NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

NSA 3180HA

User Manual

NEXCOM International Co., Ltd.
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PREFACE

Copyright

Disclaimer

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Acknowledgements

NSA 3180HA is a trademark 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 A 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 A 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 3180HA package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Name	Description	Qty
1	19S00318001X0	NSA 3180HA ASSY		1
2	50311F0206X00	P Head Screw M2x5L Long Fei	Head DIA5.4 w/Washer Nylok NI	1
3	5044440031X00	Rubber Foot Kang Yang:RF20-5-4P	19.8x18x5.0mm	4
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	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1
7	5060900301X00	NSA 5130 Ear Sets VER:A CHYUAN-JYH	79.5x43.5x26mm AL Pantone 295U	1
8	5040150001X00	NSA 7135 AL Handle VER:A PANADVANCE	78x58x8mm	1
9	6014605880X00	Outside Carton Label for NSA 3180HA VER:A Label Jet	60x60mm ART Paper	2

Ordering Information

The following below provides ordering information for NSA 3180HA.

Barebone

NSA 3180HA (P/N: 10S00318001X0)

Intel® C246 PCH, supporting 8th gen. Intel® Xeon®/Core™/Pentium®/ Celeron® processors, 2 DDR4 memory slots, 8GbE copper LAN ports, SATA 2.5" HDD, USB ports, HDMI port, one PCIe x8 LAN expansion slot (front), w/o LCM

Model	P/N Controller	Controller	PCIe	Bypass	Speed	I/O Ports
NI 142C	10SK000NI03X0	i350AM4x1	x4	2	1G	4 RJ45
NI 140C	10S10140C01X0	i350AM4x1	x4	0	1G	4 RJ45
NI 184C	10S10184C01X0	i350AM4x2	x4x4	4	1G	8 RJ45
NI 180C	10S10180C01X0	i350AM4x2	x4x4	0	1G	8 RJ45
NI 180F	10S10180F01X0	i350AM4x2	x4x4	0	1G	8 SFP
NI 140F	10SK000NI02X0	i350AM4x1	x4	0	1G	4 SFP
NI 142F	10S10142F01X0	i350AM4x1	x4	2	1G	4 SFP
NI 121F	10S10121F01X0	i350AM2x1	x4	1	1G	2 SFP
NX 140F	10S20140F01X0	XL710-BM1	x8	0	10G	4 SFP+
NX 120F	10S20120F00X0	X710-BM2	x8	0	10G	2 SFP+
NX 142F	10S20142F01X0	XL710-BM1	x8	2	10G	4 SFP+
NV 120F	10S50120F01X0	XXV710-AM2	x8	0	25G	2 SFP28

Chapter 1: Product Introduction

Overview

Key Features

- 1U rackmount network platform
- Support 8th generation Intel® Xeon®/Core™/Pentium®/Celeron® processors
- Dual channel DDR4 ECC/non-ECC 2400/2666 288-pin UDIMM socket x2 Max. capacity 32GB
- Support one LAN module slot
- Internal two 2.5" HDD bays
- 450 watt 1+1 Redundant PSU
- Support one PCIe x8 slot

Hardware Specifications

Main Board

- NSB 3180A
- Support 8th generation Intel® Xeon®/Core™/Pentium®/Celeron® processors
- Intel® C246 chipset

Main Memory

- 2 x DDR4 ECC/non-ECC 2400/2666 288-pin UDIMM, max. capacity 32GB

LAN Features

- LAN Chip: Intel® i211-AT
- Support 10/100/1000 link speed
- LAN Bypass: 2 pairs

I/O Interface-Front

- LED indicators: HDD status/Bypass 1/Bypass 2/Reserve
- 2 x USB 3.0 ports
- 1 x Micro USB console port
- 1 x RJ45 type console port
- 8 x Copper LAN ports
- 1 x Reset button
- 1 x LAN module slot
- 1 x HDMI port
- 1 x Power button with LED
- 1 x Optional LCM

Power Input

- 450W 1+1 Redundant power supply

I/O Interface-Rear

- 1 x Rear PCIe x8 expansion slot (optional)
- PCIe card maximum dimension: 107mm (4.2”) x 110mm (4.3”)

Chassis Dimensions

- Chassis dimension: 435 mm x 480 mm x 44 mm
- Carton dimension: 544 mm x 506 mm x 205 mm

Weight

- Without packing: 5.2kg
- With packing: 8kg

Environment

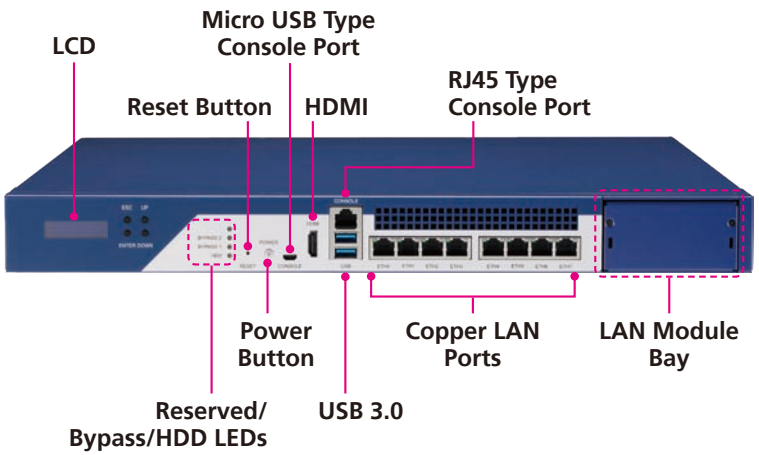
- Operating temperatures: 0°C~40°C
- Storage temperature: -40°C~80°C
- Relative humidity: 10%~90% non-condensing

Certifications

- CE
- FCC Class A
- CB/UL (IEC/EN 62368-1)

Knowing Your NSA 3180HA

Front Panel



LCD
128x32 characters LCD module.

Reserved/Bypass 1/Bypass 2/HDD LED Indicators
LED indicators for LAN bypass status and hard drive activity of the system, as well as one LED reserved for CPLD control.

Reset Button
Press to restart the system.

Power Button
Press to power-on or power-off the system.

RJ45/Micro USB Type Console Serial Port
Used to connect console devices with RJ45 or Micro USB type connection.

HDMI
Used to connect a high-definition display.

USB 3.0 Ports
Used to connect USB 3.0/2.0/1.1 devices.

Copper LAN Ports
8 LAN ports used to connect network devices.

LAN Module Bay
LAN module bay used to install add-on network modules.

Rear Panel

Expansion Slot (Optional)
Used to install a PCI Express x8 add-on card.

AC Power Sockets (Dual Redundant PSU)
Dual redundant power supply sockets, plug an AC power cord here before turning on the system.

Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the NSA 3180HA 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:

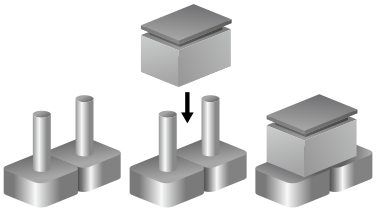
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal 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

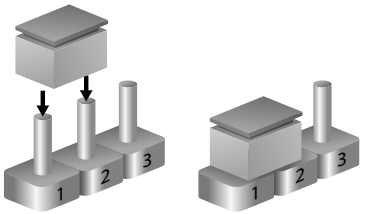
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

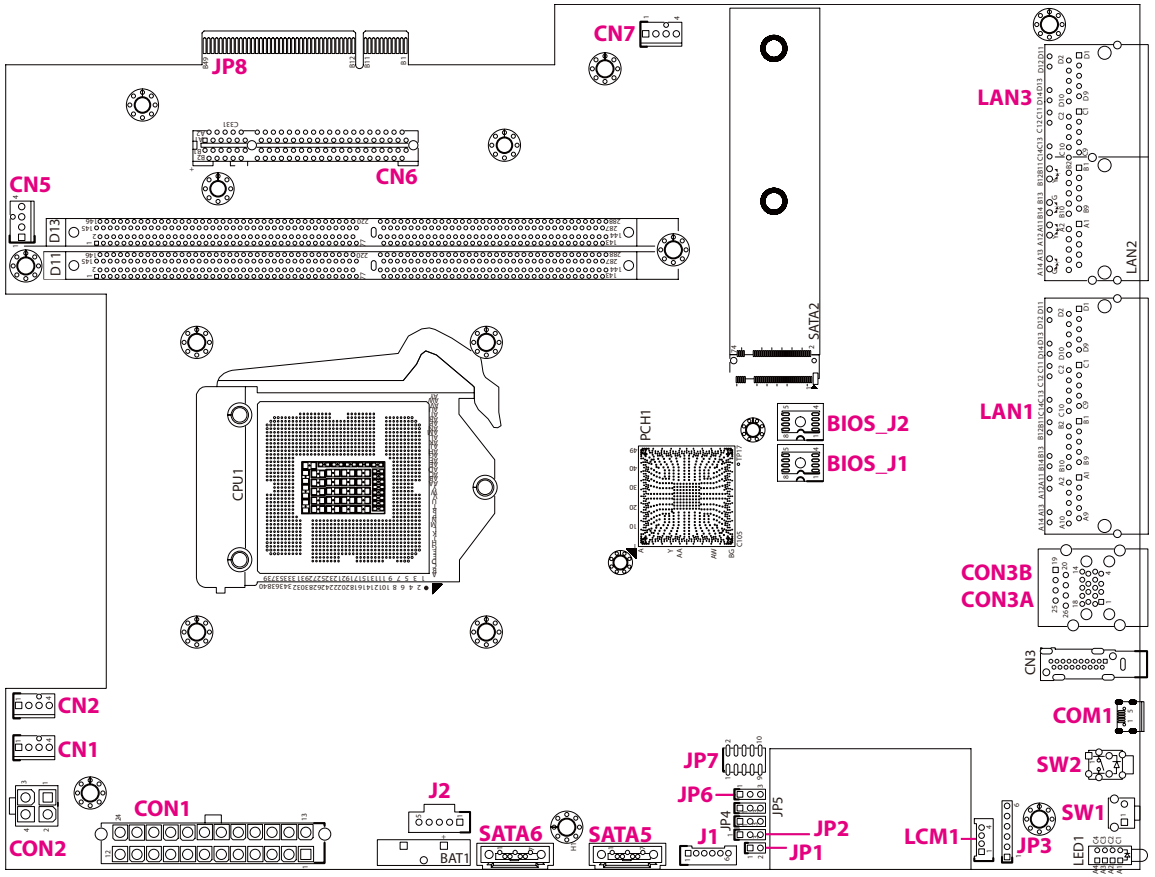


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

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



Jumpers

Clear CMOS Function

Connector type: 1x3 3-pin header
Connector location: JP6

Pin	Definition
1	NC
2	RTCRST_N
3	GND

AT/ATX Mode Select

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

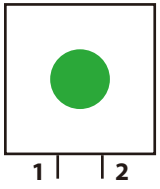
Pin	Definition
1	P3V3
2	AT/ATX
3	GND

Connector Pin Definitions

External I/O Interfaces - Front Panel

Reset Button

Connector location: SW1



Pin	Definition	Pin	Definition
1	GND	2	Reset signal
3	GND	4	GND

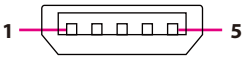
Power Button

Connector location: SW2

Pin	Definition	Pin	Definition
1	Power button signal	2	GND
3	GND	4	Power button signal

Micro USB Port (For Console Connection)

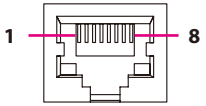
Connector location: COM1



Pin	Definition	Pin	Definition
1	CONSOLE_VBUS	2	DATA1-
3	DATA1+	4	ID
5	GND_1		

RJ45 Console Port

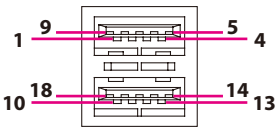
Connector location: CON3B



Pin	Definition	Pin	Definition
1	RJ45_RTS	2	RJ45_DTR
3	RJ45_TXD	4	GND
5	RJ45_DCD	6	RJ45_RXD
7	RJ45_DSR	8	RJ45_CTS

USB 3.0 Ports

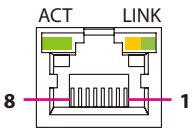
Connector type: Dual USB 3.0 ports
Connector location: CON3A



Pin	Definition	Pin	Definition
1	VCC	2	D-
3	D+	4	GND
5	RXN	6	RXP
7	GND	8	TXN
9	TXP	10	VCC
11	D-	12	D+
13	GND	14	RXN
15	RXP	16	GND
17	TXN	18	TXP

LAN1 to LAN8 Ports

Connector type: RJ45 with LEDs
Connector location: LAN1 and LAN3



Act	Status
Flashing Green	Data activity
Steady Green	No activity

Link	Status
Steady Green	1G network link
Steady Amber	100Mbps network link
Off	10Mbps or no link

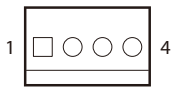
Pin	Definition	Pin	Definition
1	MDI0P	2	MDI0N
3	MDI1P	4	MDI1N
5	CT	6	CT
7	MDI2P	8	MDI2N
9	MDI3P	10	MDI3N
11	Link LED	12	Link LED
13	Active LED	14	Active LED

Connector Pin Definitions

Internal Connectors

Fan Connectors

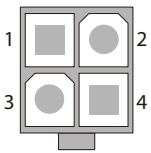
Connector type: 1x4 4-pin Wafer
Connector location: CN1, CN2, CN5 and CN7



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

Internal 12V Power Connector

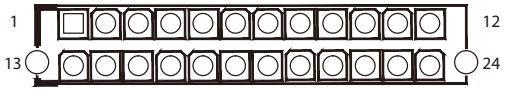
Connector type: 2x2 4-pin header
Connector location: CON2



Pin	Definition	Pin	Definition
1	GND	2	GND
3	12V	4	12V

Internal 24-Pin ATX Power Connector

Connector type: 2x12 24-pin header
Connector location: CON1



Pin	Definition	Pin	Definition
1	+P3.3V	2	+P3.3V
3	GND	4	+P5V
5	GND	6	+P5V
7	GND	8	PW-OK
9	+P5_AUX	10	+P12V
11	+P12V	12	+P3.3V
13	+P3.3V	14	NC
15	GND	16	PS-ON
17	GND	18	GND
19	GND	20	NC
21	+P5V	22	+P5V
23	+P5V	24	GND

Rear USB 2.0

Connector type: 1x6 6-pin header
Connector location: J1

Pin	Definition	Pin	Definition
1	+P5V	2	USB2_1N
3	USB2_1P	4	USB2_2N
5	USB2_2P	6	GND

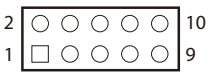
Power Button Header

Connector type: 1x2 2-pin header
Connector location: JP1

Pin	Definition
1	FP_PWR_BTN_N
2	GND

GPIO Pin Header

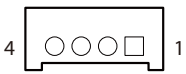
Connector type: 2x5 10-pin header
Connector location: JP7



Pin	Definition	Pin	Definition
1	+P3V3	2	GND
3	GPIN1	4	GPOUT1
5	GPIN2	6	GPOUT2
7	GPIN3	8	GPOUT3
9	GPIN4	10	GPOUT4

LCM

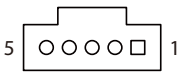
Connector type: 1x4 4-pin header
Connector location: LCM1



Pin	Definition	Pin	Definition
1	GND	2	SP_LCM_RXD
3	SP_LCM_TXD	4	P3V3 or P5V

PMBUS

Connector type: 1x5 5-pin header
Connector location: J2



Pin	Definition	Pin	Definition
1	SMB CLK	2	SMB DAT
3	POWER fail	4	GND
5	P3V3		

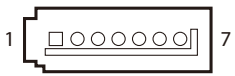
CPLD JTAG Pin Header

Connector type: 1x6 6-pin header
Connector location: JP3

Pin	Definition	Pin	Definition
1	P3V3	2	GND
3	JTAG_PLD_TCK	4	JTAG_PLD_TDO
5	JTAG_PLD_TDI	6	JTAG_PLD_TMS

SATA Connector

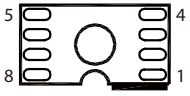
Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA5 and SATA6



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

BIOS Socket

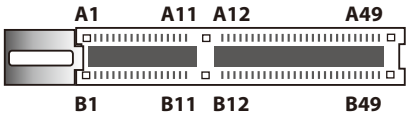
Connector type: 2x4 8-pin header
Connector location: BIOS_J1 and BIOS_J2



Pin	Definition	Pin	Definition
1	CS#	2	MISO
3	WP#	4	GND
5	MOSI	6	CLK
7	HOLD#	8	VCC

PCIe x8 Slot

Connector type: PCIe x8 Slot
Connector location: CN6

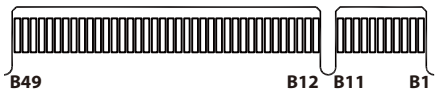


Pin	Definition	Pin	Definition
A1	GND	B1	12V
A2	12V	B2	12V
A3	12V	B3	12V
A4	GND	B4	GND
A5	NC	B5	SMBCLK
A6	NC	B6	SMBDAT
A7	NC	B7	GND
A8	NC	B8	3.3V
A9	3.3V	B9	NC
A10	3.3V	B10	3.3V AUX
A11	reset	B11	wake
A12	GND	B12	NC
A13	CLK	B13	GND
A14	CLK	B14	TXP
A15	GND	B15	TXN
A16	RXP	B16	GND
A17	RXN	B17	NC
A18	GND	B18	GND
A19	NC	B19	TXP
A20	GND	B20	TXN
A21	RXP	B21	GND

Pin	Definition	Pin	Definition
A22	RXN	B22	GND
A23	GND	B23	TXP
A24	GND	B24	TXN
A25	RXP	B25	GND
A26	RXN	B26	GND
A27	GND	B27	TXP
A28	GND	B28	TXN
A29	RXP	B29	GND
A30	RXN	B30	NC
A31	GND	B31	NC
A32	NC	B32	GND
A33	NC	B33	TXP
A34	GND	B34	TXN
A35	RXP	B35	GND
A36	RXN	B36	GND
A37	GND	B37	TXP
A38	GND	B38	TXN
A39	RXP	B39	GND
A40	RXN	B40	GND
A41	GND	B41	TXP
A42	GND	B42	TXN
A43	RXP	B43	GND
A44	RXN	B44	GND
A45	GND	B45	TXP
A46	GND	B46	TXN
A47	RXP	B47	GND
A48	RXN	B48	NC
A49	GND	B49	GND

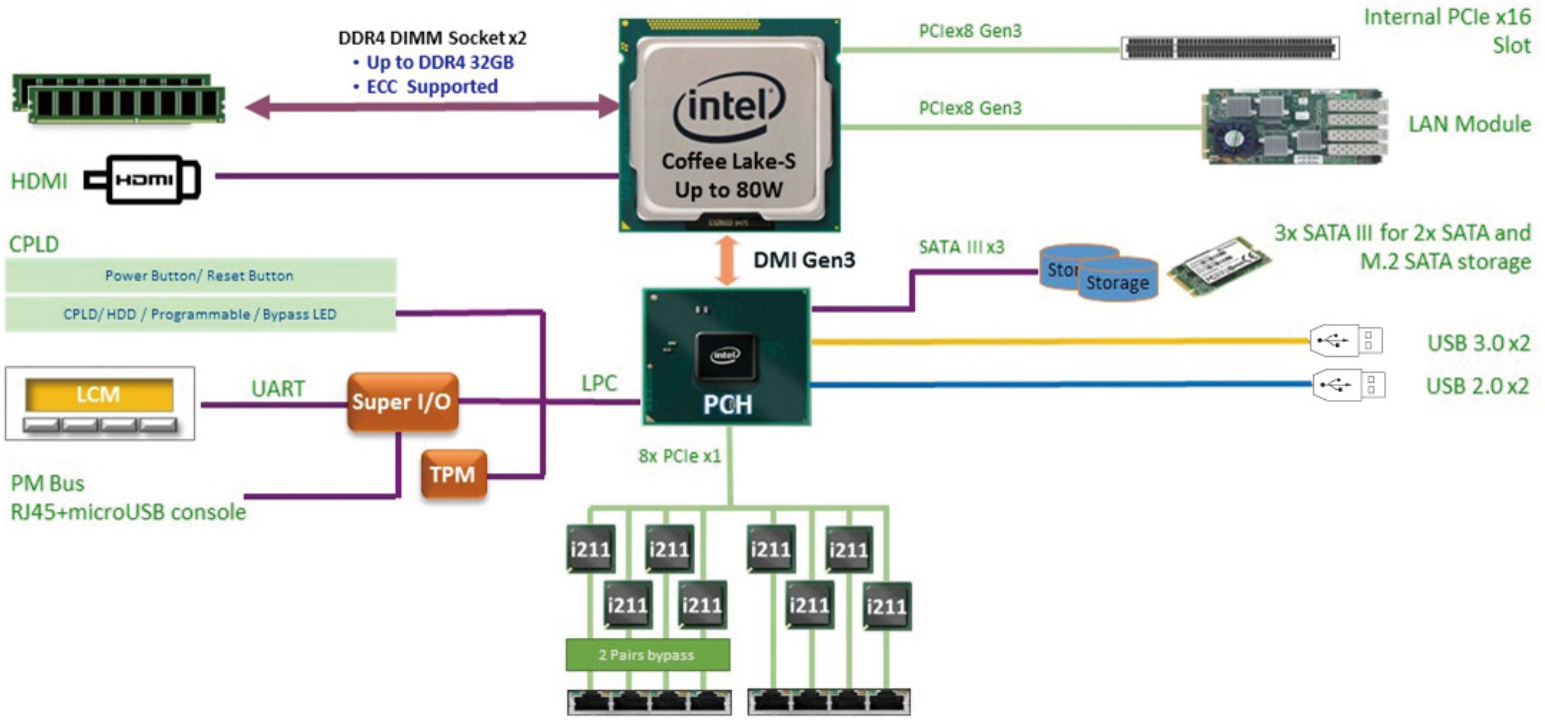
Golden Finger (For Non-standard PCIe)

Connector location: JP8



Pin	Definition	Pin	Definition
A1	NC	B1	12V
A2	12V	B2	12V
A3	12V	B3	12V
A4	GND	B4	GND
A5	SMBDAT	B5	SMBCLK
A6	SMBCLK	B6	SMBDAT
A7	SMBDAT	B7	GND
A8	SMBCLK	B8	3.3V
A9	3.3V	B9	NC
A10	3.3V	B10	3.3V AUX
A11	reset	B11	wake
A12	GND	B12	Bypass
A13	CLK	B13	GND
A14	CLK	B14	TXP
A15	GND	B15	TXN
A16	RXP	B16	GND
A17	RXN	B17	NC
A18	GND	B18	GND
A19	Bypass	B19	TXP
A20	GND	B20	TXN
A21	RXP	B21	GND
A22	RXN	B22	GND
A23	GND	B23	TXP
A24	GND	B24	TXN
A25	RXP	B25	GND
A26	RXN	B26	GND
A27	GND	B27	TXP
A28	GND	B28	TXN
A29	RXP	B29	GND
A30	RXN	B30	Bypass
A31	GND	B31	NC
A32	Bypass	B32	GND
A33	Bypass	B33	TXP
A34	GND	B34	TXN
A35	RXP	B35	GND
A36	RXN	B36	GND
A37	GND	B37	TXP
A38	GND	B38	TXN
A39	RXP	B39	GND
A40	RXN	B40	GND
A41	GND	B41	TXP
A42	GND	B42	TXN
A43	RXP	B43	GND
A44	RXN	B44	GND
A45	GND	B45	TXP
A46	GND	B46	TXN
A47	RXP	B47	GND
A48	RXN	B48	NC
A49	GND	B49	GND

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. Remove the screws around the chassis cover then put them in a safe place for later use.

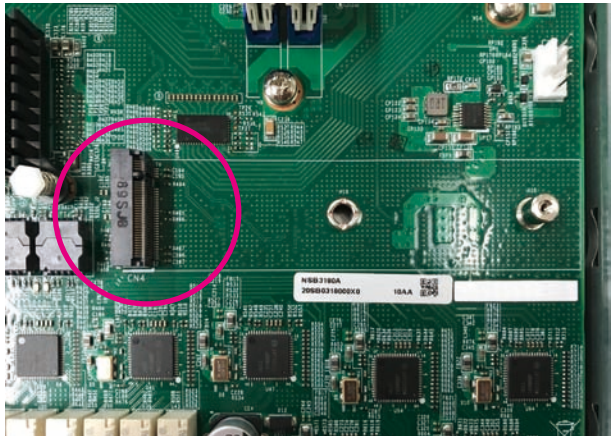
Screws on the top

Screws on the sides

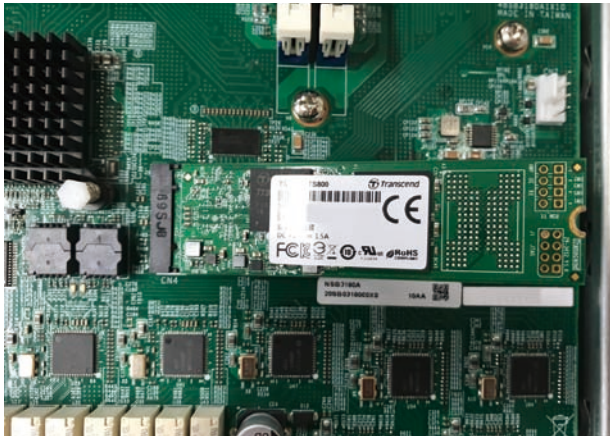
2. With the screws removed, gently slide the cover outwards and then lift up the cover to remove it.

Installing an M.2 Module

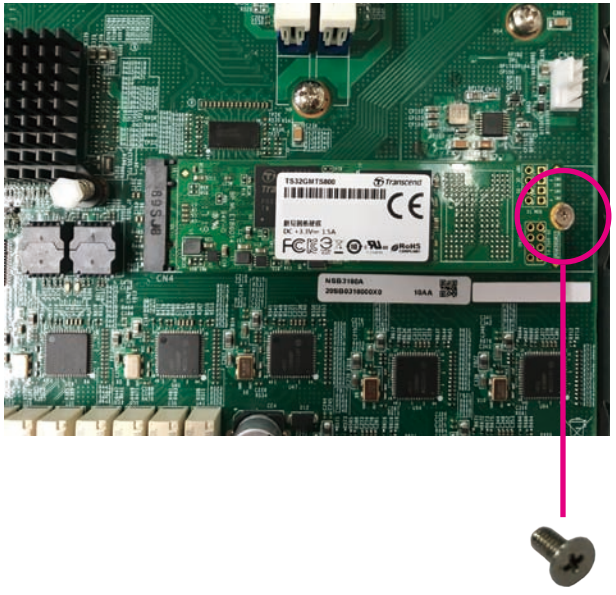
1. Locate the M.2 slot on the motherboard.



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

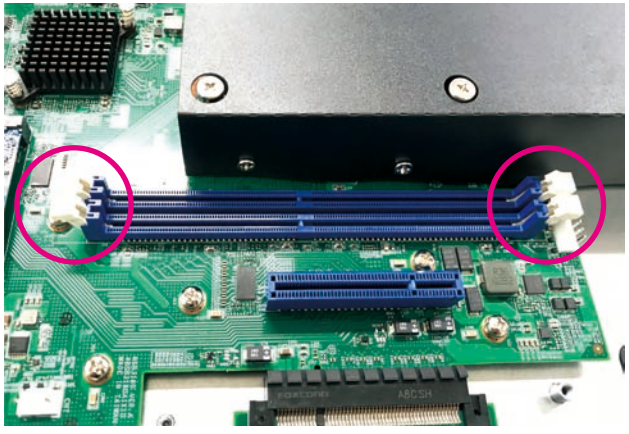


3. Push the module down and secure it with a screw.

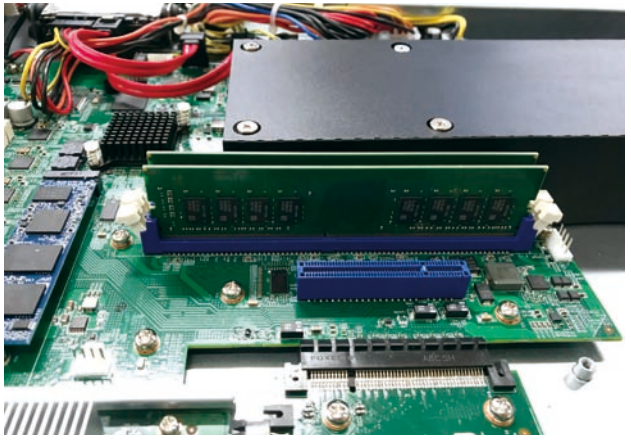


Installing DIMM Memory Modules

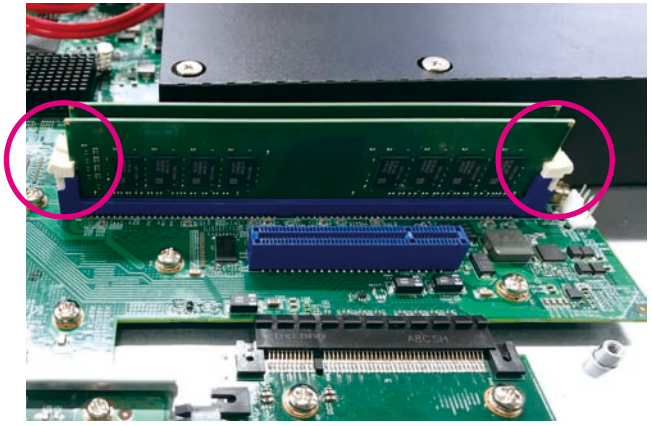
1. Locate the DIMM sockets on the board and release the locks on the DIMM sockets.



2. Insert the modules into the socket at an 90 degree angle. Apply firm even pressure to each end of the modules until they slip into the sockets.



3. While pushing the modules into position, the lock will close automatically.



Installing a 2.5" SATA Hard Drive

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

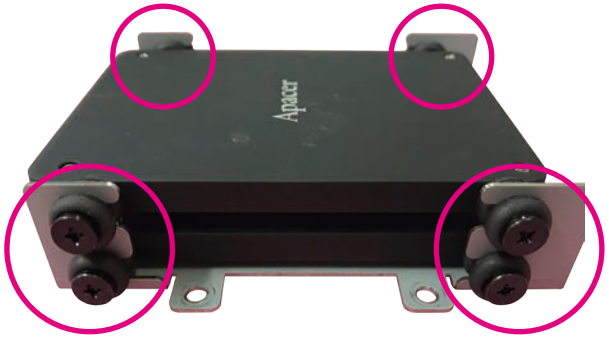
The storage drive bracket is used to secure storage drives to the system. Up to 2 storage drives can be installed.

1. Slide the four anti-vibration dampers into the mounting holes on the storage drive bracket.

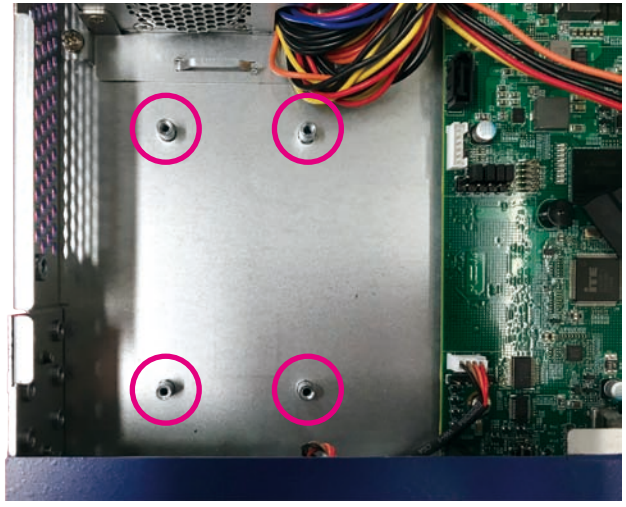
2. With the anti-vibration dampers installed, insert the mounting screws through the dampers

3. Align the mounting holes that are on the sides of the storage drive to the mounting screws.

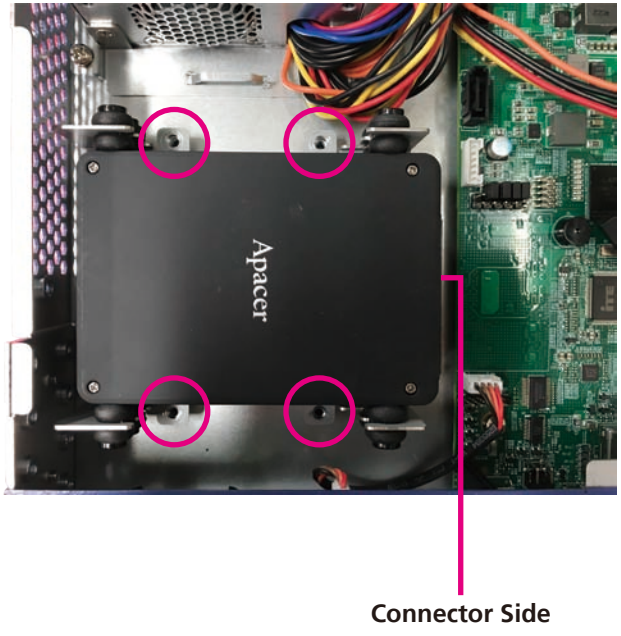
4. Fasten the screws to secure the storage drive in place.



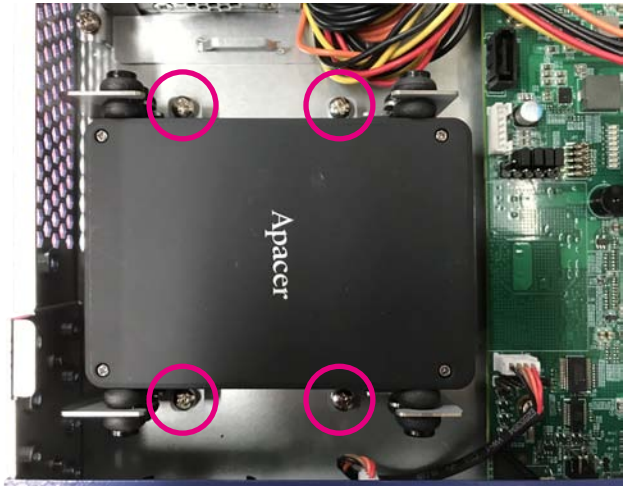
5. Locate the four mounting holes inside the chassis. This is where the storage bracket will be installed.



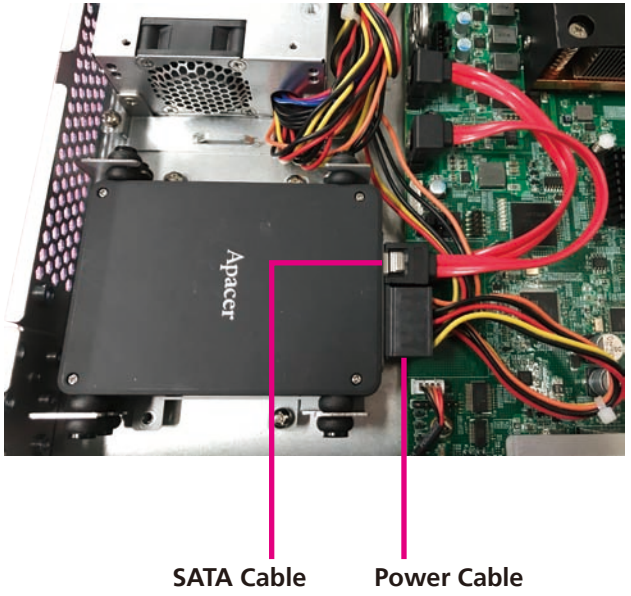
6. Place the storage bracket into the chassis with the connector side facing the board, and the mounting holes on the bracket aligned to the mounting holes inside the chassis.



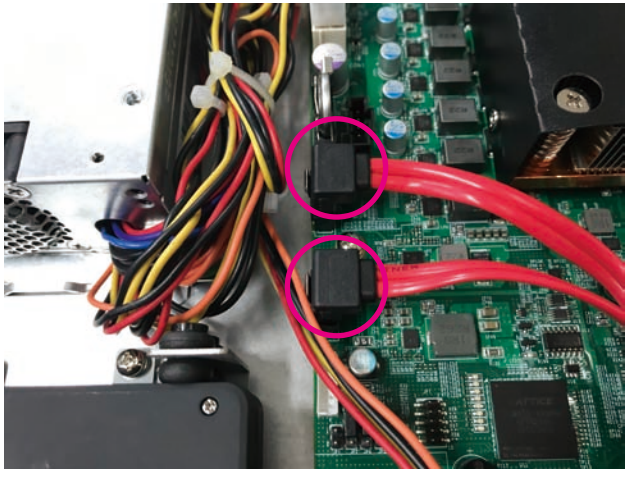
7. Secure the bracket in place with screws.



8. Connect the SATA data and power cables to the respective connectors on the storage drives.

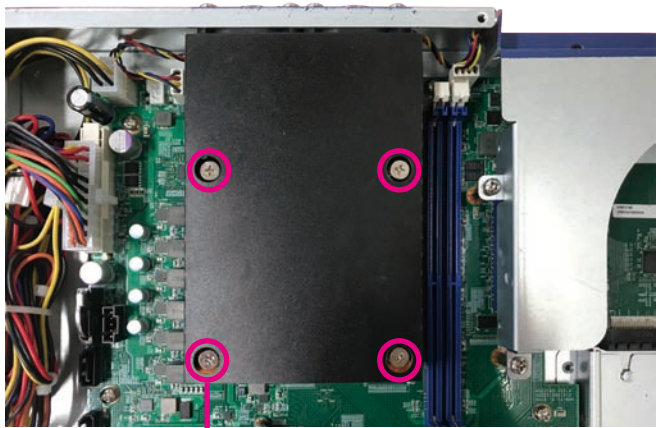


9. Connect the other ends of the SATA data cables to the respective connectors on the motherboard.



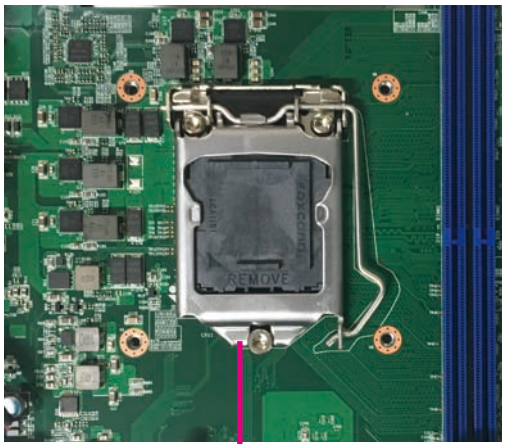
Installing a CPU

1. Remove the mounting screws that secure the heat sink to the chassis.



Mounting Screw

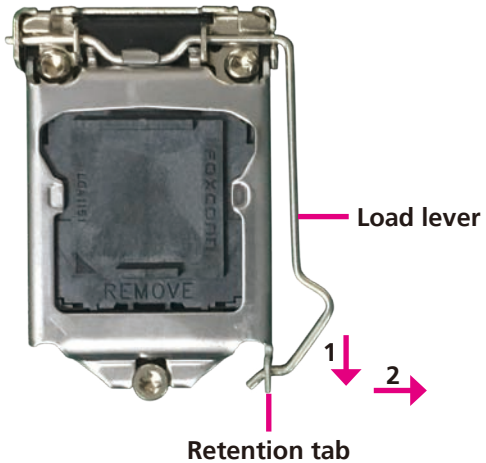
2. The CPU socket is readily accessible after you have removed the heat sink.



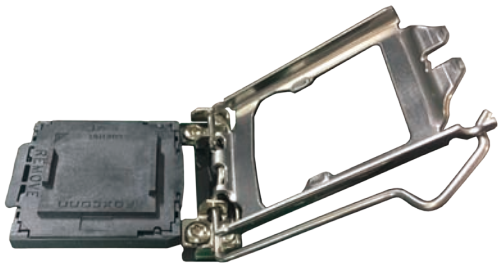
CPU Socket

- Before you proceed, make sure (1) the CPU socket comes with a protective cap, (2) the cap is not damaged and (3) the socket's contact pins are not bent.
- Make sure all power cables are unplugged before you install the CPU.
- The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure. Remove the protective cap only when you are about to install the CPU.

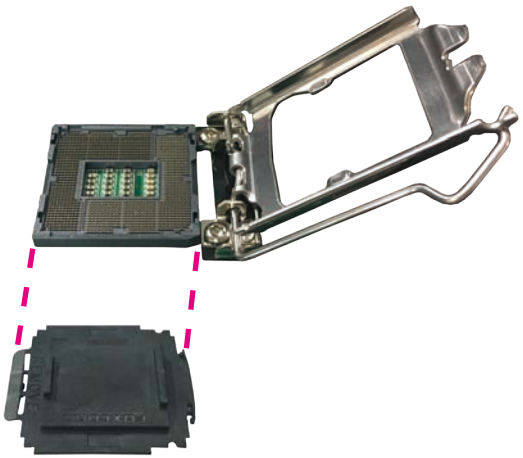
3. Unlock the socket by pushing the load lever down (1), moving it sideways (2) until it is released from the retention tab; then lift the load lever up.



4. Lifting the load lever will at the same time lift the load plate.

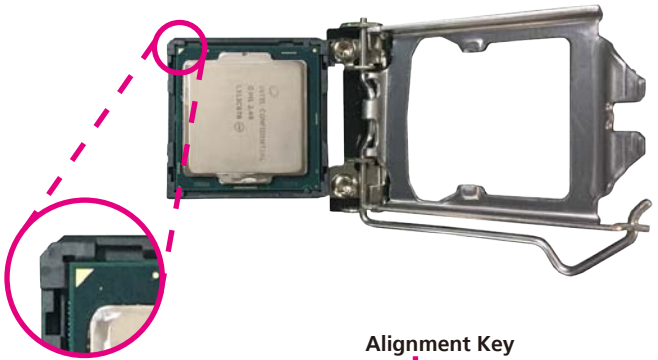


5. Remove the protective cap from the CPU socket. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.

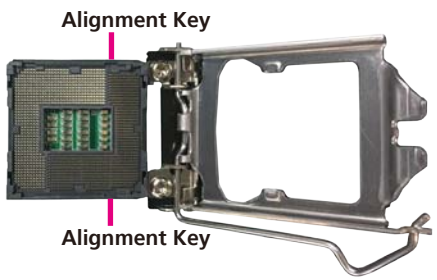


Protective cap

6. Insert the CPU into the socket. The triangular edge on the CPU must align with the corner of the CPU socket shown on the photo.



The CPU's notch will at the same time fit into the socket's alignment key.



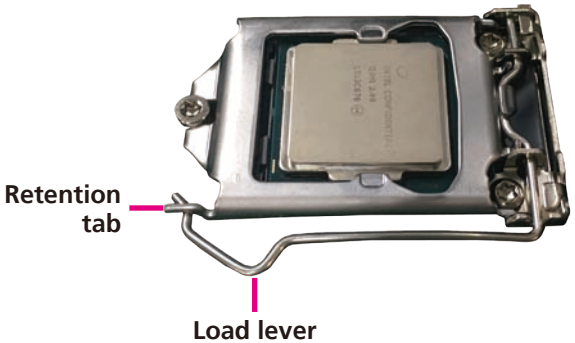
- Handle the CPU by its edges and avoid touching the pins.
- The CPU will fit in only one orientation and can easily be inserted without exerting any force.

7. Close the load plate and then push the load lever down.

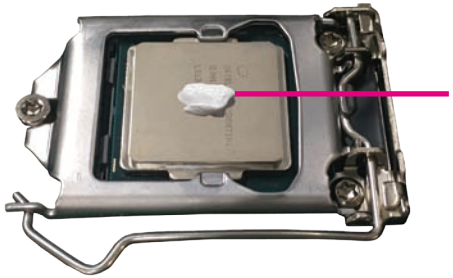
   While closing the load plate, make sure the front edge of the load plate slides under the retention knob.

Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

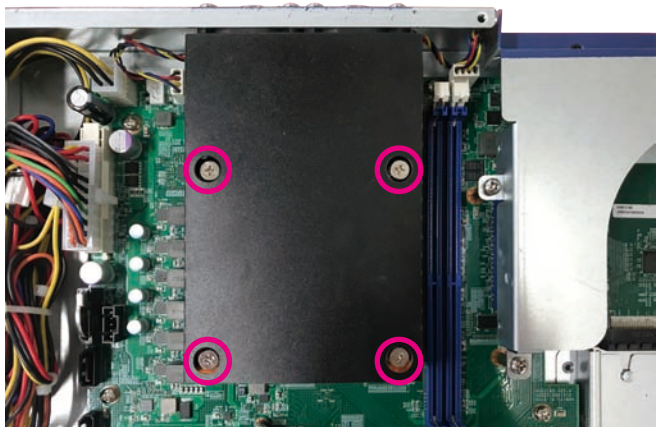
8. Hook the load lever under the retention tab.



9. Apply thermal compound on top of the CPU. Do not spread the compound all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.



10. Install the heat sink back to its original location and tighten the screws to secure the heat sink in place.



Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for NSA 3180HA. 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

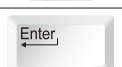
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- 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.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. 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.

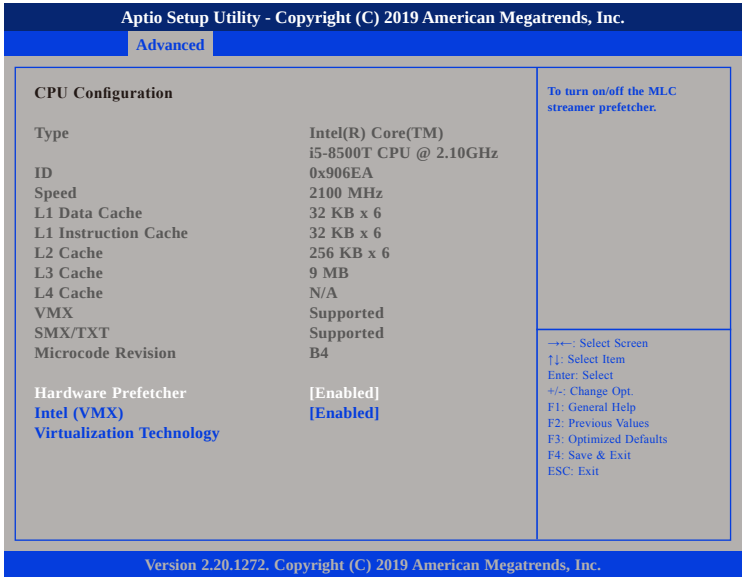
Advanced

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.

CPU Configuration

This section is used to configure the CPU.



Hardware Prefetcher

Turns on or off the MLC streamer prefetcher.

Intel (VMX) Virtualization Technology

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

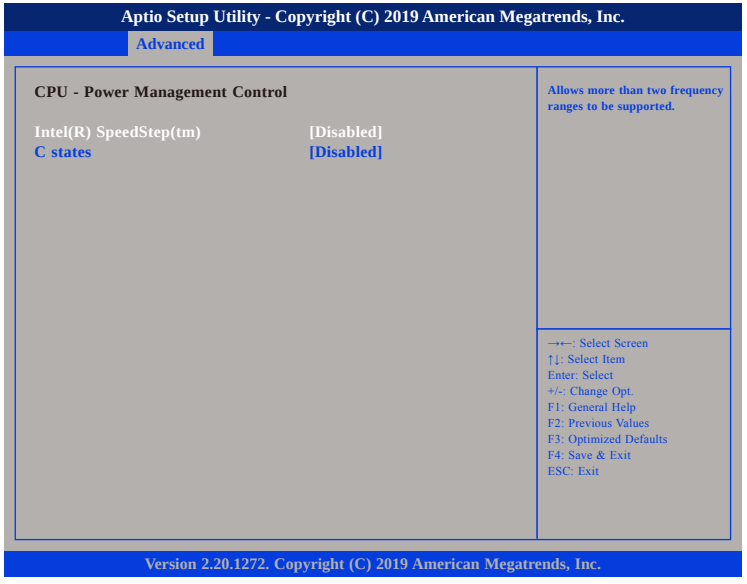
Power & Performance

This section is used to configure the CPU power management features.

CPU - Power Management Control

Enters the CPU - Power Management Control submenu.

CPU - Power Management Control



Intel® SpeedStep™

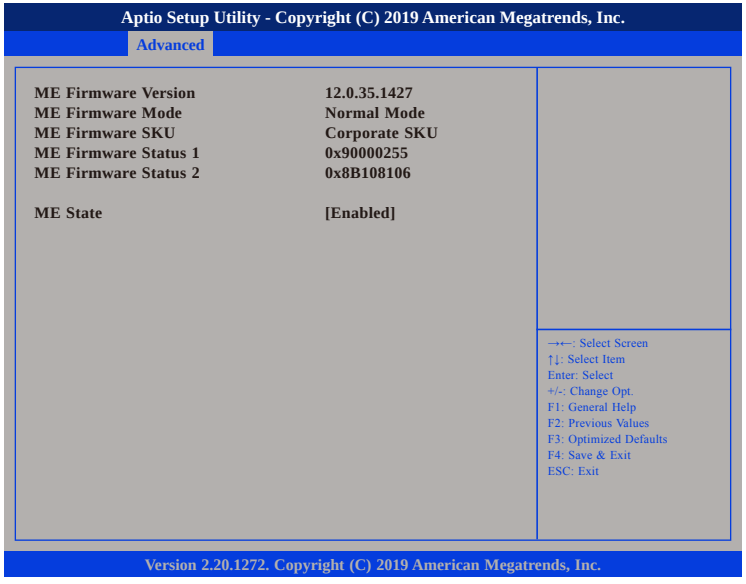
Enables or disables Intel SpeedStep.

C States

Enables or disables C-States support for power saving.

PCH-FW Configuration

This section is used to configure the firmware update options.



ME State

Displays the status of ME state. When the status is disabled, ME will be placed into ME Temporarily Disabled Mode.

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.

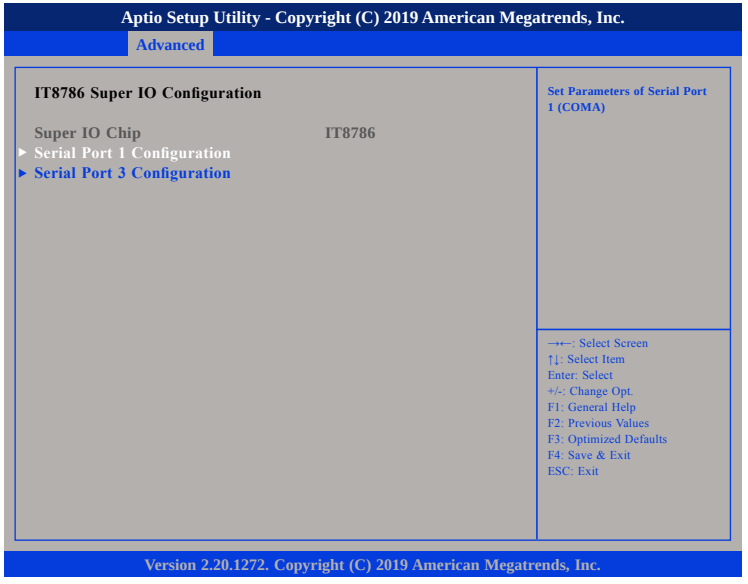
TPM2.0 UEFI Spec Version
Configures the TPM2.0 UEFI spec version.

Physical Presence Spec Version
Configures the physical presence spec version.

Device Select
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 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.

IT8786 Super IO Configuration

This section is used to configure the serial ports.



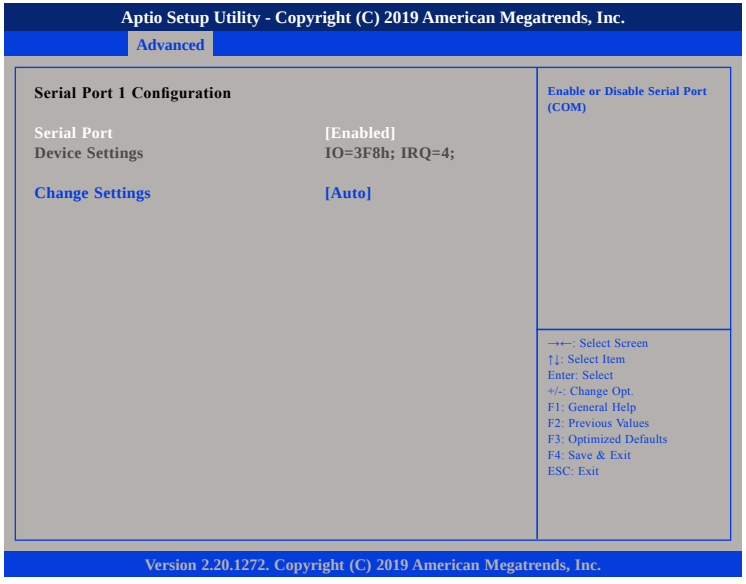
Super IO Chip
Displays the Super I/O chip used on the board.

Serial Port 1 Configuration
Configuration settings for serial port 1.

Serial Port 3 Configuration
Configuration settings for serial port 3.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

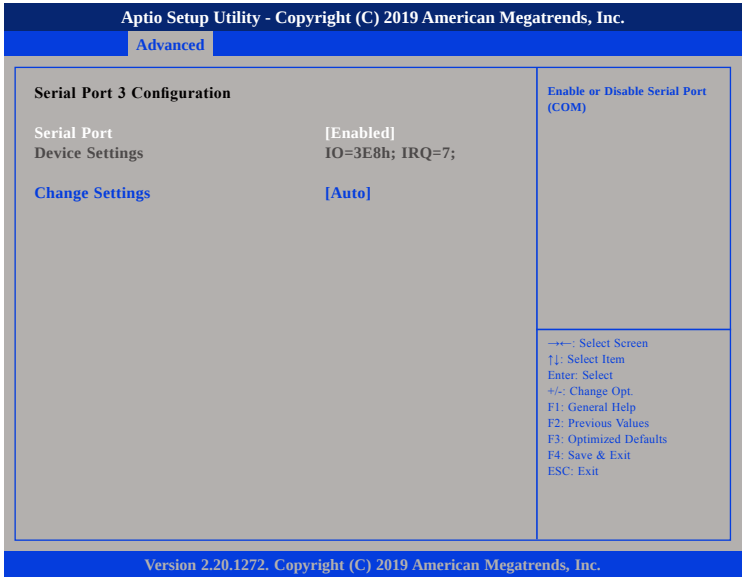
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 3 Configuration

This section is used to configure serial port 3.



Serial Port

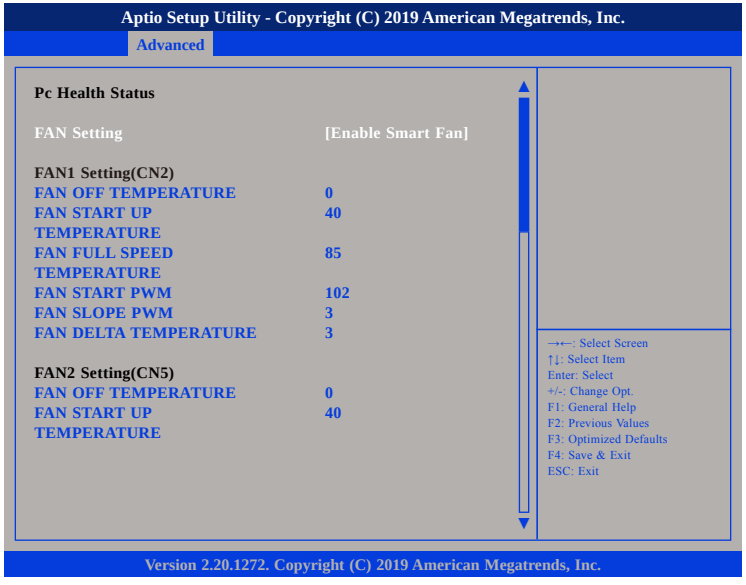
Enables or disables the serial port.

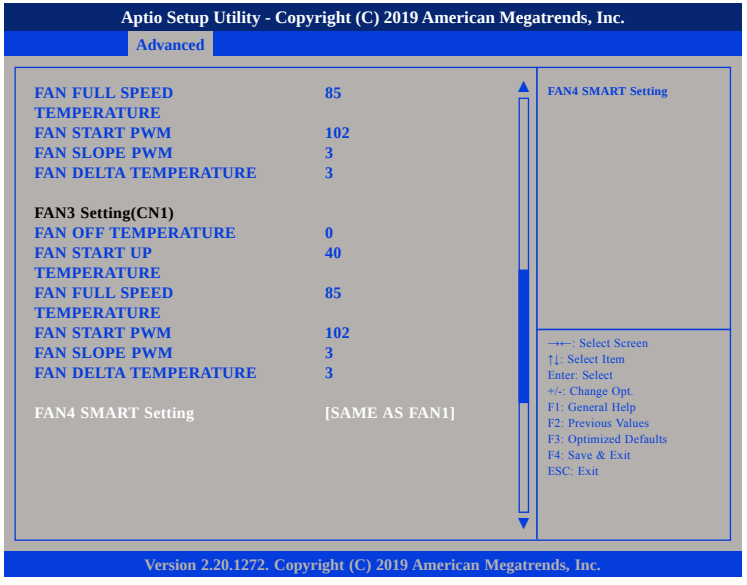
Change Settings

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.





FAN Setting
Configures the operating mode of the fan.

FAN OFF TEMPERATURE
Configures the temperature to turn the fan off.

FAN ON TEMPERATURE
Configures the temperature to turn the fan on.

FAN FULL SPEED
Configures the temperature to run the fan at full speed.

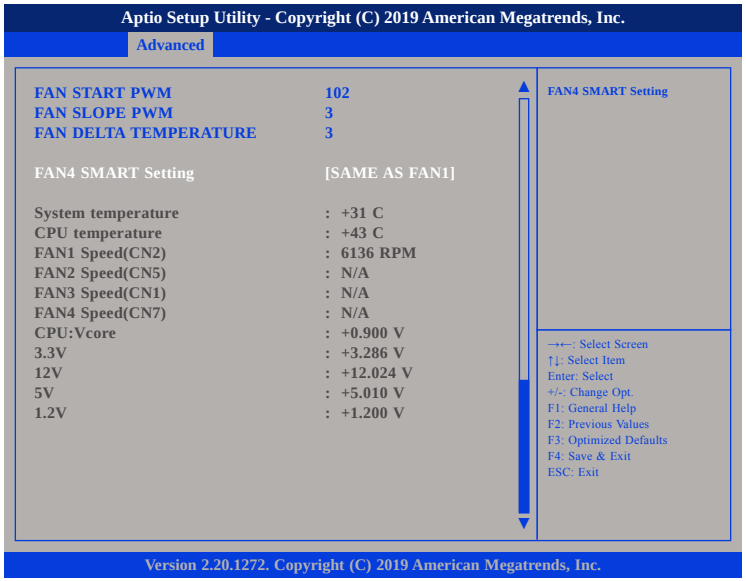
FAN START PWM
Configures the start PWM value of the fan. This is used to set the starting fan speed.

FAN SLOPE PWM
Configures the slope PWM value of the fan. This is used to control the rate of the fan speed based on temperature changes

FAN DELTA TEMPERATURE
Configures the delta temperature of the fan.

FAN4 SMART Setting
Configures the smart fan setting of FAN4.

Hardware Monitor Cont.



System and CPU temperature

Detects and displays the current system and CPU temperature.

Fan1 to Fan4 Speed

Detects and displays the current fan1 to fan4 speed.

CPU:Vcore to 1.2V

Detects and displays the output voltages.

Serial Port Console Redirection

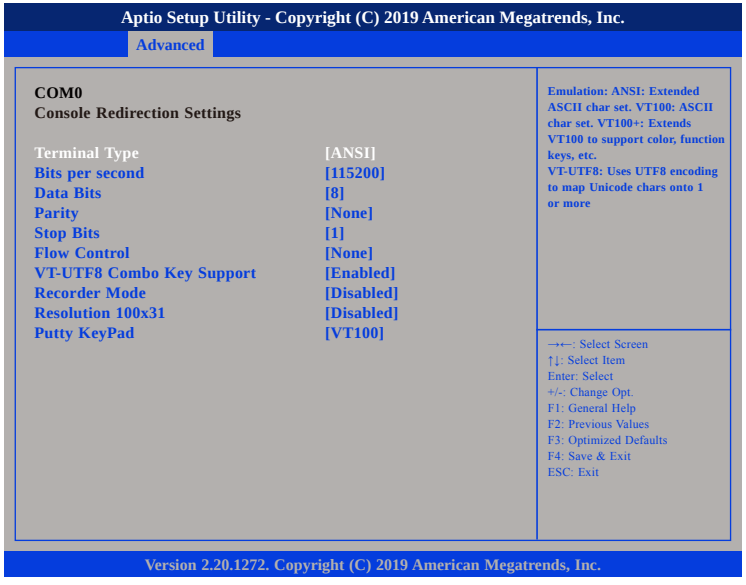
This section is used to configure the serial port that will be used for console redirection.

Console Redirection

Enables or disables console redirection.

Console Redirection Settings (COM0)

Specifies how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible 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.

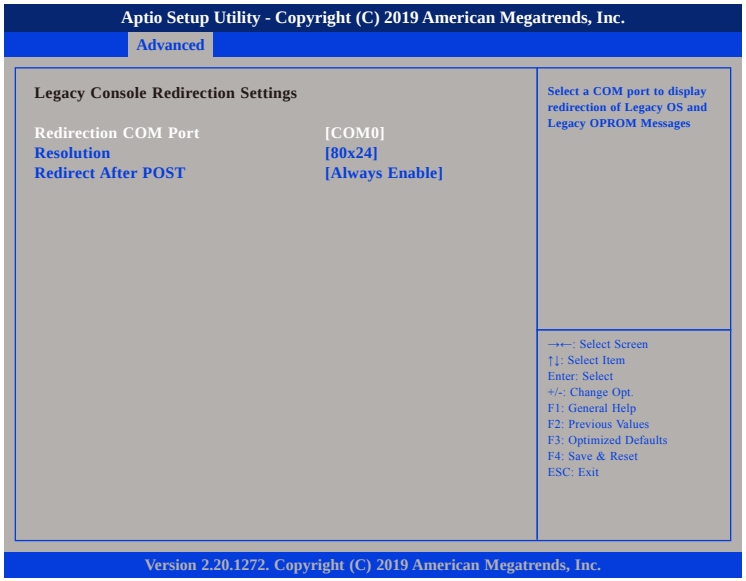
Resolution 100x31

Enables or disables extended terminal resolution.

Putty Keypad

Selects the Putty keyboard emulation type.

Legacy Console Redirection Settings



Redirection COM Port

Configures a COM port to display redirection of legacy OS and legacy OPROM messages.

Resolution

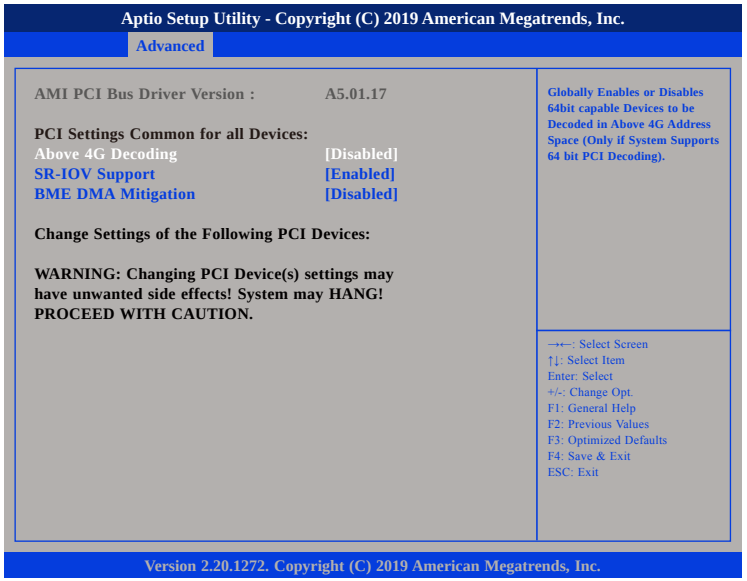
Configures the legacy OS redirection resolution.

Redirect After POST

Enables or disables redirection after POST.

PCI Subsystem Settings

This section is used to configure the PCI.



Above 4G Decoding

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

SR-IOV Support

Enables or disables SR-IOV support.

BME DMA Mitigation

Enables or disables the function to re-enable bus master attribute during PCI enumeration for PCI bridges after SMM is locked.

USB Configuration

This section is used to configure the USB.

Legacy USB Support

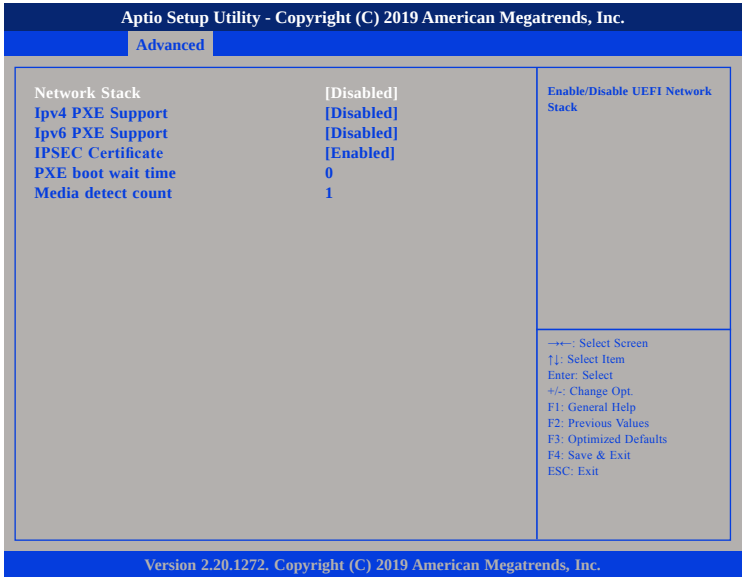
Enable Enables Legacy USB.
Auto Disables support for Legacy when no USB devices are connected.
Disable Keeps USB devices available only for EFI applications.

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.

Network Stack

This section is used to configure the network stack.



Network Stack

Enables or disables UEFI network stack.

IPv4 PXE Support

Enables or disables IPv4 PXE support. If disabled, the IPv4 boot option will not be created.

IPv6 PXE Support

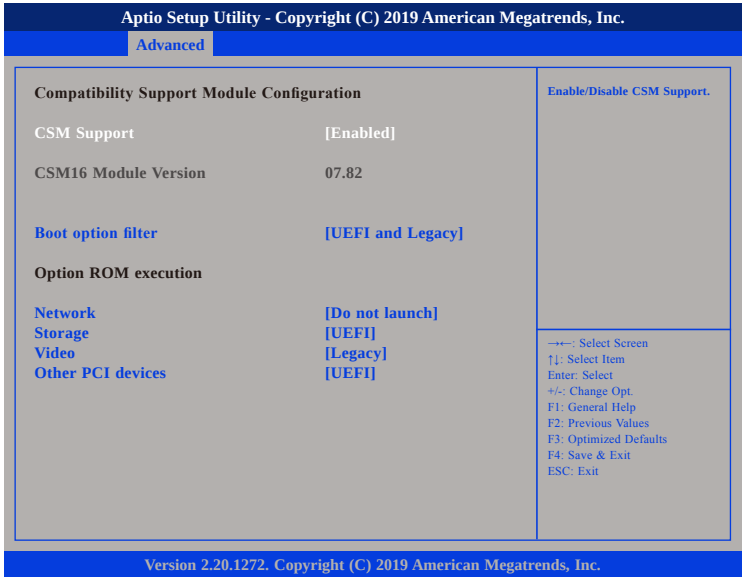
Enables or disables IPv6 PXE support. If disabled, the IPv6 boot option will not be created.

IPSEC Certificate
Enables or disables IPSEC certificate.

PXE boot wait time
Configures the wait time to press the ESC key to abort the PXE boot.

Media detect count
Configures the number of times the media will be checked.

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.

Boot Option Filter
Configures which devices the system will boot from.

Network
Controls the execution of UEFI and Legacy PXE OpROM.

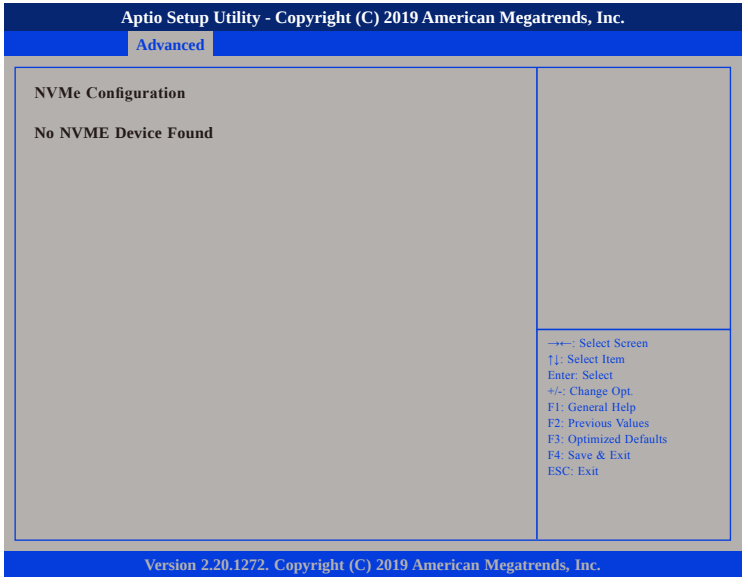
Storage
Controls the execution of UEFI and Legacy Storage OpROM.

Video
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI Devices
Configures the OpROM execution policy for devices other than Network, Storage or Video.

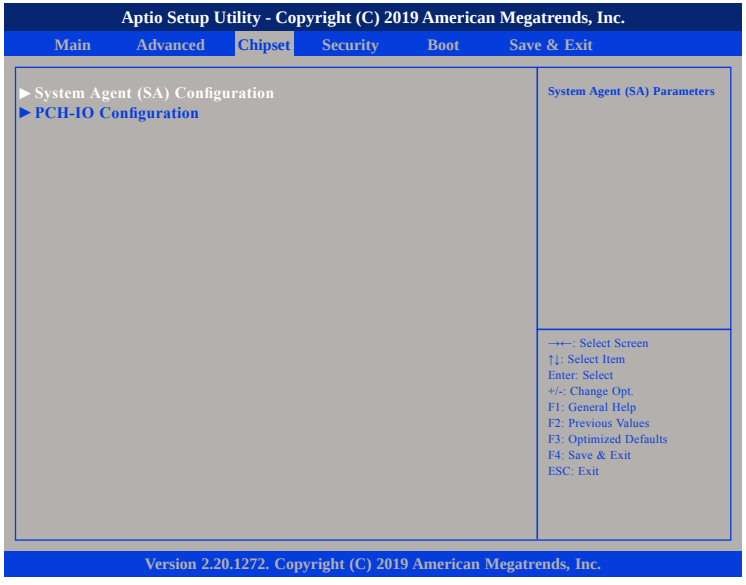
NVMe Configuration

This section is used to display information on the NVMe devices installed.



Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



System Agent (SA) Configuration
This field is used to configure System Agent (SA) parameters.

PCH-IO Configuration
This field is used to configure PCH parameters.

System Agent (SA) Configuration

Memory Configuration
Configures the memory settings.

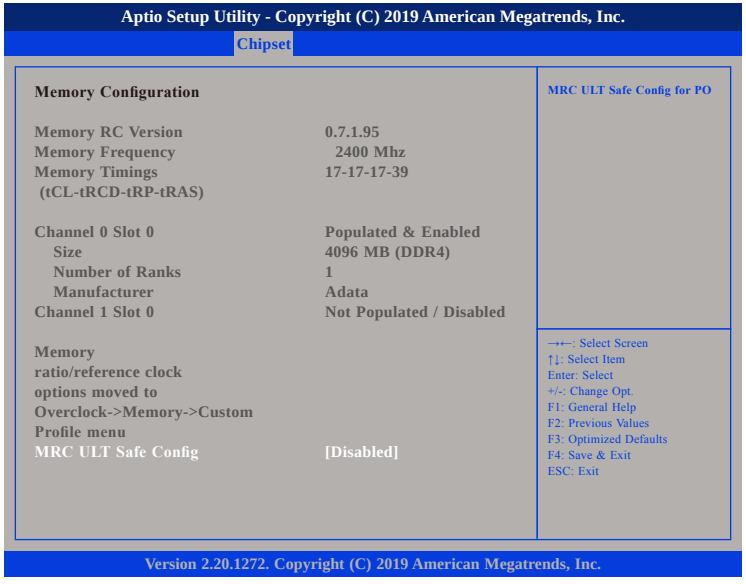
Graphics Configuration
Configures the graphics chip settings.

PEG Port Configuration
Configures the PEG Port settings.

VT-d
Enables or disables VT-d function on MCH.

X2APIC Opt Out
Enables or disables X2APIC mode.

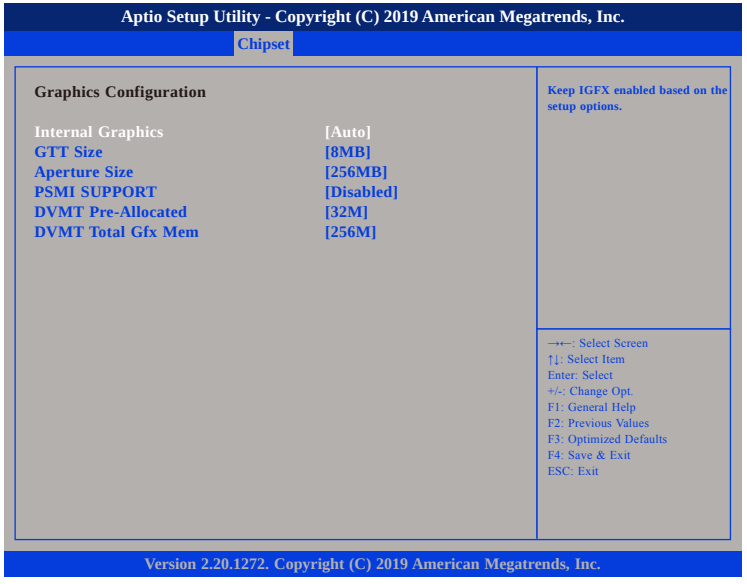
Memory Configuration



Memory Configuration
Detects and displays information of the memory installed in the system.

MRC ULT Safe Config
Enables or disables MRC ULT Safe Config for PO.

Graphics Configuration



Internal Graphics
Keep IGD enabled based on the setup options.

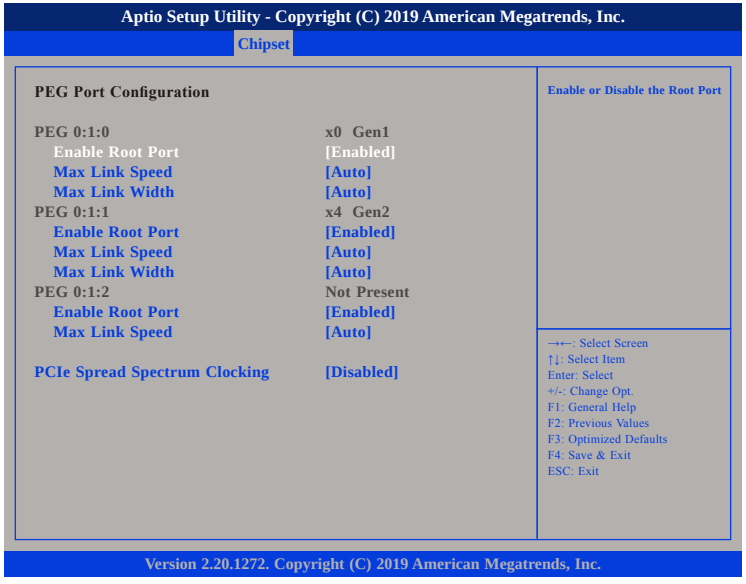
GTT Size and Aperture Size
Configures the GTT memory size and the Aperture size.

PSMI SUPPORT
Enables or disables Power Supply Management Interface (PSMI) support.

DVMT Pre-Allocated
Configures the DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem
Configures the DVMT 5.0 total graphic memory size used by the IGD.

PEG Port Configuration



Enable Root Port (PEG 0:1:0, 0:1:1 and 0:1:2)
Enables or disables the root port.

Max Link Speed (PEG 0:1:0, 0:1:1 and 0:1:2)
Configures the maximum link speed of the PEG device.

Max Link Width (PEG 0:1:0, 0:1:1 and 0:1:2)
Configures the link speed to override the max link width set by bifurcation.

PCIe Spread Spectrum Clocking
Enables or disables PCIe Spread Spectrum Clocking for compliance testing.

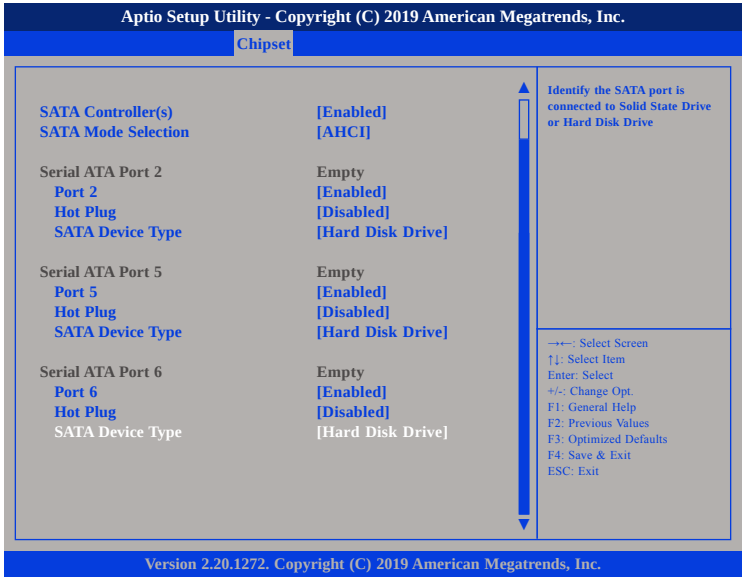
PCH-IO Configuration

SATA and RST Configuration
Enters the SATA and RST configuration sub-menu.

Network Configuration
Enters the network configuration sub-menu.

State After G3
Configures the PCH state after G3.

SATA And RST Configuration



SATA Controller(s)
Enables or disables the SATA controller.

SATA Mode Selection
Configures the SATA mode.

Port 2, Port 5 and Port 6
Enables or disables SATA port 2, port 5 and port 6.

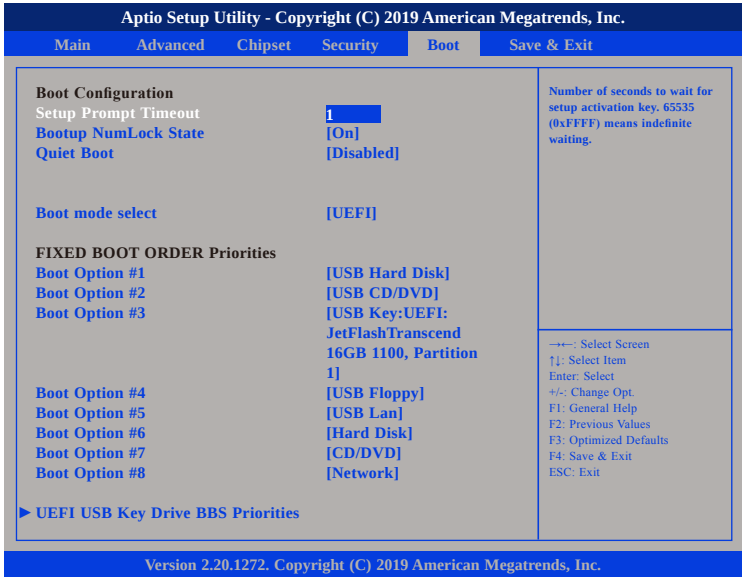
NETWORK CONFIGURATION

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.

Boot

This section is used to configure the boot features.



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.

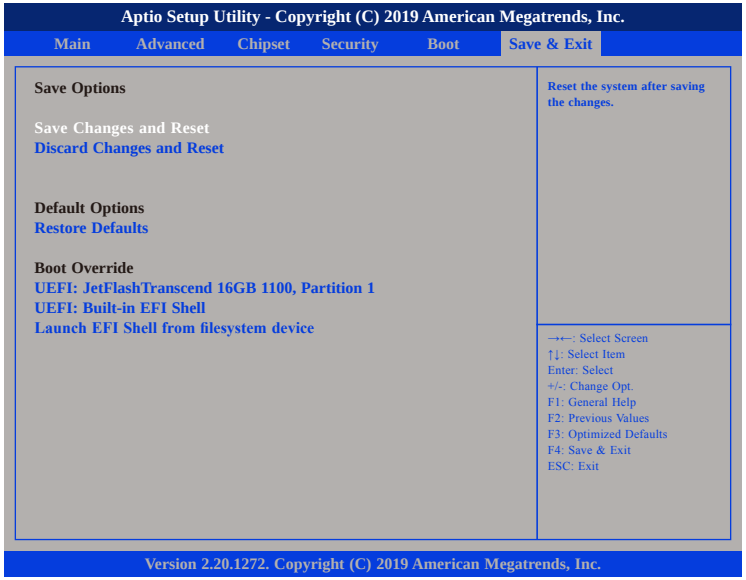
Fixed Boot Order Priorities

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

UEFI USB Key Drive BBS Priorities

Configures the boot device priority sequence from available UEFI USB key drives.

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>.