



NEXCOM International Co., Ltd.

Network and Communication Solutions

Desktop Network Appliance

DNA 141

User Manual

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PREFACE

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Disclaimer

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Acknowledgements

DNA 141 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 B devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

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

CE

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

RoHS Compliance



NEXCOM RoHS Environmental Policy and Status Update

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

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

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

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

How to recognize NEXCOM RoHS Products?

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

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

Warranty and RMA

NEXCOM Warranty Period

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

NEXCOM Return Merchandise Authorization (RMA)

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

Repair Service Charges for Out-of-Warranty Products

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

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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.

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.

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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www.nexcom.com

Package Contents

Before continuing, verify that the DNA 141 package that you received is complete. Your package should have all the items listed in the following table.

Item	Part Number	Description
1	6023309081X00	CABLE EDI:232091081804-RS
2	5044440031X00	RUBBER FOOT KANG YANG:RF20-5-4P
3	6012200052X00	PE ZIPPER BAG #8 炎洲:印刷由任袋8號
4	6012200169X00	PE BAG FOR SG 105/115 SERIES VER:A FULPAK PE
5	7400036022X00	POWER ADAPTER LITEON:PA-1360-32B1
6	60111A1060X00	INNER CARTON FOR DNA141 VER:A YI GIA
7	6013301979X00	PAPER FOLDING RIGHT & LEFT FOR DNA141 VER:A YI GIA

Ordering Information

The following below provides ordering information for DNA 141.

DNA 141 (P/N: 10L00014100X0)

Intel Atom® x7203C processor, 2 cores, 4 x 2.5GbE RJ45 port, fanless,
1 x 36W 12V DC-in power adapter

CHAPTER 1: PRODUCT INTRODUCTION

Overview

DNA 141



Key Features

- Intel Atom® x7203C (Amston Lake) processor, 2 cores, 9W
- 1 x DDR4 3200 SO-DIMM slot, ECC/non-ECC, up to 32 GB
- eMMC 32GB onboard
- 4 x 2.5GbE RJ45 port
- 1 x Console port (RJ45)
- 1 x M.2 Key B+M 2242 SATA SSD
- 2 x USB 3.2 Gen1, Type-A
- TPM 2.0 onboard
- Fanless design

Hardware Specifications

Main Board

- Intel Atom® x7203C CPU, 2 cores, 9W
- eMMC 32GB onboard
- TPM 2.0 onboard

Main Memory

- 1 x DDR4 3200 SO-DIMM slot, ECC/non-ECC, up to 32 GB

Storage Device

- eMMC 32GB onboard
- 1 x M.2 Key B+M 2242 SATA SSD

Interface External

- Button: Power/Reset
- LED: LAN/MGMT/SYS/SSD/PWR
- 2 x USB 3.2 Gen1, Type-A
- 1 x Console port (RJ45)
- 4 x 2.5GbE RJ45 port

Interface Internal

- 1 x M.2 Key B+M 2242 SATA SSD

Power

- 1 x 36W 12V DC-in power adapter

Dimensions and Weight

- Chassis dimension: 165 x 134.5 x 34 mm
- Carton dimension: 191 x 181 x 129 mm
- Without packing: 0.715 kg
- With packing: 1.37 kg

Environment

- Operating temperature: 0°C~40°C (with air flow 0.7~0.8 m/s)
- Storage temperature: -20°C~80°C
- Relative humidity: 10%~90% non-condensing

Certifications

- CE/FCC Class B

Knowing Your DNA 141

Front Panel

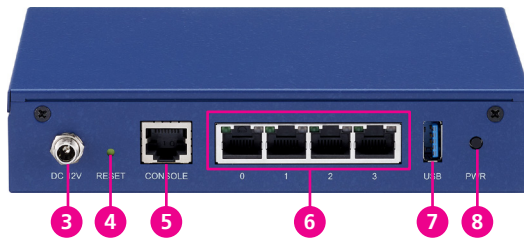


1 USB 3.2 Gen1 Port

2 LED Indicators

LED	Indicator	Behavior	Description
LAN 0~3	Act/Link	Blinking green	LAN is active with traffic
		Steady green	LAN is connected
	Speed	Steady green	2.5/1GbE link
		Steady yellow	100MbE link
MGMT	Speed	Steady green	Defined by user
		Off	Default is off
SSD	Storage	Blinking green	Blinking during access *This indicator lights up only when the SSD is connected; it will not function with the default storage (eMMC).
		Off	No access
PWR	Power	Steady green	The power is connected, and the power button is pressed.
		Steady red	The power is connected, but the power button is not pressed.
		Off	The power is not connected.
SYS	S/W Programmable	Green blinking	For the status after POST
		Orange blinking	For the status during POST
		On/Off	Enable/Diable S/W programming

Rear Panel



3 DC-in 12V Connector

4 Reset Button

5 RJ45 Console Port

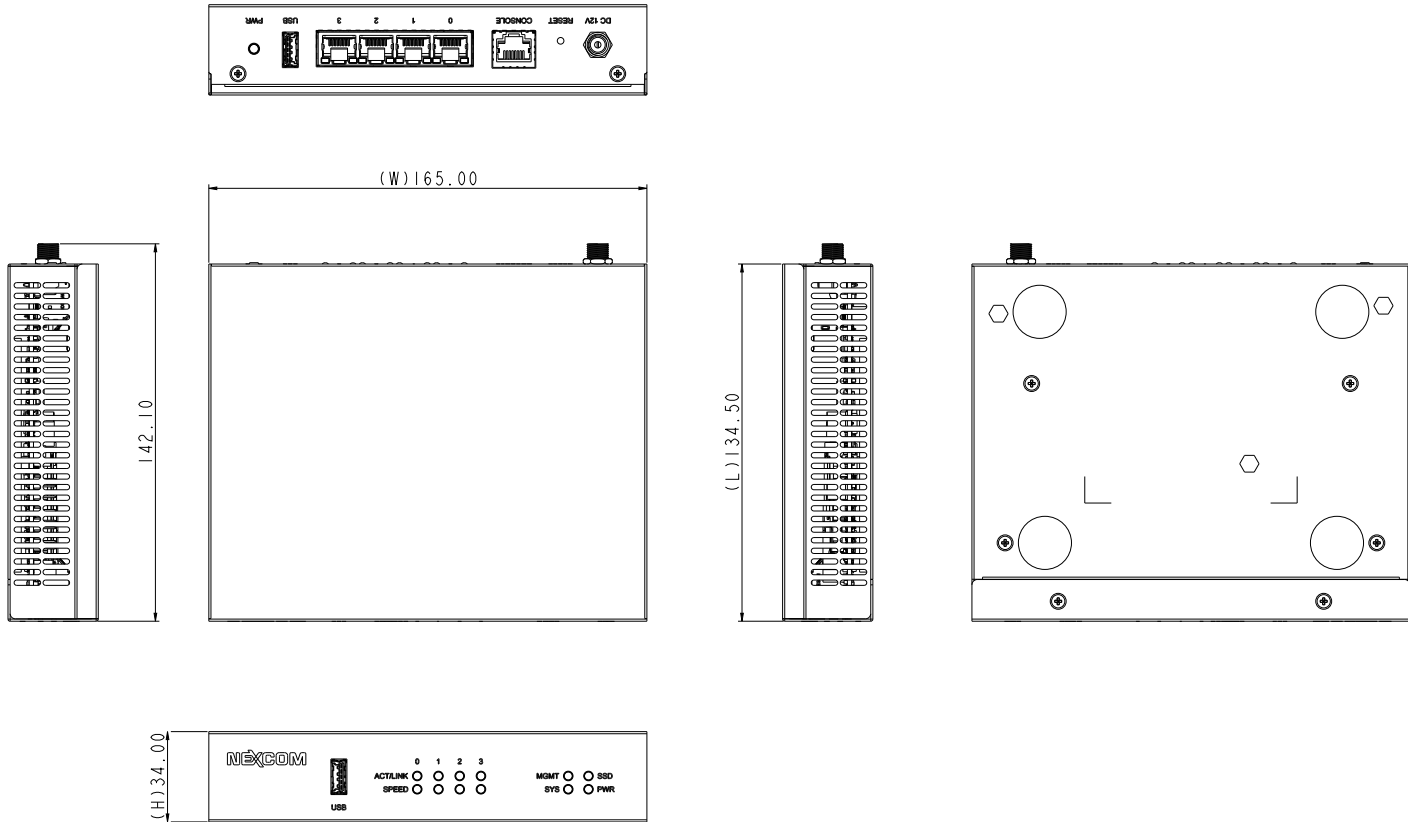
6 LAN 0~3 Ports

7 USB 3.2 Gen1 Port

8 Power Button

- Push to power on.
- Push 1s to power off (OS).
- Push 5s to force power off.

DNA 141 Mechanical Dimensions



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the DNA 141 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:

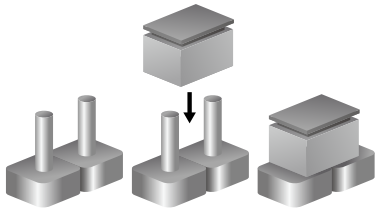
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal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

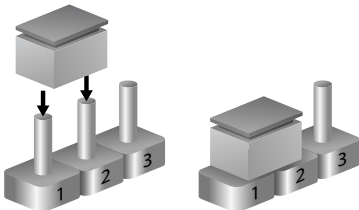
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

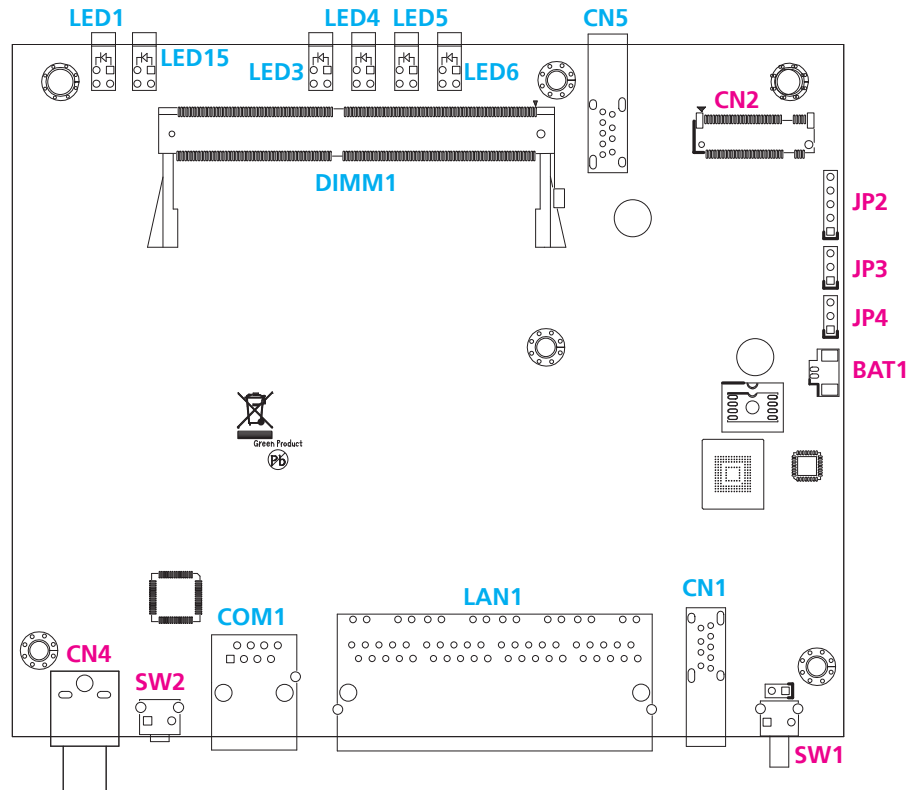


Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors

The following figure shows the motherboard of DNA141 and indicates the locations of jumpers and connectors. Refer to this chapter for detailed pin setting and definitions of connectors marked in pink on this figure.

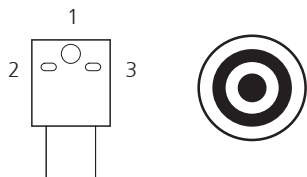


Connector Pin Definitions

External Connectors

P12V Power Connector

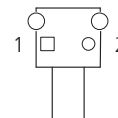
Connector location: CN4



Pin	Definition
1	DC_IN
2	AGND
3	AGND

Power Button

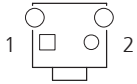
Connector location: SW1



Pin	Definition
1	GND
2	PWRBTN#_IN

Reset Button

Connector location: SW2



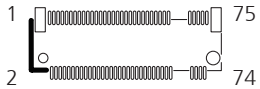
Pin	Definition
1	GND
2	ACPI_BTN_IN#

Internal Connectors

M.2 Key M Conector

Connector type: M.2 2242 Key M slot for SSD module

Connector location: CN2



Pin	Definition	Pin	Definition
1	GND	2	+P3V3_MKEY
3	GND	4	+P3V3_MKEY
5	NC	6	NC
7	NC	8	NC
9	GND	10	NC
11	NC	12	+P3V3_MKEY
13	NC	14	+P3V3_MKEY
15	GND	16	+P3V3_MKEY
17	NC	18	+P3V3_MKEY

Pin	Definition	Pin	Definition
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC

Continued on next page

Pin	Definition	Pin	Definition
37	NC	38	NGFF_DEVSLP
39	GND	40	NC
41	SATA1_SSD_RXP	42	NC
43	SATA1_SSD_RXN	44	NC
45	GND	46	NC
47	SATA1_SSD_TXN	48	NC
49	SATA1_SSD_TXP	50	M2M_RST#
51	GND	52	GND
53	CLKOUT_PCIE_MKEY_DN	54	NC
55	CLKOUT_PCIE_MKEY_DP	56	NC

Pin	Definition	Pin	Definition
57	GND	58	NC
59	-	60	-
61	-	62	-
63	-	64	-
65	-	66	-
67	NC	68	NC
69	NC	70	+P3V3_MKEY
71	GND	72	+P3V3_MKEY
73	GND	74	+P3V3_MKEY
75	GND		

Battery Connector

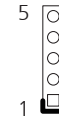
Connector location: BAT1



Pin	Definition
1	GND
2	BATT

MCU Programm Header

Connector location: JP2



Pin	Definition	Pin	Definition
1	+P3V3_MCU	2	SWCLK
3	GND	4	SWDIO
5	MCU_RST_B		

Clear CMOS

Connector location: JP3



Pin	Definition
1	NC
2	RTCST#
3	GND

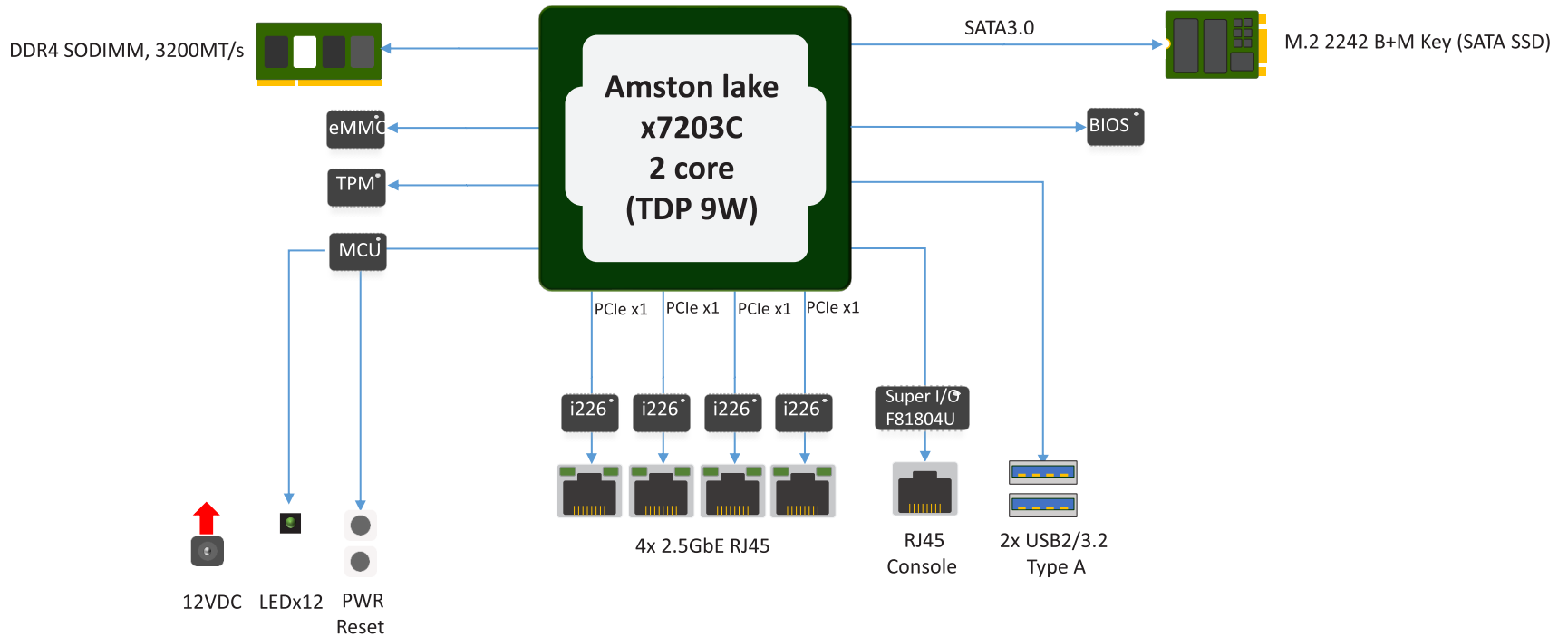
Clear RTC Registers

Connector location: JP4



Pin	Definition
1	NC
2	SRTCST#
3	GND

Block Diagram



Chapter 3: System Setup

Removing the Chassis Cover



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

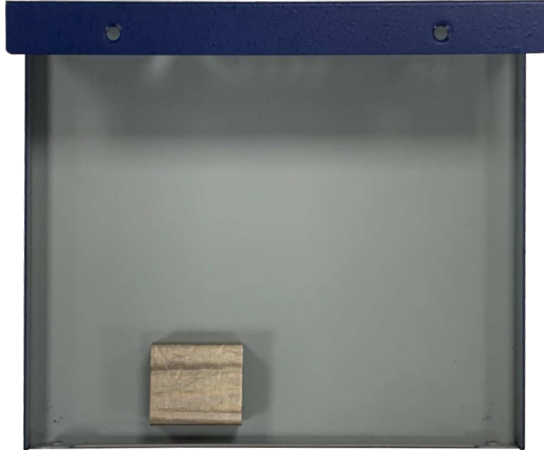
1. Remove the four screws located along the edge of the bottom chassis (marked with red circles in the image below) and the rear panel (indicated by the red marks in point 2), then place them in a safe location for later use.



2. Push the cover outwards and lift up the cover to remove it.

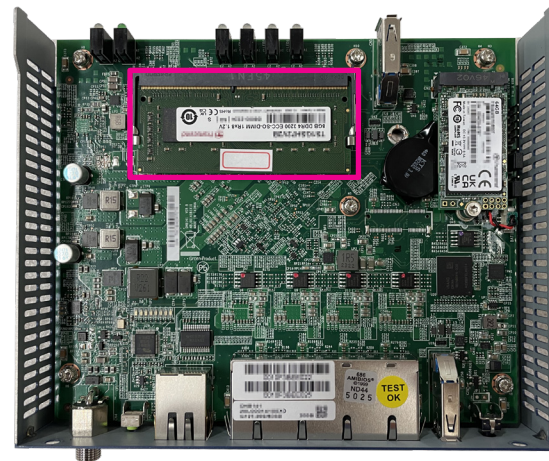
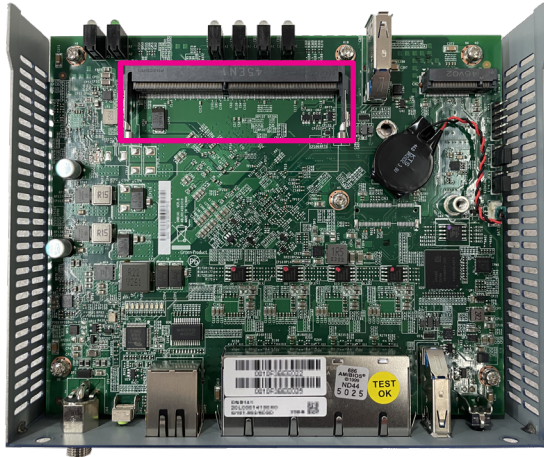


- Put the cover aside.



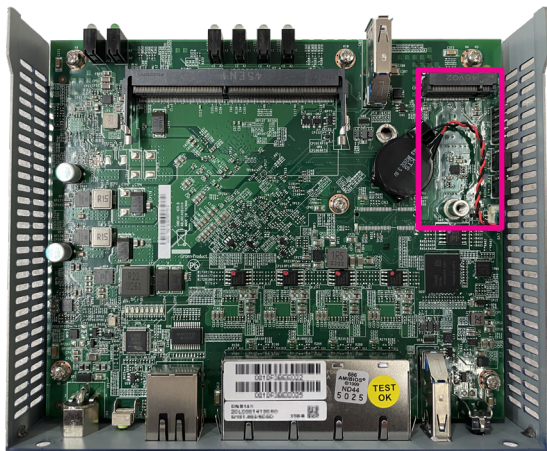
Installing a SO-DIMM Memory Module

1. Locate the SO-DIMM socket on the motherboard and insert the module into the socket at an approximately 30 degrees angle. Push the module down until the clips on both sides of the socket lock into position. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.
2. Ensure the memory module is secured properly into the socket.



Installing an M.2 Key B+M Module

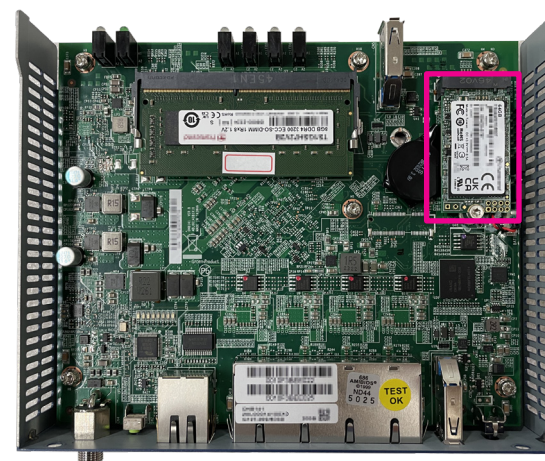
1. Locate the M.2 Key B+M slot on the motherboard.



2. Insert the M.2 module into the M.2 slot at a 45 degrees angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



3. Push the M.2 module down and fasten an M.2 mounting screw into the mounting hole to secure the module.



CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for the DNA 141. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

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

About BIOS Setup

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

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

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

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

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

When to Configure the BIOS

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

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


Default Configuration

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












Entering Setup

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

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

Powering on the computer and immediately pressing  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

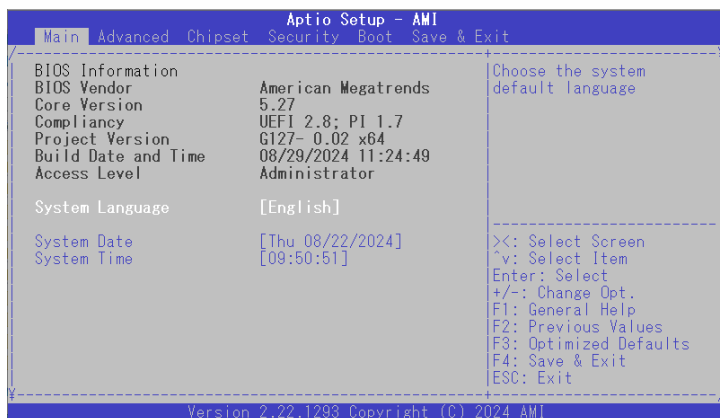
When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .

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.



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 2005 to 2099.

System Time

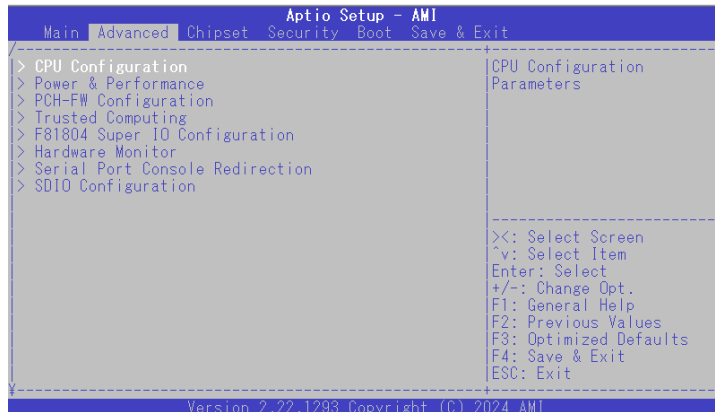
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

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

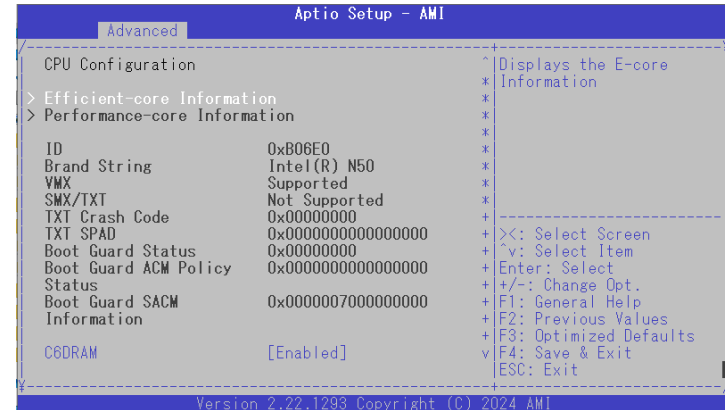


Setting incorrect field values may cause the system to malfunction.



CPU Configuration

This section is used to configure the CPU.



Efficient-core Information

Enter the E-core Information submenu.

Performance-core Information

Display the Performance-core information.

C6DRAM

Enable or disable the C6DRAM function.

CPU Flex Ratio Override

Enable or disable the CPU flex ratio override feature.

Hardware Prefetcher

Enable or disable the hardware prefetcher.

Adjacent Cache Line Prefetch

Enable or disable the adjacent cache line prefetch.

Intel (VMX) Virtualization Technology

Enable or disable Intel Virtualization technology. When enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

PECI

Enable or disable the PECI feature.

AVX

Enable or disable the AVX feature.

Active Efficient-cores

This allows you to select the number of E-cores to enable in each processor package.

BIST

Enable or disable BIST (Built-in Self Test) on reset.

AP Threads Idle Manner

AP Threads Idle Manner for waiting signal to run.

AES

Enable or Disable AES (Advanced Encryption Standard).

MachineCheck

Enable or disable Machine Check.

MonitorMwait

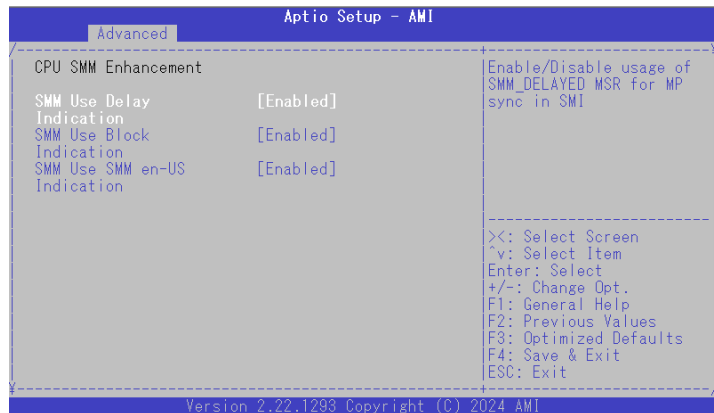
Enable or disable MonitorMwait; If disable MonitorMwait, the AP threads Idle Manner should not set in MWAIT Loop.

CPU SMM Enhancement

Enter the CPU SMM Enhancement submenu.

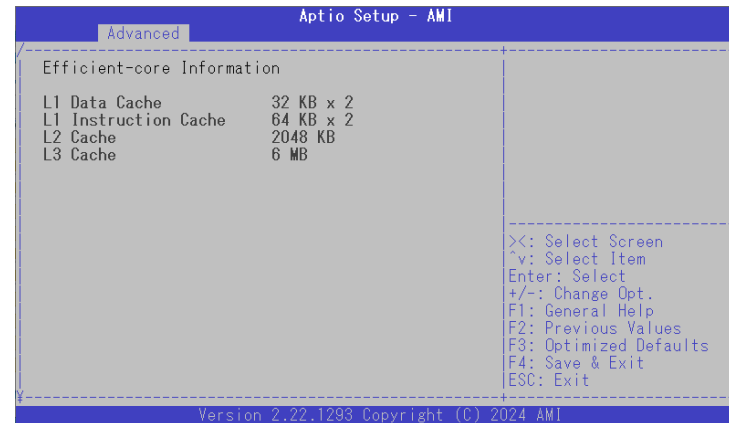
CPU SMM Enhancement

Configure options to enhance CPU SMM.



Efficient-core Information

Display the cache size of the efficient-core.



SMM Use Delay Indication

Enable or disable usage of SMM delayed MSR for MP sync in SMI.

SMM Use Block Indication

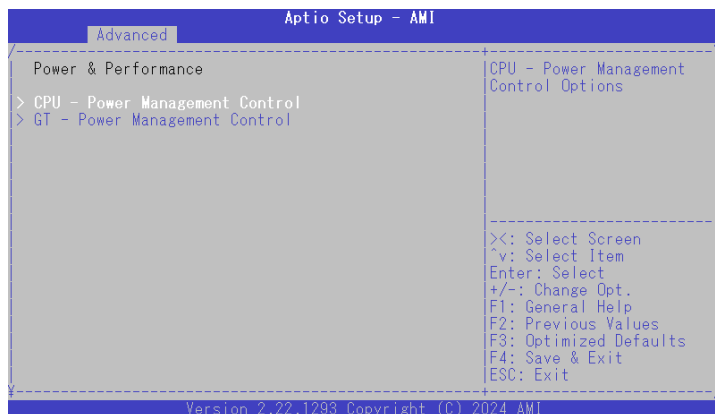
Enable or disable the usage of SMM block indication feature.

SMM Use SMM en-US Indication

Enable or disable the usage of SMM indication in US English.

Power & Performance Configuration

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



CPU - Power Management Control

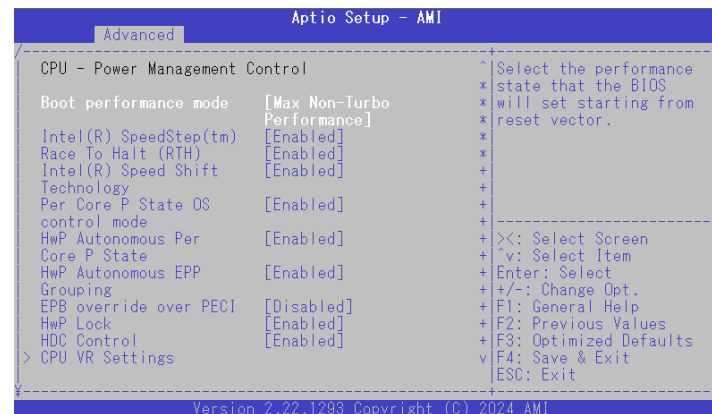
Enter the CPU - Power Management Control submenu.

GT - Power Management Control

Enter the GT - Power Management Control submenu.

CPU - Power Management Control

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



Boot performance mode

Select the performance state that the BIOS will set starting from reset vector.

Intel(R) SpeedStep(tm)

Enable or disable Intel Speedstep technology.

Race To Halt (RTH)

Enable or disable RTH feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State faster to reduce overall power.

Intel(R) Speed Shift Technology

Enable or disable Intel Speed Shift Technology support. Enabling it will expose the CPPC v2 interface to allow hardware controlled P-states.

Per Core P State OS control mode

Enable or disable Per Core P State OS control mode.

HWP Autonomous Per Core P State

Enable or disable HWP Autonomous Per Core P State.

HWP Autonomous EPP Grouping

Enable or disable HWP Autonomous EPP Grouping.

EPB override over PECI

Enable or disable EPB override over PECI.

HWP Lock

Enable or disable HWP Lock feature.

HDC Control

Enable or disable HDC Control.

CPU VR Settings

Enter the CPU VR Settings submenu.

Platform PL1 Enable

Enable or disable platform power limit 1 programming. If this option is enabled, it activates the PL1 value to be used by the processor to limit the average power of given time window.

Platform PL2 Enable

Enable or disable platform power limit 2 programming. If this option is disabled, the BIOS will program the default values for platform power limit 2.

Power Limit 4 Override

Enable or disable power limit 4 override. If this option is disabled, the BIOS will leave the default values for power limit 4..

C States

Enable or disable C-States support for power saving.

C State Pre-Wake

Enable or disable the feature of C state pre-wake.

IO MWAIT Redirection

Enable or disable the feature of I/O MWAIT redirection.

Package C State Limit

Set power saving mode for the package C state limit.

Time Unit | Latency

Configure the time units and latencies for C6/C7 Short Latency Control (MSR 0x60B), C9 Latency Control (MSR 0x634), and C10 Latency Control (MSR 0x635).

Thermal Monitor

Enable or disable thermal monitor.

Interrupt Redirection Mode Selection

Configure the Interrupt Redirection Mode for logical interrupts.

Timed MWAIT

Enable or disable Timed MWAIT support.

Custom P-state Table

Enter the Custom P-state Table submenu.

Energy Performance Gain

Enable or disable energy performance gain feature.

Power limit 3 settings

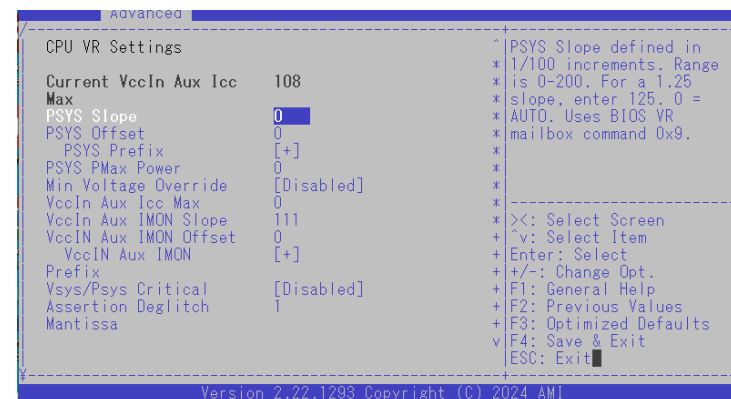
Enter the Power limit 3 settings submenu.

CPU Lock Configuration

Enter the CPU Lock Configuration submenu.

CPU VR Settings

This section is used to configure the CPU VR features.



PSYS Slope

PSYS Slope is defined in 1/100 increments while the range goes from 0 to 200 increments. It uses BIOS VR mailbox command 0x9. For a 1.25 slope, enter 125.0 for auto function.

PSYS Offset

Configure the PSUS offset and PSYs prefix.

PSYS PMax Power

Configure the PSYS PMax Power.

Min Voltage Override

Enable or disable the Min Voltage Override feature.

Vccln Aux Icc Max

Configure the value of Vccln Aux Icc Max.

Vccln Aux IMON Slope

Configure the value of Vccln IMON slope.

Vccln Aux IMON Offset

Configure the value of Vccln Aux IMON Offset and prefix.

Vsys/Phys Critical

Enable or disable the feature of Vsys/RSYS Critical.

Assertion Deglitch Mantissa

Configure the value of Assertion Deglitch Mantissa.

Assertion Deglitch Exponent

Configure the value of Assertion Deglitch Mantissa.

De assertion Deglitch Mantissa

Configure the value of De assertion Deglitch Mantissa.

De assertion Deglitch Exponent

Configure the value of De assertion Deglitch Exponent.

VR Power Delivery Design

Set the verifying mode of VR Power Delivery Design.

Acoustic Noise Settings

Enter the Acoustic Noise Settings submenu.

Core/IA VR Settings

Enter the Core/IA VR Settings submenu.

GT VR Settings

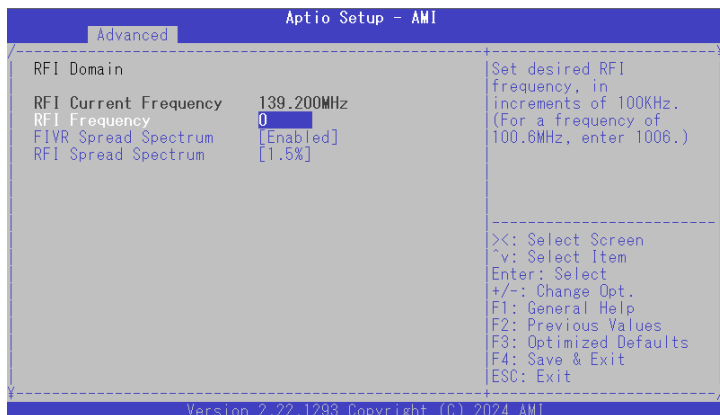
Enter the GT VR Settings submenu.

RFI Settings

Enter the RFI Settings submenu.

RFI Domain

This section is used to configure the RFI features.



RFI Frequency

Set desired RFI frequency, in increments of 100KHz. (For a frequency of 100.6 MHz, enter 1006.)

FIVR Spread Spectrum

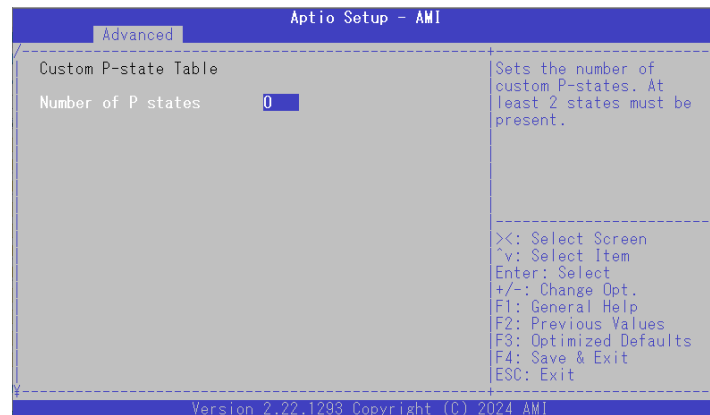
Enable or disable the FIVR spread spectrum feature.

RFI Spread Spectrum

Configure the percentage of the RFI spread spectrum.

Custom P-state Table

Configure the number of P states per your need.

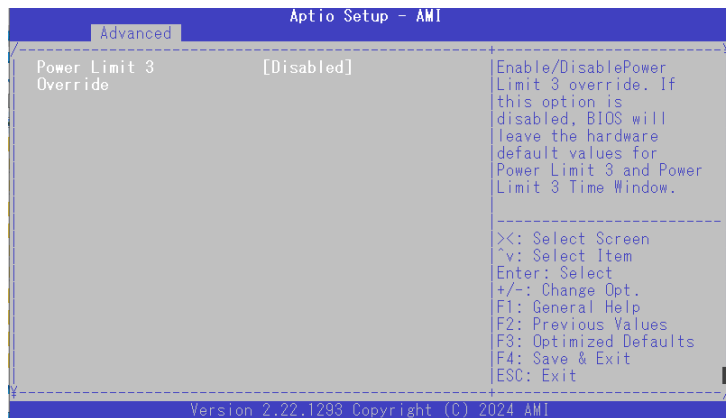


Number of P states

Set the number of custom P-states. At least 2 states must be present.

Power Limit 3 Settings

Configure the power limit 3 feature.

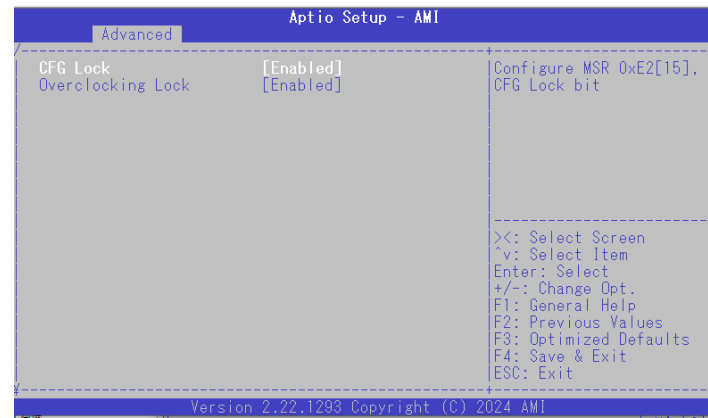


Power Limit 3 Override

Enable/disable Power Limit 3 override. If this option is disabled, BIOS will leave the hardware default values for Power Limit 3 and Power Limit 3 Time Window.

CPU Lock Configuration

Configure the CPU locking features.



CFG Lock

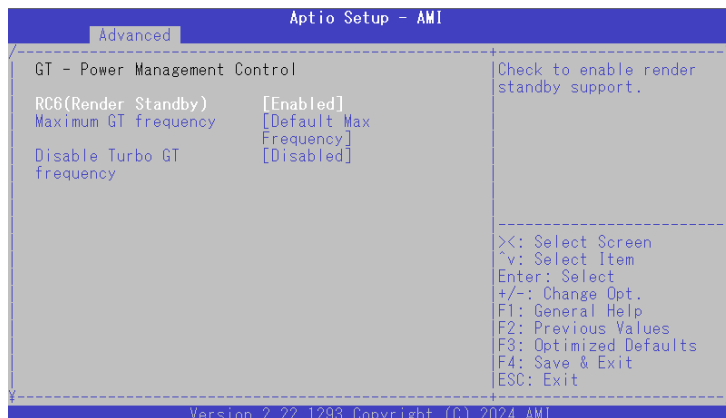
Configure MSR 0xE2 [15], CFG Lock bit.

Overclocking Lock

Enable or disable the Overclocking Lock feature.

GT - Power Management Control

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



RC6 (Render Standby)

Check to enable render standby support.

Maximum GT frequency

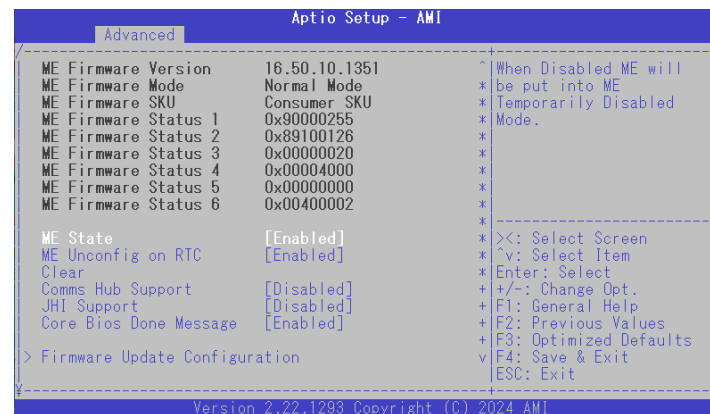
Configure the default setting of Maximum GT frequency.

Disable Turbo GT frequency

Enable or disable the feature of Turbo GT frequency.

PCH-FW Configuration

This section is used to configure the PCH-FW Configuration features.



ME State

Enable or disable the ME state.

ME Unconfig on RTC Clear

Enter or disable the feature of ME Unconfig on RTC Clear.

Comms Hub Support

Enable or disable the feature of Comms Hub Support.

JHI Support

Enable or disable th JHI Support.

Core BIOS Done Message

Enable or disable the message popup after the Core BIOS is done.

Firmware Update Configuration

Enter the Firmware Update Configuration submenu.

PTT Configuration

Enter the PTT Configuration submenu.

FIPS Configuration

Enter the FIPS Configuration submenu.

ME Debug Configuration

Enter the ME Debug Configuration submenu.

Anti-Rollback SVN Configuration

Enter the Anti-Rollback SVN Configuration submenu.

OEM Key Revocation Configuration

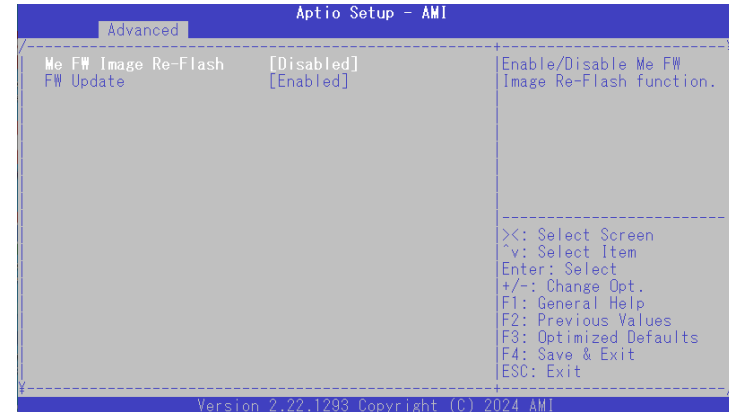
Enter the OEM Key Revocation Configuration submenu.

Extend CSME Measurement to TPM-PCR

Enable or disable the feature of Extend CSME Measurement to TPM-PCR.

Firmware Update Configuration

This section is used to configure the firmware update features.



Me FW Image Re-Flash

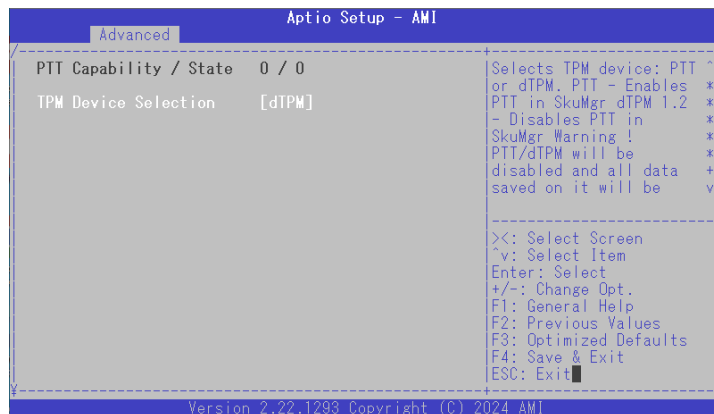
Enable or disable the Me FW Image Re-Flash function.

FW Update

Enable or disable the FW Update function.

PTT Configuration

This section is used to configure the PTT state features.



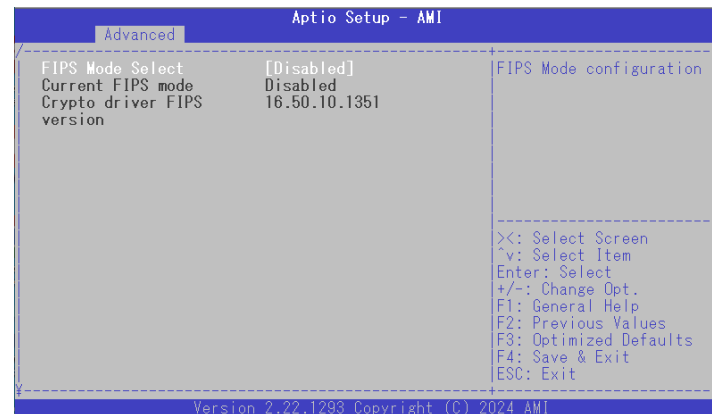
TPM Device Selection

Select a TPM device: PTT or dTPM. Selecting PTT enables PTT in SkuMgr. Selecting dTPM 1.2 disables PTT in SkuMgr.

Warning: PTT or dTPM will be disabled and all data saved on it will be....

FIPS Configuration

This section is used to configure the FIPS mode.

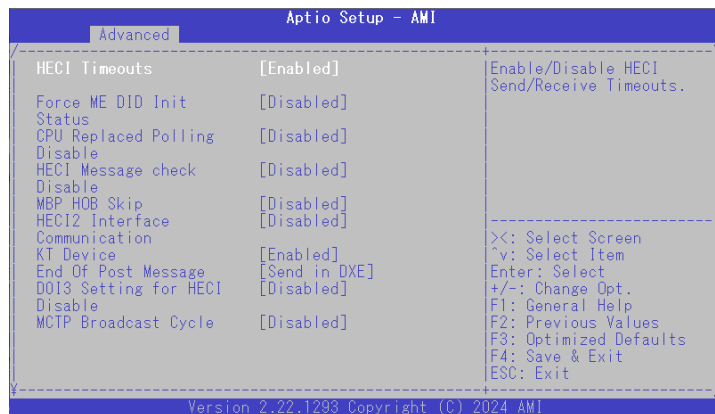


FIPS Mode Select

Enable or disable configuring the FIPS mode.

ME Debug Configuration

This section is used to configure the ME debugging.



HECI Timeouts

Enable or disable HECI sending/receiving timeouts.

Force Me DID Init Status

Enable or disable the Force ME DID initiating status.

CPU Replaced Polling Disable

Enable or disable the CPU replaced polling.

HECI Message Check Disable

Enable or disable HECI message checking.

MBP HOB Skip

Enable or disable the MBP HOB skipping.

HECI2 Interface Communication

Enable or disable the HECI2 interface communication.

KV Device

Enable or disable usage of the KV device.

End of Post Message

Set the message to display after the POST.

DOI3 Setting for HECI Disable

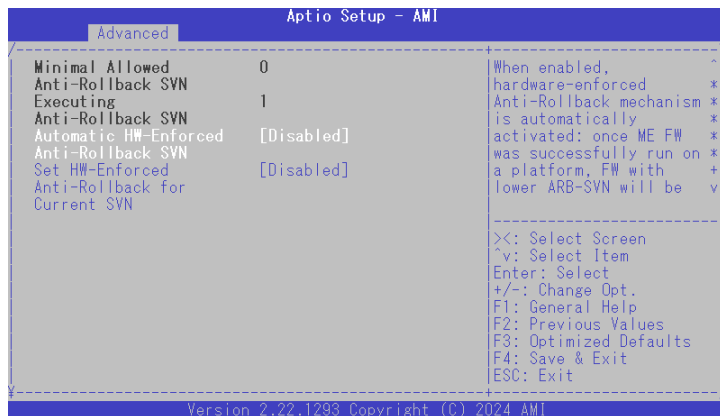
Enable or disable the DOI3 setting while HECI is disabled.

MCTP Broadcast Cycle

Enable or disable the MCTP broadcast cycle.

Anti-Rollback SVN Configuration

This section is used to configure the anti-rollback SVN features.



Automatic HW-Enforced Anti-Rollback SVN

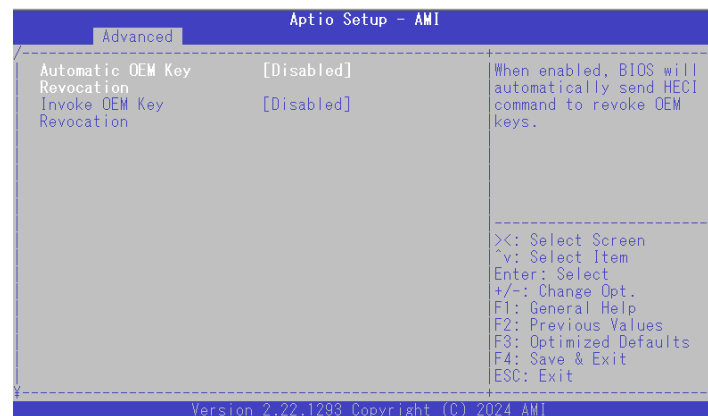
Enable or disable the feature of automatic HW-enforced anti-rollback SVN.

Set HW-Enforced Anti-Rollback for Current SVN

Enable or disable the HW-enforced anti-rollback function for the current SVN.

OEM Key Revocation Configuration

This section is used to configure the OEM key revocation features.



Automatic OEM Key Revocation

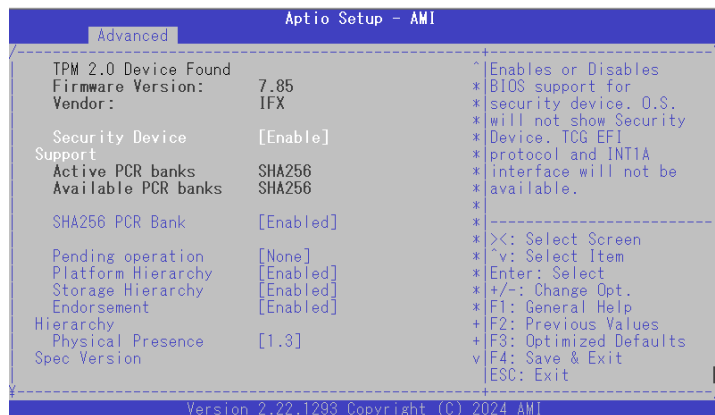
Enable or disable the automated feature for the OEM key revocation.

Invoke OEM Key Revocation

Enable or disable invocation of the OEM key revocation.

Trusted Computing

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



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

Enables or disables SHA256 PCR Bank.

Pending operation

Schedule an operation for the security device.

Platform Hierarchy

Enable or disable the platform hierarchy.

Storage Hierarchy

Enable or disable the storage hierarchy.

Endorsement Hierarchy

Enable or disable the endorsement hierarchy.

Physical Presence Spec Version

Configure the spec version for the Physical Presence.

Device Select

Configure device selection for TPM.

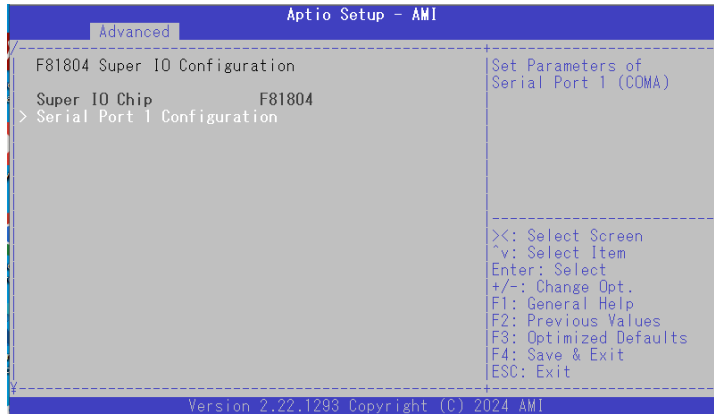
"TPM 1.2" will restrict support to TPM 1.2 devices only.

"TPM 2.0" will restrict support to TPM 2.0 devices only.

"Auto" will support both with the default set to TPM 20. devices if device type is not found.

F81804 Super IO Configuration

This section is used to configure F81804 Super I/O features.

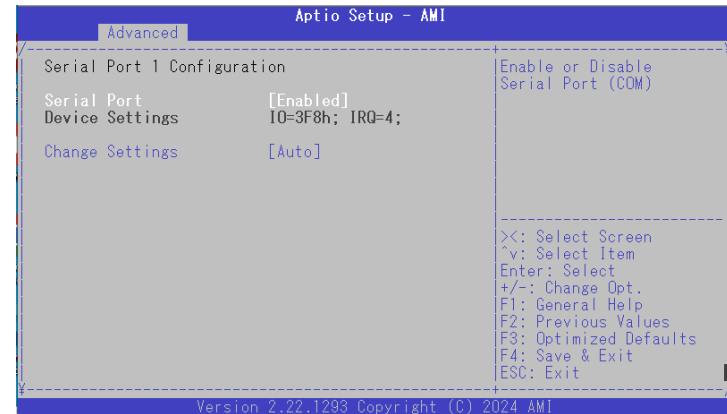


Serial Port 1 configuration

Set the parameters of the Serial Port 1 (COMA).

Serial Port 1 Configuration

This section is used to configure the Serial Port 1.



Serial Port

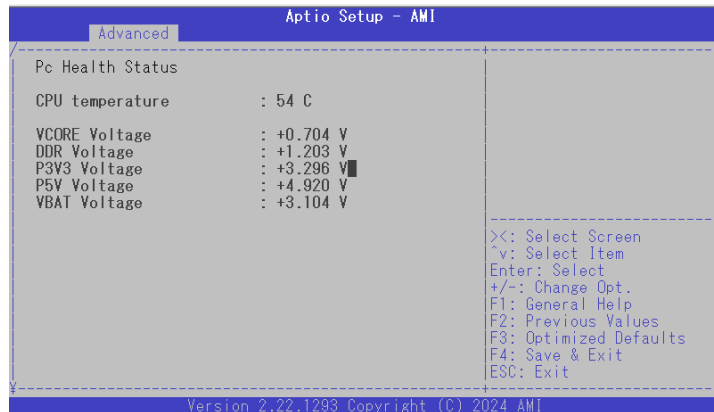
Enable or disable the serial port (COM).

Change Settings

Configure the change settings.

Hardware Monitor

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



P5V

Detect and display 5V voltages.

VBAT

Detect and display the VBAT voltages.

CPU Temperature

Detect and display the current CPU temperature.

Vcore Voltage

Detect and display the output voltages.

DDR Voltage

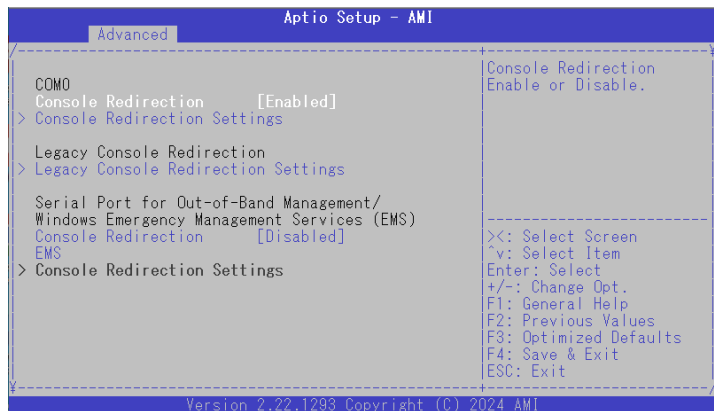
Detect and display the DDR voltages.

P3V3

Detect and display P3V3 voltages.

Serial Port Console Redirection

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



Console Redirection

Enable or disable the console redirection.

Console Redirection Settings

Enter the Console Redirection Settings submenu.

Legacy Console Redirection Settings

Enter the legacy console redirection settings submenu.

Console Redirection EMS

Enable or disable the console redirection EMS.

Console Redirection Settings

This section is used to configure the console redirection features.



Terminal Type

Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode.

Bits per second

Configure the bits per second.

Data Bits

Configure the data bits.

Parity

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

Stop Bits

Configure the bits per second.

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 the VT-UTF8 combo key.

Recorder Mode

Enable or disable the recorder mode.

Resolution 100x31

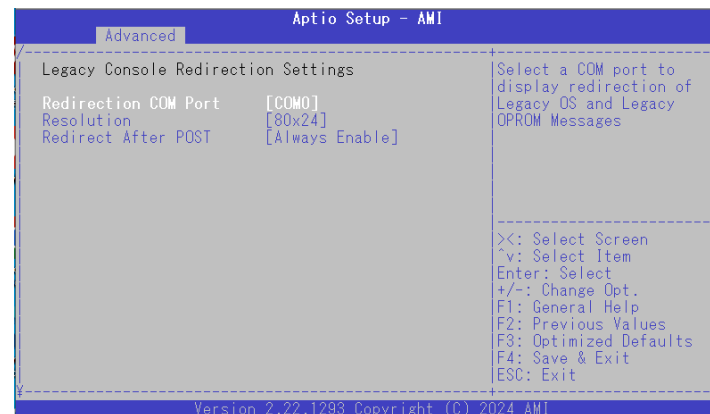
Enable or disable the display resolution of 100x31.

Putty Keypad

Select the Putty keyboard emulation type.

Legacy Console Redirection Settings

This section is used to configure the serial console port redirection.



Redirection COM Port

Select a COM port to display redirection of the legacy OS and legacy DROM messages.

Resolution

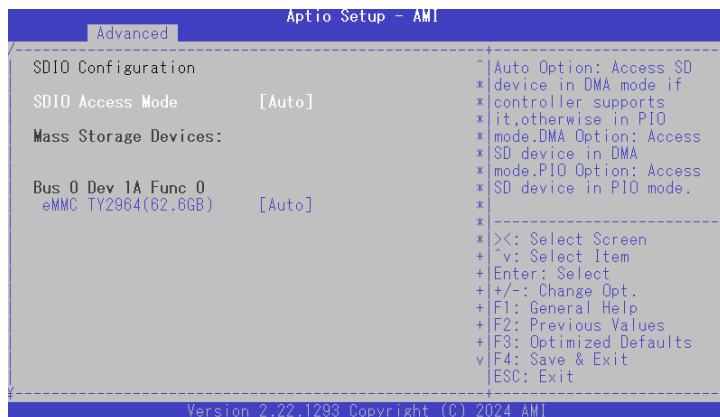
Configure the display resolution.

Redirect After POST

Enable or disable redirection after POST.

SDIO Configuration

This section is used to configure the SDIO features.



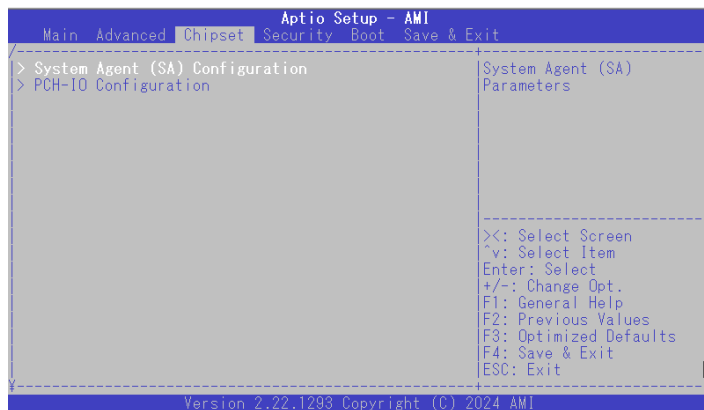
SDIO Access Mode

Auto Option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode.

DMA Option: Access SD device in DMA mode.

PIO Option: Access SD device in PIO mode.

Chipset



System Agent (SA) Configuration

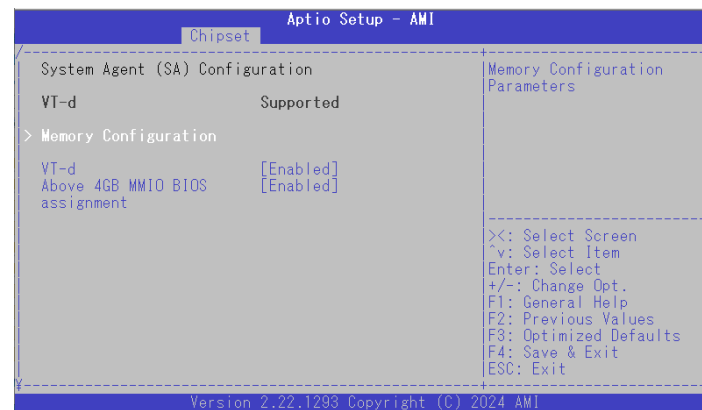
Enter the System Agent (SA) Configuration submenu.

PCH-IO Configuration

Enter the PCH-IO Configuration submenu.

System Agent (SA) Configuration

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



Memory Configuration

Enter the Memory Configuration submenu.

VT-d

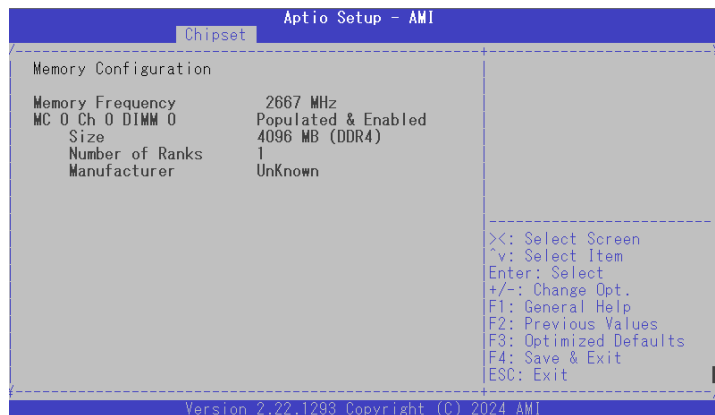
Enable or disable VT-d function.

Above 4GB MMIO BIOS assignment

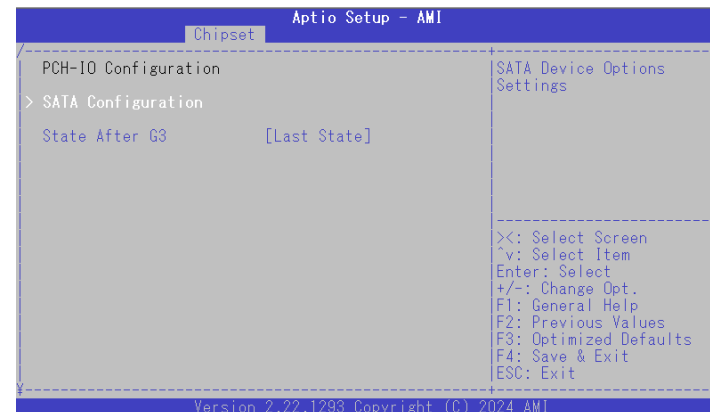
Enable or disable the MMIO BIOS assignment when above 4GB.

Memory Configuration

This section displays all the data related to the system memory, including the frequency, size, number of ranks and its manufacturer.



PCH-IO Configuration



SATA Configuration

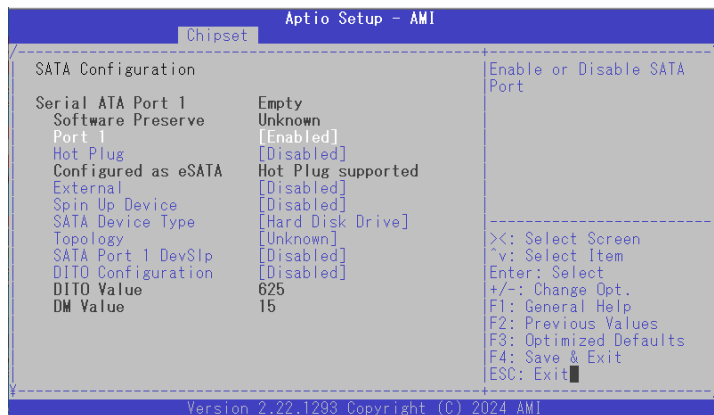
Enter SATA Configuration submenu.

State After G3

Select a state for the system to keep in the state after G3.

SATA Configuration

This section is used to configure SATA features.



Port 1

Enable or disable the SATA Port 1.

Hot Plug

Enable or disable the hot plug feature.

External

Enable or disable the external connection.

Spin Up Device

Enable or disable Spin-up device.

SATA Device Type

Select a SATA device type.

Topology

Enable or disable the hot plug feature.

SATA Port 1 DevSlp

Enable or disable the SATA Port 1 DevSlp.

DITO Configuration

Enable or disable the DITO configuration.

Boot

```

Aptio Setup - AMI
Main Advanced Chipset Security Boot Save & Exit

Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Enabled]

FIXED BOOT ORDER Priorities
Boot Option #1 [USB Key:UEFI:
                JetFlashTranscend 8GB
                8.07, Partition 1]
Boot Option #2 [USB Hard Disk]
Boot Option #3 [USB CD/DVD]
Boot Option #4 [Hard Disk]
Boot Option #5 [USB Floppy]
Boot Option #6 [USB Lan]
Boot Option #7 [UEFI AP:UEFI:
                Built-in EFI Shell]
Boot Option #8 [CD/DVD]
Boot Option #9 [SD]

^ Number of seconds to
* wait for setup
* activation key.
* 65535(0xFFFF) means
* indefinite waiting.
*
* -----
* ><: Select Screen
* ^v: Select Item
* Enter: Select
* +/-: Change Opt.
+ F1: General Help
+ F2: Previous Values
+ F3: Optimized Defaults
v F4: Save & Exit
ESC: Exit

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Setup Prompt Timeout

Configure the seconds of timeout for setup activation key prompt.

Bootup NumLock State

Select the keyboard NumLock state.

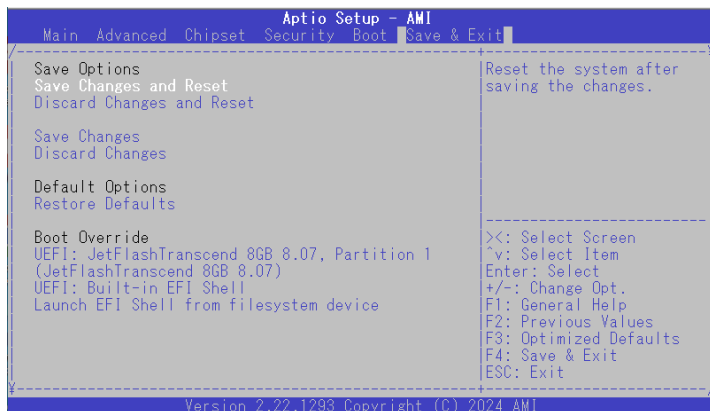
Quiet Boot

Enable or disable the Quiet Boot feature.

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. You can also press <F4> to save and exit Setup.

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. You can also press <ESC> to exit without saving the changes.

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>.

UEFI: Built-in EFI Shell From Filesystem Device

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