NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

NSA 1160

User Manual

NEXCOM International Co., Ltd.
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PREFACE

Copyright

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Acknowledgements

NSA 1160 and NSA 1160A are trademarks of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.
- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.
- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.
- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."
- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

Repair Service Charges for Out-of-Warranty Products

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System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.
- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.
- Replace with 3rd party products if needed.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.
- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by skilled person.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

    "ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions."

18. This equipment is not suitable for use in locations where children are likely to be present.

    Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.

19. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

    Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.

20. Use certified and rated Laser Class I for Optical Transceiver product.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   - Product name and serial number
   - Detailed information of the peripheral devices
   - Detailed information of the installed software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution:
Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the NSA 1160/1160A package that you received is complete. Your package should have all the items listed in the following tables.

NSA 1160

Item	Part Number	Name	Description	Qty
1	19S00116000X0	NSA 1160 ASSY		1
2	5044440031X00	Rubber Foot Kang Yang:RF20-5-4P	19.8x18x5.0mm	4
3	5060900301X00	NSA 5130 Ear Sets VER:A CHYUAN-JYH	79.5x43.5x26mm AL Pantone 295U	1
4	6012200052X00	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
5	6012200053X00	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
6	6014605589X00	Outside Carton Label for NSA 1160 VER:A Label Jet	60x60mm ART Paper	2
7	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1

NSA 1160A

Item	Part Number	Name	Description	Qty
1	19S00116001X0	NSA 1160A ASSY		1
2	5044440031X00	Rubber Foot Kang Yang:RF20-5-4P	19.8x18x5.0mm	4
3	5060900301X00	NSA 5130 Ear Sets VER:A CHYUAN-JYH	79.5x43.5x26mm AL Pantone 295U	1
4	6012200052X00	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
5	6012200053X00	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
6	6014605590X00	Outside Carton Label for NSA 1160A VER:A Label Jet	60x60mm ART Paper	2
7	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1

Ordering Information

The following below provides ordering information for NSA 1160/1160A.

Barebone

NSA 1160 (P/N: 10S00116000X0)

Intel Denverton SoC Atom® C3558, BGA type, 4 x DDR4 memory slots, 8 copper LAN ports, mSATA slot, 3 x USB 2.0

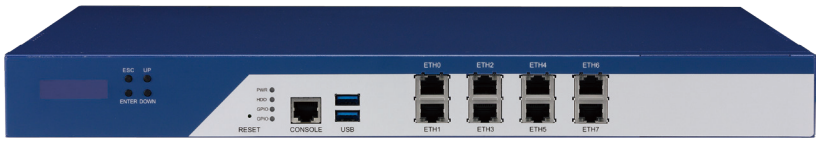
NSA 1160A (P/N: 10S00116001X0)

Intel Denverton SoC Atom® C3758, BGA type, 4 x DDR4 memory slots, 2 10GbE + 6 copper LAN ports, 1 LAN module (NI/NX series) bays, mSATA slot, 3 x USB 2.0

Model	P/N Controller	Interface	Type	Port Number	Bypass/Segment	Expansion Slot	Location Slot
NI 140F	10SK000NI02X0	i350AM4x1	PCIe x8	4 SFP	None	None	All Slot
NI 142C	10SK000NI03X0	i350AM4x1	PCIe x8	4 Copper	2 bypass	None	All Slot
NI 142F	10S10142F01X0	i350AM4x1	PCIe x8	4 SFP	2 bypass	None	All Slot
NI 121F	10S10121F01X0	i350AM2x1	PCIe x8	2 SFP	1 bypass	None	All Slot
NI 140C	10S10140C01X0	i350AM4x1	PCIe x8	4 Copper	None	None	All Slot

Chapter 1: Product Introduction

Overview



NSA 1160

NSA 1160A

Key Features

- Intel Atom® processor C3000 series SoC, BGA type
- DDR4-2133 Long-DIMM ECC memory, max. 128GB
- Support 8 x 1GbE copper for NSA 1160/2 x 10GbE SFP + 6 x 1GbE copper for NSA 1160A
- USB 3.0 connector
- Two pairs bypass

Hardware Specifications

Main Board

- NSB 1160
- Intel Atom® processor C3000 series, BGA type

Main Memory

- 4 x DDR4-2400 Long-DIMM ECC memory, max. 128GB

LAN Features

- 8 x 1GbE copper for NSA 1160
- 2 x 10GbE SFP + 6 x 1GbE copper for NSA 1160A
- LAN bypass: 2 pairs
- Support 10/100/1000 link speed
- Support LAN module for NSA 1160A (optional)

I/O Interface-Front

- Power status/HDD status/LAN status LED
- 1 x Reset button
- 2 x USB 3.0
- 1 x RJ45 type console port
- 8 x Copper ports
- 1 x LCM (optional)

I/O Interface-Rear

- 1 x Power button
- 1 x VGA connector (optional)
- 2 x USB 2.0 connectors (optional)
- 1 x Power cord connector

Devices

- 1 x Onboard mSATA slot
- 1 x 2.5" HDD bay

Power Input

- 65W power supply for NSA 1160/150W power supply for NSA 1160A

Dimensions

- Chassis dimension: 430mm x 310mm x 44mm

Weight

- Without packing: 5.6kg
- With packing: 8.4kg

Environment

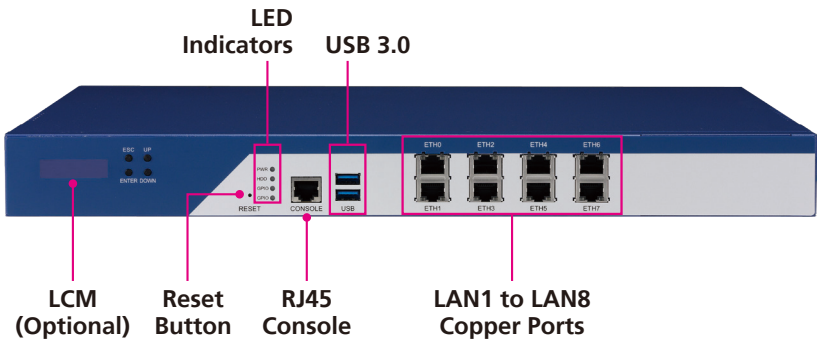
- Operating temperatures: 0°C~40°C
- Storage temperature: -20°C~75°C
- Relative humidity: 10%~90% non-condensing

Certifications

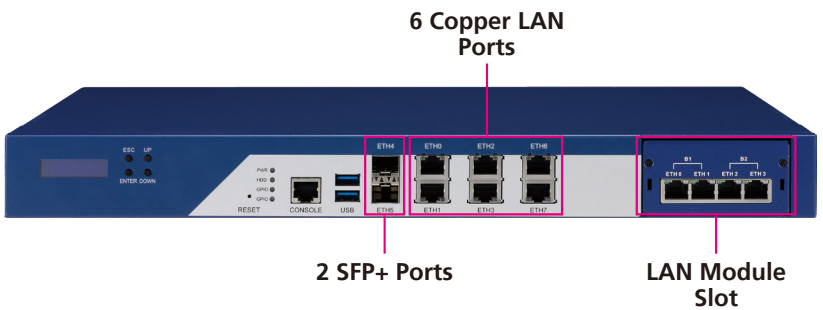
- CE approval
- FCC Class B
- UL

Knowing Your NSA 1160 Series

NSA 1160 Front Panel



NSA 1160A Front Panel



LCM (Optional)
Optional LCM module, UART interface.

Reset Button
Press to restart the system.

LED Indicators (PWR/HDD/GPIO)
Indicates the power status (PWR), storage drive (HDD) and LAN bypass status (GPIO) of the system.

RJ45 Console Port
Used to connect to devices with RJ45 type console connection.

USB 3.0 Ports
Used to connect USB 3.0/2.0 devices.

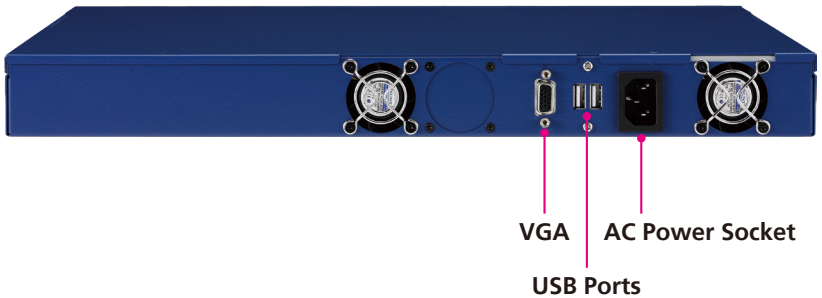
LAN 1 (ETH0) to LAN 8 (ETH7) Copper Ports
Used to connect network devices.

6 Copper LAN Ports (NSA 1160A)
Used to connect network devices.

2 SFP+ Ports (NSA 1160A)
Used to connect SFP+ modules for connecting fiber optic network devices.

LAN Module Slot (NSA 1160A)
Used to install add-on LAN modules with LAN bypass function. Refer to the Ordering Information section for information on the available LAN modules.

NSA 1160 Rear Panel



VGA (Optional)
Used to connect an analog VGA monitor.

USB Ports (Optional)
Used to connect USB 2.0/1.1 devices.

AC Power Socket
Plug an AC power cord here before turning on the system.

NSA 1160A Rear Panel

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the NSA 1160/1160A motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

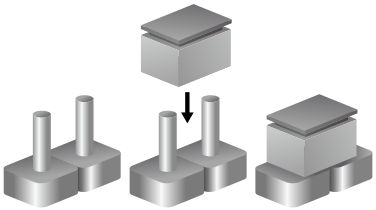
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

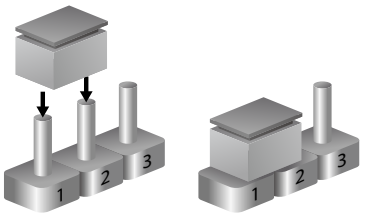
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)

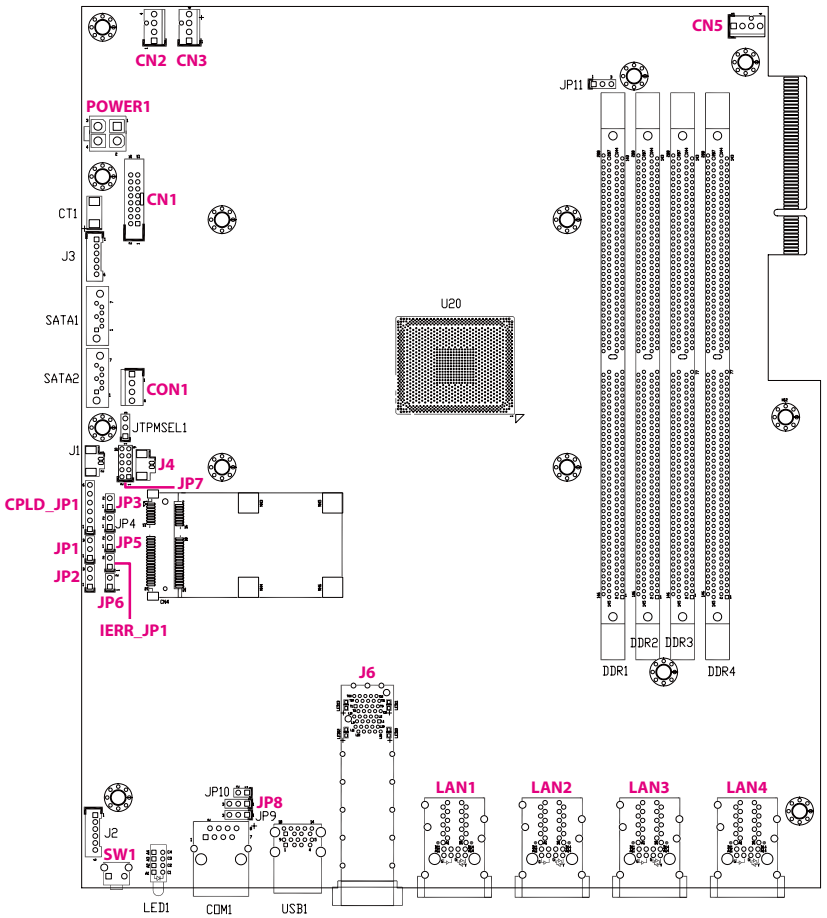


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The figure below shows the location of the jumpers and connectors.



Jumpers

RTC Clear

Connector type: 1x3 3-pin header
Connector location: JP1

Pin	Function
1-2	Normal
2-3	Clear CMOS

PMC Clear

Connector type: 1x3 3-pin header
Connector location: JP2

Pin	Function
1-2	Normal
2-3	Clear PMC

Flash Security Override (IERR)

Connector type: 1x2 2-pin header
Connector location: IERR_JP1

Pin	Function
NC	Flash descriptor security locked (Default)
1-2	Flash descriptor security unlocked - requires external pull-up

ME Recover Mode

Connector type: 1x2 2-pin header
Connector location: JP6

Pin	Function
NC	Normal (Default)
1-2	ME Recover Mode

Console CTS Strap

Connector type: 1x3 3-pin header
Connector location: JP8

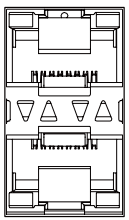
Pin	Function
1-2	RTS to CTS
2-3	Normal

Connector Pin Definitions

External I/O Interfaces

Dual SFP+ Slot

Connector type: SFP+ slots
Connector location: J6



SFP+ Port 1

SFP+ Port 2

SFP+ Port 1

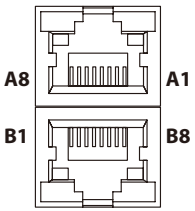
Pin	Definition	Pin	Definition
T1	GND	T2	TxFault1
T3	TxDisable1	T4	P10G_Sda1
T5	P10G_Scl1	T6	ModABS1_L
T7	1_RS0	T8	RxLOS1
T9	1_RS1	T10	GND
T11	GND	T12	1_SFP+_RD-
T13	1_SFP+_RD+	T14	GND
T15	3P3V_SFP1_R	T16	3P3V_SFP1_T
T17	GND	T18	1_SFP+_TD+
T19	1_SFP+_TD-	T20	GND

SFP+ Port 2

Pin	Definition	Pin	Definition
L1	GND	L2	TxFault2
L3	TxDisable2	L4	P10G_Sda2
L5	P10G_Scl2	L6	ModABS2_L
L7	2_RS0	L8	RxLOS2
L9	2_RS1	L10	GND
L11	GND	L12	2_SFP+_RD-
L13	2_SFP+_RD+	L14	GND
L15	3P3V_SFP2_R	L16	3P3V_SFP2_T
L17	GND	L18	2_SFP+_TD+
L19	2_SFP+_TD-	L20	GND

LAN 1 to LAN 4 Ports (ETH0 to ETH7)

Connector type: RJ45 with LEDs
Connector location: LAN1 to LAN4

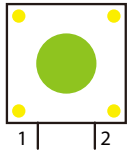


Pin	Definition	Pin	Definition
A1	P_LAN2_MDI0P	A2	P_LAN2_MDI0N
A3	P_LAN2_MDI1P	A4	P_LAN2_MDI1N
A5	P_LAN2_MDI2P	A6	P_LAN2_MDI2N
A7	P_LAN2_MDI3P	A8	P_LAN2_MDI3N
A9	GND	A10	GND
A11	P3V3	A12	PORT2_ACT_N
A13	PORT2_L100_N	A14	PORT2_L1000_N
MH1	CGND	MH2	CGND
MH3	CGND		

Pin	Definition	Pin	Definition
B1	P_LAN1_MDI0P	B2	P_LAN1_MDI0N
B3	P_LAN1_MDI1P	B4	P_LAN1_MDI1N
B5	P_LAN1_MDI2P	B6	P_LAN1_MDI2N
B7	P_LAN1_MDI3P	B8	P_LAN1_MDI3N
B9	GND	B10	GND
B11	P3V3	B12	PORT1_ACT_N
B13	PORT1_L100_N	B14	PORT1_L1000_N
MH4	CGND	MH5	CGND
MH6	CGND		

Reset Button

Connector location: SW1



Pin	Definition
1	GND
2	RW_SW_RST

Internal Connectors

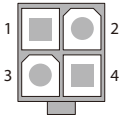
System Power Button Connector

Connector type: 1x2 2-pin header
Connector location: JP3

Pin	Definition
1	PWR_BTN_CAL_N
2	GND

DC 12V Power Connector

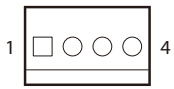
Connector type: 2x2 4-pin header
Connector location: POWER1



Pin	Definition	Pin	Definition
1	GND	2	GND
3	DC_IN	4	DC_IN

Fan Connectors

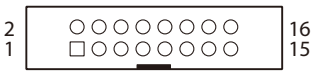
Connector type: 1x4 4-pin wafer
Connector location: CN2, CN3 and CN5



Pin	Definition	Pin	Definition
1	GND	2	P12V
3	TACH	4	PWM

VGA Connector

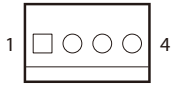
Connector type: 2x8 16-pin header
Connector location: CN1



Pin	Definition	Pin	Definition
1	VGA_RED	2	VGA_GREEN
3	VGA_BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	VGA_DATA
13	VGA_HS	14	VGS_VS
15	VGA_CLK	16	NC

SATA Power Connector

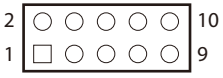
Connector type: 1x4 4-pin wafer
Connector location: CON1



Pin	Definition	Pin	Definition
1	P12V	2	GND
3	GND	4	P5V

GPIO Connector

Connector type: 2x5 10-pin header
Connector location: JP7



Pin	Definition	Pin	Definition
1	P3V3	2	GND
3	CPLD_GPIN1	4	CPLD_GPOUT1
5	CPLD_GPIN2	6	CPLD_GPOUT2
7	CPLD_GPIN3	8	CPLD_GPOUT3
9	CPLD_GPIN4	10	CPLD_GPOUT4

CPLD JTAG Pin Header

Connector type: 1x6 6-pin header
Connector location: CPLD_JP1

Pin	Definition	Pin	Definition
1	P3V_STBY	2	GND
3	JTAG_ TCK	4	JTAG_TDO
5	JTAG_TDI	6	JTAG_TMS

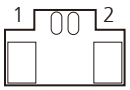
UART Pin Header

Connector type: 1x2 2-pin header
Connector location: JP5

Pin	Definition
1	UART_TX
2	UART_RX

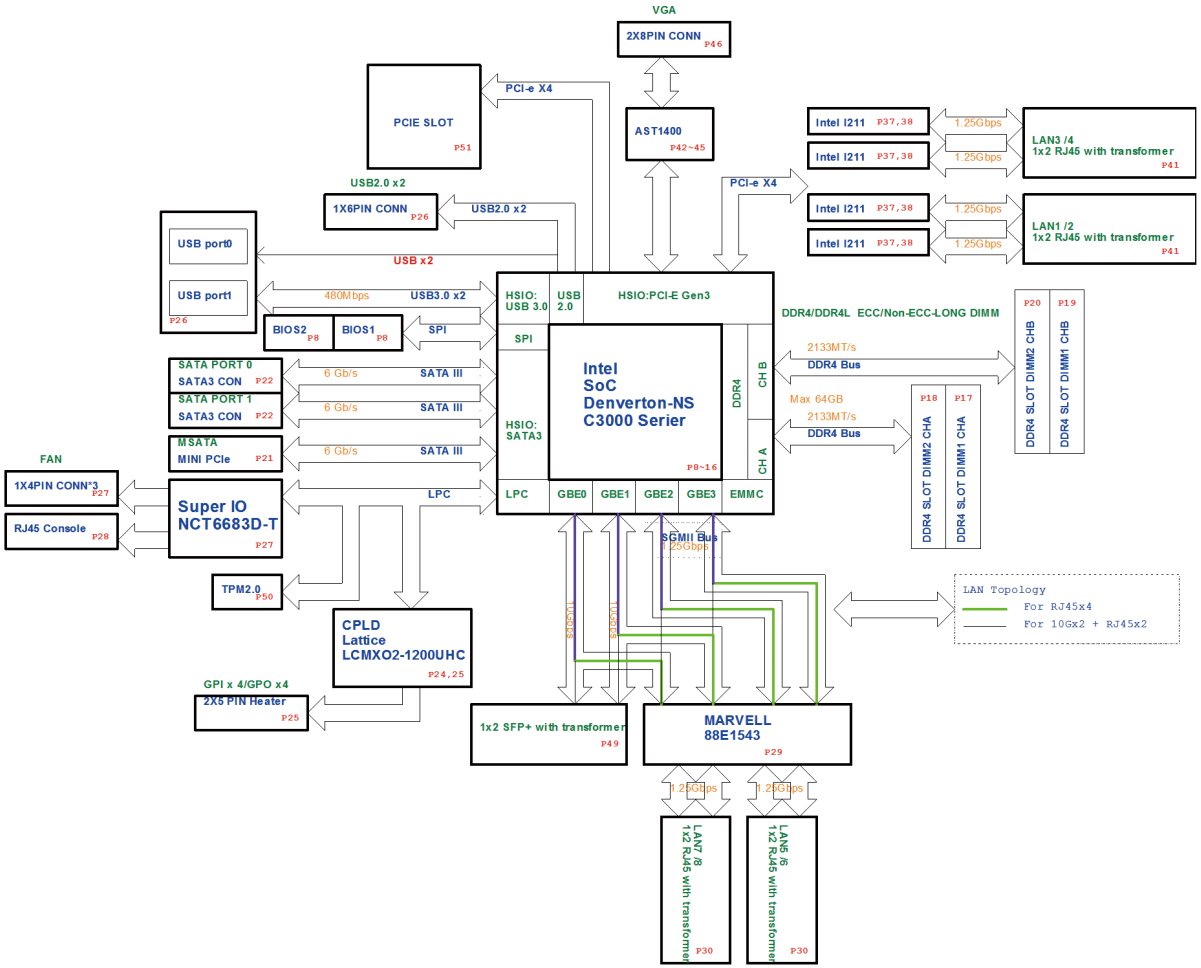
Battery Connector

Connector type: 1x2 2-pin header
Connector location: J4



Pin	Definition
1	GND
2	VBAT

Block Diagram



Chapter 3: System Setup

Removing the Chassis Cover

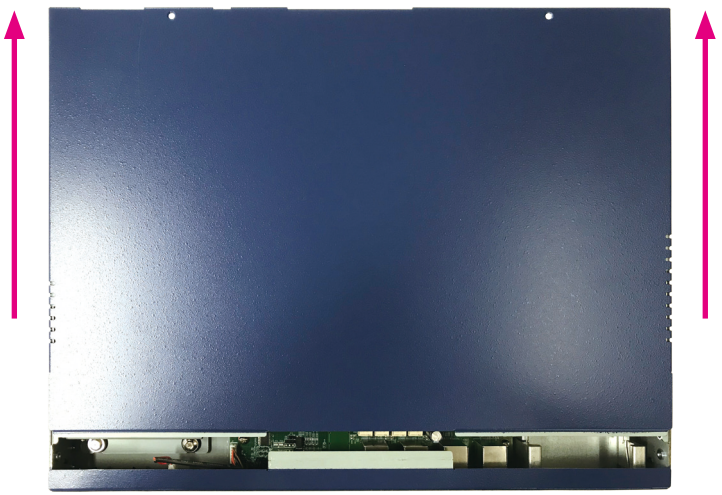
Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. The screws around the top and sides of the cover are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.

Screws on the top

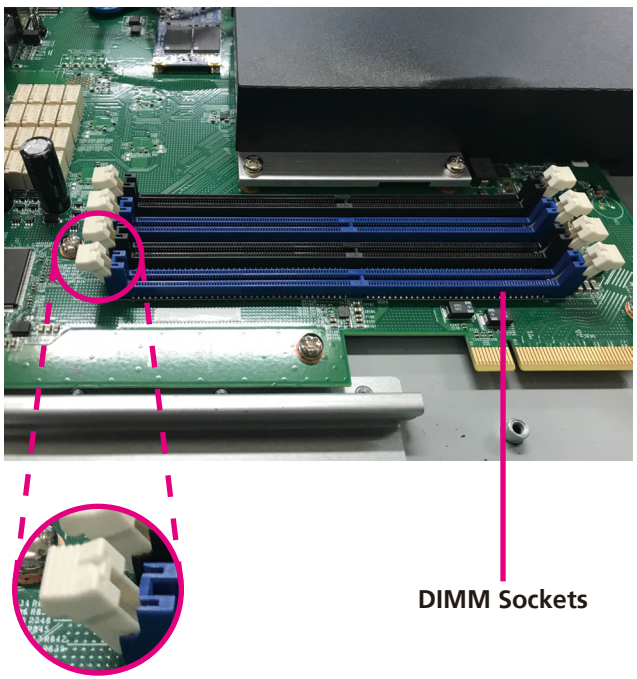
Screws on the sides

2. With the screws removed, gently slide the cover outwards then lift up the cover to remove it.

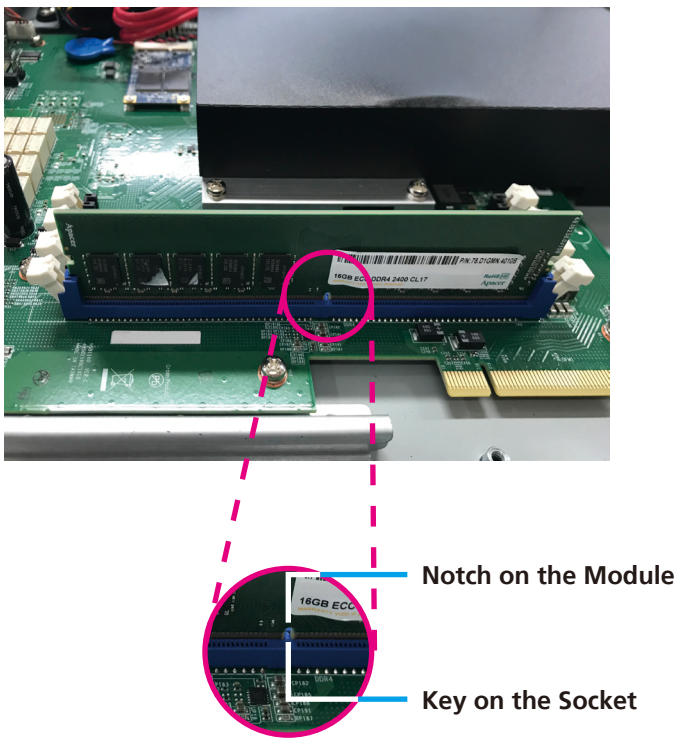


Installing a DIMM Memory Module

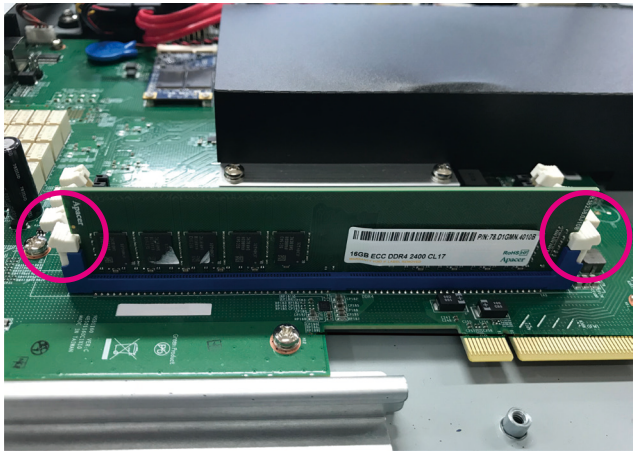
1. Locate the DIMM socket on the motherboard and push the ejector tabs which are at the ends of the socket outward. This indicates that the socket is unlocked.



2. Note how the module is keyed to the socket. Grasping the module by its edges, align the module with the socket so that the "notch" on the module is aligned with the "key" on the socket. The key ensures the module can be plugged into the socket in only one direction.

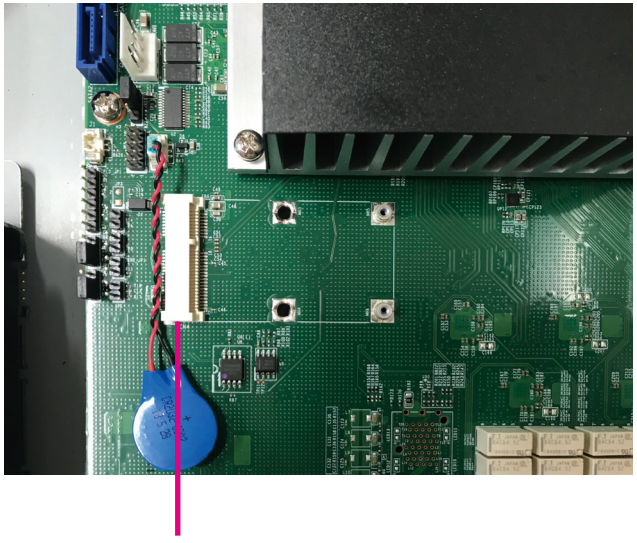


3. Seat the module vertically, pressing it down firmly until it is completely seated in the socket. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

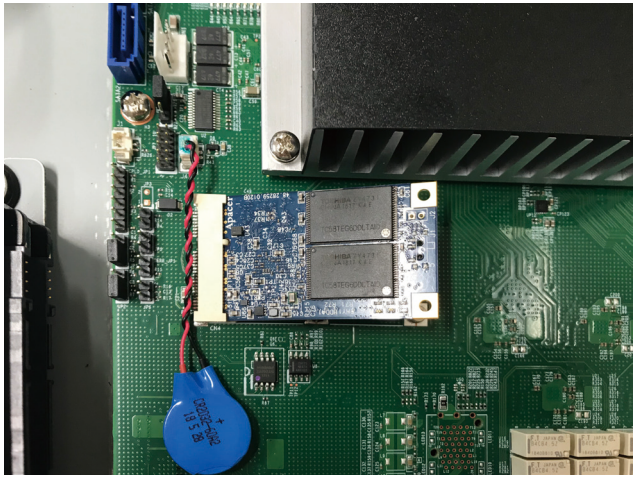


Installing an mSATA Module

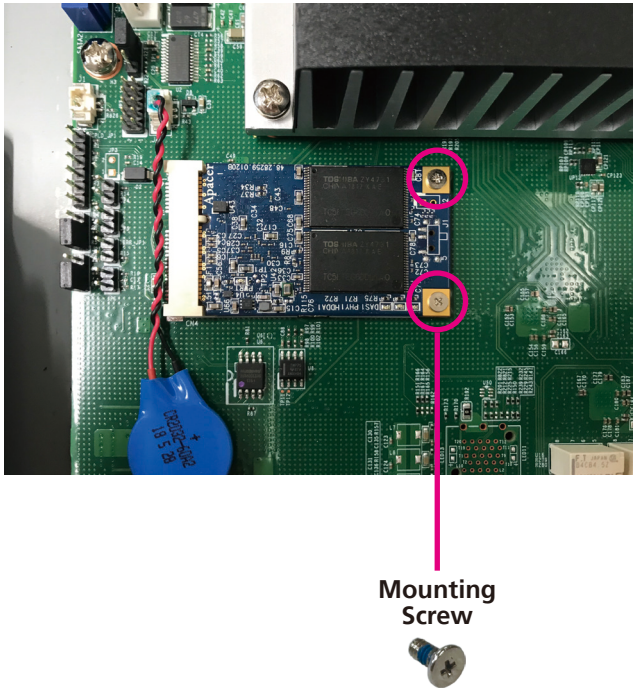
1. Locate the mSATA slot on the motherboard.



2. Insert the module into the slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



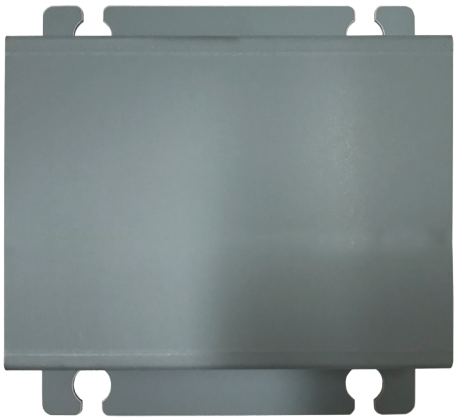
3. Push the module down and fasten screws into the mounting holes to secure the module.



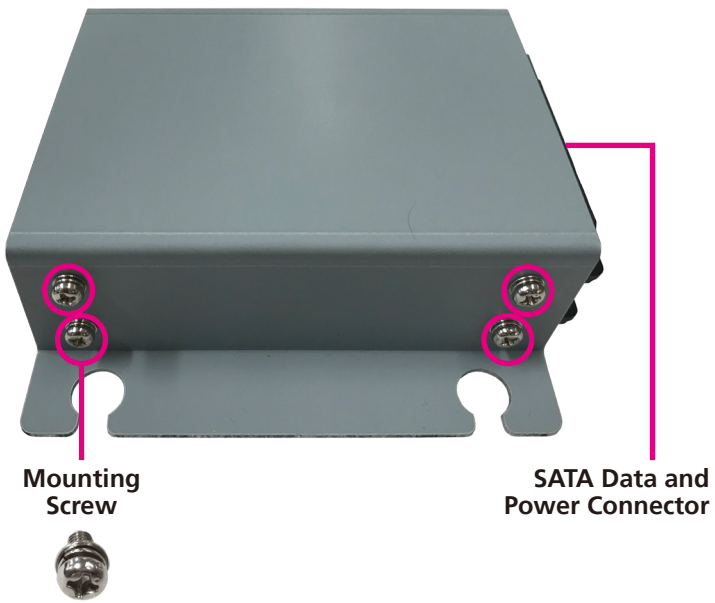
Installing 2.5” SATA Storage Drives

Please correctly follow the below instructions and noted items to avoid making unnecessary damages.

1. The storage drive bracket is used to secure storage drives to the system. Up to 2 storage drives can be installed.



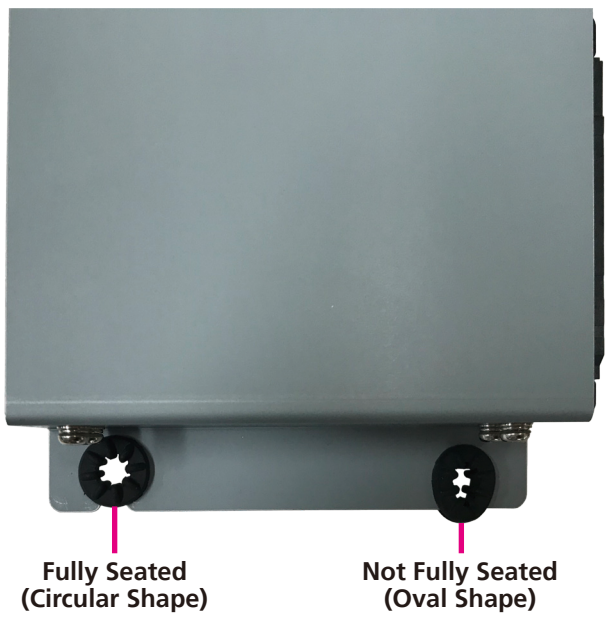
2. Place the SATA storage drives into the storage drive bracket with the SATA data and power connectors facing outwards. Then use the mounting screws to secure one side of the SATA storage drives.



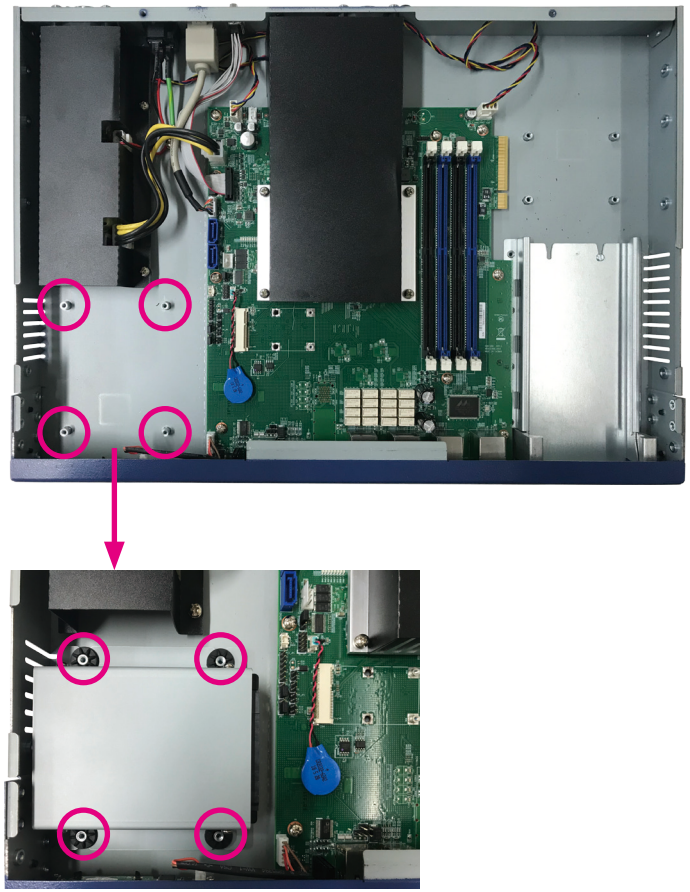
3. Secure other side of the SATA storage drives with the mounting screws to hold the drives in place.

4. Install the anti-vibration dampers to the mounting holes on the storage drive bracket. Make sure the dampers are fully seated into the mounting holes. A fully seated damper will retain a circular shape, while a damper not properly seated will retain an oval shape.

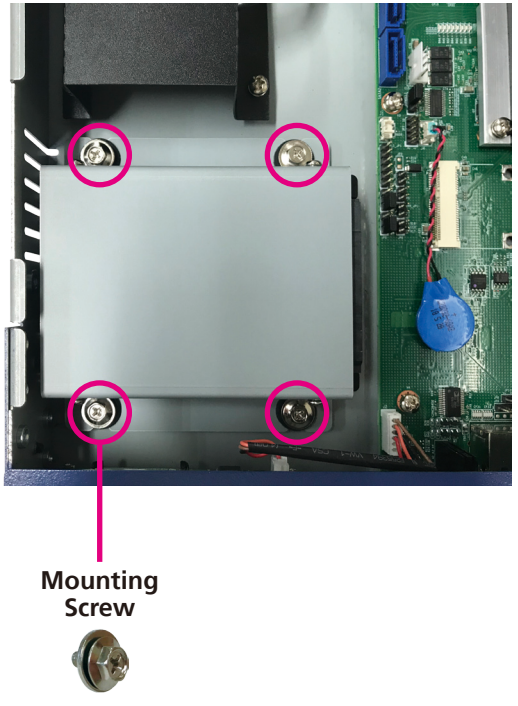
Anti-vibration Dampers



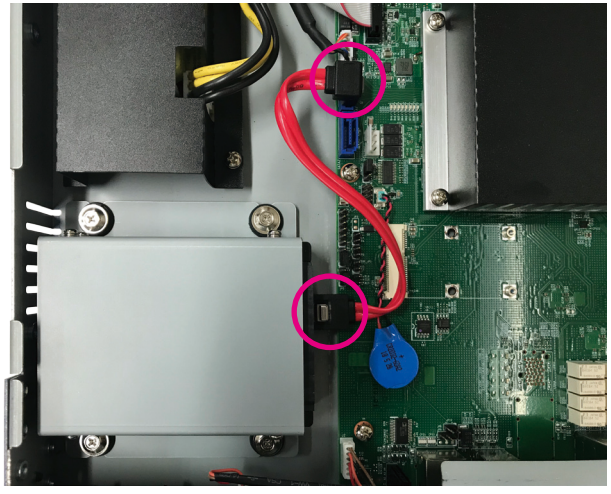
5. Place the storage drive bracket in the chassis with the mounting holes on the bracket aligned to the storage drive mounting holes in the chassis.



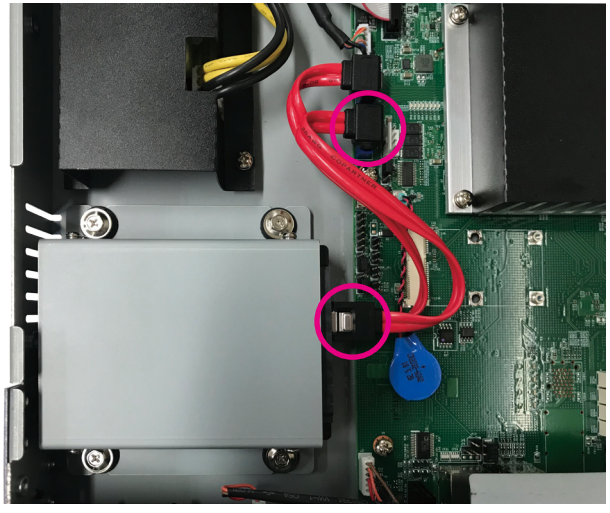
6. Use the mounting screws to secure the bracket in place.



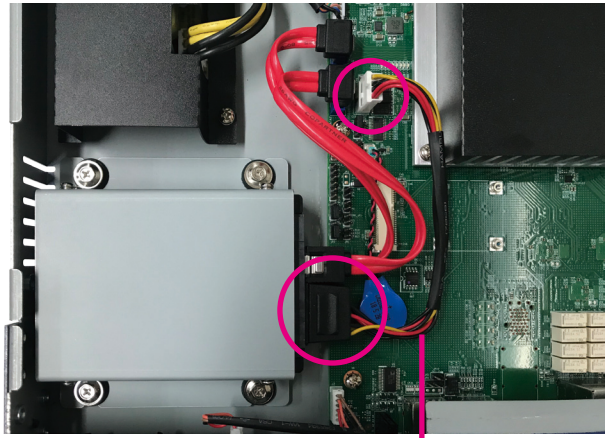
7. Connect the SATA data cable to the respective connector on the board and the other end to the storage drive on the bottom of the bracket.



8. Connect another SATA data cable to the respective connector on the board and the other end to the second storage drive.



9. Connect the SATA power cable to the respective connector on the board and the other two ends to the storage drives in the bracket.



SATA Power Cable

Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for NSA 1160. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

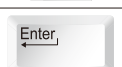
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing 

allows you to enter Setup.

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menu or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub-menu

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press 

.

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

Access Level

Displays the access level of the current user in the BIOS.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from 1 to 12. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.

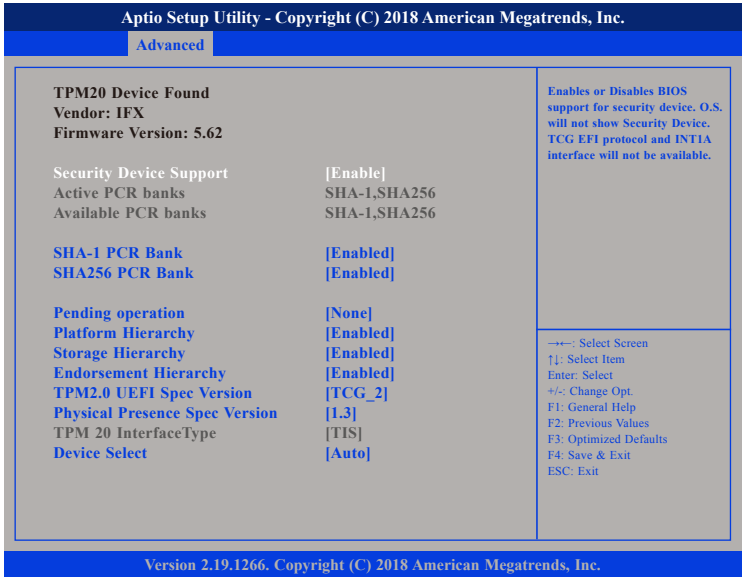
Case Open
Enables or disables the case open detection feature.

Power_ON ByPass Mode
Enables or disables the LAN module bypass mode after the system powers on.

Power_OFF ByPass Mode
Enables or disables the LAN module bypass mode after the system powers off.

Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



Security Device Support
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.

SHA-1 PCR Bank
Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank
Enables or disables SHA256 PCR Bank.

Pending operation
Schedules an operation for the security device.

Platform Hierarchy
Enables or disables platform hierarchy.

Storage Hierarchy
Enables or disables storage hierarchy.

Endorsement Hierarchy
Enables or disables endorsement hierarchy.

TPM2.0 UEFI Spec Version
Configures the TPM2.0 UEFI spec version.

Physical Presence Spec Version
Configures the physical presence spec version.

Device Select
Configures the TPM version. TPM 1.2 will restrict support to TPM 1.2 devices and TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both TPM 1.2 and 2.0 devices with the default set to TPM 2.0 devices if not found, and TPM 1.2 devices will be enumerated.

NCT6683D Super IO Configuration

This section is used to configure the serial port of the super IO.

Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 1 Configuration

Configures the IO/IRQ settings of serial port 1.

Serial Port 1 Configuration

This section is used to configure serial port 1.

Serial Port

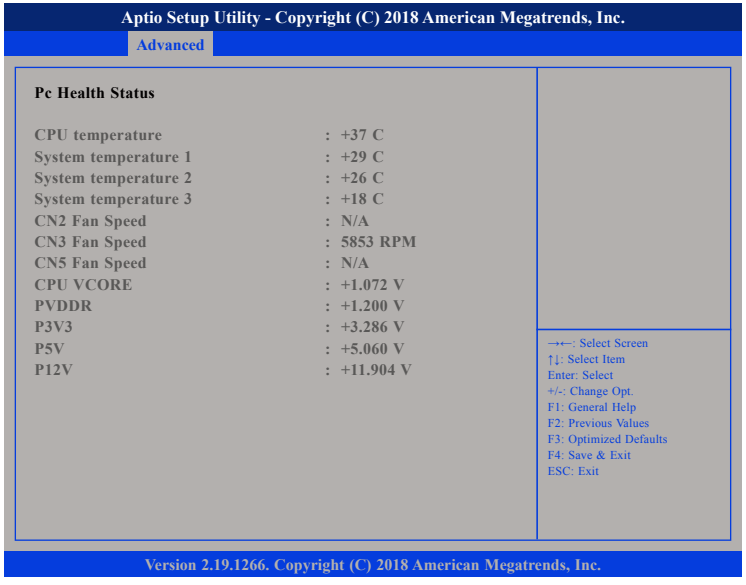
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Hardware Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



CPU Temperature
Detects and displays the current CPU temperature.

System Temperature 1, 2 and 3
Detects and displays the current temperature of the system.

CN2, CN3 and CN5 Fan Speed
Detects and displays the fan speed of CN2, CN3 and CN5.

CPU VCORE to P12V
Detects and displays the output voltages.

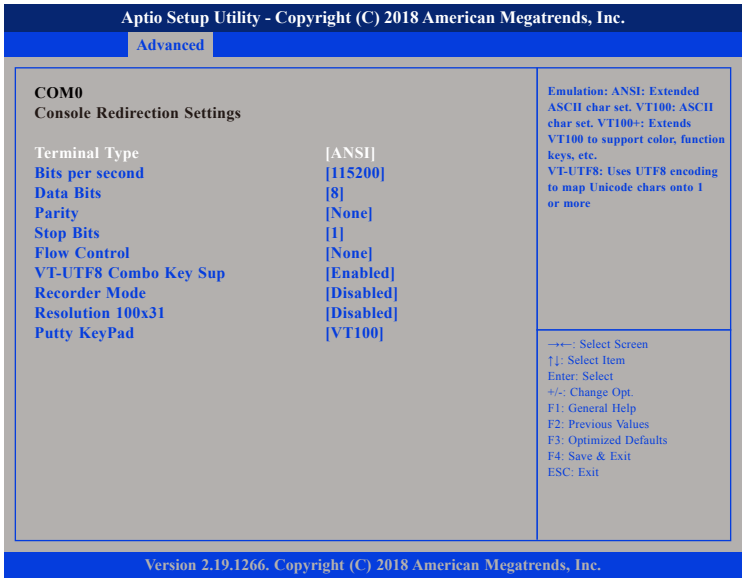
Serial Port Console Redirection

This section is used to configure the serial port that will be used for console redirection.

Console Redirection
Enables or disables the console redirection. When enabled, Console Redirection Settings will be available.

Console Redirection Settings
Enters the Console Redirection Settings sub-menu.

COM0 Console Redirection Settings



Terminal Type

ANSI Extended ASCII character set.
VT100 ASCII character set.
VT100+ Extends VT100 to support color, function keys, etc.
VT-UTF8 Uses UTF8 encoding to map Unicode characters onto 1 or more bytes.

Bits Per Second

Selects the serial port transmission speed. The speed must match the other side. Long or noisy lines may require a lower speed.

Data Bits

The options are 7 and 8.

Parity

A parity bit can be sent with the data bits to detect some transmission errors.

Even Parity bit is 0 if the number of 1's in the data bits is even.
Odd Parity bit is 0 if number of 1's in the data bits is odd.

Stop Bits

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

Flow control can prevent data loss from buffer overflow. When sending data and the receiving buffers are full, a "stop" signal can be sent to stop the data flow.

VT-UTF8 Combo Key Support

Enables or disables VT-UTF8 combo key support.

Recorder Mode

When this field is enabled, only text will be sent. This is to capture the terminal data.

Resolution 100x31

Enables or disables extended terminal resolution.

Putty Keypad

Selects the Putty keyboard emulation type.

PCI Subsystem Settings

This section is used to configure the PCI.

PCI Latency Timer
Configures the length of time allowed for the PCI device to control the bus before another takes over.

VGA Palette Snoop
Enables or disables the VGA palette registers snooping.

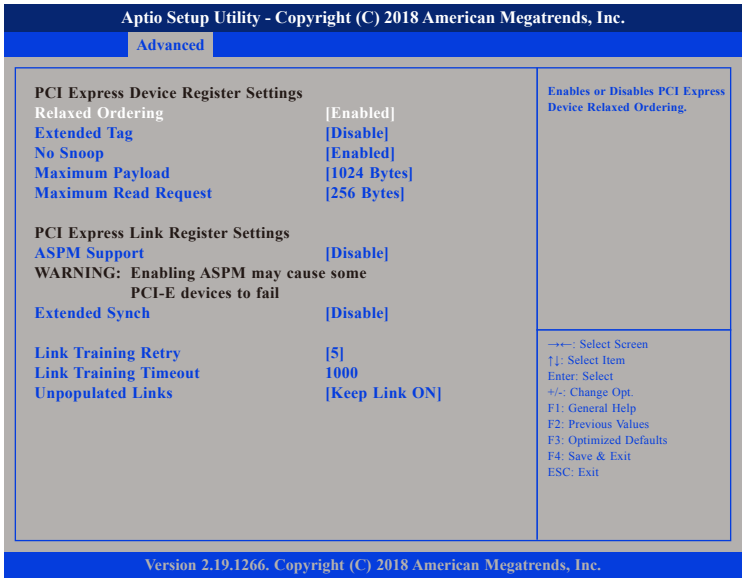
PERR# Generation
Enables or disables the PCI device to generate PERR#.

SERR# Generation
Enables or disables the PCI device to generate SERR#.

Above 4G Decoding
Enables or disables decoding of 64-bit devices in 4G address space.

SR-IOV Support
Enables or disables SR-IOV support.

PCI Express Settings



Relaxed Ordering
Enables or disables the PCI Express device's relaxed ordering.

Extended Tag
When this function is enabled, it allows a device to use 8-bit tag field as a request.

No Snoop
Enables or disables the PCI Express device's no snoop option.

Maximum Payload
Selects the maximum TLP payload size of the PCI Express devices.

Maximum Read Request
Selects the maximum read request size of the PCI Express devices.

ASPM Support
Selects the ASPM level.

Force	L0 Forces all links to L0 state.
Auto	The BIOS automatically selects an ASPM level.
Disable	Disables ASPM.

Extended Synch
When this function is enabled, it allows generation of extended synchronization patterns.

Link Training Retry
Selects the number of retry attempts.

Link Training Timeout
Selects the timeout period of link training in microseconds.

Unpopulated Links
Enables or disables unpopulated PCI Express links.

PCI Express GEN 2 Settings

Completion Timeout

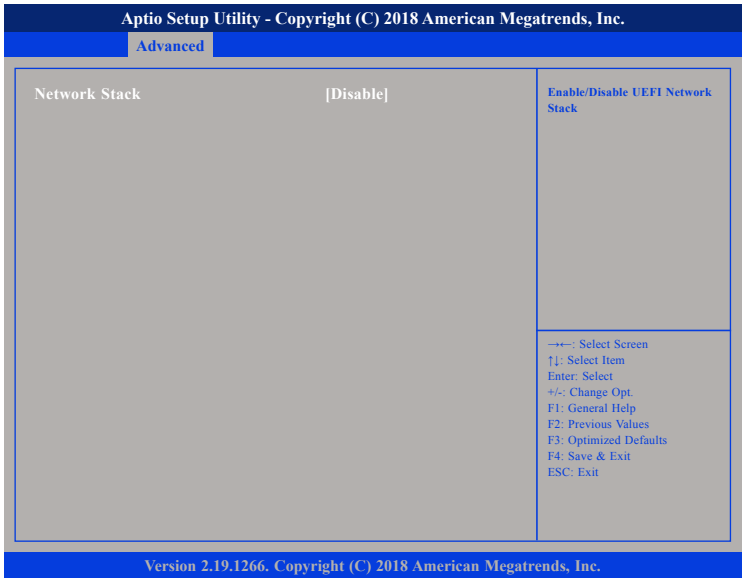
Configures the completion timeout value.

Target Link Speed

Configures the PCIe link speed.

Network Stack Configuration

This section is used to configure the network stack.

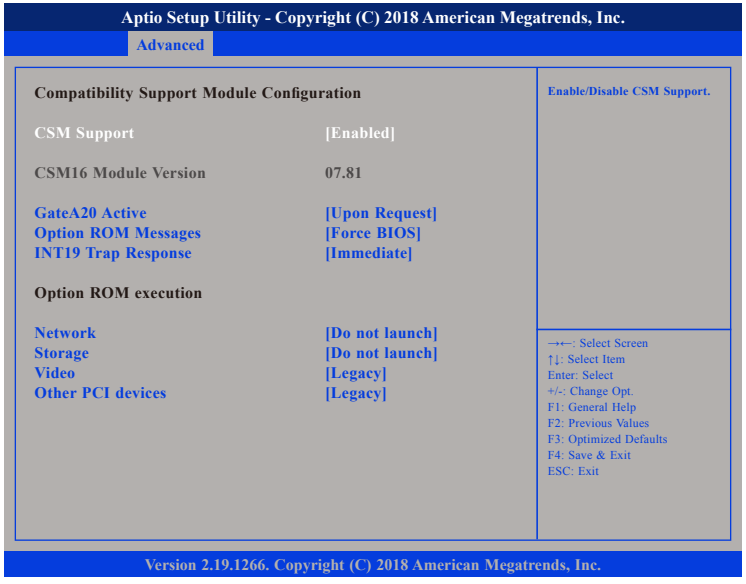


Network Stack

Enables or disables UEFI network stack.

CSM Configuration

This section is used to configure the compatibility support module features.



CSM Support

This field is used to enable or disable CSM support, if Auto option is selected, based on OS, CSM will be enabled or disabled automatically.

GateA20 Active

Upon Request	GA20 can be disabled using BIOS services.
Always	Do not allow disabling of GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

This field is used to set display mode for Option ROM. The options are Force BIOS and Keep Current.

INT19 Trap Response

Allows Option ROMs to trap Interrupt 19 when enabled.

Immediate	Execute the trap right away.
Postponed	Execute the trap during legacy boot.

Network

Enables or disables the boot option for legacy network devices.

Storage

Enables or disables the boot option for legacy storage devices.

Video

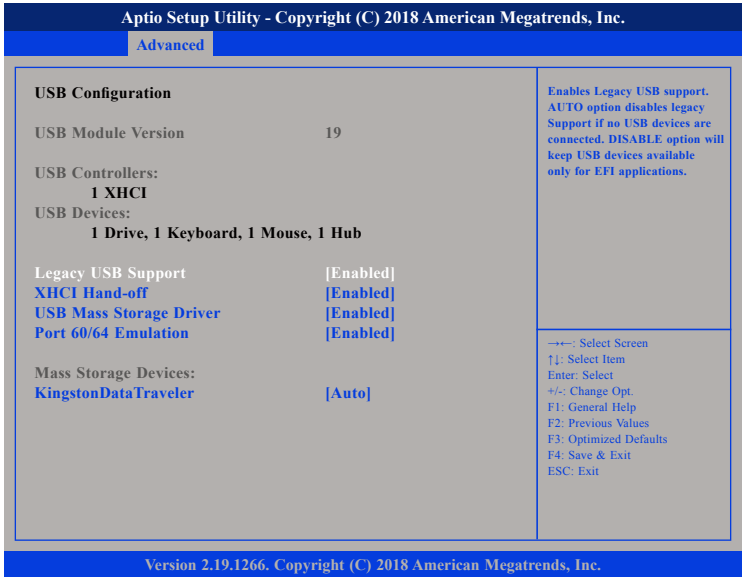
Enables or disables the boot option for legacy video devices.

Other PCI Devices

Enables or disables the boot option for legacy PCI devices.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.
Auto Disables support for Legacy when no USB devices are connected.
Disable Keeps USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

Port 60/64 Emulation

Enables the 60h/64h I/O port emulation. You must enable this to fully support USB keyboard legacy for non-USB OSes.

Mass Storage Devices:

Selects the mass storage device emulation type.

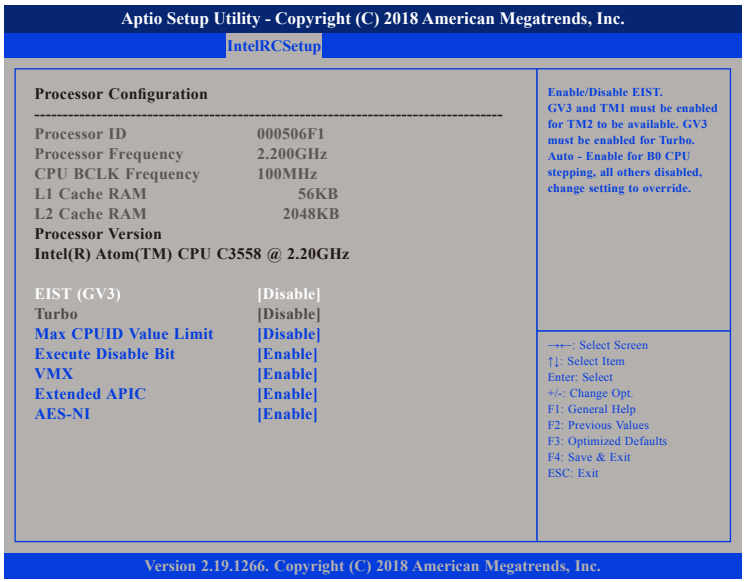
Intel RC Setup

This section is used to configure the processor and chipset settings.

Relax Security Config

Enables or disables the security configuration to be able to use BIOS update tools.

Processor Configuration



EIST (GV3)

Enables or disables Intel® SpeedStep. GV3 and TM1 must be enabled for TM2 to be available. GV3 must be enabled for Turbo.

Auto - Enable for B0 CPU stepping, all others will be disabled, change setting to override.

Max CPUID Value Limit

Set this field to Disable when using Windows XP. Set this field to Enable when using legacy operating systems so that the system will boot even when it doesn't support CPUs with extended CPUID function.

Execute Disable Bit
When this field is set to Disable, it will force the XD feature flag to always return to 0.

VMX
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

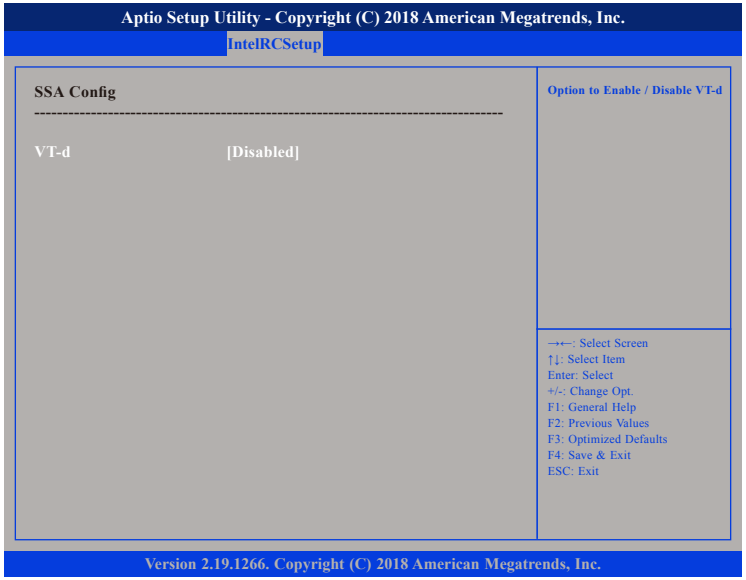
Extended APIC
Enables or disables extended APIC support.

AES-NI
Enables or disables Intel® AES-NI support.

North Bridge Chipset Configuration

Memory Frequency
Configures the DDR memory frequency.

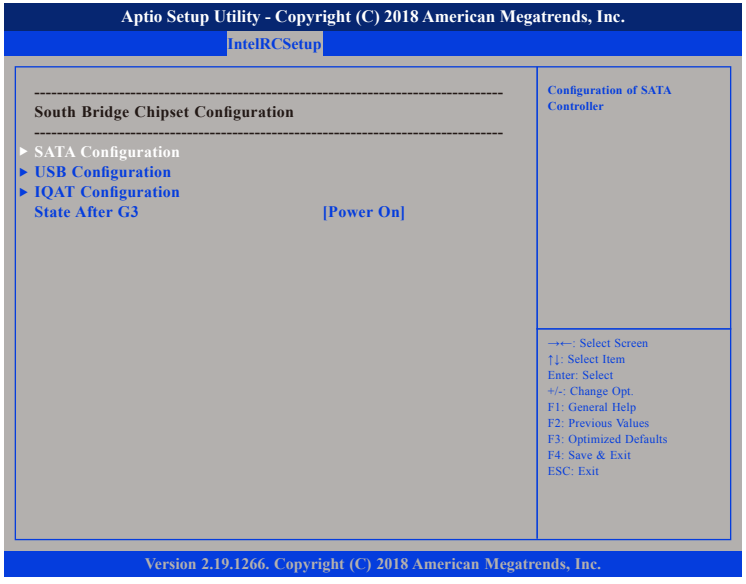
SSA Config



VT-d

Enables or disables Intel® VT-d technology.

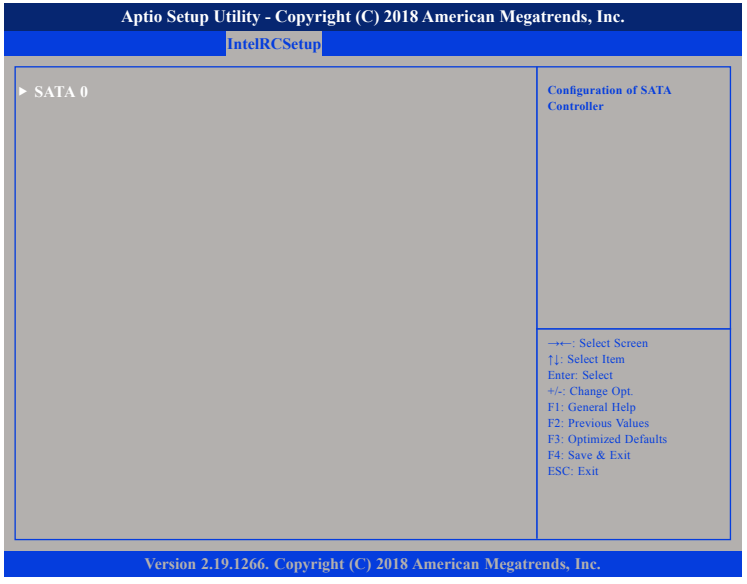
South Bridge Chipset Configuration



State After G3

Configures which state to use when power is re-applied after a power failure (G3 state).

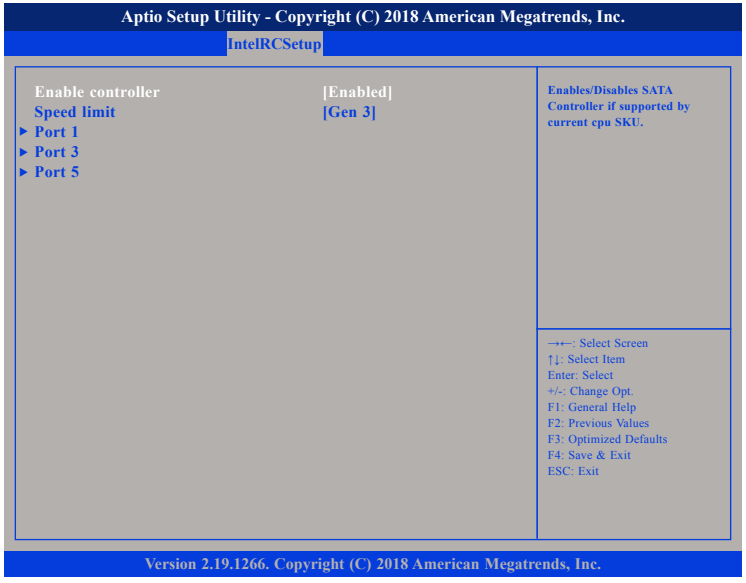
SATA Configuration



SATA 0

Enters the sub-menu of SATA 0 configuration.

SATA 0



Enable controller
Enables or disables the SATA controller if supported by the current CPU SKU.

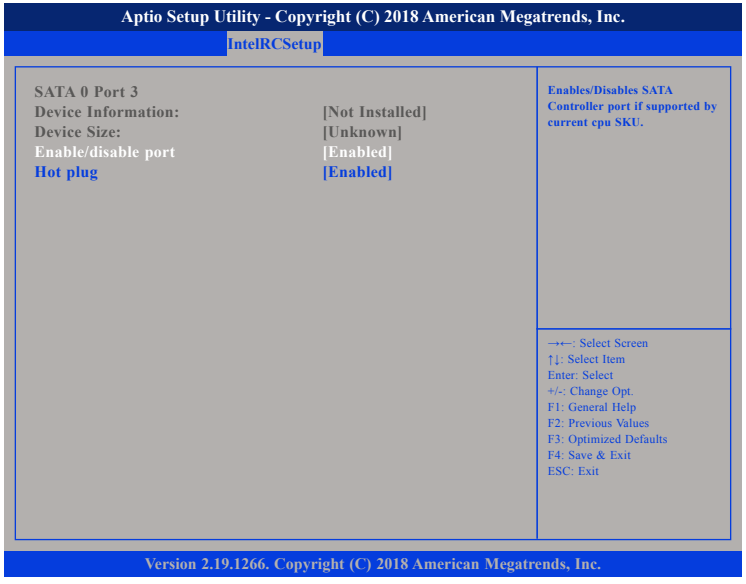
Speed limit
Configures the speed limit of the SATA controller.

Port 1

Enable/disable port
Enables or disables the SATA controller port if supported by the current CPU SKU.

Hot plug
Enables or disables hot plugging feature.

Port 3



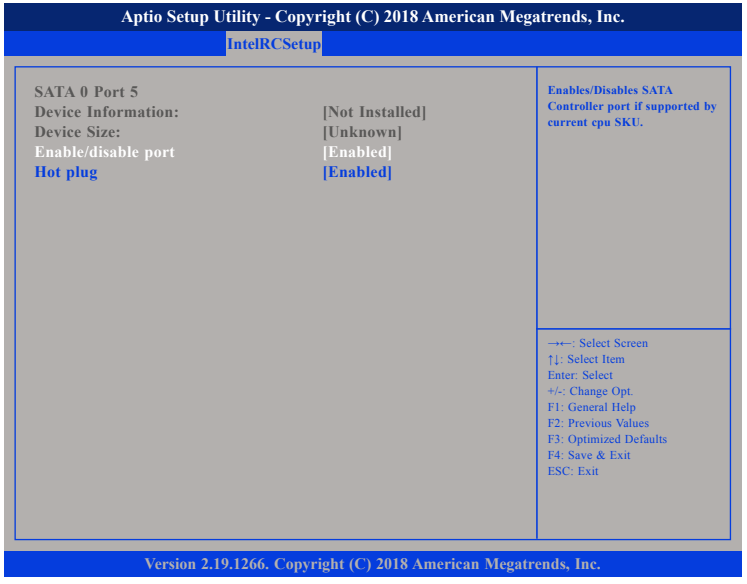
Enable/disable port

Enables or disables the SATA controller port if supported by the current CPU SKU.

Hot plug

Enables or disables hot plugging feature.

Port 5



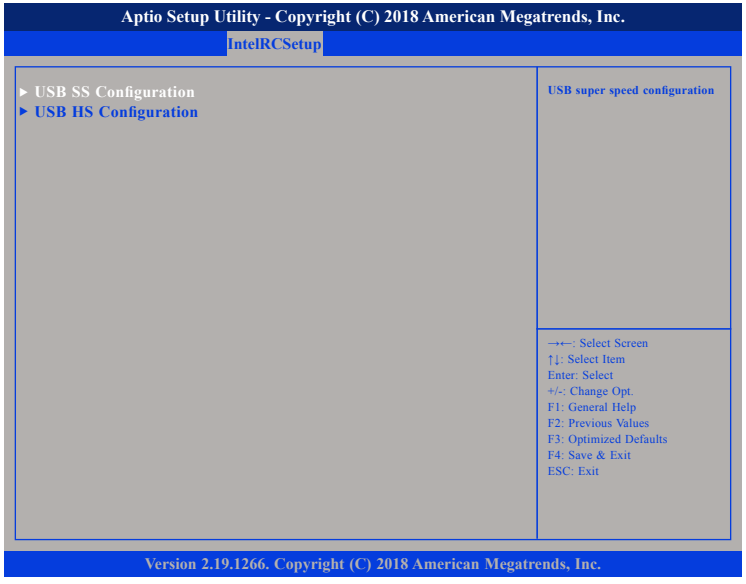
Enable/disable port

Enables or disables the SATA controller port if supported by the current CPU SKU.

Hot plug

Enables or disables hot plugging feature.

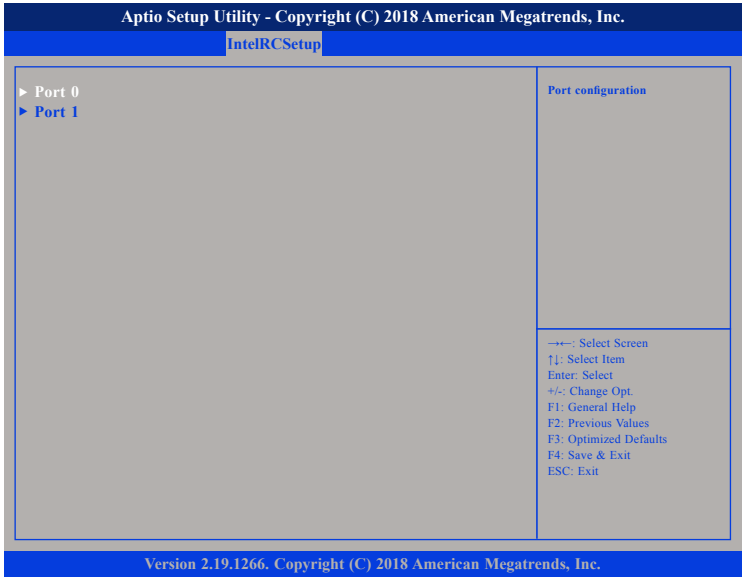
USB Configuration



USB SS Configuration
Enters the sub-menu for USB super speed configuration.

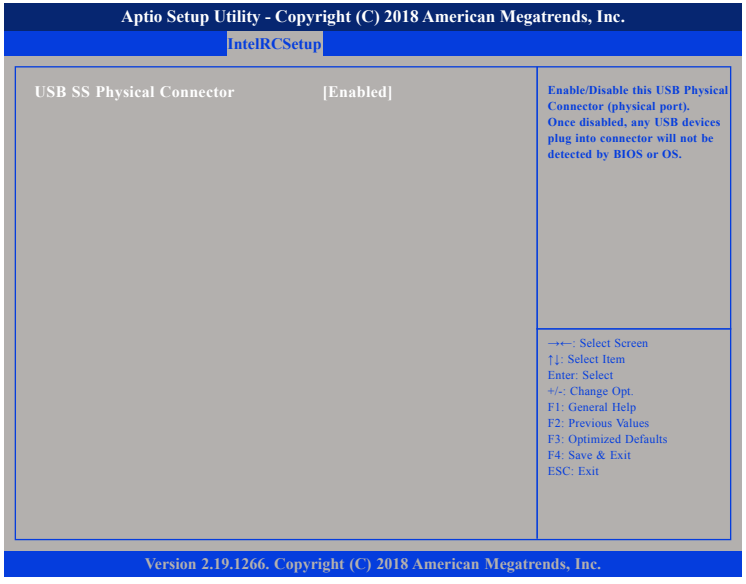
USB HS Configuration
Enters the sub-menu for USB high speed configuration.

USB SS Configuration



Port 0 and Port 1
Enters the sub-menu for port 0 and port 1 configuration.

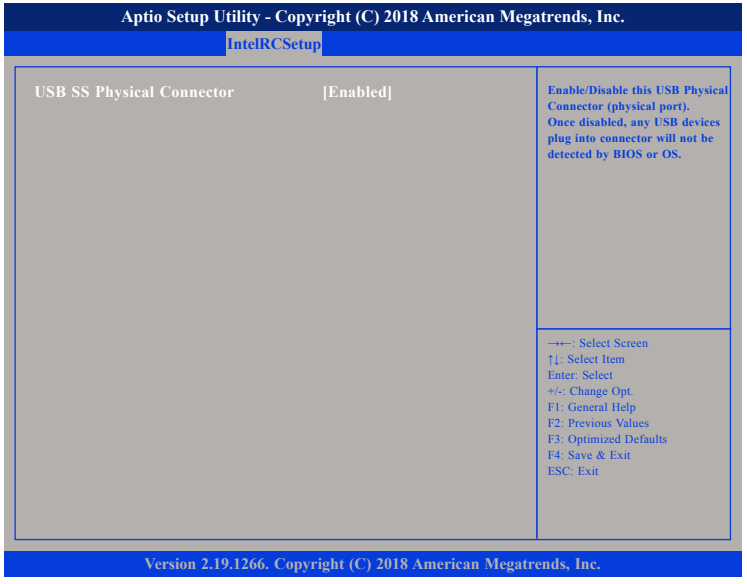
USB SS Port 0



USB SS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

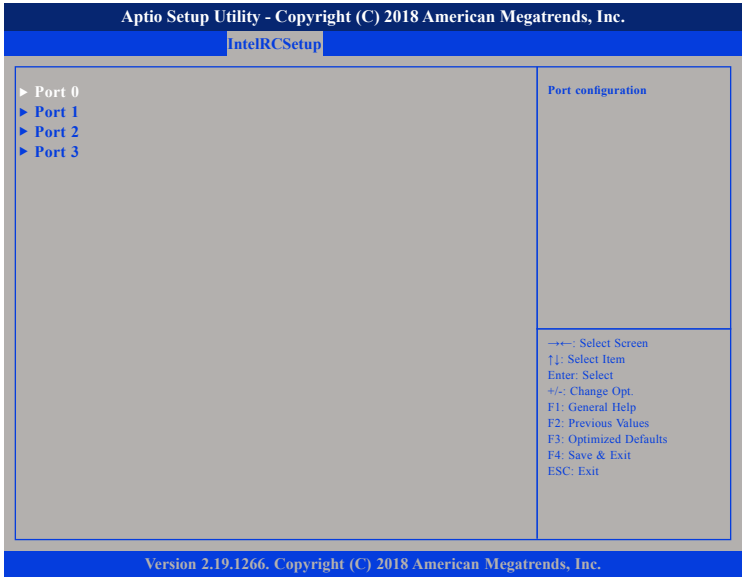
USB SS Port 1



USB SS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

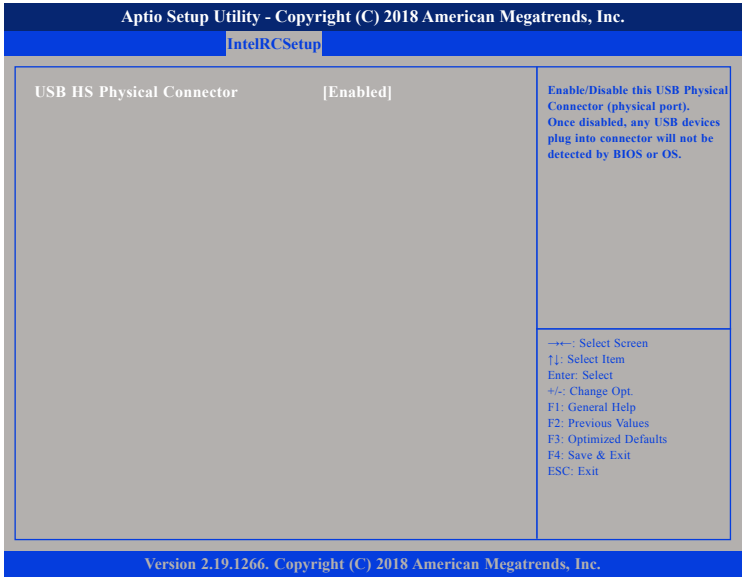
USB HS Configuration



Port 0 to Port 3

Enters the sub-menu for port 0 to port 3 configuration.

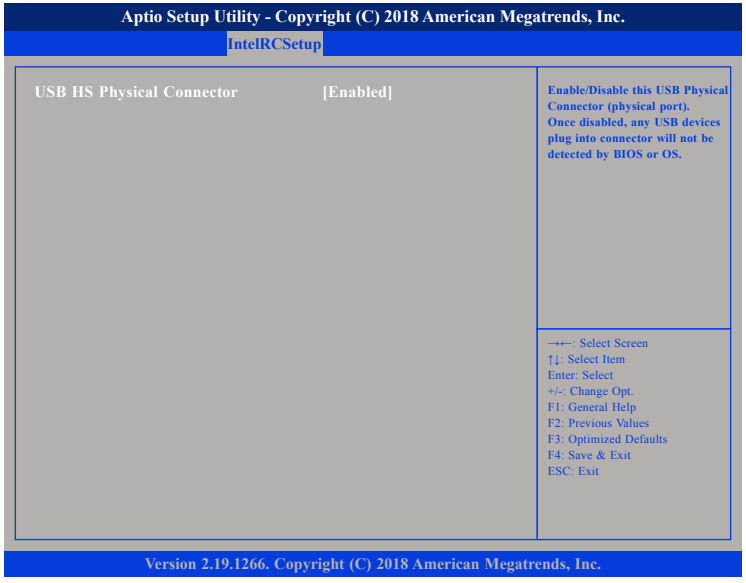
USB HS Port 0



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

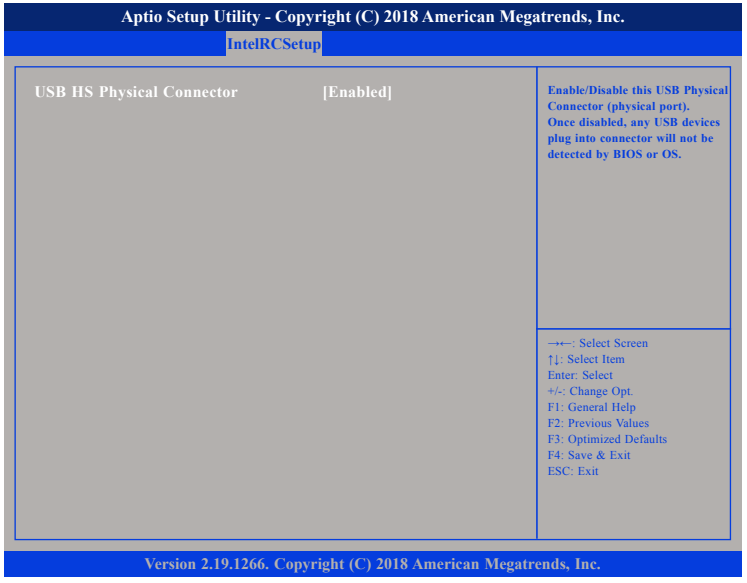
USB HS Port 1



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

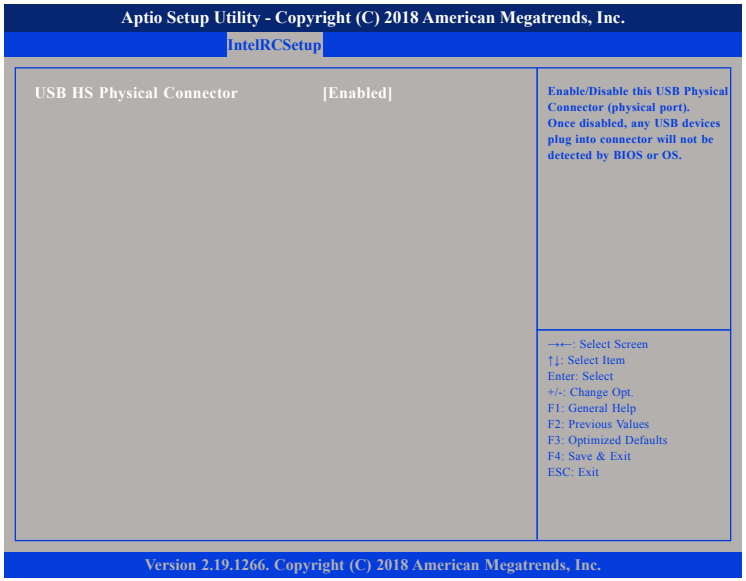
USB HS Port 2



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

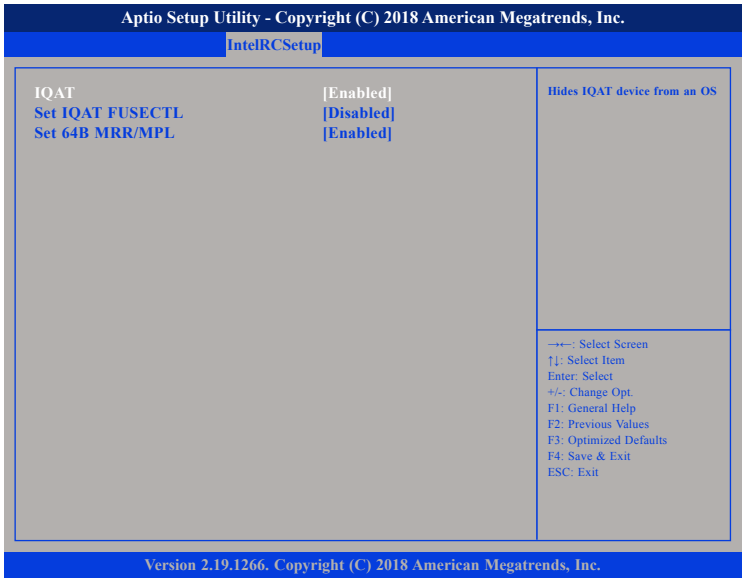
USB HS Port 3



USB HS Physical Connector

Enables or disables the USB Physical Connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

IQAT Configuration



IQAT

Enables or disables hiding of IQAT device from an OS.

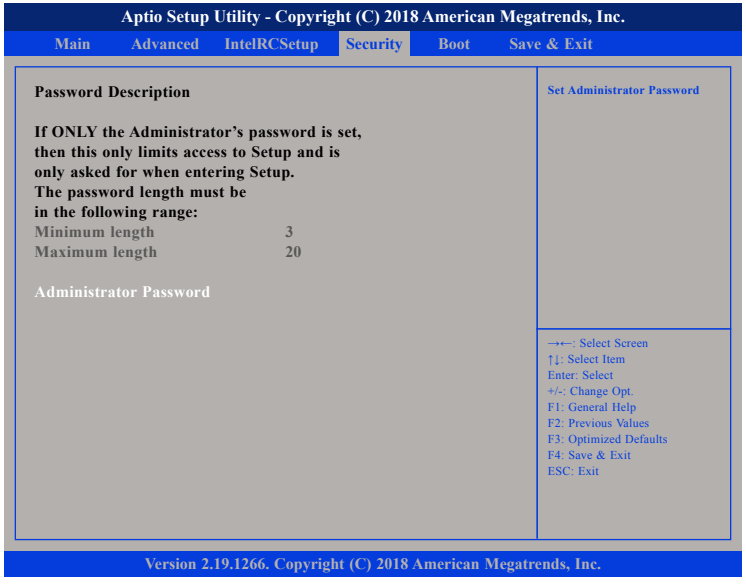
Set IQAT FUSECTL

Enables or disables the configuration of IQAT FUSECTL register.

Set 64B MRR/MPL

Enables or disables the configuration of 64B MRR/MPL in IQAT DevCTL register.

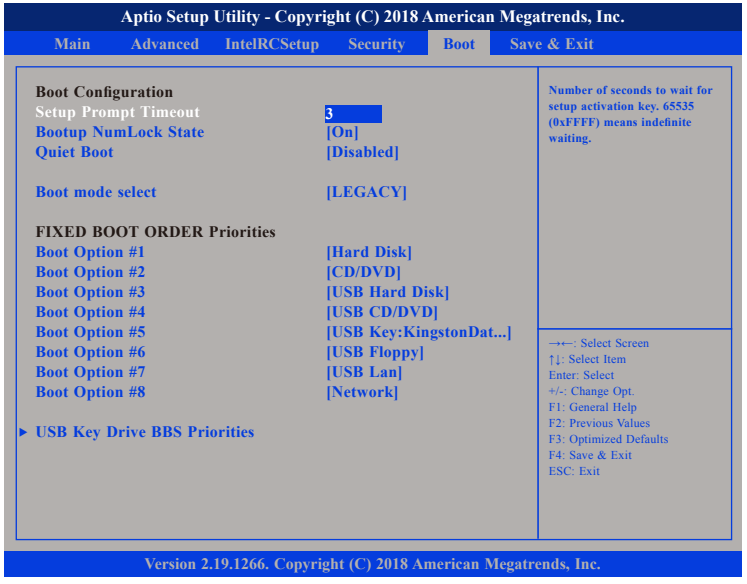
Security



Administrator Password

Select this to reconfigure the administrator's password.

Boot



Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enabled	Displays OEM logo instead of the POST messages.
Disabled	Displays normal POST messages.

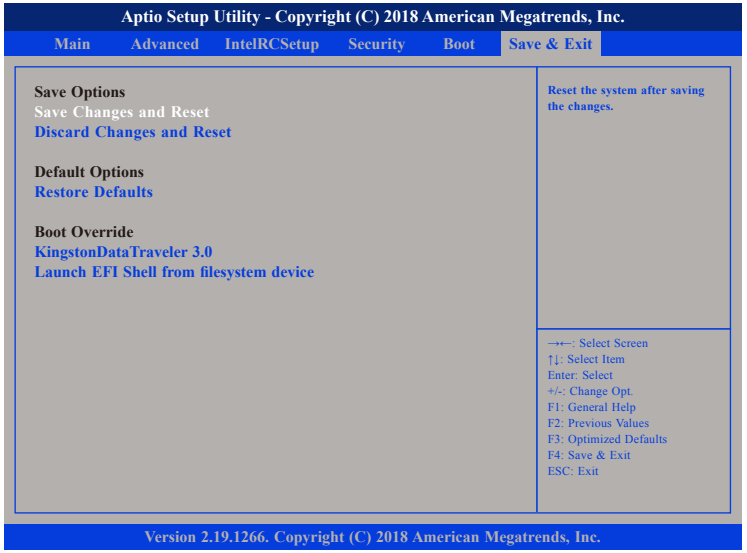
Boot Mode Select

Configures the boot mode option.

Boot Option #1 to Boot Option #8

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be Boot Option #2 and so forth.

Save & Exit



Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset

To exit the Setup utility and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Boot Override
To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

Launch EFI Shell from filesystem device
To launch EFI shell from a filesystem device, select this field and press <Enter>.