FWS-2350

Desktop

Network Appliance Platform

CompactFlash™ Socket

6 LAN Ports

2 USB2.0, 1 COM for Console

FWS-2350 Manual 2nd Ed.
October, 2014

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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.

Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- FWS-2350
- CD-ROM for manual (in PDF format) and drivers

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

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Chapter

1

General Information

1.1 Introduction

FWS-2350 adopts the Intel® Dual Core Atom™ C2358 1.7 GHz/ Quad Core Atom™ C2558 2.4 GHz. The system memory features DDR3 Long-DIMM socket, ECC or non-ECC SDRAM up to 16GB. It deploys 6x Gigabit Ethernet LAN ports with optional 3 pair LAN bypass function. The condensed appearance of the FWS-2350 features desktop form factor that fits nicely into a space-limited environment.

This compact FWS-2350 is equipped with an optional CF socket. In addition, it offers flexible expansion with network products and features 2x optional Mini-Card socket, 2x USB2.0 ports and 1x RJ-45 console port. The console port deploys console re-direction that increases the network security via remote control. All of these designs provide for a more user-friendly solution.

1.2 Features

- Built-in Gigabuilt Ethernet x 6
- Dual Core Intel® Atom™ C2358 1.7 GHz/ Quad Core Atom™ C2558 2.4 GHz
- Supports QuickAssist Crypto Acceleration
- DDR3 Long-DIMM socket, supports up to 16GB ECC or non-ECC SDRAM
- Built-in Intel® I211 LAN Controller and Marvell PHY 88E1543
- System cooling fan x 1
- Support 2 pairs LAN bypass function (optional)
- Compact desktop design

1.3 Specifications

System

Form Factor	Desktop 6-ports Network Appliance
Processor	Dual Core Intel® Atom™ C2358 1.7 GHz Processor Quad Core Intel® Atom™ C2558 2.4 GHz Processor
System Memory	DDR3 Long-DIMM slot Dual-channel DDR3/DDR3L 1333/1600MHz, ECC or non-ECC SDRAM up to 16GB
Ethernet	Intel® I211 x 2, Marvell 88E1543 x 1
BIOS	AMI BIOS
SSD	CF x 1
Serial ATA	Onboard SATA3 port x 1 Onboard SATA3 port x 1 (Optional)
Expansion Interface	Mini Card socket x 2 (Optional) CF Socket x 1 (Optional)
Watchdog Timer	1~255 steps by software programming
RTC	Internal RTC
Storage	Type 2 CompactFlash™ socket x 1 (default) or CFast™ socket x 1 (optional), 2.5” HDD Bay x 1
System Fan	4 cm ball bearing fan
Front I/O Panel	Power LED x 1, Status LED x 1, HDD

	Active LED x 1, LAN LED x 12
Rear I/O Panel	USB2.0 port x 2, RJ-45 x 6, RJ-45 console x 1, 12V DC power input x 1, Software Reset Switch x 1
Color	Black
Power Supply	12V DC power in connector/ 60W power adapter x 1, 4-pin DC power out connector for HDD (optional)
Dimension	10.24”(W) x 1.73”(H) x 7.00”(D) (260mm x 44mm x 178mm)

Display

Chipset	Dual Core Intel® Atom™ C2358 1.7 GHz Processor Quad Core Intel® Atom™ C2558 2.4 GHz Processor
Graphic Engine	-
Resolution	-
Output Interface	VGA internal box header

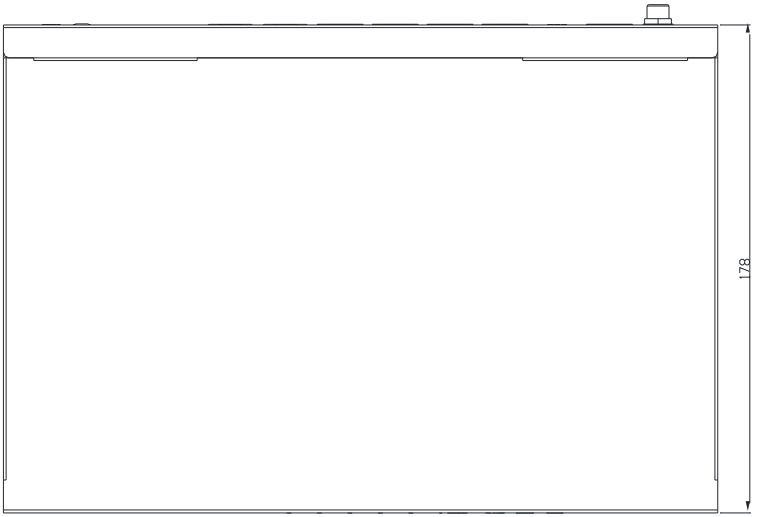
I/O

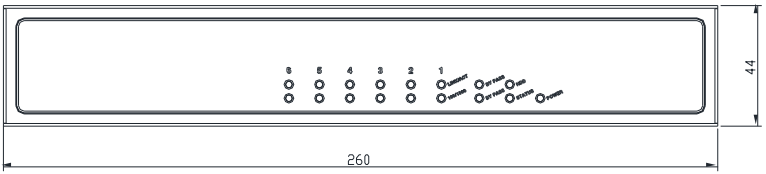
Serial Port	RJ-45 console x 1
Keyboard & Mouse	Reserved pin header
USB	USB2.0 Type A on I/O side x 2

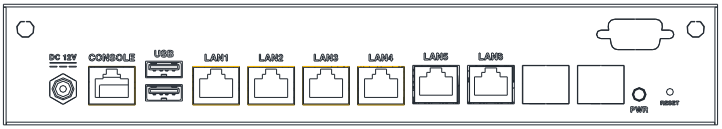
Environment

Operating Temperature	32°F~104°F (0°C ~40°C)
Storage Temperature	-4°F~104°F (-20°C ~60°C)
Operating Humidity	10%~80% relative humidity, non-condensing
Storage Humidity	10%~80% @ 40°C, non-condensing
Vibration	0.5g rms/5~500Hz/ operation (2.5" hard disk drive) 1.5g rms/5~500Hz/ non-operation
Shock	10G peak acceleration (11m sec. duration), operation 20G peak acceleration (11m sec. duration), non operation

1.4 General System Information







Chapter

2

Quick Installation Guide

2.1 Safety Precautions

The installation is intended for technically qualified personnel who have experience installing and configuring system boards.

The equipment can be installed in a restricted access location (RAL) only.

A restricted access location is a site location for equipment where the following criteria apply:

01. Access can only be gained by service persons or by users who have been trained on the restrictions and the precautions for this specific site.

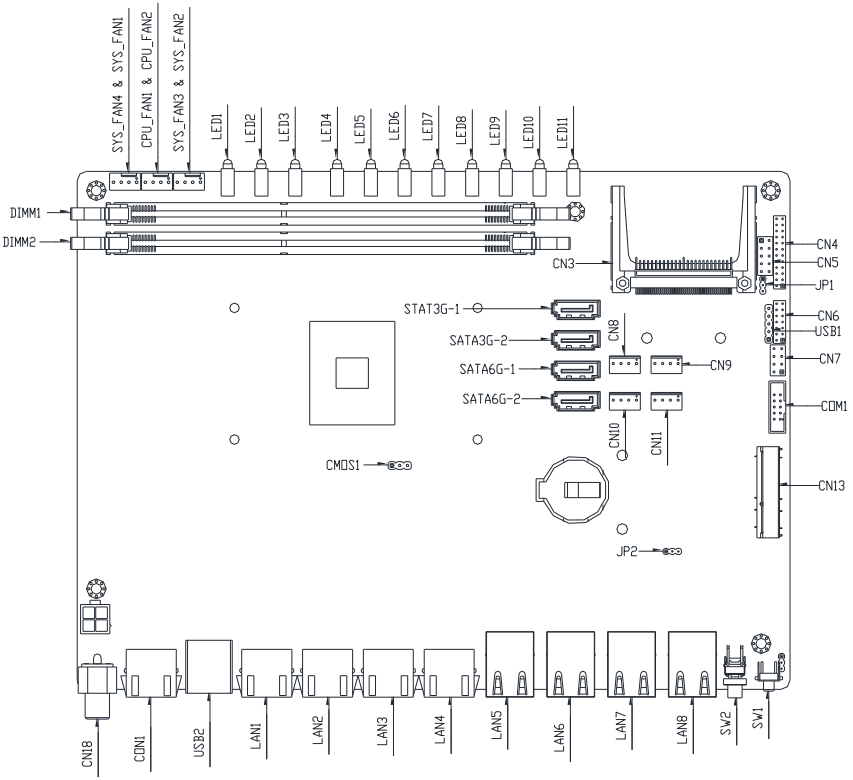
02. Access is by means of at least one of the following, special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

Safety Precautions:

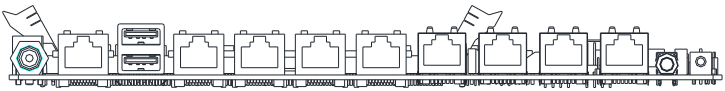
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

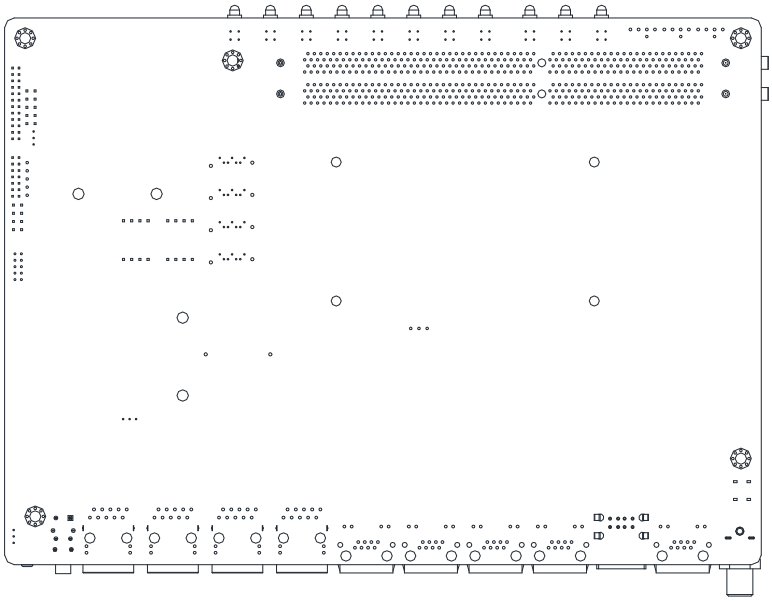
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors of Main Board

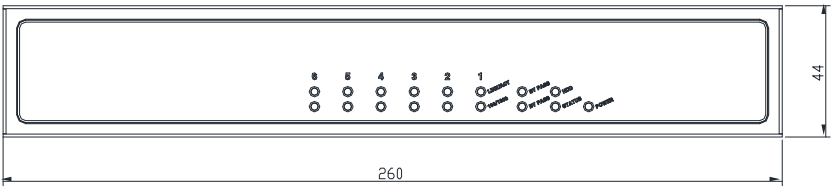


*Memory assembly priority: (1) DIMM1 (2) DIMM2

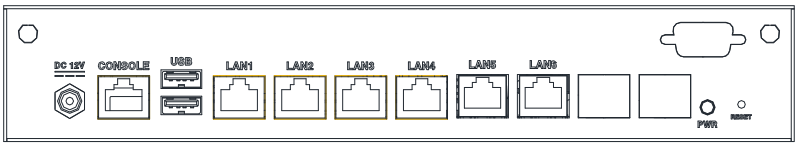




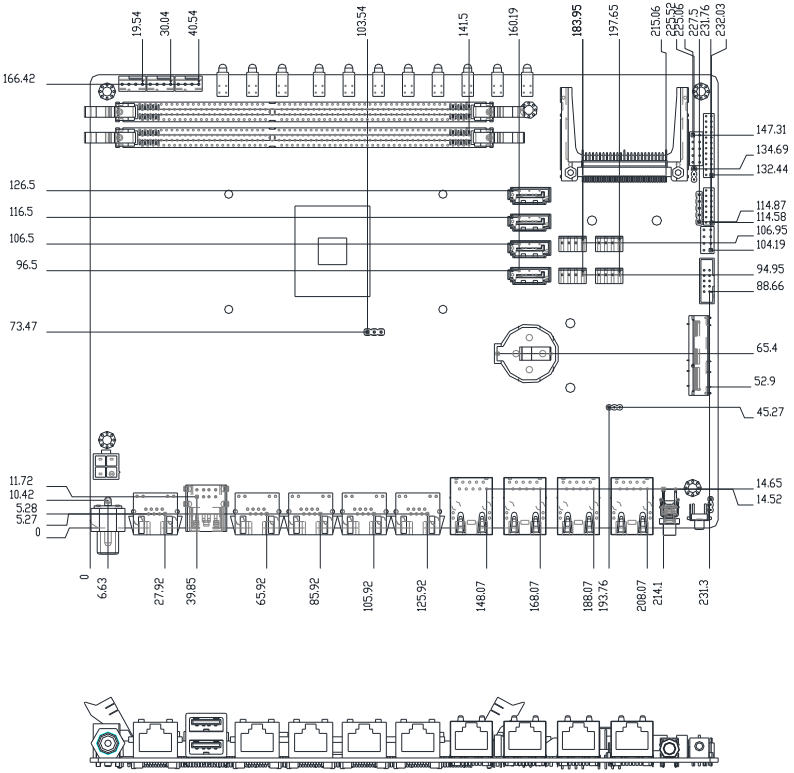
LEDs on Front Panel of FWS-2350

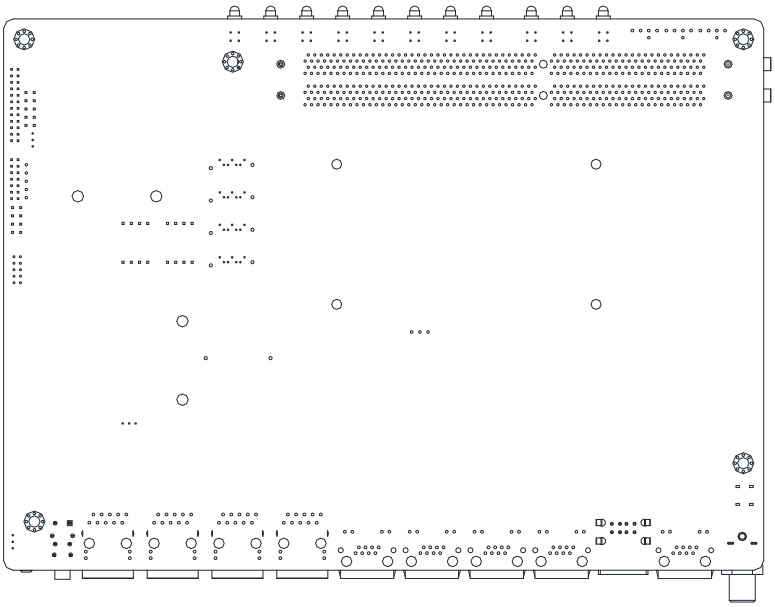


Connectors on Rear Panel of FWS-2350



2.3 Mechanical Drawing of Main Board





2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
CMOS1	CMOS Setting Selection
JP2	Auto PWRBTN Selection
JP1	CF POWER Selection

2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

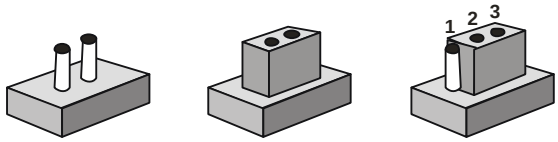
Label	Function
DIMM1	DDR3 U-DIMM SOCKET
DIMM2	DDR3 U-DIMM SOCKET
CN16	4P ATX POWER SUPPLY INPUT
CN18	DC 12V IN JACK
CPU_FAN1	4P SMART FAN
SYS_FAN1	4P SMART FAN
SYS_FAN2	4P SMART FAN
CN7	KB/MS
COM1	COM PORT
CON1	consle PORT
USB1	USB 2.0 *1
USB2	USB 2.0 *2
CN5	Front Panel Pinheader

SATA6G_1/2	SATA3 INTERFACE
SATA3G_1/2	SATA2 INTERFACE
CN8.9.10.11	SATA POWER
CN13	Mini PCI-E socket
CN4/CN6	LAN LED Pinheader

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



Open **Closed** **Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.7 CF POWER Selection (JP1)

JP1	Function
1-2	5V
2-3	3.3V (Default)

2.8 Auto PWRBTN Selection (JP2)

JP2	Function
1-2	Don't use Auto PWRBTN (Default)
2-3	Use Auto PWRBTN

2.9 CMOS Setting Selection (CMOS1)

CMOS1	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.10 LAN LED Connector (CN4)

Pin	Signal	Pin	Signal
1	L1_ACT#	**2**	L1_1K
3	L1_ACT	**4**	L1_100
5	L2_ACT#	**6**	L2_1K
7	L2_ACT	**8**	L2_100
9	L3_ACT#	**10**	L3_1K
11	L3_ACT	**12**	L3_100
13	L4_ACT#	**14**	L4_1K

15	L4_ACT	**16**	L4_100
17	L5_ACT#	**18**	L5_1K
19	L5_ACT	**20**	L5_100
21	L6_ACT#	**22**	L6_1K
23	L6_ACT	**24**	L6_100

2.11 Front Panel Connector (CN5)

Pin	Signal	Pin	Signal
1	Power On Button (-)	**2**	Power On Button (+)
3	HDD LED(-)	**4**	HDD LED(+)
5	External Speaker (-)	**6**	External Speaker (+)
7	Power LED (-)	**8**	Power LED (+)
9	Reset Switch (-)	**10**	Reset Switch (+)

2.12 LAN LED Connector (CN6)

Pin	Signal	Pin	Signal
1	L7_ACT#	**2**	L7_1K
3	L7_ACT	**4**	L7_100
5	L8_ACT#	**6**	L8_1K
7	L8_ACT	**8**	L8_100
9	BPLED1-	**10**	BPLED1+
11	BPLED2-	**12**	BPLED2+
13	STLED-RED	**14**	STLED-GRN

2.13 SATA Power Connector (CN8.9.10.11)

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

2.14 4-pin ATX Power Connector (CN16)

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

2.15 Pin Header (USB1)

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

2.16 Console Port (CON1)

Pin	Signal	Pin	Signal
1	RTS1X	**2**	DTR1X
3	SOUT1X	**4**	GND
5	GND	**6**	SIN1X
7	DSR1X	**8**	CTS1X

2.17 Hard Disk Installation

Step1: Remove the cover

Step 2: Slide right to remove casing

Step 3: Turn screw clockwise to open HDD casing

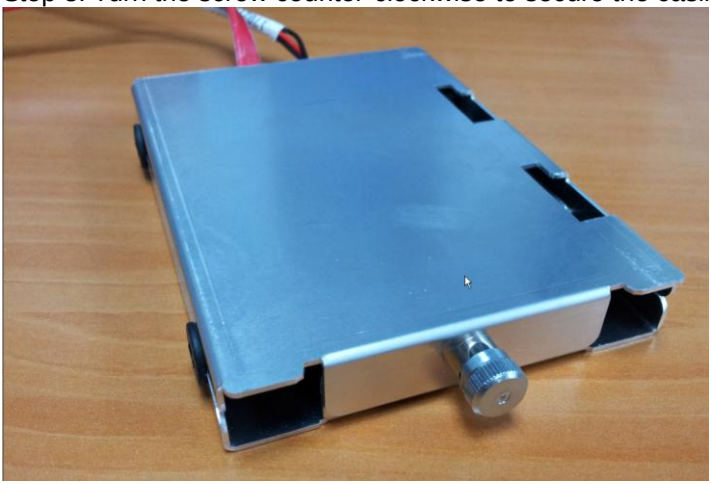
Step 4: Attach all four screws of the casing to the HDD

Step 5: Attach the SATA and Power cable to the HDD

Step 6: Place the HDD onto the HDD bracket of the casing

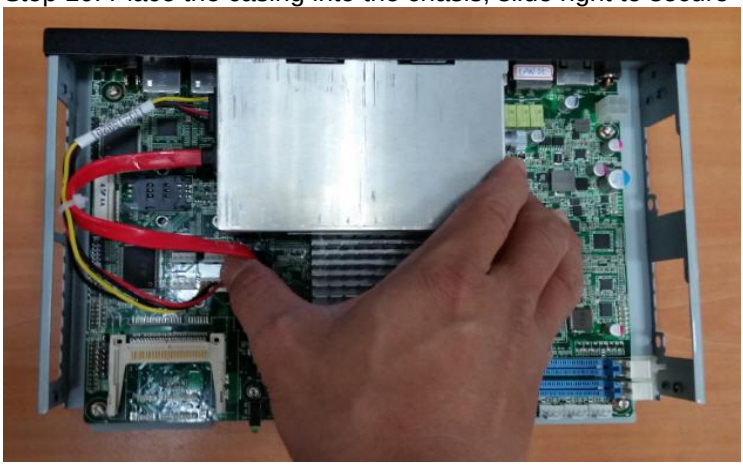
Step 7: Cover up the casing

Step 8: Turn the screw counter-clockwise to secure the casing



Step 9: Connect the SATA and Power cables to the mainboard

Step 10: Place the casing into the chasis, slide right to secure

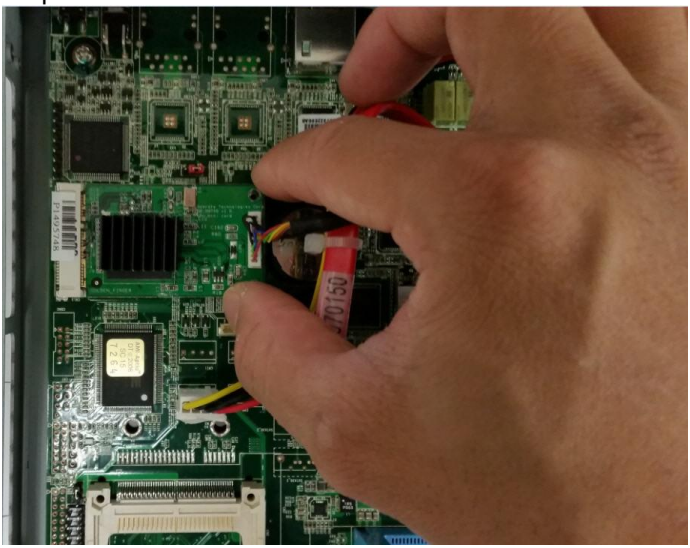


Step 11: Close and secure the cover

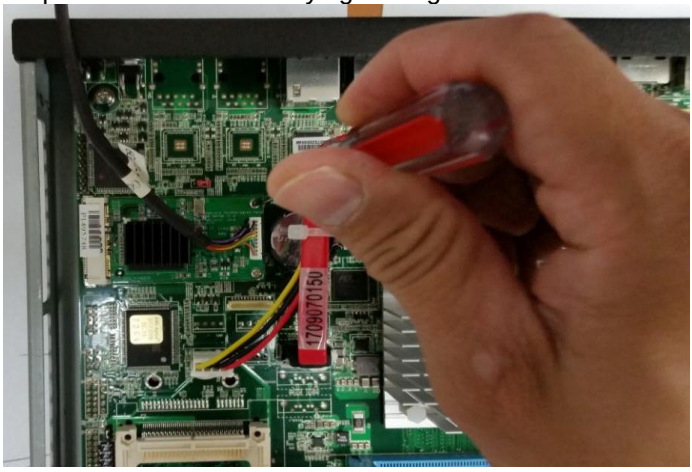
2.18 VGA Card Installation

Step 1: Remove the cover

Step 2: Insert the VGA Card into Mini-PCI slot



Step 3: Secure the card by tightening the screws



Step 4: Connect your VGA device. Both screws must be secured for the connector to function properly

Step 5: Close and secure the cover

China RoHS Requirements
产品中有毒有害物质或元素名称及含量

AAEON Boxer/ 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	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
电源	×	○	○	○	○	○

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、电源为选购品。

Chapter

3

AMI BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The system configuration reset by Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.

The FWS-2350 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer then press <Del> or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable disable boot option for legacy network devices.

Chipset

Host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

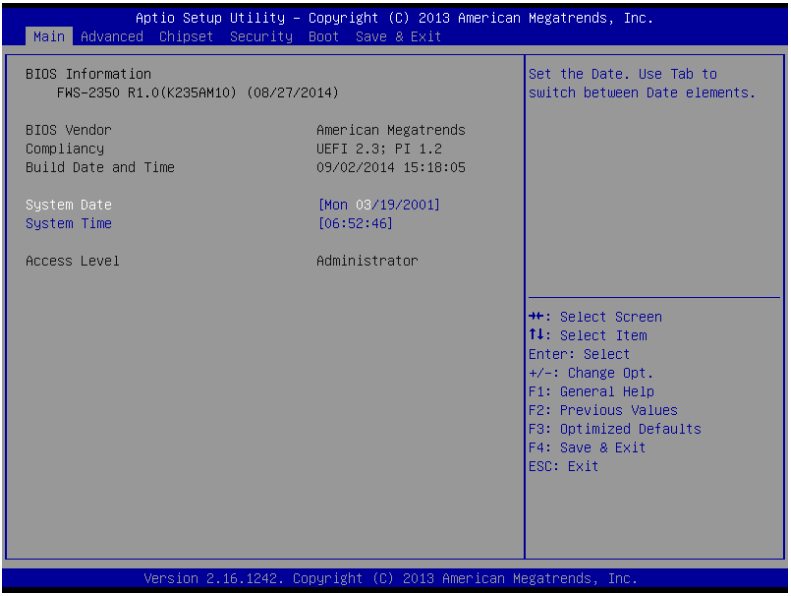
Set setup administrator password.

Save & Exit

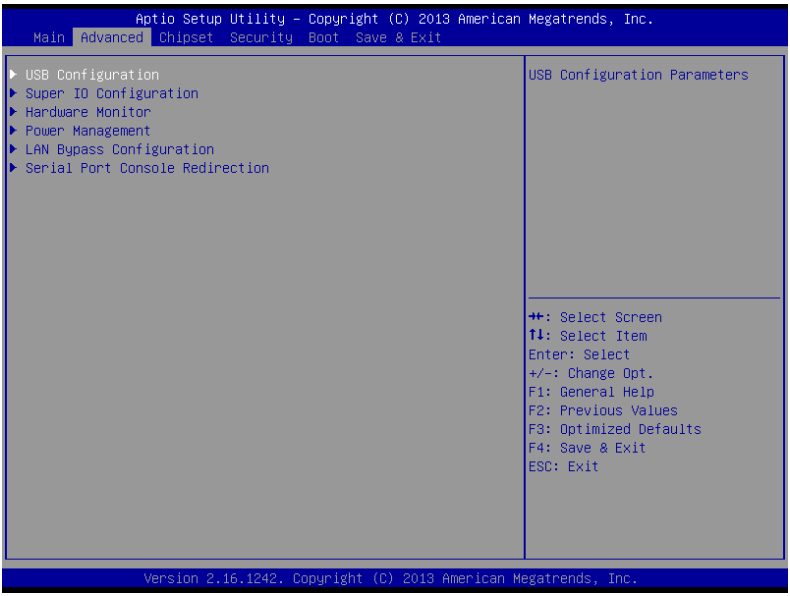
Exit system setup after saving the changes.

Setup Menu

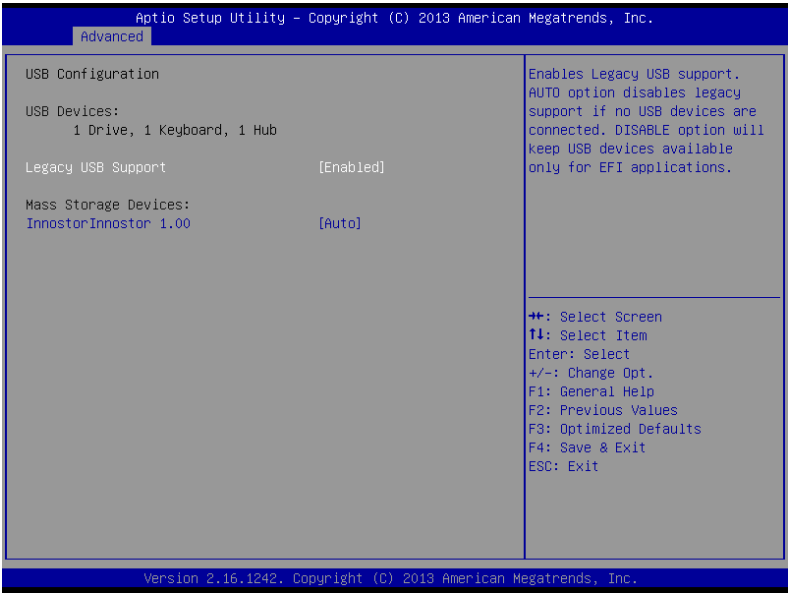
Setup submenu: Main



Setup submenu: Advanced



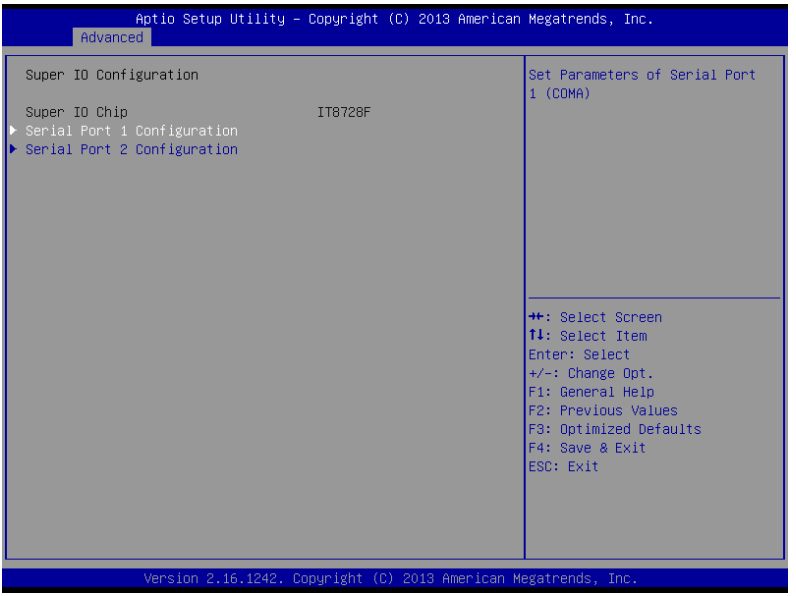
USB Configuration



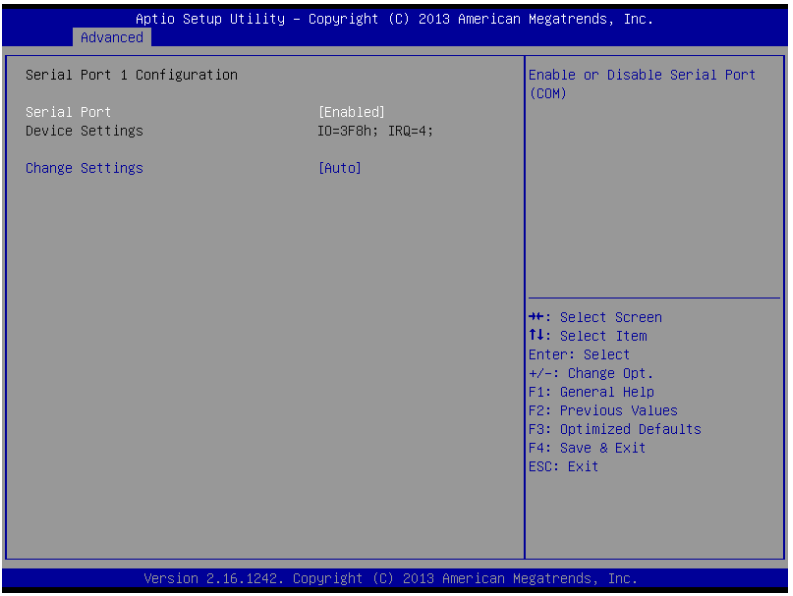
Options summary:

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)		

Super IO Configuration



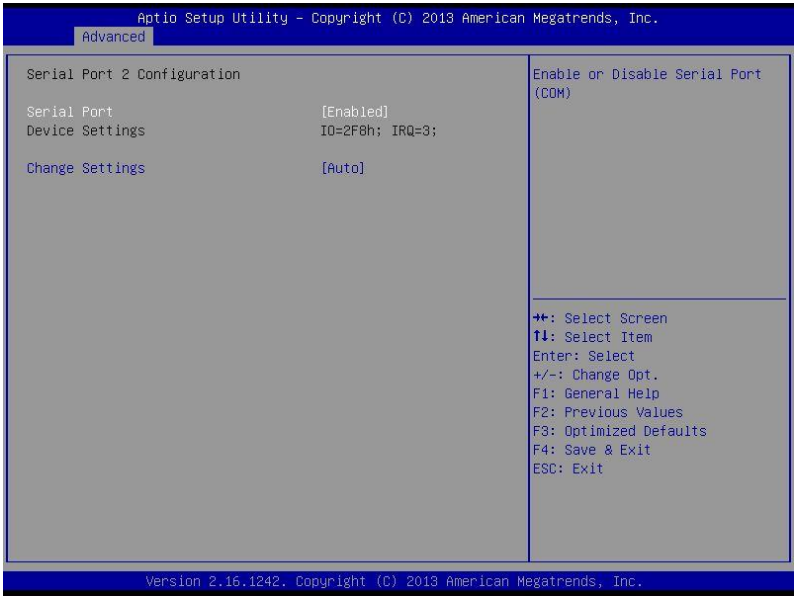
Serial Port 1 Configuration



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.		

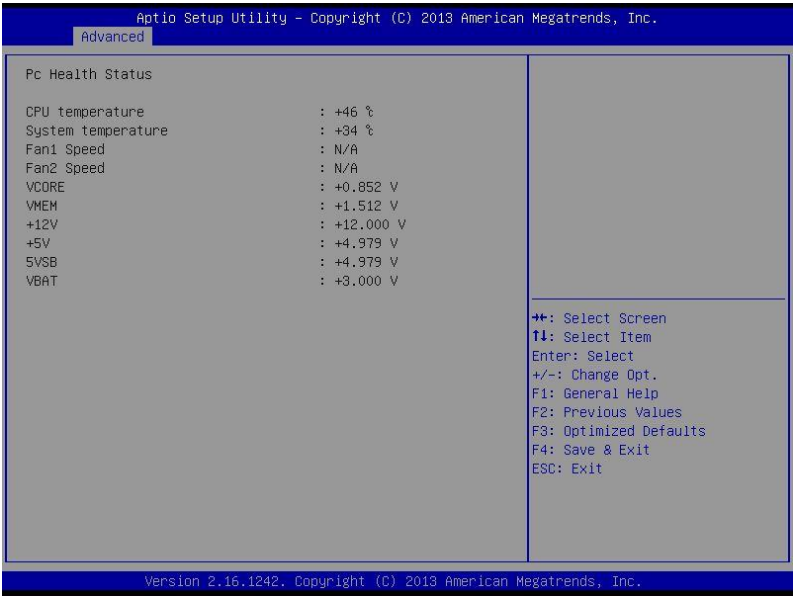
Serial Port 2 Configuration



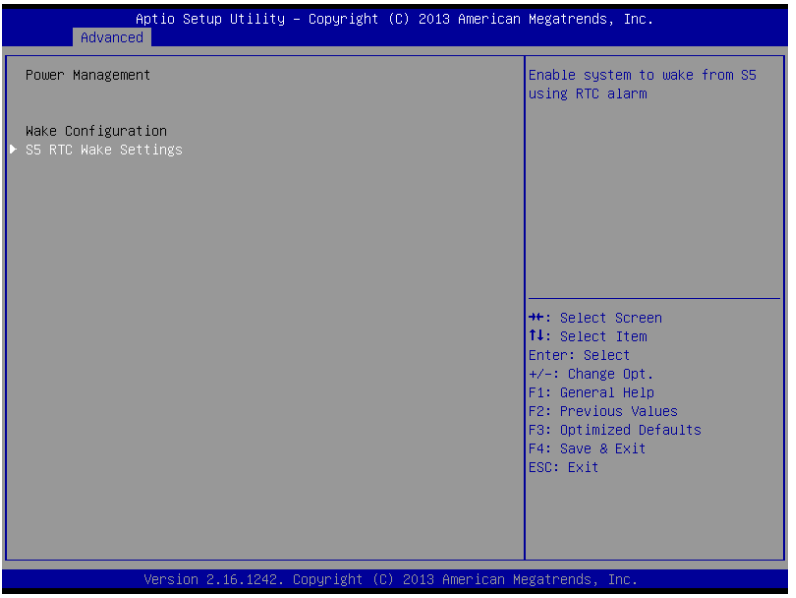
Options summary:

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.		

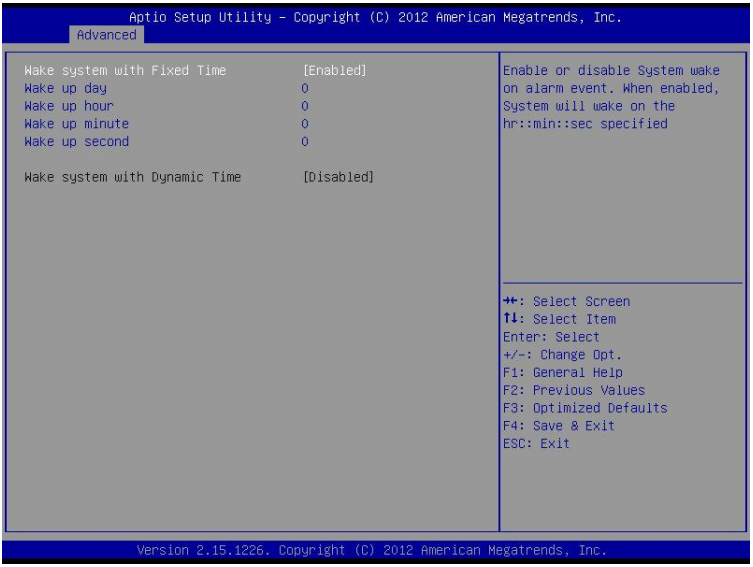
H/W Monitor


Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Advanced
Pc Health Status
CPU temperature : +46 °C
System temperature : +34 °C
Fan1 Speed : N/A
Fan2 Speed : N/A
VCORE : +0.852 V
VMEM : +1.512 V
+12V : +12.000 V
+5V : +4.979 V
5VSB : +4.979 V
VBAT : +3.000 V
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

Power Management



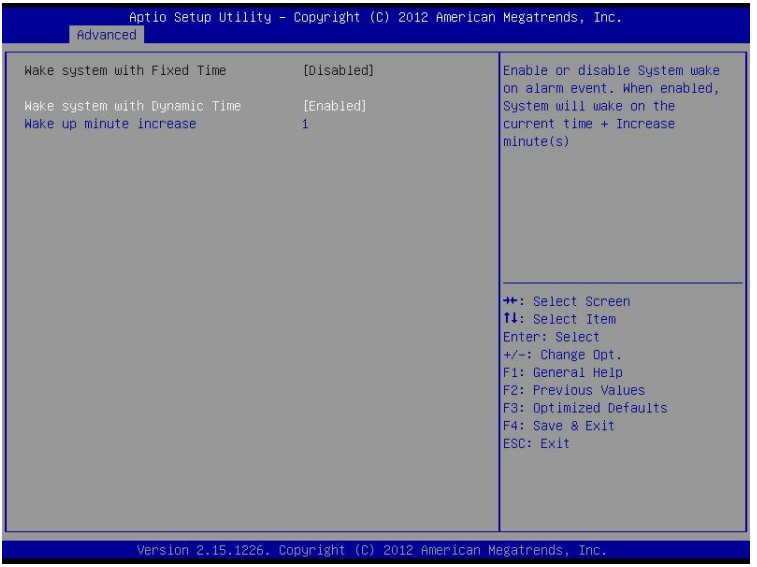
S5 RTC Wake Settings (Fixed Time)



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		

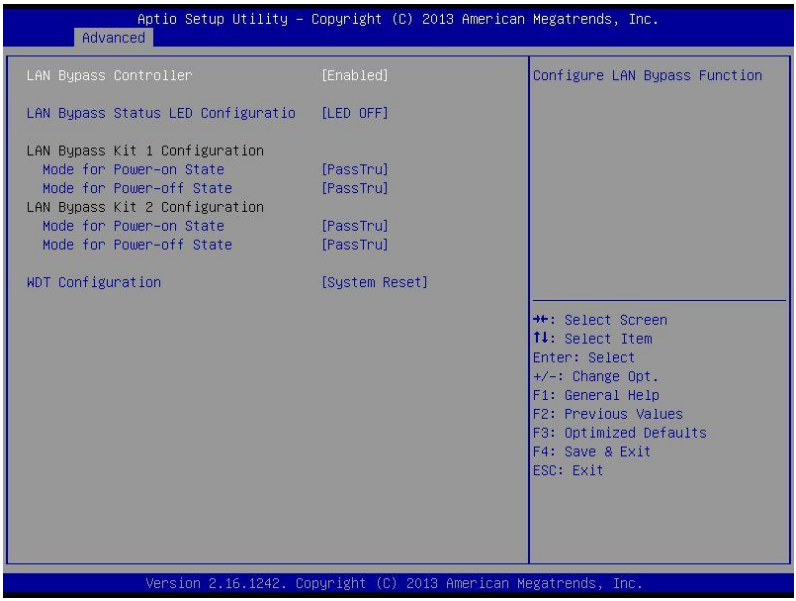
S5 RTC Wake Settings (Dynamic Time)



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 minute(s)		
Wake up day	1-5	Default 1
Select 1-5		

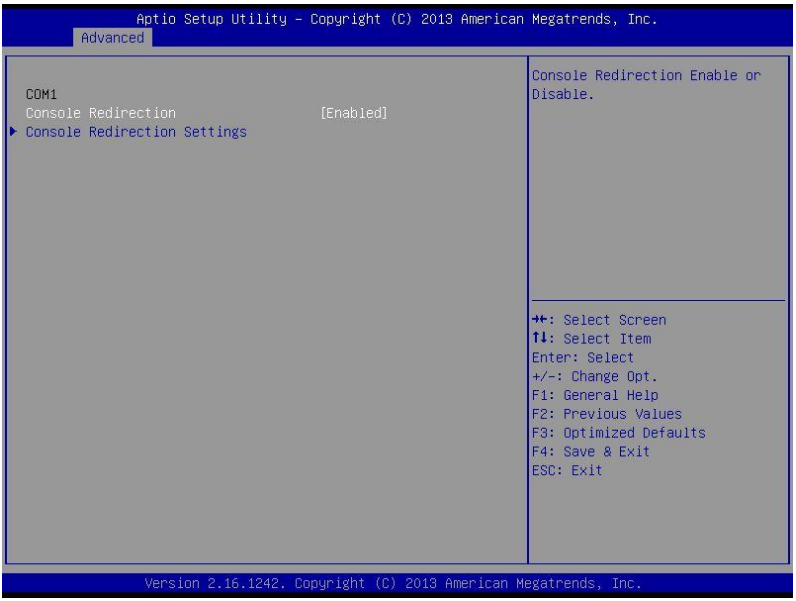
LAN Bypass Configuration



Options summary:

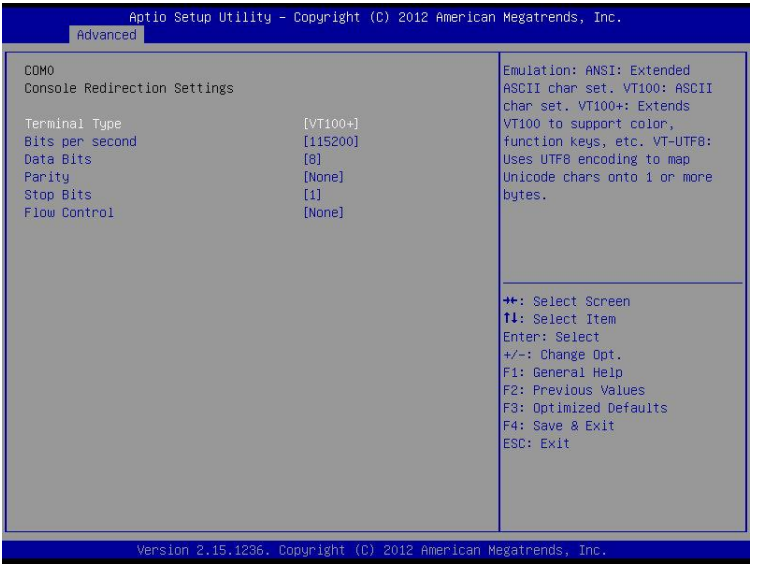
LAN Bypass Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Configure LAN Bypass Function		
LAN Bypass Status LED Configuration	LED OFF	Optimal Default, Failsafe Default
	RED LED ON	
	RED LED BLINK	
	RED LED FAST BLINK	
	GREEN LED ON	
	GREEN LED BLINK	
	GREEN LED FAST BLINK	
Configure 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	
	System Reset	Optimal Default, Failsafe Default
Configure WDT behavior , \nSystem Reset\nForce Bypass		

Serial Port Console Redirection



Options summary:

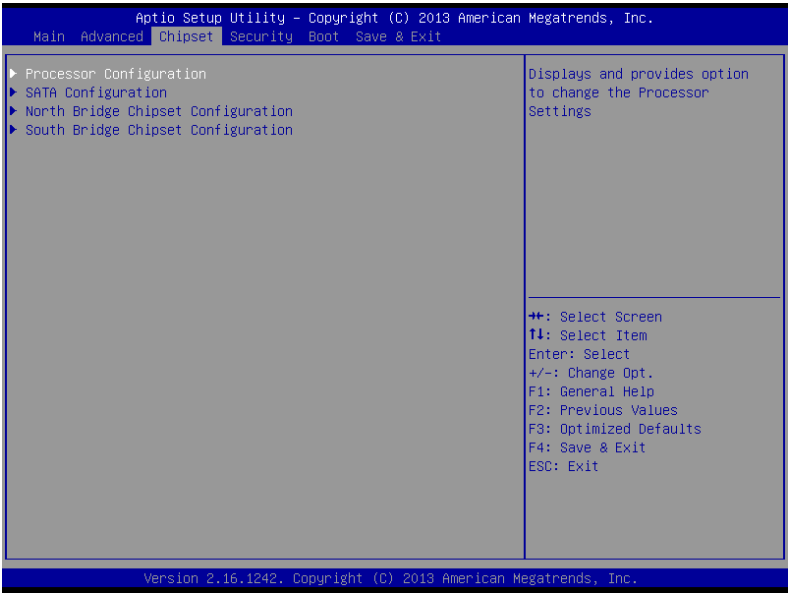
Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable		


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
COM0
Console Redirection Settings
Terminal Type [VT100+]
Bits per second [115200]
Data Bits [8]
Parity [None]
Stop Bits [1]
Flow Control [None]
Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

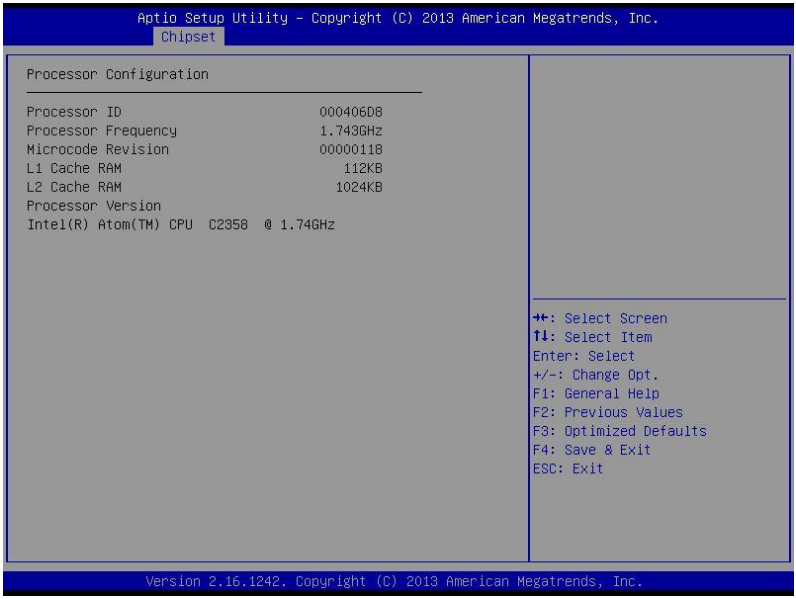
Options summary:

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.		

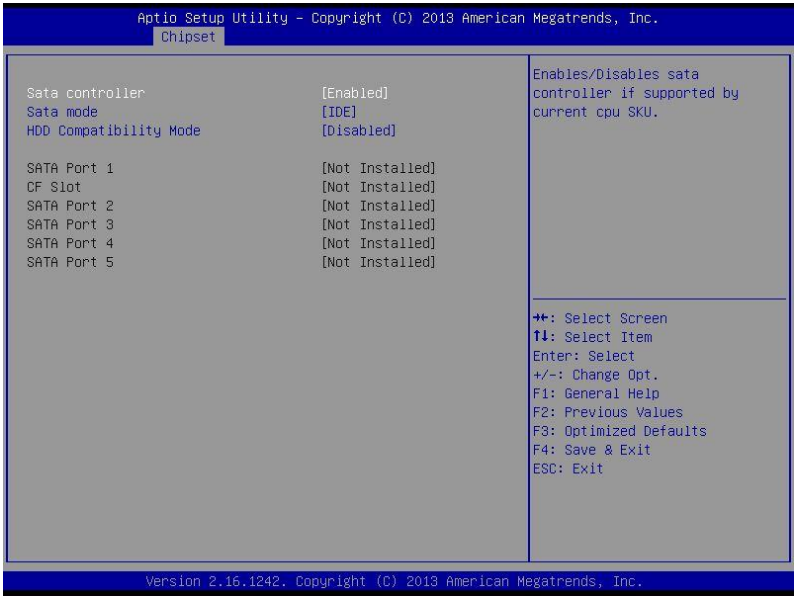
Setup submenu: Chipset



Processor Configuration



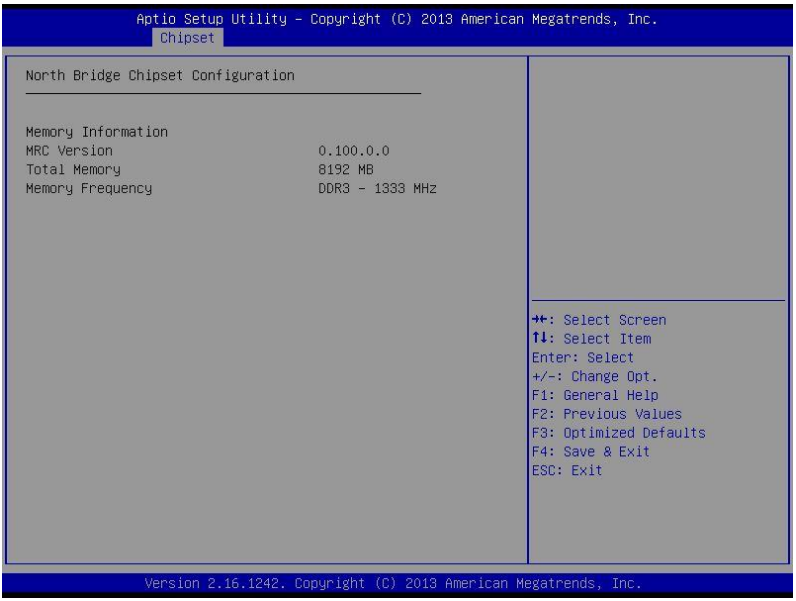
SATA Configuration



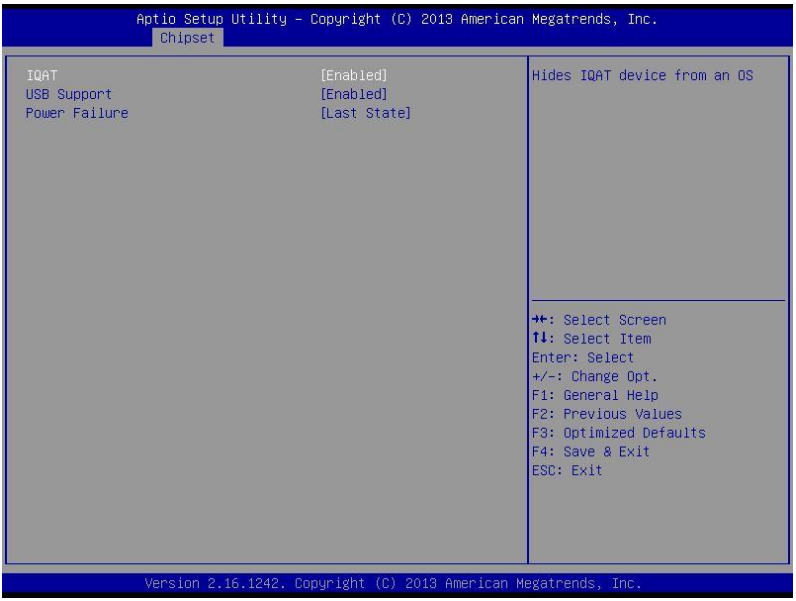
Options summary:

Sata controller	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enables/Disables SATA controller if supported by current CPU SKU.		
SATA Mode	AHCI	Optimal Default, Failsafe Default
	IDE	
Select IDE / AHCI Mode		
HDD Compatibility Mode	Enabled	Optimal Default, Failsafe Default
	Disabled	
HDD Compatibility Mode		

North Bridge Chipset Configuration



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		
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		

Security

Change User/Supervisor Password

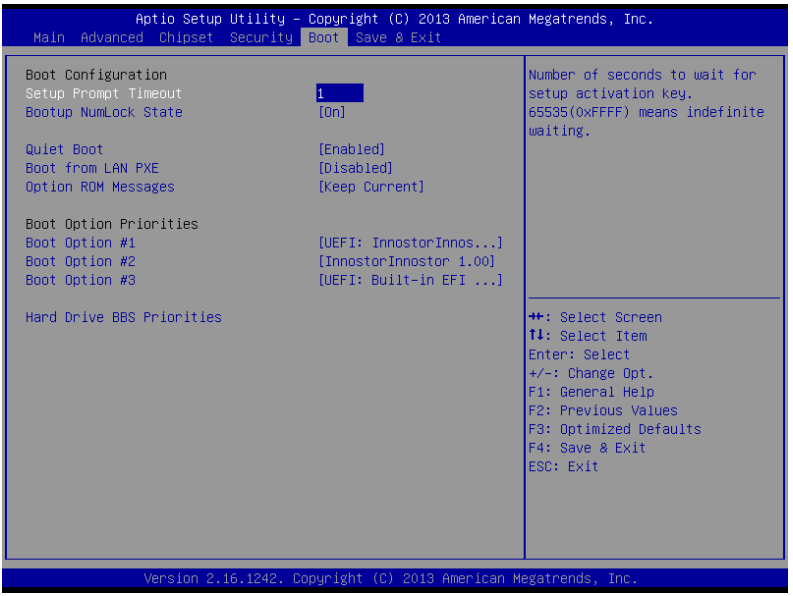
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

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

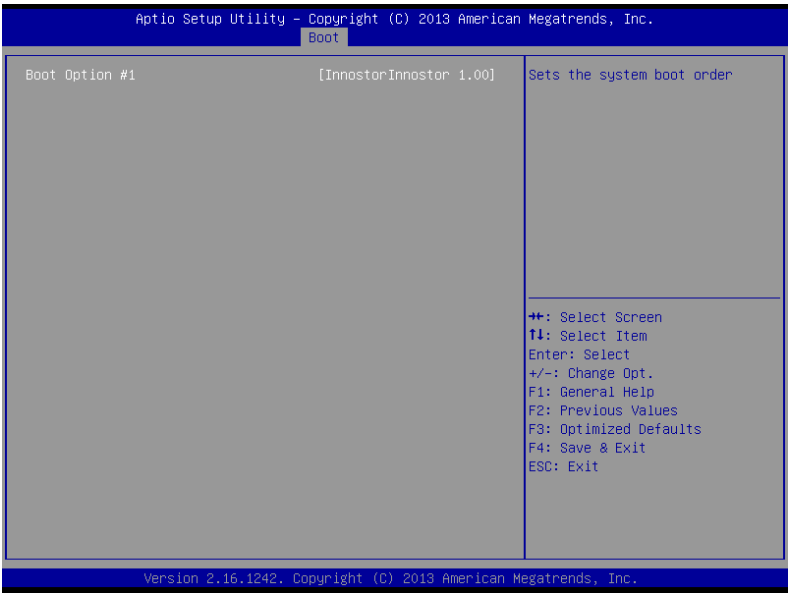
Setup submenu: Boot



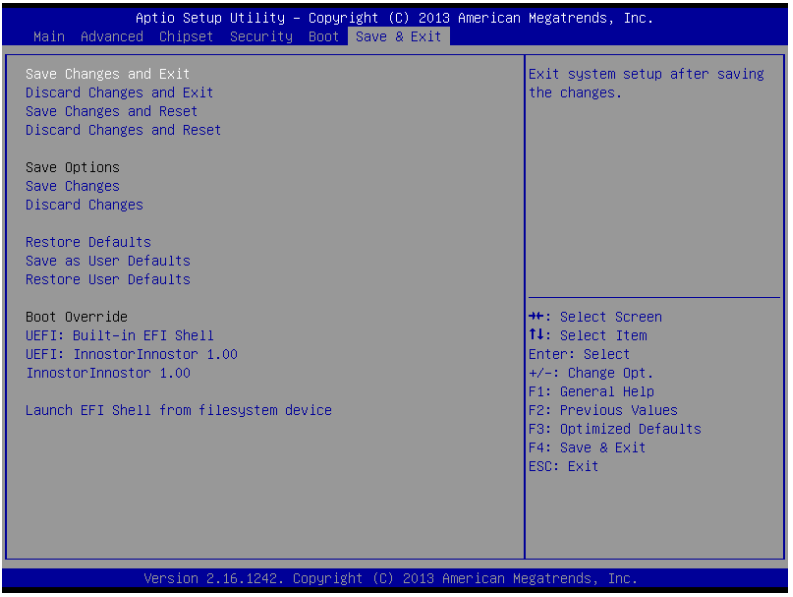
Options summary:

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		

BBS Priorities



Setup submenu: Save & Exit



Chapter

4

Driver Installation

The FWS-2350 comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver DVD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

Step 1 – Install LAN Driver

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the FWS-2350 CD-ROM into the DVD-ROM drive and install the drivers.

Step 1 – Install LAN Driver

1. Move the base driver tar file to the directory of your choice. For example, use '/home/username/LAN' or '/usr/local/src/LAN'.
2. Untar/unzip the archive: tar zxf <filename.tar.gz>
3. Follow the instructions of section installation in the README
4. The README will help you install the driver step by step

Appendix

A

Programming the Watchdog Timer

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);
}
*****************************************************************************
```

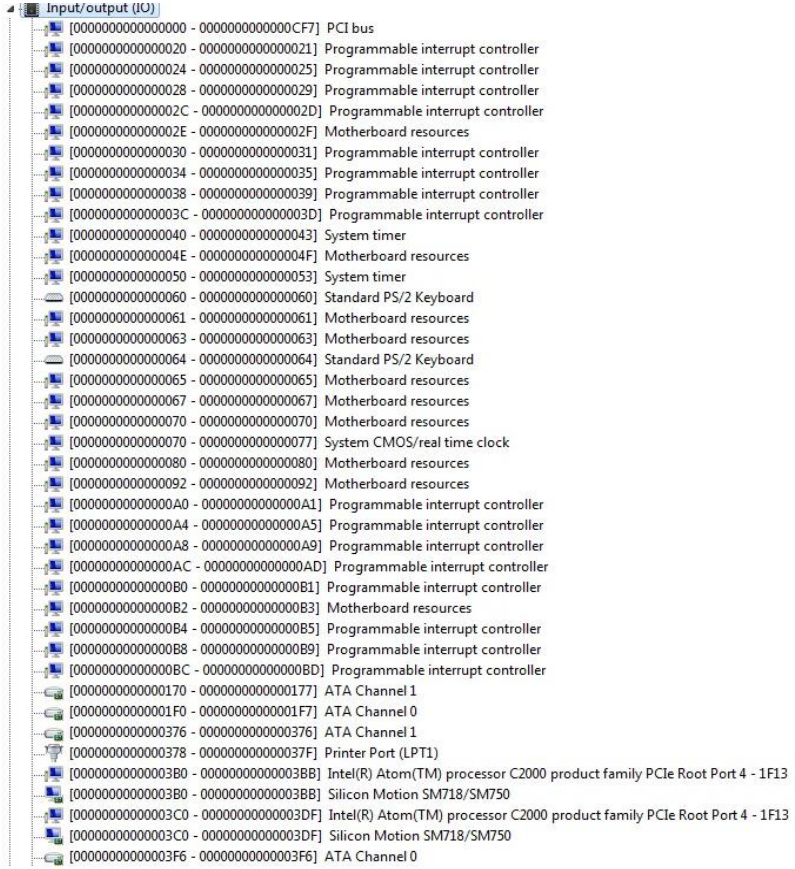
```
**************************************************************************************
VOID   SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
        Byte TmpValue;

        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

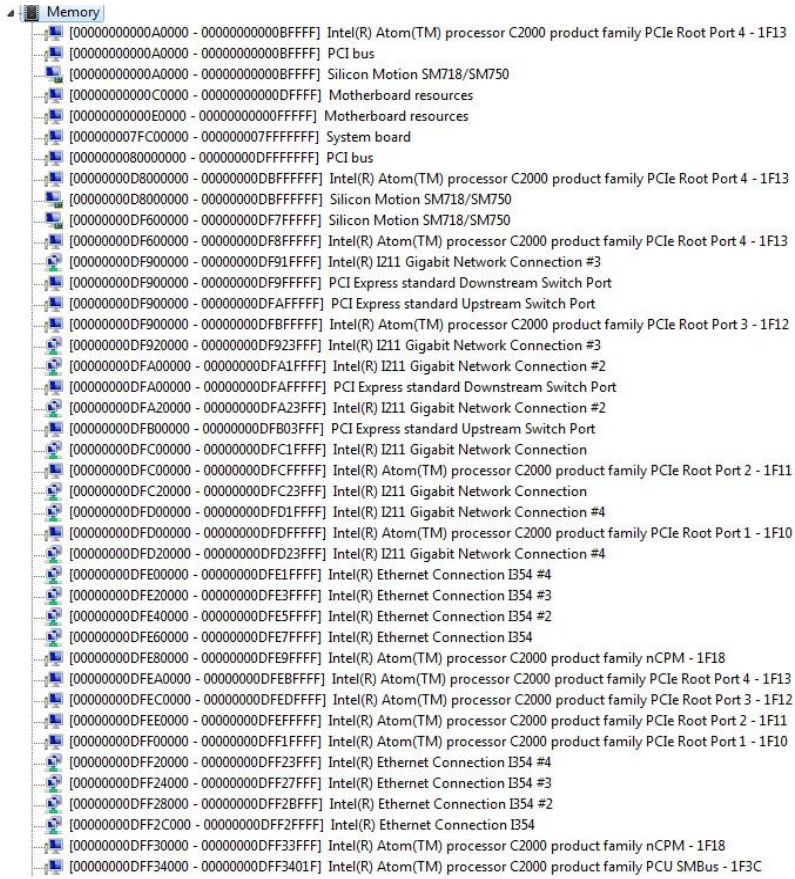
B.1 I/O Address Map

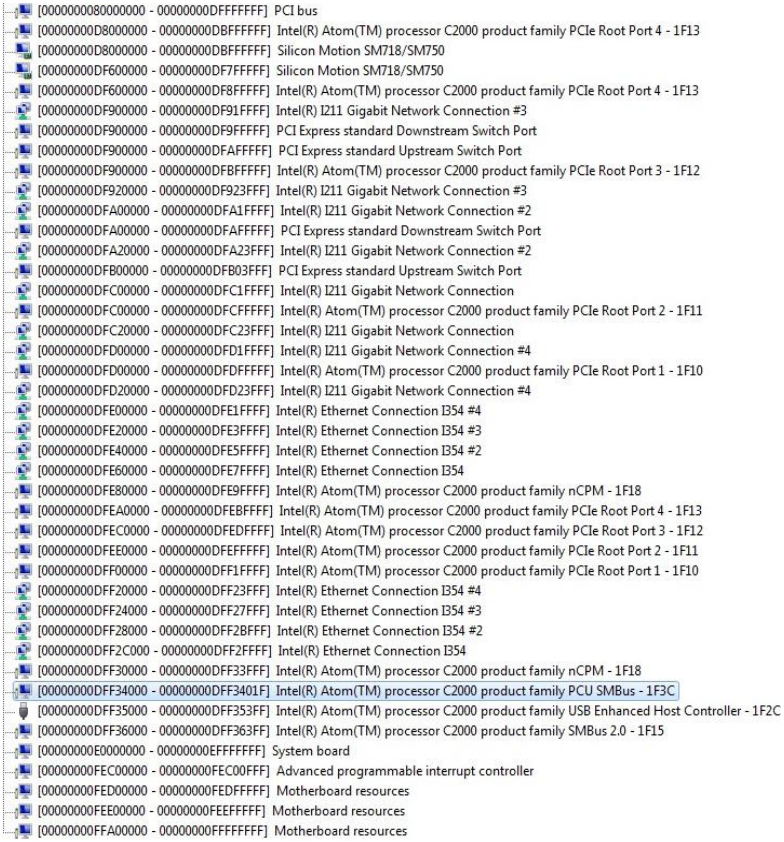


- [00000000000000B0 - 00000000000000B1] Programmable interrupt controller
- [00000000000000B2 - 00000000000000B3] Motherboard resources
- [00000000000000B4 - 00000000000000B5] Programmable interrupt controller
- [00000000000000B8 - 00000000000000B9] Programmable interrupt controller
- [00000000000000BC - 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 4 - 1F13
- [00000000000003B0 - 00000000000003BB] Silicon Motion SM718/SM750
- [00000000000003C0 - 00000000000003DF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 4 - 1F13
- [00000000000003C0 - 00000000000003DF] Silicon Motion SM718/SM750
- [00000000000003F6 - 00000000000003F6] ATA Channel 0
- [00000000000003F8 - 00000000000003FF] Communications Port (COM1)
- [0000000000000400 - 000000000000047F] Motherboard resources
- [00000000000004D0 - 00000000000004D1] Programmable interrupt controller
- [0000000000000500 - 000000000000005FE] Motherboard resources
- [0000000000000680 - 000000000000069F] Motherboard resources
- [0000000000000778 - 000000000000077F] Printer Port (LPT1)
- [0000000000000A00 - 0000000000000A2F] Motherboard resources
- [0000000000000A30 - 0000000000000A3F] Motherboard resources
- [0000000000000A40 - 0000000000000A4F] Motherboard resources
- [0000000000000D00 - 000000000000FFFF] PCI bus
- [000000000000A000 - 000000000000AFFF] PCI Express standard Downstream Switch Port
- [000000000000A000 - 000000000000BFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
- [000000000000A000 - 000000000000BFFF] PCI Express standard Upstream Switch Port
- [000000000000B000 - 000000000000BFFF] PCI Express standard Downstream Switch Port
- [000000000000C000 - 000000000000CFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 2 - 1F11
- [000000000000D000 - 000000000000DFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 1 - 1F10
- [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

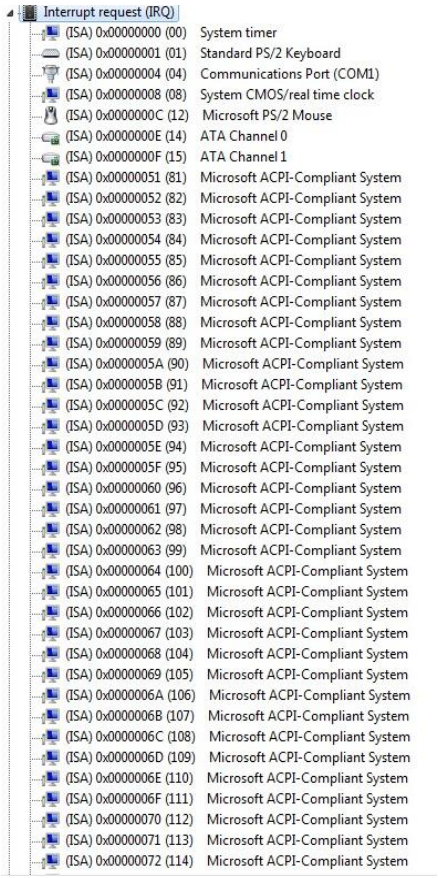
▷ Interrupt request (IRQ)
▷ Large Memory
▷ Memory

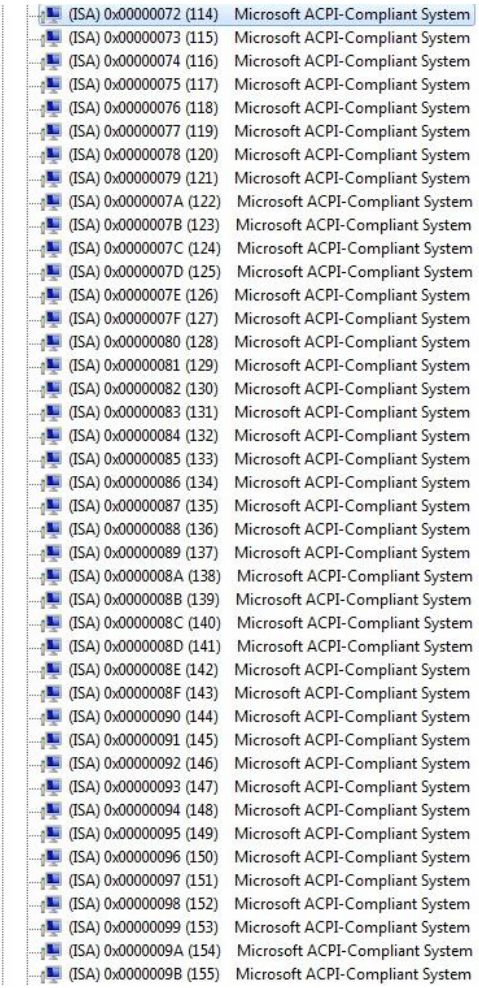
B.2 Memory Address Map




[0000000080000000 - 00000000DFFFFFFF] PCI bus
[00000000D8000000 - 00000000DBFFFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 4 - 1F13
[00000000D8000000 - 00000000DBFFFFFF] Silicon Motion SM718/SM750
[00000000DF600000 - 00000000DF7FFFFF] Silicon Motion SM718/SM750
[00000000DF600000 - 00000000DF8FFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 4 - 1F13
[00000000DF900000 - 00000000DF91FFFF] Intel(R) I211 Gigabit Network Connection #3
[00000000DF900000 - 00000000DF9FFFFF] PCI Express standard Downstream Switch Port
[00000000DF900000 - 00000000DFAFFFFF] PCI Express standard Upstream Switch Port
[00000000DF900000 - 00000000DFBFFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
[00000000DF920000 - 00000000DF923FFF] Intel(R) I211 Gigabit Network Connection #3
[00000000DFA00000 - 00000000DFA1FFFF] Intel(R) I211 Gigabit Network Connection #2
[00000000DFA00000 - 00000000DFAFFFFF] PCI Express standard Downstream Switch Port
[00000000DFA20000 - 00000000DFA23FFF] Intel(R) I211 Gigabit Network Connection #2
[00000000DFB00000 - 00000000DFB03FFF] PCI Express standard Upstream Switch Port
[00000000DFC00000 - 00000000DFC1FFFF] Intel(R) I211 Gigabit Network Connection
[00000000DFC00000 - 00000000DFCFFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 2 - 1F11
[00000000DFC20000 - 00000000DFC23FFF] Intel(R) I211 Gigabit Network Connection
[00000000DFD00000 - 00000000DFD1FFFF] Intel(R) I211 Gigabit Network Connection #4
[00000000DFD00000 - 00000000DFDFFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 1 - 1F10
[00000000DFD20000 - 00000000DFD23FFF] Intel(R) I211 Gigabit Network Connection #4
[00000000DFE00000 - 00000000DFE1FFFF] Intel(R) Ethernet Connection I354 #4
[00000000DFE20000 - 00000000DFE3FFFF] Intel(R) Ethernet Connection I354 #3
[00000000DFE40000 - 00000000DFE5FFFF] Intel(R) Ethernet Connection I354 #2
[00000000DFE60000 - 00000000DFE7FFFF] Intel(R) Ethernet Connection I354
[00000000DFE80000 - 00000000DFE9FFFF] Intel(R) Atom(TM) processor C2000 product family nCPM - 1F18
[00000000DFEA0000 - 00000000DFEBFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 4 - 1F13
[00000000DFEC0000 - 00000000DFEDFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 3 - 1F12
[00000000DFEE0000 - 00000000DFEFFFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 2 - 1F11
[00000000DFF00000 - 00000000DFF1FFFF] Intel(R) Atom(TM) processor C2000 product family PCIe Root Port 1 - 1F10
[00000000DFF20000 - 00000000DFF23FFF] Intel(R) Ethernet Connection I354 #4
[00000000DFF24000 - 00000000DFF27FFF] Intel(R) Ethernet Connection I354 #3
[00000000DFF28000 - 00000000DFF2BFFF] Intel(R) Ethernet Connection I354 #2
[00000000DFF2C000 - 00000000DFF2FFFF] Intel(R) Ethernet Connection I354
[00000000DFF30000 - 00000000DFF33FFF] Intel(R) Atom(TM) processor C2000 product family nCPM - 1F18
[00000000DFF34000 - 00000000DFF3401F] Intel(R) Atom(TM) processor C2000 product family PCU SMBus - 1F3C
[00000000DFF35000 - 00000000DFF353FF] Intel(R) Atom(TM) processor C2000 product family USB Enhanced Host Controller - 1F2C
[00000000DFF36000 - 00000000DFF363FF] Intel(R) Atom(TM) processor C2000 product family SMBus 2.0 - 1F15
[00000000E0000000 - 00000000EFFFFFFF] System board
[00000000FEC00000 - 00000000FEC00FFF] Advanced programmable interrupt controller
[00000000FED00000 - 00000000FEDFFFFF] Motherboard resources
[00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
[00000000FFA00000 - 00000000FFFFFFFF] Motherboard resources

B.3 IRQ Mapping Chart




(ISA) 0x00000072 (114) Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115) Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116) Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117) Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118) Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119) Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120) Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125) Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133) Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134) Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135) Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136) Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137) Microsoft ACPI-Compliant System
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(ISA) 0x0000008B (139) Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140) Microsoft ACPI-Compliant System
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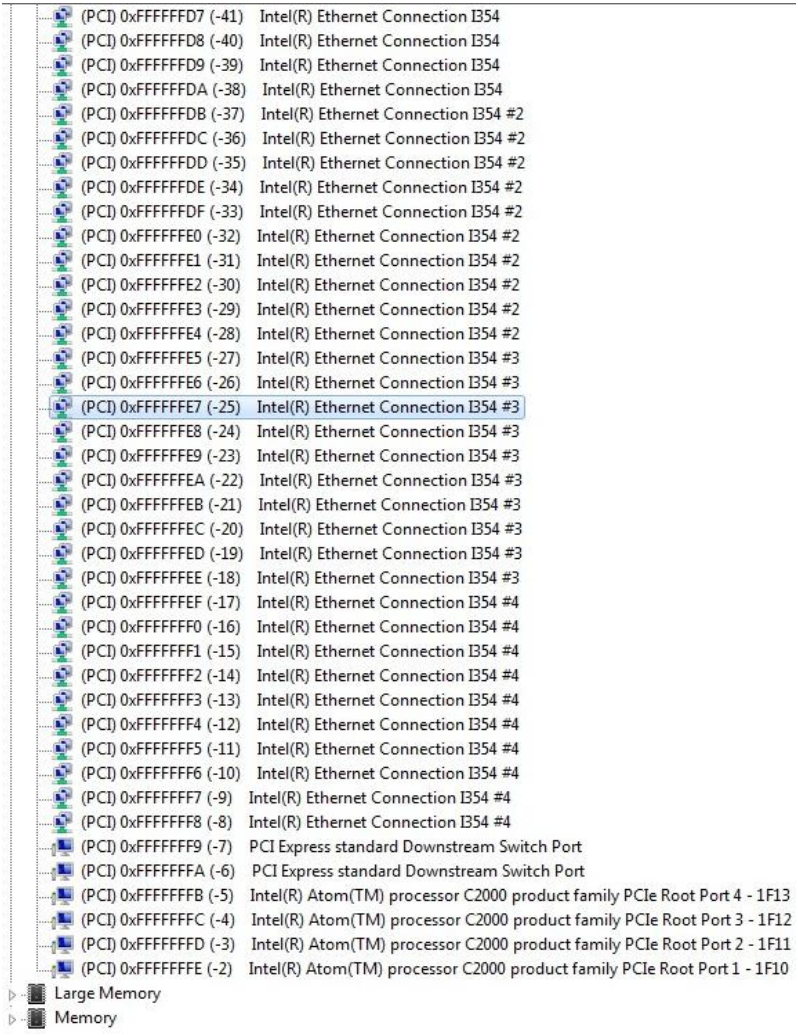
(ISA) 0x0000008E (142) Microsoft ACPI-Compliant System
(ISA) 0x0000008F (143) Microsoft ACPI-Compliant System
(ISA) 0x00000090 (144) Microsoft ACPI-Compliant System
(ISA) 0x00000091 (145) Microsoft ACPI-Compliant System
(ISA) 0x00000092 (146) Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147) Microsoft 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) 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) 0x00000003 (03) Intel(R) Atom(TM) processor C2000 product family PCU SMBus - 1F3C
(PCI) 0x0000000B (11) Intel(R) Atom(TM) processor C2000 product family nCPM - 1F18
(PCI) 0x0000000B (11) Intel(R) Atom(TM) processor C2000 product family SMBus 2.0 - 1F15
(PCI) 0x00000010 (16) Intel(R) Atom(TM) processor C2000 product family RCEC - 1F16
(PCI) 0x00000011 (17) Intel(R) Atom(TM) processor C2000 product family USB Enhanced Host Controller - 1F2C
(PCI) 0x00000012 (18) Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20

- (PCI) 0x00000012 (18) Intel(R) Atom(TM) processor C2000 product family 4-Port IDE SATA 2 Controller - 1F20
- (PCI) 0x00000012 (18) PCI Express standard Upstream Switch Port
- (PCI) 0x00000013 (19) Silicon Motion SM718/SM750
- (PCI) 0xFFFFFFC1 (-63) Intel(R) I211 Gigabit Network Connection #3
- (PCI) 0xFFFFFFC2 (-62) Intel(R) I211 Gigabit Network Connection #3
- (PCI) 0xFFFFFFC3 (-61) Intel(R) I211 Gigabit Network Connection #3
- (PCI) 0xFFFFFFC4 (-60) Intel(R) I211 Gigabit Network Connection #3
- (PCI) 0xFFFFFFC5 (-59) Intel(R) I211 Gigabit Network Connection #2
- (PCI) 0xFFFFFFC6 (-58) Intel(R) I211 Gigabit Network Connection #2
- (PCI) 0xFFFFFFC7 (-57) Intel(R) I211 Gigabit Network Connection #2
- (PCI) 0xFFFFFFC8 (-56) Intel(R) I211 Gigabit Network Connection #2
- (PCI) 0xFFFFFFC9 (-55) Intel(R) I211 Gigabit Network Connection
- (PCI) 0xFFFFFFCA (-54) Intel(R) I211 Gigabit Network Connection
- (PCI) 0xFFFFFFCB (-53) Intel(R) I211 Gigabit Network Connection
- (PCI) 0xFFFFFFCC (-52) Intel(R) I211 Gigabit Network Connection
- (PCI) 0xFFFFFFCD (-51) Intel(R) I211 Gigabit Network Connection #4
- (PCI) 0xFFFFFFCE (-50) Intel(R) I211 Gigabit Network Connection #4
- (PCI) 0xFFFFFFCF (-49) Intel(R) I211 Gigabit Network Connection #4
- (PCI) 0xFFFFFFD0 (-48) Intel(R) I211 Gigabit Network Connection #4
- (PCI) 0xFFFFFFD1 (-47) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD2 (-46) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD3 (-45) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD4 (-44) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD5 (-43) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD6 (-42) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD7 (-41) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD8 (-40) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFD9 (-39) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFDA (-38) Intel(R) Ethernet Connection I354
- (PCI) 0xFFFFFFDB (-37) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFDC (-36) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFDD (-35) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFDE (-34) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFDF (-33) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFE0 (-32) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFE1 (-31) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFE2 (-30) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFE3 (-29) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFE4 (-28) Intel(R) Ethernet Connection I354 #2
- (PCI) 0xFFFFFFE5 (-27) Intel(R) Ethernet Connection I354 #3
- (PCI) 0xFFFFFFE6 (-26) Intel(R) Ethernet Connection I354 #3
- (PCI) 0xFFFFFFE7 (-25) Intel(R) Ethernet Connection I354 #3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(PCI) 0xFFFFFFDF (-33) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFE0 (-32) Intel(R) Ethernet Connection I354 #2
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(PCI) 0xFFFFFFE4 (-28) Intel(R) Ethernet Connection I354 #2
(PCI) 0xFFFFFFE5 (-27) Intel(R) Ethernet Connection I354 #3
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(PCI) 0xFFFFFFE7 (-25) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFE8 (-24) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFE9 (-23) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFEA (-22) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFEB (-21) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFEC (-20) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFED (-19) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFEE (-18) Intel(R) Ethernet Connection I354 #3
(PCI) 0xFFFFFFEF (-17) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF0 (-16) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF1 (-15) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF2 (-14) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF3 (-13) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF4 (-12) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF5 (-11) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF6 (-10) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF7 (-9) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF8 (-8) Intel(R) Ethernet Connection I354 #4
(PCI) 0xFFFFFFF9 (-7) PCI Express standard Downstream Switch Port
(PCI) 0xFFFFFFFA (-6) PCI Express standard Downstream Switch Port
(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
Large Memory
Memory

Appendix

C

Standard LAN Bypass Platform Settings

C.1 Status LED

FWS-2350 provides a LED indicator which can show any LED status controlled by the AAEON SDK. Users are able to program the LED status to express different status.

C.2 Status LED Configuration

Table 1 : Turth Table of Status LED

STA_LED2	STA_LED1	STA_LED0	LED States
0	0	0	LED Off
0	0	1	Red
0	1	0	Red Blinking (Slowly)
0	1	1	Red Blinking (Quickly)
1	0	0	Reserved
1	0	1	Green Blinking (Slowly)
1	1	0	Green Blinking (Quickly)
1	1	1	Green

Table 2 : Status LED relative register mapping table

CPLD Slave Address 0x90 (Note1)				
	Attribute	**Offset(SMBUS)**	**BitNum**	**Value**
STA_LED2	**R/W**	0x00 (Note2)	2	(Table 1)
STA_LED1	**R/W**	0x00 (Note2)	1	(Table 1)
STA_LED0	**R/W**	0x00 (Note2)	0	(Table 1)

C.3 Status LED Sample Code

```
**********************************************************************************************
#define Byte    CPLD_SLAVE_ADDRESS  //This parameter is represented from Note1
#define Byte    OFFSET              //This parameter is represented from Note2
**********************************************************************************************
bData = aaeonSmbusReadByte(CPLD_SLAVE_ADDRESS, OFFSET);

switch( LED_FLAG)
{
case 0:
{
        //LED Off
        //BIT2=0, BIT1=0, BIT0=0
        bData = bData & 0xF8;
        break;
}
case 1:
{
        //Red LED On
        //BIT2=0, BIT1=0, BIT0=1
        bData = (bData & 0xF8) | 0x01;
        break;
}
case 2:
{
        //Red LED Blink
        //BIT2=0, BIT1=1, BIT0=0
        bData = (bData & 0xF8) | 0x02;
        break;
}
case 3:
{
        //Red LED Fast Blink
        //BIT2=0, BIT1=1, BIT0=1
        bData = (bData & 0xF8) | 0x03;
        break;
```

```
}
case 4:
{
        //Green LED On
        //BIT2=1, BIT1=1, BIT0=1
        bData = (bData & 0xF8) | 0x07;
        break;
}
case 5:
{
        //Green LED Blink
        //BIT2=1, BIT1=0, BIT0=1
        bData = (bData & 0xF8) | 0x05;
        break;
}
case 6:
{
        //Green LED Fast Blink
        //BIT2=1, BIT1=1, BIT0=0
        bData = (bData & 0xF8) | 0x06;
        break;
}
default:
        break;
}

SmbusWriteByte(CPLD_SLAVE_ADDRESS, 0x00, bData);

**********
```

C.4 LAN Bypass

FWS-2350 provides LAN Bypass kit and allow uninterrupted network traffic even if a single in-line appliance is shut down or became unresponsive.

C.5 LAN Bypass Configuration

Table 1 : ID Select table of LAN kit

LAN_ID2	LAN_ID1	LAN_ID0	LAN kit selected
0	0	0	LAN Kit 1 Selected
0	0	1	LAN Kit 2 Selected
0	1	0	LAN Kit 3 Selected
0	1	1	LAN Kit 4 Selected
1	0	0	LAN Kit 5 Selected
1	0	1	LAN Kit 6 Selected
1	1	0	LAN Kit 7 Selected
1	1	1	LAN Kit 8 Selected

Table 2 : LAN Bypass relative register table

Function	Description
LAN_ID3 LAN_ID2 LAN_ID1 LAN_ID0	Use for selecting which LAN kit will be configured, refert to Table 1 of ID Select table of LAN kit. They should be set before ACT_EN.
PWR_ON	Use for configuring LAN Bypass function behavior to LAN kit, when system power on. 1: Bypass 0: Pass Through
PWR_OFF	Use for configuring LAN Bypass function behavior to LAN kit, when system power off. 1: Bypass 0: Pass Through

WDT_EN	Use for configuring WDT function behavior to LAN kit, when WDT triggered. 0: Normal WDT reset (Default) 1: Force Bypass
ACT_EN	Use for activating programming of LAN kit. It is edge triggering (falling edge 1 to 0) and should be set to high(1) as its normal state.

Table 3 : LAN Bypass relative register mapping table

CPLD Slave Address 0x90 (Note1)				
	Attribute	**Offset(SMBUS)**	**BitNum**	**Value**
LAN_ID3	**R/W**	0x01(Note2)	**3**	(Table 1)
LAN_ID2	**R/W**	0x01(Note2)	**2**	(Table 1)
LAN_ID1	**R/W**	0x01(Note2)	**1**	(Table 1)
LAN_ID0	**R/W**	0x01(Note2)	**0**	(Table 1)
PWR_ON	**R/W**	0x01(Note2)	**6**	(Table 2)
PWR_OFF	**R/W**	0x01(Note2)	**5**	(Table 2)
WDT_EN	**R/W**	0x01(Note2)	**4**	(Table 2)
ACT_EN	**R/W**	0x01(Note2)	**7**	(Table 2)

C.6 LAN Bypass Sample Code

```
*********************************************************************************************
#define Byte    CPLD_SLAVE_ADDRESS  //This parameter is represented from Note1
#define Byte    OFFSET              //This parameter is represented from Note2
*********************************************************************************************

// Select Lan Pair
BYTE bLanSel = LAN_PAIR;

BYTE bData = SmbusReadByte(CPLD_SLAVE_ADDRESS, OFFSET);
// Set Reg01h bit3
if(bLanSel & 0x08)
        bData = bData | 0x08;
else
        bData = bData & 0xF7;
```

```
// Set Reg01h bit2
if(bLanSel & 0x04)
        bData = bData | 0x04;
else
        bData = bData & 0xFB;
// Set Reg01h bit1
if(bLanSel & 0x02)
        bData = bData | 0x02;
else
        bData = bData & 0xFD;
// Set Reg01h bit0
if(bLanSel & 0x01)
        bData = bData | 0x01;
else
        bData = bData & 0xFE;

// Power On Action (Reg01h bit6)
if(SET_PASS_THROUGH)  // Pass Through
        bData = bData & 0xBF;
else                                    // Bypass
        bData = bData | 0x40;

// Power Off Action (Reg01h bit5)
if(SET_PASS_THROUGH)  // Pass Through
        bData = bData & 0xDF;
else                                    // Bypass
        bData = bData | 0x20;

// WDT Action (Reg01h bit4)
if(SET_WDT_RESET)       // Reset
        bData = bData & 0xEF;
else                                  // Bypass
        bData = bData | 0x10;

SmbusWriteByte(CPLD_SLAVE_ADDRESS, OFFSET, bData);

// Apply Settings (Reg01h bit7)
```

```
bData = SmbusReadByte(CPLD_SLAVE_ADDRESS, OFFSET);
SmbusWriteByte(CPLD_SLAVE_ADDRESS, OFFSET, bData & 0x7F);
Sleep(500);
bData = SmbusReadByte(CPLD_SLAVE_ADDRESS, OFFSET);
SmbusWriteByte(CPLD_SLAVE_ADDRESS, OFFSET, bData | 0x80);

*********************************************************************************
```

C.7 Software Reset Button

FWS-2350 provides a general propose input button can be used to reset any settings in the AAEON SDK.

C.8 Software Reset Button Configuration

Table 2 : LAN Bypass relative register table

Function	Description
BTN_STS	Reading this register returns the pin level status which is normal high active low. 0: Pin Level States Low. 1: Pin Level States High.

Table 1 : Soft Reset Button register mapping table

	Attribute	Register(I/O)	BitNum	Value
BTN_STS	**R**	0xA05(Note1)	4(Note2)	(Note3)

C.9 Software Reset Button Sample Code

```
*********************************************************************************
#define Word    BTN_STS         //This parameter is represented from Note1
#define Byte    BTN_STS_R       //This parameter is represented from Note2
*********************************************************************************
Byte   GET_Value (Word IoAddr, Byte BitNum,Byte Value){
        BYTE    TmpValue;
```

```
        TmpValue = inportb (IoAddr);
        return    (TmpValue & (1 << BitNum))
}
*****************************************************************************
VOID   Main(){
        Byte RstBtn;

        RstBtn = GET_Value (BTN_STS, BTN_STS_R);        // Active Low
}
*****************************************************************************
```