NEXCOM International Co., Ltd.

Network and Communication Solutions
Industrial-Grade Platform
ISA 122
User Manual

NEXCOM International Co., Ltd.
Published June 2026

www.nexcom.com

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PREFACE

Copyright

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NEXCOM International Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: http://www.nexcom.com. NEXCOM shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

ISA 122 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 and its amendment 2015/863/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.

No	Restricted Substances	Limits (wt% or ppm)	Directive
1	Lead (Pb)	0.1% (<1000 ppm)	2011/65/EU
2	Cadmium (Cd)	0.01% (<100 ppm)	
3	Mercury (Hg)	0.1% (<1000 ppm)	
4	Hexavalent Chromium (Cr6+)	0.1% (<1000 ppm)	
5	Poly Brominated Biphenyls (PBB)	0.1% (<1000 ppm)	
6	Poly Brominated Diphenyl ethers (PBDE)	0.1% (<1000 ppm)	
7	Bis (2-ethylhexyl) phthalate (DEHP)	0.1% (<1000 ppm)	2015/863/EU
8	Butyl benzyl phthalate (BBP)	0.1% (<1000 ppm)	
9	Dibutyl phthalate (DBP)	0.1% (<1000 ppm)	
10	Diisobutyl phthalate (DIBP)	0.1% (<1000 ppm)	

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.

System Level

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

Board Level

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

Warnings

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

Cautions

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

Safety Information

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

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

Installation Recommendations

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

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

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

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

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEXCOM's website at www.nexcom.com.

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

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CFast: Turn off the unit's power before inserting or removing a CFast 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.

Global Service Contact Information

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Package Contents

Before continuing, please verify the contents of the product package. The items included are listed in the table below.

Item	Item Number	Name	Description	Qty
1	5044440031X00	RUBBER FOOT KANG YANG:RF20-5-4P	19.8x18x5.0mm	4
2	4NCPF00241X00	TERMINAL BLOCKS 2P DINKLE:0221-4302	ASSY 3.81mm H:7.7mm FEMALE 180D GREEN	2
3	6023309081X00	CABLE EDI:232091081804-R	COM PORT. DB9 FEMALE TO RJ45 8P8C L:1800mm	1

Ordering Information

The following provides ordering information.

ISA 122 (P/N: 10L10012200X0)
Intel Atom® processor x6414RE, 4 cores, 8GB LPDDR4, 16GB pSLC eMMC, 2 x copper and 2 x fiber port, with 2-pair bypass (default: standard NIC mode)

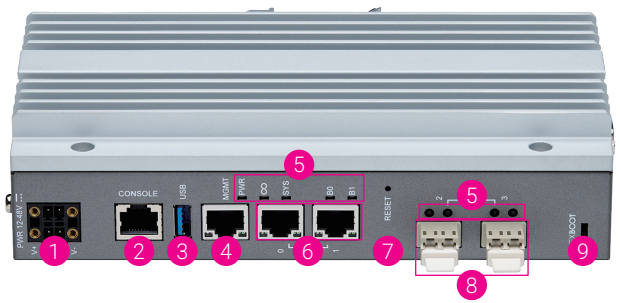
Chapter 1: Product Introduction

Product Overview

Key Features

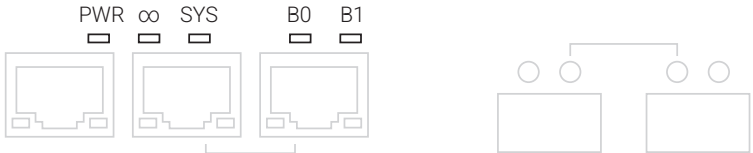
- Intel Atom® x6414RE processor, 4 cores
- 8GB LPDDR4 onboard
- 16GB pSLC eMMC onboard
- Dual DC (12~48V)
- 2 x 1GbE RJ45 ports with 1-pair bypass
- 2 x 1GbE fiber ports with 1-pair bypass
- 1 x Serial port (RS-232/422/485 programmable)

I/O & Interfaces

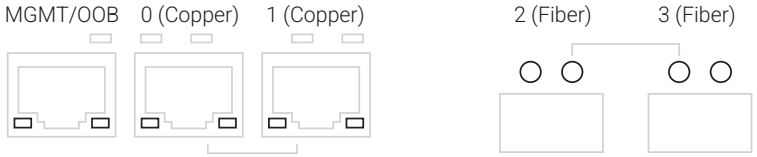


1. 12~48V DC input
2. RJ45 console port
3. USB 3.2 Type-A
4. 1GbE RJ45 management port
5. LED Indicators
6. 1GbE RJ45 ports with 1-pair bypass on each port (default: standard NIC mode)
7. Reset button
8. 1GbE fiber ports with 1-pair bypass on each port
9. NEXBOOT slider switch
10. DB9 COM port (RS-232/422/485)

LED Indicators



Indicator	LED Status	Description
PWR	Steady green	DC in (including S5)
	Off	No power
∞ (NEXBOOT)	Blinking green	Active OS running
	Steady green	Active OS ready
	Blinking orange	Golden OS running
	Steady orange	Golden OS ready
	Off	NEXBOOT disabled/ Power off
	Alternating green and orange	Failure
SYS (SW Programmable)	On/Off/Blinking	User defined
	Off (default)	
B0 (Bypass 1, copper) B1 (Bypass 2, fiber)	Steady green	Normal mode/Standard NIC mode
	Steady orange	Bypass mode
	Off	Disconnect mode



Indicator	LED Status	Description
MGMT (Left)	Green	1GbE
	Orange	100M
	Off	10M
MGMT (Right)	Steady green	Active
	Off	Inactive
	Blinking green	Data transferring
OOB (Left)	Steady green	Link
	Off	No link
OOB (Right)	Blinking green	Data transferring
	Off	Inactive

Indicator	LED Status	Description
0/1 (Copper) (Left)	Green	1GbE
	Orange	100M
	Off	10M
0/1 (Copper) (Right)	Steady green	Active
	Off	Inactive
	Blinking green	Data transferring
2/3 (Fiber) (Left)	Green	1GbE
	Off	No link
2/3 (Fiber) (Right)	Steady green	Active
	Off	Inactive
	Blinking green	Data transferring

Hardware Specifications

Processor

- Intel Atom® x6414RE, 4 cores, TDP 9W, 1.5 GHz

System Capabilities

- TPM 2.0 onboard
- NEXBOOT® (dual-layer OS failover)
- NEXLOCK® (I/O access protection)

Memory

- 8GB LPDDR4 onboard

Storage

- 16GB pSLC eMMC onboard

I/O Interface Front

- Reset button
- Slider switch: NEXBOOT®
- LED: PWR/OO/SYS/B0/B1
- 2 x 1GbE RJ45 port with 1-pair bypass (default: standard NIC mode)
- 2 x 1GbE fiber port with 1-pair bypass (default: standard NIC mode)
- 1 x RJ45 console port
- 1 x RJ45 MGMT port
- 1 x USB 3.2 Gen 1, Type-A

I/O Interface Side

- 1 x Ground screw
- 1 x Serial port (RS-232/422/485, programmable)

Power

- Dual DC (12~48V)

Dimension and Weight

- Chassis dimension: 205 mm (W) x 115 mm (D) x 50 mm (H)
- Package dimension: 279 mm (W) x 212 mm (D) x 163 mm (H)
- Net weight: 1.5 kg
- Gross weight: 1.97 kg

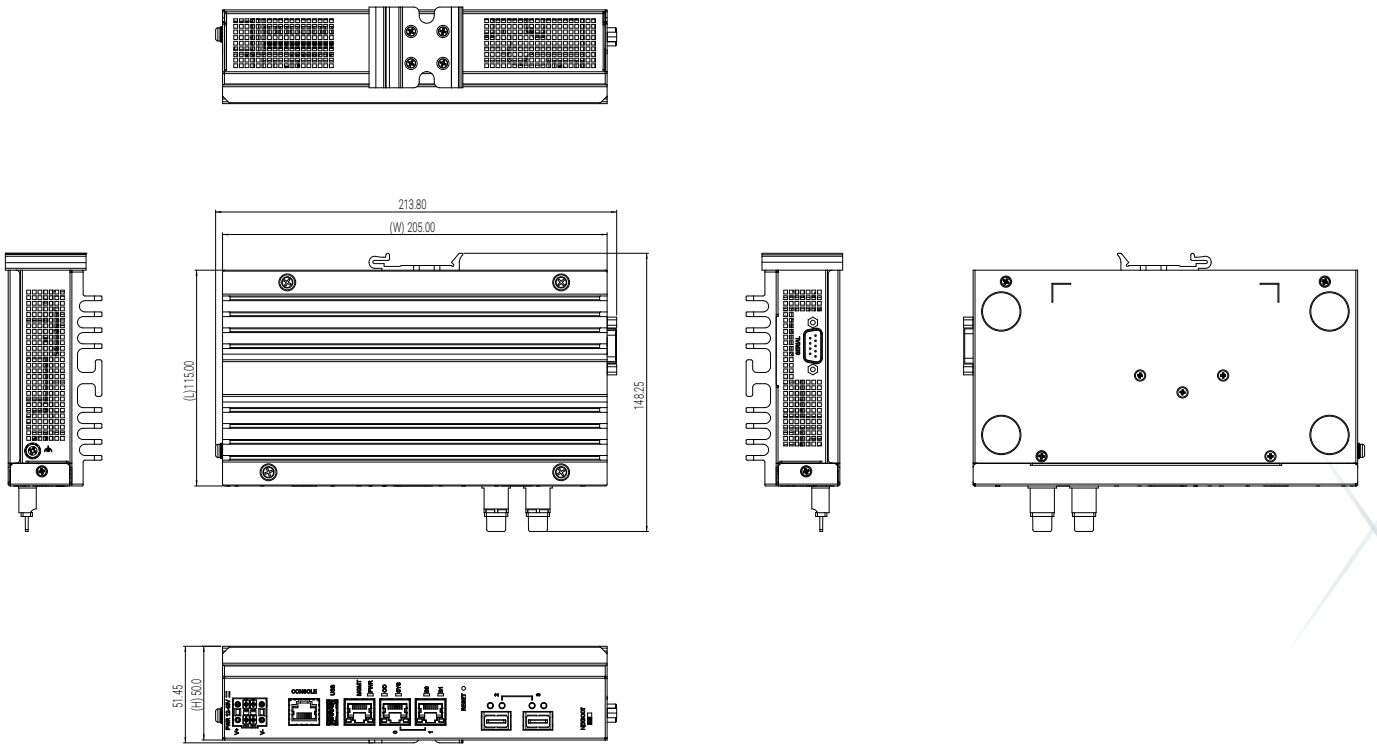
Environment

- Ambient with air flow: -40°C~70°C
- Storage temperature: -40°C~85°C
- Relative humidity: 5%~95% non-condensing

Certifications

- CE/FCC Class A

Mechanical Dimensions



Chapter 2: Connectors and Jumpers

This chapter describes how to set the jumpers and connectors on the ISA 122 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:

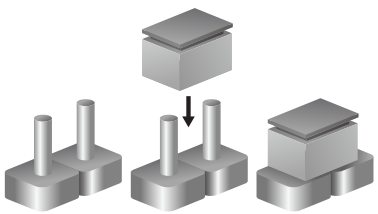
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

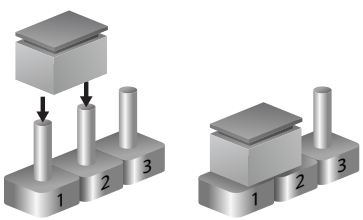
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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



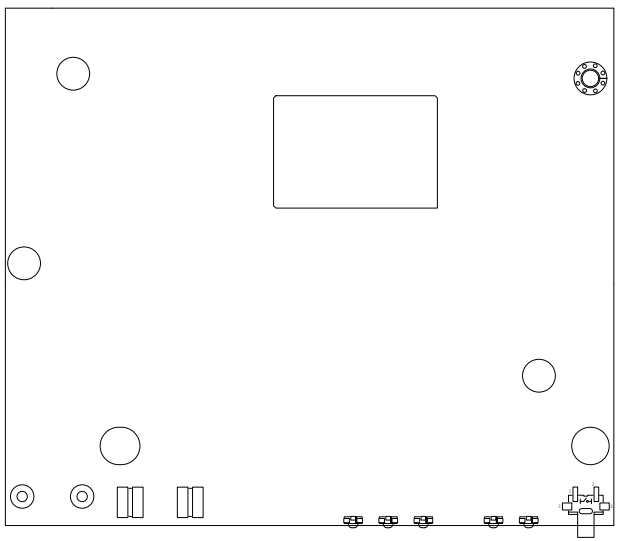
Three-Pin Jumpers: Pins 1 and 2 are Short



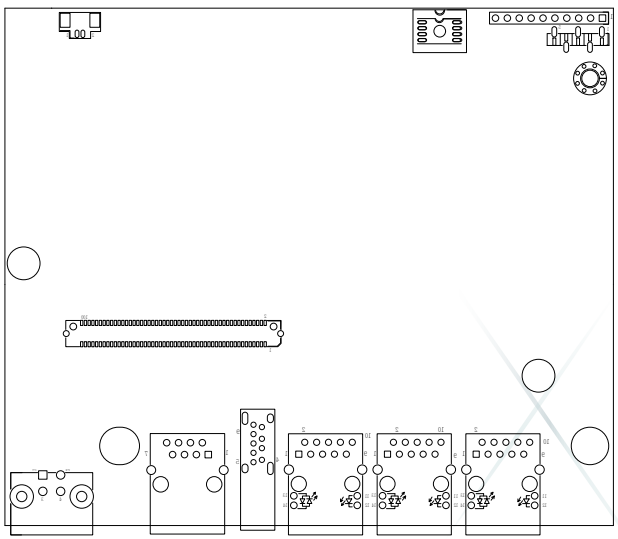
System Main Motherboard Overview

The image(s) below illustrate the layout and locations of the motherboard's connectors, headers, and jumpers. Pin assignments referenced in the following section are highlighted in pink.

Top View



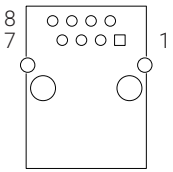
Bottom View



I/O Interfaces

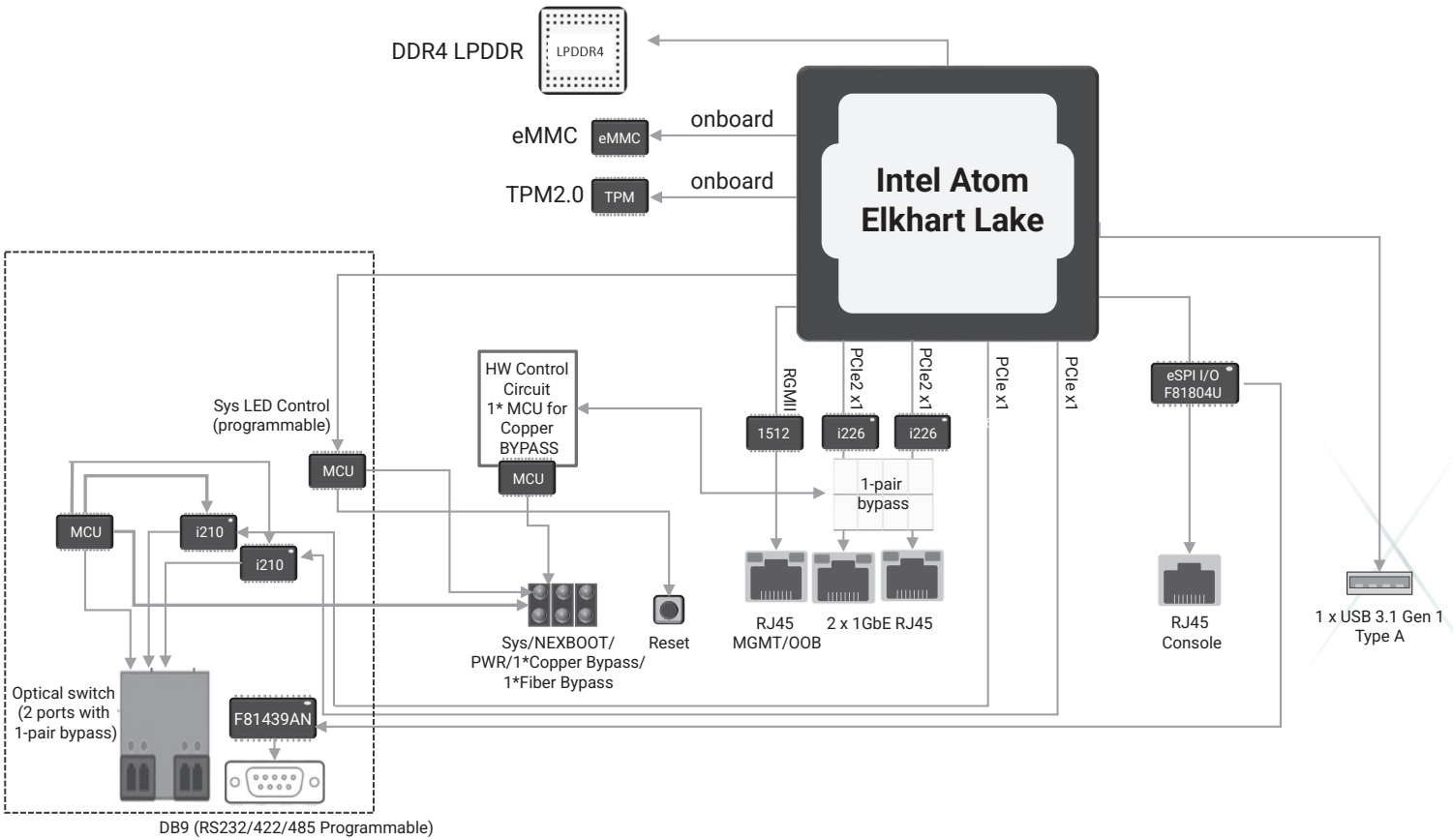
Console Port

Connector location: COM1



Pin	Definition
1	COM_UART_RTS_N_R (not use)
2	COM_UART_DTR_N_R (not use)
3	COM_UART_TXD_R
4	GND
5	COM_UART_DCD_N_R (not use)
6	COM_UART_RXD_R
7	COM_UART_DSR_N_R (not use)
8	COM_UART_CTS_N_R (not use)
MH1	CHASSIS GND
MH2	CHASSIS GND
NH1	X
NH2	X

Block Diagram



Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for ISA 122. 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 Del allows you to enter Setup.

Scroll Bar

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

Submenu

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

Legends

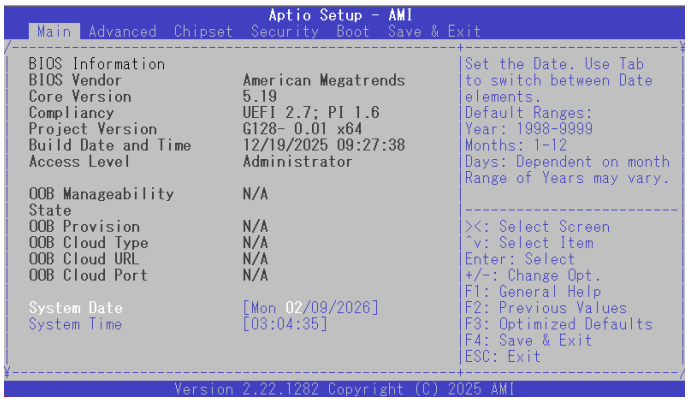
Key	Function
← →	Moves the highlight left or right to select a menu.
↑ ↓	Moves the highlight up or down between sub-menus or fields.
Esc	Exits the BIOS Setup Utility.
+	Scrolls forward through the values or options of the highlighted field.
-	Scrolls backward through the values or options of the highlighted field.
Tab ⇄	Selects a field.
F1	Displays General Help.
F2	Load previous values.
F3	Load optimized default values.
F4	Saves and exits the Setup program.
Enter ↵	Press <Enter> to enter the highlighted sub-menu

BIOS Setup Utility

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

Main

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



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.

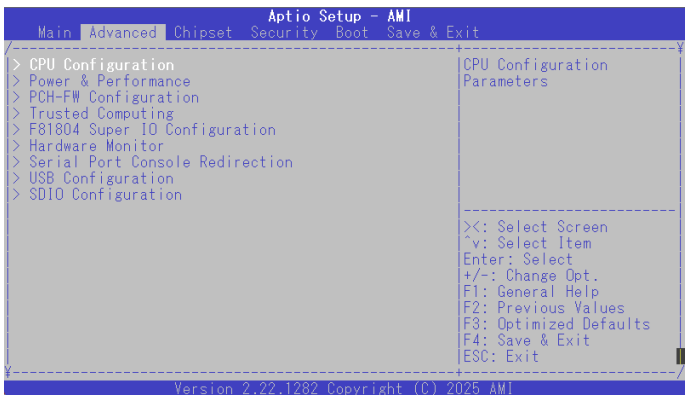
System Time

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.

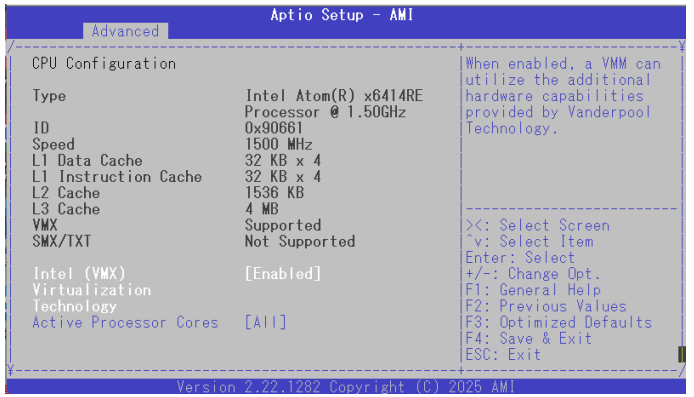
Advanced

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



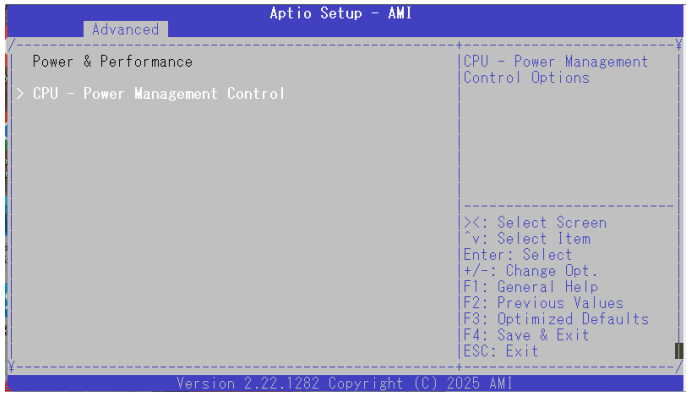
Intel® Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Active Processor Cores

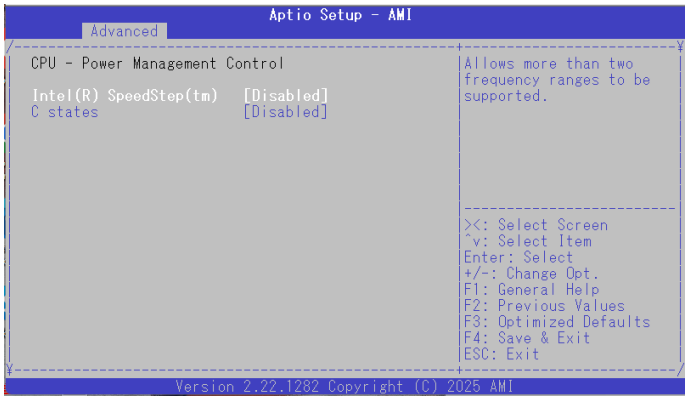
Select the number of cores to enable in each processor package.

Power & Performance



CPU - Power Management Control
Enter <Enter> to access the submenu.

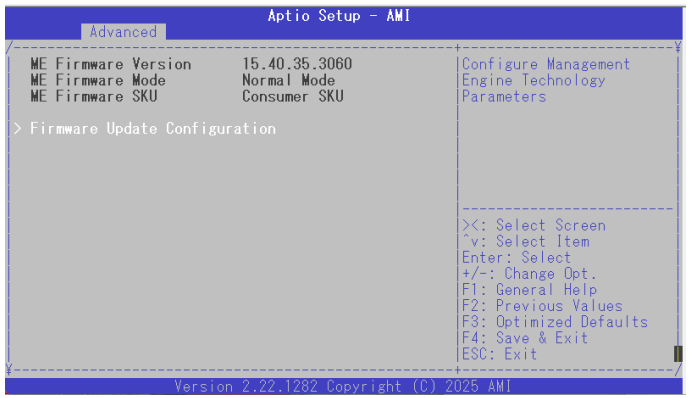
CPU - Power Management Control



Intel(R) SpeedStep(tm)
Allow more than two frequency ranges to be suported.

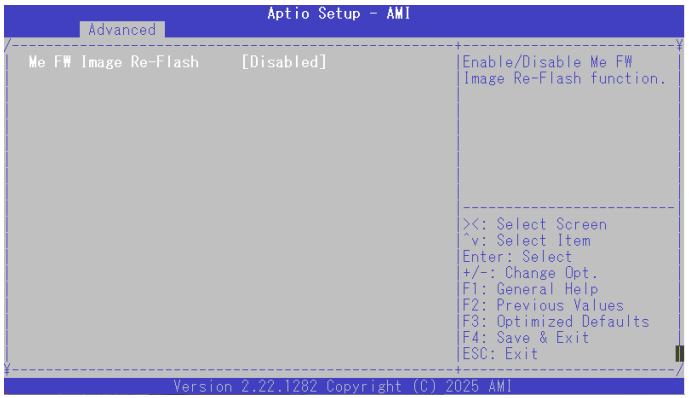
C states
Enable or disable CPU C states support for power saving.

PCH-FW Configuration



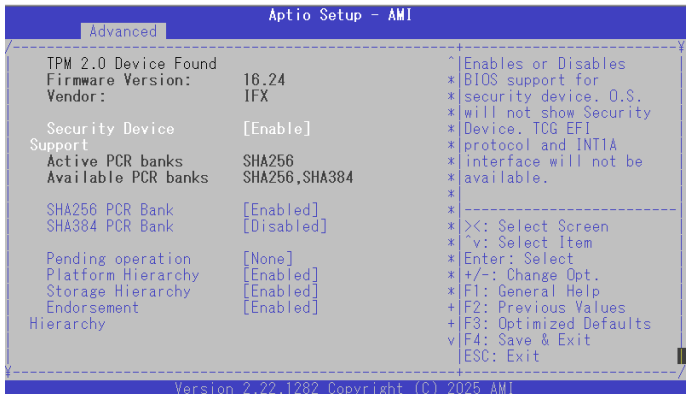
Firmware Update Configuration
Press <Enter> to open the submenu.

Firmware Update Configuration



Me FW Image Re-Flash
Enable or disable the ME firmware image re-flash function.

Trusted Computing



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.

SHA256 PCR Bank
Enable or disable SHA256 PCR Bank.

SHA384 PCR Bank
Enable or disable SHA384 PCR Bank.

Pending operation
Schedule an operation for the security device.

Platform Hierarchy
Enable or disable Platform Hierarchy.

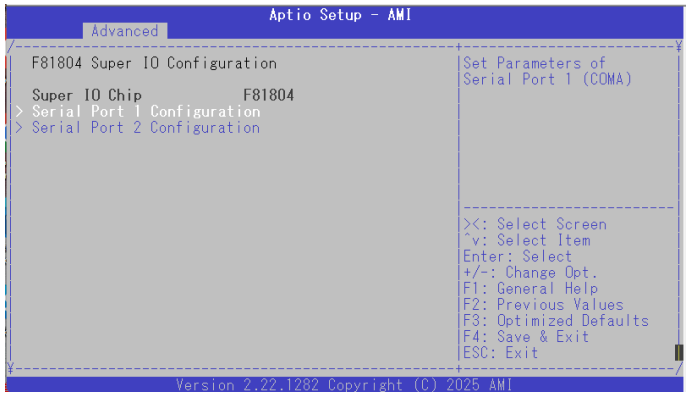
Storage Hierarchy
Enable or disable Storage Hierarchy.

Endorsement Hierarchy
Enable or disable Endorsement Hierarchy.

Physical Presence Spec Version
Configure which physical presence spec version the OS will support. Please note that some HCK tests might not support 1.3.

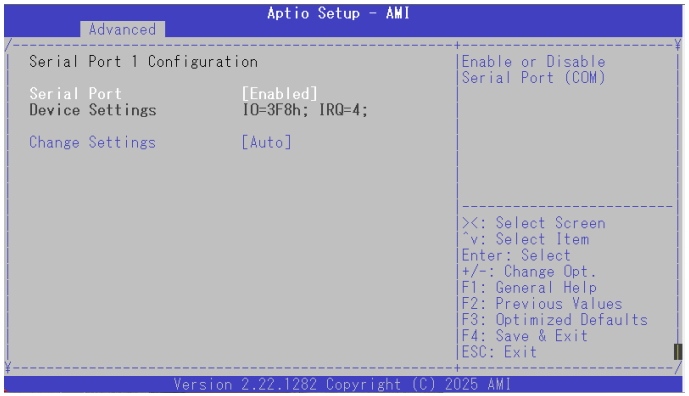
TPM 2.0 InterfaceType
Select the communication interface to TMP 2.0 device.

F81804 Super IO Configuration



Serial Port 1 Configuration
Press <Enter> to open the submenu.

Serial Port 1/2 Configuration



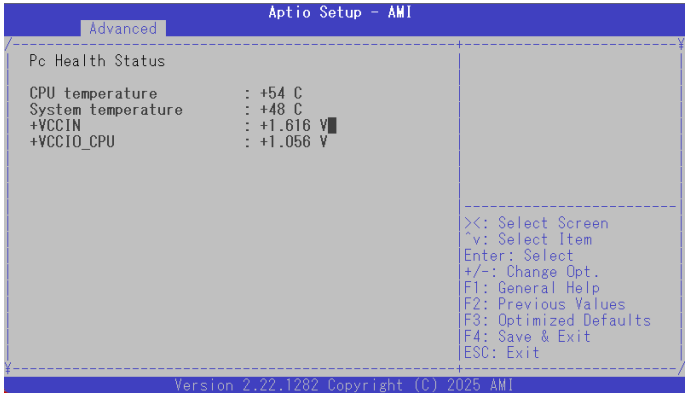
Serial Port (1/2)
Enable or disable serial port (COM).

Change Settings (1/2)
Select an optimal setting for the Super IO device.

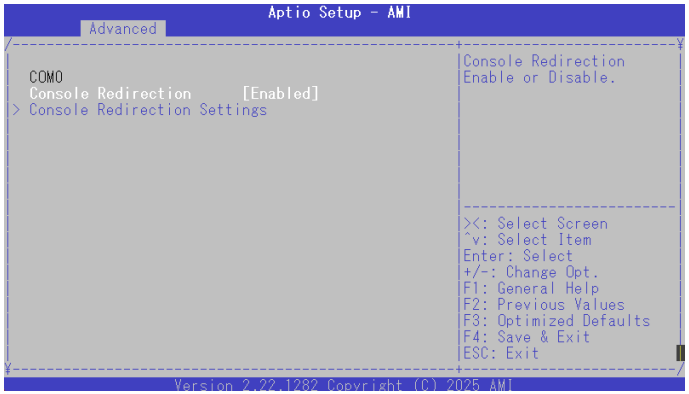
COM Port Type (2)
Select the COM port 2 type.

Hardware Monitor

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



Serial Port Console Redirection



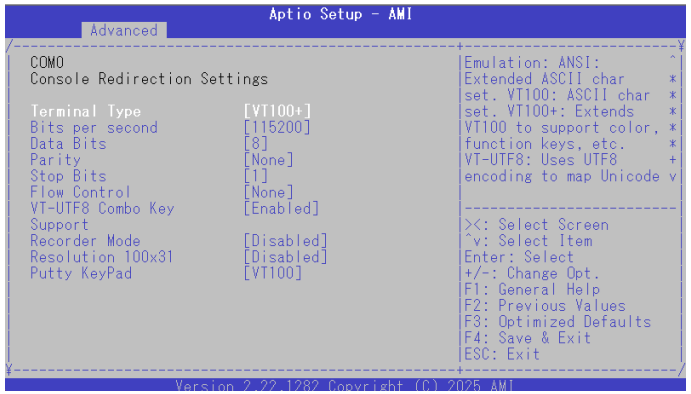
Console Redirection

Enable or disable the Console Redirection.

Console Redirection Settings

Press <Enter> to open the submenu.

Serial Port Console Redirection



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

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.

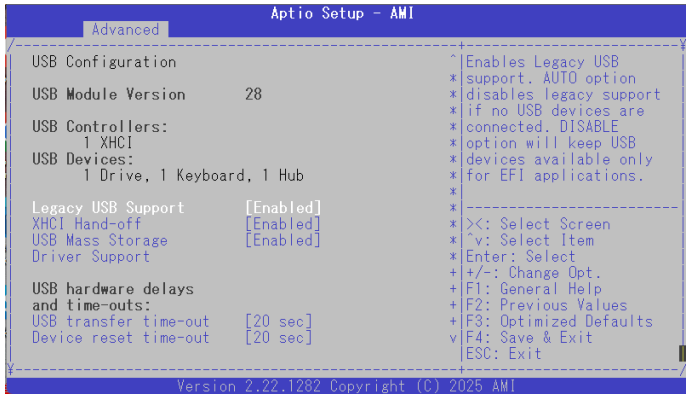
Resolution 100x31

Enable or disable extended terminal resolution.

Putty Keypad

Select the Putty keyboard emulation type.

USB Configuration



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.

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.

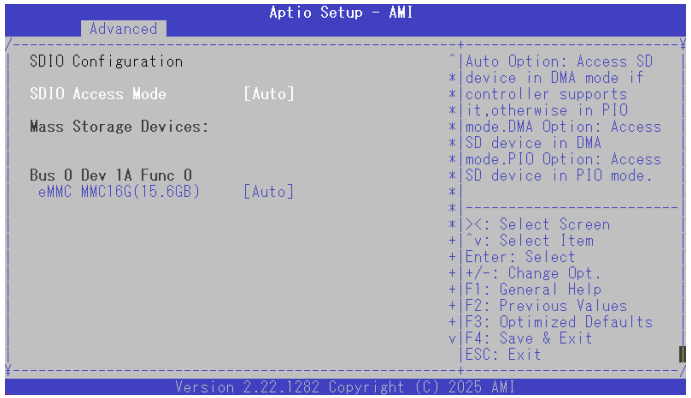
Device Power-up delay

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

Mass Storage Devices

Mass storage device emulation type. **Auto** enumerates devices according to their media format. Optional device are emulated as **CDROM**, drives with no media will be emulated according to a drive type.

SDIO Configuration



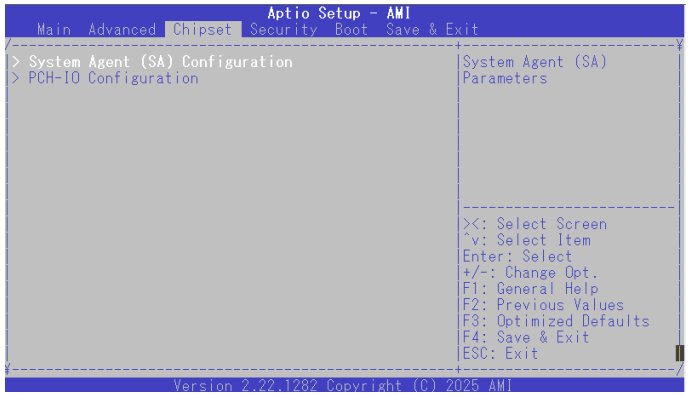
SDIO Access Mode

Auto Option	Access SD device in DMA mode if controller support it, otherwise in PIO mode.
DAM Option	Access SD device in DMA mode.
PIO Option	Access SD device in PIO mode.

eMMC MMC40G

Mass storage device emulation type. **Auto** enumerates devices according to their media format. Optional device are emulated as **CDROM**, drives with no media will be emulated according to a drive type.

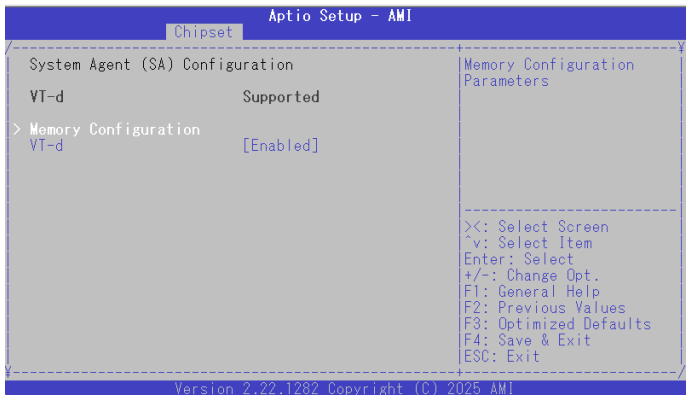
Chipset



System Agent (SA) Configuration
Press <Enter> to open the submenu.

PCH-IO Configuration
Press <Enter> to open the submenu.

System Agent (SA) Configuration

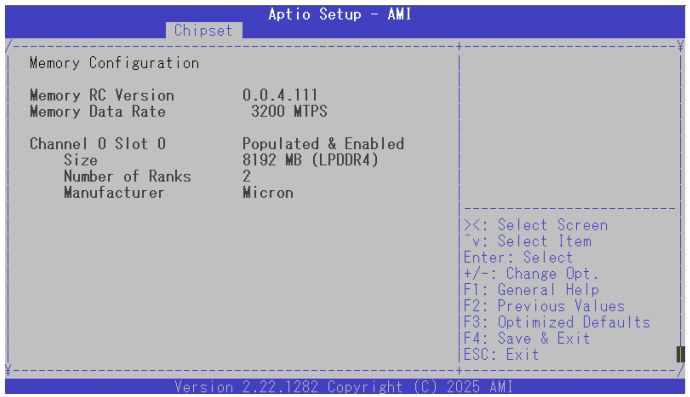


Memory Configuration
Press <Enter> to open the submenu.

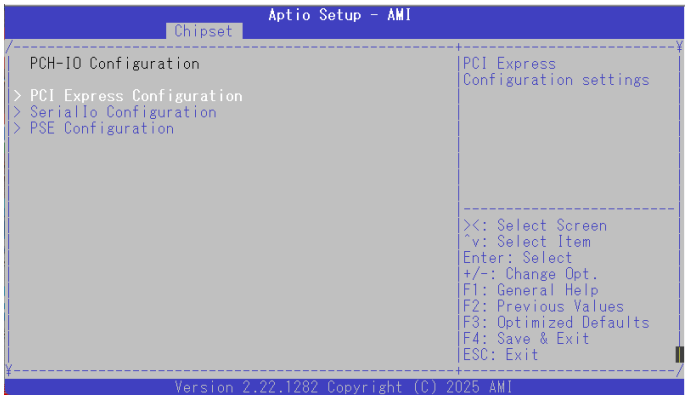
VT-d
Enable or disable the VT-d.

Memory Configuration

This section displays information about the memory you have plugged into the system.



PCH-IO Configuration



PCI Express Configuration

Press <Enter> to open the submenu.

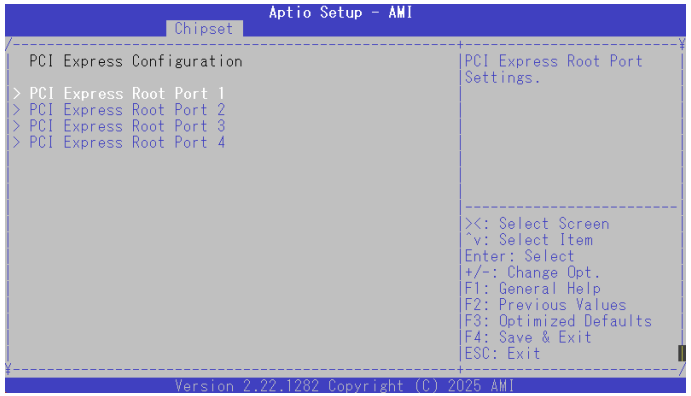
SerialIo Configuration

Press <Enter> to open the submenu.

PSE Configuration

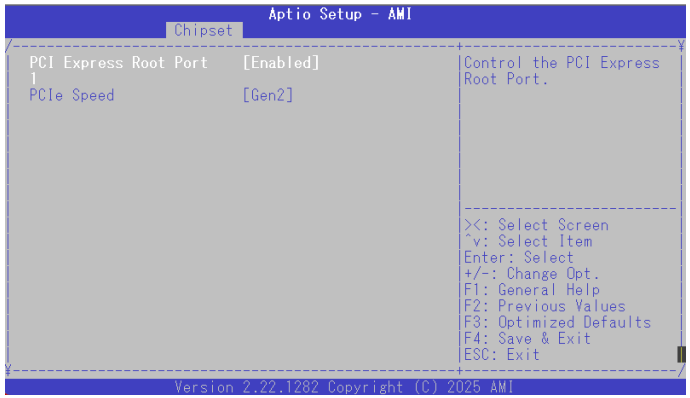
Press <Enter> to open the submenu.

PCI Express Configuration



PCI Express Root Port 1/2/3/4
Press <Enter> to open the submenu.

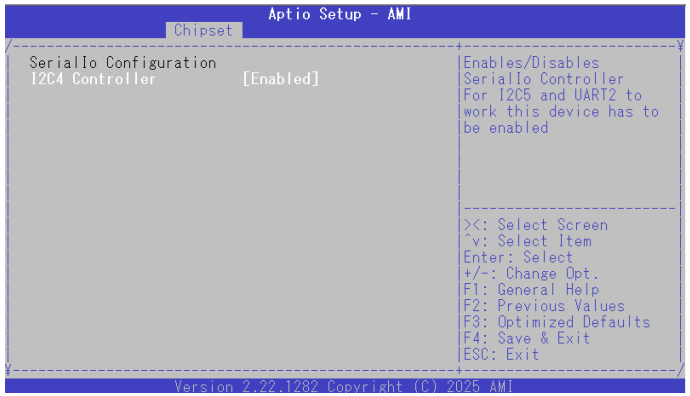
PCI Express Configuration > PCI Expess Root Port 1/2/3/4



PCI Express Root Port (1/2/3/4)
Enable or disable the PCI Express root port.

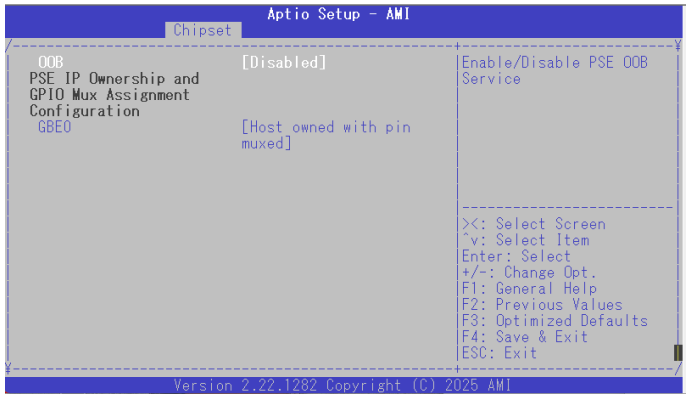
PCIe Speed (1/2/3/4)
Configure the speed of the PCI Express port.

SerialIo Configuration



I2C4 Controller
Enable or disable seriallo controller for I2C4 and UART2 to work thi device has to be enabled.

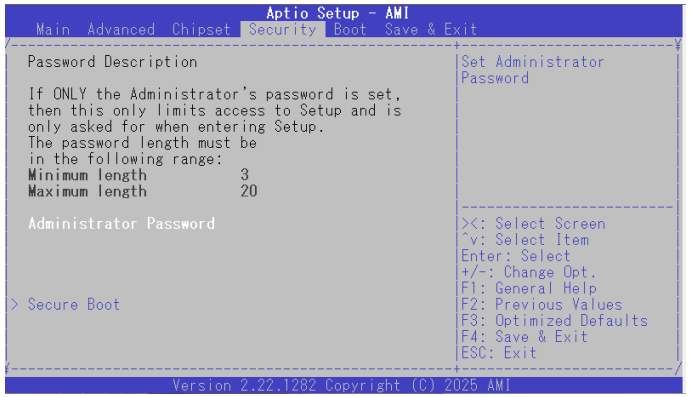
PSE Configuration



OOB
Enable or disable PSE OOB Service.

GBE0
Select ownership for GBE.

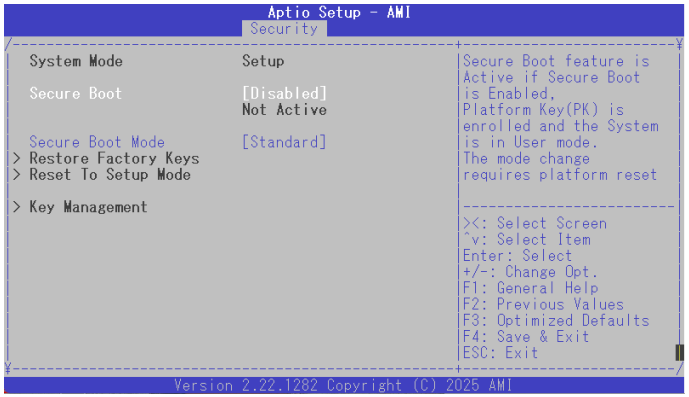
Security



Administrator Password
Configure the administrator's password.

Secure Boot
Press <Enter> to open the submenu.

Secure Boot



Secure Boot
Secure boot feature is active if secure boot is enabled, Platform Key (PK) is enrolled and the system is in User mode. The mode change requires platform reset.

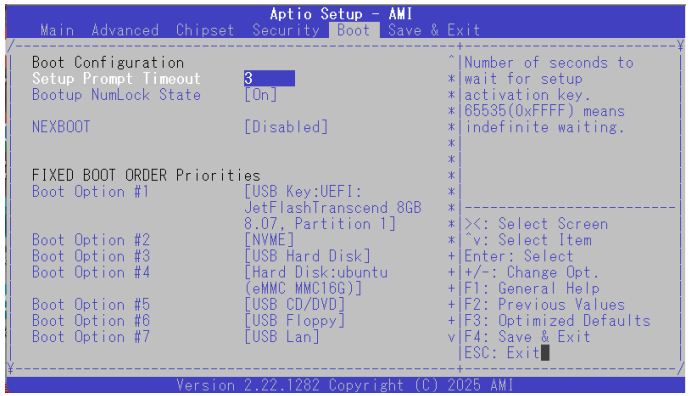
Secure Boot Mode
Select to configure the Secure Boot mode.
Standard Fixed secure boot policy.
Custom Secure boot policy variables can be configured by a physically present user without full authentication.

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.

Boot



Setup Prompt Timeout
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.

NEXBOOT
Enable or disable NEXBOOT. Once enabled, more options will be available for configuration. For more detailed configurations, refer to Appendix A.

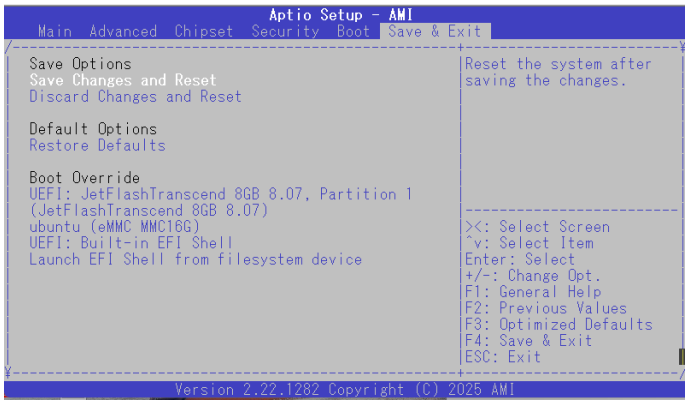
Fixed Boot Order Priorities
Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

UEFI Hard Disk Drive BBS Priorities
Configure the boot device priority sequence from available UEFI hard disk drives.

UEFI Application Boot BBS Priorities
Specify the boot device priority sequence from available UEFI Application.

UEFI USB Key Drive BBS Priorities
Configure the boot device priority sequence from available UEFI USB key drives.

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.

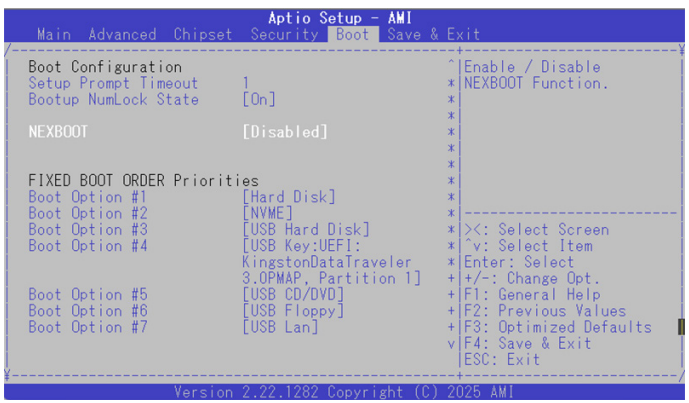
Boot Override
To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

Launch EFI Shell From Filesystem Device
Launche the EFI shell.

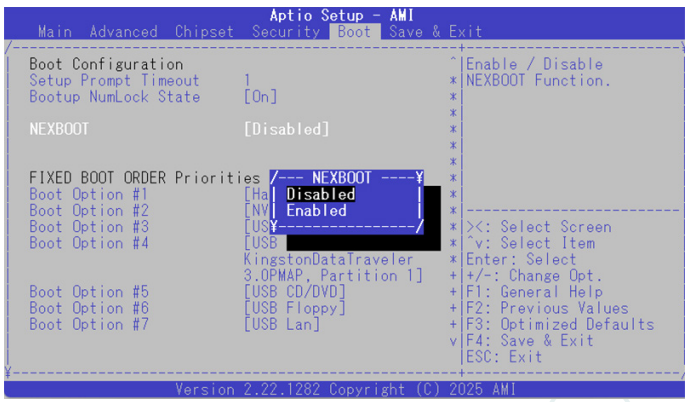
Appendix A: NEXBOOT Configuration

NEXBOOT is a feature designed to prevent issues by automatically resetting the system if the clear WDT function fails. Follow the steps below to enable and configure it in the BIOS.

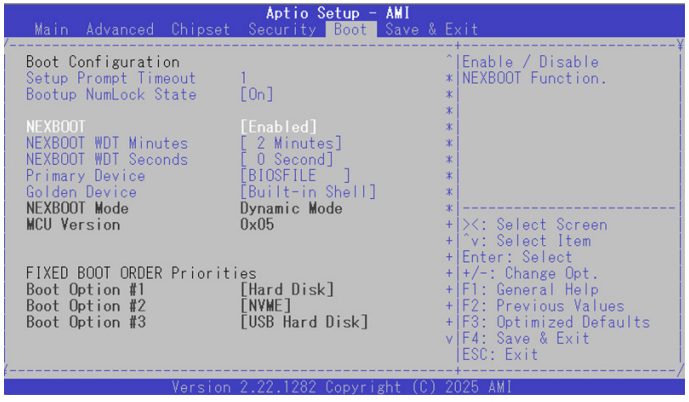
1. Immediately press the <Del> button when powering on the system, then navigate using the arrow keys to select the **BOOT** section.



2. Navigate with the up or down keys to select the feature of NEXBOOT. By default, the feature is disabled. Press the <Enter> button to enable it.

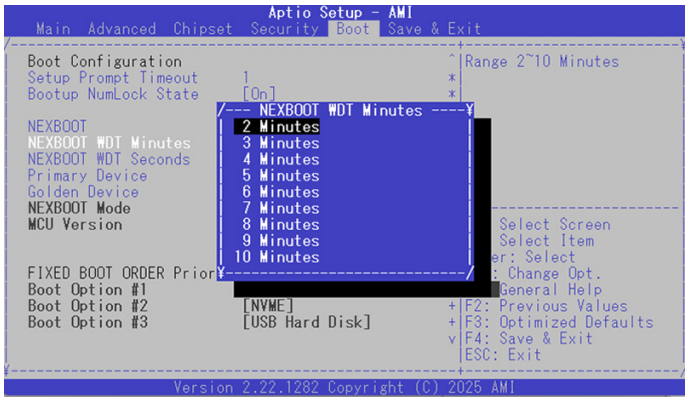


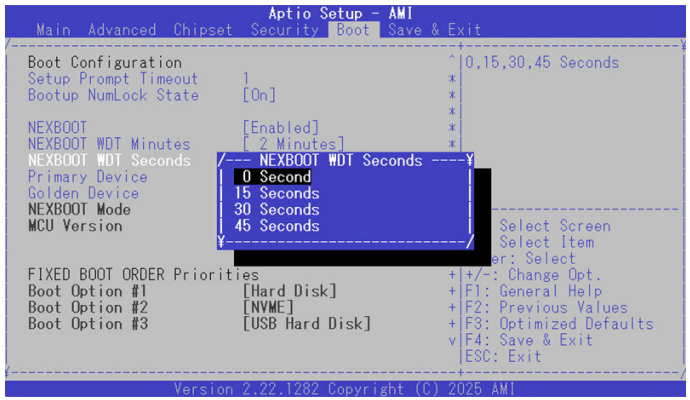
3. Once the NEXBOOT is enabled, relative settings become available for configuration. Note that the FIXED BOOT ORDER Priorities in the **BOOT** section and BOOT Override in the **Save & Exit** section will gray out and become unavailable for configuration.



NEXBOOT WDT Minutes & NEXBOOT WDT Seconds

NEXBOOT WDT Minutes & NEXBOOT WDT Seconds are features designed to set a timer for triggering NEXBOOT WDT when entering the OS without clearing the WDT. You can adjust the minutes and seconds separately.





Primary Device & Golden Device

Specify the primary and golden device for the system. The primary device is the system will attempt to boot from that drive first. If the clear WDT is failed to work in the operating system on the primary device, the NEXBOOT WDT will be triggered to reboot the system into the golden device.