FWS-7821

Network Appliance

User's Manual 1st Ed

Last Updated: February 14, 2017

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
● FWS-7821	1
● EAR bracket kit	1
● Console cable	1
● Product DVD	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	Intel® 6th/7th Generation Core™/ Xeon Processors
● System Memory	4 x 288-pin DDR4 2133MHz UDIMM up to 64 GB
● Chipset	Intel® C236
● Ethernet	Intel® i211-AT controller for 6 GbE RJ45 + Intel® i210-IS controller for 2 GbE SFP
● BIOS	AMI BIOS
● Serial ATA	5 x SATA 6 Gb w/ RAID function (Max. 7 x SATA ports)
● SSD	-
● Expansion Interface	2 x PCIe [x8] NIM and riser
● Watchdog Timer	1 ~ 255 sec per step (max. 255) software programmable
● RTC	Internal RTC
● Storage	3.5" SATA HDD x 1 or 2.5" SATA HDD x 2 (Optional extra 2.5" HDD x 4 without NIM and Expansion slot) 1 x CFast (Optional CF socket and mSATA slot)
● Front Panel I/O	1 x Power LED 1 x Status LED 3 x Bypass LED 1 x HDD Active LED

Rear Panel I/O	2 x USB 3.0 Ports 1 x NIM Slot 8 x RJ45 LAN ports with LEDs 1 x RJ45 Console 1 x LCM display and 4 keypad 1 x Software Programmable button 1 x AC Power Input 1 x Power Switch 1 x Expansion slot
Color	Black
Power Supply	250 W x 1 AC Power Input / 220 W Redundant
Dimension (W x D x H)	430 x 475 x 44 mm (16.9 x 18.7 x 1.73")

Graphics

Chipset	Intel® integrated
Output Interface	VGA (Cable optional)

I/O

Serial Port	RJ-45 console x 1
Keyboard and Mouse	2 x 4 Pin Header (2.54 mm) x1
USB	2 x USB 3.0

Environmental

Operating Temperature	0 ~ 40°C (32 ~ 104°F)
Storage Temperature	-20 ~ 60°C (-4 ~ 140°F)

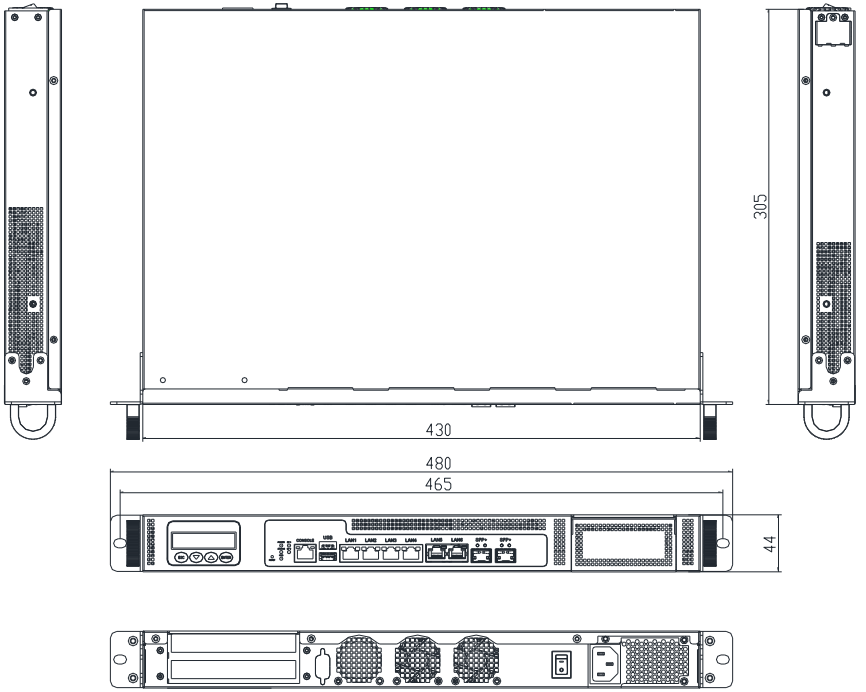
- **Operating Humidity** 10% ~ 80%
- **Storage Humidity** 10% ~ 80% @ 40°C, non-condensing
- **Anti-Vibration** 0.5 G / 5 ~ 500Hz operation
  1.5 G / 5 ~ 500Hz non-operation
- **Anti-Shock** 10 G peak acceleration (11m sec. duration), operation
  20 G peak acceleration (11m sec. duration), non operation

Chapter 2

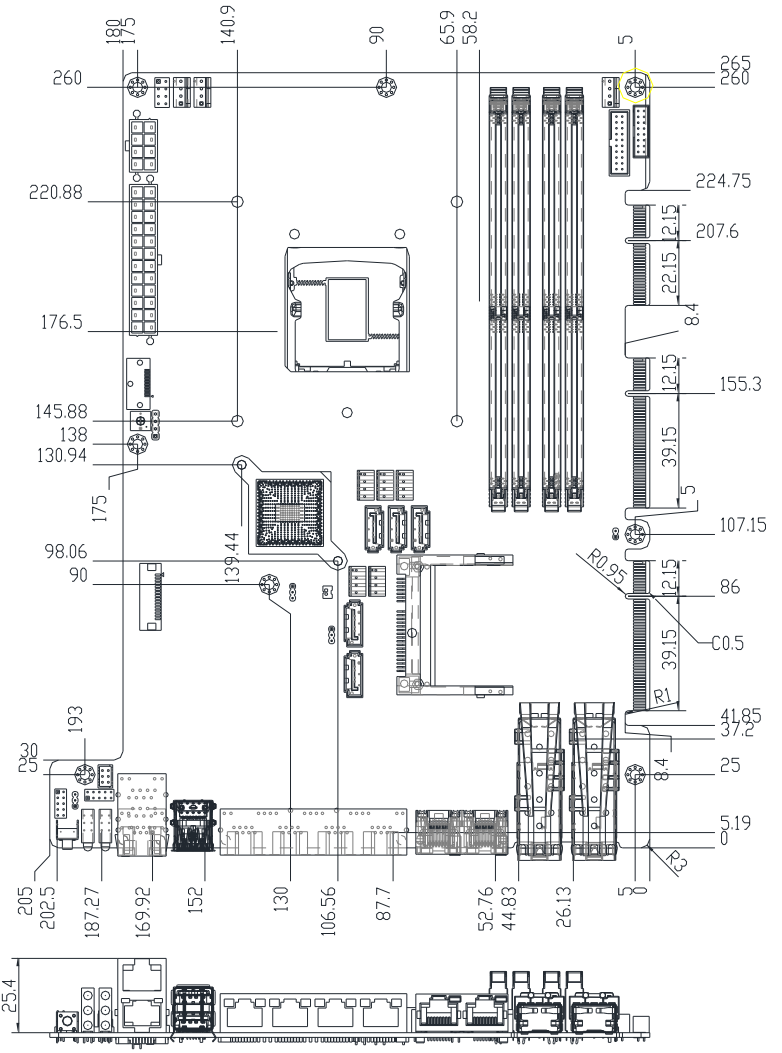
Hardware Information

2.1 Dimensions

System



Board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12.15
39.15
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130.94
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98.06
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R0.95
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C0.5
39.15
R1
41.85
37.2
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8.4
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5.19
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R3
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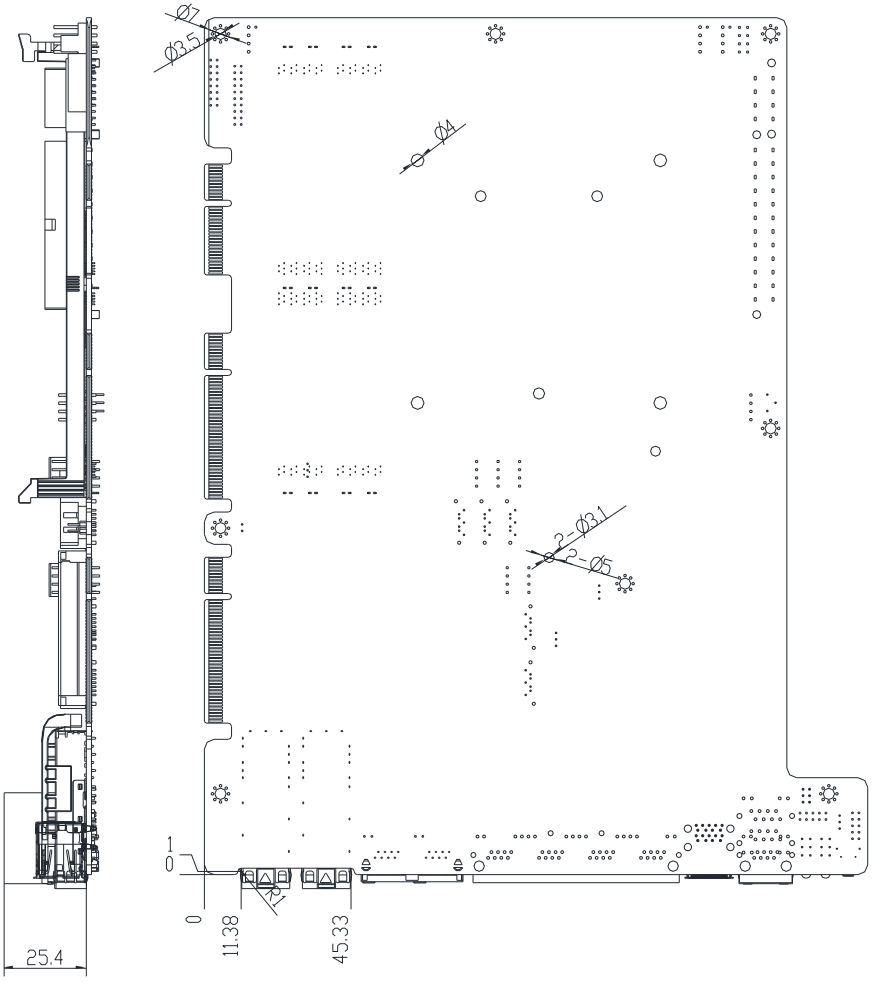
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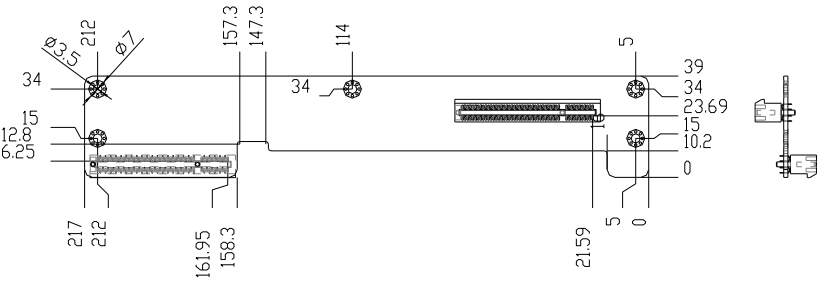
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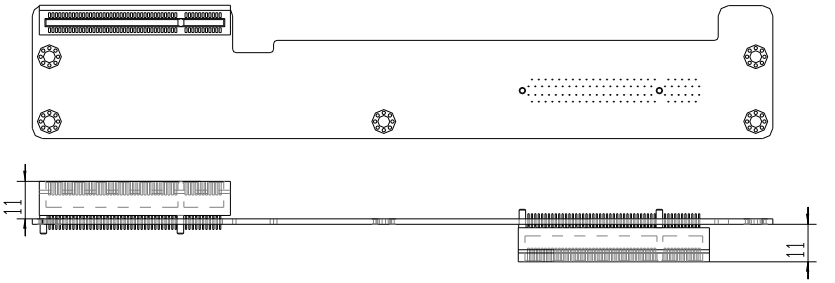
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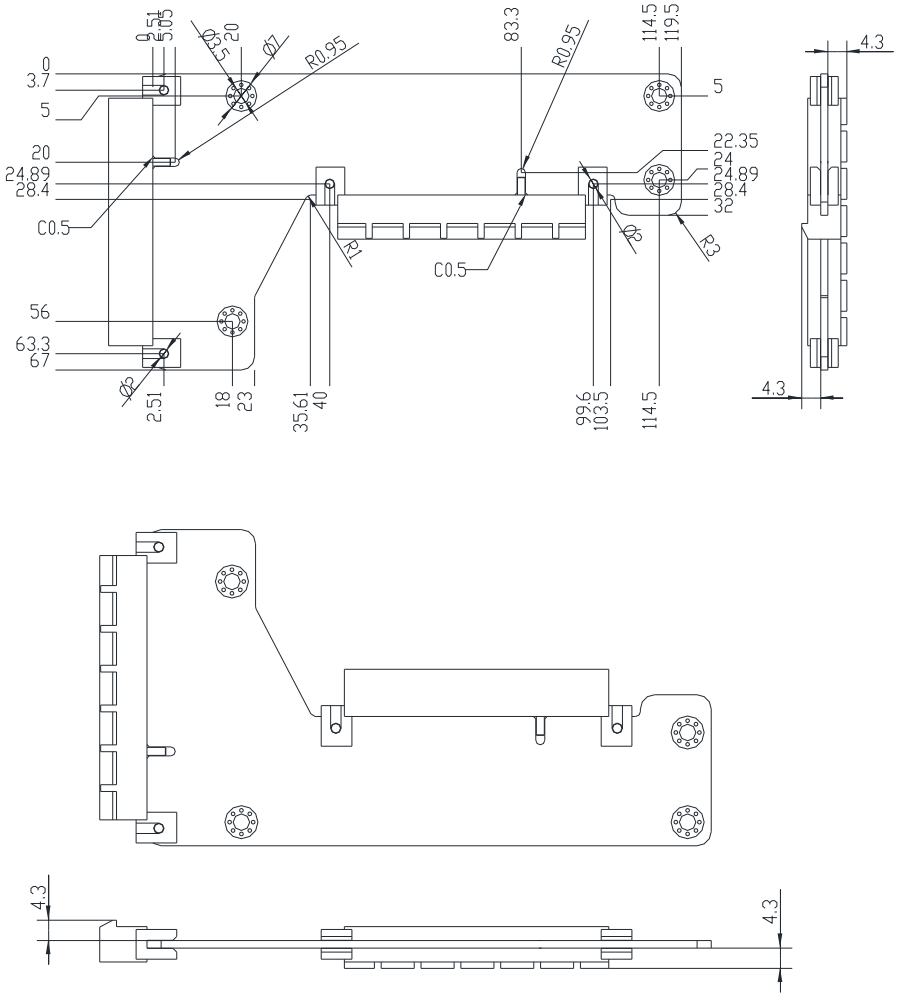
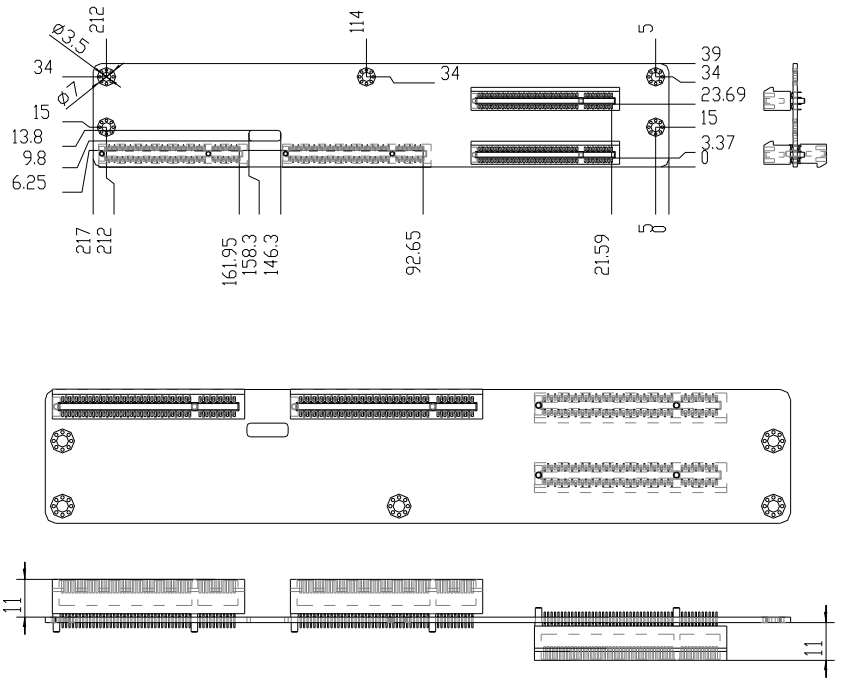
PER-R40X

NIM LAN Module Riser Card



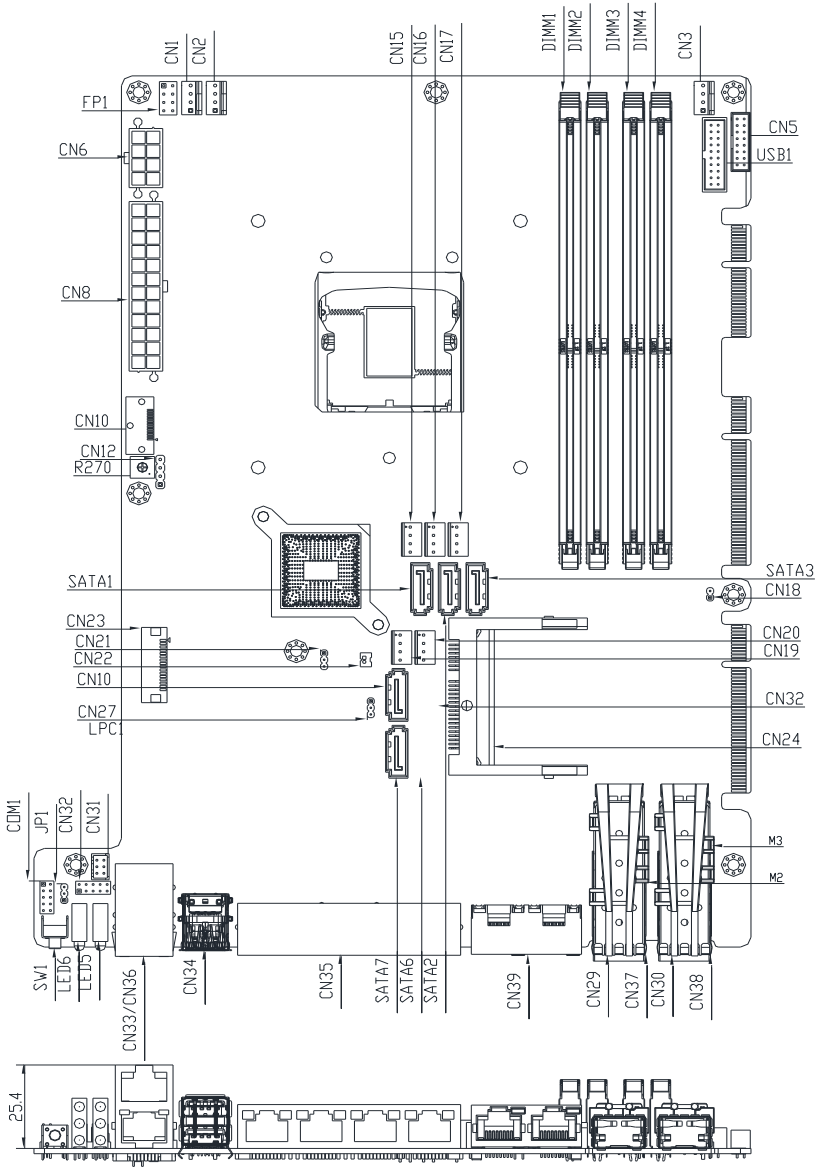
PER-R44X

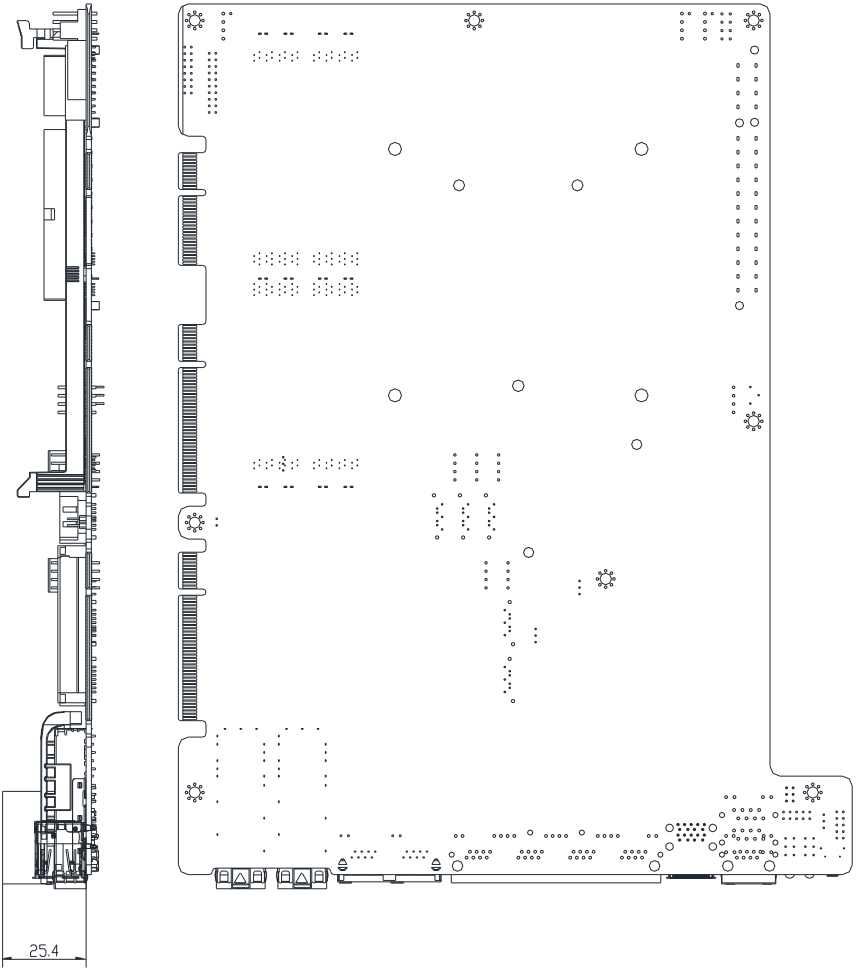
2 Slot Rear PCIE Riser Card



2.2 Jumpers and Connectors

Component Side



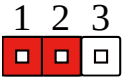

25.4

2.3 List of Jumpers

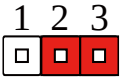
Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
JP1	Auto PWR Button
CN14	Clear CMOS
CN27	CF Voltage SEL

2.3.1 CFD Voltage 3.3V/5V Selection (CN27)

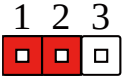


+5V (Default)

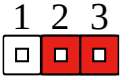


+3.3 V

2.3.2 Auto PWRBTN Selection (JP1)

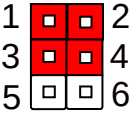


Don't use Auto PWRBTN (Default)

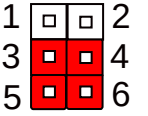


Use Auto PWRBTN

2.3.3 CMOS Setting Selection (CN14)



Normal (1-3, 2-4)



Clear (3-5, 4-6)

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
FP1	Front panel
CN1.2.3	CPU Fan/SYS Fan
DIMM1.2.3.4	DDR 4 UDIMM
CN5	VGA CON
USB1	USB 3.0 EXT CON
CN6	ATX 8 PIN CON
CN8	ATX 24 PIN CON
CN10	HDMI CON
CN12	KEYPAD Header
CN15.16.17.19.20	SATA 4P Power
CN23	LCM CON
SATA1.2.3.4.5.6.7	SATA Con
CN25	CFAST
CN24	CF
Msata1	mSATA CON
COM1	UART2
CN32	DIO CON
CN31	PS2
LED5	LED Indicate
LED6	LED Indicate
SW1	Software Reset
CN36	CONSOLE Port

CN34	USB 3.0 x 2
CN35	LAN 1 – LAN 4
CN39	LAN 5 – LAN 6
CN37	LAN 7
CN38	LAN 8

2.4.1 Front Panel (FP1)

Pin	Signal	Pin	Signal
1	Power Button	2	GND
3	RESET	4	GND
5	PWR LED+	6	PWR LED-
7	HDD LED+	8	HDD LED-

2.4.2 Digital I/O (CN31)

This connector offers 5-pairs of digital I/O functions. The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	DIO1	2	DIO2
3	DIO3	4	DIO4
5	DIO5	6	DIO6
7	DIO7	8	DIO8
9	3.3V	10	GND

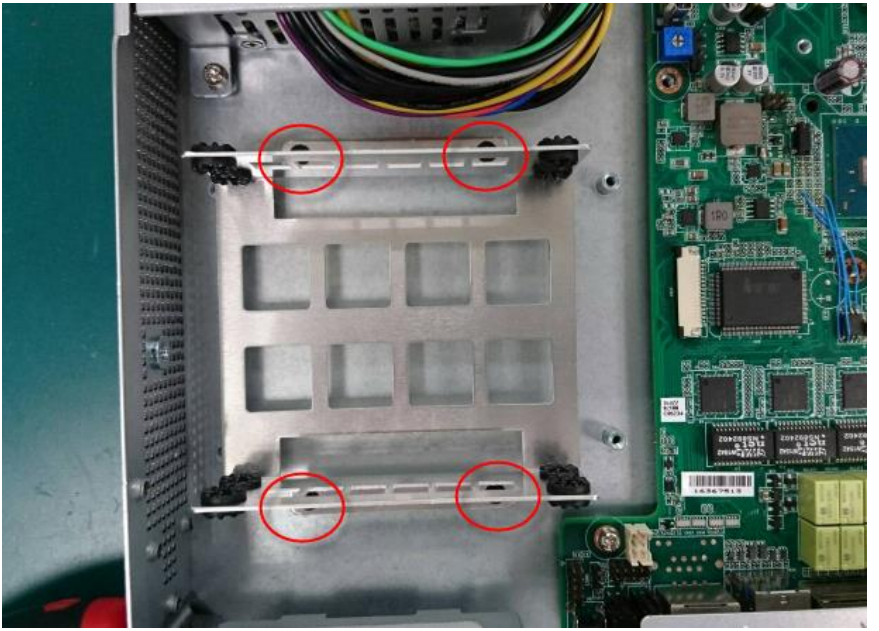
2.4.3 COM1 (RS232 UART2)

Pin	Signal	Pin	Signal
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND2	6	DSR2
7	RTS2	8	CTS2
9	RI2	10	

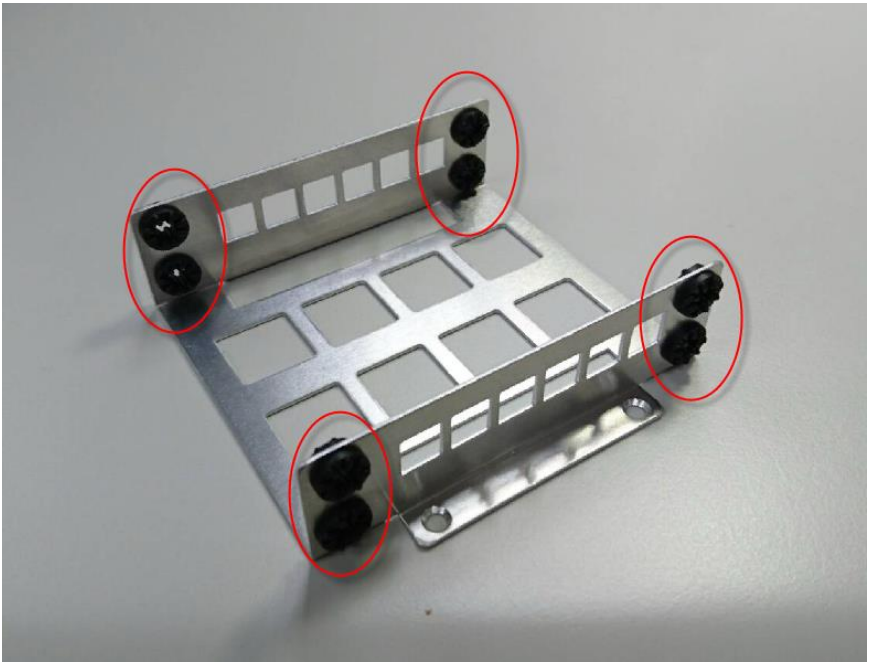
2.5 Installing 2.5" Hard Disk Drives (2 Pieces)

1. Unscrew and remove the upper lid.

2. Remove the highlighted screws to remove the HDD bracket



3. Affix the cushions to the hard disk bracket.



4. Secure the hard disk to the lower cushions with four screws

5. Secure the hard disk to the upper cushions with four screws

6. Secure the hard drive bracket to the chassis with four screws

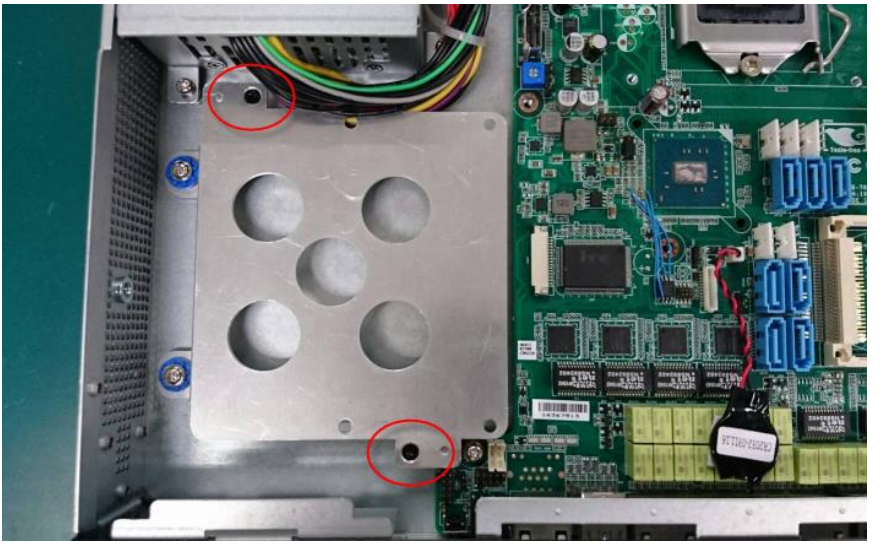
7. Connect the SATA and power cable to the lower disk

8. Connect the SATA and power cable to the upper disk

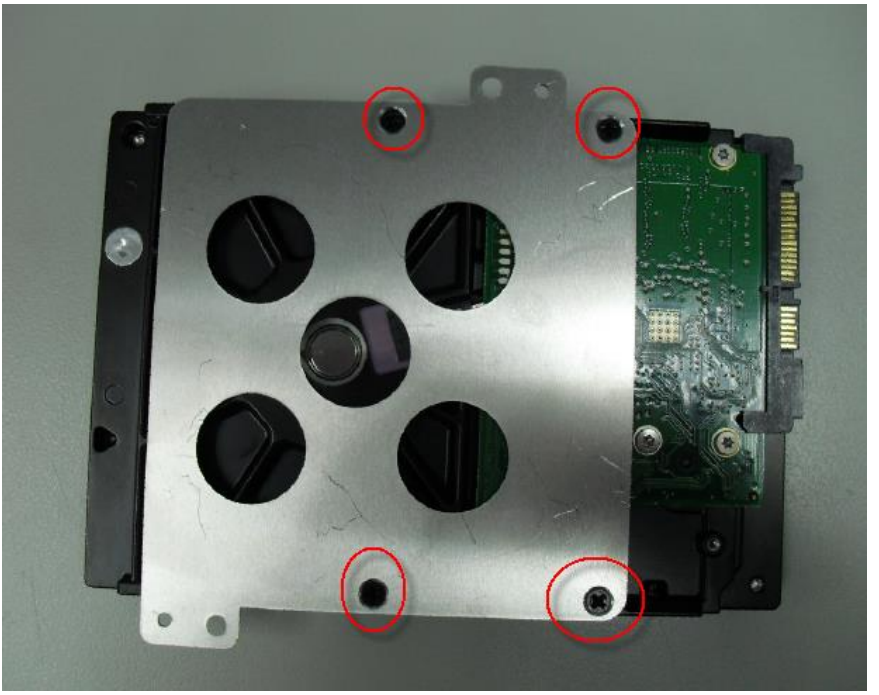
2.6 Installing 3.5" Hard Disk (1 Piece)

1. Unscrew and remove the upper lid.

2. Loosen the highlighted screws and remove the HDD upper bracket



3. Secure the hard disk to the upper bracket



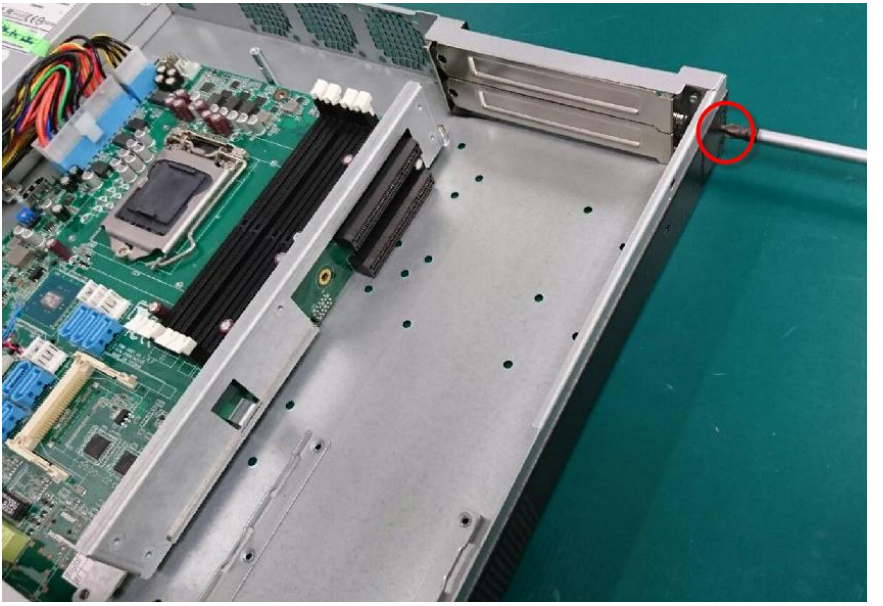
4. Secure the hard disk bracket to the lower bracket

5. Attach the SATA and power cables to the disk.

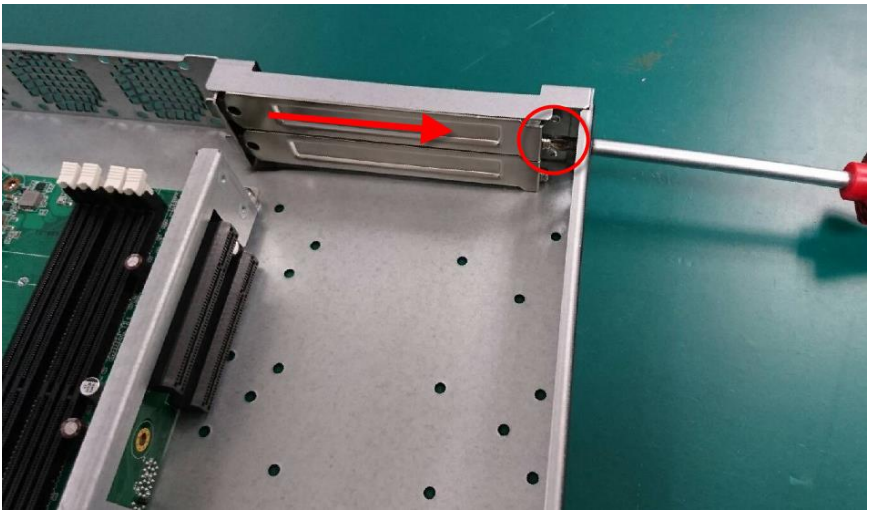
2.9 Installing Expansion Card

1. Remove the highlighted screws, and slide the casing upwards to remove

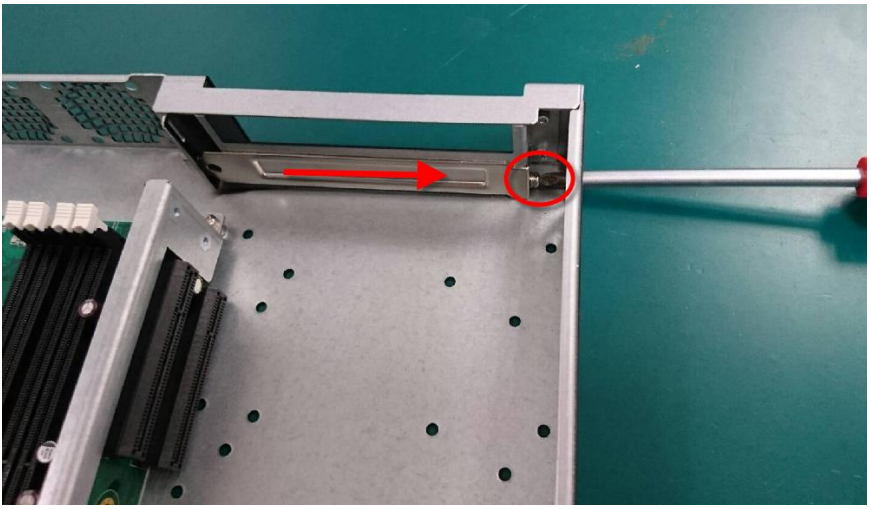
2. Remove the screw to remove the bracket cover.



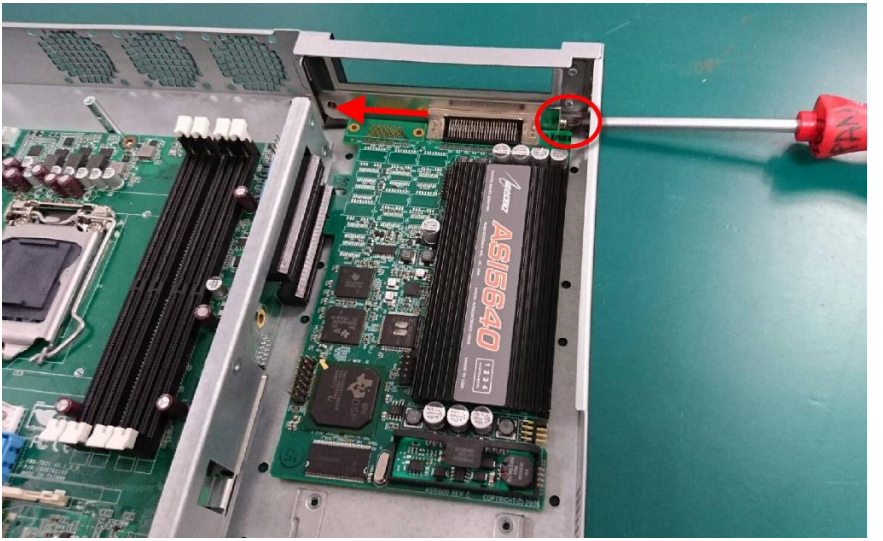
3. Loosen and remove the upper I/O bracket.



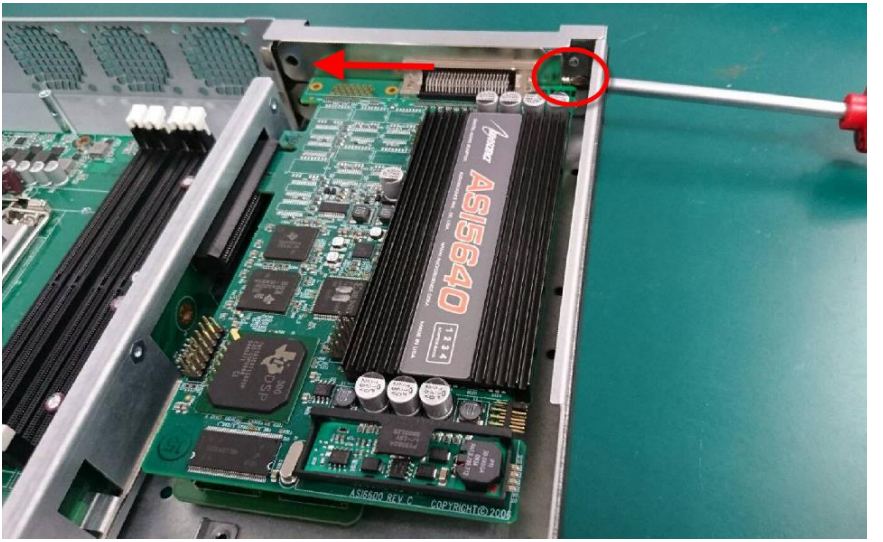
4. Loosen and remove the lower I/O bracket.



5. Insert and secure the expansion card into the lower slot.



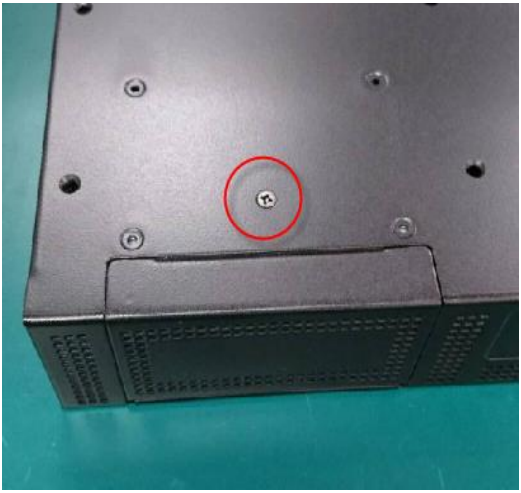
6. Insert and secure the expansion card into the upper slot.



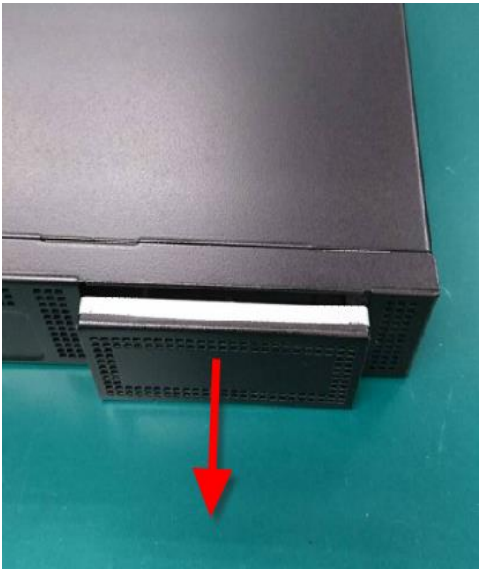
7. Replace and secure the bracket cover.

2.7 Installing Network Interface Module

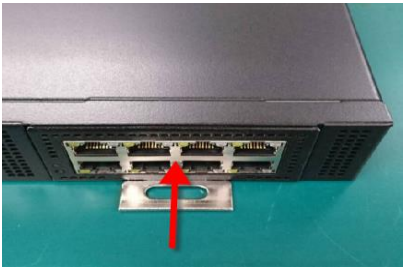
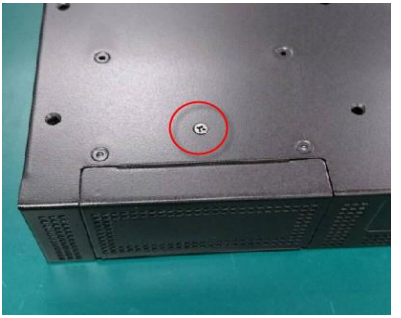
1. Remove the highlighted screws to remove the NIM cover



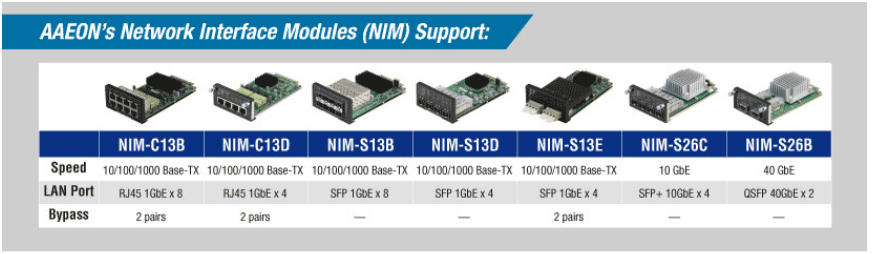
2. Remove the black cover, or the existing module



3. Insert the required module and secure with screws


2.7.1 Supported Network Interface Modules



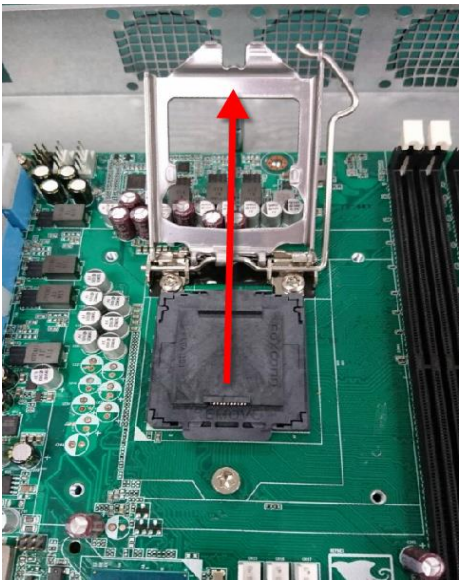
Model	Speed	Port	Bypass
NIM-C13B	10/100/1000 Base-TX	RJ45 GbE x 8	2 pairs
NIM-C13D	10/100/1000 Base-TX	RJ45 GbE x 4	2 pairs
NIM-S13B	10/100/1000 Base-TX	SFP GbE x 8	-
NIM-S13D	10/100/1000 Base-TX	SFP GbE x 4	-
NIM-S13E	10/100/1000 Base-TX	SFP GbE x 4	2 pairs
NIM-S26C	10 GbE	SFP+ 10 GbE x 4	-
NIM-S26B	40 GbE	QSFP 40 GbE x 2	-

2.8 Installing the CPU and the Heat Sink

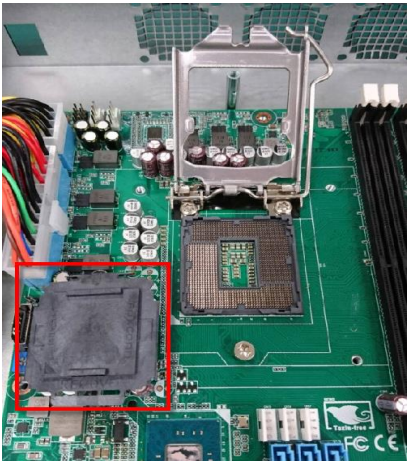
1. Loosen screen and remove fan duct

2. Release the retaining arm of the CPU bracket

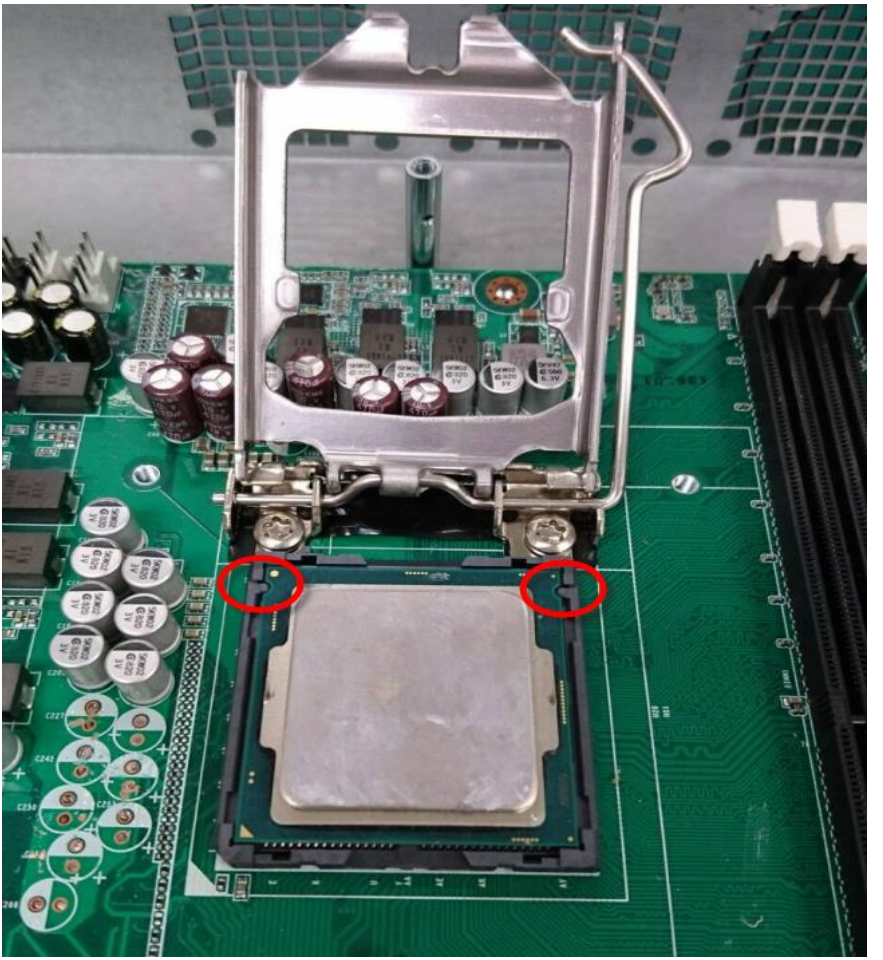
3. Lift the CPU bracket



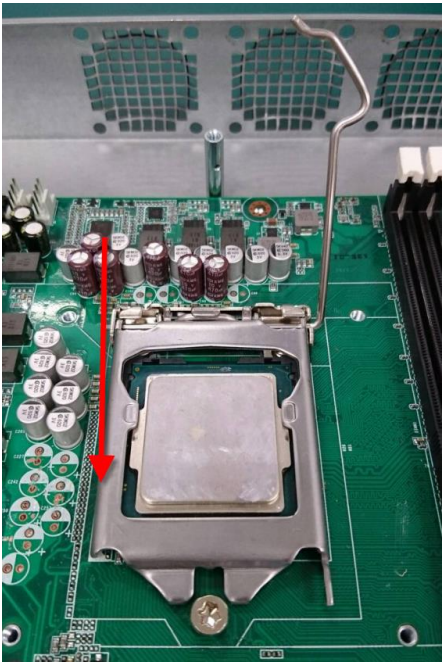
4. Remove the CPU cover

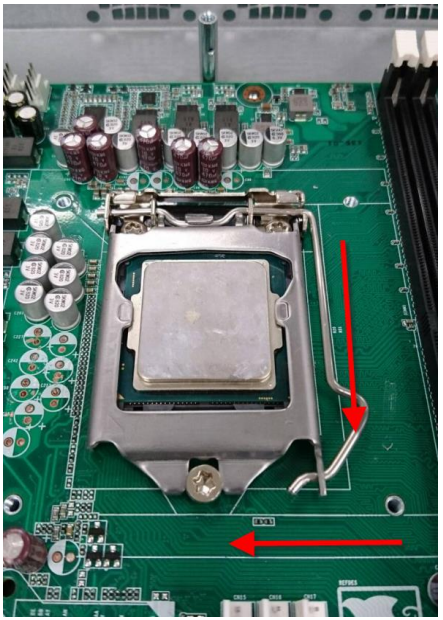


5. Place the CPU into the socket, and ensure it is correctly aligned

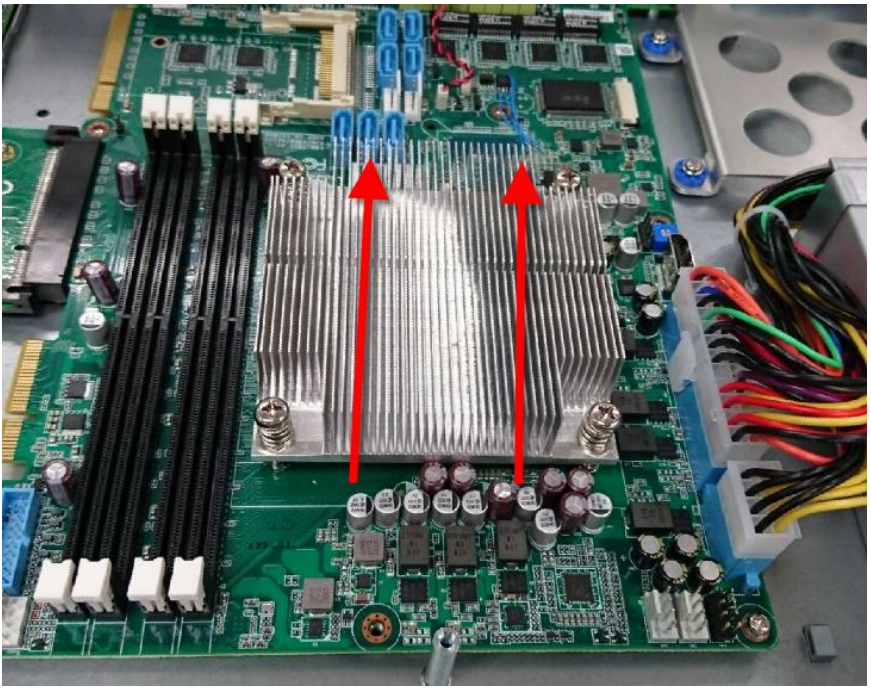


Close the CPU cover, and secure the retaining arm.





6. Place and secure the heatsink to the CPU ensuring the heatsink aligns with the airflow



7. Replace and secure the fan duct

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 is reset by Clear-CMOS jumper.
4. The CMOS memory has lost power and the configuration information has been erased. The FWS-7821 CMOS memory has an integral lithium battery backup for data retention. You have to replace the battery 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 and press <Del>or <Esc> immediately. This will allow you to enter Setup.

Main

Basic information and set Date & Time.

Advanced

Major feature configuration (e.g.: CPU, Super IO, Hardware Monitor, Digital I/O, etc.).

Chipset

Configuration for Chipset features.

Security

Set BIOS Administrator/User password.

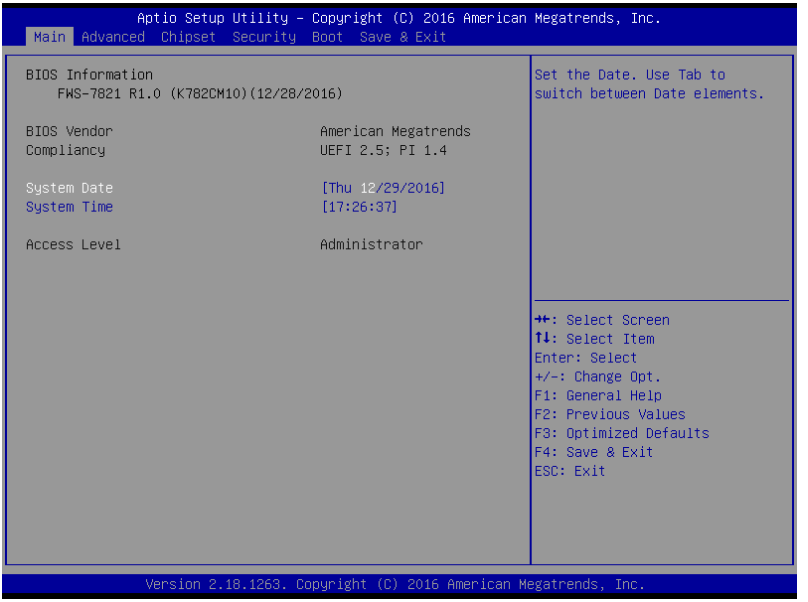
Boot

Adjust Boot configuration/priorities.

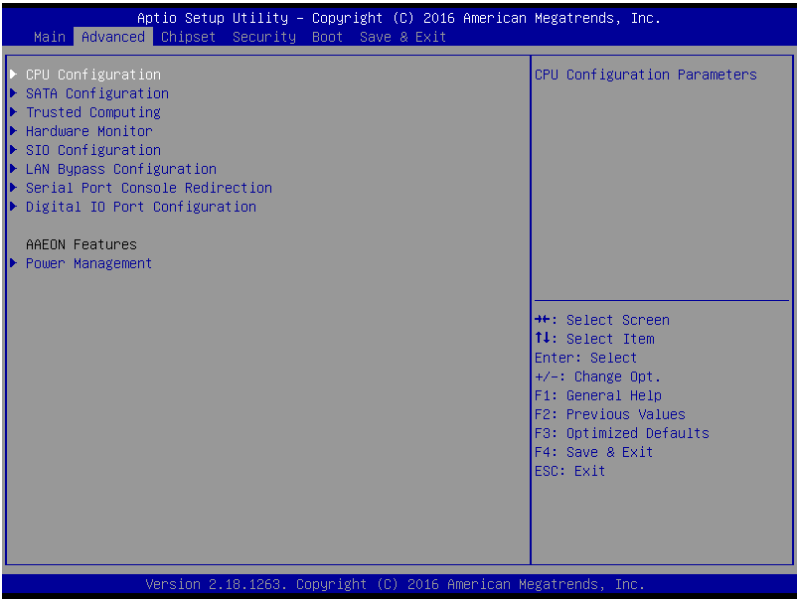
Save& Exit

Save changes/restore defaults and exit system setup.

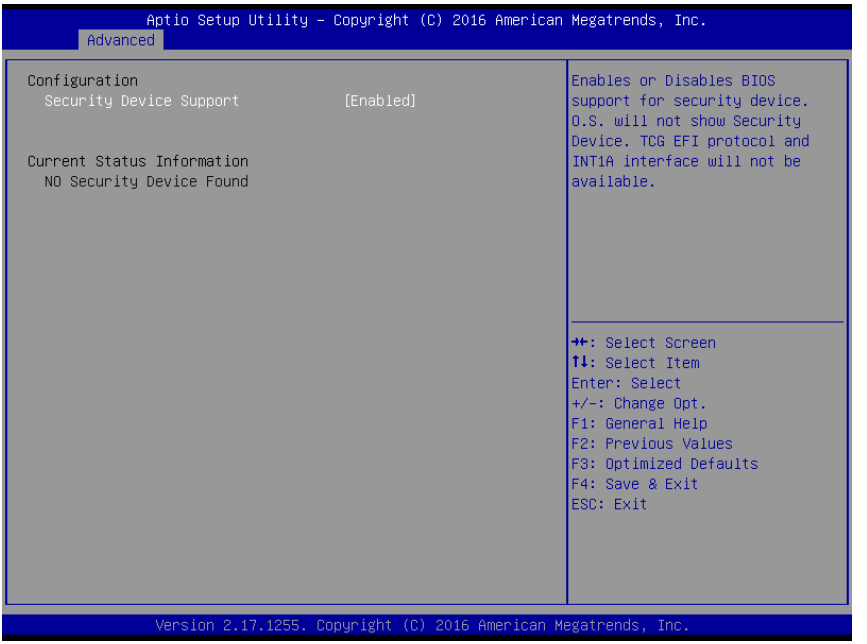
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



3.4.1 Advanced: Trusted Computing



Options summary:

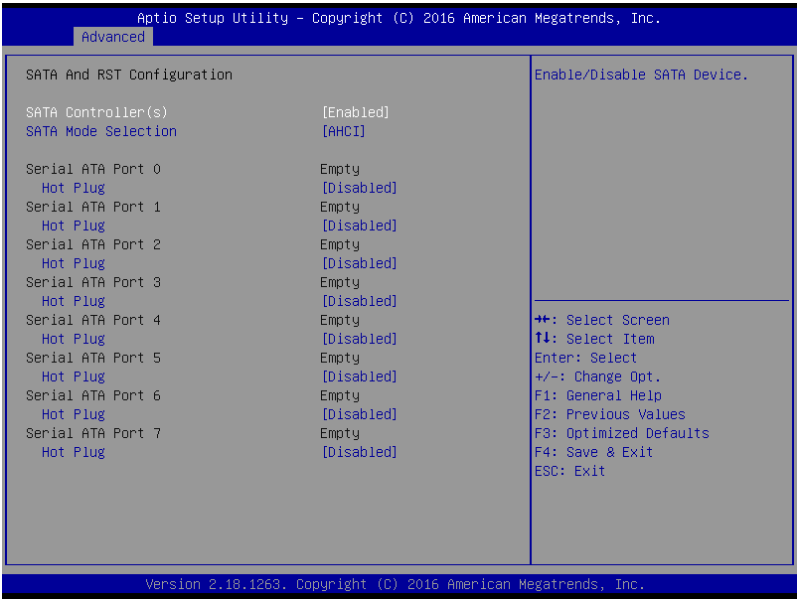
Security Device Support	Disable	
	Enable	Default
Enable or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		

3.4.2 CPU Configuration

Options summary:

Active Processor Cores	**All**
	1
Number of cores to enable in each processor package.	
Hyper-threading	Disabled
	Enabled
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).	

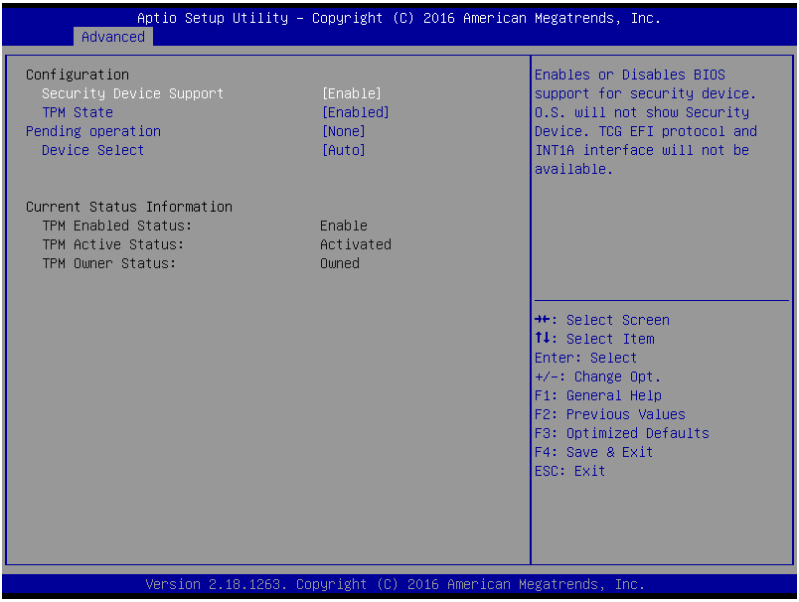
3.4.3 SATA Configuration



Options summary:

SATA Controller Speed	Disabled
	Enabled
Enable or disable SATA Device.	
SATA Mode Selection	**AHCI**
	Intel RST Premium
Determines how SATA controller(s) operate.	
Hot Plug	**Disabled**
	Enabled
Designates this port as Hot Pluggable.	

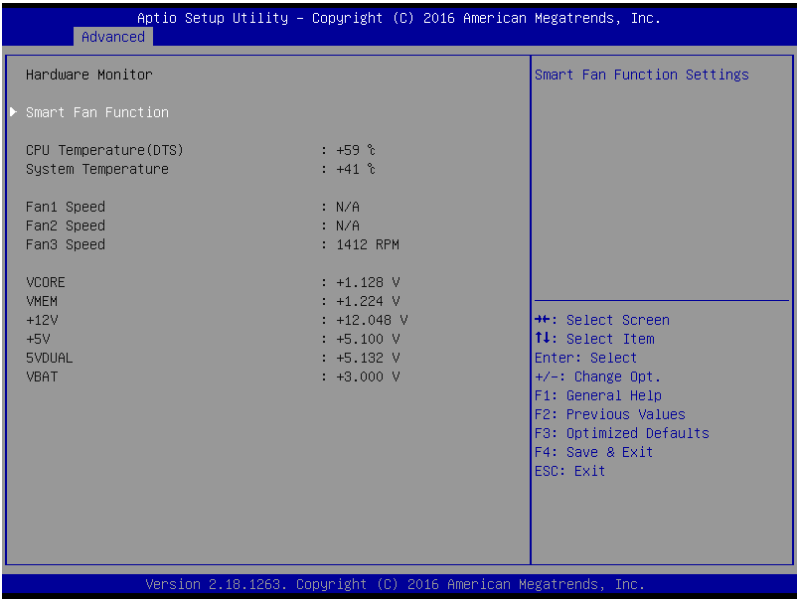
3.4.4 Trusted Computing



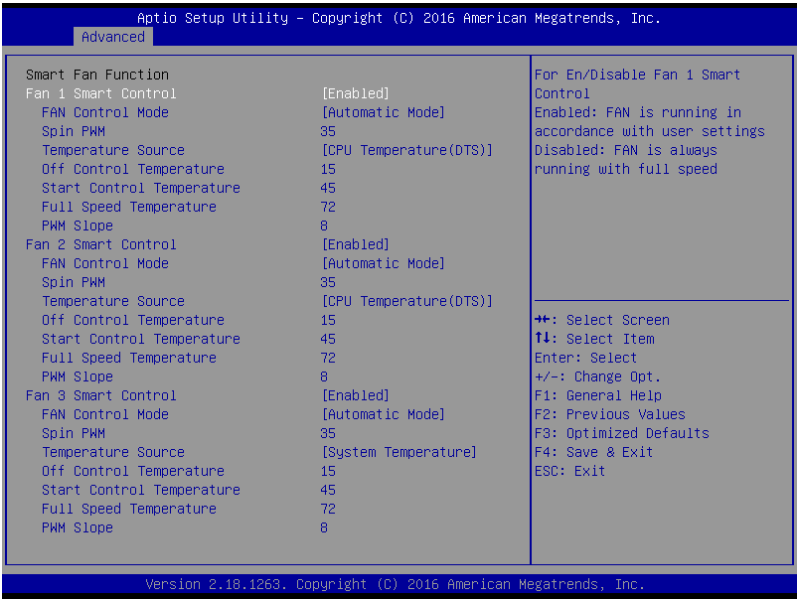
Options summary:

Security Device Support	Disabled
	Enabled
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.	
TPM State	Disabled
	Enabled
Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to change State of the Device.	
Pending operation	**None**
	TPM Clear
Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.	
Device Select	TPM 1.2
	TPM 2.0
	Auto
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated	

3.4.5 Hardware Monitor



3.4.6 Smart Fan Function



Options summary:

Fan 1 Smart Control	Disabled
	Enabled
For En/Disable Fan 1 Smart Control. Enabled: FAN is running in accordance with user settings. Disabled: FAN is always running with full speed	
Smart Fan Mode	Full on Mode
	Automatic Mode
	Manual Mode
Manual Mode: Depends on PWM Duty. Automatic Mode: FAN Speed is depends on System Temperature	
Spin PWM	**35 (0-255)**
The PWM Duty of FAN Spin Range:[0 - 255]	
Temperature Source	**CPU Temperature(DTS)**
	System Temperature
Reference Temperature Input Selection.	
Off Control Temperature	**15 (0-127)**
Temperature Limit Value of Fan Off. Note: Some fans have the minimum speed even if the PWM value is 0	
Start Control Temperature	**45 (0-127)**
Temperature Limit Value of FAN Start Control	
Full Speed Temperature	**72**

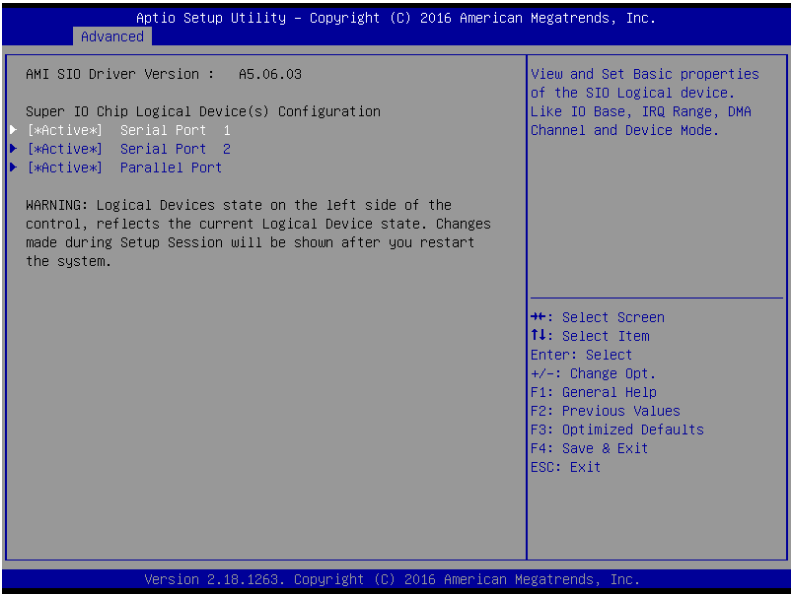
Temperature Limit Value of FAN Full Speed	
PWM Slope	**8 (1-15)**
Slope PWM value/Degree C for FAN Speed Control Range:[1-15]	

Fan 2 Smart Control	Disabled
	Enabled
For En/Disable Fan 1 Smart Control. Enabled: FAN is running in accordance with user settings. Disabled: FAN is always running with full speed	
Smart Fan Mode	Full on Mode
	Automatic Mode
	Manual Mode
Manual Mode: Depends on PWM Duty. Automatic Mode: FAN Speed is depends on System Temperature	
Spin PWM	**35 (0-255)**
The PWM Duty of FAN Spin Range:[0 - 255]	
Temperature Source	**CPU Temperature(DTS)**
	System Temperature
Reference Temperature Input Selection.	
Off Control Temperature	**15 (0-127)**
Temperature Limit Value of Fan Off. Note: Some fans have the minimum speed even if the PWM value is 0	
Start Control Temperature	**45 (0-127)**
Temperature Limit Value of FAN Start Control	
Full Speed Temperature	**72**
Temperature Limit Value of FAN Full Speed	
PWM Slope	**8 (1-15)**
Slope PWM value/Degree C for FAN Speed Control Range:[1-15]	

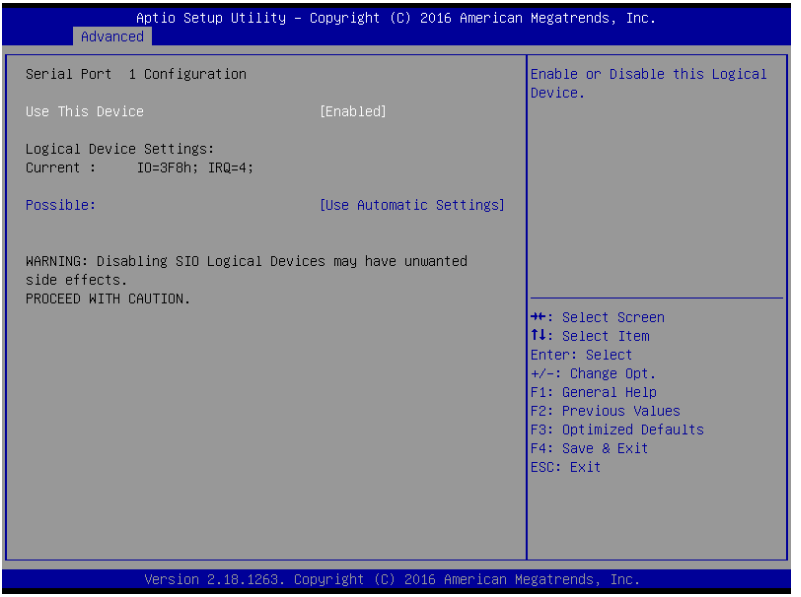
Fan 3 Smart Control	Disabled
	Enabled
For En/Disable Fan 1 Smart Control. Enabled: FAN is running in accordance with user settings. Disabled: FAN is always running with full speed	
Smart Fan Mode	Full on Mode
	Automatic Mode
	Manual Mode
Manual Mode: Depends on PWM Duty. Automatic Mode: FAN Speed is depends on System Temperature	
Spin PWM	**35 (0-255)**
The PWM Duty of FAN Spin Range:[0 - 255]	
Temperature Source	CPU Temperature(DTS)
	System Temperature
Reference Temperature Input Selection.	
Off Control Temperature	**15 (0-127)**
Temperature Limit Value of Fan Off. Note: Some fans have the minimum speed even if the PWM value is 0	

Start Control Temperature	**45 (0-127)**
Temperature Limit Value of FAN Start Control	
Full Speed Temperature	**72**
Temperature Limit Value of FAN Full Speed	
PWM Slope	**8 (1-15)**
Slope PWM value/Degree C for FAN Speed Control Range:[1-15]	

3.4.7 SIO Configuration



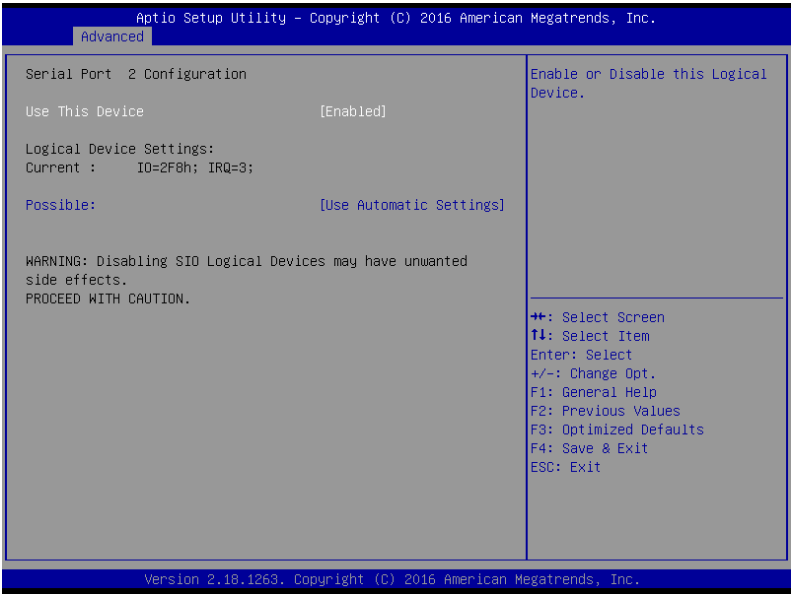
3.4.8 Serial Port 1 Configuration



Options summary:

Use This Device	Disabled
	Enabled
Enable or Disable this Logical Device.	
Possible:	**Use Automatic Settings**
	IO=2F8h; IRQ=3;
	IO=3F8h; IRQ=4;
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.	

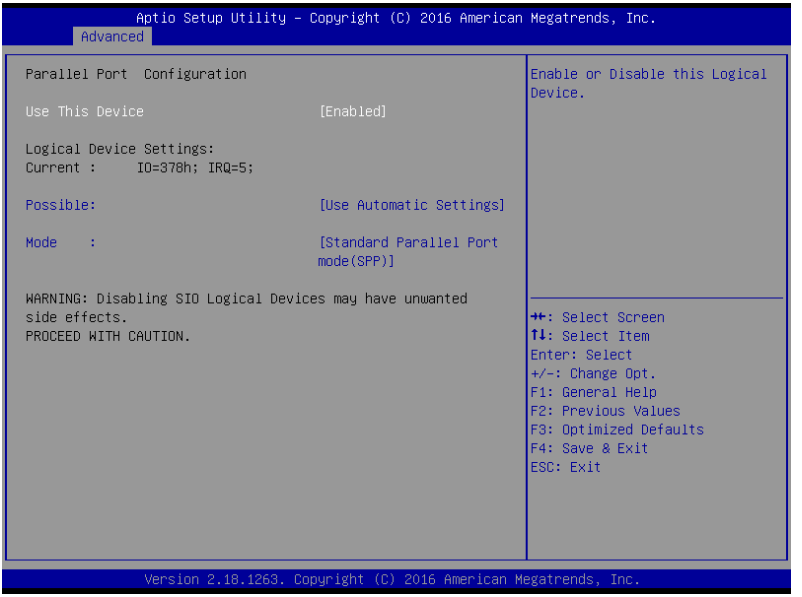
3.4.9 Serial Port 2 Configuration



Options summary:

Use This Device	Disabled
	Enabled
Enable or Disable this Logical Device.	
Possible:	**Use Automatic Settings**
	IO=2F8h; IRQ=3;
	IO=3F8h; IRQ=4;
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.	

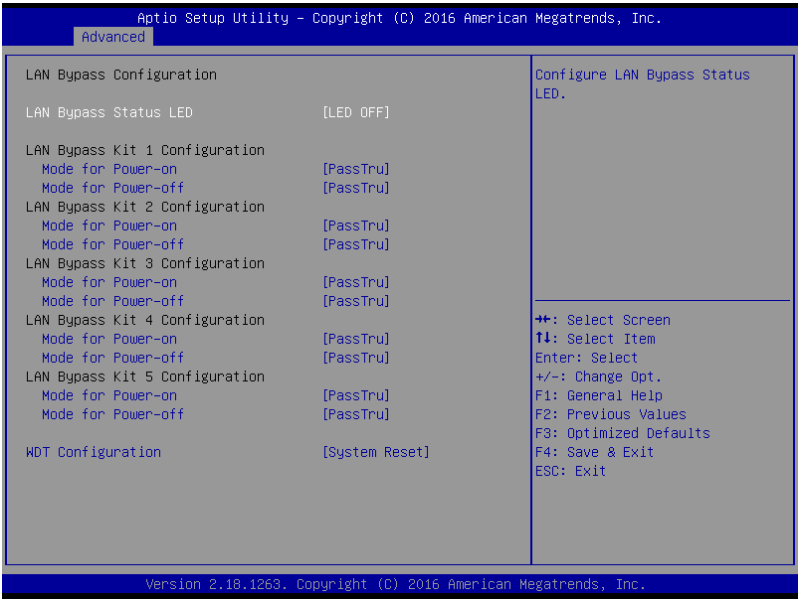
3.4.10 Parallel Port Configuration



Options summary:

Use This Device	Disabled
	Enabled
Enable or Disable this Logical Device.	
Possible:	**Use Automatic Settings**
	IO=378h; IRQ=5;
	IO=378h; IRQ=5,6,7,9,10,11,12;
	IO=278h; IRQ=5,6,7,9,10,11,12;
	IO=3BCh;IRQ=5,6,7,9,10,11,12;
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.	
Mode	**Standard Parallel Port Mode**
	EPP Mode
	ECP Mode
	EPP Mode & ECP Mode
Change the Printer Port mode.	

3.4.11 LAN Bypass Configuration

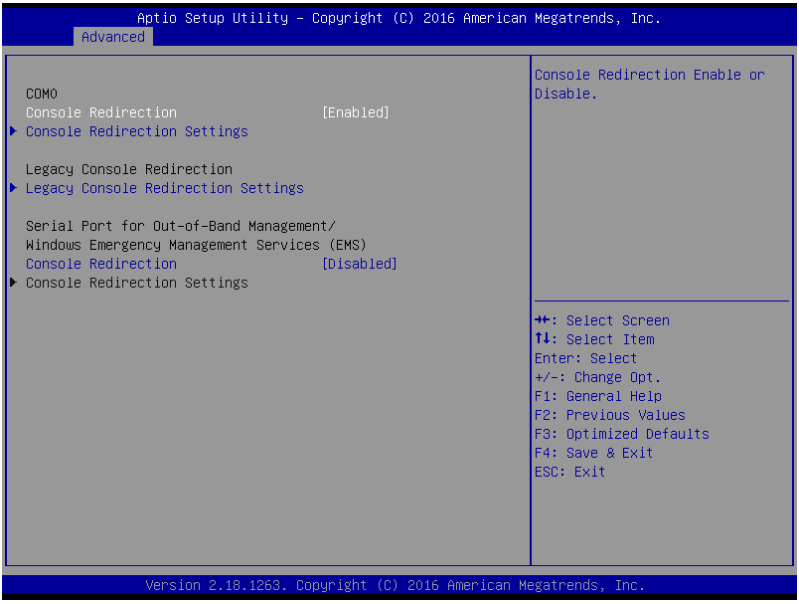


Options summary:

STATUS LED CTRL	**LED OFF**
	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.	
LAN kit Power ON	Bypass
	PassTru
Setting LAN kit function behavior when power on.(Bypass/Pass Through)	
LAN kit Power Off	Bypass
	PassTru
Setting LAN kit function behavior when power off.(Bypass/Pass Through)	

WDT configuration	Force Bypass
	SystemReset
Configure WDT behavior , System Reset Force Bypass	

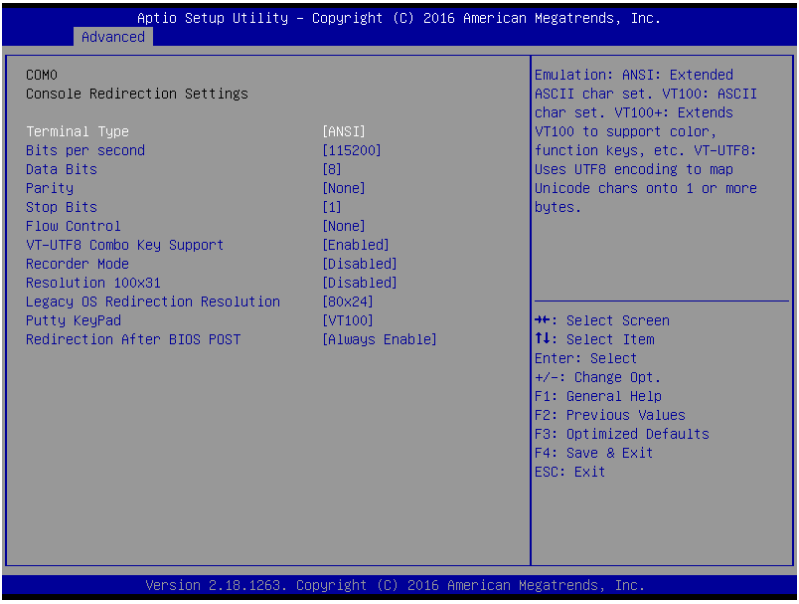
3.4.12 Serial Port Console Redirection



Options summary:

Console Redirection	Disabled
	Enabled
Console Redirection Enabled or Disabled.	

3.4.13 Console Redirection Settings

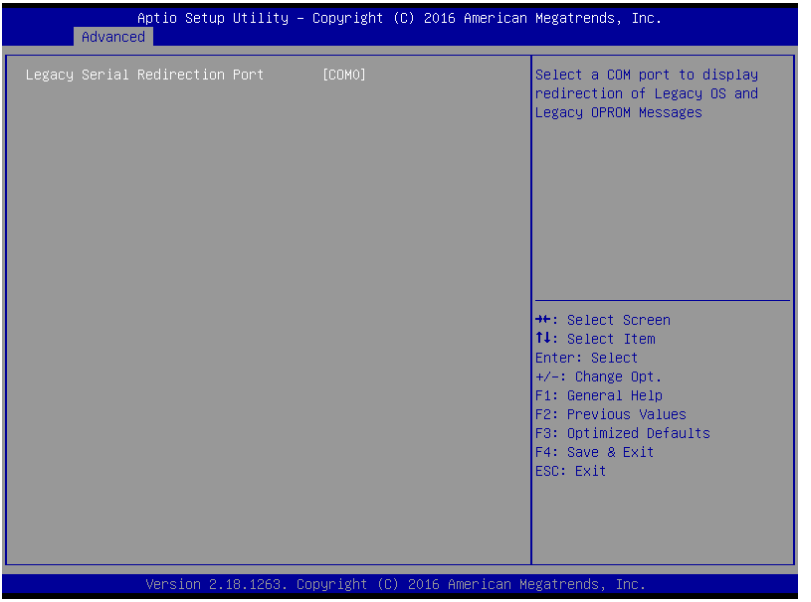


Options summary:

Terminal Type	VT100
	VT100+
	VT-UTF8
	ANSI
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.	
Bits per second	9600
	19200
	38400
	57600
	115200
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.	
Data Bits	7
	8
Data Bits	
Parity	**None**
	Even
	Odd
	Mark
	Space

A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection.	
Stop Bits	**1**
	2
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	
Flow Control	**None**
	Hardware RTS/CTS
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	
VT-UTF8 Combo Key Support	Disabled
	Enabled
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals	
Recorder Mode	**Disabled**
	Enabled
On this mode enabled only text will be send. This is to capture Terminal data.	
Resolution 100x31	**Disabled**
	Enabled
Enables or disables extended terminal resolution	
Legacy OS Redirection Resolution	**80x24**
	80x25
On Legacy OS, the Number of Rows and Columns supported redirection	
Putty KeyPad	**VT100**
	LINUX
	XTERMR6
	SCO
	ESCN
	VT400
Select FunctionKey and KeyPad on Putty.	
Redirection After BIOS POST	**Always Enable**
	BootLoader
The Setting Specify if BootLoader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.	

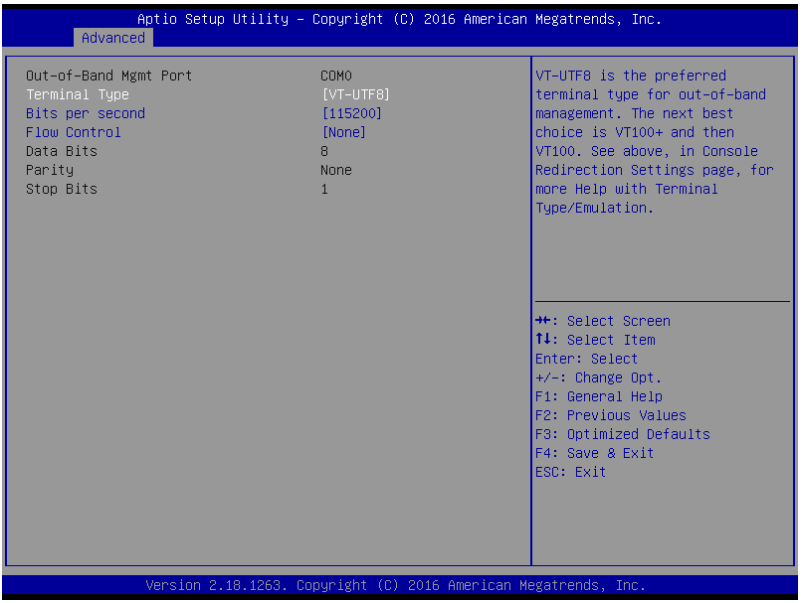
3.4.13 Legacy Console Redirection Settings



Options summary:

Legacy Serial Redirection Port	**COM0**
Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages	

3.4.14 Serial Port for Out-of-Band Management/Windows Emergency Management Services(EMS)

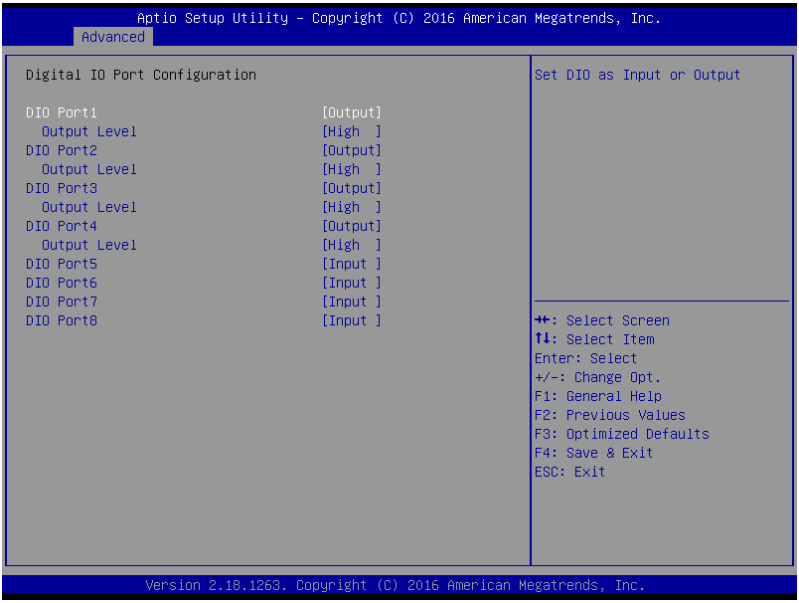


Options summary:

Terminal Type	VT100
	VT100+
	VT-UTF8
	ANSI
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.	
Bits per second	9600
	19200
	57600
	115200
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.	
Flow Control	**None**
	Hardware RTS/CTS
	Software Xon/Xoff
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	
Data Bits	7

	8
Data Bits	
Parity	**None**
	Even
	Odd
	Mark
	Space
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection.	
Stop Bits	**1**
	2
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	

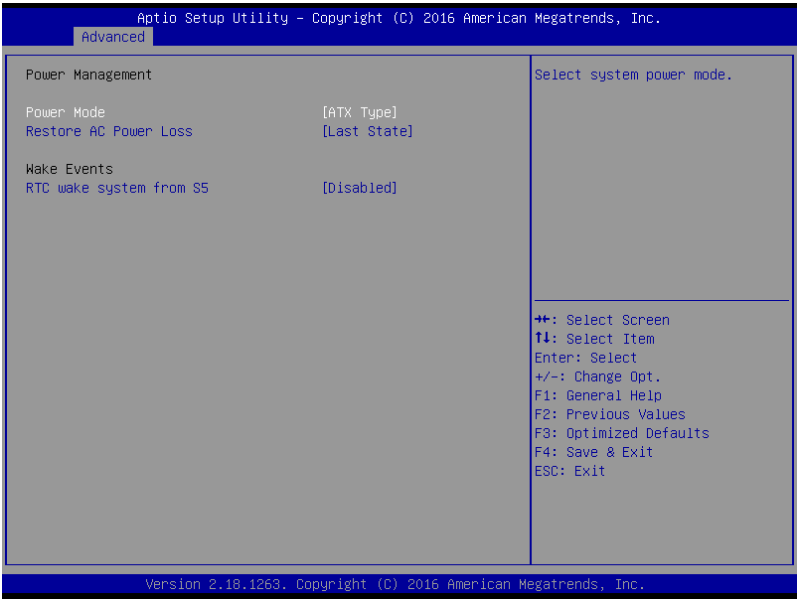
3.4.15 Digital IO Port Configuration



Options summary:

DIO_P#1~4	Input
	Output
Set DIO as Input or Output	
DIO_P#5~8	**Input**
	Output
Set DIO as Input or Output	
DIO_P#1~4 Direction	Low
	High
Set output level when DIO pin is output	

3.4.16 Power Management

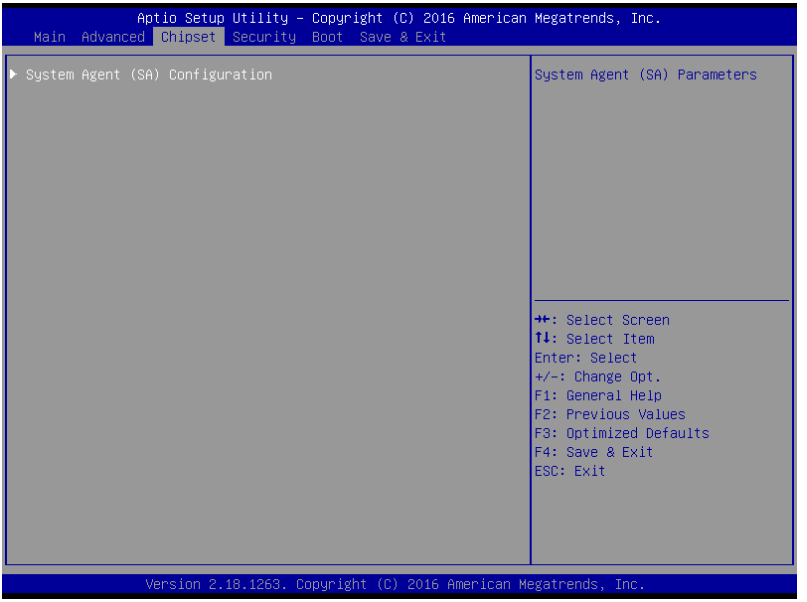


Options summary:

Power Mode	**ATX Type**
	AT Type
Select Power Supply Mode.	
Restore AC Power Loss	Power Off
	Power On
	Last State
Select AC power state when power is re-applied after a power failure.	
RTC Wake system from S5	**Disabled**
	Fixed time
	Dynamic time
Fixed Time: System will wake on the hr::min::sec specified. Dynamic Time: System will wake on the current time + Increase minute(s)	
Wake up day (Fixed time option)	**0**
Select 0 for daily system wake up, 1-31 for which day of month that you would like the system to wake up.	
Wake up hour (Fixed time option)	**0**
Select 0-23 For example enter 3 for 3am and 15 for 3pm.	
Wake up minute (Fixed time option)	**0**
0-59	
Wake up second (Fixed time option)	**0**
0-59	

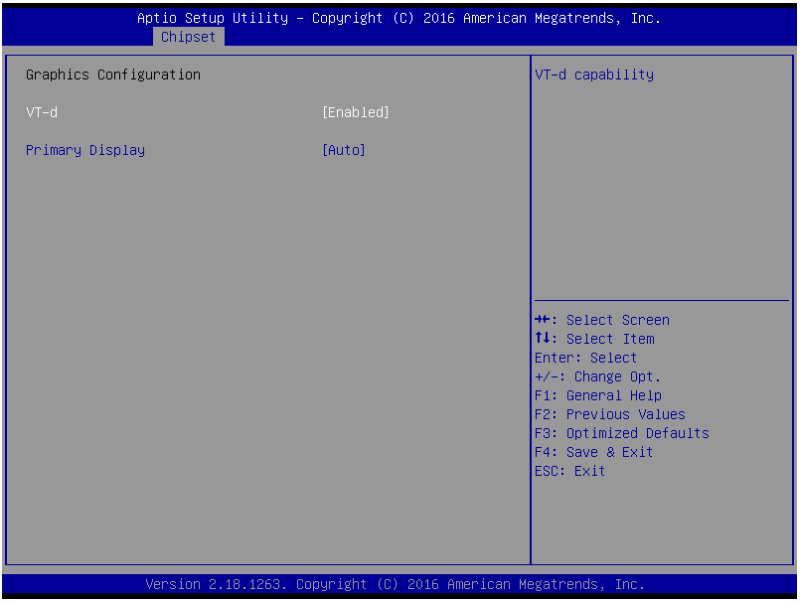
Wake up minute increase (Dynamic time option)	1
1-5	

3.5 Chipset


Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
System Agent (SA) Configuration
System Agent (SA) Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.18.1263. Copyright (C) 2016 American Megatrends, Inc.

3.5.1 System Agent (SA) Configuration

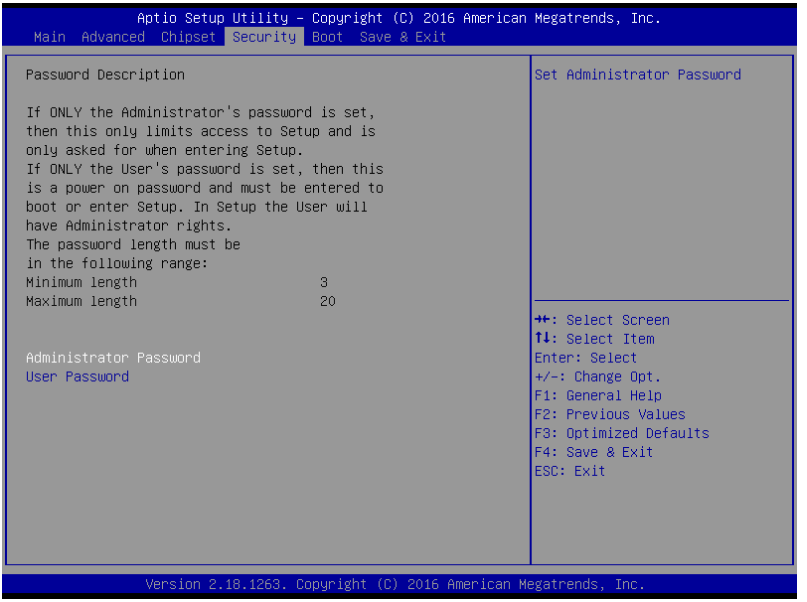
3.5.2 Graphics Configuration



Options summary:

VT-d	**Enabled**
	Disabled
VT-d capability	
Primary Display	**Auto**
	IGFX
	PEG
Select which of Auto/IGFX/PEG/PCIE Graphics device should be Primary Dislpay Or select SG for Switchable Gfx.	

3.6 Security



Change User/Supervisor Password

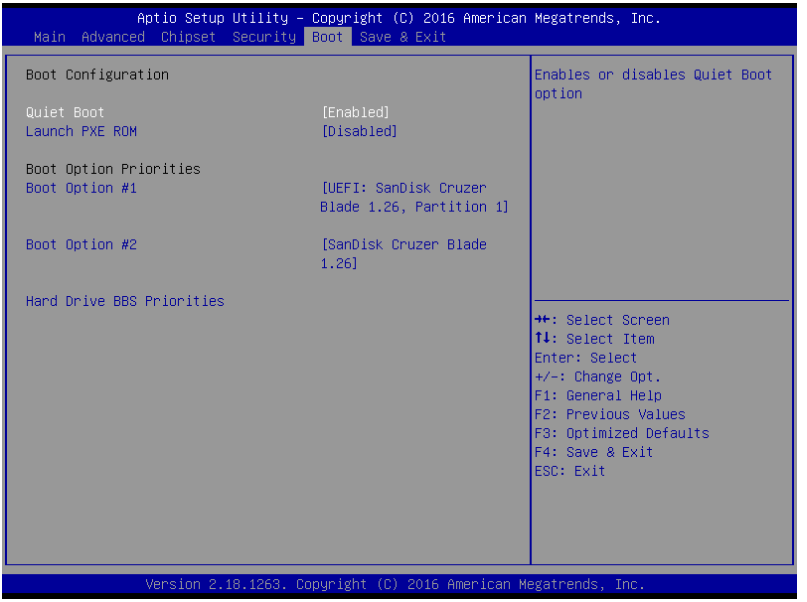
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

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:

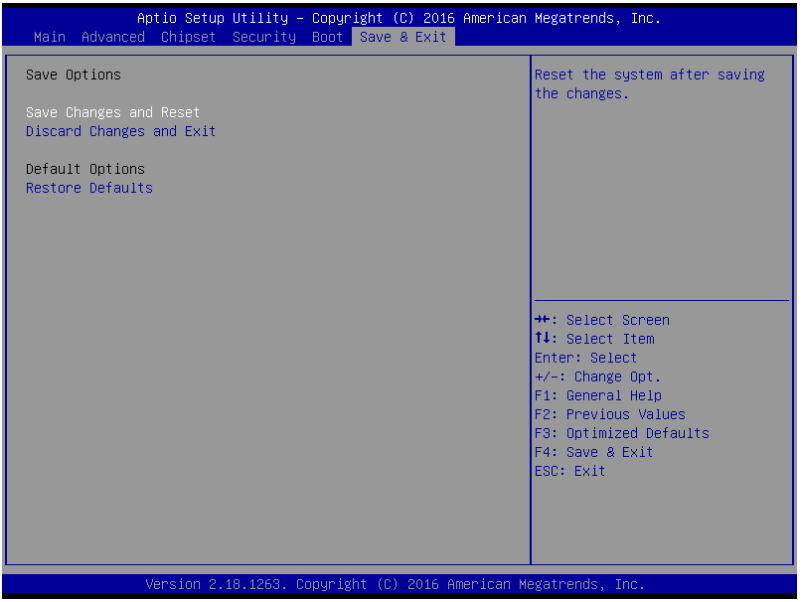
3.7 Boot



Options summary:

Quiet Boot	Disabled
	Enabled
Enables or disables Quiet Boot option.	
Launch PXE ROM	**Disabled**
	Enabled
Controls the execution of UEFI and Legacy PXE OpROM	

3.8 Exit


Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
Save Options
Save Changes and Reset
Discard Changes and Exit
Default Options
Restore Defaults
Reset the system after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.18.1263. Copyright (C) 2016 American Megatrends, Inc.

Chapter 4

Drivers Installation

4.1 Drivers Installation

The drivers can be found in the product page for FWS-7821 at aaeon.com. Please follow the sequence below to install the drivers.

Step 1 – Install Chipset Drivers

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

Step 2 – Install Graphic Drivers

Open the Step 2 – Graphic folder and select your OS

1. Open the Setup.exe file in the folder
2. Follow the instructions
3. Drivers will be installed automatically
4. Step 3 – Install LAN Driver
5. Open the Step 3 - LAN folder and select your OS
6. Open the.exe file in the folder

Follow the instructions

Drivers will be installed automatically

Step 4 – Install ME Drivers

1. Open the Step 4 – ME folder followed by the MEISetup.exe file
2. Follow the instructions
3. Drivers will be installed automatically

Step 5 – Install Intel RST Drivers

1. Open the Step 5 – Intel RST folder followed by the SetupRST.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);
}
*********************************************************************************
```

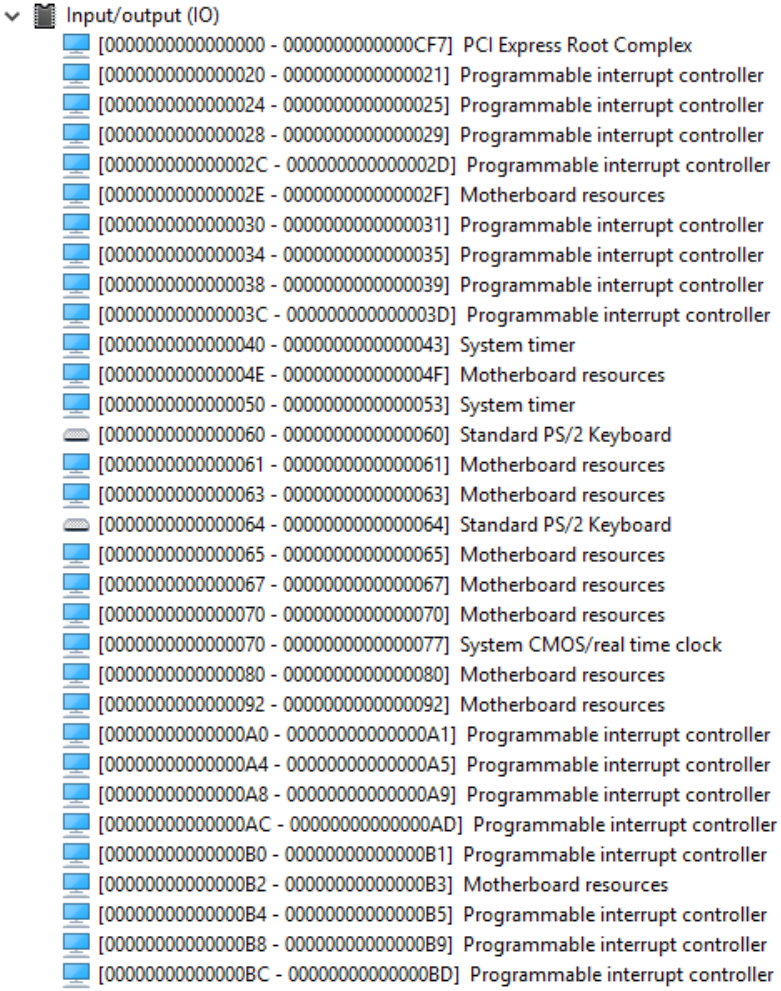
```
*******************************************************************************
VOID   SIOEnterMBPnPMode(){
       Switch(SIOIndex){
              Case 0x2E:
                     IOWriteByte(SIOIndex, 0x87);
                     IOWriteByte(SIOIndex, 0x01);
                        IOWriteByte(SIOIndex,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

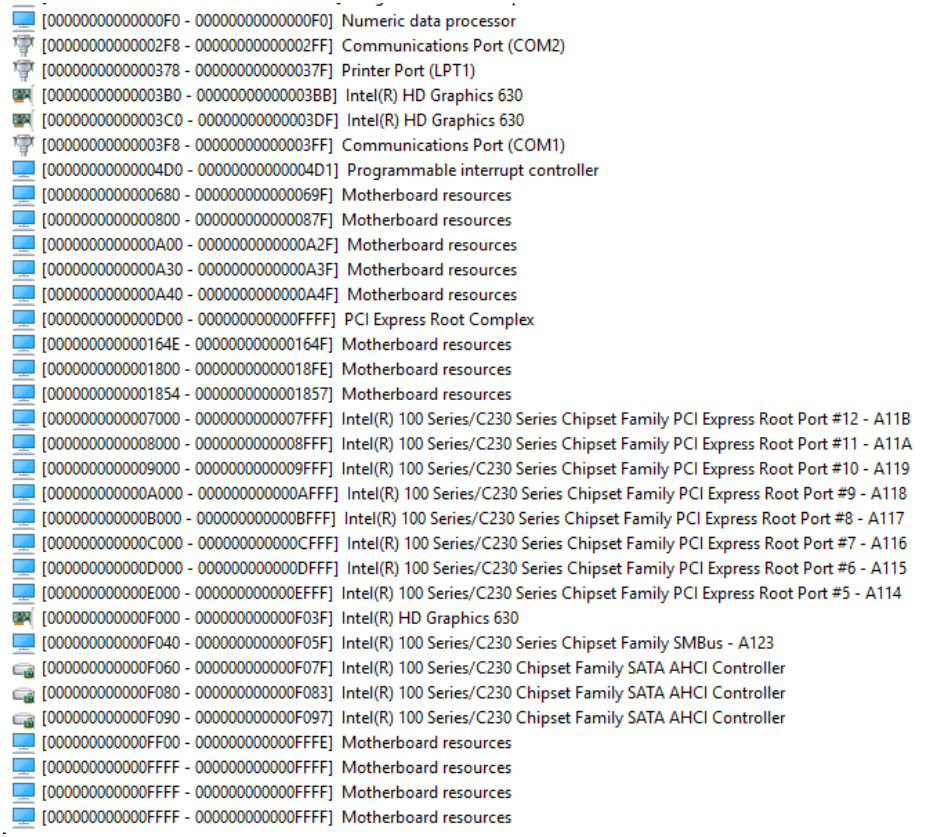
```
*****************************************************************************
VOID   SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
       Byte TmpValue;

       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

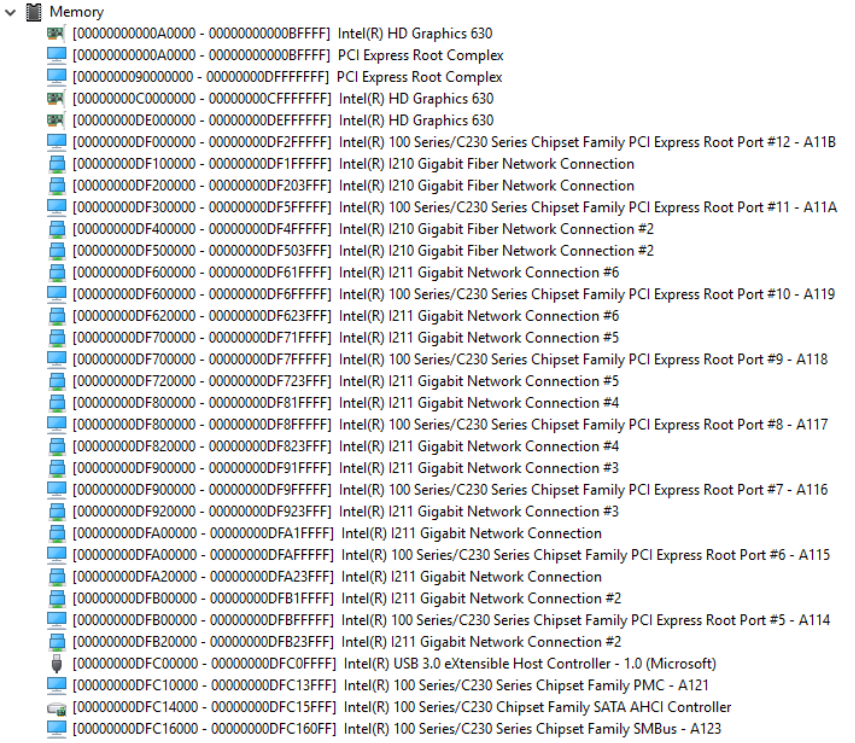
I/O Information

B.1 I/O Address Map



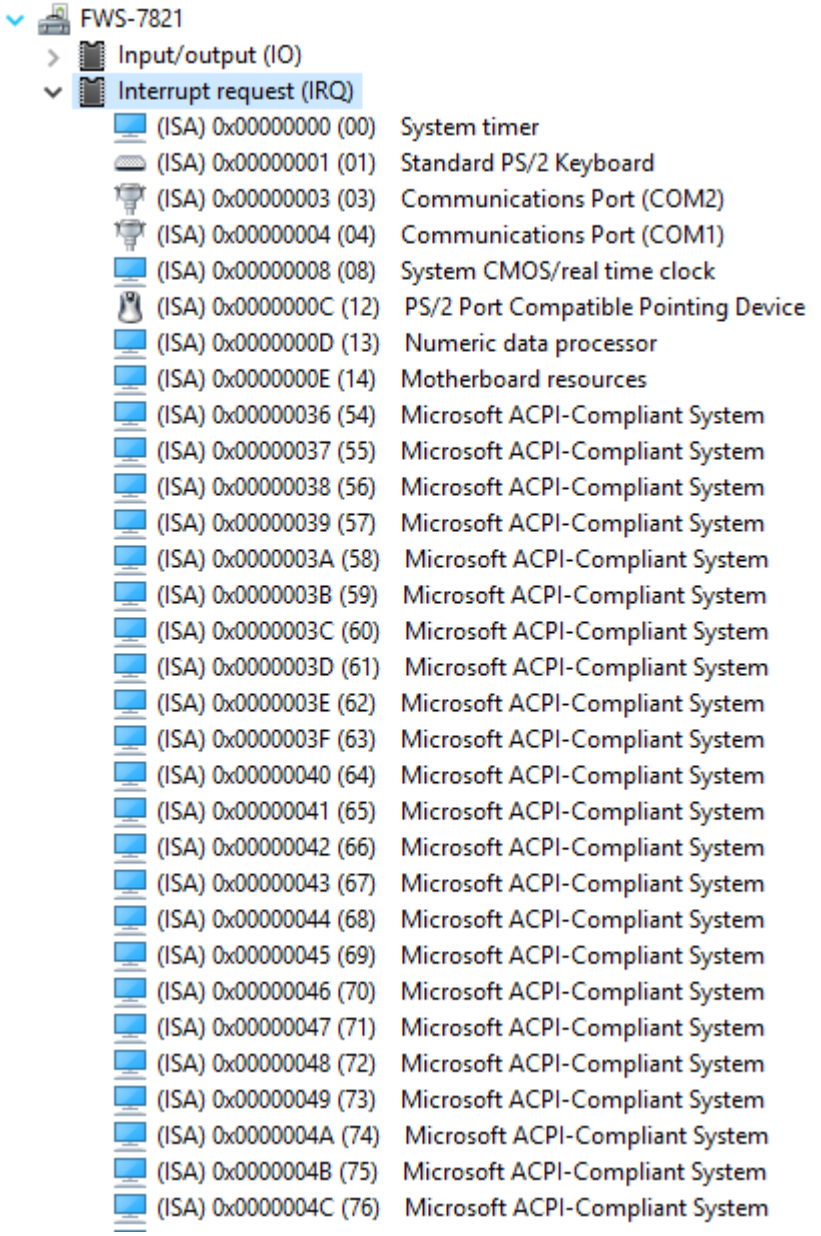

[00000000000000F0 - 00000000000000F0] Numeric data processor
[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
[0000000000000378 - 000000000000037F] Printer Port (LPT1)
[00000000000003B0 - 00000000000003BB] Intel(R) HD Graphics 630
[00000000000003C0 - 00000000000003DF] Intel(R) HD Graphics 630
[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000800 - 000000000000087F] Motherboard resources
[0000000000000A00 - 0000000000000A2F] Motherboard resources
[0000000000000A30 - 0000000000000A3F] Motherboard resources
[0000000000000A40 - 0000000000000A4F] Motherboard resources
[0000000000000D00 - 000000000000FFFF] PCI Express Root Complex
[000000000000164E - 000000000000164F] Motherboard resources
[0000000000001800 - 00000000000018FE] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000007000 - 0000000000007FFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #12 - A11B
[0000000000008000 - 0000000000008FFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #11 - A11A
[0000000000009000 - 0000000000009FFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #10 - A119
[000000000000A000 - 000000000000AFFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #9 - A118
[000000000000B000 - 000000000000BFFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #8 - A117
[000000000000C000 - 000000000000CFFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #7 - A116
[000000000000D000 - 000000000000DFFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #6 - A115
[000000000000E000 - 000000000000EFFF] Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #5 - A114
[000000000000F000 - 000000000000F03F] Intel(R) HD Graphics 630
[000000000000F040 - 000000000000F05F] Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
[000000000000F060 - 000000000000F07F] Intel(R) 100 Series/C230 Chipset Family SATA AHCI Controller
[000000000000F080 - 000000000000F083] Intel(R) 100 Series/C230 Chipset Family SATA AHCI Controller
[000000000000F090 - 000000000000F097] Intel(R) 100 Series/C230 Chipset Family SATA AHCI Controller
[000000000000FF00 - 000000000000FFFE] Motherboard resources
[000000000000FFFF - 000000000000FFFF] Motherboard resources
[000000000000FFFF - 000000000000FFFF] Motherboard resources
[000000000000FFFF - 000000000000FFFF] Motherboard resources

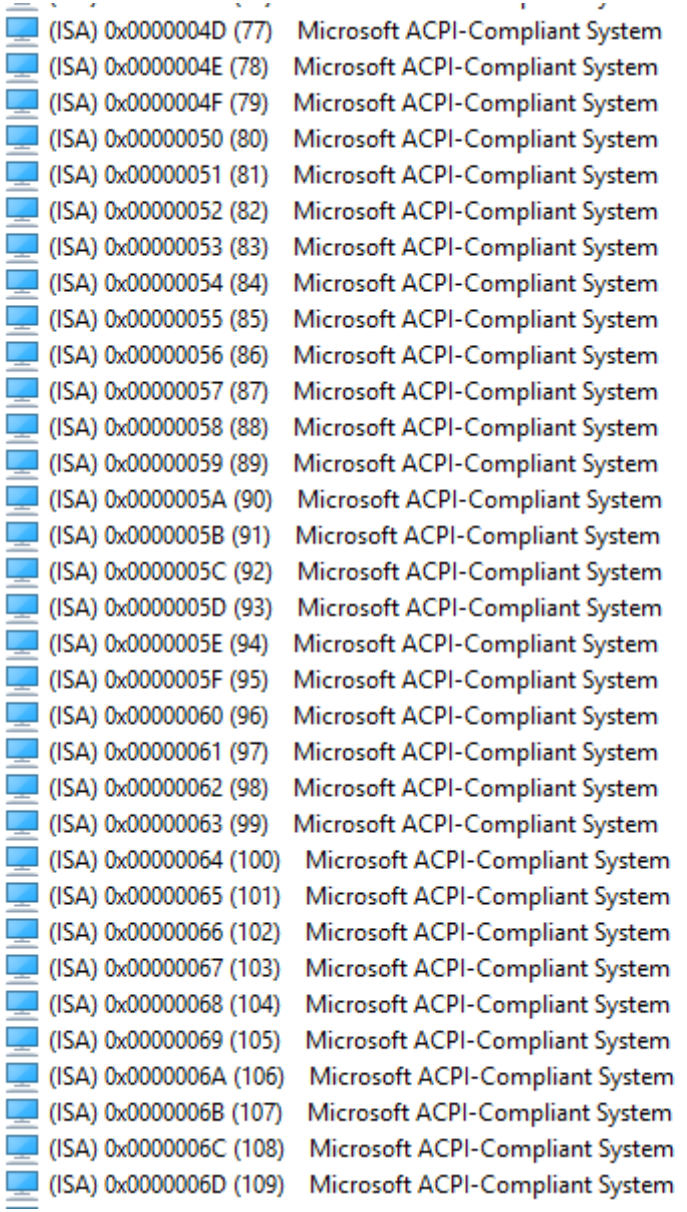
B.2 Memory Address Map

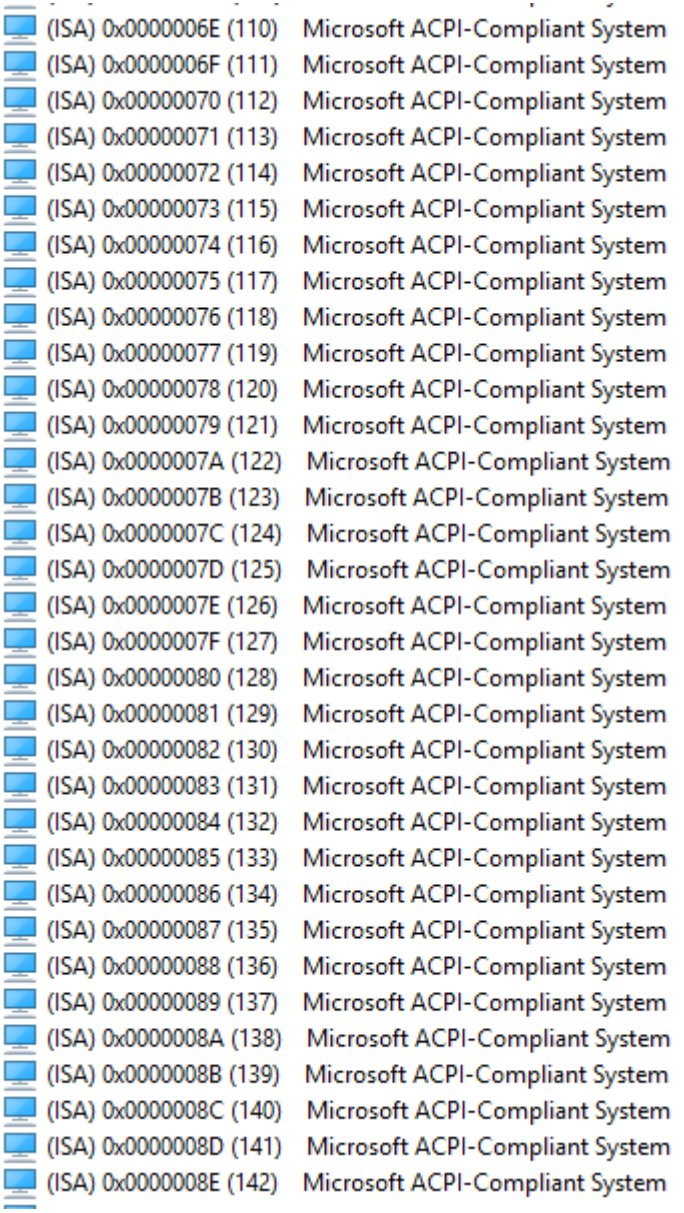


[00000000DFC17000 - 00000000DFC177FF] Intel(R) 100 Series/C230 Chipset Family SATA AHCI Controller
[00000000DFC18000 - 00000000DFC180FF] Intel(R) 100 Series/C230 Chipset Family SATA AHCI Controller
[00000000DFC1A000 - 00000000DFC1AFFF] Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
[00000000DFFE0000 - 00000000DFFFFFFF] Motherboard resources
[00000000E0000000 - 00000000EFFFFFFF] Motherboard resources
[00000000FD000000 - 00000000FDABFFFF] Motherboard resources
[00000000FD000000 - 00000000FE7FFFFF] PCI Express Root Complex
[00000000FDAC0000 - 00000000FDACFFFF] Motherboard resources
[00000000FDAD0000 - 00000000FDADFFFF] Motherboard resources
[00000000FDAE0000 - 00000000FDAEFFFF] Motherboard resources
[00000000FDAF0000 - 00000000FDAFFFFF] Motherboard resources
[00000000FDB00000 - 00000000FDFFFFFF] Motherboard resources
[00000000FE000000 - 00000000FE01FFFF] Motherboard resources
[00000000FE036000 - 00000000FE03BFFF] Motherboard resources
[00000000FE03D000 - 00000000FE3FFFFF] Motherboard resources
[00000000FE40F000 - 00000000FE40FFFF] Intel(R) Management Engine Interface
[00000000FE410000 - 00000000FE7FFFFF] Motherboard resources
[00000000FED00000 - 00000000FED003FF] High precision event timer
[00000000FED10000 - 00000000FED17FFF] Motherboard resources
[00000000FED18000 - 00000000FED18FFF] Motherboard resources
[00000000FED19000 - 00000000FED19FFF] Motherboard resources
[00000000FED20000 - 00000000FED3FFFF] Motherboard resources
[00000000FED40000 - 00000000FED40FFF] Trusted Platform Module 1.2
[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
[00000000FED90000 - 00000000FED93FFF] Motherboard resources
[00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
[00000000FF000000 - 00000000FFFFFFFF] Legacy device
[00000000FF000000 - 00000000FFFFFFFF] Motherboard resources

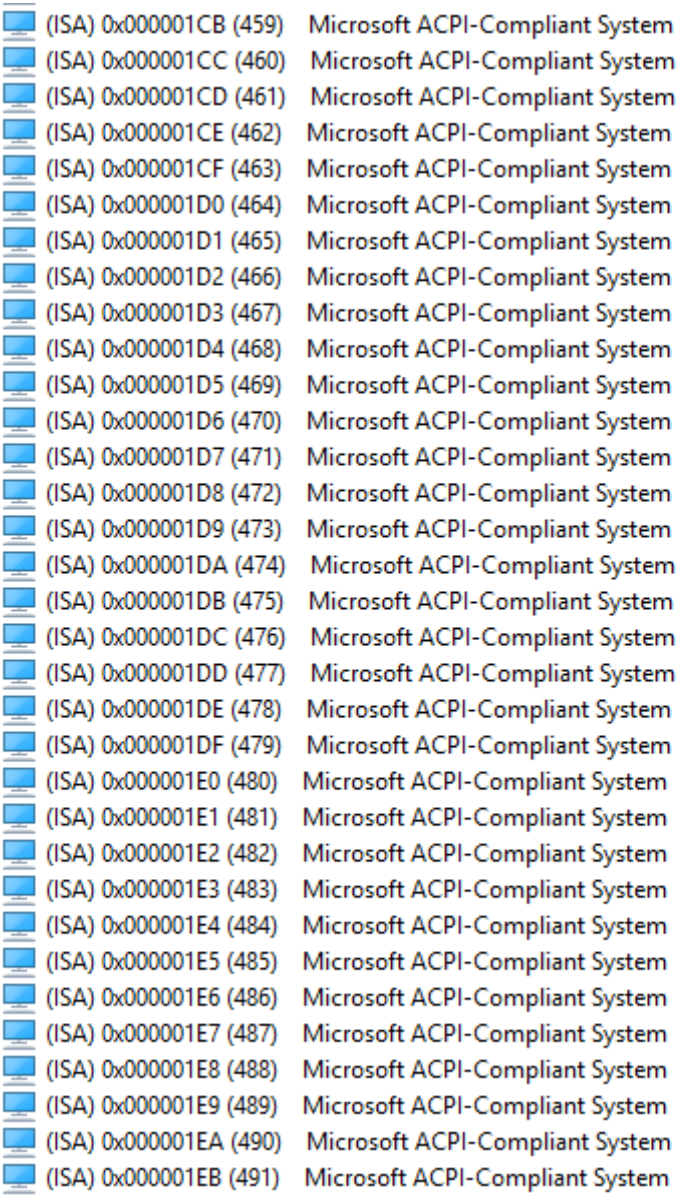
B.3 IRQ Mapping Chart

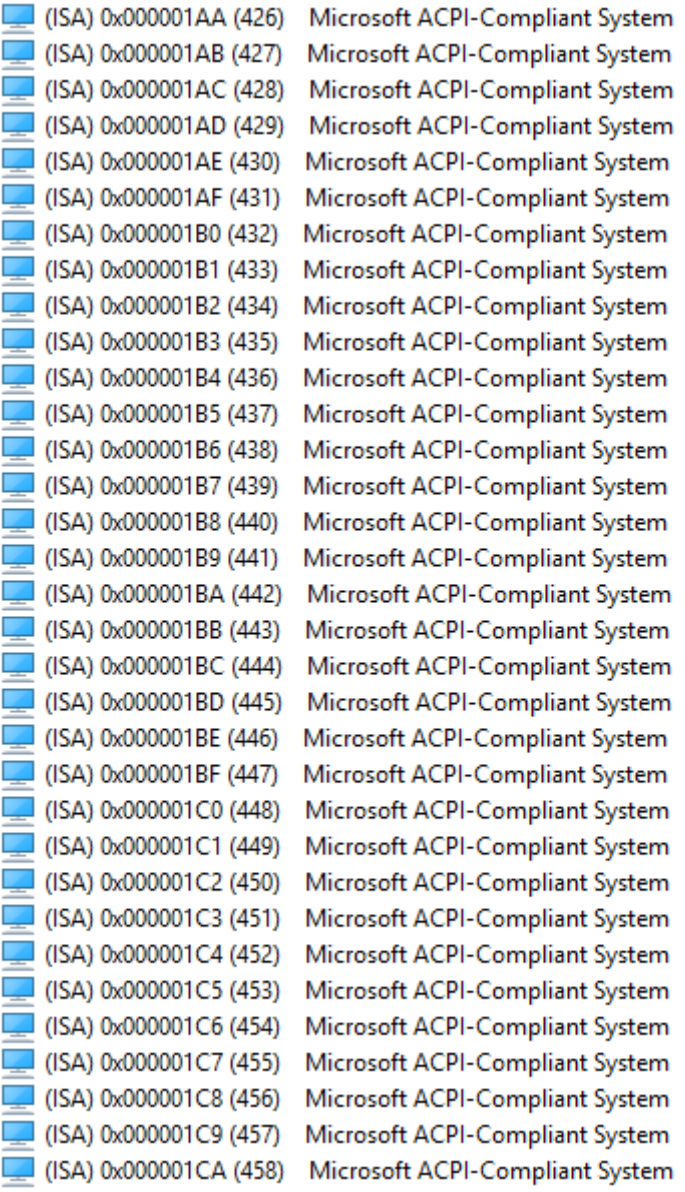



(ISA) 0x0000004D (77) Microsoft ACPI-Compliant System
(ISA) 0x0000004E (78) Microsoft ACPI-Compliant System
(ISA) 0x0000004F (79) Microsoft ACPI-Compliant System
(ISA) 0x00000050 (80) Microsoft ACPI-Compliant System
(ISA) 0x00000051 (81) Microsoft ACPI-Compliant System
(ISA) 0x00000052 (82) Microsoft ACPI-Compliant System
(ISA) 0x00000053 (83) Microsoft ACPI-Compliant System
(ISA) 0x00000054 (84) Microsoft ACPI-Compliant System
(ISA) 0x00000055 (85) Microsoft ACPI-Compliant System
(ISA) 0x00000056 (86) Microsoft ACPI-Compliant System
(ISA) 0x00000057 (87) Microsoft ACPI-Compliant System
(ISA) 0x00000058 (88) Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89) Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90) Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91) Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92) Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93) Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94) Microsoft ACPI-Compliant System
(ISA) 0x0000005F (95) Microsoft ACPI-Compliant System
(ISA) 0x00000060 (96) Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97) Microsoft ACPI-Compliant System
(ISA) 0x00000062 (98) Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99) Microsoft ACPI-Compliant System
(ISA) 0x00000064 (100) Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101) Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102) Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103) Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104) Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105) Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106) Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107) Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108) Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109) Microsoft ACPI-Compliant System


(ISA) 0x0000006E (110) Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111) Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112) Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113) Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114) Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115) Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116) Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117) Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118) Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119) Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120) Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125) Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133) Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134) Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135) Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136) Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137) Microsoft ACPI-Compliant System
(ISA) 0x0000008A (138) Microsoft ACPI-Compliant System
(ISA) 0x0000008B (139) Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140) Microsoft ACPI-Compliant System
(ISA) 0x0000008D (141) Microsoft ACPI-Compliant System
(ISA) 0x0000008E (142) Microsoft ACPI-Compliant System

(ISA) 0x000001EC (492) Microsoft ACPI-Compliant System
(ISA) 0x000001ED (493) Microsoft ACPI-Compliant System
(ISA) 0x000001EE (494) Microsoft ACPI-Compliant System
(ISA) 0x000001EF (495) Microsoft ACPI-Compliant System
(ISA) 0x000001F0 (496) Microsoft ACPI-Compliant System
(ISA) 0x000001F1 (497) Microsoft ACPI-Compliant System
(ISA) 0x000001F2 (498) Microsoft ACPI-Compliant System
(ISA) 0x000001F3 (499) Microsoft ACPI-Compliant System
(ISA) 0x000001F4 (500) Microsoft ACPI-Compliant System
(ISA) 0x000001F5 (501) Microsoft ACPI-Compliant System
(ISA) 0x000001F6 (502) Microsoft ACPI-Compliant System
(ISA) 0x000001F7 (503) Microsoft ACPI-Compliant System
(ISA) 0x000001F8 (504) Microsoft ACPI-Compliant System
(ISA) 0x000001F9 (505) Microsoft ACPI-Compliant System
(ISA) 0x000001FA (506) Microsoft ACPI-Compliant System
(ISA) 0x000001FB (507) Microsoft ACPI-Compliant System
(ISA) 0x000001FC (508) Microsoft ACPI-Compliant System
(ISA) 0x000001FD (509) Microsoft ACPI-Compliant System
(ISA) 0x000001FE (510) Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System
(PCI) 0x0000000B (11) Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
(PCI) 0x0000000B (11) Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
(PCI) 0xFFFFFFD7 (-41) Intel(R) Management Engine Interface
(PCI) 0xFFFFFFD8 (-40) Intel(R) I210 Gigabit Fiber Network Connection
(PCI) 0xFFFFFFD9 (-39) Intel(R) I210 Gigabit Fiber Network Connection
(PCI) 0xFFFFFFDA (-38) Intel(R) I210 Gigabit Fiber Network Connection
(PCI) 0xFFFFFFDB (-37) Intel(R) I210 Gigabit Fiber Network Connection
(PCI) 0xFFFFFFDC (-36) Intel(R) I210 Gigabit Fiber Network Connection
(PCI) 0xFFFFFFDD (-35) Intel(R) I210 Gigabit Fiber Network Connection
(PCI) 0xFFFFFFDE (-34) Intel(R) I210 Gigabit Fiber Network Connection #2
(PCI) 0xFFFFFFDF (-33) Intel(R) I210 Gigabit Fiber Network Connection #2
(PCI) 0xFFFFFFE0 (-32) Intel(R) I210 Gigabit Fiber Network Connection #2
(PCI) 0xFFFFFFE1 (-31) Intel(R) I210 Gigabit Fiber Network Connection #2


(ISA) 0x000001CB (459) Microsoft ACPI-Compliant System
(ISA) 0x000001CC (460) Microsoft ACPI-Compliant System
(ISA) 0x000001CD (461) Microsoft ACPI-Compliant System
(ISA) 0x000001CE (462) Microsoft ACPI-Compliant System
(ISA) 0x000001CF (463) Microsoft ACPI-Compliant System
(ISA) 0x000001D0 (464) Microsoft ACPI-Compliant System
(ISA) 0x000001D1 (465) Microsoft ACPI-Compliant System
(ISA) 0x000001D2 (466) Microsoft ACPI-Compliant System
(ISA) 0x000001D3 (467) Microsoft ACPI-Compliant System
(ISA) 0x000001D4 (468) Microsoft ACPI-Compliant System
(ISA) 0x000001D5 (469) Microsoft ACPI-Compliant System
(ISA) 0x000001D6 (470) Microsoft ACPI-Compliant System
(ISA) 0x000001D7 (471) Microsoft ACPI-Compliant System
(ISA) 0x000001D8 (472) Microsoft ACPI-Compliant System
(ISA) 0x000001D9 (473) Microsoft ACPI-Compliant System
(ISA) 0x000001DA (474) Microsoft ACPI-Compliant System
(ISA) 0x000001DB (475) Microsoft ACPI-Compliant System
(ISA) 0x000001DC (476) Microsoft ACPI-Compliant System
(ISA) 0x000001DD (477) Microsoft ACPI-Compliant System
(ISA) 0x000001DE (478) Microsoft ACPI-Compliant System
(ISA) 0x000001DF (479) Microsoft ACPI-Compliant System
(ISA) 0x000001E0 (480) Microsoft ACPI-Compliant System
(ISA) 0x000001E1 (481) Microsoft ACPI-Compliant System
(ISA) 0x000001E2 (482) Microsoft ACPI-Compliant System
(ISA) 0x000001E3 (483) Microsoft ACPI-Compliant System
(ISA) 0x000001E4 (484) Microsoft ACPI-Compliant System
(ISA) 0x000001E5 (485) Microsoft ACPI-Compliant System
(ISA) 0x000001E6 (486) Microsoft ACPI-Compliant System
(ISA) 0x000001E7 (487) Microsoft ACPI-Compliant System
(ISA) 0x000001E8 (488) Microsoft ACPI-Compliant System
(ISA) 0x000001E9 (489) Microsoft ACPI-Compliant System
(ISA) 0x000001EA (490) Microsoft ACPI-Compliant System
(ISA) 0x000001EB (491) Microsoft ACPI-Compliant System


(ISA) 0x000001AA (426) Microsoft ACPI-Compliant System
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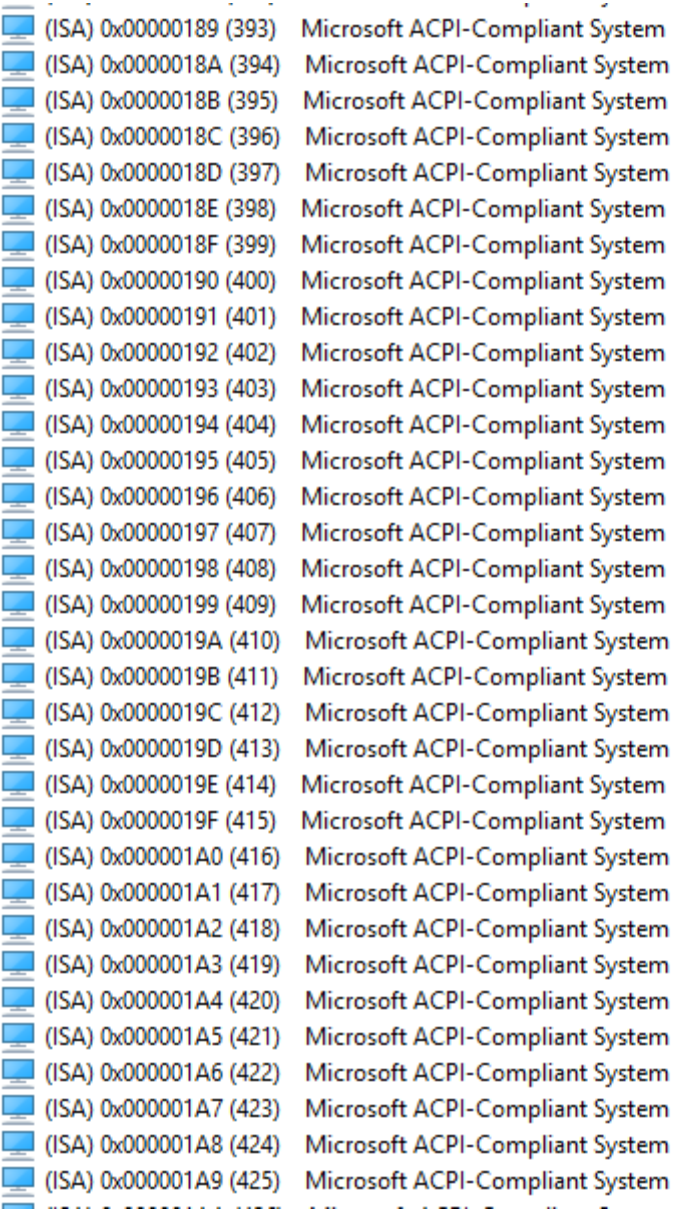
(ISA) 0x000001AC (428) Microsoft ACPI-Compliant System
(ISA) 0x000001AD (429) Microsoft ACPI-Compliant System
(ISA) 0x000001AE (430) Microsoft ACPI-Compliant System
(ISA) 0x000001AF (431) Microsoft ACPI-Compliant System
(ISA) 0x000001B0 (432) Microsoft ACPI-Compliant System
(ISA) 0x000001B1 (433) Microsoft ACPI-Compliant System
(ISA) 0x000001B2 (434) Microsoft ACPI-Compliant System
(ISA) 0x000001B3 (435) Microsoft ACPI-Compliant System
(ISA) 0x000001B4 (436) Microsoft ACPI-Compliant System
(ISA) 0x000001B5 (437) Microsoft ACPI-Compliant System
(ISA) 0x000001B6 (438) Microsoft ACPI-Compliant System
(ISA) 0x000001B7 (439) Microsoft ACPI-Compliant System
(ISA) 0x000001B8 (440) Microsoft ACPI-Compliant System
(ISA) 0x000001B9 (441) Microsoft ACPI-Compliant System
(ISA) 0x000001BA (442) Microsoft ACPI-Compliant System
(ISA) 0x000001BB (443) Microsoft ACPI-Compliant System
(ISA) 0x000001BC (444) Microsoft ACPI-Compliant System
(ISA) 0x000001BD (445) Microsoft ACPI-Compliant System
(ISA) 0x000001BE (446) Microsoft ACPI-Compliant System
(ISA) 0x000001BF (447) Microsoft ACPI-Compliant System
(ISA) 0x000001C0 (448) Microsoft ACPI-Compliant System
(ISA) 0x000001C1 (449) Microsoft ACPI-Compliant System
(ISA) 0x000001C2 (450) Microsoft ACPI-Compliant System
(ISA) 0x000001C3 (451) Microsoft ACPI-Compliant System
(ISA) 0x000001C4 (452) Microsoft ACPI-Compliant System
(ISA) 0x000001C5 (453) Microsoft ACPI-Compliant System
(ISA) 0x000001C6 (454) Microsoft ACPI-Compliant System
(ISA) 0x000001C7 (455) Microsoft ACPI-Compliant System
(ISA) 0x000001C8 (456) Microsoft ACPI-Compliant System
(ISA) 0x000001C9 (457) Microsoft ACPI-Compliant System
(ISA) 0x000001CA (458) Microsoft ACPI-Compliant System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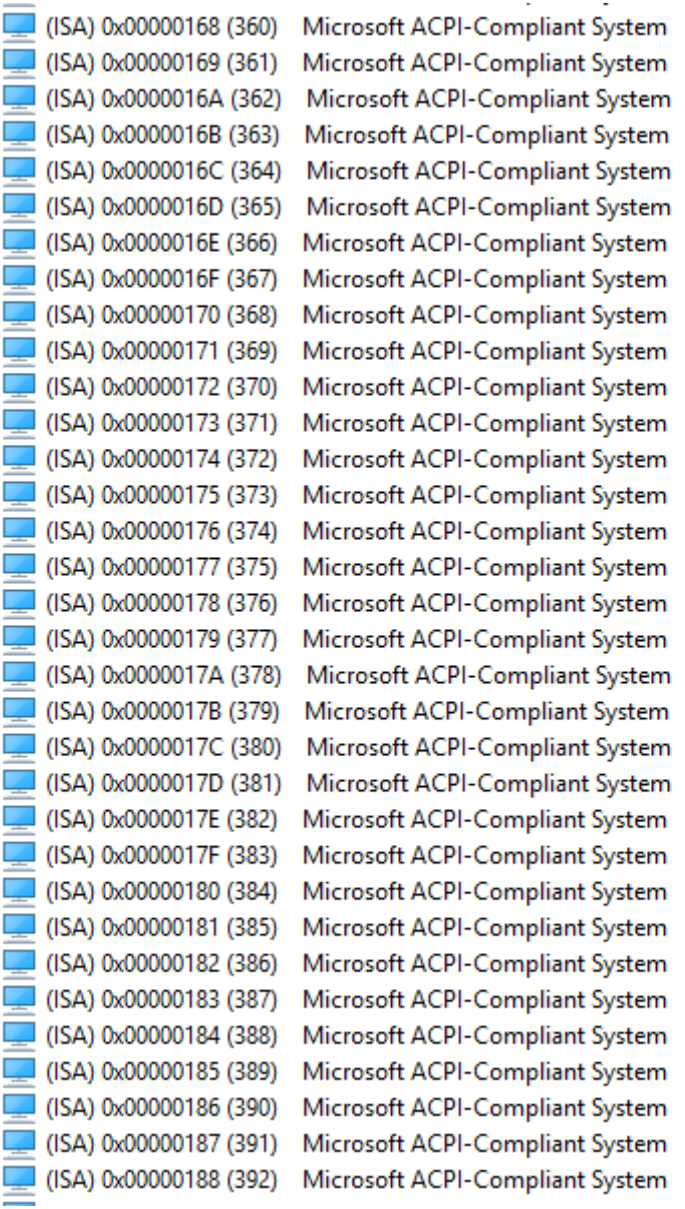
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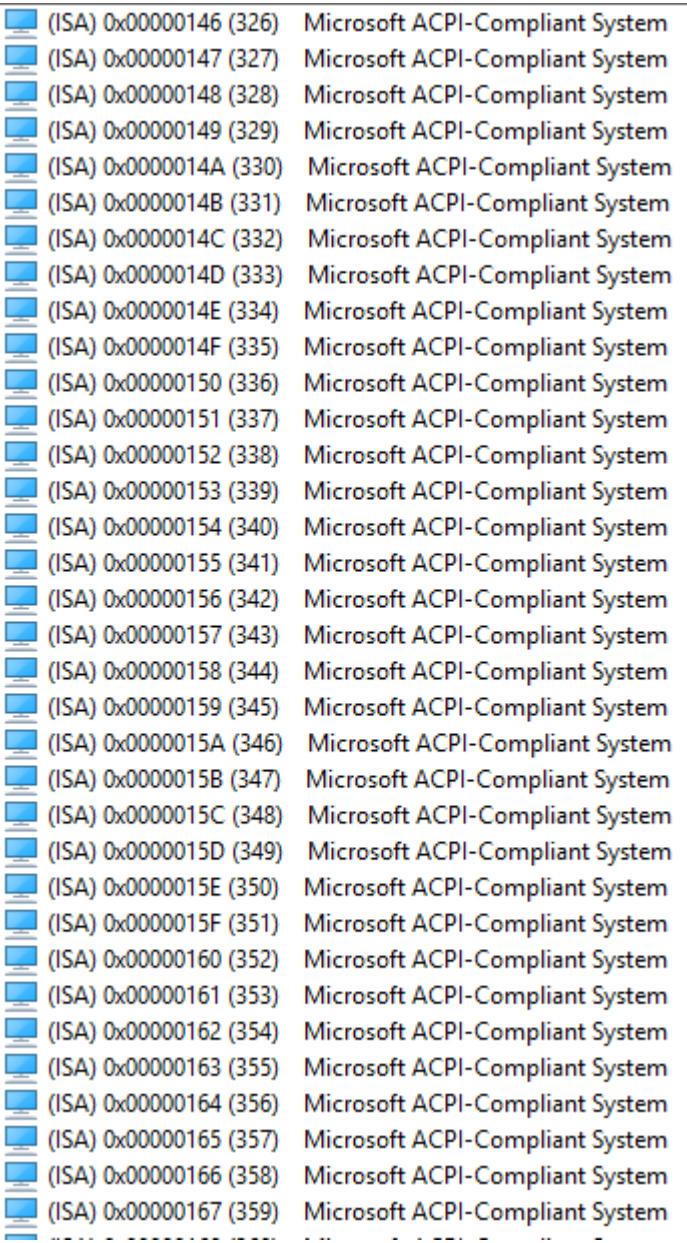
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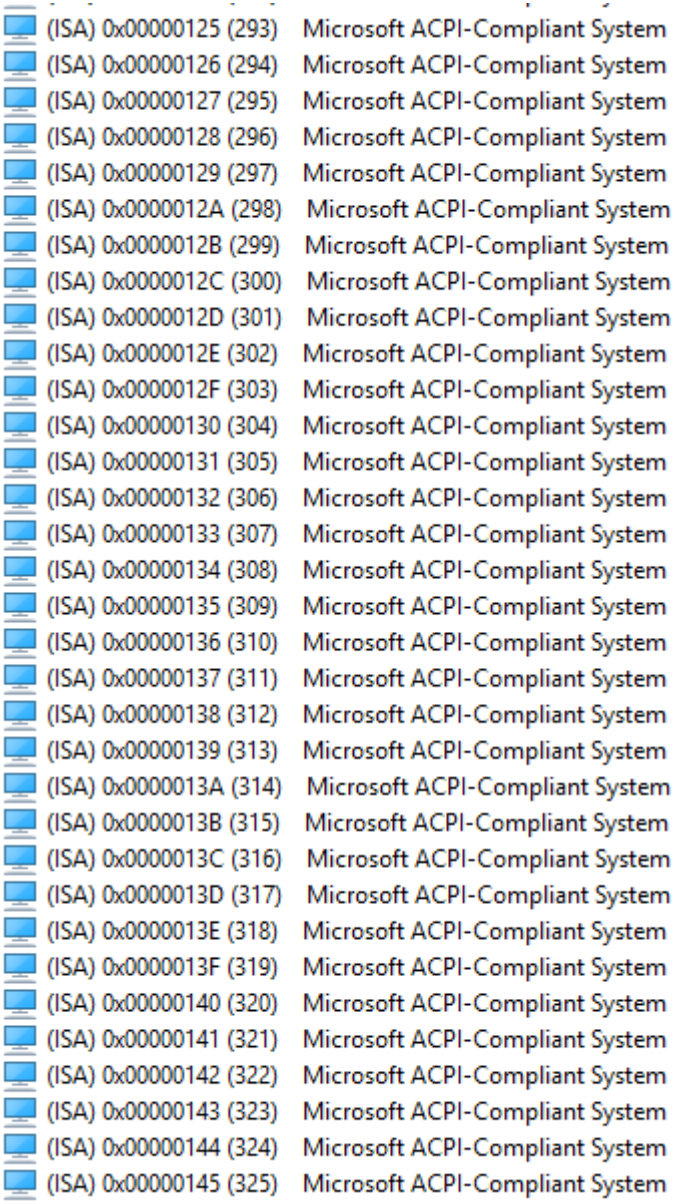
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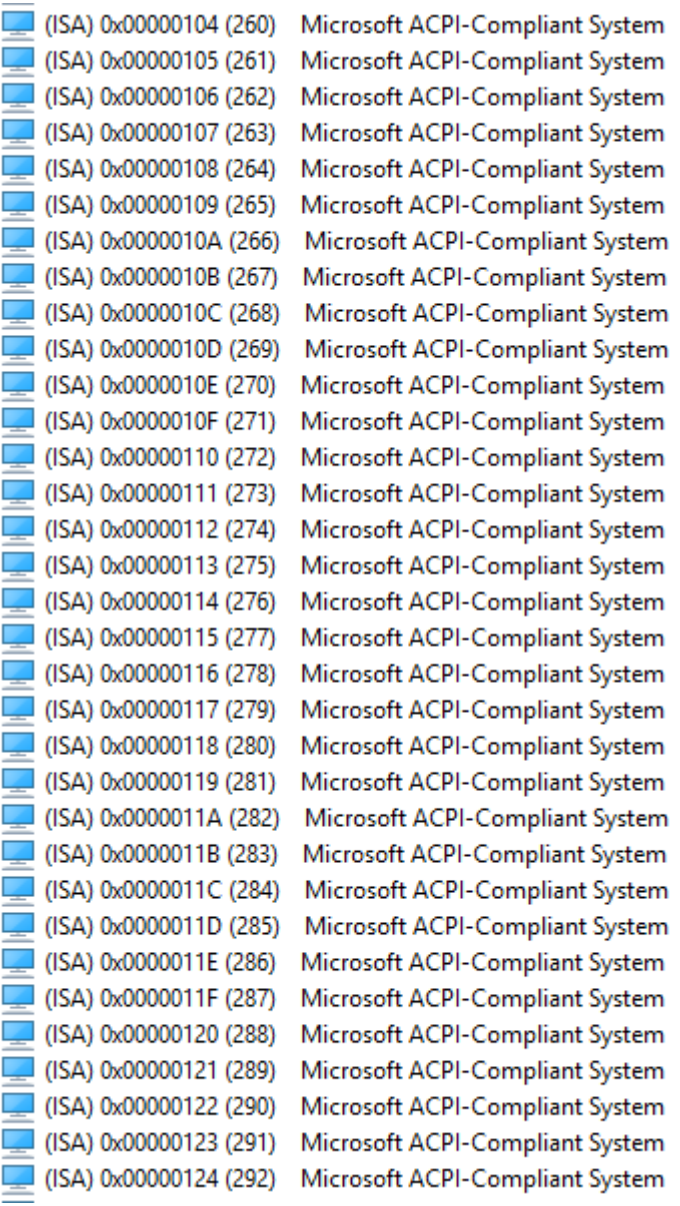
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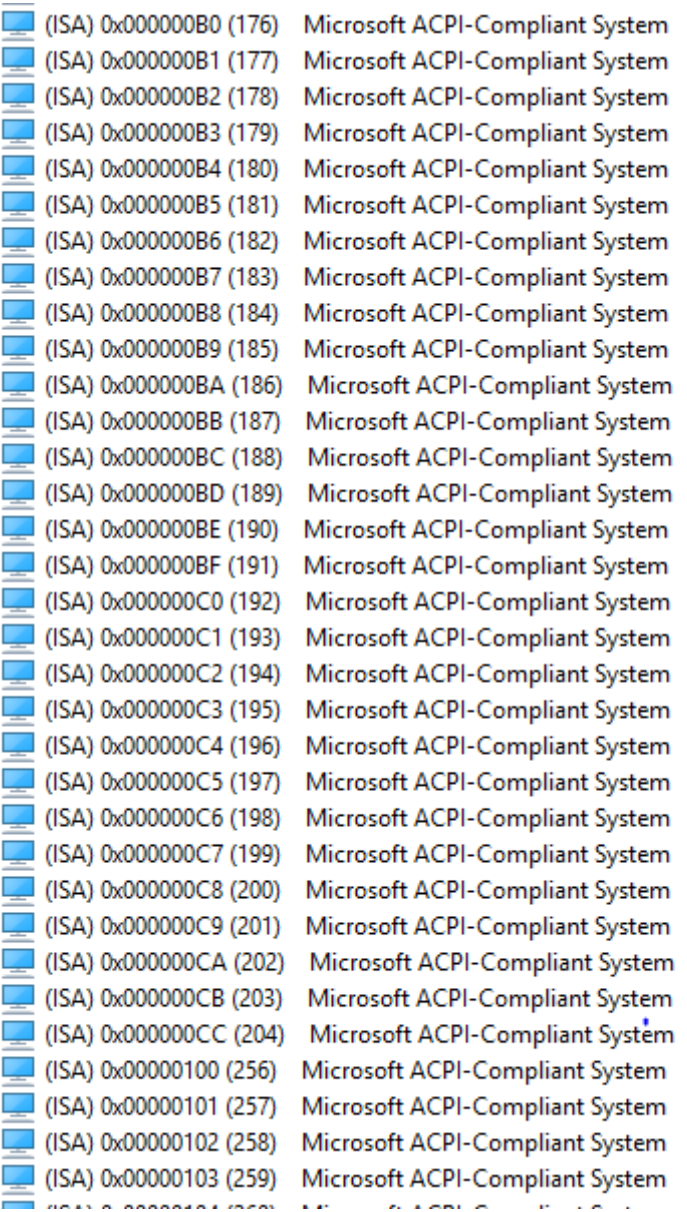
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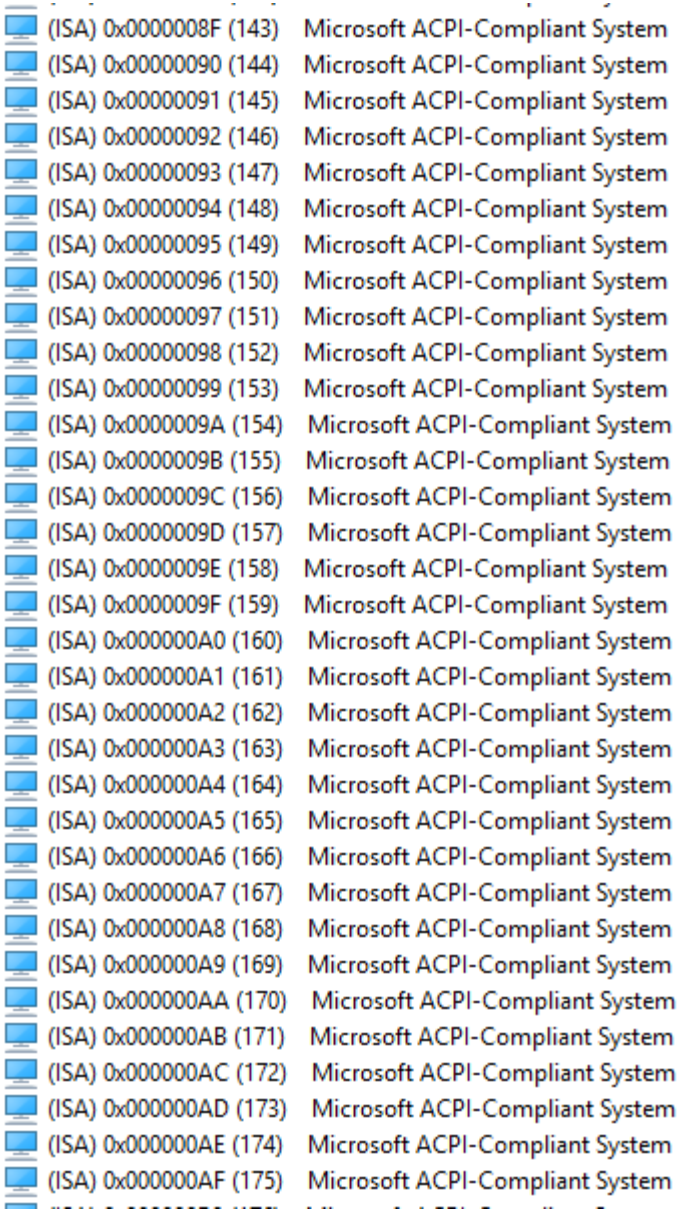
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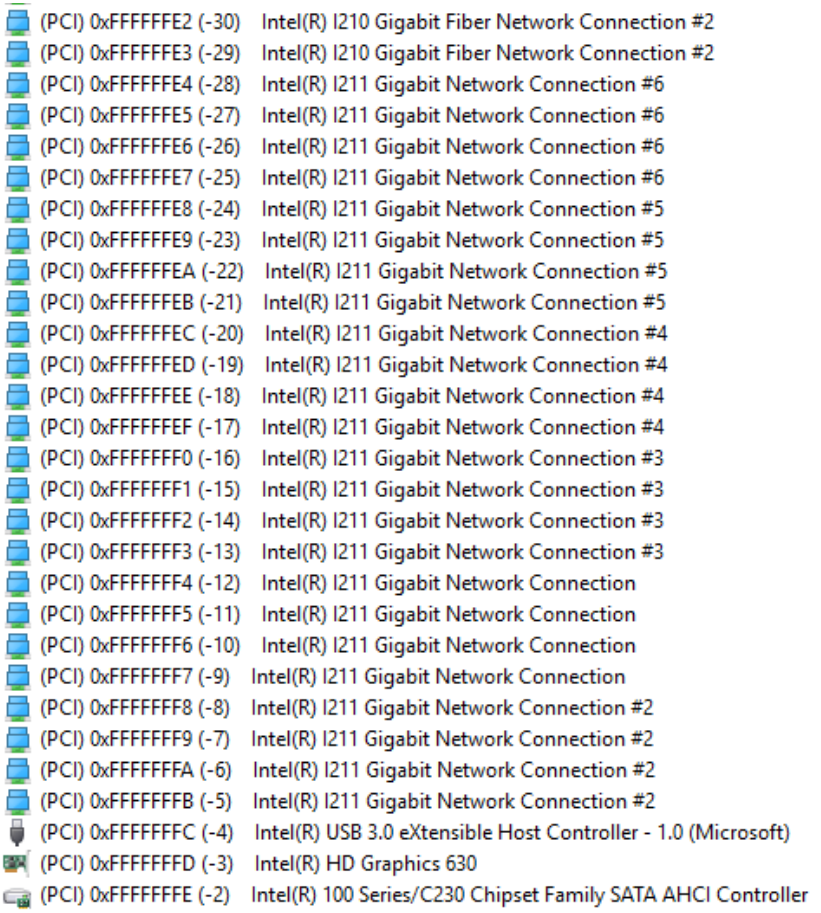
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(PCI) 0xFFFFFFE6 (-26) Intel(R) I211 Gigabit Network Connection #6
(PCI) 0xFFFFFFE7 (-25) Intel(R) I211 Gigabit Network Connection #6
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(PCI) 0xFFFFFFE9 (-23) Intel(R) I211 Gigabit Network Connection #5
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(PCI) 0xFFFFFFFD (-3) Intel(R) HD Graphics 630
(PCI) 0xFFFFFFFE (-2) Intel(R) 100 Series/C230 Chipset Family SATA AHCI Controller

Appendix C

Standard LAN Bypass Platform Setting

C.1 Status LED

FWS-7821 provides a LED indicator which can change the LED status by AAEON SDK.

User is able to program the LED status to express different status

Table1: LED Status

	STA_LED2	STA_LED1	STA_LED0
LED Off	0	0	0
Red LED On	0	0	1
Red LED Blink	0	1	0
Red LED Fast Blink	0	1	1
Reserved	1	0	0
Green LED Blink	1	0	1
Green LED Fast Blink	1	1	0
Green LED On	1	1	1

Table2: Status LED and 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)

Sample Code:

```
*********************************************************************************************
#define ByteCPLD_SLAVE_ADDRESS   //This parameter is represented from Note1
#define ByteOFFSET               //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.2 LAN Bypass

FWS-7821 provides LAN Bypass kit and allows uninterrupted network traffic even if a single in-line appliance is shut down or hangs

Table1: LAN Kit ID Select

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

Table2: LAN Bypass register table

Function	Description
LAN_ID3	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.
LAN_ID2	
LAN_ID1	
LAN_ID0	
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.

Table3: LAN Bypass 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)

Sample Code

```
*********************************************************************************************
#define ByteCPLD_SLAVE_ADDRESS   //This parameter is represented from Note1
#define ByteOFFSET               //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.3 Software Reset Button (General Propose Input)

FWS-7821 provides a general propose input button which status get by AAEON SDK.

Table 1: Soft Reset Button register mapping table

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

Table 2: LAN Bypass 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.

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
}
*********************************************************************************
```