



NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

NSA 5160

User Manual

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 5160	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
Jumpers	8
RTC Clear	8
ME Firmware Update	8
BIOS Recovery Swap	9
TPM Select Pin Header	9
Console CTS Strap Pin Header	10
BMC Strap	10
Console UART Controller Strap	11
Connector Pin Definitions	12
External I/O Interfaces	12
Reset Button	12
RS232 Console and Dual USB 2.0 Port	12
Connector Pin Definitions	13
Internal Connectors	13
Power Button	13
CPLD JTAG Pin Header	13
USB 3.0 Box Header	14
SATA DOM Power Connector	14
System Fan Connector	15
VGA Connector	15
LCM JST Connector	16

ATX Power Connector	16
ATX Power Connector	17
Block Diagram	18

Chapter 3: System Setup

Removing the Chassis Cover	19
Installing a SATA DOM	20
Installing DIMM Memory Modules	23
Installing a 2.5" SATA Hard Drive	24
Installing a LAN Module	28

Chapter 4: BIOS Setup

About BIOS Setup	30
When to Configure the BIOS.....	30
Default Configuration	31
Entering Setup	31
Legends	31
BIOS Setup Utility.....	33
Main	33
Advanced	34
Intel RC Setup	44
Server Mgmt	55
Security	59
Boot.....	60
Save & Exit	61

PREFACE

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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.

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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 qualified service personnel.
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.**

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 5160 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	19S00516000X0	NSA 5160 ASSY		1
2	5044440031X00	Rubber Foot Kang Yang: RF20-5-4P	19.8 x 18 x 5.0mm	4
3	6012200052X00	PE Zipper Bag #8	170 x 240mm, w/China RoHS Symbol	1
4	6012200053X00	PE Zipper Bag #3	100 x 70mm, w/China RoHS Symbol	1
5	6023309081X00	Cable EDI: 232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1
6	50311F0102X00	(H)Round Head Screw Long Fei:P6#32T x 1/4/SW7*0.8	W/Spring + Flat Washer P6#32T x 1/4/SW7 x 0.8 NI	4
7	603ATA0052X00	SATA Cable ST:MD-6104042	SATA 7P 180D (Lock) to 7P 90D (Lock) L=260mm	1
8	5060900301X00	NSA 5130 Ear Sets VER:A CHYUAN-JYH	79.5 x 43.5 x 26mm AL PANTONE 295U	1
9	50311F0100X00	(H)Round Head Screw w/Spring+Flat Washer Long Fei:P3 x 6L	P3 x 6 iso/SW6 x 0.5 NI	1
10	5040150001X00	NSA 7135 AL Handle VER:A PANADVANCE	78 x 58 x 8mm	1

Ordering Information

The following below provides ordering information for NSA 5160.

Barebone

NSA 5160 (P/N: 10S00516000X0)

1U Intel® Xeon® processor D-1520 4C/2.2Ghz with 2x 10GbE + 8 1GbE LAN ports, 2 LAN module (NI/NX series) bays, w/o LCM kit

NX 140F

Intel® XL710-AM1 10GbE module 4 fiber ports by PCIe x8 interface with PKG

NX 142F

Intel® XL710-AM1 10GbE module 4 fiber ports with 2 bypass segment (multi mode) by PCIe x8 interface with PKG

NI 140F

Intel® I350 module 4 fiber ports with PCIe x8 interface with PKG

NI 180F

Intel® I350 module 8 fiber ports with PCIe x8 interface with PKG

NI 142C

Intel® I350 module 4 copper ports with 2 bypass segment by PCIe x8 interface with PKG

NI 180C

Intel® I350 module 8 copper ports by PCIe x8 interface with PKG

NI 184C

Intel® I350 module 8 copper ports with 4 bypass segment by PCIe x8 interface with PKG

NI 142F

Intel® I350 module 4 fiber ports with 2 bypass segment by PCIe x8 interface with PKG

NI 121F

Intel® I350 module 2 fiber ports with 1 bypass segment by PCIe x8 interface with PKG

Model	P/N Controller	Interface	Type	Port Number	Bypass/Segment	Expansion Slot	Location Slot
NX 140F	10S20140F01X0	XL710-AM1	PCIe x8	4 SFP+	None	None	All Slot
NX 142F	10S20142F01X0	XL710-AM1	PCIe x8	4 SFP+	2 bypass (multi mode)	None	All Slot
NI 140F	10SK000NI02X0	i350AM4x1	PCIe x8	4 SFP	None	None	All Slot
NI 180F	10S10180F01X0	i350AM4x2	PCIe x8	8 SFP	None	None	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	4 SFP	1 bypass	None	All Slot

CHAPTER 1: PRODUCT INTRODUCTION

Overview



Key Features

- 1U rackmount network platform
- Intel® Xeon® processor D-1500 product family
- Support DDR4 2133 ECC & REG, up to 128GB
- Onboard 8G LAN Copper + 2 x 10G SFP+
- Support up to two LAN modules

Hardware Specifications

Main Board

- NSB 5160
- Intel® Xeon® processor D-1500 product family
- CS4227 10G PHY
- Support IPMI 2.0 (option)
- One PCIe x8 expansion slot

Main Memory

- 4x DDR4 2133 memory DIMM support ECC/Non-ECC memory, max 128GB

LAN Features

- Swappable LAN modules
** Please see LAN module list in Ordering Information.
- Support Intel® i350/Intel® XL710 Copper/Fiber ports
- Support 10/100/1000/10G link speed

I/O Interface-Front

- Power status/HDD status/LAN status/Bypass status LEDs
- 2x USB 2.0 ports
- 1x RJ45 type console port
- 2x SFP + ports
- 8x Copper LAN ports
- 2x LAN modules

I/O Interface-Rear

- 1x Power button switch
- 1x VGA port

Devices

- 1x SATA-DOM device space

Power Input

- 300W switching power supply

Chassis Dimensions

- Chassis dimension: 430mm x 450mm x 44mm
- Carton dimension: 560mm x 620mm x 190mm

Weight

- Without packing: 8kg
- With packing: 12kg

Environment

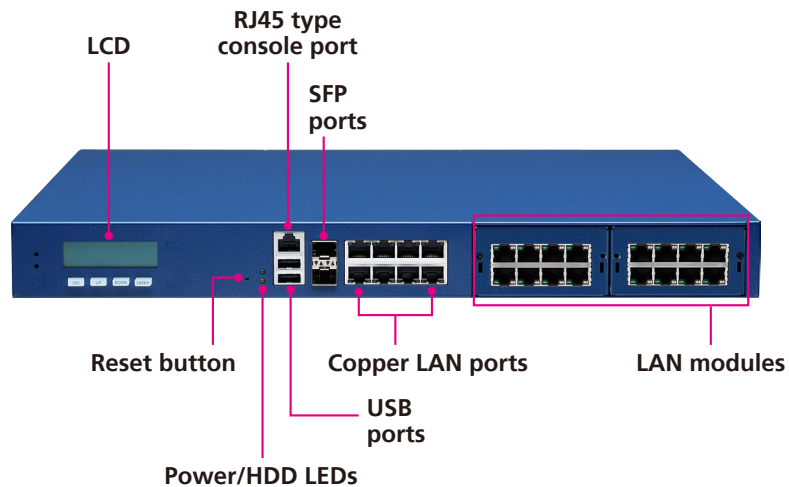
- Operating temperatures : 0°C~40°C
- Storage temperature : -20°C~75°C
- Relative humidity : 10%~90% non-condensing

Certifications

- CE approval
- FCC Class A
- UL

Knowing Your NSA 5160

Front Panel



LCD

LCD display with serial data interface.

Reset Button

Press to restart the system.

Power LED

Indicates the power status of the system.

HDD LED

Indicates the status of the hard drive.

RJ45 Type Console Serial Port

Used to connect RJ45 type console devices.

USB Ports

Used to connect USB 2.0 devices.

SFP Ports

Used to connect SFP modules for connecting fiber optic network devices.

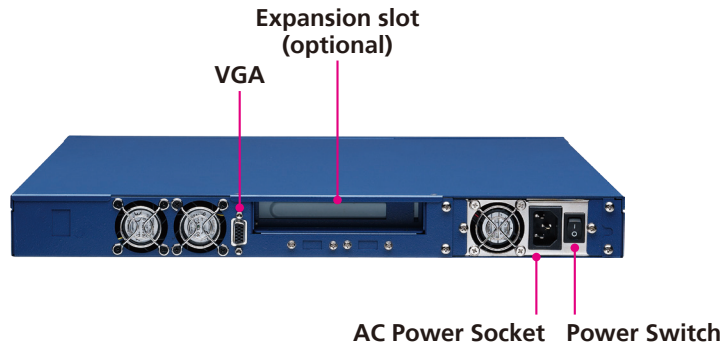
Copper LAN Ports

Eight LAN ports used to connect network devices.

LAN Modules

Two LAN module bays to install add-on network modules.

Rear Panel



Expansion Slot (Optional)

Used to install a PCI Express add-on card.

VGA

Used to connect an analog VGA monitor.

AC Power Socket

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

Power Switch

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

CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NSA 5160 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:

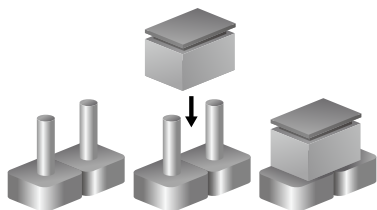
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

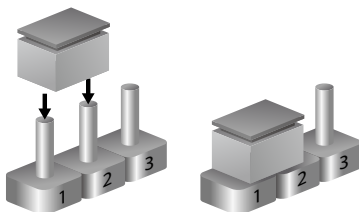
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



Jumpers

RTC Clear

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: J5



Pin	Function
1-2	Normal
2-3	Clear CMOS

1-2 On: default

ME Firmware Update

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: J6



Pin	Function
1-2	Disable ME Force Update
2-3	ME Force Update

1-2 On: default

BIOS Recovery Swap

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: J7



Pin	Function
1-2	Disable BIOS_Recovery Mode
2-3	Enable BIOS_Recovery Mode

1-2 On: default

TPM Select Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JTPMSEL1



Pin	Function
1-2	Enable Some Special Commands
2-3	Disable Some Special Commands

2-3 On: default

Console CTS Strap Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP7



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

2-3 On: default

BMC Strap

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: JP5



Pin	Function
NC	Enable BMC
1-2	Disable BMC

NC: default

Console UART Controller Strap

Connector type: 1x2 2-pin header, 2.54mm pitch

Connector location: JP4



Pin	Function
NC	System UART Controller
1-2	BMC Debug UART Controller

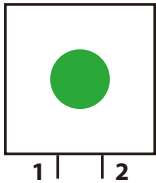
NC: default

Connector Pin Definitions

External I/O Interfaces

Reset Button

Connector location: SW21

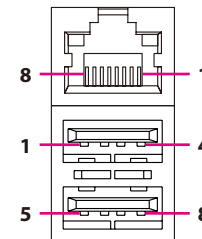


Pin	Definition
1	GND
2	RST_BTN_N

RS232 Console and Dual USB 2.0 Port

Connector type: RJ45 port and USB 2.0 ports, Type A

Connector location: CN1



RS232 Console

Pin	Definition	Pin	Definition
1	SP_RTS1_R	2	SP_DTR1_R
3	SP_TXD1_R	4	GND
5	SP_DCD1_R	6	SP_RXD1_R
7	SP_DSR1_R	8	SP_CTS1_CON

USB

Pin	Definition	Pin	Definition
1	VCC5	2	USB 2N
3	USB 2P	4	GND
5	VCC5	6	USB 1N
7	USB 1P	8	GND

Connector Pin Definitions

Internal Connectors

Power Button

Connector type: 1x2 2-pin header

Connector location: JPWRBTN1



Pin	Definition
1	GND
2	PWRBTN

CPLD JTAG Pin Header

Connector type: 1x6 6-pin header

Connector location: JP9



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

USB 3.0 Box Header

Connector type: 2x10 20-pin header

Connector location: JUSB1



Pin	Definition	Pin	Definition
1	P5V	2	NC
3	NC	4	GND
5	NC	6	NC
7	GND	8	NC
9	NC	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	P5V		

SATA DOM Power Connector

Connector type: 1x2 2-pin header

Connector location: J9

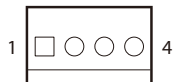


Pin	Definition
1	P5V
2	GND

System Fan Connector

Connector type: 1x4 4-pin Wafer

Connector location: FAN1 and FAN2

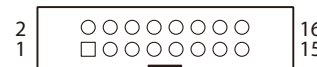


Pin	Definition
1	GND
2	P12V
3	TACH
4	PWN

VGA Connector

Connector type: 2x8 16-pin header

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	AVSYNCO_B
13	AHSYNCO_B	14	AVSYNCO_B
15	DDC_CLKO_B	16	NC

LCM JST Connector

Connector type: 1x6 6-pin header

Connector location: J11

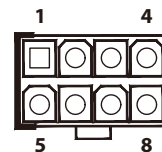


Pin	Definition	Pin	Definition
1	IBMC_LCM_TXD	2	IBMC_LCM_RXD
3	GND	4	P5V
5	LCM_LED_KR_N	6	LCM_LED_KG_N

ATX Power Connector

Connector type: 2x4 8-pin header

Connector location: CON1

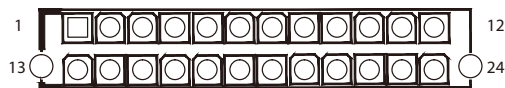


Pin	Definition	Pin	Definition
1	GND	2	GND
3	GND	4	GND
5	P12V	6	P12V
7	P12V	8	P12V

ATX Power Connector

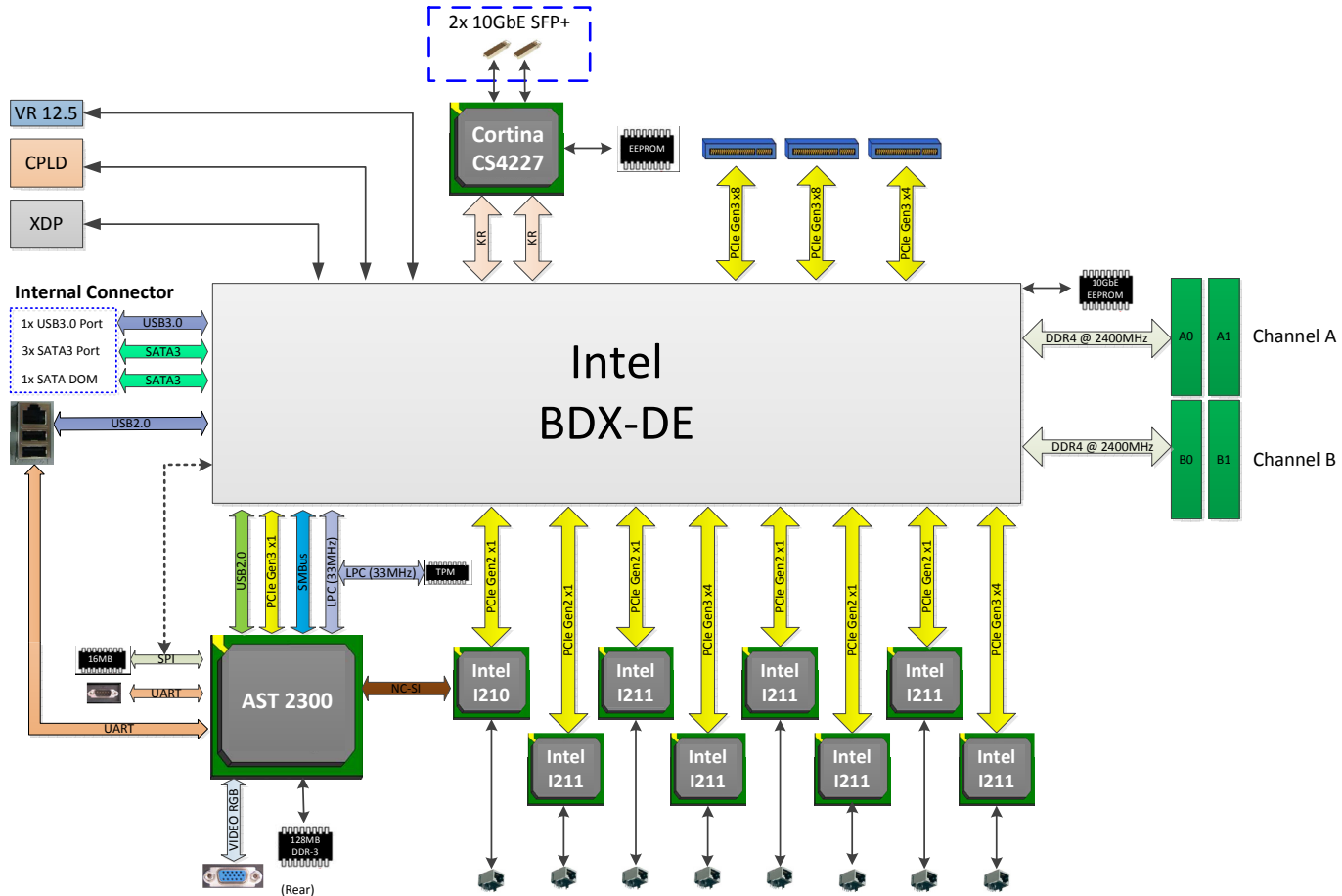
Connector type: 2x12 24-pin header

Connector location: CON2



Pin	Definition	Pin	Definition
1	3.3V	2	3.3V
3	GND	4	5V
5	GND	6	5V
7	GND	8	PW-OK
9	5VSB	10	12V
11	12V	12	3.3V
13	3.3V	14	-12V
15	GND	16	GND
17	GND	18	GND
19	GND	20	RES/-5V
21	5V	22	5V
23	5V	24	GND

Block Diagram



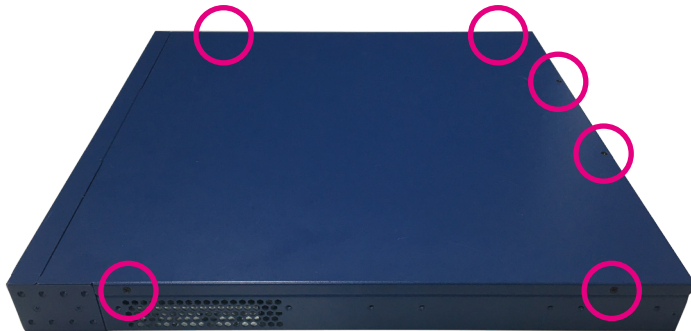
CHAPTER 3: SYSTEM SETUP

Removing the Chassis Cover

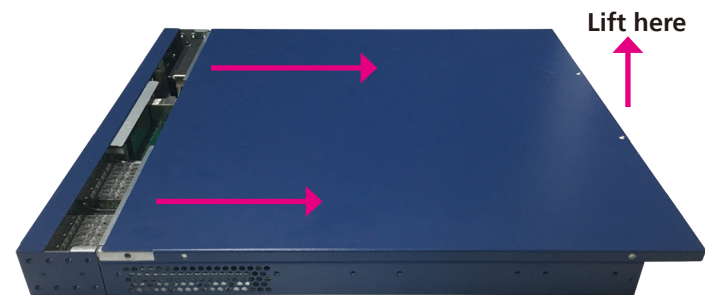


Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

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

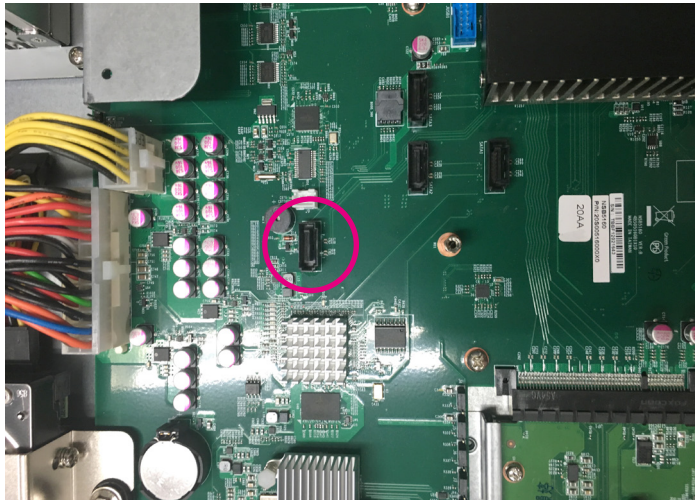


2. Gently slide the cover outwards, then lift up the cover to remove it.

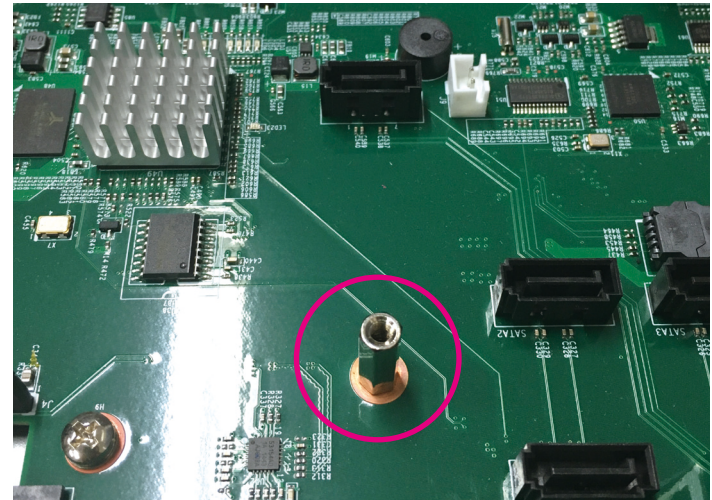


Installing a SATA DOM

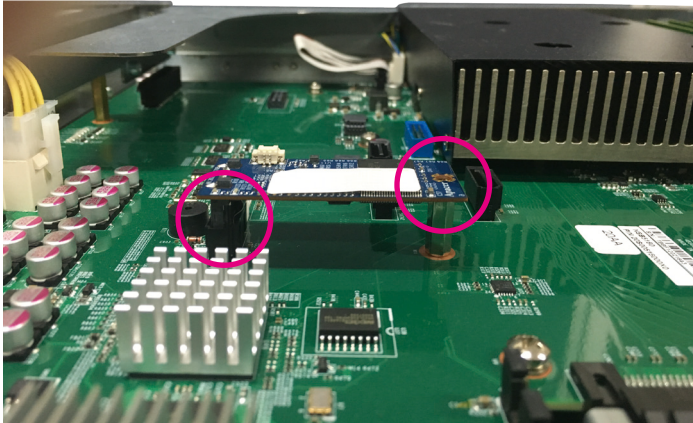
1. Locate the SATA DOM connector on the board.



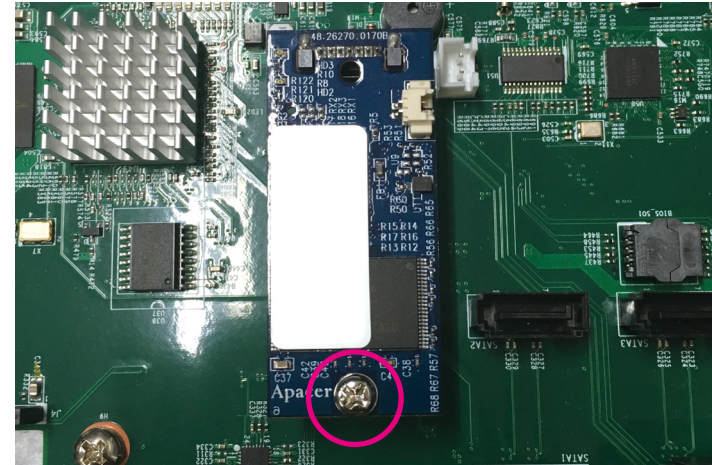
2. Fasten a copper post on the mounting hole.



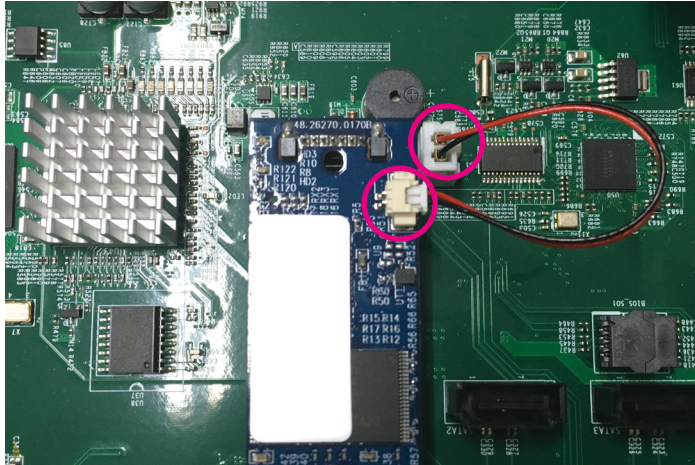
3. Install the SATA DOM to the connector with the mounting hole aligned to the copper post.



4. Fasten a screw on top of the copper post.

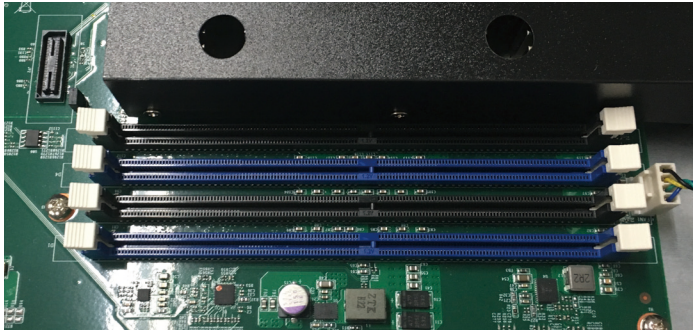


5. Connect the power cable to the power connector on the board.

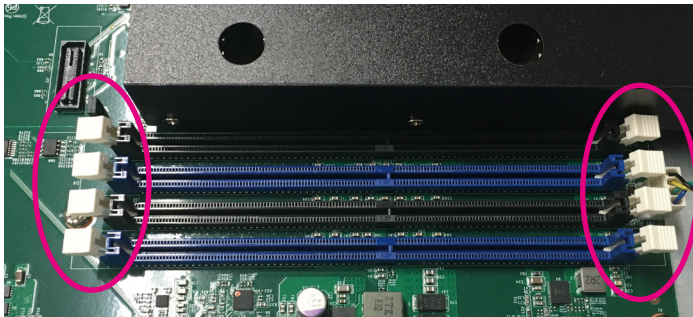


Installing DIMM Memory Modules

1. Locate the DIMM sockets on the board.



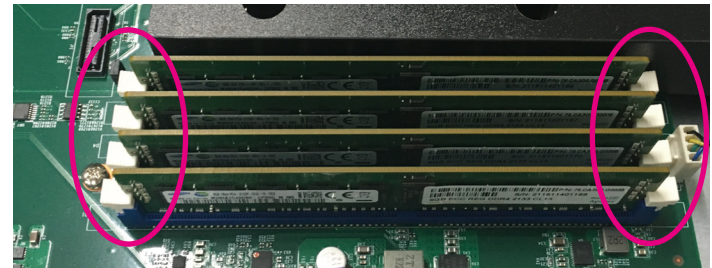
2. Release the locks on the DIMM sockets.



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 modules into position, the lock will close automatically.

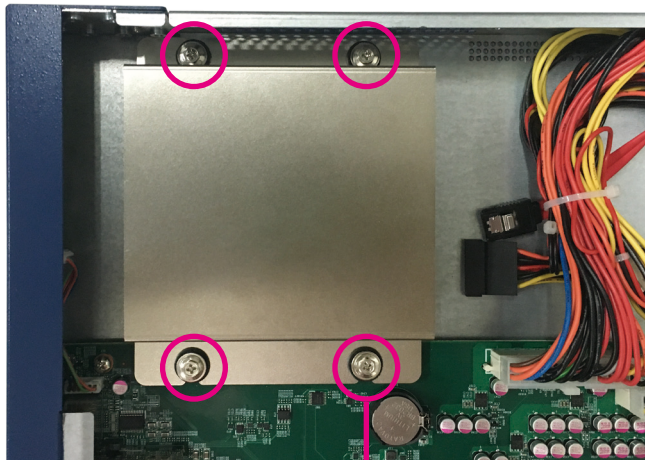


Installing a 2.5" SATA Hard Drive



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

1. Remove the mounting screws that secure the hard drive bracket to the chassis.



Mounting screw

2. Note the sides of the hard drive bracket. The longer side is designed to fit on the chassis' standoff while the shorter side is designed to fit on the motherboard's standoff.

3.5" Bracket

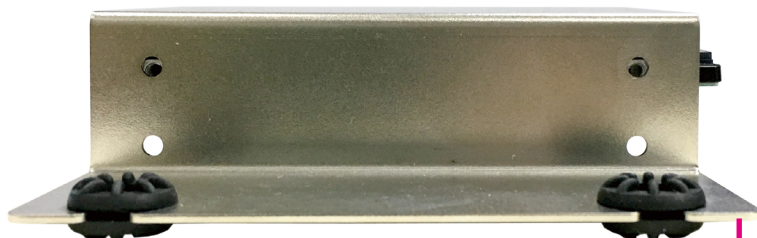
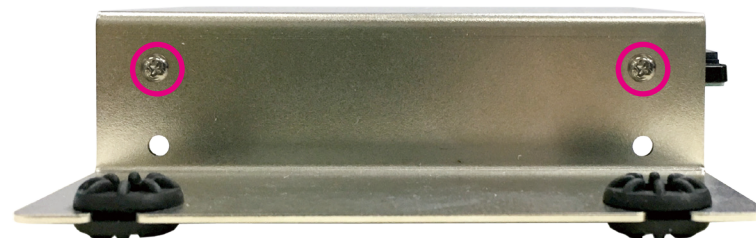


2.5" Bracket



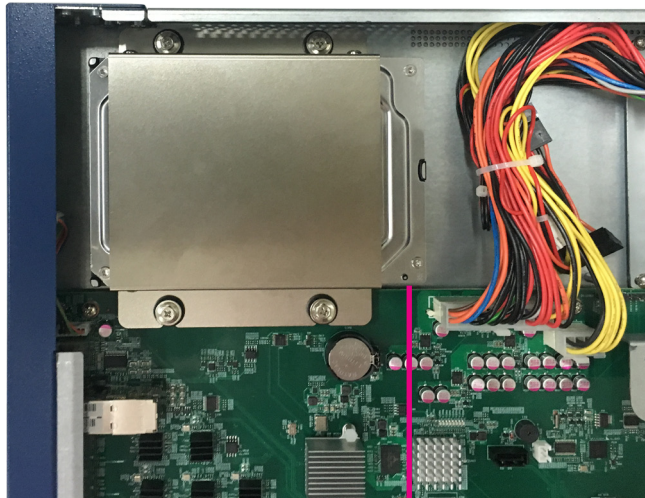
- Place the SATA hard drive into the hard drive bracket with the SATA connector facing outwards.

- Align the mounting holes that are on the sides of the SATA drive with the mounting holes on the hard drive bracket. Then use the provided mounting screws to secure the SATA drive in place.

3.5" Bracket**SATA data and power connector****3.5" Bracket****2.5" Bracket****SATA data and power connector****2.5" Bracket**

- Repeat step 4 for securing the screws on the other side of the hard drive bracket.

6. Place the drive into the chassis with the connector side facing the board, and then use the provided mounting screws to secure the hard drive bracket in place.



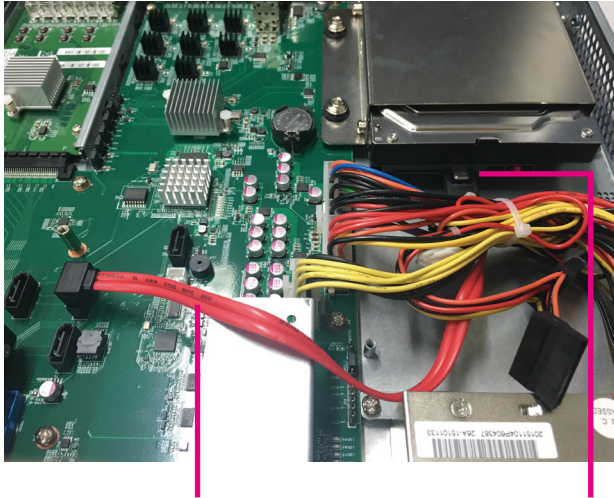
Connector side

7. Locate the SATA data connector on the board.



SATA data connector

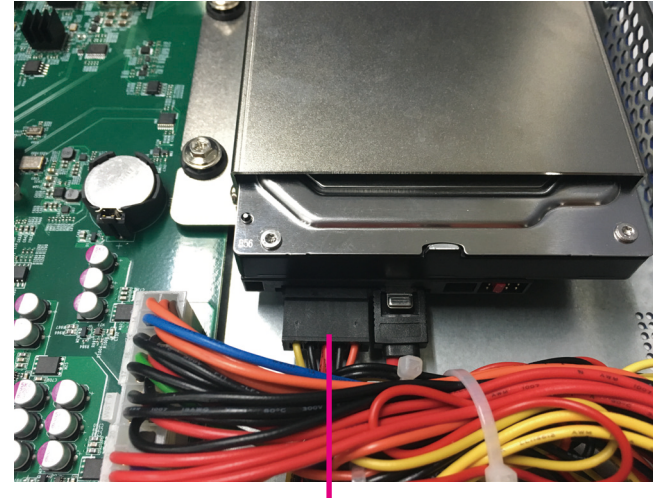
8. Plug the SATA data cable onto the connector, then plug the other end to the SATA data connector on the hard drive.



SATA data cable

SATA data connector

9. Plug the SATA power cable to the SATA power connector on the hard drive.



SATA power cable

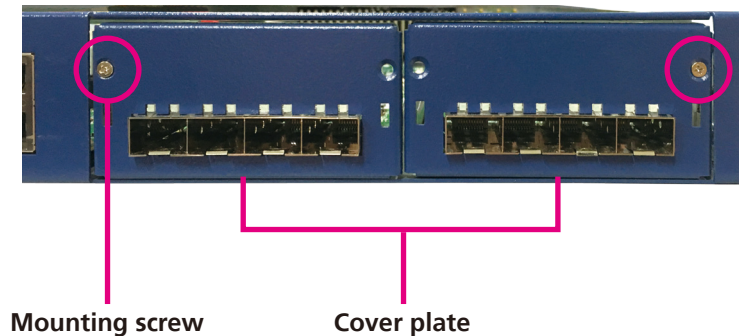
Installing a LAN Module

The system is equipped with 2 LAN module bays. To install a LAN module, please follow the instructions below.

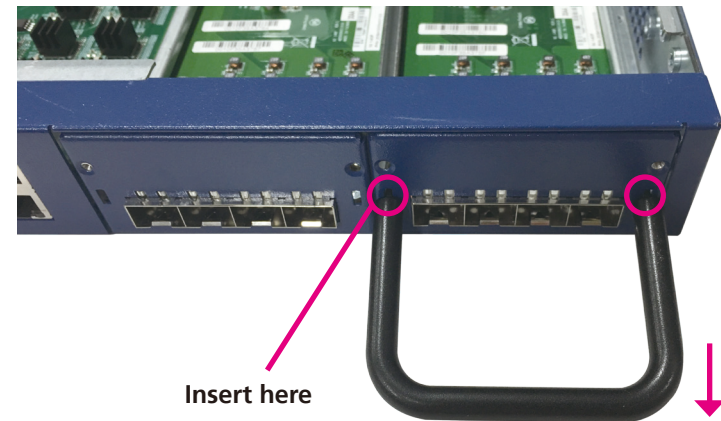


Please correctly follow the below instructions and noted items to avoid making unnecessary damages. Make sure the power supply is switched off and disconnected from the power sources before replacing or adding LAN modules to prevent electric shock or system damage.

1. Remove the screw on the cover plate of the LAN module then put them in a safe place for later use. Each cover is secured by one screw.

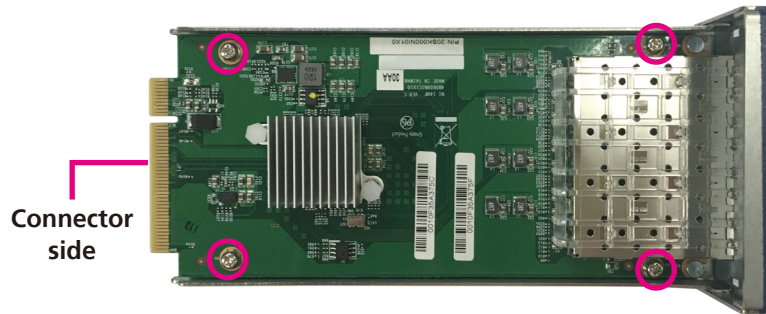


2. Use the handle provided, and insert the handle into the two holes on the LAN module cover.



3. Once the handle is firmly secured in position, pull the handle outwards to remove the LAN module bay.

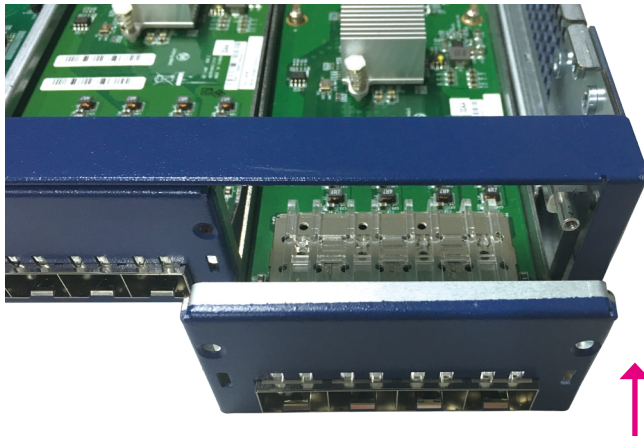
- Place the LAN module into the tray making sure the connector side of the module is at the rear side of the tray.



Important:

Before using Optical fiber for transferring data, make sure you have connected an approved Optical Transceiver Module. User needs to install appropriate and UL approved Laser Class I Transceivers, rated 3.3Vdc, max. 1W.

- Secure the module in place with screws, and slide the tray back into the bay.



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for the NSA 5160. 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

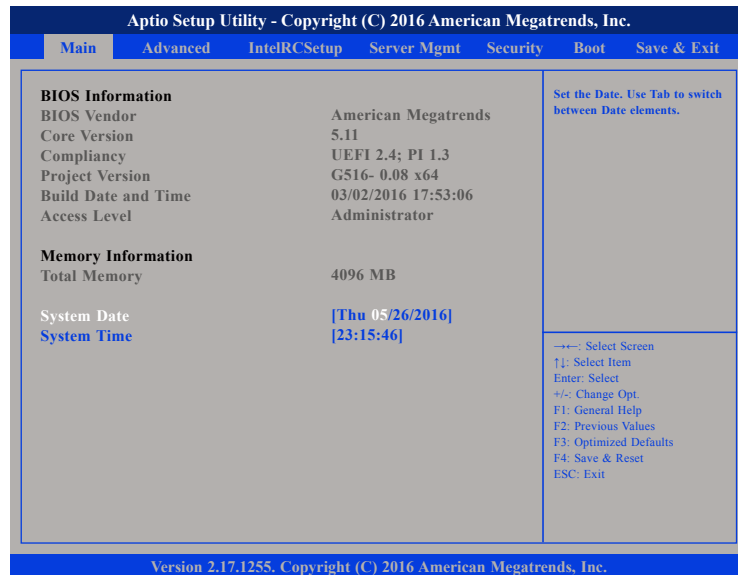
When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .

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  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 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.

Access Level

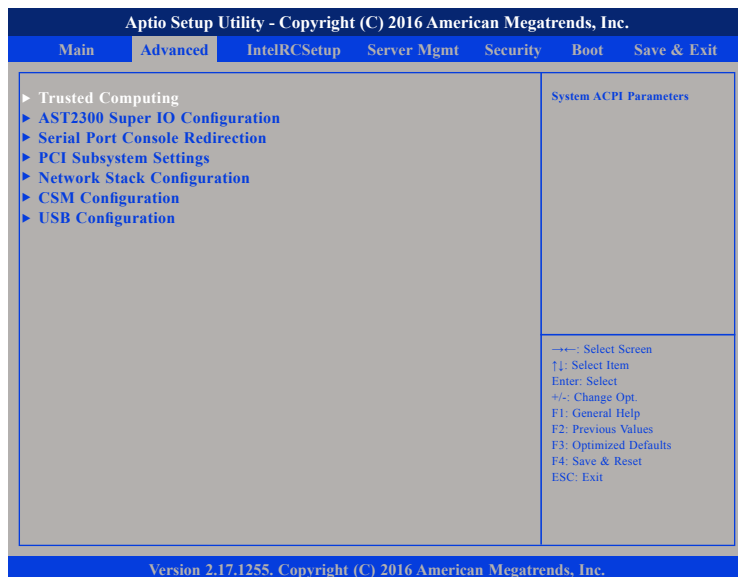
Displays the access level of the current user in the BIOS.

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.



Trusted Computing

This section is used to configure trusted computing settings.



Security Device Support

Enables or disables BIOS support for the security device. O.S. will not show security device. TCG EFI protocol and INT1A interface will not be available.

TPM State

Enables or disables the security device.

Pending Operation

Configures the operation mode for the security device.

Device Select

Configures the TPM version.

AST2300 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

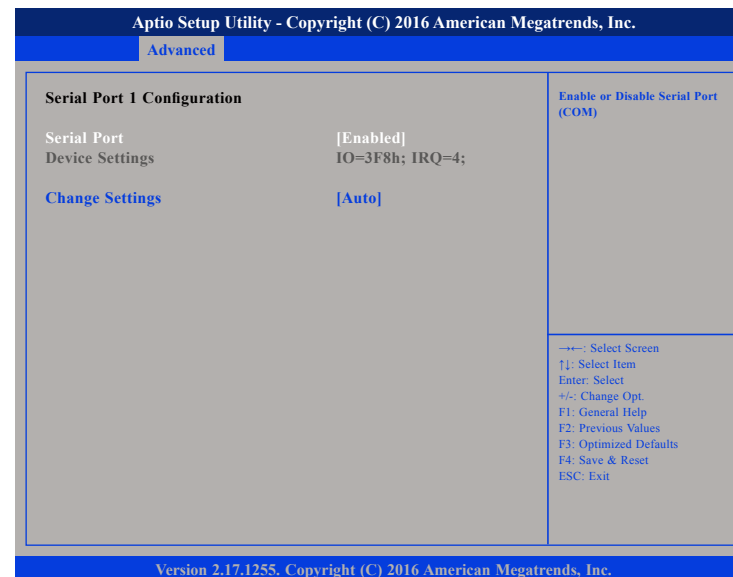
Configuration settings for serial port 1.

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

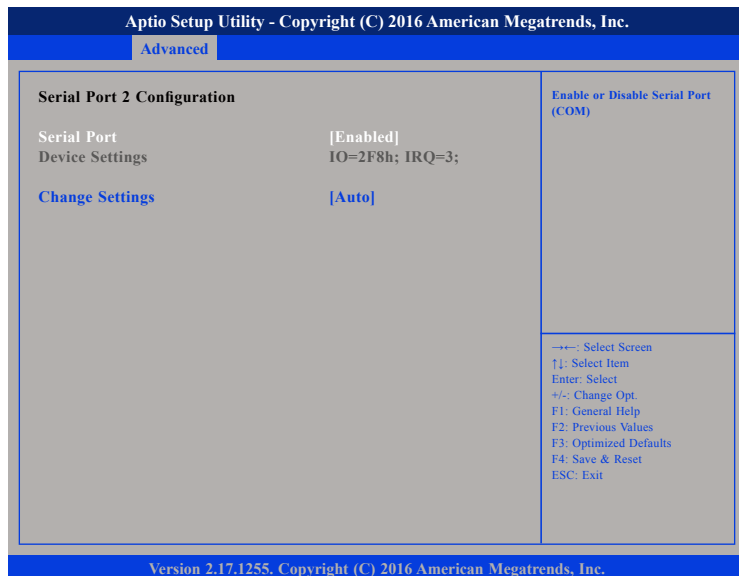
Enables or disables the serial port.

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.

Serial Port Console Redirection

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

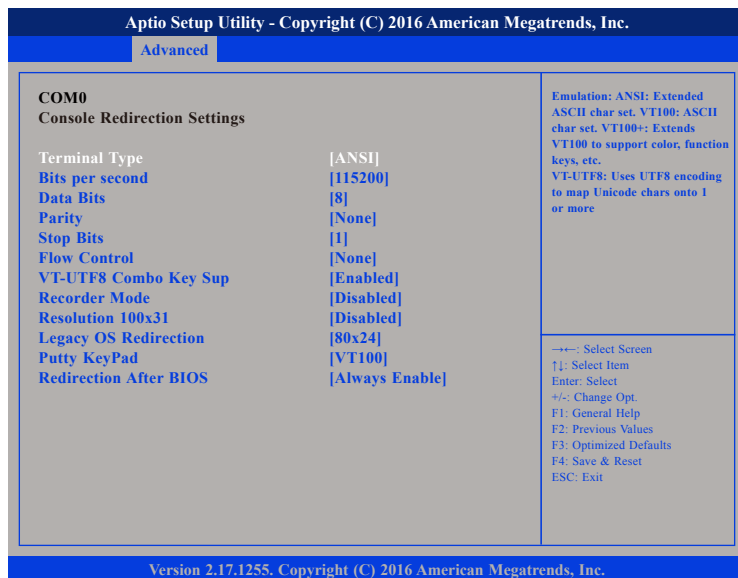


Console Redirection (COM0/COM1/EMS)

Enables or disables console redirection for COM0/COM1/EMS.

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.

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

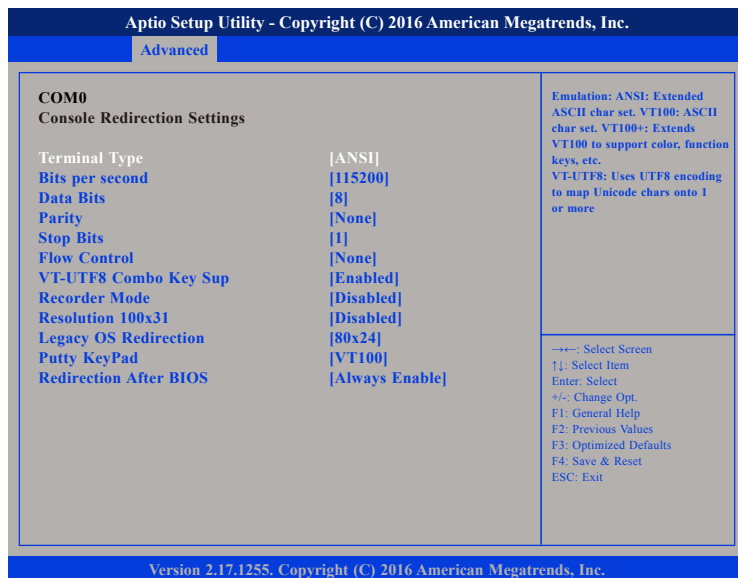
Selects the Putty keyboard emulation type.

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.

Console Redirection Settings (COM1)

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.

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Legacy OS Redirection

Selects the number of rows and columns that support redirection.

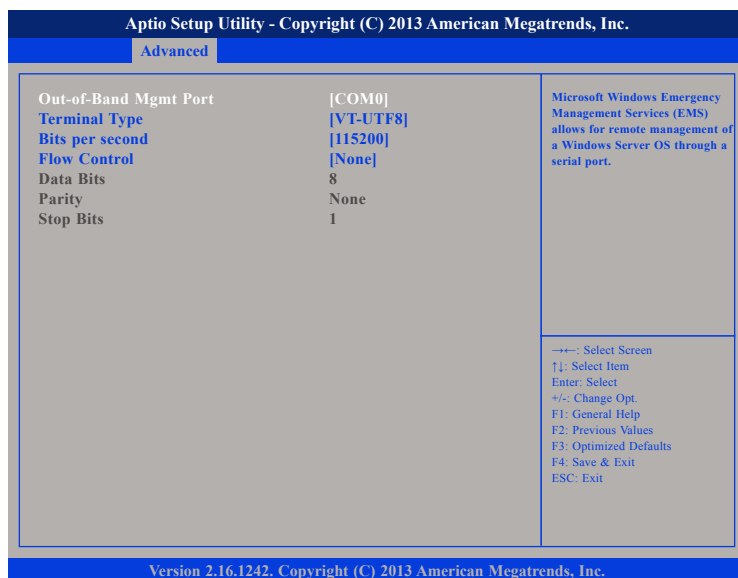
Putty Keypad

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.

Console Redirection Settings (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.

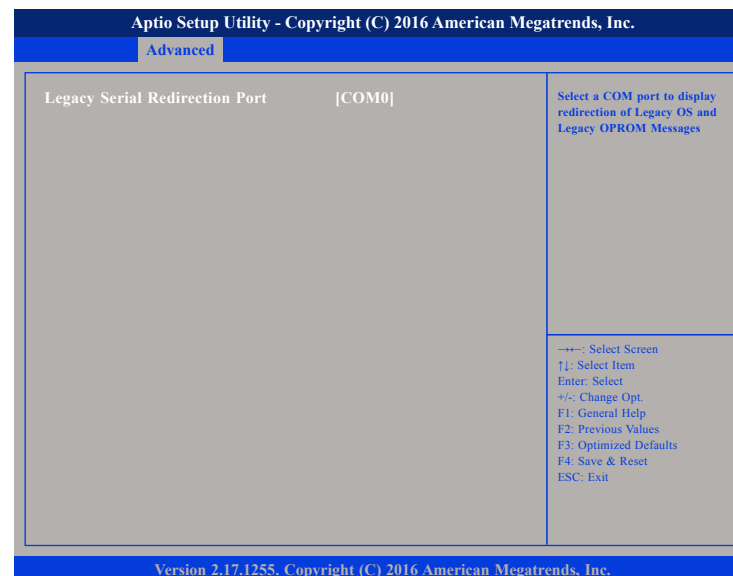
Bits Per Second

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 Port

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

PCI Subsystem Settings

This section is used to configure the PCI.



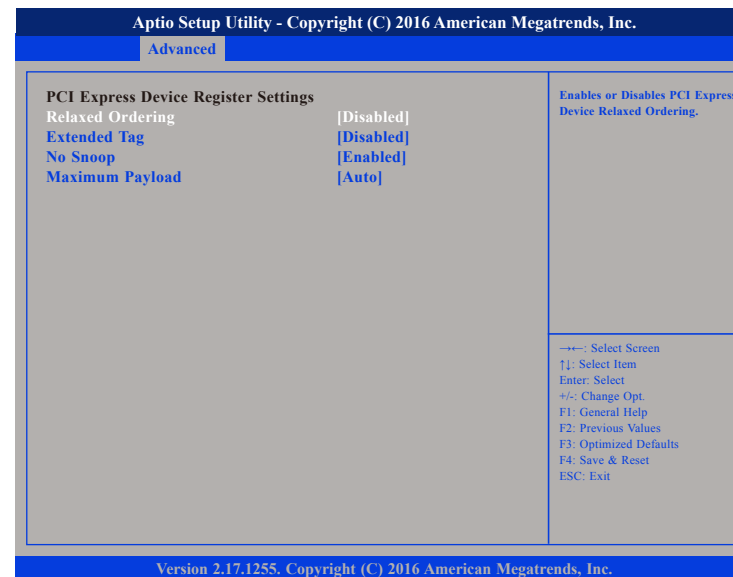
Above 4G Decoding

Enables or disables decoding of 64bit 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 relaxed ordering.

Extended Tag

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

No Snoop

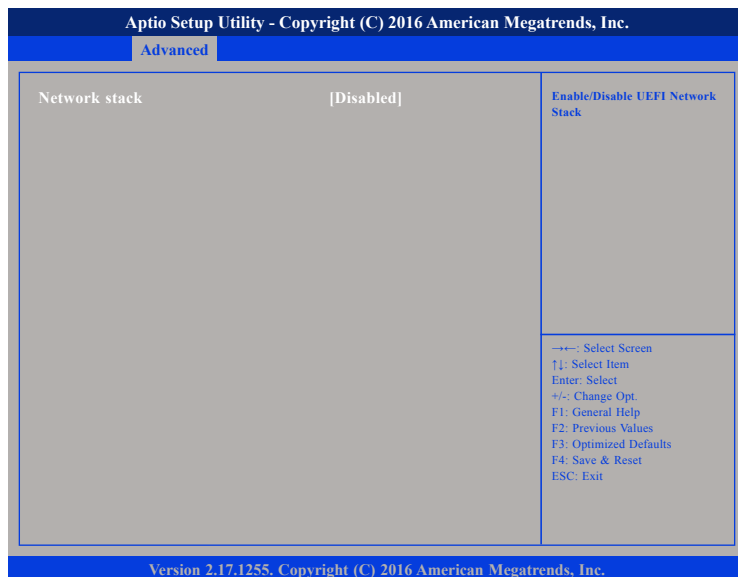
Enables or disables the PCI Express device no snoop option.

Maximum Payload

Selects the maximum TLP payload size of the PCI Express device.

Network Stack

This section is used to configure the network stack.

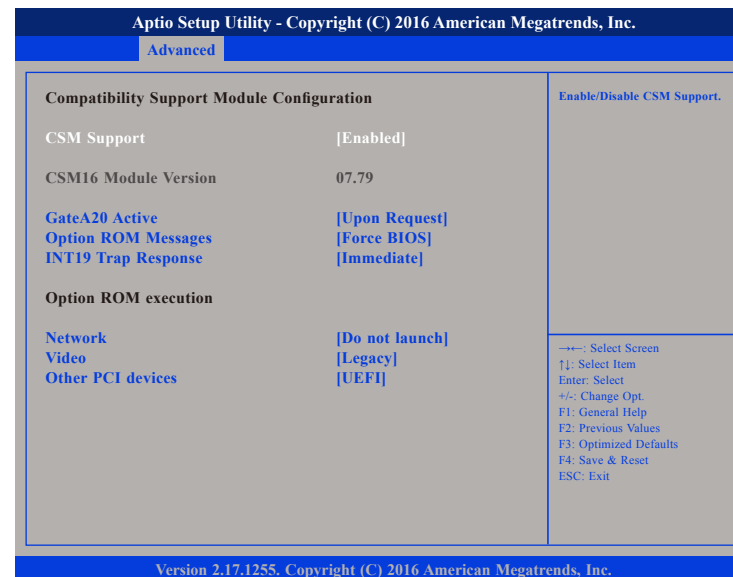


Network Stack

Enables or disables UEFI network stack.

CSM Configuration

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



CSM Support

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

GateA20 Active

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



Option ROM Messages

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

INT19 Trap Response

Allows Option ROMs to trap Interrupt 19 when enabled.

Network

Enables or disables the boot option for legacy network 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 I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB aware OS.

USB Transfer Time-out

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

Device Reset Time-out

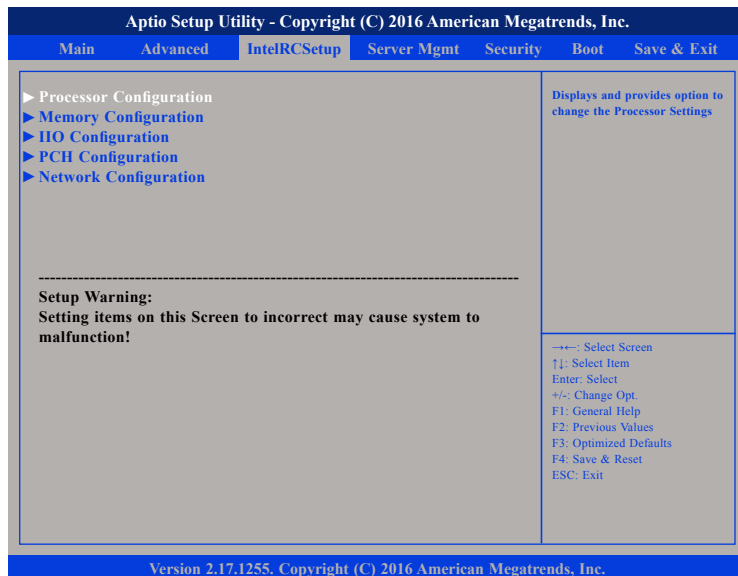
Selects the USB mass storage device's start unit command timeout.

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.

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 this field is 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.

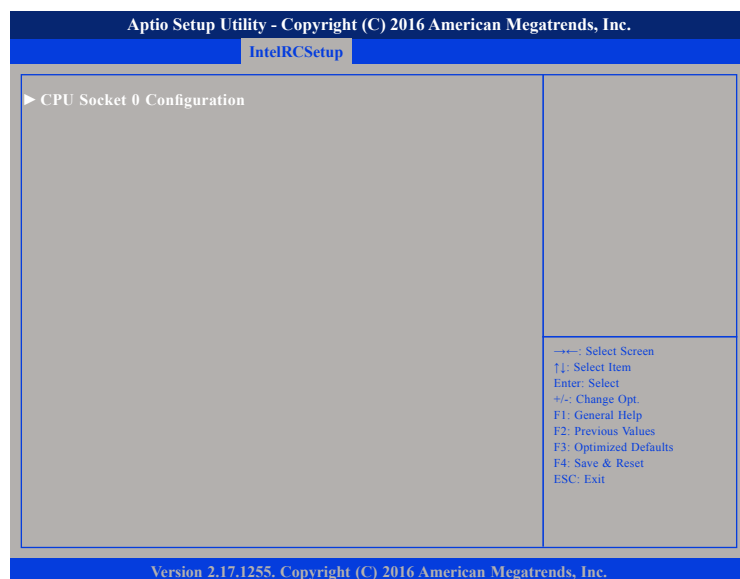
Enable SMX

Enables or disables Secure Mode Extensions.

Hardware Prefetcher

Turns on or off the mid level cache (L2) streamer prefetcher.

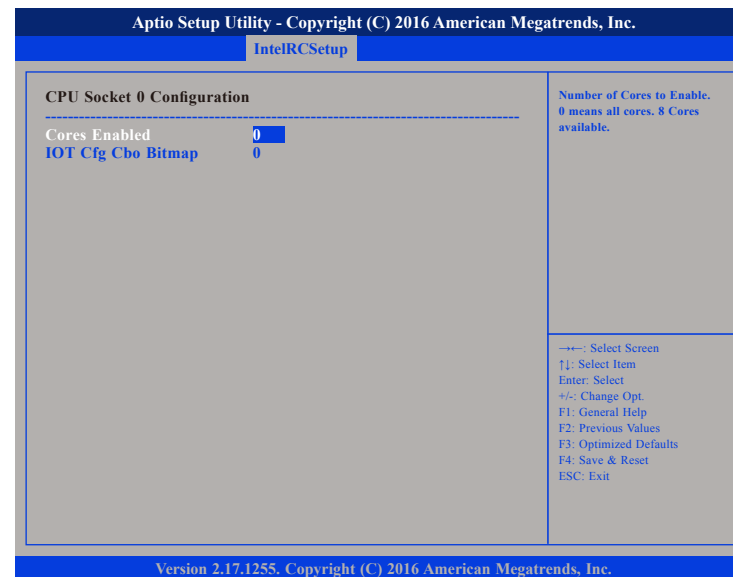
Processor Configuration



CPU Socket 0 Configuration

Processor settings for the CPU on socket 0.

CPU Socket 0 Configuration



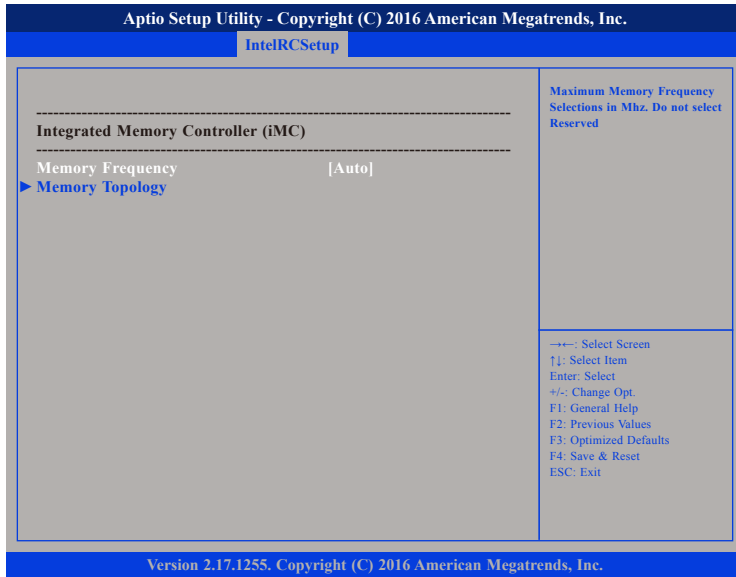
Cores Enabled

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

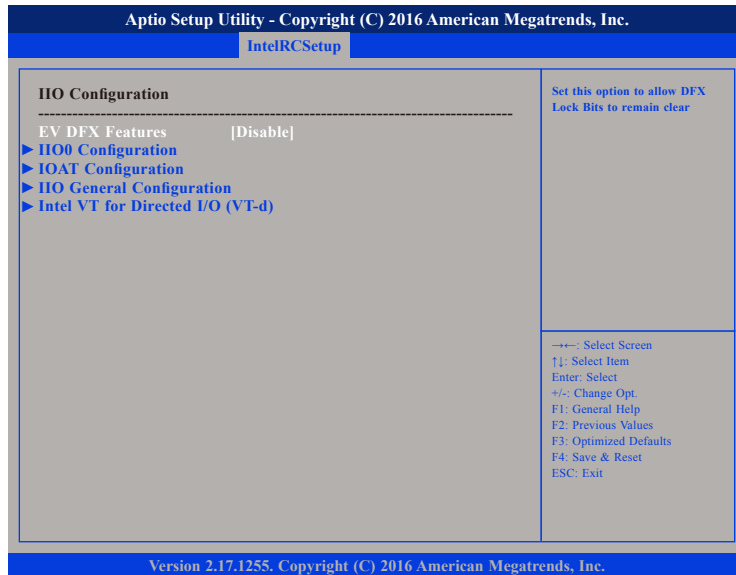
Configures the maximum frequency of the memory. Do not select Reserved.

Memory Topology



Detects and displays the information on the memory installed.

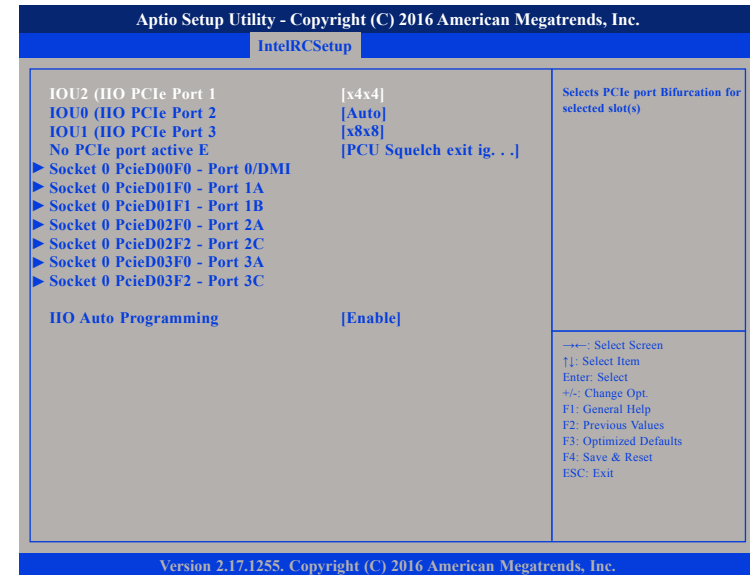
I/O Configuration



EV DFX Features

Enables or disables DFX lock bits to remain clear.

IIO Configuration



IOU2, IOU0 and IOU1 (I/O PCIe Port 1 to Port 3)

Port Bifurcation settings for IOU2, IOU0 and IOU1.

No PCIe Port Active

Configures the workaround solution for ECO when the PCIe ports are not active.

IIO Auto Programming

Enables or disables auto programming of IIO.

Socket 0 PCIED00F0 - Port 0/DMI

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
IntelRCSetup	
Socket 0 PCIeD00F0 - Port 0/DMI	
Link Speed	[Auto]
PCI-E Port DeEmphasis	[-6.0 dB]
PCI-E Port Link Status	Linked as x4
PCI-E Port Link Max	Max Width x4
PCI-E Port Link Speed	Gen 2 (5.0 GT/s)
→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit	
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.	

Link Speed

Configures the link speed of the PCIe port.

PCI-E Port DeEmphasis

Configures the level of the PCIe port de-emphasis.

Socket 0 PCIED00F0 - Port 1A to Socket 0 PCIED03F2 - Port 3C

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.	
IntelRCSetup	
Socket 0 PCIeD0xFx - Port xx	
PCI-E Port	[Auto]
PCI-E Port Link	[Enable]
Link Speed	[Auto]
PCI-E Port DeEmphasis	[-6.0 dB]
PCI-E Port Link Status	Linked as x4
PCI-E Port Link Max	Max Width x4
PCI-E Port Link Speed	Gen 2 (5.0 GT/s)
→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit	
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.	

PCI-E Port

Enables or disables the PCIe port.

PCI-E Port Link

Enables or disables link training of the PCIe port.

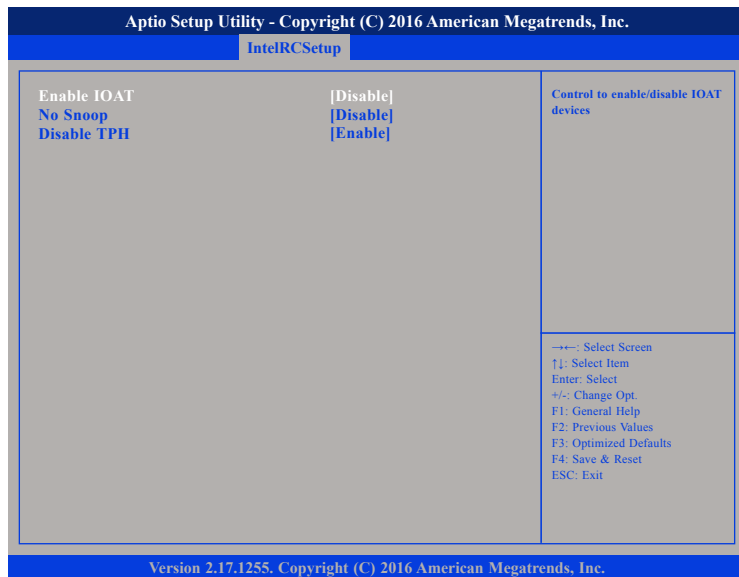
Link Speed

Configures the link speed of the PCIe port.

PCI-E Port DeEmphasis

Configures the level of the PCIe port de-emphasis.

IOAT Configuration



Enable IOAT

Enables or disables Intel® I/O Acceleration Technology.

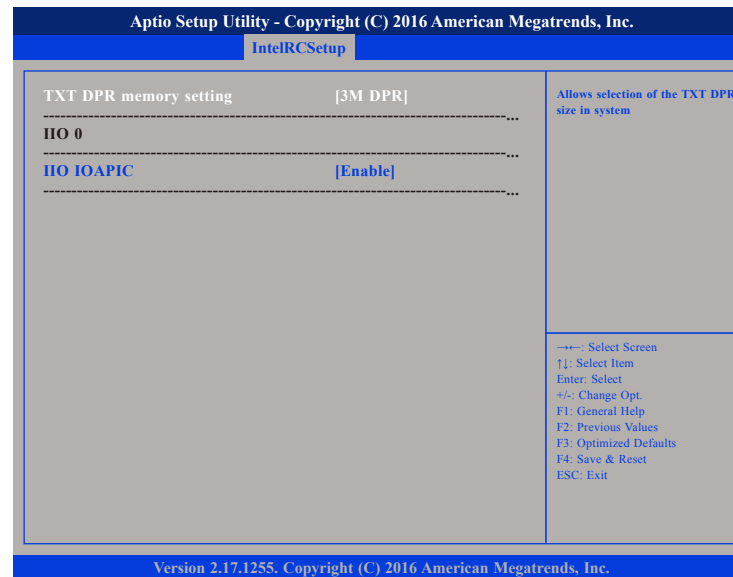
No Snoop

Enables or disables PCIe no snoop attribute for the processor caches.

Disable TPH

Enables or disables transactions processing hints (TPH).

IIO General Configuration



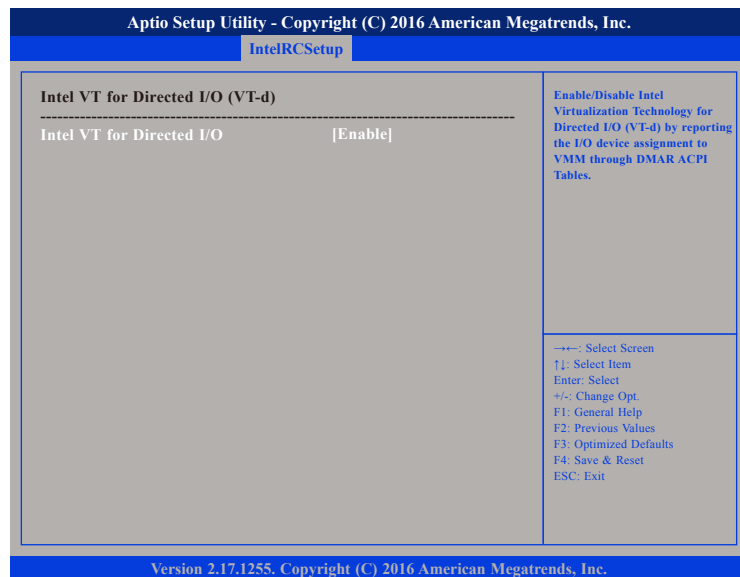
TXT DPR Memory Setting

Configures the TXT DPR size.

IIO IOAPIC

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

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



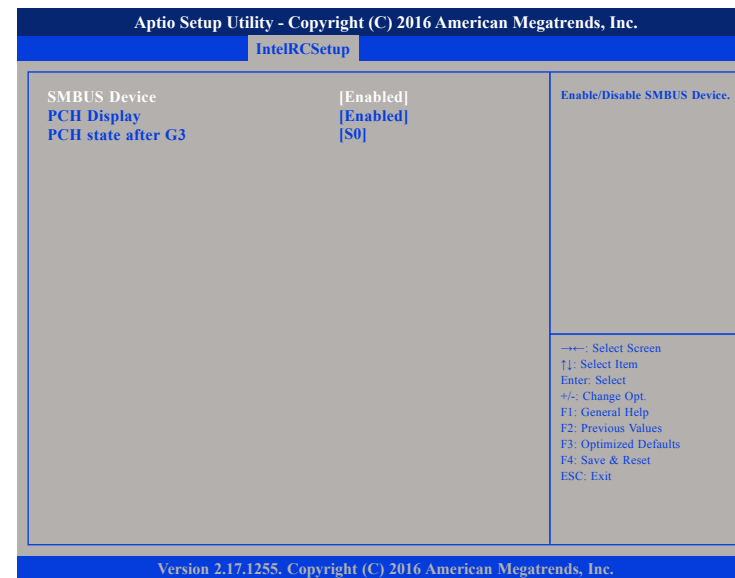
Intel VT for Directed I/O

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.

PCH State After G3

Configures the PCH state after G3.

PCI Express Configuration



PCIe Root Port Function

Enables or disables PCIe root port function swapping feature to dynamically assign function 0 to the enabled root port.

PCI Express Root Port 1 to Port 8



PCI Express Root Port

Enables or disables the PCIe root port.

PCIe Speed

Configures the PCIe speed for the root port.

PCH SATA Configuration

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.		
IntelRCSetup		
SATA Controller	[Enabled]	Enable or Disable SATA Controller
Configure SATA as	[AHCI]	
SATA Port 0	[Not Installed]	
Port 0	[Enabled]	
Hot Plug	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
SATA Port 1	[Not Installed]	
Port 1	[Enabled]	
Hot Plug	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
SATA Port 2	[Not Installed]	
Port 2	[Enabled]	
Hot Plug	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
SATA Port 3	[Not Installed]	
Port 3	[Enabled]	
Hot Plug	[Disabled]	
SATA Device Type	[Hard Disk Drive]	
		← Select Screen ↑↓ Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.		

Port 0 to Port 3

Enables or disables Serial ATA port 0 to port 3.

Hot Plug

Enables or disables hot plugging feature on Serial ATA port 0 to port 3.

SATA Device Type

Identifies what type of SATA device is connected on port 0 to port 3.

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.

USB Configuration



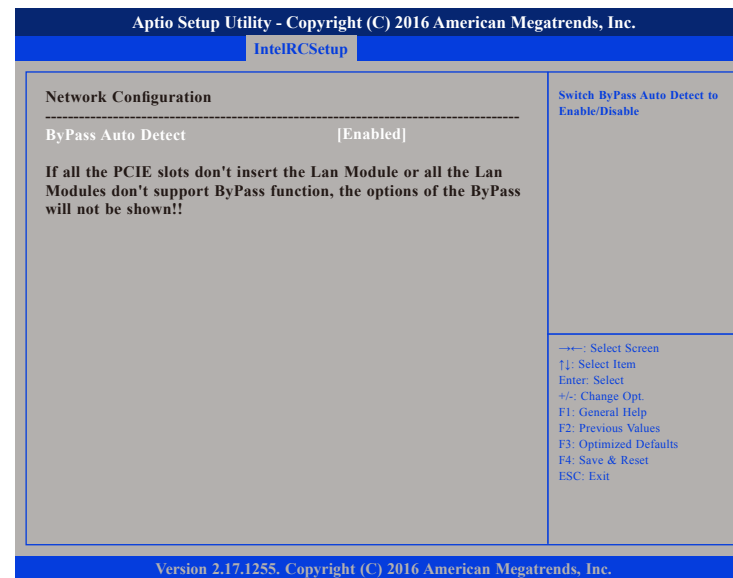
xHCI Mode

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.

Server Mgmt

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.						
Main	Advanced	IntelRCSetup	Server Mgmt	Security	Boot	Save & Exit
BMC Self Test Status	PASSED	Enable/Disable interfaces to communicate with BMC				
BMC Device ID	32					
BMC Device Revision	1					
BMC Firmware Revision	0.72					
IPMI Version	2.0					
BMC Support	[Enabled]					
Wait For BMC	[Enabled]					
▶ System Event Log						
▶ BMC network configuration						
▶ View System Event Log						
▶ BMC User Settings						
▶ BMC Warm Reset						
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit				
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.						

BMC Support

Enables or disables interfaces to communicate with BMC.

Wait for BMC

Enables or disables waiting for BMC.

BMC Warm Reset

To perform a BMC warm reset, select this field then press <Enter>.

System Event Log

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.		
		Server Mgmt
Enabling/Disabling Options		Change this to enable or disable all features of System Event Logging during boot.
SEL Components	[Enabled]	
Erasing Settings		
Erase SEL	[No]	
When SEL is Full	[Do Nothing]	
Custom EFI Logging Options		
Log EFI Status Codes	[Error code]	
NOTE: All values changed here do not take until computer is restarted.		
		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.17.1255. Copyright (C) 2016 American Megatrends, Inc.		

SEL Components

Enables or disables all the features of system event logging during boot.

Erase SEL

Configures the options for erasing SEL.

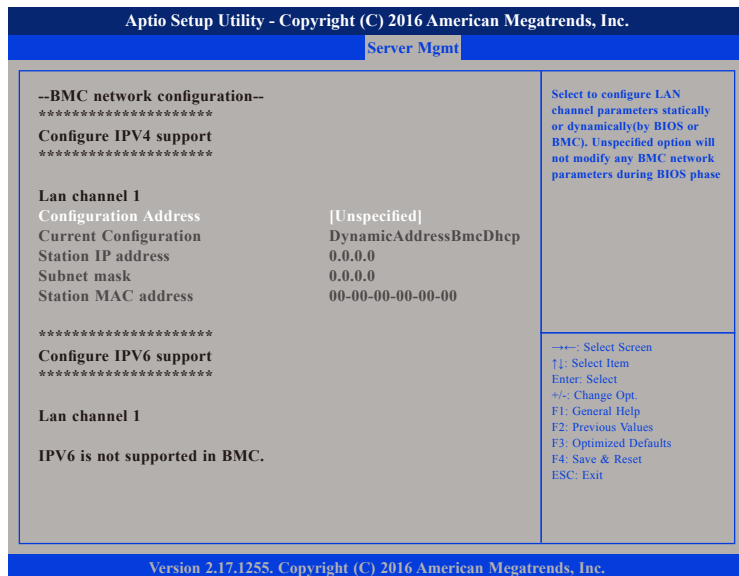
When SEL is Full

Configures the action to perform when SEL is full.

Log EFI Status Codes

Configures the options for logging EFI status codes.

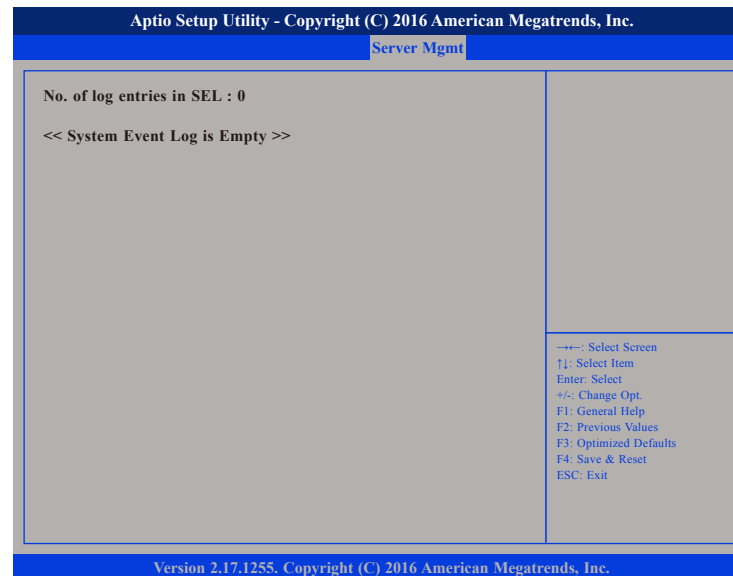
BMC Network Configuration



Configuration Address

Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

View System Event Log



Displays system event log information including date, time and sensor type.

BMC User Settings



Add User

Option to add a user.

Delete User

Option to delete a user.

Change User Settings

Option to change user settings.

BMC User Settings - Add User



User Name

Configures a username for the new user account.

User Password

Configures a password for the new user account.

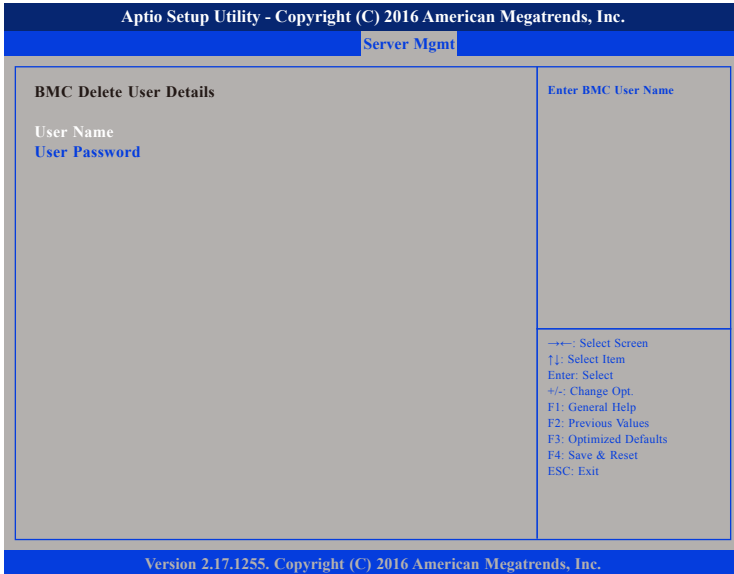
Channel No

Assigns a channel number for the new user account.

User Privilege Limit

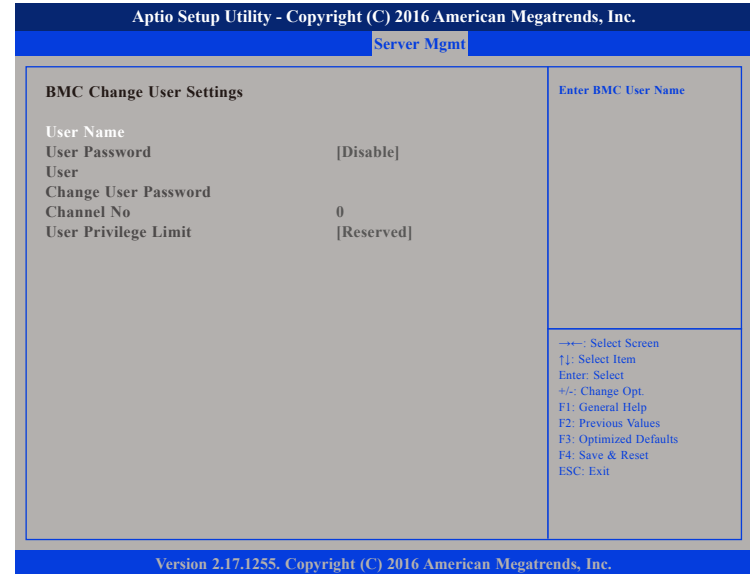
Configures the access privileges of the new user account.

BMC User Settings - Delete User



Deletes the specified user account.

BMC User Settings - Change User Settings



Reconfigures user account settings such as username, password, channel number and access privileges.

Boot



Setup Prompt Timeout

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

Bootup NumLock State

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

Quiet Boot

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

AMI Virtual Device

Enables or disables AMI virtual device.

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 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 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>.