NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

NSA 7131

User Manual

NEXCOM International Co., Ltd.
Published January 2019

www.nexcom.com

Contents

Preface

Copyright iv
Disclaimer iv
Acknowledgements iv
Regulatory Compliance Statements iv
Declaration of Conformity iv
RoHS Compliance v
Warranty and RMA vi
Safety Information viii
Installation Recommendations viii
Safety Precautions ix
Technical Support and Assistance x
Conventions Used in this Manual x
Global Service Contact Information xi
Package Contents xiii
Ordering Information xiv

Chapter 1: Product Introduction

Overview 1
Key Features 1
Hardware Specifications 2
Knowing Your NSA 7131 3
  Front Panel 3
  Rear Panel 4

Chapter 2: Jumpers and Connectors

Before You Begin 5
Precautions 5
Jumper Settings 6
Locations of the Jumpers and Connectors 7
Connector Pin Definitions 8
  Internal Connectors 8
    VGA Connector 8
    SATA Connectors 8
    USB 2.0 Header (Reserved) 9
    LCM Header 9
    CPU Fan Connector 10
    ATX 4-pin Connector (Reserved) 10
    USB 3.0 Box Header 11
    8-pin ATX Power Connectors 11
    24-pin ATX Power Connector 12
    COM Port Header (Reserved) 12
    GPIO Pin Header (Reserved) 13
    PMBUS Header 13
    PSU TTL Header 14
    PCIe Slots 15
Block Diagram 17

Chapter 3: System Setup

Installing a CompactFlash (CF) Card 18
Installing a CPU 19
Installing a DIMM Memory Module 21

Chapter 4: BIOS Setup

About BIOS Setup 22
When to Configure the BIOS 22
Default Configuration 23
Entering Setup 23
Legends 23
BIOS Setup Utility 25
  Main 25
  Advanced 26
  Intel RC Setup 36
  Security 47
  Boot 48
  Save & Exit 49

PREFACE

Copyright

Disclaimer

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Acknowledgements

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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

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

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 3.3Vdc 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.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

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 7131 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	19S00713132X0	NSA 7131 ASSY		1
2	5044440031X00	Rubber Foot Kang Yang:RF20-5-4P	19.8x18x5.0mm	4
3	6012200052X00	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
4	6012200053X00	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
5	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1
6	50311F0109X00	Flat Head Screw Long Fei:F6#32Tx5 Nylok Black	F6#32Tx5 Black Nylok	16
7	50311F0162X00	Round Head Screw GW/Washer Long Fei	P4x8 iso/w NI	1
8	5040150001X00	NSA 7135 AL Handle VER:A Panadvance	78x58x8mm	1
9	6014605510X00	Outside Carton Label for NSA 7131 VER:A Label Jet	60x60mm ART Paper	1

Ordering Information

The following information below provides ordering information for NSA 7131.

Barebone

NSA 7131 (P/N: 10S00713132X0)

2U Intel® Xeon® E5-2600 v3 PCH C612, with LCM, 4 x swappable 3.5" HDD tray, 3 x swappable system fans, 4 x LAN module (NI/NX series) bays, 550W PSU

Model	P/N Controller	Interface	Type	Port Number	Bypass/Segment	Expansion Slot	Location Slot
NX 140F	10S20140F01X0	XL710-BM1	PCIe x8	4 SFP+	None	None	All Slot
NX 142F	10S20142F01X0	XL710-BM1	PCIe x8	4 SFP+	2 bypass	None	All Slot
NX 120F	10S20120F00X0	X710-BM2	PCIe x8	2 SFP+	None	One	All Slot
NI 140F	10SK000NI02X0	i350AM4x1	PCIe x8	4 SFP	None	None	All Slot
NI 180F	10S10180F01X0	i350AM4x2	PCIe x8	8 SFP	None	One	All Slot
NI 142C	10SK000NI03X0	i350AM4x1	PCIe x8	4 Copper	2 bypass	None	All Slot
NI 180C	10S10180C01X0	i350AM4x2	PCIe x8	8 Copper	None	None	All Slot
NI 184C	10S10184C01X0	i350AM4x2	PCIe x8	8 Copper	4 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

Key Features

- Dual Intel® Xeon® processor E5-2600 v4/v3 product family
- Support DDR4 1866/2133 ECC & REG
- Support 4 x 3.5” swappable HDD bays
- Support LCD module
- Four LAN module slots

Hardware Specifications

Main Board

- NSB7131
- Intel® Xeon® processor E5-2600 v4/v3 product family
- Intel® Wellsburg C612 PCH

Main Memory

- 8 x DDR4 1866/2133 DIMM sockets, up to 512GB ECC & REG SDRAM max. 256GB

LAN Features

- Swappable LAN modules
- Support Intel® i350/Intel® XL710 copper/fiber ports
- Support 10/100/1000/10G link speed
- LAN bypass
  * Please see LAN module list information

I/O Interface-Front

- 1 x Management port (LAN chip: Intel® i210)
- 2 x USB 2.0 ports
- 1 x RJ45 type console port
- 4 x PCIe Gen.3 LAN module slots (x8, x8, x4, x4)

Devices

- 1x onboard CF card socket

Power Input

- 550W 1+1 CRPS redundant power supply

Chassis Dimensions

- Chassis dimension: 550mm x 438mm x 88mm
- Carton dimension: 767mm x 60mm x 242mm

Weight

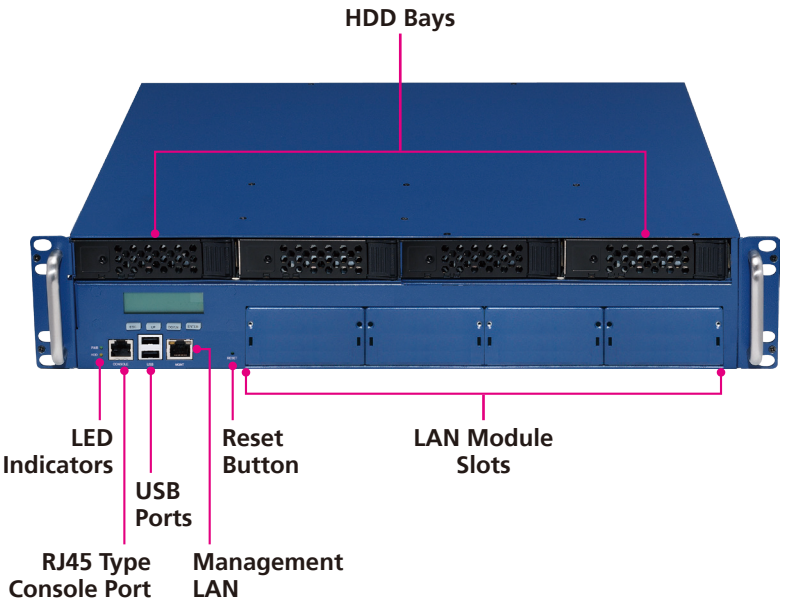
- Without packing: 14.045kg
- With packing: 19.04kg

Certifications

- CE approval
- FCC Class A
- UL

Knowing Your NSA 7131

Front Panel



HDD Bays
Four 3.5" HDD swappable bays.

LAN Module Slots
Four LAN module slots.

LED Indicators
Indicates the power status and storage drive activity of the system.

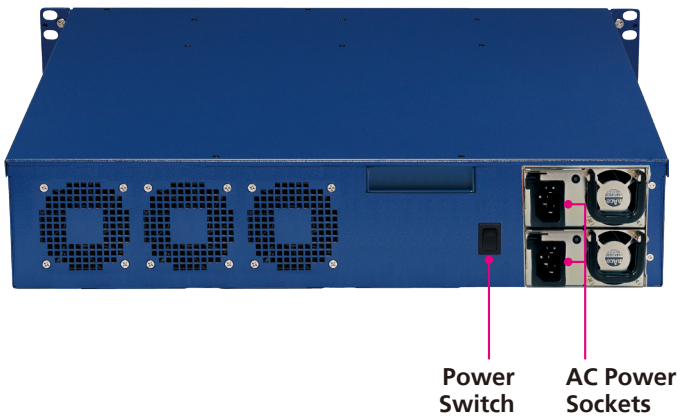
Console Port
Used to connect RJ45 type console port.

USB Ports
Used to connect USB 2.0/1.1 devices.

Management LAN Ports
2 LAN ports used for managing the system.

Reset Button
Press to restart the system.

Rear Panel



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

AC Power Sockets
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 7131 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:

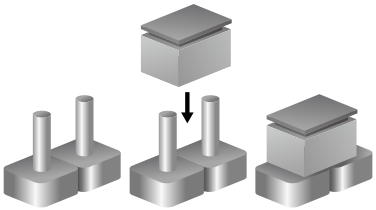
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

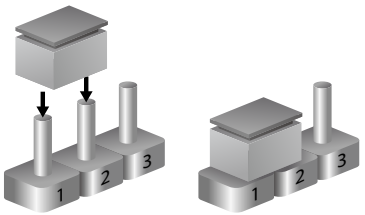
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

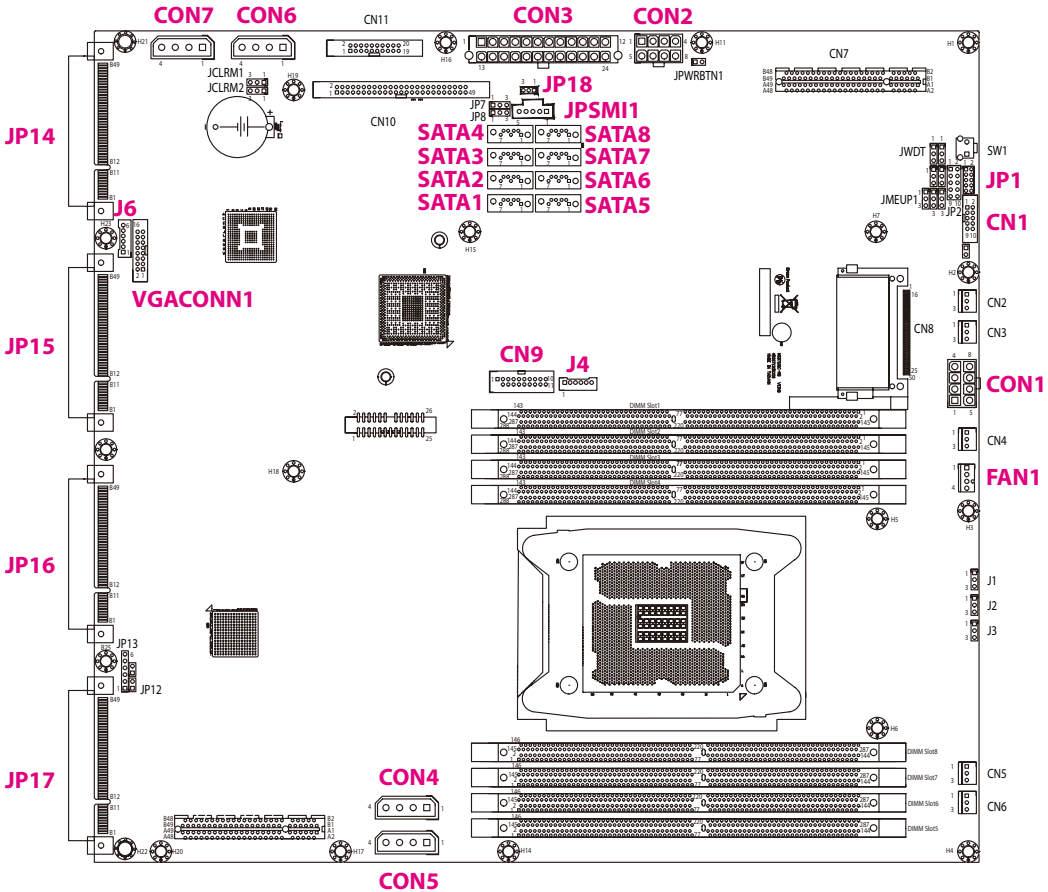


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

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

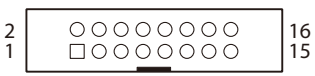


Connector Pin Definitions

Internal Connectors

VGA Connector

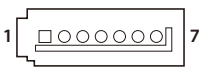
Connector type: 2x8 16-pin header, 2.0mm pitch
Connector location: VGACONN1



Pin	Definition	Pin	Definition
1	DACROA_B	2	DACGOA_B
3	DACBOA_B	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA_VCC	10	GND
11	NC	12	DDC_DATAO_B
13	AHSYNCO_B	14	AVSYNCO_B
15	DDC_CLKO_B	16	NC

SATA Connectors

Connector type: Standard Serial ATA 7P (1.27mm, SATA-M-180)
Connector location: SATA1 to SATA8



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

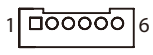
USB 2.0 Header (Reserved)

Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J4

Pin	Definition	Pin	Definition
1	5V	2	DN2
3	DP2	4	DN3
5	DP3	6	GND

LCM Header

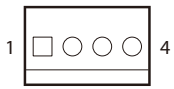
Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J6



Pin	Definition	Pin	Definition
1	TX	2	RX
3	GND	4	5V
5	LED_KR_N	6	LED_KG_N

CPU Fan Connector

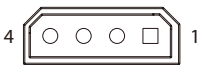
Connector type: 1x4 4-pin wafer
Connector location: FAN1



Pin	Definition	Pin	Definition
1	GND	2	P12V_CPU
3	FAN_TACH	4	FAN_PWM

ATX 4-pin Connector (Reserved)

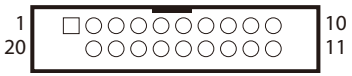
Connector type: 1x4 4-pin header, 5.08mm pitch
Connector location: CON4, CON5, CON6 and CON7



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

USB 3.0 Box Header

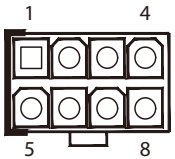
Connector type: 2x10 20-pin header, 2.0mm pitch
Connector location: CN9



Pin	Definition	Pin	Definition
1	PV5_USB01_C	2	USB2_L_DN1
3	USB2_L_DP1	4	GND
5	USB3_L_RX_N2	6	USB3_L_RX_P2
7	GND	8	USB3_L_TX_N2
9	USB3_L_TX_P2	10	GND
11	USB2_L_DP0	12	USB2_L_DN0
13	GND	14	USB3_L_TX_P1
15	USB3_L_TX_N1	16	GND
17	USB3_L_RX_P1	18	USB3_L_RX_N1
19	PV5_USB01_C	20	NC

8-pin ATX Power Connectors

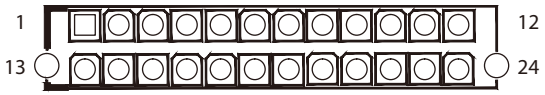
Connector type: 2x4 8-pin boxed header, 4.2mm pitch
Connector location: CON1 and CON2



Pin	Definition	Pin	Definition
1	GND	2	GND
3	GND	4	GND
5	P12V	6	P12V
7	P12V	8	P12V

24-pin ATX Power Connector

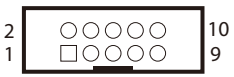
Connector type: 2x12 24-pin boxed header, 4.2mm pitch
Connector location: CON1



Pin	Definition	Pin	Definition
1	ATX_P3V3	2	ATX_P3V3
3	GND	4	P5V
5	GND	6	P5V
7	GND	8	PW-OK
9	P5VSB	10	P12V
11	P12V	12	ATX_P3V3
13	ATX_P3V3	14	-12V
15	GND	16	PS-ON
17	GND	18	GND
19	GND	20	RES/-5V
21	P5V	22	P5V
23	P5V	24	GND

COM Port Header (Reserved)

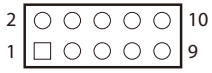
Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: CN1



Pin	Definition	Pin	Definition
1	SP_DCD2	2	SP_RXD2
3	SP_TXD2	4	SP_DTR2
5	GND	6	SP_DSR2
7	SP_RTS2	8	SP_CTS2
9	SP_RI2	10	GND

GPIO Pin Header (Reserved)

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: JP1



Pin	Definition	Pin	Definition
1	P5V	2	GND
3	SIO_GP32	4	SIO_GP06
5	SIO_GP03	6	SIO_GP07
7	SIO_GP04	8	SIO_GP76
9	SIO_GP05	10	SIO_GP77

PMBUS Header

Connector type: 1x5 5-pin header, 2.54mm pitch
Connector location: JPSMI1

Pin	Definition	Pin	Definition
1	PMBUS CLK	2	PMBUS DATA
3	PMBUS ALERT#(Reserve)	4	GND
5	NC		

PSU TTL Header

Connector type: 1x3 3-pin header, 2.0mm pitch
Connector location: JP18

Pin	Definition
1	PSU_status1
2	PSU_status2
3	GND

PCIe Slots

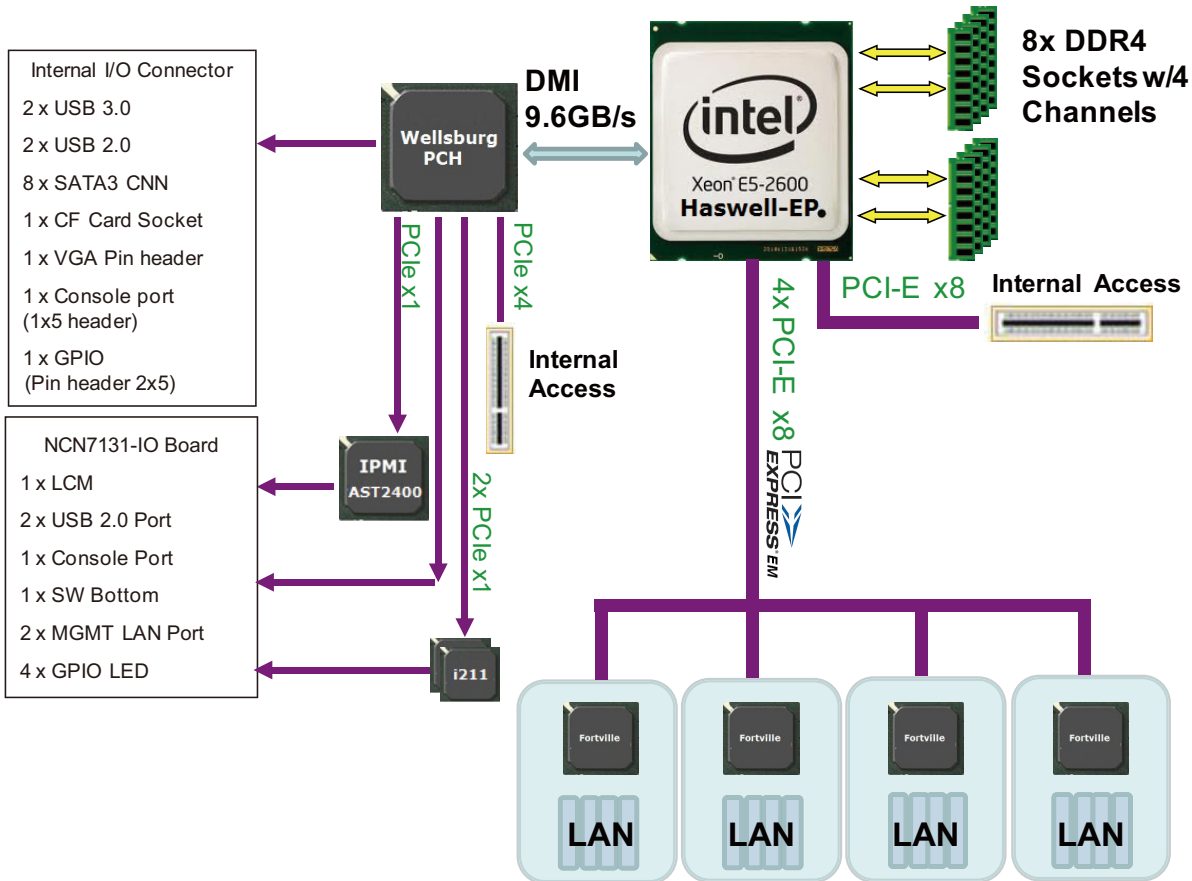
Connector location: JP14, JP15, JP16 and JP17

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	SMBDATA
A7	NC	B7	GND
A8	NC	B8	3.3V
A9	3.3V	B9	NC
A10	3.3V	B10	P3V3AUX
A11	PRSNT#	B11	WAKE#
A12	GND	B12	BYPASS GATE Enable
A13	CLK_P	B13	GND
A14	CLK_N	B14	TX0P
A15	GND	B15	TX0N
A16	RX0P	B16	GND

Pin	Definition	Pin	Definition
A17	RX0N	B17	NC
A18	GND	B18	GND
A19	BYPASS_A Enable	B19	TX1P
A20	GND	B20	TX1N
A21	RX1P	B21	GND
A22	RX1N	B22	GND
A23	GND	B23	TX2P
A24	GND	B24	TX2N
A25	RX2P	B25	GND
A26	RX2N	B26	GND
A27	GND	B27	TX3P
A28	GND	B28	TX3N
A29	RX3P	B29	GND
A30	RX3N	B30	BYPASS_B Enable
A31	GND	B31	NC
A32	BYPASS_C Enable	B32	GND

Pin	Definition	Pin	Definition
A33	BYPASS_D Enable	B33	TX4P
A34	GND	B34	TX4N
A35	RX4P	B35	GND
A36	RX4N	B36	GND
A37	GND	B37	TX5P
A38	GND	B38	TX5N
A39	RX5P	B39	GND
A40	RX5N	B40	GND
A41	GND	B41	TX6P
A42	GND	B42	TX6N
A43	RX6P	B43	GND
A44	RX6N	B44	GND
A45	GND	B45	TX7P
A46	GND	B46	TX7N
A47	RX7P	B47	GND
A48	RX7N	B48	NC
A49	GND	B49	GND

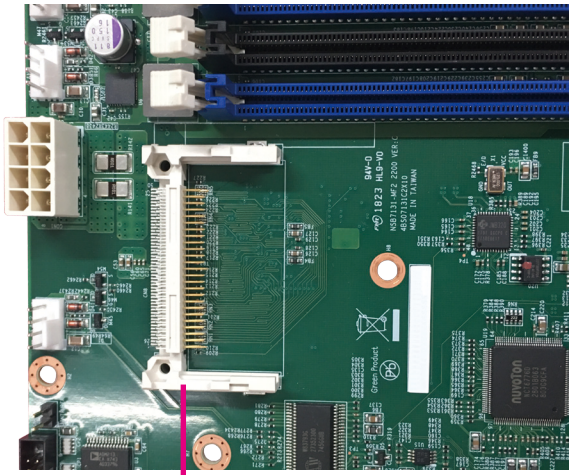
Block Diagram



Chapter 3: System Setup

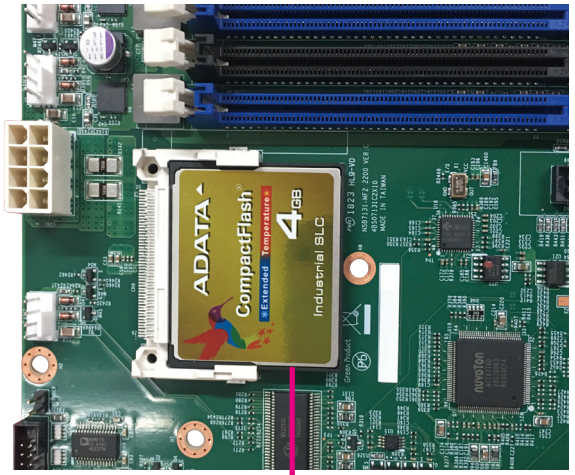
Installing a CompactFlash (CF) Card

1. With the chassis cover removed, locate the CF slot on the motherboard.



CF Slot

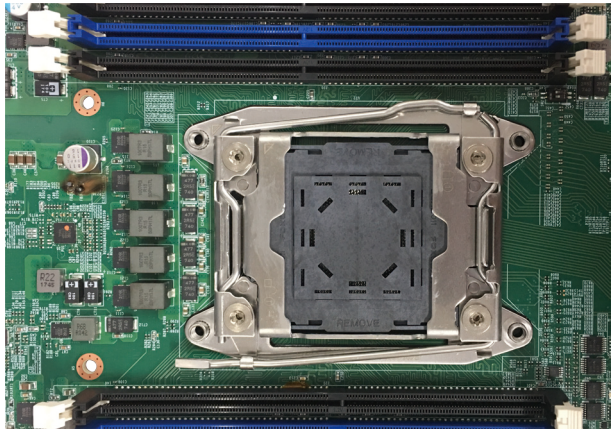
2. Insert the CF module until it is completely seated into the slot.



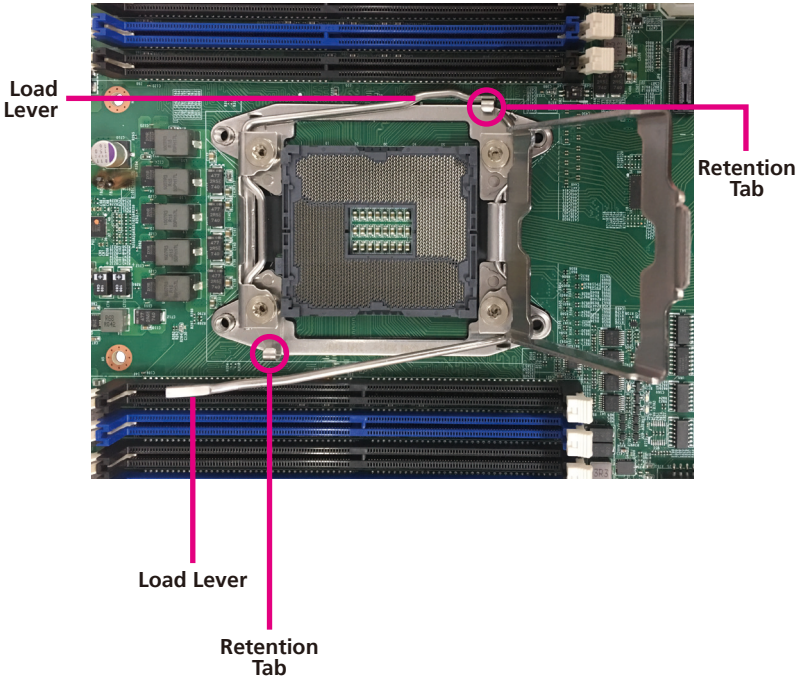
CF Module

Installing a CPU

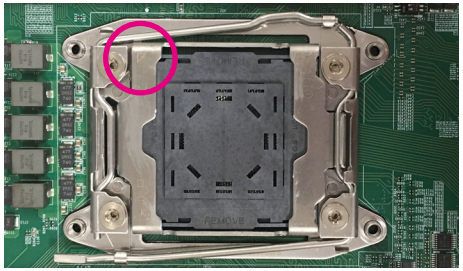
1. Locate the CPU socket on the motherboard.

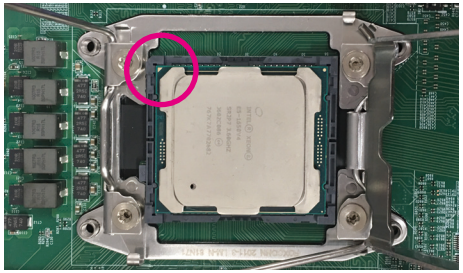


2. Unlock the socket by pushing the two load levers down, moving them sideways until they are released from the retention tabs; then lift the load levers up and remove the CPU protective cap.



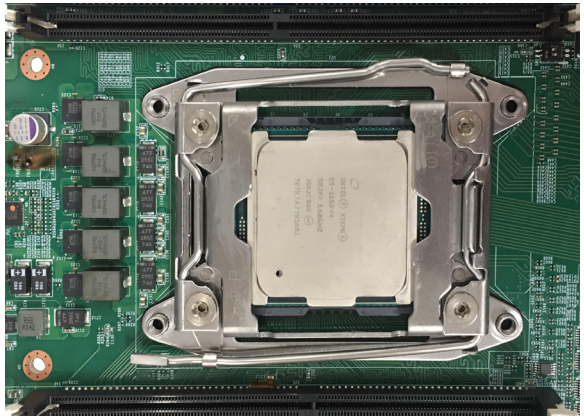
3. Insert the CPU into the socket. The triangular edge on the CPU must align with the corner of the CPU socket shown on the photo.





- 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.

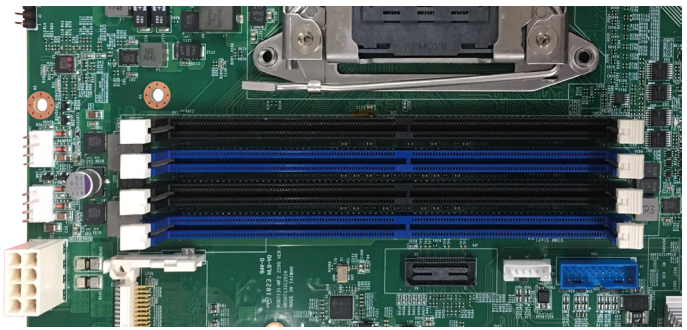
4. Close the load plate and then hook the load levers under the retention tabs.



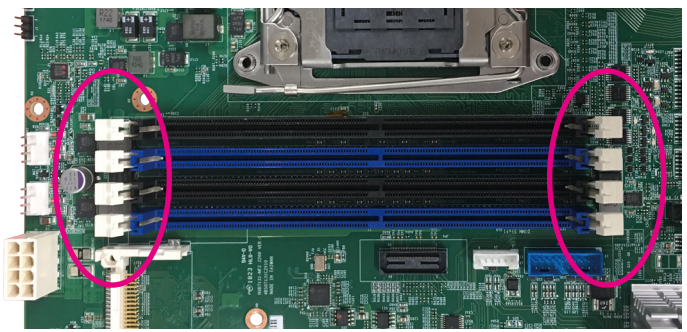
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

Installing a DIMM Memory Module

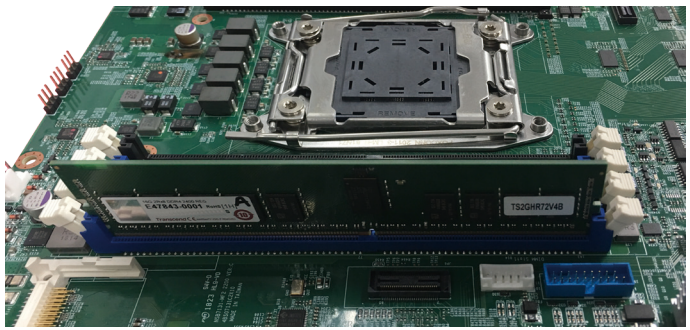
1. Locate the DIMM sockets on the motherboard.



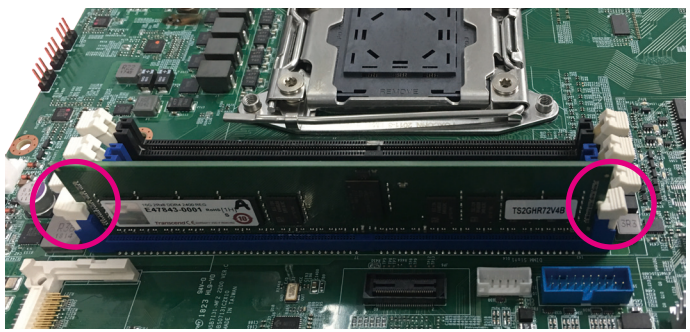
2. Release the locks on the DIMM sockets.



3. Insert the module into the socket at an 90 degree angle. Apply firm even pressure to each end of the module until it slips into the socket.



4. While pushing the module into position, the lock will close automatically.



Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the NSA 7131. 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

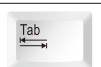
When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- 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 resets the system.
	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 January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 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.

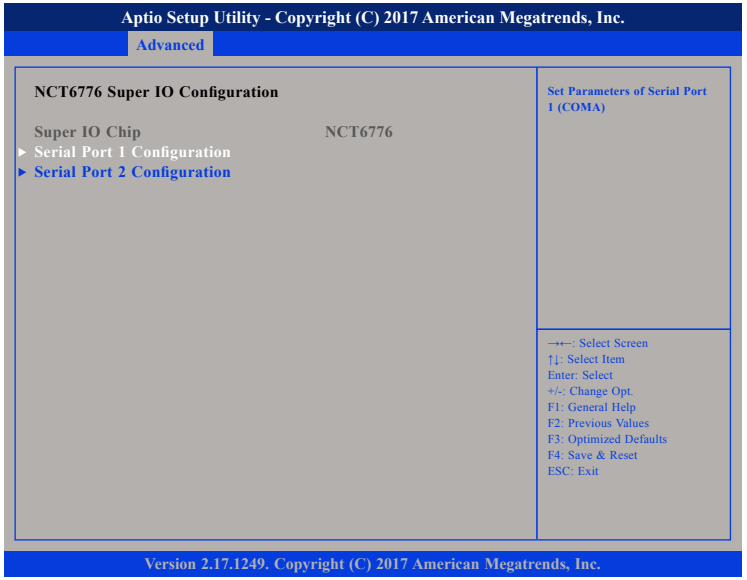
Advanced

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.

NCT6776 Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.



Super IO Chip

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

Serial Port 1 Configuration

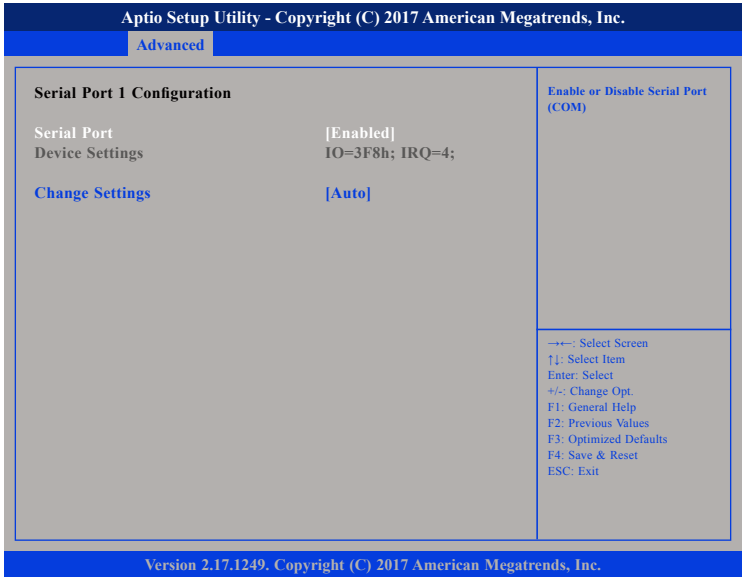
Configuration settings for serial port 1.

Serial Port 2 Configuration

Configuration settings for serial port 2.

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 2 Configuration

This section is used to configure serial port 2.

Serial Port

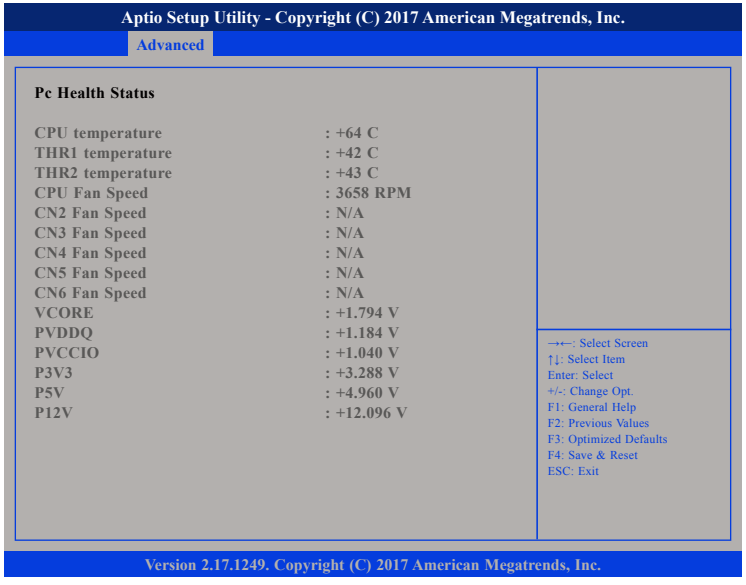
Enables or disables the serial port.

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, THR1 and THR2 temperature

Detects and displays the current CPU, THR1 and THR2 temperature.

CPU Fan Speed to CN6 Fan Speed

Detects and displays the current CPU Fan, CN2, CN3, CN4, CN5 and CN6 speed.

VCORE to P12V

Detects and displays the output voltages.

AST SEC Super IO Configuration

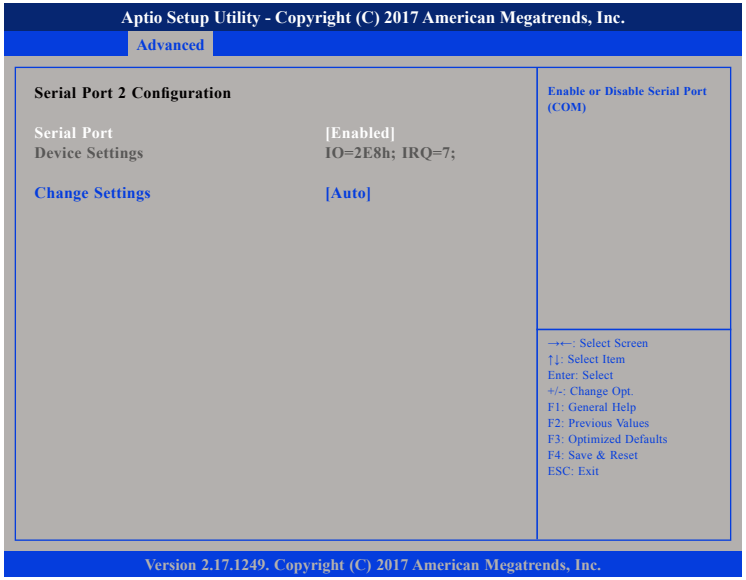
This section is used to configure the I/O functions supported by the onboard AST SEC Super I/O chip.

Serial Port 2 Configuration

Configuration settings for serial port 2.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

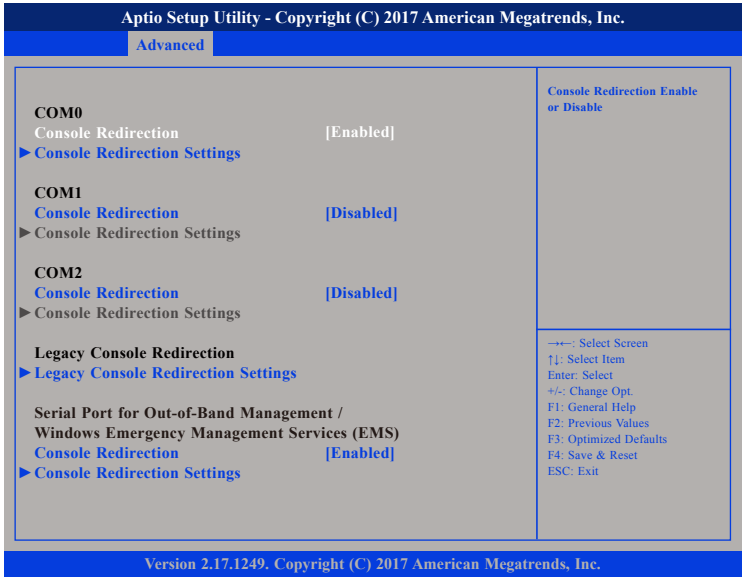
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port Console Redirection

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

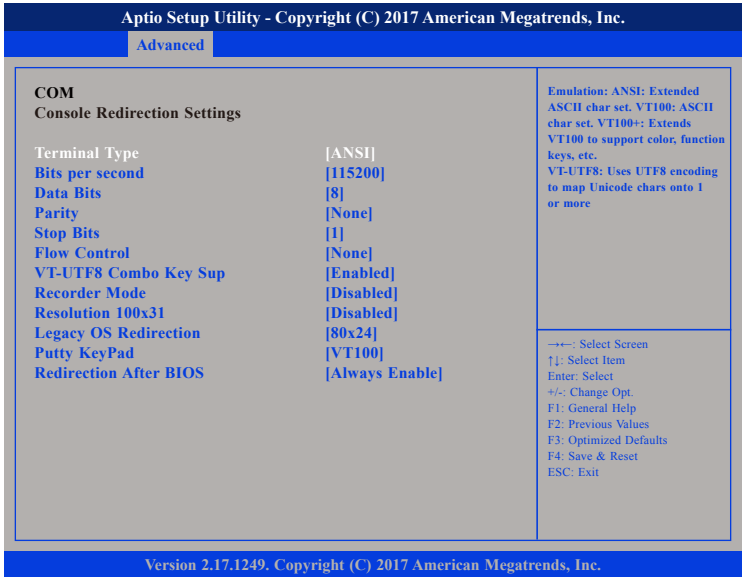


Console Redirection

Enables or disables the console redirection.

Console Redirection Settings (COM0 to COM2)

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.

Data Bits
The options are 7 and 8.

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.

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 combination key support for ANSI/VT100 terminals.

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

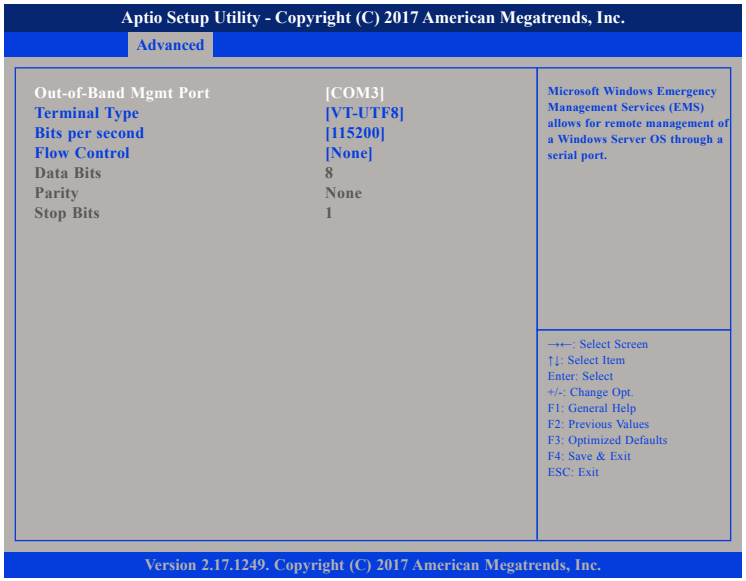
Resolution 100x31
Enables or disables extended terminal resolution.

Legacy OS Redirection
Selects the number of rows and columns that support redirection.

Putty KeyPad
Selects the Putty keyboard emulation type.

Redirection After BIOS
The settings specify if BootLoader is selected, then Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy Console Redirection is enabled for Legacy OS.

Serial Port for Out-of-Band Management



Out-of-Band Mgmt Port

Configures the out-of-band management port. Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS via a serial port.

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.

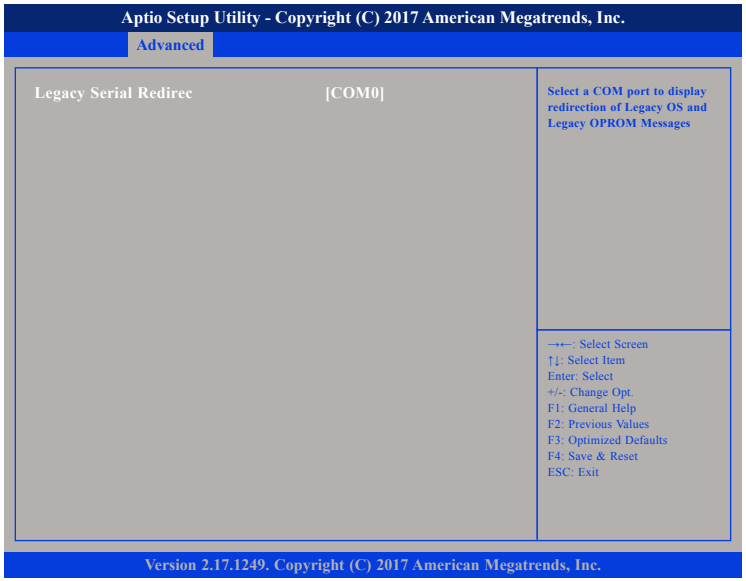
Bits Per Second

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

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.

Legacy Console Redirection Settings



Legacy Serial Redirection

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

PCI Subsystem Settings

This section is used to configure the PCI.

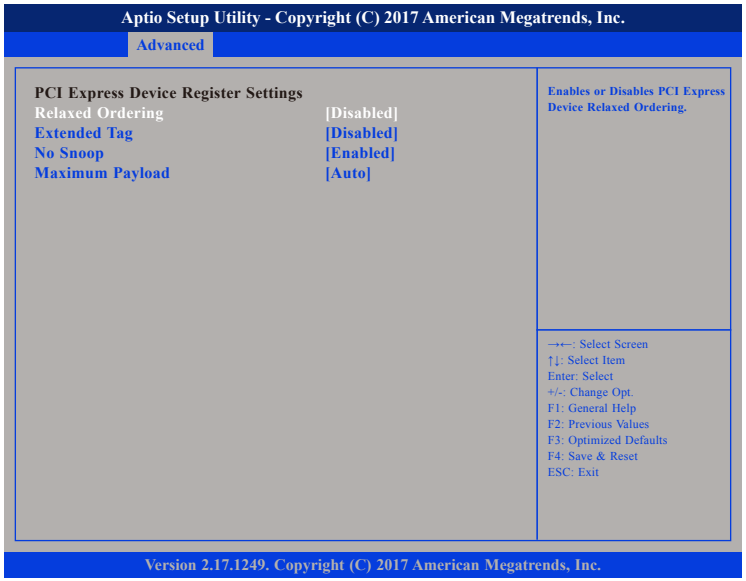
Above 4G Decoding

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

SR-IOV Support

Enables or disables SR-IOV support.

PCI Express Settings



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

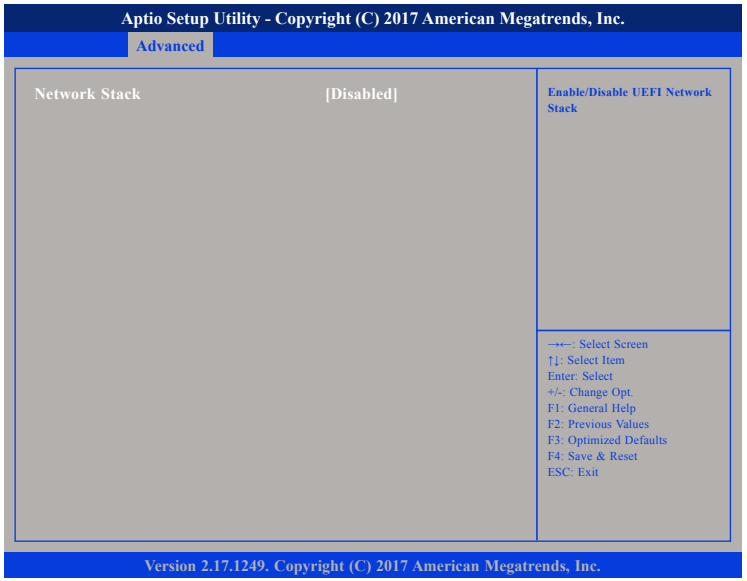
Extended Tag
When this function is enabled, it allows a device to use 8-bit tag field as a request.

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.

Network Stack Configuration

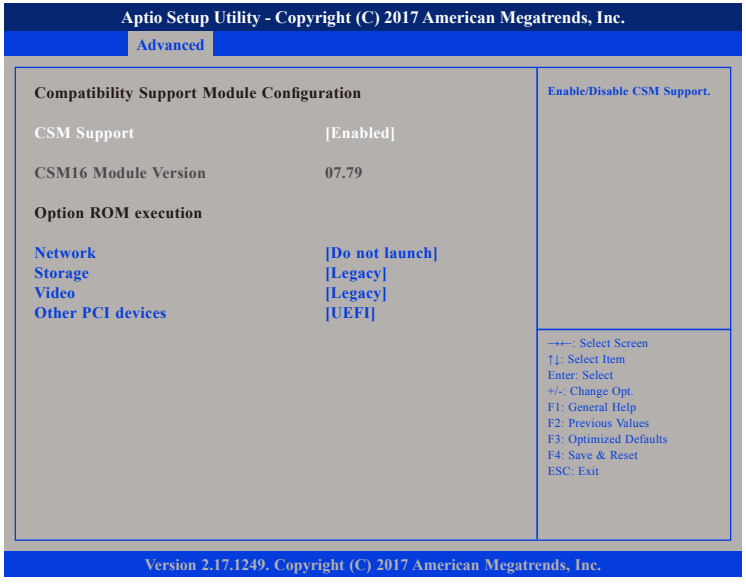
This section is used to configure the network stack.



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.

Network

Enables or disables the boot option for legacy network devices.

Storage

Enables or disables the boot option for legacy storage devices.

Video

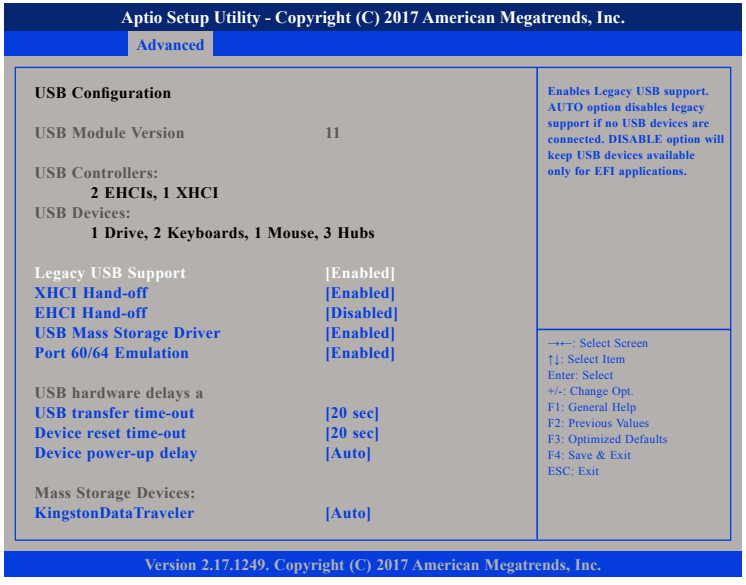
Enables or disables the boot option for legacy video devices.

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.

EHCI Hand-Off

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

USB Mass Storage Driver

Enables or disables USB mass storage device 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.

USB Transfer Time-out

The time-out value for control, bulk, and Interrupt transfers.

Device Reset Time-out

Selects the USB mass storage device's start unit command timeout.

Device Power-up Delay

Maximum time the value will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

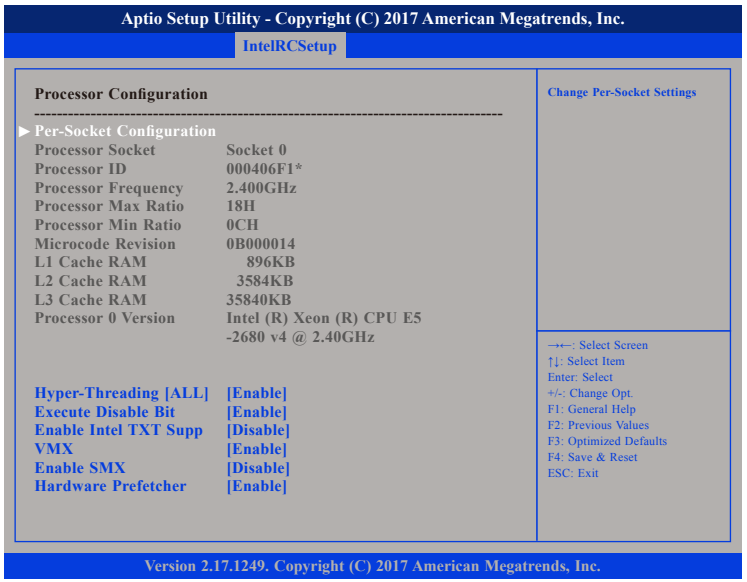
Mass Storage Devices

Configures the mass storage device emulation type. AUTO enumerates devices according to their media format. Optical drives are emulated as CDROM, drives with no media will be emulated according to a drive type.

Intel RC Setup

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

Processor Configuration



Hyper-Threading [ALL]
Enables or disables hyper-threading technology.

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

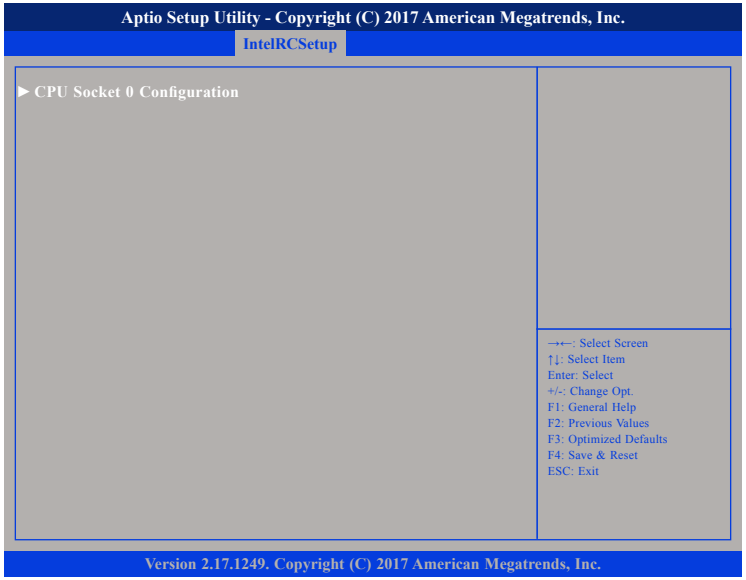
Enable Intel® TXT Support
Enables or disables Intel TXT support.

VMX
Enables or disables Virtual Machine Extensions.

Enable SMX
Enables or disables Secure Mode Extensions.

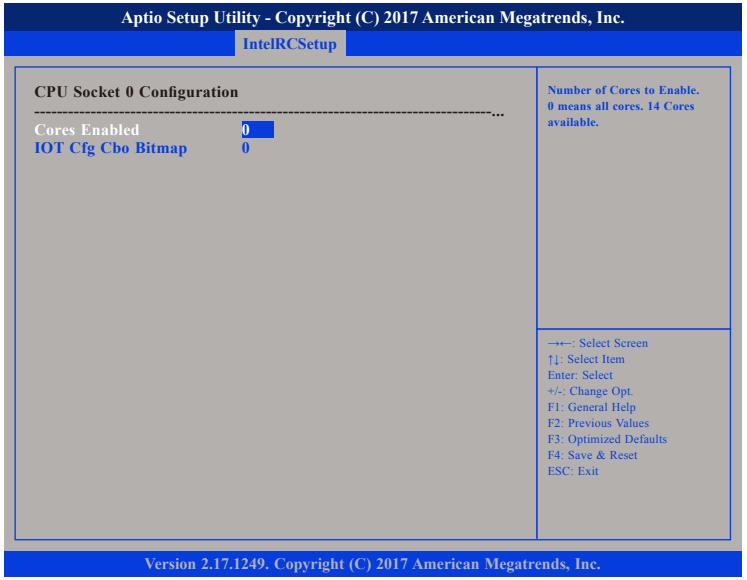
Hardware Prefetcher
Enables or disables the MLC streamer prefetcher.

Per-Socket Configuration



CPU Socket 0 Configuration
Processor settings for the CPU on socket 0.

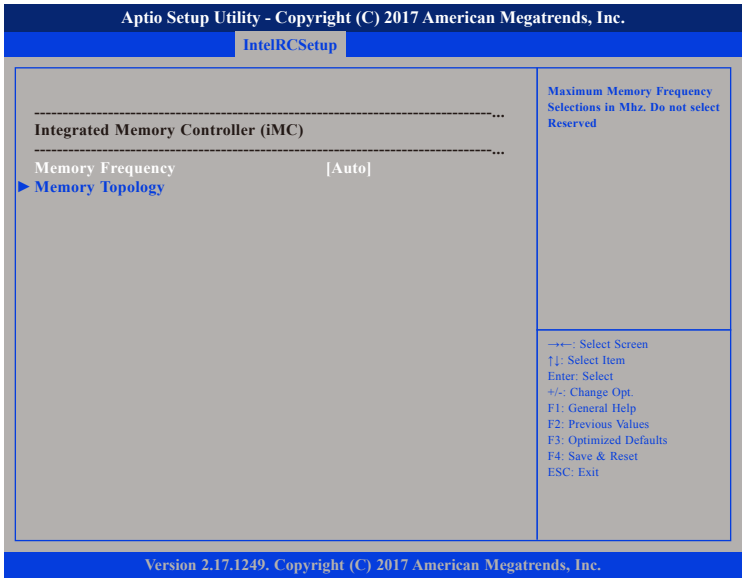
CPU Socket 0 Configuration



Cores Enabled
Configures the number of cores to enable. 0 means all cores.

IoT Cfg Cbo Bitmap
Configures the bit to enable IOT/OCLA.

Memory Configuration

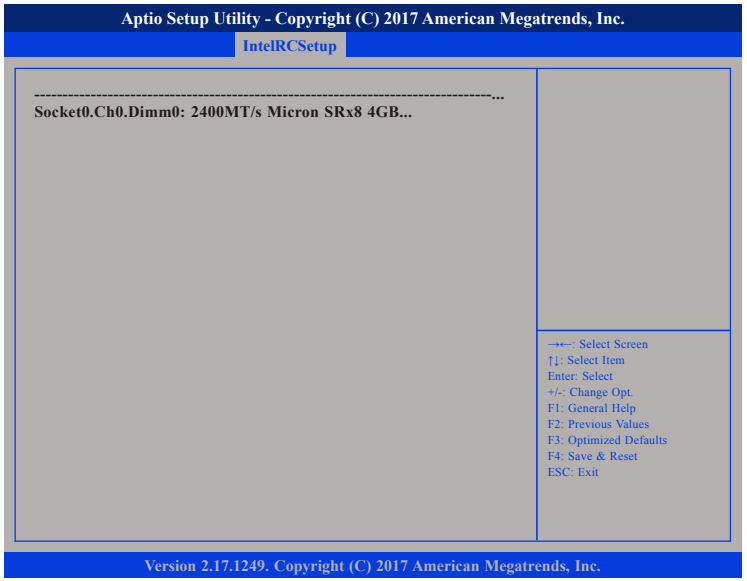


Memory Frequency

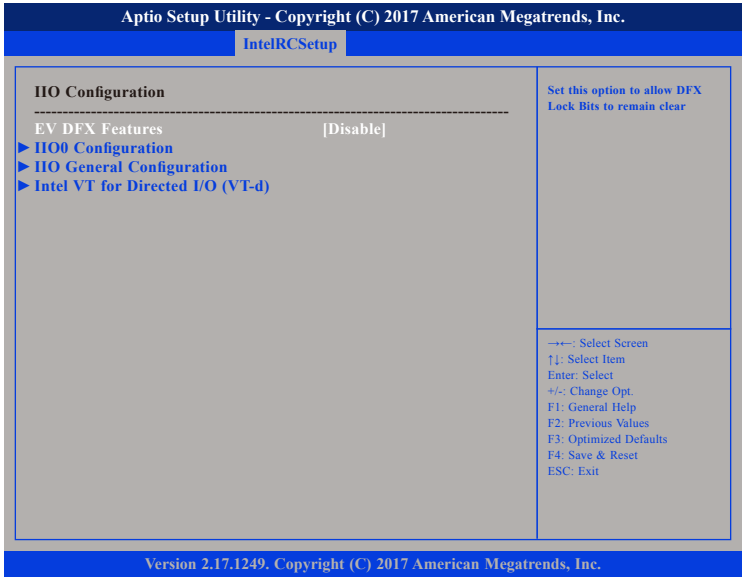
Configures the maximum frequency of the memory. Do not select Reserved.

Memory Topology

Detects and displays the information on the memory installed.

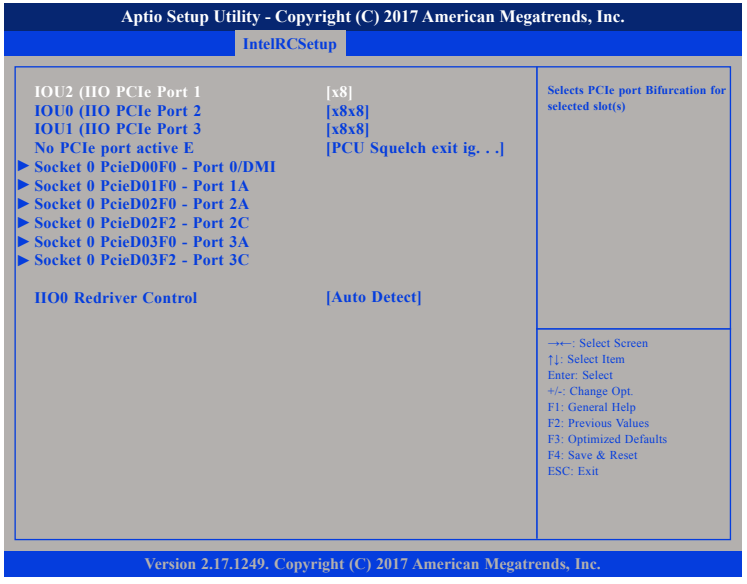


IIO Configuration



EV DFX Features
Enables or disables the DFX Lock Bits to remain clear.

IIO0 Configuration



IOU2 (IIO PCIe Port 1)
Port Bifurcation settings for IOU 2.

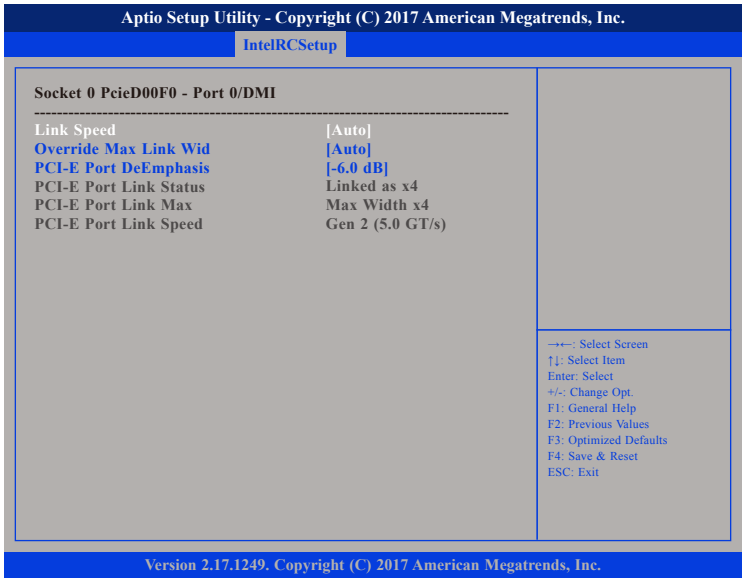
IOU0 (IIO PCIe Port 2)
Port Bifurcation settings for IOU 0.

IOU1 (IIO PCIe Port 3)
Port Bifurcation settings for IOU 1.

No PCIe Port Active
Configures the workaround solution for ECO when the PCIe ports are not active.

IIO0 Redriver Control
Configures the redriver options for IIO0.

Socket 0 PcieD00F0 - Port 0/DMI

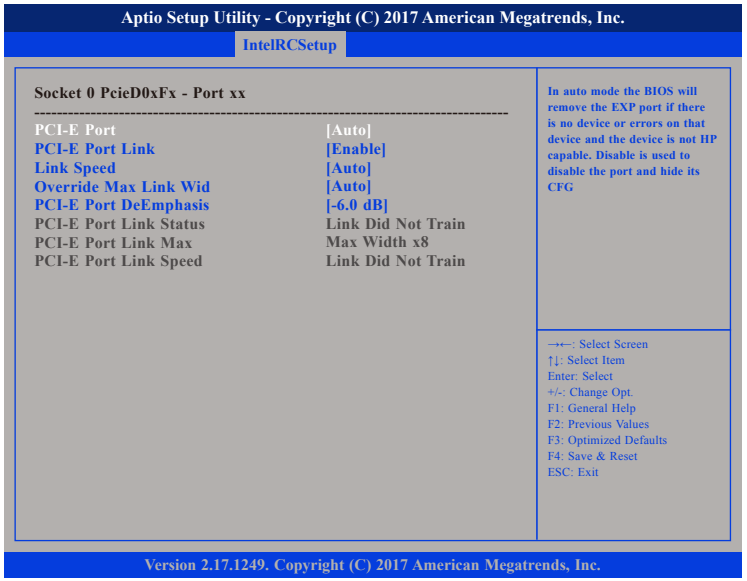


Link Speed
Configures the link speed of the PCIe port.

Override Max Link Width
Configures the link speed to override the max link width set by bifurcation.

PCI-E Port DeEmphasis
Configures the level of the PCIe port de-emphasis.

Socket 0 PcieD01F0 - Port 1A to Socket 0 PcieD03F2 - Port 3C



PCI-E Port
Enables or disables the PCIe port. In auto mode the BIOS will remove the EXP port if there is no device or errors on that device and the device is not HP capable. Disable is used to disable the port and hide its CFG space.

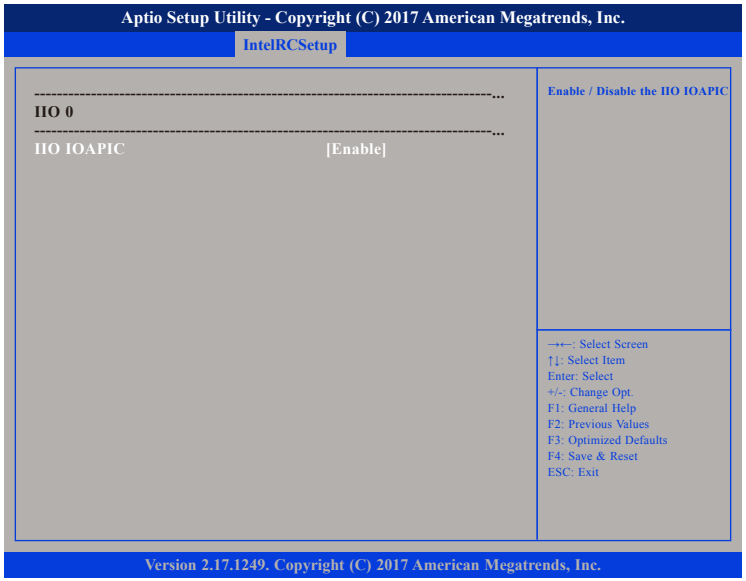
PCI-E Port Link
Enables or disables link training of the PCIe port.

Link Speed
Configures the link speed of the PCIe port.

Override Max Link Width
Configures the link speed to override the max link width set by bifurcation.

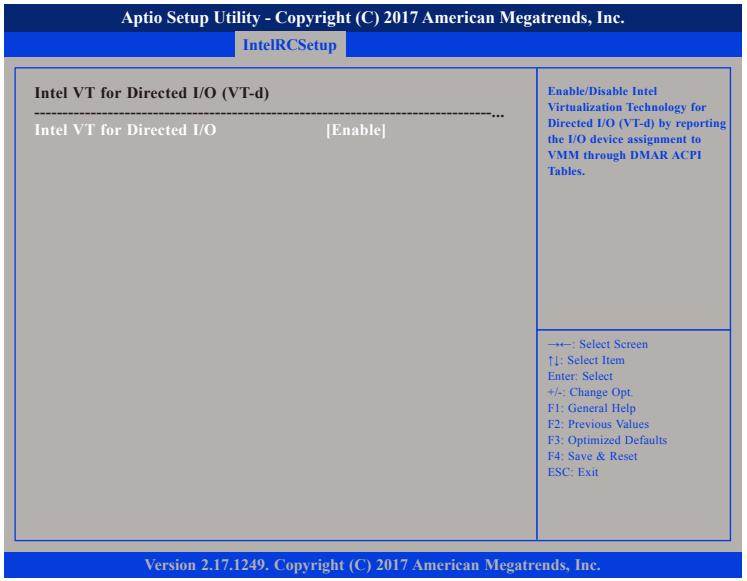
PCI-E Port DeEmphasis
Configures the level of the PCIe port de-emphasis.

IIO General Configuration



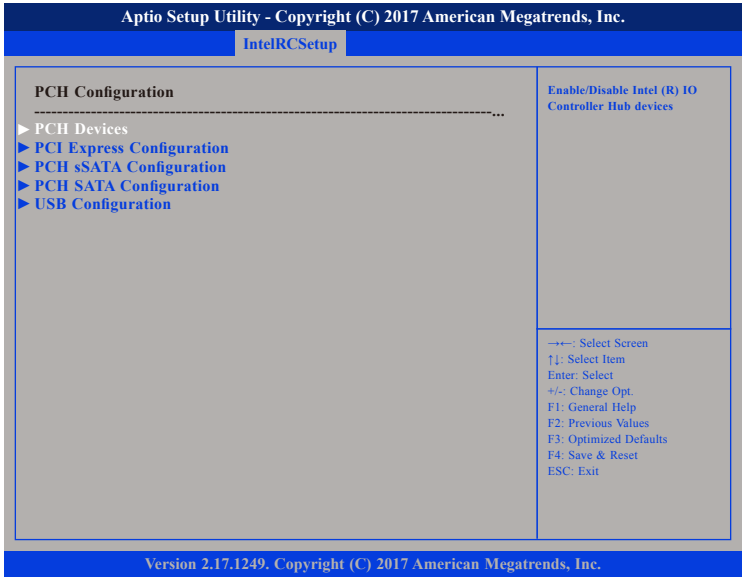
IIO IOAPIC
Enables or disables I/O Advanced Power Interface Configuration (IIOAPIC) for IIO 0.

Intel VT for Directed I/O (VT-d)

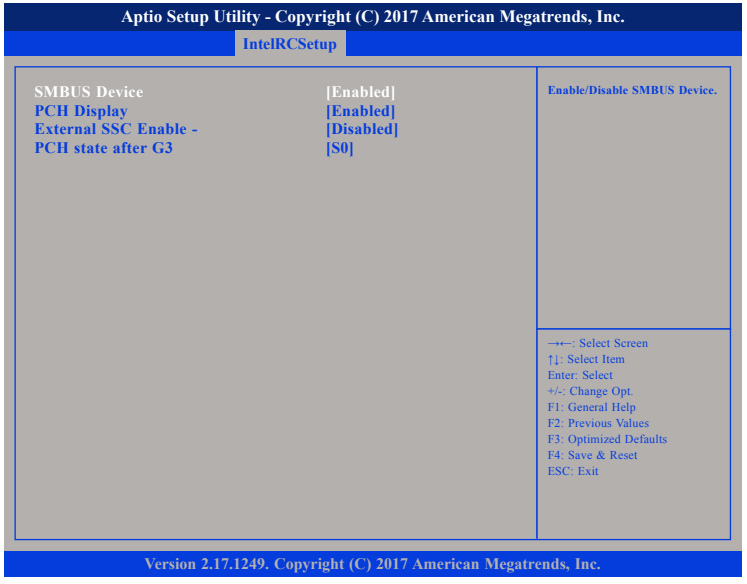


Intel VT for Directed I/O
Enables or disables Intel® Virtualization Technology for Directed I/O (VT-d) by reporting the I/O device assignment to VMM through DMAR ACPI tables.

PCH Configuration



PCH Devices



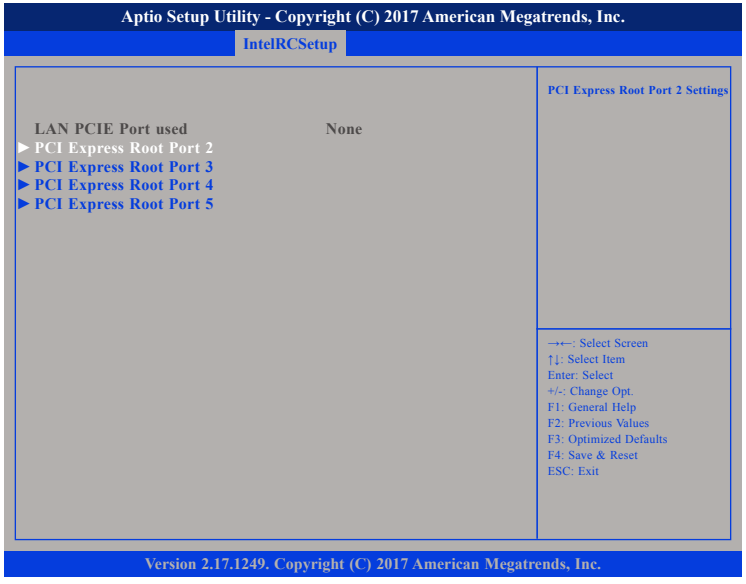
SMBUS Device
Enables or disables SMBUS device.

PCH Display
Enables or disables the PCH Display.

External SSC Enable
Enables or disables External SSC.

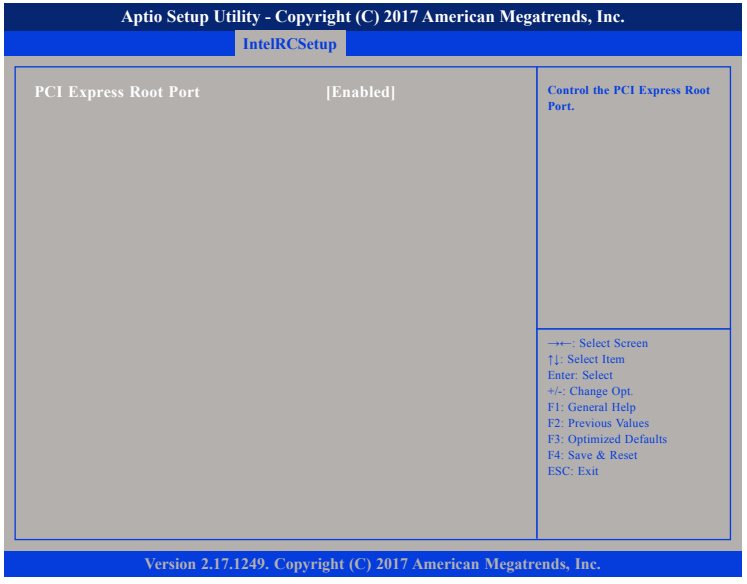
PCH State After G3
Configures the PCH state after G3.

PCI Express Configuration



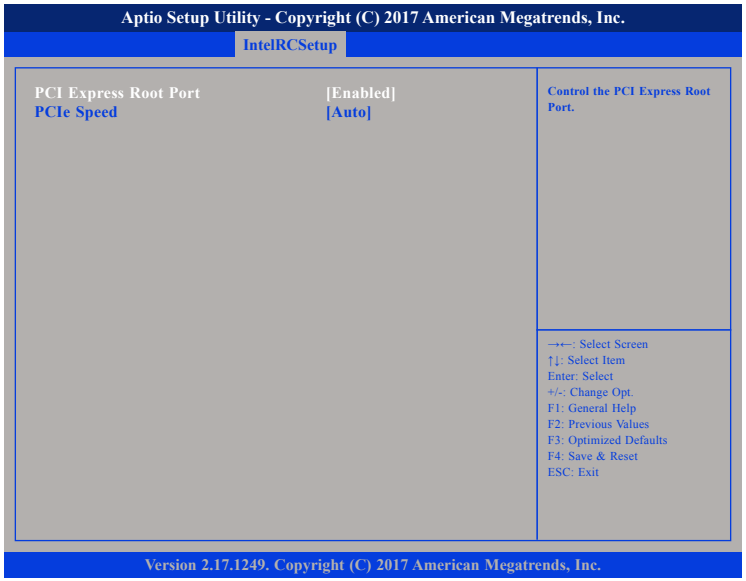
PCI Express Root Port 2, 3, 4 and 5
Settings for PCI Express Root Port 2, 3, 4 and 5.

PCI Express Root Port 2



PCI Express Root Port
Enables or disables the PCIe root port.

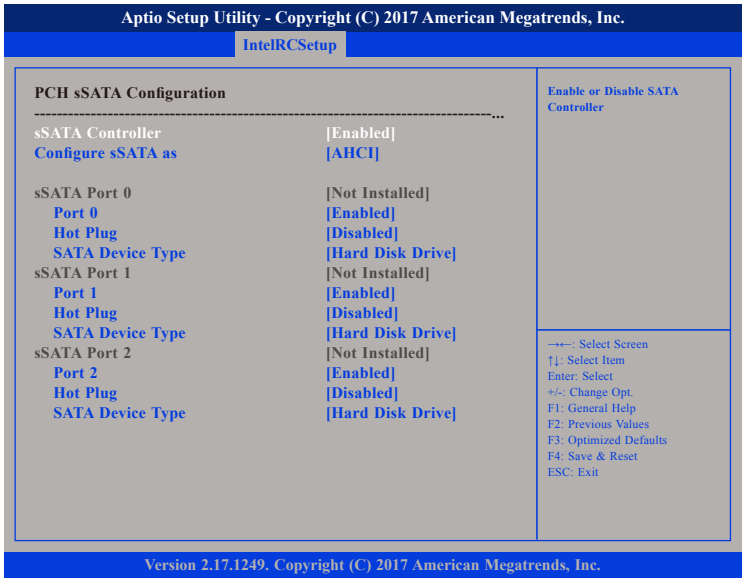
PCI Express Root Port 3 to Port 5



PCI Express Root Port
Enables or disables the PCIe root port.

PCIe Speed
Configures the PCIe speed for the root port.

PCH sSATA Configuration



SATA Controller
Enables or disables the SATA controller.

Configure SATA as
Configures the SATA as IDE or AHCI.

IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.

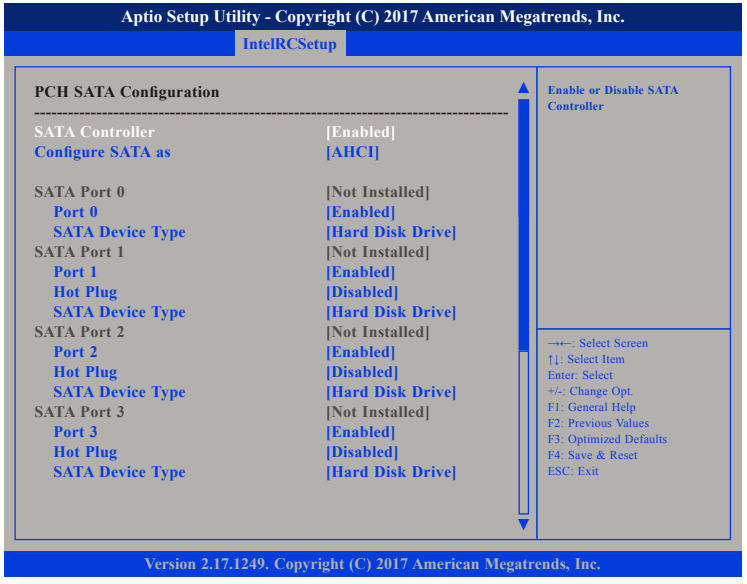
AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

Port 0 to Port 2
Enables or disables sSATA port 0 to port 2.

Hot Plug
Enables or disables hot plugging feature on sSATA port 0, port 1 and port 2.

sSATA Device Type
Identifies what type of sSATA device is connected.

PCH SATA Configuration



SATA Controller
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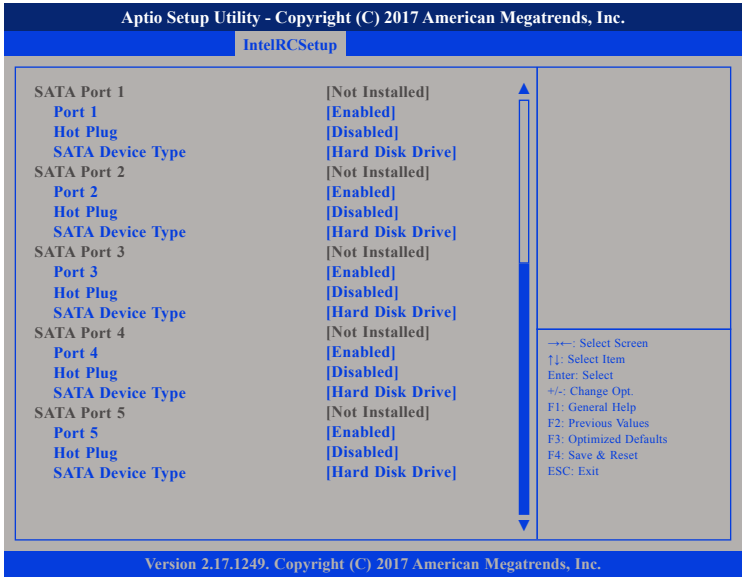


Port 0 to Port 5
Enables or disables SATA port 0 to port 5.

Hot Plug
Enables or disables hot plugging feature on SATA port 1, port 2, port 3, port 4 and port 5.

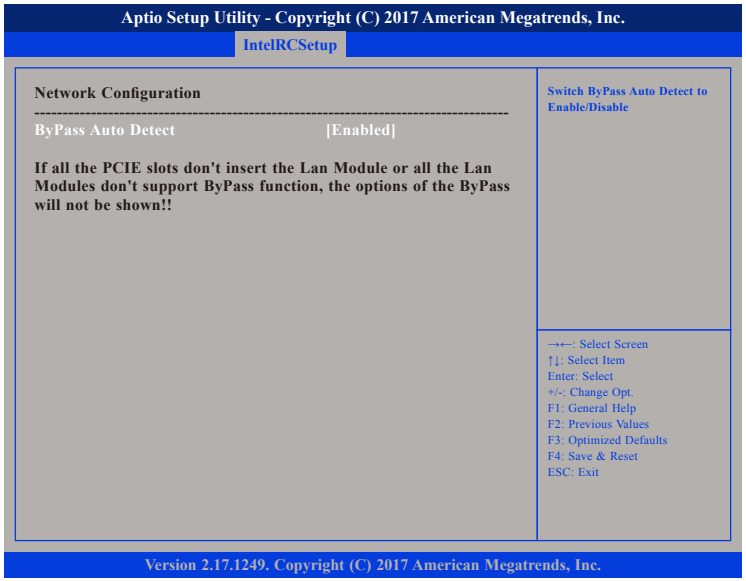
SATA Device Type
Identifies what type of SATA device is connected.

USB Configuration

xHCI Mode
Configures the XHCI mode.

Trunk Clock Gating
Enables or disables Trunk Clock Gating.

Network Configuration



ByPass Auto Detect

Enables or disables automatic LAN Bypass function.

Security

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

Administrator Password

Select this to reconfigure the administrator's password.

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.

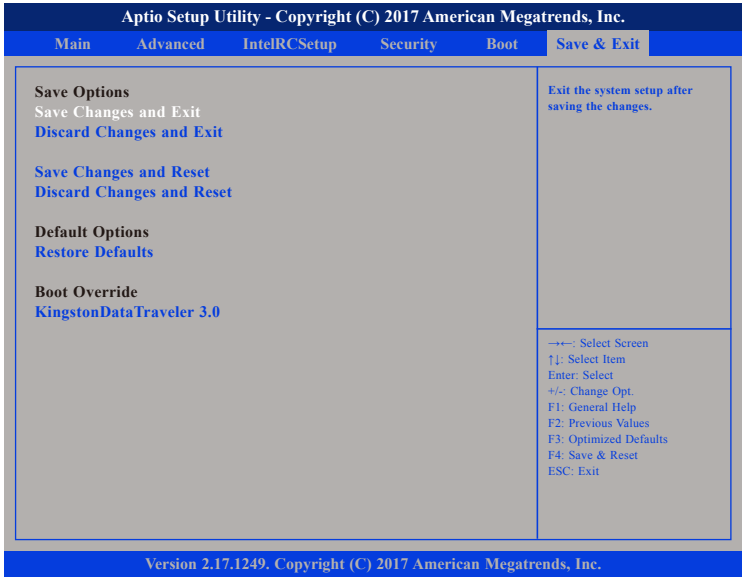
Fixed Boot Order Priorities

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.

USB Key Drive BBS Priorities

Adjust the boot sequence for USB devices. 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 Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

Discard Changes and Exit

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

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>.