

GENE-BT05

3.5" Subcompact Board

User's Manual 5th Ed

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Packing List

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

| Item | Quantity |
|---|----------|
| ● GENE-BT05 | 1 |
| ● Product DVD with User's Manual (in pdf) and drivers | 1 |

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

About this Document

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

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

Safety Precautions

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

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

17. If any of the following situations arises, please 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>○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p> | | | | | | |

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

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

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Chapter 1

Product Specifications

1.1 Specifications

System

- **Processor** Intel® Atom™ E3825/ E3845
Intel® Celeron® N2807/ N2930/ J1900
Processor SoC
- **System Memory** 204-pin DDR3L 1066/1333 MHz SODIMM x 1,
up to 8GB
- **Chipset** Intel® Atom™ and Celeron® Processor SoC
- **I/O Chipset** Fintek F81866D
- **Ethernet** Intel® I210/I211, 10/100/1000Base-TX, RJ-45 x
2
- **BIOS** AMI BIOS - 8MB SPI Flash
- **Wake On LAN** Yes
- **Watchdog Timer** Generates a time-out system reset
- **H/W Status Monitoring** Supports power supply voltages and
temperature monitoring
- **Expansion Interface** MiniCard x 2 (Full-size x 1, Half-size x 1)
LPC
- **Trusted Platform Module
(TPM)** Atmel, AT97SC3204 (optional)
- **Battery** Lithium battery
- **Power Requirement** DC 12 V, AT/ATX
- **Board Size** 145 x 101.6 mm (5.75 x 4")

- **Gross Weight** 0.4 kg (0.88 lb)
- **Operating Temperature** -40 ~ 85°C (-40 ~ 185°F) for E3825/E3845
0 ~ 60°C (32 ~ 140°F)
- **Storage Temperature** -40 ~ 80°C (-40 ~ 176°F)
- **Operation Humidity** 0 ~ 90% Relative Humidity, Non-Condensing

Display

- **Chipset** Intel® Atom™ and Celeron® Processor SoC
- **Memory** Shared system memory up to 512 MB
- **Resolution** Up to 2560 x 1600 for CRT
Up to 1920 x 1200 for LCD, HDMI
- **LCD Interface** Up to 24-bit dual-channel LVDS x 1
- **HDMI** Up to 1920x1080 @ 60 Hz

I/O

- **Storage** SATA 3.0 Gb/s x 1
CFast™ x 1
Half-size mSATA x 1(Optional)
- **USB** USB 3.0 x 1
USB 2.0 x 3
- **Serial Port** RS-232 x 2
RS-232/422/485 (auto flow) x 2
- **PS/2 Port** Keyboard x 1
Mouse x 1
- **DI/O** Supports 8-bit (Programmable)

- **Audio**
 - Line-in
 - Line-out
 - Mic-in
- **Touchscreen**
 - Support 4/5/8-wire resistive touch screen (optional)

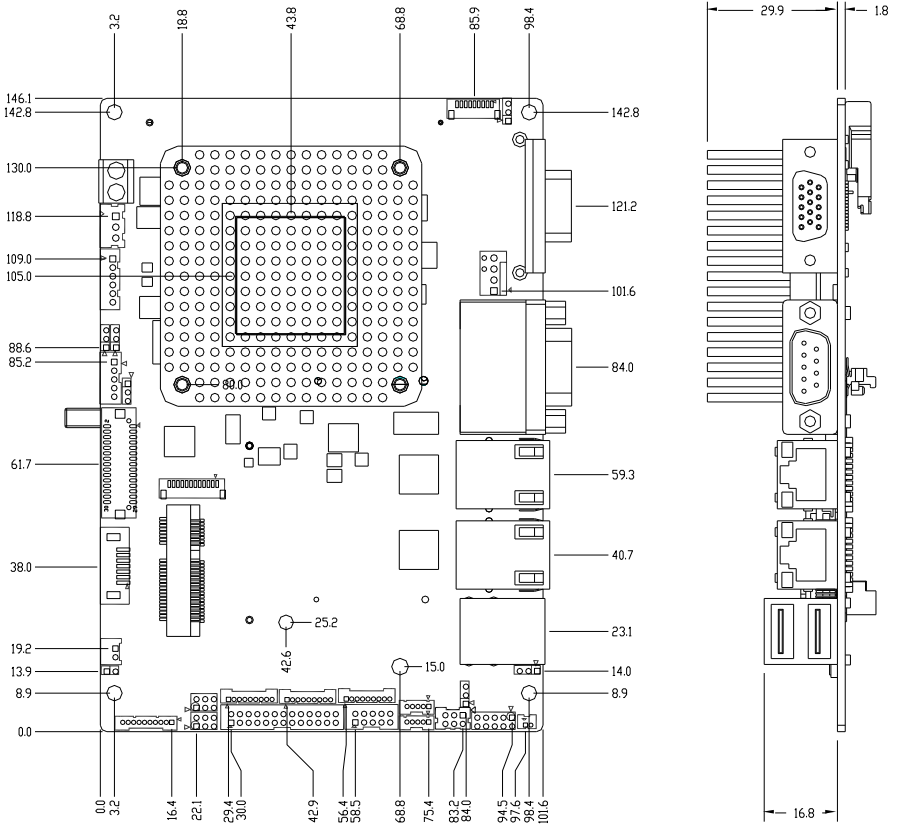
Note: Audio may not function properly in harsh environments

Chapter 2

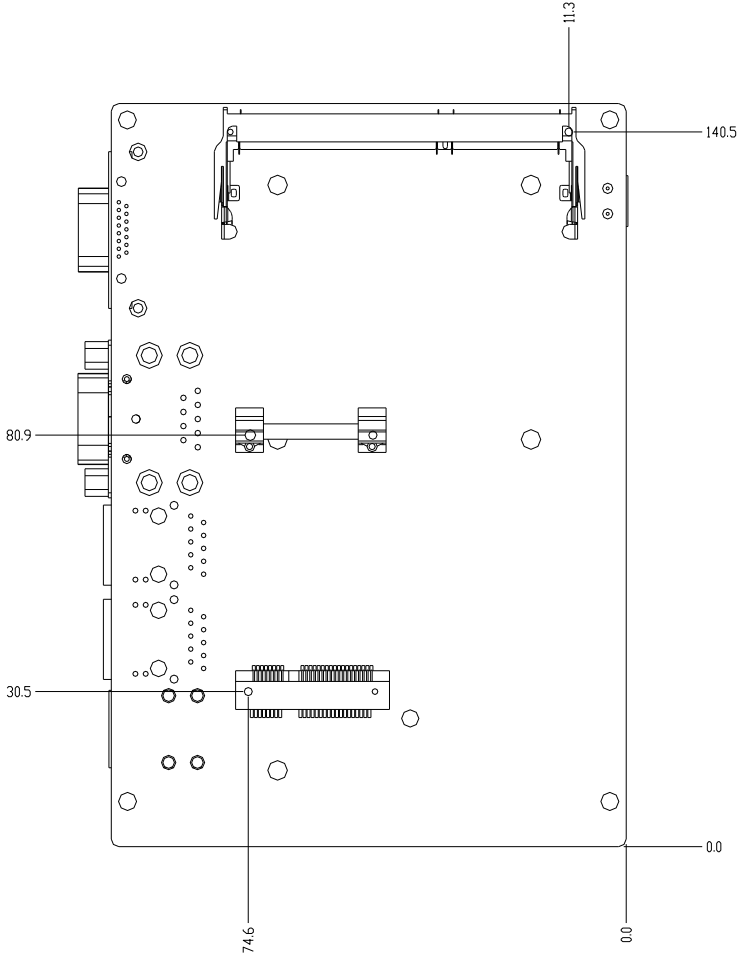
Hardware Information

2.1 Dimensions

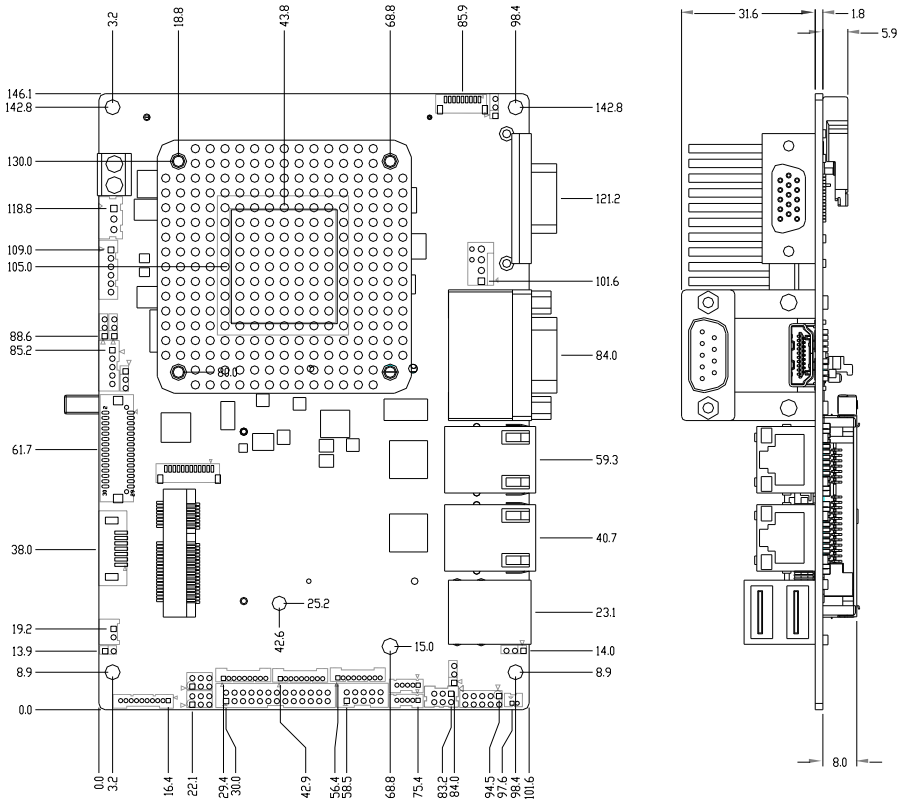
Standard Version (Component Side)



Standard Version (Solder Side)



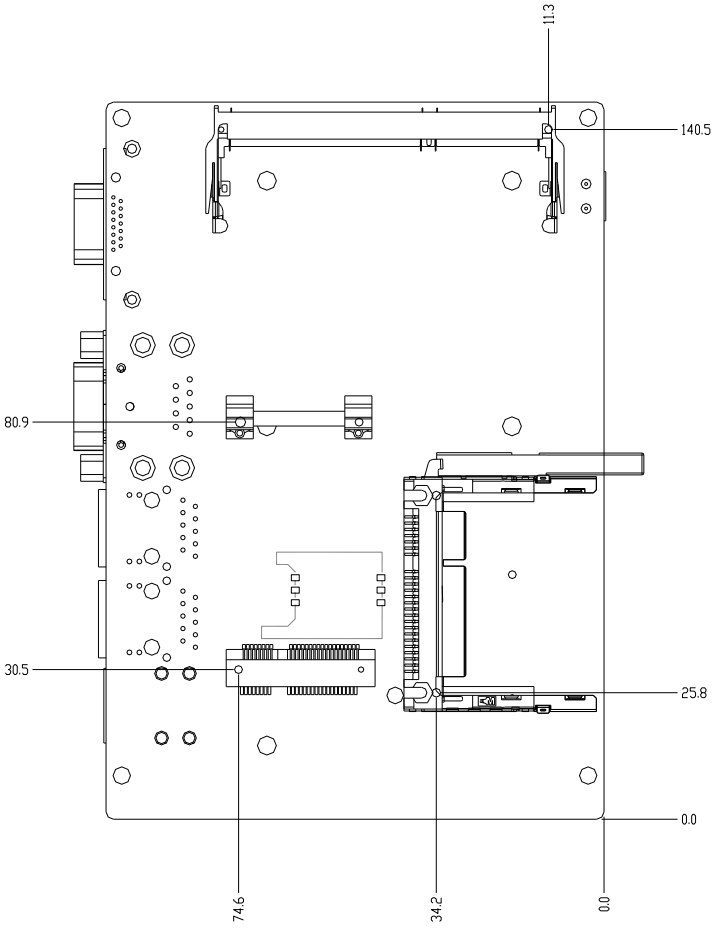
Advanced Version (Component Side)



Advanced Version (Solder Side)

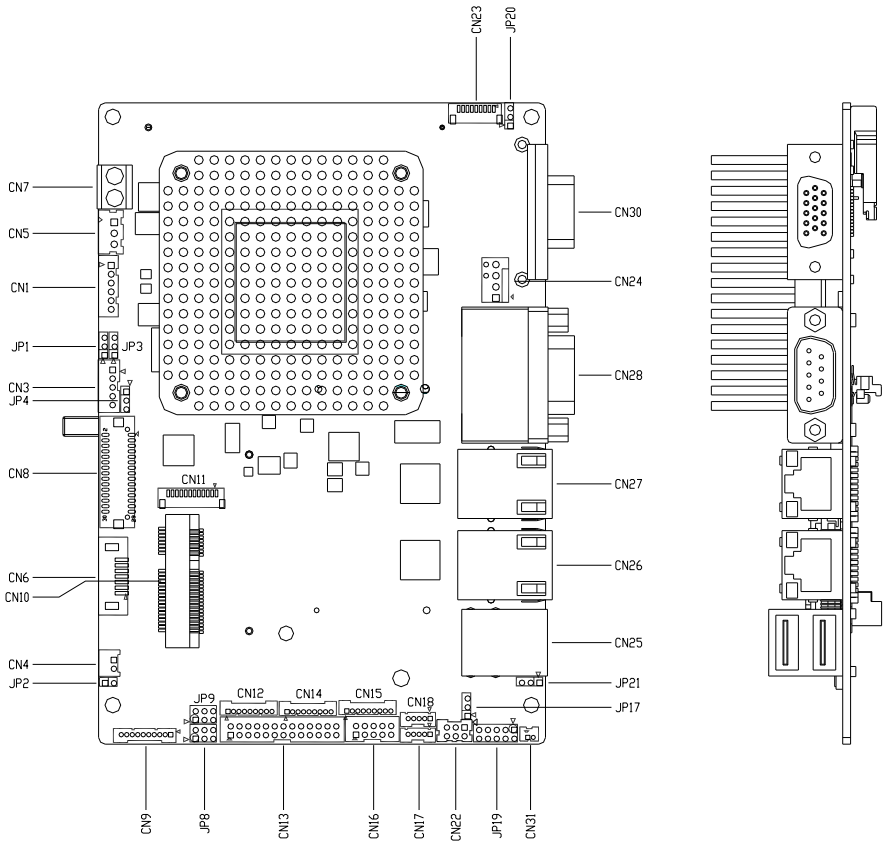
3.5" Subcompact Board

GENE-BT05

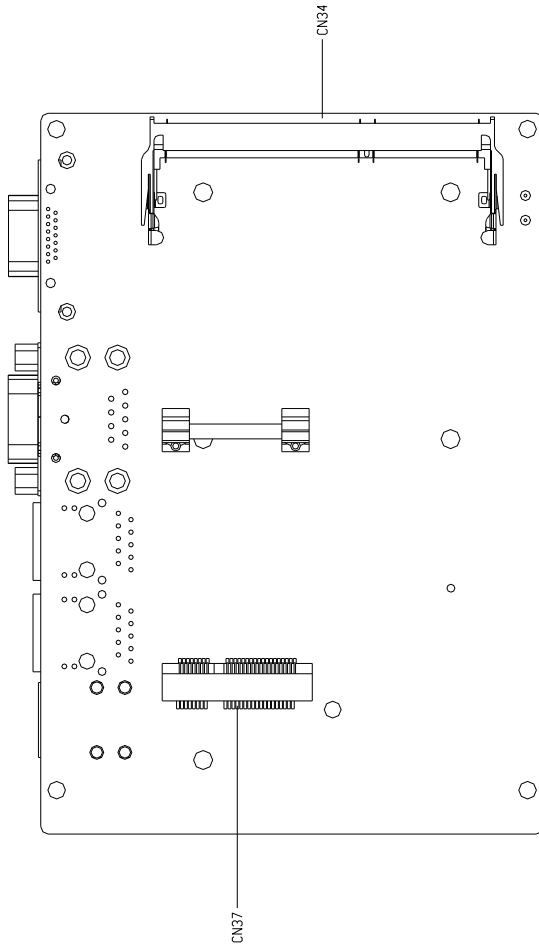


2.2 Jumpers and Connectors

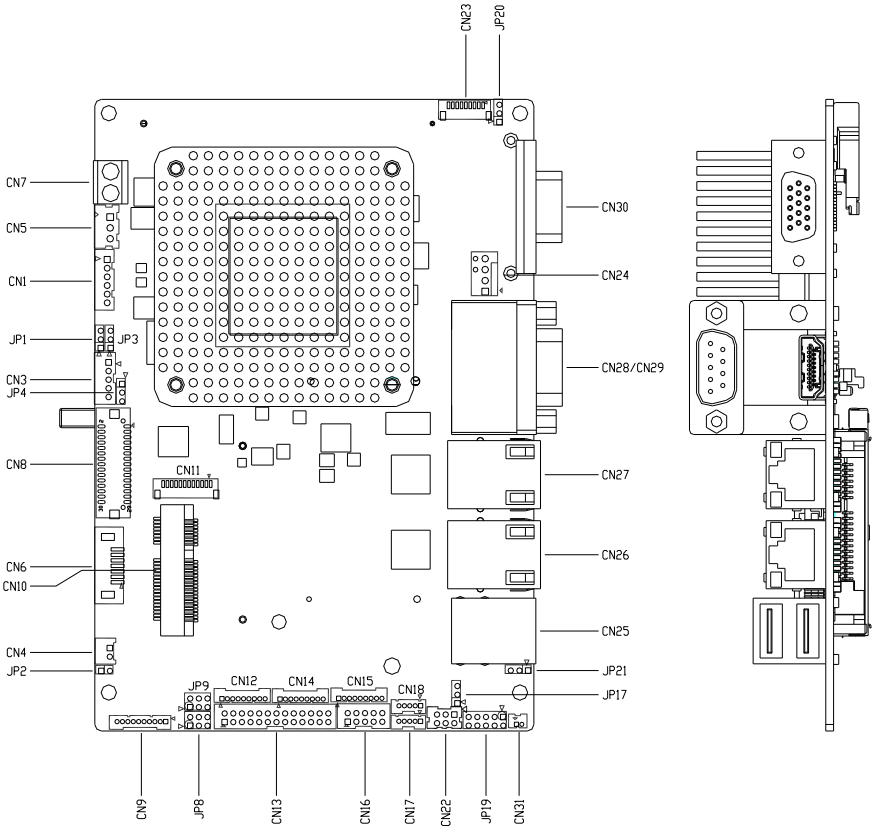
Standard Version (Component Side)



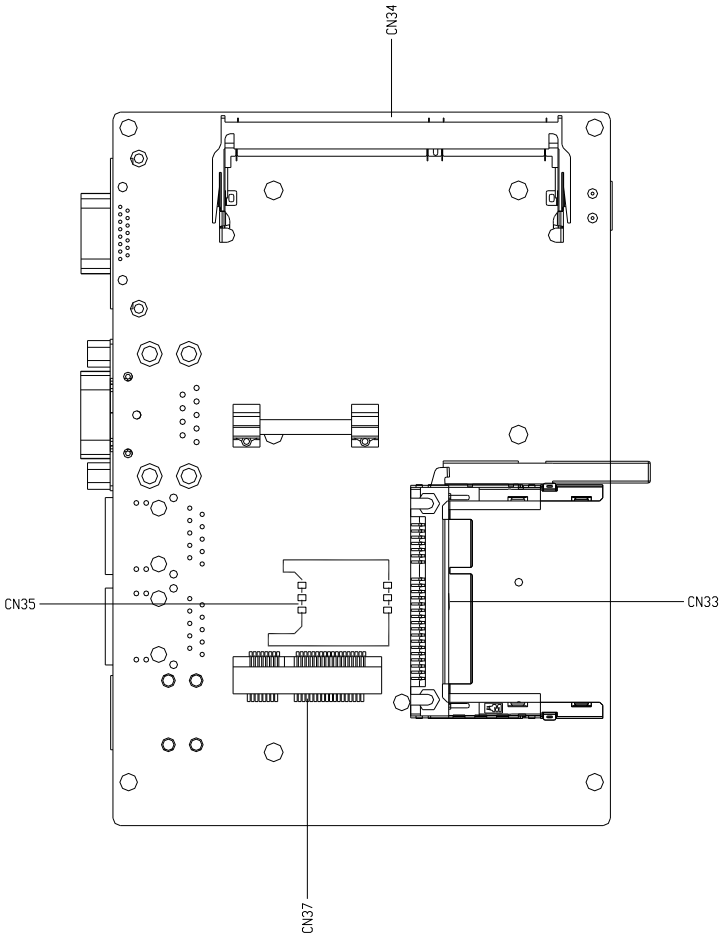
Standard Version (Solder Side)



Advanced Version (Component Side)



Advanced Version (Solder Side)

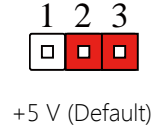
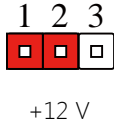


2.3 List of Jumpers

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

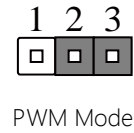
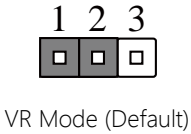
| Label | Function |
|-------|--|
| JP1 | LVDS Port Backlight Inverter VCC Selection |
| JP3 | LVDS Port Backlight Lightness Control Mode Selection |
| JP4 | LVDS Port Operating VDD Selection |
| JP8 | COM3 Pin8 Function Selection |
| JP9 | COM2 Pin8 Function Selection |
| JP17 | Auto Power Button Enable/Disable Selection |
| JP19 | Front Panel Connector |
| JP20 | Touch Screen 4/5/8-wire Mode Selection |
| JP21 | Clear CMOS Jumper |

2.3.1 LVDS Port Backlight Inverter VCC Selection (JP1)



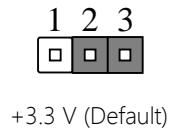
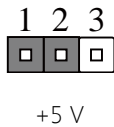
| Pin | Function |
|-----|---------------|
| 1-2 | +12V |
| 2-3 | +5V (Default) |

2.3.2 LVDS Port Backlight Lightness Control Mode Selection (JP3)



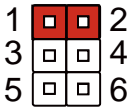
| Pin | Function |
|-----|-------------------|
| 1-2 | VR Mode (Default) |
| 2-3 | PWM Mode |

2.3.3 LVDS Port Operating VDD Selection (JP4)

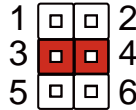


| Pin | Function |
|-----|------------------|
| 1-2 | +5 V |
| 2-3 | +3.3 V (Default) |

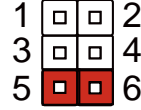
2.3.4 COM3 Pin8 Function Selection (JP8)



+12 V



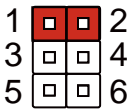
Ring (Default)



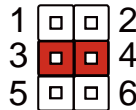
+5 V

| Pin | Function |
|-----|----------------|
| 1-2 | +12 V |
| 3-4 | Ring (Default) |
| 5-6 | +5 V |

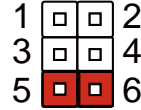
2.3.5 COM2 Pin8 Function Selection (JP9)



+12 V



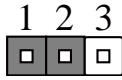
Ring (Default)



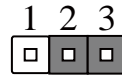
+5 V

| Pin | Function |
|-----|----------------|
| 1-2 | +12 V |
| 3-4 | Ring (Default) |
| 5-6 | +5 V |

2.3.6 Auto Power Button Enable/Disable Selection (JP17)



Disable

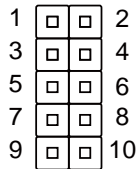


Enable (Default)

| Pin | Function |
|-----|------------------|
| 1-2 | Disable |
| 2-3 | Enable (Default) |

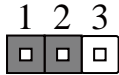
Note: When disabled, use power button JP19 (1-2) to power on the system

2.3.7 Front Panel Connector (JP19)

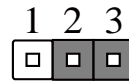


| Pin | Function |
|-----|------------|
| 1 | PWR_BTN- |
| 2 | PWR_BTN+ |
| 3 | HDD_LED- |
| 4 | HDD_LED+ |
| 5 | SPEAKER- |
| 6 | SPEAKER+ |
| 7 | PWR_LED- |
| 8 | PWR_LED+ |
| 9 | H/W RESET- |
| 10 | H/W RESET+ |

2.3.8 Touchscreen 4,5,8 Wire Selection (JP20)



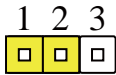
4/8 Wires Mode (Default)



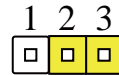
5 Wires Mode

| JP20 | Function |
|------|--------------------------|
| 1-2 | 4/8 Wires Mode (Default) |
| 2-3 | 5 Wires Mode |

2.3.9 Clear CMOS Jumper (JP21)



Normal (Default)



Clear CMOS

| JP20 | Function |
|------|------------------|
| 1-2 | Normal (Default) |
| 2-3 | Clear CMOS |

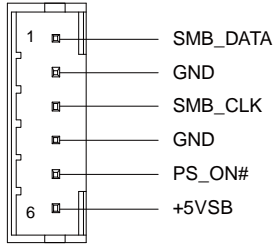
2.4 List of Connectors

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

| Label | Function |
|-------|--|
| CN1 | +5VSB Output w/SMBus |
| CN3 | LVDS Port Inverter / Backlight Connector |
| CN4 | +5V Output for SATA HDD |
| CN5 | External +5VSB Input |
| CN6 | SATA Port |
| CN7 | External +12V Input |
| CN8 | LVDS Port |
| CN9 | Audio I/O Port |
| CN10 | MiniCard Slot (Half-MiniCard) |
| CN11 | LPC Port |
| CN12 | COM Port 2 |
| CN13 | LPT Port |
| CN14 | COM Port 3 |
| CN15 | COM Port 4 |
| CN16 | Digital IO Port |
| CN17 | USB 2.0 Port 3 |
| CN18 | USB 2.0 Port 2 |
| CN19 | SPI Debug Port |
| CN22 | PS/2 Keyboard/Mouse Combo Port |
| CN23 | Touchscreen Connector |
| CN24 | CPU FAN (Optional) |
| CN25 | USB Ports 0 and 1 |

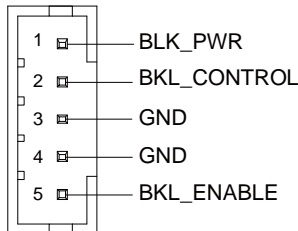
| | |
|------|-------------------------------|
| CN26 | LAN (RJ-45) Port2 |
| CN27 | LAN (RJ-45) Port1 |
| CN28 | COM Port 1 (D-SUB 9) |
| CN29 | HDMI Port |
| CN30 | VGA Port |
| CN31 | Battery |
| CN33 | CFast Slot |
| CN34 | DDR3L SO-DIMM Slot |
| CN35 | UIM Card Socket |
| CN37 | MiniCard Slot (Full-MiniCard) |

2.4.1 +5VSB Output w/SMBus (CN1)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | SMB_DATA | I/O | +3.3V |
| 2 | GND | GND | |
| 3 | SMB_CLK | I/O | +3.3V |
| 4 | GND | GND | |
| 5 | PS_ON# | OUT | +5V |
| 6 | +5VSB | PWR | +5V |

2.4.2 LVDS Port Inverter / Backlight Connector (CN3)

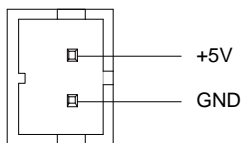


| Pin | Pin Name | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1 | BKL_PWR | PWR | +5V / +12V |
| 2 | BKL_CONTROL | OUT | |
| 3 | GND | GND | |
| 4 | GND | GND | |
| 5 | BKL_ENABLE | OUT | +3.3V |

Note 1: LVDS BKL_PWR can be set to +5V or +12V by JP1.

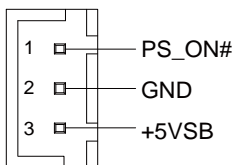
Note 2: LVDS BKL_CONTROL can be set by JP3.

2.4.3 +5V Output for SATA HDD (CN4)



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

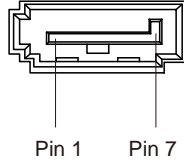
2.4.4 External +5VSB Input (CN5)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | PS_ON# | OUT | +3.3V |

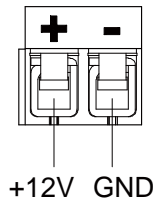
| | | | |
|---|-------|-----|-----|
| 2 | GND | GND | |
| 3 | +5VSB | PWR | +5V |

2.4.5 SATA Port (CN6)



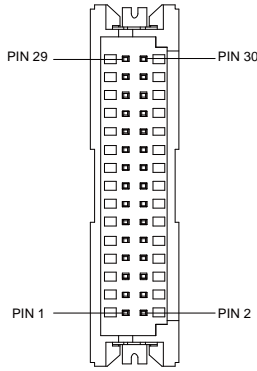
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | GND | GND | |
| 2 | SATA_TX+ | DIFF | |
| 3 | SATA_TX- | DIFF | |
| 4 | GND | GND | |
| 5 | SATA_RX- | DIFF | |
| 6 | SATA_RX+ | DIFF | |
| 7 | GND | GND | |

2.4.6 External +12V Input (CN7)



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

2.4.7 LVDS Port (CN8)

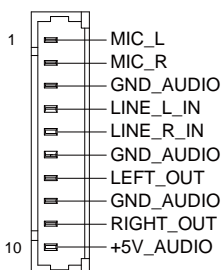


| Pin | Pin Name | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1 | BKL_ENABLE | OUT | |
| 2 | BKL_CONTROL | OUT | |
| 3 | LCD_PWR | PWR | +3.3V/+5V |
| 4 | GND | GND | |
| 5 | LVDS_A_CLK- | DIFF | |
| 6 | LVDS_A_CLK+ | DIFF | |
| 7 | LCD_PWR | PWR | +3.3V/+5V |
| 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 | |

Note: LVDS LCD_PWR can be set to +3.3V or +5V by JP4.

2.4.8 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 | LINE_L_IN | IN | |
| 5 | LINE_R_IN | IN | |
| 6 | GND_AUDIO | GND | |
| 7 | LEFT_OUT | OUT | |
| 8 | GND_AUDIO | GND | |
| 9 | RIGHT_OUT | OUT | |
| 10 | +5V_AUDIO | PWR | +5V |

2.4.9 MiniCard Slot (Half-MiniCard) (CN10)

| Pin | Pin Name | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1 | PCIE_WAKE# | IN | |
| 2 | +3.3VSB | PWR | +3.3V |
| 3 | NC | | |
| 4 | GND | GND | |
| 5 | NC | | |
| 6 | +1.5V | PWR | +1.5V |
| 7 | PCIE_CLK_REQ# | IN | |
| 8 | NC | | |
| 9 | GND | GND | |
| 10 | NC | | |
| 11 | PCIE_REF_CLK- | DIFF | |
| 12 | NC | | |
| 13 | PCIE_REF_CLK+ | DIFF | |
| 14 | NC | | |
| 15 | GND | GND | |
| 16 | NC | | |

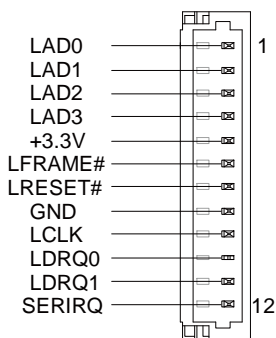
| | | | |
|----|------------|------|-------|
| 17 | NC | | |
| 18 | GND | GND | |
| 19 | NC | | |
| 20 | W_DISABLE# | OUT | +3.3V |
| 21 | GND | GND | |
| 22 | PCIE_RST# | OUT | +3.3V |
| 23 | PCIE_RX- | DIFF | |
| 24 | +3.3VSB | PWR | +3.3V |
| 25 | PCIE_RX+ | DIFF | |
| 26 | GND | GND | |
| 27 | GND | GND | |
| 28 | +1.5V | PWR | +1.5V |
| 29 | GND | GND | |
| 30 | SMB_CLK | I/O | +3.3V |
| 31 | PCIE_TX- | DIFF | |
| 32 | SMB_DATA | I/O | +3.3V |
| 33 | PCIE_TX+ | DIFF | |
| 34 | GND | GND | |
| 35 | GND | GND | |
| 36 | USB_D- | DIFF | |
| 37 | GND | GND | |
| 38 | USB_D+ | DIFF | |
| 39 | +3.3VSB | PWR | +3.3V |
| 40 | GND | GND | |
| 41 | +3.3VSB | PWR | +3.3V |
| 42 | NC | | |
| 43 | GND | GND | |

| | | | |
|----|---------|-----|-------|
| 44 | NC | | |
| 45 | NC | | |
| 46 | NC | | |
| 47 | NC | | |
| 48 | +1.5V | PWR | +1.5V |
| 49 | NC | | |
| 50 | GND | GND | |
| 51 | NC | | |
| 52 | +3.3VSB | PWR | +3.3V |

Note 1: CN10 can be selected for Mini-Card or mSATA by changing BOM.

Note 2: You can choose the function either from mSATA or from CFast on the motherboard

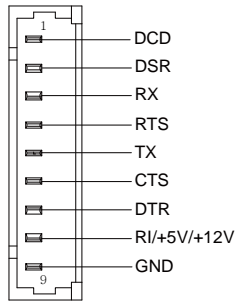
2.4.10 LPC Port (CN11)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | LAD0 | I/O | +3.3V |
| 2 | LAD1 | I/O | +3.3V |
| 3 | LAD2 | I/O | +3.3V |
| 4 | LAD3 | I/O | +3.3V |
| 5 | +3.3V | PWR | +3.3V |

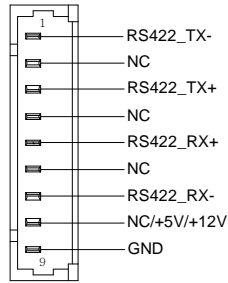
| | | | |
|----|---------|-----|-------|
| 6 | LFRAME# | IN | |
| 7 | LRESET# | OUT | +3.3V |
| 8 | GND | GND | |
| 9 | LCLK | OUT | |
| 10 | LDRQ0 | IN | |
| 11 | LDRQ1 | IN | |
| 12 | SERIRQ | I/O | +3.3V |

2.4.11 COM Port 2 (CN12)



RS-232

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

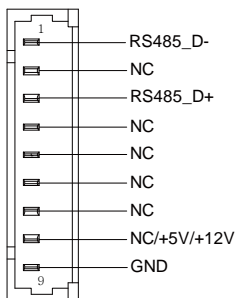


RS-422

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

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

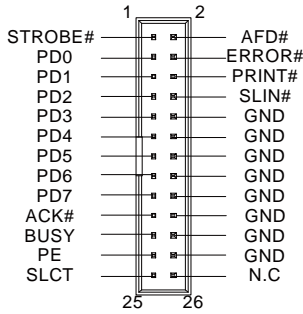
Note 2: Pin 8 function can be set by JP9.



RS-485

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

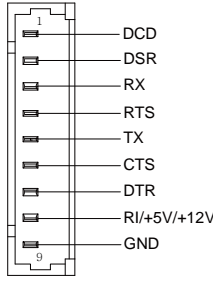
2.4.12 LPT Port (CN13)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | STROBE# | IN | |
| 2 | AFD# | I/O | |
| 3 | PD0 | I/O | |
| 4 | ERROR# | IN | |
| 5 | PD1 | I/O | |
| 6 | PRINT# | I/O | |

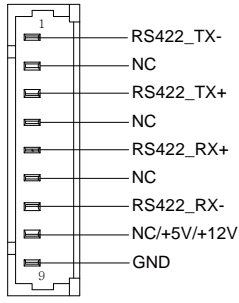
| | | |
|----|-------|-----|
| 7 | PD2 | I/O |
| 8 | SLIN# | I/O |
| 9 | PD3 | I/O |
| 10 | GND | GND |
| 11 | PD4 | I/O |
| 12 | GND | GND |
| 13 | PD5 | I/O |
| 14 | GND | GND |
| 15 | PD6 | I/O |
| 16 | GND | GND |
| 17 | PD7 | I/O |
| 18 | GND | GND |
| 19 | ACK# | IN |
| 20 | GND | GND |
| 21 | BUSY | IN |
| 22 | GND | GND |
| 23 | PE | IN |
| 24 | GND | GND |
| 25 | SLCT | IN |
| 26 | NC | |

2.4.13 COM Port 3 (CN14)



RS-232

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

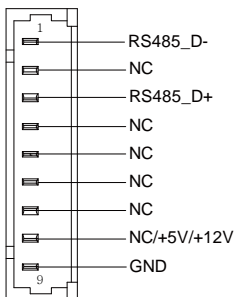


RS-422

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

Note 1: COM3 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

Note 2: Pin 8 function can be set by JP8.

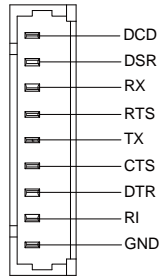


RS-485

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | RS485_D- | I/O | ±5V |
| 2 | NC | | |
| 3 | RS485_D+ | I/O | ±5V |
| 4 | NC | | |
| 5 | NC | | |

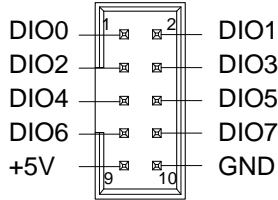
| | | | |
|---|-------------|-----|----------|
| 6 | NC | | |
| 7 | NC | | |
| 8 | NC/+5V/+12V | PWR | +5V/+12V |
| 9 | GND | GND | |

2.4.14 COM Port 4 (CN15)



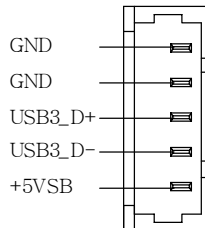
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | DCD | IN | |
| 2 | DSR | IN | |
| 3 | RX | IN | |
| 4 | RTS | OUT | ±9V |
| 5 | TX | OUT | ±9V |
| 6 | CTS | IN | |
| 7 | DTR | OUT | ±9V |
| 8 | RI | IN | |
| 9 | GND | GND | |

2.4.15 Digital I/O Port (CN16)



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

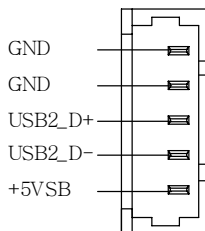
2.4.16 USB 2.0 Port 3 (CN17)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +5VSB | PWR | +5V |

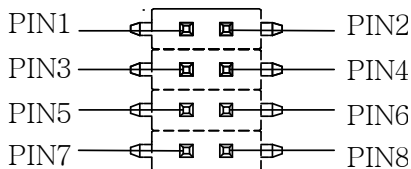
| | | |
|---|---------|------|
| 2 | USB3_D- | DIFF |
| 3 | USB3_D+ | DIFF |
| 4 | GND | GND |
| 5 | GND | GND |

2.4.17 USB 2.0 Port 2 (CN18)



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

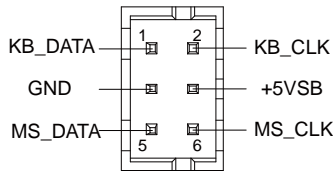
2.4.18 BIOS Debug Port (CN19)



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

| | | |
|---|----------|-----|
| 3 | SPI_CS | IN |
| 4 | SPI_CLK | IN |
| 5 | SPI_MISO | OUT |
| 6 | SPI_MOSI | IN |
| 7 | NC | |
| 8 | NC | |

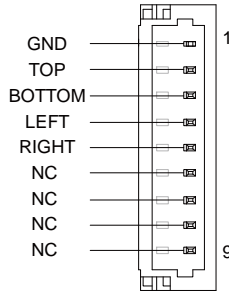
2.4.19 PS/2 Keyboard/Mouse Combo Port (CN22)



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

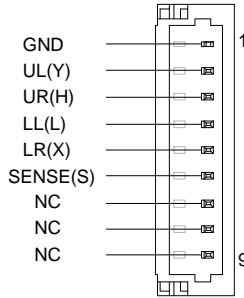
2.4.20 Touchscreen Connector (CN23)

4 Wires



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | GND | GND | |
| 2 | TOP | IN | |
| 3 | BOTTOM | IN | |
| 4 | LEFT | IN | |
| 5 | RIGHT | IN | |
| 6 | NC | | |
| 7 | NC | | |
| 8 | NC | | |
| 9 | NC | | |

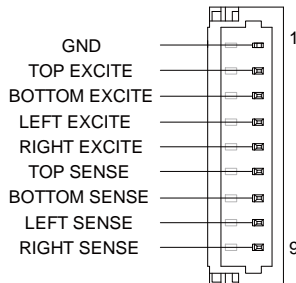
5 Wires



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

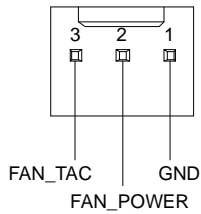
Note: Touch mode can be set by JP20

8 Wires



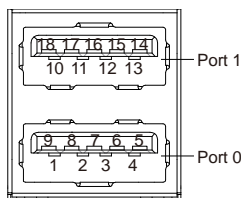
| Pin | Pin Name | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1 | GND | GND | |
| 2 | TOP EXCITE | IN | |
| 3 | BOTTOM EXCITE | IN | |
| 4 | LEFT EXCITE | IN | |
| 5 | RIGHT EXCITE | IN | |
| 6 | TOP SENSE | IN | |
| 7 | BOTTOM SENSE | IN | |
| 8 | LEFT SENSE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

2.4.21 CPU FAN (Optional) (CN24)



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

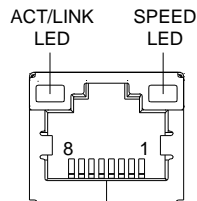
2.4.22 USB Ports 0 and 1 (CN25)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1 | +5VSB | PWR | +5V |
| 2 | USB0_D- | DIFF | |
| 3 | USB0_D+ | DIFF | |
| 4 | GND | GND | |
| 5 | USB0_SSRX- | DIFF | |
| 6 | USB0_SSRX+ | DIFF | |
| 7 | GND | GND | |
| 8 | USB0_SSTX- | DIFF | |
| 9 | USB0_SSTX+ | DIFF | |
| 10 | +5VSB | PWR | +5V |
| 11 | USB1_D- | DIFF | |
| 12 | USB1_D+ | DIFF | |
| 13 | GND | GND | |
| 14 | NC | | |
| 15 | NC | | |
| 16 | GND | GND | |
| 17 | NC | | |
| 18 | NC | | |

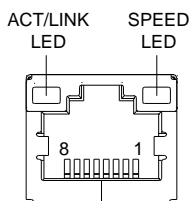
Note: Only Port0 supports USB 3.0.

2.4.23 LAN (RJ-45) Port2 (CN26)



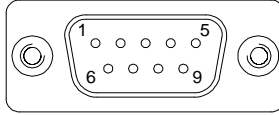
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | MDI0+ | DIFF | |
| 2 | MDI0- | DIFF | |
| 3 | MDI1+ | DIFF | |
| 4 | MDI2+ | DIFF | |
| 5 | MDI2- | DIFF | |
| 6 | MDI1- | DIFF | |
| 7 | MDI3+ | DIFF | |
| 8 | MDI3- | DIFF | |

2.4.24 LAN (RJ-45) Port1 (CN27)



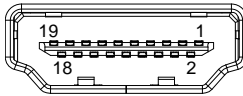
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | MDI0+ | DIFF | |
| 2 | MDI0- | DIFF | |
| 3 | MDI1+ | DIFF | |
| 4 | MDI2+ | DIFF | |
| 5 | MDI2- | DIFF | |
| 6 | MDI1- | DIFF | |
| 7 | MDI3+ | DIFF | |
| 8 | MDI3- | DIFF | |

2.4.25 COM Port 1 (D-SUB 9) (CN28)



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

2.4.26 HDMI Port (CN29)

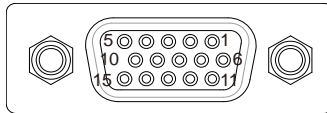


| Pin | Pin Name | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1 | TMDS_DAT2+ | DIFF | |
| 2 | GND | GND | |
| 3 | TMDS_DAT2- | DIFF | |
| 4 | TMDS_DAT1+ | DIFF | |
| 5 | GND | GND | |
| 6 | TMDS_DAT1- | DIFF | |
| 7 | TMDS_DAT0+ | DIFF | |

| | | | |
|----|-------------|------|-----|
| 8 | GND | GND | |
| 9 | TMDS_DAT0- | DIFF | |
| 10 | TMDS_CLK+ | DIFF | |
| 11 | GND | GND | |
| 12 | TMDS_CLK- | DIFF | |
| 13 | NC | | |
| 14 | NC | | |
| 15 | DDC_CLK | I/O | +5V |
| 16 | DDC_DATA | I/O | +5V |
| 17 | GND | GND | |
| 18 | +5V | I/O | +5V |
| 19 | HPLG_DETECT | IN | |

Note: COM port1 can be selected for D-SUB9 or Wafer BOX connector (CN20)

2.4.27 VGA Port (CN30)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1 | RED | OUT | |
| 2 | GREEN | OUT | |
| 3 | BLUE | OUT | |
| 4 | NC | | |
| 5 | GND | GND | |
| 6 | RED_GND_RTN | GND | |
| 7 | GREEN_GND_RTN | GND | |

| | | | |
|----|--------------|-----|-----|
| 8 | BLUE_GND_RTN | GND | |
| 9 | +5V | PWR | +5V |
| 10 | CRT_PLUG# | | |
| 11 | NC | | |
| 12 | DDC_DATA | I/O | +5V |
| 13 | HSYNC | OUT | |
| 14 | VSYNC | OUT | |
| 15 | DDC_CLK | I/O | +5V |

2.4.28 Battery (CN31)

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

2.4.29 CFast Slot (CN33)

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| S1 | GND | GND | |
| S2 | SATA_TX+ | DIFF | |
| S3 | SATA_TX- | DIFF | |
| S4 | GND | GND | |
| S5 | SATA_RX- | DIFF | |
| S6 | SATA_RX+ | DIFF | |
| S7 | GND | GND | |
| PC1 | NC | | |
| PC2 | GND | GND | |

| | | | |
|------|-------|-----|-------|
| PC3 | NC | | |
| PC4 | NC | | |
| PC5 | NC | | |
| PC6 | NC | | |
| PC7 | GND | GND | |
| PC8 | NC | | |
| PC9 | NC | | |
| PC10 | NC | | |
| PC11 | NC | | |
| PC12 | NC | | |
| PC13 | +3.3V | PWR | +3.3V |
| PC14 | +3.3V | PWR | +3.3V |
| PC15 | GND | GND | |
| PC16 | GND | GND | |
| PC17 | NC | | |

2.4.30 DDR3L SO-DIMM Slot (CN34)

Standard Specifications

2.4.31 UIM 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 | I/O |
|---|----------|-----|

2.4.32 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 |

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

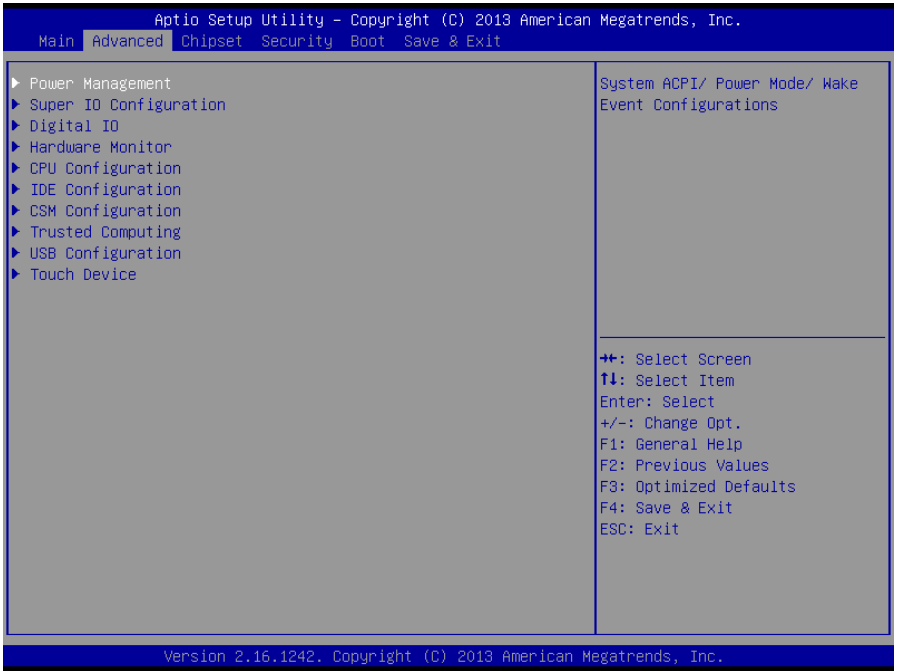
Save & Exit – Save your changes and exit the program

3.3 Setup submenu: Main

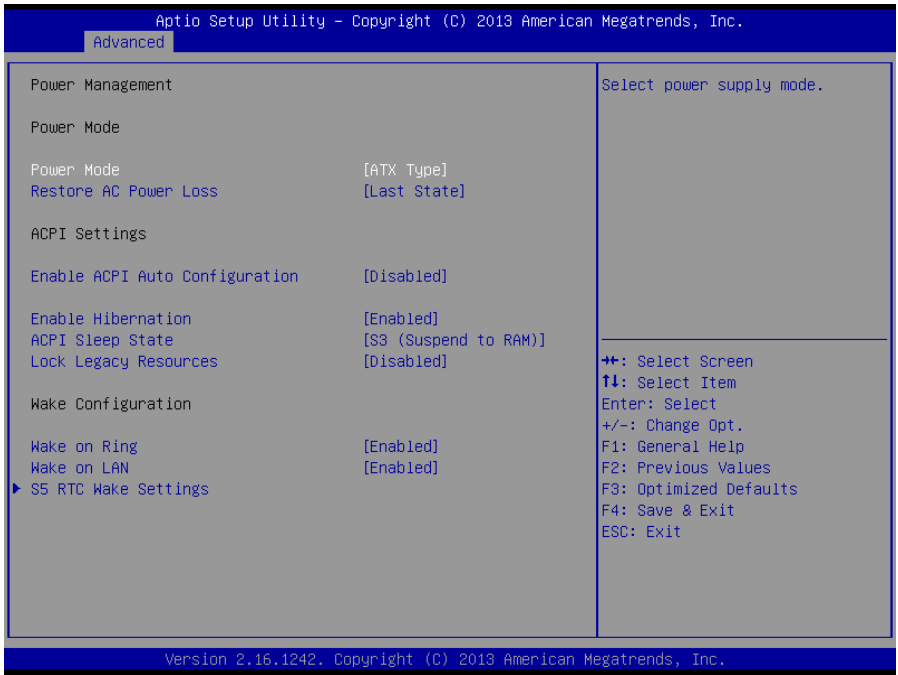
Press '*Delete*' Key to enter Setup



3.4 Setup submenu: Advanced



3.4.1 Advanced: Power Management

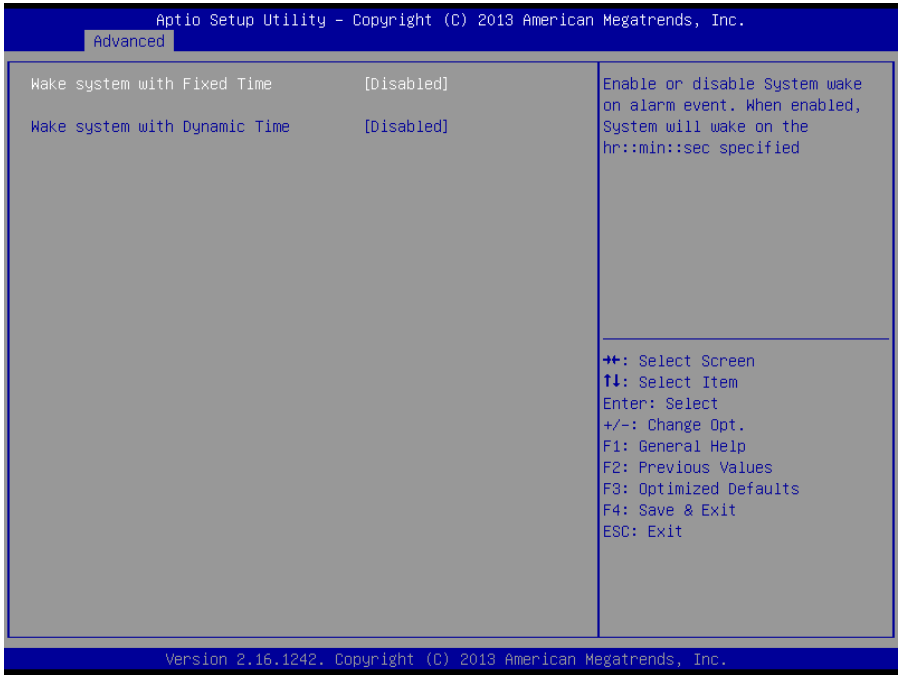


Options summary:

| | | |
|--|------------|-----------------------------------|
| Power Mode | ATX Type | Optimal Default, Failsafe Default |
| | AT Type | |
| Select power supply mode | | |
| Restore AC Power Loss | Last State | Optimal Default, Failsafe Default |
| | Power On | |
| | Power Off | |
| 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 | Enable | Optimal Default, Failsafe Default |
| Hibernation | Disable | |
| Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS | | |
| Lock Legacy | Enable | |
| Resources | Disable | Optimal Default, Failsafe Default |
| 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 | | |

3.4.1.1 Power Management: S5 RTC Wake Settings

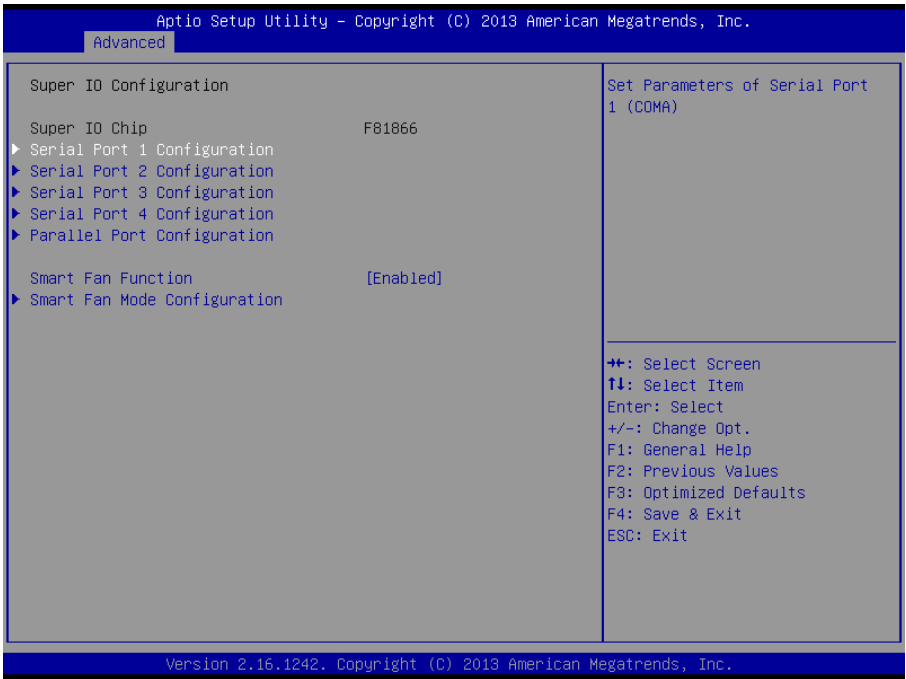


Options summary:

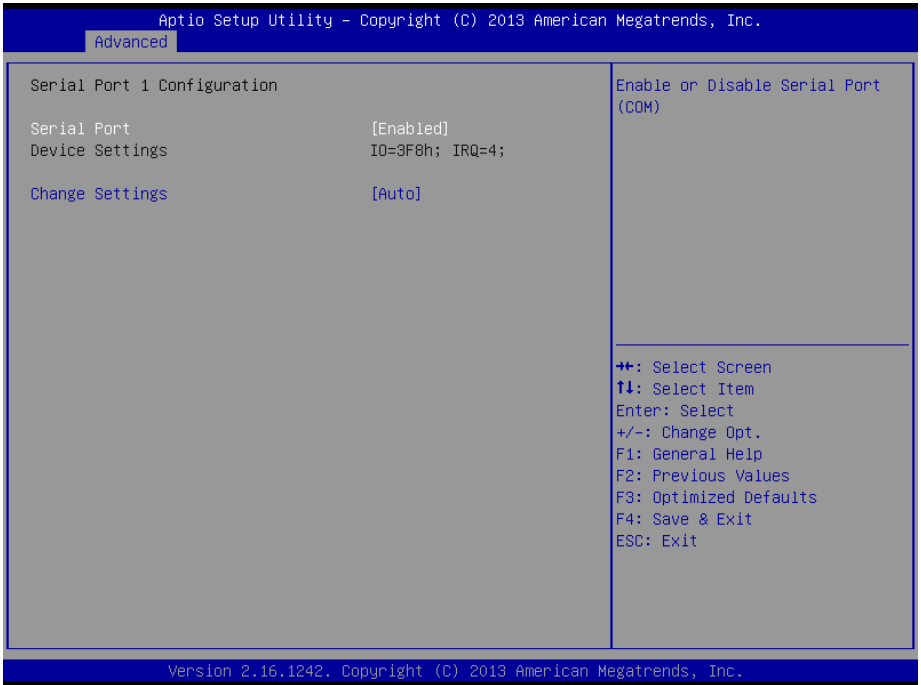
| | | | |
|-------------------------------|----------------|---------|--------------------------------------|
| Wake system with Fixed Time | | Enable | |
| | | Disable | Optimal Default, Failsafe Default |
| | Wake up hour | 0 | |
| | Wake up minute | 0 | |
| | Wake up second | 0 | |
| Wake system with Dynamic Time | | Enable | |
| | | Disable | Optimal Default, Failsafe Default |

| | | | |
|----------------------|-------------------------|---|--|
| | Wake up minute increase | 0 | |
| Select RTC wake mode | | | |

3.4.2 Advanced: Super IO Configuration



3.4.3 Advanced: Super IO Configuration Serial Port 1 Configuration



3.4.4 Advanced: Super IO Configuration Serial Port 2 Configuration

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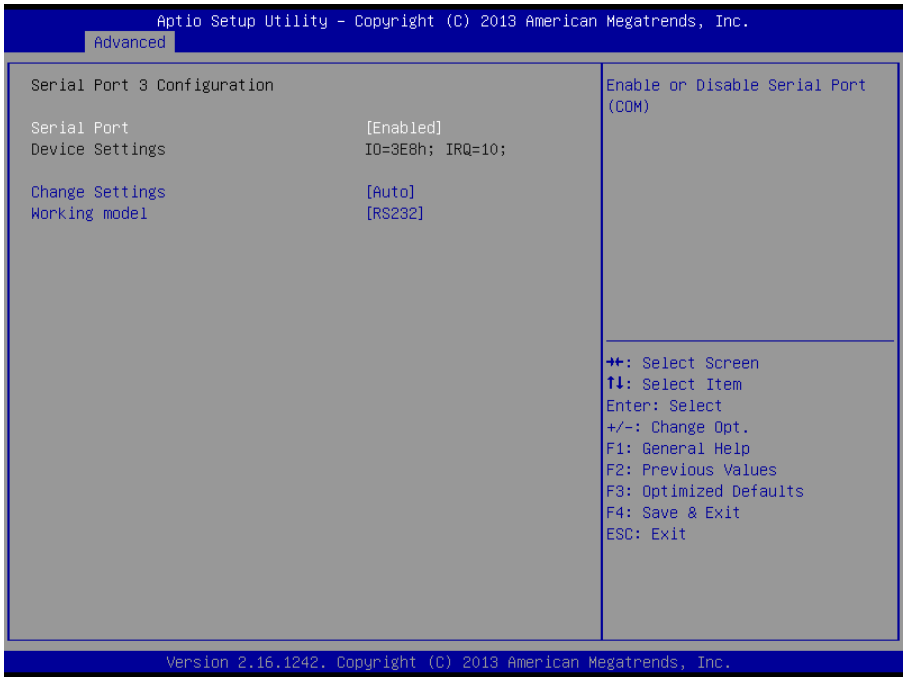
Advanced

| | | |
|-----------------------------|-----------------|-------------------------------------|
| Serial Port 2 Configuration | | Enable or Disable Serial Port (COM) |
| Serial Port | [Enabled] | |
| Device Settings | ID=2F8h; IRQ=3; | |
| Change Settings | [Auto] | |
| Working model | [RS232] | |

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

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3.4.5 Advanced: Super IO Configuration Serial Port 3 Configuration



3.4.6 Advanced: Super IO Configuration Serial Port 4 Configuration

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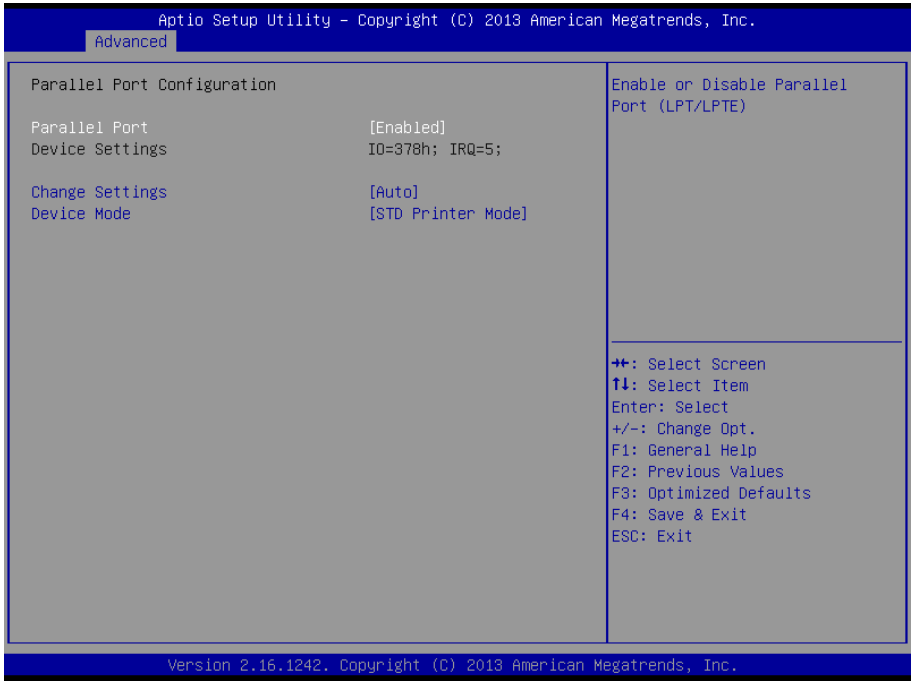
Advanced

| | | |
|-----------------------------|------------------|-------------------------------------|
| Serial Port 4 Configuration | | Enable or Disable Serial Port (COM) |
| Serial Port | [Enabled] | |
| Device Settings | IO=2E8h; IRQ=10; | |
| Change Settings | [Auto] | |

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

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3.4.7 Advanced: Parallel Port Configuration



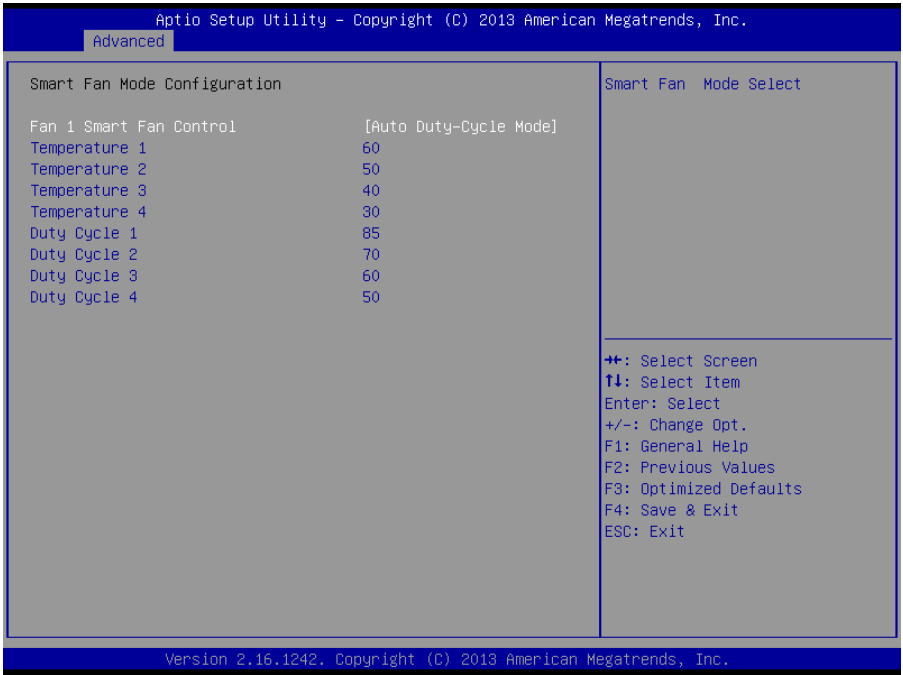
Options summary:

| | | |
|---|------------------------------------|---------|
| Serial Port | Disabled | |
| | Enabled | Default |
| Allows BIOS to En/Disable correspond serial port. | | |
| Change Settings (Serial Port 1) | Auto | Default |
| | IO=3F8h; IRQ=4; | |
| | IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; | |
| | IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; | |

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

| | | |
|---|---------|--------------------------------------|
| Allows BIOS to Select Serial Port resource. | | |
| | | |
| Smart Fan Function | Enable | |
| | Disable | Optimal Default, Failsafe Default |
| Enable or Disable Smart Fan | | |

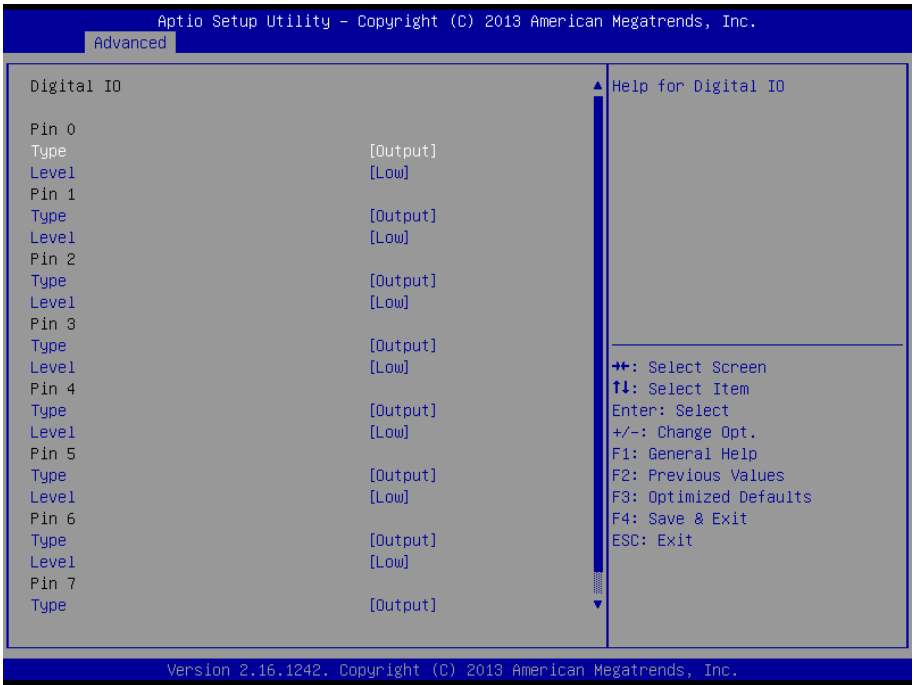
3.4.8 Advanced: Smart Fan



Options summary:

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

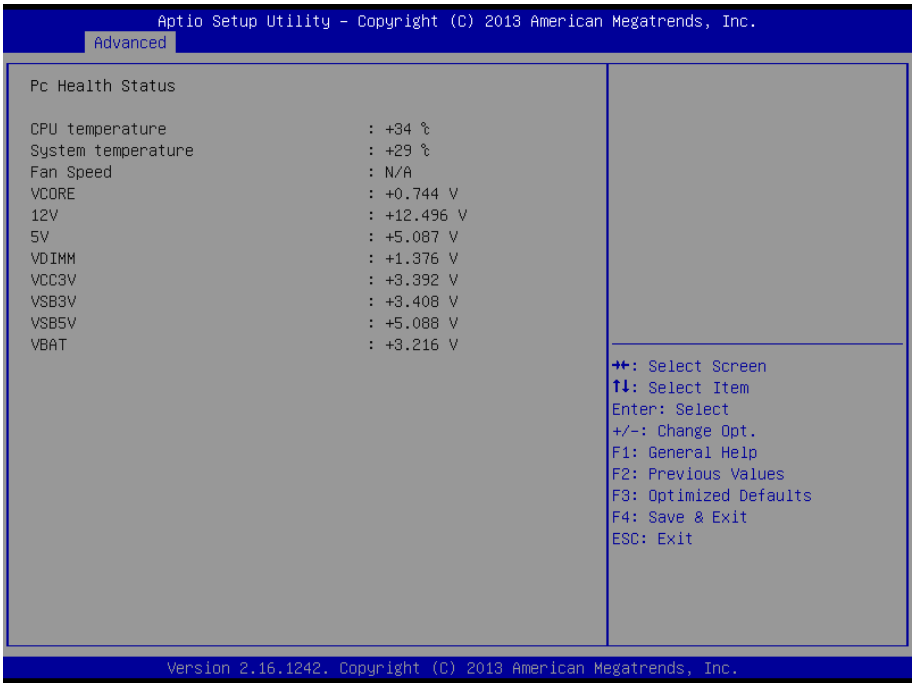
3.4.9 Advanced: Digital IO



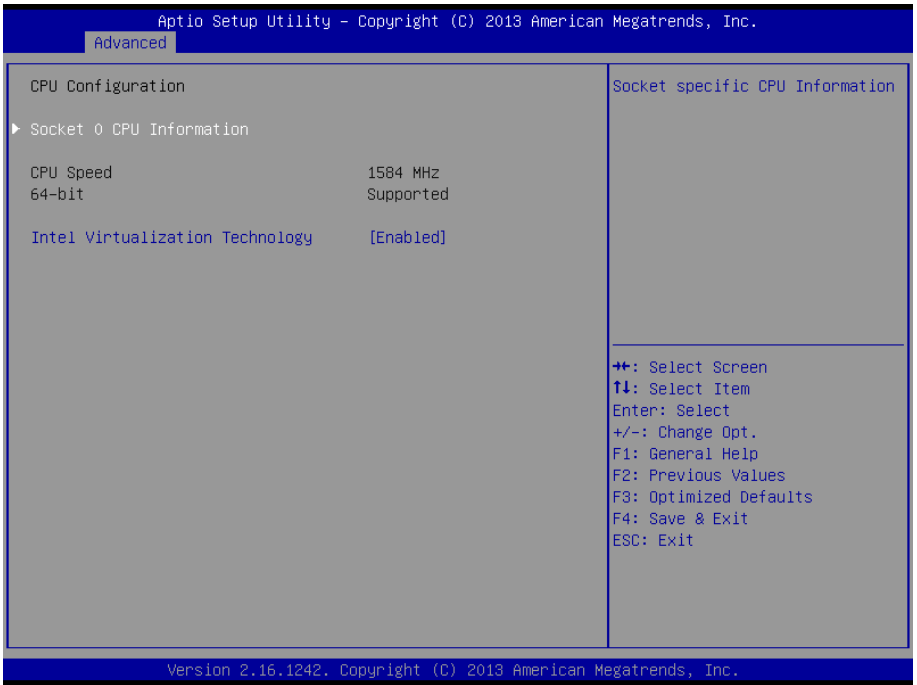
Options summary:

| | | |
|---------------------|--------|--|
| Type | Output | |
| | Input | |
| Help for Digital IO | | |
| Level | Low | |
| | Hi | |
| Help for Digital IO | | |

3.4.10 Advanced: H/W Monitor



3.4.11 Advanced: CPU Configuration



Options summary:

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

3.4.12 Advanced: CPU Configuration Socket 0 CPU Information

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Advanced

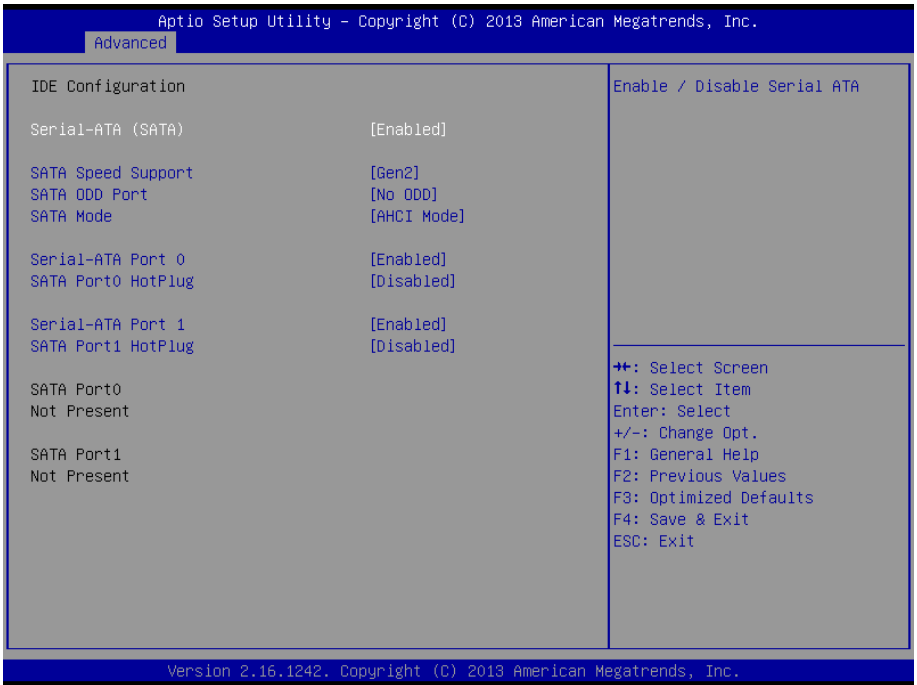
Socket 0 CPU Information

| | |
|---|---------------|
| Intel(R) Celeron(R) CPU N2807 @ 1.58GHz | |
| CPU Signature | 30678 |
| Microcode Patch | 815 |
| Max CPU Speed | 1580 MHz |
| Min CPU Speed | 500 MHz |
| Processor Cores | 2 |
| Intel HT Technology | Not Supported |
| Intel VT-x Technology | Supported |
| | |
| L1 Data Cache | 24 kB x 2 |
| L1 Code Cache | 32 kB x 2 |
| L2 Cache | 1024 kB x 1 |
| L3 Cache | Not Present |

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

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3.4.13 Advanced: SATA Configuration



Options summary:

| | | |
|--|------|---------|
| SATA Mode | IDE | Default |
| | AHCI | |
| IDE: Configure SATA controllers as legacy IDE | | |
| AHCI: Configure SATA controllers to operate in AHCI mode | | |
| En/Disable SATA Port | | |

3.4.14 Advanced: CSM Configuration

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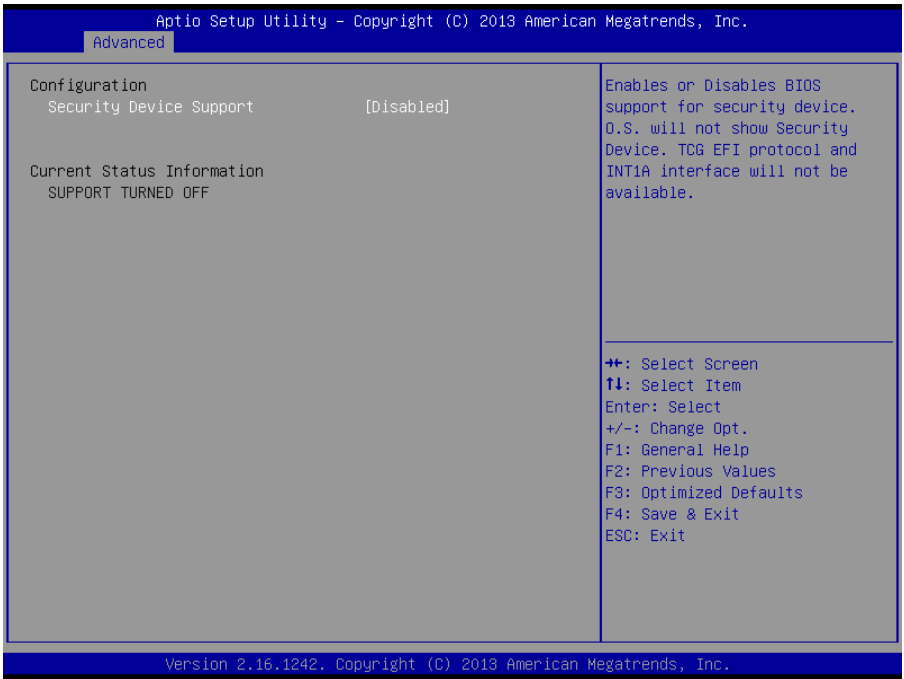
Advanced

| | | |
|--|-------------------|-----------------------------|
| Compatibility Support Module Configuration | | Enable/Disable CSM Support. |
| CSM Support | [Enabled] | |
| CSM16 Module Version | 07.71 | |
| Boot option filter | [UEFI and Legacy] | |
| Option ROM execution order | | |
| Storage | [UEFI only] | |
| Video | [Legacy first] | |
| Other PCI devices | [UEFI first] | |

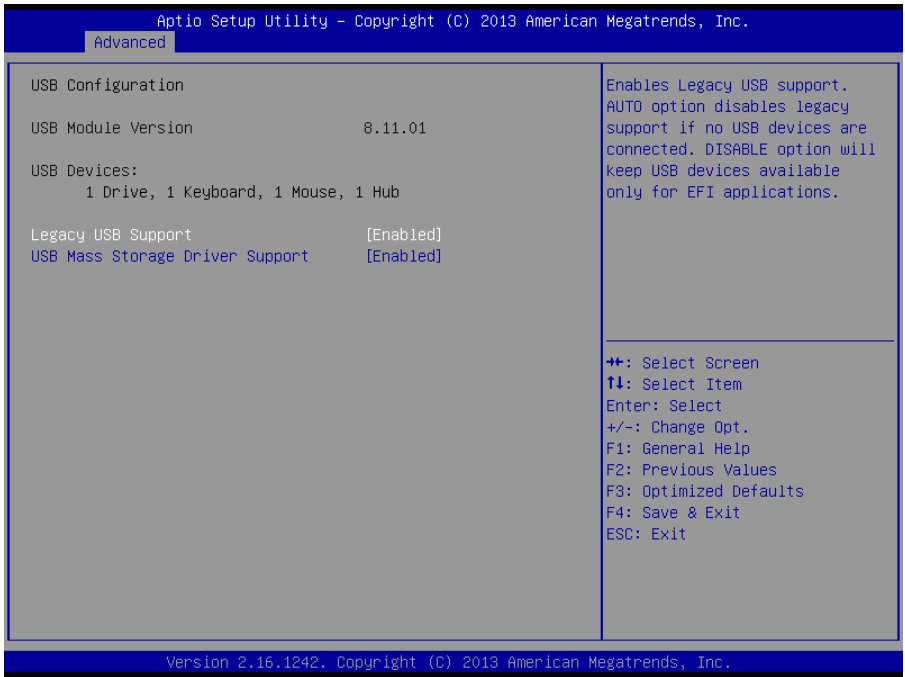
←+: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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3.4.15 Advanced: Trusted Computing



3.4.16 Advanced: USB Configuration

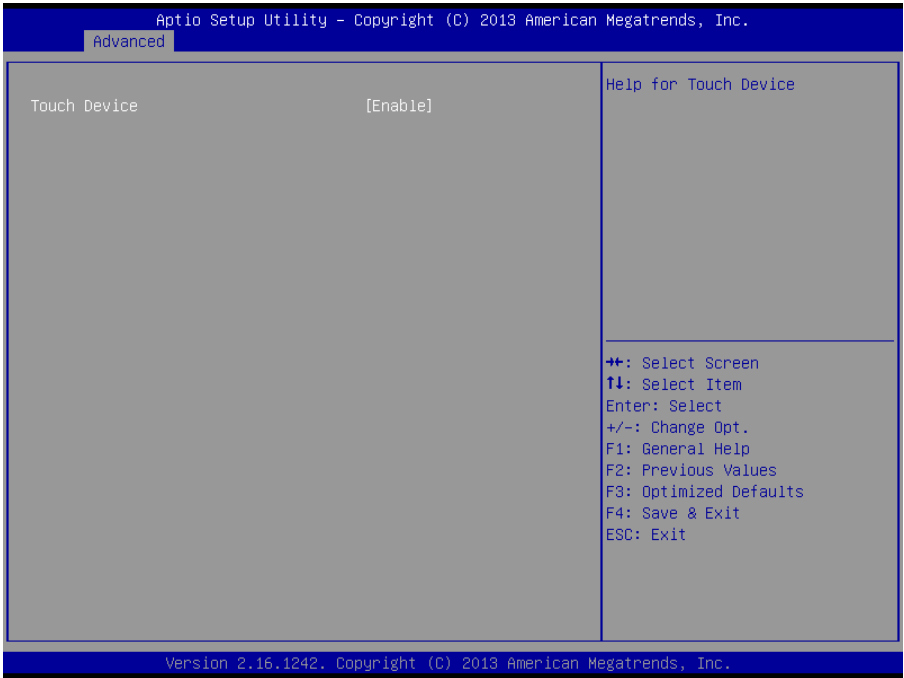


Options summary:

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

| | | |
|---|------------|--|
| | Floppy | |
| | Forced FDD | |
| | Hard Disk | |
| | CDROM | |
| If Auto. USB devices less than 530MB will be emulated as Floppy and 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) | | |

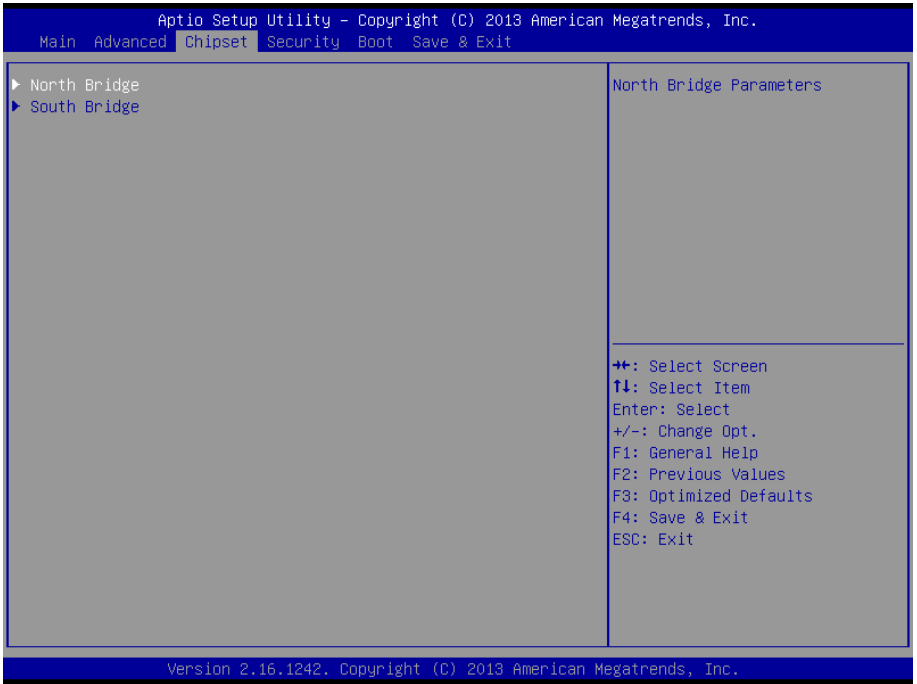
3.4.17 Advanced: Touch Device



Options summary:

| | | |
|--------------|----------|--------------------------------------|
| Touch Device | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |

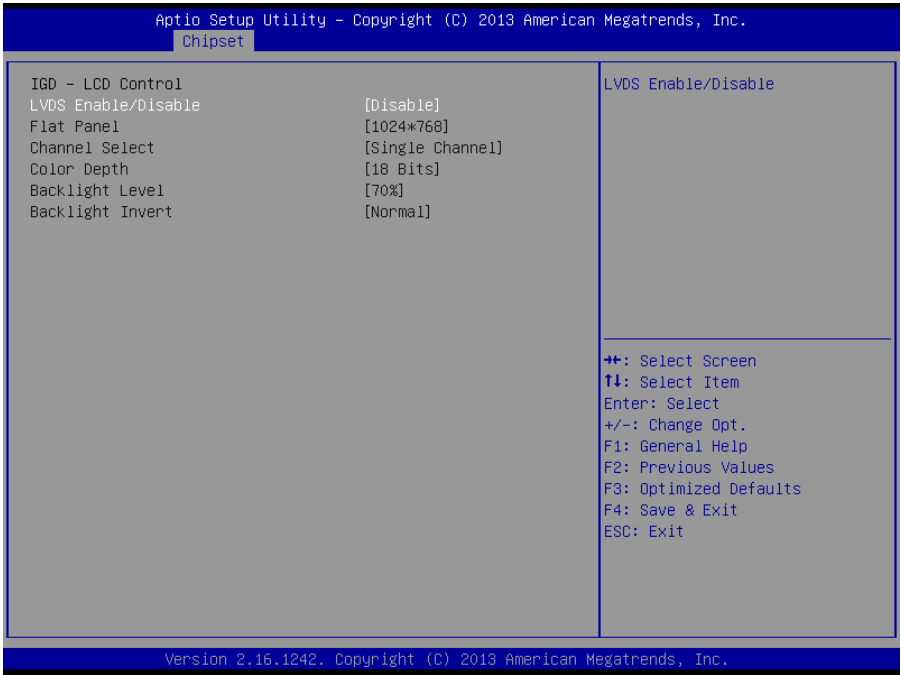
3.5 Setup submenu: Chipset



3.5.1 Chipset: Host Bridge

The screenshot shows the Aptio Setup Utility BIOS interface. At the top, it reads "Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc." and "Chipset" is selected in the top menu. The main display area is divided into two columns. The left column lists settings: "Primary Boot Display" with the value "[VBIOS Default]", "IGD - LCD Control" (indicated by a blue arrow), "Memory Information", "Total Memory" with the value "4096 MB (LPDDR3)", and "Memory Slot0" with the value "4096 MB (LPDDR3)". The right column contains explanatory text: "Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display". Below this text is a legend for navigation keys: "++: Select Screen", "↑↓: Select Item", "Enter: Select", "+/-: Change Opt.", "F1: General Help", "F2: Previous Values", "F3: Optimized Defaults", "F4: Save & Exit", and "ESC: Exit". At the bottom of the screen, it says "Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc."

3.5.1.1 Host Bridge: IGD – LCD Control

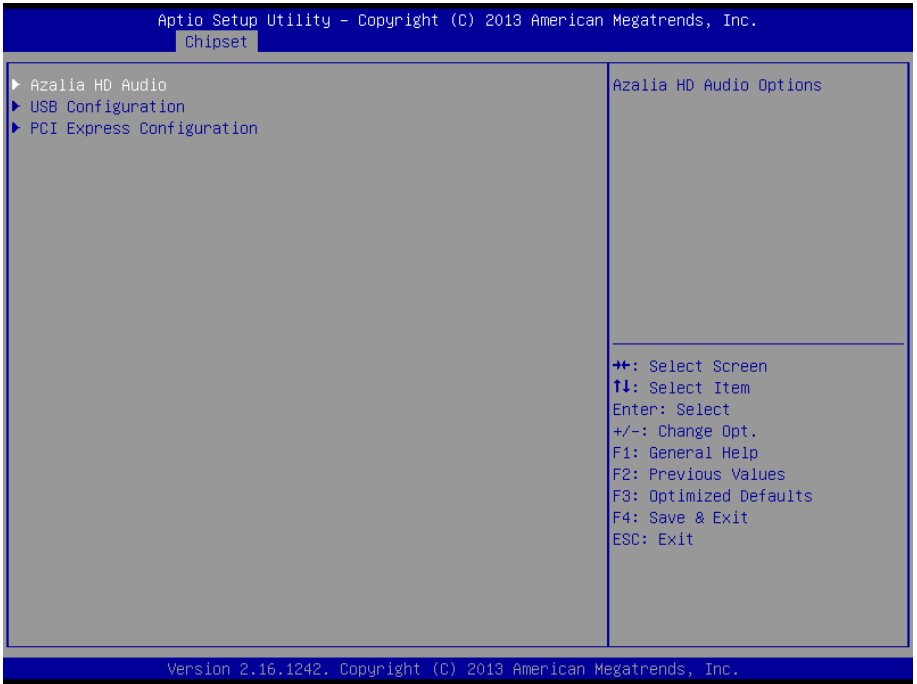


Options summary:

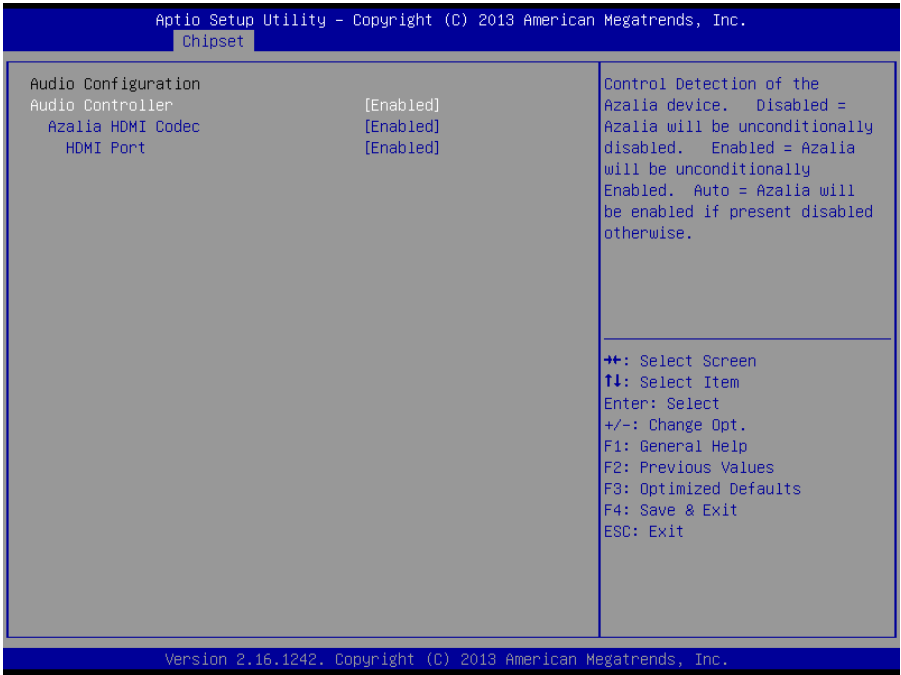
| | | |
|--|----------------|---------|
| LVDS Enable/Disable | Enable | |
| | Disable | Default |
| LVDS Enable/Disable | | |
| LCD Panel Type | 1024x768 24Bit | Default |
| Select LCD panel used by internal Graphics Device by selecting the appropriate setup item. | | |
| Backlight Controller | 100% | |

| | | |
|-----------------------------|-----|---------|
| | 90% | Default |
| | 80% | |
| | 70% | |
| | 60% | |
| | 50% | |
| | 40% | |
| | 30% | |
| | 20% | |
| | 10% | |
| | 0% | |
| Adjust backlight brightness | | |

3.5.2 Chipset: South Bridge



3.5.2.1 South Bridge: Azallia HD Audio



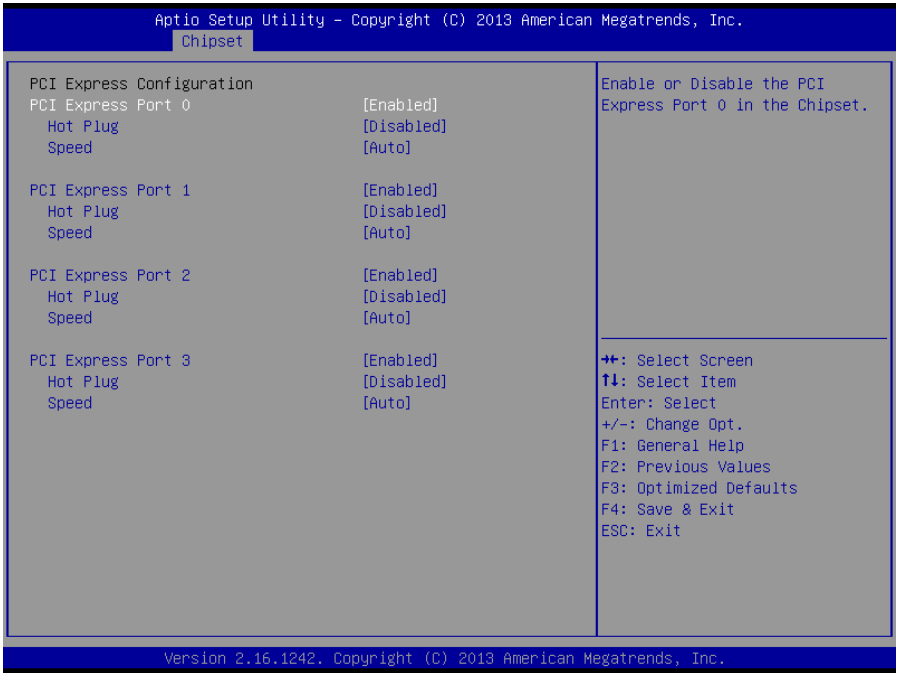
| | | |
|---|----------|--------------------------------------|
| Azalia HD Audio | Disabled | Optimal Default, Failsafe Default |
| | HD Audio | |
| Enabling/Disabling HD Audio controller. | | |

3.5.2.2 South Bridge: USB Configuration

The screenshot displays the Aptio Setup Utility interface for the Chipset section. The title bar reads "Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc." and the sub-header is "Chipset". The main content area is divided into two columns. The left column lists various USB configuration options with their current status in brackets: "USB Configuration" (no status), "USB OTG Support" [Disabled], "XHCI Mode" [Enabled], "USB 2.0(EHCI) Support" [Disabled], "USB Per Port Control" [Enabled], and "USB Port 0" through "USB Port 3" all [Enabled]. The right column contains the text "Enable/Disable USB OTG Support". Below the configuration list, a legend of keyboard shortcuts is provided: "+": Select Screen, "↑↓": Select Item, "Enter": Select, "+/-": Change Opt., "F1": General Help, "F2": Previous Values, "F3": Optimized Defaults, "F4": Save & Exit, and "ESC": Exit. The footer of the screen shows "Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc."

| Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc. | |
|--|------------|
| Chipset | |
| USB Configuration | |
| USB OTG Support | [Disabled] |
| XHCI Mode | [Enabled] |
| USB 2.0(EHCI) Support | [Disabled] |
| USB Per Port Control | [Enabled] |
| USB Port 0 | [Enabled] |
| USB Port 1 | [Enabled] |
| USB Port 2 | [Enabled] |
| USB Port 3 | [Enabled] |
| Enable/Disable USB OTG Support | |
| + : Select Screen | |
| ↑↓ : Select Item | |
| Enter : Select | |
| +/- : Change Opt. | |
| F1 : General Help | |
| F2 : Previous Values | |
| F3 : Optimized Defaults | |
| F4 : Save & Exit | |
| ESC : Exit | |
| Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc. | |

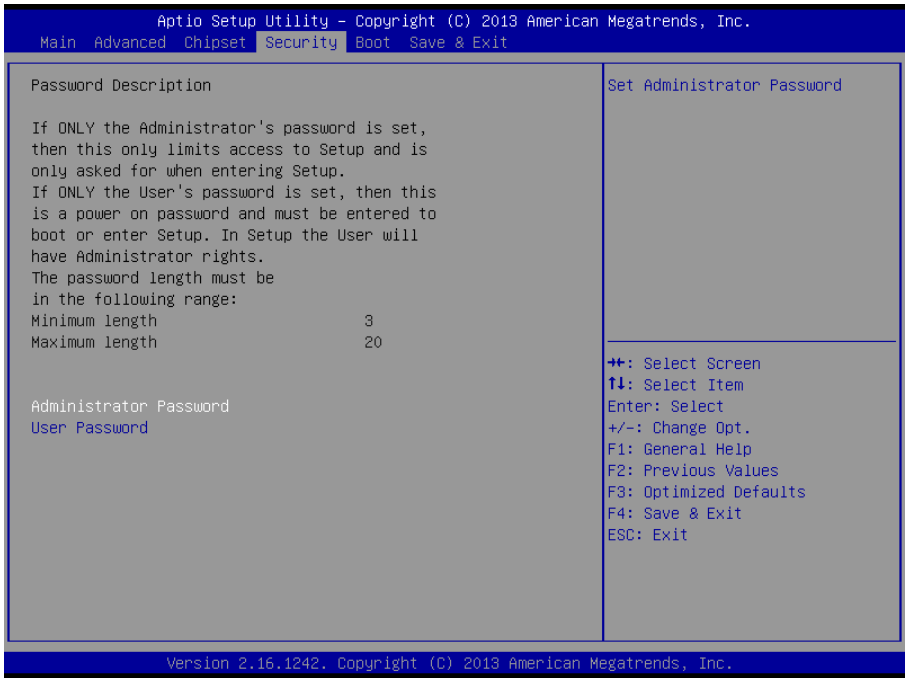
3.5.2.2 South Bridge: PCI Express Configuration



Options summary:

| | | |
|---|------------------|--------------------------------------|
| PCI Express Root Port 0 | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enabling/Disabling PCI Express root ports | | |
| PCI Express Root Port x | Disabled Enabled | Optimal Default, Failsafe Default |
| | Auto | |
| Enabling/Disabling PCI Express root ports | | |

3.6 Setup submenu: Security



Change User/Administrator Password

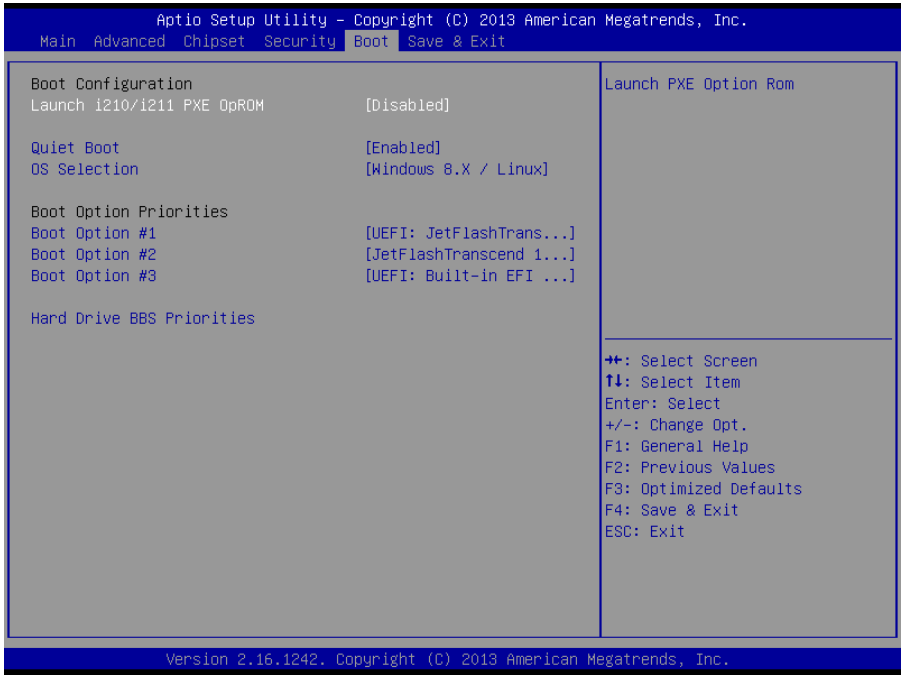
You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

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

Removing the Password

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

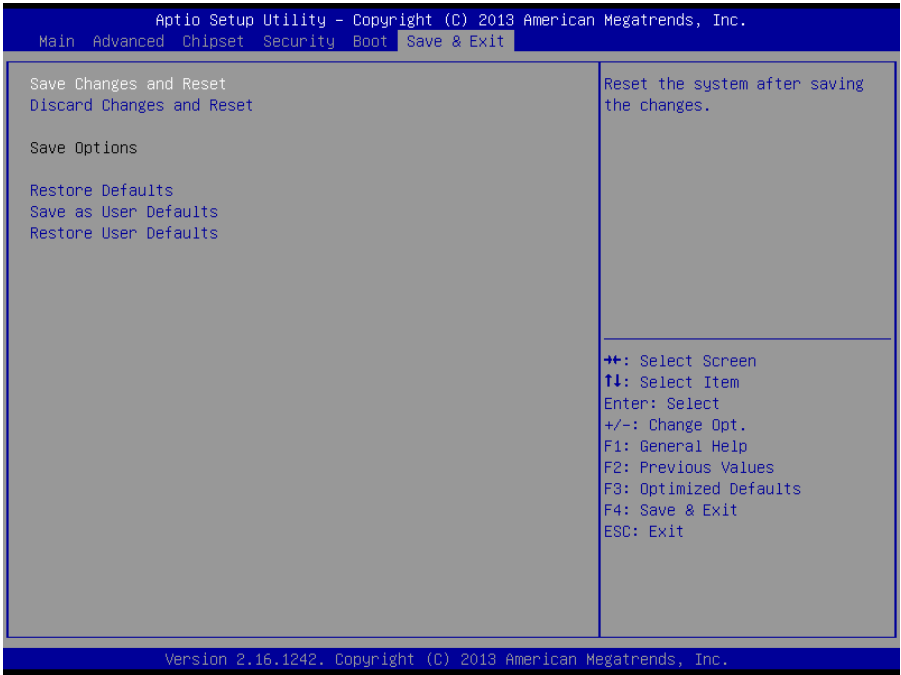
3.7 Setup submenu: Boot



Options summary:

| | | |
|-----------------------------------|----------|---------|
| Quiet Boot | Disabled | Default |
| | Enabled | |
| En/Disable showing boot logo. | | |
| Launch 8111E PXE OpROM | Disabled | Default |
| | Enabled | |
| En/Disable PXE boot for 8111E LAN | | |

3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Product CD/DVD

The GENE-BT05 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 Drivers

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

Step 2 – Install Graphics Driver

1. Open the **Step2 - Graphic** 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 **Step3 - LAN** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install Audio Driver (Windows 8 only)

1. Open the **Step4 - Audio** folder and select your OS

2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 5 – Install TXE Drivers

1. Open the **Step5 - TXE** folder select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 6 – Install PenMount Touch 6000 Driver

1. Open the **Step6 - PenMount Touch 6000** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 7 – Install TPM Driver

1. Open the **Step7 - TPM** folder followed by the **Atmel TPM Driver Installer 3.0.3.15.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 8 – Install MBI Driver

1. Open the **Step8 - MBI** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

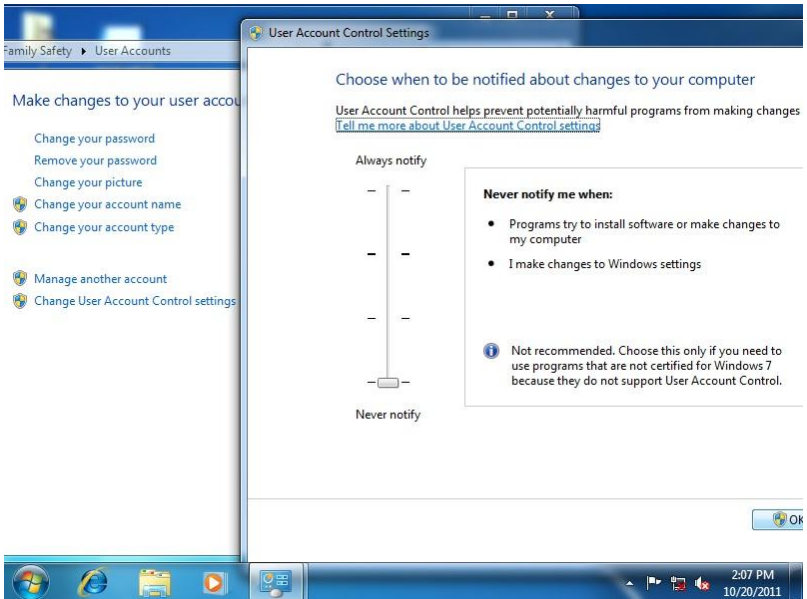
Step 9 – Install USB 3.0 Driver (Windows 7 only)

1. Open the **Step9 - USB3.0** folder followed by the **Setup.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

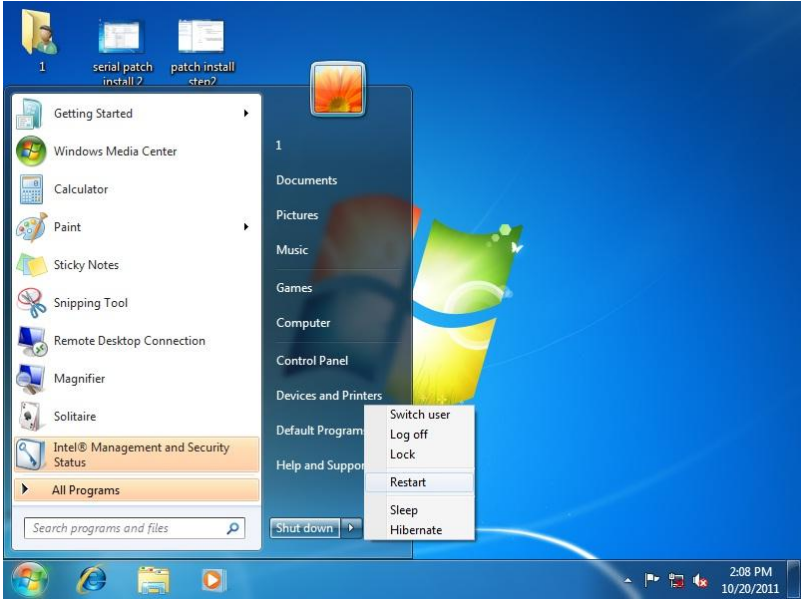
Step 10 – Install Serial Port Driver (Optional)

For Windows 7:

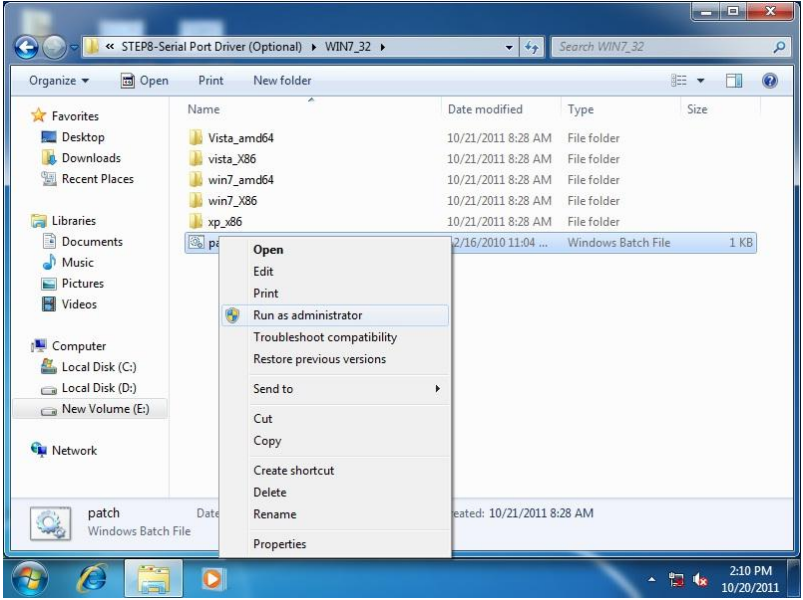
1. Change User Account Control settings to **Never notify**



2. Reboot and log in as administrator

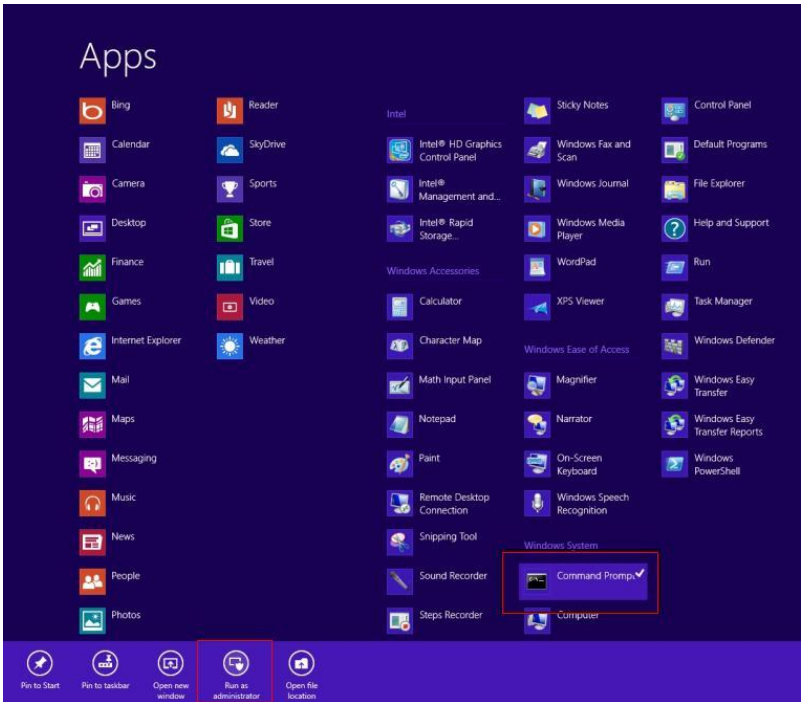


3. Run patch.bat as administrator

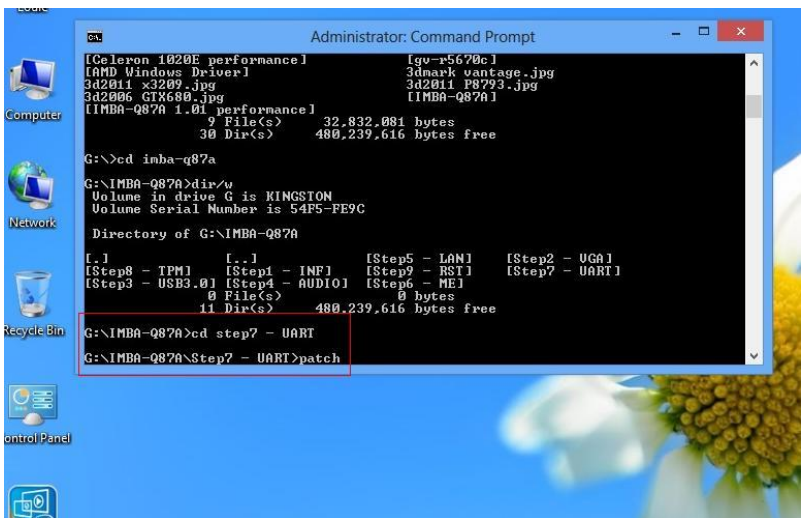


For Windows 8/ Windows 10:

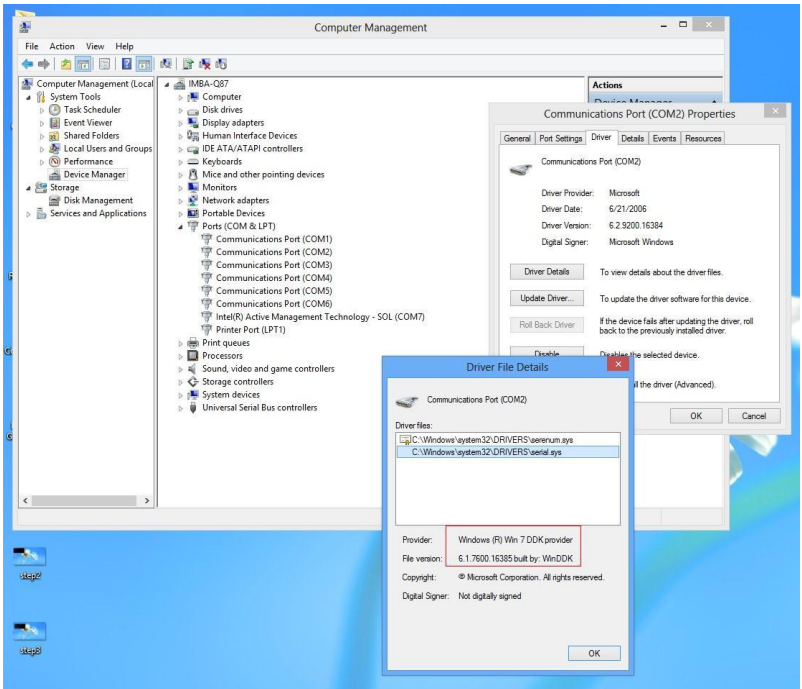
1. Open the Apps Screen, right click on the **Command Prompt** tile and select **Run as Administrator**



- To install the driver (patch.bat), you will first have to locate the file in command prompt. To do that, first go to the directory which contains the file by entering **<drive letter>**: eg. if the driver is in D drive, enter **D:**
- You are now at the directory containing the installation file. Next, go to the folder in which the file resides by entering **cd <folder>** eg: if the file is in a folder named abc, enter **cd <abc>**.
- You are now at the folder where the file is located. Enter the **patch.bat** to open and install the drivers. If your file is in a subfolder, enter the **cd <folder>** command again to access the subfolder (screenshot below is for reference only).



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



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 WDRstBit 0x80 // Watchdog WDTRST# (Bit7)
#define WDRstVal 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(WDTAddr+Register, Value);
}
byte WDTReadByte(byte Register){
return IOReadByte(WDTAddr+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




































| Address Range | Device Name |
|---------------------------------------|--|
| [0000000000000000 - 000000000000006F] | PCI bus |
| [0000000000000020 - 0000000000000021] | Programmable interrupt controller |
| [0000000000000024 - 0000000000000025] | Programmable interrupt controller |
| [0000000000000028 - 0000000000000029] | Programmable interrupt controller |
| [000000000000002C - 000000000000002D] | Programmable interrupt controller |
| [000000000000002E - 000000000000002F] | Motherboard resources |
| [0000000000000030 - 0000000000000031] | Programmable interrupt controller |
| [0000000000000034 - 0000000000000035] | Programmable interrupt controller |
| [0000000000000038 - 0000000000000039] | Programmable interrupt controller |
| [000000000000003C - 000000000000003D] | Programmable interrupt controller |
| [0000000000000040 - 0000000000000043] | System timer |
| [000000000000004E - 000000000000004F] | Motherboard resources |
| [0000000000000050 - 0000000000000053] | System timer |
| [0000000000000061 - 0000000000000061] | Motherboard resources |
| [0000000000000063 - 0000000000000063] | Motherboard resources |
| [0000000000000065 - 0000000000000065] | Motherboard resources |
| [0000000000000067 - 0000000000000067] | Motherboard resources |
| [0000000000000070 - 0000000000000070] | Motherboard resources |
| [0000000000000070 - 0000000000000077] | System CMOS/real time clock |
| [0000000000000078 - 00000000000000CF] | PCI bus |
| [0000000000000080 - 000000000000008F] | Motherboard resources |
| [0000000000000092 - 0000000000000092] | Motherboard resources |
| [00000000000000A0 - 00000000000000A1] | Programmable interrupt controller |
| [00000000000000A4 - 00000000000000A5] | Programmable interrupt controller |
| [00000000000000A8 - 00000000000000A9] | Programmable interrupt controller |
| [00000000000000AC - 00000000000000AD] | Programmable interrupt controller |
| [00000000000000B0 - 00000000000000B1] | Programmable interrupt controller |
| [00000000000000B2 - 00000000000000B3] | Motherboard resources |
| [00000000000000B4 - 00000000000000B5] | Programmable interrupt controller |
| [00000000000000B8 - 00000000000000B9] | Programmable interrupt controller |
| [00000000000000BC - 00000000000000BD] | Programmable interrupt controller |
| [00000000000002E8 - 00000000000002EF] | Communications Port (COM4) |
| [00000000000002F8 - 00000000000002FF] | Communications Port (COM2) |
| [0000000000000378 - 000000000000037F] | Printer Port (LPT1) |
| [00000000000003B0 - 00000000000003BB] | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |
| [00000000000003C0 - 00000000000003DF] | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |
| [000000000000D000 - 000000000000DFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A |
| [000000000000E000 - 000000000000EFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48 |
| [000000000000F000 - 000000000000F01F] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port |
| [000000000000F020 - 000000000000F03F] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [000000000000F040 - 000000000000F043] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [000000000000F050 - 000000000000F057] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [000000000000F060 - 000000000000F063] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [000000000000F070 - 000000000000F077] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [000000000000F080 - 000000000000F087] | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |


















































B.2 Memory Address Map

| Address Range | Device |
|---|--|
| [0000000000A0000 - 0000000000BFFFF] | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |
| [0000000000A0000 - 0000000000BFFFF] | PCI bus |
| [0000000000C0000 - 0000000000DFFFF] | PCI bus |
| [0000000000E0000 - 0000000000FFFFFF] | PCI bus |
| [00000000C0000000 - 00000000CFFFFFFF] | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |
| [00000000C0000000 - 00000000D0816FFF] | PCI bus |
| [00000000D0000000 - 00000000D03FFFFF] | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |
| [00000000D0400000 - 00000000D04FFFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Trusted Execution Engine Interface - |
| [00000000D0500000 - 00000000D05FFFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Trusted Execution Engine Interface - |
| [00000000D0600000 - 00000000D061FFFF] | Intel(R) I211 Gigabit Network Connection |
| [00000000D0600000 - 00000000D06FFFFFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A |
| [00000000D0620000 - 00000000D0623FFF] | Intel(R) I211 Gigabit Network Connection |
| [00000000D0700000 - 00000000D071FFFF] | Intel(R) I211 Gigabit Network Connection #2 |
| [00000000D0700000 - 00000000D07FFFFFFF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48 |
| [00000000D0720000 - 00000000D0723FFF] | Intel(R) I211 Gigabit Network Connection #2 |
| [00000000D0800000 - 00000000D080FFFF] | Intel(R) USB 3.0 eXtensible Host Controller |
| [00000000D0810000 - 00000000D0813FFF] | High Definition Audio Controller |
| [00000000D0814000 - 00000000D081401F] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port |
| [00000000D0816000 - 00000000D08167FF] | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
| [00000000E0000000 - 00000000FFFFFFF] | Motherboard resources |
| [00000000FED00000 - 00000000FED003FF] | High precision event timer |
| [00000000FED01000 - 00000000FED01FFF] | Motherboard resources |
| [00000000FED03000 - 00000000FED03FFF] | Motherboard resources |
| [00000000FED04000 - 00000000FED04FFF] | Motherboard resources |
| [00000000FED08000 - 00000000FED08FFF] | Motherboard resources |
| [00000000FED0C000 - 00000000FED0FFFF] | Motherboard resources |
| [00000000FED1C000 - 00000000FED1CFFF] | Motherboard resources |
| [00000000FEE00000 - 00000000FEEFFFFFFF] | Motherboard resources |
| [00000000FEF00000 - 00000000FEFFFFFFF] | Motherboard resources |
| [00000000FF000000 - 00000000FFFFFFFF] | Intel(R) 82802 Firmware Hub Device |

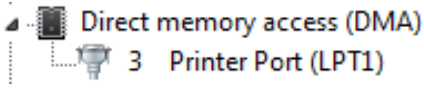
B.3 IRQ Mapping Chart

| Interrupt request (IRQ) | Device |
|-------------------------|---------------------------------|
| (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) 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) 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 |
|  | (PCI) 0x0000000B (11) | 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) 0x00000013 (19) | Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23 |
|  | (PCI) 0x00000016 (22) | High Definition Audio Controller |
|  | (PCI) 0xFFFFFFF1 (-15) | Intel(R) I211 Gigabit Network Connection |
|  | (PCI) 0xFFFFFFF2 (-14) | Intel(R) I211 Gigabit Network Connection |
|  | (PCI) 0xFFFFFFF3 (-13) | Intel(R) I211 Gigabit Network Connection |
|  | (PCI) 0xFFFFFFF4 (-12) | Intel(R) I211 Gigabit Network Connection |
|  | (PCI) 0xFFFFFFF5 (-11) | Intel(R) I211 Gigabit Network Connection |
|  | (PCI) 0xFFFFFFF6 (-10) | Intel(R) I211 Gigabit Network Connection |
|  | (PCI) 0xFFFFFFF7 (-9) | Intel(R) I211 Gigabit Network Connection #2 |
|  | (PCI) 0xFFFFFFF8 (-8) | Intel(R) I211 Gigabit Network Connection #2 |
|  | (PCI) 0xFFFFFFF9 (-7) | Intel(R) I211 Gigabit Network Connection #2 |
|  | (PCI) 0xFFFFFFFA (-6) | Intel(R) I211 Gigabit Network Connection #2 |
|  | (PCI) 0xFFFFFFFB (-5) | Intel(R) I211 Gigabit Network Connection #2 |
|  | (PCI) 0xFFFFFFFC (-4) | Intel(R) I211 Gigabit Network Connection #2 |
|  | (PCI) 0xFFFFFFFDD (-3) | Intel(R) USB 3.0 eXtensible Host Controller |
|  | (PCI) 0xFFFFFFFEE (-2) | Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900 |

B.4 DMA Channel Assignments



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 | | |
| CN1 | External AUX Power and PS_ON# | JST | PHR-6 | N/A | N/A |
| CN3 | LVDS Inverter Connector | JST | PHR-5 | N/A | N/A |
| CN4 | +5Vout Connector | JST | PHR-2 | 2 Pins For SATA HDD Power | 1702150155 |
| CN5 | External +5VSB Power Input and PS_ON# | JST | XHP-3 | ATX Cable | 170220020B |
| CN6 | SATA Connector | Molex | 887505318 | SATA Cable | 1709070500 |
| CN7 | +12V Vin Connector | Molex | 19211-0003 | Power Cable | 170204010R |
| CN8 | LVDS Connector | HIROSE | DF13-30DS-1.25C | N/A | N/A |
| CN9 | Audio Connector | Molex | 51021-1000 | Audio Cable | 1709100254 |
| CN11 | LPC Connector | JST | SHR-12V-S-B | AAEON LPC Cable | 1703120130 |
| CN12 | COM Port #2 Connector | Molex | 51021-0900 | Serial Port Cable | 1701090150 |

| | | | | | |
|------|-------------------------------|-------|------------|---------------------|------------|
| CN13 | LPT Connector | Molex | 51110-2650 | Parallel Port Cable | 1701260200 |
| CN14 | COM Port #3 Connector | Molex | 51021-0900 | Serial Port Cable | 1701090150 |
| CN15 | COM Port #4 Connector | Molex | 51021-0900 | Serial Port Cable | 1701090150 |
| CN16 | Digital IO Connector | Molex | 51110-1050 | N/A | N/A |
| CN17 | USB Port #3 Connector | Molex | 51021-0500 | USB Cable | 1700050207 |
| CN18 | USB Port #2 Connector | Molex | 51021-0500 | USB Cable | 1700050207 |
| CN22 | PS/2 KB/MS Connector | JST | PHDR-06VS | PS/2 KB/MS Cable | 1700060152 |
| CN23 | Touch Screen Connector | JST | SHR-9V-S-B | N/A | N/A |
| CN24 | CPU Fan Connector | Molex | 22-01-2035 | N/A | N/A |
| CN31 | External RTC Connector | Molex | 51021-0200 | Battery Cable | 175011901M |
| CN1 | External AUX Power and PS_ON# | JST | PHR-6 | N/A | N/A |
| CN3 | LVDS Inverter Connector | JST | PHR-5 | N/A | N/A |
| CN4 | +5Vout Connector | JST | PHR-2 | 2 Pins For SATA HDD | 1702150155 |

| | | | | | |
|-----|--|-----|-------|--------------|------------|
| | | | | Power | |
| CN5 | External +5VSB Power Input and PS_ON# | JST | XHP-3 | ATX Cable | 170220020B |

Appendix D

Electrical Specifications for I/O Ports

D.1 Electrical Specifications for I/O Ports

| I/O | Reference | Signal Name | Rate Output |
|--|-----------|------------------|----------------------------|
| LVDS Port Inverter / Backlight Connector | CN3 | +5V/+12V | +5V/1.5A or +12V/1.5A |
| +5V Output for SATA HDD | CN4 | +5V | +5V/1A |
| LVDS Port | CN8 | +3.3V/+5V | +3.3V/2A or +5V/2A |
| Audio I/O Port | CN9 | +5V | +5V/1A |
| Mini-Card Slot (Half-Mini Card) | CN10 | +3.3VSB +1.5V | +3.3V/1.1A +1.5V/0.375A |
| LPC Port | CN11 | +3.3V | +3.3V/0.5A |
| COM Port 2 | CN12 | +5V/+12V | +5V/1A or +12V/1A |
| COM Port 3 | CN14 | +5V/+12V | +5V/1A or +12V/1A |
| Digital IO Port | CN16 | +5V | +5V/1A |
| USB 2.0 Ports 3 | CN17 | +5VSB | +5V/0.5A (per channel) |
| USB 2.0 Ports 2 | CN18 | +5VSB | |

| | | | |
|---|------|------------------|----------------------------|
| PS/2 Keyboard/Mouse Combo Port | CN22 | +5VSB | +5V/1A |
| CPU FAN | CN24 | +12V | +12V/0.5A |
| USB Ports 0 and 1 | CN25 | +5VSB | +5V/1A (per channel) |
| HDMI Port | CN29 | +5V | +5V/1A |
| VGA Port | CN30 | +5V | +5V/1A (reserved) |
| CFast Slot | CN33 | +3.3V | +3.3V/0.5A |
| Mini-Card Slot (Full-Mini Card) | CN37 | +3.3VSB +1.5V | +3.3V/1.1A +1.5V/0.375A |
| LVDS Port Inverter / Backlight Connector | CN3 | +5V/+12V | +5V/1.5A or +12V/1.5A |
| +5V Output for SATA HDD | CN4 | +5V | +5V/1A |
| LVDS Port | CN8 | +3.3V/+5V | +3.3V/2A or +5V/2A |