

GENE-BT07

3.5" Subcompact Board

User's Manual 2nd Ed

Copyright Notice

This document is copyrighted, 2017. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, AAEMON assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

AAEMON reserves the right to make changes in the product design without notice to its users.

Acknowledgement

All other products' name or trademarks are properties of their respective owners.

- Microsoft Windows is a registered trademark of Microsoft Corp.
- Intel, Pentium, Celeron, and Xeon are registered trademarks of Intel Corporation
- Core, Atom are trademarks of Intel Corporation
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

All other product names or trademarks are properties of their respective owners.

Packing List

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

| Item | Quantity |
|--|----------|
| ● GENE-BT07 | 1 |
| ● Product CD/DVD with User's Manual (in pdf) and drivers | 1 |

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

About this Document

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

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

Safety Precautions

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

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

17. If any of the following situations arises, please 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
18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

Warning!



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

| 部件名称 | 有毒有害物质或元素 | | | | | |
|--|-----------|-----------|-----------|-----------------|---------------|-----------------|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 印刷电路板 及其电子组件 | ○ | ○ | ○ | ○ | ○ | ○ |
| 外部信号 连接器及线材 | ○ | ○ | ○ | ○ | ○ | ○ |
| <p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p> | | | | | | |

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

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

Table of Contents

| | |
|--|----------|
| Chapter 1 - Product Specifications | 1 |
| 1.1 Specifications | 2 |
| Chapter 2 – Hardware Information | 4 |
| 2.1 Dimensions | 5 |
| 2.2 Jumpers and Connectors..... | 7 |
| 2.3 Block Diagram..... | 9 |
| 2.4 List of Jumpers | 10 |
| 2.4.1 LVDS Port Backlight Inverter VCC Selection (JP1)..... | 11 |
| 2.4.2 LVDS Port Operating VDD Selection (JP4) | 11 |
| 2.4.3 COM6 Pin8 Function Selection (JP8) | 11 |
| 2.4.4 COM2 Pin8 Function Selection (JP9) | 11 |
| 2.4.5 COM1 Pin8 Function Selection (JP10)..... | 12 |
| 2.4.6 eDP Port Backlight Inverter VCC Selection (JP11) | 12 |
| 2.4.7 eDP Port Operating VDD Selection (JP13)..... | 12 |
| 2.4.8 Clear CMOS Jumper (JP21) | 12 |
| 2.4.9 AT/ATX power mode selection (JP17)..... | 13 |
| 2.4.10 Front Panel Connector (JP19) (Reserved, not used) | 13 |
| 2.5 List of Connectors..... | 14 |
| 2.5.1 LVDS Back light Control Connector (CN3) | 16 |
| 2.5.2 DC 12V Power Input (CN7)..... | 16 |
| 2.5.3 LVDS Port (CN8) | 17 |
| 2.5.4 Audio I/O Port (CN9) | 18 |
| * Line-in is not available in GENE-BT07 Rev. A1.1..... | 19 |
| 2.5.5 mSATA (Half-MiniCard) (CN10)..... | 19 |
| 2.5.6 COM Port 1/2/6 (CN20/12/32) | 21 |
| 2.5.7 COM Port 3/4/5 (CN14/15/28) | 22 |

| | | |
|---|---|-----------|
| 2.5.8 | USB Port 0/1 (CN25/40)..... | 22 |
| 2.5.9 | USB Hub Port 1/2/3/4/5/6/7 (CN18/17/44/45/41/42/43) | 23 |
| 2.5.10 | SPI Debug Port (CN19)..... | 23 |
| 2.5.11 | ALS Connector (CN21) (Reserved) | 24 |
| 2.5.12 | CPU/SYS Fan Connector (CN24/46) | 26 |
| 2.5.13 | LAN1/2 Connector (CN27/26)..... | 26 |
| 2.5.14 | eDP Connector (CN29)..... | 27 |
| 2.5.15 | CRT Connector (CN30)..... | 28 |
| 2.5.16 | RTC Battery Connector (CN31)..... | 29 |
| 2.5.17 | SIM card Socket (CN35)..... | 29 |
| 2.5.18 | MiniCard Slot (Full MiniCard) (CN37)..... | 30 |
| 2.5.19 | Speaker Left Channel (CN38)..... | 32 |
| 2.5.20 | Speaker Right Channel (CN39)..... | 32 |
| 2.5.21 | Power LED Connector (5V) (CN47) (Optional) | 33 |
| 2.5.22 | Power LED Connector (12V) (CN48) (Optional)..... | 33 |
| Chapter 3 - AMI BIOS Setup | | 34 |
| 3.1 | System Test and Initialization | 35 |
| 3.2 | AMI BIOS Setup | 36 |
| 3.3 | Setup submenu: Main | 37 |
| 3.4 | Setup submenu: Advanced | 38 |
| 3.4.1 | Advanced: Power Management..... | 39 |
| 3.4.1.1 | Power Management: S5 RTC Wake Settings | 41 |
| 3.4.2 | Advanced: Super IO Configuration..... | 43 |
| 3.4.2.1 | Super IO Configuration: Serial Port 1 Configuration... .. | 44 |
| 3.4.3 | Advanced: H/W Monitor | 45 |
| 3.4.4 | Advanced: CPU Configuration | 46 |
| 3.4.4.1 | CPU Configuration: Socket 0 CPU Information | 47 |
| 3.4.5 | Advanced: IDE Configuration..... | 48 |

| | | |
|---|---|-----------|
| 3.4.6 | Advanced: CSM Configuration | 50 |
| 3.4.7 | Advanced: USB Configuration..... | 51 |
| 3.5 | Setup submenu: Chipset..... | 53 |
| 3.5.1 | Chipset: Host Bridge | 54 |
| 3.5.1.1 | Host Bridge: IGD - LCD Control | 55 |
| 3.5.2 | Chipset: South Bridge | 57 |
| 3.5.2.1 | South Bridge: Azalia HD Audio..... | 58 |
| 3.5.2.2 | South Bridge: USB Configuration | 59 |
| 3.5.2.3 | South Bridge: PCI Express Configuration | 61 |
| 3.6 | Setup submenu: Security | 62 |
| 3.7 | Setup submenu: Boot..... | 64 |
| 3.8 | Setup submenu: Exit | 65 |
| Chapter 4 – Drivers Installation..... | | 66 |
| 4.1 | Product CD/DVD | 67 |
| Appendix A - Watchdog Timer Programming..... | | 76 |
| A.1 | Watchdog Timer Registers | 77 |
| A.2 | Watchdog Sample Program..... | 79 |
| Appendix B - I/O Information | | 81 |
| B.1 | I/O Address Map | 82 |
| B.2 | Memory Address Map | 84 |
| B.3 | IRQ Mapping Chart..... | 85 |
| Appendix C – Mating Connectors | | 95 |
| C.1 | List of Mating Connectors and Cables..... | 96 |

Chapter 1

Product Specifications

1.1 Specifications

System

- **Form Factor** 3.5"
- **Processor** Intel® Celeron® J1900 processor SoC
- **System Memory** 204-pin DDR3L 1333 SODIMM up to 8 GB
- **Chipset** Intel® Celeron® J1900 processor SoC
- **Ethernet** RTL8111E, RJ-45 x 2
- **BIOS** SPI BIOS – 8 MB flash
- **Watchdog Timer** Fintek F81866
- **H/W Status Monitoring** Fintek F81866
- **RTC** Intel® Celeron® J1900 processor SoC
- **Expansion Interface** MiniCard x 1
SIM Card Socket x 1
- **Power Requirement** DC 12 V, AT/ATX
- **Board Size** 146 x 101.6 mm (5.7" x 4")
- **Gross Weight** 0.4 kg (0.88 lb)
- **Operating Temperature** 0°C ~ 60°C (32°F ~ 140°F)
- **Storage Temperature** -40 ~ 80°C (-40 ~ 176°F)
- **Operation Humidity** 0 ~ 90% relative humidity, con-condensing

Display

- **Chipset** Intel® Celeron® J1900 processor SoC
- **Resolution** VGA up to 2560 x 1600 @ 60 Hz
LVDS up to 1920 x 1200 @ 60 Hz
eDP up to 2560 x 1600 @ 60Hz (optional)
- **Output Interface** 18/24-bit Dual-Channel LVDS LCD
Wafer connector x 1 for VGA
- **Display Combination** Dual simultaneous display

I/O

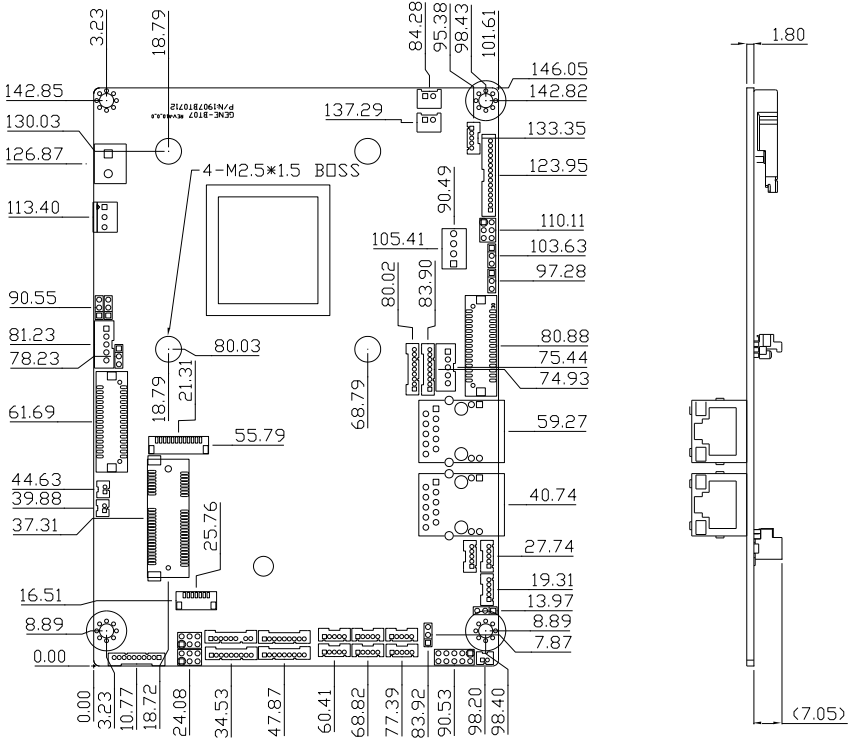
- **Storage** Half size mSATA x 1
- **USB** USB 2.0 x 9
- **Serial Port** RS-232 x 6
- **PS/2 Port** -
- **DI/O** -
- **Audio** Realtek ALC892 codec
Mic-in, Line-out
TPA3113, 8 Ω / 2W speaker supported

Chapter 2

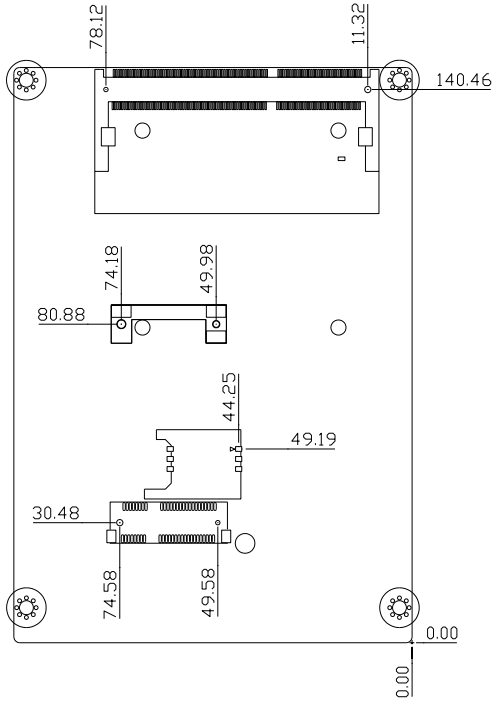
Hardware Information

2.1 Dimensions

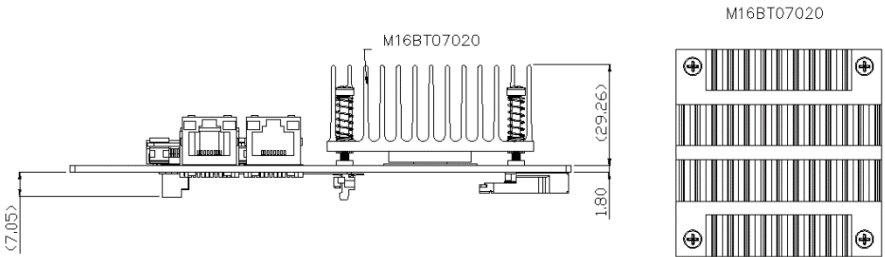
Component side



Solder side

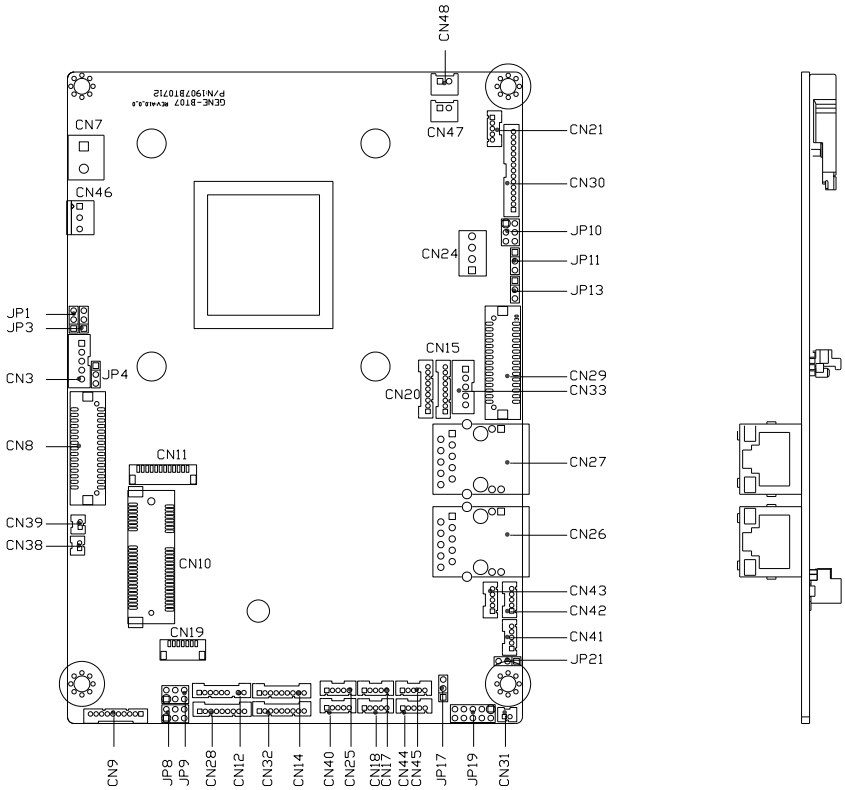


With optional heat sink

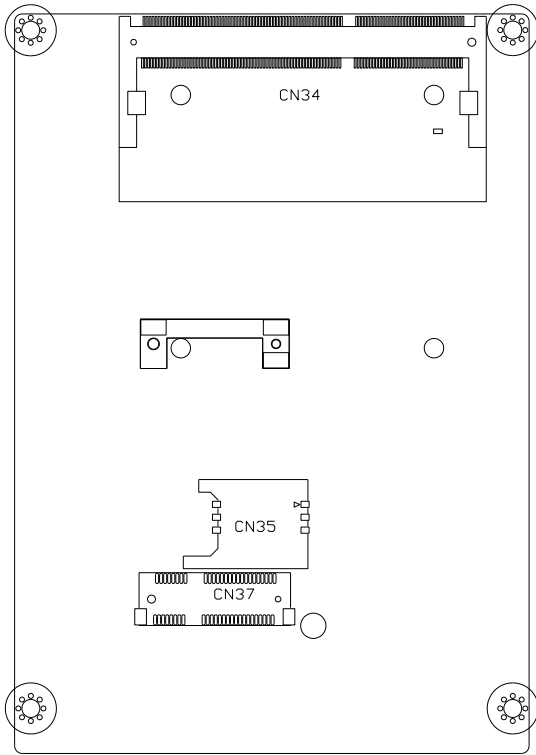


2.2 Jumpers and Connectors

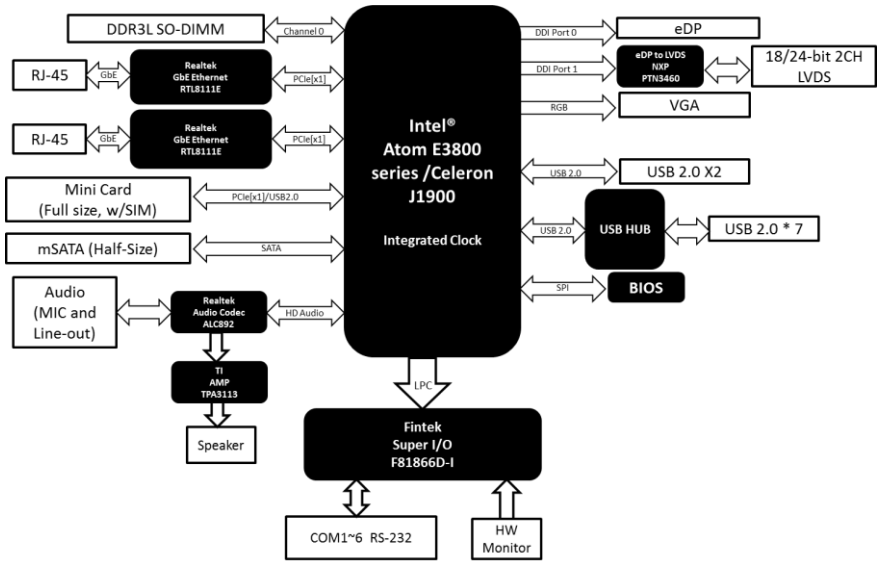
Component side



Solder side



2.3 Block Diagram

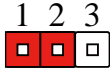


2.4 List of Jumpers

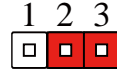
Please refer to the table below for all of the board's jumpers that you can configure for your application

| Label | Function |
|-------|--|
| JP1 | LVDS port backlight inverter VCC selection |
| JP4 | LVDS port operating VDD selection |
| JP8 | COM6 pin8 function selection |
| JP9 | COM2 pin8 function selection |
| JP10 | COM1 pin8 function selection |
| JP11 | eDP port backlight inverter VCC Selection |
| JP13 | eDP port operating VDD selection |
| JP21 | Clear CMOS Jumper |
| JP17 | AT/ATX power mode selection |
| JP19 | Front Panel Connector (Reserved, not used) |

2.4.1 LVDS Port Backlight Inverter VCC Selection (JP1)

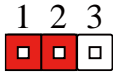


+12V

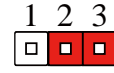


+5V (Default)

2.4.2 LVDS Port Operating VDD Selection (JP4)

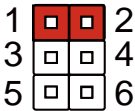


+5V

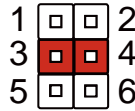


+3.3V (Default)

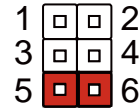
2.4.3 COM6 Pin8 Function Selection (JP8)



+12V

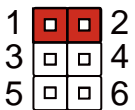


Ring(Default)

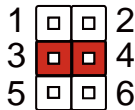


+5V

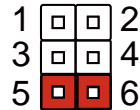
2.4.4 COM2 Pin8 Function Selection (JP9)



+12V

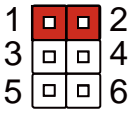


Ring(Default)

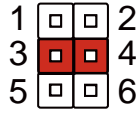


+5V

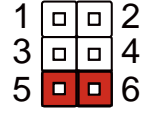
2.4.5 COM1 Pin8 Function Selection (JP10)



+12V

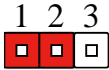


Ring(Default)

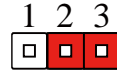


+5V

2.4.6 eDP Port Backlight Inverter VCC Selection (JP11)

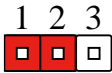


+12V

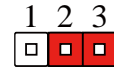


+5V (Default)

2.4.7 eDP Port Operating VDD Selection (JP13)

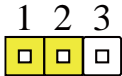


+5V

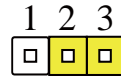


+3.3V (Default)

2.4.8 Clear CMOS Jumper (JP21)

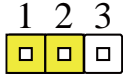


Normal (Default)

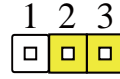


Clear CMOS

2.4.9 AT/ATX power mode selection (JP17)

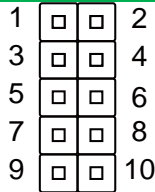


ATX mode (Default)



AT mode

2.4.10 Front Panel Connector (JP19) (Reserved, not used)



| 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+ |

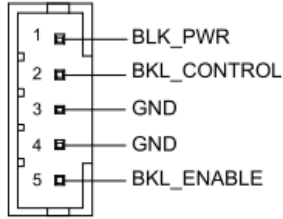
2.5 List of Connectors

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

| Label | Function |
|-------|-----------------------------------|
| CN3 | LVDS Back light Control Connector |
| CN7 | DC 12V Power Input |
| CN8 | LVDS Connector |
| CN9 | Audio Connector |
| CN10 | mSATA (Half-Mini Card) |
| CN12 | COM Port 2 |
| CN14 | COM Port 3 |
| CN15 | COM Port 4 |
| CN17 | USB Port2 from HUB |
| CN18 | USB Port1 from HUB |
| CN19 | SPI Debug Port |
| CN20 | COM Port 1 |
| CN21 | ALC connector (Reserved) |
| CN24 | CPU Fan Connector |
| CN25 | USB Port 0 |
| CN26 | LAN 2 connector |
| CN27 | LAN 1 connector |
| CN28 | COM Port 5 |
| CN29 | eDP Connector |
| CN30 | CRT Connector |
| CN31 | RTC Connector |
| CN32 | COM Port 6 |
| CN33 | eDP Backlight Connector |

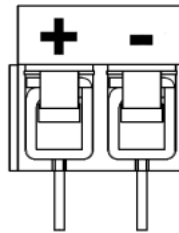
| | |
|------|--|
| CN34 | DDR SO-DOMM socket |
| CN35 | SIM socket |
| CN37 | Mini Card (Full-Mini Card) |
| CN38 | Speaker Left channel |
| CN39 | Speaker Right channel |
| CN40 | USB Port 1 |
| CN41 | USB Port5 from HUB |
| CN42 | USB Port6 from HUB |
| CN43 | USB Port7 from HUB |
| CN44 | USB Port3 from HUB |
| CN45 | USB Port3 from HUB |
| CN46 | System Fan Connector |
| CN47 | Power LED connector(5V) (Optional) |
| CN48 | Power button LED connector(12V) (Optional) |

2.5.1 LVDS Back light Control Connector (CN3)



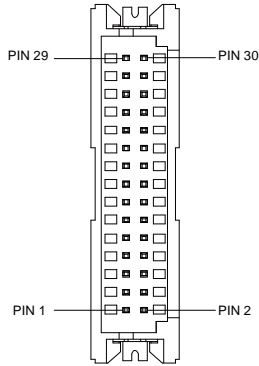
| Pin | Pin Name | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1 | BKL_PWR | OUT | +5V / +12V |
| 2 | BKL_CONTROL | OUT | |
| 3 | GND | GND | |
| 4 | GND | GND | |
| 5 | BKL_ENABLE | OUT | |

2.5.2 DC 12V Power Input (CN7)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | 12 V | PWR | +12 V |
| 2 | GND | GND | |

2.5.3 LVDS Port (CN8)



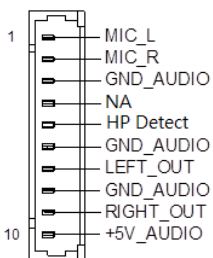
* LVDS LCD_PWR can be set to 3.3V or +5V by JP1

* LVDS VDD power can be set by JP4

| 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 | |
| 30 | LVDS_B_CLK+ | DIFF | |

2.5.4 Audio I/O Port (CN9)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1 | MIC_L | IN | |
| 2 | MIC_R | IN | |
| 3 | GND_AUDIO | GND | |

| | | | |
|----|-----------|-----|-----|
| 4 | NA | | |
| 5 | HP Detect | IN | |
| 6 | GND_AUDIO | GND | |
| 7 | LEFT_OUT | OUT | |
| 8 | GND_AUDIO | GND | |
| 9 | RIGHT_OUT | OUT | |
| 10 | +5V_AUDIO | PWR | +5V |

* Line-in is not available in GENE-BT07 Rev. A1.1

2.5.5 mSATA (Half-MiniCard) (CN10)

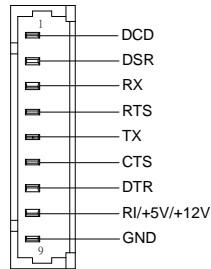
| Pin | Pin Name | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1 | PCIE_WAKE# | IN | |
| 2 | +3.3VSB | PWR | +3.3V |
| 3 | NC | NC | |
| 4 | GND | GND | |
| 5 | NC | NC | |
| 6 | +1.5V | PWR | +1.5V |
| 7 | PCIE_CLK_REQ# | IN | |
| 8 | NC | NC | |
| 9 | GND | GND | |
| 10 | NC | NC | |
| 11 | PCIE_REF_CLK- | DIFF | |
| 12 | NC | NC | |
| 13 | PCIE_REF_CLK+ | DIFF | |
| 14 | NC | NC | |
| 15 | GND | GND | |

| | | | |
|----|------------|------|-------|
| 16 | NC | NC | |
| 17 | NC | NC | |
| 18 | GND | GND | |
| 19 | NC | NC | |
| 20 | W_DISABLE# | OUT | +3.3V |
| 21 | GND | GND | |
| 22 | PCIE_RST# | OUT | +3.3V |
| 23 | mSATA_RXP | DIFF | |
| 24 | +3.3VSB | PWR | +3.3V |
| 25 | mSATA_RXN | DIFF | |
| 26 | GND | GND | |
| 27 | GND | GND | |
| 28 | +1.5V | PWR | +1.5V |
| 29 | GND | GND | |
| 30 | SMB_CLK | I/O | +3.3V |
| 31 | mSATA_TXN | DIFF | |
| 32 | SMB_DATA | I/O | +3.3V |
| 33 | mSATA_TXP | DIFF | |
| 34 | GND | GND | |
| 35 | GND | GND | |
| 36 | NC | NC | |
| 37 | GND | GND | |
| 38 | NC | NC | |
| 39 | +3.3VSB | PWR | +3.3V |
| 40 | GND | GND | |
| 41 | +3.3VSB | PWR | +3.3V |
| 42 | NC | 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 |

* CN10 is for mSATA only

2.5.6 COM Port 1/2/6 (CN20/12/32)

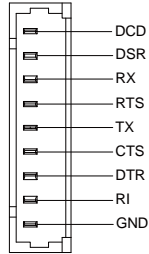


* Pin 8 can't be set by JP8/9/10

| 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 |

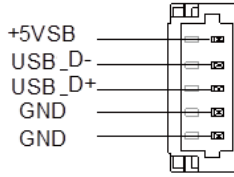
| | | | |
|---|-------------|---------|----------|
| 6 | CTS | IN | |
| 7 | DTR | OUT | ±5V |
| 8 | RI/+5V/+12V | IN/ PWR | +5V/+12V |
| 9 | GND | GND | |

2.5.7 COM Port 3/4/5 (CN14/15/28)



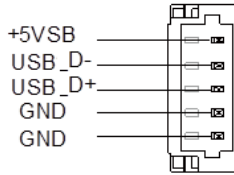
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | DCD | IN | |
| 2 | DSR | IN | |
| 3 | RX | IN | |
| 4 | RTS | OUT | ±9V |
| 5 | TX | OUT | ±9V |
| 6 | CT | IN | |
| 7 | DTR | OUT | ±9V |
| 8 | RI | IN | |
| 9 | GND | GND | |

2.5.8 USB Port 0/1 (CN25/40)



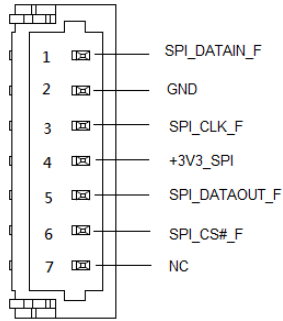
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +5VSB | PWR | +5 V |
| 2 | USB_D- | DIFF | |
| 3 | USB_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | GND | GND | |

2.5.9 USB Hub Port 1/2/3/4/5/6/7 (CN18/17/44/45/41/42/43)



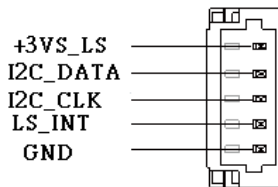
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +5VSB | PWR | +5 V |
| 2 | USB_D- | DIFF | |
| 3 | USB_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | GND | GND | |

2.5.10 SPI Debug Port (CN19)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1 | SPI_DATAIN_F | IN | |
| 2 | GND | GND | |
| 3 | SPI_CLK_F | IN | |
| 4 | +3V3_SPI | PWR | 3.3 V |
| 5 | SPI_DATAOUT_F | OUT | |
| 6 | SPI_CS#_F | IN | |
| 7 | NC | | |

2.5.11 ALS Connector (CN21) (Reserved)



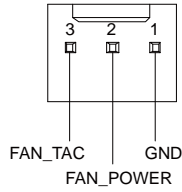
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +3VS_LS | PWR | +5V |
| 2 | I2C_DATA | I/O | |
| 3 | I2C_CLK | OUT | |
| 4 | LS_INT | IN | |

5

GND

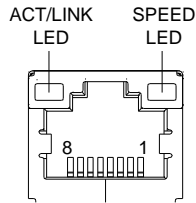
GND

2.5.12 CPU/SYS Fan Connector (CN24/46)



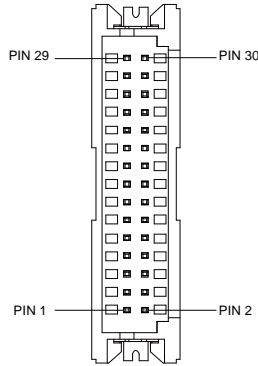
| Pin | Pin Name | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1 | GND | GND | |
| 2 | FAN_POWER | PWR | +12V |
| 3 | FAN_TAC | IN | |

2.5.13 LAN1/2 Connector (CN27/26)



| 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 | |

2.5.14eDP Connector (CN29)

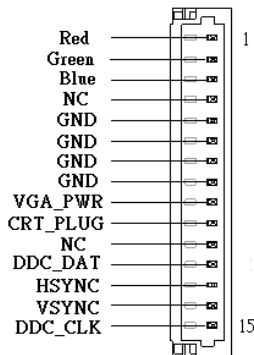


| Pin | Pin Name | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1 | BKL_ENABLE | OUT | |
| 2 | BKL_CONTROL | OUT | |
| 3 | LCD_PWR | PWR | +3.3V/+5V |
| 4 | GND | GND | |
| 5 | eDP_A_TX3- | DIFF | |
| 6 | eDP_A_TX3+ | DIFF | |
| 7 | LCD_PWR | PWR | +3.3V/+5V |
| 8 | GND | GND | |
| 9 | eDP_A_TX2- | DIFF | |
| 10 | eDP_A_TX2+ | DIFF | |
| 11 | eDP_A_TX1- | DIFF | |
| 12 | eDP_A_TX1+ | DIFF | |
| 13 | eDP_A_TX0- | DIFF | |
| 14 | eDP_A_TX0+ | DIFF | |
| 15 | NC | NC | |
| 16 | eDP_HPD | DIFF | |
| 17 | eDP_AUX_N | DIFF | +3.3V |

| | | | |
|----|-----------|------|-----------|
| 18 | eDP_AUX_P | DIFF | +3.3V |
| 19 | NC | NC | |
| 20 | NC | NC | |
| 21 | NC | NC | |
| 22 | NC | NC | |
| 23 | NC | NC | |
| 24 | NC | NC | |
| 25 | NC | NC | |
| 26 | NC | NC | |
| 27 | LCD_PWR | PWR | +3.3V/+5V |
| 28 | GND | GND | |
| 29 | NC | NC | |
| 30 | NC | NC | |

* eDP backlight power can be set by JP11

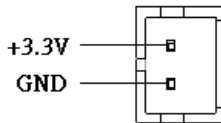
2.5.15 CRT Connector (CN30)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | RED | OUT | |
| 2 | GREEN | OUT | |

| | | | |
|----|----------|-----|-----|
| 3 | BLUE | OUT | |
| 4 | NC | NC | |
| 5 | GND | GND | |
| 6 | GND | GND | |
| 7 | GND | GND | |
| 8 | GND | GND | |
| 9 | VGA_PWR | PWR | +5V |
| 10 | CRT_PLUG | IN | |
| 11 | NC | NC | |
| 12 | DDC_DAT | I/O | |
| 13 | HSYNC | Out | |
| 14 | VSYNC | Out | |
| 15 | DDC_CLK | I/O | |

2.5.16 RTC Battery Connector (CN31)



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

* Clear CMOS can be set by JP21

2.5.17 SIM card Socket (CN35)

| 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 | IO |

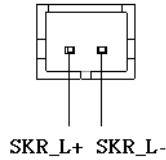
2.5.18 MiniCard Slot (Full MiniCard) (CN37)

| 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 | | |

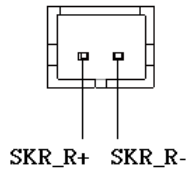
| | | | |
|----|---------|-----|-------|
| 45 | NC | | |
| 46 | NC | | |
| 47 | NC | | |
| 48 | +1.5V | PWR | +1.5V |
| 49 | NC | | |
| 50 | GND | GND | |
| 51 | NC | | |
| 52 | +3.3VSB | PWR | +3.3V |

2.5.19 Speaker Left Channel (CN38)



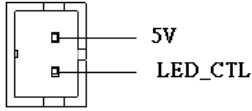
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | SKR_L+ | OUT | |
| 2 | SKR_L- | OUT | |

2.5.20 Speaker Right Channel (CN39)



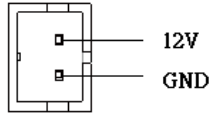
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | SKR_R+ | OUT | |
| 2 | SKR_R- | OUT | |

2.5.21 Power LED Connector (5V) (CN47) (Optional)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1 | +5V | PWR | 5V |
| 2 | LED Control | Out | |

2.5.22 Power LED Connector (12V) (CN48) (Optional)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +12V | PWR | 12V |
| 2 | GND | GND | |

Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

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

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

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

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

3.2 AMI BIOS Setup

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

To enter BIOS Setup, press or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

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

Advanced – Enable/ Disable boot option for legacy network devices

Chipset – For hosting bridge parameters

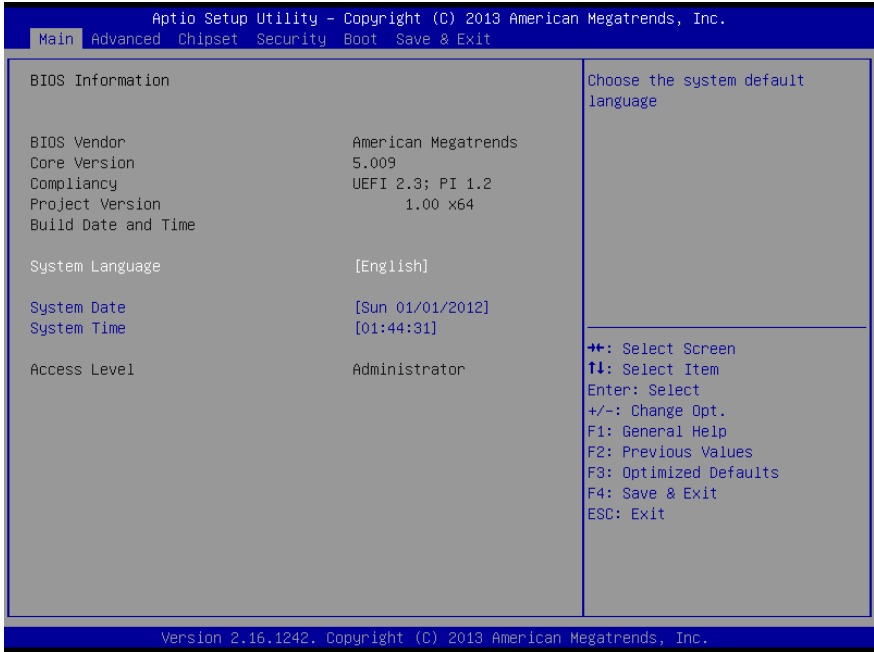
Boot – Enable/ Disable quiet Boot Option

Security – The setup administrator password can be set here

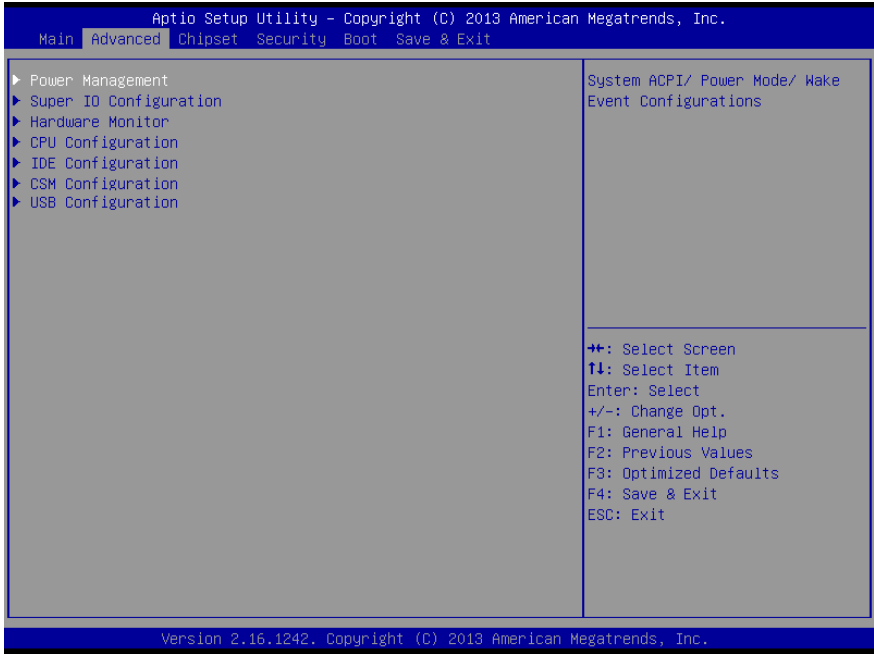
Save & Exit – Save your changes and exit the program

3.3 Setup submenu: Main

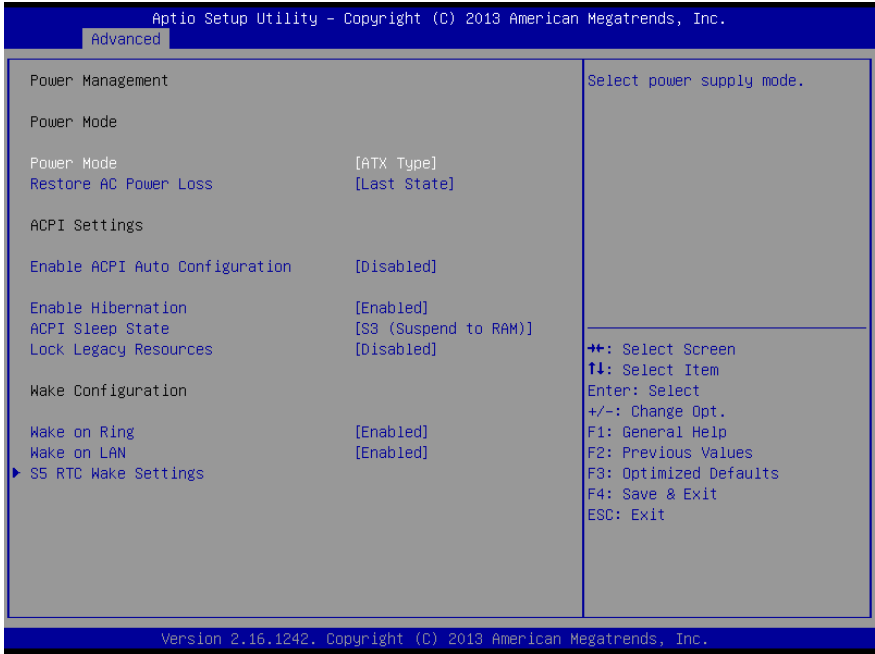
Press 'Delete' Key to enter Setup



3.4 Setup submenu: Advanced



3.4.1 Advanced: Power Management

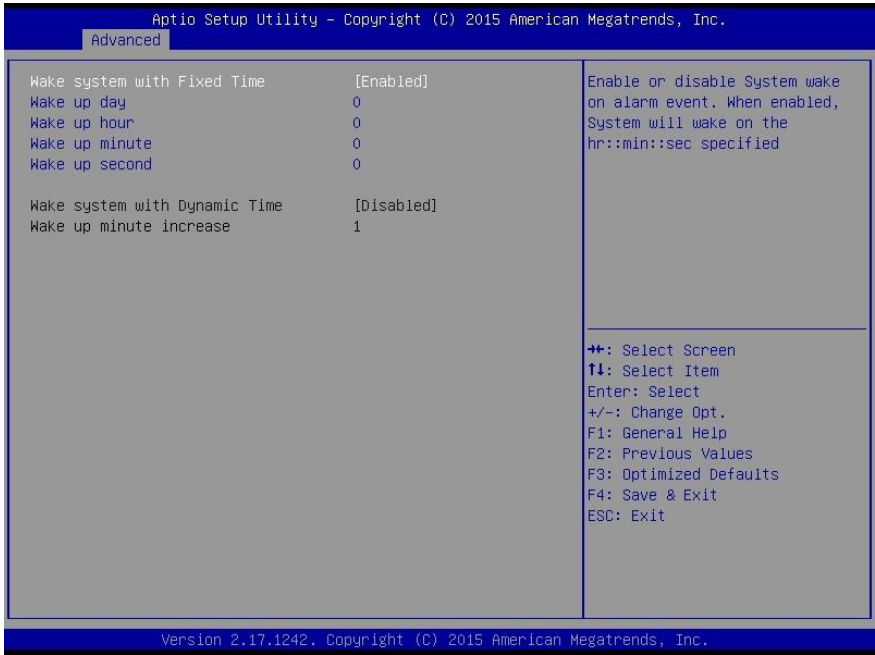


Options summary:

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

| | | |
|--|-------------------------|-----------------------------------|
| Enable Hibernation | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS | | |
| ACPI Sleep State | Suspend Disabled | Optimal Default, Failsafe Default |
| | S3 only(Suspend to RAM) | |
| Select highest ACPI sleep state the System will enter when the Suspend button is pressed | | |
| Lock Legacy Resources | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enables or Disables Lock of Legacy Resources | | |
| Wake on Ring | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enabled/Disabled wake from Ring | | |
| Wake on LAN | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enabled/Disabled wake from LAN | | |
| S5 RTC Wake Settings | | |
| Enable system to wake from S5 using RTC alarm. | | |

3.4.1.1 Power Management: S5 RTC Wake Settings

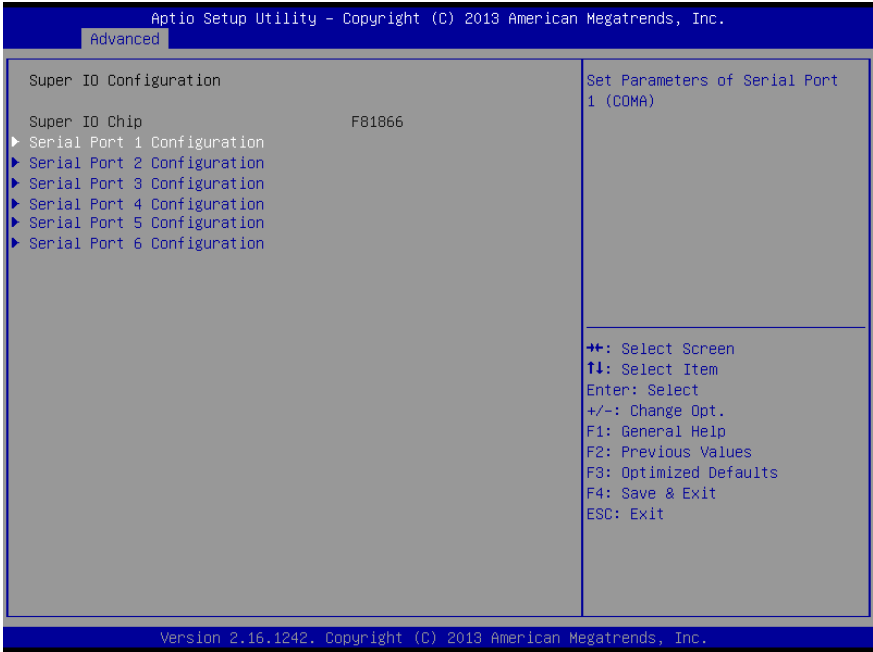


Options summary:

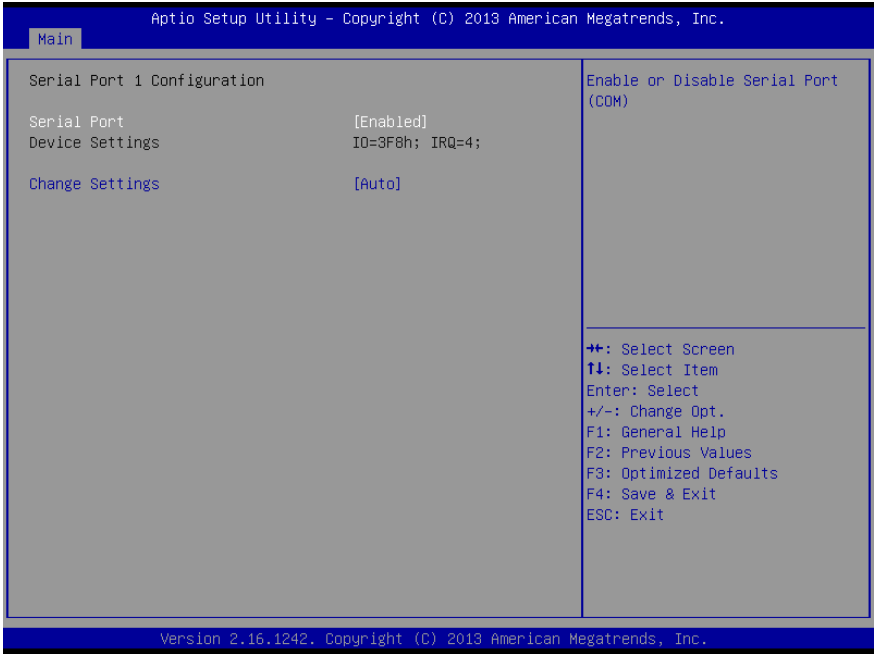
| | | |
|---|---------|-----------------------------------|
| Wake system with Fixed Time | Enable | |
| | Disable | Optimal Default, Failsafe Default |
| Enable or disable System wake on alarm event. Wake up time is setting by following settings. | | |
| Wake up day | 0-31 | |
| Select 0 for daily system 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 | |

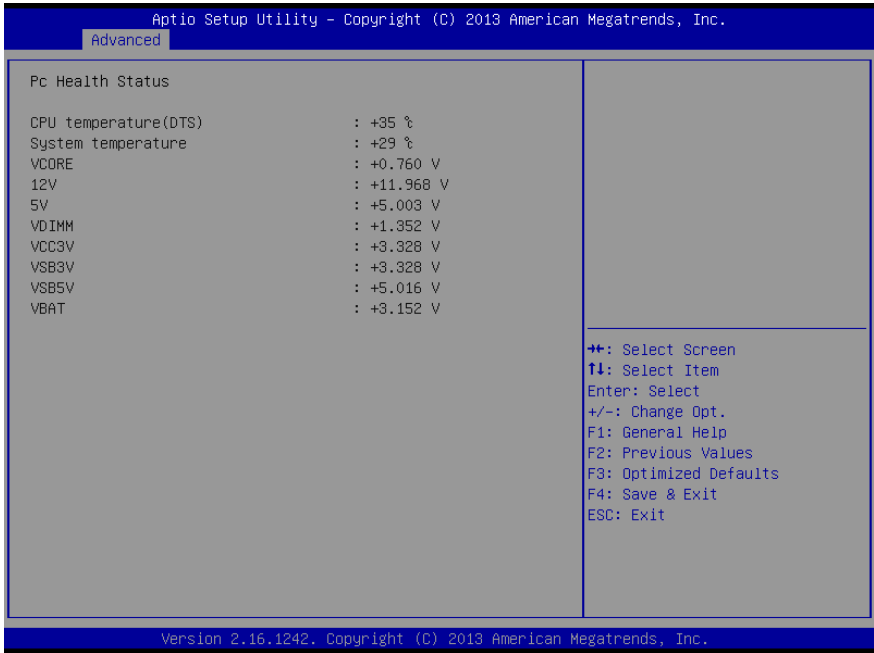
3.4.2 Advanced: Super IO Configuration



3.4.2.1 Super IO Configuration: Serial Port 1 Configuration



3.4.3 Advanced: H/W Monitor



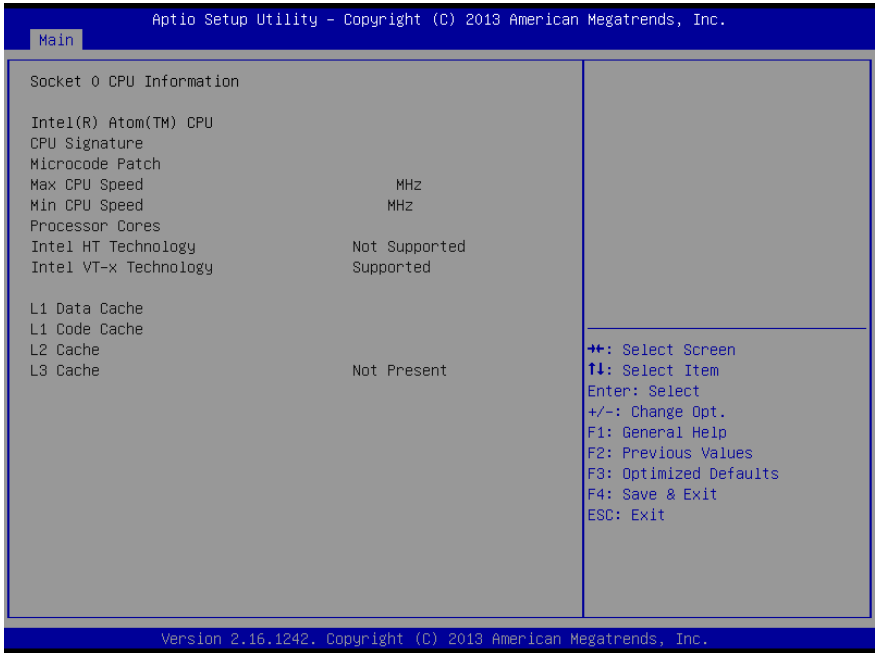
3.4.4 Advanced: CPU Configuration



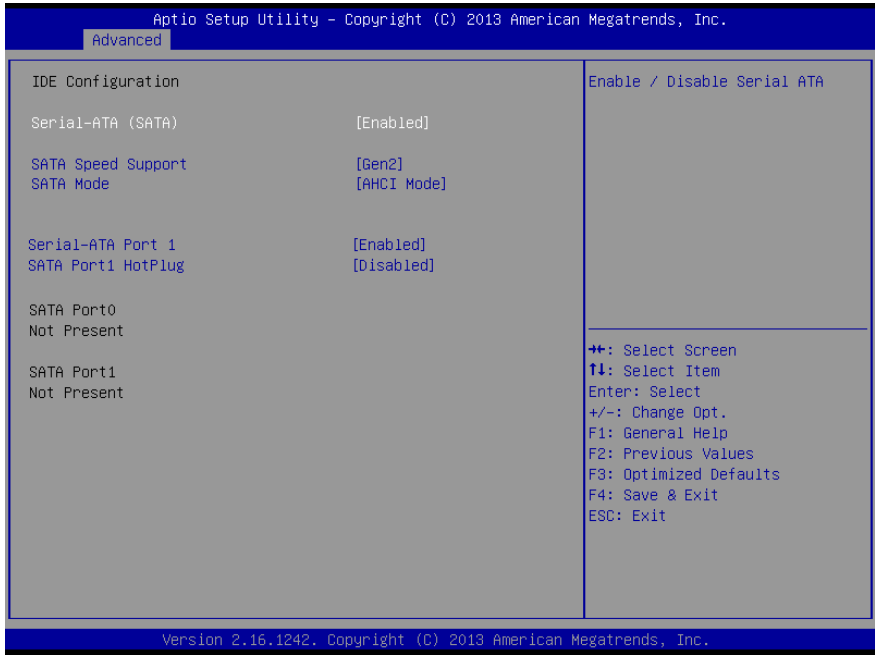
Options summary:

| | | |
|---|----------|-----------------------------------|
| Intel Virtualization | Disabled | Optimal Default, Failsafe Default |
| Technology | Enabled | |
| 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



3.4.5 Advanced: IDE Configuration

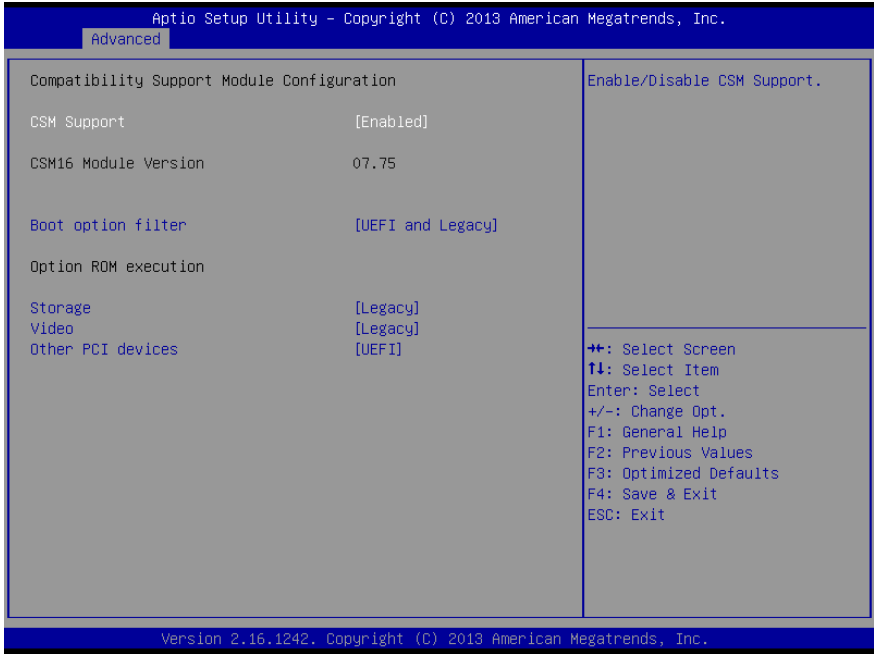


Options summary:

| | | |
|--|---------|---------|
| Serial-ATA(SATA) | Enabled | Default |
| | Disable | |
| SATA Speed Support | Gen1 | |
| | Gen2 | Default |
| SATA Mode | IDE | Default |
| | AHCI | |
| IDE: Configure SATA controllers as legacy IDE | | |
| AHCI: Configure SATA controllers to operate in AHCI mode | | |
| Serial-ATA Port 1 | Enabled | Default |
| | Disable | |

| | | |
|---------------------|---------|---------|
| SATA Port 1 HotPlug | Enabled | |
| | Disable | Default |

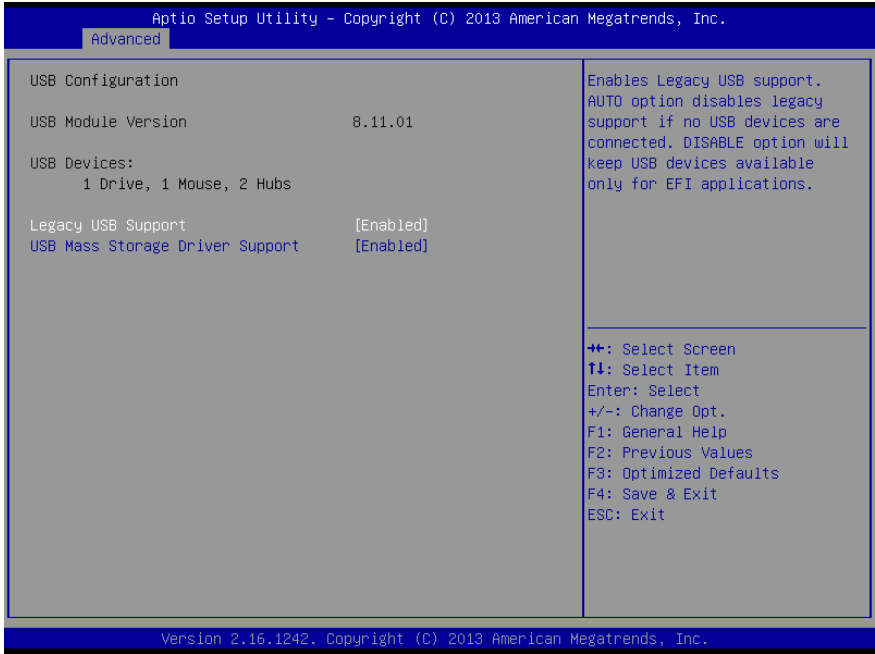
3.4.6 Advanced: CSM Configuration



Options summary:

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

3.4.7 Advanced: USB Configuration

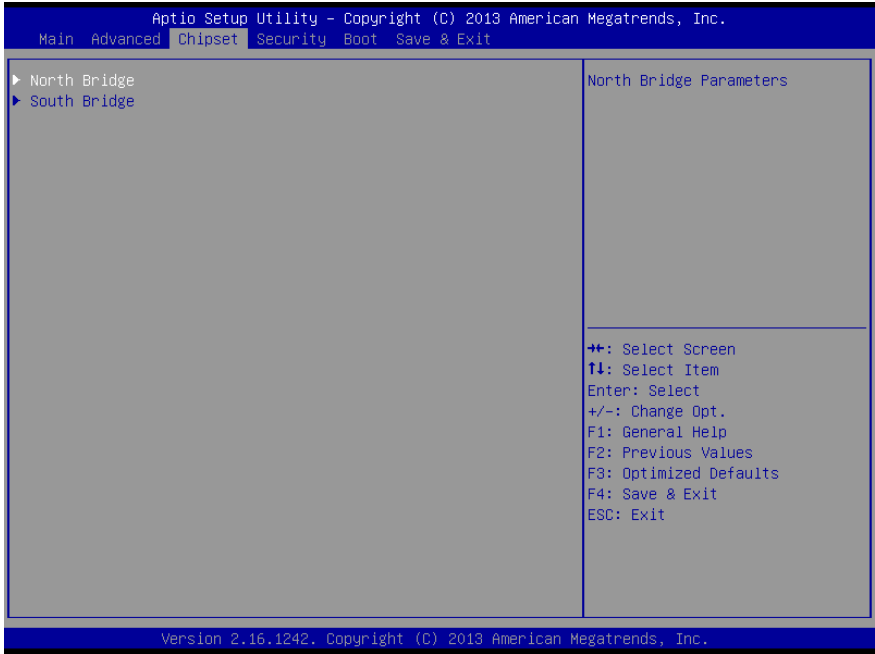


Options summary:

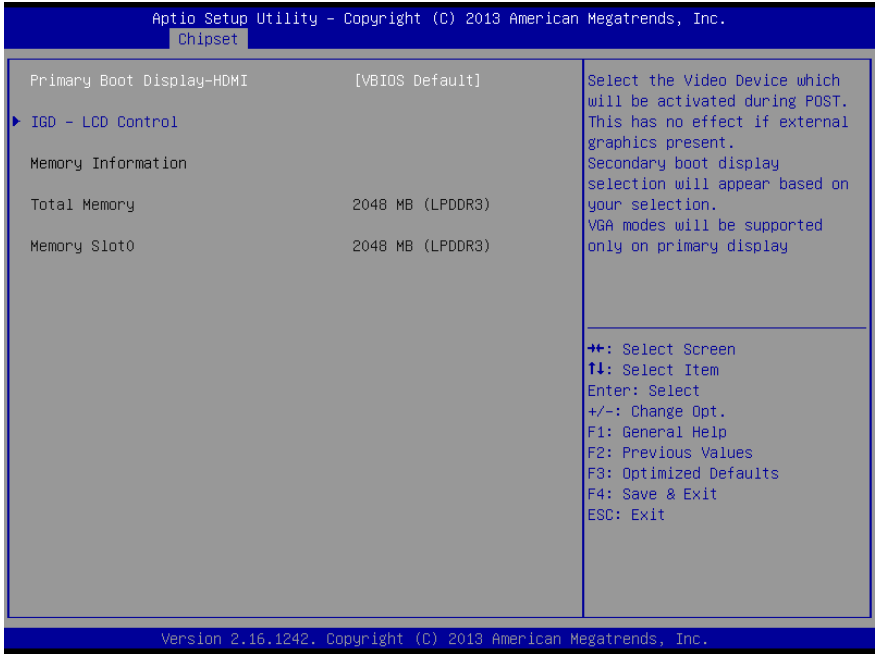
| | | |
|--|----------|-----------------------------------|
| Legacy USB Support | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| | Auto | |
| Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. | | |
| AUTO option disables legacy support if no USB devices are connected | | |
| USB Mass Storage Driver Support | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable/Disable USB Mass Storage Driver Support | | |
| Device Name (Emulation) | Auto | Optimal Default, Failsafe Default |

| | | |
|---|------------|--|
| Type) | Floppy | |
| | Forced FDD | |
| | Hard Disk | |
| | CDROM | |
| If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive) | | |

3.5 Setup submenu: Chipset



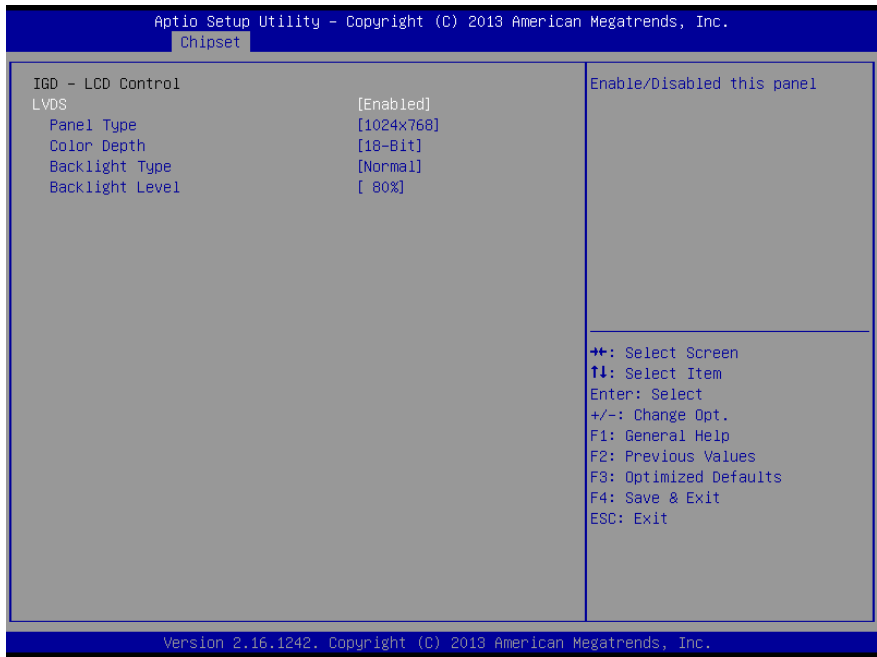
3.5.1 Chipset: Host Bridge



Options summary:

| | | |
|----------------------|---------------|---------|
| Primary Boot Display | VBIOS Default | Default |
| | CRT | |
| | eDP | |
| | LVDS | |

3.5.1.1 Host Bridge: IGD - LCD Control

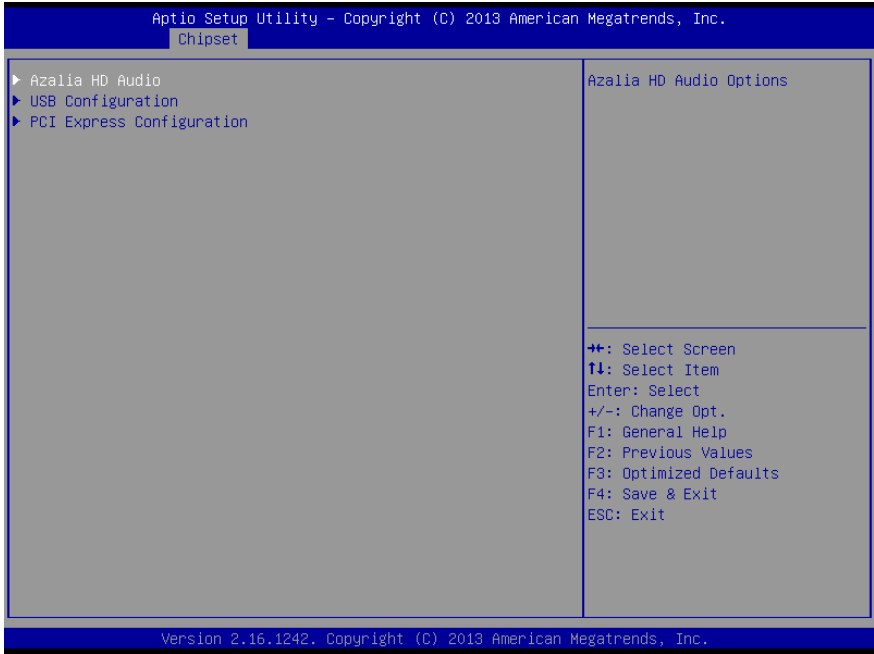


Options summary:

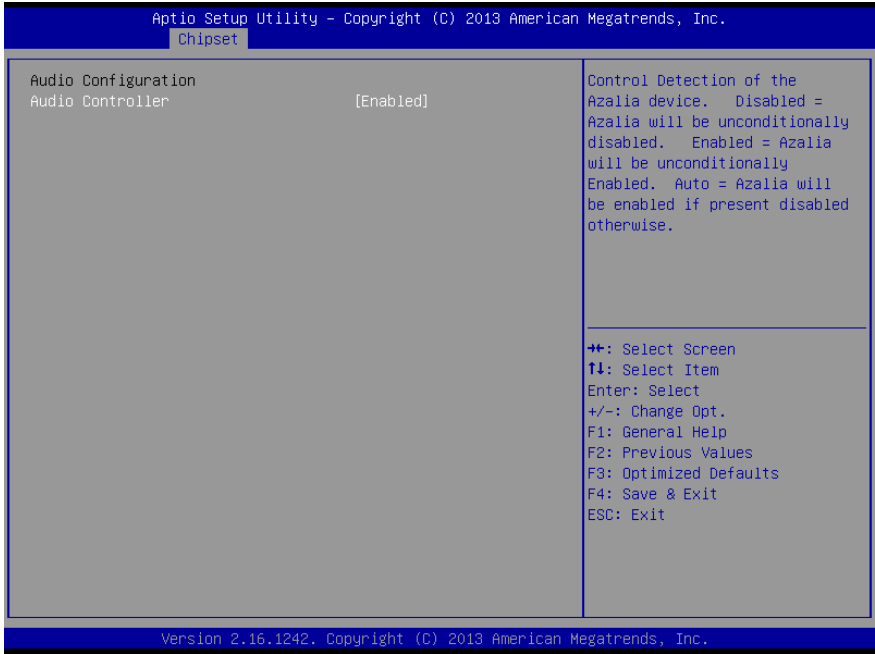
| | | |
|----------------------------------|-----------|---------|
| LVDS | Disabled | Default |
| | Enabled | |
| Enable or Disable LVDS interface | | |
| Panel Type | 640x480 | Default |
| | 800x480 | |
| | 800x600 | |
| | 1024x600 | |
| | 1024x768 | |
| | 1280x768 | |
| | 1280x1024 | |
| | 1366x768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

| | | |
|---|-----------|---------|
| | 1440x900 | |
| | 1600x1200 | |
| | 1920x1080 | |
| | 1920x1200 | |
| Select panel resolution. | | |
| Color Depth | 18-Bit | Default |
| | 24-Bit | |
| | 36-Bit | |
| | 48-Bit | |
| Select color depth of the panel | | |
| Backlight Type | Normal | Default |
| | Inverted | |
| Select Backlight control type. | | |
| Inverted: Brightest for low PWM duty cycle and low voltage. | | |
| Normal: Brightest for high PWM duty cycle and high voltage. | | |
| Backlight Level | 0% | Default |
| | 10% | |
| | 20% | |
| | 30% | |
| | 40% | |
| | 50% | |
| | 60% | |
| | 70% | |
| | 80% | |
| | 90% | |
| | 100% | |
| Select Backlight Level | | |

3.5.2 Chipset: South Bridge



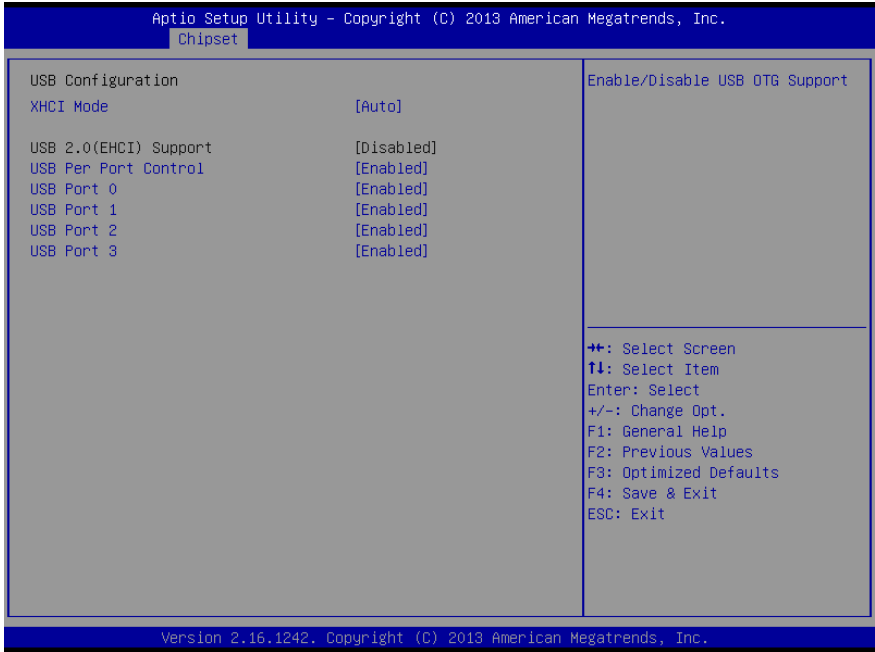
3.5.2.1 South Bridge: Azalia HD Audio



Options summary:

| | | |
|--|----------|---------|
| Audio Controller | Disabled | Default |
| | Enabled | |
| <p>Control Detection of the Azalia device.</p> <p>Disabled = Azalia will be unconditionally disabled.</p> <p>Enabled = Azalia will be unconditionally Enabled.</p> <p>Auto = Azalia will be enabled if present disabled otherwise.</p> | | |

3.5.2.2 South Bridge: USB Configuration

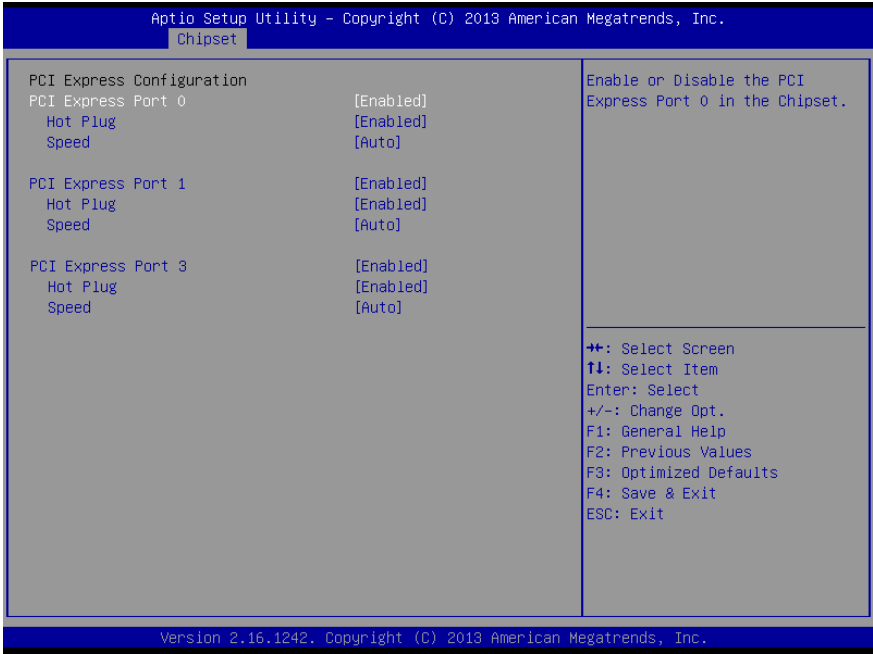


Options summary:

| | | |
|---|------------|---------|
| XHCI Mode | Enabled | Default |
| | Disabled | |
| | Auto | |
| | 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 | | |

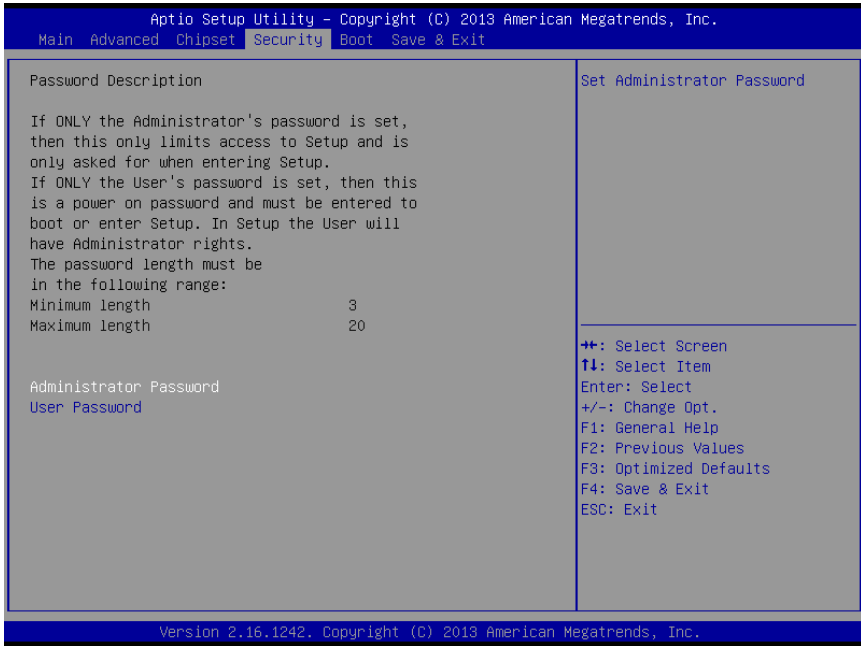
3.5.2.3 South Bridge: PCI Express Configuration



Options summary:

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

3.6 Setup submenu: Security



Change User/Administrator Password

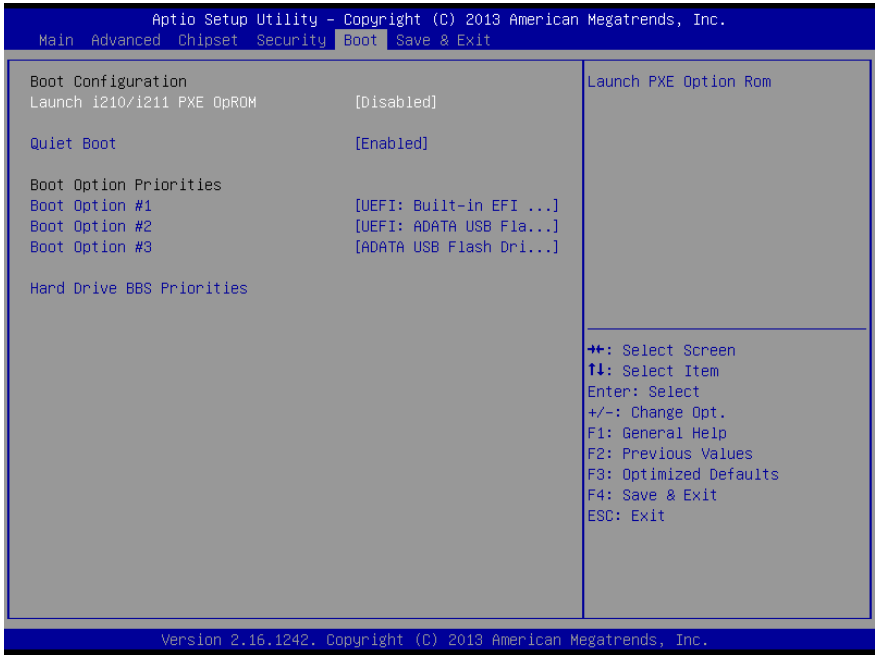
You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

Removing the Password

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

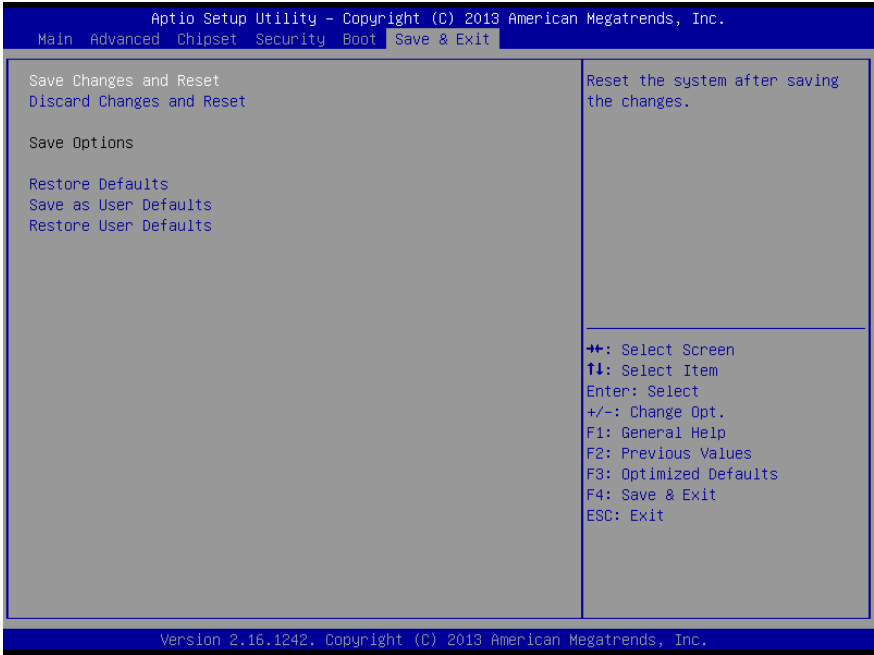
3.7 Setup submenu: Boot



Options summary:

| | | |
|-------------------------------|----------|---------|
| Launch PXE OpROM | Disabled | Default |
| | Enabled | |
| Launch PXE Option Rom | | |
| Quiet Boot | Disabled | Default |
| | Enabled | |
| En/Disables Quiet Boot option | | |

3.8 Setup submenu: Exit



Chapter 4

Drivers Installation

4.1 Product CD/DVD

The GENE-BT06 comes with a product DVD that contains all the drivers and utilities you need to setup your product. Insert the DVD and follow the steps in the autorun program to install the drivers.

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

Step 1 – Install Chipset 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 **Setup.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

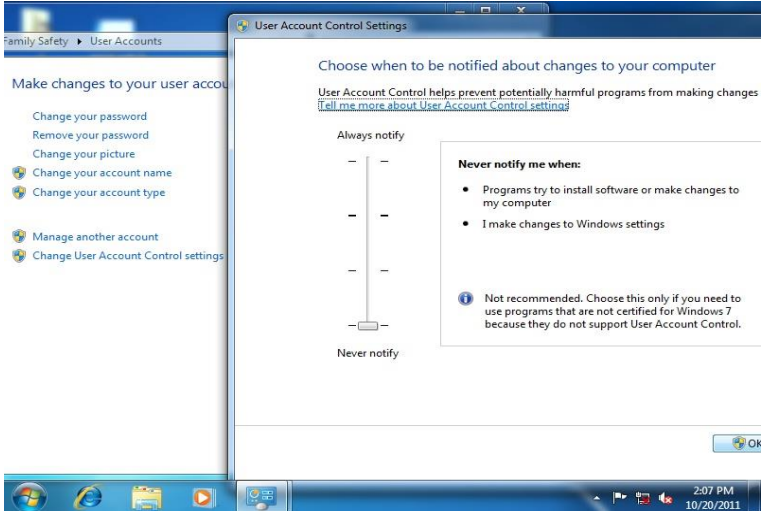
Step 5 – Install MBI Driver (Optional, Windows 8.1/10 only)

1. Open the **Step 5 – 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

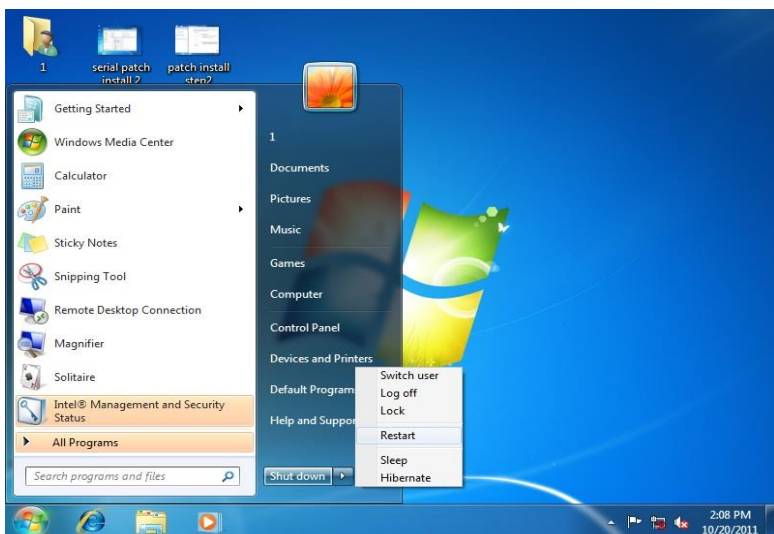
Step 6 – Install Serial Port Driver (Optional)

For Windows 7:

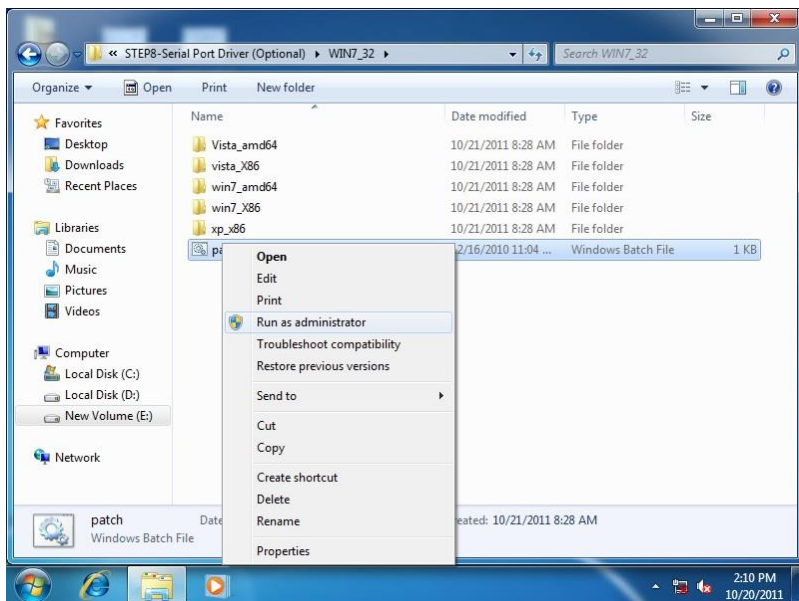
1. Change User Account Control settings to **Never notify**



2. Reboot and log in as administrator

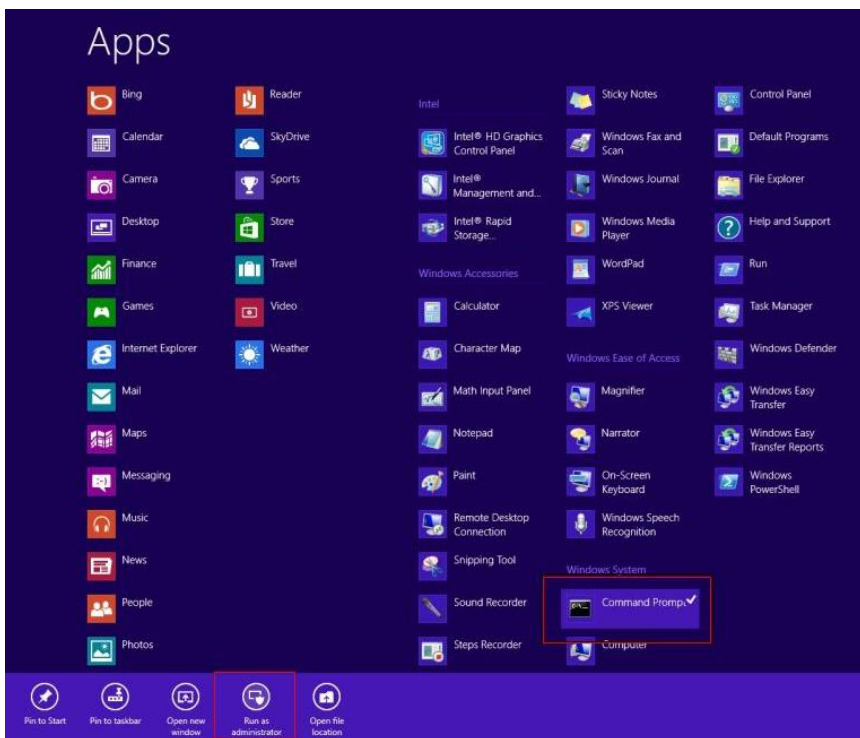


3. Run patch.bat as administrator

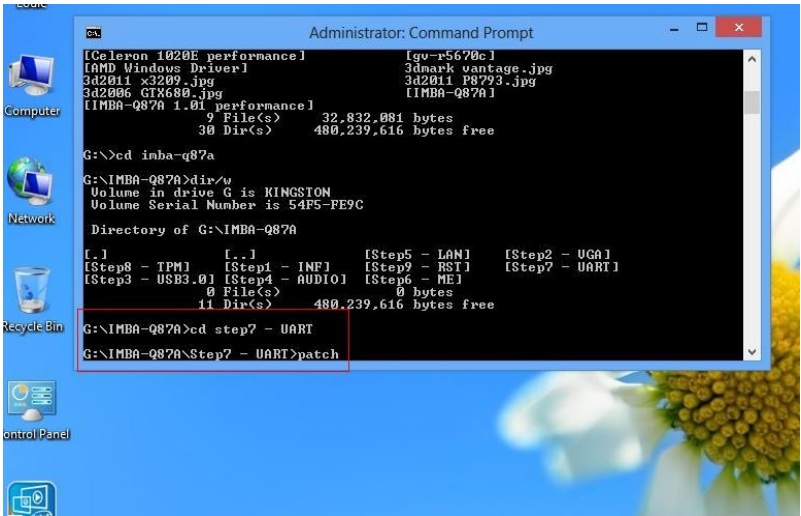


For Windows 8:

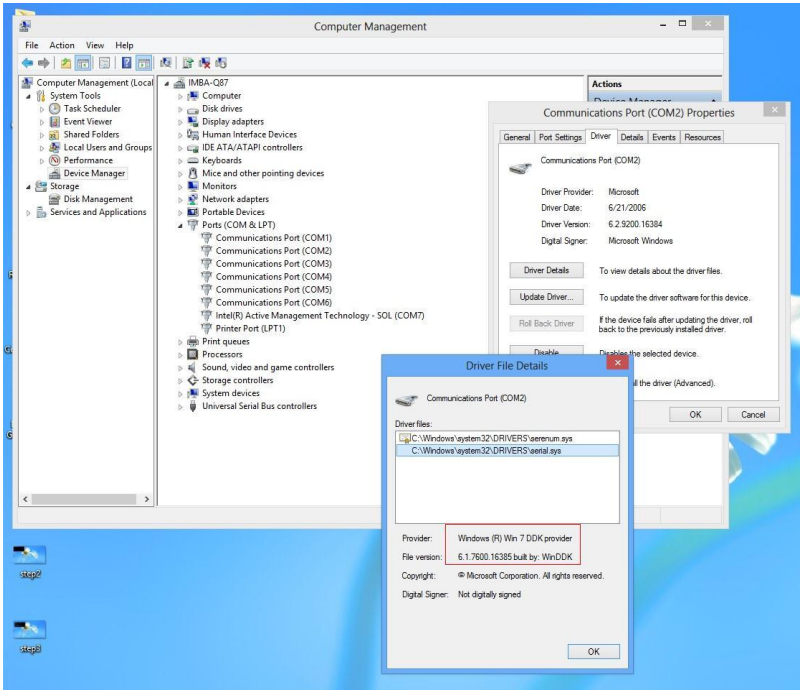
1. Open the Apps Screen, right click on the **Command Prompt** tile and select **Run as Administrator**



2. 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)
3. You are now at the folder where the file is located. Enter the **patch.bat** to open and install the drivers.

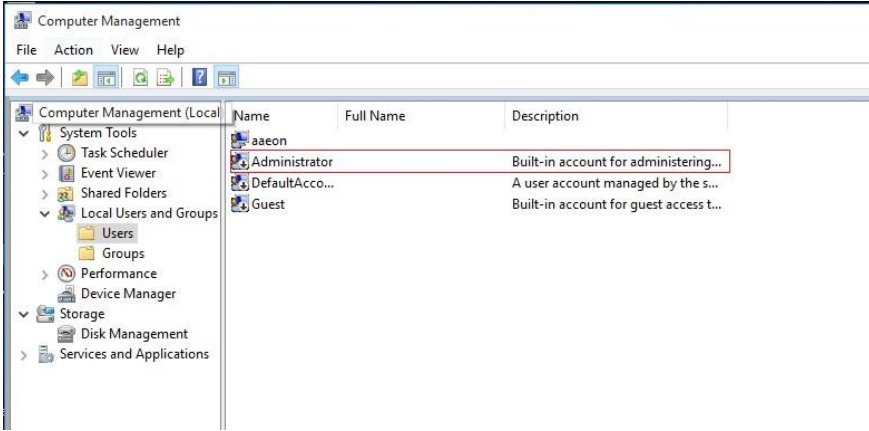


4. Reboot after installation completes.
5. To confirm the installation, go to Device Manager, expand the Ports (COM & LPT) tree and double click on any of the COM ports to open its properties. Go to the Driver tab, select Driver Details and click on **serial.sys**, you should see its provider as **Windows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

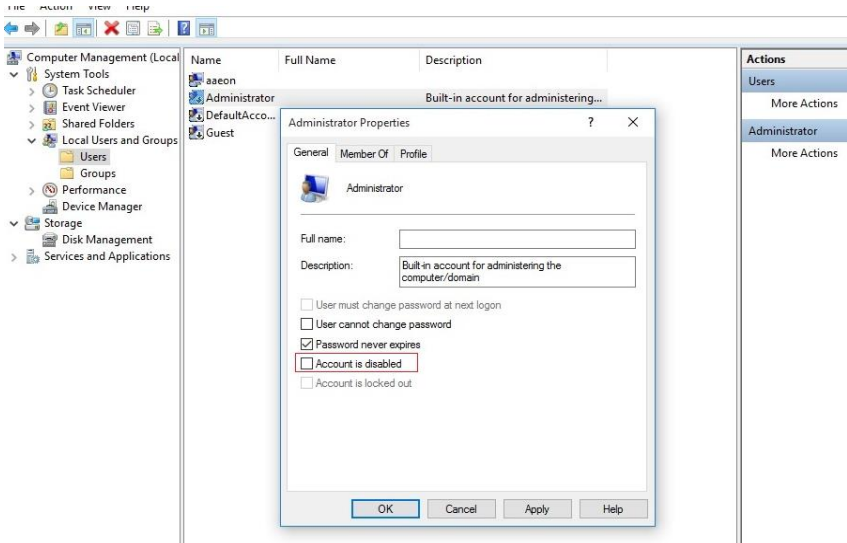


For Windows 10:

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**



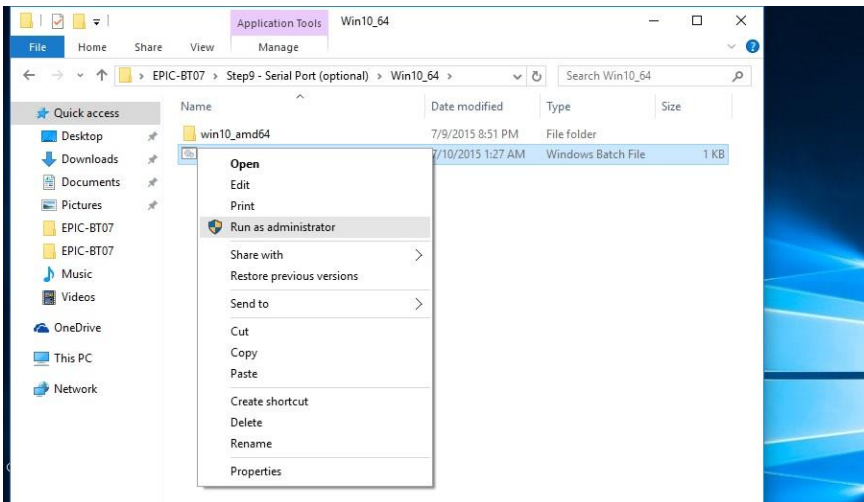
2. In the dialog box, **uncheck** the **Account is disabled** option to enable administrator account.



- 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.



Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Registers

Table 1 : Watch dog relative IO address

| I/O Base Address | Default Value | Note |
|------------------|---------------|---|
| | 0xA00 | I/O Base address for Watchdog operation. This address is assigned by SIO LDN7, register 0x60-0x61. |

Table 2 : Watchdog relative register table

| Register | Offset | BitNum | Value | Note |
|------------------------|--------|--------|-------|--|
| Watchdog WDRST# Enable | 0x00 | 7 | 1 | Enable/Disable time out output via WDRST# 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 <i>Pulse width is must longer than 16ms.</i> |
| Signal Polarity | 0x05 | 2 | 0 | 0: low active 1: high active <i>Must set this bit to 0</i> |
| Counting Unit | 0x05 | 3 | 0 | Select time unit. 0: second 1: minute |

| | | | | |
|-----------------------|------|---|---|--|
| Output Signal Type | 0x05 | 4 | 1 | 0: Level 1: Pulse <i>Must set this bit to 1</i> |
| Watchdog Timer Enable | 0x05 | 5 | 1 | 0: Disable 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

```

*****// WDT I/O
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 procedure will enable the WDT counting.
WDTSetBit(TimerReg, PSWidthBit, PSWidthVal);
// Watchdog WDRST# Enable
WDTSetBit(DevReg, WDRstBit, WDRstVal);
}
VOID WDTClearTimeoutStatus(){
WDTSetBit(TimerReg, StatusBit, 1);
}
*****

*****










































VOID WDTWriteByte(byte Register, byte Value){
IOWriteByte(WDAddr+Register, Value);
}
byte WDTReadByte(byte Register){
return IORReadByte(WDAddr+Register);
}
VOID WDTSetBit(byte Register, byte Bit, byte Val){
byte TmpValue;
TmpValue = WDTReadByte(Register);
TmpValue &= ~(1 << Bit);
TmpValue |= Val << Bit;
WDTWriteByte(Register, TmpValue);
}
*****





















```

Appendix B

I/O Information

B.1 I/O Address Map









































| | |
|---|---|
|  | Input/output (IO) |
|  | [00000000 - 0000006F] PCI Express Root Complex |
|  | [00000020 - 00000021] Programmable interrupt controller |
|  | [00000024 - 00000025] Programmable interrupt controller |
|  | [00000028 - 00000029] Programmable interrupt controller |
|  | [0000002C - 0000002D] Programmable interrupt controller |
|  | [0000002E - 0000002F] Motherboard resources |
|  | [00000030 - 00000031] Programmable interrupt controller |
|  | [00000034 - 00000035] Programmable interrupt controller |
|  | [00000038 - 00000039] Programmable interrupt controller |
|  | [0000003C - 0000003D] Programmable interrupt controller |
|  | [00000040 - 00000043] System timer |
|  | [0000004E - 0000004F] Motherboard resources |
|  | [00000050 - 00000053] System timer |
|  | [00000061 - 00000061] Motherboard resources |
|  | [00000063 - 00000063] Motherboard resources |
|  | [00000065 - 00000065] Motherboard resources |
|  | [00000067 - 00000067] Motherboard resources |
|  | [00000070 - 00000070] Motherboard resources |
|  | [00000070 - 00000077] System CMOS/real time clock |
|  | [00000078 - 00000CF7] PCI Express Root Complex |
|  | [00000080 - 0000008F] Motherboard resources |
|  | [00000092 - 00000092] Motherboard resources |
|  | [000000A0 - 000000A1] Programmable interrupt controller |
|  | [000000A4 - 000000A5] Programmable interrupt controller |
|  | [000000A8 - 000000A9] Programmable interrupt controller |
|  | [000000AC - 000000AD] Programmable interrupt controller |
|  | [000000B0 - 000000B1] Programmable interrupt controller |
|  | [000000B2 - 000000B3] Motherboard resources |
|  | [000000B4 - 000000B5] Programmable interrupt controller |
|  | [000000B8 - 000000B9] Programmable interrupt controller |
|  | [000000BC - 000000BD] Programmable interrupt controller |
|  | [000002C0 - 000002C7] Communications Port (COM5) |
|  | [000002D0 - 000002D7] Communications Port (COM6) |
|  | [000002E8 - 000002EF] Communications Port (COM4) |
|  | [000002F8 - 000002FF] Communications Port (COM2) |
|  | [000003B0 - 000003BB] Intel(R) HD Graphics |
|  | [000003C0 - 000003DF] Intel(R) HD Graphics |
|  | [000003E8 - 000003EF] Communications Port (COM3) |
|  | [000003F8 - 000003FF] Communications Port (COM1) |
|  | [00000400 - 0000047F] Motherboard resources |










































| | |
|---|---|
|  | [00000400 - 0000047F] Motherboard resources |
|  | [000004D0 - 000004D1] Programmable interrupt controller |
|  | [00000500 - 000005FE] Motherboard resources |
|  | [00000600 - 0000061F] Motherboard resources |
|  | [00000680 - 0000069F] Motherboard resources |
|  | [00000A00 - 00000A0F] Motherboard resources |
|  | [00000A10 - 00000A1F] Motherboard resources |
|  | [00000A20 - 00000A2F] Motherboard resources |
|  | [00000D00 - 0000FFFF] PCI Express Root Complex |
|  | [0000C000 - 0000C0FF] Realtek PCIe GBE Family Controller #2 |
|  | [0000C000 - 0000CFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A |
|  | [0000D000 - 0000D0FF] Realtek PCIe GBE Family Controller |
|  | [0000D000 - 0000DFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48 |
|  | [0000E000 - 0000E01F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12 |
|  | [0000E020 - 0000E03F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
|  | [0000E040 - 0000E043] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
|  | [0000E050 - 0000E057] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
|  | [0000E060 - 0000E063] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
|  | [0000E070 - 0000E077] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
|  | [0000E080 - 0000E087] Intel(R) HD Graphics |










































B.2 Memory Address Map










































| Address Range | Device Name |
|-----------------------|---|
| [000A0000 - 000BFFFF] | Intel(R) HD Graphics |
| [000A0000 - 000BFFFF] | PCI Express Root Complex |
| [000C0000 - 000DFFFF] | PCI Express Root Complex |
| [000E0000 - 000FFFFF] | PCI Express Root Complex |
| [C0000000 - CFFFFFFF] | Intel(R) HD Graphics |
| [C0000000 - D0822FFE] | PCI Express Root Complex |
| [D0000000 - D03FFFFF] | Intel(R) HD Graphics |
| [D0400000 - D04FFFFF] | Intel(R) Trusted Execution Engine Interface |
| [D0500000 - D05FFFFF] | Intel(R) Trusted Execution Engine Interface |
| [D0600000 - D0603FFF] | Realtek PCIe GBE Family Controller #2 |
| [D0600000 - D06FFFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A |
| [D0604000 - D0604FFF] | Realtek PCIe GBE Family Controller #2 |
| [D0700000 - D0703FFF] | Realtek PCIe GBE Family Controller |
| [D0700000 - D07FFFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48 |
| [D0704000 - D0704FFF] | Realtek PCIe GBE Family Controller |
| [D0800000 - D080FFFF] | Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft) |
| [D0814000 - D0817FFF] | High Definition Audio Controller |
| [D081C000 - D081C01F] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12 |
| [D081F000 - D081FFFF] | SDA Standard Compliant SD Host Controller |
| [D0820000 - D08207FF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [D0821000 - D0821FFF] | SDA Standard Compliant SD Host Controller |
| [E0000000 - EFFFFFFF] | Motherboard resources |
| [E00000D0 - E00000DB] | Intel(R) Sideband Fabric Device |
| [FED00000 - FED003FF] | High precision event timer |
| [FED01000 - FED01FFF] | Motherboard resources |
| [FED03000 - FED03FFF] | Motherboard resources |
| [FED04000 - FED04FFF] | Motherboard resources |
| [FED08000 - FED08FFF] | Motherboard resources |
| [FED1C000 - FED1CFFF] | Motherboard resources |
| [FEE00000 - FEEFFFFF] | Motherboard resources |
| [FEF00000 - FEF00000] | Motherboard resources |
| [FFF00000 - FFFFFFFF] | Intel(R) 82802 Firmware Hub Device |









































B.3 IRQ Mapping Chart










































| Interrupt request (IRQ) | |
|---|--|
|  | (ISA) 0x00000000 (00) System timer |
|  | (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) |
|  | (ISA) 0x0000000A (10) Communications Port (COM4) |
|  | (ISA) 0x0000000B (11) Communications Port (COM5) |
|  | (ISA) 0x0000000B (11) Communications Port (COM6) |
|  | (ISA) 0x00000051 (81) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000052 (82) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000053 (83) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000054 (84) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000055 (85) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000056 (86) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000057 (87) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000058 (88) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000059 (89) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000005A (90) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000005B (91) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000005C (92) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000005D (93) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000005E (94) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000005F (95) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000060 (96) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000061 (97) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000062 (98) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000063 (99) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000064 (100) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000065 (101) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000066 (102) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000067 (103) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000068 (104) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000069 (105) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000006A (106) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000006B (107) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000006C (108) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000006D (109) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000006E (110) Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000006F (111) Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000070 (112) Microsoft ACPI-Compliant System |










































| | |
|--|---------------------------------|
|  (ISA) 0x00000071 (113) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000072 (114) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000073 (115) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000074 (116) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000075 (117) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000076 (118) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000077 (119) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000078 (120) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000079 (121) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007A (122) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007B (123) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007C (124) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007D (125) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007E (126) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007F (127) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000080 (128) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000081 (129) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000082 (130) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000083 (131) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000084 (132) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000085 (133) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000086 (134) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000087 (135) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000088 (136) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000089 (137) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008A (138) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008B (139) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008C (140) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008D (141) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008E (142) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008F (143) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000090 (144) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000091 (145) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000092 (146) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000093 (147) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000094 (148) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000095 (149) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000096 (150) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000097 (151) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000098 (152) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000099 (153) | Microsoft ACPI-Compliant System |










































| | |
|--|---------------------------------|
|  (ISA) 0x0000009A (154) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009B (155) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009C (156) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009D (157) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009E (158) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009F (159) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A0 (160) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A1 (161) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A2 (162) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A3 (163) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A4 (164) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A5 (165) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A6 (166) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A7 (167) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A8 (168) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A9 (169) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000AA (170) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000AB (171) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000AC (172) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000AD (173) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000AE (174) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000AF (175) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B0 (176) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B1 (177) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B2 (178) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B3 (179) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B4 (180) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B5 (181) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B6 (182) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B7 (183) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B8 (184) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000B9 (185) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000BA (186) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000BB (187) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000BC (188) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000BD (189) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000BE (190) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000BF (191) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000100 (256) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000101 (257) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000102 (258) | Microsoft ACPI-Compliant System |










































| | |
|--|---------------------------------|
|  (ISA) 0x00000103 (259) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000104 (260) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000105 (261) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000106 (262) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000107 (263) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000108 (264) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000109 (265) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010A (266) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010B (267) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010C (268) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010D (269) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010E (270) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010F (271) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000110 (272) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000111 (273) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000112 (274) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000113 (275) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000114 (276) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000115 (277) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000116 (278) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000117 (279) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000118 (280) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000119 (281) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000011A (282) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000011B (283) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000011C (284) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000011D (285) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000011E (286) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000011F (287) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000120 (288) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000121 (289) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000122 (290) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000123 (291) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000124 (292) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000125 (293) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000126 (294) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000127 (295) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000128 (296) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000129 (297) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000012A (298) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000012B (299) | Microsoft ACPI-Compliant System |





















| | | |
|---|------------------------|---------------------------------|
|  | (ISA) 0x0000012C (300) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000012D (301) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000012E (302) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000012F (303) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000130 (304) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000131 (305) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000132 (306) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000133 (307) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000134 (308) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000135 (309) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000136 (310) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000137 (311) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000138 (312) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000139 (313) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000013A (314) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000013B (315) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000013C (316) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000013D (317) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000013E (318) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000013F (319) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000140 (320) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000141 (321) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000142 (322) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000143 (323) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000144 (324) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000145 (325) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000146 (326) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000147 (327) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000148 (328) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000149 (329) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000014A (330) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000014B (331) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000014C (332) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000014D (333) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000014E (334) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000014F (335) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000150 (336) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000151 (337) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000152 (338) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000153 (339) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000154 (340) | Microsoft ACPI-Compliant System |

| | |
|--|---------------------------------|
|  (ISA) 0x00000155 (341) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000156 (342) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000157 (343) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000158 (344) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000159 (345) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000015A (346) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000015B (347) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000015C (348) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000015D (349) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000015E (350) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000015F (351) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000160 (352) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000161 (353) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000162 (354) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000163 (355) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000164 (356) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000165 (357) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000166 (358) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000167 (359) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000168 (360) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000169 (361) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000016A (362) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000016B (363) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000016C (364) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000016D (365) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000016E (366) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000016F (367) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000170 (368) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000171 (369) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000172 (370) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000173 (371) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000174 (372) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000175 (373) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000176 (374) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000177 (375) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000178 (376) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000179 (377) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017A (378) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017B (379) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017C (380) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017D (381) | Microsoft ACPI-Compliant System |

| | |
|--|---------------------------------|
|  (ISA) 0x0000017D (381) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017E (382) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017F (383) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000180 (384) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000181 (385) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000182 (386) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000183 (387) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000184 (388) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000185 (389) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000186 (390) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000187 (391) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000188 (392) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000189 (393) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000018A (394) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000018B (395) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000018C (396) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000018D (397) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000018E (398) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000018F (399) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000190 (400) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000191 (401) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000192 (402) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000193 (403) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000194 (404) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000195 (405) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000196 (406) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000197 (407) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000198 (408) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000199 (409) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000019A (410) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000019B (411) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000019C (412) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000019D (413) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000019E (414) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000019F (415) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A0 (416) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A1 (417) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A2 (418) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A3 (419) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A4 (420) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A5 (421) | Microsoft ACPI-Compliant System |

| | |
|--|---------------------------------|
|  (ISA) 0x000001A6 (422) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A7 (423) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A8 (424) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001A9 (425) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001AA (426) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001AB (427) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001AC (428) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001AD (429) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001AE (430) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001AF (431) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B0 (432) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B1 (433) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B2 (434) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B3 (435) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B4 (436) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B5 (437) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B6 (438) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B7 (439) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B8 (440) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001B9 (441) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001BA (442) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001BB (443) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001BC (444) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001BD (445) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001BE (446) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001BF (447) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C0 (448) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C1 (449) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C2 (450) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C3 (451) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C4 (452) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C5 (453) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C6 (454) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C7 (455) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C8 (456) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001C9 (457) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001CA (458) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001CB (459) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001CC (460) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001CD (461) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001CE (462) | Microsoft ACPI-Compliant System |

| | |
|--|---------------------------------|
|  (ISA) 0x000001CF (463) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D0 (464) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D1 (465) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D2 (466) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D3 (467) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D4 (468) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D5 (469) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D6 (470) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D7 (471) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D8 (472) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001D9 (473) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001DA (474) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001DB (475) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001DC (476) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001DD (477) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001DE (478) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001DF (479) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E0 (480) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E1 (481) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E2 (482) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E3 (483) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E4 (484) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E5 (485) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E6 (486) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E7 (487) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E8 (488) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001E9 (489) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001EA (490) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001EB (491) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001EC (492) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001ED (493) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001EE (494) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001EF (495) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F0 (496) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F1 (497) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F2 (498) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F3 (499) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F4 (500) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F5 (501) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F6 (502) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001F7 (503) | Microsoft ACPI-Compliant System |

| | | |
|---|-------------------------|---|
|  | (ISA) 0x000001F8 (504) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F9 (505) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FA (506) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FB (507) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FC (508) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FD (509) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FE (510) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FF (511) | Microsoft ACPI-Compliant System |
|  | (PCI) 0x00000005 (05) | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12 |
|  | (PCI) 0x00000010 (16) | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48 |
|  | (PCI) 0x00000011 (17) | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A |
|  | (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 Port 4 - 0F4E |
|  | (PCI) 0x00000016 (22) | High Definition Audio Controller |
|  | (PCI) 0xFFFFFFFF (-6) | Intel(R) Trusted Execution Engine Interface |
|  | (PCI) 0xFFFFFFFFFB (-5) | Realtek PCIe GBE Family Controller #2 |
|  | (PCI) 0xFFFFFFFFFC (-4) | Realtek PCIe GBE Family Controller |
|  | (PCI) 0xFFFFFFFFFD (-3) | Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft) |
|  | (PCI) 0xFFFFFFFFFE (-2) | Intel(R) HD Graphics |

Appendix C

Mating Connectors

C.1 List of Mating Connectors and Cables

| Connector Label | Function | Mating Connector | | Available Cable | Cable P/N |
|-----------------|--------------------------------|------------------|-----------------|-----------------|------------|
| | | Vendor | Model no | | |
| CN39 | Amplifier right channel output | Molex | 51021-02000 | N/A | N/A |
| CN38 | Amplifier left channel output | Molex | 51021-02000 | N/A | N/A |
| CN9 | MIC/Line in | Molex | 51021-1000 | Audio Cable | 1709100254 |
| CN8 | LVDS LCD | Hirose | DF13-30DS-1.25C | N/A | N/A |
| CN3 | LCD Inverter | JWT | A2001H02-05 | N/A | N/A |
| CN25 | USB port0 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN40 | USB2 port1 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN18 | USB HUB Port1 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN17 | USB HUB Port2 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN44 | USB HUB Port3 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN45 | USB HUB Port4 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN41 | USB HUB Port5 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN42 | USB HUB Port6 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |

| | | | | | |
|------|-------------------------|--------|-----------------|--------------|------------|
| CN43 | USB HUB Port7 connector | Molex | 51021-0500 | USB2.0 Cable | 1700050207 |
| CN20 | COM Port1 Connector | Molex | 51021-0900 | COM Cable | 1701090150 |
| CN12 | COM Port2 Connector | Molex | 51021-0900 | COM Cable | 1701090150 |
| CN14 | COM Port3 Connector | Molex | 51021-0900 | COM Cable | 1701090150 |
| CN15 | COM Port4 Connector | Molex | 51021-0900 | COM Cable | 1701090150 |
| CN28 | COM Port5 Connector | Molex | 51021-0900 | COM Cable | 1701090150 |
| CN32 | COM Port6 Connector | Molex | 51021-0900 | COM Cable | 1701090150 |
| CN30 | VGA | Molex | 51021-1500 | CRT Cable | 1704150153 |
| CN47 | Power LED | JST | PHR-2 | N/A | N/A |
| CN48 | ON/OFF LED | JST | PHR-2 | N/A | N/A |
| CN46 | SYSTEM Fan | Molex | 22-01-2035 | N/A | N/A |
| CN24 | CPU Fan | Molex | 22-01-2035 | N/A | N/A |
| CN29 | eDP LCD | Hirose | DF13-30DS-1.25C | N/A | N/A |
| CN33 | eDP Inverter | JWT | A2001H02-05 | N/A | N/A |