FWS-7350

Network Appliance

User's Manual 3rd Ed

Last Updated: March 29, 2016

Copyright Notice

Acknowledgement

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Packing List

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

Item	Quantity
● FWS-7350	1
● SATA HDD cable	2
● Serial ATA cable	2
● RJ-45 console cable	1
● CPU heat sink	1
● Ear bracket module, black	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. All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
3. Make sure the power source matches the power rating of the device.
4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
5. Always completely disconnect the power before working on the system's hardware.
6. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
7. 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.
8. Always disconnect this device from any AC supply before cleaning.
9. While cleaning, use a damp cloth instead of liquid or spray detergents.
10. Make sure the device is installed near a power outlet and is easily accessible.
11. Keep this device away from humidity.
12. Place the device on a solid surface during installation to prevent falls
13. Do not cover the openings on the device to ensure optimal heat dissipation.
14. Watch out for high temperatures when the system is running.
15. Do not touch the heat sink or heat spreader when the system is running
16. Never pour any liquid into the openings. This could cause fire or electric shock.

17. 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.
18. 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
19. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

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

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Embedded Box PC/ Industrial System

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	O	O	O	O	O	O
外部信号连接器及线材	O	O	O	O	O	O
外壳	O	O	O	O	O	O
中央处理器与内存	O	O	O	O	O	O
硬盘	O	O	O	O	O	O
电源	O	O	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

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。

备注：
一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
二、上述部件物质中央处理器、内存、硬盘、光驱、触控模块为选购品。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Embedded Box PC/ Industrial System

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	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	O	O	O	O	O	O
Hard Disk	O	O	O	O	O	O
PSU	O	O	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

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

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Processor	Onboard Intel® C2758/C2558 4 Core™/ 8 Core™ 2.4GHz processor
System Memory	240-pin Dual Channel DDR3/L 1600MHz SODIMM x 4, up to 32GB
Chipset	Intel® C2758/C2558
Ethernet (Optional)	Marvell PHY x 1, Gigabit Ethernet x 4
BIOS	AMI BIOS ROM
Serial ATA	Onboard SATA 6.0 Gb/s x 2 (optional SATA 3.0Gb/s x 3)
SSD	CompactFlash Card x 1
Expansion Interface	Network Interface Module (NIM) x 1 (Optional) PCIe [x4] slot x 1 (Optional)
Watchdog Timer	System reset : 1~255 steps by software programming
RTC	Internal RTC
Storage	3.5" SATA HDD Bay x 1 or 2.5" SATA HDD Bay x 2
System Fan	4 cm Ball Bearing Fan x 1
Front Panel I/O	USB Ports x 2, RJ-45 Ports x 4 (w/ LED indicator) RJ-45 Console x 1, Power LED x 1 Bypass LED (Optional), Status LED x 1

	HDD Active LED x 1, Software Programmable Switch x 1
	NIM Socket x 1 (Optional)
● Rear Panel I/O	AC Power Input x 1
	Power Switch x 1
	Expansion Slot x 1 (optional PCI-E[x4] Slot x 1)
● Color	Black
● LCM	16 x 2 characters with 4 keypad control
● Power Supply	Flex ATX 100W
● Dimension (W x D x H)	430 x 44 x 305 mm (16.93 x 1.73 x 12.00")

I/O

● Serial Port	RJ45 Console x 1 (on front panel)
	RS-232 Box Header x 1 (Optional)
● Keyboard and Mouse	Reserved pin header (optional)
● USB	USB 2.0 x 2

Environmental

● Operating Temperature	-20 ~ 60°C (-4 ~140°F)
● Operating Humidity	10 ~ 80% relative humidity, non-condensing
● Storage Humidity	10 ~ 80% @ 40°C, non-condensing
● Anti-Vibration	0.5 Grms/5~500 Hz / operation (2.5" Hard Disk Drive)
	1.5 Grms/5~500 Hz / non-operation

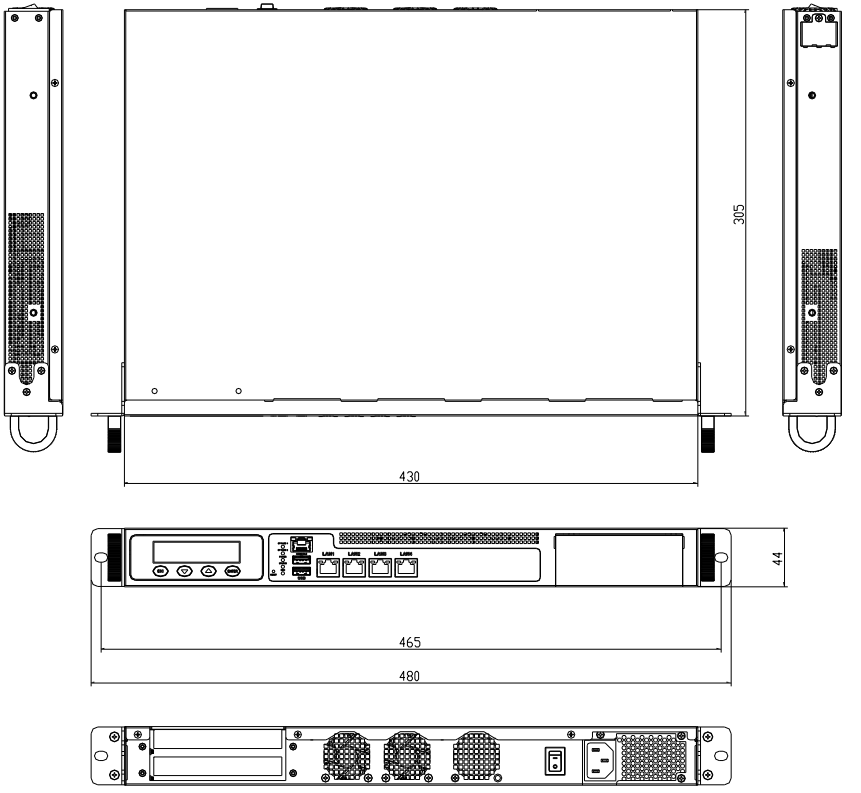
● Anti-Shock	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non-operation

Chapter 2

Hardware Information

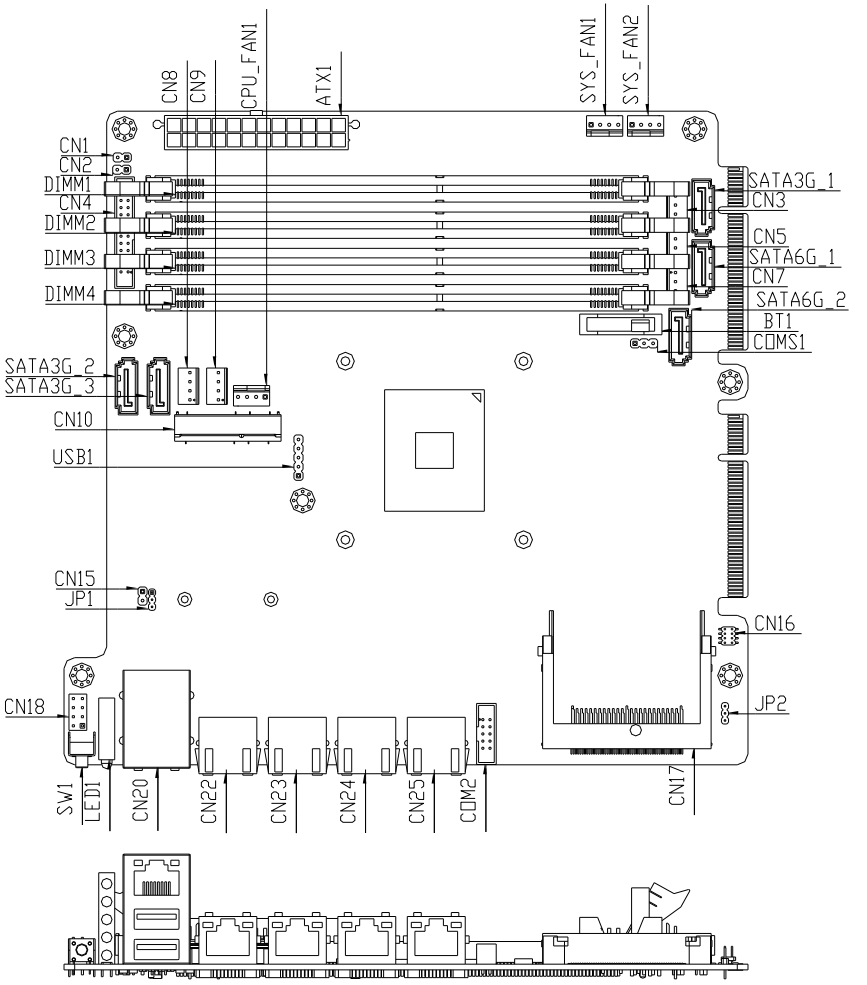
2.1 Dimensions

System

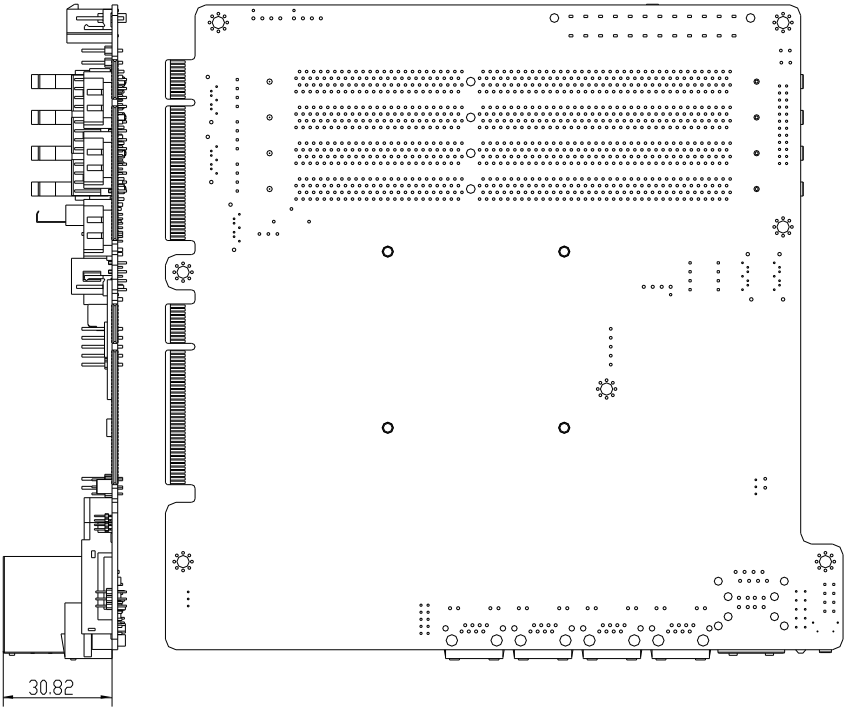


2.2 Jumpers and Connectors

Component Side



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	Auto PWRBTN Selection
CN19	CF Power Selection
CMOS1	CMOS Setting Selection

2.3.1 Auto PWRBTN Selection (JP1)

Pin	Function
1-2	Disable Auto PWRBTN (Default)
2-3	Enable Auto PWRBTN

2.3.2 CF Power Selection (CN19)

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

2.3.3 CMOS Setting Selection (CMOS1)

Pin	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	Power Switch
CN2	Reset Switch
CN3.5.7.8.9	SATA POWER
CN4	Power Bottom
CN7	SATA Power Connector
CN10	Mini PCI-E Socket
CN11~CN15	SATA Power Connector
CN15	SMBUS
CN17	CF Card Socket
CN18	KB/MS
CN20	Console+2USB 2.0
CN22.CN23.CN24.CN25	Gigabit LAN Connector
DIMM1	DDR3 U-DIMM SOCKET
DIMM2	DDR3 U-DIMM SOCKET
ATX1	24P ATX Power Supply Input
CPU_FAN2	4P Smart Fan
SYS_FAN3	4P Smart Fan
SYS_FAN4	4P Smart Fan
COM2	COM Port
SATA3G_1.2.3	SATA3G Interface
SATA6G_1.2	SATA6G Interface
SW1	Software Reset
LED1	LED

USB1	USB 2.0 Pin Header
SYS_FAN1	4-Pin Fan Connector
SYS_FAN2	4-Pin Fan Connector
LCM1	LCM Connector
ATX1	24-Pin ATX Power Connector
ATX2	8-Pin ATX Power Connector
COM1/USB1	COM/USB3 Connector
SW1	Reset Switch (By Control)

2.4.1 Reset Switch Header (CN2)

Pin	Signal	Pin	Signal
1	Reset signal	2	GND

2.4.2 SATA Power Connector (CN3/5/7/8/9)

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

2.4.3 SMBus Header (CN15)

Pin	Signal	Pin	Signal
1	SM_CLK	2	SM_DATA

2.4.4 RS-232 Pin Header (COM2)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

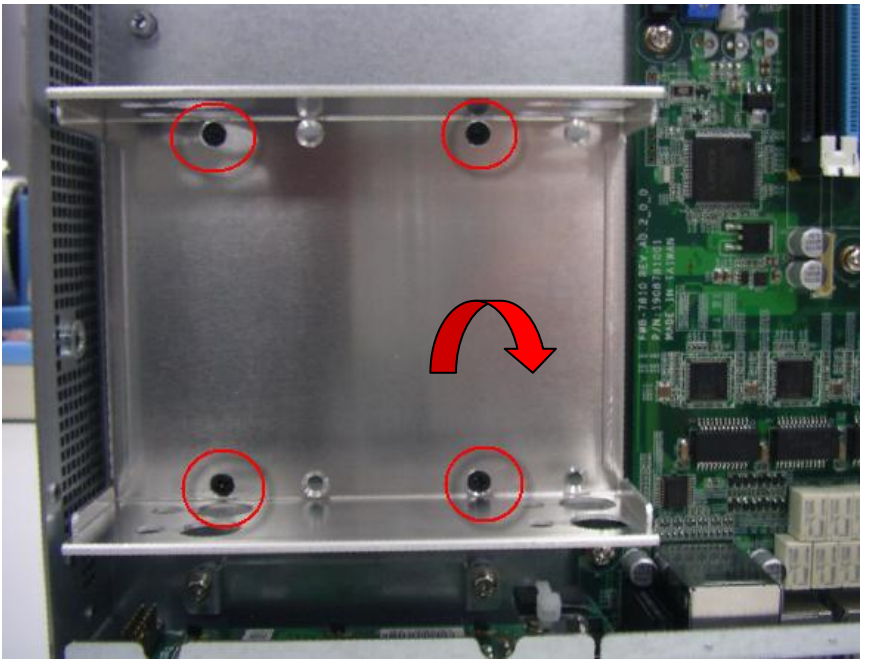
2.4.5 USB 2.0 Pin Header (USB1)

Pin	Signal	Pin	Signal
1	+5V	2	USBD1-
3	USBD1+	4	GND
5	GND		

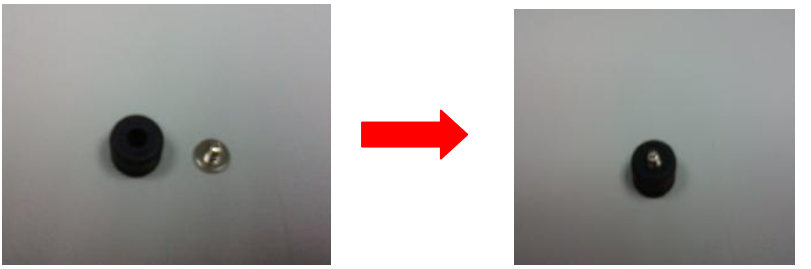
2.6 Hard Disk Drive Installation

1. Remove the highlighted screws to remove the top cover

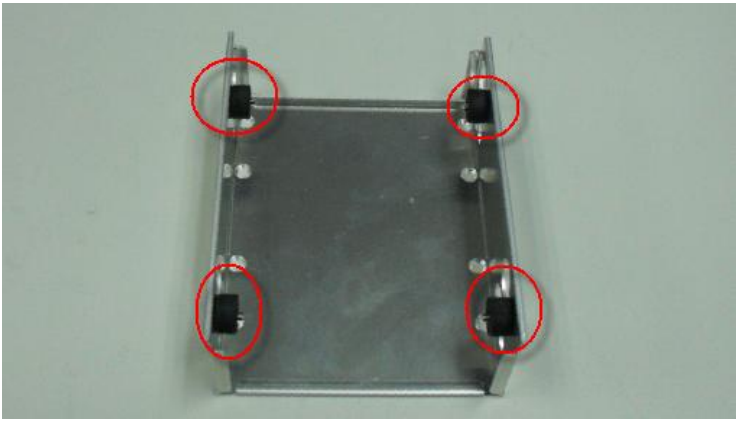
2. Remove the screws on the HDD bracket

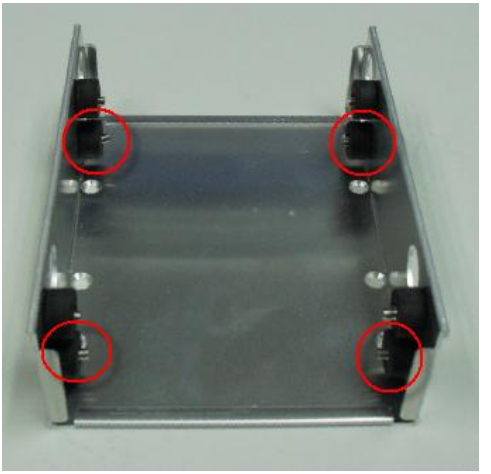


3. Insert the screws into the cushions

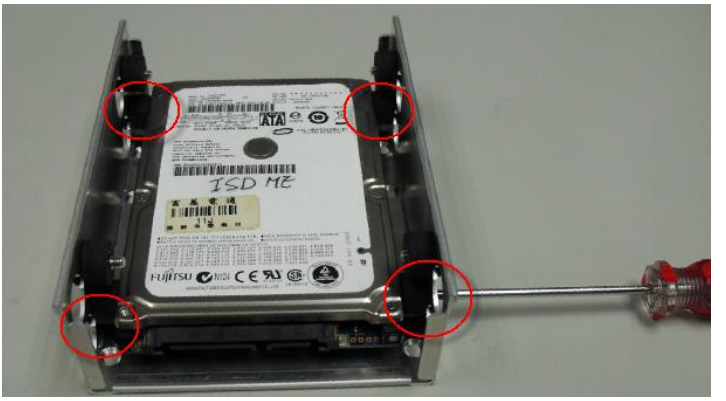


4. Attached the assembled screws to the HDD bracket





5. Tighten the screws to secure the HDD

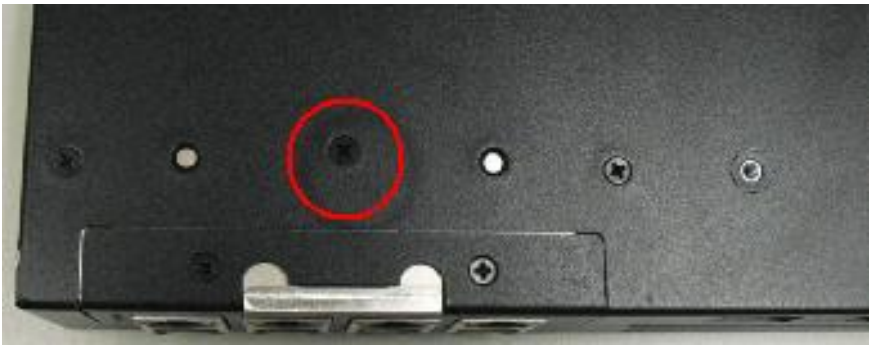


6. Place the assembled HDD back to the chassis and secure with screws

7. Attach the SATA and power cable to complete installation

2.6 Network Interface Module Installation

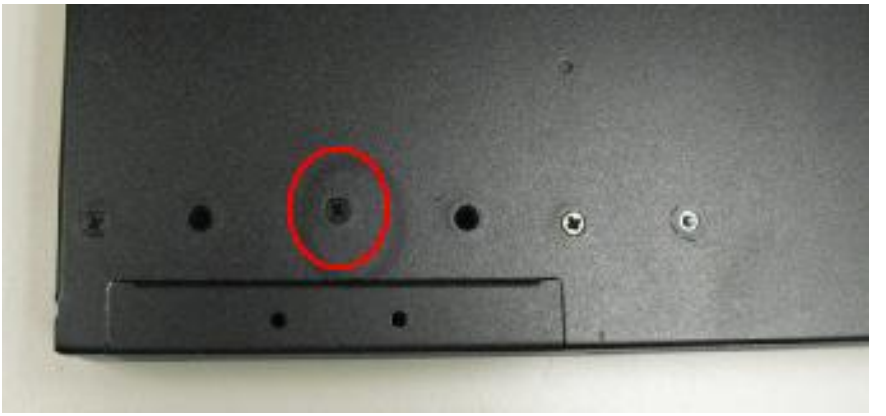
1. Remove the highlighted screw at the bottom of the device



2. Remove the module cover or an existing module

3. Slot in a module and secure with screws at the bottom of the chassis

4. Secure the module with screws at the bottom of the chassis



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

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

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

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

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

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

3.2 AMI BIOS Setup

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

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

The function for each interface can be found below.

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

Advanced – Enable/ Disable boot option for legacy network devices

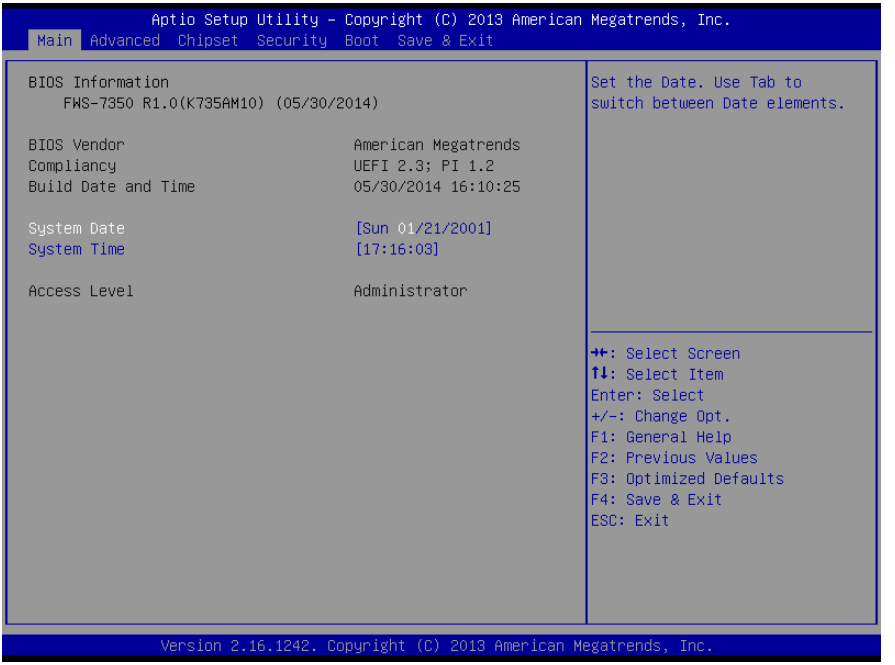
Chipset – For hosting bridge parameters

Boot – Enable/ Disable quiet Boot Option

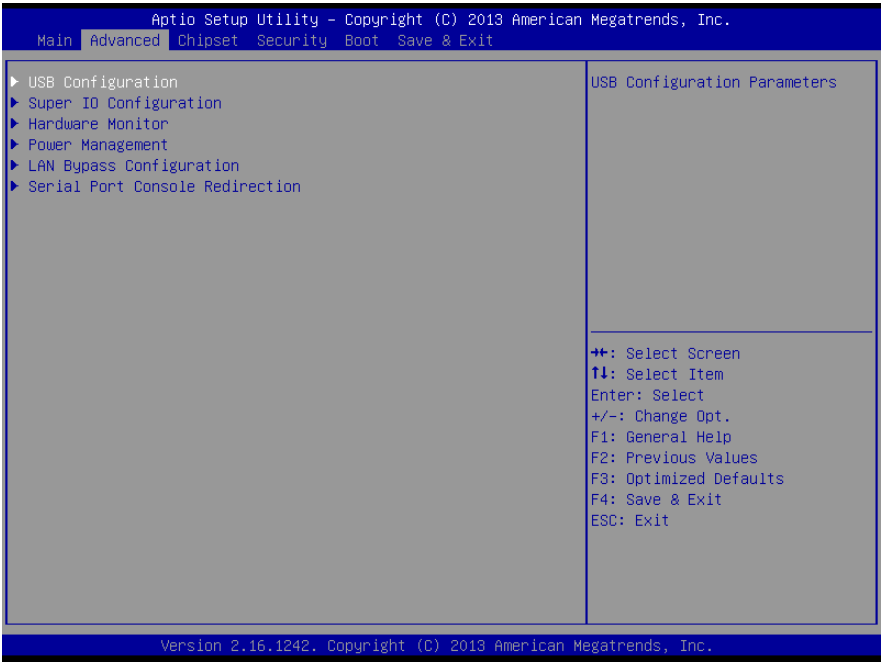
Security – The setup administrator password can be set here

Save & Exit –Save your changes and exit the program

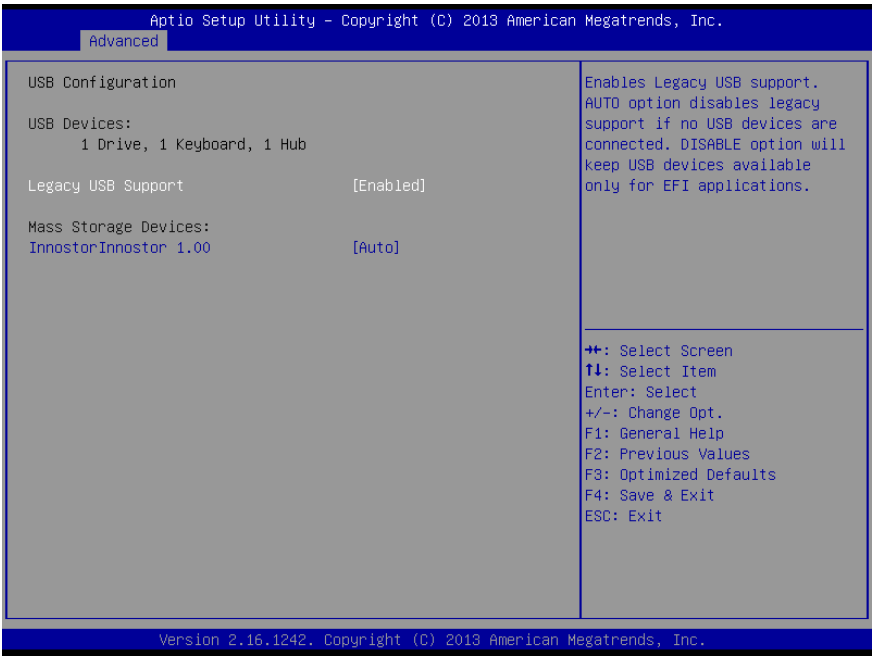
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



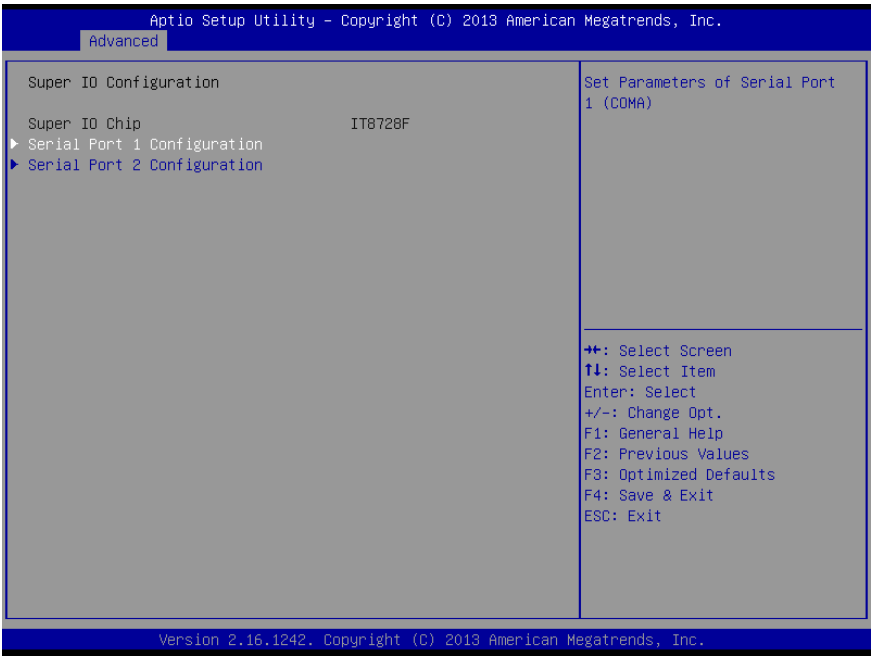
3.4.1 Advanced: USB Configuration



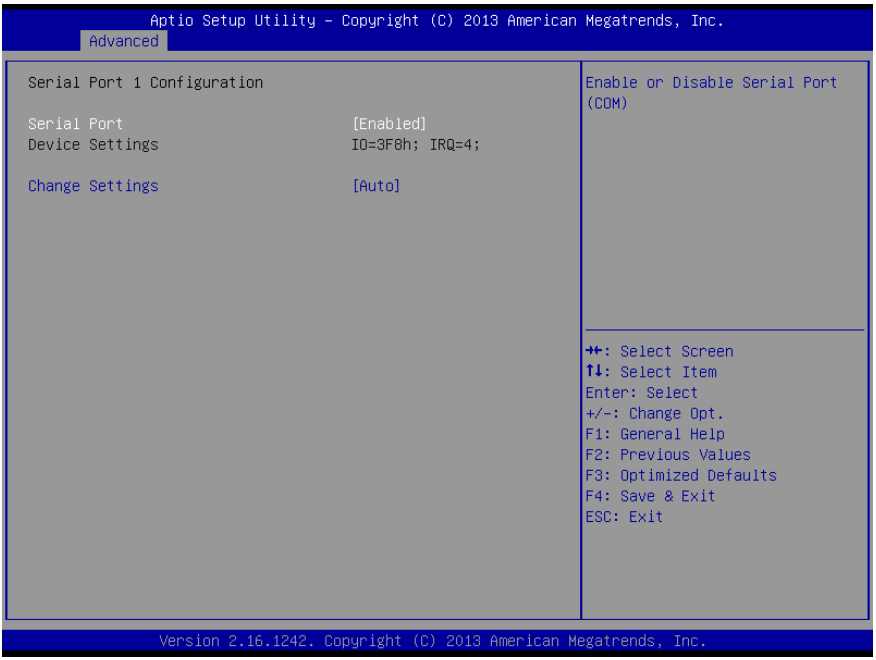
Options summary:

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)		

3.4.2 Advanced: Super IO Configuration



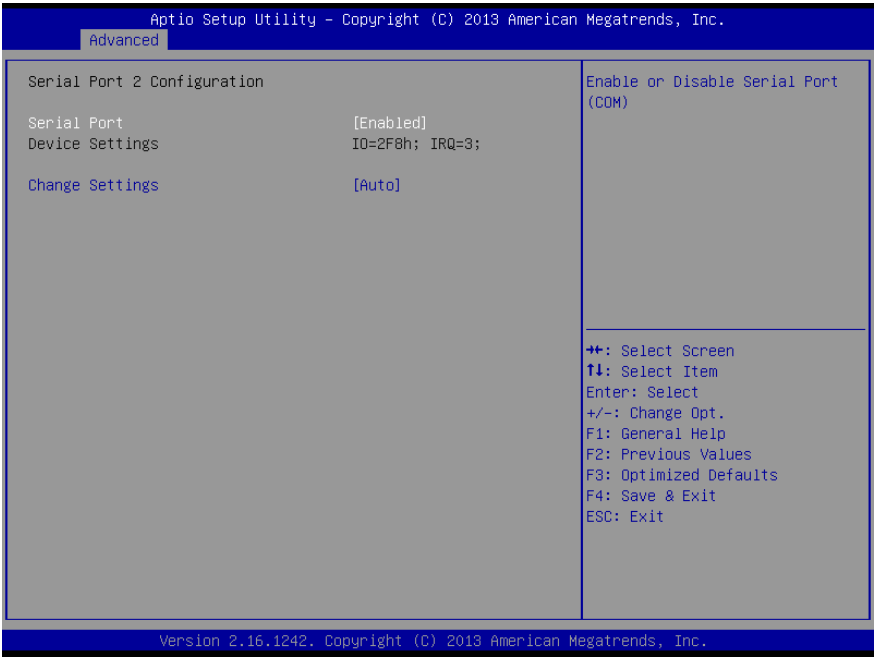
3.4.2.1 Super IO Configuration: Serial Port 1 Configuration



Options summary:

Serial Port	Disabled	Optimal Default, Failsafe Default
	Enabled	
Allows BIOS to En/Disable correspond serial port.		
Change Settings	Auto	Optimal Default, Failsafe 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.		

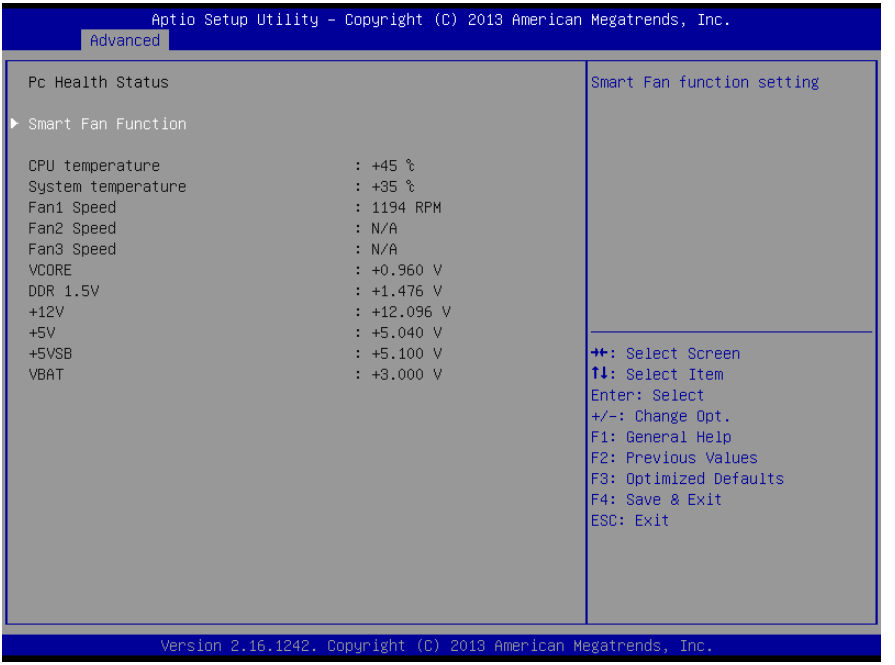
3.4.2.2 Super IO Configuration: Serial Port 2 Configuration



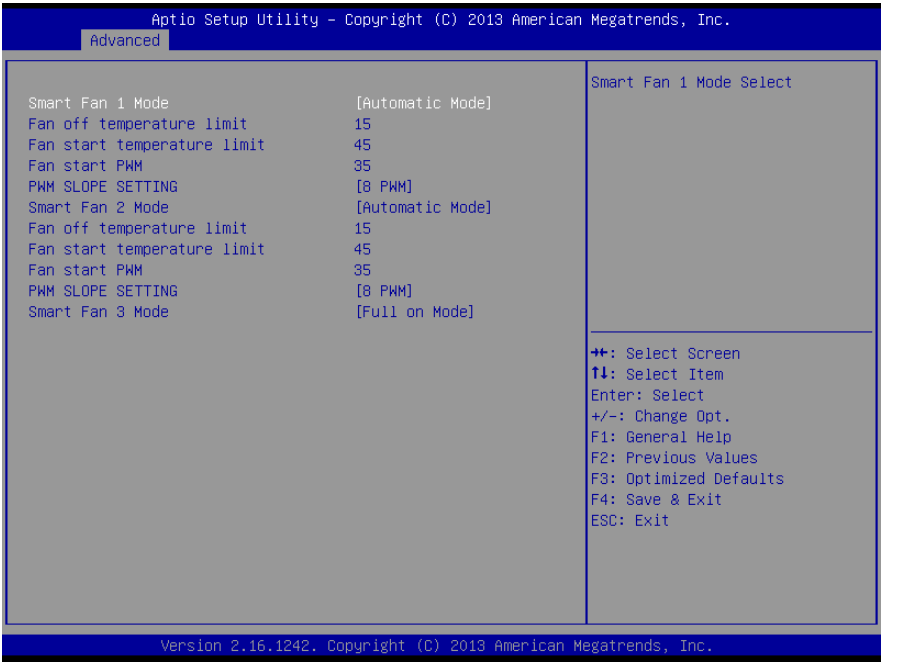
Options summary:

Serial Port	Disabled	Optimal Default, Failsafe Default
	Enabled	
Allows BIOS to En/Disable correspond serial port.		
Change Settings	Auto	Optimal Default, Failsafe 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;	
Allows BIOS to Select Serial Port resource.		

3.4.3 Advanced: H/W Monitor



3.4.3.1 H/W Monitor: Smart Fan Function

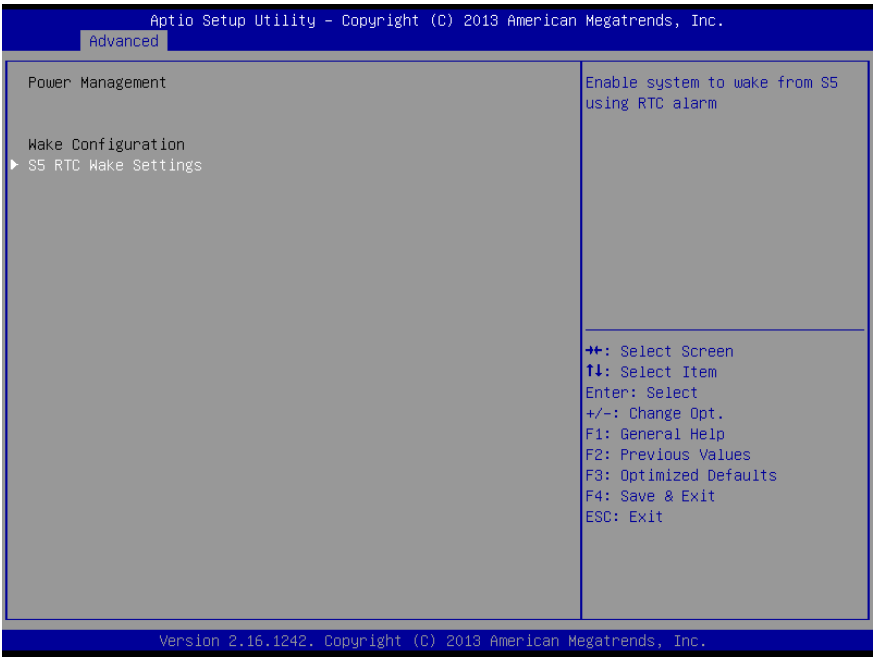


Options Summary :

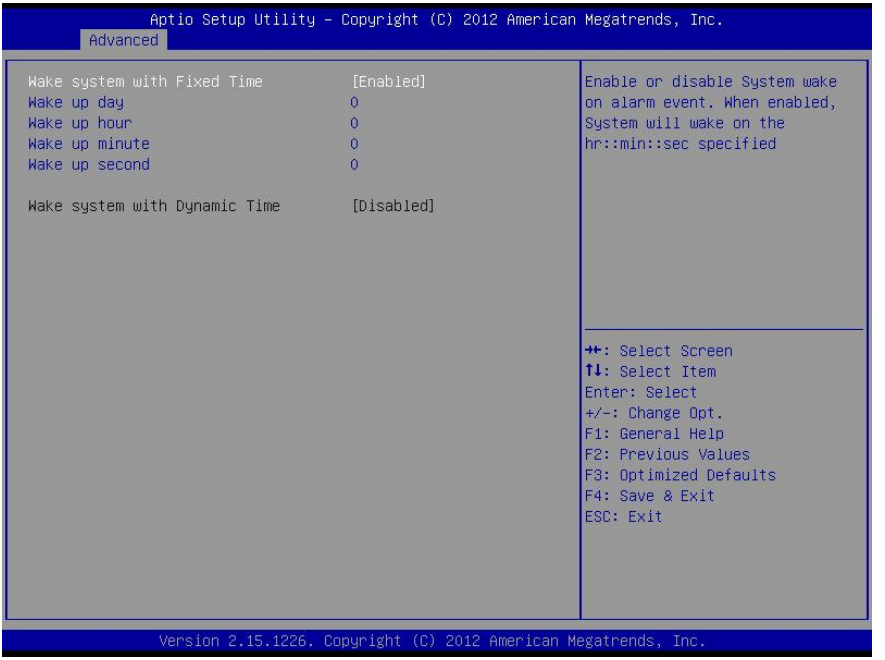
Smart Fan 1/2 Mode	Manual Mode	Default
	Automatic Mode	
	Full on Mode	
Manual Mode: Depends on PWM Duty Automatic Mode: Fan Speed is depends on CPU Temperature Full on Mode: Full fan speed		
Manual PWM Setting	35	Default
	0-255	
Fan will work with this Manual PWM Value(Range 0-255).		
Fan off temperature limit	15	Default
	0-255	
Fan will off when temperature lower than this limit		
Fan start temperature limit	45	Default
	0-255	
Fan will work when temperature higher than this limit		
Fan start PWM	35	Default

	0-255	
Fan will start with this PWM value(Range 0-255).		
PWM SLOPE SETTING	0.125 PWM	
	0.25 PWM	
	0.5 PWM	
	1 PWM	
	2 PWM	
	4 PWM	
	8 PWM	Default
	15.875 PWM	
PWM SLOPE Selection		
Smart Fan 3 Mode	Manual Mode	
	Automatic Mode	
	Full on Mode	Default
Manual Mode: Depends on PWM Duty Automatic Mode: Fan Speed is depends on CPU Temperature Full on Mode: Full fan speed		
Manual PWM Setting	100	Default
	0-255	
Fan will work with this Manual PWM Value(Range 0-255).		
Fan off temperature limit	0	Default
	0-255	
Fan will off when temperature lower than this limit		
Fan start temperature limit	20	Default
	0-255	
Fan will work when temperature higher than this limit		
Fan start PWM	100	Default
	0-255	
Fan will start with this PWM value(Range 0-255).		
PWM SLOPE SETTING	0.125 PWM	
	0.25 PWM	
	0.5 PWM	Default
	1 PWM	
	2 PWM	
	4 PWM	
	8 PWM	
	15.875 PWM	
PWM SLOPE Selection		

3.4.4 Advanced: Power Management



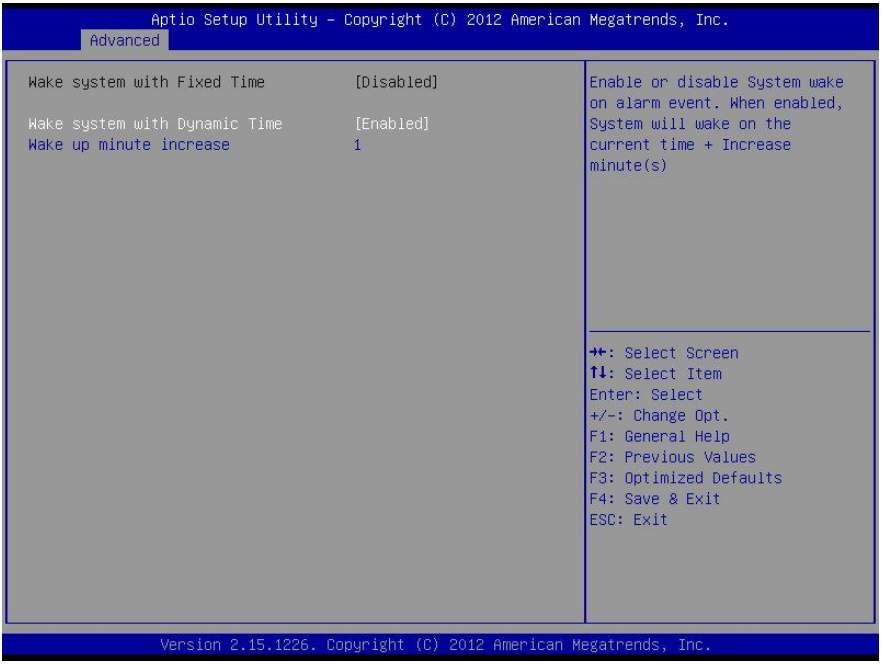
3.4.4.1 Power Management: S5 RTC Wake Settings (Fixed Time)



Options summary:

Wake system with Fixed Time	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable System wake on alarm event. When enabled, System will wake on the hr:min:sec specified		
Wake up day	0-31	Default 0
Select 0 for daily system wake up, 1-31 for witch day of the moth that you would like the system to wake up.		
Wake up day	0-23	Default 0
Select 0-23 For example enter 3 for 3am and 15 for 3pm		
Wake up day	0-59	Default 0
Select 0-59		
Wake up day	0-59	Default 0
Select 0-59		

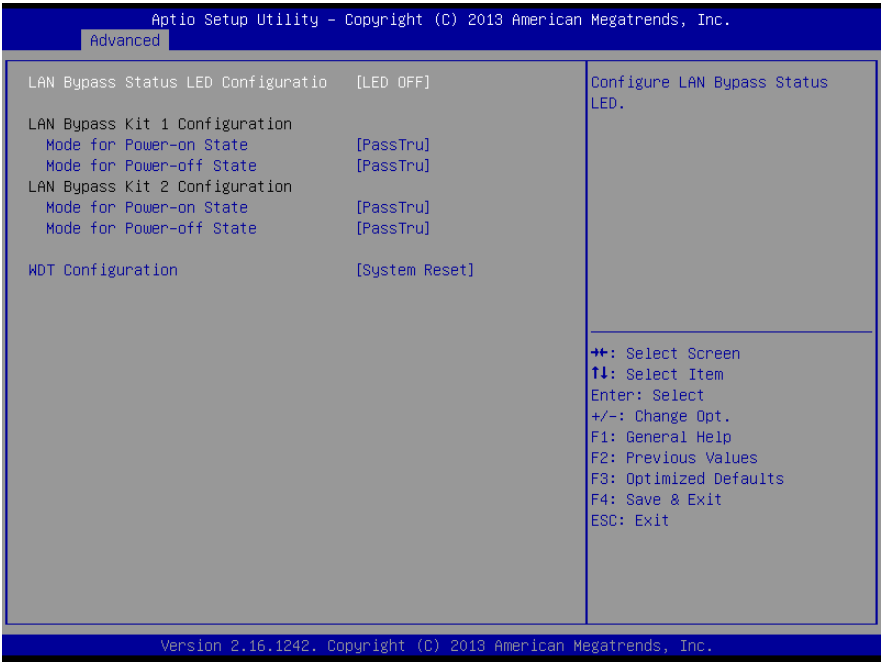
3.4.4.2 Power Management: S5 RTC Wake Settings (Dynamic Time)



Options summary:

Wake system with Dynamic Time	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable System wake on alarm event. When enabled, System will wake on current time + Increases minutese(s)		
Wake up day	1-5	Default 1
Select 1-5		

3.4.5 Advanced: LAN Bypass Configuration

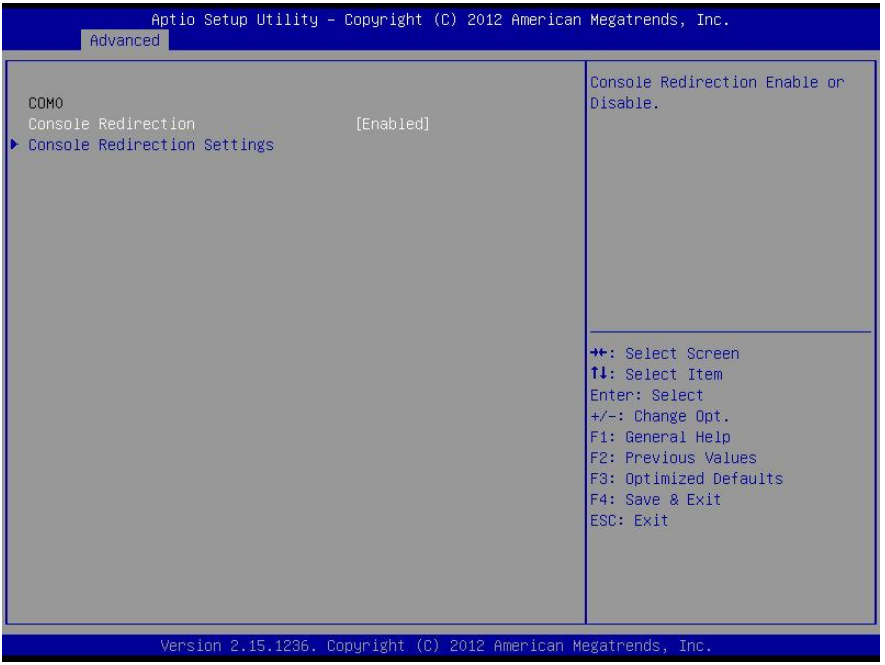


Options summary:

LAN Bypass Status LED Configuration	LED OFF	Optimal Default, Failsafe Default
	RED LED ON	
	RED LED BLINK	
	RED LED FAST BLINK	
	GREEN LED ON	
	GREEN LED BLINK	
	GREEN LED FAST BLINK	
Configure LAN Bypass Status LED.		
Mode for Power-on State	ByPass	
	PassTru	Optimal Default, Failsafe Default
Configure LAN kit behavior when system in power-on state. (Bypass/Pass Through)		
Mode for Power-off State	ByPass	
	PassTru	Optimal Default, Failsafe Default
Configure LAN kit behavior when system in power-off state. (Bypass/Pass Through)		
Mode for WDT triggering	ByPass	
	PassTru	Optimal Default, Failsafe Default

Configure LAN kit behavior when WDT is triggered. (Bypass/Pass Through)		
WDT Configuration	Force ByPass	Optimal Default, Failsafe Default
	System Reset	
Configure WDT behavior , \nSystem Reset\nForce Bypass		

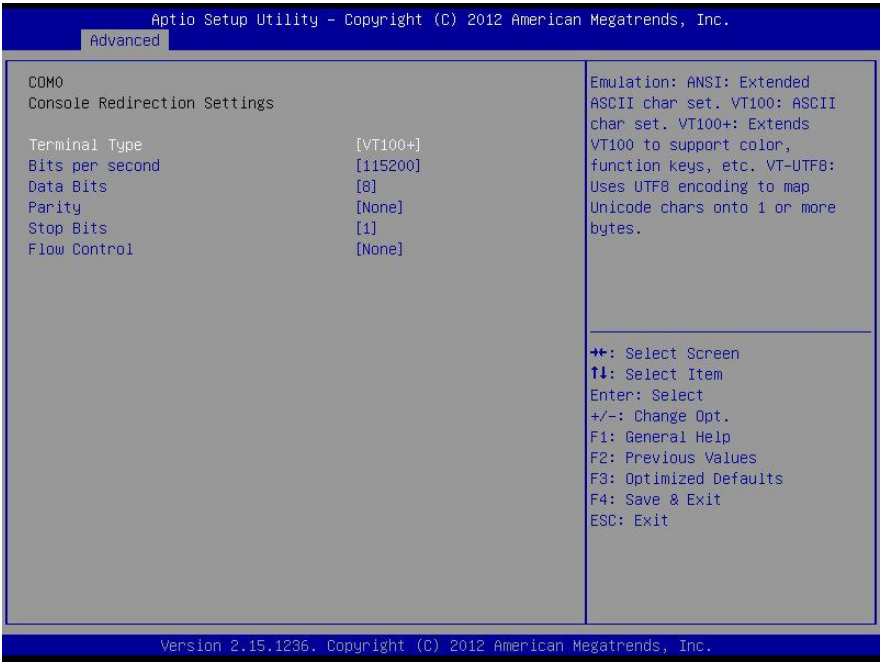
3.4.6 Advanced: Serial Port Console Redirection



Options summary:

Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable		

3.4.6.1 Serial Port Console Redirection: Console Redirection Settings

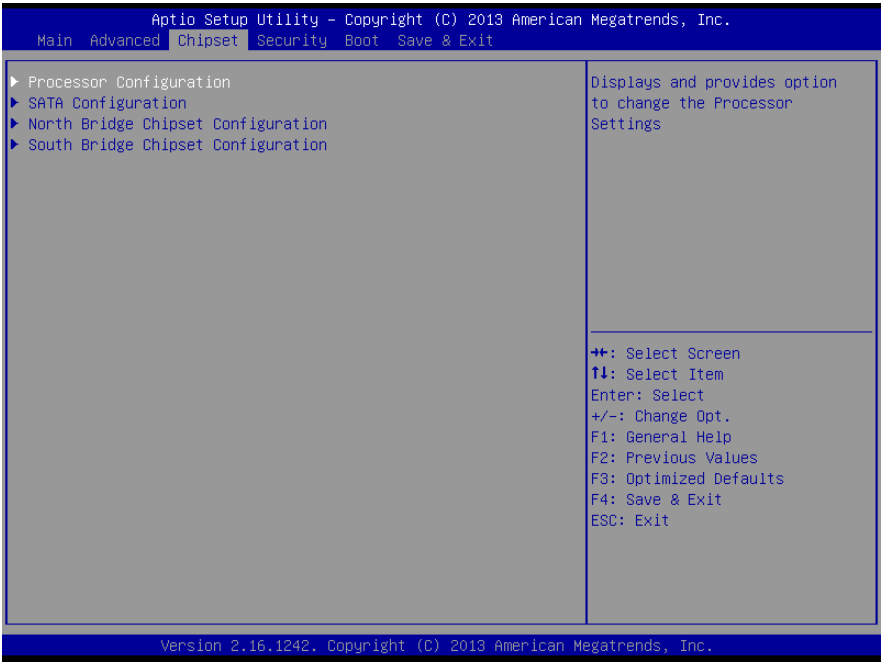


Options summary:

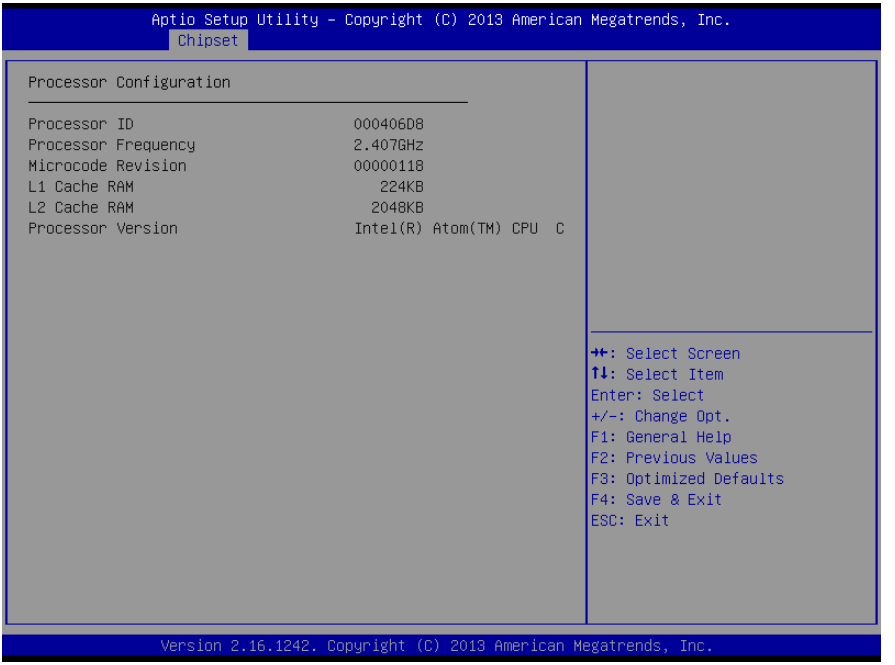
Terminal Type	VT100	Optimal Default, Failsafe Default
	VT100+	
	VT-UTF8	
	ANSI	
Emulation: ANSI, VT100, VT100+, VT-UTF8		
Bit per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed		
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits		
Parity	None	Optimal Default, Failsafe Default
	Even	

	Odd	
	Mark	
	Space	
A parity bit can be sent with the data bits to detect some transmission errors.		
Stop Bits	1	Optimal Default, Failsafe Default
	2	
Stop bits indicate the end of a serial data packet.		
Flow Control	None	
	Hardware RTS/CTS	Optimal Default, Failsafe Default
Flow control can prevent data loss from buffer overflow.		

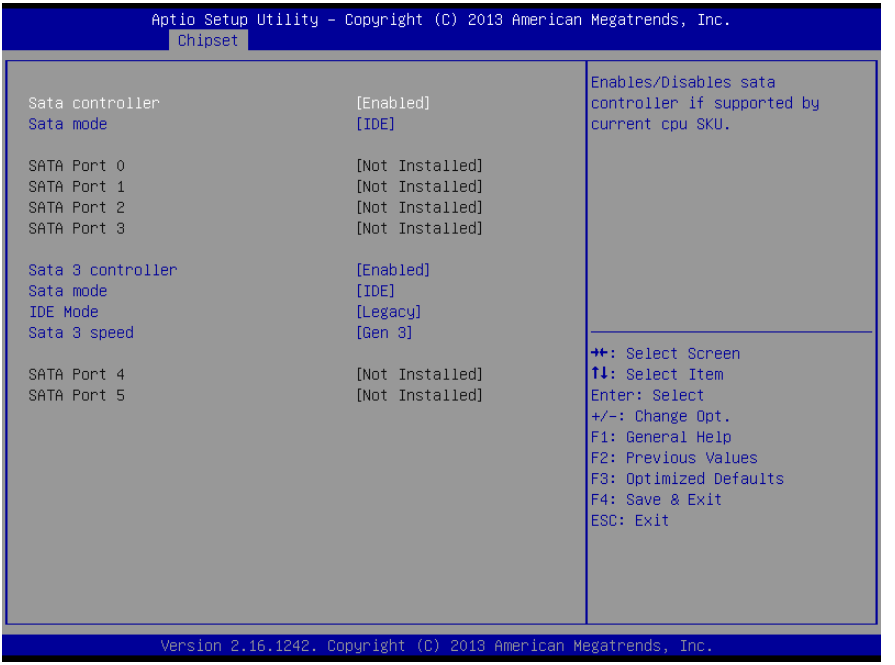
3.5 Setup submenu: Chipset



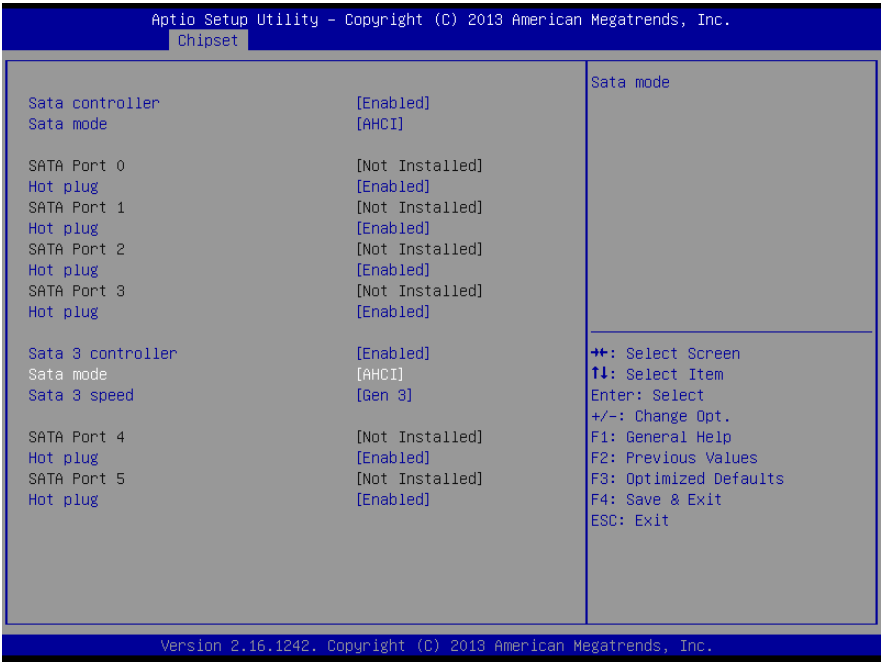
3.5.1 Chipset: Processor Configuration



3.5.2 Chipset: SATA Configuration (IDE)



3.5.3 Chipset: SATA Configuration (AHCI)

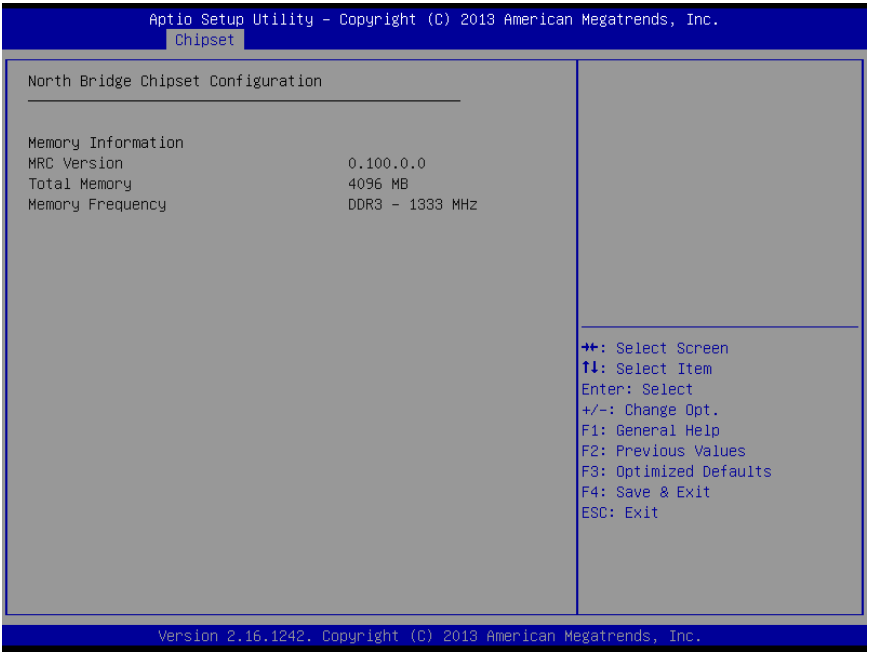


Options summary:

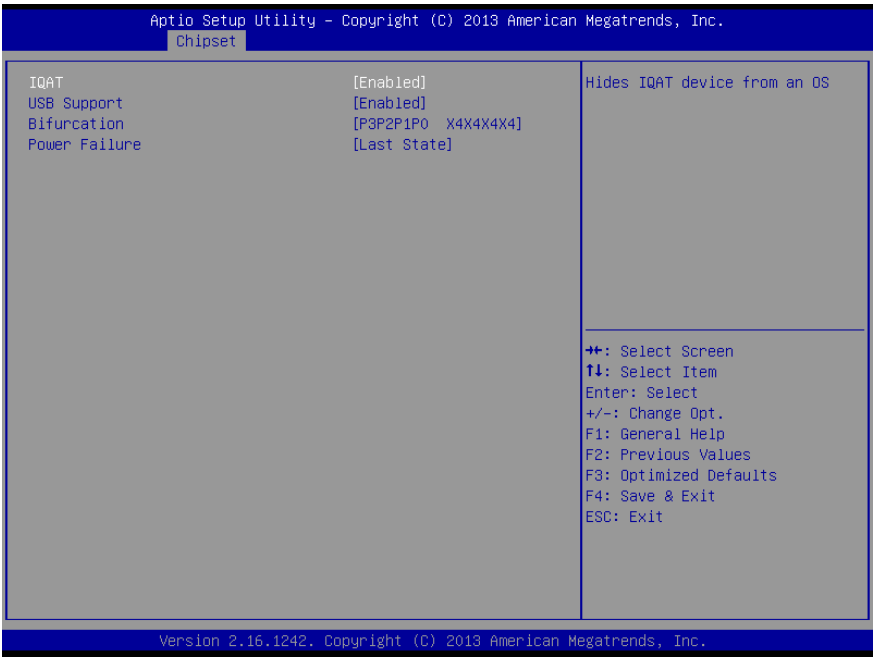
Sata controller	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enables/Disables sata controller if supported by current cpu SKU.		
SATA Mode	AHCI	
	IDE	Optimal Default, Failsafe Default
Select IDE / AHCI Mode		
Sata 3 controller	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enables/Disables sata controller if supported by current cpu SKU.		
SATA Mode	AHCI	
	IDE	Optimal Default, Failsafe Default
Select IDE / AHCI Mode		
Sata 3 speed	Gen 1	Optimal Default, Failsafe Default
	Gen 2	
	Gen 3	
Indicates the highest allowable speed of the interface		

Hot plug	Enabled	Optimal Default, Failsafe Default
	Disabled	
Hot plug		

3.5.4 Chipset: North Bridge Chipset Configuration



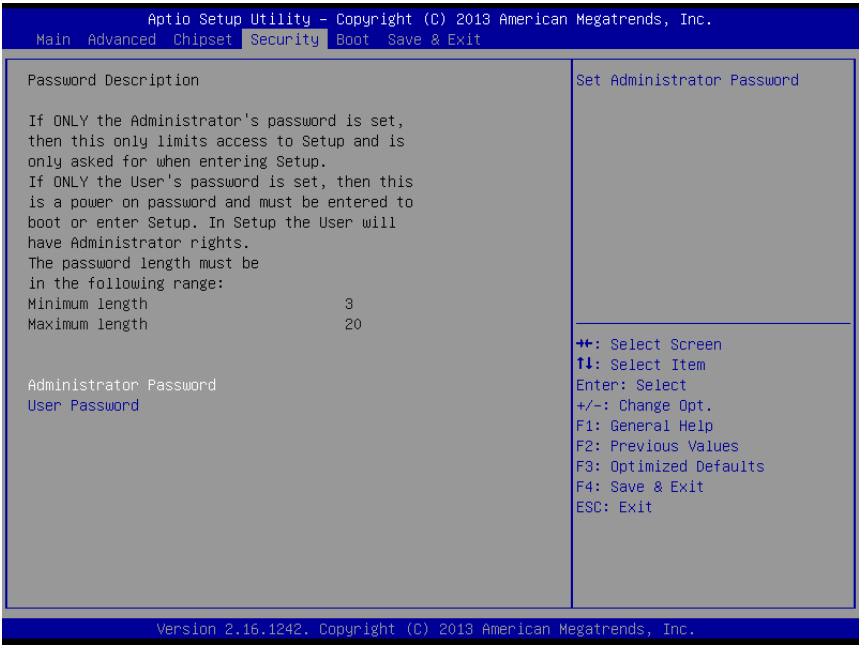
3.5.5 Chipset: South Bridge Chipset Configuration



Options summary:

IQAT	Enabled	Optimal Default, Failsafe Default
	Disabled	
Hides IQAT device from an OS		
USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
USB Support Parameters		
Bifurcation	P3P2----P0 X4X4X8	
	P3P2P1P0 X4X4X4X4	Optimal Default, Failsafe Default
Select Root Complex Bifurcation Config		
Power Failure	Last state	Optimal Default, Failsafe Default
	Power On	
	Power Off	
Detemine which state system should move to when restoring from AC power loss		

3.6 Setup submenu: Security



Change User/Administrator Password

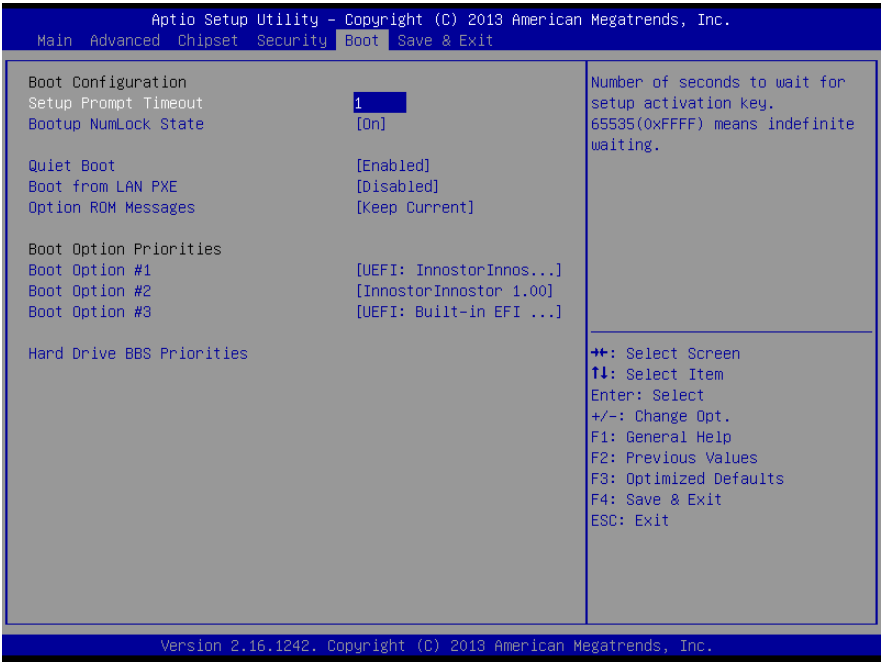
You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

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.

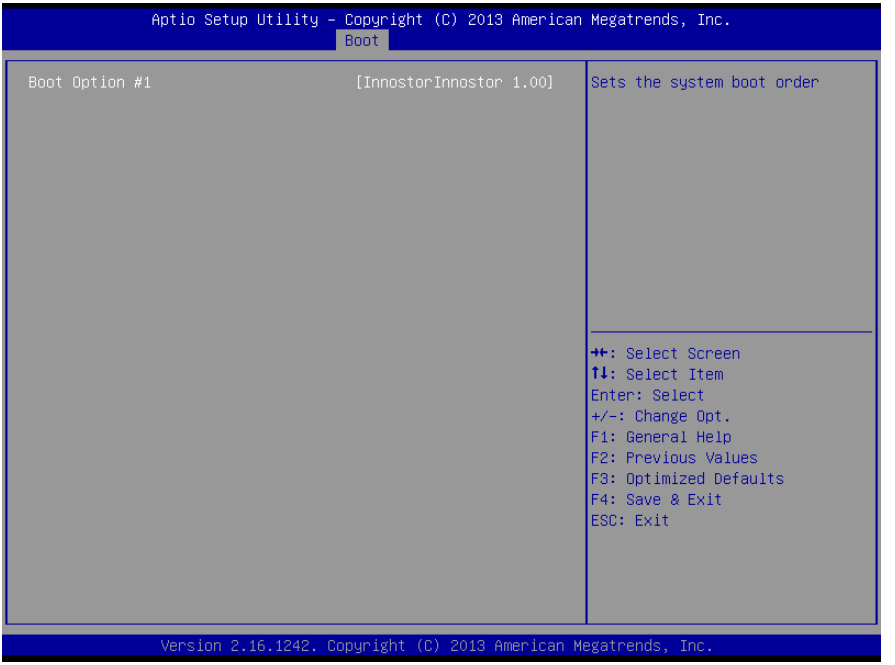
3.7 Setup submenu: Boot



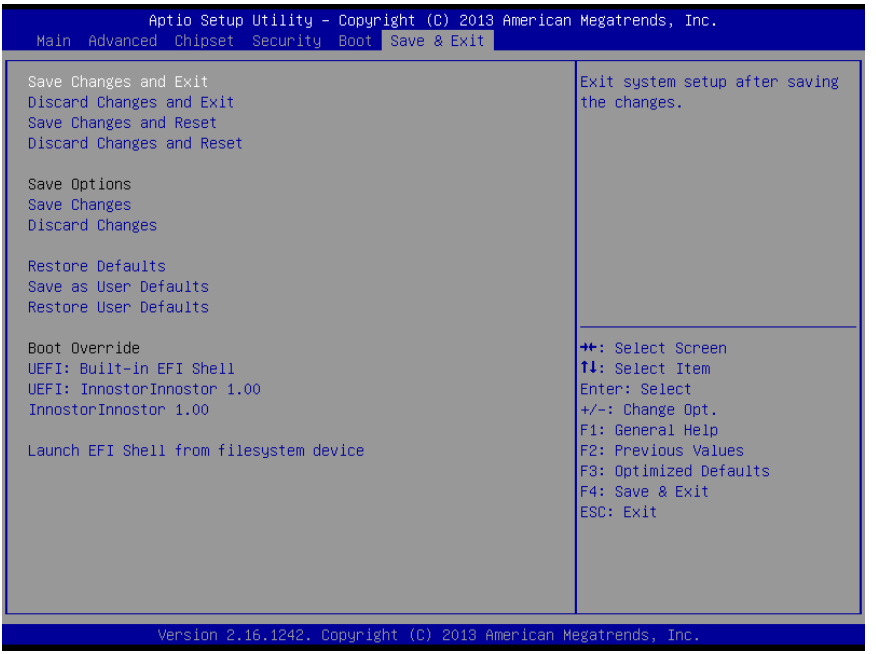
Options summary:

Setup Prompt Timeout	1	Default
	1-65536	
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.		
Bootup NumLock State	On	Default
	Off	
Select the keyboard NumLock state		
Quiet Boot	Disabled	
	Enabled	Default
En/Disable showing boot logo.		
Boot from LAN PXE	Disabled	Default
	Enabled	
En/Disable boot from on board LAN		
Option ROM Messages	Force BIOS	
	Keep Current	Default
Set display mode for Option ROM		

3.7.1 Boot: BBS Priorities



3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Product CD/DVD

The FWS-7350 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 **Step 1 - Chipset** folder followed by the **infinst_autol_Rangeley_9.4.3.1011.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 2 – Install Network Driver

1. Open the **Step 2 - LAN** folder followed by the **Autorun.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Initial Program

Table 1 : SuperIO relative register table		
	Default Value	Note
Index	0x2E(Note1)	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	0x2F(Note2)	SIO MB PnP Mode Data Register 0x2F or 0x4F

Table 2 : Watchdog relative register table					
	LDN	Register	BitNum	Value	Note
Timer Counter	0x07(Note3)	0x73(Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	0x07(Note5)	0x72(Note6)	7(Note7)	1(Note8)	Select time unit. 1: second 0: minute
Watchdog Enable (KRST)	0x07(Note9)	0x72(Note10)	6(Note11)	1 (Note12)	0: Disable 1: Enable
Timeout Status	0x07(Note13)	0x71(Note14)	0(Note15)	1	1: Clear timeout status

```
*********************************************************************************
// SuperIO relative definition (Please reference to Table 1)
#define byte   SIOIndex   //This parameter is represented from Note1
#define byte   SIOData   //This parameter is represented from Note2
#define   void   IOWriteByte(byte IOPort, byte Value);
#define   byte   IOReadByte(byte IOPort);
// Watch Dog relative definition (Please reference to Table 2)
#define byte   TimerLDN   //This parameter is represented from Note3
#define byte   TimerReg   //This parameter is represented from Note4
#define byte   TimerVal   // This parameter is represented from Note24
#define byte   UnitLDN   //This parameter is represented from Note5
#define byte   UnitReg   //This parameter is represented from Note6
#define byte   UnitBit   //This parameter is represented from Note7
#define byte   UnitVal   //This parameter is represented from Note8
#define byte   EnableLDN   //This parameter is represented from Note9
#define byte   EnableReg   //This parameter is represented from Note10
#define byte   EnableBit   //This parameter is represented from Note11
#define byte   EnableVal   //This parameter is represented from Note12
#define byte   StatusLDN   // This parameter is represented from Note13
#define byte   StatusReg   // This parameter is represented from Note14
#define byte   StatusBit   // This parameter is represented from Note15
*********************************************************************************
```

```
*********************************************************************************
VOID   Main(){
       // Procedure : AaeonWDTConfig
       // (byte)Timer : Time of WDT timer.(0x00~0xFF)
       // (boolean)Unit : Select time unit(0: second, 1: minute).
       AaeonWDTConfig();

       // Procedure : AaeonWDTEnable
        // This procudure will enable the WDT counting.
       AaeonWDTEnable();
}
*********************************************************************************
```

```
*********************************************************************************
// Procedure : AaeonWDTEnable
VOID    AaeonWDTEnable ( ){
        WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 1);
}

// Procedure : AaeonWDTConfig
VOID    AaeonWDTConfig ( ){
        // Disable WDT counting
        WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 0);
        // Clear Watchdog Timeout Status
        WDTClearTimeoutStatus();
        // WDT relative parameter setting
        WDTParameterSetting();
}

VOID    WDTEnableDisable(byte LDN, byte Register, byte BitNum, byte Value){
       SIOBitSet(LDN, Register, BitNum, Value);
}

VOID    WDTParameterSetting(){
        // Watchdog Timer counter setting
       SIOByteSet(TimerLDN, TimerReg, TimerVal);
      // WDT counting unit setting
       SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
}

VOID    WDTClearTimeoutStatus(){
       SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);
}
*********************************************************************************
```

```
*******************************************************************************
VOID    SIOEnterMBPnPMode(){
        Switch(SIOIndex){
                Case 0x2E:
                        IOWriteByte(SIOIndex, 0x87);
                        IOWriteByte(SIOIndex, 0x01);
                           IOWriteByte(SIOIndex, 0x55);
                           IOWriteByte(SIOIndex, 0x55);
                           Break;
                Case 0x4E:
                        IOWriteByte(SIOIndex, 0x87);
                        IOWriteByte(SIOIndex, 0x01);
                           IOWriteByte(SIOIndex, 0x55);
                           IOWriteByte(SIOIndex, 0xAA);
                        Break;
        }
}

VOID    SIOExitMBPnPMode(){
        IOWriteByte(SIOIndex, 0x02);
        IOWriteByte(SIOData, 0x02);
}

VOID    SIOSelectLDN(byte LDN){
         IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
        IOWriteByte(SIOData, LDN);
}
*******************************************************************************
```

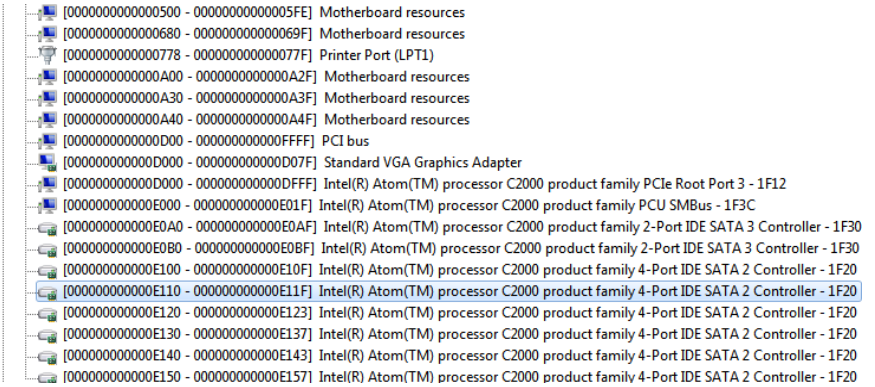
```
*****************************************************************************
VOID   SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
       Byte TmpValue;

       SIOEnterMBPnPMode();
        SIOSelectLDN(byte LDN);
       IOWriteByte(SIOIndex, Register);
       TmpValue = IOReadByte(SIOData);
       TmpValue &= ~(1 << BitNum);
       TmpValue |= (Value << BitNum);
       IOWriteByte(SIOData, TmpValue);
       SIOExitMBPnPMode();
}

VOID   SIOByteSet(byte LDN, byte Register, byte Value){
       SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
       IOWriteByte(SIOIndex, Register);
        IOWriteByte(SIOData, Value);
        SIOExitMBPnPMode();
}
*****************************************************************************
```

Appendix B

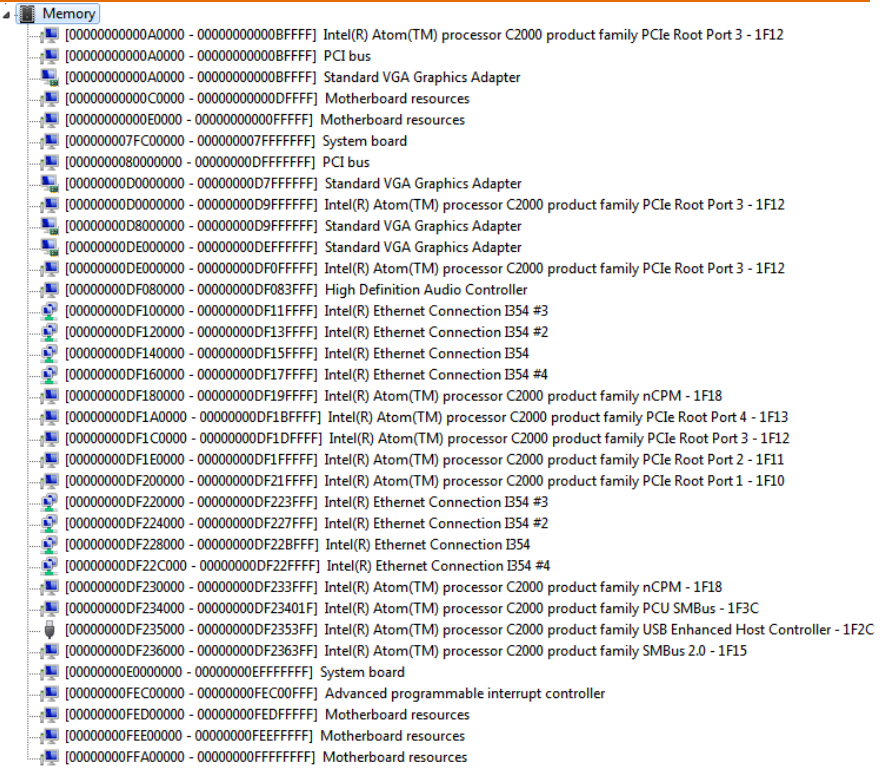
I/O Information

B.1 I/O Address Map

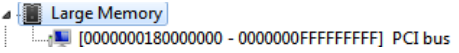
- Input/output (IO)
  - [0000000000000000 - 0000000000000CF7] PCI bus
  - [0000000000000020 - 0000000000000021] Programmable interrupt controller
  - [0000000000000024 - 0000000000000025] Programmable interrupt controller
  - [0000000000000028 - 0000000000000029] Programmable interrupt controller
  - [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
  - [0000000000000060 - 0000000000000060] Standard PS/2 Keyboard
  - [0000000000000061 - 0000000000000061] Motherboard resources
  - [0000000000000063 - 0000000000000063] Motherboard resources
  - [0000000000000064 - 0000000000000064] Standard PS/2 Keyboard
  - [0000000000000065 - 0000000000000065] Motherboard resources
  - [0000000000000067 - 0000000000000067] Motherboard resources
  - [0000000000000070 - 0000000000000070] Motherboard resources
  - [0000000000000070 - 0000000000000077] System CMOS/real time clock
  - [0000000000000080 - 0000000000000080] 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
  - [0000000000000170 - 0000000000000177] ATA Channel 1
  - [00000000000001F0 - 00000000000001F7] ATA Channel 0
  - [0000000000000376 - 0000000000000376] ATA Channel 1
  - [0000000000000378 - 000000000000037F] Printer Port (LPT1)
  - [00000000000003B0 - 00000000000003BB] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
  - [00000000000003B0 - 00000000000003BB] Standard VGA Graphics Adapter
  - [00000000000003C0 - 00000000000003DF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
  - [00000000000003C0 - 00000000000003DF] Standard VGA Graphics Adapter
  - [00000000000003F6 - 00000000000003F6] ATA Channel 0
  - [00000000000003F8 - 00000000000003FF] Communications Port (COM1)
  - [0000000000000400 - 000000000000047F] Motherboard resources
  - [00000000000004D0 - 00000000000004D1] Programmable interrupt controller


[0000000000000500 - 00000000000005FE] Motherboard resources
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000778 - 000000000000077F] Printer Port (LPT1)
[0000000000000A00 - 0000000000000A2F] Motherboard resources
[0000000000000A30 - 0000000000000A3F] Motherboard resources
[0000000000000A40 - 0000000000000A4F] Motherboard resources
[0000000000000D00 - 0000000000000FFFF] PCI bus
[0000000000000D000 - 000000000000D07F] Standard VGA Graphics Adapter
[0000000000000D000 - 000000000000DFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
[000000000000E000 - 000000000000E01F] Intel(R) Atom(TM) processor C2000 product family PCU SMBus - 1F3C
[000000000000E0A0 - 000000000000E0AF] Intel(R) Atom(TM) processor C2000 product family 2-Port IDE SATA 3 Controller - 1F30
[000000000000E0B0 - 000000000000E0BF] Intel(R) Atom(TM) processor C2000 product family 2-Port IDE SATA 3 Controller - 1F30
[000000000000E100 - 000000000000E10F] Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
[000000000000E110 - 000000000000E11F] Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
[000000000000E120 - 000000000000E123] Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
[000000000000E130 - 000000000000E137] Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
[000000000000E140 - 000000000000E143] Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
[000000000000E150 - 000000000000E157] Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20

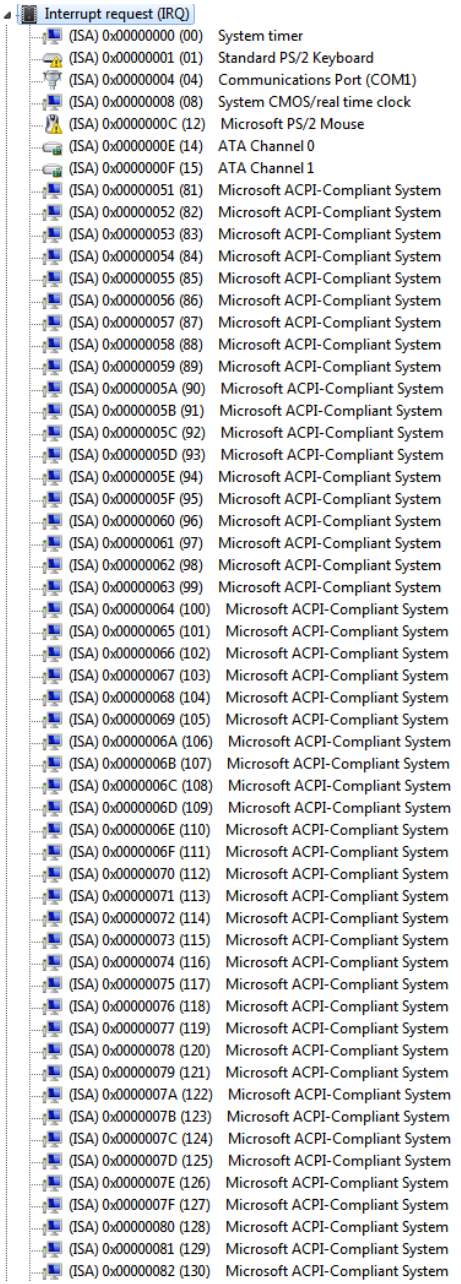
B.2 Memory Address Map



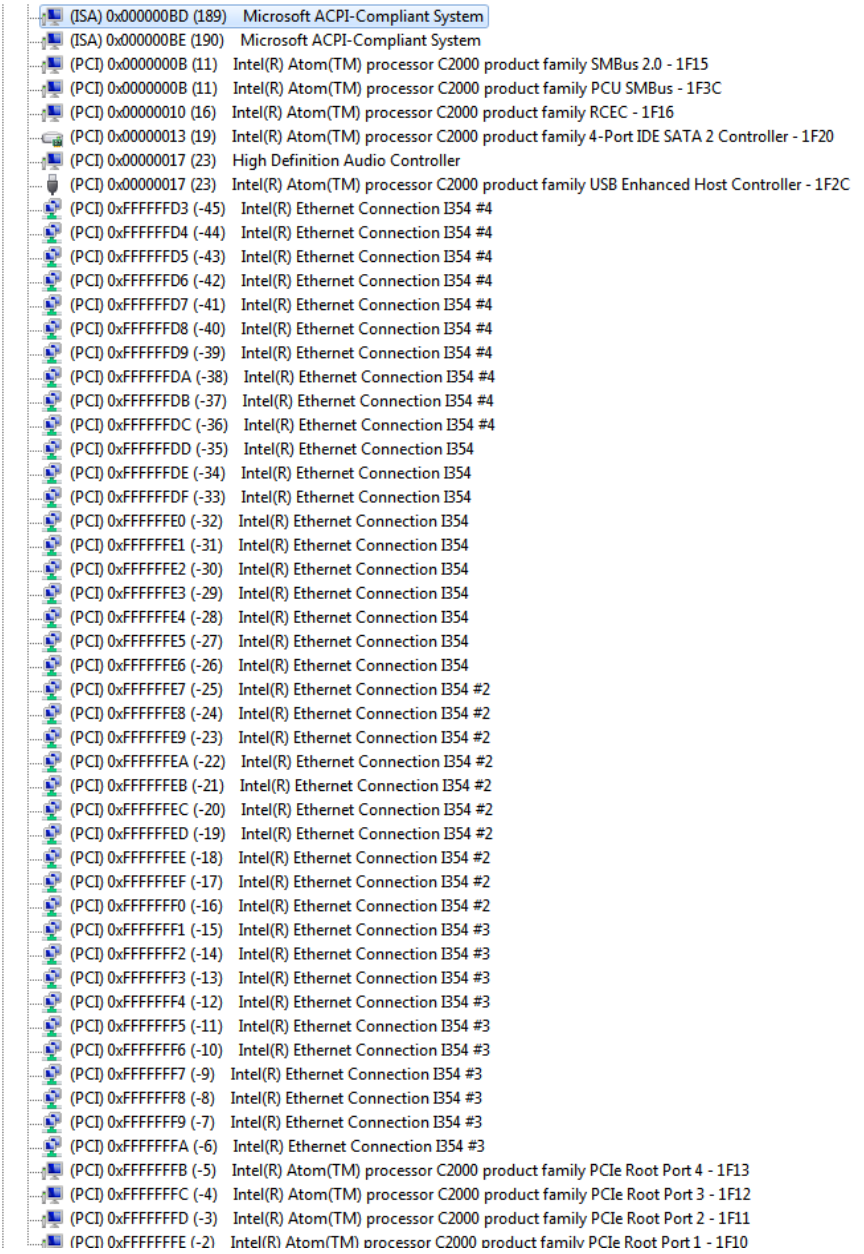
Large Memory



B.3 IRQ Mapping Chart



(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) processor C2000 product family SMBus 2.0 - 1F15
(PCI) 0x0000000B (11) Intel(R) Atom(TM) processor C2000 product family PCU SMBus - 1F3C
(PCI) 0x00000010 (16) Intel(R) Atom(TM) processor C2000 product family RCEC - 1F16
(PCI) 0x00000013 (19) Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
(PCI) 0x00000017 (23) High Definition Audio Controller
(PCI) 0x00000017 (23) Intel(R) Atom(TM) processor C2000 product family USB Enhanced Host Controller - 1F2C
(PCI) 0xFFFFFFD3 (-45) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFD4 (-44) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFD5 (-43) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFD6 (-42) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFD7 (-41) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFD8 (-40) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFD9 (-39) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFDA (-38) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFDB (-37) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFDC (-36) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFDD (-35) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFDE (-34) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFDF (-33) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE0 (-32) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE1 (-31) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE2 (-30) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE3 (-29) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE4 (-28) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE5 (-27) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE6 (-26) Intel(R) Ethernet Connection I354
(PCI) 0xFFFFFFE7 (-25) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFE8 (-24) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFE9 (-23) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFEA (-22) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFEB (-21) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFEC (-20) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFED (-19) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFEE (-18) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFEF (-17) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFF0 (-16) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFF1 (-15) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF2 (-14) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF3 (-13) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF4 (-12) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF5 (-11) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF6 (-10) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF7 (-9) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF8 (-8) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFF9 (-7) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFFA (-6) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFFB (-5) Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 4 - 1F13
(PCI) 0xFFFFFFFC (-4) Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
(PCI) 0xFFFFFFFD (-3) Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 2 - 1F11
(PCI) 0xFFFFFFFE (-2) Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 1 - 1F10

B.4 DMA Channel Assignments