



**NEXCOM International Co., Ltd.**

**Network and Communication Solutions**

**Network Security Appliance**

**NSA 1170**

User Manual

# CONTENTS

## Preface

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

## Chapter 1: Product Introduction

Overview .....	1
Key Features .....	1
Hardware Specifications .....	2
Knowing Your NSA 1170 .....	3
NSA 1170 Front Panel .....	3
NSA 1170 Rear Panel .....	3

## Chapter 2: Jumpers and Connectors

Before You Begin .....	5
Precautions .....	5
Jumper Settings .....	6
Locations of the Jumpers and Connectors .....	7
Main Board .....	7
Expansion Card - Top View .....	8
Bottom View .....	8
Main Board Components .....	9
Jumper Settings .....	9
External I/O Pin Definition .....	10
Internal I/O Pin Definition .....	14
DDR4 SO-DIMM Slot .....	17
Expansion Card Components .....	23
Internal I/O Pin Definition .....	23
Block Diagram .....	28

## Chapter 3: System Setup

Removing the Chassis Cover .....	20
Installing a DIMM Memory Module .....	21
Installing an M.2 SSD Module .....	22
Installing a 2.5" SATA Storage Drive .....	23

## Chapter 4: BIOS Setup

About BIOS Setup .....	30
When to Configure the BIOS.....	30
Default Configuration .....	31
Entering Setup .....	31
Legends .....	31
BIOS Setup Utility.....	33
Main .....	33
Advanced .....	34
Platform Configuration.....	43
Socket Configuration.....	47
Security .....	54
Save & Exit .....	57

# 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 2011/65/EU, to be your trusted green partner and to protect our environment.

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

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

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

### **How to recognize NEXCOM RoHS Products?**

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

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

## Warranty and RMA

### NEXCOM Warranty Period

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

### NEXCOM Return Merchandise Authorization (RMA)

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

### Repair Service Charges for Out-of-Warranty Products

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

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### System Level

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

### Board Level

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

## Warnings

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

## Cautions

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

## Safety Information

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

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

## Installation Recommendations

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

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

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

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

## Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection to protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by skilled person.
14. If one of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.
  - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped and damaged.
  - f. The equipment has obvious signs of breakage.
15. Do not place heavy objects on the equipment.
16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
17. **CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.**

*"ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions."*
18. This equipment is not suitable for use in locations where children are likely to be present.

Cet équipement ne convient pas à une utilisation dans des lieux pouvant accueillir des enfants.
19. Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.
20. Use certified and rated Laser Class I for Optical Transceiver product.

## Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at [www.nexcom.com](http://www.nexcom.com).
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
  - Product name and serial number
  - Detailed information of the peripheral devices
  - Detailed information of the installed software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wordings of the error messages

### Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

## Conventions Used in this Manual



### Warning:

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



### Caution:

Information to avoid damaging components or losing data.



### Note:

Provides additional information to complete a task easily.

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## Package Contents

Before continuing, verify that the package you received is complete. It should contain all the items listed in the following table.

Item	Part Number	Name	Qty
1	5044440031X00	RUBBER FOOT KANG YANG:RF20-5-4P	4
2	6023309081X00	CABLE EDI:232091081804-RS	1
3	6012200058X00	PE BAG FOR C2/C6 SERIES Chyuan Jyh:2PC-L10-011-03	1
4	5040230041X00	EAR SET FOR 1100 SERIES VRE:B CHENG FWA	1
5	603POW0331X00	SATA POWER CABLE ST:MD-6107162	1
6	60233AT133X00	SATA CABLE ST:MD-6102042	2
7	50311F0144X00	I HEAD SCREW LONG FEI:	8

## Ordering Information

The following list below provides the ordering information.

### NSA 1170 (P/N: 10S00117000X0)

Intel Atom® P5322 processor, BGA type, 8 cores, 2 x DDR4 SO-DIMM 3200MHz ECC memory slot, 8 x 1GbE RJ45, and 8 x 10GbE SFP+ port

# CHAPTER 1: PRODUCT INTRODUCTION

## Overview



## Key Features

- Intel Atom® P5322 processor SoC, BGA type
- 2 x SO-DIMM DDR4 3200 ECC memory slots
- 1 x M.2 2242 Key M slot
- 1 x RJ45 management port
- 8 x 1GbE RJ45 port
- 8 x 10GbE SFP+ port
- 2 x 2.5" SSD (optional)
- Supports Intel® QAT

## Hardware Specifications

### Main Board

- Intel Atom® P5322 processor SoC, BGA type, 8 cores w/ QAT

### Memory

- 2 x DDR4 SO-DIMM 3200 ECC memory slot, up to 32GB per SO-DIMM

### Storage

- 1 x M.2 2242 Key M slot (SATA interface)
- 2 x 2.5" SSD (optional)

### Interface External

- 8 x 1GbE RJ45 port
- 8 x 10GbE SFP+ port
- 1 x RJ45 console port
- 1 x RJ45 management port
- 3 x USB 3.0
- Power & Reset buttons
- LEDs: Status/MGMT/SYS/PWR1/PWR2/SSD
- 1 x Ground screw

### Interface Internal

- 1 x M.2 2242 Key M slot
- 1 x TPM 2.0 module (optional)
- 2 x 2.5" SSD (optional)

### Power

- 2 x Slim type 150W AC + AC PSU (default)
- 2 x Slim type 150W AC + AC PSU (optional)

### Dimension and Weight

- Chassis dimension: 438 mm x 300 mm x 44 mm (W x D x H)
- Carton dimension: 575 mm x 412 mm x 237 mm (W x D x H) without packing: 5.3 kg
- With packing: 9.3 kg

### Environment

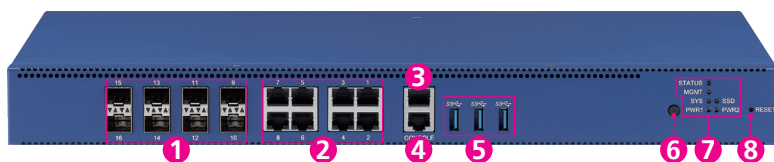
- Operating temperatures: 0°C~40°C
- Storage temperature: -20°C~70°C
- Relative humidity: 0%~95% non-condensing

### Certifications

- CE/FCC class B

## Knowing Your NSA 1170

### NSA 1170 Front Panel



### NSA 1170 Rear Panel



#### 1. 10GbE SFP+ Ports

Used to connect the devices with fiber optic connectors.

#### 2. 1GbE LAN Ports (0~8, Copper)

Used to connect network devices.

#### 3. RJ45 Management Port

Used to connect devices that can remotely manage the system over a network.

#### 4. RJ45 Console Port

Used to connect a computer or terminal for the system configuration.

#### 5. USB 3.0 Ports

Used to connect USB 3.0/2.0 devices.

#### 6. Power Button

Press to power on/off the system.

#### 7. LED Indicators

Indicate the power status (SYS), programmable LED status (Status, reserved), storage drive status (SSD), LAN connection status (MGMT), and AC power sockets status (PWR1/2) of the system.

#### 8. Reset Button

Press to reset the system.

#### 9. AC Power Socket (PWR1)

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

#### 10. AC Power Socket (PWR2)

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 1170 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:

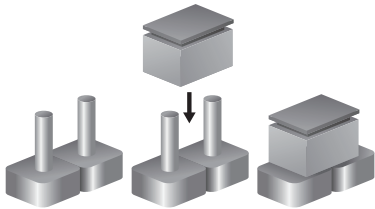
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

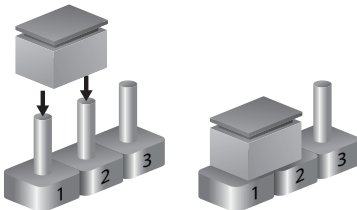
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



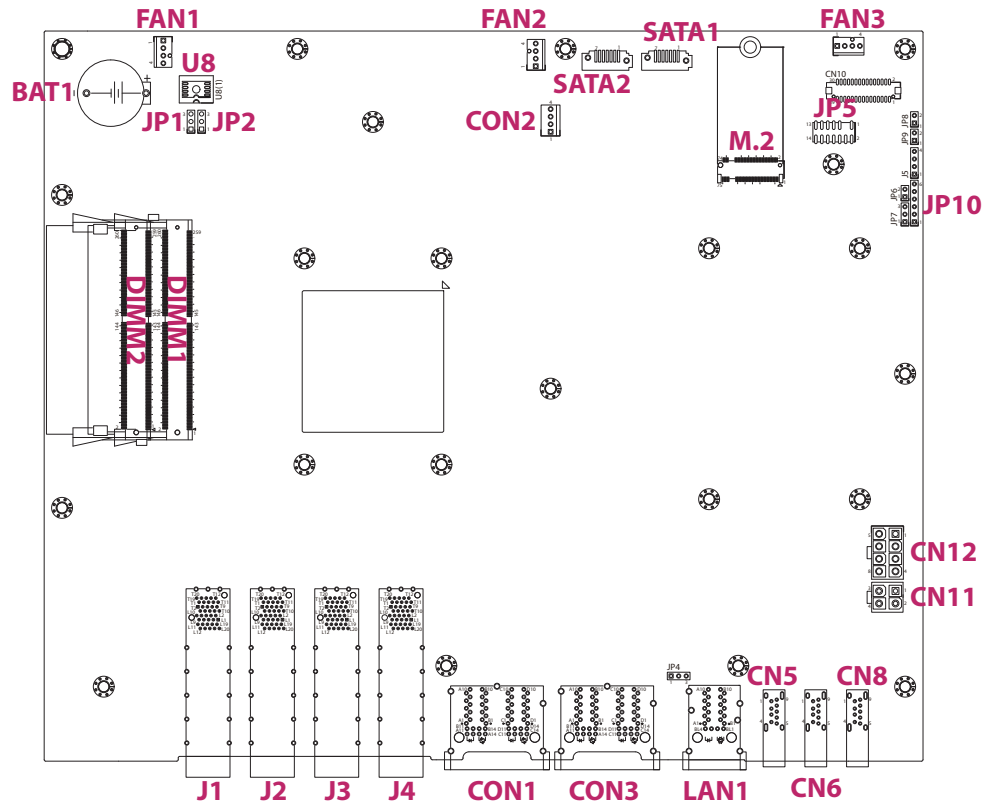
Three-Pin Jumpers: Pins 1 and 2 are Short



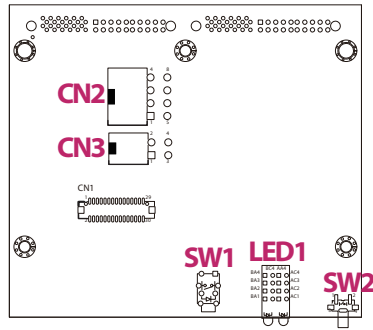
## Locations of the Jumpers and Connectors

This system consists of a main board and an expansion card. The illustrations in this section provide a visual guide to the locations of jumpers and connectors. For detailed information on pin assignments and definitions, please refer to this chapter, where they are highlighted in pink in the illustrations below.

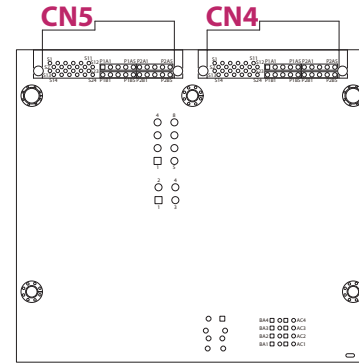
### Main Board



## Expansion Card - Top View



## Bottom View





## Main Board Components

### Jumper Settings

#### Clear RTC/CMOS Jumper

Connector type: 1x3 3-pin header

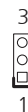
Connector location: JP1



Pin	Function
1-2	Normal (default)
2-3	Clear CMOS

Connector type: 1x3 3-pin header

Connector location: JP2



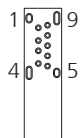
Pin	Function
1-2	Normal (default)
2-3	Clear RTC

## External I/O Pin Definition

### USB 3.0

Connector type: USB Type-A

Connector location: CN5, CN6, CN8

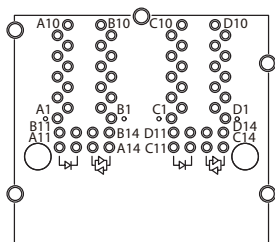


Pin	Definition
1	P5V_USB[0:2]
2	USB2N[0:2]_C
3	USB2P[0:2]_C
4	GND
5	USB3RN[0:2]_C
6	USB3RP[0:2]_C
7	GND
8	USB3TN[0:2]_C
9	USB3TP[0:2]_C

### LAN Ports

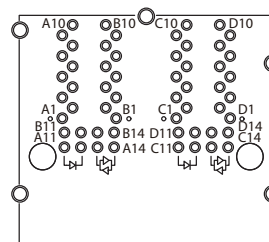
Connector type: 1GbE RJ45

Connector location: CON1



Pin	Definition
[D:A]1	LANB[1:4]_MDI_N0
[D:A]2	LANB[1:4]_MDI_P0
[D:A]3	LANB[1:4]_MDI_N1
[D:A]4	LANB[1:4]_MDI_P1
[D:A]5	LANB[1:4]_MDI_N2
[D:A]6	LANB[1:4]_MDI_P2
[D:A]7	LANB[1:4]_MDI_N3
[D:A]8	LANB[1:4]_MDI_P3
[D:A]9	T_VCC_[D:A]
[D:A]10	T_GND
[D:A]11	L[1:4]_LINK_P
[D:A]12	L[1:4]_B_ACT_N
[D:A]13	L[1:4]_B_L1000_N
[D:A]14	L[1:4]_B_L100_N

Connector location: CON3

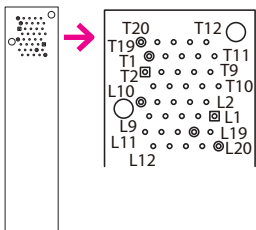


Pin	Definition
[D:A]1	LANA[1:4]_MDI_N0
[D:A]2	LANA[1:4]_MDI_P0
[D:A]3	LANA[1:4]_MDI_N1
[D:A]4	LANA[1:4]_MDI_P1
[D:A]5	LANA[1:4]_MDI_N2
[D:A]6	LANA[1:4]_MDI_P2
[D:A]7	LANA[1:4]_MDI_N3
[D:A]8	LANA[1:4]_MDI_P3
[D:A]9	T_VCC_[D:A]
[D:A]10	T_GND
[D:A]11	P[0:3]_LINK_P
[D:A]12	L[1:4]_A_ACT_N
[D:A]13	L[1:4]_A_L1000_N
[D:A]14	L[1:4]_A_L100_N

## Fiber Ports

Connector type: 10GbE SFP+

Connector location: J1, J2, J3, J4

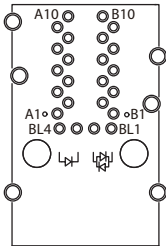


Pin	Definition	Pin	Definition
T1 / L1	GND	T11 / L11	GND
T2 / L2	SFP_TX_FAULT_P[0:3]	T12 / L12	SFP_P[0:3]_RX_DN
T3 / L3	SFP_TX_DISABLE_P[0:3]	T13 / L13	SFP_P[0:3]_RX_DP
T4 / L4	SFP_SDA[0:3]	T14 / L14	GND
T5 / L5	SFP_SCL[0:3]	T15 / L15	P3V3_P[0:3]R
T6 / L6	SFP_MOD_ABS_P[0:3]	T16 / L16	P3V3_P[0:3]T
T7 / L7	SFP_P[0:3]_RS	T17 / L17	GND
T8 / L8	SFP_RX_LOS_P[0:3]	T18 / L18	SFP_P[0:3]_TX_DP
T9 / L9	SFP_P[0:3]_RS	T19 / L19	SFP_P[0:3]_TX_DN
T10 / L10	GND	T20 / L20	GND

## MGMT Port

Connector type: 2.5GbE RJ45

Connector location: LAN1 upper



Pin	Definition
B1	LAN_MDIP0
B2	LAN_MDIN0
B3	LAN_MDIP1
B4	LAN_MDIN1
B5	LAN_MDIP2
B6	LAN_MDIN2
B7	LAN_MDIP3
B8	LAN_MDIN3
B9	I226_T_VCC
B10	GND
BL1	LED1_L2500_N
BL2	LED0_L1000_N
BL3	LED2_ACT_N
BL4	VCC3_LED

## Console Port

Connector type: RJ45

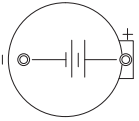
Connector location: LAN1 lower

Pin	Definition
A1	SP_RTS1_R
A2	SP_DTR1_R
A3	SP_TXD1_R
A4	GND
A5	SP_DCD1_R
A6	SP_RXD1_R
A7	SP_DSR1_R
A8	SP_CTS1_CON
A9	A_VCC (GND)
A10	GND

## Internal I/O Pin Definition

### Battery Holder

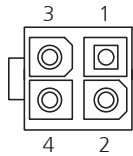
Connector location: BAT1



Pin	Definition
1	VBAT
2	GND

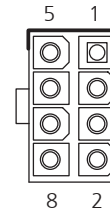
### Power Connectors

Connector location: CN11



Pin	Definition
1	GND
2	GND
3	P12V_PSU
4	P12V_PSU

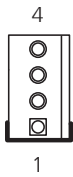
Connector location: CN12



Pin	Definition
1	GND
2	GND
3	GND
4	GND
5	P12V_PSU
6	P12V_PSU
7	P12V_PSU
8	P12V_PSU

## SATA Power Connector

Connector location: CON2

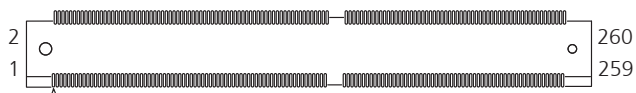


Pin	Definition
1	P12V_AUX
2	GND
3	GND
4	P5V



## DDR4 SO-DIMM Slot

Connector location: DIMM1, DIMM2



Pin	Definition	Pin	Definition
1	VSS	33	DM1_n/ DBI_n
3	DQ5	35	VSS
5	VSS	37	DQ15
7	DQ1	39	VSS
9	VSS	41	DQ10
11	DQS0_c	43	VSS
13	DQS0_t	45	DQ21
15	VSS	47	VSS
17	DQ7	49	DQ17
19	VSS	51	VSS
21	DQ3	53	DQS2_c
23	VSS	55	DQS2_t
25	DQ13	57	VSS
27	VSS	59	DQ23
29	DQ9	61	VSS
31	VSS	63	DQ19

Pin	Definition	Pin	Definition
65	VSS	97	DQS8_t/ NC
67	DQ29	99	VSS
69	VSS	101	CB2/NC
71	DQ25	103	VSS
73	VSS	105	CB3/NC
75	DM3_n/ DBI3_n	107	VSS
77	VSS	109	CKE0
79	DQ30	111	VDD
81	VSS	113	BG1
83	DQ26	115	BG0
85	VSS	117	VDD
87	CB5/NC	119	A12
89	VSS	121	A9
91	CB1/NC	123	VDD
93	VSS	125	A8
95	DQS8_c/ NC	127	A6

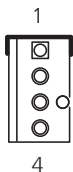
Continued to the next page

Pin	Definition	Pin	Definition
129	VDD	161	ODT1/ NC
131	A3	163	VDD
133	A1	165	C1, CS3_n, NC
135	VDD	167	VSS
137	CK0_t	169	DQ37
139	CK0_c	171	VSS
141	VDD	173	DQ33
143	PARITY	175	VSS
145	BA1	177	DQS4_c
147	VDD	179	DQS4_t
149	CS0_n	181	VSS
151	WE_n/ A14	183	DQ38
153	VDD	185	VSS
155	ODT0	187	DQ34
157	CS1_n/ NC	189	VSS
159	VDD	191	DQ44

Pin	Definition	Pin	Definition
193	VSS	227	VSS
195	DQ40	229	DQ51
197	VSS	231	VSS
199	DM5_n/ DBI5_n	233	DQ61
201	VSS	235	VSS
203	DQ46	237	DQ56
205	VSS	239	VSS
207	DQ42	241	DM7_n/ DBI7_n
209	VSS	243	VSS
211	DQ52	245	DQ62
213	VSS	247	VSS
215	DQ49	249	DQ58
217	VSS	251	VSS
219	DQS6_c	253	SCL
221	DQS6_t	255	VDDSPD
223	VSS	257	VPP
225	DQ55	259	VPP

### Fan Power Connectors

Connector location: FAN1, FAN2, FAN3



Pin	Definition
1	GND
2	P12V_FAN
3	FAN[1:3]_IN_CON
4	FAN[1:3]_PWM_OUT

### LPC TPM Module Pin Header

Connector location: JP5



Pin	Definition
1	GND
2	LPC_CLK_TPM
3	NA
4	TPM_LPC_FRAME_N
5	TPM_LAD2
6	RST_TPM_LRESET_R_N
7	TPM_LAD1
8	TPM_LAD3
9	GND
10	TPM_LAD0
11	LPC_SERIRQ
12	P3V3_SOC
13	GND
14	GND

## LPC TPM Module Pin Header

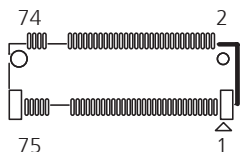
Connector location: JP5



Pin	Definition
1	P3V3_CPLD
2	GND
3	JTAG_PLD_TCK
4	JTAG_PLD_TDO
5	JTAG_PLD_TDI
6	JTAG_PLD_TMS

## M.2 Key M Slot

Connector location: M.2



Pin	Definition	Pin	Definition
1	GND	2	3.3 V
3	GND	4	3.3 V
5	PERn3	6	N/A
7	PERp3	8	N/A
9	GND	10	DAS/DSS
11	PETn3	12	3.3 V
13	PETp3	14	3.3 V
15	GND	16	3.3V
17	PERn2	18	3.3 V
19	PERp2	20	N/A

Pin	Definition	Pin	Definition
21	CONFIG_0	22	N/A
23	PETn2	24	N/A
25	PETp2	26	N/A
27	GND	28	N/A
29	PERn1	30	N/A
31	PERp1	32	N/A
33	GND	34	N/A
35	PETn1	36	N/A
37	PETp1	38	DEVSLP
39	GND	40	N/A

Continued to the next page

## 2.5" SATA Connectors

Connector location: SATA1, SATA2



Pin	Definition
1	GND
2	SATA[1:2]_TX_DP_C
3	SATA[1:2]_TX_DN_C
4	GND
5	SATA[1:2]_RX_DN_C
6	SATA[1:2]_RX_DP_C
7	GND

## BIOS SPI Flash

Connector location: U8



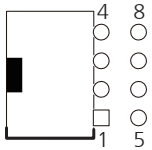
Pin	Definition
1	CS
2	SO/SIO1
3	WP#*/SIO2
4	GND
5	SI/SIO0
6	SCLK
7	RESET#*/SIO3
8	VCC

## Expansion Card Components

### Internal I/O Pin Definition

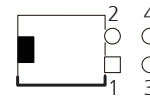
#### Power of main board connector

Connector location: CN2, CN3



#### CN2

Pin	Definition
1	GND
2	GND
3	GND
4	GND
5	P12V_PSU
6	P12V_PSU
7	P12V_PSU
8	P12V_PSU

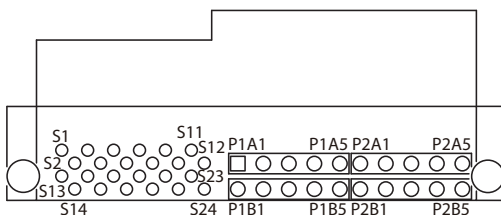


#### CN3

Pin	Definition
1	GND
2	GND
3	P12V_PSU
4	P12V_PSU

## Power Connector

Connector location: CN4, CN5  
(close to PSU golden finger Side)



### CN4

Pin	Definition	Pin	Definition
S1	PSU_S13	S15	+12VIBUS
S2	PSU1_DET	S16	PMB_ALERT#1
S3	PSU1_A0	S17	PMB_SDA1
S4	NC	S18	PMB_SCL1
S5	PSU_Vsso	S19	GND
S6	NC	S20	PSU_PSON#
S7	NC	S21	PSU1_PWOK
S8	NC	S22	PSU1_A1
S9	NC	S23	PSU_S11
S10	NC	S24	PSU_S12
S11	NC	P1A[1:5]	GND
S12	NC	P1B[1:5]	GND
S13	P12V_PSU	P2A[1:5]	P12V_PSU
S14	NC	P2B[1:5]	P12V_PSU

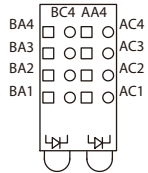
### CN5

Pin	Definition	Pin	Definition
S1	PSU_S13	S15	+12VIBUS
S2	PSU2_DET	S16	PMB_ALERT#2
S3	PSU2_A0	S17	PMB_SDA2
S4	NC	S18	PMB_SCL2
S5	PSU_Vsso	S19	GND
S6	NC	S20	PSU_PSON#
S7	NC	S21	PSU2_PWOK
S8	NC	S22	PSU2_A1
S9	NC	S23	PSU_S11
S10	NC	S24	PSU_S12
S11	NC	P1A[1:5]	GND
S12	NC	P1B[1:5]	GND
S13	P12V_PSU	P2A[1:5]	P12V_PSU
S14	NC	P2B[1:5]	P12V_PSU



## LED Indicators

Connector location: LED1



Row	Description
1	System Status
2	MGMT Port Status
3	SYS/SSD Status
4	PWR1/PWR2 Status

LED Indicator	LED Status	Description
System (Bi-color LED)	Amber on/off	Off: S5 mode / Power is down (SW-programmed by CPLD)
	Green on/off	
MGMT	Green on/off	Off: S5 mode / Power is down (SW-programmed by CPLD)
SYS	Green on/off	Off: S5 mode / Power is down (SW-programmed by CPLD)
PWR1/PWR2* (Bi-color LED)	Green on/off	Steady green: power on Steady red: power off
	Red on/off	
SSD	Green on/off	Blinking green: data transferring Off: inactive

\*For detailed information on the power LED behavior, refer to the [next page](#).

### Power LED Behavior

PSU1	PSU2	Power Button Pressed	PWR LED1	PWR LED2
Not Connected (No PSU insert)	Not Connected (No PSU insert)	Not Pressed	off	off
Not Connected (No PSU insert)	Not Connected (No PSU insert)	Pressed	off	off
Not Connected (No PSU insert)	Powered	Not Pressed	off	Red
Not Connected (No PSU insert)	Powered	Pressed	off	Green
Present (PSU insert but no power)	Powered	Not Pressed	Red	Red
Present (PSU insert but no power)	Powered	Pressed	Red	Green
Powered	Not Connected (No PSU insert)	Not Pressed	Red	off
Powered	Not Connected (No PSU insert)	Pressed	Green	off
Powered	Present (PSU insert but no power)	Not Pressed	Red	Red
Powered	Present (PSU insert but no power)	Pressed	Green	Red
Powered	Powered	Not Pressed	Red	Red
Powered	Powered	Pressed	Green	Green

## System Power Button

Connector location: SW1



Pin	Definition
1	GND
2	FM_PWRBTN_N_R
3	FM_PWRBTN_N_R
4	GND

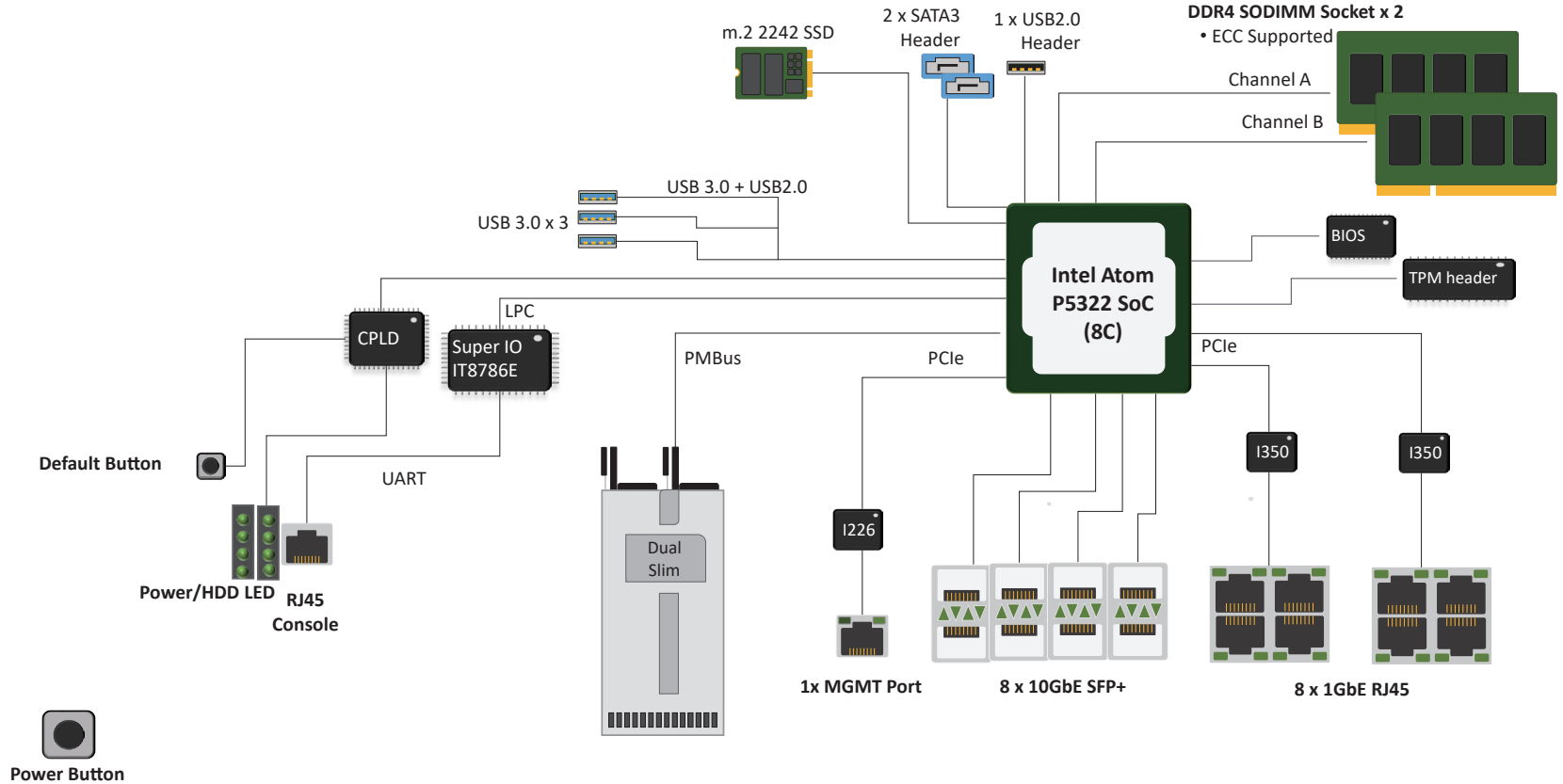
## System Reset Button

Connector location: SW2



Pin	Definition
1	GND
2	ACPI_BTN_IN#
3	GND
4	GND

# Block Diagram



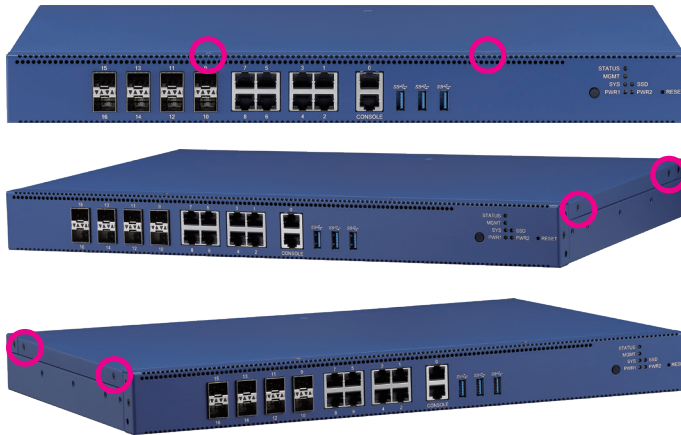
# CHAPTER 3: SYSTEM SETUP

## Removing the Chassis Cover



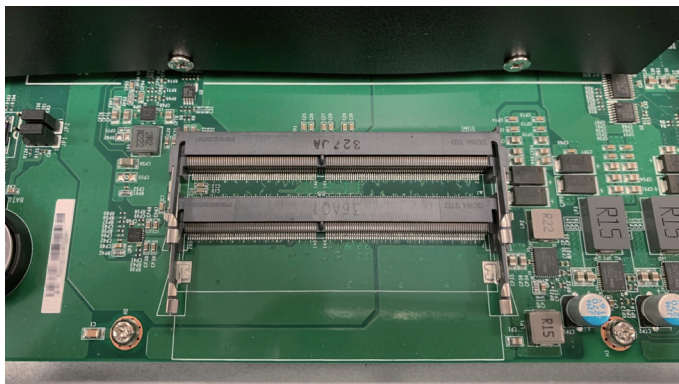
Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Remove the screws by following the pink indicators shown below, and place them in a safe place for later use.
2. With the screws removed, gently slide the cover outwards then lift up the cover to remove it.



## Installing a DIMM Memory Module

1. Locate the SO-DIMM socket on the motherboard.



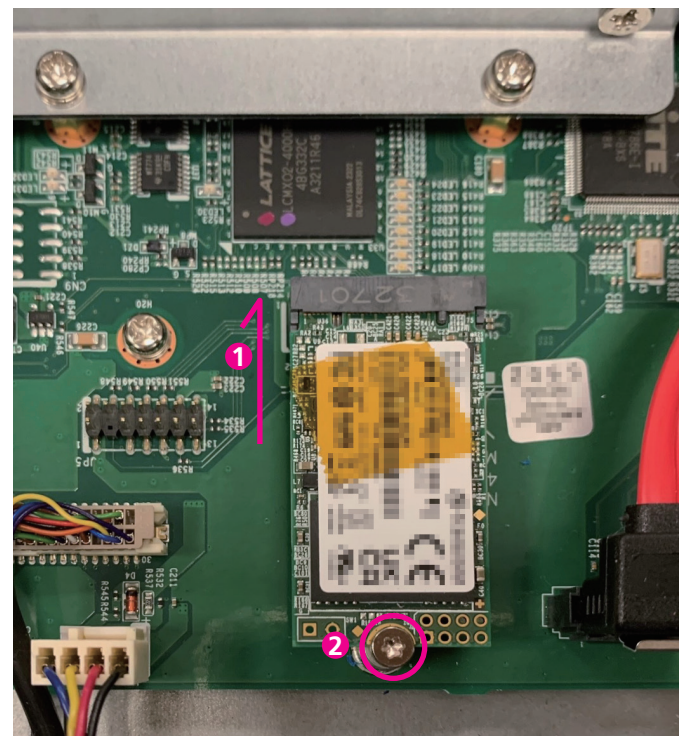
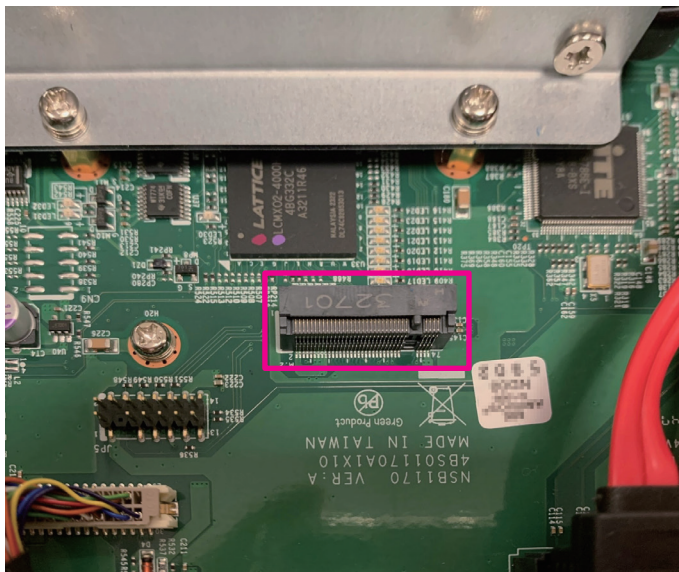
2. Insert the module into the socket at an approximately 30 degree angle (1). Push the module down (2) until the clips on both sides of the socket lock into position. The gold-plated connector on the edge of the module will almost completely disappear inside the socket.



1. There is no particular order in which memory modules should be installed in the SO-DIMM slots.
2. It's recommended that you install memory modules of the same brand, speed, and capacity if you want to plug them into both of the slots.
3. The total supported memory is up to 32GB.

## Installing an M.2 SSD Module

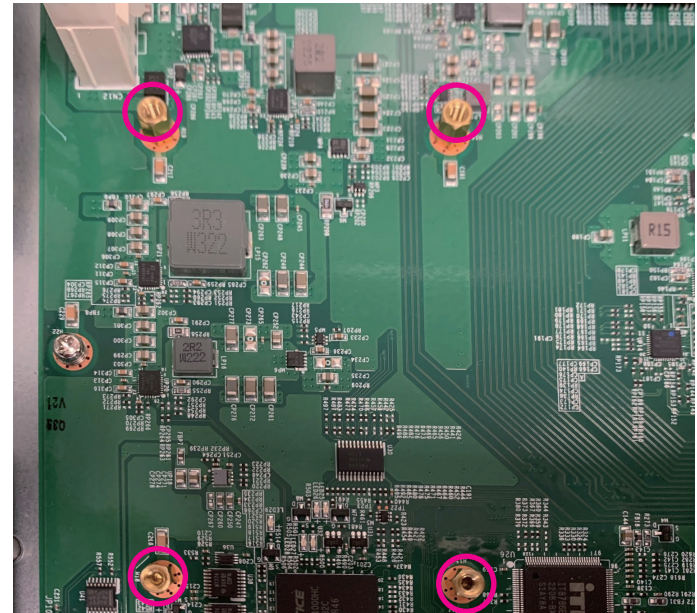
1. Locate the M.2 slot (Key M, 2240) on the motherboard.
2. Insert the M.2 SSD module into the M.2 slot at a 45-degree angle until the gold-plated connector **1** on the edge of the module completely disappears. With the module fully inserted, tighten the screw **2** into the mounting hole to secure it.





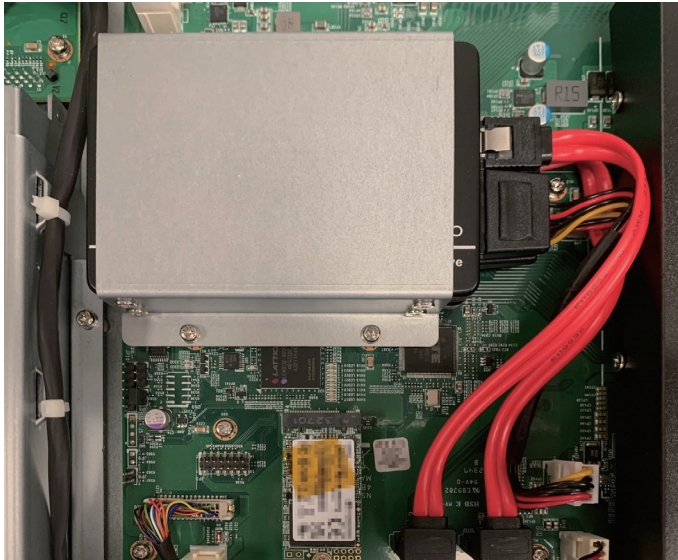
## Installing a 2.5" SATA Storage Drive

1. Secure the SATA storage drive(s) to the bracket as shown below. This bracket can hold up to two drives.
2. Locate the standoffs for the SATA storage drive on the motherboard.





3. Secure the bracket with the SATA storage drive(s) installed in place, then connect the SATA data cable(s) and SATA power cable(s) from the motherboard to the storage drive(s).



# CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NSA 1170. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at [www.nexcom.com.tw](http://www.nexcom.com.tw).

## About BIOS Setup

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

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

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

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

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

## When to Configure the BIOS

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

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


## Default Configuration

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











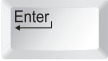
## Entering Setup

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

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

Powering on the computer and immediately pressing  allows you to enter Setup.


## Legends

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


## Scroll Bar

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

## Submenu

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

## BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  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 - American Megatrends International, LLC.
Main Advanced Platform Configuration Socket Configuration Security
-----
| BIOS Information                                     |Set the Date. Use Tab |
| BIOS Vendor           American Megatrends          |to switch between Date|
| Core Version          5.19                         |elements.             |
| Compliancy            UEFI 2.7; PI 1.6              |Default Ranges:      |
| Project Version       Z177- 0.04 x64                |Year: 1998-9999      |
| Build Date and Time   02/15/2024 13:51:27          |Months: 1-12         |
|                                     |Days: Dependent on month|
|                                     |Range of Years may vary.|
|-----|
| Memory Information                                     |
| Total Memory          16384 MB                      |
|                                     |
| System Date           [Wed 07/30/2008]              |
| System Time           [16:17:31]                   |
|-----|
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
|-----|
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```

### System Date

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

### System Time

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

## Advanced

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



Setting incorrect field values may cause the system to malfunction.

```

Aptio Setup - American Megatrends International, LLC.
Main  Advanced  Platform Configuration  Socket Configuration  Security  >
-----
> Trusted Computing
> IT8786 Super IO Configuration
> Hardware Monitor
> UEFI Variables Protection
> Serial Port Console Redirection
> PCI Subsystem Settings
> USB Configuration
> Network Stack Configuration

Trusted Computing
Settings

|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit

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```

## Trusted Computing

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

```

Aptio Setup - American Megatrends International, LLC.
Advanced
-----
Configuration
Security Device      [Enable]
Support
Disable Block Sid   [Disabled]
NO Security Device
Found

|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
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit

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```

### Security Device Support

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

### Disable Block Sid

Enable or disable the option to allow SID authentication in TCG storage device.

## IT8786 Super IO Configuration

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

```

Aptio Setup - American Megatrends International, LLC.
Advanced
-----
IT8786 Super IO Configuration          |Set Parameters of
Super IO Chip             IT8786      |Serial Port 1 (COMA)
> Serial Port 1 Configuration
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
-----
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```

### Serial Port 1 Configuration

Enter the Serial Port 1 Configuration submenu.

## Serial Port 1 Configuration

This section is used to configure serial port 1.

```

Aptio Setup - American Megatrends International, LLC.
Advanced
-----
Serial Port 1 Configuration          |Enable or Disable
Serial Port             [Enabled]    |Serial Port (COM)
Device Settings        IO=3F8h; IRQ=4;
Change Settings        [Auto]
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
-----
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```

### Serial Port

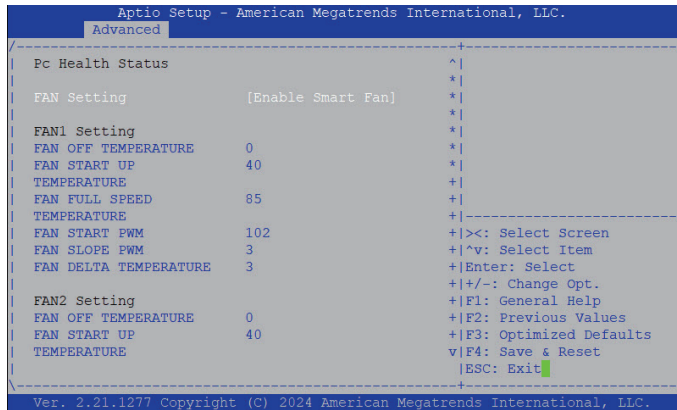
Enable or disable the serial port.

### Change Settings

Select an optimal setting for the super IO device.

## Hardware Monitor

This section is used to configure the fan(s) and monitor hardware status such as temperature, fan speed, and voltages.



### FAN1/2/3 Setting

Configure the operating mode of the fan.

### FAN1/2/3 OFF TEMPERATURE

Configure the temperature to turn the fan off.

### FAN1/2/3 START UP TEMPERATURE

Configure the temperature to turn the fan on.

### FAN1/2/3 FULL SPEED

Configure the temperature to run the fan at full speed.

### FAN1/2/3 START PWM

Configure the start PWM value of the fan. This is used to set the starting fan speed.

### FAN1/2/3 SLOPE PWM

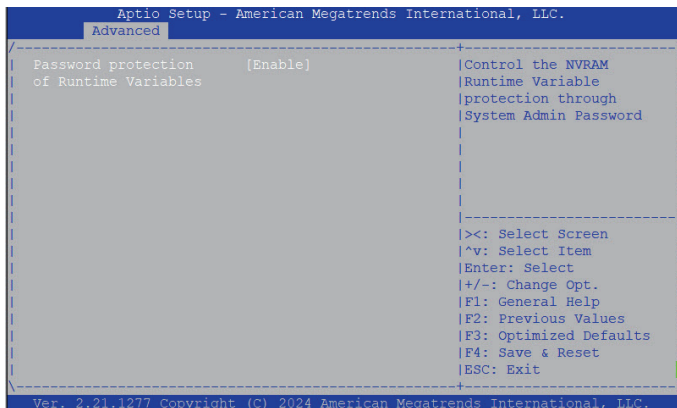
Configure the slope PWM value of the fan. This is used to control the rate of the fan speed based on temperature changes.

### FAN1/2/3 DELTA TEMPERATURE

Configure the delta temperature of the fan.



## UEFI Variables protection

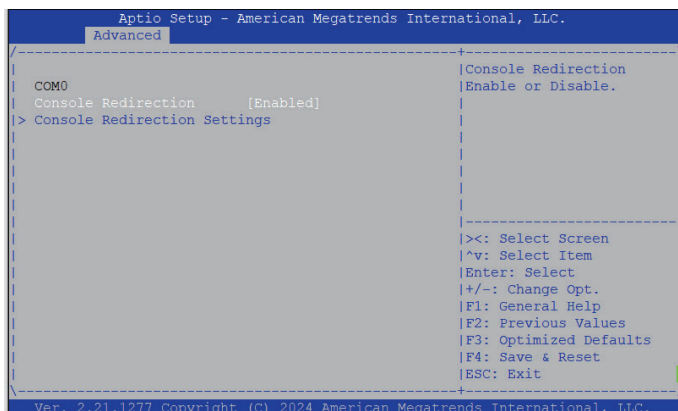


### Password protection of Runtime Variables

Control the NVRAM runtime variable protection through system admin password.

## UEFI Variables protection

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



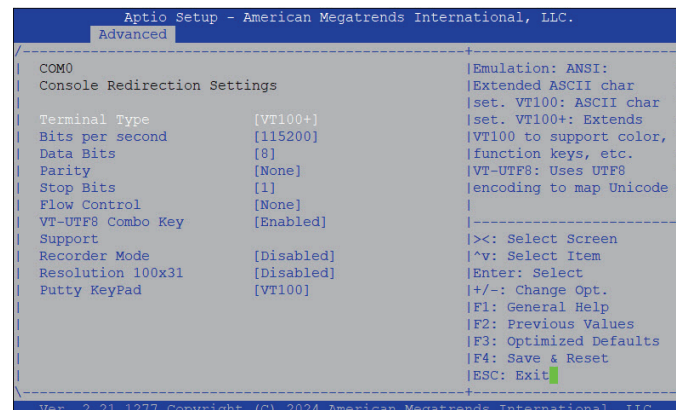
## Console Redirection

Enable or disable the console redirection.

## Console Redirection Settings

When Console Redirection (the option above) is enabled, the Console Redirection Settings will be available. Press <Enter> for additional configuration options.

## Console Redirection Settings



## Terminal Type

ANSI Extended ASCII character set.

VT100 ASCII character set.

VT100+ Extends VT100 to support color, function keys, etc.

VT-UTF8 Uses UTF8 encoding to map Unicode characters onto 1 or more bytes.

## Bits Per Second

Select the serial port transmission speed. The speed must match the other side. Long or noisy lines may require a lower speed. Data Bits The options are 7 and 8.

## Parity

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

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

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

## Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

## Flow Control

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

## VT-UTF8 Combo Key Support

Enable or disable VT-UTF8 combo key support.

## Recorder Mode

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

## Resolution 100x31

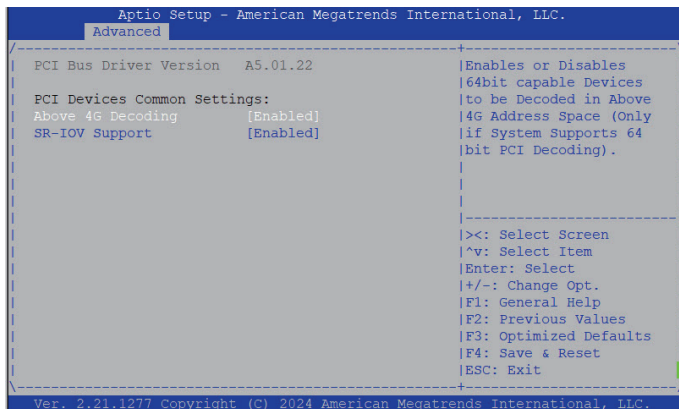
Enable or disable extended terminal resolution.

## Putty Keypad

Select the Putty keyboard emulation type.

## PCI Subsystem Settings

This section is used to configure the PCI.



### Above 4G Decoding

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

### SR-IOV Support

Enables or disables SR-IOV support.

## USB Configuration

This section is used to configure the USB.

```

Apico Setup - American Megatrends International, LLC.
-----
Advanced
-----
USB Configuration
USB Module Version      25
USB Controllers:
  1 XHCI
USB Devices:
  1 Keyboard
Legacy USB Support      [Enabled]
XHCI Hand-off           [Enabled]
USB Mass Storage        [Enabled]
Driver Support
USB hardware delays
and time-outs:
USB transfer time-out   [20 sec]
Device reset time-out  [20 sec]
-----
^| Enables Legacy USB
*| support. AUTO option
*| disables legacy support
*| if no USB devices are
*| connected. DISABLE
*| option will keep USB
*| devices available only
*| for EFI applications.
*|
*| -----
*| <: Select Screen
*| ^v: Select Item
*| Enter: Select
*| +/-: Change Opt.
*| F1: General Help
+| F2: Previous Values
+| F3: Optimized Defaults
v| F4: Save & Reset
|ESC: Exit
-----
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```

### Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disable Keeps USB devices available only for EFI applications.

### XHCI Hand-off

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

### USB Mass Storage Driver Support

Enable or disable USB mass storage driver support.

### USB transfer time-out

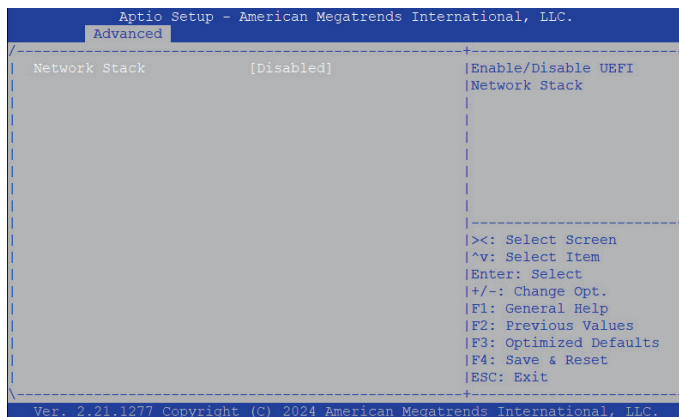
The time-out value for control, bulk, and Interrupt transfers.

### Device reset time-out

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

## Network Stack Configuration

This section is used to configure the network stack.



### Network Stack

Enables or disables UEFI network stack.

## Platform Configuration

```

Aptio Setup - American Megatrends International, LLC.
Main Advanced Platform Configuration Socket Configuration Security >
> PCH-IO Configuration PCH Parameters
-----
Setup Warning:
Setting items on this Screen to incorrect
values
may cause system to malfunction!

|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
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```

### PCH-IO Configuration

Enter the PCH-IO Configuration submenu.

## PCH-IO Configuration

```

Aptio Setup - American Megatrends International, LLC.
Platform Configuration
PCH-IO Configuration PCI Express
Configuration settings
> PCI Express Configuration
> Fia Mux Configuration
> SATA Configuration
> USB Configuration
State After G3 [Last State]
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
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```

### PCI Express Configuration

Enter the PCI Express Configuration submenu.

### SATA Configuration

Enter the SATA Configuration submenu.

### USB Configuration

Enter the USB Configuration submenu.

### State After G3

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

## PCI Express Configuration

```

Aptio Setup - American Megatrends International, LLC.
Platform Configuration

PCI Express Configuration
PCI Express Root Port
Settings.

> PCI Express Root Port 1
> PCI Express Root Port 3
> PCI Express Root Port 4
> PCI Express Root Port 9
> PCI Express Root Port 10
> PCI Express Root Port 11
> PCI Express Root Port 12

-<: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit

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```

### PCI Express Root Port 1/3/4/9/10/11/12

Enter the PCI Express Root Port 1/3/4/9/10/11/12 submenu.

## PCI Express Configuration > PCI Express Configuration 1/3/4/9/10/11/12

```

Aptio Setup - American Megatrends International, LLC.
Platform Configuration

PCI Express Root Port [Enabled] |Control the PCI Express
1 |Root Port.
ASPM [Disabled]
L1 Substates [Disabled]
PCIe Speed [Auto]
CTO [default (50us - 50ms)]

-<: Select Screen
^v: Select Item
Enter: Select
+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit

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```

### ASPM

Control the PCI Express root port.

### L1 Substates

Configure the L1 Substates settings.

### PCIe Speed

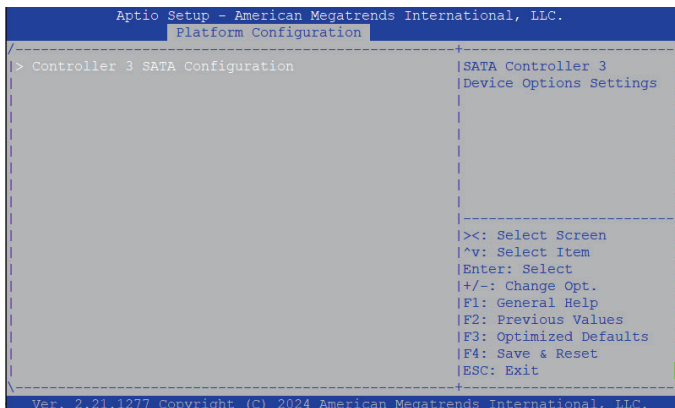
Configure the speed of the PCI Express port.

### CTO

Configure the CTO for PCI Express.



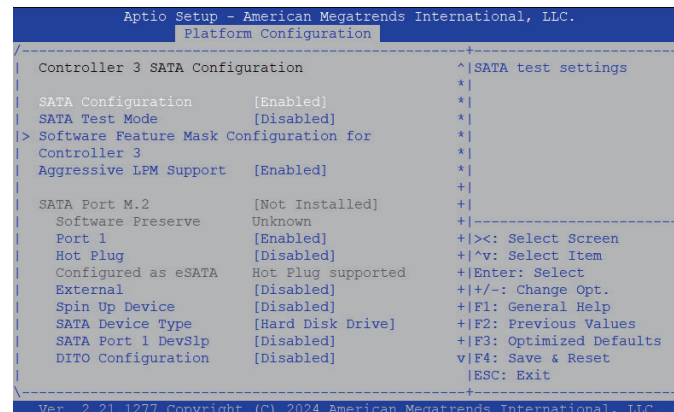
## SATA Configuration



### Controller 3 SATA Configuration

Enter the Controller 3 SATA Configuration submenu.

## SATA Configuration > Controller 3 SATA Configuration



### SATA Configuration

Enable or disable SATA configuration.

### SATA Test Mode

Enable or disable SATA test mode.

### Software Feature Mask Configuration for Controller 1

Enable or disable software feature mask configuration for controller 1.

### Aggressive LPM Support

Enable or disable aggressive LPM support.

### Port 1

Enable or disable SATA port 1.

### Hot Plug

Enable or disable hot plugging feature on SATA port 1.

### External

Enable or disable the feature of External.

### Spin Up Device

Enable or disable staggered spin up on devices connected to SATA port 1.

### SATA Device Type

Identify what type of SATA device is connected.

### SATA Port 1 DevSlp

Enable or disable SATA Port 1 DevSlp. Before enabling DevSlp, board rework is needed.

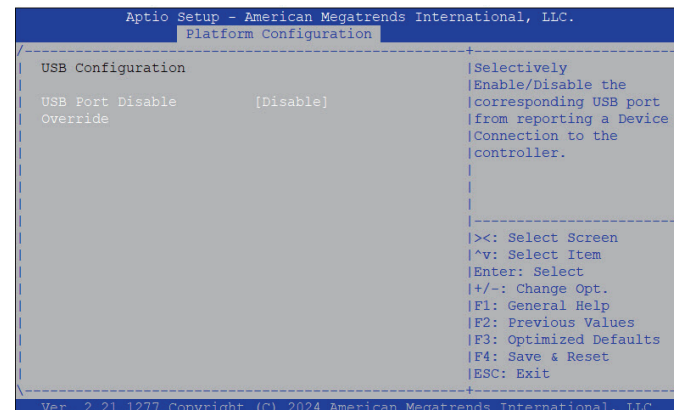
### DITO Configuration

Enable or disable DITO configuration.



The configuration options in this section may vary based on the connected SATA devices.

### USB Configuration



### USB Port DisableOverride

Selectively enable or disable the corresponding USB port from reporting a device connection to the controller.

## Socket Configuration

```

Aptio Setup - American Megatrends International, LLC.
Socket Configuration
-----
> Processor Configuration      Displays and provides
> Memory Configuration        option to change the
> IIO Configuration           Processor Settings
> Advanced Power Management Configuration

|<<: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
-----
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```

### Processor Configuration

Enter the Processor Configuration submenu.

### Memory Configuration

Enter the Memory Configuration submenu.

### IIO Configuration

Enter the IIO Configuration submenu.

### Advanced Power Management Configuration

Enter the Advanced Power Management Configuration submenu.

## Processor Configuration

```

Aptio Setup - American Megatrends International, LLC.
Socket Configuration
-----
Processor Configuration      ^|Change Per-Socket
                             *|Settings
-----
> Per-Socket Configuration   *|
Processor BSP Revision      80667 - SNR C0 *|
Processor Socket            Socket 0 *|
Processor ID                 00080667* *|
Processor Frequency         2.200GHz *|
Processor Max Ratio         16H *|
Processor Min Ratio         08H *|
Microcode Revision         4C000021 *|<<: Select Screen
L1 Cache RAM(Per Core)     64KB *|^v: Select Item
L2 Cache RAM(Per          9216KB +|Enter: Select
Package)                   +|+/-: Change Opt.
L3 Cache RAM(Per          7680KB +|F1: General Help
Package)                   +|F2: Previous Values
Processor 0 Version         Intel Atom(R) P5322 pro +|F3: Optimized Defaults
                           cessor v|F4: Save & Reset
                             |ESC: Exit
-----
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```

### Pre-Socket Configuration

Enter the Pre-Socket Configuration submenu.

### Max CPUID Value Limit

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

### Hardware Prefetcher

Enable or disable the MLC streamer prefetcher.

### Adjacent Cache Prefetcher

Enable or disable prefetching of adjacent cache lines.

### Extended APIC

Enable or disable extended APIC support.

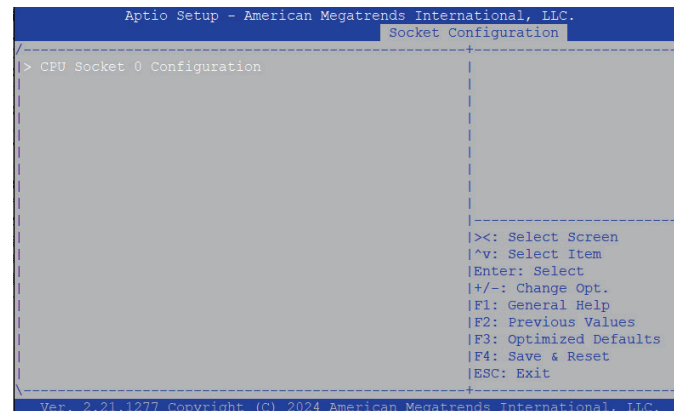
### VMX

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

### Enable SMX

Enable Safer Mode Extensions.

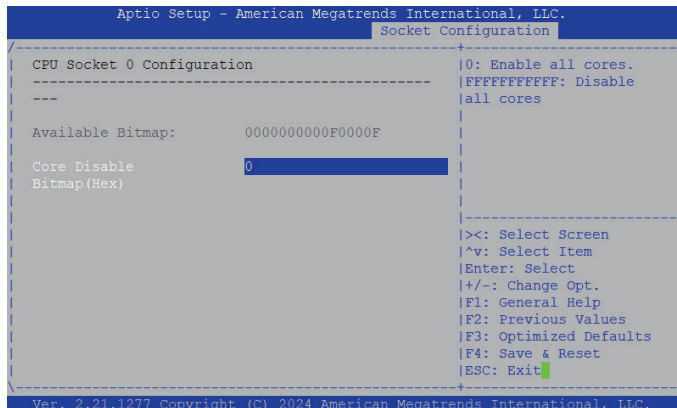
### CPU Socket 0 Configuration



### CPU Socket 0 Configuration

Enter the CPU Socket 0 Configuration submenu.

## CPU Socket 0 Configuration > CPU Socket 0 Configuration

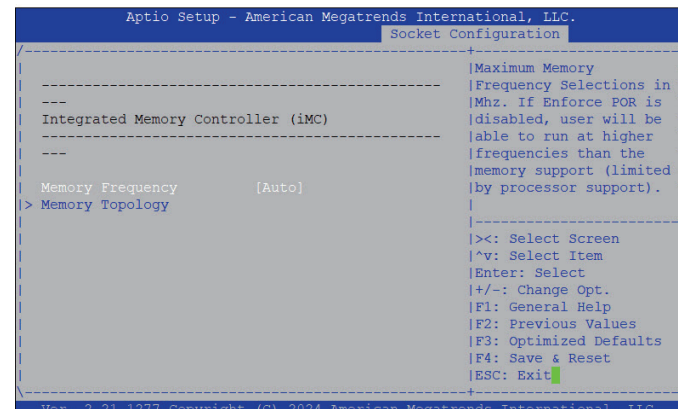


### Core Disable Bitmap (Hex)

0: Enable all cores.

FFFFFFFF: Disable all cores

## Memory Configuration



### Memory Frequency

Maximum memory frequency selection in MHz. If enforce POR is disabled, user will be able to run at higher frequencies than the memory support (limited by processor support).

### Memory Topology

Enter the Memory Topology submenu.

## Memory Topology

Detect and display the information on the memory installed.

```

Aptio Setup - American Megatrends International, LLC.
Socket Configuration
-----
Socket0.ChA.Dimm0:
2400MT/s Transcend
SRx8 8GB SODIMM
Socket0.ChB.Dimm0:
2400MT/s Transcend
SRx8 8GB SODIMM
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
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```

## I/O Configuration

```

Aptio Setup - American Megatrends International, LLC.
Socket Configuration
-----
I/O Configuration
-----
> Socket0 Configuration
> Intel VT for Directed I/O (VT-d)
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Reset
|ESC: Exit
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```

### Socket0 Configuration

Enter the Socket0 Configuration submenu.

### Intel VT for Directed IO (VT-d)

Enter the Intel VT for Directed IO (VT-d) submenu.

## Socket0 Configuration

```

Aptio Setup - American Megatrends International, LLC.
Socket Configuration
-----
IOU0 (IIO PCIe Port 1) [Auto] |Selects PCIe port
> Port 1A                    |Bifurcation for
                             |selected slot(s)
-----
                             |
                             |><: Select Screen
                             |^v: Select Item
                             |Enter: Select
                             |+/-: Change Opt.
                             |F1: General Help
                             |F2: Previous Values
                             |F3: Optimized Defaults
                             |F4: Save & Reset
                             |ESC: Exit
-----
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```

### IOU0 (IIO PCIe Port 1)

Select PCIe port bifurcation for selected slot(s).

### Port 1A

Enter the Port 1A submenu.

## Socket0 Configuration > Port 1A

```

Aptio Setup - American Megatrends International, LLC.
Socket Configuration
-----
Port 1A                      |In auto mode the BIOS ^|
-----                      |will remove the EXP  *|
                             |port if there is no  *|
                             |device or errors on  *|
                             |that device and the  *|
PCI-E Port                    |[Yes]                 +|
Link Speed                    |[Auto]                +|
Override Max Link              |[Auto]                +|
Width                          |capable.              +|
                             |Enable/Disable is used v|
-----                      |
PCI-E Port Link Status        |Link Did Not Train    |
PCI-E Port Link Max           |Max Width x16         |
PCI-E Port Link Speed         |Link Did Not Train    |><: Select Screen
PCI-E Port MPSS               |[Auto]                |^v: Select Item
PCI-E ASPM Support            |[Disable]             |Enter: Select
                             |+/-: Change Opt.
                             |F1: General Help
                             |F2: Previous Values
                             |F3: Optimized Defaults
                             |F4: Save & Reset
                             |ESC: Exit
-----
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```

### Link Speed

Configure the link speed of the PCIe port.

### Override Max Link Width

Configure the link speed to override the max link width set by bifurcation.

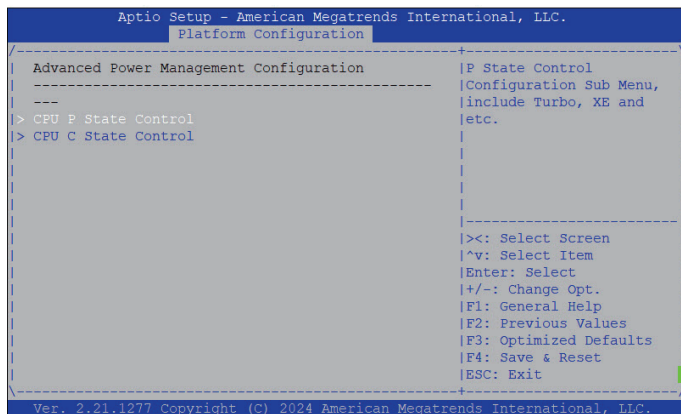
### PCI-E Port MPSS

Configures the PCI-e Port MPSS.

### PCI-E ASPM Support

Enable or disable the PCI-E ASPM Support.

## Advanced Power Management Configuration



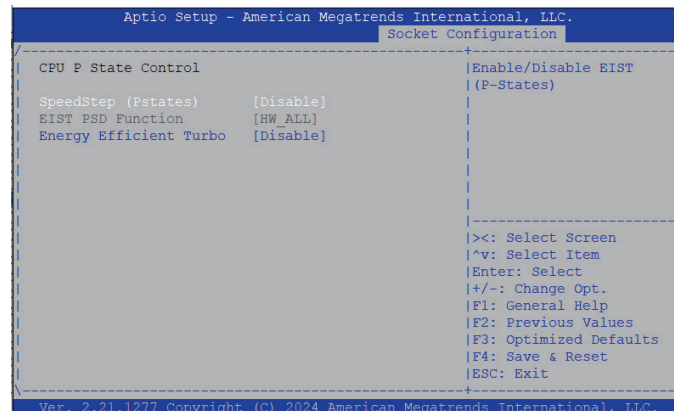
### CPU P State Control

Enter the CPU P State Control submenu.

### CPU C State Control

Enter the CPU C State Control submenu.

## CPU P State Control



### SpeedStep (Pstates)

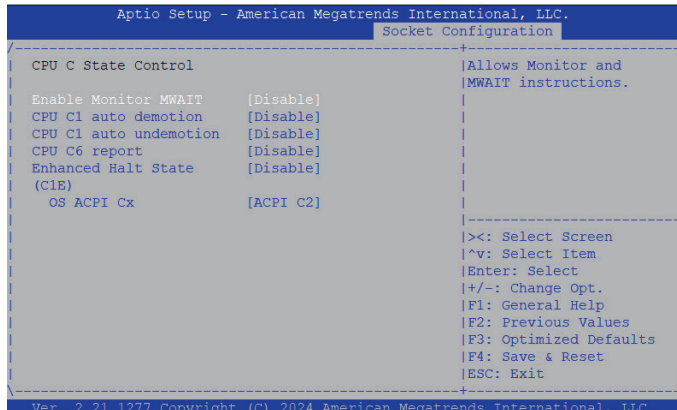
Enable or disable EIST (P-States).

### Energy Efficient Turbo

Enable or disable the Energy Efficient Turbo.



## CPU C State Control



### Enable Monitor MWATT

Enable or disable monitoring and MWait instructions.

### CPU C1 auto demotion

Enable or disable CPU C1 auto demotion.

### CPU C1 auto undemotion

Enable or disable CPU C1 auto undemotion.

### CPU C6 report

Enable or disable C6 report to the operating system.

### Enhanced Halt State (C1E)

Enable or disable Enhanced Halt State (C1E) for lower power consumption.

## OS ACPI Cx

Enable or disable C3 report or C6 report to OS ACPI C2 or ACPI C3.

## Security

```

Aptio Setup - American Megatrends International, LLC.
Main Advanced Platform Configuration Socket Configuration Security >

Password Description                               Set Administrator
                                                    Password
-----
If ONLY the Administrator's password is set,
then this only limits access to Setup and is
only asked for when entering Setup.
The password length must be
in the following range:
Minimum length      3
Maximum length     20

Administrator Password                               ><: Select Screen
                                                    ^v: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Reset
                                                    ESC: Exit

> Secure Boot
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```

### Administrator Password

Select to reconfigure the administrator's password.

### Secure Boot

Enter the Secure Boot submenu.

## Secure Boot

```

Aptio Setup - American Megatrends International, LLC.
Platform Configuration

Advanced Power Management Configuration           P State Control
-----
                                                    [Configuration Sub Menu,
                                                    include Turbo, XE and
                                                    etc.]

> CPU P State Control
> CPU C State Control

                                                    ><: Select Screen
                                                    ^v: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Reset
                                                    ESC: Exit

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```

### Secure Boot

Enable or disable Secure Boot. Secure Boot only works when the system runs in user mode.

### Secure Boot Mode

Select this to configure the Secure Boot mode.

Standard: Fixed secure boot policy.

Custom: Secure boot policy variables can be configured by a physically present user without full authentication.

## Restore Factory Keys

Allow you to install factory default secure boot key databases.

## Reset to Setup Mode

Delete all Secure Boot Key databases from NVRAM.

## Key Management

Enable experienced users to modify Secure Boot variables.

## Key Management

```

Aptio Setup - American Megatrends International, LLC.
Security
-----
Vendor Keys          Valid          ^|Install factory default
                   |          |*|Secure Boot keys after
Factory Key Provision [Disabled]  *|the platform reset and
> Restore Factory Keys  *|while the System is in
> Reset To Setup Mode   *|Setup mode
> Export Secure Boot variables *|
> Enroll Efi Image      *|
|                         *|
Device Guard Ready    *|
> Remove 'UEFI CA' from DB *|-----
> Restore DB defaults  *|<: Select Screen
                   *|^v: Select Item
Secure Boot variable | Size| Keys| Key Source *|Enter: Select
> Platform Key(PK)   |  0|  0| No Keys *|+/-: Change Opt.
> Key Exchange Keys |  0|  0| No Keys *|F1: General Help
> Authorized Signatures|  0|  0| No Keys *|F2: Previous Values
> Forbidden Signatures|  0|  0| No Keys +|F3: Optimized Defaults
> Authorized TimeStamps|  0|  0| No Keys v|F4: Save & Reset
                   |ESC: Exit
-----
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```

### Factory Key Provision

Install factory default secure boot keys after the platform reset and while the system is in Setup mode.

### Restore Factory Keys

Force system into User Mode. Install factory default Secure Boot Key databases.

### Enroll Efi Image

Run the image in Secure Boot Mode.

### Remove 'URFI CA' from DB

Device Guard ready system must not list 'Microsoft EFI CA' Certificate in Authorized Signature database (db).

---

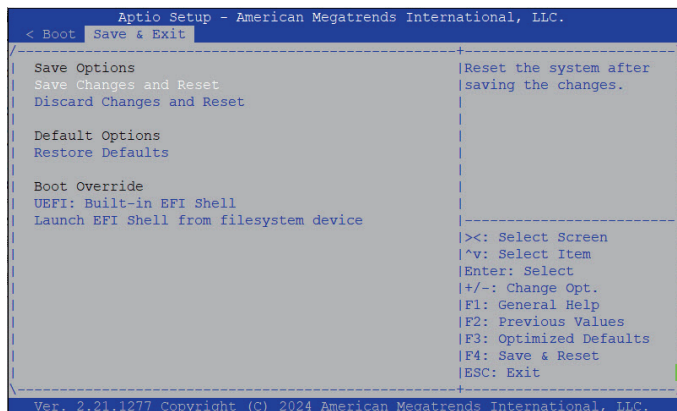
**Restore DB defaults**

Restore DB variable to factory defaults.

**Platform Key (PK)/Key Exchange Keys/Authorized Signature/Forbidden Signature/Authorized TimeStamps/OsRecovery Signatures**

Enroll factory defaults or load the keys from a file.

## Save & Exit



### Save Changes and Reset

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

### Discard Changes and Reset

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

### Restore Defaults

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

### Boot Override

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

### Launch EFI Shell from filesystem device

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