

## Embedded Computing

Embedded Computing Platforms for Industrial and Commercial Applications

## LEC-7338 User Manual

Version: 1.0

Date of Release: 2018-03-28

## Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:



**Note:** This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.



**Warning:** This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

## Online Resources

The listed websites are links to the on-line product information and technical support.

Resources	URL
Lanner	<a href="http://www.lannerinc.com">http://www.lannerinc.com</a>
Product Resource	<a href="http://www.lannerinc.com/download-center">http://www.lannerinc.com/download-center</a>
RMA	<a href="http://eRMA.lannerinc.com">http://eRMA.lannerinc.com</a>

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# Compliances and Certification

## CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

## FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

## Safety Guidelines

Follow these guidelines to ensure general safety:

- ▶ Keep the chassis area clear and dust-free during and after installation.
- ▶ Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- ▶ Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- ▶ Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- ▶ Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- ▶ Do not work alone if potentially hazardous conditions exist.
- ▶ Never assume that power is disconnected from a circuit; always check the circuit.

### **Lithium Battery Caution:**

- ▶ Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- ▶ Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.
- ▶ Do not carry the handle of power supplies when moving to another place.
- ▶ The machine can only be used in a fixed location such as labs or computer facilities.

### **Operating Safety**

- ▶ Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- ▶ Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- ▶ Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- ▶ Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- ▶ Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

### **Mounting Installation Precaution**

#### **Environment:**

- ▶ Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- ▶ If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.
- ▶ Installation of the equipment (especially in a rack) should consider the ventilation of the system's intake (for taking chilled air) and exhaust (for emitting hot air) openings so that the amount of air flow required for safe operation of the equipment is not compromised.
- ▶ To avoid a hazardous load condition, be sure the mechanical loading is even when mounting.
- ▶ Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

- ▶ Reliable earthing should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
- ▶ Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the unit or use of inappropriate installation components.

#### **Installation & Operation:**

- ▶ The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- ▶ Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.

## **Consignes de sécurité**

Suivez ces consignes pour assurer la sécurité générale :

- ▶ Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- ▶ Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- ▶ Portez des lunettes de sécurité pour protéger vos yeux.
- ▶ N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- ▶ Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- ▶ Ne travaillez pas seul si des conditions dangereuses sont présentes.
- ▶ Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

## **Avertissement concernant la pile au lithium**

- ▶ Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- ▶ Jetez les piles usagées conformément aux instructions.
- ▶ L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- ▶ Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.
- ▶ La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

## Sécurité de fonctionnement

L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.

- ▶ Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- ▶ Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- ▶ Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- ▶ Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

## Consignes de sécurité électrique

- ▶ Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- ▶ Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- ▶ Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.
- ▶ Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm<sup>2</sup> ou 10 AWG.

# Revision History

Version	Date	Descriptions
1.0	2018/03/28	1 <sup>st</sup> Official Release

## Table of Contents

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### **Chapter 1: Product Overview ..... 10**

Package Content.....	10
Ordering Information .....	10
System Specifications .....	11
Front Panel .....	13
Rear Panel.....	14

### **Chapter 2: Motherboard Information ..... 15**

Block Diagram.....	15
Motherboard Layout .....	17
Internal Jumper & Connectors .....	18

### **Chapter 3: Hardware Setup ..... 21**

Opening the Chassis .....	21
Installing the System Memory.....	23
Installing the mSATA.....	24
Installing the 3G Supported Module .....	25
Installing Disk Drive(s) .....	26

### **Chapter 4: BIOS Setup ..... 27**

Enter BIOS Setup .....	27
Main.....	28
Advanced Setup.....	29
Chipset.....	43
Security .....	46
Boot Menu.....	47



Save and Exit Menu .....	48
<b>Appendix A: LED Indicator Explanations .....</b>	<b>49</b>
<b>Appendix B: Programming Watchdog Timer.....</b>	<b>51</b>
<b>Appendix C: Installing Intel® LAN Controller Driver for Linux.....</b>	<b>52</b>
<b>Appendix D: Terms and Conditions.....</b>	<b>53</b>
Warranty Policy .....	53
RMA Service.....	53
RMA Service Request Form .....	54

# CHAPTER 1: PRODUCT OVERVIEW

LEC-7338 is a cost effective embedded system which adopts Intel Bay trail CPU to provide a high performance with low power consumption structure and featured with 8-port PoE (power over Ethernet) Ethernet switch. LEC-7338, a compact design supports many integrated multimedia and IO features such a video, network, serial communication, PoE, especially for Network Video Recorder physical security applications.

- On board Intel Bay trail-D J1900 CPU
- 1x DDR3L SO-DIMM support up to 8GB
- 2x 10/100/1000Mbps Ethernet ports
- 8x 10/100Mbps PoE Ethernet switch ports
- 1x USB3.0, 2x USB 2.0
- 2x mini-PCIe for standard full size module (1 with SIM card reader, 1 for mSATA\_SATA2.0)
- 2x SATA 2.5" storage bay support Raid 0 & 1
- Support 48V<sub>DC</sub> power input

## Package Content

Your package contains the following items:

- ▶ 1x LEC-7338 Embedded Compact PC
- ▶ 1x Pack of Screws
- ▶ 1x Power Adapter + Power Cable



**Note:** If you should find any components missing or damaged, please contact your dealer immediately for assistance.

## Ordering Information

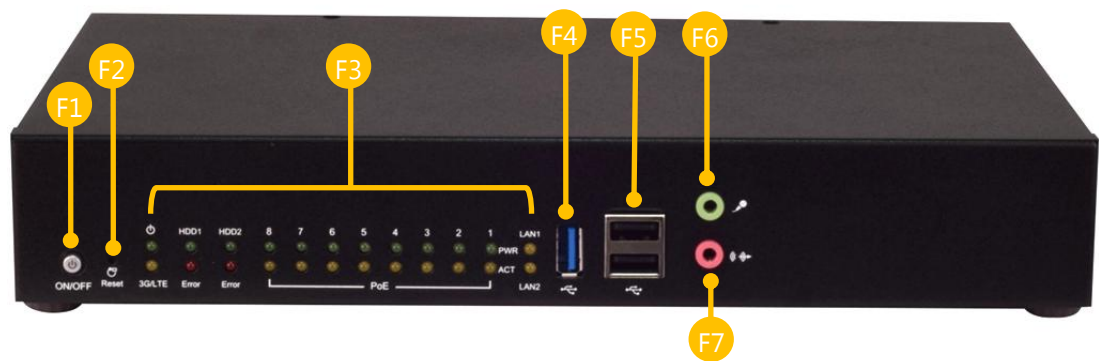
SKU No.	Specification
<b>LEC-7338 J11A</b>	J11A Compact Surveillance Platform with Intel® Celeron® J1900 (2 GHz) CPU

## System Specifications

<b>Processor System</b>	CPU	Intel® Celeron® J1900
	Frequency	2 GHz
	Core Number	4C
	BIOS	AMI 32Mbit SPI Flash BIOS
	Chipset	SOC
<b>Fanless</b>		No
<b>Memory</b>	Technology	DDR3L 1333MHz
	Max. Capacity	8GB
	Socket	1x 204-pin SODIMM
<b>Graphic</b>	Controller	Intel® HD Graphics
	HDMI	1x HDMI, 1920 x 1080
<b>Audio</b>	Realtek ALC886	Realtek ALC886
	Interface	2x Phone Jack for MIC-in and Line-out
<b>Ethernet</b>	Controller	2x Intel® i210
	Speed	10/100/1000 Mbps
	Interface	2x RJ45 + 8x RJ45 (PoE Ethernet Switch)
<b>Storage</b>	Type	SATA II
	Installation	1x mSATA (mini-PCIe slot)
	Type	SATA II
	Installation	2x 2.5" HDD/SSD Drive Bay (RAID 0/1) HDD/SSD Thickness: 2x 11mm or 1x 16mm
<b>I/O</b>	Serial Port	2x RS-232/485, DB9 Male
	Digital I/O	8x DI, 8x DO with +5V TTL
	USB 2.0	2x Type A
	USB 3.0	1x Type A
	Power-On/ Reset Button	1x Power On/Off, 1x Reset
	Remote Power Switch	-
	LED	Power/Storage Access/3G
<b>Expansion Interface</b>	Mini-PCIe	1x Full-sized Socket with SIM Card Reader
<b>Watchdog Timer</b>		1~255 Level Time Interval System Reset, Software Programmable
<b>Power</b>	Power Type	ATX
	Power Supply Voltage	+48 VDC
	Connector	2-pin Terminal Block

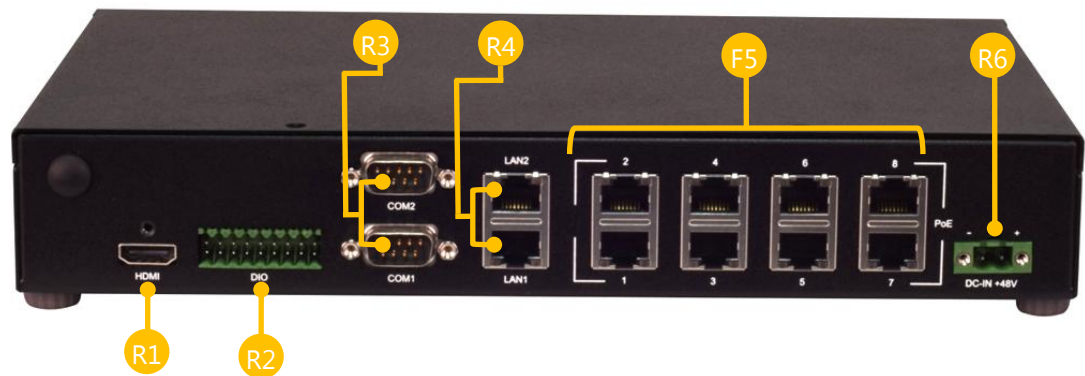
	Power Consumption (Idle)	TBD
	Power Consumption (Full Load)	TBD
<b>Environment</b>	Operating Temperature	0°C to 50°C
	Storage Temperature	-20°C to 70°C
	Relative Humidity	5% to 95%, non-condensing
	Vibration	IEC 60068-2-64, 0.5Grms, random 5 ~500 Hz, 40 mins/axis
<b>Mechanical</b>	Dimension (W x H x D)	272 x 44 x 164.4 mm
	Construction	SGCC
	Weight	TBD
	Mounting	Stand, Wallmount, VESA
<b>Driver Support</b>	Microsoft Windows	WES7, Win 7 Pro FES, WE 8.1 Industry Pro, Win 10 IoT
	Linux	Linux Kernel 3.12
<b>Certification</b>	EMC	CE,FCC Class A

Front Panel



No. Description		
F1	Power Button	1x Power button with LED
F2	Reset Button	Software reset
F3	LED Indicators	<div><div>System Power</div><div>HDD Status</div><div>PoE Status</div><div>3G /WWAN Data Link</div><div>HDD Error</div><div>PoE</div><div>Data Link Activity</div><div>LAN Port Status</div></div>
F4	USB Port	1x USB 3.0 port
F5	USB Port	2x USB 2.0 port
F6	Mic-in	Supported by Realtek ALC886-GR High Definition Audio
F7	Line-out	Supported by Realtek ALC886-GR High Definition Audio

## Rear Panel

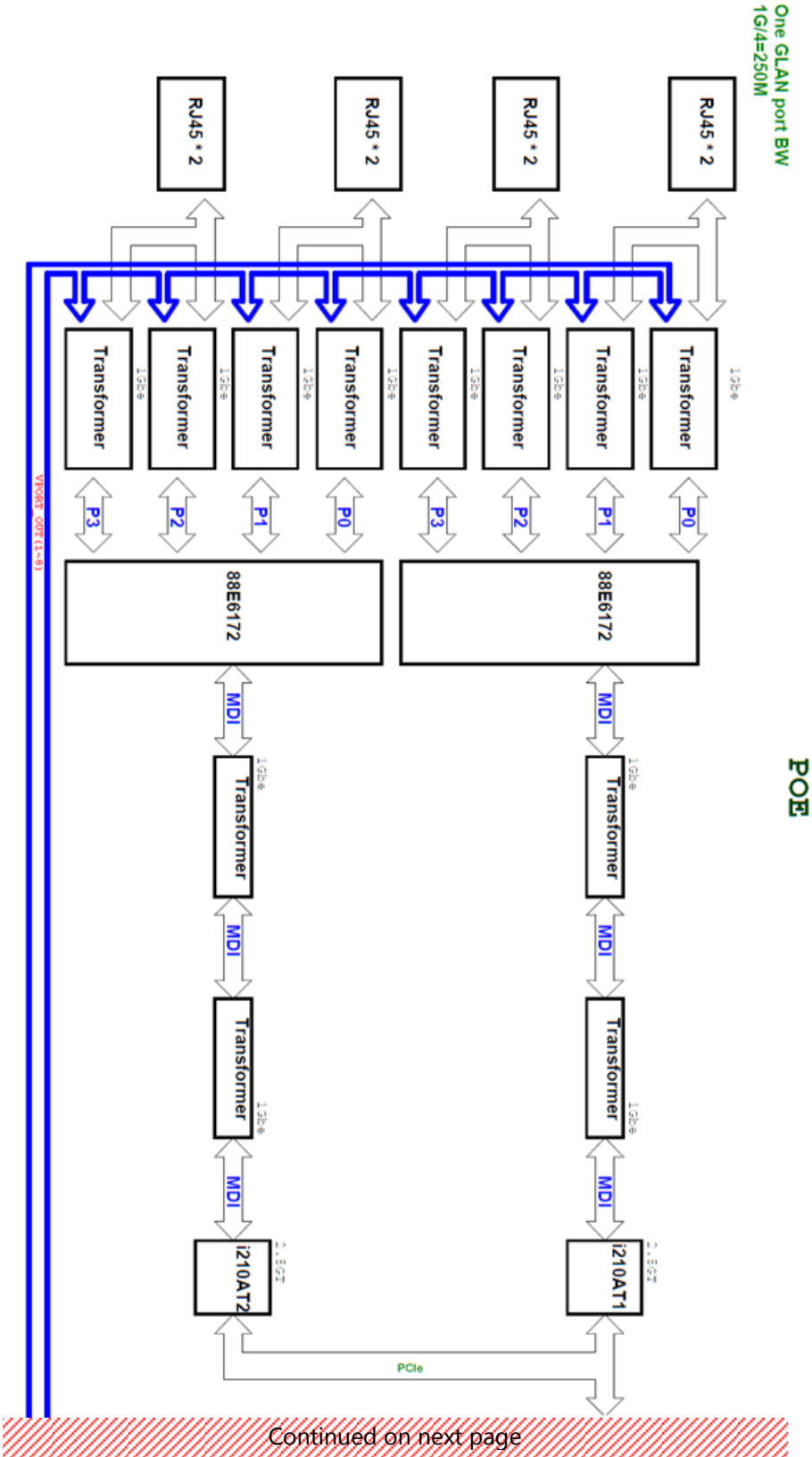


No.	Description	
R1	HDMI Port	1x HDMI Connector
R2	Digital IO	1x 18-pin terminal block for 8DI/8DO
R3	COM Port	2x DB9 (Male connector supporting RS232/485)
R4	Ethernet Port	2x RJ-45 of 10/100/1000Mbps Ethernet ports
R5	PoE Port	8x RJ-45 of 10/100Mbps PoE Ethernet Switch ports
R6	Power Input	1x 2pin terminal block for +48V DC input

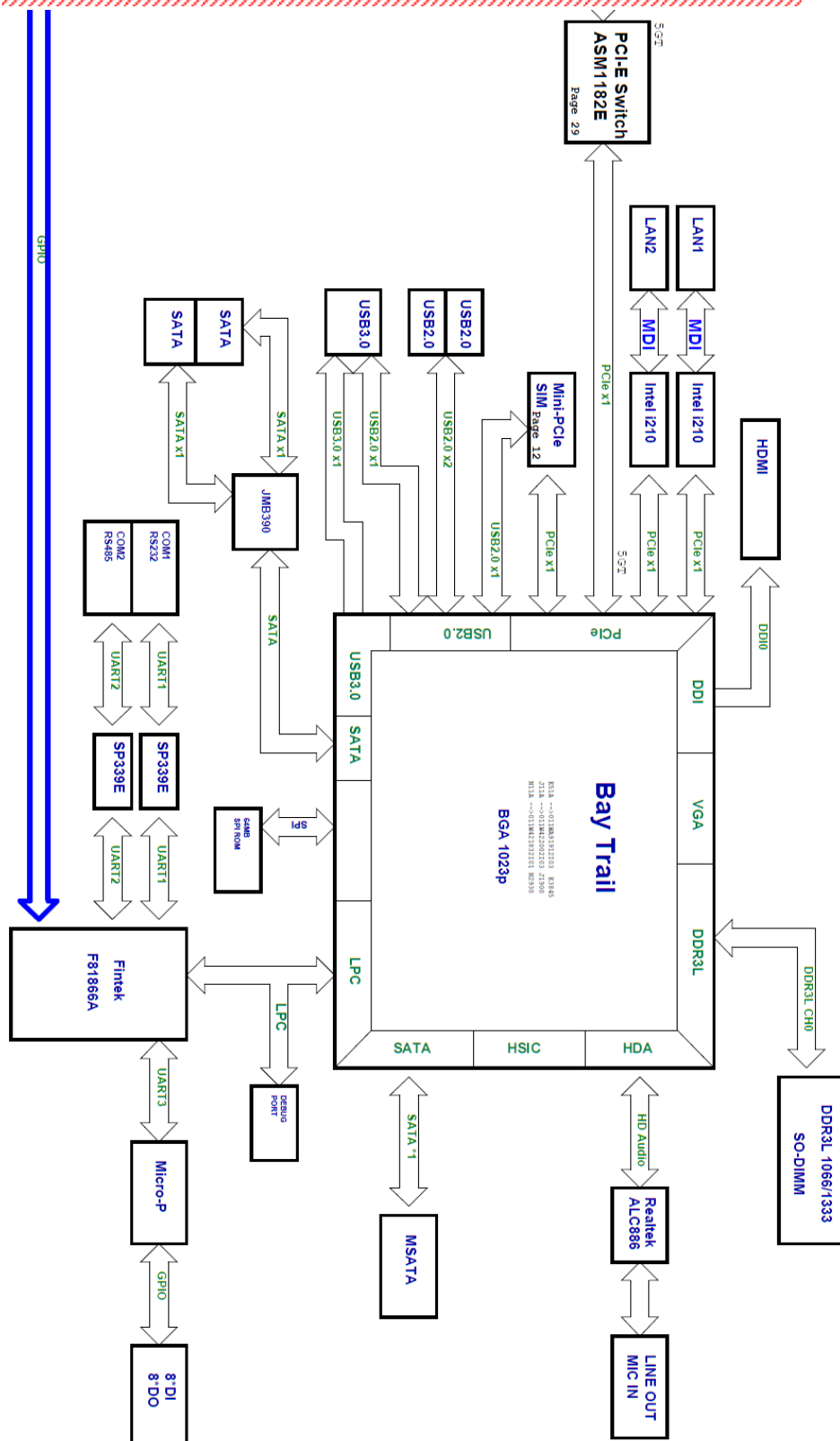
# CHAPTER 2: MOTHERBOARD INFORMATION

## Block Diagram

The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard’s layout design.



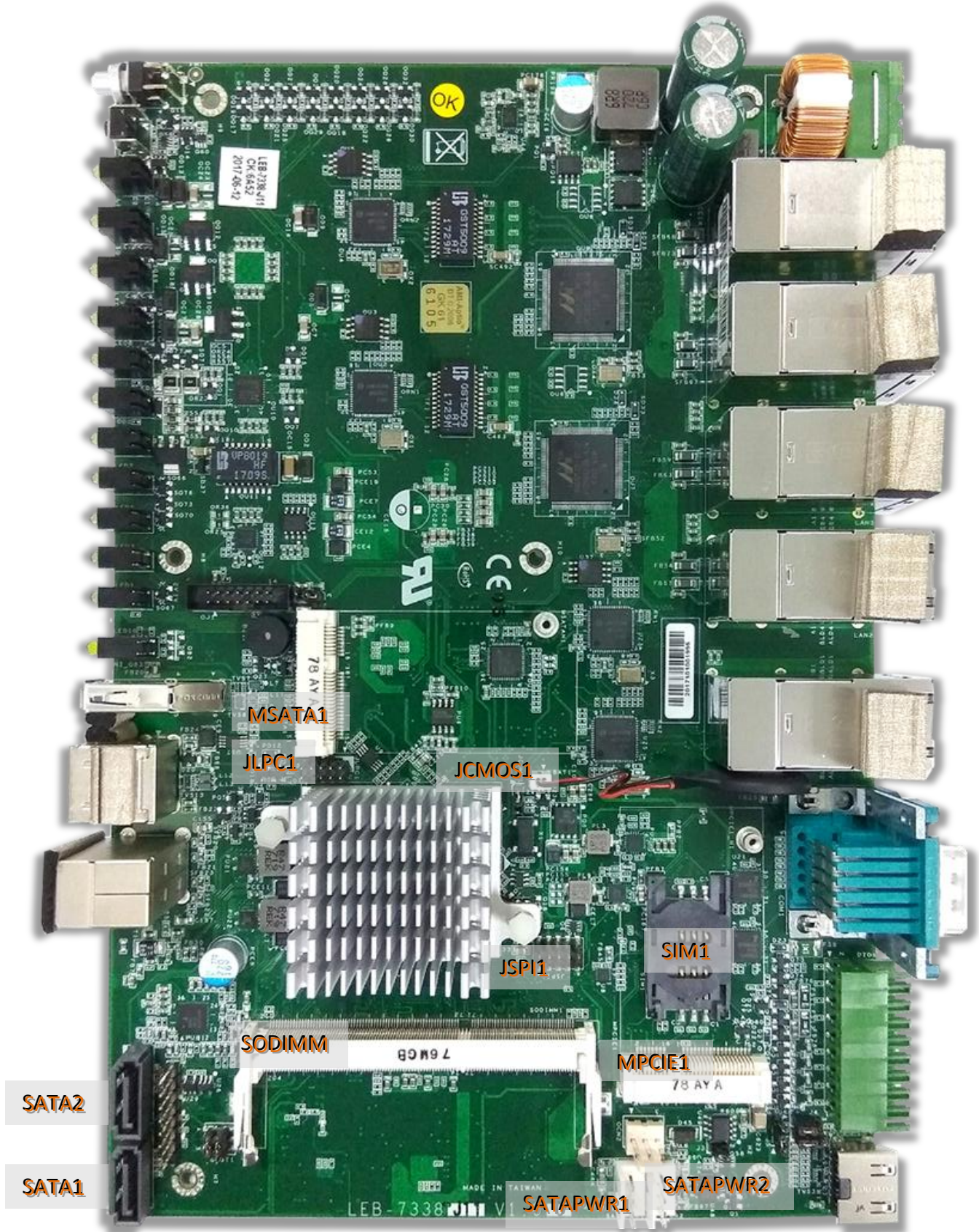
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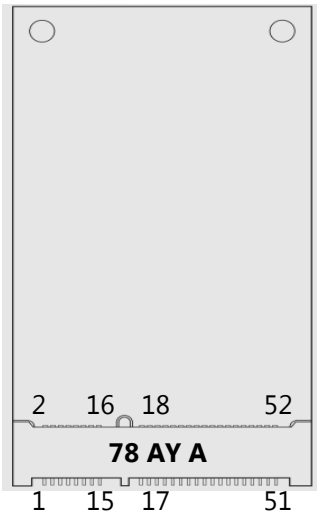
## Motherboard Layout

The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



# Internal Jumper & Connectors

**MPCIE1:** Mini-PCIe socket with SIM card reader

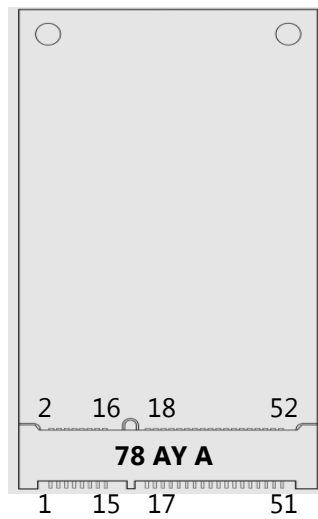


Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	N.C	2	+3.3V	3	N.C	4	GND
5	N.C	6	+1.5V	7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA	11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET	15	GND	16	N.C
17	N.C	18	GND	19	N.C	20	W_DISABLE#
21	GND	22	PERST#	23	PERn0	24	+3.3V
25	PERp0	26	GND	27	GND	28	+1.5V
29	GND	30	N.C	31	PETn0	32	N.C
33	PETp0	34	GND	35	GND	36	USB_D-
37	GND	38	USB_D+	39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN	43	GND	44	LED_WLAN#
45	N.C	46	N.C	47	N.C	48	+1.5V
49	N.C	50	GND	51	N.C	52	+3.3V

**SIM1**

Pin	Description	Pin	Description
C1	UIM_PWR	C5	GND
C2	UIM_RST#	C6	UIM_VPP
C3	UIM_CLK	C7	UIM_DATA

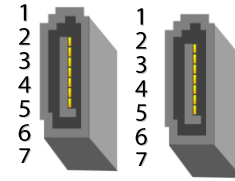


**MSATA1:** MSATA Slot (Full Size)

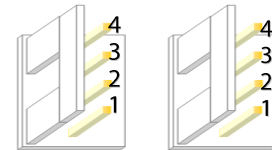
Pin	Description	Pin	Description	Pin	Description	Pin	Description
<b>1</b>	N.C	<b>2</b>	+3.3V	<b>3</b>	N.C	<b>4</b>	GND
<b>5</b>	N.C	<b>6</b>	N.C	<b>7</b>	N.C	<b>8</b>	N.C
<b>9</b>	GND	<b>10</b>	N.C	<b>11</b>	N.C	<b>12</b>	N.C
<b>13</b>	N.C	<b>14</b>	N.C	<b>15</b>	GND	<b>16</b>	N.C
<b>17</b>	N.C	<b>18</b>	GND	<b>19</b>	N.C	<b>20</b>	N.C
<b>21</b>	GND	<b>22</b>	N.C	<b>23</b>	SATA_RXp	<b>24</b>	+3.3V
<b>25</b>	SATA_RXn	<b>26</b>	GND	<b>27</b>	GND	<b>28</b>	N.C
<b>29</b>	GND	<b>30</b>	N.C	<b>31</b>	SATA_TXn	<b>32</b>	N.C
<b>33</b>	SATA_TXp	<b>34</b>	GND	<b>35</b>	GND	<b>36</b>	N.C
<b>37</b>	GND	<b>38</b>	N.C	<b>39</b>	+3.3V	<b>40</b>	GND
<b>41</b>	+3.3V	<b>42</b>	N.C	<b>43</b>	GND	<b>44</b>	N.C
<b>45</b>	N.C	<b>46</b>	N.C	<b>47</b>	N.C	<b>48</b>	N.C
<b>49</b>	N.C	<b>50</b>	GND	<b>51</b>	N.C	<b>52</b>	+3.3V

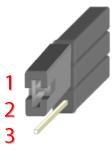
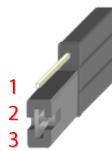
**SATA1&2:**

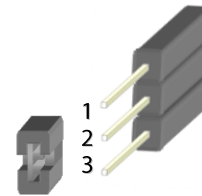
Pin	Description	Pin	Description
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

**SATAPWR1&2:**

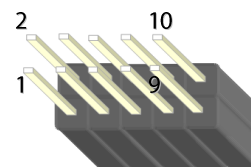
Pin	Description	Pin	Description
1	+12V	2	GND
3	GND	4	+5V

**JCMOS1:**

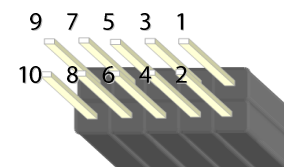
Setting	Description	Setting	Description
	1-2: Normal (Default)		2-3: Clear CMOS

**JSPI1:**

Pin	Description	Pin	Description
1	HOLD#	2	NC
3	CS#	4	VCC
5	MISO	6	NC
7	NC	8	CLK
9	GND	10	MOSI

**JLPC1:**

Pin	Description	Pin	Description
1	LPC_CLK	2	LAD1
3	PLTRST	4	LAD0
5	LFRAME#	6	3.3V
7	LAD3	8	N.C
9	LAD2	10	GND



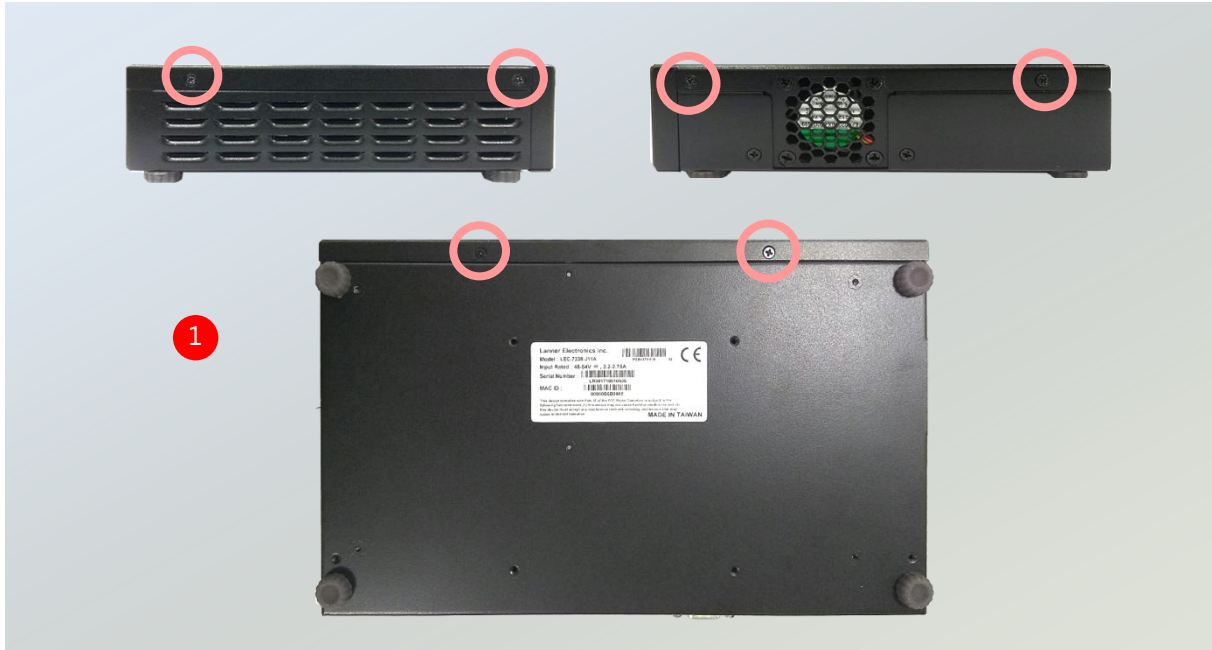


## CHAPTER 3: HARDWARE SETUP

To reduce the risk of personal injury, electric shock, or damage to the unit, please remove all power connections to completely shut down the device. Also, please wear ESD protection gloves when conducting the steps in this chapter.

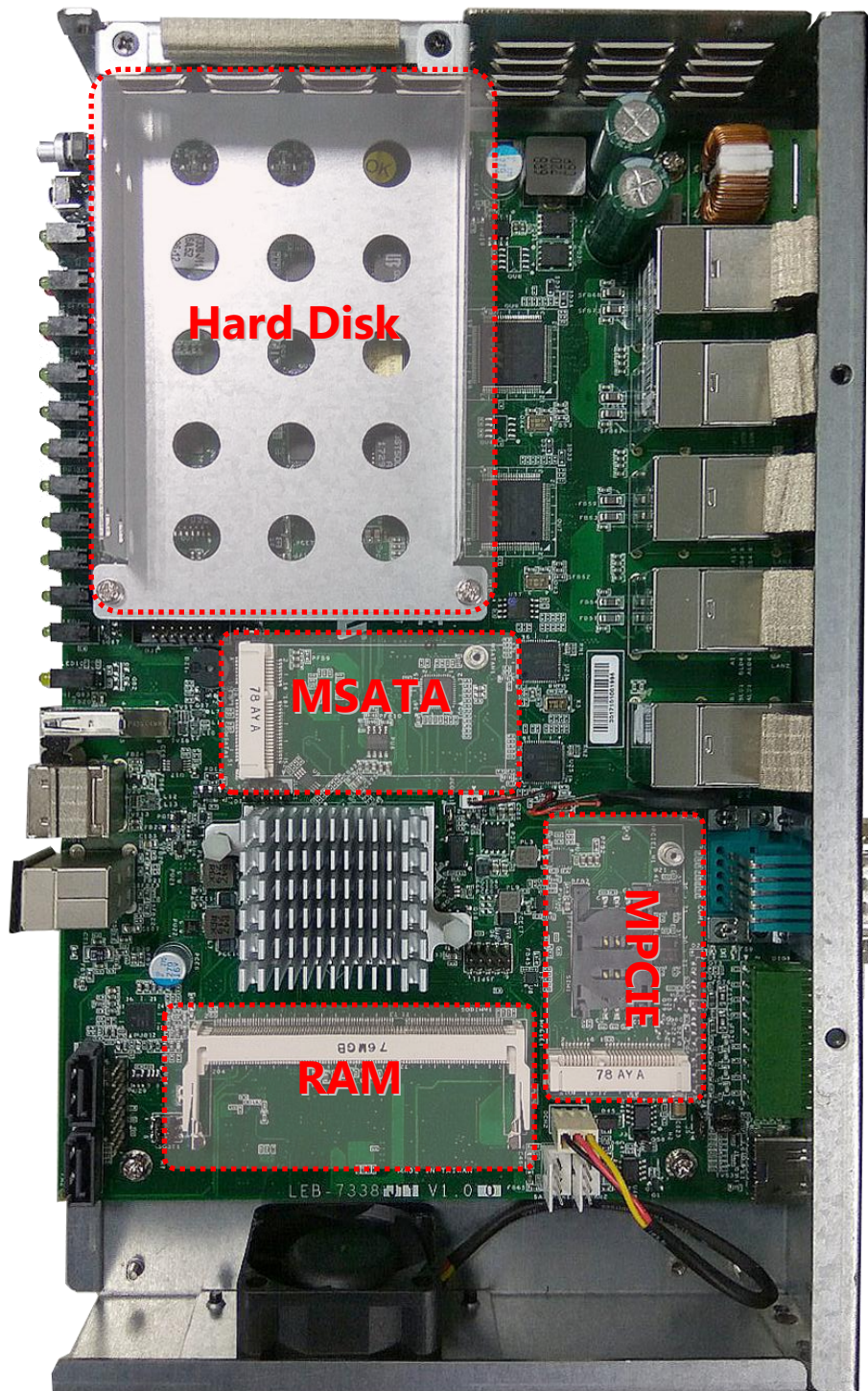
### Opening the Chassis

1. Unscrew the screws indicated in the picture.



2. Slide open the case and remove it.



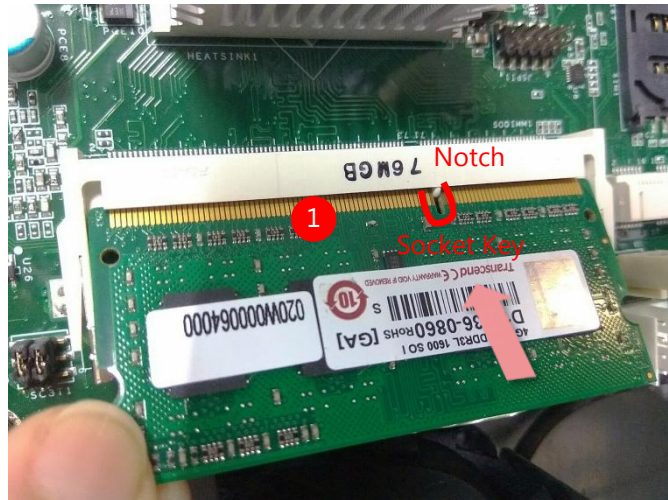




## Installing the System Memory

The motherboard supports SODIMM memory. Please follow the steps below to install the SODIMM memory modules.

1. Align the notch of the module with the socket key in the slot.



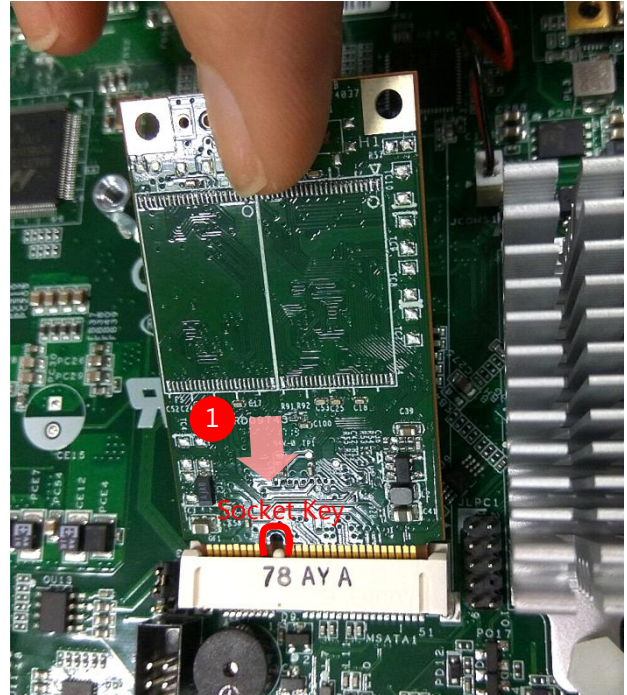
2. Press on both corners vertically until the module clicks into place.



## Installing the mSATA

The motherboard provides one mSATA slot. Follow the procedures below for installing an mSATA card.

1. Align the notch of the mSATA module with the socket key in the slot, and insert it at 30 degrees into the socket until it is fully seated in the connector.



2. Push down on the module and secure it with the screw that comes with it.

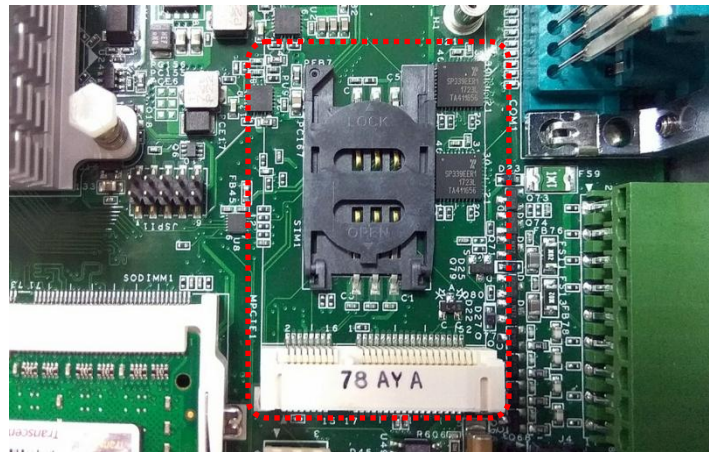




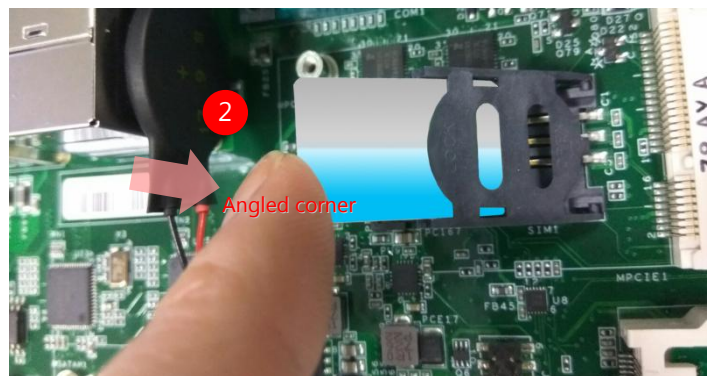
## Installing the 3G Supported Module

1. Locate MPCIE1 connector and its SIM slot.

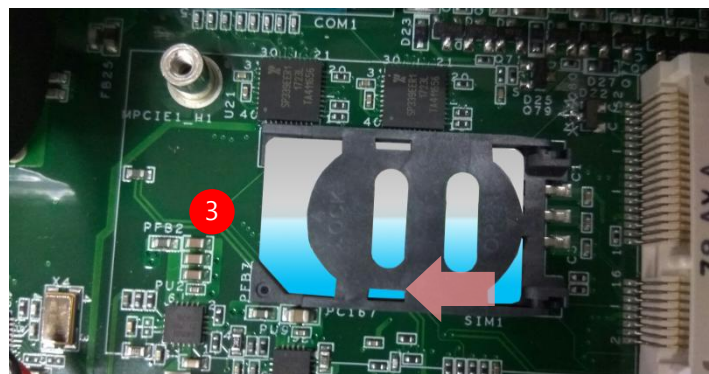
To install the SIM card: slide the socket cover open and lift it on its hinges.



2. Insert the SIM card into the slot in the cover with the gold contacts facing down, and the angled corner of the card is positioned correctly as shown in the picture.

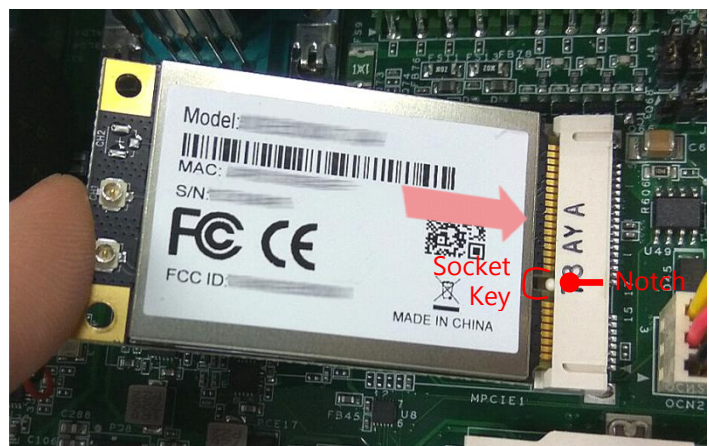


3. Push down the cover to close, and the SIM card will come in contact with the metal contacts in the socket. Finally, Slide the socket cover to the Lock position.



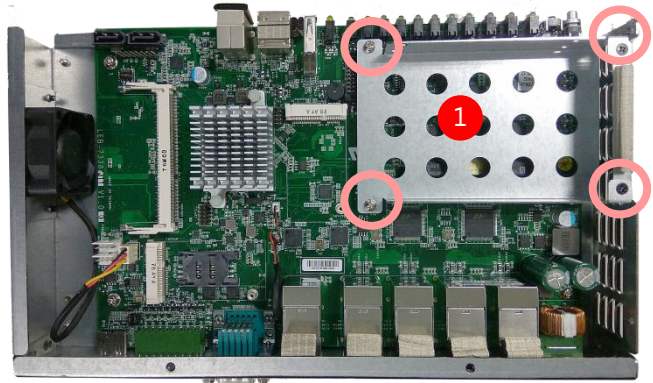
4. Align the notch of the module with the socket key in the slot, and insert it at 30 degrees into the socket until it is fully seated in the connector.

5. Push down on the module and secure it with the screw that comes with it.



## Installing Disk Drive(s)

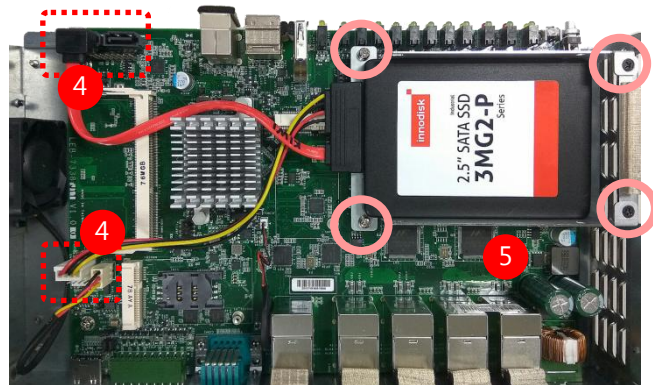
1. Disassemble the disk tray from the mother board by unscrewing the four screws shown in the picture.



2. Fix the hard disk onto the tray with provided disk screws.
3. Insert the end of the SATA cable to the SATA contacts on the disk.



4. Insert the other end of the SATA data cable to the SATA port on the motherboard and the end of the SATA power cable to the SATA power port.
5. Lock the disk tray back to the motherboard with the four screws.



## CHAPTER 4: BIOS SETUP

### Enter BIOS Setup

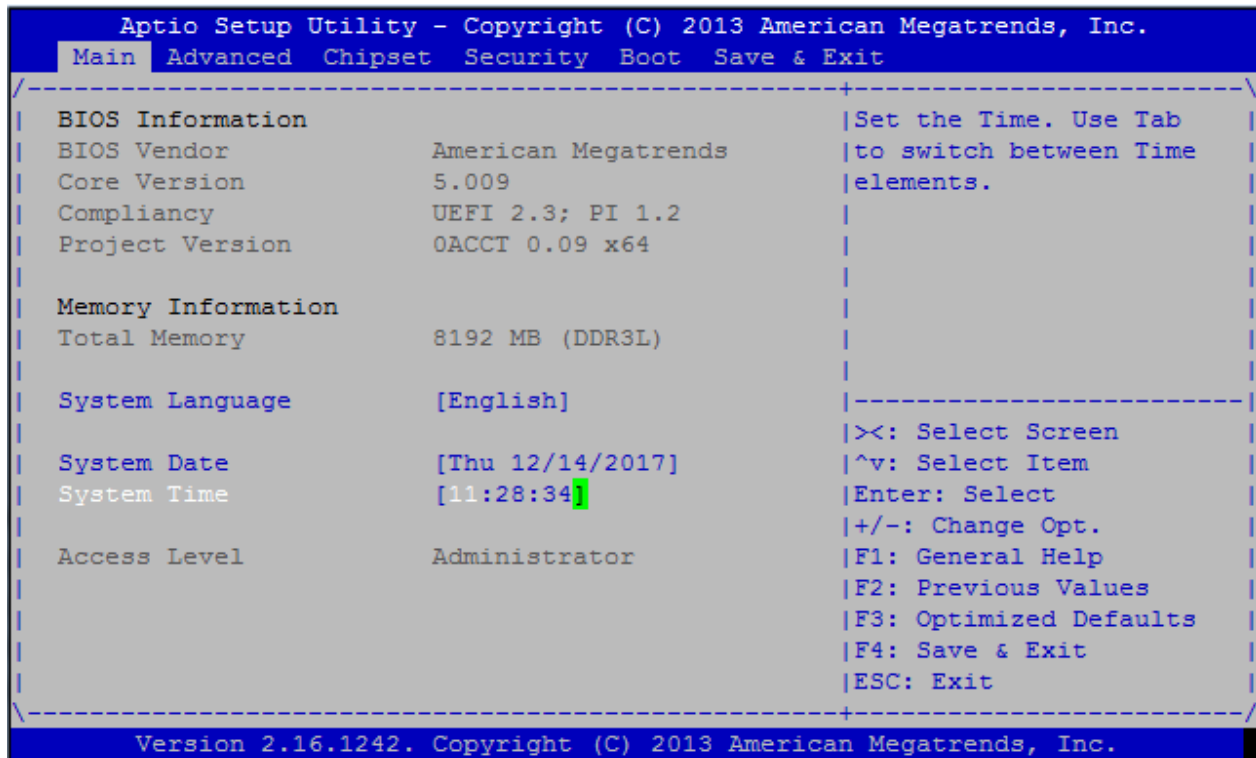
To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.
2. Pressing the **<Tab>** or **<Del>** key immediately allows you to enter the Setup utility, and then you will be directed to the BIOS main screen.
3. Instructions of BIOS navigations:

Control Keys	Description
<b>→←</b>	select a setup screen, for instance, [Main], [Advanced],[Chipset], [Boot], and [Save & Exit]
<b>↑↓</b>	select an item/option on a setup screen
<b>&lt;Enter&gt;</b>	select an item/option or enter a sub-menu
<b>+/-</b>	to adjust values for the selected setup item/option
<b>F1</b>	to display General Help screen
<b>F2</b>	To retrieve previous values, such as the parameters configured the last time you had entered BIOS.
<b>F3</b>	to load optimized default values
<b>F4</b>	to save configurations and exit BIOS
<b>&lt;Esc&gt;</b>	exit the current screen

## Main

Setup main page displays a description of BIOS information and project version information. You can also set up the System Time and System Date here.

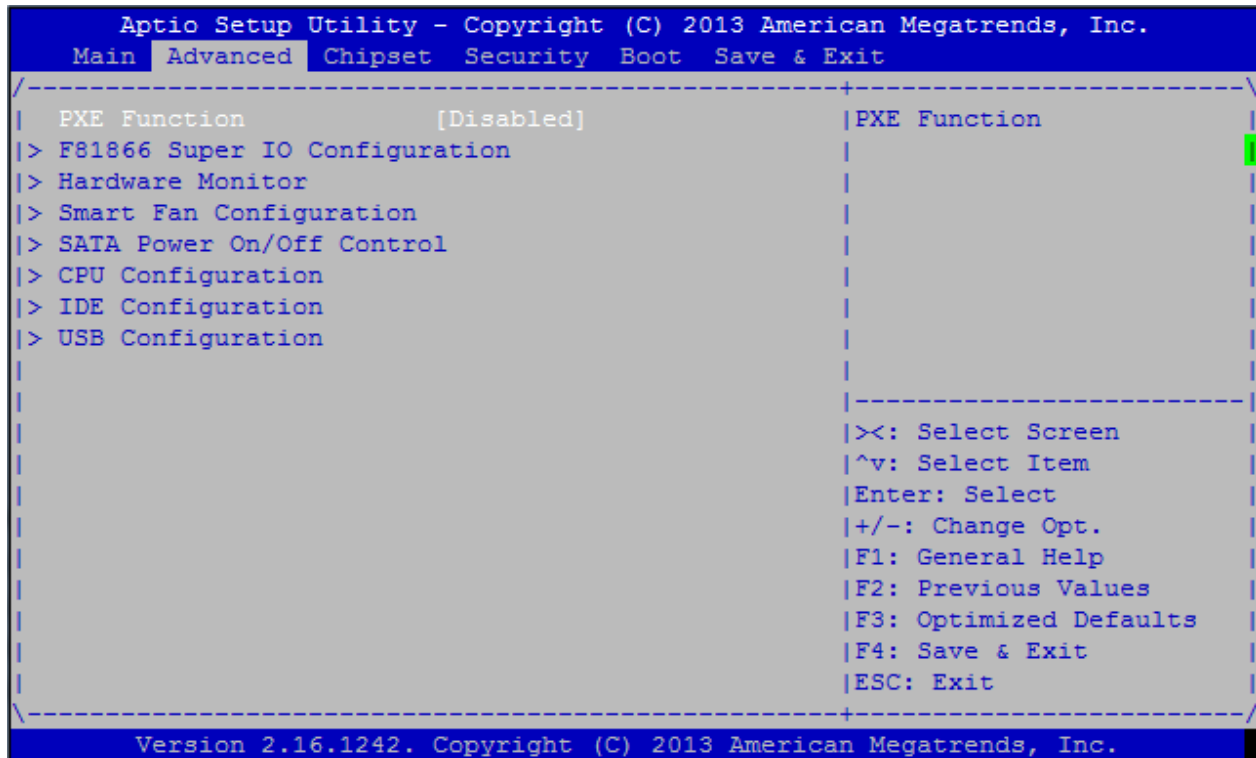


(The screenshots presented in section are for reference only)

Item	Description.
System Language	The option allows the user to set the language shown on interface
System Date	The option allows the user to set the date on the system RTC. Simply navigate to the month, day, or year and type in the correct numeric value.
System Time	The option allows the user to set the Time on the system RTC. Simply navigate to the hour, minute, or second and type in the correct numeric value.

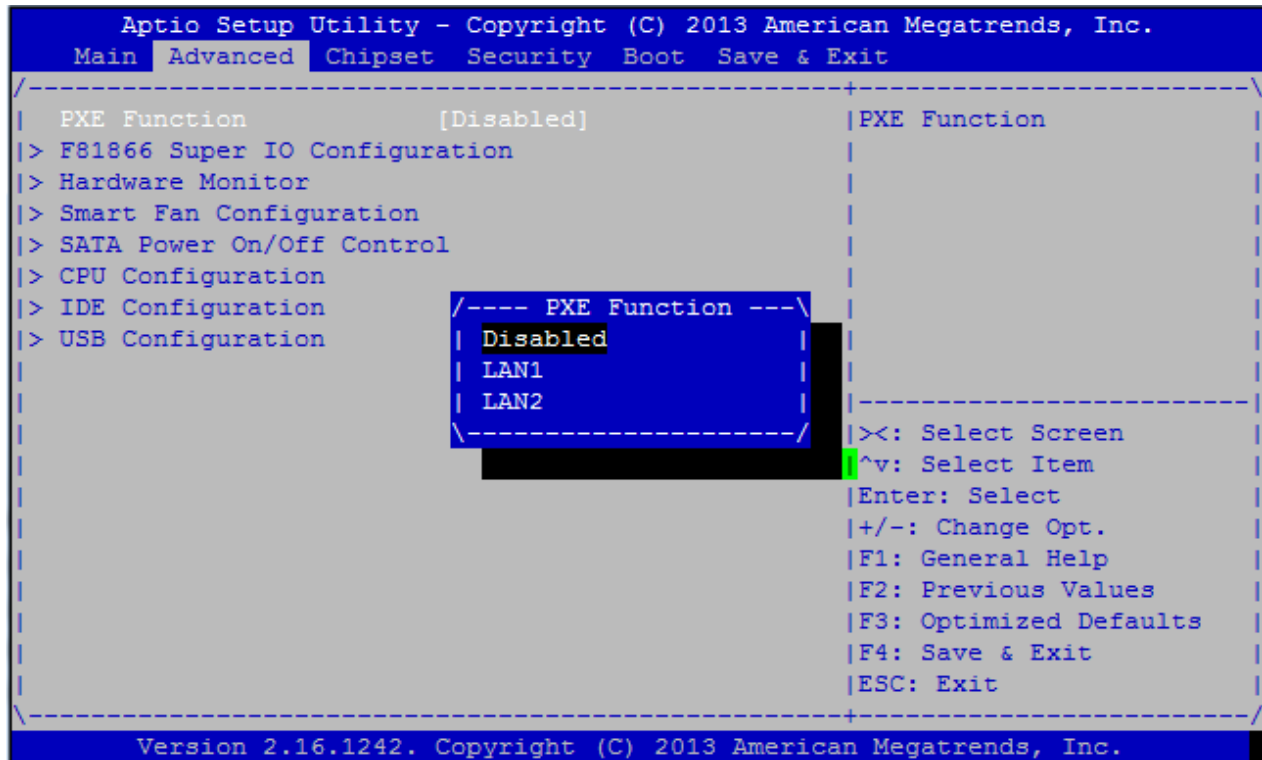
## Advanced Setup

Use [←] / [→] to select [Advanced] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.



## PXE Function

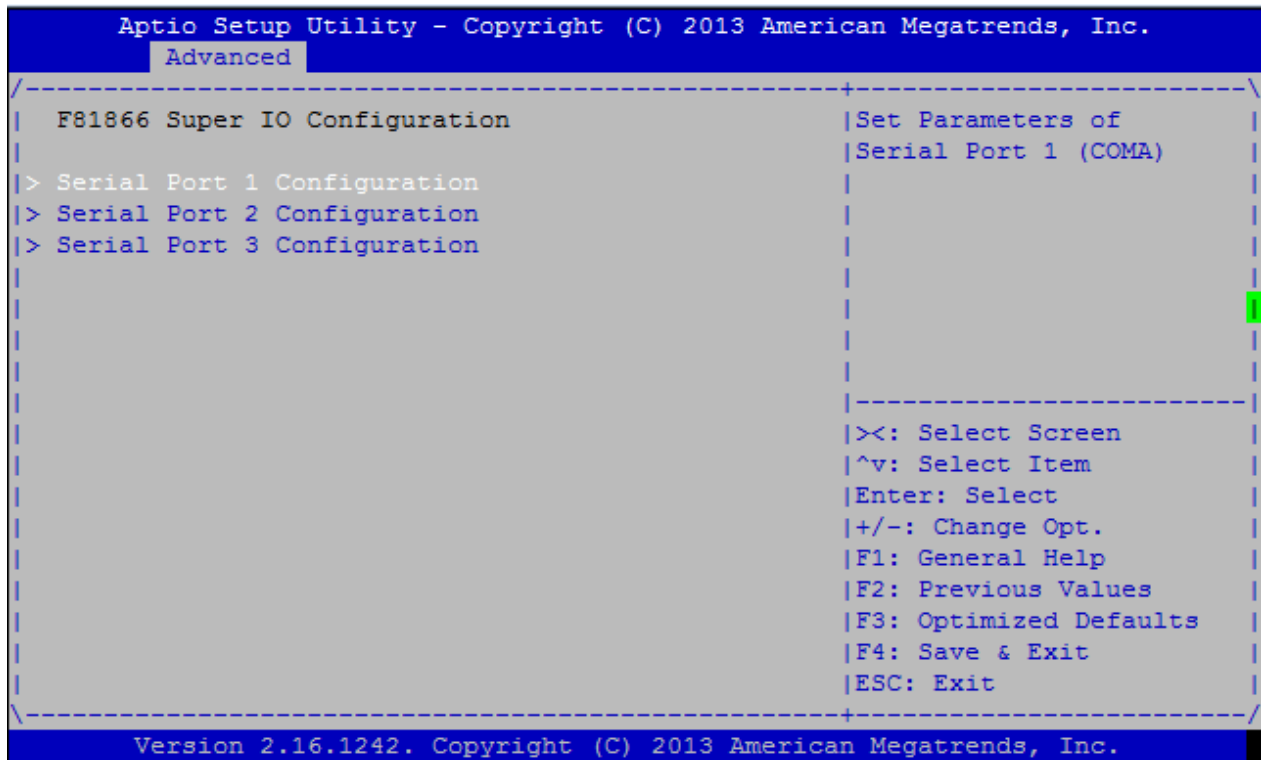
This option allows you to choose the NIC card which the system will boot from in order for a PXE (Pre-Boot Execution) reboot. Press <Enter> to access the submenu. The default is "Disabled".

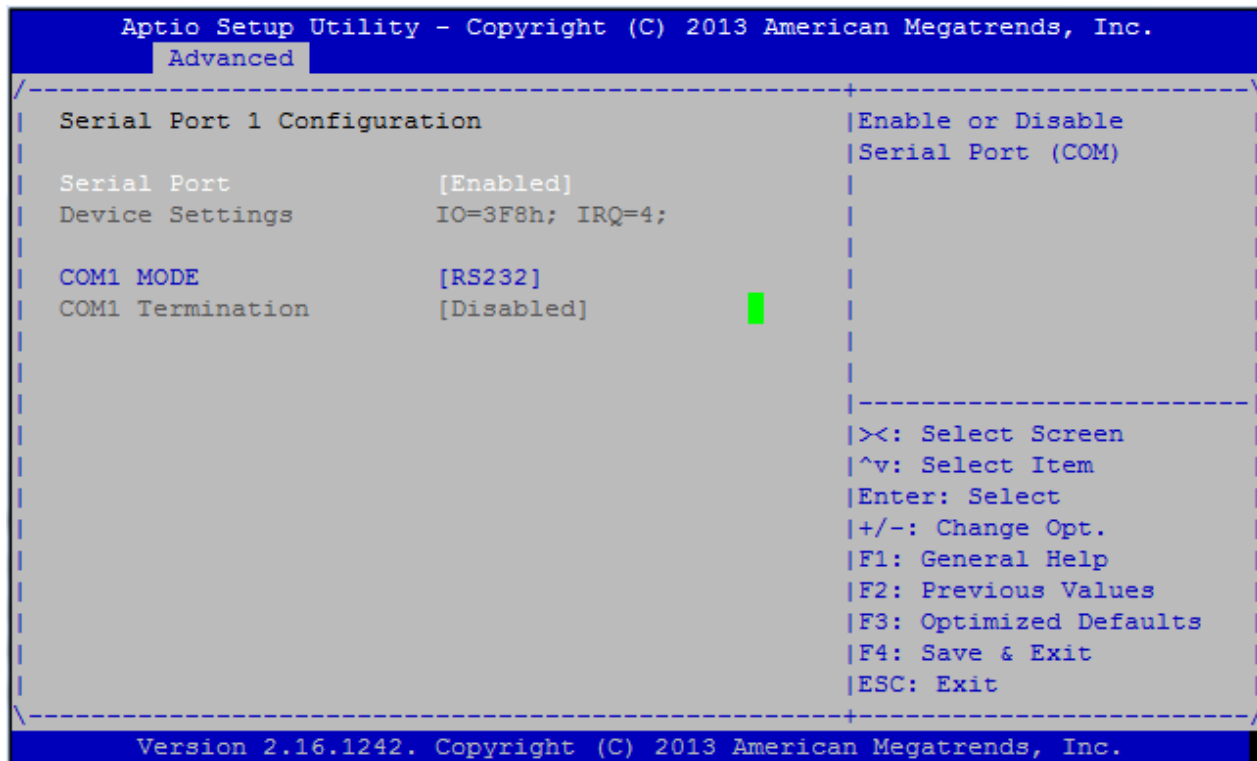




## F81886 Super IO Configuration

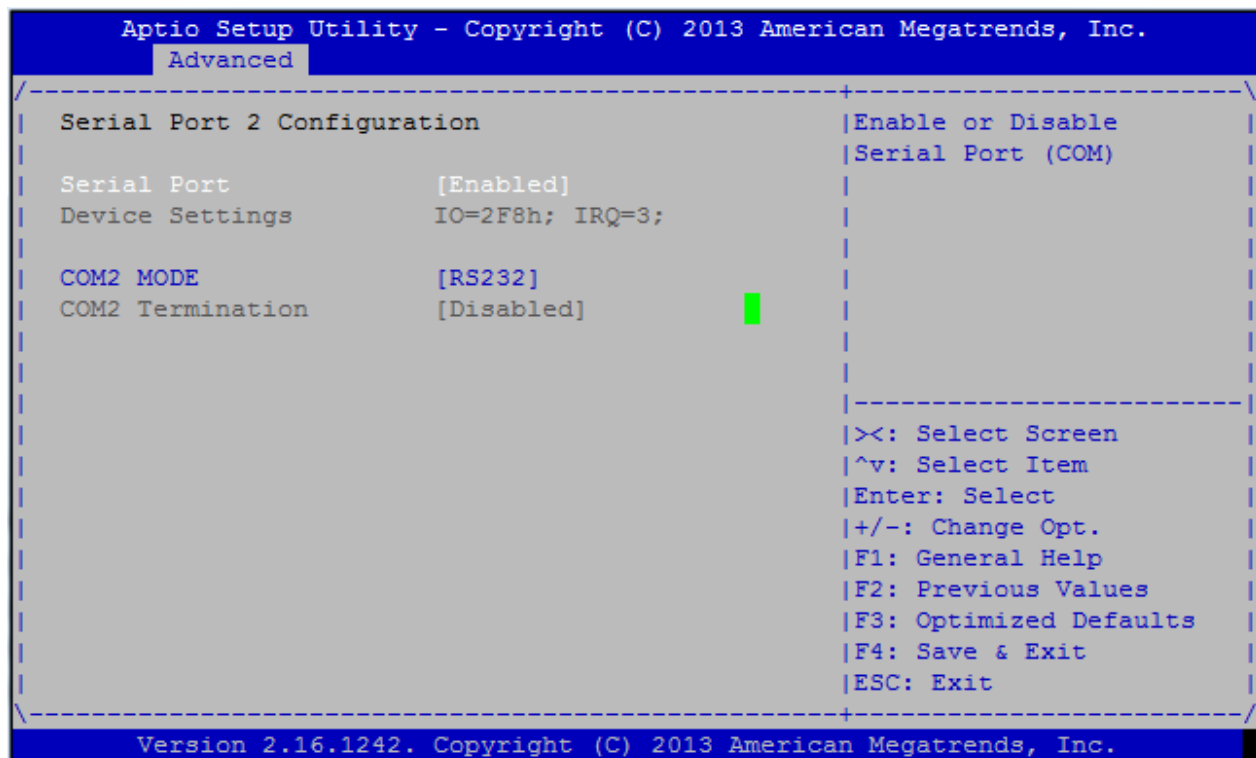
This option allows you to configure parameters about Super IO Chip. Press <Enter> to access the submenu.



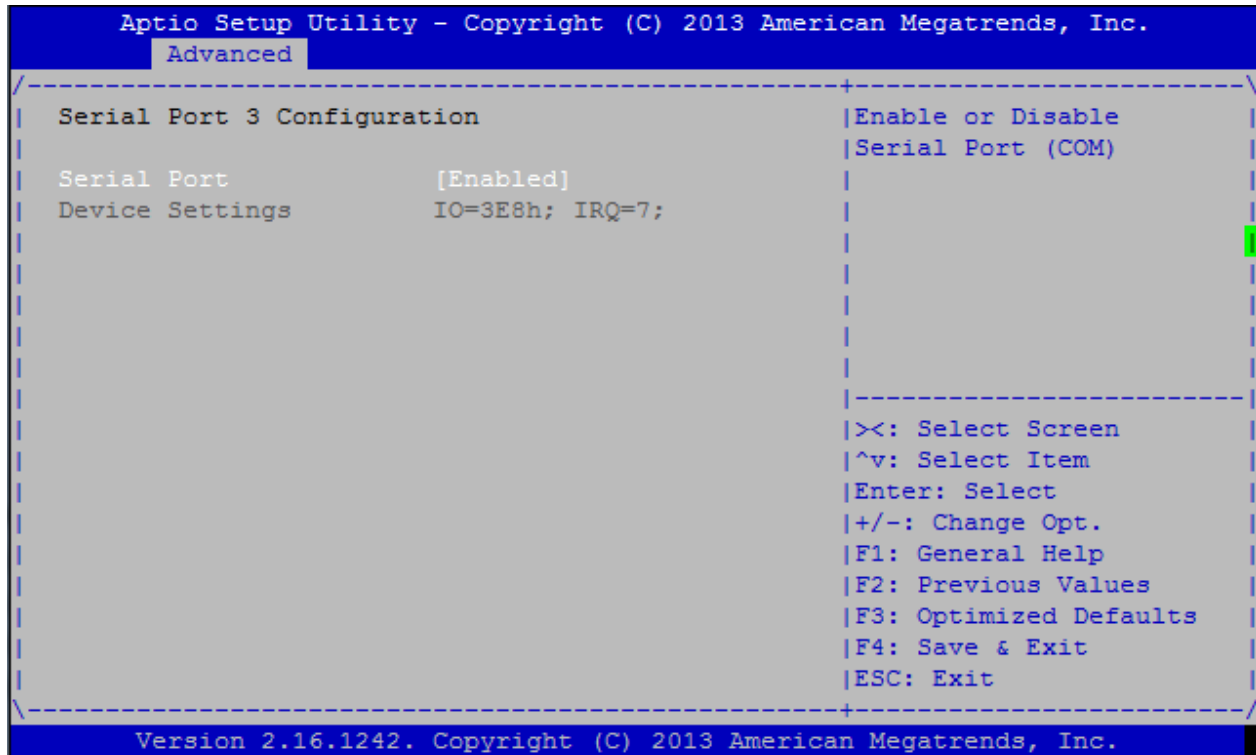
**Serial Port 1 Configuration**

Item	Value	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 1.
Device Settings	NA	IO=3F8h; IRQ= 4
COM1 MODE	RS232 RS485 RS422	Select Com Mode as <b>RS232/RS485/RS422</b> .



**Serial Port 2 Configuration**

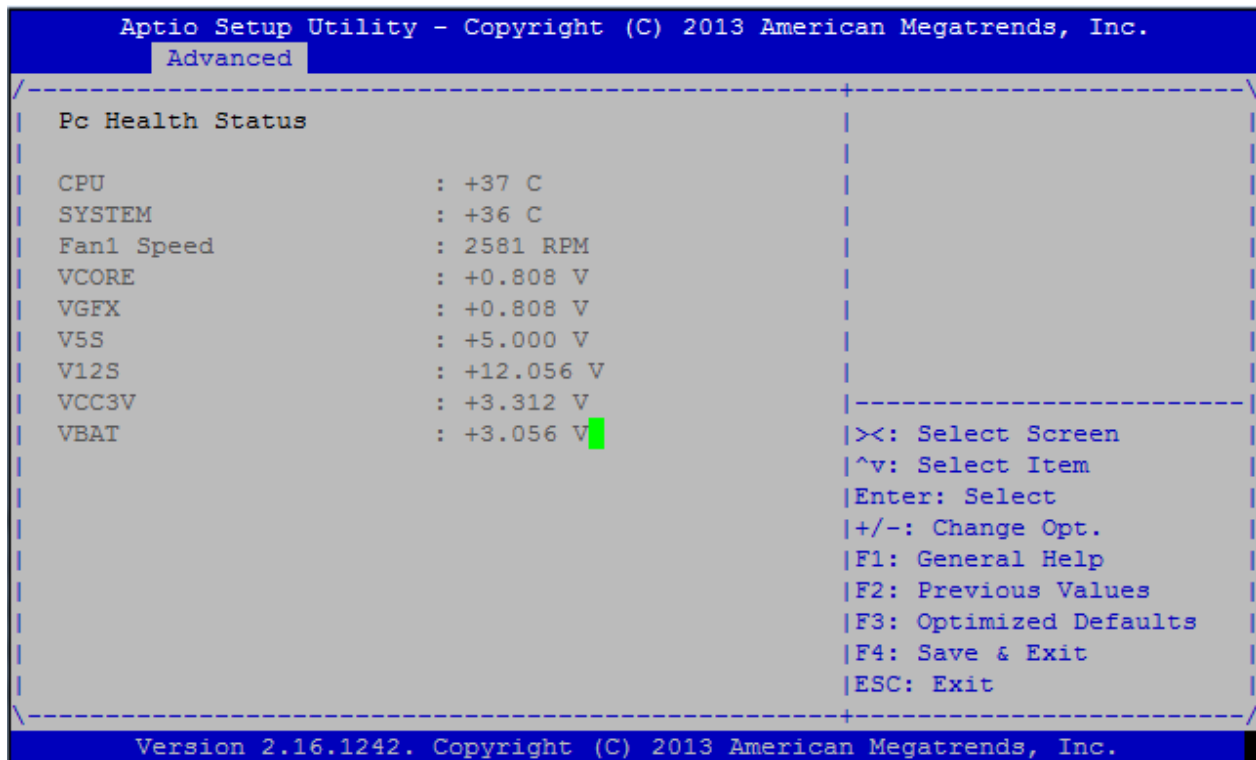
Item	Value	Description
Serial Port	<b>Enabled</b> Disabled	Enable or Disable Serial Port 2.
Device Settings	NA	IO=2F8h; IRQ=3
COM1 MODE	<b>RS232</b> RS485 RS422	Select Com Mode as <b>RS232/RS485/RS422</b> .

**Serial Port 3 Configuration**

Item	Value	Description
Serial Port	Enabled Disabled	Enable or Disable Serial Port 3.
Device Settings	NA	IO=3E8h; IRQ=7

## Pc Health Status

This option allows you to monitor the PC Health status.



## Smart Fan Configuration

This option allows you to configure smart fan related properties.

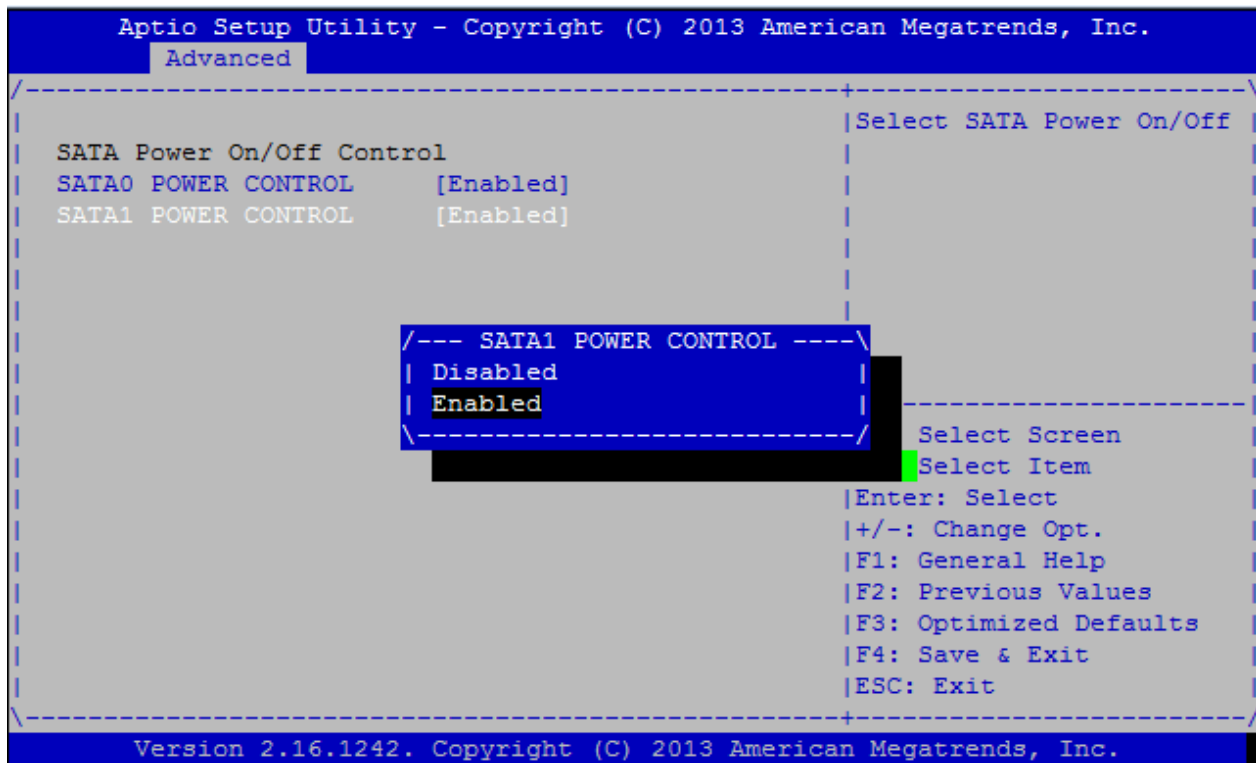
```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
  Advanced
+-----+
| Smart Fan Configuration                                | FAN Follow Temperture |
+-----+-----+
| Smart Fan Type          DAC Mode or PWM Mode         |                       | |
| SYS Smart Fan Mode      [AUTO DUTY]                  |                       |
| FAN Follow Temperture   [By SysTemp2]                 |                       |
| Target Temp T1          80                           |                       |
| Target Temp T2          /--- FAN Follow Temperture ---\ |                       |
| Target Temp T3          | By PECI                     |                       |
| Target Temp T4          | By SysTemp1                  |                       |
| FanOut-1 for over T1    | By SysTemp2                  |                       |
| FanOut-2 for over T2    |                               |                       |
| FanOut-3 for over T3    |                               |                       |
| FanOut-4 for over T4    130                             | Enter: Select        |
| FanOut-5 for under T    100                             | +/-: 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.

```

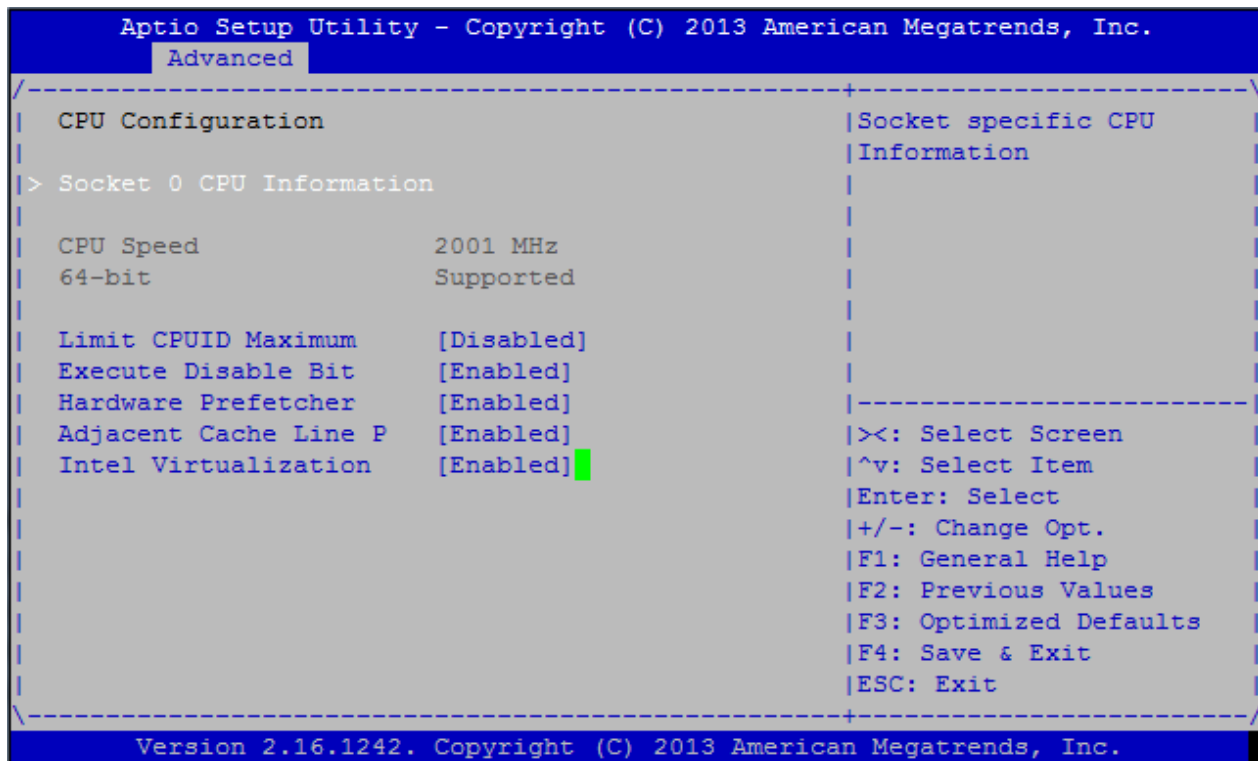
## SATA Power On/Off Control

This option allows you to turn on or off SATA power control.

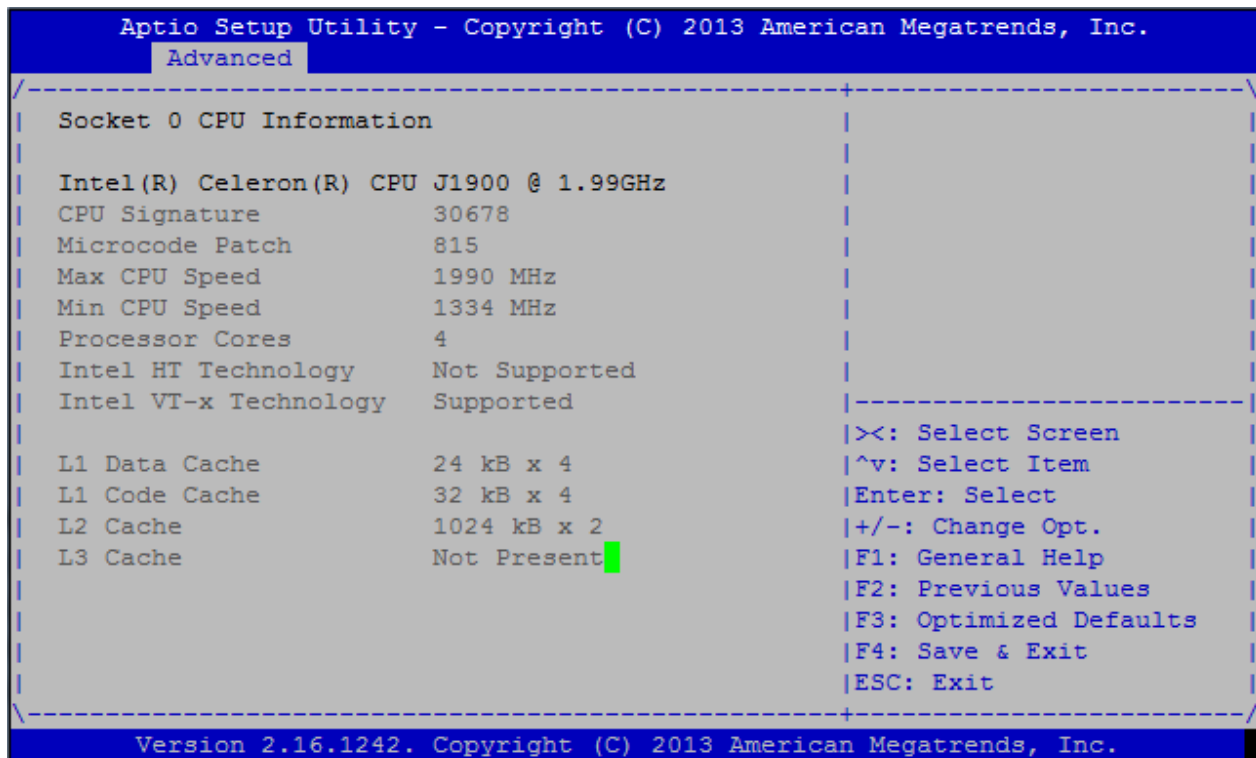


## CPU Configuration

This option allows you to configure socket specific CPU properties.

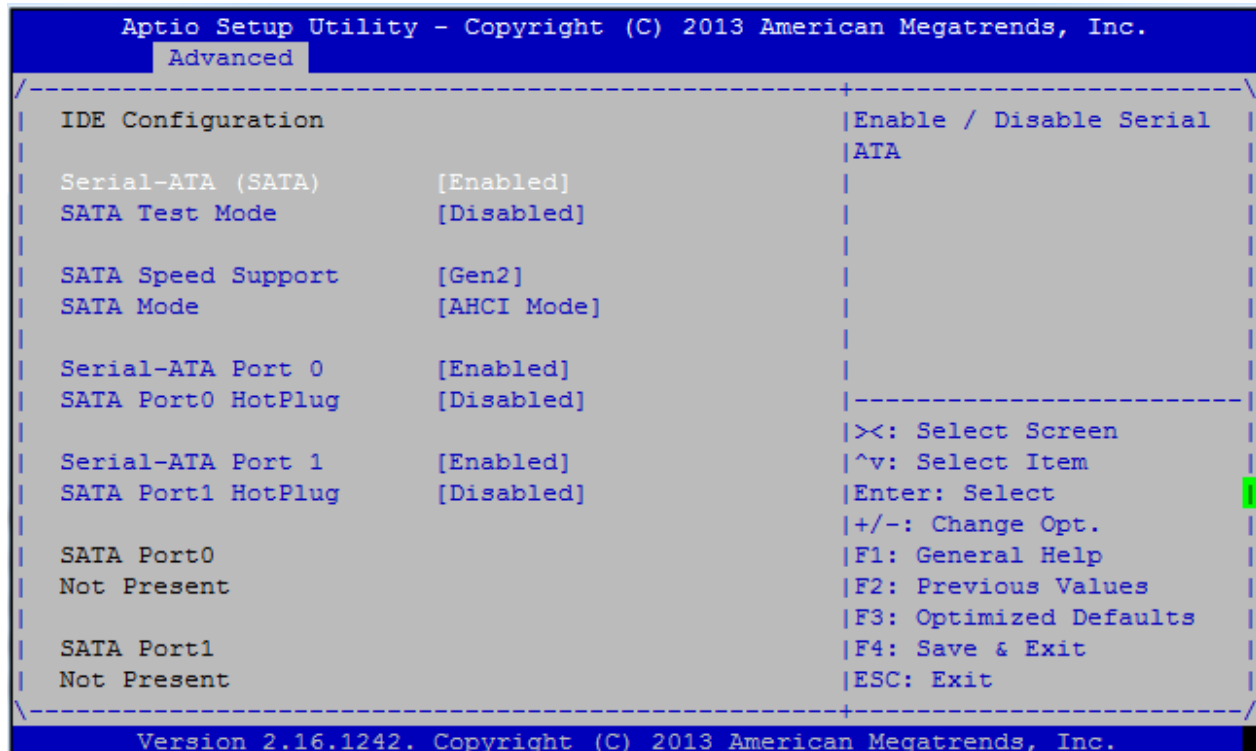


Item	Value	Description
Limit CPUID Maximum	Enable Disabled	Enable this option if your are experiencing OS crashes due to incompatibility between newer CPUs (with a maximum supported CPUID value of 4) and older operating systems (i.e. Windows NT SP2 and older).
Execute Disable Bit	Enabled Disabled	Enable this feature to force Physical Address Extension (PAE) Mode when running a 32-bit Windows OS regardless of the amount of system memory installed.
Hardware Prefetcher	Enabled Disabled	Enable the prefetcher that automatically analyzes its requirements and prefetches data from the memory into the Level 2 cache to reduce the latency associated with memory reads.
Adjacent Cache Line Prefetch	Enabled Disabled	Enable the hardware adjacent cache line prefetch mechanism that automatically fetches an extra 64-byte cache line whenever the processor requests for a 64-byte cache line to reduce cache latency.
Intel Virtualization	Enabled Disabled	Controls whether or not the BIOS masks requests sent to the CPU in determining whether or not Virtualization Technology (VT) is supported.

**Socket 0 CPU Information**

## IDE Configuration

This option allows you to SATA related settings. Press <**Enter**> to access items for SATA devices and settings.



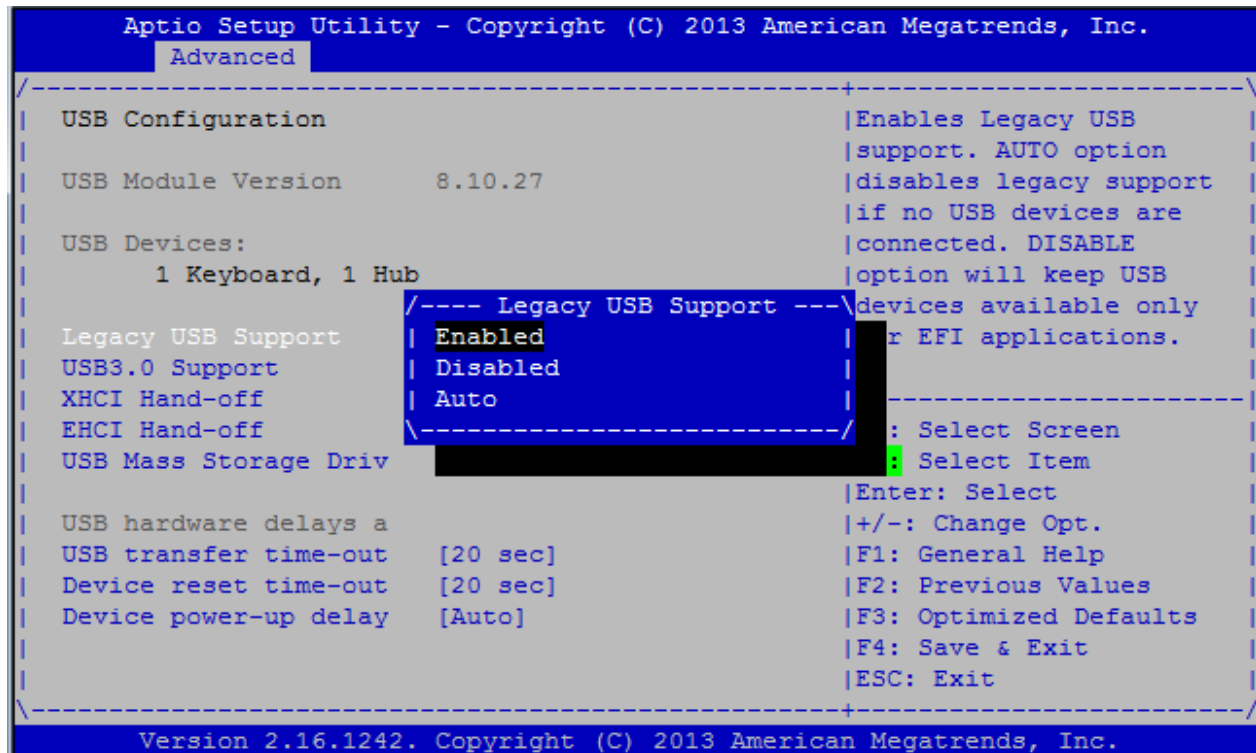
Item	Value	Description
Serial-ATA (SATA)	Enabled Disabled	enable or disable SATA function
SATA Test Mode	Enable Disabled	enable or disable SATA test mode
SATA Speed Support	Default Gen1 Gen2 Gen3	Select SATA speed based on the generations defined by SATA specifications.
SATA Mode	IDE Mode AHCI Mode	The selection to determine the SATA mode for your storage devices. You may select "IDE" or "AHCI" mode.
Serial-ATA Port 0/1	Enable Disabled	Enable or disable the SATA0/1 port
SATA Port0/1 Hotplug	Enable Disabled	Enable or disable the Hotplug function



## USB Configuration

This option allows you to change USB configuration parameters.

### Legacy USB Support

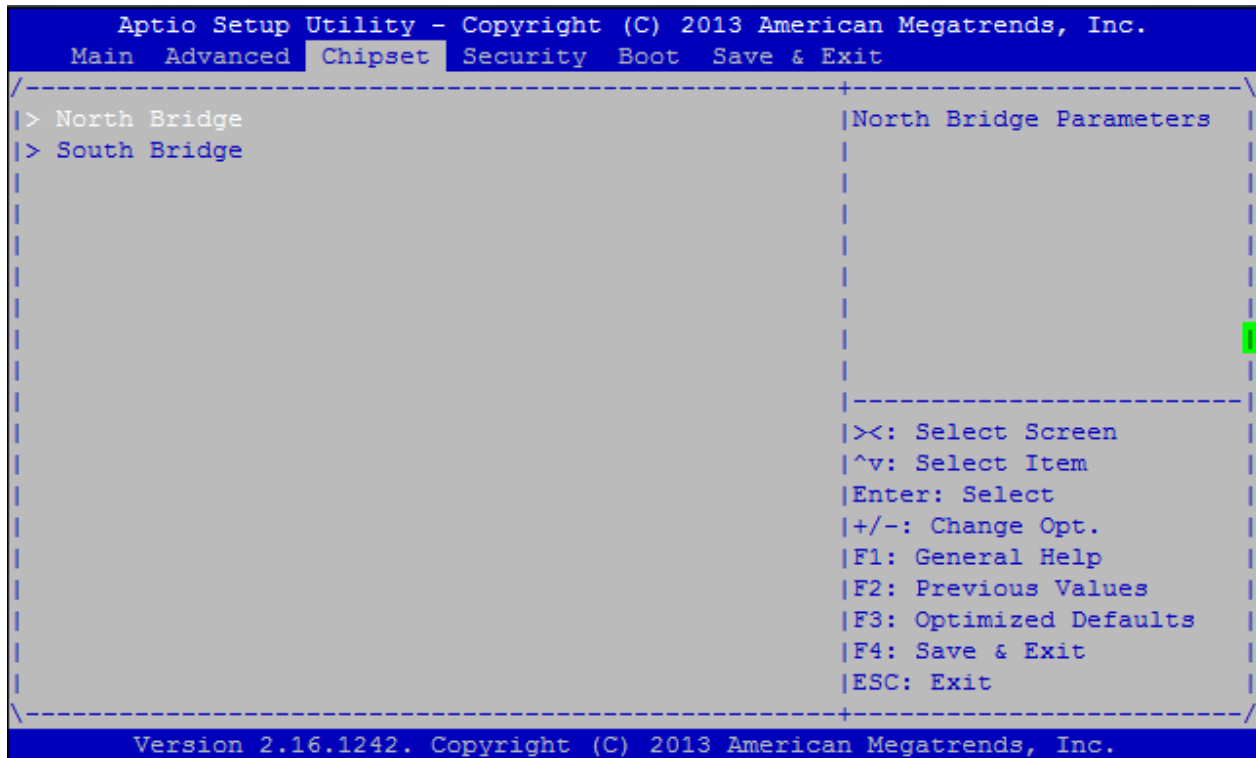


Item	Option	Description
Legacy USB Support	<b>Enabled</b> Disabled Auto	Enables Legacy USB support. <b>Auto</b> option disables legacy support if no USB devices are connected; <b>Disabled</b> option will keep USB devices available only for EFI applications.
USB 3.0 Support	<b>Enabled</b> Disabled	Enables or disables USB 3.0 support
XHCI Hand-off	<b>Enabled</b> Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
EHCI Hand-off	Enabled <b>Disabled</b>	Enables or disables EHCI Hand-off function. This is a workaround for operating systems without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	<b>Enabled</b> Disabled	Enables or disables USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec <b>20 sec</b>	The time-out value for Control, Bulk, and Interrupt transfers

Device reset time-out	1 sec 5 sec 10 sec <b>20 sec</b>	USB mass storage device Start Unit command time-out
Device power-up delay	<b>Auto</b> Manual	Maximum time the device will take before it properly reports itself to the Host Controller. <b>Auto</b> uses default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

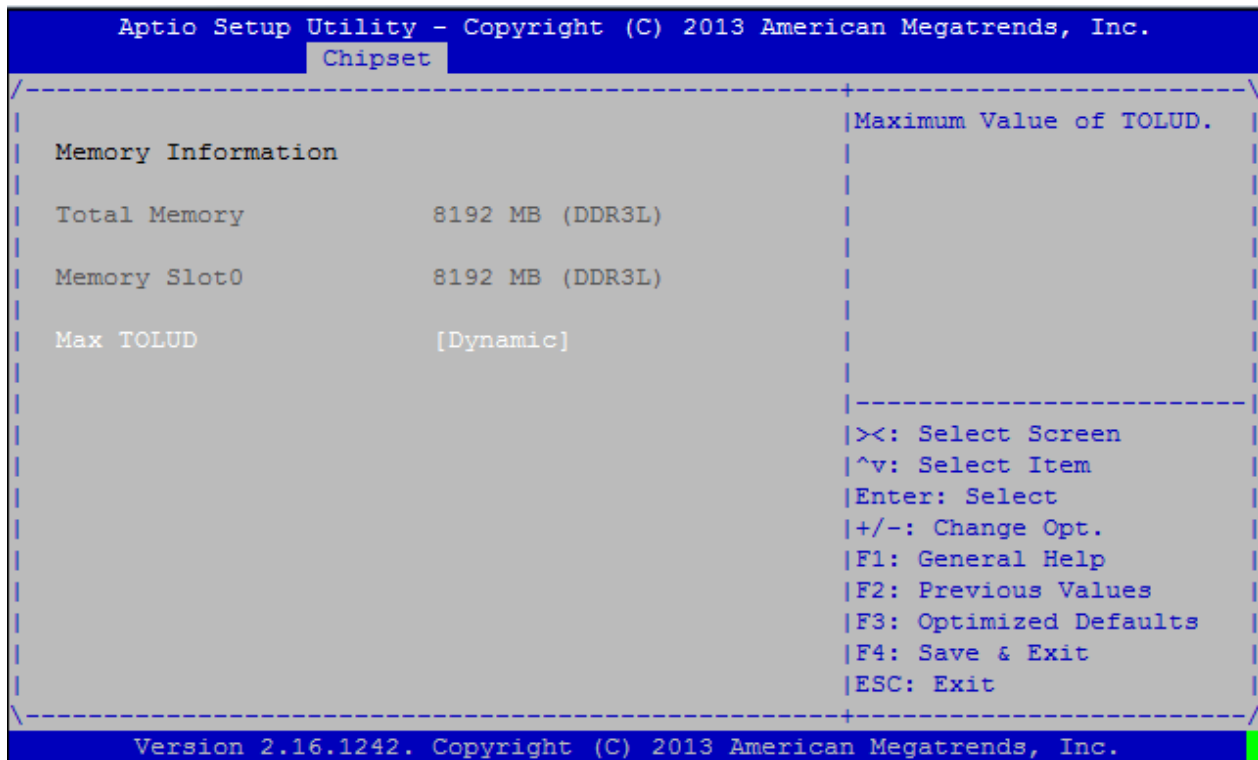
## Chipset

Use [←] / [→] to select [Chipset] setup screen. Under this screen, you may use [↑] [↓] to select “North Bridge” or “South Bridge” to configure the parameters.



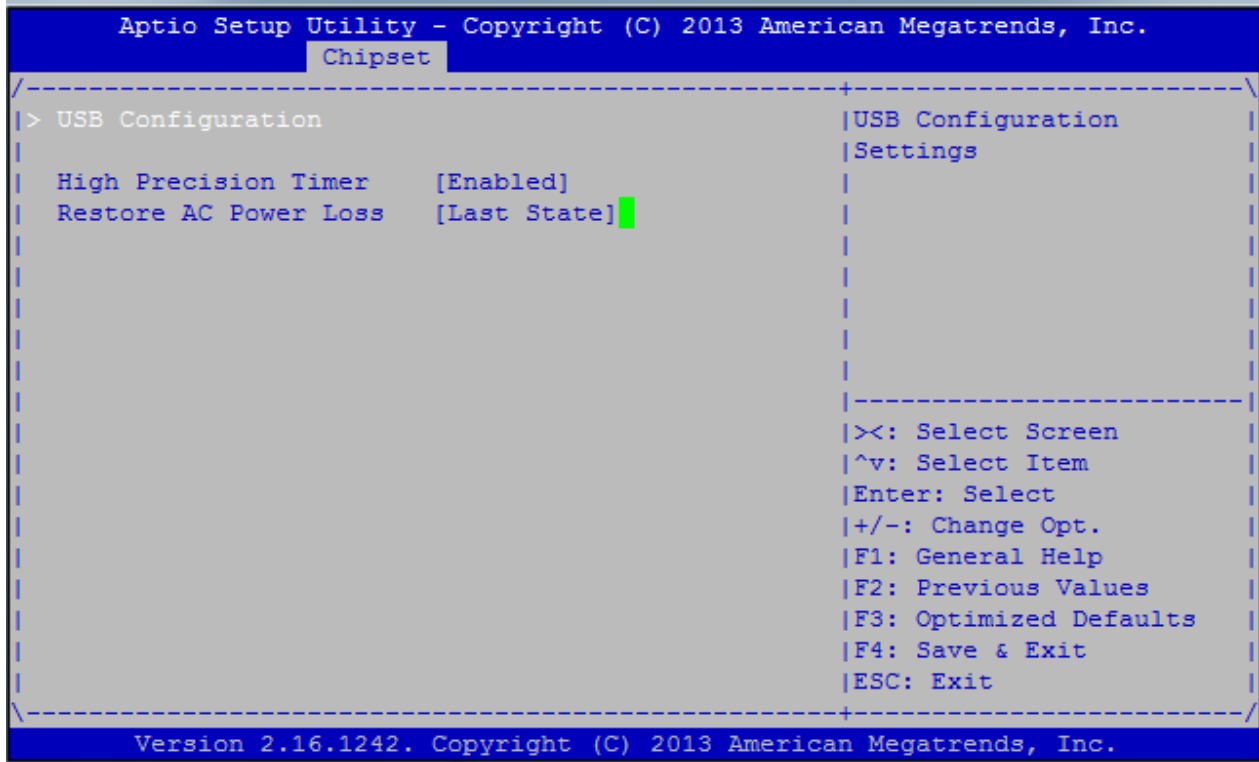
## North Bridge

This option enables or disables fast boot which skips memory training and attempts to boot using last known good configuration. The default is "Dynamic".



Item	Value	Description
Max TOLUD	Dynamic	Maximum Value of TOLUD
	1 GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB	

South Bridge

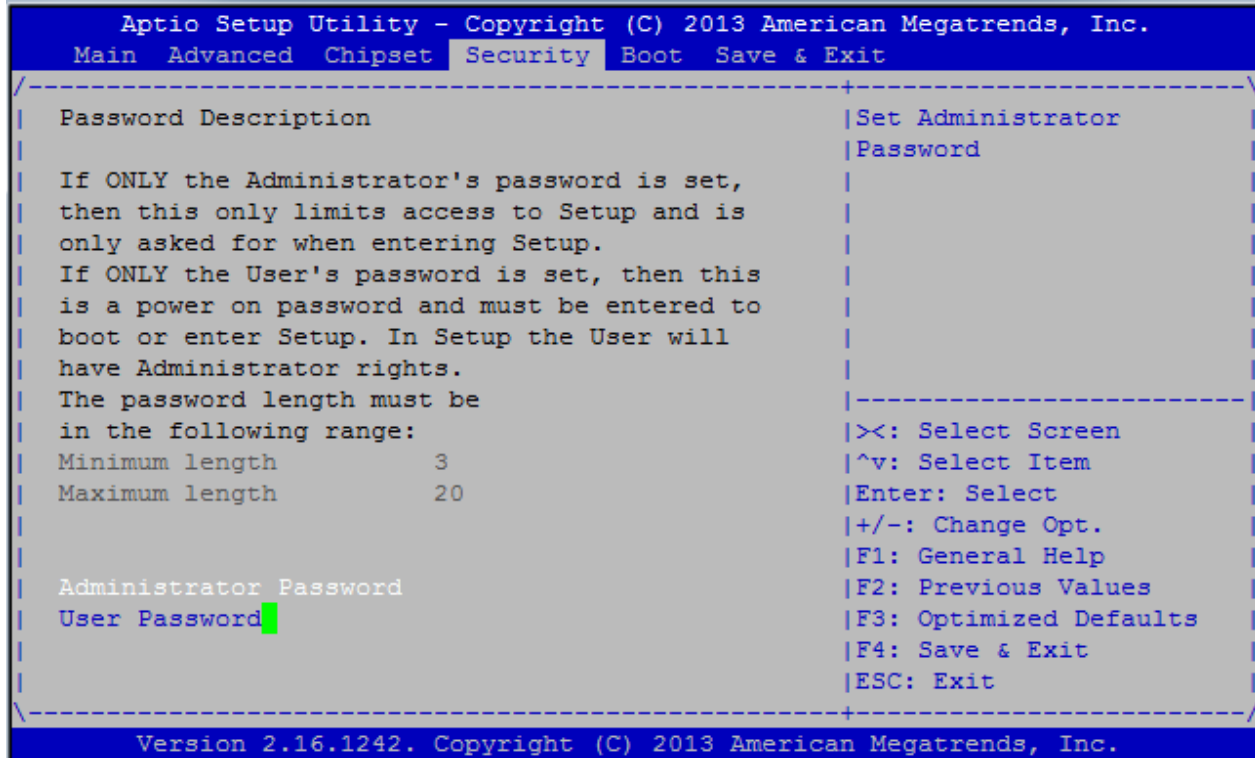


Item	Value	Description
High Precision Timer	Disabled Enabled	Enable or Disable the High Precision Event Timer
Restore AC Power Loss	Power On Power Off Last State	Specify what state to go to when power is re-applied after a power failure (G3 State). S0 state: System will boot directly as soon as power applied.

## Security

Use [←] / [→] to select [Security] setup screen. Under this screen, you may use [↑] [↓] to select an item you would like to configure.

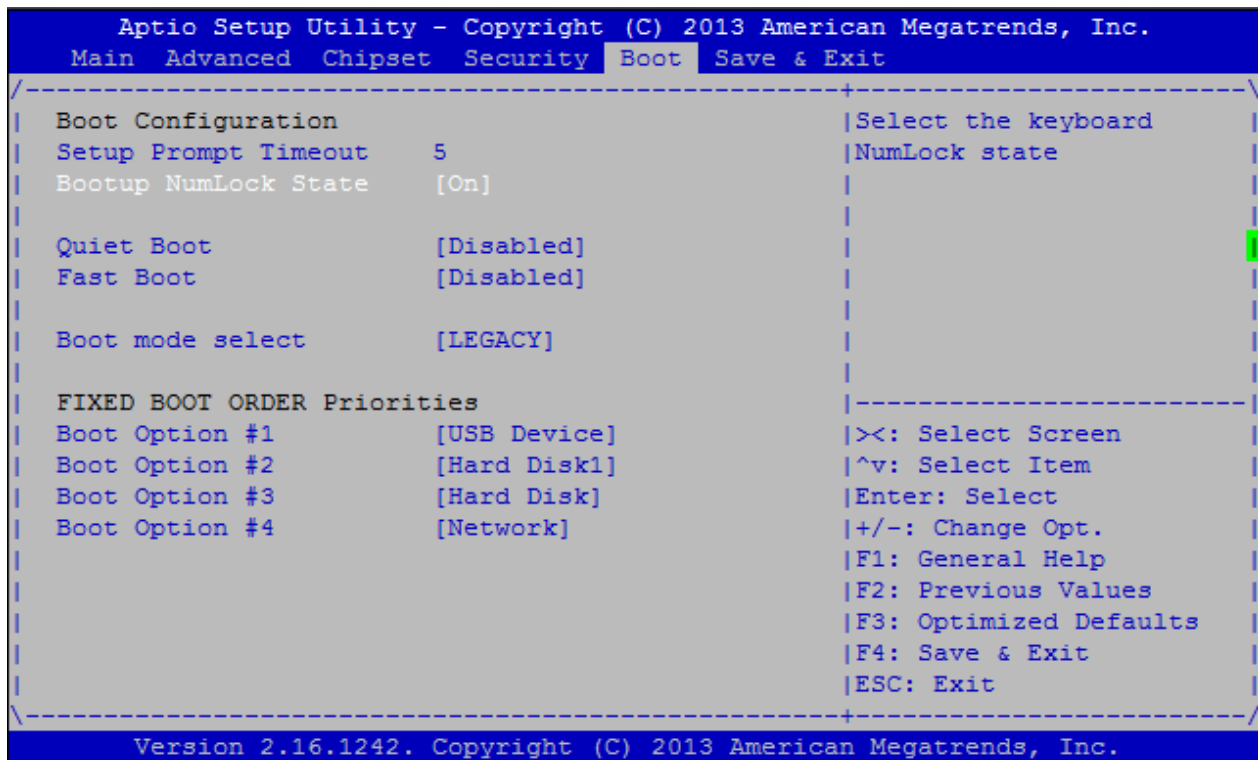
### Administrator Password & User Password:



Item	Description
Administrator Password	If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, then this is a power-on password and must be entered to boot or enter Setup. In Setup, the User will have Administrator rights.

## Boot Menu

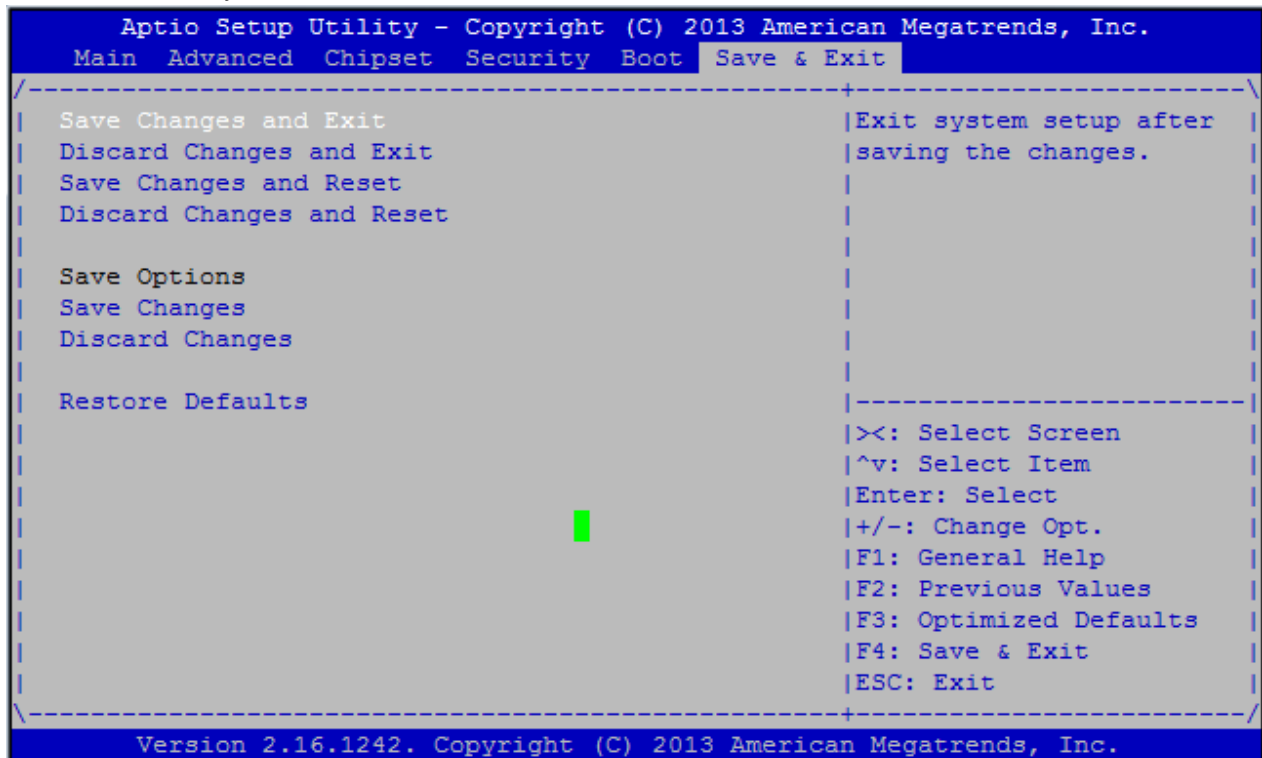
Select the Boot menu item from the BIOS setup screen to enter the [Boot] Setup screen.



Item	Value	Description
Setup Prompt Timeout	1~65535 5	Set the number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off	Turn on or off the NumLock keypad during booting up.
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
Fast Boot	Disabled Enabled	This option skips advanced memory tests during POST.
Boot mode select	LEGACY UEFI	Select boot mode <b>LEGACY/ UEFI</b> .

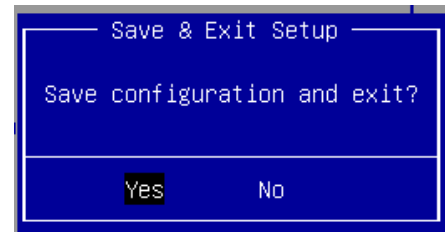
## Save and Exit Menu

Select the Save and Exit menu item from the BIOS setup screen to enter the [Save and Exit] Setup screen. Users can select any of the items in the left frame of the screen.



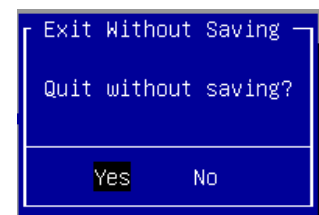
### Save Changes and Exit

When you have completed the system configuration, select this option to save the changes and Exit from BIOS Setup, so the new system configuration parameters can take effect. This window will appear after the 'Save Changes and Exit' option is selected. Select **YES** to save changes and exit Setup.



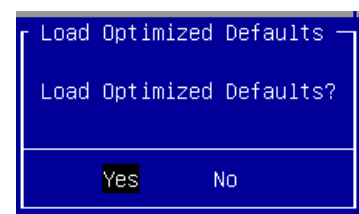
### Discard Changes and Exit

Select this option to quit Setup without saving any modifications to the system configuration. This window will appear after the 'Discard Changes and Exit' option is selected. Select **YES** to discard changes and exit Setup.



### Restore Defaults

Restore default values for all setup options. Select **YES** to load Optimized Defaults.








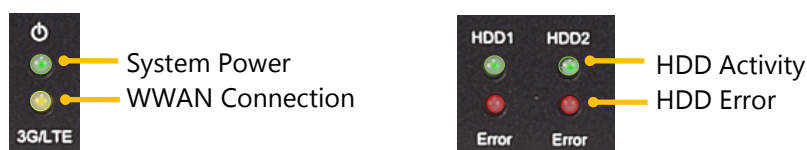
# APPENDIX A: LED INDICATOR EXPLANATIONS

The status explanations of LED indicators on Front Panel are as follows:

## Power Button

		
<b>Power-Off mode:</b> <i>The system is not connected to any power source.</i>	<b>Stand-by mode:</b> <i>The system is connected with power source; ready for powering up with a push on the button.</i>	<b>Power-On mode:</b> <i>The system is powered on. Perform a graceful shutdown using the service commands to ensure that all of your data is saved.</i>

## Status LED



### ► System Power

<i>Solid Green</i>	<i>The system is powered on</i>
<i>Off</i>	<i>The system is powered off</i>

### ► 3G (WWAN) Connection

<i>Solid Amber</i>	<i>The system is connected with WWAN network.</i>
<i>Blinking Amber</i>	<i>The system is transmitting/receiving data via WWAN connection</i>
<i>Off</i>	<i>No link has been established</i>

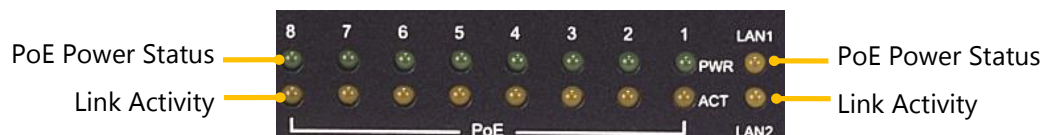
### ► HDD Activity

<i>Blinking Green</i>	<i>Data access activity</i>
<i>Off</i>	<i>No data access activity</i>

### ► HDD Error

<i>Blinking Red</i>	<i>Hard disk error</i>
<i>Off</i>	<i>No data access activity</i>

## PoE Ports



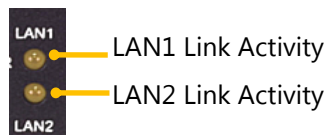
### ► PoE Power Status

<i>Blinking Green</i>	<i>The port is providing PoE power</i>
<i>Off</i>	<i>No power is being drawn from this port</i>

### ► Link Activity

<i>Blinking Amber</i>	<i>Link has been established and there is activity on this port</i>
<i>Solid Amber</i>	<i>Link has been established and there is no activity on this port</i>
<i>Off</i>	<i>No link has been established</i>

GbE Ports

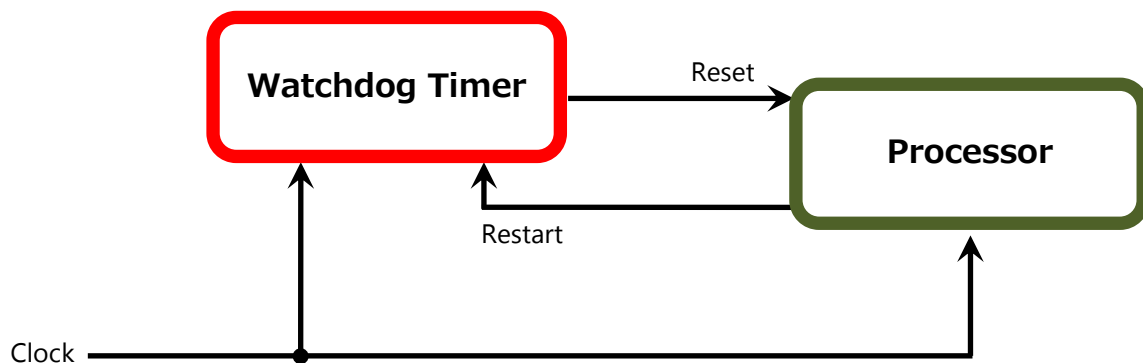


► LAN1 & LAN2 Link Activity

<i>Blinking Amber</i>	<i>Link has been established and there is activity on this port</i>
<i>Solid Amber</i>	<i>Link has been established and there is no activity on this port</i>
<i>Off</i>	<i>No link has been established</i>

## APPENDIX B: PROGRAMMING WATCHDOG TIMER

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is resumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.



To execute the utility: enter the number of seconds to start the countdown before the system can be reset.

```
wd_tst -swt xxx (Set Watchdog Timer 1-255 seconds and start to count-down)
```

```
wd_tst -stop (Stop Watchdog Timer)
```

- For a reference utility that contains sample code for watchdog function programming, please visit <http://www.lannerinc.com/support/download-center/drivers>, enter the product category and download the utility package.

## APPENDIX C: INSTALLING INTEL® LAN CONTROLLER DRIVER FOR LINUX

To install the Intel® LAN controller base driver for the Red Hat® and Linux operating system, please visit <http://www.lannerinc.com/support/download-center/drivers>, enter the product category and download the utility package.

For the latest driver update, please visit Intel® download center at <https://downloadcenter.intel.com/>, use the keyword search or the filter to access the driver's product page, and then download the latest controller driver as well as the ReadMe document.

Product Name Keyword	I210
Product Category	Network I/O→Ethernet Products→Intel® Gigabit Server Adapters→ Intel® Ethernet Server Adapter I210 Series
Download Type	Drivers
Operating System	Linux*
Product page	<a href="#">Intel® Network Adapter Driver for 82575/6, 82580, I350, and I210/211-Based Gigabit Network Connections for Linux*</a>

## APPENDIX D: TERMS AND CONDITIONS

### Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for the repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:
  - ▶ Improper or inadequate maintenance by the customer
  - ▶ Unauthorized modification, misuse, or reversed engineering of the product
  - ▶ Operation outside of the environmental specifications for the product.

### RMA Service

#### Requesting an RMA#

1. To obtain an RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
4. Mark the RMA# clearly on the box.



**Note:** Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

## RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

<b>RMA No:</b>		Reasons to Return: <input type="checkbox"/> Repair(Please include failure details)	
		<input type="checkbox"/> Testing Purpose	
Company:		Contact Person:	
Phone No.		Purchased Date:	
Fax No.:		Applied Date:	
Return Shipping Address: _____			
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____			
<input type="checkbox"/> Others: _____			
<b>Item</b>	<b>Model Name</b>	<b>Serial Number</b>	<b>Configuration</b>

Item	Problem Code	Failure Status

**\*Problem Code:**

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
03: CMOS Data Lost	09: Cache RMA Problem	15: PS2	21: Shut Down
04: FDC Fail	10: Memory Socket Bad	16: LAN	22: Panel Fail
05: HDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
06: Bad Slot	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)

***Request Party***

***Confirmed By Supplier***

\_\_\_\_\_  
Authorized Signature / Date

\_\_\_\_\_  
Authorized Signature / Date