NEXCOM International Co., Ltd.

Network and Communication Solutions
Network Security Appliance
NSA 5150
User Manual

Contents

Chapter 3: System Setup

Chapter 4: BIOS Setup

Appendix A: Bypass Register

Preface

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Acknowledgements

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Regulatory Compliance Statements

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

Declaration of Conformity

FCC

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

CE

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

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2002/95/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 2006 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 5150 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	5044440031X00	Rubber Foot Kang Yang: RF20-5-4P	19.8x18x5.0mm	4
2	6012200052X00	PE Zipper Bag #8	170x240mm, W/China RoHS SYMBOL	1
3	6012200053X00	PE Zipper Bag #3	100x70mm, W/China RoHS SYMBOL	1
4	6023309081X00	Cable EDI: 232091081804-RS	COM Port. DB9 Female To RJ45 8P8C L:1800mm	1
5	6029900037X00	DOW Corning 340 Silcone Heat Sink Compound(3g)		1
6	50311F0102X00	(H)Round Head Screw Long FEI: P6#32Tx 1/4/SW7*0.8	W/Spring+Flat Washer P6#32Tx 1/4/SW7x0.8 NI	4
7	60233AT133X00	SATA Cable ST: MD-6102042	SATA 7P 180D(LOCK) TO 7P 90D(LOCK) L=135mm	1
8	6014401754X00	NSA 5150 Membrane with LCM VER: A GREATWOOD	42x427.8x0.582mm	1
9	5060900301X00	NSA 5130 Ear Sets VER: A CHYUAN-JYH	79.5x43.5x26mm AL Pantone 295U	1
10	50311F0148X00	(H)Screw Long FEI: P4#40T*1/4 NIGP	P#4-40TX6.35mm (NI)	1
11	602DCD0757X00	(E)NSA 5150 CD Driver VER: 1.0	JCL	1

NSA 5150 User Manual

Ordering Information

The following below provides ordering information for NSA 5150.

Barebone

NSA 5150 (P/N: 10S00515000X0)

Support 4th generation Intel® Core™ processors, 4 DDR3 memory slots, 8PCIe GbE LAN ports, MO-297 socket, USB ports, VGA port, one PCIe x4 expansion slot, w/o LCM

Chapter 1: Product Introduction

Overview

Key Features

- 1U rackmount network platform

- Intel® 4th generation Core™ processors

- Support four DDR3 1333/1600 memory, up to 32GB

- Support one PCIe x8 expansion

- Internal one 3.5" HDD bay/two 2.5" HDD bay (Optional)

Hardware Specifications

Main Board

- NSB 5150
- Support 4th generation Intel® Core™ processors
- Intel® C226

Main Memory

- 4x 240-pin DDR3 1333/1600MHz DIMM sockets, up to 32GB ECC SDRAM

LAN Features

- LAN Chip : Intel® I350
- Support 10/100/1000 link speed
- LAN Bypass : 4pairs

Expansion

- 1x PCIe x4 slot
- 1x LAN module

I/O Interface-Front

- Power status/HDD status/LAN status/Bypass status LEDs
- 2x USB 2.0 ports
- 1x RJ45 type console port
- 8x copper LAN ports
- 1x LAN Module (Optional)

I/O Interface-Rear

- 1x expansion slot
- 2x USB 2.0 ports
- 1x VGA port

Devices

- 1x MO-297 socket
- 1x internal 3.5" HDD bay/two 2.5" HDD Bay (Optional)
- 1x SATA-DOM device space

Power Input

- 250W ATX power supply/200W 1+1 redundant power supply (Optional)

Chassis Dimensions

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

Weight

- Without packing: 8Kg
- With packing: 12Kg

Certifications

- CE approval
- FCC Class A
- UL

Knowing Your NSA 5150

Front Panel

LCD

Power/HDD LEDs

Reset button

RJ45 type
console
serial port

USB
ports

Copper LAN ports
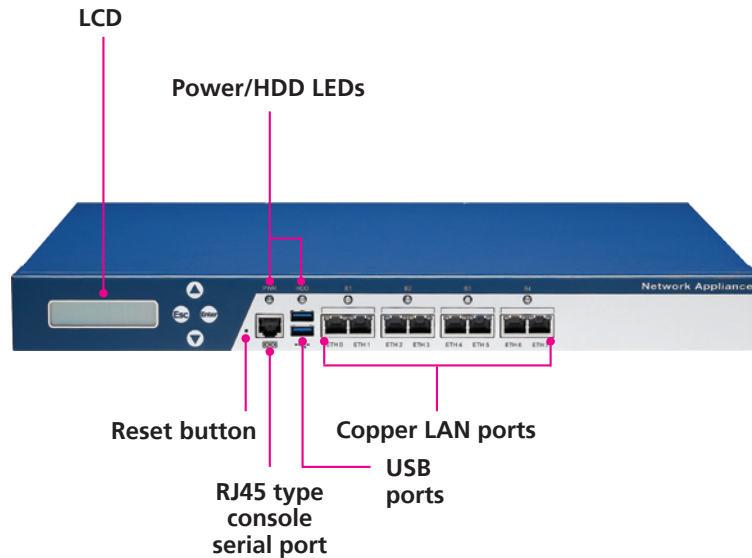
LCD
2x16 characters LCD module, PIO interface.

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 3.0/2.0 devices.

Copper LAN Ports
Used to connect LAN network devices.

Rear Panel

Expansion slot (optional)

VGA

AC Power Socket
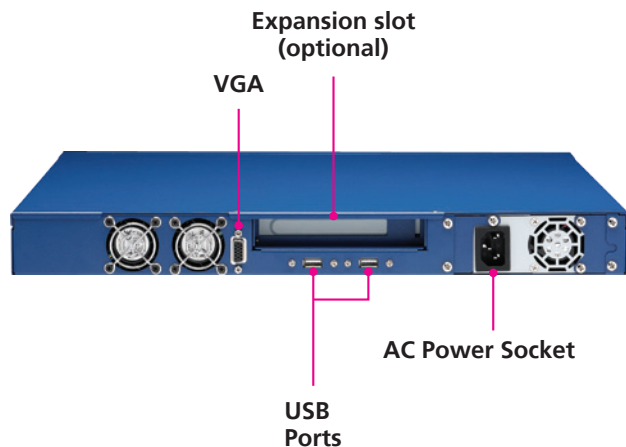
USB Ports

Expansion Slot
Used to install a PCI Express x8 card.

VGA
Used to connect an analog VGA monitor.

USB Ports
Used to connect USB 2.0/1.1 devices.

AC Power Socket
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 5150 motherboard.

Before You Begin

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

▪ Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
– A Philips screwdriver
– A flat-tipped screwdriver
– A set of jewelers screwdrivers
– A grounding strap
– An anti-static pad

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

▪ Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

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

Follow the guidelines below to avoid damage to your computer or yourself:
▪ Always disconnect the unit from the power outlet whenever you are working inside the case.

▪ If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

▪ Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.

▪ Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.

▪ Use correct screws and do not over tighten screws.

Jumper Settings

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

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

Two-Pin Jumpers: Open (Left) and Short (Right)
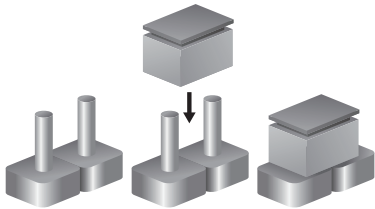
Three-Pin Jumpers: Pins 1 and 2 are Short
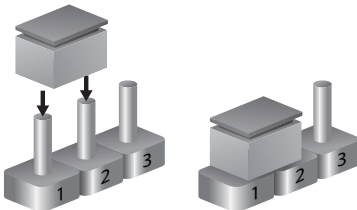
Locations of the Jumpers and Connectors

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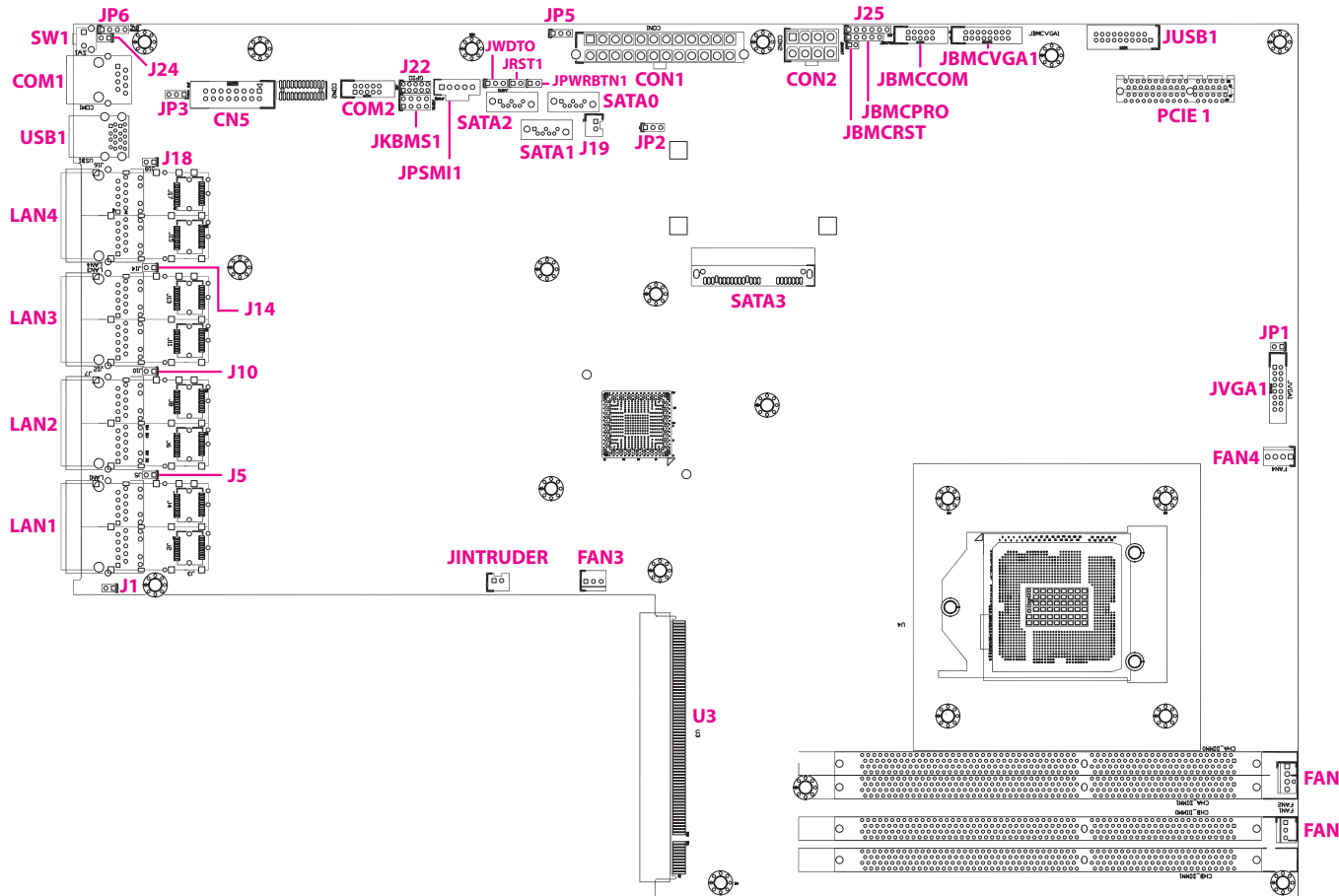
Jumpers

RTC Clear

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP2

1 ☐ ○ ○ 3

Pin	Function
1-2	Normal
2-3	Clear CMOS

Pin	Definition
1	VCCRTC
2	RTC_RST#
3	GND

ATX/AT Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP5

1 ☐ ○ ○ 3

Pin	Function
1-2	ATX Mode
2-3	AT Mode

Pin	Definition
1	NC
2	AT_ATX_SELECT
3	GND

Console Pin Header

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JP3

1 ▢ ◯ ◯ 3

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

Pin	Description
1	SP_RTS1_R
2	SP_CTS1_R
3	SP_CTS1_CON

WDTO Pin Header

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

1 ▢ ◯ ◯ 3

Pin	Function
1-2	NMI at WDTO
2-3	Reset at WDTO

Pin	Description
1	NMI_WDTO
2	SIO_WDTO
3	RST_WDTO

Connector Pin Definitions

External I/O Interfaces
Reset Button
Connector location: SW1
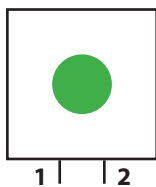
Pin	Definition
1	GND
2	SW_BTN_IN

RS232 Console Port
Connector type: RJ45 port
Connector location: COM1
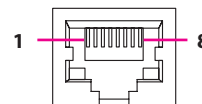
Pin	Definition	Pin	Definition
1	SP_RTS1_R	2	SP_DTR1_R
3	SP_TXD1_R	4	GND
5	SP_DCD1_R	6	SP_RXD1_R
7	SP_DSR1_R	8	SP_CTS1_CON

10 NSA 5150 User Manual

Dual USB 3.0 Ports

Connector type: Dual USB 3.0 ports
Connector location: USB1
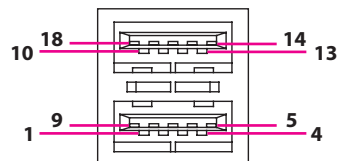
Pin	Definition	Pin	Definition
1	5VDUAL	2	USB2-
3	USB2+	4	GND
5	USB3_RX3-	6	USB3_RX3+
7	GND	8	USB3_TX3-
9	USB3_TX3+	10	5VDUAL
11	USB3-	12	USB3+
13	GND	14	USB3_RX4-
15	USB3_RX4+	16	GND
17	USB3_TX4-	18	USB3_TX4+

LAN Ports

Connector type: RJ45 with LEDs
Connector location: LAN1, LAN2, LAN3 and LAN4
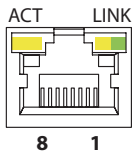
Act	Status
Flashing Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Yellow	100Mbps network link
Off	No link

LAN1

Pin	Definition	Pin	Definition
A1	PORT7_MDI0P	A2	PORT7_MDI0N
A3	PORT7_MDI1P	A4	PORT7_MDI1N
A5	LAN7_RJ_TC	A6	GND
A7	PORT7_MDI2P	A8	PORT7_MDI2N
A9	PORT7_MDI3P	A10	PORT7_MDI3N
A11	PORT7_L1000_N	A12	PORT7_L100_N
A13	PORT7_ACT_N	A14	PORT7_LINK_N
B1	PORT8_MDI0P	B2	PORT8_MDI0N
B3	PORT8_MDI1P	B4	PORT8_MDI1N
B5	LAN8_RJ_TC	B6	GND
B7	PORT8_MDI2P	B8	PORT8_MDI2N
B9	PORT8_MDI3P	B10	PORT8_MDI3N
B11	PORT8_L1000_N	B12	PORT8_L100_N
B13	PORT8_ACT_N	B14	PORT8_LINK_N

LAN2

Pin	Definition	Pin	Definition
A1	PORT5_MDI0P	A2	PORT5_MDI0N
A3	PORT5_MDI1P	A4	PORT5_MDI1N
A5	LAN5_RJ_TC	A6	GND
A7	PORT5_MDI2P	A8	PORT5_MDI2N
A9	PORT5_MDI3P	A10	PORT5_MDI3N
A11	PORT5_L1000_N	A12	PORT5_L100_N
A13	PORT5_ACT_N	A14	PORT5_LINK_N
B1	PORT6_MDI0P	B2	PORT6_MDI0N
B3	PORT6_MDI1P	B4	PORT6_MDI1N
B5	LAN6_RJ_TC	B6	GND
B7	PORT6_MDI2P	B8	PORT6_MDI2N
B9	PORT6_MDI3P	B10	PORT6_MDI3N
B11	PORT6_L1000_N	B12	PORT6_L100_N
B13	PORT6_ACT_N	B14	PORT6_LINK_N

LAN3

Pin	Definition	Pin	Definition
A1	PORT3_MDI0P	A2	PORT3_MDI0N
A3	PORT3_MDI1P	A4	PORT3_MDI1N
A5	LAN3_RJ_TC	A6	GND
A7	PORT3_MDI2P	A8	PORT3_MDI2N
A9	PORT3_MDI3P	A10	PORT3_MDI3N
A11	PORT3_L1000_N	A12	PORT3_L100_N
A13	PORT3_ACT_N	A14	PORT3_LINK_N
B1	PORT4_MDI0P	B2	PORT4_MDI0N
B3	PORT4_MDI1P	B4	PORT4_MDI1N
B5	LAN4_RJ_TC	B6	GND
B7	PORT4_MDI2P	B8	PORT4_MDI2N
B9	PORT4_MDI3P	B10	PORT4_MDI3N
B11	PORT4_L1000_N	B12	PORT4_L100_N
B13	PORT4_ACT_N	B14	PORT4_LINK_N

LAN4

Pin	Definition	Pin	Definition
A1	PORT1_MDI0P	A2	PORT1_MDI0N
A3	PORT1_MDI1P	A4	PORT1_MDI1N
A5	LAN1_RJ_TC	A6	GND
A7	PORT1_MDI2P	A8	PORT1_MDI2N
A9	PORT1_MDI3P	A10	PORT1_MDI3N
A11	PORT1_L1000_N	A12	PORT1_L100_N
A13	PORT1_ACT_N	A14	PORT1_LINK_N
B1	PORT2_MDI0P	B2	PORT2_MDI0N
B3	PORT2_MDI1P	B4	PORT2_MDI1N
B5	LAN2_RJ_TC	B6	GND
B7	PORT2_MDI2P	B8	PORT2_MDI2N
B9	PORT2_MDI3P	B10	PORT2_MDI3N
B11	PORT2_L1000_N	B12	PORT2_L100_N
B13	PORT2_ACT_N	B14	PORT2_LINK_N

13 NSA 5150 User Manual

Connector Pin Definitions

Internal Connectors

Digital IO (4 Input/4 Output)

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: J22
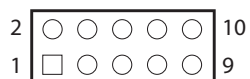
Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	SIO_GP32	4	SIO_GP06
5	SIO_GP03	6	SIO_GP07
7	SIO_GP04	8	SIO_GP76
9	SIO_GP05	10	SIO_GP77

COM 2 Box Header Connector (RS232)

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: COM2
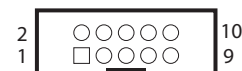
Pin	Definition	Pin	Definition
1	SP_DCD2	2	SP_RXD2
3	SP_TXD2	4	SP_DTR2
5	GND	6	SP_DSR2
7	SP_RTS2	8	SP_CTS2
9	SP_RI2	10	GND

BMC COM

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: JBMCCOM
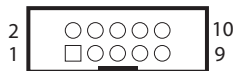
Pin	Definition	Pin	Definition
1	NC	2	SP_RXD
3	SP_TXD	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC	10	GND

USB2 Box Header

Connector type: 2x10 20-pin header, 2.0mm pitch
Connector location: JUSB1

Pin	Definition	Pin	Definition
1	5VDUAL	2	USB3_RX1-
3	USB3_RX1+	4	GND
5	USB3_TX1-	6	USB3_TX1+
7	GND	8	USB_0-
9	USB_0+	10	NC
11	USB_1+	12	USB_1-
13	GND	14	USB3_TX2+
15	USB3_TX2-	16	GND
17	USB3_RX2+	18	USB3_RX2-
19	5VDUAL	20	

HW Reset Pin Header

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: JRST1

2 | ⚪ ⬜ | 1

Pin	Definition
1	PCH_SYS_RESET_N_R
2	GND

Power Button Pin Header

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: JPWRBTN1

2 | ⚪ ⬜ | 1

Pin	Definition
1	GND
2	FP_PWRBTN_N

NMI Pin Header

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: JP1

2 ⬜○ 1

Pin	Definition
1	NMI_SW-
2	GND

Bypass LED Pin Header

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: J1, J5, J10 and J14

2 ⬜○ 1

J1

Pin	Definition
1	VCC3
2	BYPASS_LED_S4

J5

Pin	Definition
1	VCC3
2	BYPASS_LED_S3

J10

Pin	Definition
1	VCC3
2	BYPASS_LED_S2

J14

Pin	Definition
1	VCC3
2	BYPASS_LED_S1

Power LED Pin Header

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: J24

2 ○ □ 1

Pin	Definition
1	VCC3
2	POWER_LED

HDD LED Pin Header

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: J18

2 ○ □ 1

Pin	Definition
1	VCC3
2	HDD_LED

GAL Programming Connector

Connector type: 1x6 6-pin header, 2.54mm pitch
Connector location: J25

1 □ ○ ○ ○ ○ ○ 6

Pin	Definition	Pin	Definition
1	3VSB	2	GND
3	GAL_TCK	4	GAL_TDO
5	GAL_TDI	6	GAL_TMS

BMC Programming Connector

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

1 □ ○ ○ ○ ○ 5

Pin	Definition	Pin	Definition
1	FLA_CS0	2	FLA_D0
3	FLA_D1	4	FLA_D2
5	FLA_D3	6	

19 NSA 5150 User Manual

BMC Reset Pin Header

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

2 ⬜⬛ 1

Pin	Definition
1	BMC_RESET_N
2	GND

System Fan Connector (4-Pin)

Connector type: 1x4 4-pin Wafer, 2.54mm pitch
Connector location: FAN2 and FAN4

1 ⬜○○○ 4
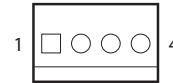
Pin	Definition
1	GND
2	VCC12
3	Sense
4	FANPWM

System Fan Connectors (3-Pin)

Connector type: 1x3 3-pin Wafer, 2.54mm pitch
Connector location: FAN1 and FAN3
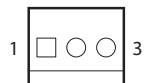
Intrusion Detect Connector

Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: JINTRUDER

Pin	Definition
1	GND
2	VCC12
3	Sense

Pin	Definition
1	INTRUDER_N
2	GND

Internal MO-297 Connector

Connector type: MO-297
Connector location: SATA3

SATA Connectors

Connector type: Standard Serial ATA, 1.27mm pitch
Connector location: SATA0, SATA1 and SATA2
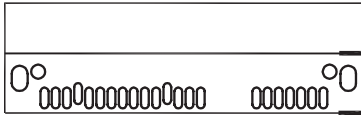
Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP3
3	SATA_TXN3	4	GND
5	SATA_RXN3	6	SATA_RXP3
7	GND	8	NC
9	NC	10	NC
11	GND	12	GND
13	GND	14	VCC5
15	VCC5	16	VCC5
17	GND	18	NC
19	GND	20	NC
21	NC	22	NC
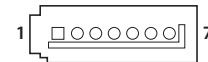
SATA0

Pin	Definition	Pin	Definition
1	GND	2	SATA_TX0P
3	SATA_TX0N	4	GND
5	SATA_RX0N	6	SATA_RX0P
7	GND		

SATA1

Pin	Definition	Pin	Definition
1	GND	2	SATA_TX1P
3	SATA_TX1N	4	GND
5	SATA_RX1N	6	SATA_RX1P
7	GND		

SATA2

Pin	Definition	Pin	Definition
1	GND	2	SATA_TX2P
3	SATA_TX2N	4	GND
5	SATA_RX2N	6	SATA_RX2P
7	GND		

SATA DOM Power Port

Connector type: 1x2 2-pin header, 2.5mm pitch
Connector location: J19

Pin	Definition
1	VCC5
2	GND

Keyboard/Mouse Connector

Connector type: 2x4 8-pin header, 2.54mm pitch
Connector location: JKBMS1
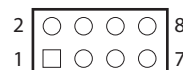
Pin	Definition	Pin	Definition
1	VCC5	2	VCC5
3	KDAT	4	MDAT
5	KCLK	6	MCLK
7	GND	8	GND

VGA Connector

Connector type: 2x8 16-pin header, 2.0mm pitch
Connector location: JVGA1
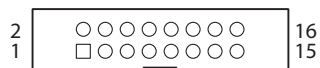
Pin	Definition	Pin	Definition
1	RED_VGA	2	GREEN_VGA
3	BLUE_VGA	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA_+5V	10	GND
11	NC	12	DDC_DATA_VGA
13	HSYNC_VGA	14	VSYNC_VGA
15	DDC_CLK_VGA	16	NC

VGA Connector

Connector type: 2x8 16-pin header, 2.0mm pitch
Connector location: JBMCVGA1
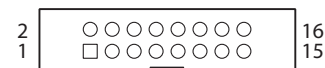
Pin	Definition	Pin	Definition
1	DACROA	2	DACGOA
3	DACBOA	4	NC
5	GND	6	GND
7	GND	8	GND
9	VGA_VCC	10	GND
11	NC	12	DDC_DATAO
13	AHSYNCO	14	AVSYNCO
15	DDC_CLKO	16	NC

Parallel Interface for LCM Module

Connector type: 2x8 16-pin header, 2.54mm pitch
Connector location: CN5

Keypad Pin Header

Connector type: 1x4 4-pin header, 2.54mm pitch
Connector location: JP6
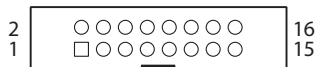
Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	LPT_SLIN#R	4	LPT_RES
5	LPT_AFD#R	6	LPT_INIT#R
7	LPT_PDR1	8	LPT_PDR0
9	LPT_PDR3	10	LPT_PDR2
11	LPT_PDR5	12	LPT_PDR4
13	LPT_PDR7	14	LPT_PDR6
15	LPT_PW	16	VCC5

Pin	Definition	Pin	Definition
1	KEY_PIN1	2	KEY_PIN2
3	KEY_PIN3	4	KEY_PIN4

PSMI Connector

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

Power Connector

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

Pin	Definition	Pin	Definition
1	PMBUS_CLK	2	PMBUS_DATA
3	PMBUS_ALERT_N	4	GND
5	NC	6	
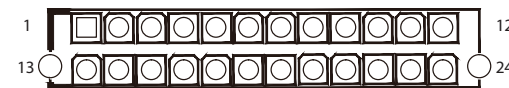
Pin	Definition	Pin	Definition
1	VCC3	2	VCC3
3	GND	4	VCC5
5	GND	6	VCC5
7	GND	8	ATXPWROK
9	5VSB	10	VCC12
11	VCC12	12	VCC3
13	VCC3	14	NVCC12
15	GND	16	SIO_PSON_N
17	GND	18	GND
19	GND	20	GND
21	VCC5	22	VCC5
23	VCC5	24	GND

Power Connector

Connector type: 2x4 8-pin header, 4.2mm pitch
Connector location: CON2
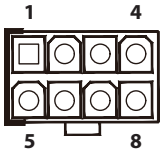
Pin	Definition	Pin	Definition
1	GND	2	GND
3	GND	4	GND
5	VCC12_CPU	6	VCC12_CPU
7	VCC12_CPU	8	VCC12_CPU

PCIe x4 Slot

Connector type: PCIe x4 Slot
Connector location: PCIE1
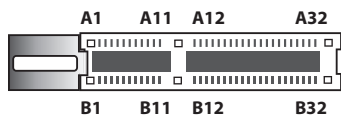
Pin	Definition	Pin	Definition
A1	PRSNT1	B1	VCC12
A2	VCC12	B2	VCC12
A3	VCC12	B3	VCC12
A4	GND	B4	GND
A5	NC	B5	SLOT_SMC
A6	NC	B6	SLOT_SMD
A7	NC	B7	GND
A8	NC	B8	VCC3
A9	VCC3	B9	NC
A10	VCC3	B10	3VSB
A11	RST_X4_SLOT_N	B11	PCIE_WAKE_L
A12	GND	B12	NC
A13	CK_SLOT2_DP	B13	GND
A14	CK_SLOT2_DN	B14	PCH_PE_TXP5
A15	GND	B15	PCH_PE_TXN5
A16	PCH_PE_RXP5	B16	GND

Pin	Definition	Pin	Definition
A17	PCH_PE_RXN5	B17	PRSNT2_1
A18	GND	B18	GND
A19	NC	B19	PCH_PE_TXP6
A20	GND	B20	PCH_PE_TXN6
A21	PCH_PE_RXP6	B21	GND
A22	PCH_PE_RXN6	B22	GND
A23	GND	B23	PCH_PE_TXP7
A24	GND	B24	PCH_PE_TXN7
A25	PCH_PE_RXP7	B25	GND
A26	PCH_PE_RXN7	B26	GND
A27	GND	B27	PCH_PE_TXP8
A28	GND	B28	PCH_PE_TXN8
A29	PCH_PE_RXP8	B29	GND
A30	PCH_PE_RXN8	B30	NC
A31	GND	B31	PRSNT2_2
A32	NC	B32	GND

LAN Module Slot

Connector location: U3

```
B82                                                    B12      B11          B1



A82                                                    A12      A11          A1
```
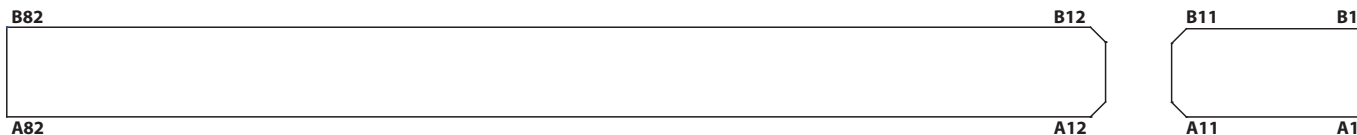
Pin	Definition	Pin	Direction
A1	GND	GND	
A2	LPC_AD0	LPC Multiplexed Command, Address, Data	I/O
A3	LPC_AD1	LPC Multiplexed Command, Address, Data	I/O
A4	LPC_AD2	LPC Multiplexed Command, Address, Data	I/O
A5	LPC_AD3	LPC Multiplexed Command, Address, Data	I/O
A6	LPC_FRAME_N	LPC Frame	O
A7	GND	GND	
A8	CK_33M_PCIE1	33MHz Clock output	O
A9	GNG	GND	
A10	PCIE1_SLOT_RST_N	Platform Reset	O
A11	GND	GND	
A12	P5V	5V	Power
A13	P5V	5V	Power
A14	P5V	5V	Power
A15	P5V	5V	Power
A16	P5V	5V	Power
A17	P3V3	3.3V	Power

Pin	Definition	Pin	Direction
A18	P3V3	3.3V	Power
A19	P3V3	3.3V	Power
A20	P3V3	3.3V	Power
A21	P3V3	3.3V	Power
A22	P3V3	3.3V	Power
A23	P3V3	3.3V	Power
A24	P12V	12V	Power
A25	P12V	12V	Power
A26	P12V	12V	Power
A27	P12V	12V	Power
A28	P12V	12V	Power
A29	ATX_PWROK_B1	Power good signal from ATX power supply 8.2K pull-high to 5VDual	O
A30	ATX_PWROK_B2	Power good signal from ATX power supply 8.2K pull-high to 5VDual	O
A31	GND	GND	
A32	PCIE1_SMBCLK	SMBus Clock. 4.7K pull-high to 3.3V	I/O

Pin	Definition	Pin	Direction
A33	PCIE1_SMBDAT	SMBus Data. 4.7K pull-high to 3.3V	I/O
A34	GND	GND	
A35	FAN_TAC4	Amplitude fan tachometer input	I
A36	GND	GND	
A37	GND	GND	
A38	GND	GND	
A39	GND	GND	
A40	GND	GND	
A41	GND	GND	
A42	GND	GND	
A43	GND	GND	
A44	GND	GND	
A45	HM_VTIN1	Temperature sensor input 10K pull-high to VREF	I
A46	MONITOR_GND	Temperature sensor GND	
A47	GND	GND	
A48	GND	GND	
A49	GND	GND	
A50	GND	GND	
A51	ALL_PWRGD	All power OK signal	O
A52	GND	GND	
A53	N12V	NC	
A54	GND	GND	
A55	GND	GND	
A56	PEG0_RX7P	CPU Primary PCI Express Receive Differential	I
A57	PEG0_RX7N	Pair	I

Pin	Definition	Pin	Direction
A58	GND	GND	
A59	PEG0_TX7P	CPU Primary PCI Express Transmit	O
A60	PEG0_TX7N	Differential Pair	O
A61	GND	GND	
A62	PEG0_RX6P	CPU Primary PCI Express Receive Differential	I
A63	PEG0_RX6N	Pair	I
A64	GND	GND	
A65	PEG0_TX6P	CPU Primary PCI Express Transmit	O
A66	PEG0_TX6N	Differential Pair	O
A67	GND	GND	
A68	PEG0_RX5P	CPU Primary PCI Express Receive Differential	I
A69	PEG0_RX5N	Pair	I
A70	GND	GND	
A71	PEG0_TX5P	CPU Primary PCI Express Transmit	O
A72	PEG0_TX5N	Differential Pair	O
A73	GND	GND	
A74	PEG0_RX4P	CPU Primary PCI Express Receive Differential	I
A75	PEG0_RX4N	Pair	I
A76	GND	GND	
A77	PEG0_TX4P	CPU Primary PCI Express Transmit	O
A78	PEG0_TX4N	Differential Pair	O
A79	GND	GND	
A80	GND	GND	
A81	GND	GND	
A82	GND	GND	

Pin	Definition	Pin	Direction
B1	GND	GND	
B2	PCIE1_SEL1	High level (3.3VSB) (Identify for module)	O
B3	PCIE1_SEL2	Low level (GND) (Identify for module)	O
B4	PCIE1_SEL3	Low level (GND) (Identify for module)	O
B5	GND	GND	
B6	GND	GND	
B7	GND	GND	
B8	PCIE1_SUSCLK	32KHz Clock output	O
B9	P3V3_DUAL	3.3VSB	Power
B10	P3V3_DUAL	3.3VSB	Power
B11	P3V3_DUAL	3.3VSB	Power
B12	P5V	5V	Power
B13	P5V	5V	Power
B14	P5V	5V	Power
B15	P5V	5V	Power
B16	P5V	5V	Power
B17	P3V3	3.3V	Power
B18	P3V3	3.3V	Power
B19	P3V3	3.3V	Power
B20	P3V3	3.3V	Power
B21	P3V3	3.3V	Power
B22	P3V3	3.3V	Power
B23	P3V3	3.3V	Power
B24	P12V	12V	Power
B25	P12V	12V	Power
B26	P12V	12V	Power
B27	P12V	12V	Power
B28	P12V	12V	Power
B29	SMB_ALERT#	SMBus ALERT#	I
B30	PE_WAKE_N	PCI Express Device Wake Event signal 1K pull-high to 3VDual	I

Pin	Definition	Pin	Direction
B31	ATX_PWROK_A1	Power good signal from ATX power supply 8.2K pull-high to 5VDual	O
B32	ATX_PWROK_A2	Power good signal from ATX power supply 8.2K pull-high to 5VDual	O
B33	GND	GND	
B34	USB_4P	Universal Serial Bus Port Differential signal	I/O
B35	USB_4N	Universal Serial Bus Port Differential signal	I/O
B36	USB_OC45#	USB device Over current Indicators	I
B37	GND	GND	
B38	GND	GND	
B39	GND	GND	
B40	GND	GND	
B41	GND	GND	
B42	GND	GND	
B43	GND	GND	
B44	GND	GND	
B45	GND	GND	
B46	GND	GND	
B47	GND	GND	
B48	GND	GND	
B49	GND	GND	
B50	GND	GND	
B51	GND	GND	
B52	GND	GND	
B53	GND	GND	
B54	GND	GND	
B55	GND	GND	
B56	PEG0_RX3P	CPU Primary PCI Express Receive Differential	I
B57	PEG0_RX3N	Pair	I
B58	GND	GND	

Pin	Definition	Pin	Direction
B59	PEG0_TX3P	CPU Primary PCI Express Transmit	O
B60	PEG0_TX3N	Differential Pair	O
B61	GND	GND	
B62	PEG0_RX2P	CPU Primary PCI Express Receive Differential	I
B63	PEG0_RX2N	Pair	I
B64	GND	GND	
B65	PEG0_TX2P	CPU Primary PCI Express Transmit	O
B66	PEG0_TX2N	Differential Pair	O
B67	GND	GND	
B68	PEG0_RX1P	CPU Primary PCI Express Receive Differential	I
B69	PEG0_RX1N	Pair	I
B70	GND	GND	
B71	PEG0_TX1P	CPU Primary PCI Express Transmit	O
B72	PEG0_TX1N	Differential Pair	O
B73	GND	GND	
B74	PEG0_RX0P	CPU Primary PCI Express Receive Differential	I
B75	PEG0_RX0N	Pair	I
B76	GND	GND	
B77	PEG0_TX0P	CPU Primary PCI Express Transmit	O
B78	PEG0_TX0N	Differential Pair	O
B79	GND	GND	
B80	CK_SLOT1_DP	Differential PCI Express Clock	O
B81	CK_SLOT1_DN	Differential PCI Express Clock	O
B82	GND	GND	

Chapter 3: System Setup

Removing the Chassis Cover

> **CAUTION!** 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.
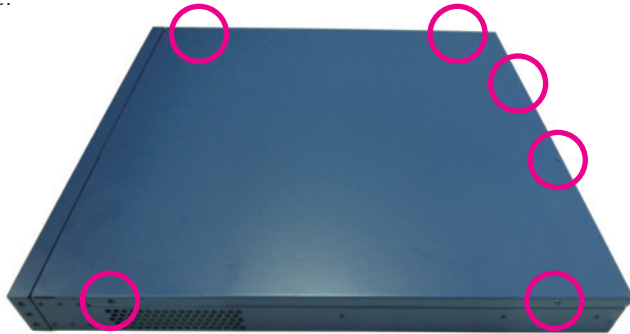
2. Gently slide the cover outwards, then lift up the cover to remove it.

Lift here
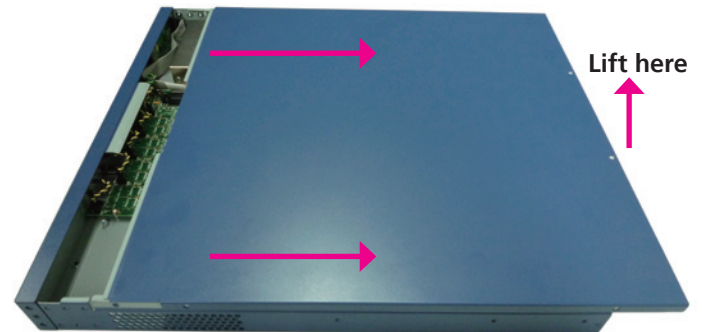
Installing a SATA DOM

1. Locate the SATA DOM connector on the board.
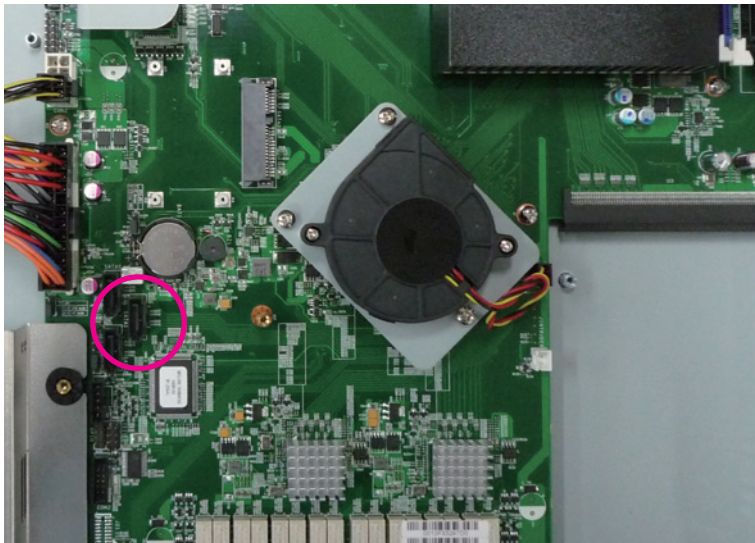
2. Fasten a copper post on the mounting hole.
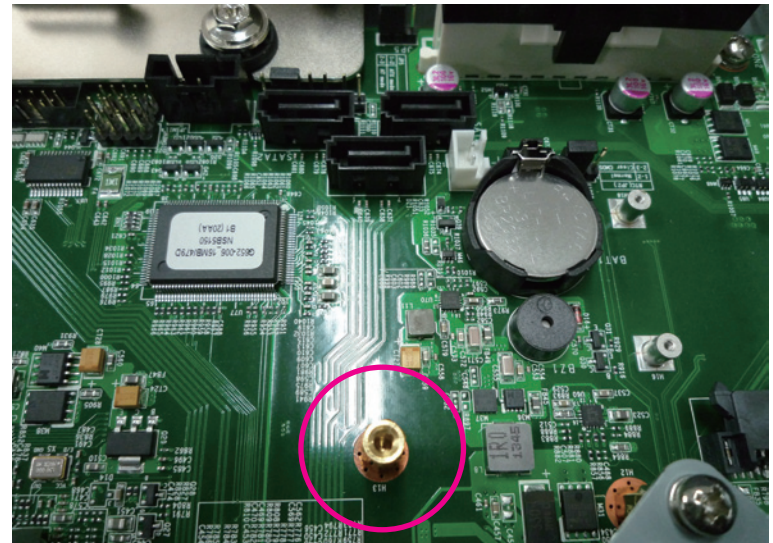
3. Install the SATA DOM to the connector with the mounting hole aligned to the copper post.
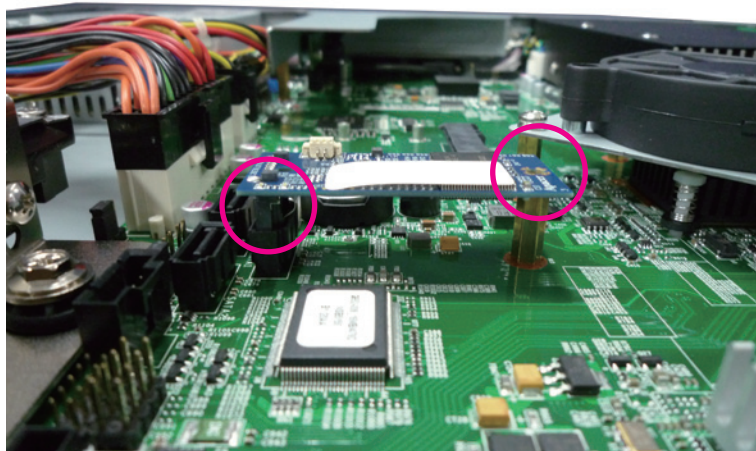
4. Fasten a screw on top of the copper post.
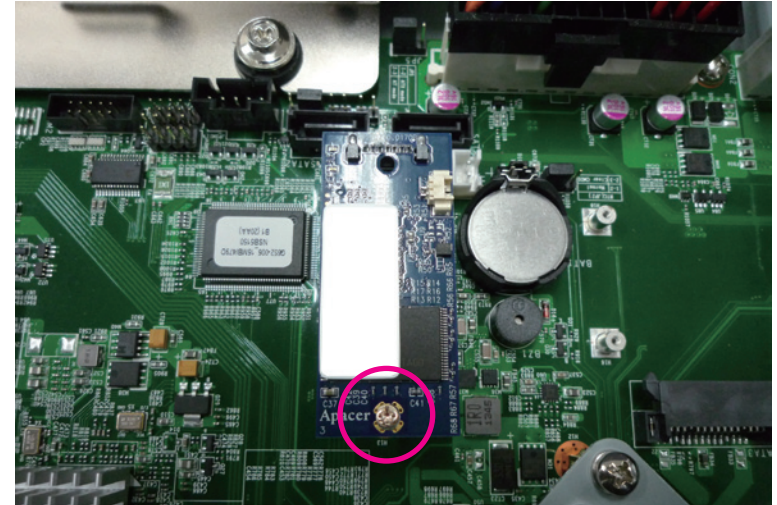
5. Connect the power cable to the power connector on the board.
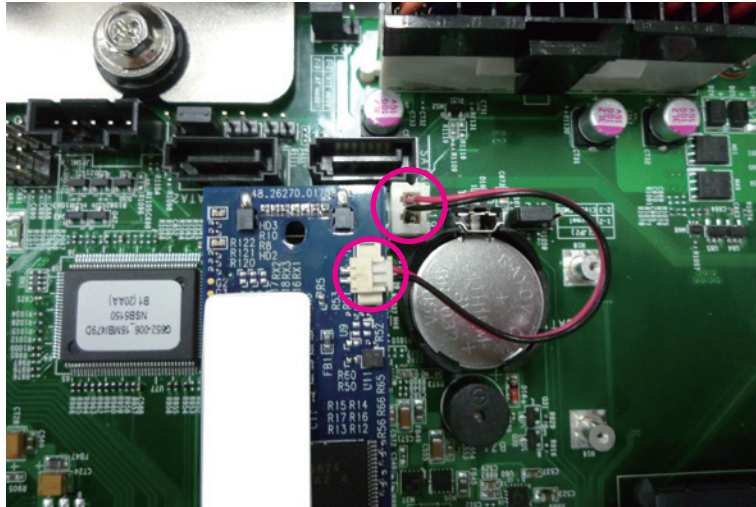
Installing a MO-297 SSD Module

1. Locate the MO-297 connector on the board.

**MO-297
connector**

2. Insert the MO-297 SSD module until it is fully seated into the connector.
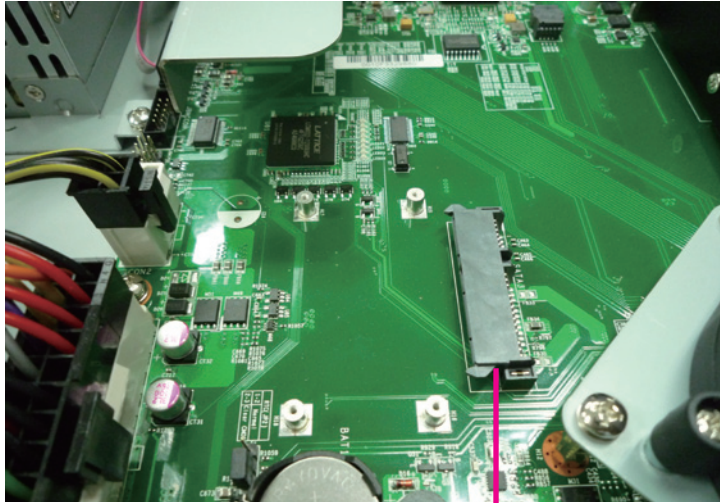
**MO-297
module**

37
NSA 5150 User Manual
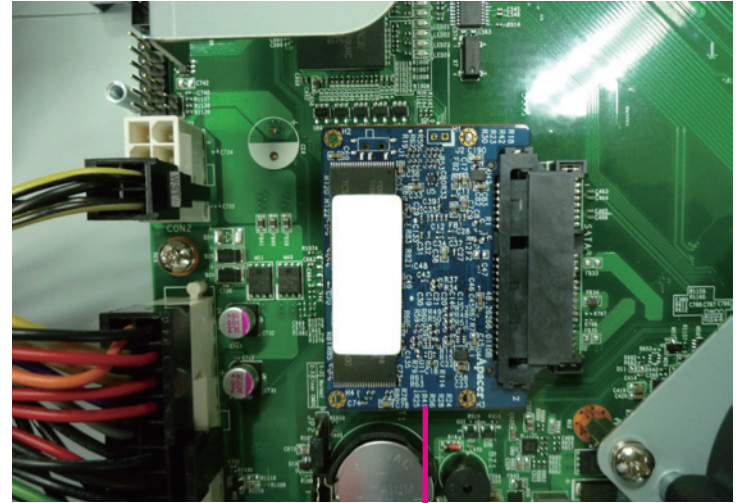
3. Secure the MO-297 SSD module with screws.
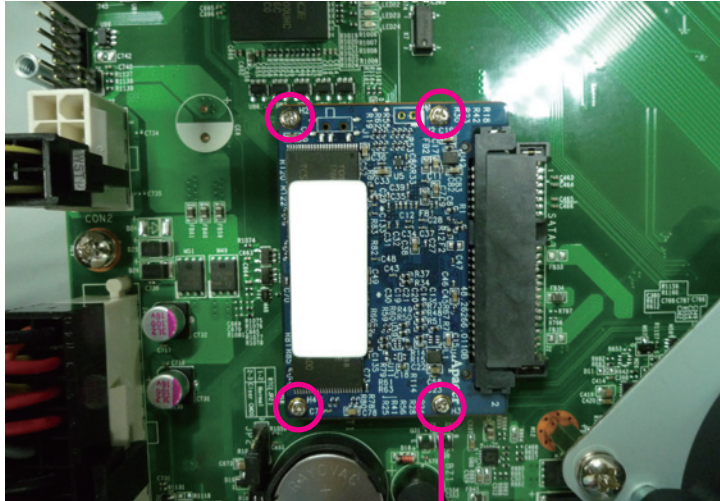
Mounting screw

Installing a SO DIMM

1. Locate the SO DIMM sockets on the board.
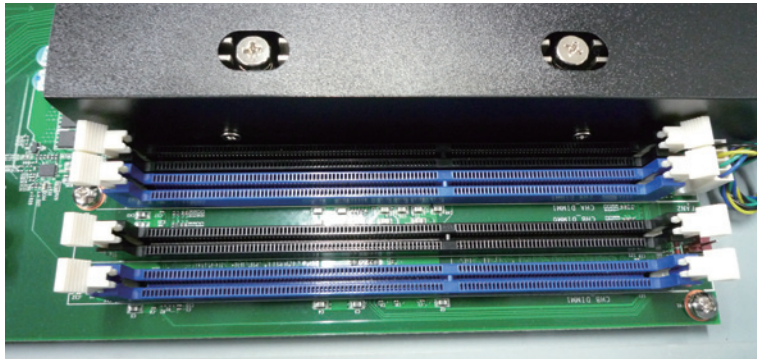
2. Release the locks on the SO DIMM sockets.
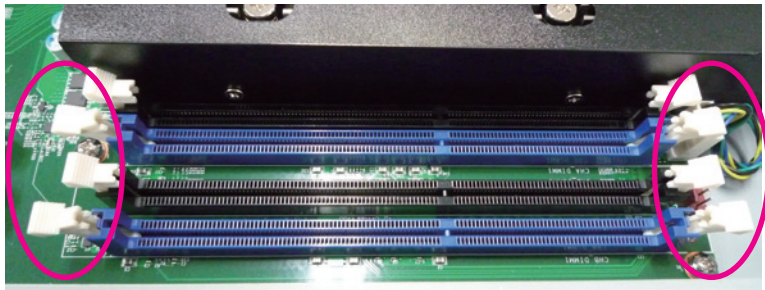
3. Insert the module into the socket at an 90 degree angle. Apply firm even pressure to each end of the module until it slips into the socket.
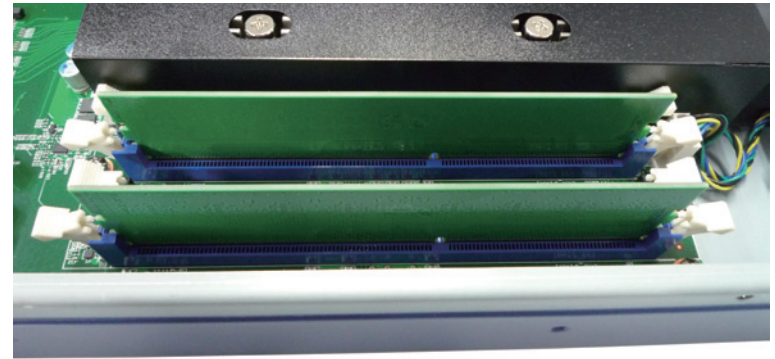
4. While pushing the SO DIMM into the position, the lock will close automatically.
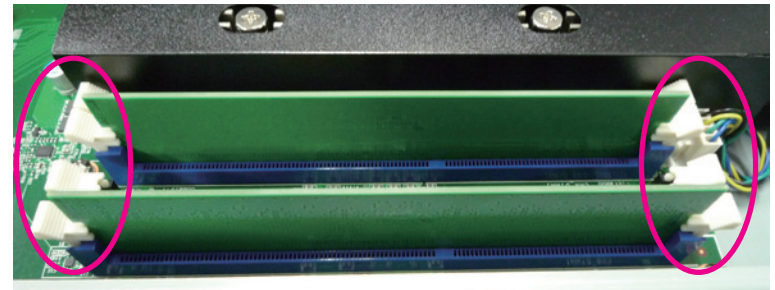
Installing a 3.5" SATA Hard Drive

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.
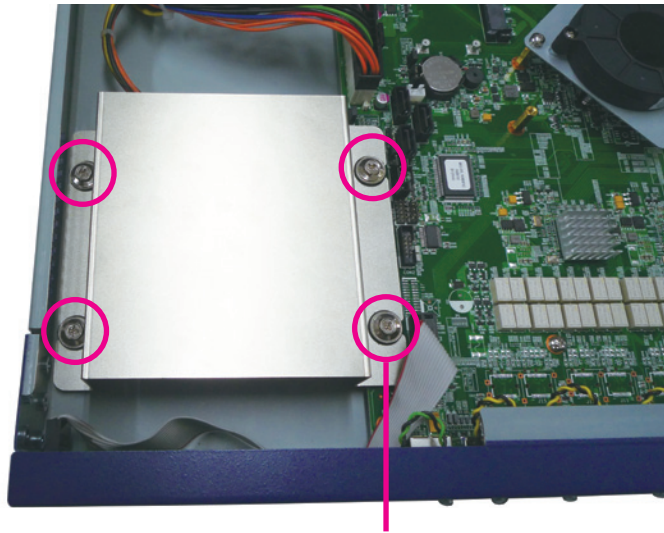
Mounting screw

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.

Longer side   **Shorter side**

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

SATA data and power connector

4. 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.

5. 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.
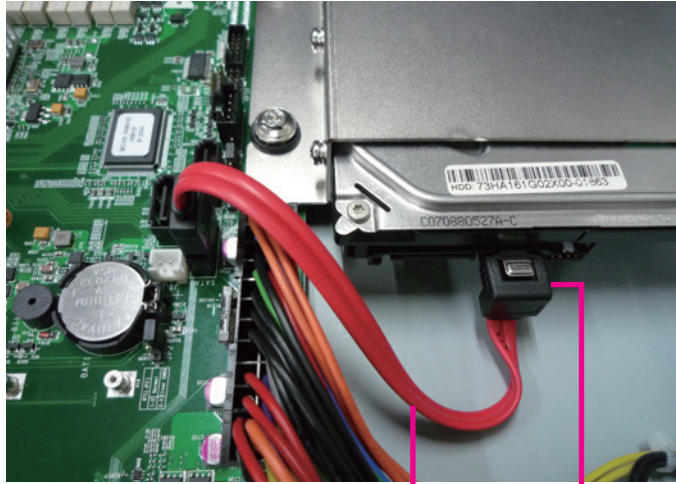
SATA data cable   **SATA data connector**

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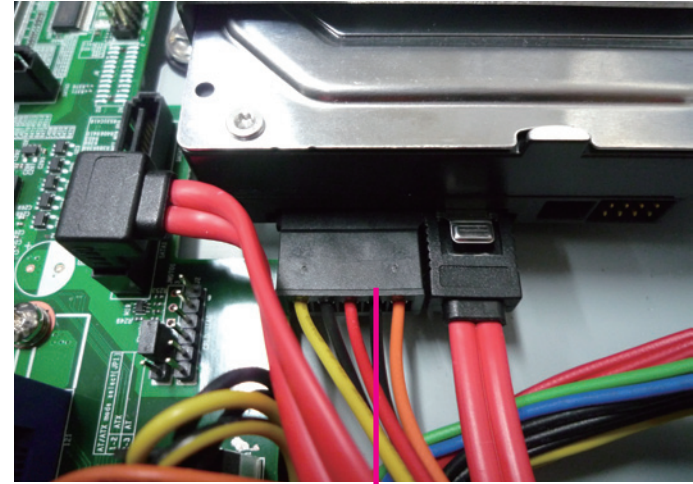
SATA power cable

Installing a LAN Module

The system is equipped with 1 LAN module bay. To install a LAN module, please follow the instructions below.

> **CAUTION!** 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.

Mounting screw   **Cover plate**

2. Place the LAN module into the tray making sure the connector side of the module is facing inwards.
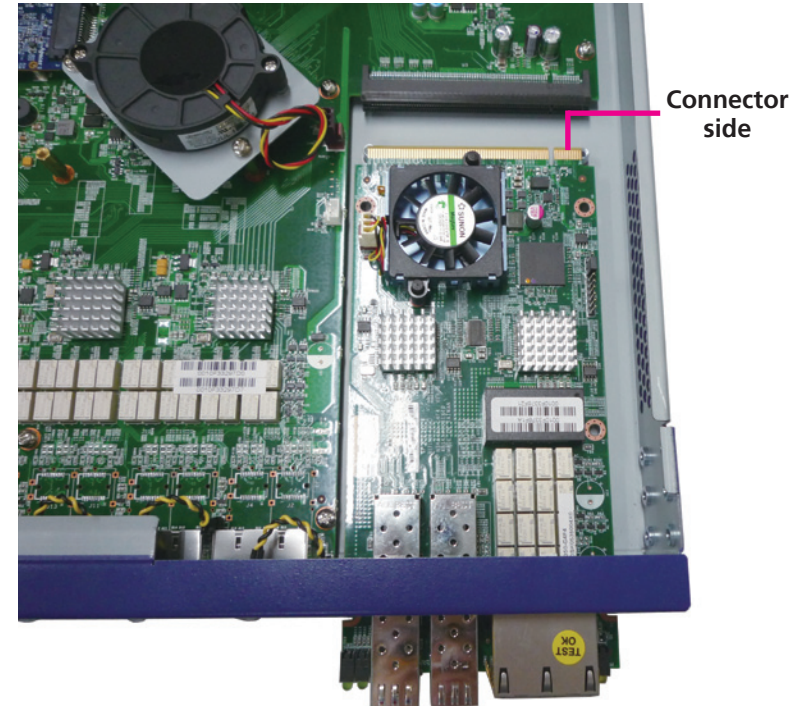
Connector side

CAUTION! The components on the bottom of the LAN module is mounted very close to the base plate of the chassis, you may damage the components if excessive force is used. When installing or removing, please handle the LAN module with care.
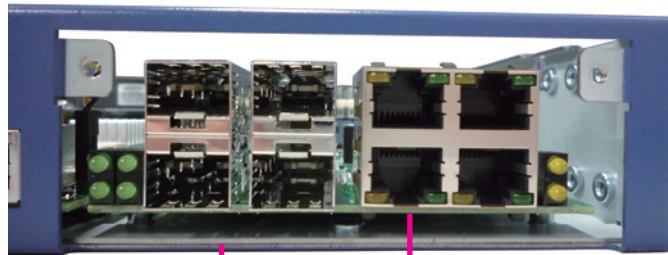
Base plate   **Components on bottom**

3. Once the module is plugged into the LAN module connector, use the provided screws to secure the module in place. Then replace the cover plate and the chassis cover to complete.
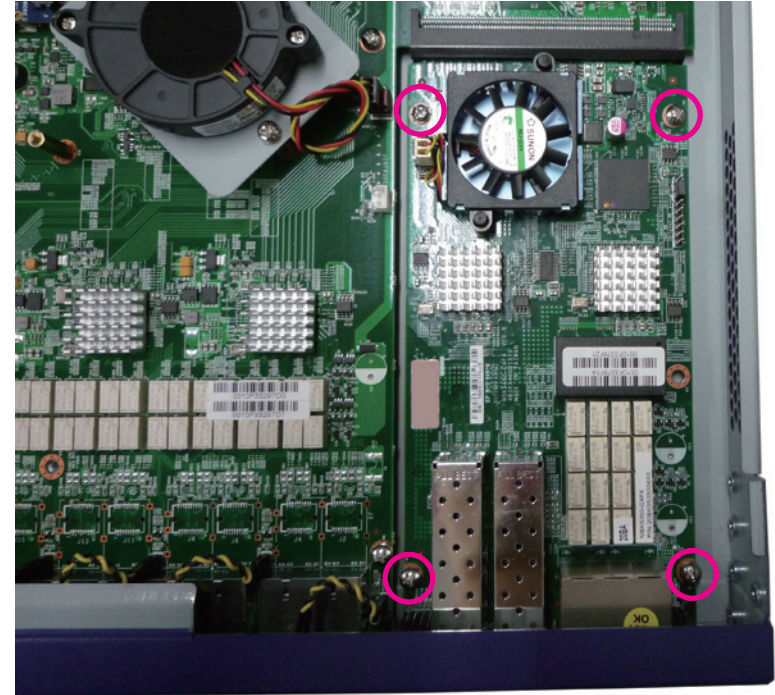
Important:

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.

Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the NSA 5150. 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 Web site 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 [Del] 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.
Esc	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.
Tab	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter	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 ⏎ Enter .

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.

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
  Main      Advanced    Chipset    Boot      Security    Save & Exit

 BIOS Information                                            Choose the system default
 BIOS Vendor              American Megatrends                language
 Core Version             4.6.5.4
 Compliancy               UEFI 2.3.1; PI 1.2
 Project Version          G652- 0.10 x64
 Build Date and Time      03/19/2014 13:21:01

 Total Memory             4096 MB (DDR3)
 Memory Frequency         1333 Mhz

 System Language          [English]

 System Date              [Wed 03/27/2014]              →←: Select Screen
 System Time              [06:51:18]                    ↑↓: Select Item
                                                        Enter: Select
 Access Level             Administrator                 +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

            Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

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.

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
▶ PCI Subsystem Settings ▶ ACPI Settings ▶ Trusted Computing ▶ CPU Configuration ▶ Network Configuration ▶ SATA Configuration ▶ USB Configuration ▶ AST2300 Second Super IO Configuration ▶ Super IO Configuration ▶ H/W Monitor ▶ Serial Port Console Redirection ▶ Network Stack	PCI, PCI-X and PCI Express Settings. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.	

PCI Subsystem Settings

This section is used to configure the PCI.

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Advanced

  PCI Bus Driver Versio          V 2.05.02              Value to be programmed into
                                                        PCI Latency Timer Register.

  PCI Common Settings
  PCI Latency Timer              [32 PCI Bus Clocks]
  VGA Palette Snoop              [Disabled]
  PERR# Generation               [Disabled]
  SERR# Generation               [Disabled]

  ► PCI Express Settings

                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

          Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

PCI Latency Timer
This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

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

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

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

ACPI Settings

This section is used to configure ACPI settings.

<table>
<tr><td colspan="2">Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.</td></tr>
<tr><td>Advanced</td><td></td></tr>
<tr><td>

ACPI Settings

Enable ACPI Auto Conf   [Disabled]

Lock Legacy Resources   [Disabled]

</td><td>

Enables or Disables BIOS ACPI Auto Configuration.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

</td></tr>
<tr><td colspan="2">Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.</td></tr>
</table>

Enable ACPI Auto Conf
Enables or disables BIOS ACPI auto configuration.

Lock Legacy Resources
Enables or disables lock of legacy resources

Trusted Computing

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

<table>
<tr><td colspan="2">Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.</td></tr>
<tr><td>Advanced</td><td></td></tr>
<tr><td>

Configuration
  Security Device Support   [Disable]

Current Status Information
  SUPPORT TURNED OFF

</td><td>

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

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

</td></tr>
<tr><td colspan="2">Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.</td></tr>
</table>

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

CPU Configuration

This section is used to configure the CPU.

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Advanced

  CPU Configuration

  Intel(R) Xeon(R) CPU E3-1225 v3 @ 3.20GHz
  CPU Signature                306c3
  Processor Family             6
  Microcode Patch              12
  FSB Speed                    100 MHz
  Max CPU Speed                3200 MHz
  Min CPU Speed                800 MHz
  CPU Speed                    3400 MHz
  Processor Cores              4
  Intel HT Technology          Supported
  Intel VT-x Technology        Supported
  Intel SMX Technology         Supported          →←: Select Screen
  64-bit                       Supported          ↑↓: Select Item
  EIST Technology              Supported          Enter: Select
  CPU C3 state                 Supported          +/-: Change Opt.
  CPU C6 state                 Supported          F1: General Help
  CPU C7 state                 Supported          F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit

          Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
          Advanced

  Intel VT-x Technology        Supported          Enables or Disables Intel(R)
  Intel SMX Technology         Supported          TXT(LT) support.
  64-bit                       Supported
  EIST Technology              Supported
  CPU C3 state                 Supported
  CPU C6 state                 Supported
  CPU C7 state                 Supported

  L1 Data Cache                32 kB x 4
  L1 Code Cache                32 kB x 4
  L2 Cache                     256 kB x 4
  L3 Cache                     8192 kB

  Hyper-threading              [Enabled]          →←: Select Screen
  Overclocking lock            [Disabled]         ↑↓: Select Item
  Intel Virtualization         [Enabled]          Enter: Select
  Hardware Prefetcher          [Disabled]         +/-: Change Opt.
  EIST                         [Disabled]         F1: General Help
  Intel TXT(LT) Support        [Disabled]         F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit

          Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

Hyper-Threading
Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled.

Overclocking Lock
Enables or disables overclocking lock.

Intel® Virtualization
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
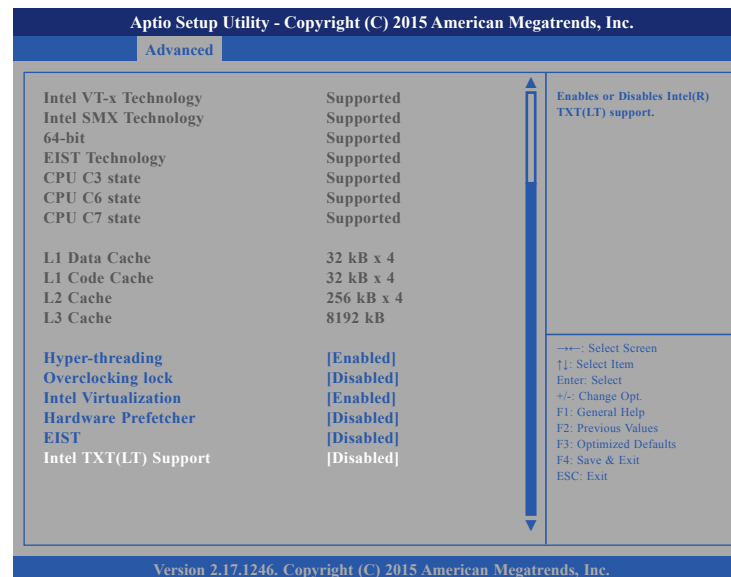
Hardware Prefetcher
Turns on or off the MLC streamer prefetcher

EIST
Enables or disables Intel® SpeedStep.

Intel TXT(LT) Support
Enables or disables Intel TXT(LT).

Network Configuration

This section is used to configure the network settings.

```
Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
 Advanced

 Network Configuration                                    Switch all ByPass Mode to
 Power_ON ByPass Mode            [ALL Disabled]           Enable/Disable after power on.
 Power_OFF ByPass Mode           [ALL Disabled]




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

        Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

Power_ON ByPass Mode

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

Power_OFF ByPass Mode

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

SATA Configuration

This section is used to configure the SATA drives.

```
Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
 Advanced

 SATA Controller(s)              [Enabled]                Enable or Disable SATA Device.
 SATA Mode Selection             [AHCI]
 SATA Test Mode                  [Disabled]
 Aggressive LPM Suppor           [Enabled]
 SATA Controller Speed           [Default]

 Serial ATA Port 0               Empty
    Software Preserve            Unknown
    Port 0                       [Enabled]
    Hot Plug                     [Disabled]
    External SATA                [Disabled]
    SATA Device Type             [Hard Disk Drive]
    Spin Up Device               [Disabled]
 Serial ATA Port 1               Empty
    Software Preserve            Unknown                  →←: Select Screen
    Port 1                       [Enabled]                ↑↓: Select Item
    Hot Plug                     [Disabled]               Enter: Select
    External SATA                [Disabled]               +/-: Change Opt.
    SATA Device Type             [Hard Disk Drive]        F1: General Help
    Spin Up Device               [Disabled]               F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

        Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

SATA Controller(s)

Enables or disables the SATA controller.

SATA Mode Selection

Configures the SATA as IDE, AHCI or RAID mode.

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.

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
              Advanced

     Port 1                        [Enabled]             On an edge detect from 0 to 1,
     Hot Plug                      [Disabled]            the PCH starts a COMRESET
     External SATA                 [Disabled]            initialization sequence to the
     SATA Device Type              [Hard Disk Drive]     device.
     Spin Up Device                [Disabled]
  Serial ATA Port 2                Empty
     Software Preserve             Unknown
     Port 2                        [Enabled]
     Hot Plug                      [Disabled]
     External SATA                 [Disabled]
     SATA Device Type              [Hard Disk Drive]
     Spin Up Device                [Disabled]
  Serial ATA Port 3                Empty
     Software Preserve             Unknown
     Port 3                        [Enabled]             →←: Select Screen
     Hot Plug                      [Disabled]            ↑↓: Select Item
     External SATA                 [Disabled]            Enter: Select
     SATA Device Type              [Hard Disk Drive]     +/-: Change Opt.
     Spin Up Device                [Disabled]            F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

              Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

SATA Test Mode
Enables or disables SATA test mode.

Aggressive LPM Support
Enables or disables agressive LPM support.

SATA Controller Speed
Configures the SATA controller as Gen1, Gen2 or Gen3.

Port 0 to Port 3
Enables or disables SATA port 0 to port 3.

Hot Plug
Enables or disables hot plugging feature on SATA port 0 to port 3.

External SATA
Enables or disables the external SATA option on SATA port 0 to port 3.

SATA Device Type
The options are Hard Disk Drive and Solid State Drive.

Spin Up Device
Enables or disables staggered spin up on devices connected to SATA port 0 to port 3.

USB Configuration

This section is used to configure the USB.

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
             Advanced

    USB Configuration                                      Enables Legacy USB support.
                                                           AUTO option disables legacy
    USB Module Version              8.10.27                support if no USB devices are
                                                           connected. DISABLE option will
    USB Devices:                                           keep USB devices available
         1 Keyboard, 2 Hubs                                only for EFI applications.

    Legacy USB Support              [Enabled]
    USB3.0 Support                  [Enabled]
    XHCI Hand-off                   [Enabled]
    EHCI Hand-off                   [Disabled]
    USB Mass Storage Driver         [Enabled]

    USB hardware delays a                                 →←─: Select Screen
    USB transfer time-out           [20 sec]              ↑↓: Select Item
    Device reset time-out           [20 sec]              Enter: Select
    Device power-up delay           [Auto]                +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit




          Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

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.

USB3.0 Support
Enables or disables USB 3.0 controller support.

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.

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 it self 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.

Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.
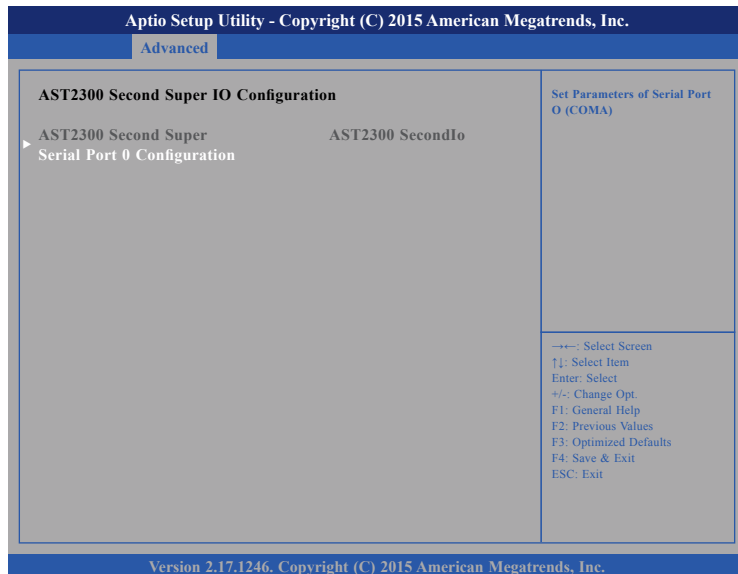
```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Advanced

  AST2300 Second Super IO Configuration                    Set Parameters of Serial Port
                                                           O (COMA)
  AST2300 Second Super                    AST2300 SecondIo
▶ Serial Port 0 Configuration




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit


                Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

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

Serial Port 0 Configuration
Configuration settings for serial port 0.

Super IO Configuration

This section is used to configure the serial ports.

```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Advanced

  Super IO Configuration                                   Set Parameters of Serial Port
                                                           O (COMA)
  Super IO Chip                           NCT6776F
▶ Serial Port 0 Configuration
▶ Serial Port 1 Configuration
▶ Parallel Port Configuration



                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit


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```

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

Serial Port 0 Configuration
Configuration settings for serial port 0.

Serial Port 1 Configuration
Configuration settings for serial port 1.

Parallel Port Configuration
Configuration settings for parallel port.

H/W Monitor

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

```
              Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
        Advanced

   PC Health Status

   System Temperature              : +26 C
   LAN Module Temperature          : N/A
   CPU Temperature                 : +26 C
   LAN Module Fan Speed            : N/A
   Smart FAN1 Speed                : N/A
   Smart FAN2 Speed                : 2436 RPM
   PCH Fan Speed                   : N/A
   Fan1 Speed                      : N/A
   VCORE                           : +1.768 V
   DRAM Voltage                    : +1.512 V
   V_1P05_PCH                      : +1.039 V          →←: Select Screen
   VCC5                            : +5.040 V          ↑↓: Select Item
   VCC12                           : +12.288 V         Enter: Select
   AVCC                            : +3.296 V          +/-: Change Opt.
   VCC3                            : +3.280 V          F1: General Help
   3VSB                            : +3.296 V          F2: Previous Values
   VCCRTC                          : +3.248 V          F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit


              Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

System Temperature
Detects and displays the current system temperature.

CPU Temperature
Detects and displays the current CPU temperature.

LAN Module Fan Speed
Detects and displays the fan speed of the LAN module.

Smart Fan1 Speed and Smart Fan2 Speed
Detects and displays the fan speed of smart fan1 and smart fan2.

PCH Fan Speed
Detects and displays the PCH fan speed.

Fan1 Speed
Detects and displays the Fan1 speed.

VCORE
Detects and displays the VCore voltage.

DRAM Voltage
Detects and displays the DRAM voltage.

V_1P05_PCH
Detects and displays the PCH voltage.

VCC5
Detects and displays 5V voltage.

VCC12
Detects and displays 12V voltage.

AVCC
Detects and displays AVCC voltage.

VCC3
Detects and displays 3.3V voltage.

3VSB
Detects and displays 3.3V standby voltage.

VCCRTC
Detects and displays VCCRTC voltage.

Serial Port Console Redirection

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

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
              Advanced

                                                                    Console Redirection Enable
                                                                    or Disable
       COM0
       Console Redirection              [Enabled]
    ► Console Redirection Settings

       COM1
       Console Redirection              [Disabled]
    ► Console Redirection Settings

       BMC SOL COM
       Console Redirection              [Disabled]
    ► Console Redirection Settings

       Serial Port for Out-of-Band Management /                      →←: Select Screen
       Windows Emergency Management Services (EMS)                   ↑↓: Select Item
       Console Redirection              [Enabled]                    Enter: Select
    ► Console Redirection Settings                                   +/-: Change Opt.
                                                                     F1: General Help
                                                                     F2: Previous Values
                                                                     F3: Optimized Defaults
                                                                     F4: Save & Exit
                                                                     ESC: Exit


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```

Console Redirection

Enables or disables the console redirection.

Network Stack

This section is used to configure the network stack.

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
              Advanced

       Network stack                    [Disabled]                   Enable/Disable UEFI network
                                                                     stack








                                                                     →←: Select Screen
                                                                     ↑↓: Select Item
                                                                     Enter: Select
                                                                     +/-: Change Opt.
                                                                     F1: General Help
                                                                     F2: Previous Values
                                                                     F3: Optimized Defaults
                                                                     F4: Save & Exit
                                                                     ESC: Exit


            Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```
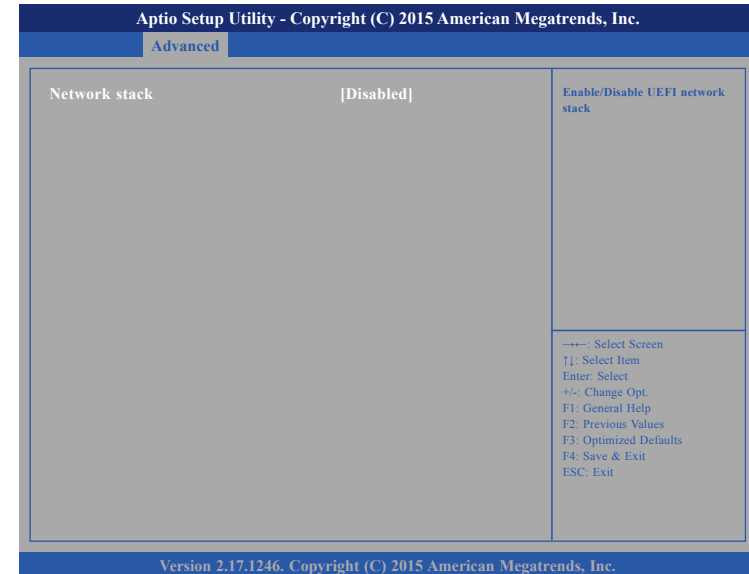
Network Stack

Enables or disables UEFI network stack.

Chipset

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

```
                 Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
      Main      Advanced    Chipset     Boot      Security    Save & Exit

  ▶ PCH-IO Configuration                                  PCH Parameters
  ▶ System Agent (SA) Configuration




                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


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```

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

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

PCH-IO Configuration
This section is used to configure PCH-IO settings.

```
                 Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                    Chipset

  Intel PCH RC Version          2.1.0.0           PCI Express Configuration
  Intel PCH SKU Name            C226              settings
  Intel PCH Rev ID              04/C1

  ▶ PCI Express Configuration
  ▶ USB Configuration

  Power Supply Type             [ATX]
  SLP_S4 Assertion Width        [4-5 Seconds]
  Restore AC Power Loss         [Power On]

                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


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```

SLP_S4 Assertion Width
Select a minimum assertion width of the SLP_S4# signal.

Restore AC Power Loss
Power Off   When power returns after an AC power failure, the system's power is off. You must press the power button to power-on the system.

Power On   When power returns after an AC power failure, the system will automatically power-on.

PCI Express Configuration

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                 Chipset

   PCI Express Configuration                          PCI Express Root Port 1
                                                      Settings.
 ► PCI Express Root Port 1
 ► PCI Express Root Port 2
 ► PCI Express Root Port 3
 ► PCI Express Root Port 4
 ► PCI Express Root Port 5
 ► PCI Express Root Port 6
 ► PCI Express Root Port 7
 ► PCI Express Root Port 8

                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



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```

PCI Express Root Port 1 to PCI Express Root Port 8

Setting menus of PCI Express Root Port 1 to PCI Express Root Port 8.

PCI Express Root Port 1 to Port 8

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                 Chipset

   PCI Express Root Port         [Enabled]           Control the PCI Express Root
   ASPM Support                  [Disabled]          Port.
   PCIe Speed                    [Auto]




                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



            Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```
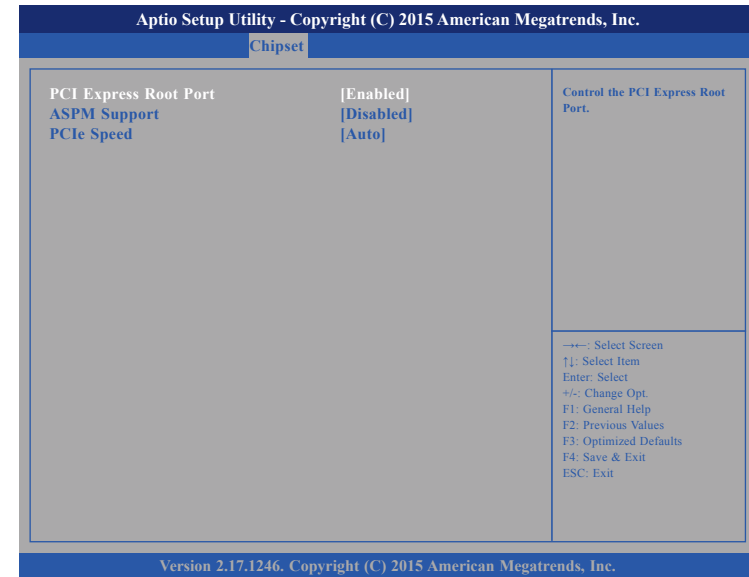
PCI Express Root Port

Enables or disables the PCI Express port.

ASPM Support

Selects the ASPM level.

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

PCIe Speed

Configures the speed of the PCI Express Root Port.

USB Configuration

```
         Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                    Chipset

  USB Configuration                                         Precondition work on USB host
                                                            controller and root ports for
  USB Precondition              [Enabled]                   faster enumeration.
  XHCI Mode                     [Smart Auto]




                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


         Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```

USB Precondition
Enables or disables faster USB enumeration.

XHCI Mode
Enables or disables XHCI mode.

System Agent (SA) Configuration

This section is used to configure System Agent (SA) settings.

```
         Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                       Chipset

  System Agent Bridge N          Haswell                    Check to enable VT-d function
  System Agent RC Version        2.1.0.0                    on MCH.
  VT-d Capability                Supported

  VT-d                           [Enabled]
  Enable NB CRID                 [Disabled]
  X2APIC Opt Out                 [Enabled]

  ► Graphics Configuration
  ► Memory Configuration


                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit

         Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.
```
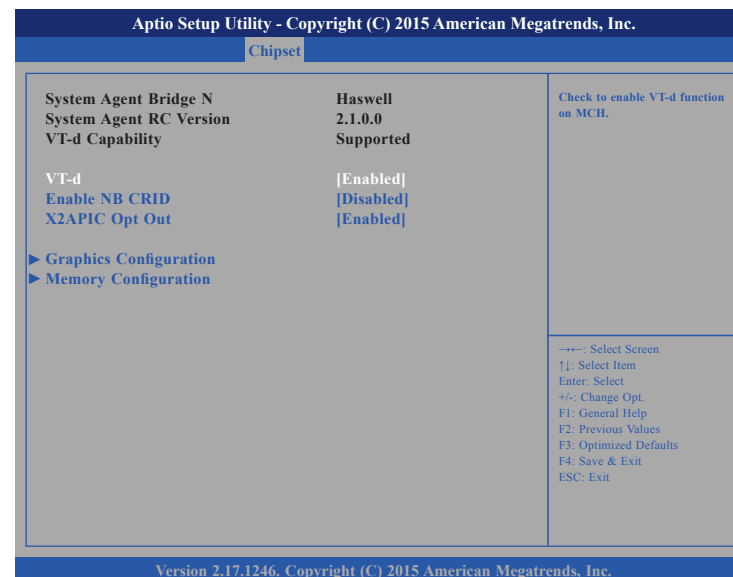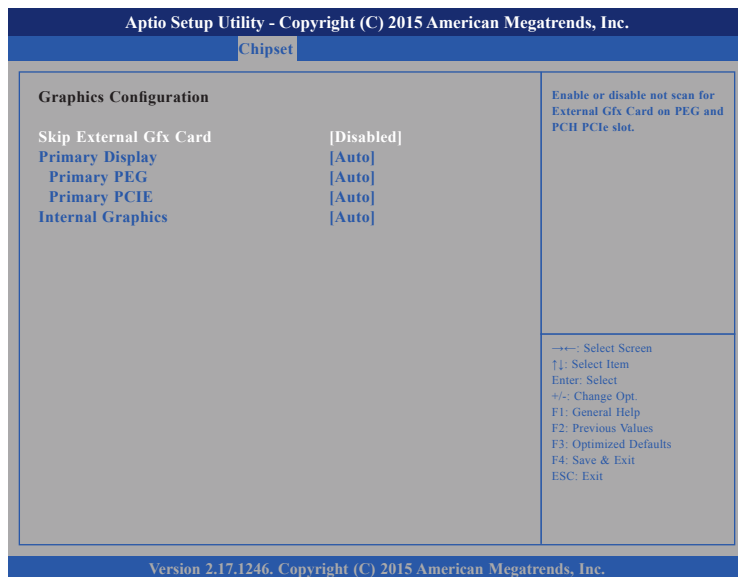
VT-d
Enables or disables the VT-d.

Enable NB CRID
Enables or disables NB CRID workaround.

X2APIC Opt Out
Enables or disables X2APIC mode.

Graphics Configuration

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                      Chipset

      Graphics Configuration                              Enable or disable not scan for
                                                          External Gfx Card on PEG and
      Skip External Gfx Card          [Disabled]          PCH PCIe slot.
      Primary Display                 [Auto]
        Primary PEG                   [Auto]
        Primary PCIE                  [Auto]
      Internal Graphics               [Auto]




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

Skip External Gfx Card
Enables or disables scanning of an external GFx card on the PEG, PCH and PCIe slot.

Primary Display
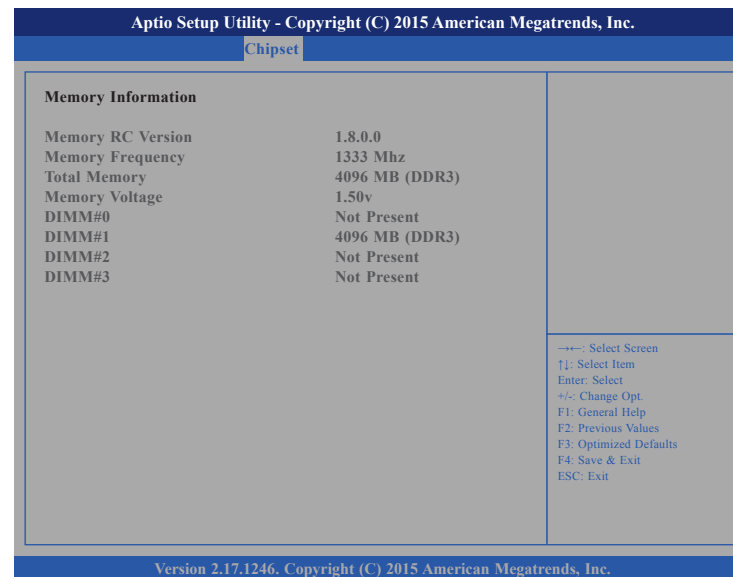Select which of IGFX/PEG/PCIE graphics device should be the primary display.

Primary PEG and Primary PCIE
Select which PEG and PCIE should be the primary display.

Internal Graphics
Keep IGD enabled based on the setup options.

Memory Configuration

```
          Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
                      Chipset

      Memory Information

      Memory RC Version               1.8.0.0
      Memory Frequency                1333 Mhz
      Total Memory                    4096 MB (DDR3)
      Memory Voltage                  1.50v
      DIMM#0                          Not Present
      DIMM#1                          4096 MB (DDR3)
      DIMM#2                          Not Present
      DIMM#3                          Not Present




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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```

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

Boot

This section is used to configure the boot features.

```
             Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
   Main      Advanced    Chipset    Boot    Security    Save & Exit

   Boot Configuration                                    Number of seconds to wait for
   Setup Prompt Timeout          1                       setup activation key. 65535
   Bootup NumLock State          [On]                    (0xFFFF) means indefinite
                                                         waiting.
   Quiet Boot                    [Disabled]
   Fast Boot                     [Disabled]
 ▶ CSM16 Parameters
   CSM parameters

   Boot mode select              [LEGACY]

   FIXED BOOT ORDER Priorities
   Boot Option #1                [USB CD/DVD]
   Boot Option #2                [USB Key]             →←: Select Screen
   Boot Option #3                [Hard Disk]           ↑↓: Select Item
   Boot Option #4                [USB Hard Disk]       Enter: Select
   Boot Option #5                [CD/DVD]              +/-: Change Opt.
   Boot Option #6                [USB Floppy]          F1: General Help
   Boot Option #7                [Network]            F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

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```

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.

Fast Boot
When enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.

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.

CSM16 Parameters

Boot

```
CSM16 Parameters

CSM16 Module Version          07.71

GateA20 Active                [Upon Request]
Option ROM Messages           [Force BIOS]
INT19 Trap Response           [Immediate]
```

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.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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GateA20 Active

Upon Request   GA20 can be disabled using BIOS services.

Always   Does not allow disabling GA20. This option is useful when an RT code is executed above 1M.

Option ROM Messages

Selects the display mode for Option ROM.

INT19 Trap Response

When enabled, it allows the optional ROM to trap interrupt 19.

CSM Parameters

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Boot

```
Launch CSM                    [Enabled]
Boot option filter            [Legacy only]
Launch PXE OpROM policy       [Disabled]
Launch Storage OpROM policy   [Legacy only]
Launch Video OpROM policy     [Legacy only]

Other PCI device ROM          [UEFI OpROM]
```

This option controls if CSM will be launched

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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Launch CSM
This option controls if CSM will be launched.

Boot Option Filter
This options filters which devices the system can boot to.

Launch PXE OpROM Policy and Launch Storage OpROM Policy
Enables or disables the boot option for legacy network devices and legacy storage devices.

Launch Video OpROM Policy
Enables or disables the boot option for legacy video devices.

Other PCI Device ROM
This options selects whether UEFI mode or Legacy mode will be used when other OpROM is initialized.

Security

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit

Password Description

Set Administrator Password

The password length must be
in the following range:
Minimum length   3
Maximum length   20

Administrator Password

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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Administrator Password
Select this to reconfigure the administrator's password.

Save & Exit

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit

Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset

Save Options
Save Changes
Discard Changes

Restore Defaults
Save as User Defaults
Restore User Defaults

Boot Override

Launch EFI Shell from filesystem device

Exit system setup after saving
the changes.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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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.

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

Discard Changes
To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes to discard all changes made and restore the previously saved settings.

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

Save as User Defaults
To use the current configurations as user default settings for the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

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

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

Launch EFI Shell From Filesystem Device
Launches the EFI shell.

Appendix A: Bypass Register

Register Map

The following tables are the Register Map for NSA 5150.

Bypass Timer Configuration Register							
Offset 0xF2							
7	6	5	4	3	2	1	0
R	X	X	X	X	R/W		
Timer Expired	Unused	Unused	Unused	Unused	Global Timeout Value		

Power OFF State Bypass Control Status Register							
Offset 0xF7							
7	6	5	4	3	2	1	0
X	X	X	X	X	X	W	W
Unused	Unused	Unused	Unused	Segment4	Segment3	Segment2	Segment1

Power ON State Bypass Control Status Register							
Offset 0xF3							
7	6	5	4	3	2	1	0
W	X	X	X	X	W	W	
Bypass Mode	Unused	Unused	Segment4	Segment3	Segment2	Segment1	

Register Bit Definitions

Bypass Timer Configuration Register (F2)		
Bit Field	Name	Value
2:0	Timer Value	000 = 0 second, timer immediately expired 001 = 1 second 010 = 2 second 011 = 4 second 100 = 8 second 101 = 16 second 110 = 32 second 111 = 64 second Note: This is a write only field. Upon reads these bit values are undefined. A Timer value of 1 to 7 is required to be written before expiration of the hardware timer. When the timer expires, all segments which have been enabled in bits 2:0 of *Power ON state Bypass Control Status Register* set relays closed to form bypass segments. It is responsibility of software to keep track of time to ensure writes to this register occur no greater than TimerValueInSeconds / 2. A write of the timer value will automatically reset the expiration timer and set it to the value expressed in bit 2:0 .
3	Not used	No active taken if written, value is undetermined and not needed on read operation.
4	Not used	No active taken if written, value is undetermined and not needed on read operation.
5	Not used	No active taken if written, value is undetermined and not needed on read operation.
6	Not used	No active taken if written, value is undetermined and not needed on read operation.
7	Segment Timer Expired	**Read only bit:** 0 = Timer has not expired 1 = Timer has expired, de-assert while leave Timer mode

Power ON State Bypass Control Status Register (F3)		
Bit Field	Name	Value
1:0	Segment 1 to 2	Segment control bit mask. Each bit corresponds to a specific segment numbered 1 through 2. **Write:** If a segment mask bit is set to false (0) no action on that segment will take place. If a segment mask bit has been set to true (1), action will take place on this segment according to the bypass mode settings in bits 7:6.
2	Not used	No active taken if written, value is undetermined and not needed on read operation.
3	Not used	No active taken if written, value is undetermined and not needed on read operation.
4	Not used	No active taken if written, value is undetermined and not needed on read operation.
5	Not used	No active taken if written, value is undetermined and not needed on read operation.
7:6	Bypass Mode	These two bits defined the bypass mode for one or more segments. These bits are Write only and on reads returns undetermined values which will be ignored by the driver. Bypass Mode Table:

Bit 7	Bit 6	Action
0	0	Ignore, no action taken
0	1	Force Enable: Engage bypass relays on segments enabled in segment mask.
1	0	Force Disable: Disable bypass relays immediately on segments enabled in mask.
1	1	Timer Enable: Segments enabled in mask are under Timer control.

Power OFF State Bypass Control Status Register (F7)		
Bit Field	Name	Value
0	Segment 1	0 = Set segment bypass disable when power off 1 = Set segment bypass enable when power off
1	Segment 2	0 = Set segment bypass disable when power off 1 = Set segment bypass enable when power off
2	Segment 3	0 = Set segment bypass disable when power off 1 = Set segment bypass enable when power off
3	Segment 4	0 = Set segment bypass disable when power off 1 = Set segment bypass enable when power off
7:4	Unused	No active taken if written, value is undetermined and not needed on read operation.