USER'S MANUAL

CT-DML01 Series

3.5" Industrial Motherboard With Intel® Core™ Ultra Processors

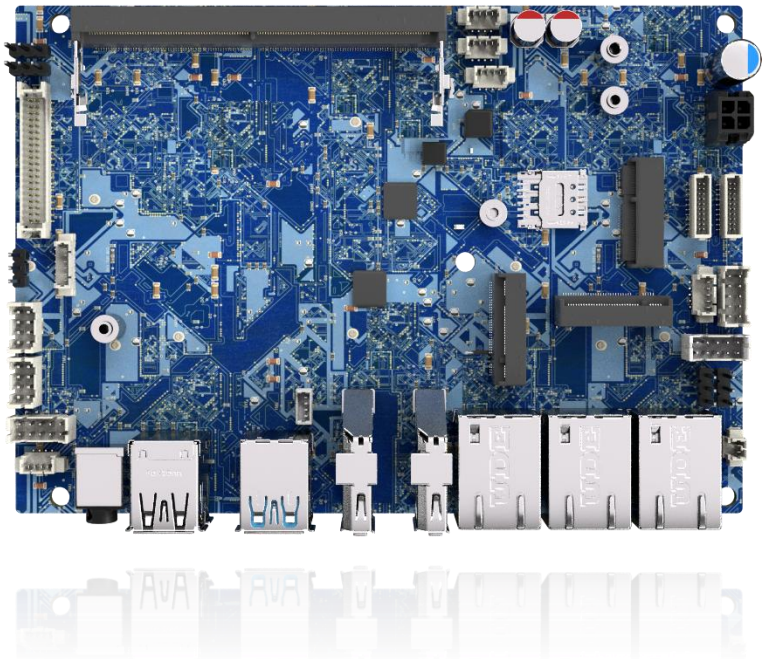


Table of Contents

Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2025/6/10

Disclaimer

All specifications and information in this User's Manual are believed to be accurate and up to date. Premio Inc. does not guarantee that the contents herein are complete, true, accurate or non-misleading. The information in this document is subject to change without notice and does not represent a commitment on the part of Premio Inc.
Premio Inc. disclaims all warranties, express or implied, including, without limitation, those of merchantability, fitness for a particular purpose with respect to contents of this User's Manual. Users must take full responsibility for the application of the product.

Copyright Notice

Trademarks Acknowledgment

Intel®, Celeron® and ATOM® are trademarks of Intel Corporation.
Windows® is registered trademark of Microsoft Corporation.
AMI is trademark of American Megatrend Inc.
IBM, XT, AT, PS/2 and Personal System/2 are trademarks of International Business Machines Corporation
All other products and trademarks mentioned in this manual are trademarks of their respective owners.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. Please recycle to minimize pollution and ensure environment protection.

Regulatory Notices

FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and radiates radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

NOTE

- The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- Shield interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

CE Conformity

Hereby, Premio Inc. declares that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.

WEEE Statement

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2012/19/EU, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life.

Battery Information

Please take special precautions if this product comes with a battery.

- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
- Avoid disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, which can result in an explosion.
- Avoid leaving a battery in an extremely high temperature or extremely low air pressure environment that can result in an explosion or the leakage of flammable liquid or gas.
- Do not ingest battery. If the coin/button cell battery is swallowed, it can cause severe internal burns and can lead to death. Keep new and used batteries away from children.

European Union:

Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.

BSMI:

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

California, USA:

The button cell battery may contain perchlorate material and requires special handling when recycled or disposed of in California.
For further information please visit:
http://www.dtsc.ca.gov/hazardouswaste/perchlorate/

Chemical Substances Information

In compliance with chemical substances regulations, such as the EU REACH Regulation (Regulation EC No. 1907/2006 of the European Parliament and the Council), Premio provides the information of chemical substances in products at:
www.premioinc.com

Environmental Policy

- The product has been designed to enable proper reuse of parts and recycling and should not be thrown away at its end of life.
- Users should contact the local authorized point of collection for recycling and disposing of their end-of-life products.
- Visit the Premio website and locate a nearby distributor for further recycling information.
- Users may also reach us at Premio for information regarding proper Disposal, Take-back, Recycling, and Disassembly of Premio products.

Green Product Features

- Reduced energy consumption during use and stand-by
- Limited use of substances harmful to the environment and health
- Easily dismantled and recycled
- Reduced use of natural resources by encouraging recycling
- Extended product lifetime through easy upgrades
- Reduced solid waste production through take-back policy

Copyright and Trademarks Notice

Technical Support

If a problem arises with your product and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please visit www.premioinc.com

Safety Information

Before installing and using the equipment, please read the following precautions:

- The components included in this package are prone to damage from electrostatic discharge (ESD). Please adhere to the following instructions to ensure successful computer assembly.
- Ensure that all components are securely connected. Loose connections may cause the computer to not recognize a component or fail to start.
- Hold the motherboard by the edges to avoid touching sensitive components.
- It is recommended to wear an electrostatic discharge (ESD) wrist strap when handling the motherboard to prevent electrostatic damage. If an ESD wrist strap is not available, discharge yourself of static electricity by touching another metal object before handling the motherboard.
- Store the motherboard in an electrostatic shielding container or on an anti-static pad whenever the motherboard is not installed.
- Before turning on the computer, ensure that there are no loose screws or metal components on the motherboard or anywhere within the computer case.
- Do not boot the computer before installation is completed. This could cause permanent damage to the components as well as injury to the user.
- If you need help during any installation step, please consult a certified computer technician.
- Always turn off the power supply and unplug the power cord from the power outlet before installing or removing any computer component.
- Keep this user guide for future reference.
- Keep this motherboard away from humidity.
- Make sure that your electrical outlet provides the same voltage as is indicated on the PSU, before connecting the PSU to the electrical outlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- All cautions and warnings on the motherboard should be noted.
- If any of the following situations arises, get the motherboard checked by service personnel:
    - Liquid has penetrated into the computer.
    - The motherboard has been exposed to moisture.
    - The motherboard does not work well or you can not get it work according to user guide.
    - The motherboard has been dropped and damaged.
    - The motherboard has obvious sign of breakage.
- Do not leave this motherboard in an environment above 60°C (140°F), it may damage the motherboard

Technical Support and Assistance

1. Visit the Premio Inc website at www.premioinc.com where you can find the latest information about the product.
2. Contact your distributor, our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:
   - Model name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Conventions Used in this Manual

WARNING This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.

CAUTION This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.

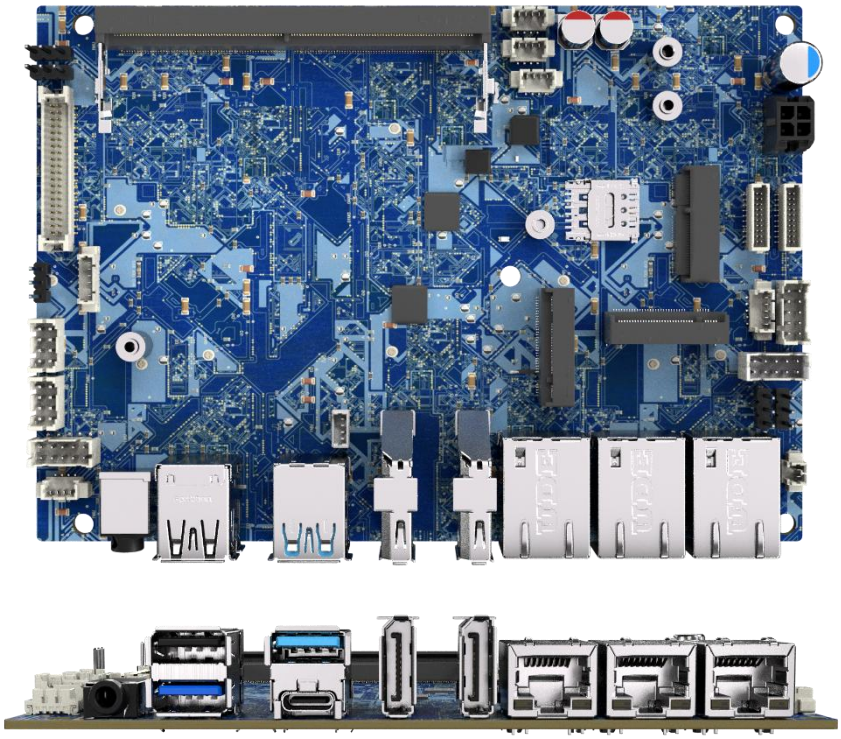
NOTE This indication provides additional information to complete a task easily.

Chapter 1

Product Introductions

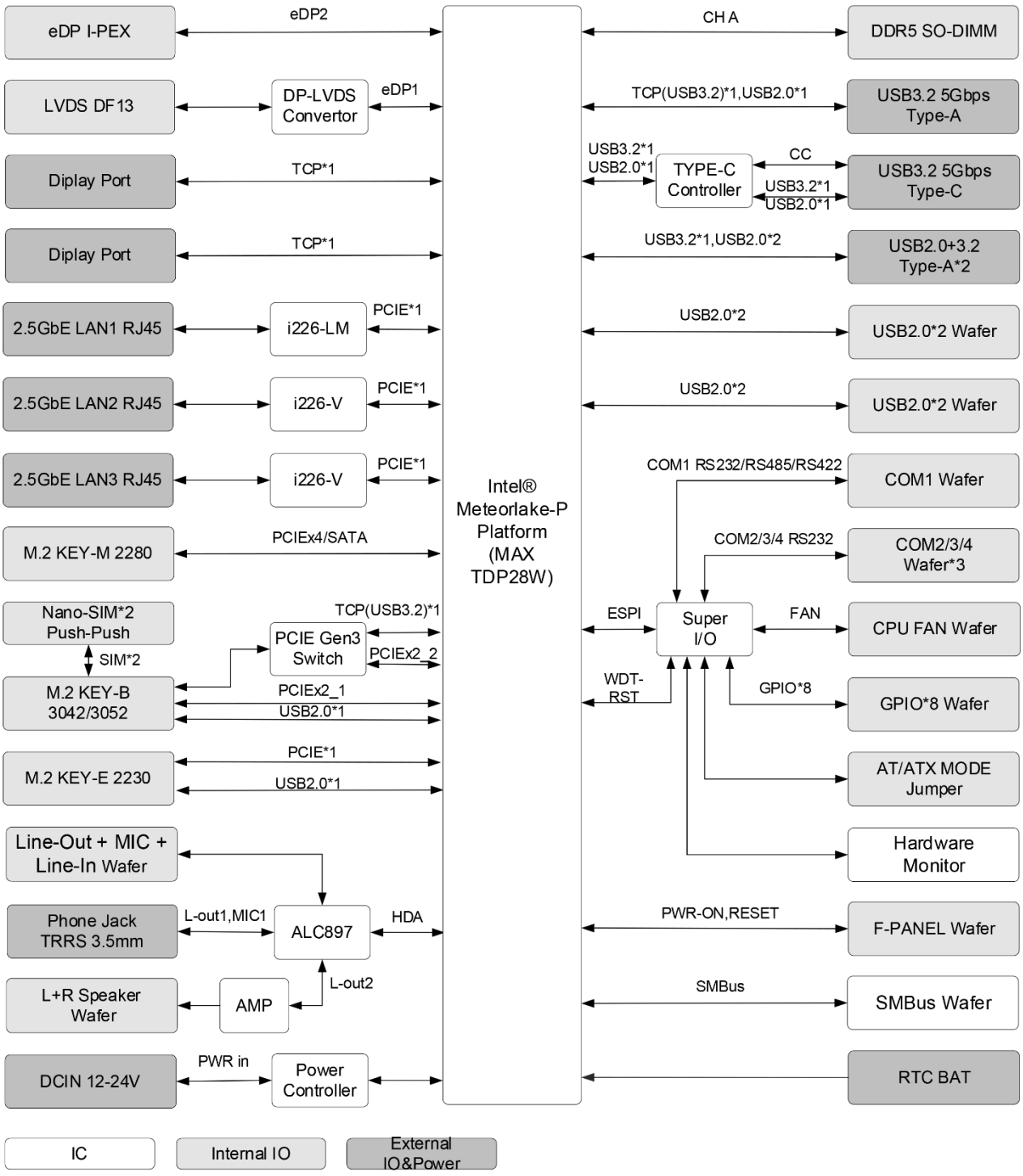
1.1 Product Description

3.5" SBC Industrial Motherboard With Intel® Core™ Ultra Processors, Meteor Lake-U



- Supports Intel® Core™ Ultra Processors, Meteor Lake-U, TDP 15W
- 1x 262-pin DDR5 5600 SO-DIMM. Max. up to 32GB
- 3x Intel® 2.5 GbE
- Quad simultaneous display: 2x DP, LVDS, eDP
- 1x M.2 M Key for NVMe/ SATA, Auto detect
- 1x M.2 B Key for 4G/5G support, 1x M.2 E Key for Wifi/Bluetooth
- 2x SIM Nano Socket
- 1x USB Type-C Gen 1, 2x USB 3.2 Gen 1, 1x USB 2.0
- 4x Internal COM, 1x 8-bit GPIO
- Watchdog timer 1~255sec. system reset
- dTPM 2.0 Supported
- Wide Voltage DC IN 12~24V

1.2 Block Diagram



1.3 Specifications

System

Processor
Support Intel® Core™ Ultra Processors
- Intel® Core™ Ultra 5 Processor 125U 12M Cache, up to 4.30 GHz (2+8+2 core)
- Intel® Core™ Ultra 7 Processor 155U 12M Cache, up to 4.80 GHz (2+8+2 core)

System Chipset	SoC
LAN Chipset	• GbE1: Intel i226-LM 2.5GbE LAN PXE Support • GbE2: Intel i226-V 2.5GbE LAN PXE Support • GbE3: Intel i226-V 2.5GbE LAN PXE Support
Audio Codec	Realtek® ALC897 CODEC
System Memory	1x 262-Pin DDR5 5600MHz SO-DIMM. Max. up to 32GB (Non-ECC)
Watchdog	Software Programmable Supports 1~255 sec. System Reset
TPM	dTPM2.0, fTPM2.0

Display

Display Port	2x DP++ 1.4 up to 3040x2160 @60Hz
eDP	1x eDP 1.4b, max 3840x2160 @60Hz
LVDS	1x LVDS up to 1920x1200 @60Hz, dual channel
Multiple Display	Quad simultaneous display

Storage

M.2	1x M.2 M Key (2280, PCIe x4 Gen 4/SATA) support for NVMe/SATA SSD, Auto Detect

Expansion

M.2	• 1 x M.2 B Key (3042/3052, PCIe x2+USB 3.0+USB 2.0) support for 4G/5G • 1 x M.2 E Key (2230, PCIe+USB 2.0) for Wifi/Bluetooth

Physical

Dimensions	146 mm x 102 mm

Rear I/O

Audio	1x Line-Out +MIC
Display Port	2x DisplayPort
LAN	3x 2.5GbE RJ45
SIM	2x SIM Nano Socket
USB	1x USB 3.2 Type-C (5 Gbps) 2x USB 3.2 Gen 1 (5 Gbps) 1x USB 2.0

Internal I/O

COM	4x COM (Internal) COM1: RS232/422/485 COM2-4: RS232
GPIO	1x GPIO 8-pin header (4 In/4 Out)
USB	4x USB 2.0 Internal 2.0PH Headers

Operating System

Windows	Microsoft® Windows® 10 Windows 11
Linux	Linux Ubuntu 22.04

Power

Power Adapter	AC/DC Adpater 20V/7.5A, 150W (Optional)
Power Mode	AT/ ATX
Power Supply Voltage	DC IN 12~24V
Power Connector	Micro fit pitch 3.0 2x2 pin
Power Protection	OVP (Over Voltage Protection) OCP (Over Current Protection) Reverse Protection Surge Protection

Environment

Form Factor	3.5" Embedded SBC
Operating Temperature	0°C to 60°C
Storage Temperature	-20°C to 75°C
Relative Humidity	10% to 95% (non-condensing)
Certification	CE, FCC Class A, ICES-003, UKCA

1.4 Available Models

Ordering Information	DESCRIPTION
• CT-DML01-125U-KIT	Industrial Motherboard with Intel® Core Ultra 5 125U 3.5" SBC Board Ver1.0 Packing Kit w/MB
• CT-DML01-155U-KIT	Industrial Motherboard with Intel® Core Ultra 7 155U 3.5" SBC Board Ver1.0 Packing Kit w/MB

1.5 Optional Accessories

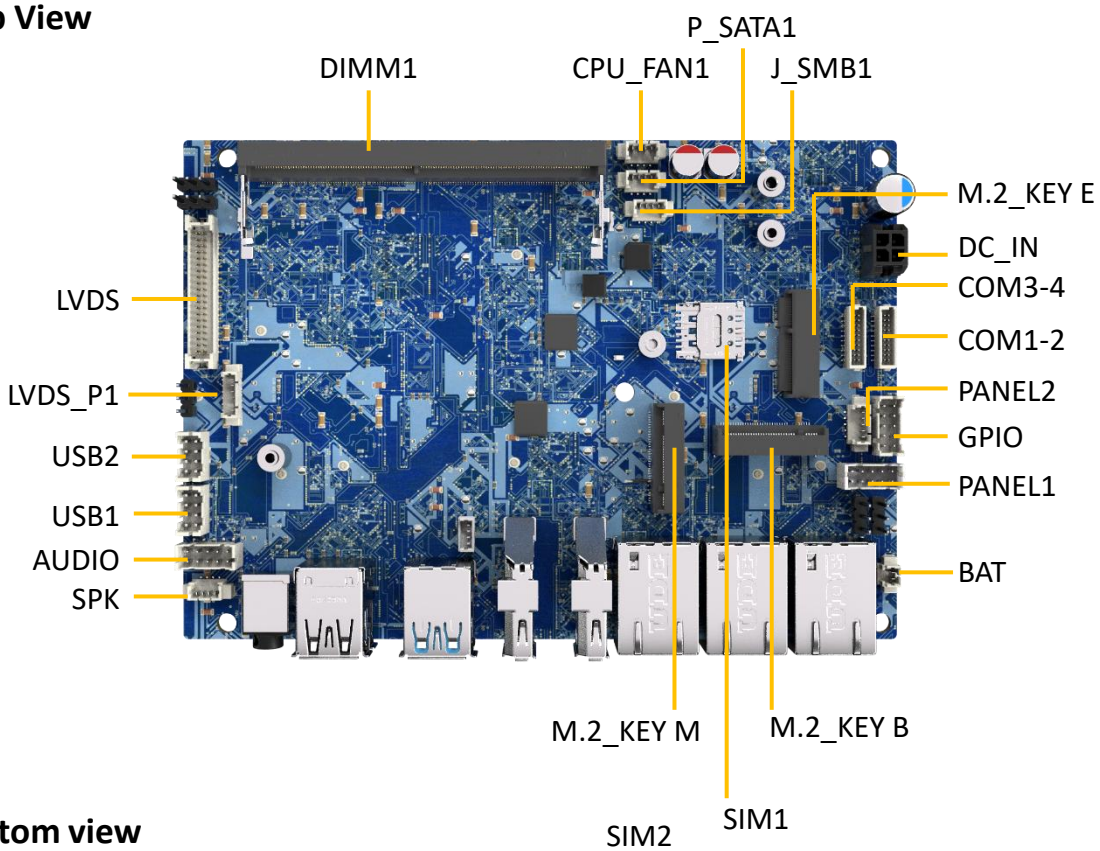
1-E09A15001	AC-DC Power Adapter W/Lock 20V_7.5A_150W
1-TPCD00008	Power Supply Cord_3Pin_1830mm_IEC-320-C5 To AC US Type

Chapter 2

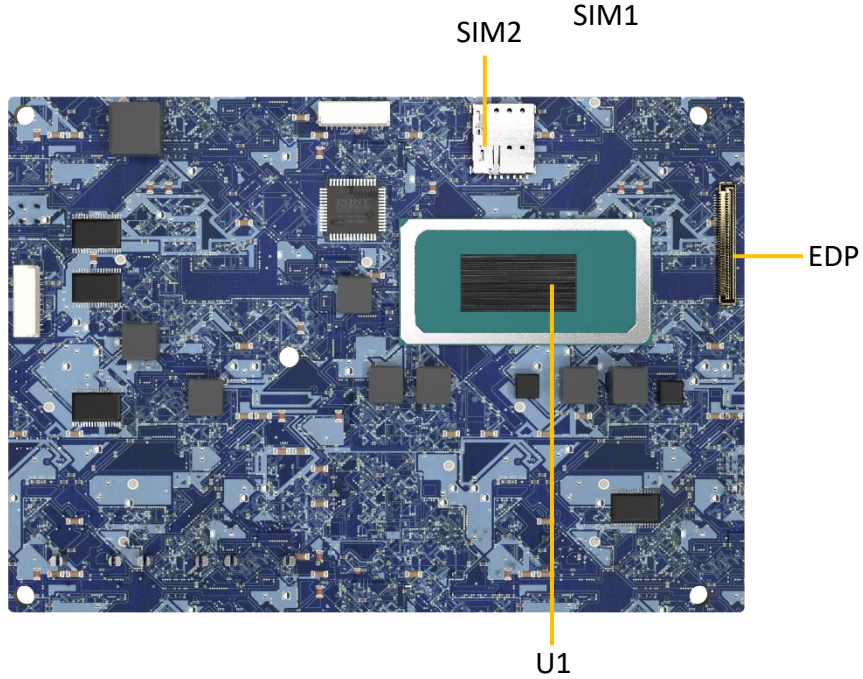
Switches and Connectors

2.1 Switch and Connector Locations

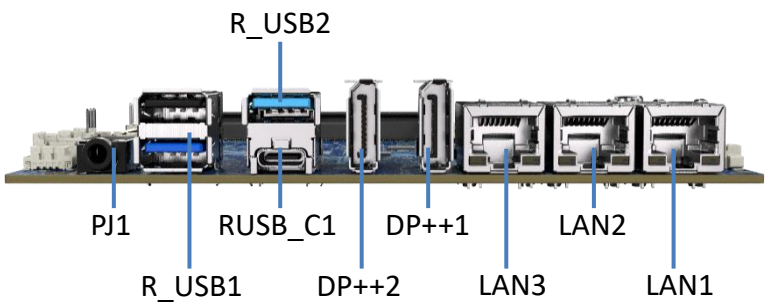
2.1.1 Top View



2.1.2 Bottom view



2.1.3 Rear I/O

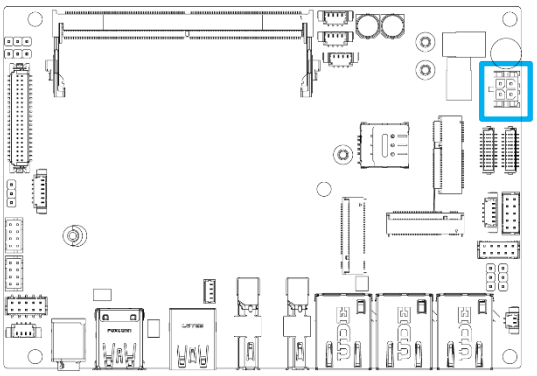


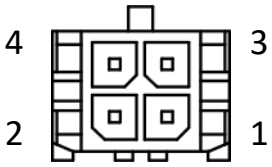
2.2 Connector / Switch Definition

Connector Location	Definition
U1	CPU
DIMM1	DDR5 SO-DIMM Slot
DC_IN	DC 12-24V Power Input 4P Micro-Fit Connector
EDP	eDP Signal I-PEX Connector
LVDS	LVDS Signal DF13 Wafer
LVDS_P1	LVDS Backlight Control Wafer
DP++1	DP++ Upright Connector
DP++2	DP++ Upright Connector
PJ1	Line-Out + MIC 2in1 3.5mm Jack
AUDIO	Front Audio Wafer (Line-Out + MIC + Line-In)
SPK	Left+ Right Amplifier Wafer
M.2_KEY M	M.2 M KEY (PCIE x4/SATA, Auto Detect, 2280)
M.2_KEY B	M.2 B KEY (PCIE x2/USB3.0+USB2.0, 3042/3052)
M.2_KEY E	M.2 E KEY (PCIE+USB2.0, 2230)
SIM1	Nano SIM Card Slot1
SIM2	Nano SIM Card Slot2
LAN1	2.5GbE LAN RJ45 Connector1
LAN2	2.5GbE LAN RJ45 Connector2
LAN3	2.5GbE LAN RJ45 Connector3
R_USB1	Dual USB3.0+USB2.0 TYPE-A Connector
R_USB2	USB3.0 TYPE-A Connector
RUSB_C1	USB3.0 TYPE-C Connector
USB1	Front Dual USB2.0 Wafer
USB2	Front Dual USB2.0 Wafer
COM1-2	COM1+COM2 Wafer
COM3-4	COM3+COM4 Wafer
GPIO	GPIO Wafer
PANEL1	Front Panel Wafer1
PANEL2	Front Panel Wafer2
CPU_FAN1	CPU FAN Wafer

2.3 Definition of Connectors

2.3.1 DC 12V/24V Power Input: Micro-Fit, 2*2P, 3.00 mm

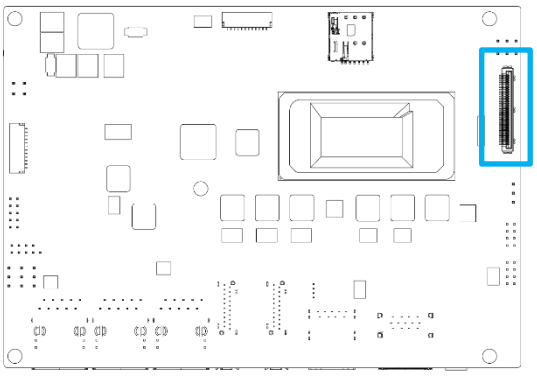


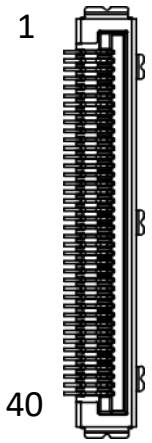


DC_IN

Pin	Definition	Pin	Definition
1	GND	2	GND
3	DC_IN	4	DC_IN

2.3.2 eDP: I-PEX, 40P, 0.5mm

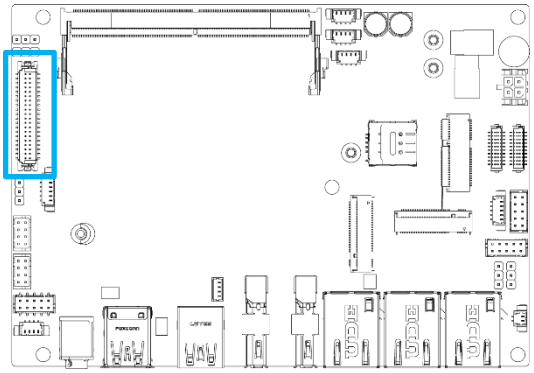


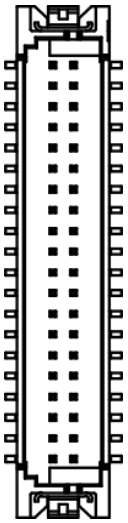


EDP

Pin	Definition	Pin	Definition
1	VCC3.3/VCC5[1]	21	EDP2_TX1+
2	VCC3.3/VCC5[1]	22	GND
3	VCC3.3/VCC5[1]	23	EDP2_TX0-
4	VCC3.3/VCC5[1]	24	EDP2_TX0+
5	VCC3.3/VCC5[1]	25	GND
6	VCC3.3	26	EDP2_AUX+
7	SMB_SCL	27	EDP2_AUX-
8	SMB_SDA	28	GND
9	GND	29	VCC3.3
10	EDP_HPD	30	GND
11	N/C	31	VCC12
12	N/C	32	GND
13	GND	33	GND
14	EDP2_TX3-	34	VCC5
15	EDP2_TX3+	35	GND
16	GND	36	EPD2_BKLT_CTL
17	EDP2_TX2-	37	EPD2_BKL_EN
18	EDP2_TX2+	38	VCC12
19	GND	39	VCC3.3
20	EDP2_TX1-	40	GND

2.3.3 LVDS: DF13, 20*2P, 1.25mm

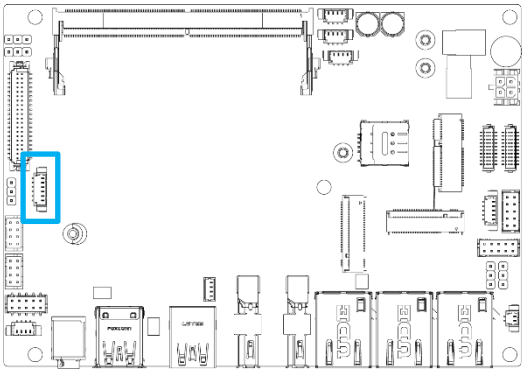


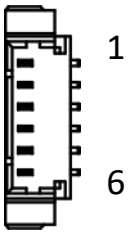


LVDS

Pin	Definition	Pin	Definition
1	VCC12	2	VCC12
3	VCC3.3/VCC5[1]	4	VCC12
5	VCC3.3/VCC5[1]	6	VCC3.3/VCC5[1]
7	LVDS_SPC	8	LVDS_SPD
9	LVDS_BKLT_CTL	10	LVDS_BKL_EN
11	VCC3.3	12	LVDS_DET
13	LVDS_A_DATA1+	14	LVDS_A_DATA0+
15	LVDS_A_DATA1-	16	LVDS_A_DATA0-
17	GND	18	GND
19	LVDS_A_DATA3+	20	LVDS_A_DATA2+
21	LVDS_A_DATA3-	22	LVDS_A_DATA2-
23	GND	24	GND
25	LVDS_B_DATA1+	26	LVDS_B_DATA0+
27	LVDS_B_DATA1-	28	LVDS_B_DATA0-
29	GND	30	GND
31	LVDS_B_DATA3+	32	LVDS_B_DATA2+
33	LVDS_B_DATA3-	34	LVDS_B_DATA2-
35	GND	36	GND
37	LVDS_A_CLK+	38	LVDS_B_CLK+
39	LVDS_A_CLK-	40	LVDS_B_CLK-

2.3.4 LVDS Backlight Control: Wafer, 6*1P, 1.25mm

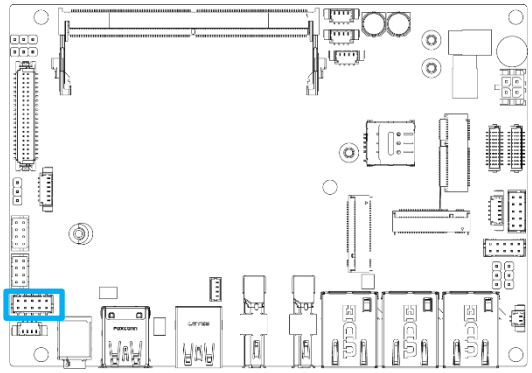


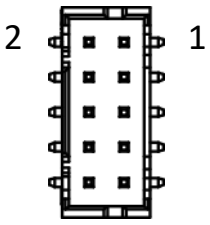


LVDS_P1

Pin	Definition	Pin	Definition
1	VCC5/VCC12[1]	4	LVDS_BKLT_CTL
2	VCC5/VCC12[1]	5	GND
3	LVDS_BKL_EN	6	GND

2.3.5 Front Audio: Wafer,(Line-Out + MIC + Line-In) 5*2P, 2.00mm

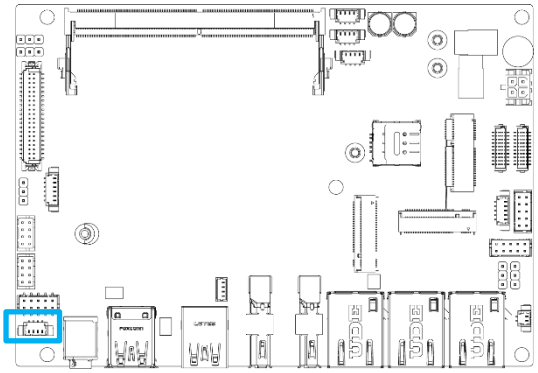


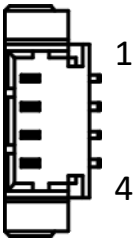


AUDIO

Pin	Definition	Pin	Definition
1	LINE_IN_R	2	MIC_IN2_R
3	LINE_IN_L	4	MIC_IN2_L
5	LINE_OUT_R	6	MIC2_JD
7	LINE_OUT_L	8	LINE_JD
9	LINE2_JD	10	GND_AUD

2.3.6 Left+ Right Amplifier: Wafer 4*1P, 1.25mm

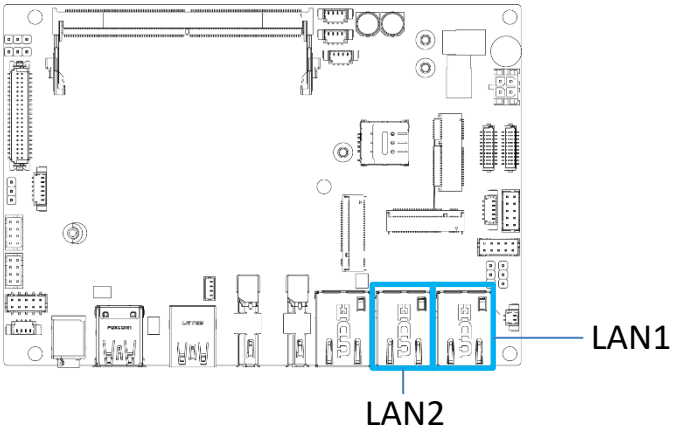


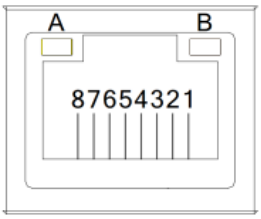


SPK

Pin	Definition	Pin	Definition
1	SPK_OUT_L-	3	SPK_OUT_R-
2	SPK_OUT_L+	4	SPK_OUT_R+

2.3.7 2.5GbE LAN RJ45 Connector1





LAN1

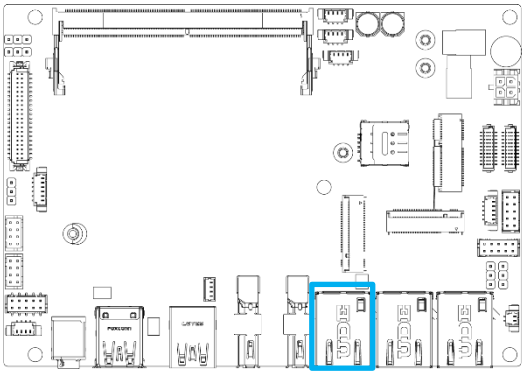
Pin	Definition		Pin	Definition	
1	MDI0+		4	MDI2-	
2	MDI0-		5	MDI1-	
3	MDI1+		7	MDI3+	
4	MDI2+		8	MDI3-	
A	Active LED	ACT: Twinkling Yellow	B	Speed LED	1000M: Turn Orange
		Only LINK: Lights On			1000M: Turn Green
		Only LINK: Lights Off			10M: Lights Off

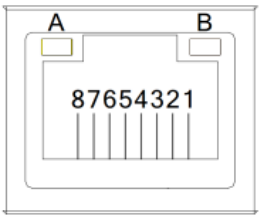
2.3.8 2.5GbE LAN RJ45 Connector2

LAN2

Pin	Definition		Pin	Definition	
1	MDI0+		4	MDI2-	
2	MDI0-		5	MDI1-	
3	MDI1+		7	MDI3+	
4	MDI2+		8	MDI3-	
A	Active LED	ACT: Twinkling Yellow	B	Speed LED	1000M: Turn Orange
		Only LINK: Lights On			1000M: Turn Green
		Only LINK: Lights Off			10M: Lights Off

2.3.9 2.5GbE LAN RJ45 Connector3

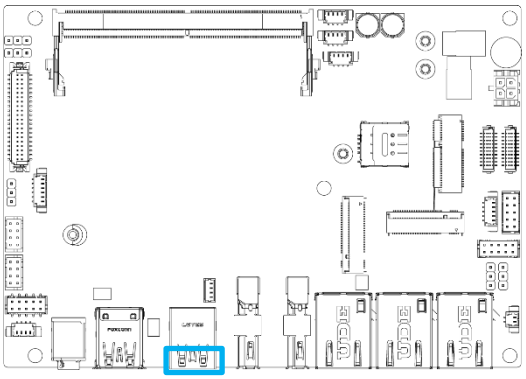


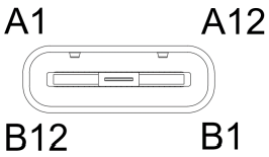


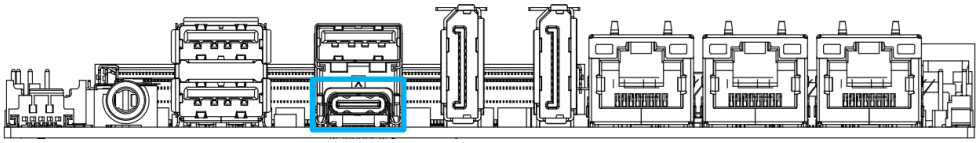
LAN3

Pin	Definition		Pin	Definition	
1	MDI0+		4	MDI2-	
2	MDI0-		5	MDI1-	
3	MDI1+		7	MDI3+	
4	MDI2+		8	MDI3-	
A	Active LED	ACT: Twinkling Yellow	B	Speed LED	1000M: Turn Orange
		Only LINK: Lights On			1000M: Turn Green
		Only LINK: Lights Off			10M: Lights Off

2.3.10 USB3.0 TYPE-C Connector



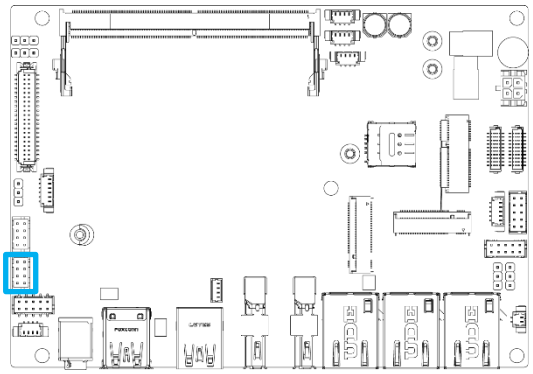


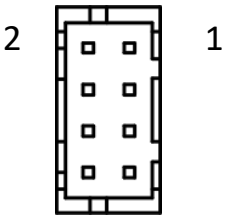


RUSB_C1

Pin	Definition	Pin	Definition
A1	GND	B1	GND
A2	SS_C1_TX1+	B2	SS_C1_TX2+
A3	SS_C1_TX1-	B3	SS_C1_TX2+
A4	VBUS	B4	VBUS
A5	C1_CC1	B5	C1_CC2
A6	USB2.0+	B6	USB2.0+
A7	USB2.0-	B7	USB2.0-
A8	N/C	B8	N/C
A9	VBUS	B9	VBUS
A10	SS_C1_RX2+	B10	SS_C1_RX1+
A11	SS_C1_RX2-	B11	SS_C1_RX1-
A12	GND	B12	GND

2.3.11 Front Dual USB2.0: Wafer, 4*2P, 2.00mm

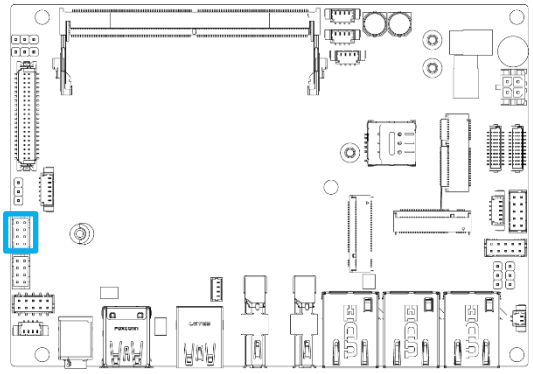


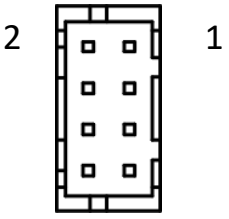


USB1

Pin	Definition	Pin	Definition
1	GND	2	5V
3	USB_0+	4	USB_1-
5	USB_0-	6	USB_1+
7	5V	8	GND

2.3.12 Front Dual USB2.0: Wafer, 4*2P, 2.00mm

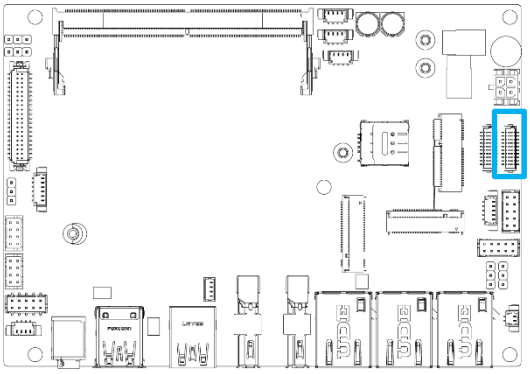


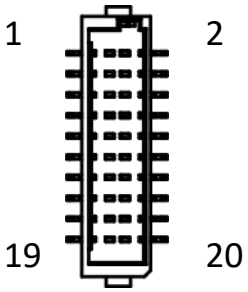


USB2

Pin	Definition	Pin	Definition
1	GND	2	5V
3	USB_0+	4	USB_1-
5	USB_0-	6	USB_1+
7	5V	8	GND

2.3.13 COM1+COM2: Wafer, 10*2P, 1.00mm

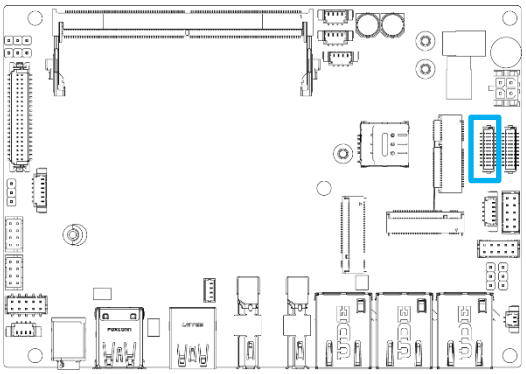


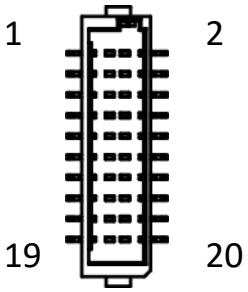


COM1-2

Pin	Definition	Pin	Definition
1	COM1_RS232_DCD/ COM1_RS422_TXD-/ COM1_RS485_TXD-	2	COM2_RS232_DCD
3	COM1_RS232_RXD/ COM1_RS422_TXD+/ COM1_RS485_TXD+	4	COM2_RS232_RXD
5	COM1_RS232_TXD/ COM1_RS422_RXD+	6	COM2_RS232_TXD
7	COM1_RS232_DTR/ COM1_RS422_RXD+	8	COM2_RS232_DTR
9	GND	10	GND
11	COM1_RS232_DSR	12	COM2_RS232_DSR
13	COM1_RS232_RTS	14	COM2_RS232_RTS
15	COM1_RS232_CTS	16	COM2_RS232_CTS
17	COM1_RS232_RI	18	COM2_RS232_RI
19	N/C	20	N/C

2.3.14 COM3+COM4: Wafer, 10*2P, 1.00mm

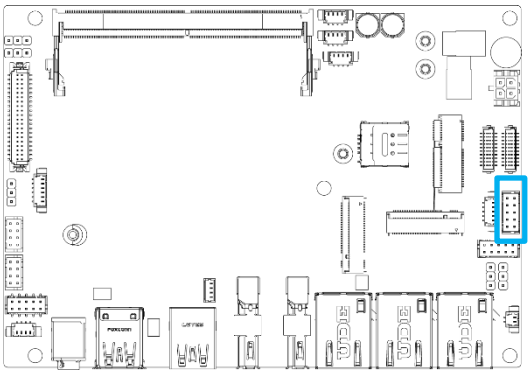


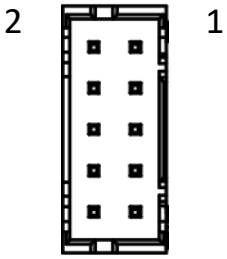


COM3-4

Pin	Definition	Pin	Definition
1	COM3_RS232_DCD	2	COM4_RS232_DCD
3	COM3_RS232_RXD	4	COM4_RS232_RXD
5	COM3_RS232_TXD	6	COM4_RS232_TXD
7	COM3_RS232_DTR	8	COM4_RS232_DTR
9	GND	10	GND
11	COM3_RS232_DSR	12	COM4_RS232_DSR
13	COM3_RS232_RTS	14	COM4_RS232_RTS
15	COM3_RS232_CTS	16	COM4_RS232_CTS
17	COM3_RS232_RI	18	COM4_RS232_RI
19	N/C	20	N/C

2.3.15 GPIO: Wafer, 5*2P, 2.00mm

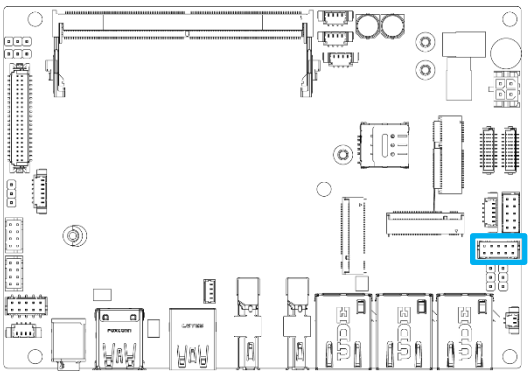


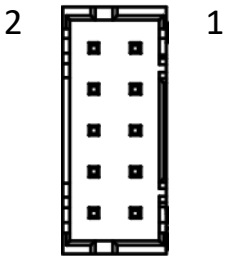


GPIO

Pin	Definition	Pin	Definition
1	GPO7	2	GPO3
3	GPO6	4	GPO2
5	GPO5	6	GPO1
7	GPO4	8	GPO0
9	GND	10	VCC5

2.3.16 Front Panel: Wafer, 5*2P, 2.00mm

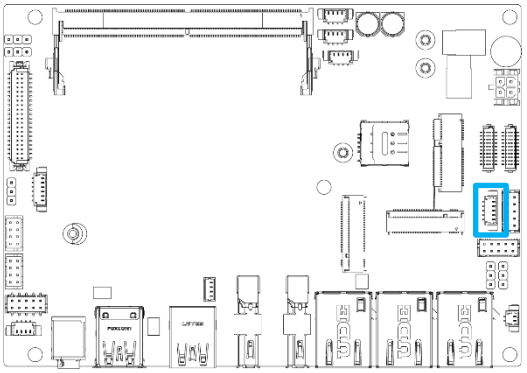


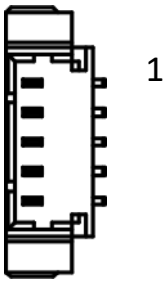


F_PANEL1

Pin	Definition	Pin	Definition
1	N/C		
3	Reset+	4	Power On-
5	GND	6	Power On+
7	HDD LED-	8	Sus LED
9	HDD LED+	10	Power LED

2.3.17 Front Panel: Wafer, 5*1P, 1.25mm

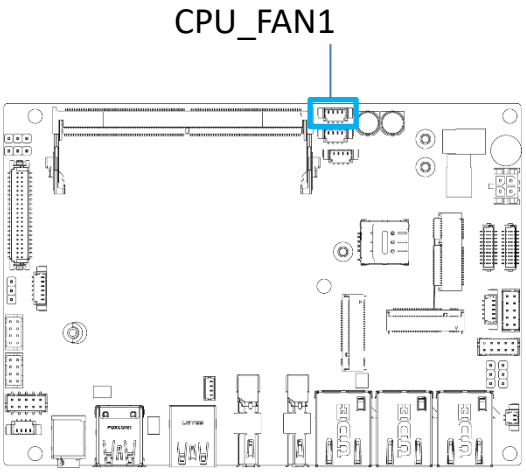


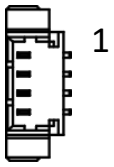


F_PANEL2

Pin	Definition	Pin	Definition
1	VCC5	2	Power On_N
3	GND	4	VCC3.3 STB
5	Reset_N		

2.3.18 CPU FAN Wafer

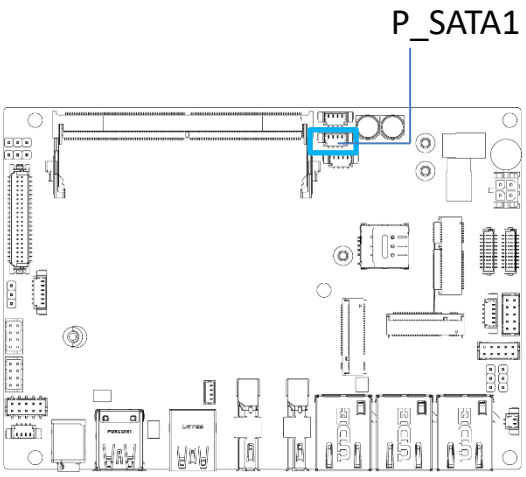


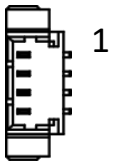


CPU_FAN1

Pin	Definition	Pin	Definition
1	GND	3	FAN Speed Detection
2	VCC12	4	FAN Speed Control

2.3.19 SATA Power Wafer

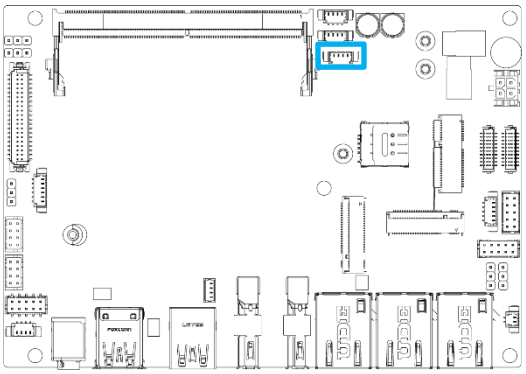


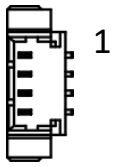


P_SATA1

Pin	Definition	Pin	Definition
1	VCC5S	3	GND
2	VCC5S	4	GND

2.3.20 SMBus Wafer

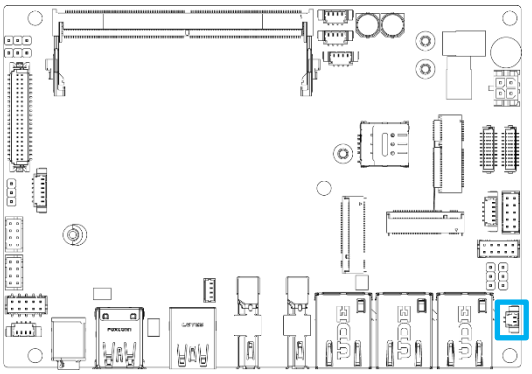


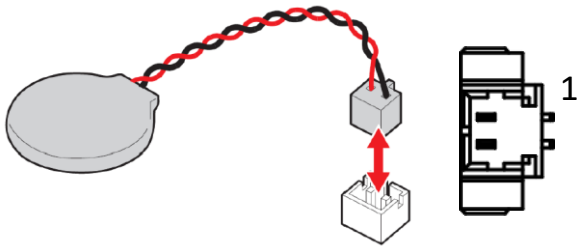


J_SMB1

Pin	Definition	Pin	Definition
1	VCC5	3	SMB_SDA
2	SMB_SCL	4	GND

2.3.21 CMOS Battery Wafer





BAT1

Pin	Definition	Pin	Definition
1	VCC_BAT	2	GND

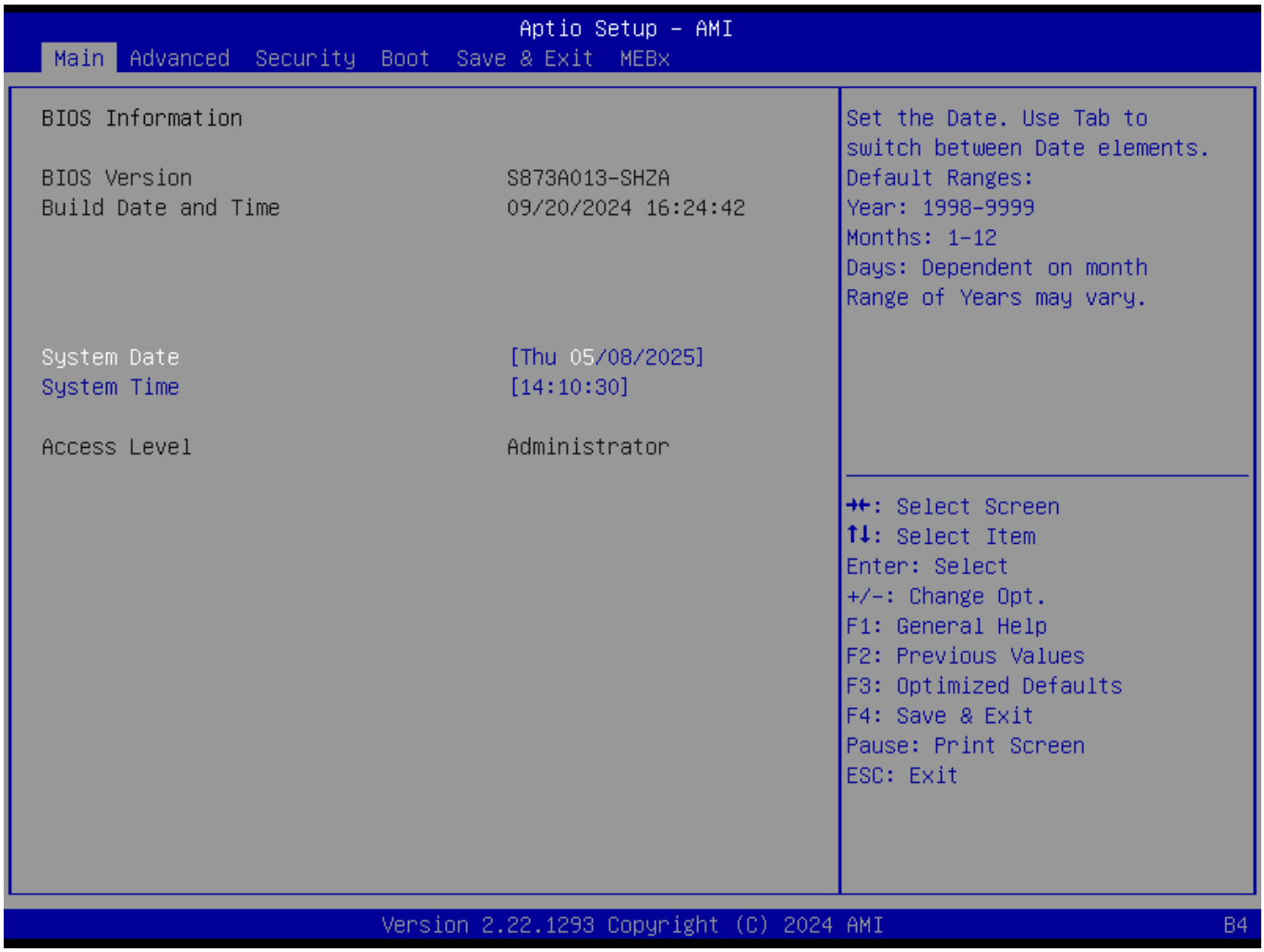
Chapter 3

System BIOS

3.1 Description of the BIOS Options

Due to the differences in the specific model of the motherboard and the update of the BIOS version, there may be a few menus that do not match this manual, please take the actual basis.

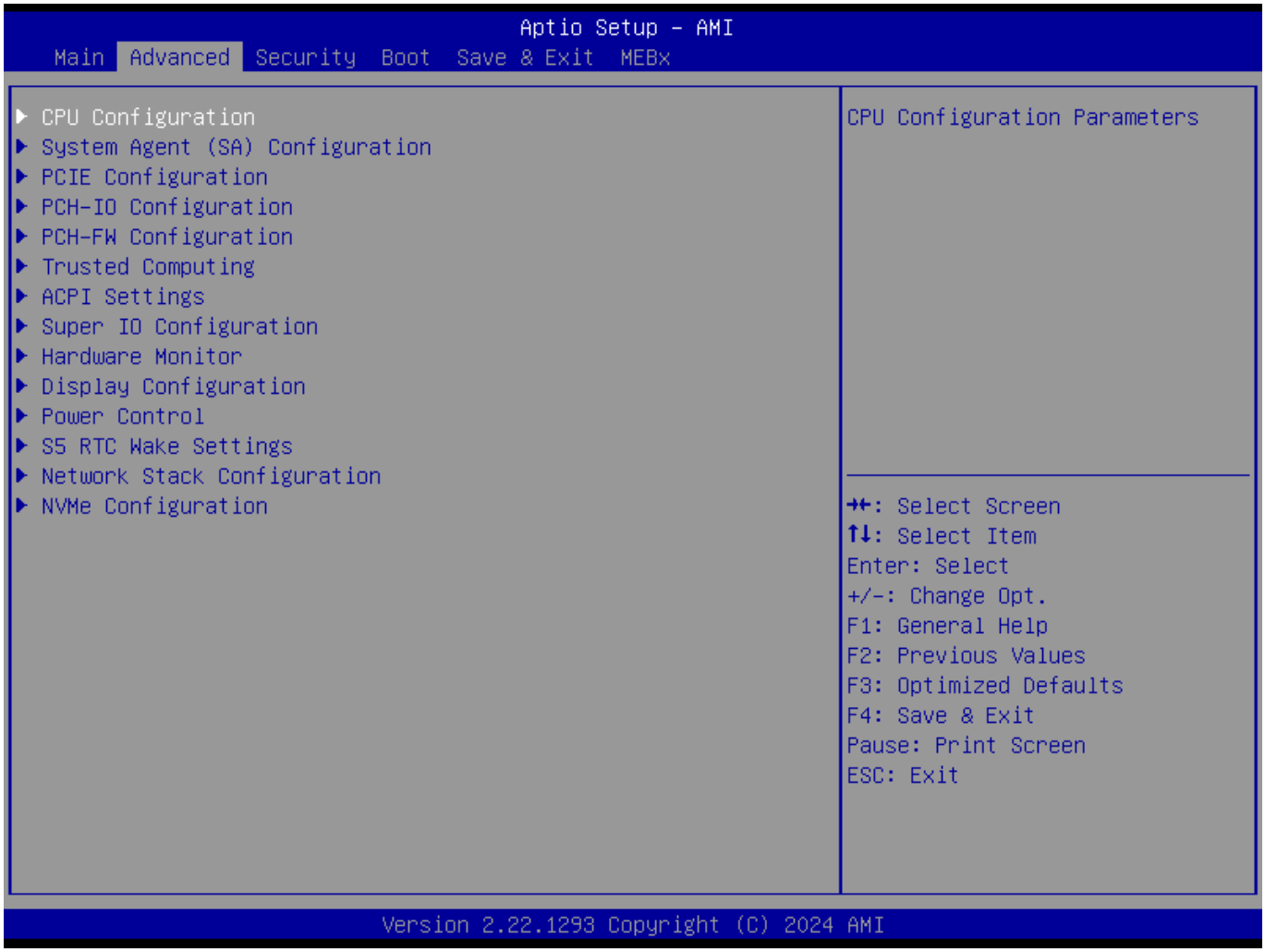
3.1.1 Main



This menu contains the following information:

- BIOS Version
  Display the BIOS version information.
- Build Date and Time
  Display the BIOS Build date and time.
- System Date
  Set the date. Use Tab to switch between date elements. Default ranges: Year: 1998-9999
  Months: 1-12
  Days: Dependent on month
  Range of Years may vary.
- System Time
  Set the time. Use Tab to switch between time elements.
- Access Level
  Display the current access level to BIOS Setup Utility.

3.2 Advanced



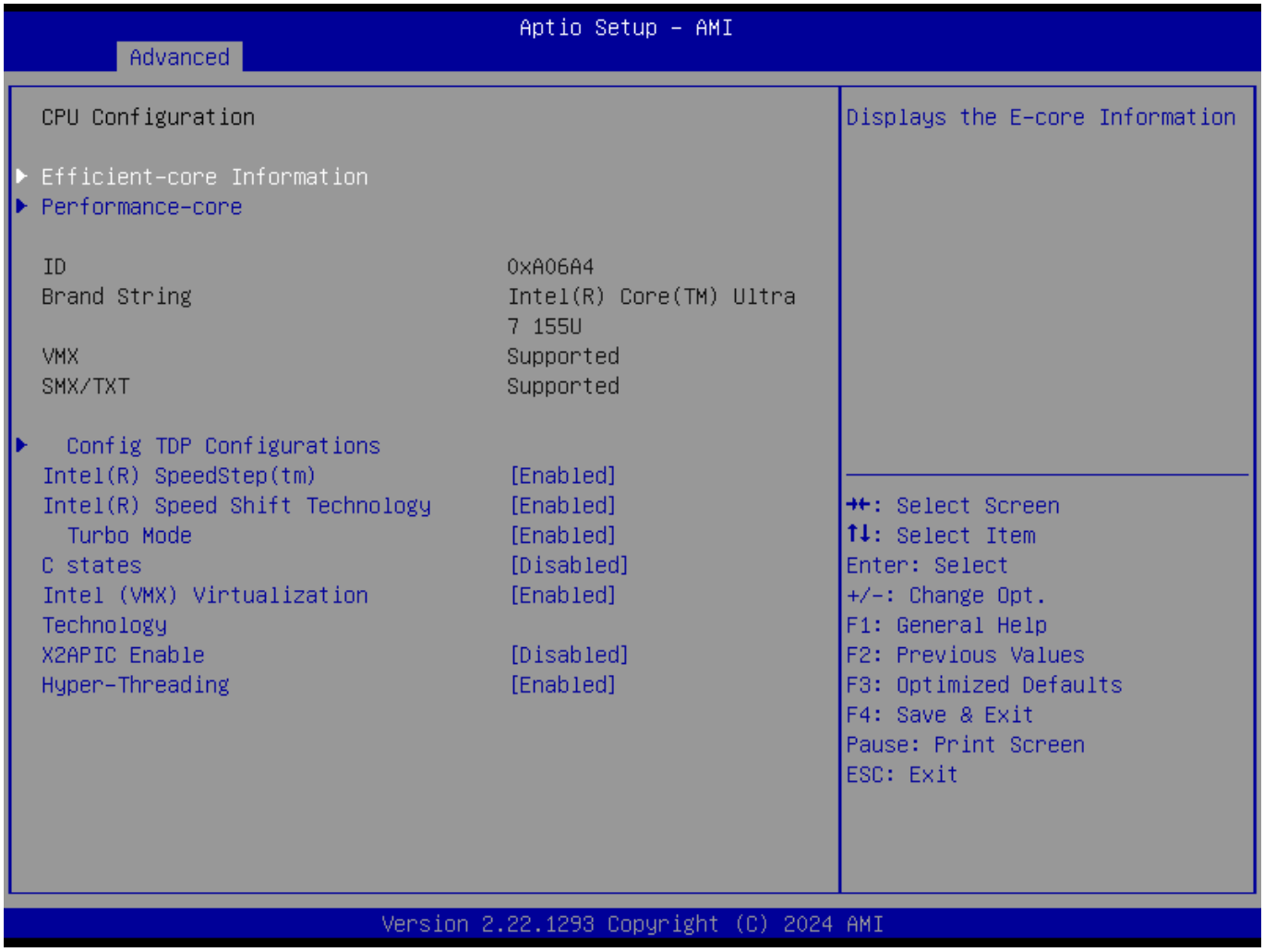
This menu contains the following information:

- CPU Configuration
  CPU Configuration Parameters.
- System Agent (SA) Configuration
  System Agent (SA) Parameters.
- PCIE Configuration
  PCIE Parameters.
- PCH-IO Configuration
  PCH Parameters.
- PCH-FW Configuration
  Configure Management Engine Technology Parameters.
- Trusted Computing
  Trusted Computing Settings.
- ACPI Settings
  System APCI Parameters.
- Super IO Configuration
  System Super IO Chip Parameters.
- Hardware Monitor Monitor
  hardware status.
- Display Configuration
  Display Configuration Parameters.
- Power Control
- S5 RTC Wake Settings

Enable system to wake from S5 using RTC alarm.

- Network Stack Configuration
  Network Stack Settings.
- NVMe Configuration
  NVMe Device Options Settings.

3.2.1 CPU Configuration

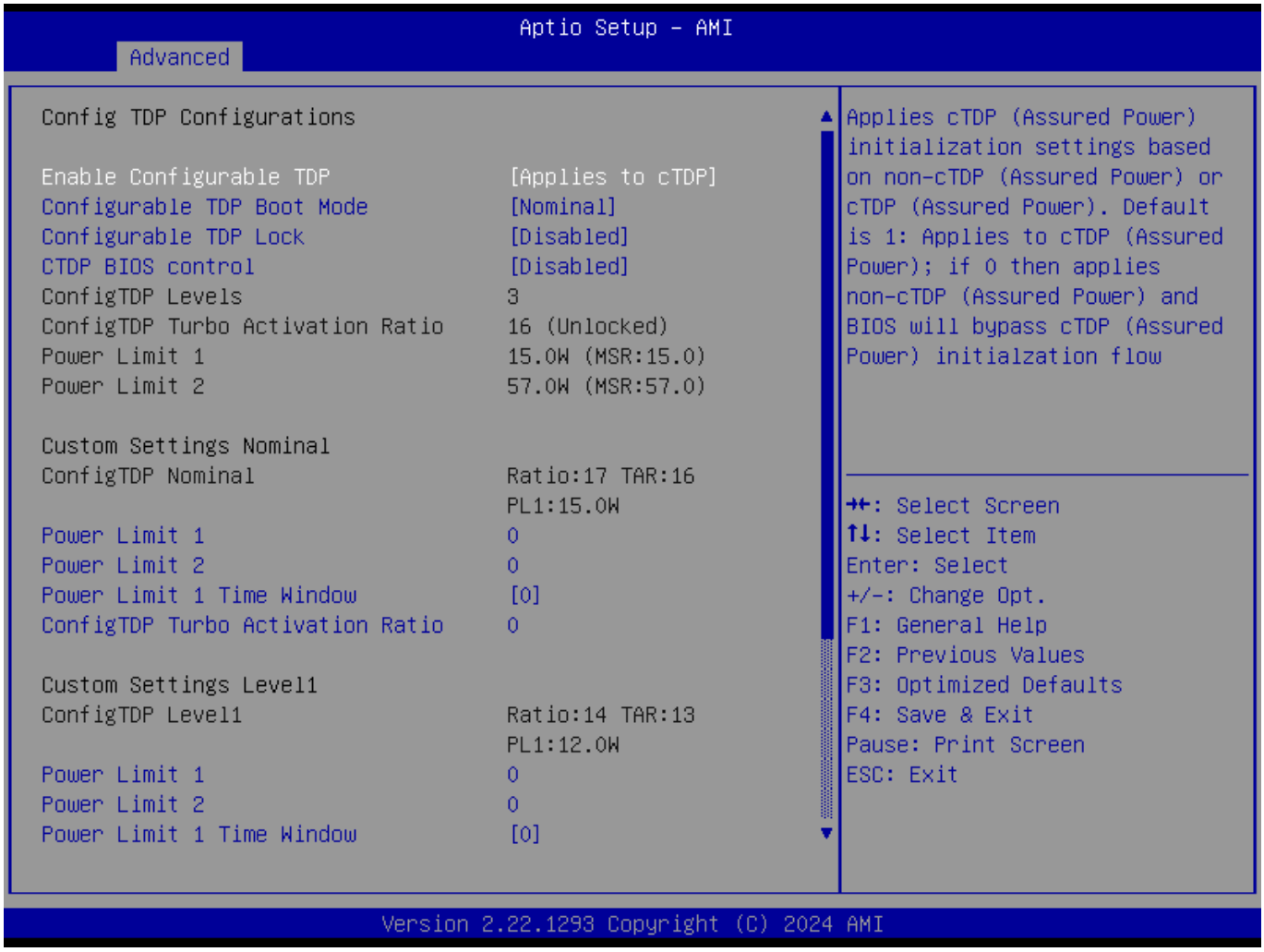


This menu contains the following information:

- Efficient-core Information Displays the E-core Information.
- Performance-core
  Displays the P-core Information.
- ID
  Display the Processor ID.
- Brand String
  Display the Brand String.
- VMX
  VMX (Virtual-Machine Extensions) supported or not.
- SMX/TXT
  SMX (Safer Mode Extensions) /TXT (Trusted Execution Technology) Supported or not.
- Config TDP Configurations
  cTDP (Assured Power) Configurations.
- Intel(R) Speed Step(tm)
  Allows more than two frequency ranges to be supported.
- Intel(R) Speed Shift Technology
  Enable or Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.

- Turbo Mode
  Enable or Disable processor Turbo Mode.
- C states
  Enable or Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
- Intel (VMX) Virtualization Technology
  When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
- X2APIC Enable
  Enable or Disable X2APIC Operating Mode.
  When this option is configured as 'Enabled', 'VT-d' option must be 'Enabled' and 'X2APIC Opt Out' option must be 'Disabled' as well.
  This option will be grayed out when 'VT-d' option is configured as 'Disabled'.
- Hyper-Threading
  Enable or Disable Hyper-Threading Technology.

3.2.1.1 Config TDP Configurations



This menu contains the following information:

- Enable Configurable TDP

  Applies cTDP (Assured Power) initialization settings based on non-cTDP (Assured Power) or cTDP (Assured Power). Default is 1: Applies to cTDP (Assured Power); if 0 then applies non-cTDP (Assured Power) and BIOS will bypass cTDP (Assured Power) initialization flow.

- Configurable TDP Boot Mode

  cTDP (Assured Power) Mode as Nominal/Level1/Level2/Deactivate TDP (Base Power) selection. Deactivate option will set MSR to Nominal and MMIO to Zero.

- Configurable TDP Lock

  cTDP (Assured Power) Mode Lock sets the Lock bits on TURBO_ACTIVATION_RATIO and CONFIG_TDP_CONTROL.

  Note: When CTDP (Assured Power) Lock is enabled Custom ConfigTDP Count will be forced to 1 and Custom ConfigTDP Boot Index will be forced to 0.

- CTDP BIOS control

  Enables cTDP (Assured Power) control via runtime ACPI BIOS methods. This 'BIOS only' feature does not require EC or driver support.

Custom Settings Nominal/Level1/Level2

- ConfigTDP Nominal/Level1/Level2

  The options are as follows:

  Power Limit 1: Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Overclocking SKU: Value must be between Max

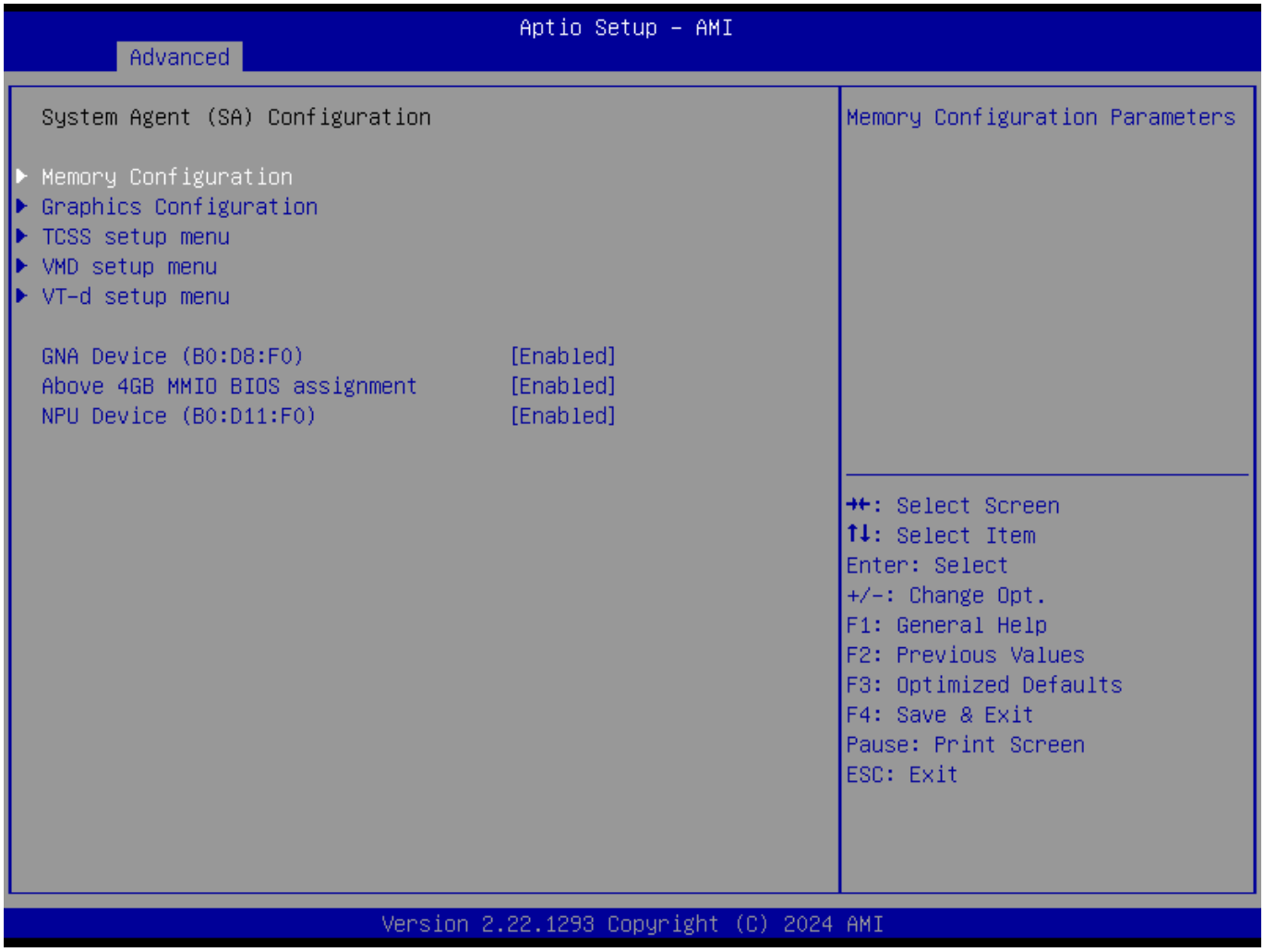
and Min Power Limit and Processor Base Power (TDP) Limit.

Power Limit 2: Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.

Power Limit 1 Time Window: Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128. 0 = default value (28 sec for Mobile and 8 sec for Desktop). Defines time window which Processor Base Power (TDP) value should be maintained.

ConfigTDP Turbo Activation Ratio: Custom value for Turbo Activation Ratio. Needs to be configured with valid values from LFM to Max Turbo. 0 means don't use custom value.

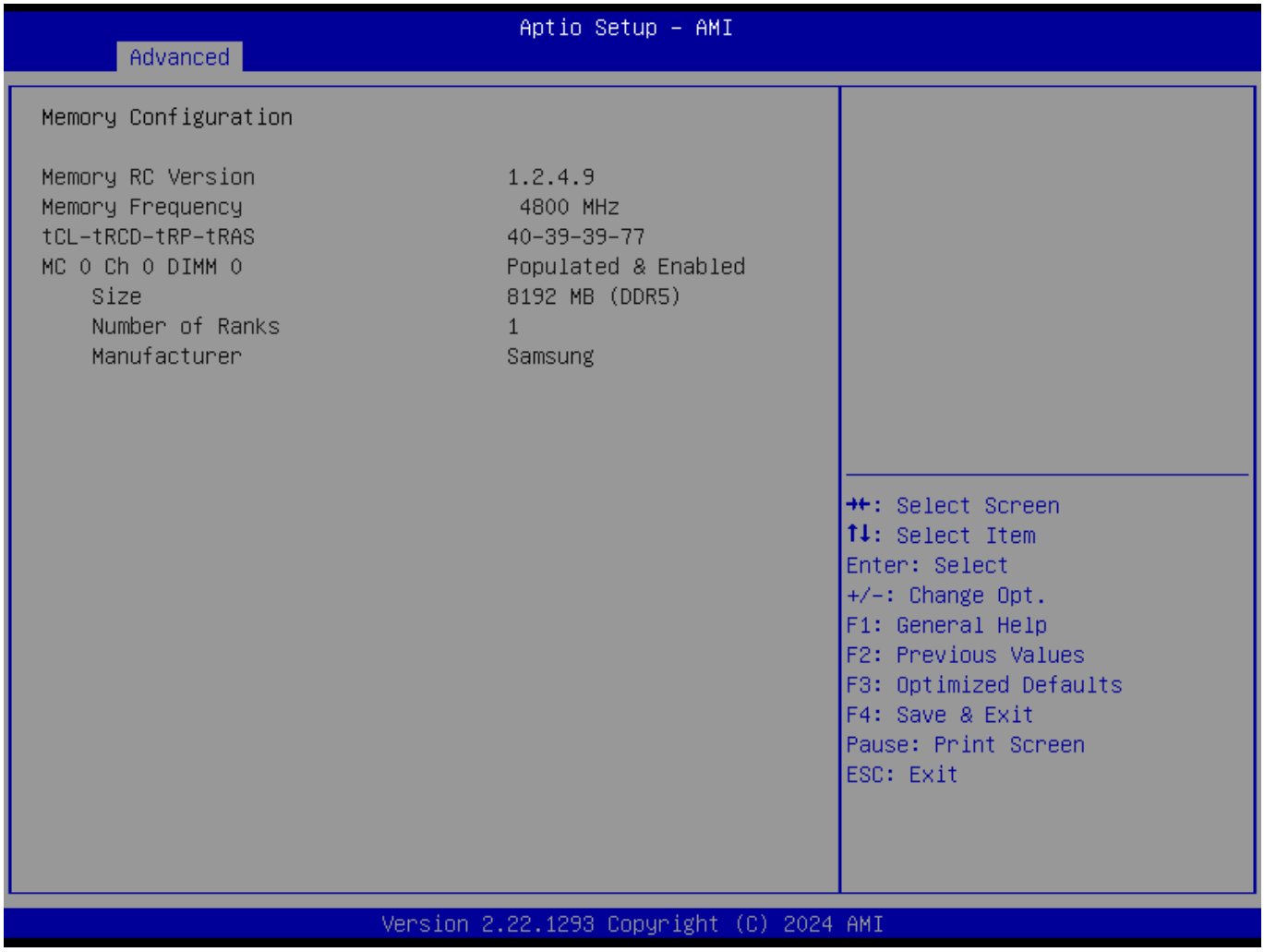
3.2.2 System Agent (SA) Configuration



This menu contains the following information:

- Memory Configuration
  Memory Configuration Parameters.
- Graphics Configuration
  Graphics Configuration.
- TCSS setup menu
  TCSS Configuration settings.
- VMD setup menu
  VMD Configuration settings.
- VT-d setup menu
  VT-d Configuration settings.
- GNA Device (B0:D8:F0)
  Enable or Disable SA GNA Device.
- Above 4GB MMIO BIOS assignment
  Enable or Disable above 4GB Memory Mapped IO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB.
- NPU Device (B0:D11:F0)
  Enable or Disable NPU (Neural Processing Unit) Device.

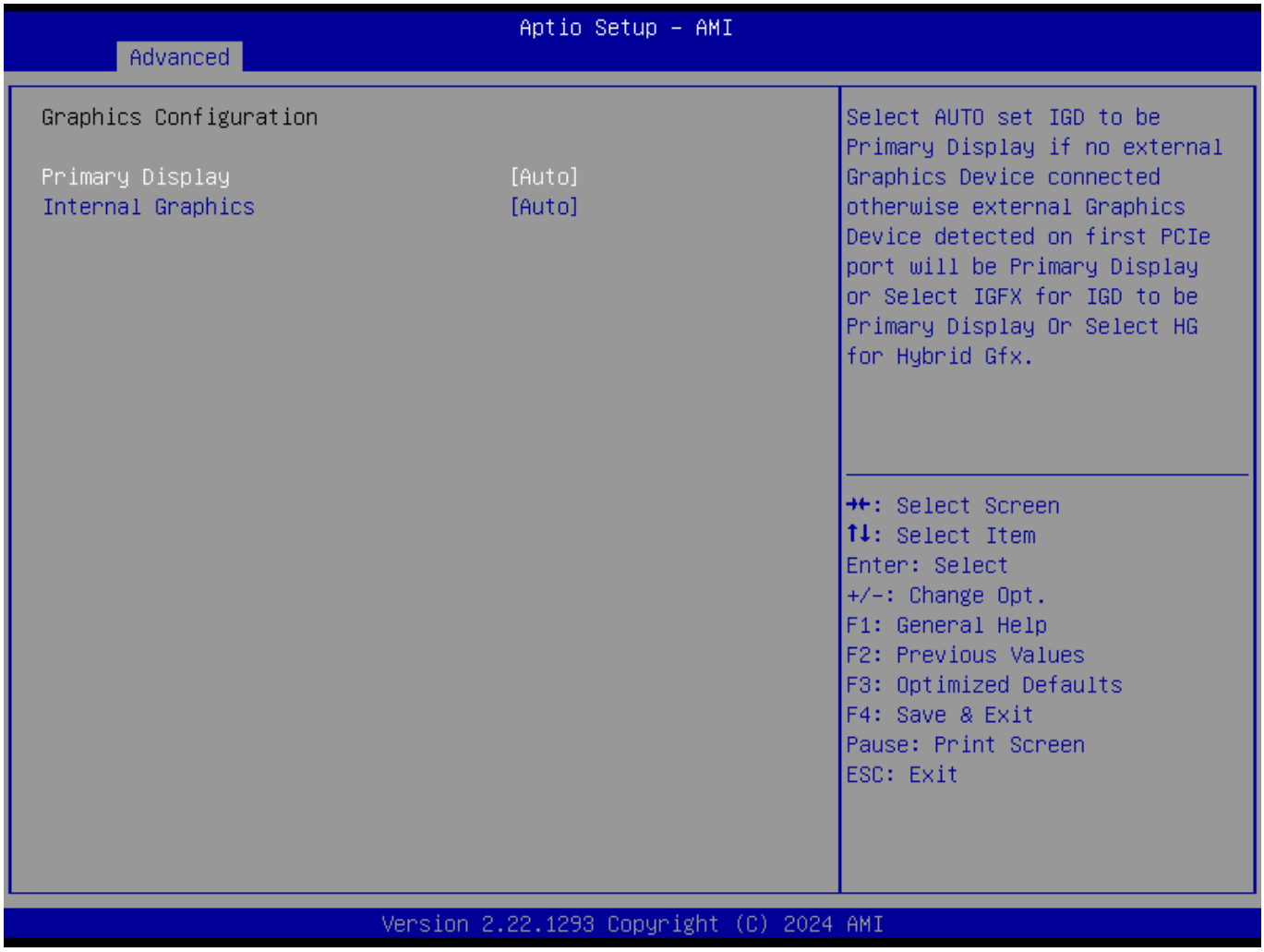
3.2.2.1 Memory Configuration



This menu contains the following information:

- Memory Configuration
  Display the Memory RC Version, Data Rate, Timings, etc.

3.2.2.2 Graphics Configuration



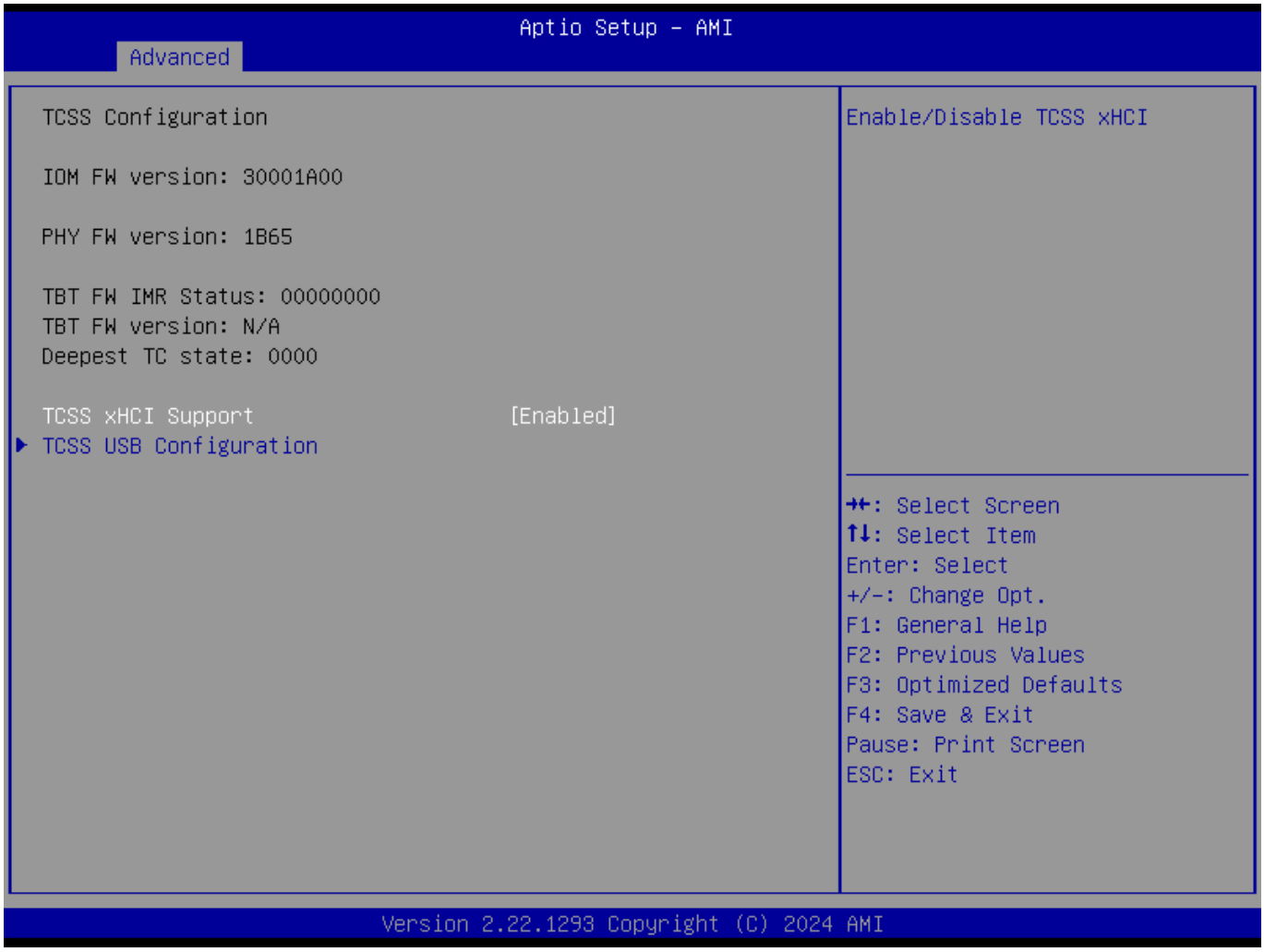
This menu contains the following information:

- Primary Display

  Select AUTO set IGD to be Primary Display if no external Graphics Device connected otherwise external Graphics Device detected on first PCIE port will be Primary Display or Select IGFX for IGD to be Primary Display Or select HG for Hybrid Gfx.
- Internal Graphics

  Keep IGFX enabled based on the setup options.

3.2.2.3 TCSS setup menu



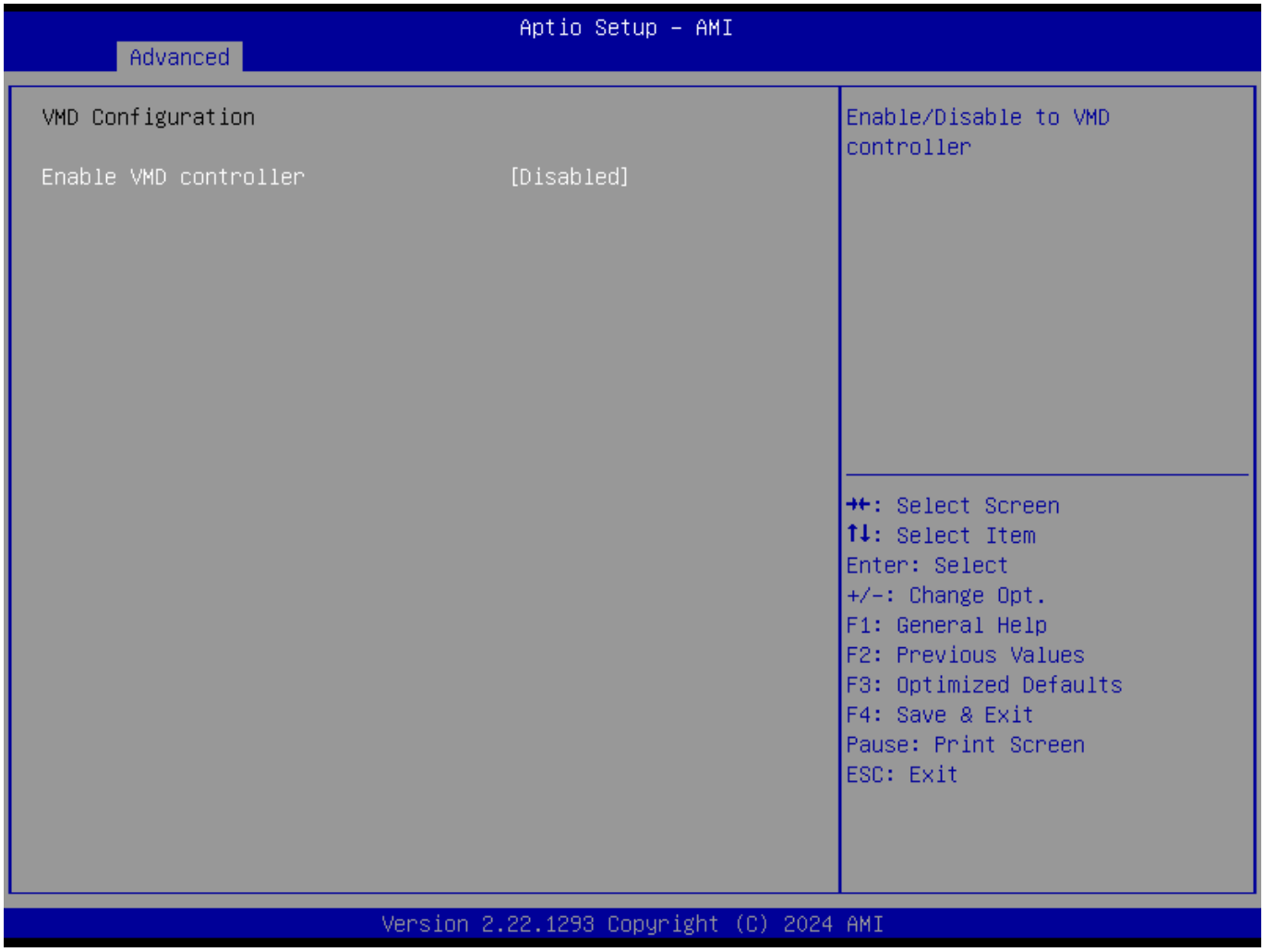
This menu contains the following information:

- TCSS xHCI Support
  Enable or Disable TCSS xHCI.
- TCSS USB Configuration
  SA TCSS USB Configuration settings.

  The option after entering the interface settings above is as follows:

  TCSS CPU USB Port Disable Override: Selectively Enable or Disable the corresponding USB port from reporting a Device Connection to the controller.

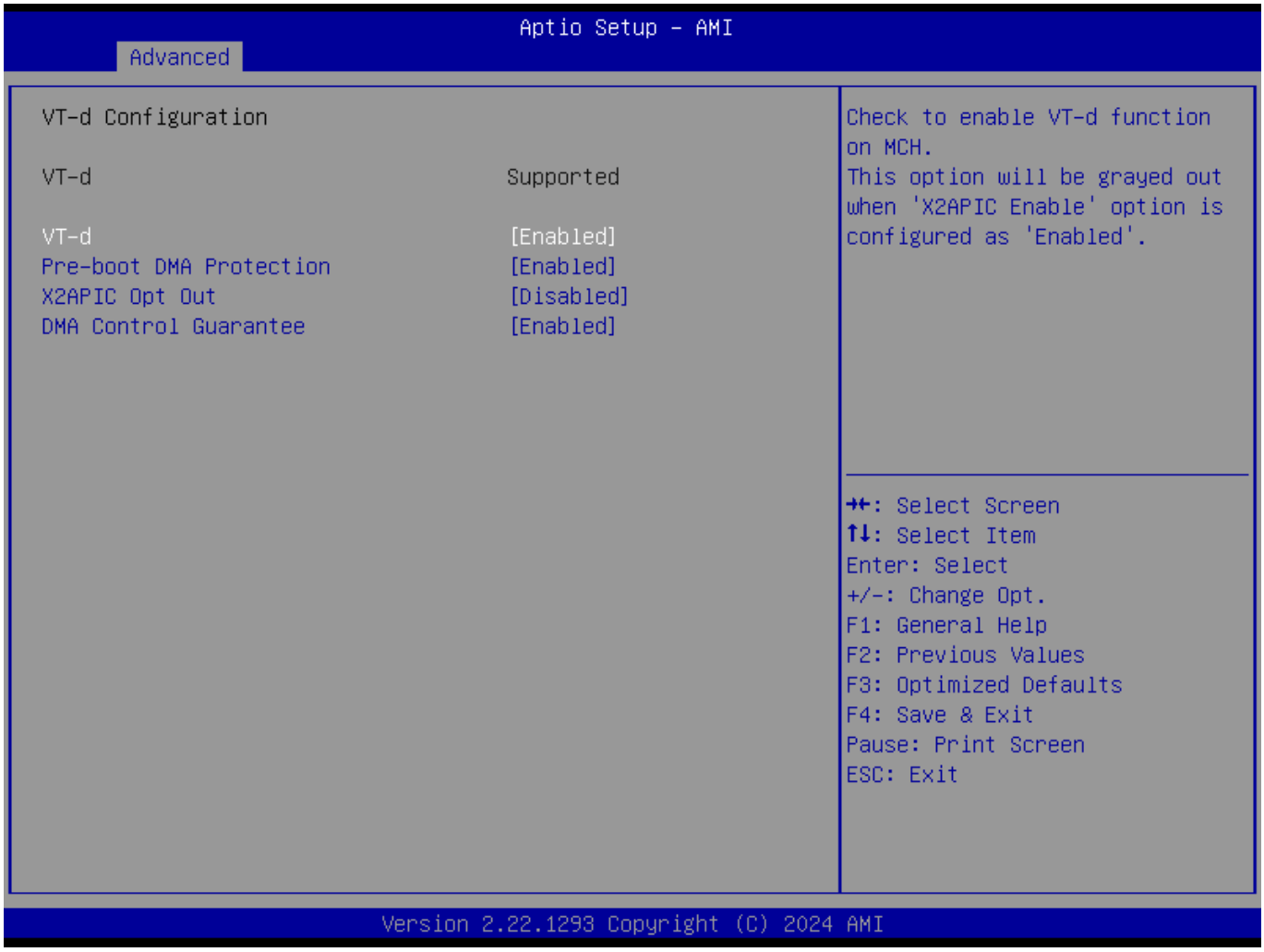
3.2.2.4 VMD setup menu



This menu contains the following information:

- Enable VMD controller
  Enable or Disable to VMD controller.

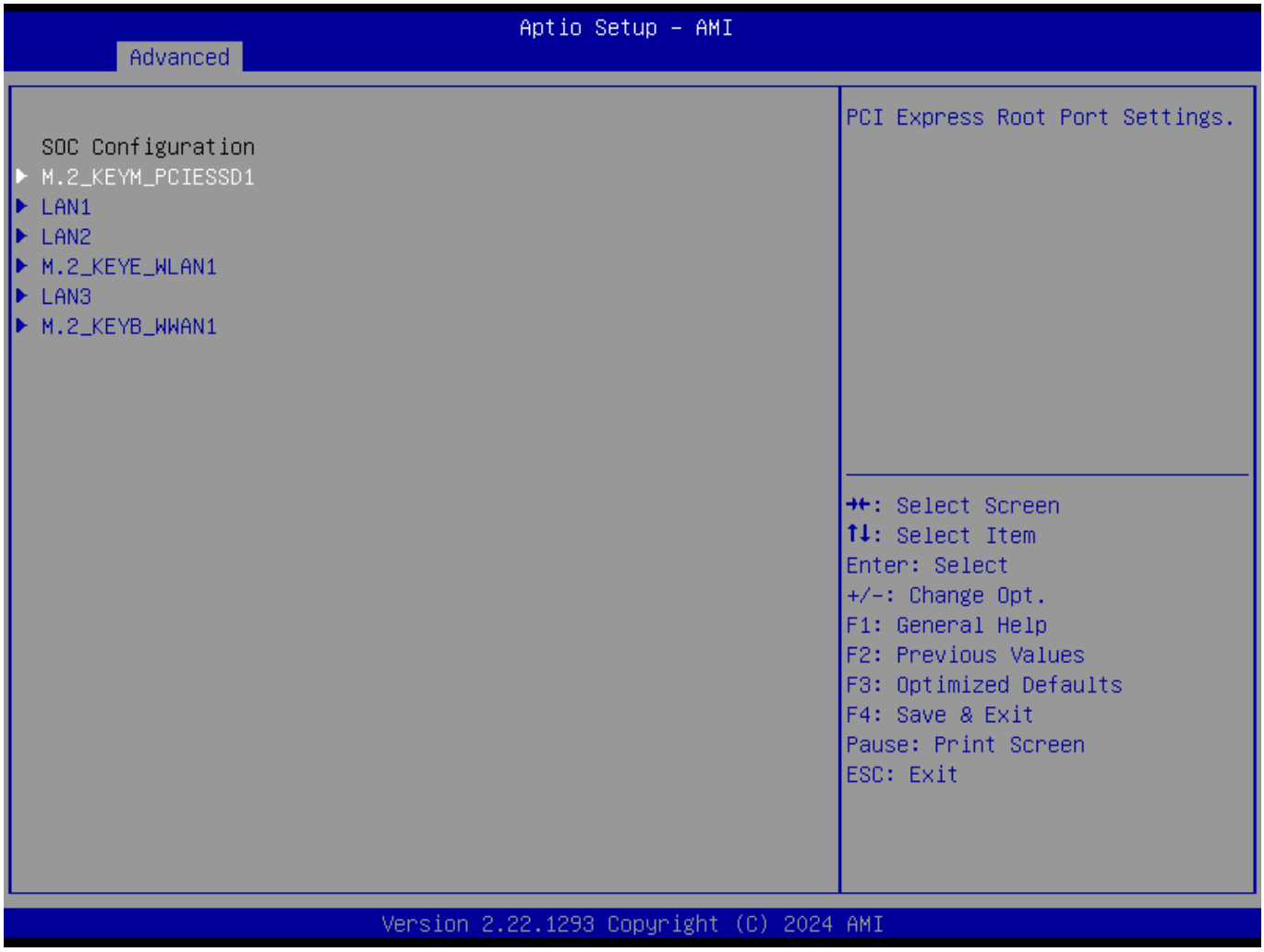
3.2.2.5 VT-d setup menu



This menu contains the following information:

- VT-d
  Check to enable VT-d function on MCH.
  This option will be grayed out when 'X2APIC Enable' option is configured as 'Enabled'.
- Pre-boot DMA Protection
  Enable DMA Protection in Pre-boot environment (If DMAR table is installed in DXE and If VTD_INFO_PPI Is installed in PEI).
- X2APIC OPT OUT
  Enable or Disable X2APIC_OPT_OUT bit.
  This option will be grayed out when 'X2APIC Enable' option is configured as 'Enabled'.
- DMA Control Guarantee
  Enable or Disable DMA_CONTROL_GUARANTEE bit.

3.2.3 PCIE Configuration



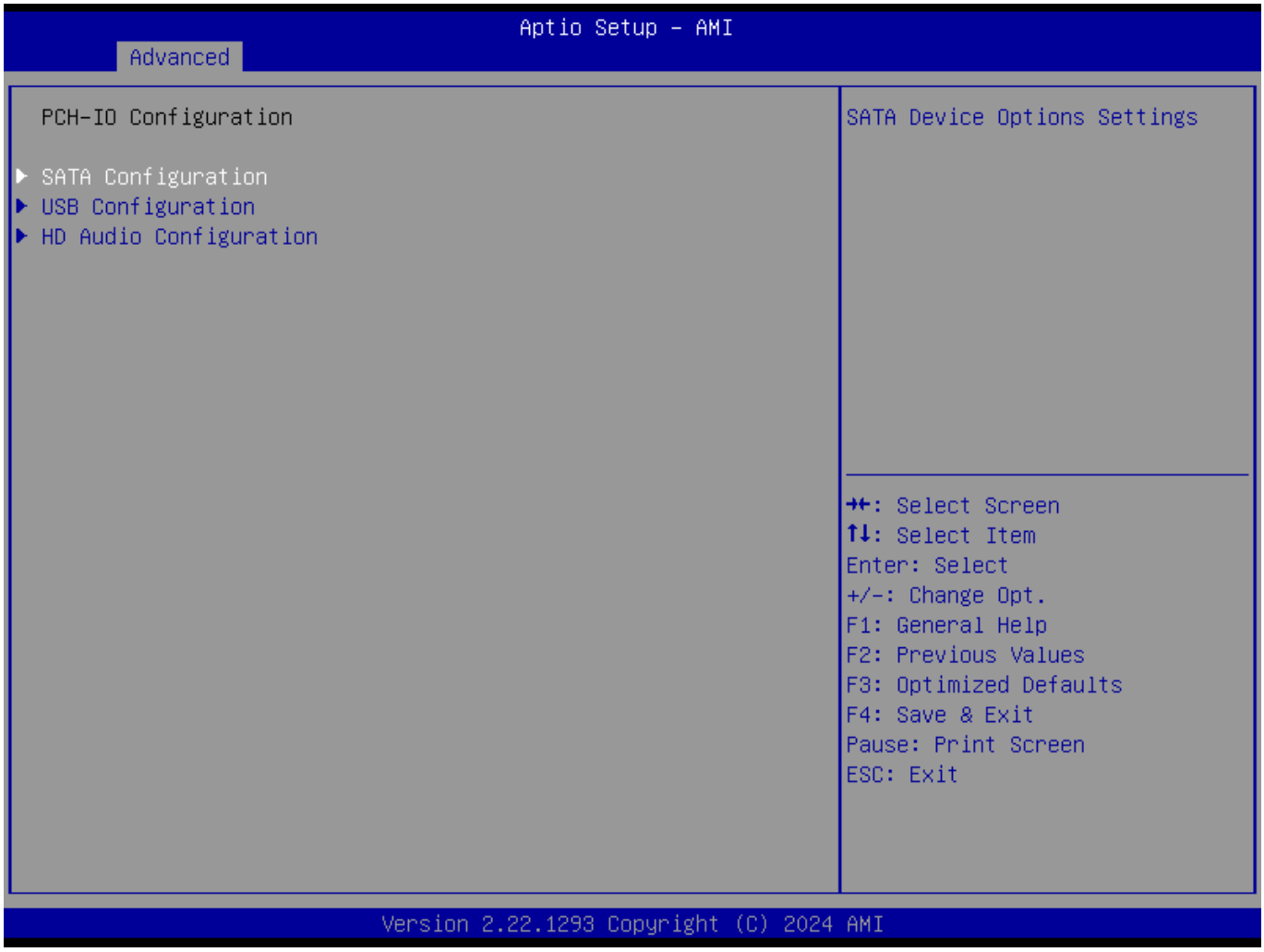
This menu contains the following information:

- M.2_KEYM_PCIESSD1/LAN1/LAN2/M.2_KEYE_WLAN1/LAN3/M.2_KEYB_WWAN1:
  PCI Express Root Port Settings.

  The options after entering the interface settings above are as follows.

  PCI Express Root Port PXPA1/PXPB1/PXPB2/PXPB3/PXPB4/PXPC: Control the PCI Express Root Port. PCIe Speed: Configure PCIe Speed.

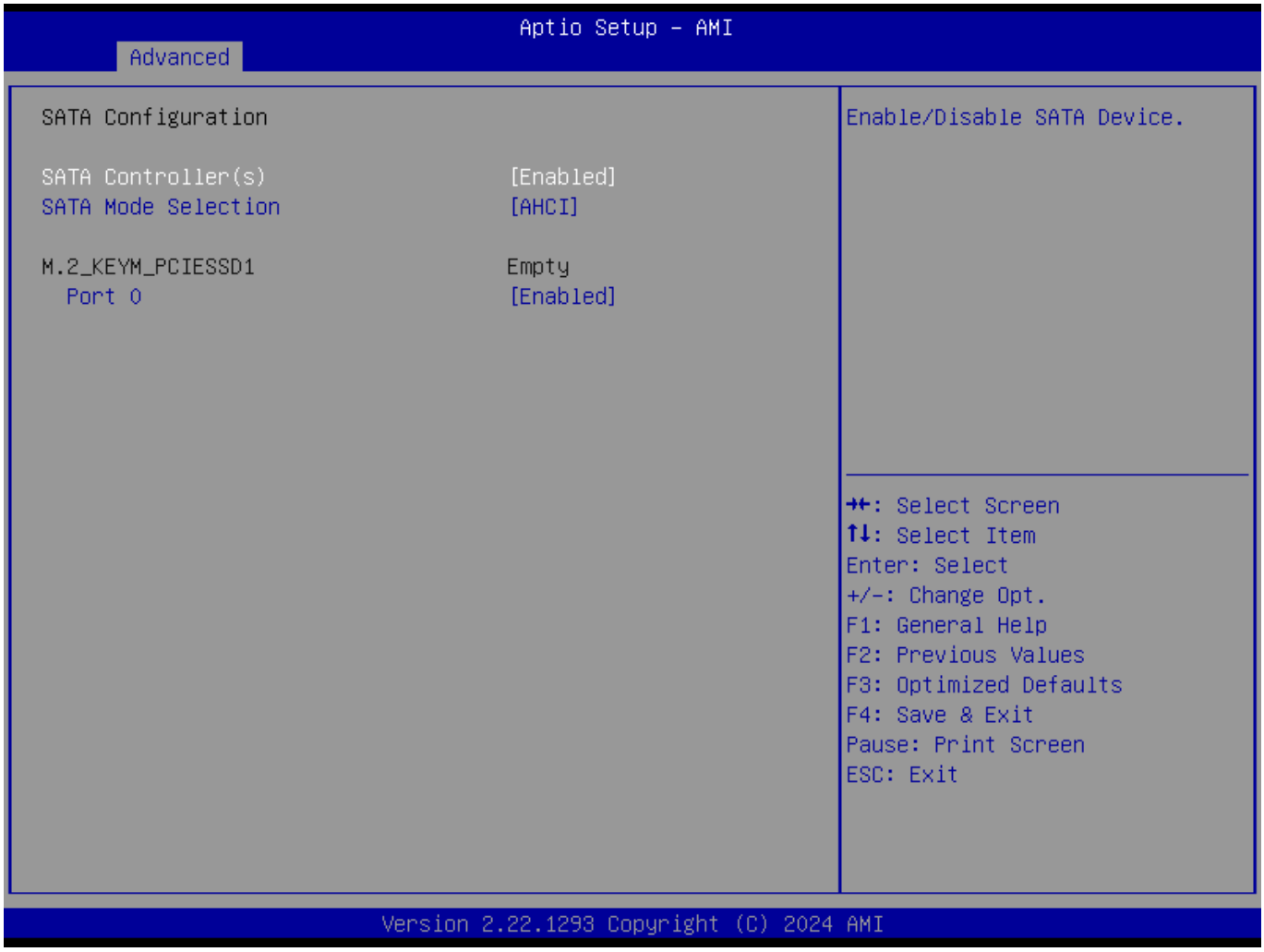
3.2.4 PCH-IO Configuration



This menu contains the following information:

- SATA Configuration
  SATA Device Options Settings.
- USB Configuration
  USB Configuration Settings.
- HD Audio Configuration
  HD Audio Subsystem Configuration Settings.

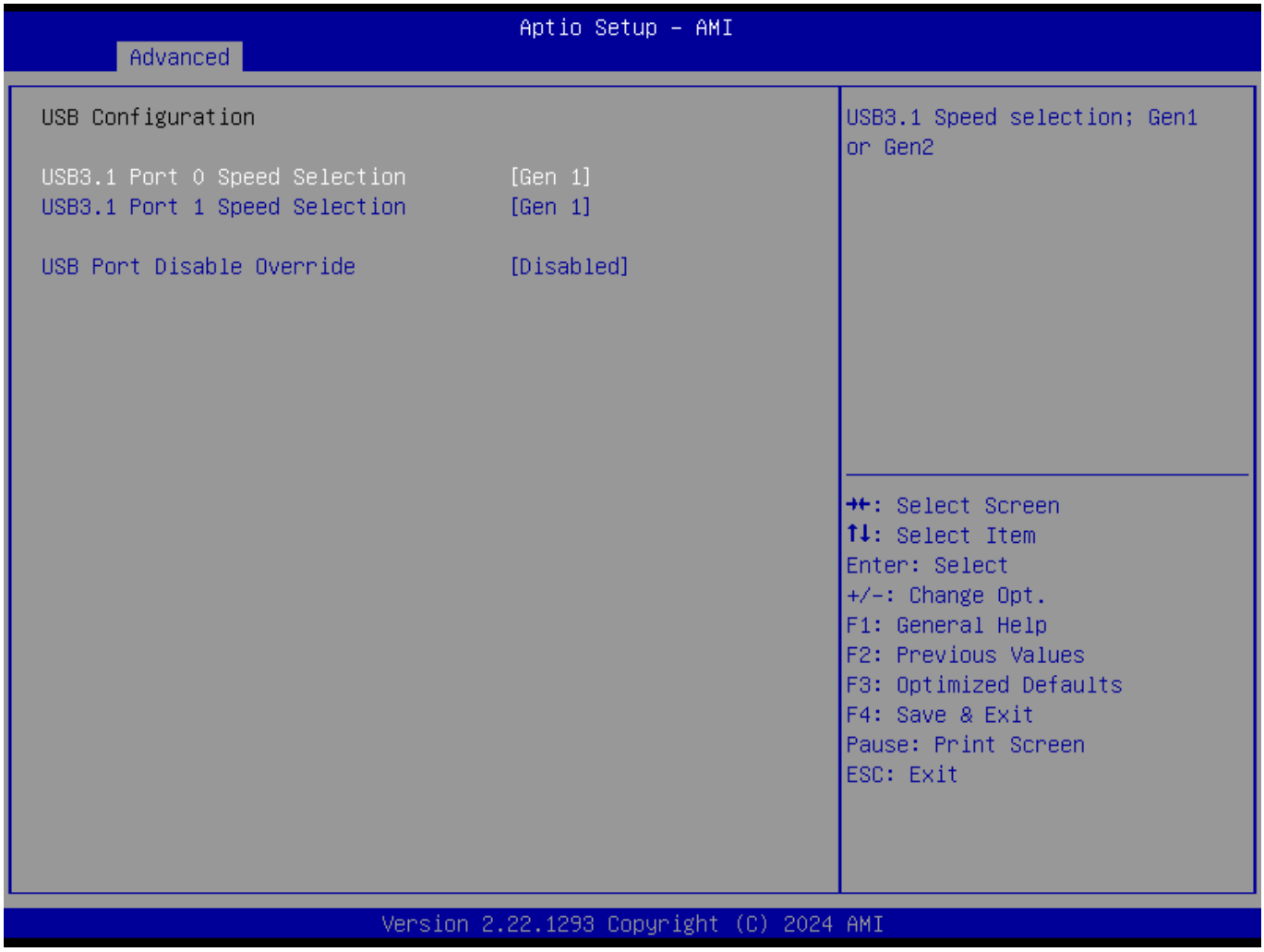
3.2.4.1 SATA Configuration



This menu contains the following information:

- SATA Controller(s)
  Enable or Disable SATA Device.
- SATA Mode Selection
  Determines how SATA controller(s) operate.
- M.2_KEYM_PCIESSD1
  Display M.2_KEYM_PCIESSD1 Information.
- Port X
  Enable or Disable SATA Port X.

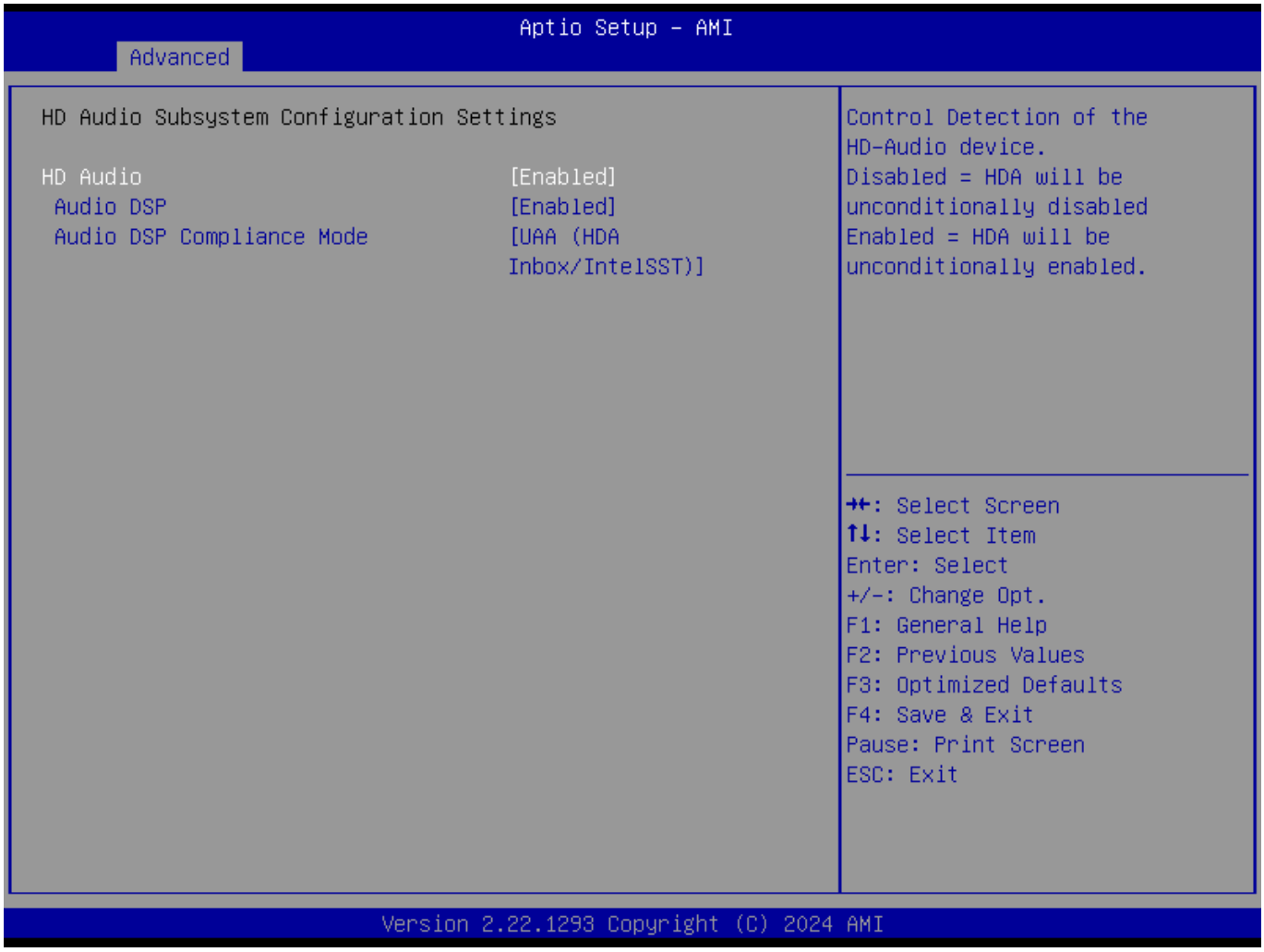
3.2.4.2 USB Configuration



This menu contains the following information:

- USB3.1 Port 0 Speed Selection
  USB3.1 Speed selection; Gen1 or Gen2.
- USB3.1 Port 1 Speed Selection
  USB3.1 Speed selection; Gen1 or Gen2.
- USB Port Disable Override
  Selectively Enable or Disable the corresponding USB port from reporting a Device Connection to the controller.

3.2.4.3 HD Audio Configuration



This menu contains the following information:

- HD Audio

  Control Detection of the HD-Audio device. Disabled = HAD will be unconditionally disabled. Enabled = HAD will be unconditionally enabled.

- Audio DSP

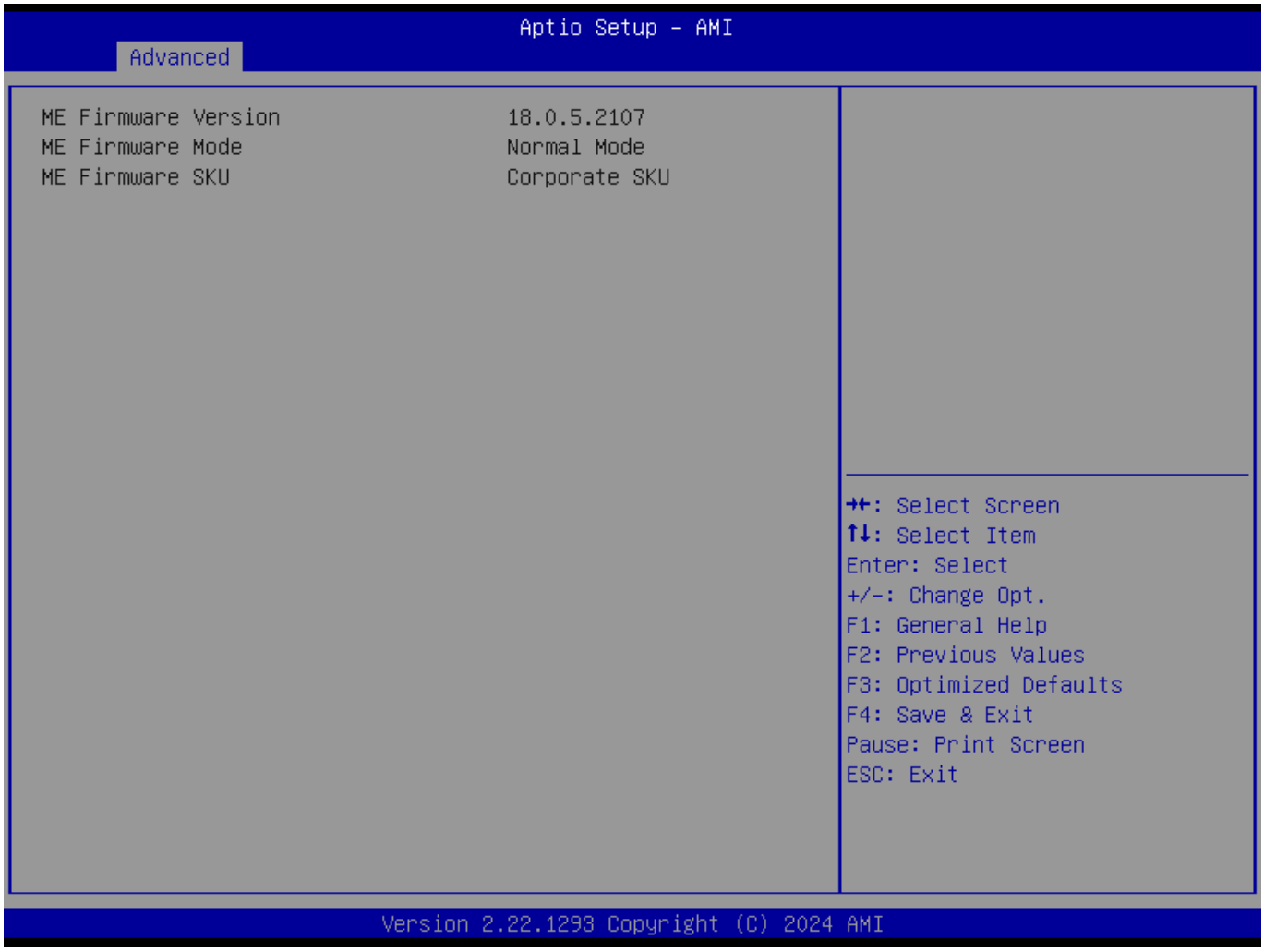
  Enable or Disable Audio DSP.

- Audio DSP Compliance Mode

  Specifies DSP enabled system compliance:

  1. Non-UAA (Intel SST driver support only – CC_040100).
  2. UAA (HD Audio Inbox or Intel SST driver support – CC_040380). Note: NHLT (DMIC/BT/I2S configuration) is published for non-UAA only.

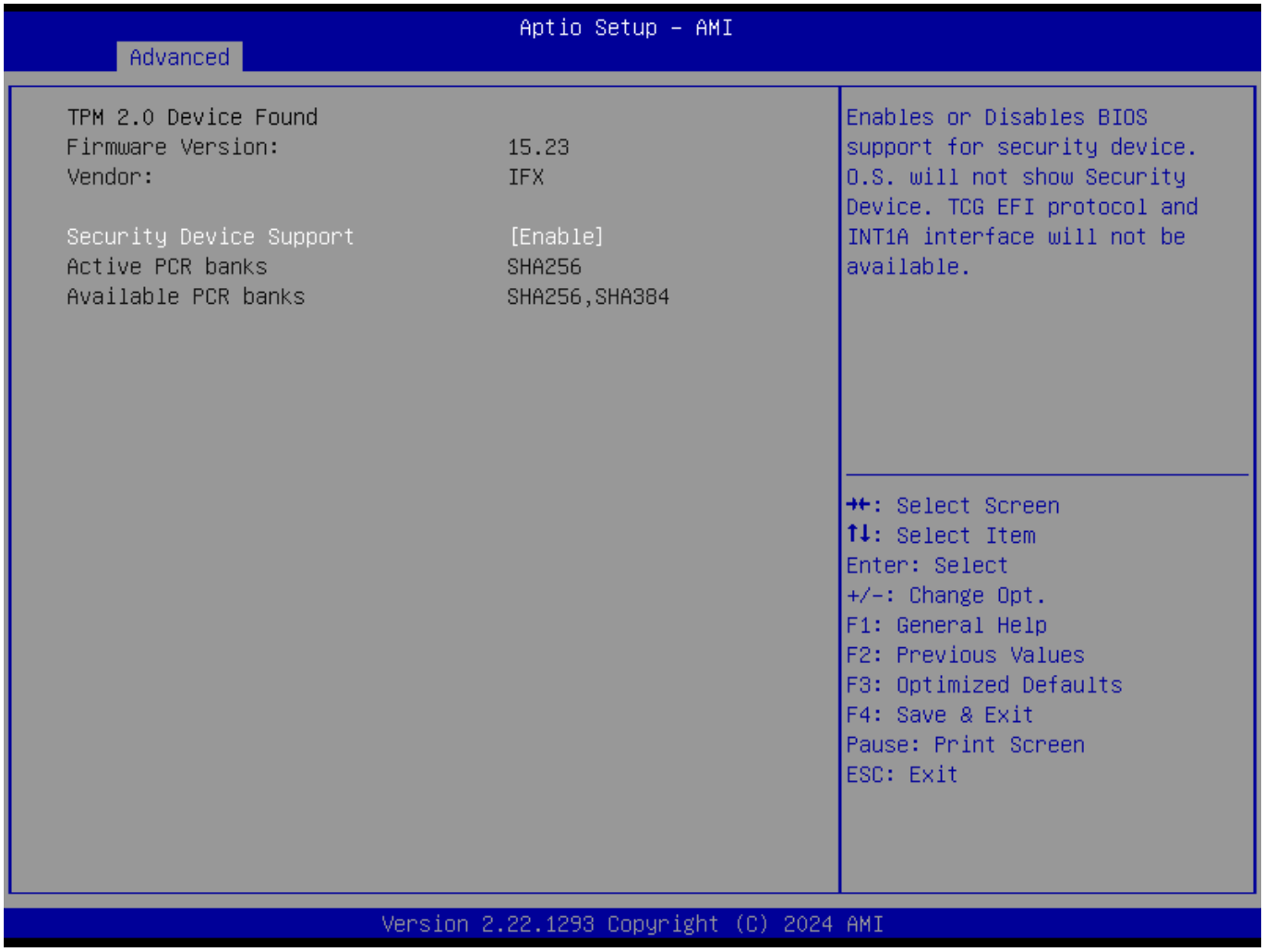
3.2.5 PCH-FW Configuration



This menu contains the following information:

- ME Firmware Version
  Display the ME Firmware information.
- Me Firmware Mode
  Display the Me Firmware Mode.
- Me Firmware SKU
  Display the Me Firmware SKU.

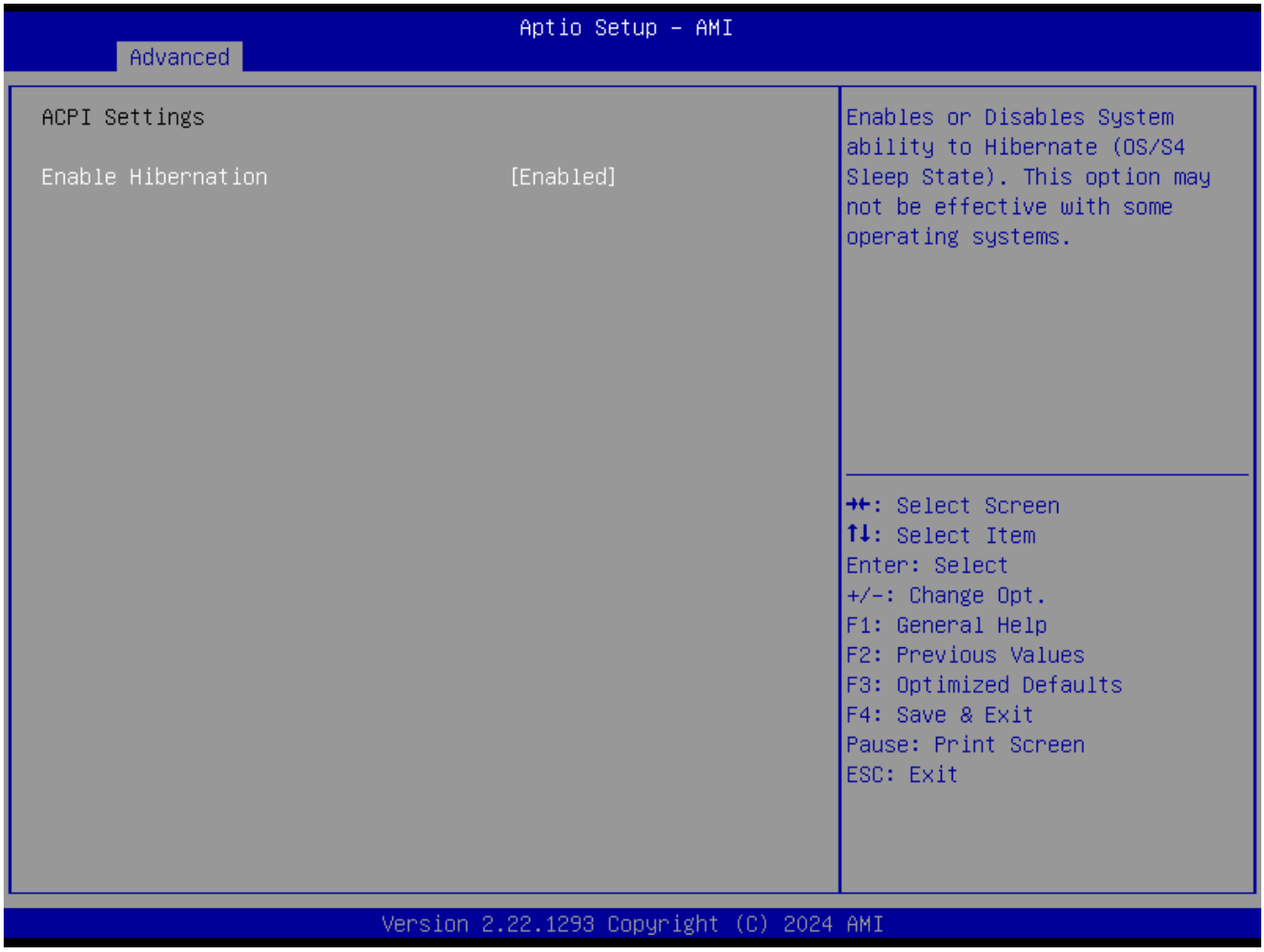
3.2.6 Trusted Computing



This menu contains the following information:

- TPM 2.0 Device Found
  Display the information of the TPM 2.0 Device: Firmware Version, Vendor.
- 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.

3.2.7 ACPI Settings

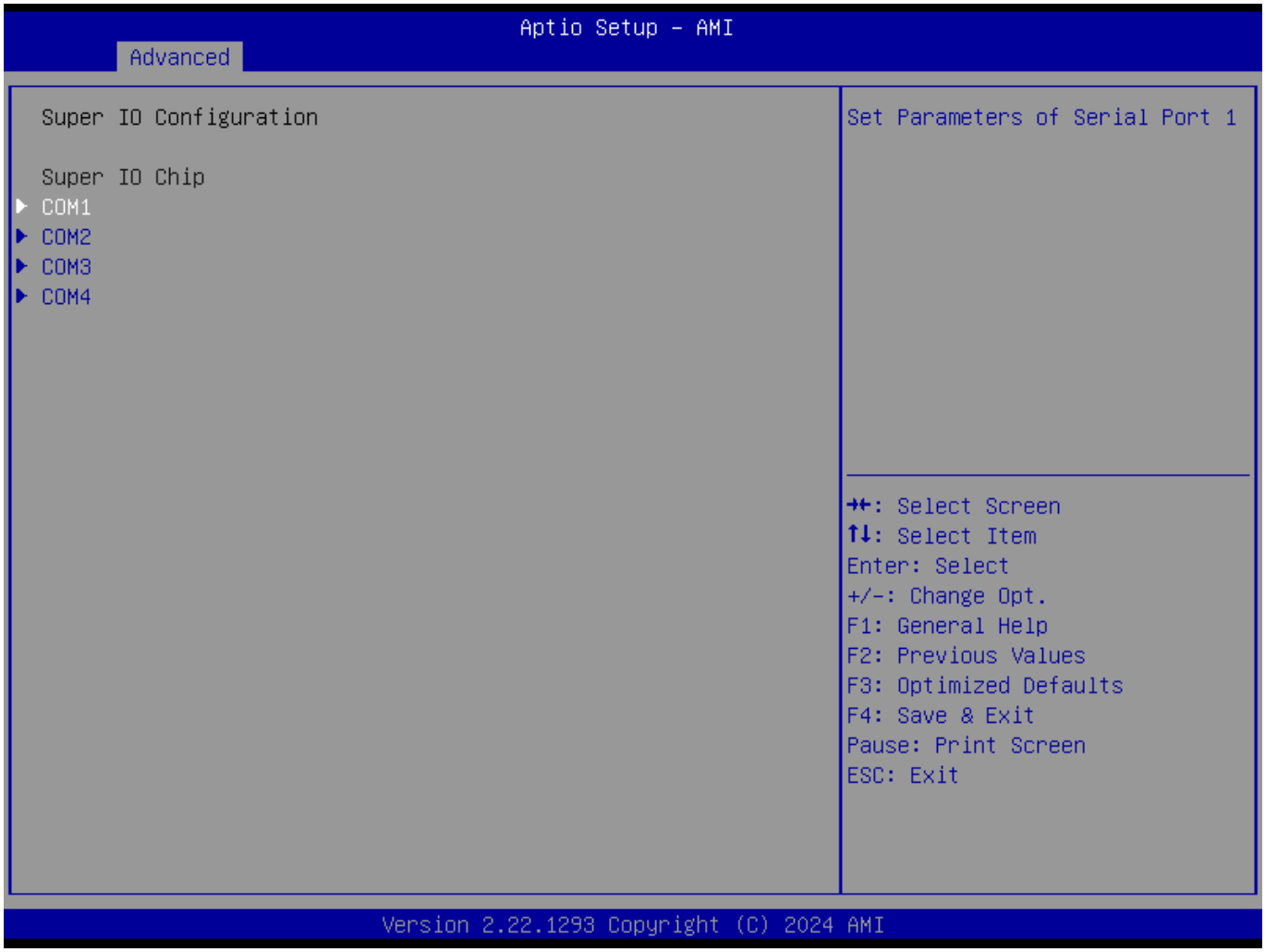


This menu contains the following information:

- Enable Hibernation

  Enable or Disable System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.

3.2.8 Super IO Configuration

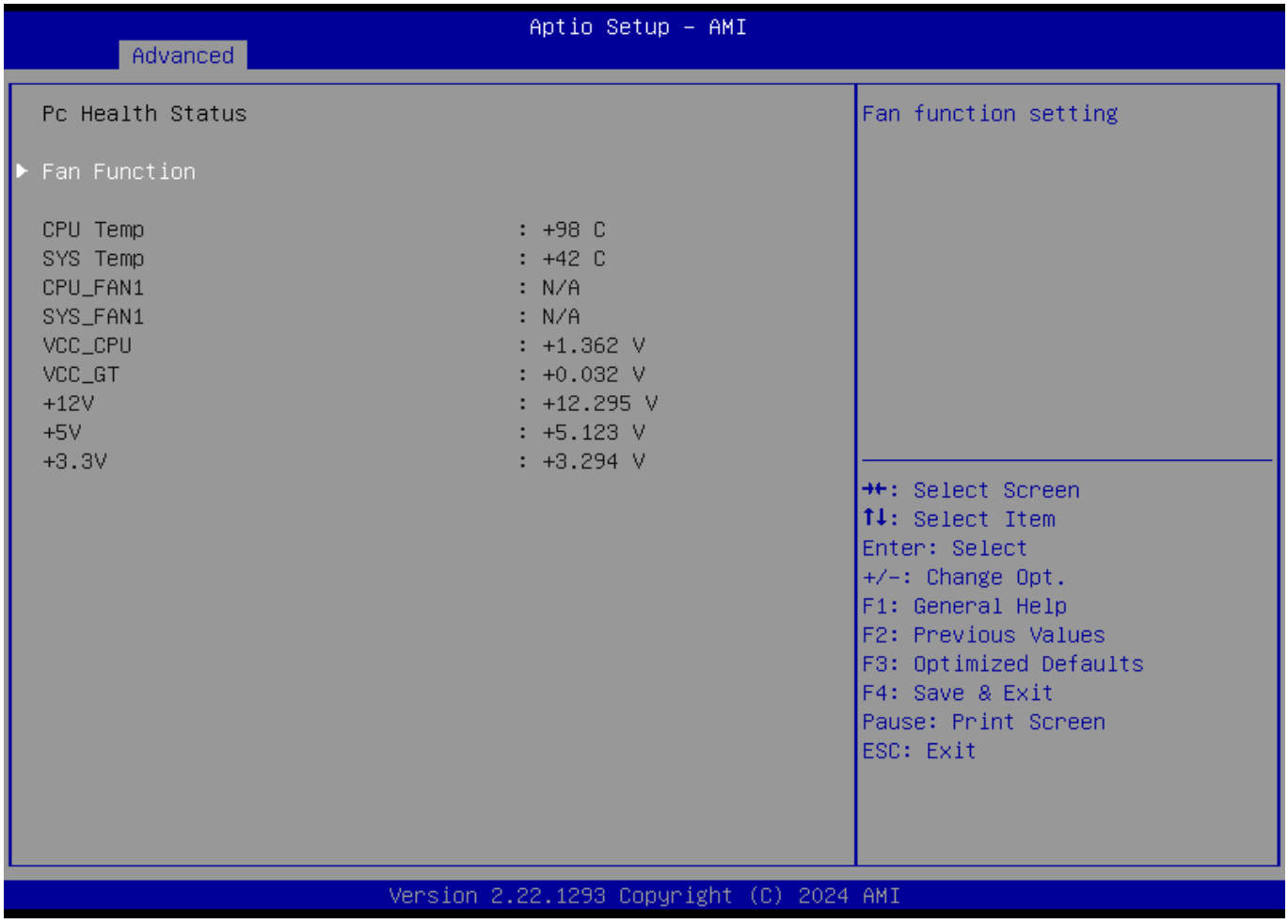


This menu contains the following information:

- COM X
  Set Parameters of Serial Port x:

  The options after entering the interface settings above are as follows. Serial Port: Enable or Disable Serial Port (COM).
  Device Settings: Display the Current Device Settings.
  Change Settings: If the board supported, this menu shows. Select an optimal setting for Super IO Device.

3.2.9 Hardware Monitor



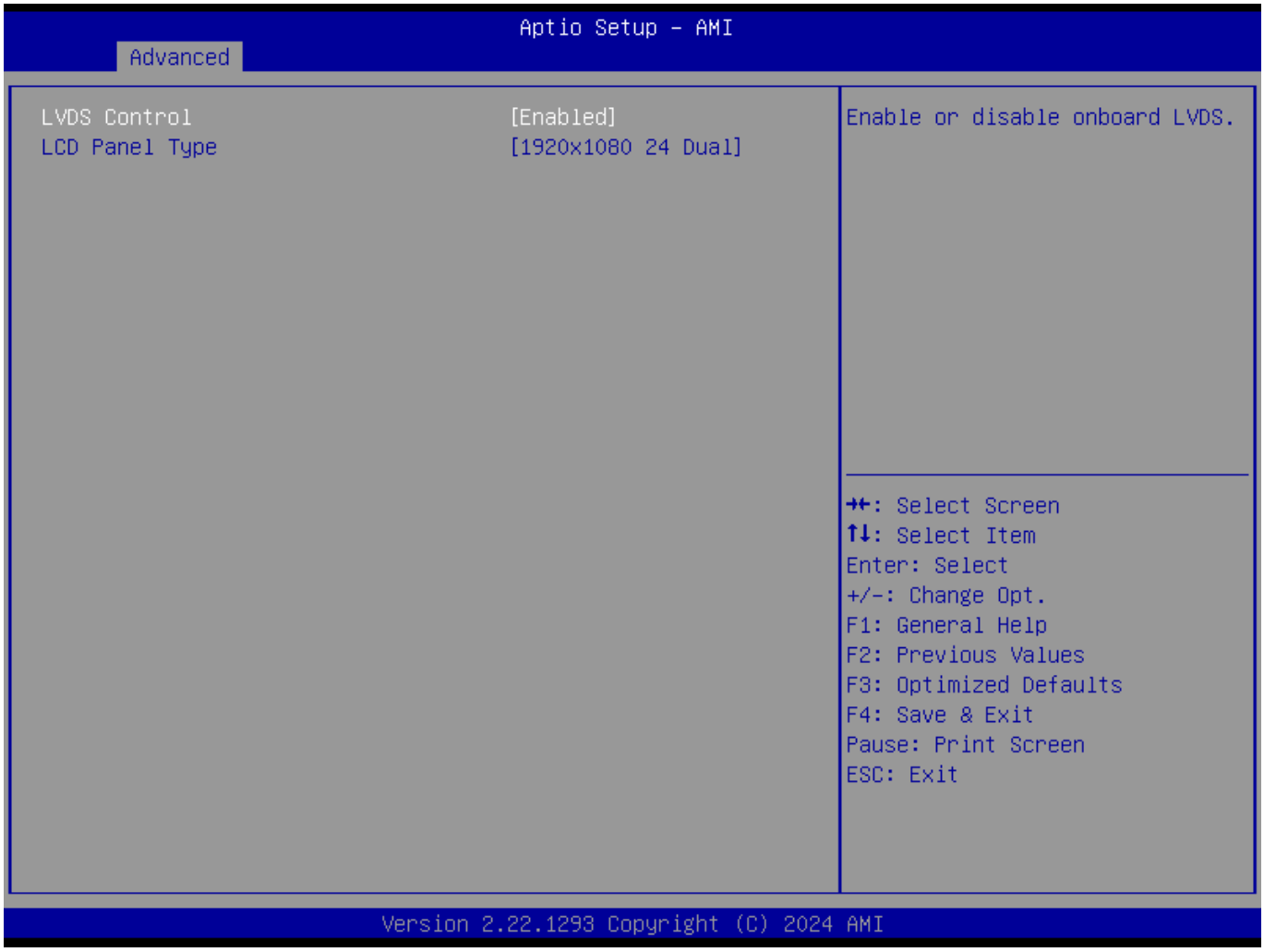
This menu contains the following information:

- Fan Function (If the board supported, this menu shows.) Fan Function setting.

  CPU_FAN1/SYS_FAN1 Mode: FAN Mode Select.
  Full on Mode; Automatic Mode; Manual Mode. Refer to section 2.7 of this manual for setting up.

- CPU Temp
  Display CPU Temperature.
- SYS Temp
  Display System Temperature.
- CPU_FAN1
  Display CPU_FAN1 Speed.
- SYS_FAN1
  Display SYS_FAN1 Speed.
- VCC_CPU
  Display CPU Core Voltage Value.
- VCC_GT
  Display Memory Voltage Value.
- +12V
  Display +12 Voltage Value.
- +5V
  Display +5 Voltage Value.
- +3.3V
  Display +3.3 Voltage Value.

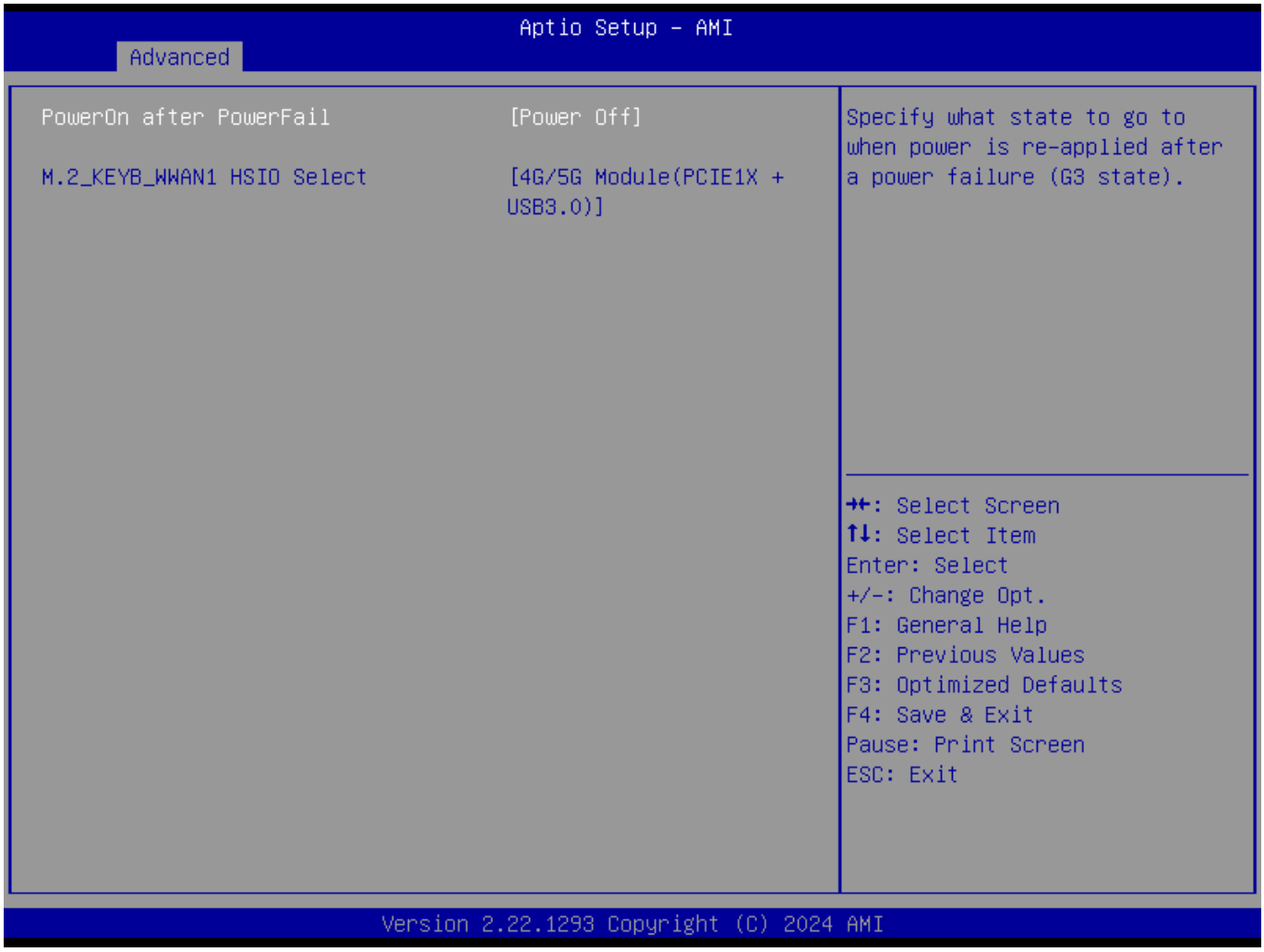
3.2.10 Display Configuration



This menu contains the following information:

- LVDS Control
  Enable or Disable onboard LVDS.
- LCD Panel Type
  Select LCD Panel Type.

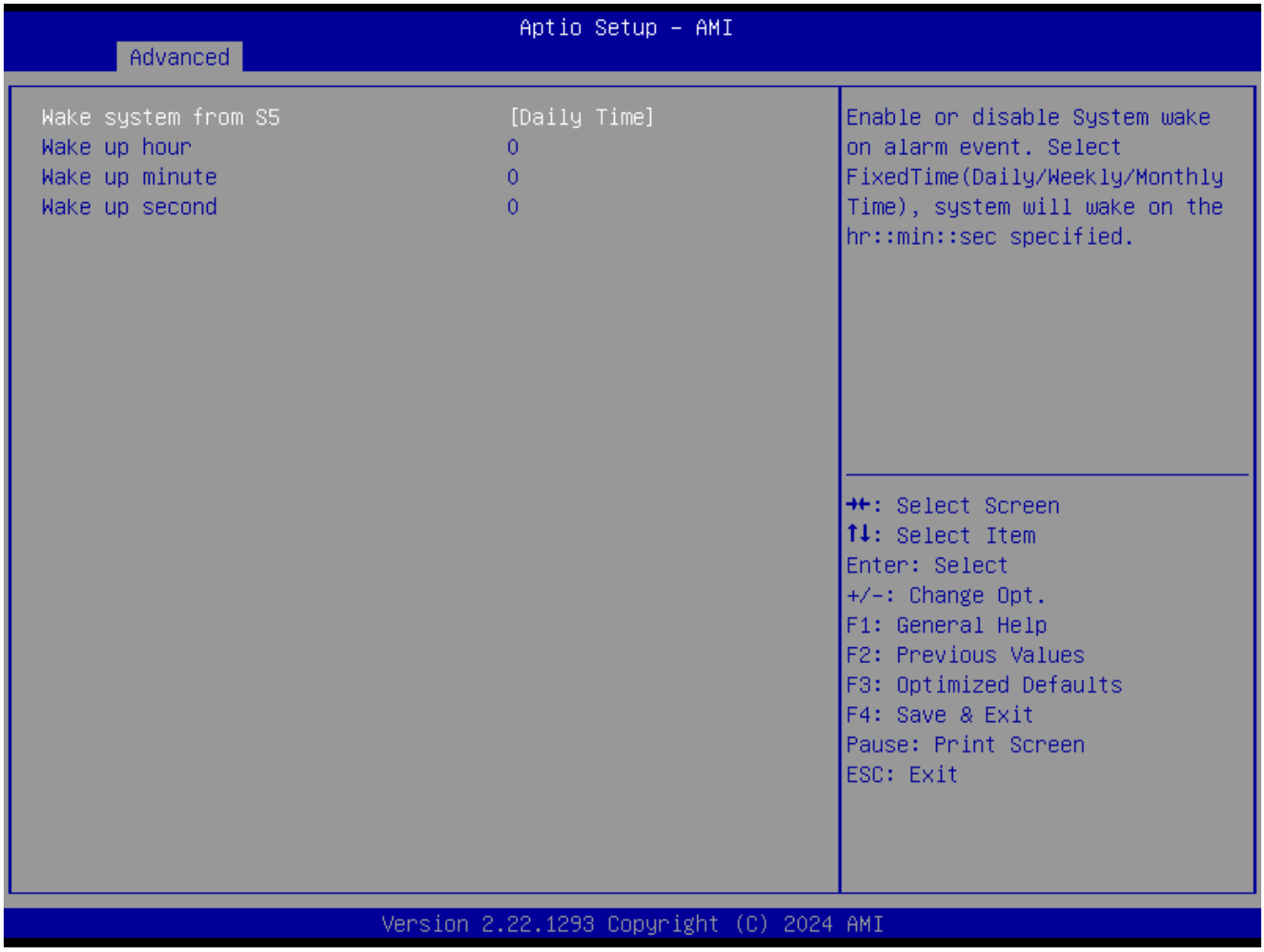
3.2.11 Power Control



This menu contains the following information:

- Power On after Power Fail
  Specify what state to go to when power is re-applied after a power failure (G3 state).
- M.2_KEYB_WWAN1 HSIO Select Select
  M.2_KEYB_WWAN1 HSIO Type.

3.2.12 S5 RTC Wake Settings



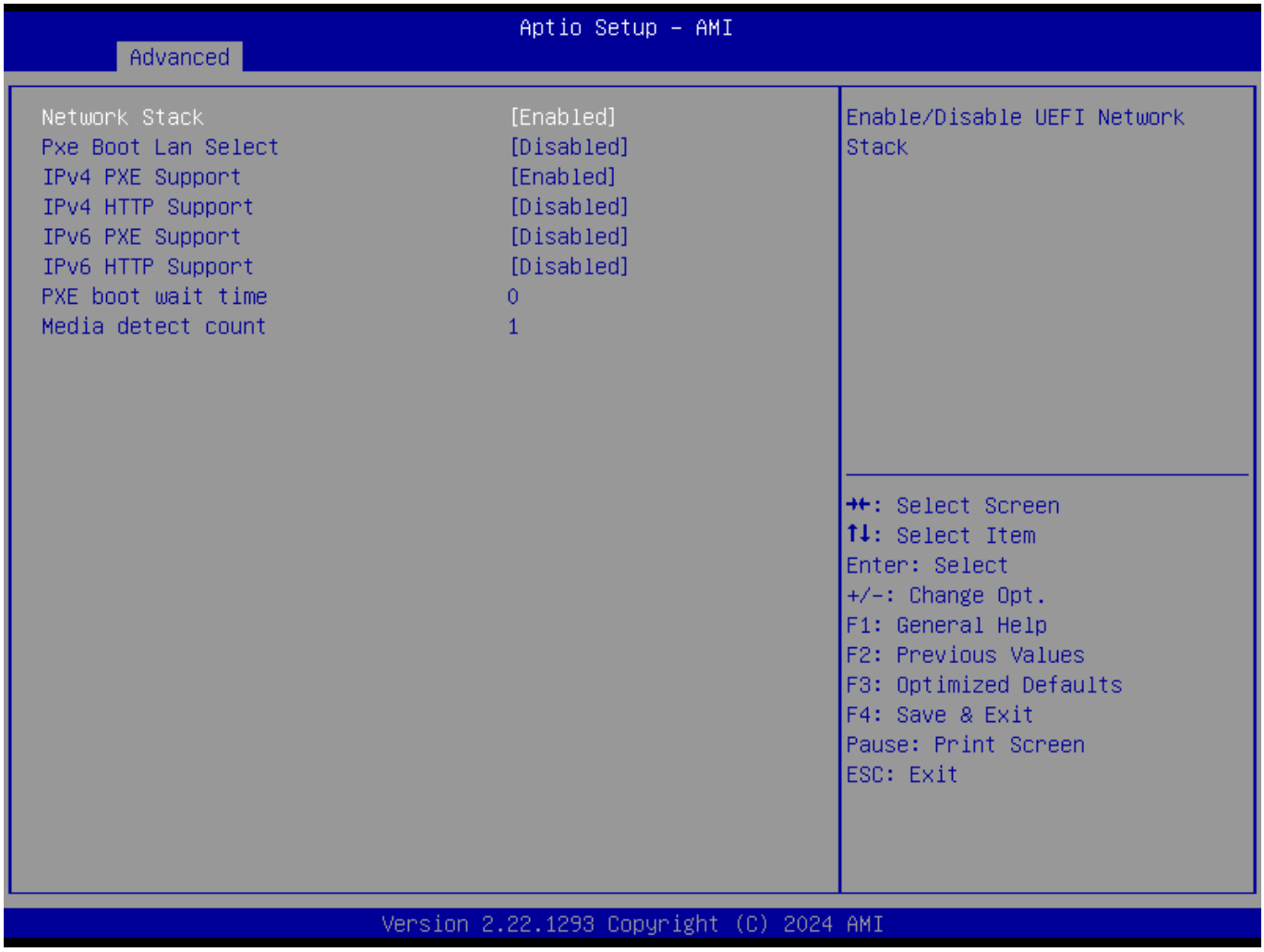
This menu contains the following information:

- Wake system from S5

  Enable or Disable System wake on alarm event. Select FixedTime (Daily/Weekly/Monthly Time), system will wake on the hr::min::sec specified.

  Refer to section 2.6 of this manual for setting up.

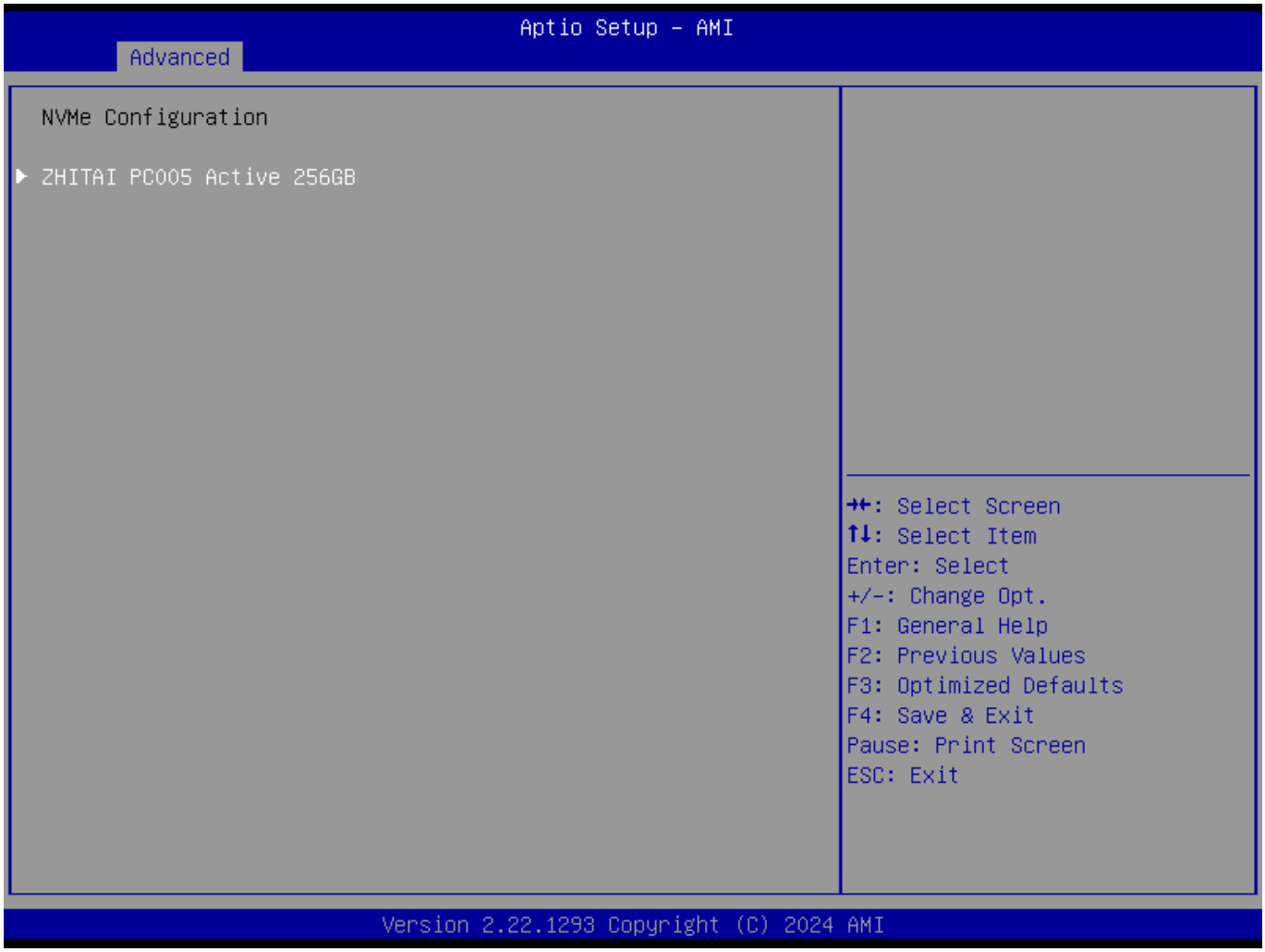
3.2.13 Network Stack Configuration



This menu contains the following information:

- Network Stack
  Enable or Disable UEFI Network Stack.
- PXE Boot Lan Select
  Select the LAN port to Support PXE Boot.
- IPv4 PXE Support
  Enable or Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
- IPv4 HTTP Support
  Enable or Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
- IPv6 PXE Support
  Enable or Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
- IPv6 HTTP Support
  Enable or Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
- PXE boot wait time
  Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.
- Media detect count
  Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

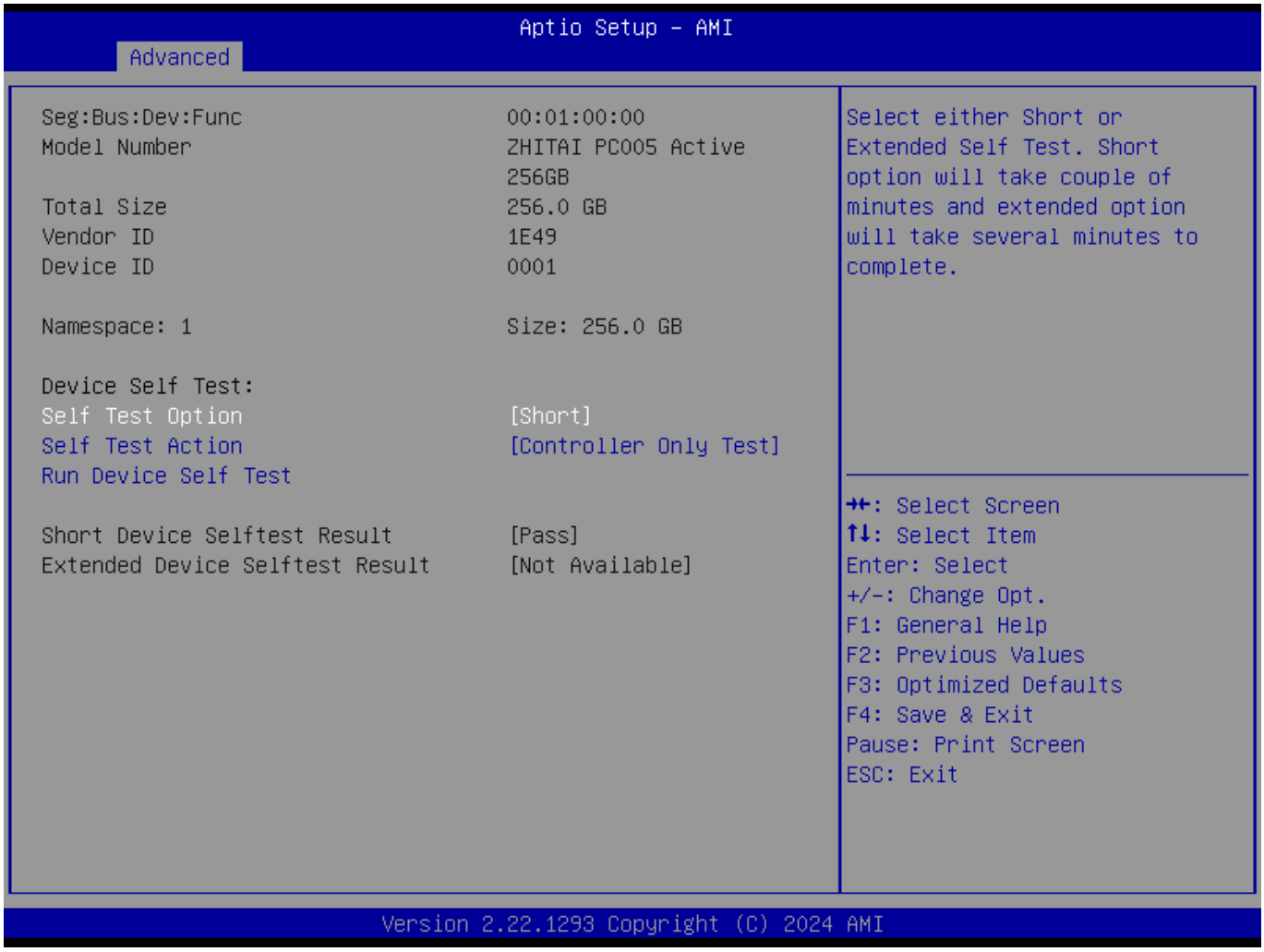
3.2.14 NVMe Configuration



This menu contains the following information:

- NVMe Configuration
  NVMe Device Options Settings. (When no device is connected, the Option display 'No NVMe Device Found').

3.2.14.1 NVMe Device Options Settings



This menu contains the following information:

- Display the NVME device information
- Device Self Test

  Self Test Option: Select either Short or Extended Self Test. Short option will take couple of minutes and extended option will take several minutes to complete.

  Self Test Action: Select either to test Controller alone or Controller and Name Space. Selecting Controller and Name Space option will take lot longer to complete the test.

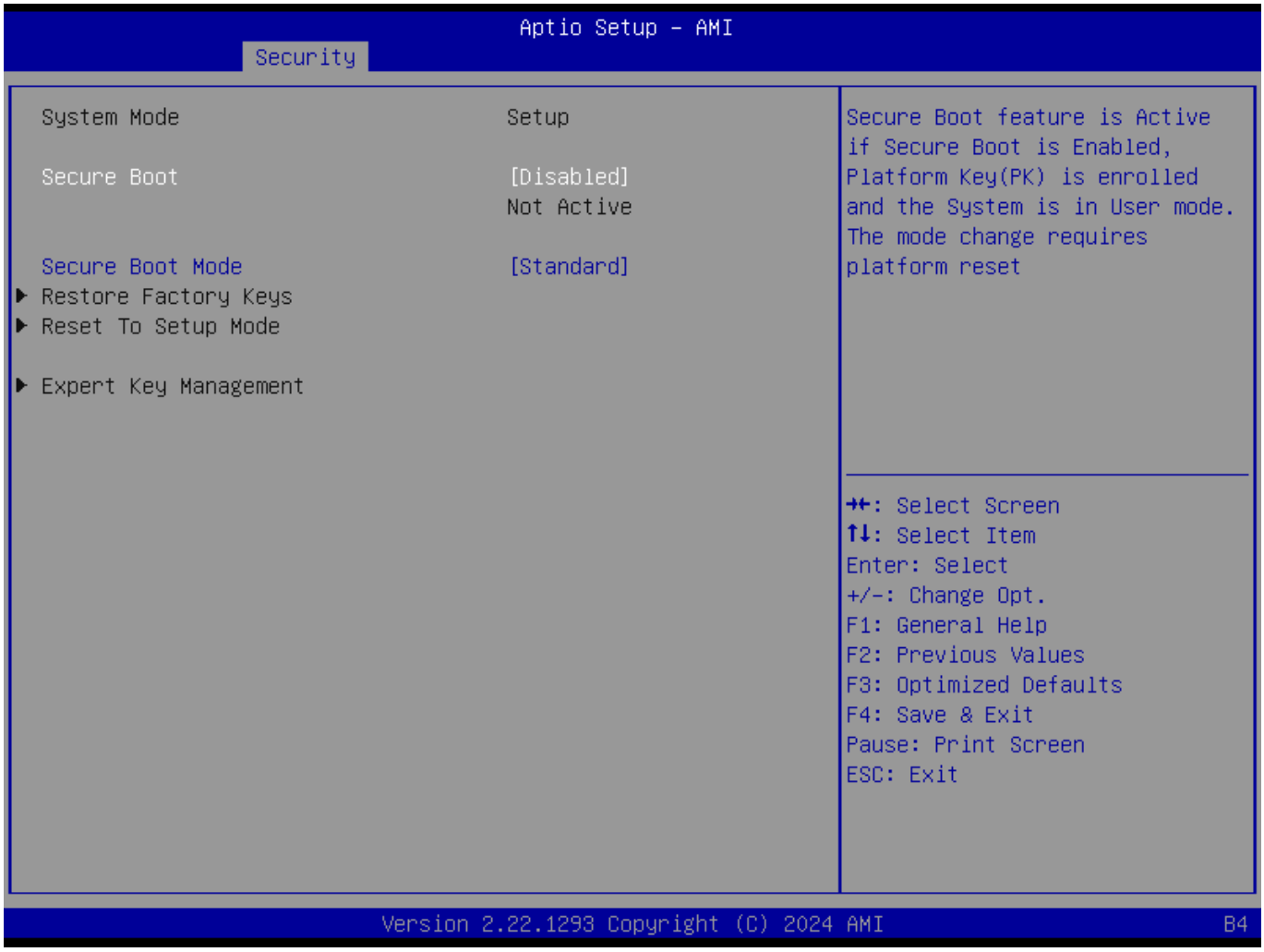
  Run Device Self Test: Perform device self test for the corresponding Option and Action selected by user. Pressing 'Esc' key will abort the test. Result shown below is the recent result logged in the device.

3.3 Security

This menu contains the following information:

- Administrator Password
  Set Setup Administrator Password.
- User Password
  Set User Password.
- Secure Boot
  Secure Boot configuration.

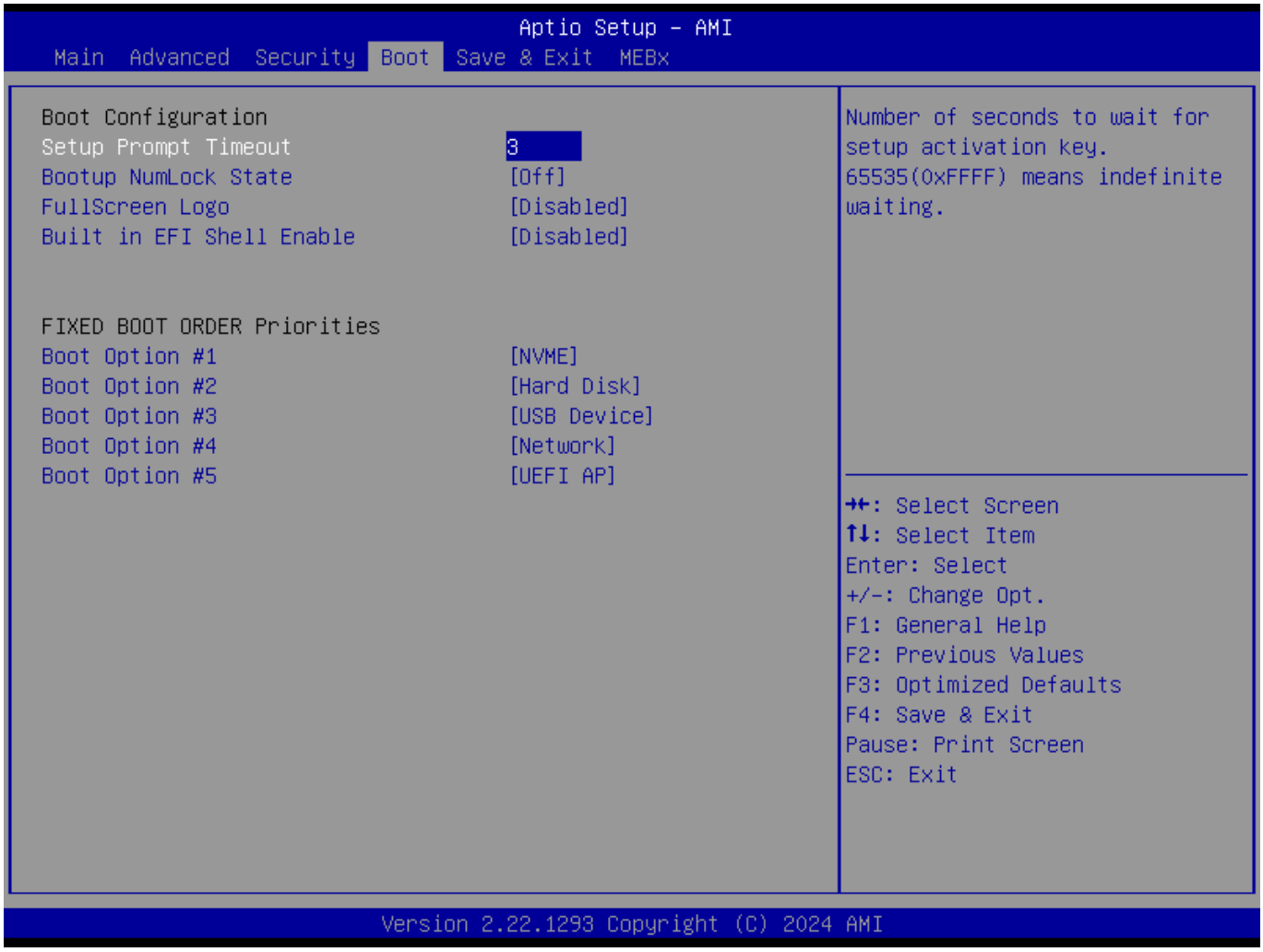
3.3.1 Secure Boot



This menu contains the following information:

- System Mode
  Display the System Mode.
- 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
  Secure Boor mode options: Standard or Custom.
  In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.
- Restore Factory Keys
  Force System to User Mode. Install factory default Secure Boot key databases.
- Reset To Setup Mode
  Delete all Secure Boot key databases from NVRAM.
- Expert Key Management
  Enables expert users to modify Secure Boot Policy variables without full authentication.

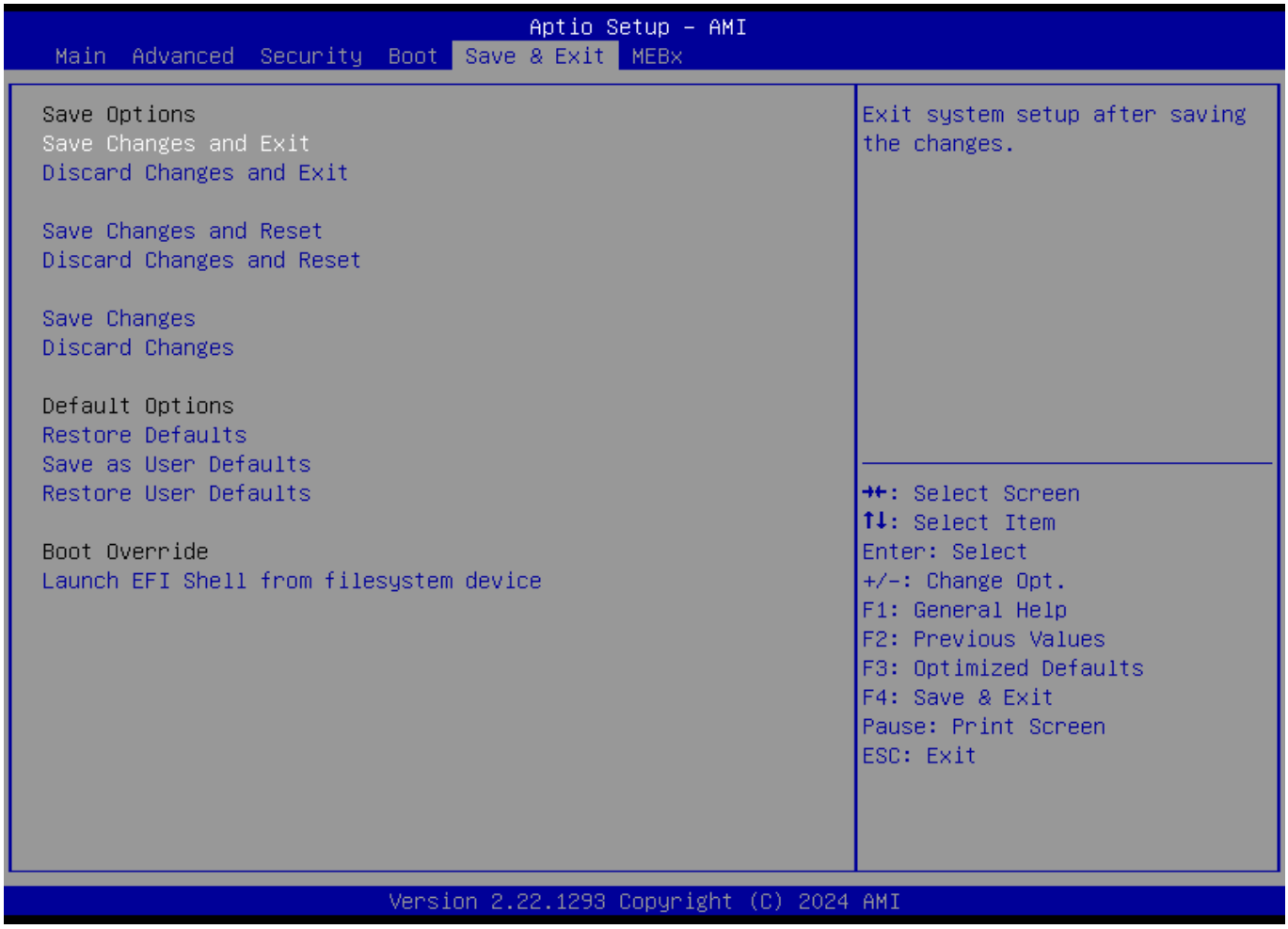
3.4 Boot



This menu contains the following information:

- Setup Prompt Timeout
  Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
- Bootup Num Lock State
  Select the keyboard Num Lock state.
- Full Screen Logo
  Enable or Disable Full Screen Logo option.
- Built in EFI Shell Enable
  Enable or Disable Built in EFI Shell.
- FIXED BOOT ORDER Priorities
  Display Boot order, and allow to set NVME/Hard Drive/USB/XXX boot order in this group.

3.5 Save & Exit



This menu contains the following information:
Save Options:

- Save Changes and Exit
  Exit the system after saving the changes.
- Discard Changes and Exit
  Exit system setup without saving any changes.
- Save Changes and Reset
  Reset the system after saving the changes.
- Discard Changes and Reset
  Reset system setup without saving any changes.
- Save Changes
  Save Changes done so far to any of far to any of the setup options.
- Discard Changes:
  Discard Changes done so far to any of the setup options.

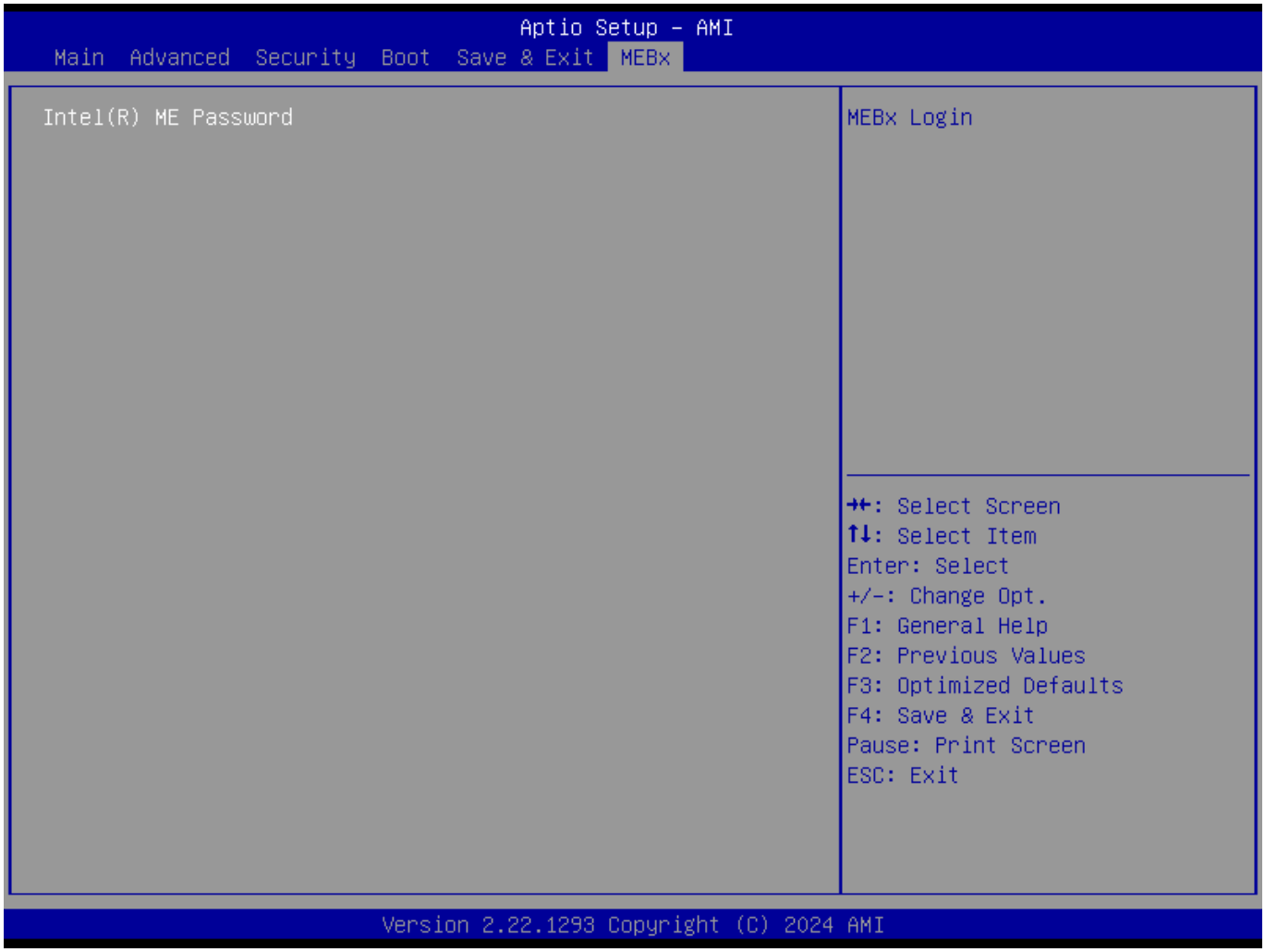
Default Options

- Restore Defaults
  Restore or Load Default values for all the setup options.
- Save as User Defaults
  Save the changes done so far as User Defaults.
- Restore User Defaults
  Restore the User Defaults to all the setup options.

Boot Override

- Launch EFI Shell from filesystem device
  Attempts to launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

3.6 MEBx



This menu contains the following information:

- Intel(R) ME Password
  MEBx Login.

www.premioinc.com