



NEXCOM International Co., Ltd.

Network and Communication Solutions

Network Security Appliance

NSA 5170C

User Manual

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PREFACE

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Acknowledgements

NSA 5170C is a trademark of NEXCOM International Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

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

Declaration of Conformity

FCC

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

CE

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

RoHS Compliance



NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

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

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

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

How to recognize NEXCOM RoHS Products?

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

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

Warranty and RMA

NEXCOM Warranty Period

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

NEXCOM Return Merchandise Authorization (RMA)

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

Repair Service Charges for Out-of-Warranty Products

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

Repair Service Charges for Out-of-Warranty Products

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

System Level

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

Board Level

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

Warnings

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

Cautions

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

Safety Information

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

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

Installation Recommendations

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

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

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

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

Safety Precautions

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

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

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

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

Technical Support and Assistance

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

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.
3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual



Warning:

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



Caution:

Information to avoid damaging components or losing data.



Note:

Provides additional information to complete a task easily.

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Package Contents

Before continuing, verify that the NSA 5170C 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	19S00517002X0	NSA 5170C ASSY		1
2	5044440031X00	Rubber Foot Kang Yang:RF20-5-4P	19.8x18x5.0mm	4
3	6012200052X00	PE Zipper Bag #8	170x240mm, w/China RoHS Symbol	1
4	6012200053X00	PE Zipper Bag #3	100x70mm, w/China RoHS Symbol	1
5	6023309081X00	Cable EDI:232091081804-RS	COM Port. DB9 Female to RJ45 8P8C L:1800mm	1
6	5040210027X00	Ear Set for NSA 5180 VER:A PANADVANCE	78x43x22mm SECC T=2.0mm Painting Color:Pantone 295U Powder and Liquid	1
7	5040150001X00	NSA 7135 AL Handle VER:A PANADVANCE	78x58x8mm	1
8	6014605586X00	Outside Carton Label for NSA 5170C VER:A Label Jet	60x60mm ART Paper	1

Ordering Information

The following below provides ordering information for NSA 5170C.

Barebone

NSA 5170C (P/N: 10S00517002X0)

Supports Intel® 6th Gen. Xeon®/Core™/Pentium® processors, 4 x DDR4 memory slots, 2 x PCIe GbE LAN ports, CF card socket, USB ports, VGA port, 2 x PCIe x8 LAN and 2 x PCIe x4 LAN expansion slots (front), w/o LCM

Model	P/N Controller	Interface	Type	Port Number	Bypass/Segment	Expansion Slot	Location Slot
NX 140F	10S20140F01X0	XL710-BM1	PCIe x8	4 SFP+	None	None	1,2
NX 142F	10S20142F01X0	XL710-BM1	PCIe x8	4 SFP+	2 bypass	None	1,2
NX 120F	10S20120F00X0	X710-BM2	PCIe x8	2 SFP+	None	One	1,2
NI 140F	10SK000NI02X0	i350AM4x1	PCIe x8	4 SFP	None	None	All Slot
NI 180F	10S10180F01X0	i350AM4x2	PCIe x8	8 SFP	None	One	2
NI 142C	10SK000NI03X0	i350AM4x1	PCIe x8	4 Copper	2 bypass	None	All Slot
NI 180C	10S10180C01X0	i350AM4x2	PCIe x8	8 Copper	None	None	2
NI 184C	10S10184C01X0	i350AM4x2	PCIe x8	8 Copper	4 bypass	None	2
NI 142F	10S10142F01X0	i350AM4x1	PCIe x8	4 SFP	2 bypass	None	All Slot
NI 121F	10S10121F01X0	i350AM2x1	PCIe x8	2 SFP	1 bypass	None	All Slot
NI 140C	10S10140C01X0	i350AM4x1	PCIe x8	4 Copper	None	None	All Slot

CHAPTER 1: PRODUCT INTRODUCTION

Overview



Key Features

- 1U up workstation rack mount system
- Intel® 6th Xeon®/Core™/Pentium® processor
- Support DDR4 2400
- Four LAN module slots
- Support LCM module

Hardware Specifications

Main Board

- NSB 5170C
- Intel® 6th Gen. Xeon®/Core™/Pentium® processors
- Intel® C236

Main Memory

- 4 x DDR4 2133 memory DIMM support ECC/non-ECC memory, max. 64GB

LAN Features

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

I/O Interface-Front

- Power status/HDD status/2 x GPIO status LEDs
- 1 x Management port (LAN chip: Intel® i210)
- 2 x USB 2.0 ports
- 1 x RJ45 type console port
- 1 x Reset button
- 4 x PCIe Gen.3 LAN module slots (x8, x8, x4, x4)

I/O Interface-Rear

- 1 x VGA port
- 1 x Power button switch (optional)
- 1 x USB 2.0 port (optional)

Devices

- 1 x CF card
- 1 x 2.5" HDD bay

Power Input

- Power supply 220W (1+1) redundant PSU

Dimensions

- Chassis dimension: 438 mm x 480mm x 44mm
- Carton dimension: TBC

Weight

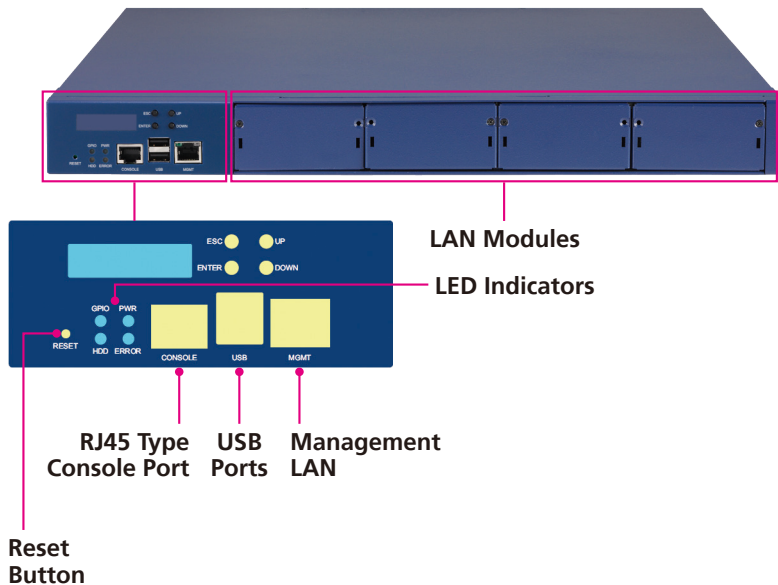
- Without packing: TBC
- With packing: TBC

Certifications

- CE approval
- FCC Class A
- UL

Knowing Your NSA 5170C

Front Panel



Reset Button
Press to restart the system.

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

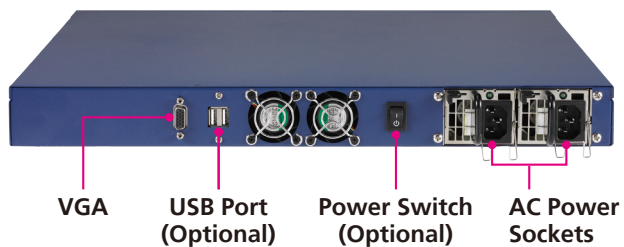
RJ45 Type Console Serial Port
Used to connect RJ45 type console devices.

USB Ports
Used to connect USB 2.0 devices.

Management LAN Port
Management LAN port used for managing the system.

LAN Modules
Four LAN module bays to install add-on network modules.

Rear Panel



VGA

Used to connect an analog VGA monitor.

USB Port (Optional)

Used to connect USB 2.0/1.1 devices.

Power Switch (Optional)

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

AC Power Sockets

Dual redundant power supply sockets, plug an AC power cord here before turning on the system.

CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the NSA 5170C 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:

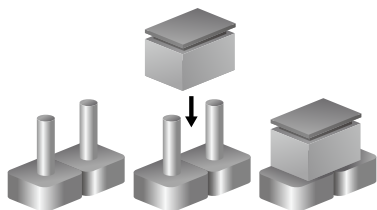
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

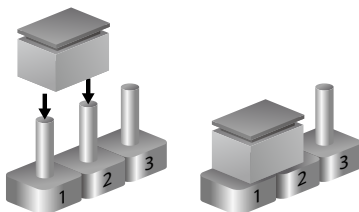
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

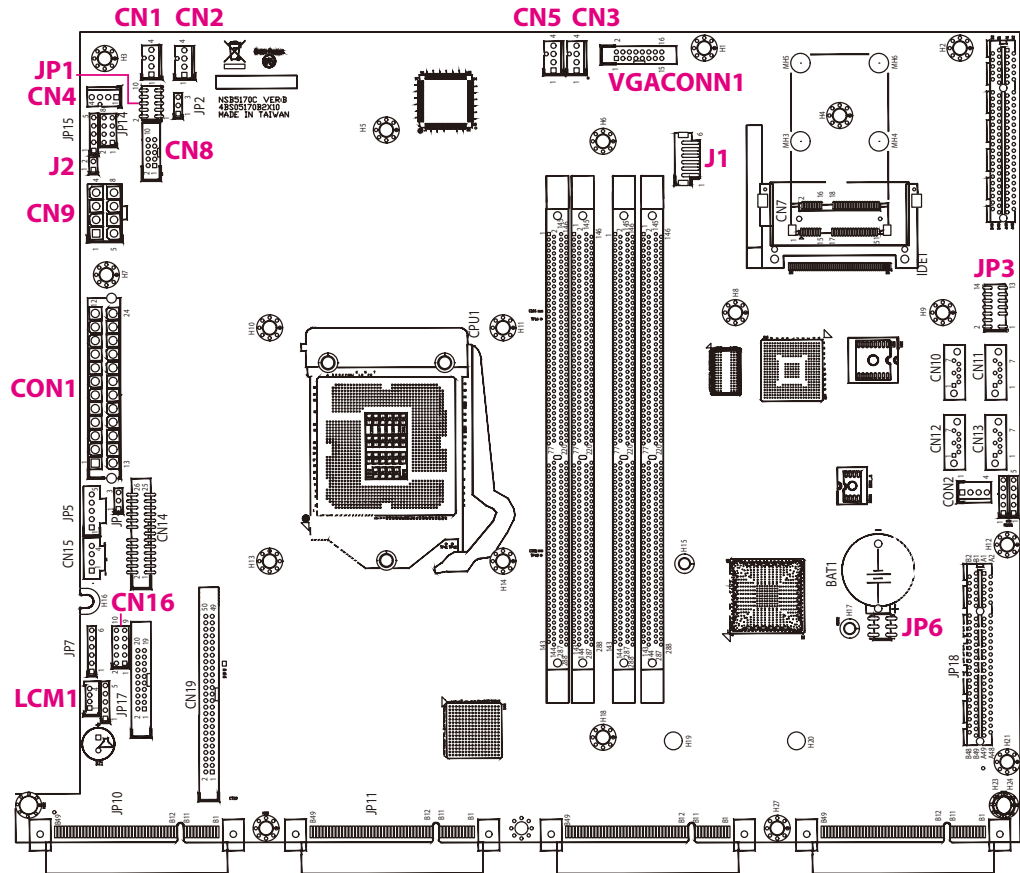


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

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

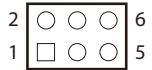


Jumpers

CMOS Clear Jumper

Connector type: 2x3 6-pin header, 2.54mm pitch

Connector location: JP6



Pin	Definition	Pin	Definition
1	N/A	2	ROMA0
3	RST_RTCRST_N	4	ROMA_0_R
5	GND	6	80port_debug_sw

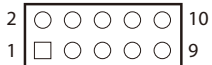
Connector Pin Definitions

Internal Connectors

System Reset Header

Connector type: 2x5 10-pin header, 2.54mm pitch

Connector location: CN16



Pin	Definition
9	GND
10	System Reset

COM1 Header

Connector type: 2x5 10-pin header

Connector location: CN8

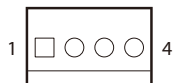


Pin	Definition	Pin	Definition
1	COM2_DCD	2	COM2_RXD
3	COM2_TXD	4	COM2_DTR
5	GND	6	COM2_DSR
7	COM2_RTS	8	COM2_CTS
9	COM2_RI	10	GND

Fan Connectors

Connector type: 1x4 4-pin Wafer

Connector location: CN1, CN2, CN3, CN4 and CN5

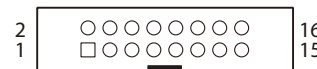


Pin	Definition
1	GND
2	P12V
3	TACH
4	PWM

VGA Connector

Connector type: 2x8 16-pin header

Connector location: VGACONN1

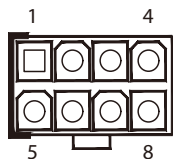


Pin	Definition	Pin	Definition
1	DACROA_B	2	DACGOA_B
3	DACBOA_B	4	N/A
5	GND	6	GND
7	GND	8	GND
9	VGA_VCC	10	GND
11	N/A	12	DDC_DATAO_B
13	AHSYNCO_B	14	AVSYNCO_B
15	DDC_CLKO_B	16	N/A

8-pin Internal Power Connector

Connector type: 2x4 8-pin boxed header, 4.2mm pitch

Connector location: CN9

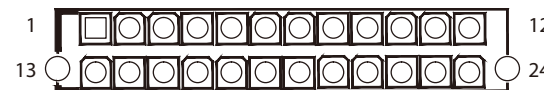


Pin	Definition	Pin	Definition
1	GND	2	GND
3	GND	4	GND
5	P12V	6	P12V
7	P12V	8	P12V

24-pin Internal Power Connector

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

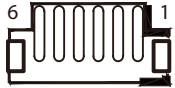
Connector location: CON1



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

Rear USB 2.0 Connector

Connector type: 1x6 6-pin header, 2.0mm pitch
Connector location: J1



Pin	Definition	Pin	Definition
1	P5V_USB_P01	2	USB2N0_C
3	USB2P0_C	4	USB2N1_C
5	USB2P1_C	6	GND

Power Button

Connector type: 1x2 2-pin header, 2.54mm pitch
Connector location: J2

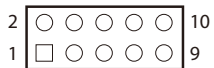


Pin	Definition
1	GND
2	FP_PWR_BTN_N

GPIO Pin Header

Connector type: 2x5 10-pin header

Connector location: JP1

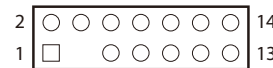


Pin	Definition	Pin	Definition
1	P3V3	2	GND
3	SW_GPIN1	4	SW_GPOUT1
5	SW_GPIN2	6	SW_GPOUT2
7	SW_GPIN3	8	SW_GPOUT3
9	SW_GPIN4	10	SW_GPOUT4

TPM Header

Connector type: 2x7 14-pin header, 2.0mm pitch

Connector location: JP3



Pin	Definition	Pin	Definition
1	GND	2	CLK_LPC_TPM_R
3	N/A	4	LPC_FRAME_R1_N
5	LPC_AD2_R1	6	RST_TPM_R1_N
7	LPC_AD1_R1	8	LPC_AD3_R1
9	GND	10	LPC_ADO_R1
11	INT_SERIRQ_R1	12	P3V3
13	GND	14	GND

LCM

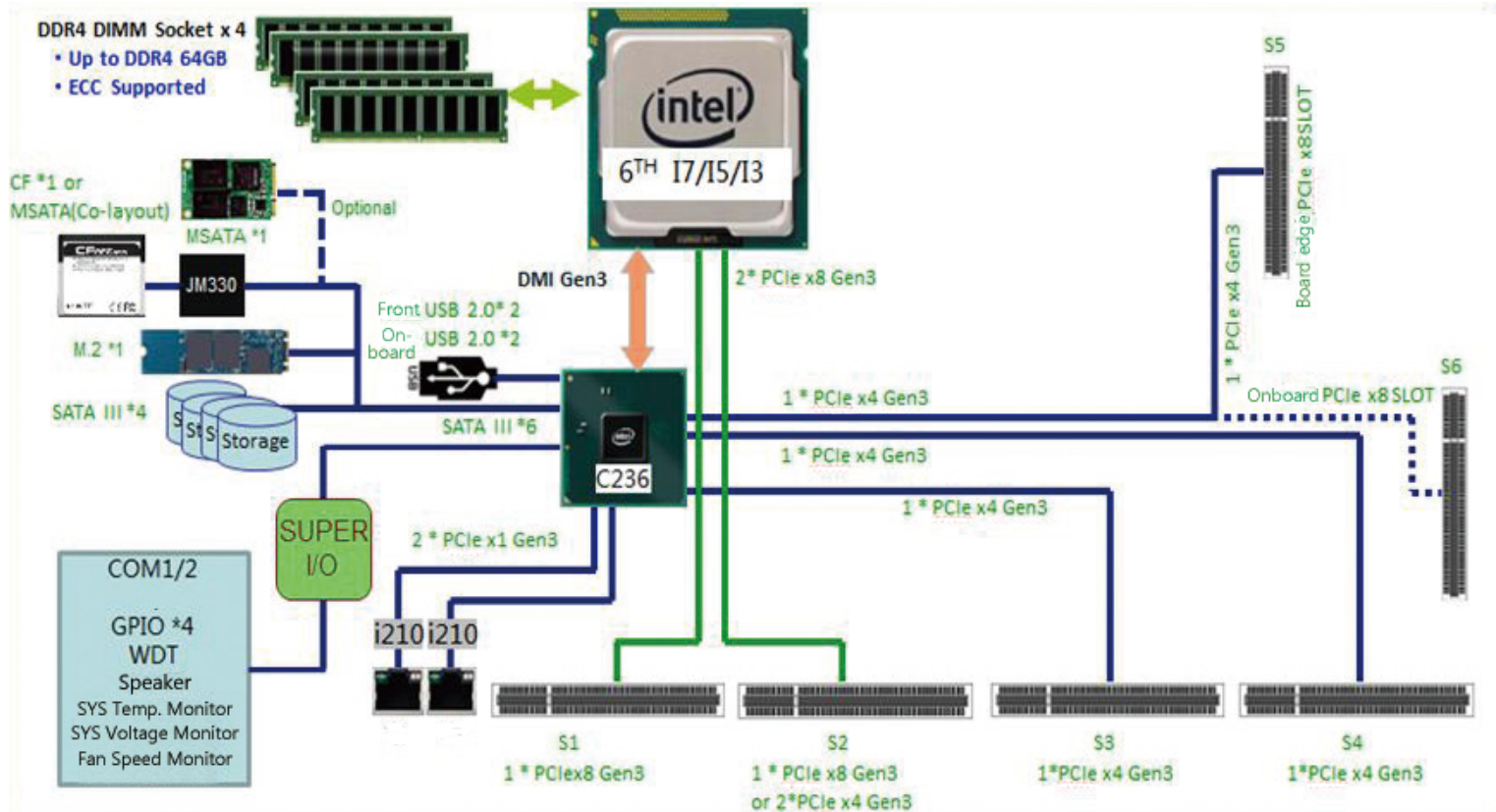
Connector type: 1x4 4-pin header, 2.0mm pitch

Connector location: LCM1



Pin	Definition
1	GND
2	SP_LCM_RXD
3	SP_LCM_TXD
4	P3V3

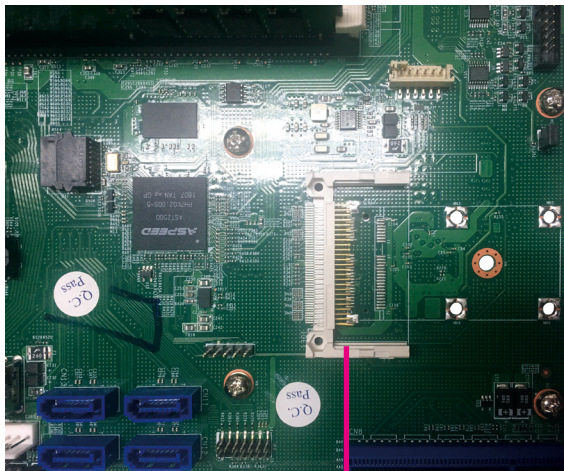
Block Diagram



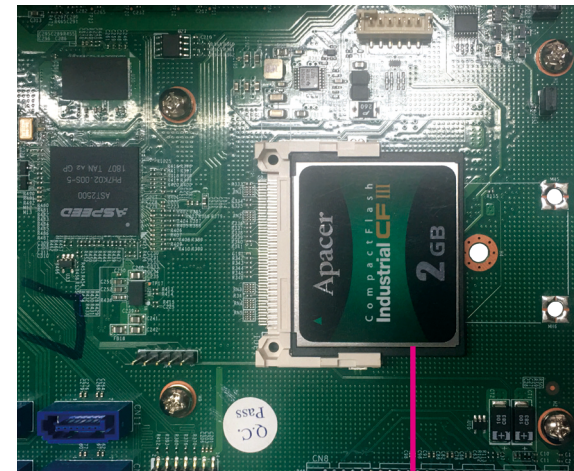
CHAPTER 3: SYSTEM SETUP

Installing a CompactFlash (CF) Card

1. With the chassis cover removed, locate the CF slot on the motherboard.
2. Insert the CF module until it is completely seated into the slot.



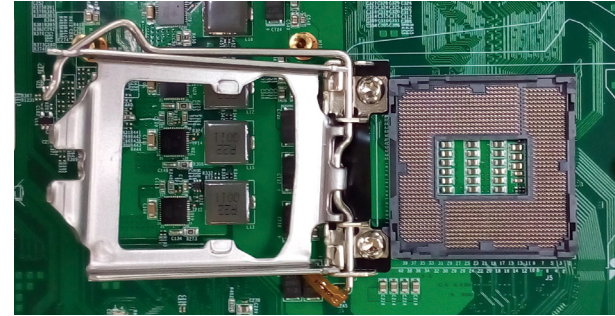
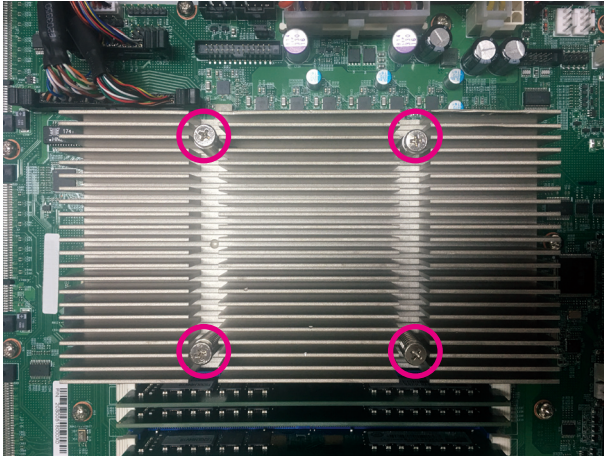
CF Slot



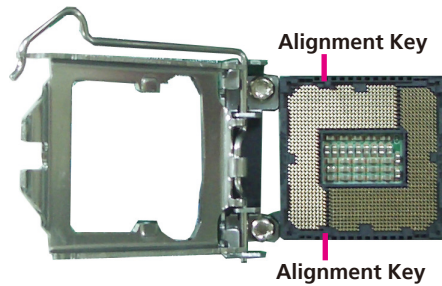
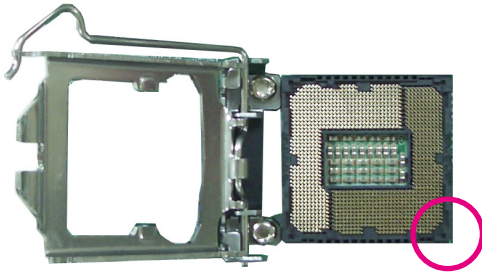
CF Module

Installing a CPU

1. Loosen the four screws on the heat sink to remove it and access the CPU socket.
2. Unlock the socket by pushing the load lever down, moving it sideways until it is released from the retention tab; then lift the load lever up.



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



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

4. Close the load plate and then hook the load lever under the retention tab.

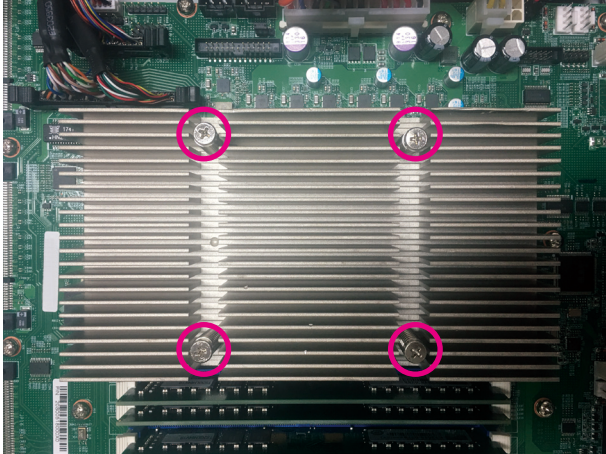


Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.



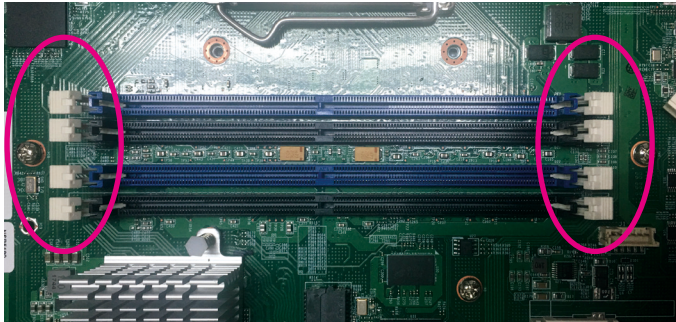
- Handle the CPU by its edges and avoid touching the pins.
- The CPU will fit in only one orientation and can easily be inserted without exerting any force.

5. Place the heat sink back to its original location and apply all the four screws to secure it in place.

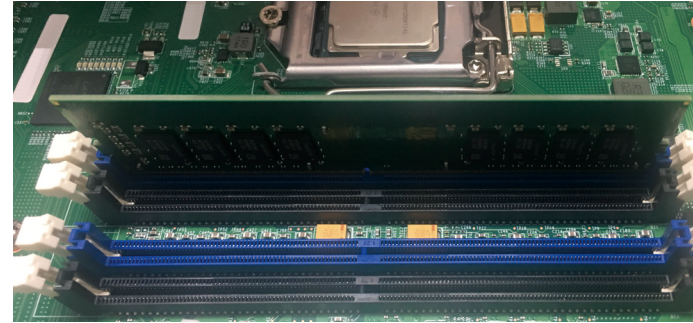


Installing DIMM Memory Modules

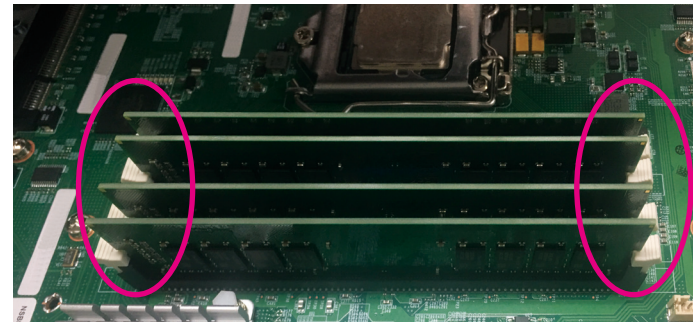
1. Locate the DIMM sockets on the board and release the locks.



2. 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.



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

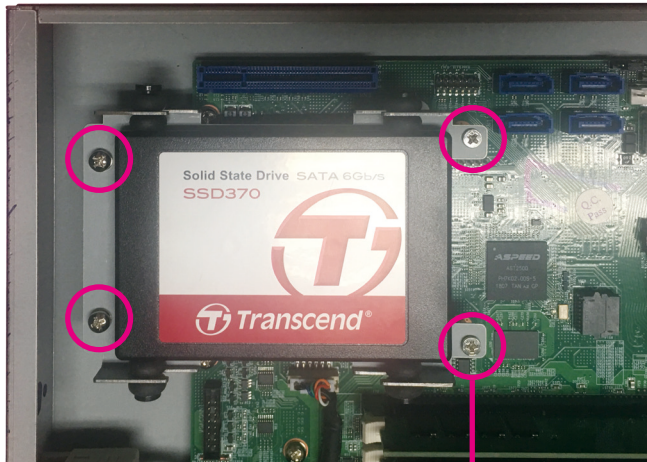


Installing a 2.5" SATA Hard Drive

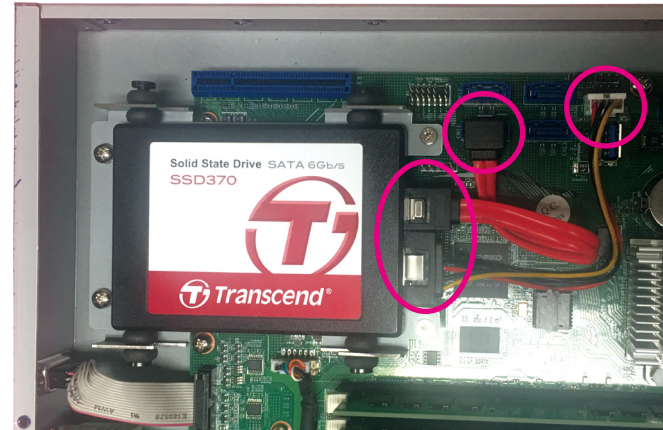


Please correctly follow the below instructions and noted items to avoid making unnecessary damages.

1. Install the SATA storage drive onto the storage drive bracket and secure it to the chassis with mounting screws.
2. Connect the SATA data and power cables to the respective connectors on the board and the other ends of the cables to the connectors on the storage drive.



Mounting Screw



Installing a LAN Module

The system is equipped with 4 LAN module bays. To install a LAN module, please follow the instructions below.

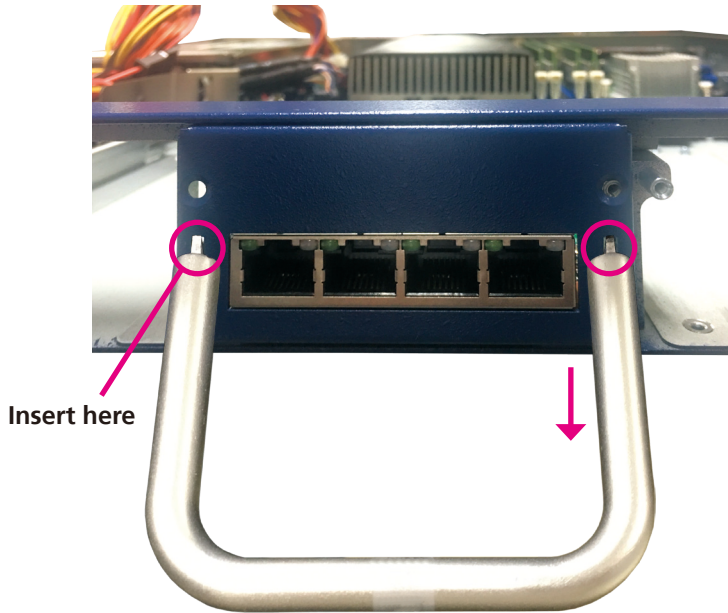


Please correctly follow the below instructions and noted items to avoid making unnecessary damages. Make sure the power supply is switched off and disconnected from the power sources before replacing or adding LAN modules to prevent electric shock or system damage.

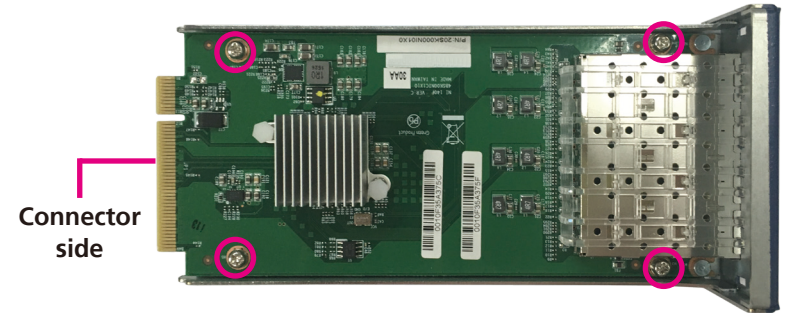
1. Remove the screw on the LAN module then put it in a safe place for later use.
2. Use the handle provided, and insert the handle into the two holes on the LAN module.



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



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



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

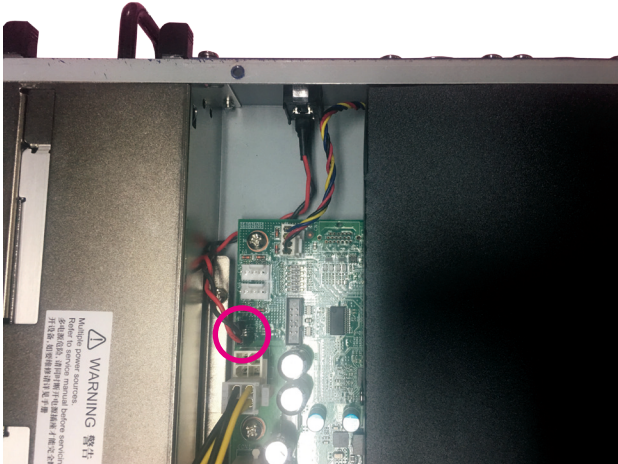


Important:

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.

Connecting the Power Switch (Optional)

1. Connect the power switch cable to the power switch connector (J2) on the board.



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for the NSA 5170C. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM website at www.nexcom.com.tw.

About BIOS Setup

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

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

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

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

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

When to Configure the BIOS

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

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

Default Configuration

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












Entering Setup

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

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

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


Legends

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


Scroll Bar

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

Submenu

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

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



Access Level

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

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

System Time

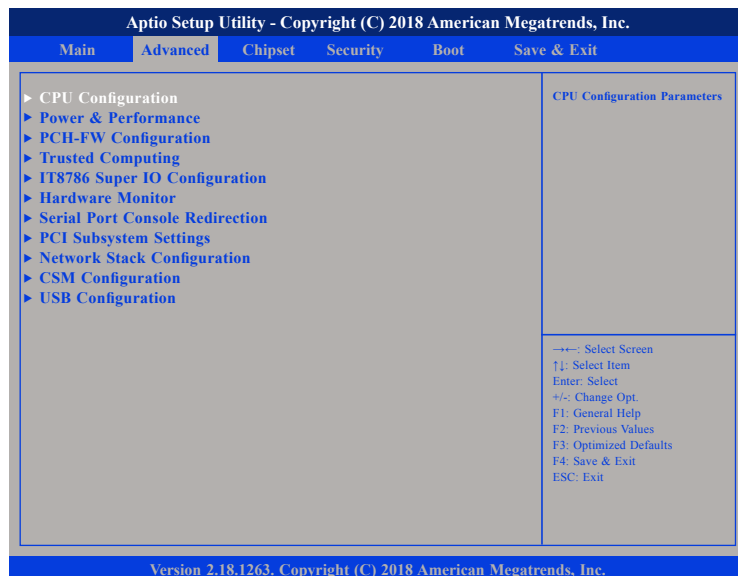
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

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

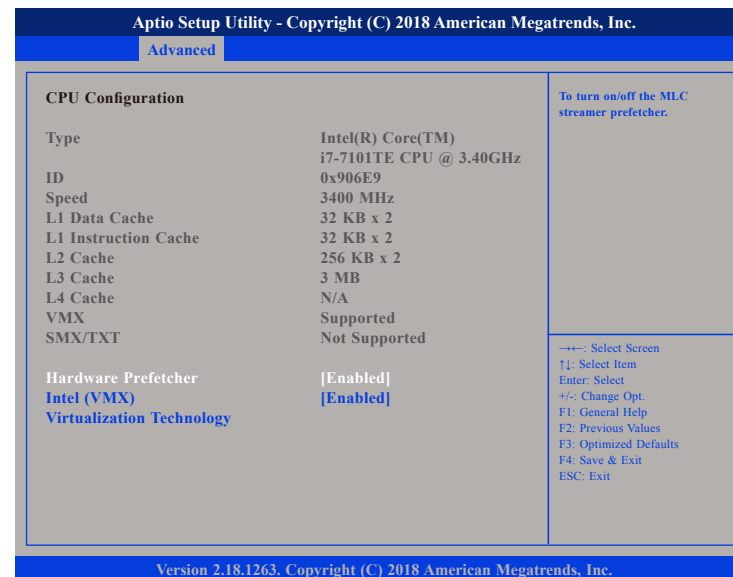


Setting incorrect field values may cause the system to malfunction.



CPU Configuration

This section is used to configure the CPU.



Hardware Prefetcher

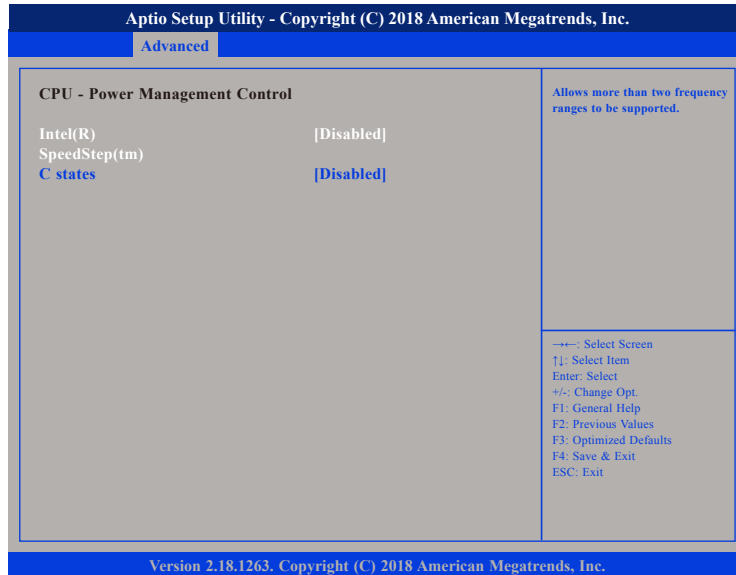
Turns on or off the MLC streamer prefetcher.

Intel® Virtualization Technology

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

Power & Performance

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



Intel® SpeedStep™

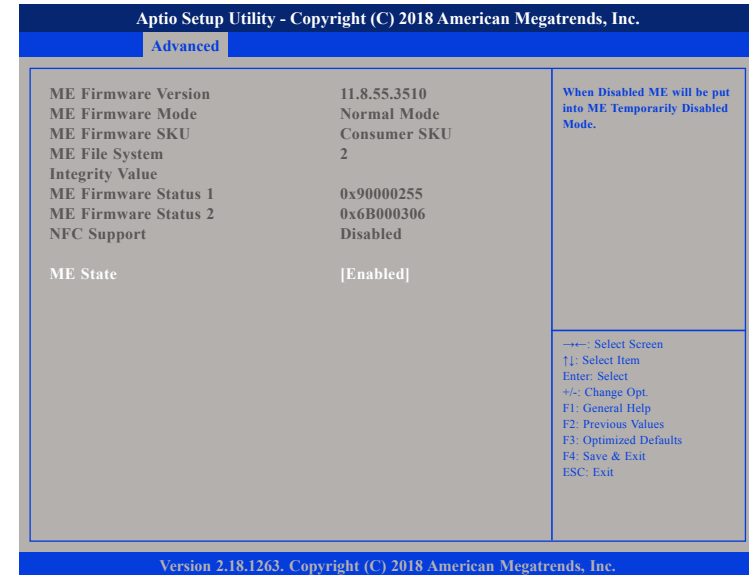
Enables or disables Intel SpeedStep.

C States

Enables or disables C-States support for power saving.

PCH-FW Configuration

This section is used to configure the firmware update options.

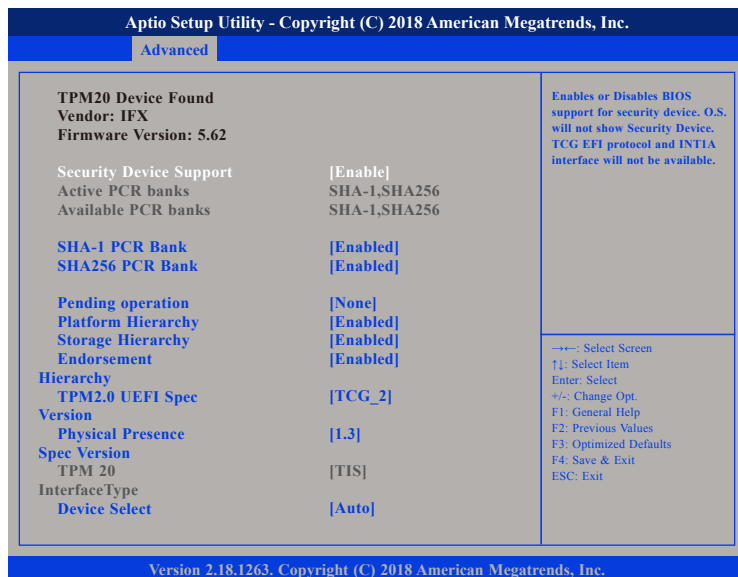


ME State

Enables or disables ME state. When disabled, ME will be placed into ME Temporarily Disabled Mode.

Trusted Computing

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



Security Device Support

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

SHA-1 PCR Bank

Enables or disables SHA-1 PCR Bank.

SHA256 PCR Bank

Enables or disables SHA256 PCR Bank.

Pending operation

Schedules an operation for the security device.

Platform Hierarchy

Enables or disables platform hierarchy.

Storage Hierarchy

Enables or disables storage hierarchy.

Endorsement Hierarchy

Enables or disables endorsement hierarchy.

TPM2.0 UEFI Spec Version

Configures the TPM2.0 UEFI spec version.

Physical Presence Spec Version

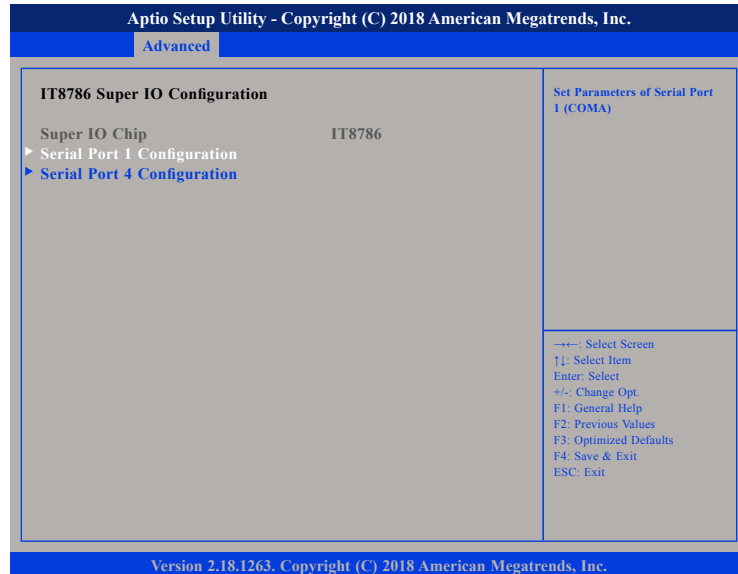
Configures the physical presence spec version.

Device Select

TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both TPM 1.2 and 2.0 devices with the default set to TPM 2.0 devices if not found, and TPM 1.2 devices will be enumerated.

IT8786 Super IO Configuration

This section is used to configure the serial ports.



Super IO Chip

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

Serial Port 1 Configuration

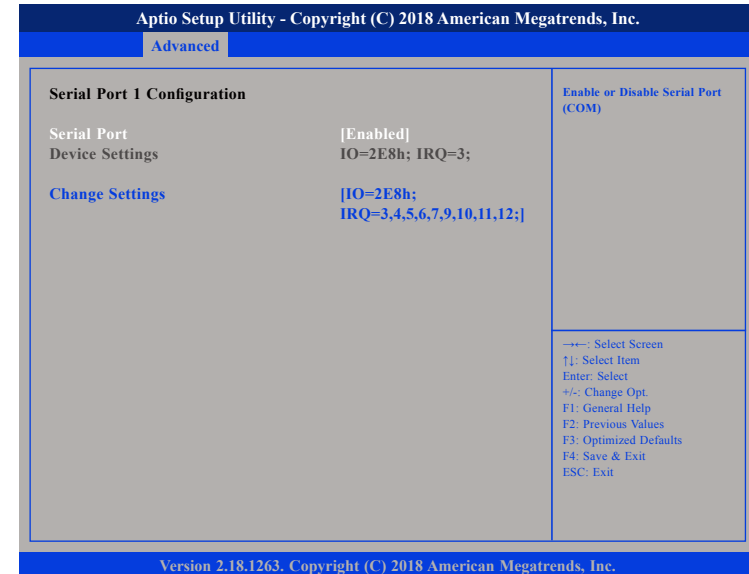
Configuration settings for serial port 1.

Serial Port 4 Configuration

Configuration settings for serial port 4.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

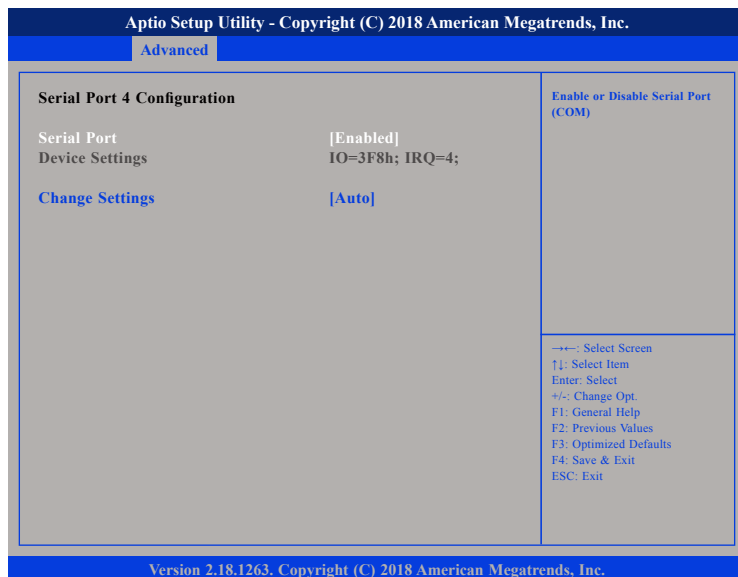
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 4 Configuration

This section is used to configure serial port 4.



Serial Port

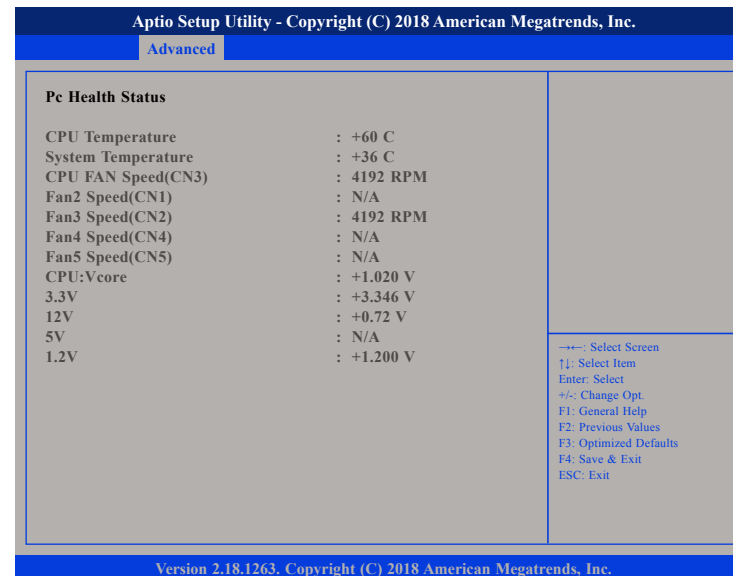
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Hardware Monitor

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



CPU and System Temperature

Detects and displays the current CPU and system temperature.

CPU FAN Speed

Detects and displays the current CPU fan speed.

Fan2 to Fan5 Speed

Detects and displays the current fan2 to fan5 speed.

CPU:Vcore to 1.2V

Detects and displays the output voltages.

Serial Port Console Redirection

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

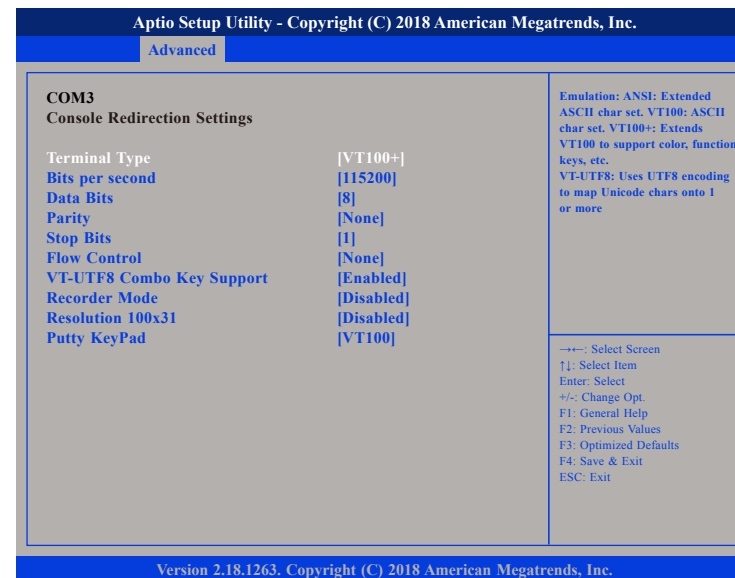


Console Redirection

Enables or disables the console redirection.

Console Redirection Settings (COM3)

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



Terminal Type

ANSI Extended ASCII character set.

VT100 ASCII character set.

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

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

Bits Per Second

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

Data Bits

The options are 7 and 8.

Parity

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

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

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

Enables or disables VT-UTF8 combo key support.

Recorder Mode

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

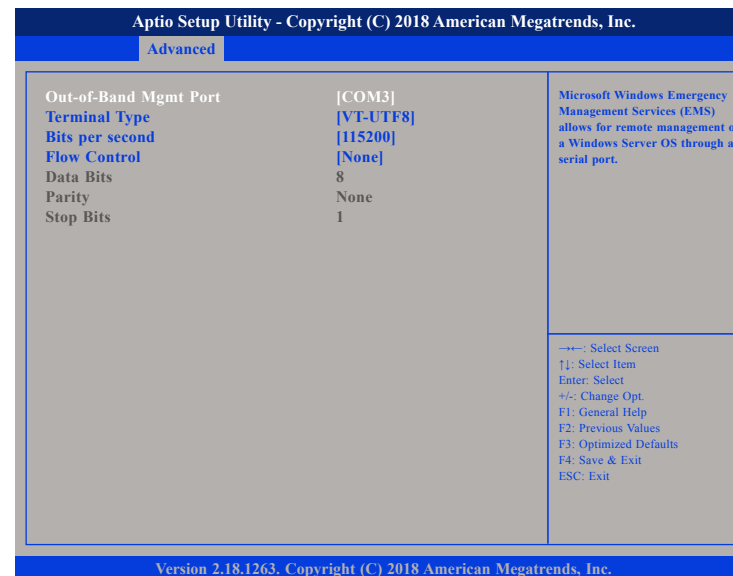
Resolution 100x31

Enables or disables extended terminal resolution.

Putty Keypad

Selects the Putty keyboard emulation type.

Serial Port for Out-of-Band Management



Out-of-Band Mgmt Port

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

Terminal Type

ANSI Extended ASCII character set.

VT100 ASCII character set.

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

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

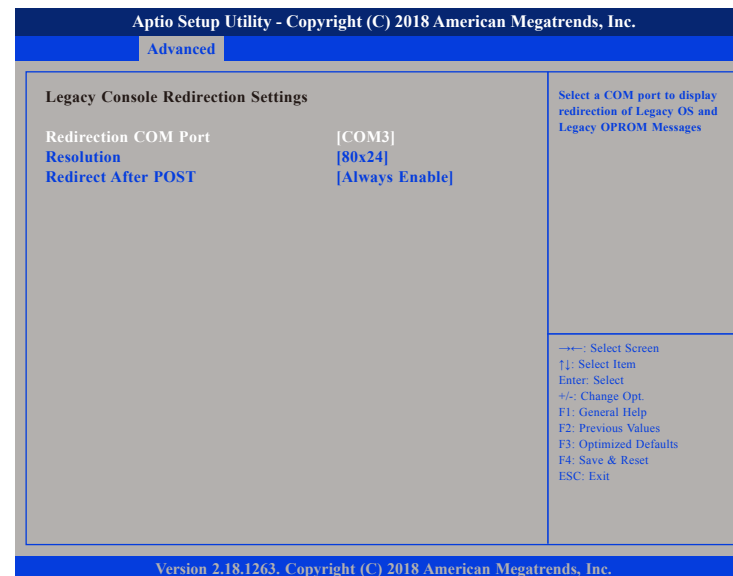
Bits Per Second

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

Flow Control

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

Legacy Console Redirection Settings



Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.

Advanced

Legacy Console Redirection Settings

Redirection COM Port [COM3]
 Resolution [80x24]
 Redirect After POST [Always Enable]

Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages

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

Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.

Redirection COM Port

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

Resolution

Configures the legacy OS redirection resolution.

Redirect After POST

Enables or disables redirection after POST.

PCI Subsystem Settings

This section is used to configure the PCI.



Above 4G Decoding

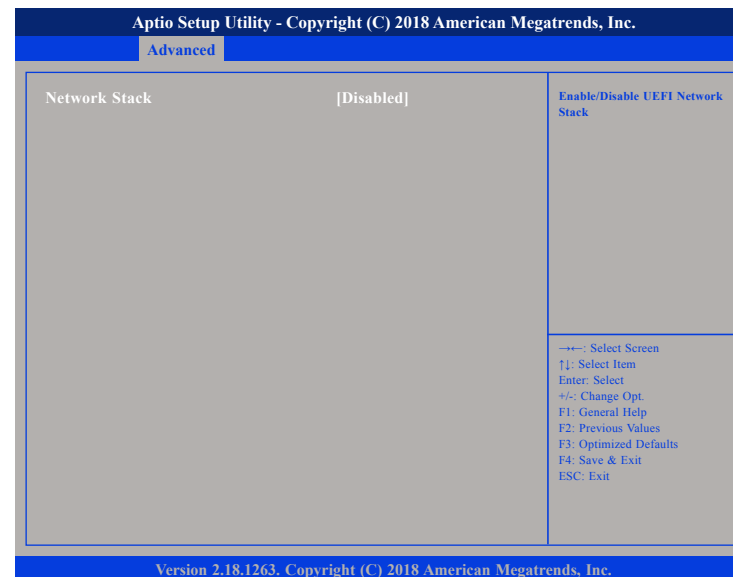
Enables or disables decoding of 64-bit devices in 4G address space.

SR-IOV Support

Enables or disables SR-IOV support.

Network Stack

This section is used to configure the network stack.

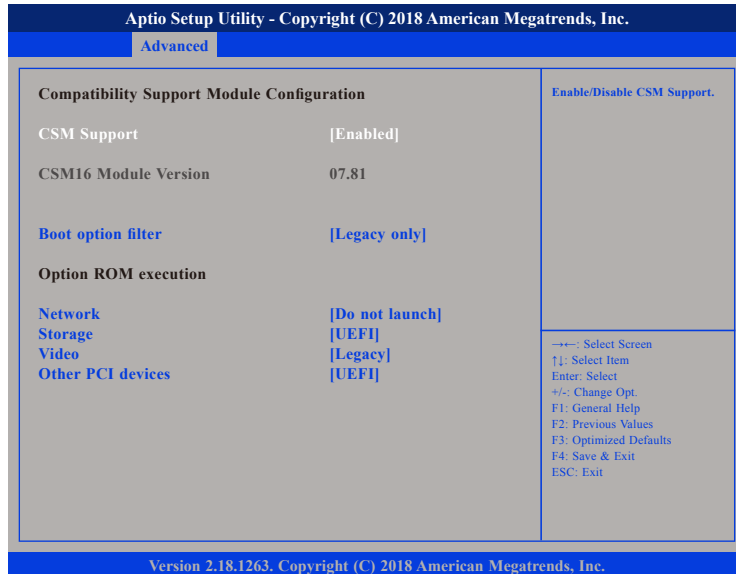


Network Stack

Enables or disables UEFI network stack.

CSM Configuration

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



CSM Support

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

Boot Option Filter

Configures which devices the system will boot from.

Network

Controls the execution of UEFI and Legacy PXE OpROM.

Storage

Controls the execution of UEFI and Legacy Storage OpROM.

Video

Controls the execution of UEFI and Legacy Video OpROM.

Other PCI Devices

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

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.

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

Disable Keeps USB devices available only for EFI applications.

XHCI Hand-off

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

USB Mass Storage Driver Support

Enables or disables USB mass storage device driver support.

Port 60/64 Emulation

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

USB Transfer Time-out

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

Device Reset Time-out

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

Device Power-up Delay

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

Mass Storage Devices

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

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.



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.

System Agent (SA) Configuration



Memory Configuration

Configures the memory settings.

Graphics Configuration

Configures the graphics chip settings.

PEG Port Configuration

Configures the PEG Port settings.

VT-d

Enables or disables VT-d function on MCH.

X2APIC Opt Out

Enables or disables X2APIC mode.

Memory Configuration

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.

Chipset

Memory Configuration		MRC ULT Safe Config for PO
Memory RC Version	2.3.0.0	
Memory Frequency	2400 Mhz	
Memory Timings (tCL-tRCD-tRP-tRAS)	17-17-17-39	
Channel 0 Slot 0 Size	Populated & Enabled 4096 MB (DDR4)	
Number of Ranks	1	
Manufacturer	UnKnown	
Channel 0 Slot 1	Not Populated / Disabled	
Channel 1 Slot 0	Not Populated / Disabled	
Channel 1 Slot 1	Not Populated / Disabled	

←→: 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 Configuration

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

Graphics Configuration

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Chipset

Graphics Configuration		Keep IGFX enabled based on the setup options.
Internal Graphics	[Auto]	
GTT Size	[8MB]	
Aperture Size	[256MB]	
DVMT Pre-Allocated	[32M]	
DVMT Total Gfx Mem	[256M]	

←→: 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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Internal Graphics

Keep IGD enabled based on the setup options.

GTT Size

Configures the GTT memory size.

Aperture Size

Configures the Aperture size.

DVMT Pre-Allocated

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

DVMT Total Gfx Mem

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

PEG Port Configuration



Enable Root Port (PEG 0:1:0 and 0:1:1)

Enables or disables the root port.

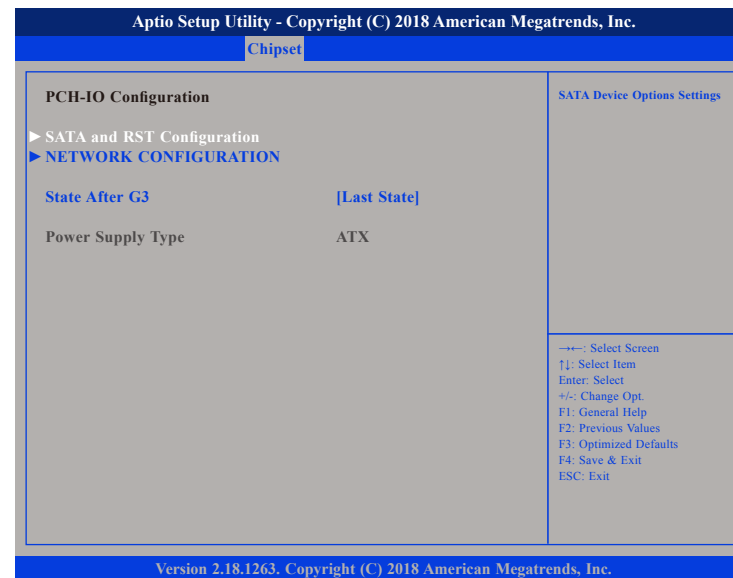
Max Link Speed (PEG 0:1:0 and 0:1:1)

Configures the maximum link speed of the PEG device.

PCIe Spread Spectrum Clocking

Enables or disables PCIe Spread Spectrum Clocking for compliance testing.

PCH-IO Configuration



SATA and RST Configuration

Enters the SATA and RST configuration sub-menu.

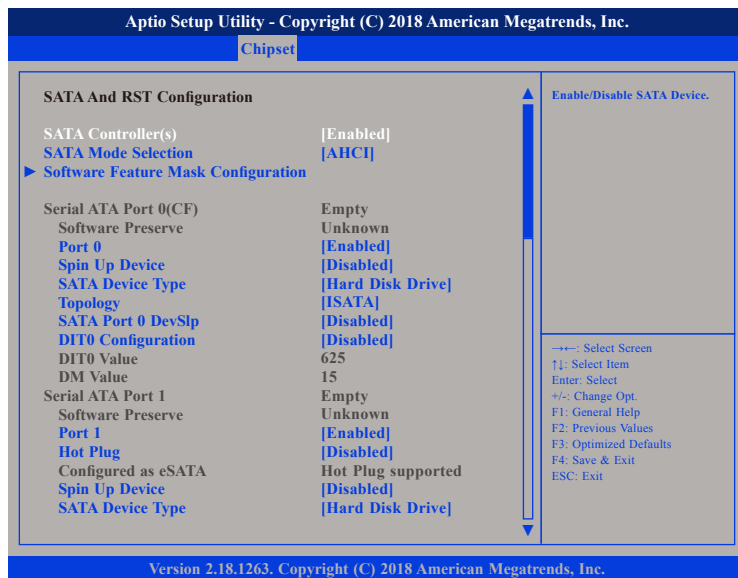
Network Configuration

Enters the network configuration sub-menu.

State After G3

Configures the PCH state after G3.

SATA And RST Configuration



SATA Controller(s)

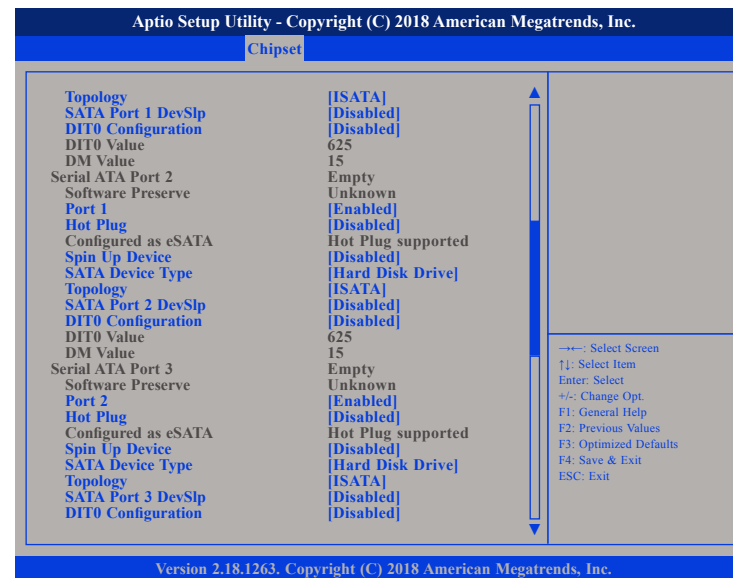
Enables or disables the SATA controller.

SATA Mode Selection

Configures the SATA mode. The options are AHCI and Intel RST Premium.

Port 0, Port 1, Port 2, Port 6 and Port 7

Enables or disables SATA port 0, port 1, port 2, port 3, port 6 and port 4.



Hot Plug

Enables or disables hot plugging feature on SATA port 1, port 2, port 3, port 6 and port 4.

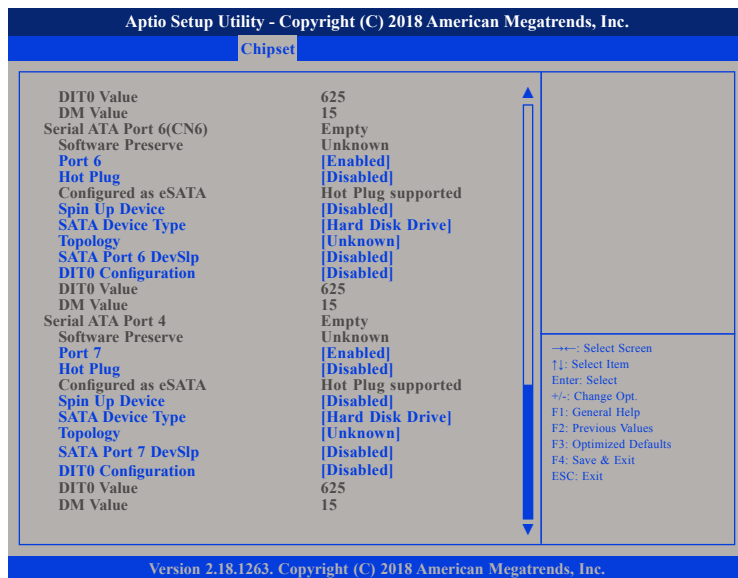
Spin Up Device

Enables or disables staggered spin up on devices connected to SATA port 0, port 1, port 2, port 3, port 6 and port 4

SATA Device Type

Identifies what type of SATA device is connected.

SATA And RST Configuration Cont.



Topology

Identifies what type of SATA connection is used.

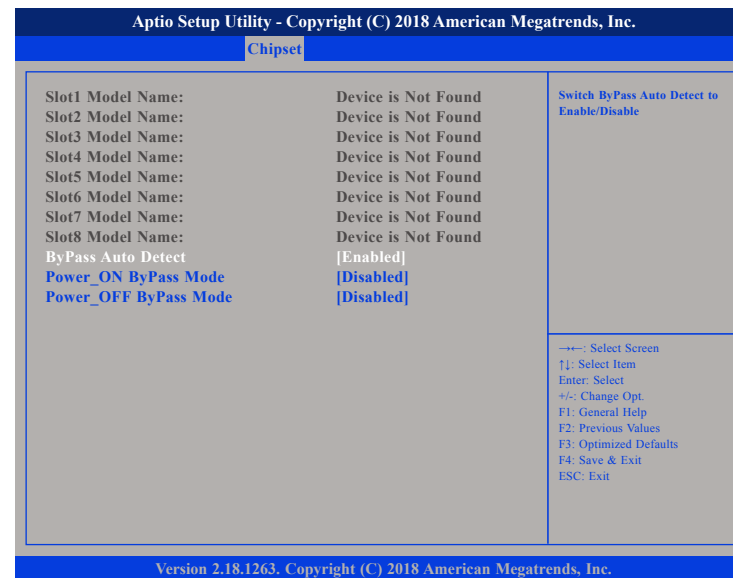
SATA Port 0, Port 1, Port 2, Port 3, Port 6 and Port 4 DevSlp

Enables or disables SATA Port 0, Port 1, Port 2, Port 3, Port 6 and Port 4 DevSlp. Before enabling DevSlp, board rework is needed.

DIT0 Configuration

Enables or disables DIT0 configuration for SATA Port 0, Port 1, Port 2, Port 3, Port 6 and Port 4.

Network Configuration



ByPass Auto Detect

Enables or disables automatic LAN Bypass function.

Power_ON ByPass Mode

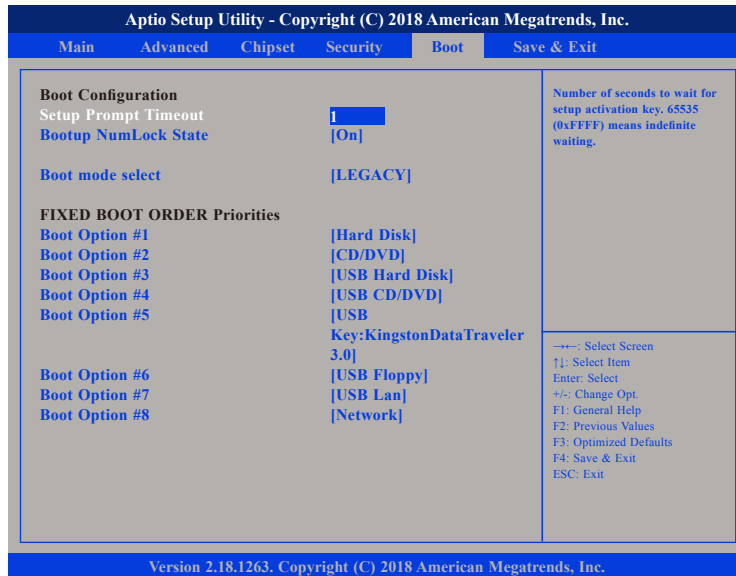
Enables or disables the LAN module bypass mode after the system powers on.

Power_OFF ByPass Mode

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

Boot

This section is used to configure the boot features.



Setup Prompt Timeout

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

Bootup NumLock State

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

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.

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>.