NuTAM-8XXC

12.1”/15”/15.6”/17”/19”/21.5”

Intel Alder Lake-N

Fanless Industrial Narrow Edge Touch Panel PC

User Manual

Release Date	Revision
Nov. 2025	V1.0

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Revision History

Reversion	Date	Description
1.0	2025/12/1	Initiation

Warning!

This equipment generates uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Caution
Risk of explosion if the battery is replaced with an incorrect type.
Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

Disclaimer
This information in this document is subject to change without notice. In no event shall Aplex Technology Inc. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

Table of Contents

Chapter 1 Getting Started

1.1 Main Features

- 12.1”~21.5” Fanless Stainless Steel Panel PC
- Intel® Alder Lake-N Processor
- True Flat Front Bezel Design and Grade 304 Stainless Steel Enclosure (Grade 316 for Option)
- Support Projective capacitive touch
- Touch on/off Button on the Side Edge for Hygienic Cleaning
- IP66/IP69K Rated with M12 Connectors
- 9~36V DC wide-ranging power input
- Support Ergonomic Versatile Mounting: Yoke Mounting / VESA Mounting

1.2 Serial Information

Serial Model	LCD Size	Touch Screen	M/B	Fanless	Power Input
NuTAM-812CP(H)	12.1”	Projected Capacitive	SBC-7135	V	DC 9~36V
NuTAM-815CP(H)	15”	Projected Capacitive	SBC-7135	V	DC 9~36V
NuTAM-816CP(H)	15.6”	Projected Capacitive	SBC-7135	V	DC 9~36V
NuTAM-817CP(H)	17”	Projected Capacitive	SBC-7135	V	DC 9~36V
NuTAM-819CP(H)	19”	Projected Capacitive	SBC-7135	V	DC 9~36V
NuTAM-821CP(H)	21.5”	Projected Capacitive	SBC-7135	V	DC 9~36V

1.3 Hardware Specifications

Main Board	SBC-7135, 3.5"SBC (146mm x 101.7mm)
CPU	Intel N97 Processor, Quad Core 2.0GHz, TDP is 12W Intel Atom x7425E, Quad Core 1.5GHz, TDP is 12W
CPU Turbo Mode	Disable Turbo Mode in BIOS
Chipset	SoC
Graphics	Intel® UHD Graphics, 1.20 GHz
Memory	1 x DDR5-4800MHz SO-DIMM (Single Channel, Non-ECC) socket, up to 32GB
Standard I/O ports	● 1 x M12 8pin for 2xUSB 2.0 (TB-536-U2)/with waterproof CAP (0300000002280000) ● 1 x M12 8pin for 2.5 GbE LAN/ with waterproof CAP ● 1 x M12 8pin for COM 1/RS-232/422/485 (Default RS-232) (TB-536-8)/ with waterproof CAP (0300000002280000) ● 1 x M12 3pin DC Power (TB-536-3) (6410205361000100)

<table>
<tr><td></td><td>

1 x Power Switch on the rear (Stainless steel) (Power symbol/stepless switch/green light/S57M-143G05)
1 x Touch on/off switch on the side (Ring/two-stage switch/reserved blue light, no light on /S57M-242B05)
*Touch on (Default)
(Touch on= The button no need to be pressed, but Touch off = the button must be pressed)

</td></tr>
<tr><td>Optional I/O ports</td><td>
2x M12 Blank for Option (Select one from each type) :


<table>
<tr><th>M12-1</th><th>M12-2</th></tr>
<tr><td>2 x USB2.0</td><td>1 x COM2(RS-232/422/485) or
1 x 2.5 GbE LAN</td></tr>
<tr><td>1 x USB3.2 Gen1</td><td>1 x USB3.2 Gen1 or
1 x COM2(RS-232/422/485) or
1 x 2.5 GbE LAN</td></tr>
<tr><td>1 x COM2(RS-232/422/485)</td><td>1 x USB3.2 Gen1 or
2 x USB2.0 or
1 x 2.5 GbE LAN</td></tr>
<tr><td>1 x 2.5 GbE LAN</td><td>1 x USB3.2 Gen1 or
2 x USB2.0 or
1 x COM2(RS-232/422/485)</td></tr>
<tr><td>1 x HDMI</td><td>1 x COM2(RS-232/422/485) or
1 x USB3.2 Gen1 or
2 x USB2.0 or
1 x 2.5 GbE LAN</td></tr>
</table>
</td></tr>
<tr><td>Storage</td><td>

1 x M.2 M-Key 2280(PCIe x1/SATA-III), default SATA-III SSD
1 x 2.5” SATA-III SSD as optional

</td></tr>
<tr><td>Chassis Color</td><td>

304 Stainless Steel Enclosure (Default)
316 Stainless Steel Enclosure (Optional)

</td></tr>
<tr><td>Touch screen</td><td>Projected Capacitive, Flat Panel design, default USB interface</td></tr>
<tr><td>Expansion Slot</td><td>

1 x M.2 2230 E-Key (USB2.0, PCIe x1) for optional Wi-Fi/BT module
1 x M.2 2242/3402/3052 B-key (PCIe x1, USB3.2 Gen1, USB2.0) for optional LTE/5G module
1 x SIM card

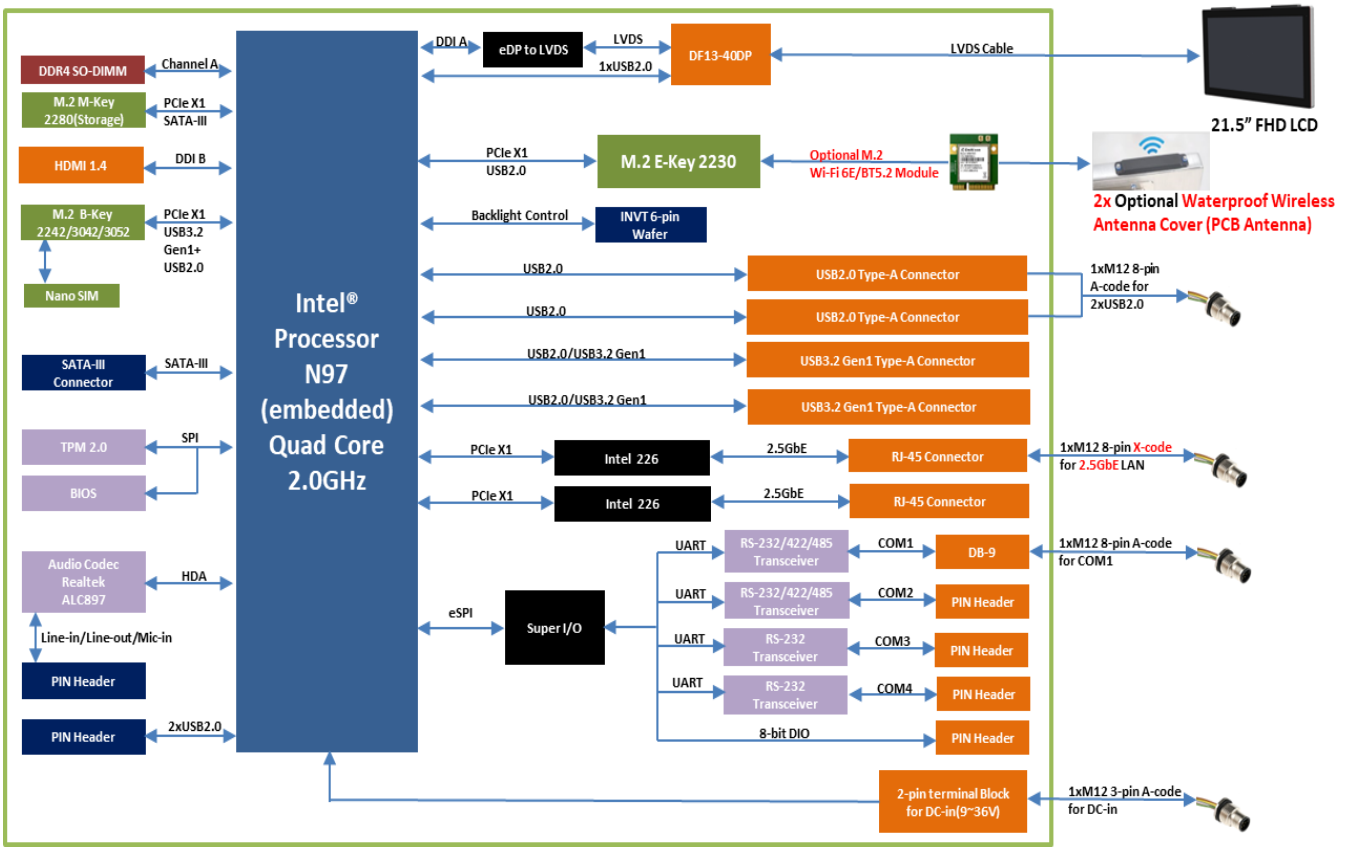
</td></tr>
</table>

	● Optional M.2 Module: 6491002101000000, AX210.NGW00/OTHERS/M.2 2230 A/E KEY_INTEL/WIFI 6E +BT5.3/802.11AX(2.4G+5G+6GHz BANDS)+BT5.3/0~80 DEGREE/MEDICAL
IP Level	Totally IP66/IP69K
Safety & EMC	Meet CE / FCC, Class A
TPM	TPM 2.0
Antenna	● Optional Wi-Fi/BT Antenna Cover : 0431791630000002，SABIC-3412R/BLACK ● Optional Wi-Fi/BT Antenna Rubber : 0510000000000023，30˚+57115B+MYLAR ● Optional internal Wi-Fi/BT PCBA Antenna: (1) 6602000152400000，RFA-25-AP152L-4G-400 L=40cm (2) 6602000152500000，RFA-25-AP152L-4G-500 L=50cm

1.4 Power

Item	Description
Power Module	9~36VDC

1.5 Block Diagram



1.6 Dimensions

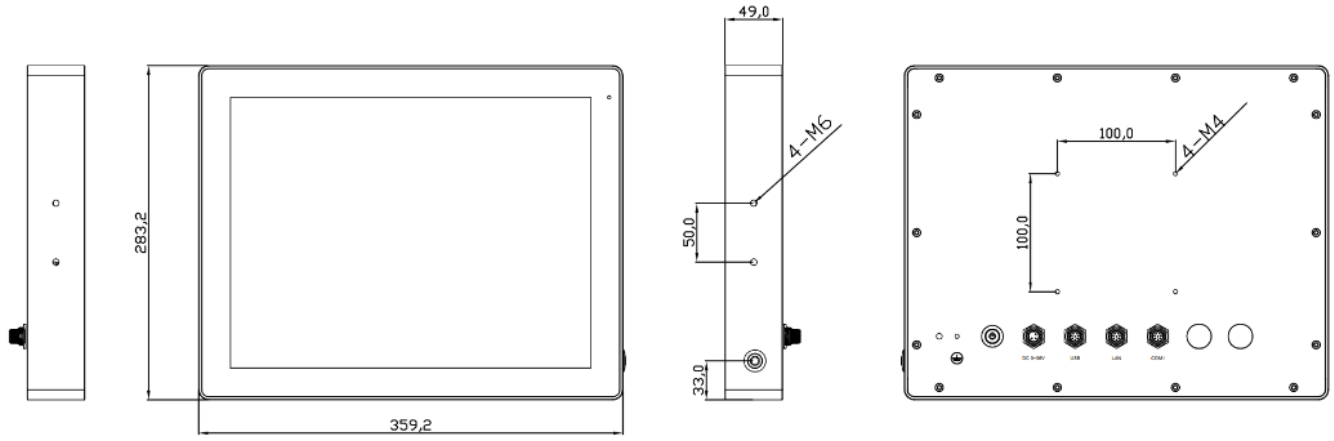


Figure 1. 1 Dimensions of NuTAM-815CP(H)

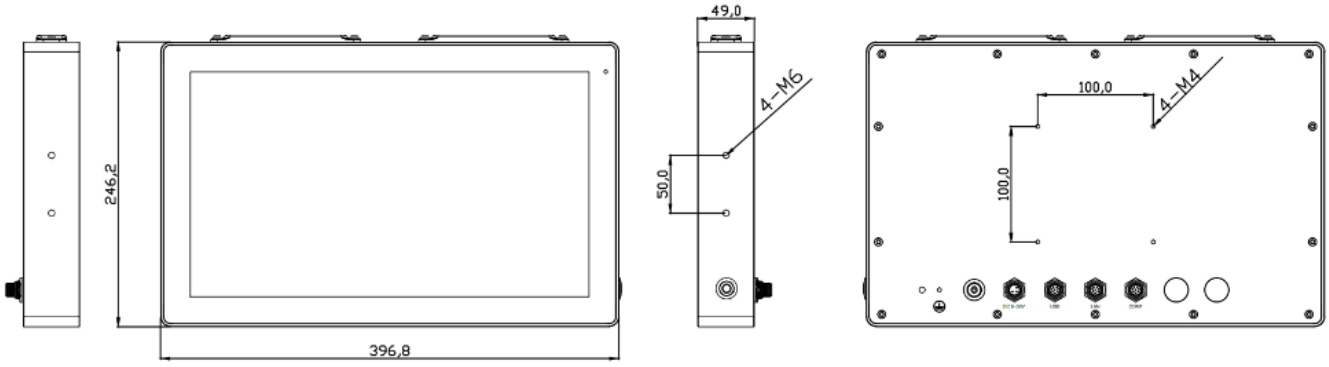


Figure 1. 2 Dimensions of NuTAM -816CP(H)

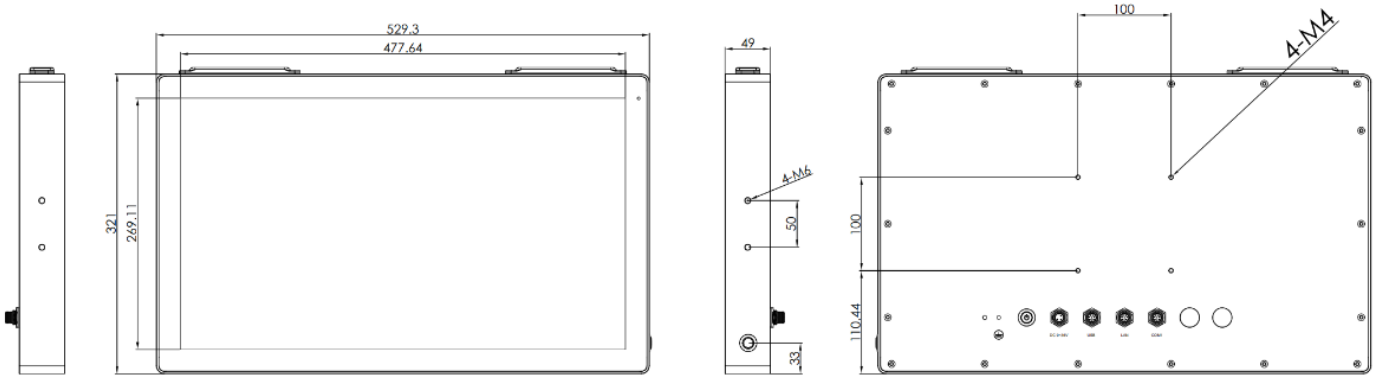


Figure 1. 3 Dimensions of NuTAM-821CP(H)

1.7 Brief Description of NuTAM-8XXC Series

There are 12.1”, 15”, 15.6”, 17”, 19”, and 21.5” new generation panel PCs in the NuTAM-8XXC series, adopting SUS304 grade stainless steel housing (SUS316 grade for option). The series features a 100% dustproof and waterproof guarantee with an all-in-one fanless design. It is powered by Intel® Processor N97 Quad Core 2.0GHz, supporting 1 x DDR5-4800MHz SO-DIMM (Single Channel, Non-ECC) socket, up to 32GB, and provides storage through 1 x M.2 M-Key 2280 (PCIe x1/SATA-III) supporting default SATA-III, with an optional 2.5” SATA-III SSD. The NuTAM-8XXC series supports wide range DC 9~36V power input and is IP66/IP69K rated with M12 connectors. Furthermore, the models feature a flat-panel projected capacitive touch screen with a default USB interface, and offer optional high-brightness LCDs and optical bonding. It also features a touch on/off button on the side edge for hygienic cleaning and supports versatile mounting options, including Yoke mounting and space-saving VESA mounting.

Figure 1. 4 Front View and Touch on/off Button of NuTAM-8XXC Series

Figure 1. 5 Rear View of NuTAM-8XXC Series

1.8 Yoke Mounting and VESA Mounting

The NuTAM-8XXC Series model can be Yoke mounted and VESA mounted as shown in Picture below.

Figure 1. 6 Yoke mounting of NuTAM-8XXC Series

Figure 1. 7 VESA mounting of NuTAM-8XXC Series

Chapter 2 Hardware

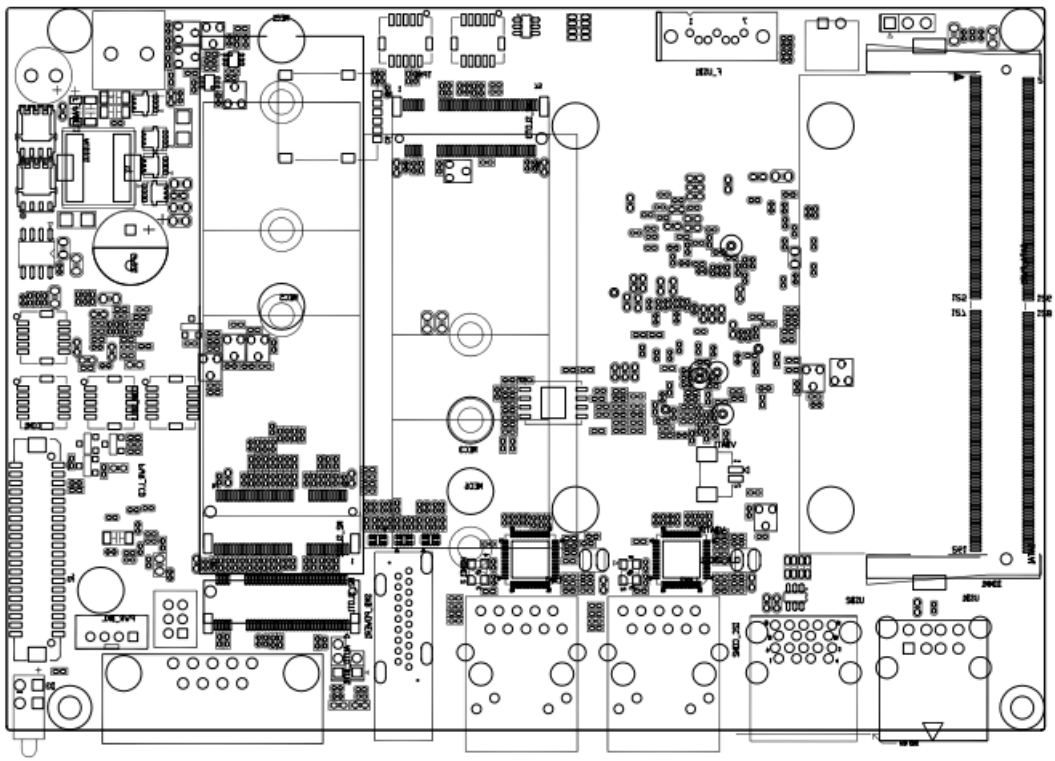
SBC-7135 is a 3.5" industrial motherboard developed on the basis of Intel Alder Lake-N, which provides abundant peripheral interfaces to meet the needs of different customers.

2.1 Motherboard Specifications

Specifications	
Board Size	146mm x 101.6mm
CPU Support	Intel N95,4C4T ,up to 3.4GHz, 16EU iGPU TDP:15W Intel N97,4C4T, up to 3.6 GHz , 24EU iGPU , TDP:12W Intel N100,4C4T,up to 3.4GHz, 24EU iGPU,TDP:6W Intel N200,4C4T,up to 3.7GHz, 32EU iGPU,TDP:6W Intel Core™ i3-N300,8C8T,up to 3.8GHz, 32EU iGPU,TDP:7W Intel Core™ i3-N305,8C8T,up to 3.8GHz, 32EU iGPU,TDP:15W Intel Atom® X7425E,4C4T, up to 3.4GHz, 24EU iGPU , TDP:12W
Chipset	SOC
Memory Support	SO-DIMM (262pins), up to 32GB DDR5 4800MT/s
Graphics	Integrated Intel UHD Graphics
Display Mode	1 x HDMI1.4b via HDMI Port 1 x LVDS (18/24-bit dual LVDS)/Edp(option by bom)
Support Resolution	HDMI: support up to 4096x2160@60Hz LVDS: support up to 1920x1200@60Hz eDP: support up to 3840x2160@60Hz
Super I/O	ITE IT8786E-I/HX
BIOS	AMI/UEFI BIOS
Storage	1 x SATA-III via 7pin SATA connector 1 x M.2 M-Key (Pcie 3.0 x1+SATA-III) 2280 for Storage
Ethernet	1 x 2.5G LAN via intel® I226V/IT controller (PXE/WOL) 1 x 2.5G LAN via intel® I226V/IT controller (PXE/WOL)
USB	2 x USB3.2 gen1/USB2.0,Type-A stack ports (USB1) 2 x USB2.0, Type-A stack ports (USB2) 2 x USB2.0 via SHD 1.25mm 2x5pin header (F_USB1) 1x USB2.0 for M.2 B-Key 1x USB2.0 for M.2 E-Key
Serial	1 x RS-232(default)/422/485, signals select via BIOS (COM1), pin9 RI(default)/5V/12V, select via COM1_PIN9SEL. (DB9, COM1) 1 x RS-232(default)/422/485 via SHD 1.25mm 2x5pin header, signals select via BIOS (COM2) 4 x 2wired RS232 via SHD 1.25mm 2x5pin header (COM3-6)

GPIO	8-bit digital I/O by SHD 1.25mm 2x5pin header (GPIO1)
Audio	Support Audio via Realtek ALC887-VA2-CG HD audio codec Support Line-in,Line-out, MIC by SHD 1.25mm 2x5pin header
Expansion Slots	1 x M.2 B-Key(PCIex1, USB3.0, USB2.0),3042/3052 for 4G/5G module with Nano SIM slot (SIM1) 1 x M.2 E-Key(PCIex1,USB2.0,CNVi),2230 for WIFI/BT module
FAN	1x 2pin fan connector
Watchdog Timer	Software programmable 1–255 level
TPM	Onboard TPM IC Infineon_SLB9670AQ2.0 Support fTPM, select via BIOS
Switches and LED Indicators	Power button/reset button/power LED/HDD LED via SHD 1.25mm 2x5pin header (F_Panel1)
Battery	Support 3V RTC Li-battery via 2pin wafer (VBAT1)
Power Management	Wide range DC 9~36V±10% power input via 2pin terminal block
Temperature	Operating: -30℃ to 70℃ Storage: -40℃ to 85℃
Humidity	10% - 90%, non-condensing, operating
Certifications	Meet CE/FCC class A UL RoHS2.0

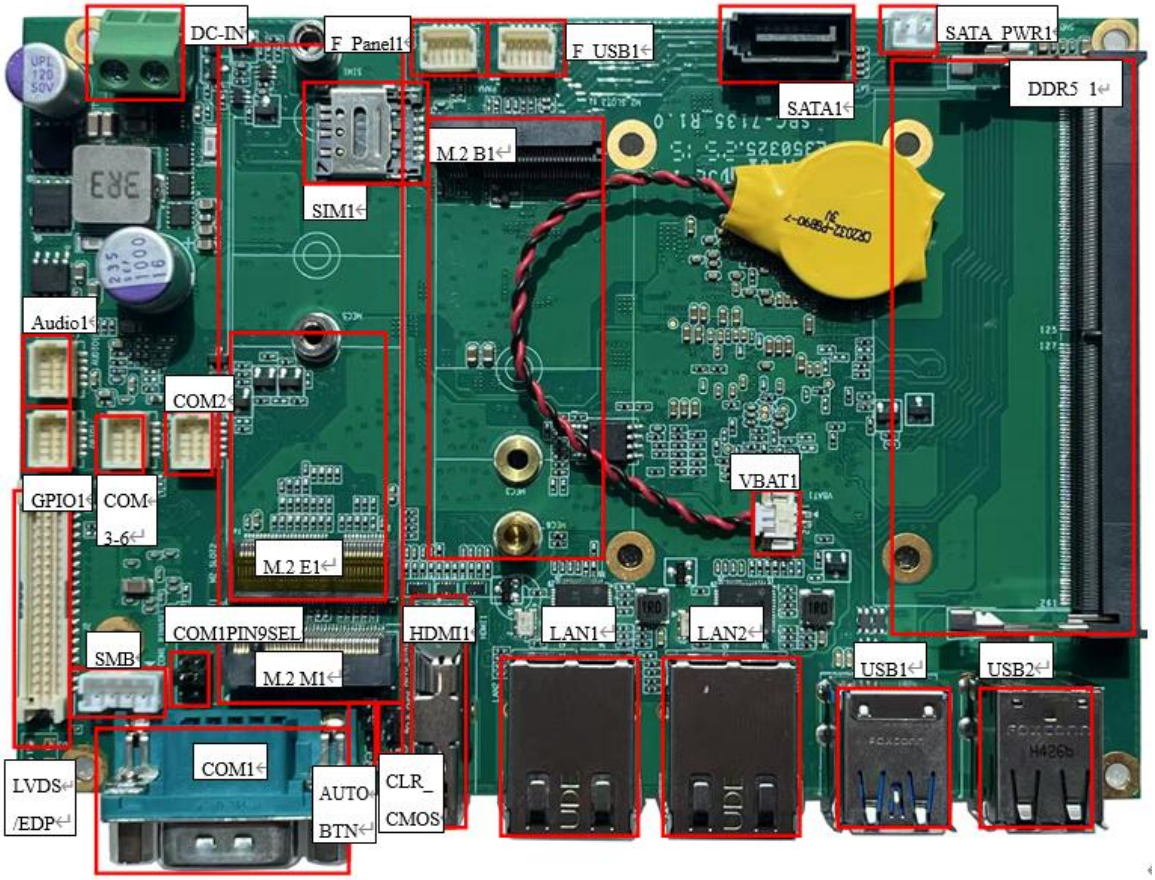
2.2 Board Dimensions



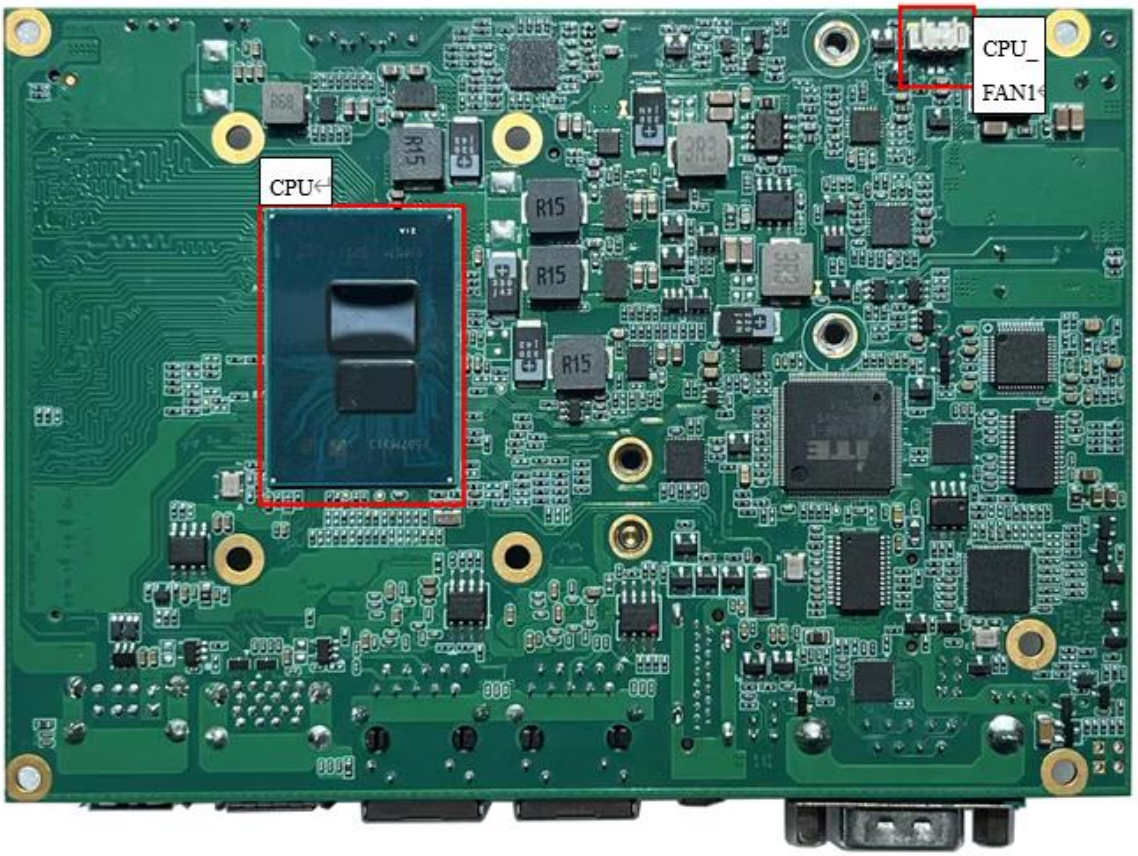
Dimensions: 146 x 101.6 (units :mm)

2.3 Jumpers and Connectors Location

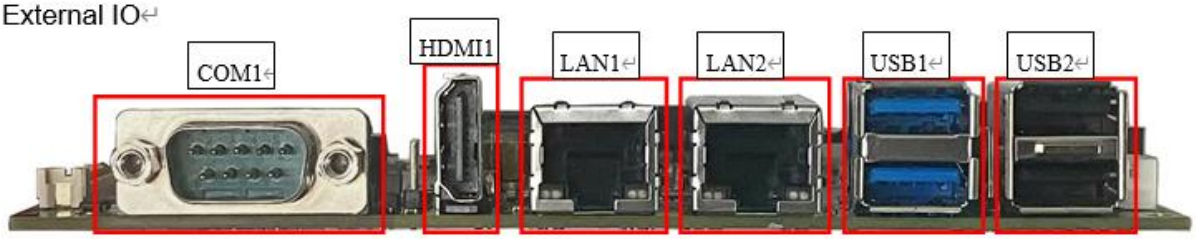
Board Top



Board Bottom



External IO



2.4 Jumpers Setting and Connectors

1. CPU1:

(FCBGA1264) Onboard Intel Alder Lake SoC

Model	SoC				
	Number	PBF	Cores/ Threads	TDP	Remarks
SBC-7135-N95	N95	Up to 4.4GHz(P-Core)	4C / 4T	15W	Option
SBC-7135-N97	N97	Up to 4.4GHz(P-Core)	4C / 4T	12W	Default
SBC-7135-N100	N100	Up to 4.4GHz(P-Core)	4C / 4T	6W	Option
SBC-7135-N200	N200	Up to 4.4GHz(P-Core)	4C / 4T	6W	Option
SBC-7135-N300	N300	Up to 4.5GHz(P-Core)	8C / 8T	7W	Option
SBC-7135-N305	N305	Up to 4.5GHz(P-Core)	8C / 8T	15W	Option
SBC-7135-X7425E	X7425E	Up to 4.5GHz(P-Core)	4C / 4T	12W	Option

2. DDR5_1:

(SO-DIMM 260Pin slot) DDR5 memory socket, the socket is located at the top of the board and supports 260Pin 1.1V DDR5 SO-DIMM memory module up to 32GB.

Max Memory Size (dependent on memory type).

3. VBAT1:

(1.25mm Pitch 1x2 wafer Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
Pin1	VCC_RTC
Pin2	GND

4. CLR_CMOS1:

CMOS clear switch, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

Procedures of CMOS clear:

a) Turn off the system and unplug the power cord from the power outlet.

b) To clear the CMOS settings, close CLR_CMOS1 for 1 second

c) Power on the system again.

d) When entering the POST screen, press the <DEL> key to enter CMOS Setup Utility to load optimal defaults.

e) After the above operations, save changes and exit BIOS Setup.

5. CPU_FAN1:

(1.25mm Pitch 1x2 wafer Pin Header) Fan connector, cooling fans can be connected directly for use.

Pin#	Signal Name
1	GND
2	VCC(5V_S0)

Note:

Output power of cooling fan must be limited under 3W.

6. DC_IN1:

(5.08mm Pitch 1x2 Pin Connector) DC9~36V System power input connector.

Pin#	Power Input
Pin1	DC_IN+ (DC+9V~36V)
Pin2	DC_IN- (Ground)

7. SMB:

(2.00mm Pitch 1x4 Pin Header) For SMBUS interface Device.

Pin#	Signals
1	GND
2	Data
3	Clock
4	Vcc 3.3V

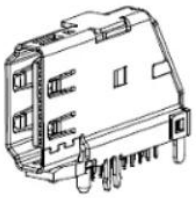
8. LVDS/EDP:

(1.25mm Pitch 2x20 Connector, DF13-40P) Support 18/24-bit LVDS interface LCM with USB2.0 signal for touch screen.

Function	Signal Name	Pin#		Signal Name	Function
DC12V	12V_S0	1	2	12V_S0	DC12V
fLVDS/eDP Signals	BKLT_PWM_OUT	3	4	BKLT_EN	LVDS/eDP Signals
	GND	5	6	GND	
	LVDS_VDD5	7	8	LVDS_VDD5	
	LVDS_VDD3.3	9	10	LVDS_VDD3.3	
	GND	11	12	GND	
	LA_D0-/EDP D0-	13	14	LA_D0+/EDP D0+	
	LA_D1-/EDP D1-	15	16	LA_D1+/EDP D1+	
	LA_D2-/EDP D2-	17	18	LA_D2+/EDP D2+	

	LA_D3-/EDP D3-	19	20	LA_D3+/EDP D3+	
	LA_CLK-/EDP AUX-	21	22	LA_CLK+/EDP AUX+	
	LB_D0-	23	24	LB_D0+	
	LB_D1-	25	26	LB_D1+	
	LB_D2-	27	28	LB_D2+	
	LB_D3-	29	30	LB_D3+	
	LB_CLK-	31	32	LB_CLK+	
USB3	GND	33	34	GND	
	USB2 9D-	35	36	USB2 9D+	USB3
SMbus	SMbus DAT	37	38	5V_S5	
	SMbus CLK	39	40	Power LED+	Power LED

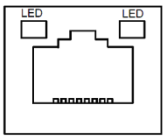
9. HDMI1:



(Vertical HDMI Connector) HDMI Interface connector.

HDMI 1.4, Support resolution up to 1920x1080@60Hz.

10. LAN1:

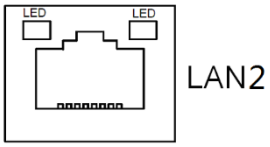


LAN1

(RJ45 Connector) Provide 2.5GbE LAN via Intel® I226V/IT.

Status	Description
Green ACT, Yellow Link	100Mbps
Green ACT, Yellow Link	1G/2.5Gbps bps

11. LAN2:



(RJ45 Connector) Provide 2.5GbE LAN via Intel® I226V/IT.

Status	Description
Green ACT, Yellow Link	100Mbps
Green ACT, Yellow Link	1G/2.5Gbps bps

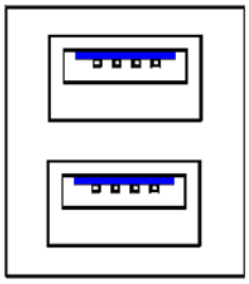
12. F_AUDIO1:

(SHD 1.25mm 2x5pin header) Provide line-in/line-out/mic-in via onboard Realtek ALC897 codec.

Signal Name	Pin#	Pin#	Signal Name
LINE-OUT-R	1	2	LINE-OUT-L
GND	3	4	GND
MIC-IN-R	5	6	MIC-IN-L
GND	7	8	GND
LINE-IN-R	9	10	LINE-IN-L

13. USB1、USB2:

(Double stack USB typeA) Rear USB3.2 connector, provides up to 2 USB3.2 gen1/USB2.0 ports, USB3.2 gen1 allows data transfers up to 5.0Gbps.



Each USB Type A Receptacle (2 Ports) Current limited value is 2A.

If the external USB device current exceeds 2.0A, please separate connectors into different Receptacle.

14. F_USB1:

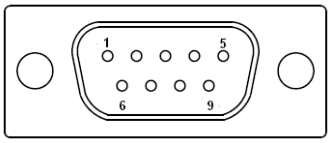
(SHD 1.25mm 2x5pin header) Provide 2xUSB2.0 signals.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23

USB2_N	3	4	USB3_N
USB2_P	5	6	USB3_P
GND	7	8	GND
GND	9	10	GND

15. COM1:

(DB9 connector) Provide serial RS232/422/485 via standard DB9 male connector. Default is set to RS232, RS422/485 can be selected via BIOS. Pin 9 RI/5V/12V select via COM1_PIN9SEL.



RS232 (Default):	
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	GND
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP1 select Setting (RI/5V/12V)
BIOS Setup：Serial Port 1 Configuration【RS-232】	

RS422 (option):	
Pin#	Signal Name
1	422_TX-
2	422_TX+
3	422_RX+
4	422_RX-
5	GND
6	NC
7	NC
8	NC
9	NC
BIOS Setup：Serial Port 1 Configuration【RS-422】	

RS485 (option):	
Pin#	Signal Name
1	485-
2	485+
3	NC
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC
BIOS Setup：Serial Port 1 Configuration【RS-485】	

16. COM1_PIN9SEL:

(2.0mm Pitch 2x3 Pin Header) For COM1 pin9 signal setting.

JP1 Pin#	Function
Close 1-2	COM1 Pin9 = +12V
Close 3-4	**COM1 Pin9 RI (Ring Indicator, Default)**
Close 5-6	COM1 Pin9 = +5V

17. COM2:

(SHD 1.25mm 2x5pin header) Provide RS232 RS422/485, Default is set to RS232, RS422/485 can be selected via BIOS.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

18. COM3-6:

(SHD 1.25mm 2x5pin header) Provide 4x2wired RS232(COM3/4/5/6).

Signal Name	Pin#	Pin#	Signal Name
COM3_RX	1	2	COM3_TX
COM4_RX	3	4	COM4_TX

COM5_RX	5	6	COM5_TX
COM6_RX	7	8	COM6_TX
GND	9	10	GND

19. GPIO1:

(SHD 1.25mm 2x5pin header) Provide 8Xgpio with 3.3V VCC.

Signal Name	Pin#	Pin#	Signal Name
3.3V_GPIO	1	2	GND
GPIO0	3	4	GPIO1
GPIO2	5	6	GPIO3
GPIO4	7	8	GPIO5
GPIO6	9	10	GPIO7

20. F_Panel1:

(SHD 1.25mm 2x5pin header) Provide power button/reset button/power LED/HDD LED.

Signal Name	Pin#	Pin#	Signal Name
HDD LED+	1	2	Power LED+
HDD LED-	3	4	Power LED-
Reset Button-	5	6	Power Button+
Reset Button+	7	8	Power Button-
NC	9	10	NC

21. SIM1:

(Nano-SIM Slot) Support Nano SIM card for M.2 B Key.

Pin#	Signal Name
1	SIM_VCC
2	SIM_RST
3	SIM_CLK
4	GND
5	NC
6	SIM_DAT

22. M2_B1:

(M.2 B-Key Socket) Support 3042/3052 4G/5G module with Nano SIM slot,and Support 2242 Nvme interface SSD.

23. M2_M1:

(M.2 M-Key Socket) Provide PCIex1, support M-key 2280 Nvme interface SSD.

24. M2_E1:

(M.2 E-Key Socket) Provide USB2.0/PCIex1/CNVi, support E-key 2230 WiFi/BT expansion cards.

25. SATA1:

(SATA 7Pin) SATA connector provide SATA III signal for storages.

26. SATA_PWR1:

(2.0mm Pitch 1x2 Wafer Pin Header) 5V power supply for SATA1 port device.

Pin#	Signal Name
1	5V_S0
2	GND

Note:

Output current of the connector must not be above 1A.

27. AUTO_BTN:

The AUTO_BTN button allows you to select automatic power on after the motherboard is powered on. (Defalt)

Status	Function
Pin1-2 short circuit	Forced AT mode(Auto power ON)
Pin2-3 short circuit	AT(Auto power ON)/ATX(Manual Power ON) mode select via BIOS (Default AT mode)
*Note: Compatible with BIOS version 002	

Chapter 3 BIOS Setup Description

3.1 Operations after POST Screen

After CMOS discharge or BIOS flashing operation. Press [Delete] key to enter CMOS Setup.

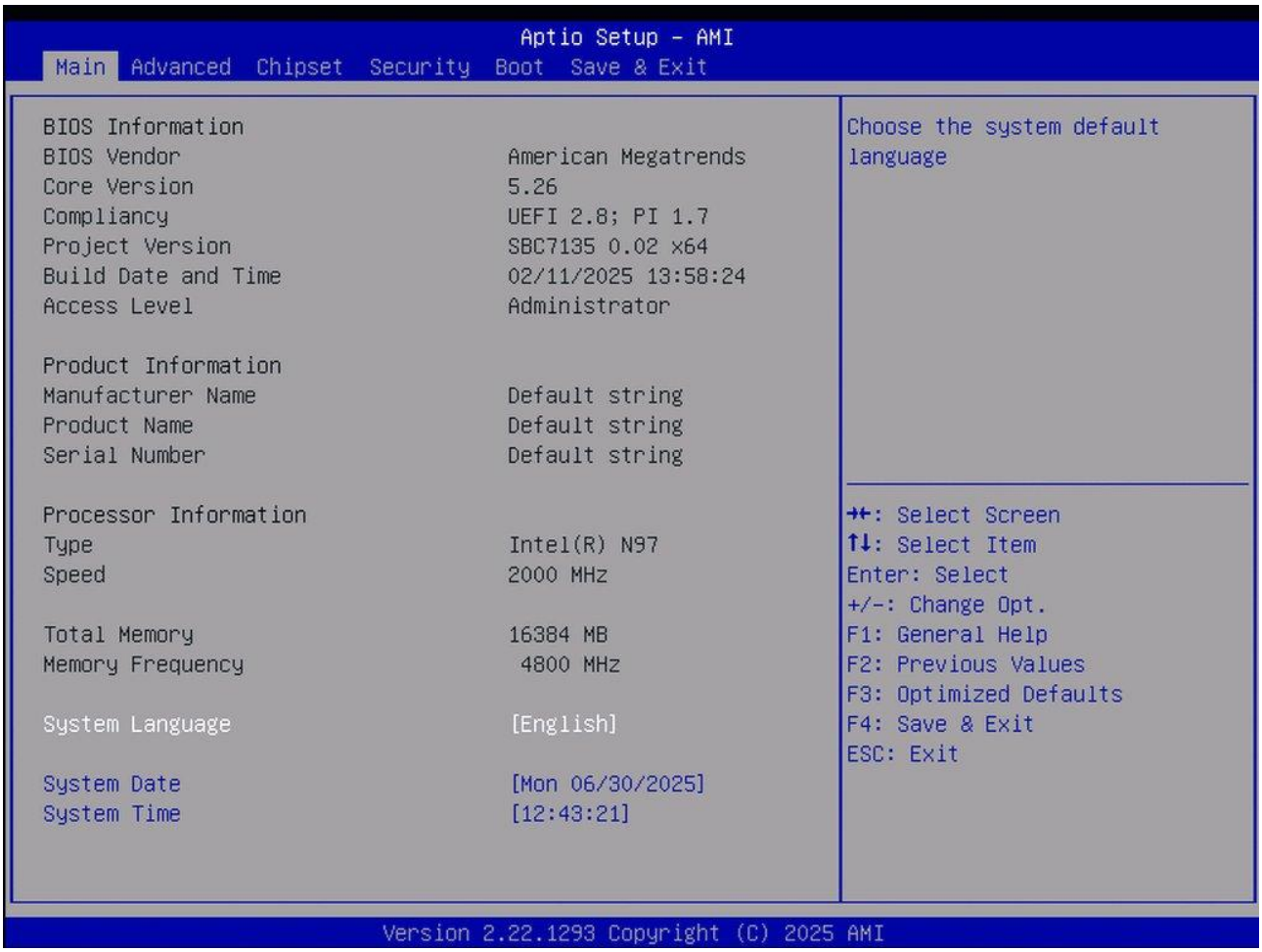
After optimizing and exiting CMOS Setup

Press F11 to load default values and continue **0085**

3.2 BIOS SETUP UTILITY

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

3.3 Main Settings



System Time:

Set the system time, the time format is:

Hour : 0 to 23

Minute : 0 to 59

Second : 0 to 59

System Date:

Set the system date, the date format is:

Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

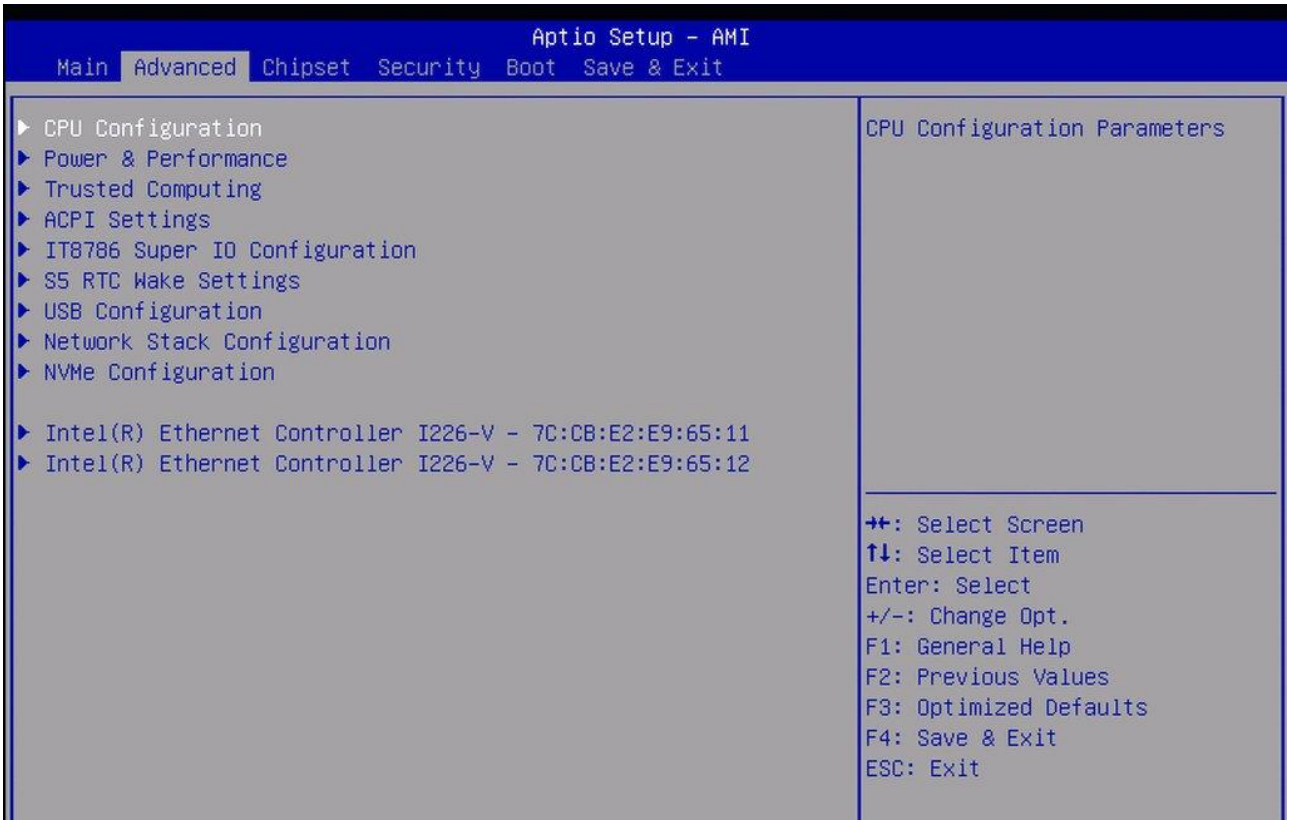
Date: 01 to 31

Year: 1998 to 2099

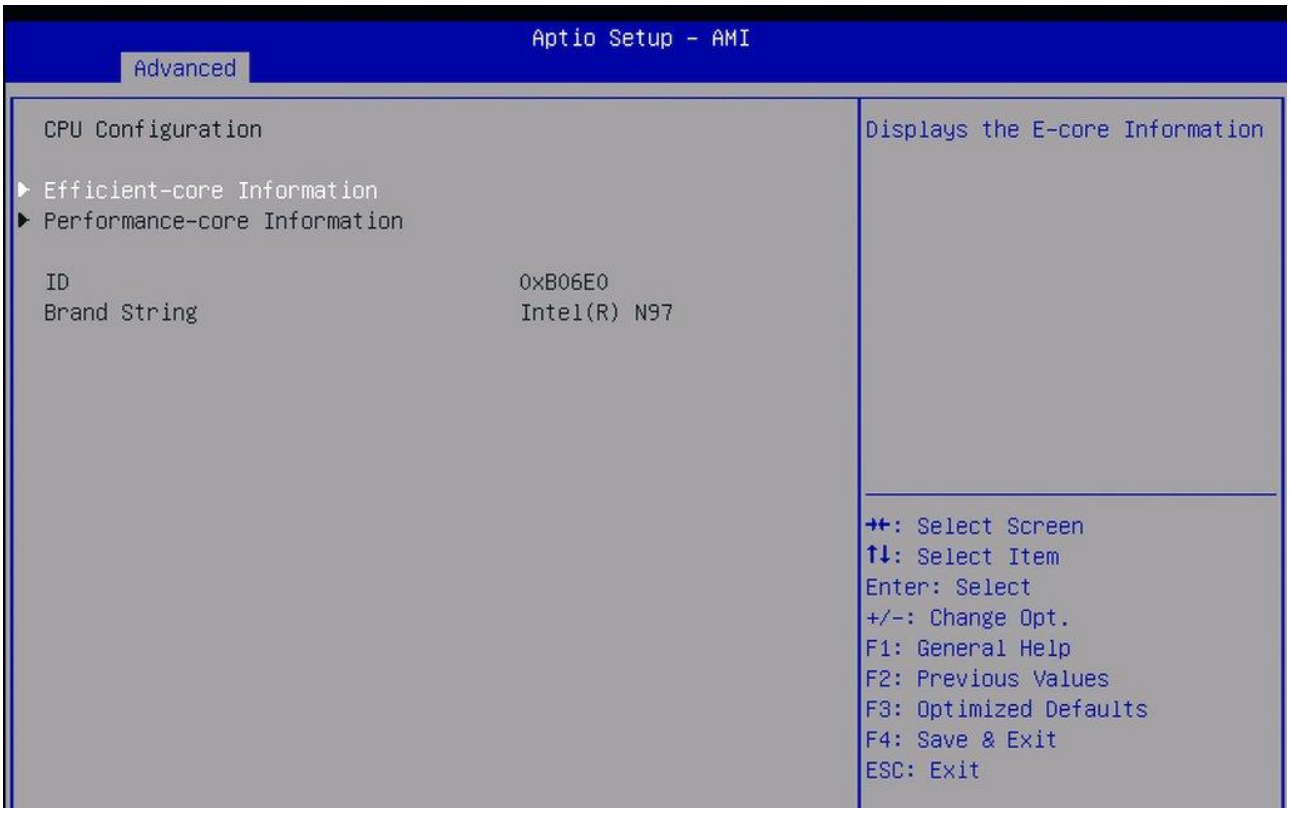
NOTE:

When all selectable items are not listed in the BIOS, it only has two options to "Enabled" or "Disabled".

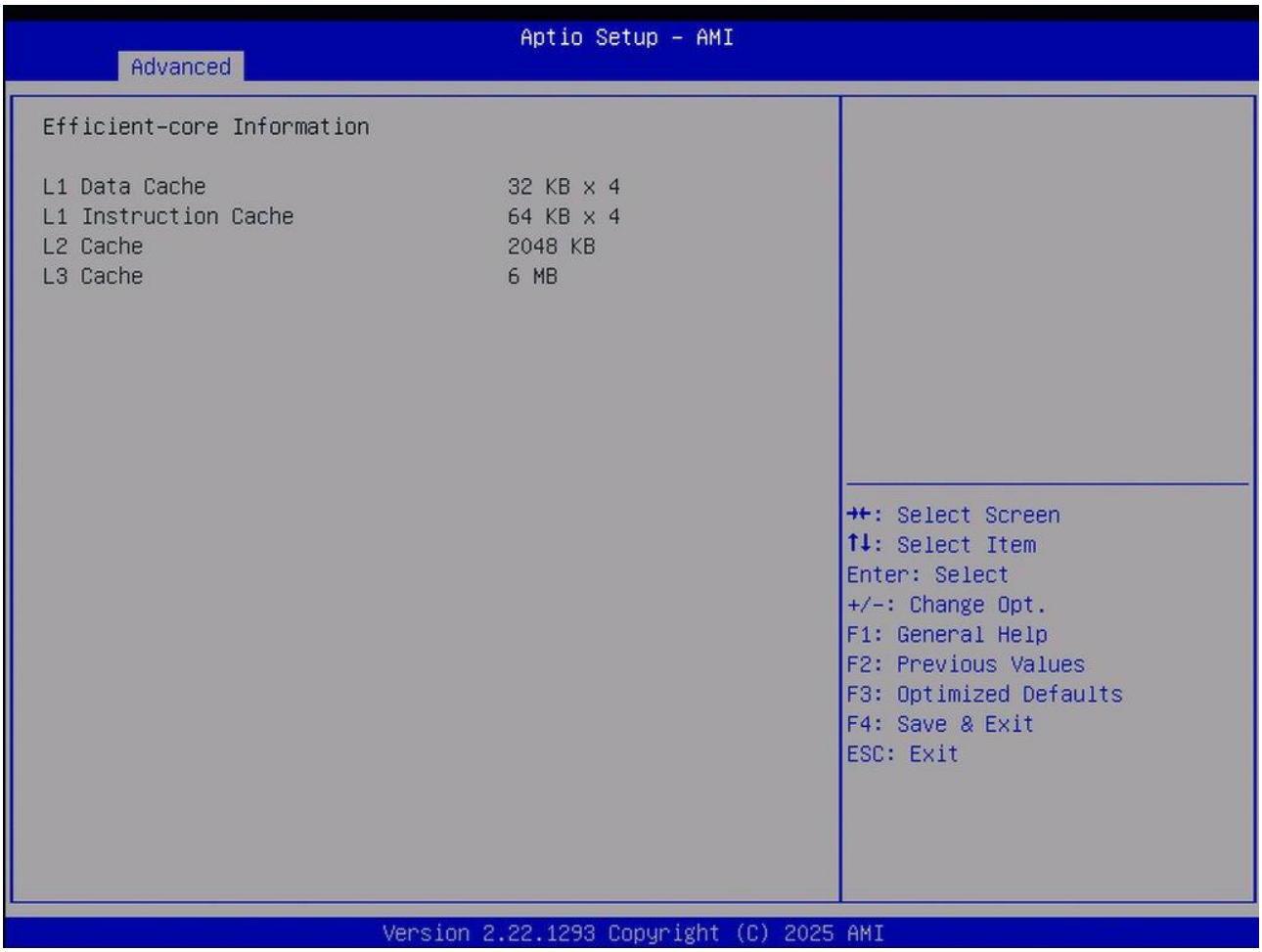
3.4 Advanced Settings



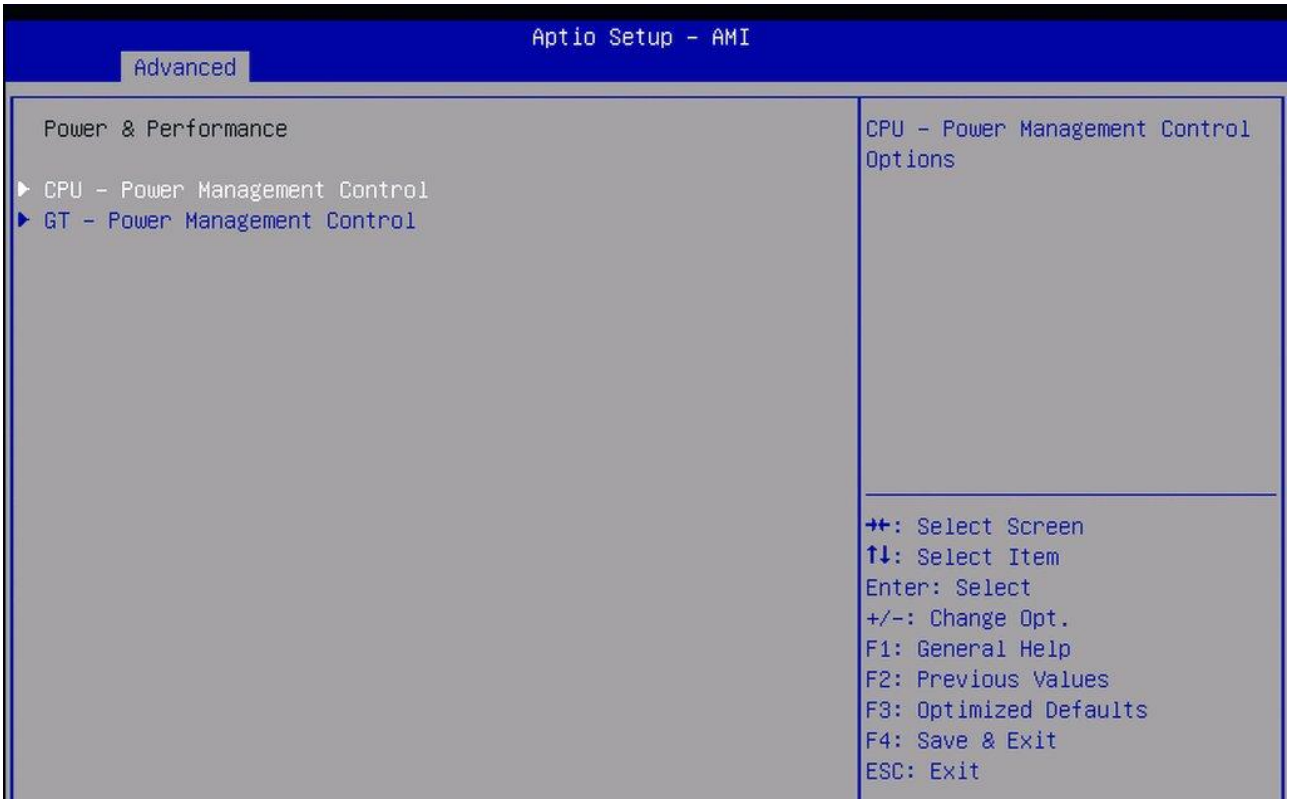
3.4.1 CPU Configuration



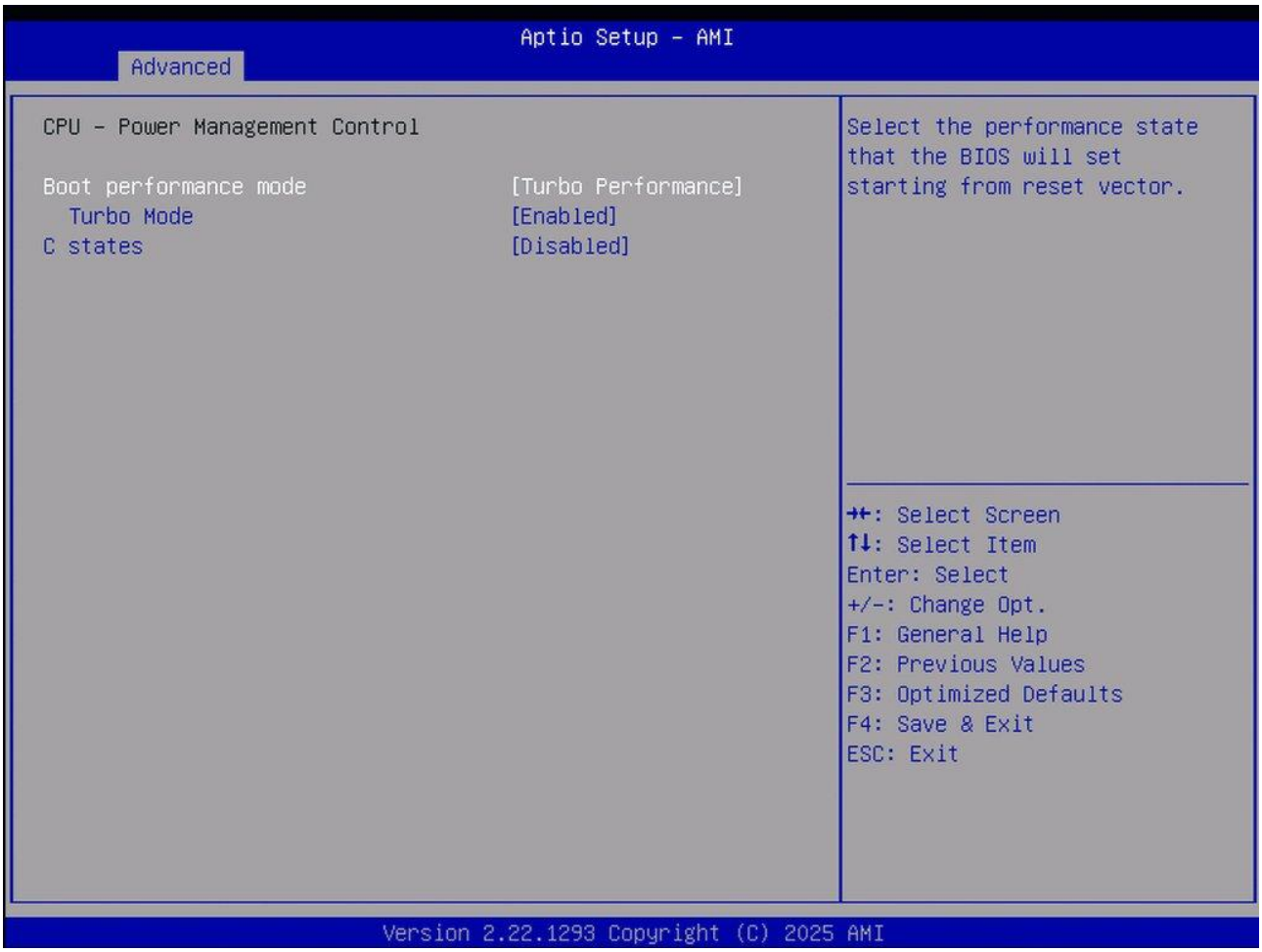
3.4.1.1 Efficient-core Information



3.4.2 Power & Performance



3.4.2.1 CPU-Power Management Control



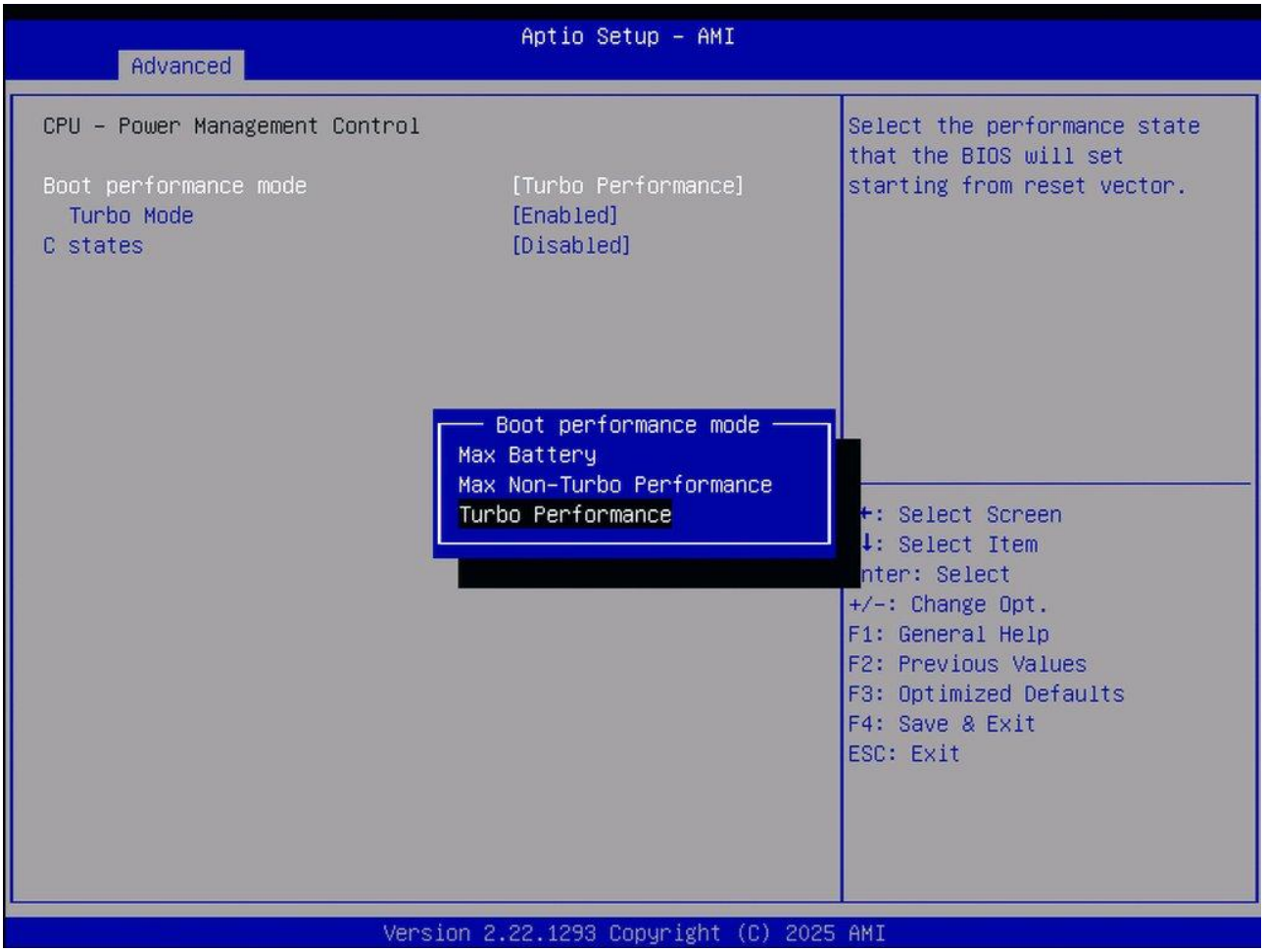
Boot performance mode:

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

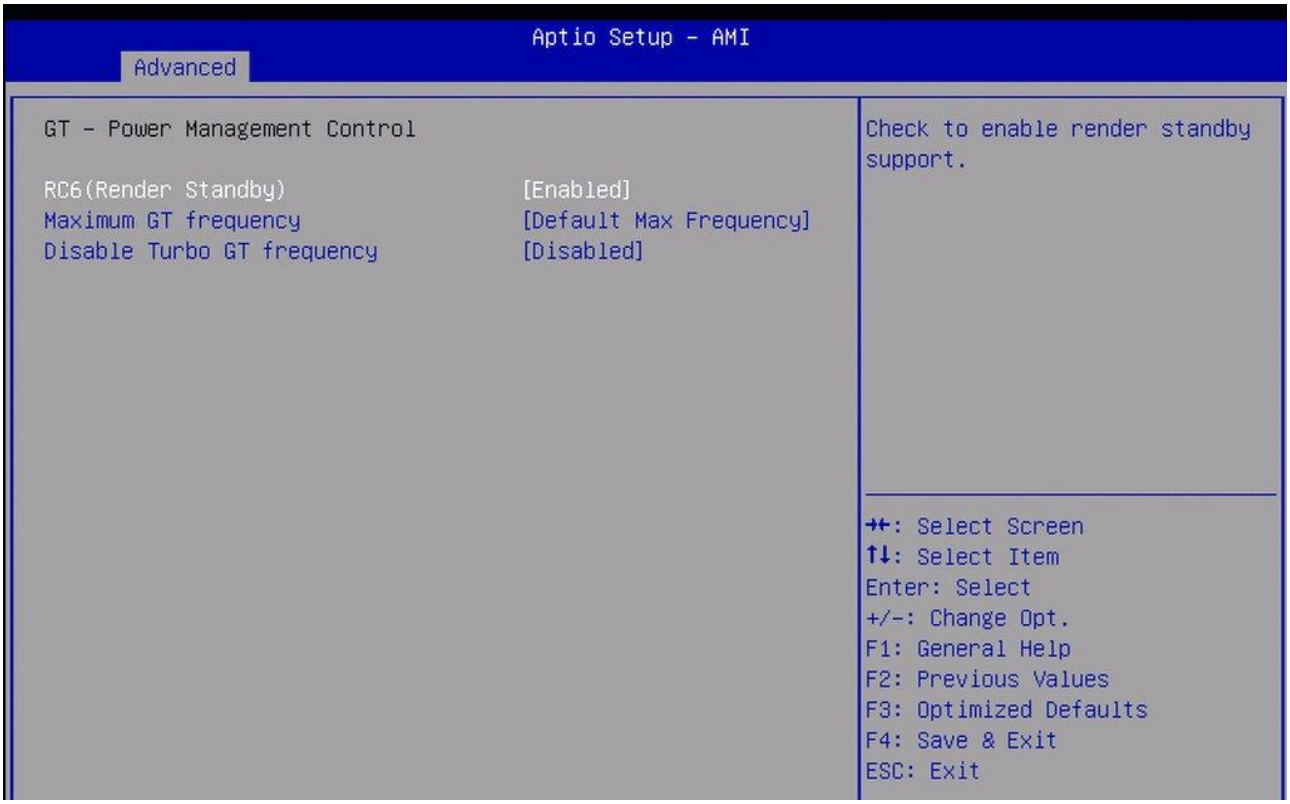
Turbo Mode:

Enable/Disable processor Turbo Mode (requires EMTTM enabled too).AUTO means enabled.

2.4.2.1.1 Boot performance mode



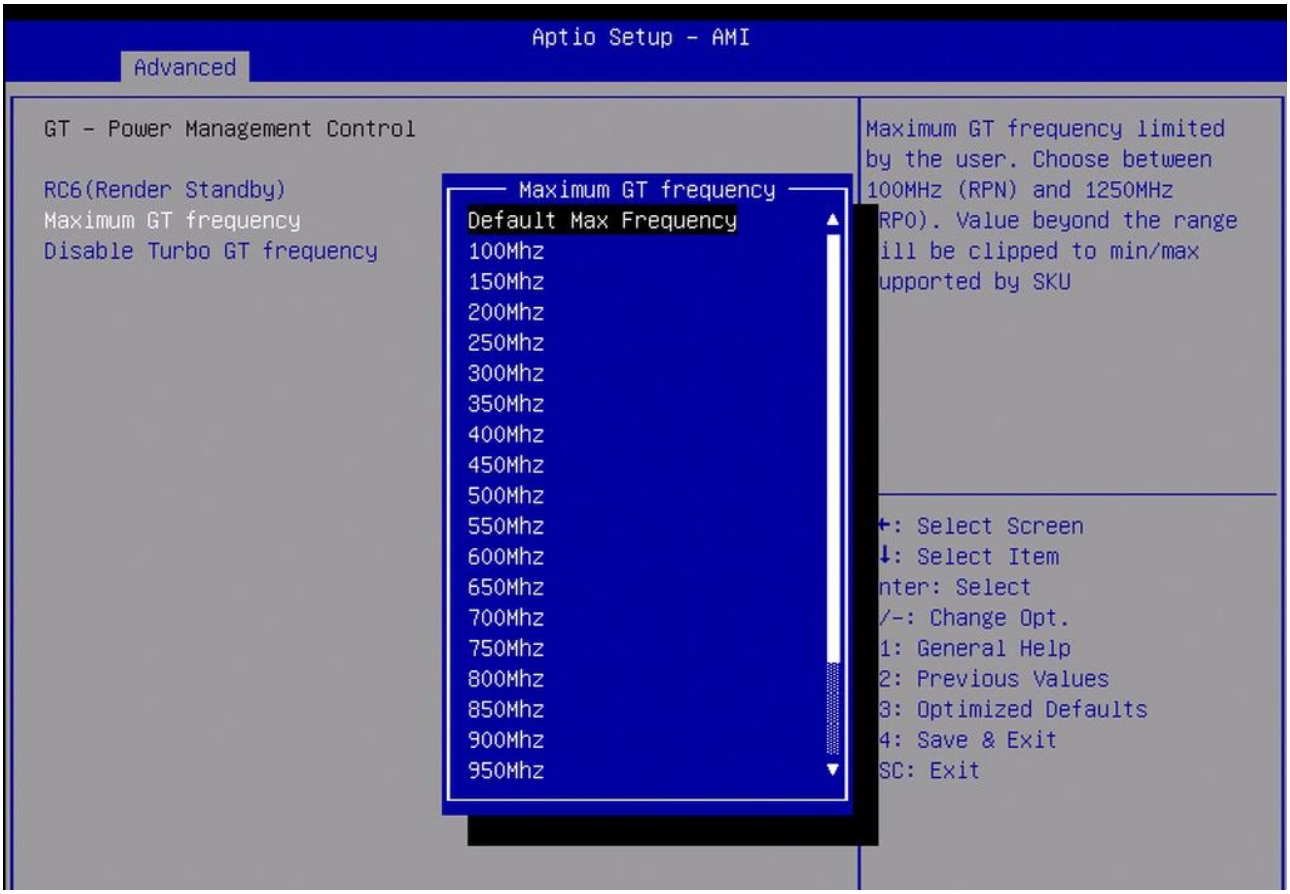
3.4.2.2 GT- Power Management Control



RC6(Render Standby):

Check to enable render standby support.

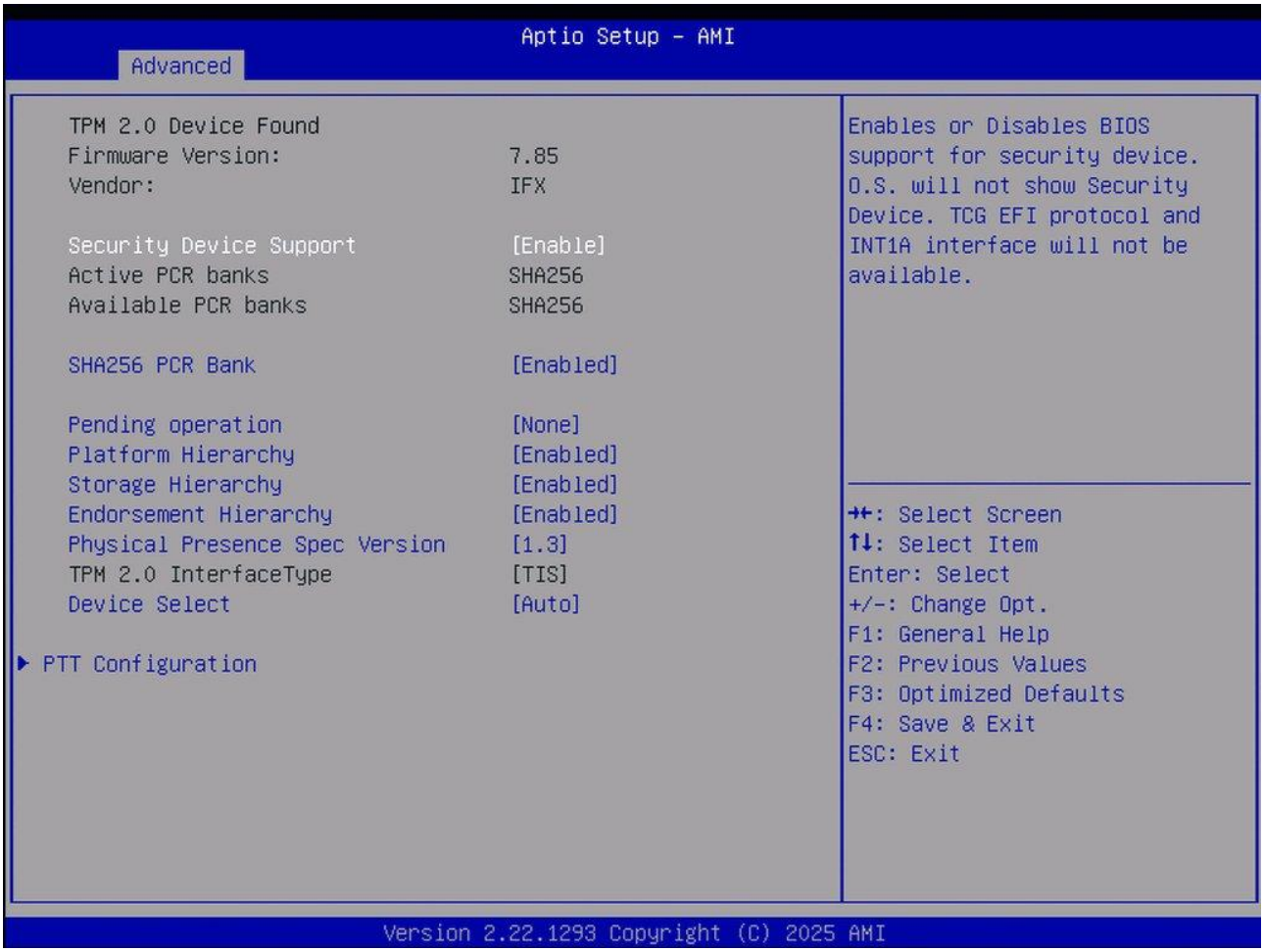
Maximum GT frequency:



Disable Turbo GT frequency:

Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited

3.4.3 Trusted Computing



Security Device support:

Enables or Disables BlOS support for security device. o.S. wll not show Security Device. TCG EFl protocol and INT1A interface will not be available.

SHA256 PCR Bank:

Enable or Disable SHA256 PCR Bank

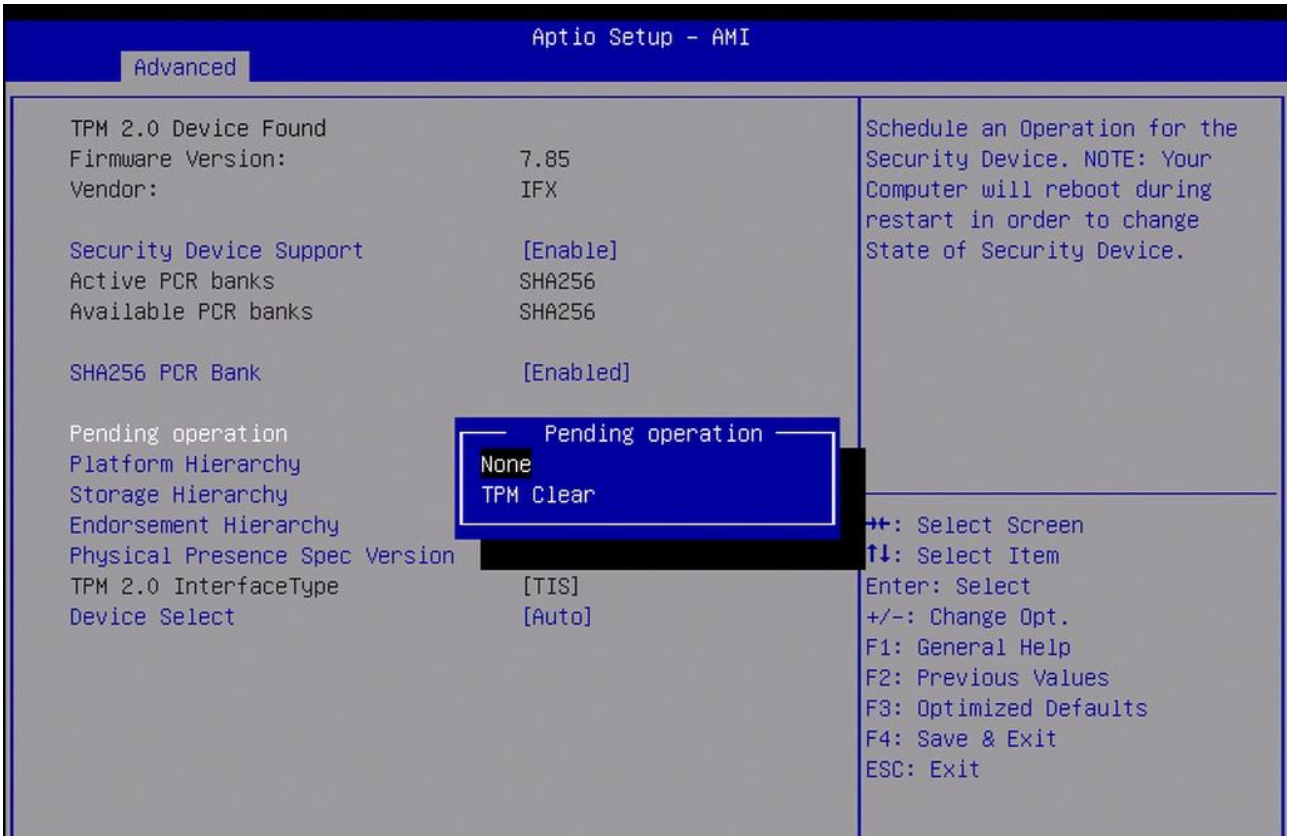
Pending operation:

Schedule an Operation for the Security Device.NOTE:Your Computer will reboot during restart in order to change State of Security Device.

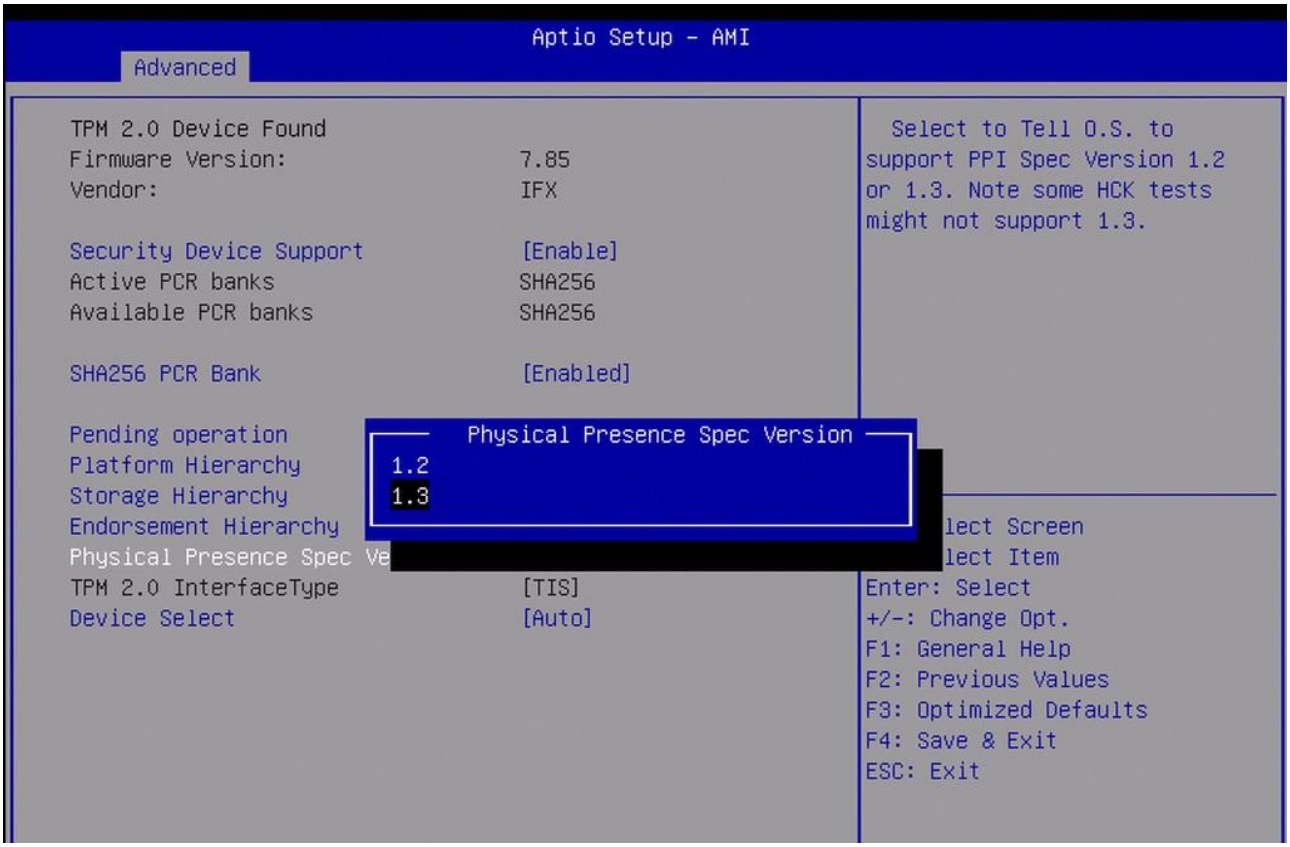
Device Select:

TPM1.2 will restict support to TPM 1.2 devices, TPM 2.0 will restict support to TPM 2.0 devices, Auto wll upport both with the default set toTPM 2.0 devices if not found,TPM 1.2 devices will be enumerated

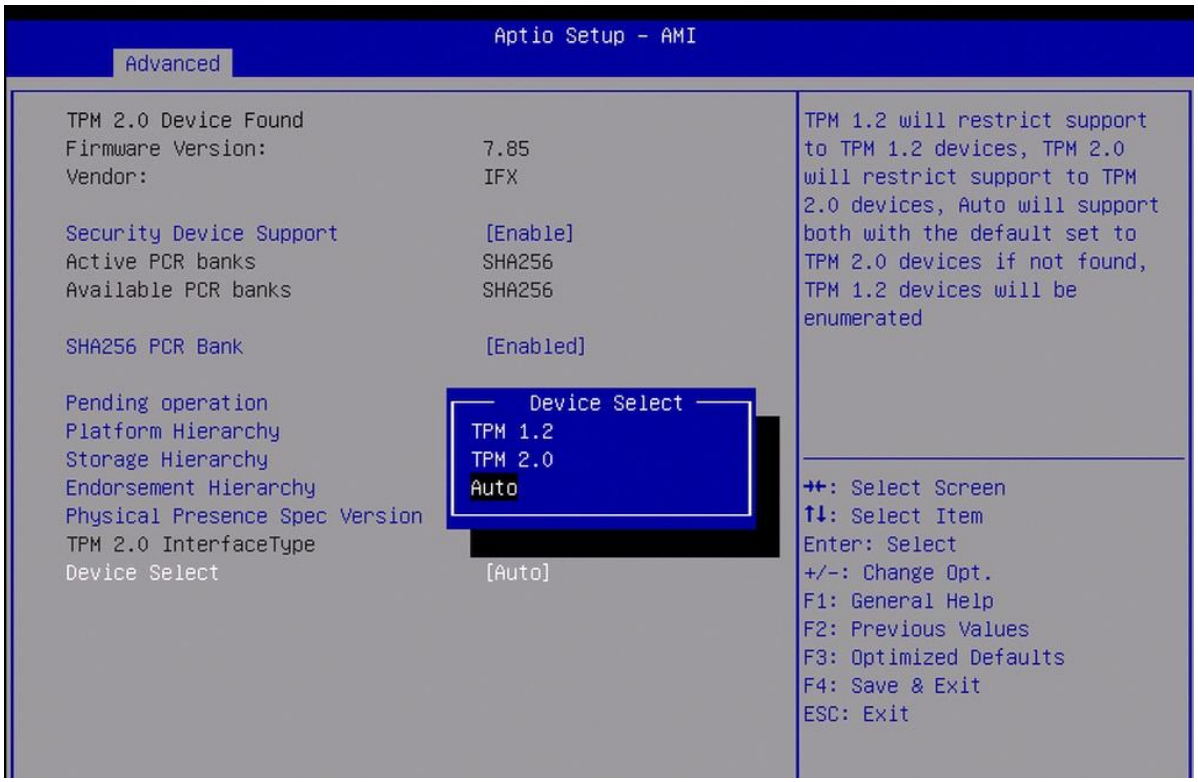
3.4.3.1 Pending operation



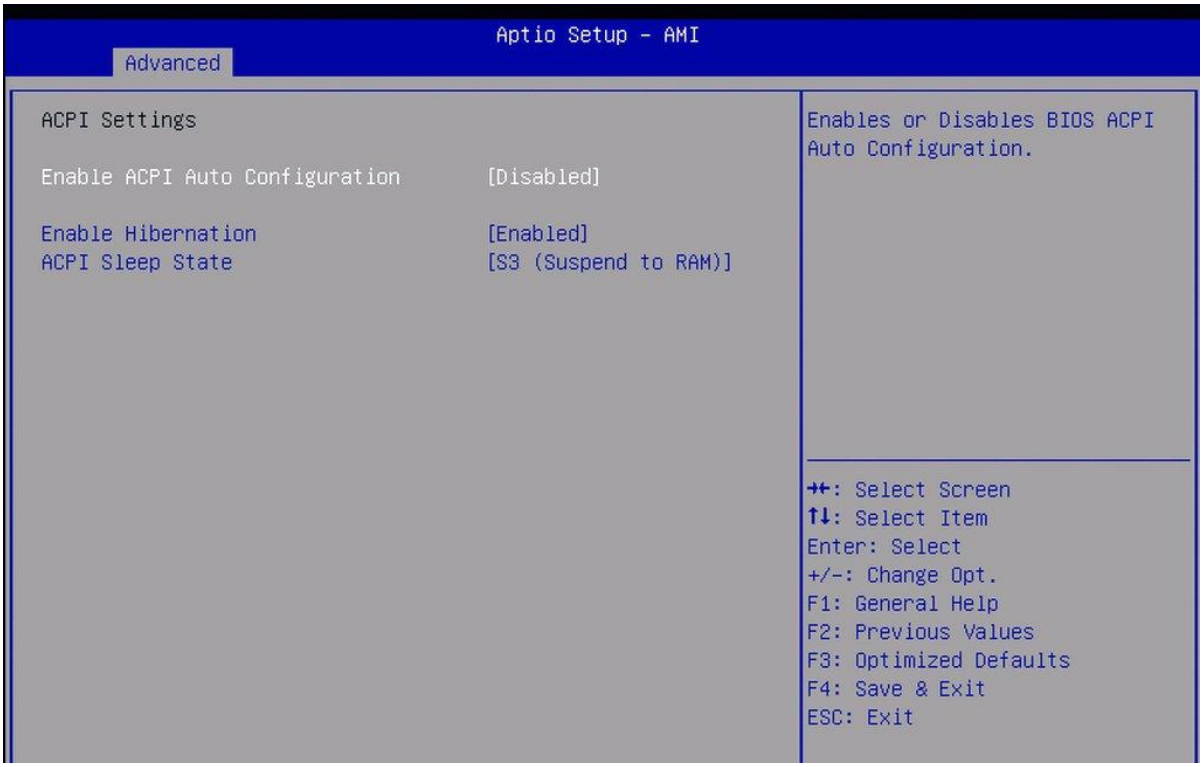
3.4.3.2 Physical Presence Spec Version



3.4.3.3 Device Select



3.4.4 ACPI Settings



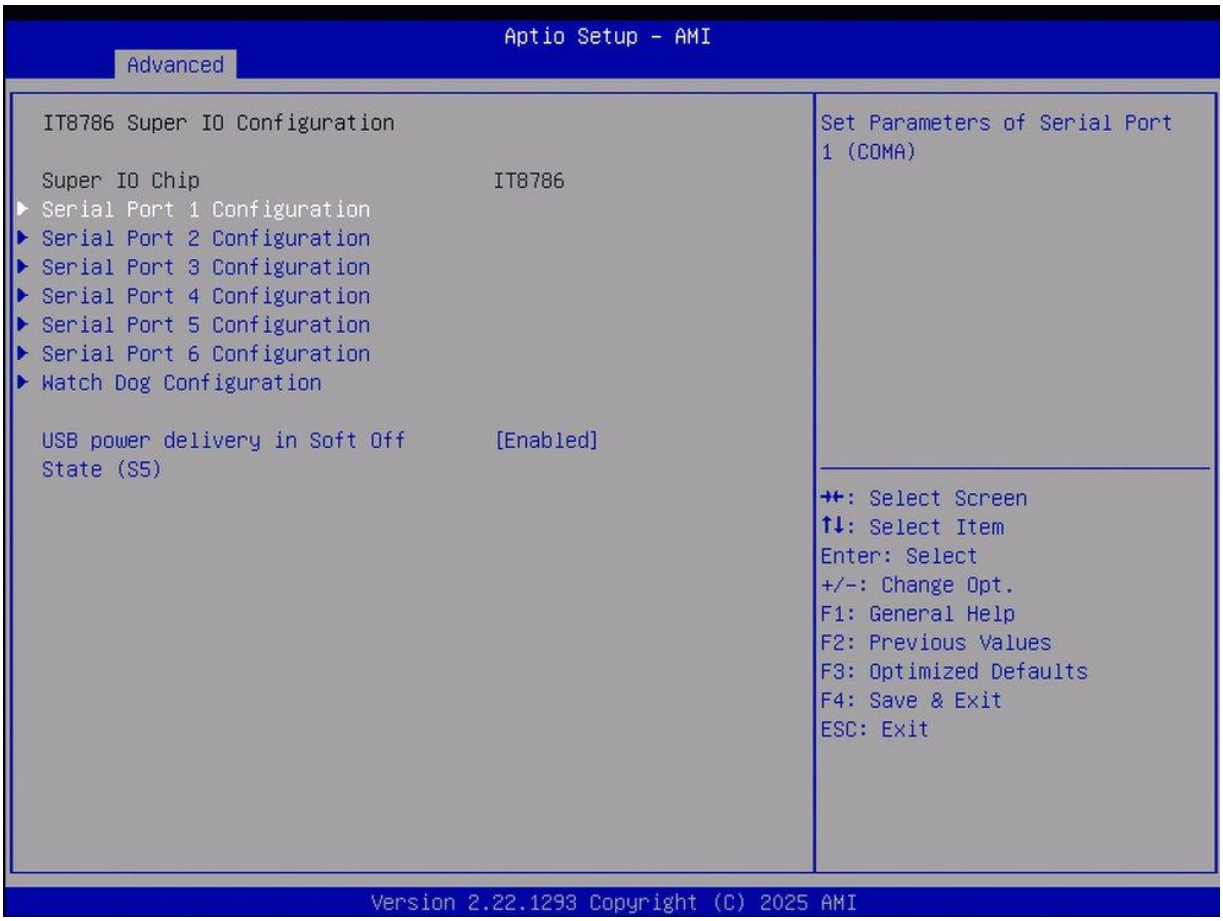
Enable Hibernation:

Enables or Disables System ability to Hibernate(OS/S4 Ssleep State). This option may not be effective with some operating systems.

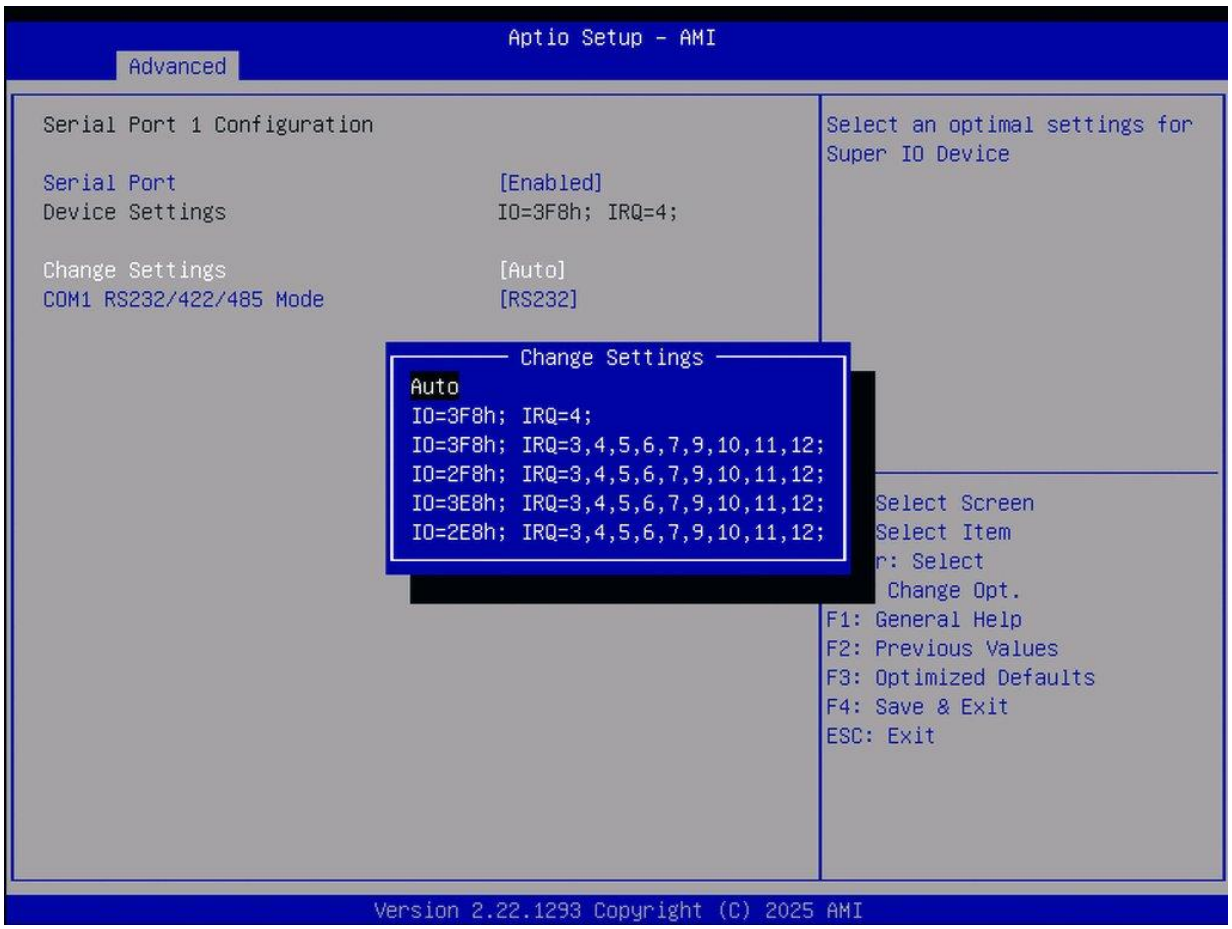
ACPI Sleep State:

Select the highest ACPl sleep state the system will enter when the SUSPEND button is pressed.

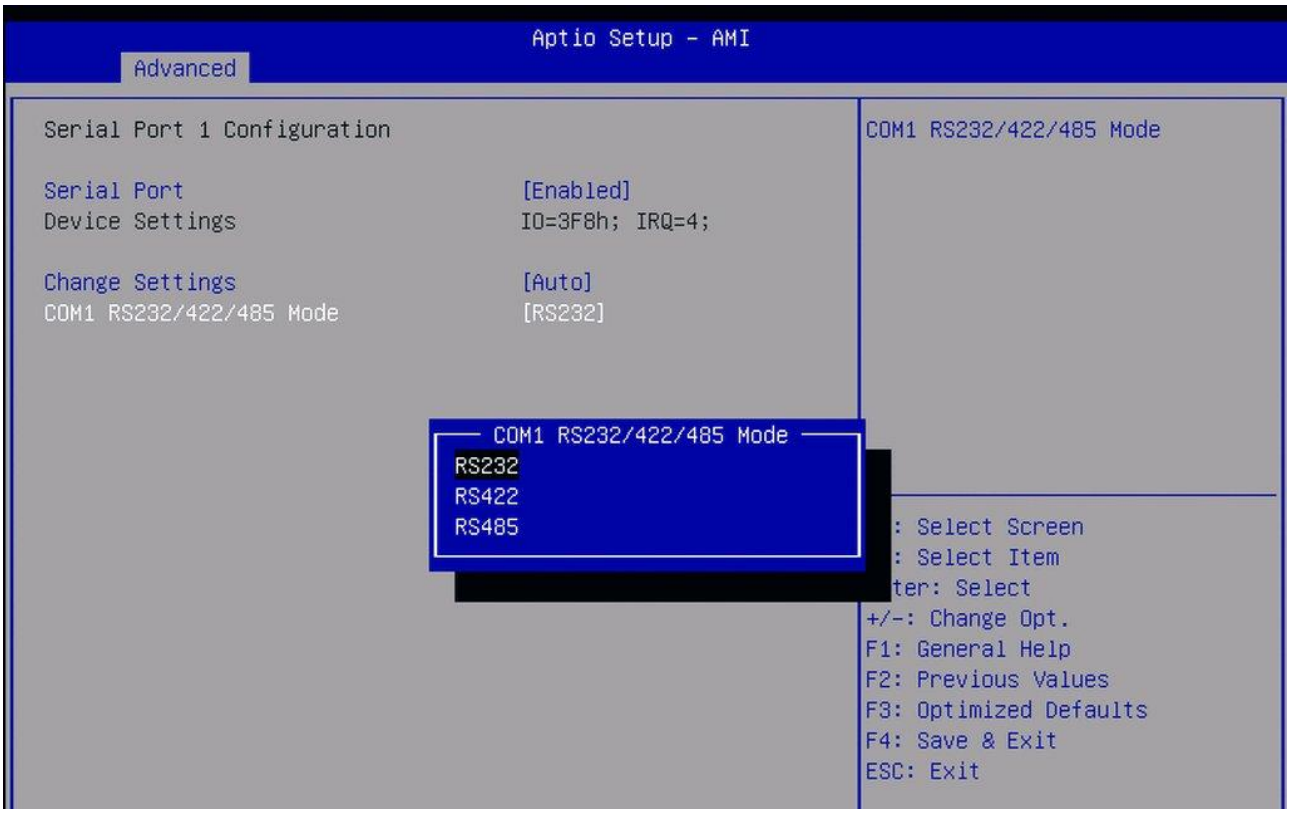
3.4.5 IT8786 Super IO Configuration



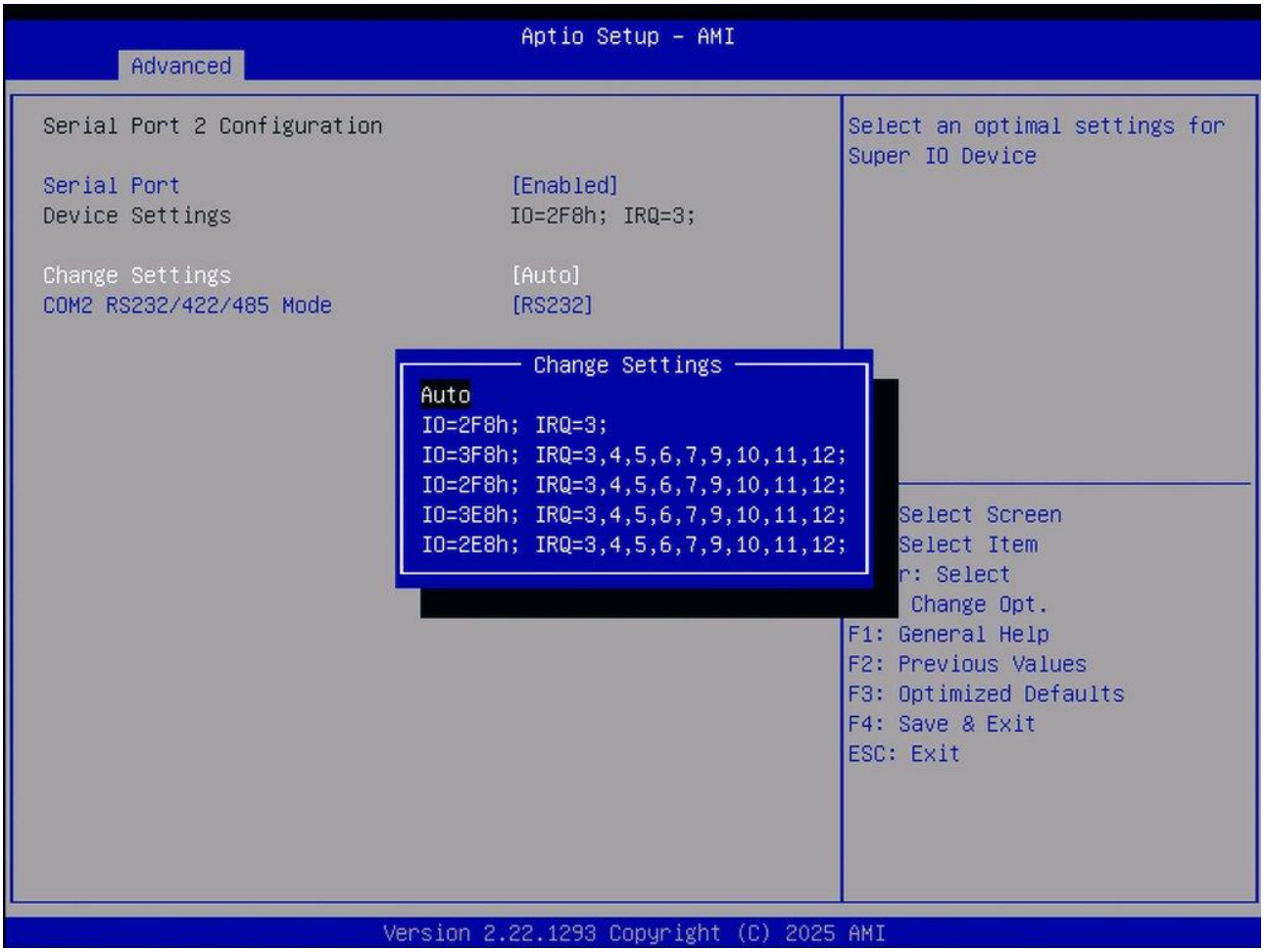
3.4.5.1 Serial Port 1 Configuration



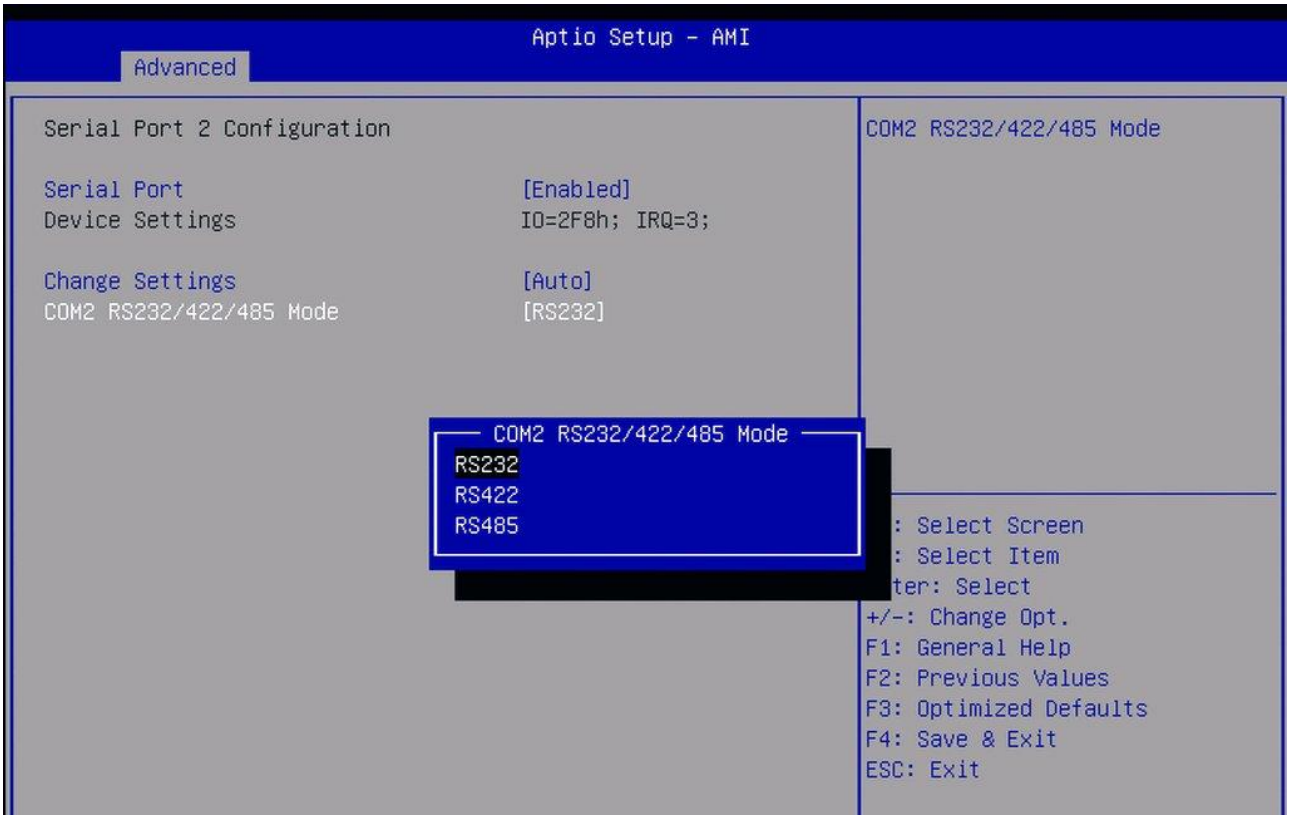
Com1 RS232/422/485 Mode



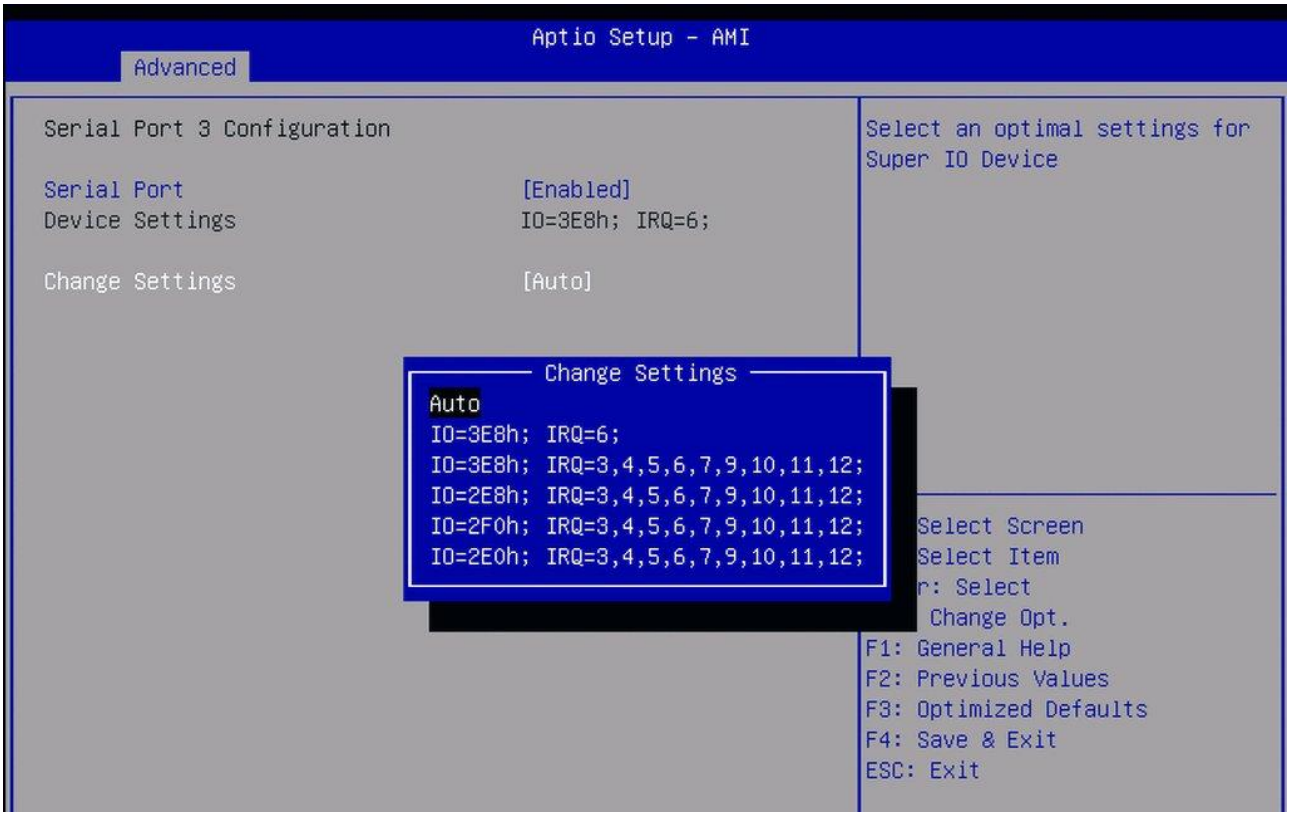
3.4.5.2 Serial Port 2 Configuration



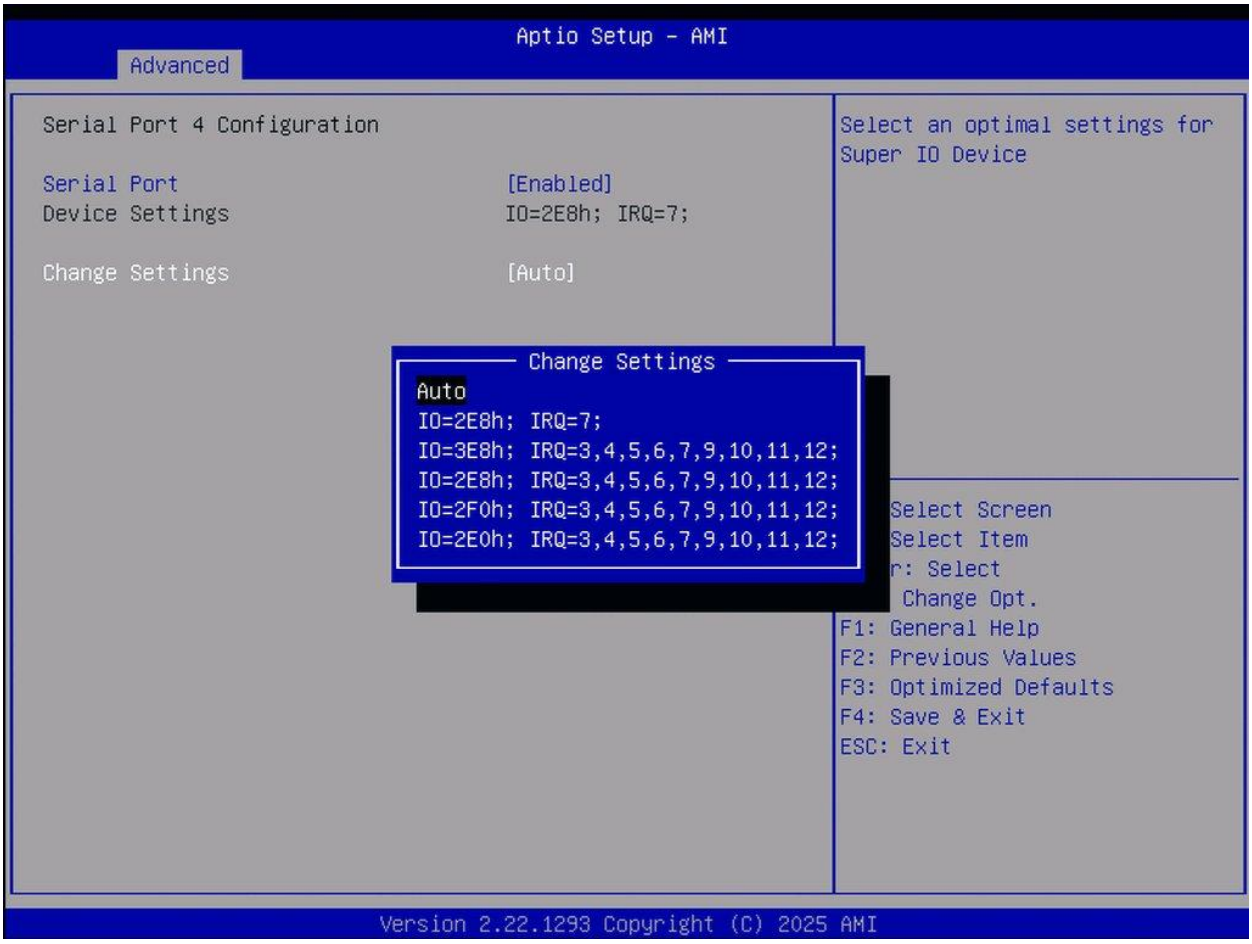
Com2 RS232/422/485 Mode



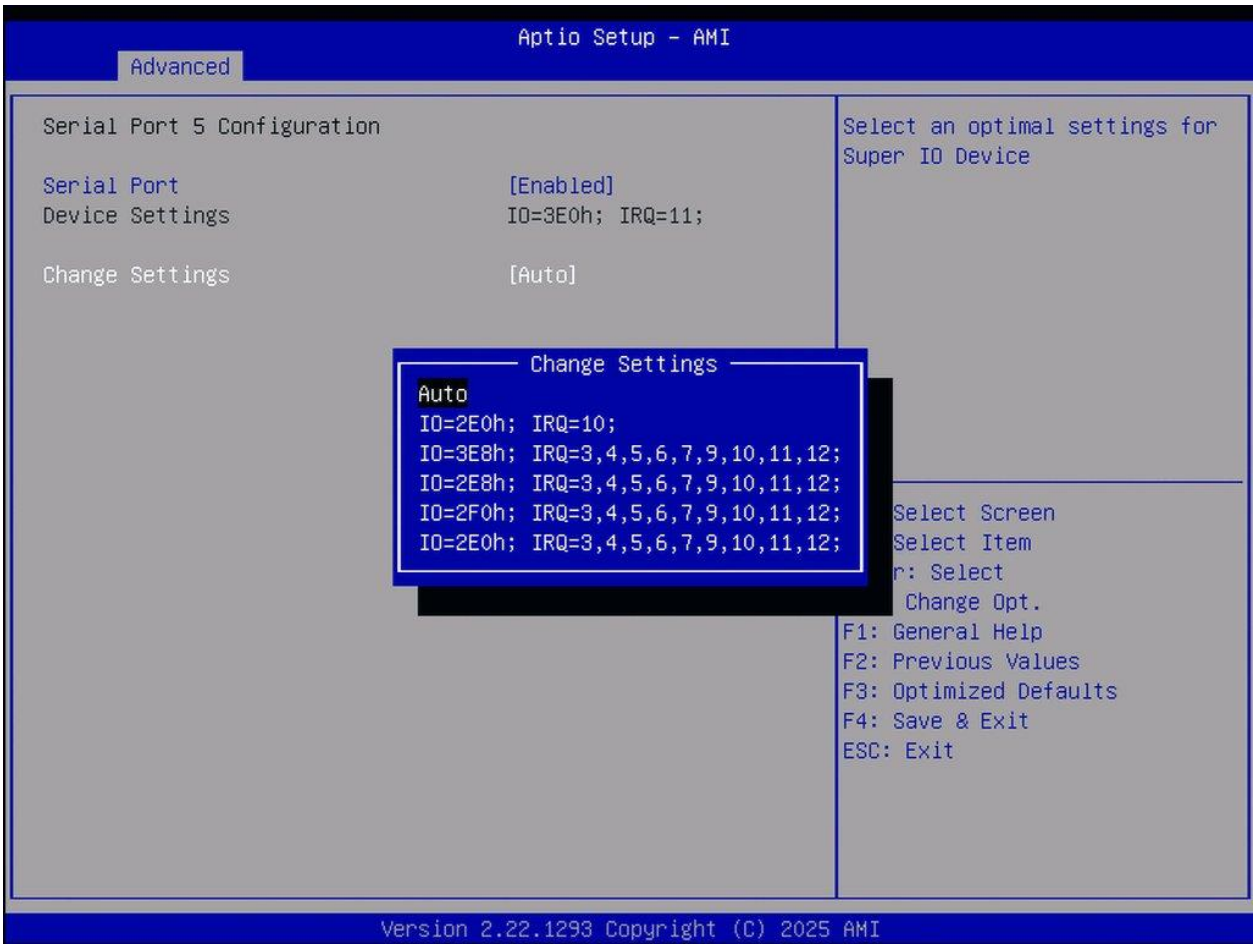
3.4.5.3 Serial Port 3 Configuration



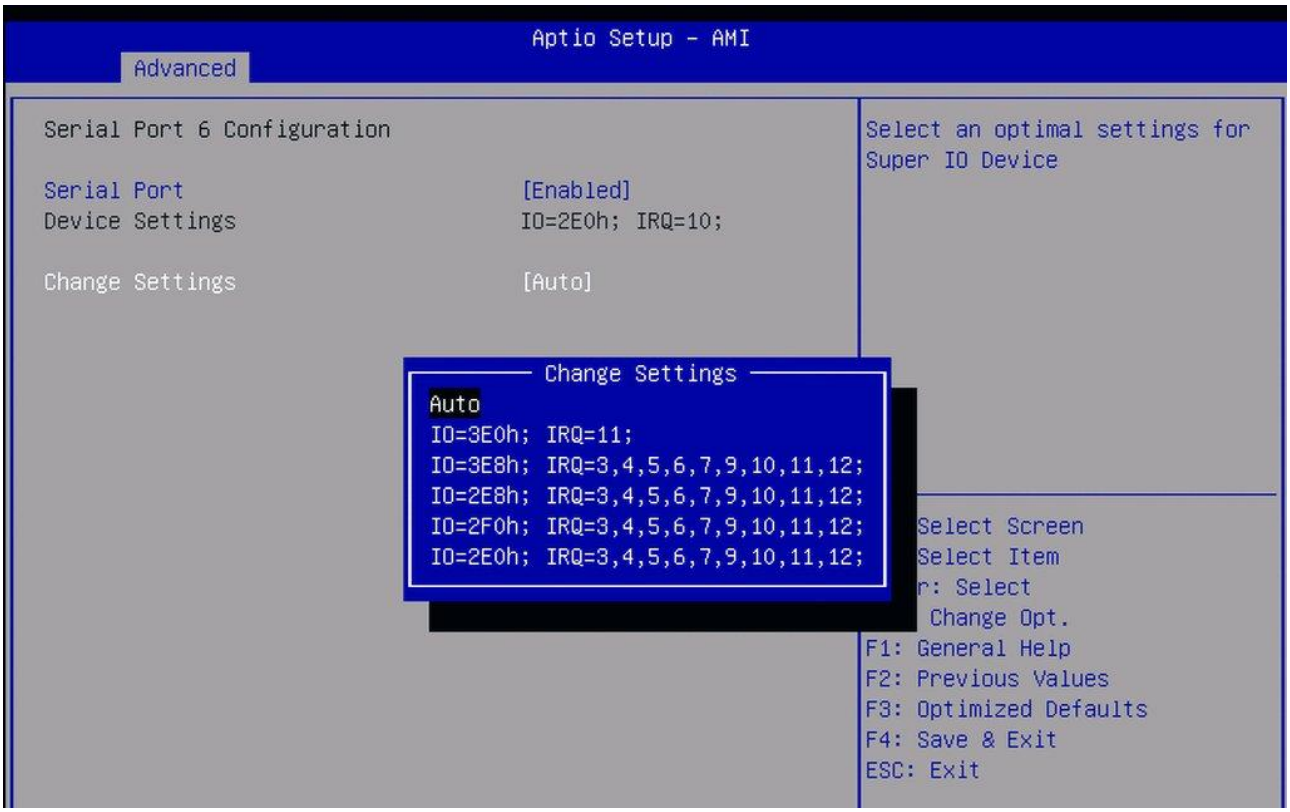
3.4.5.4 Serial Port 4 Configuration



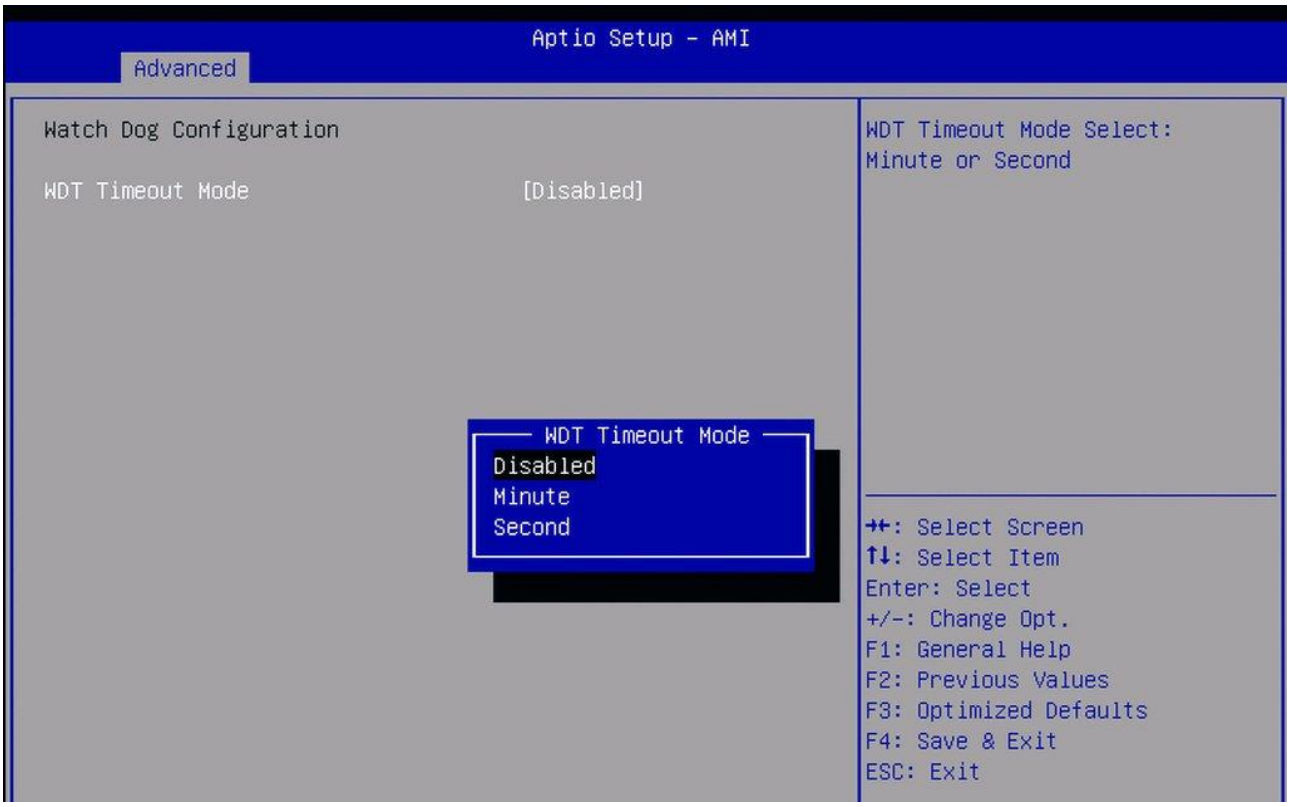
3.4.5.5 Serial Port 5 Configuration



3.4.5.6 Serial Port 6 Configuration

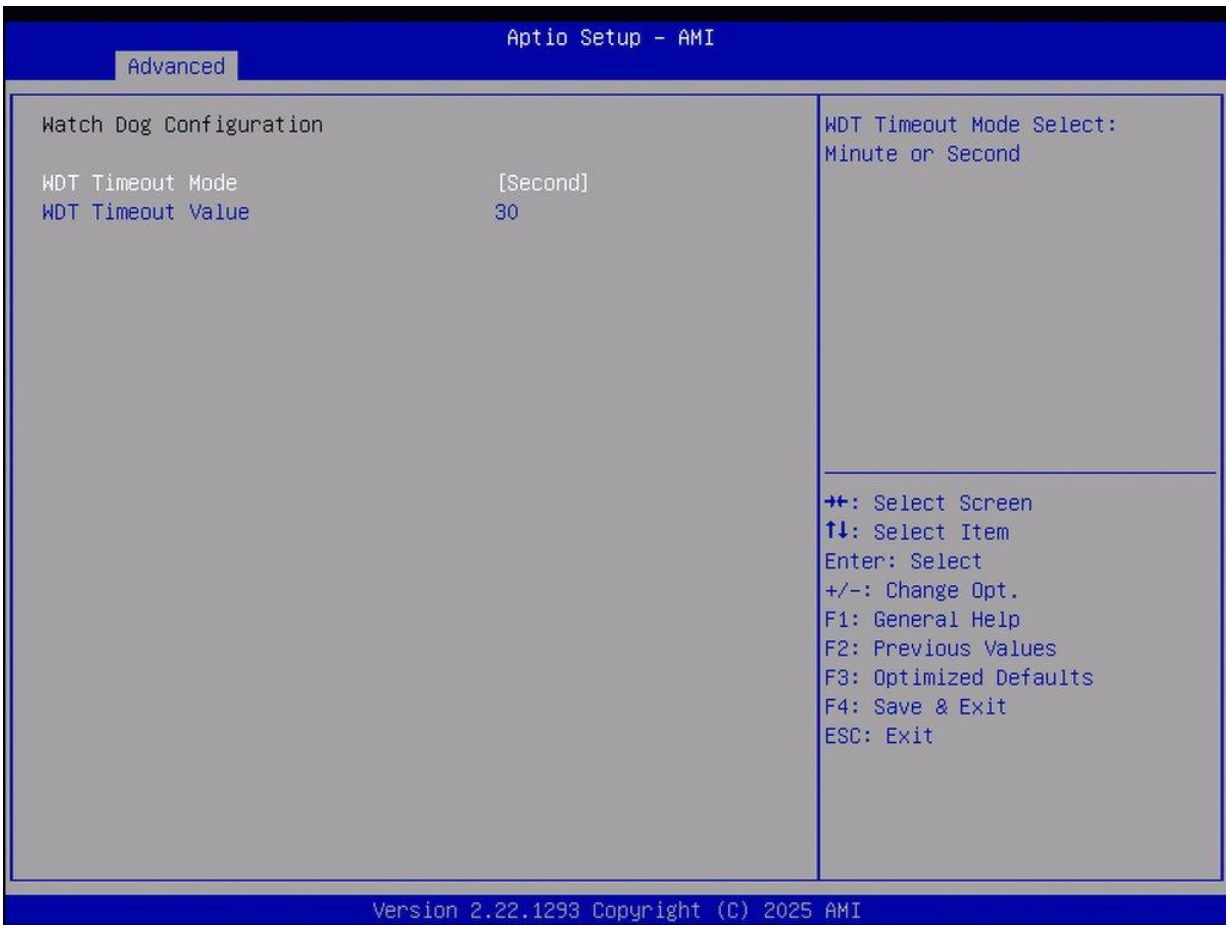


3.4.5.7 Watch Dog Configuration

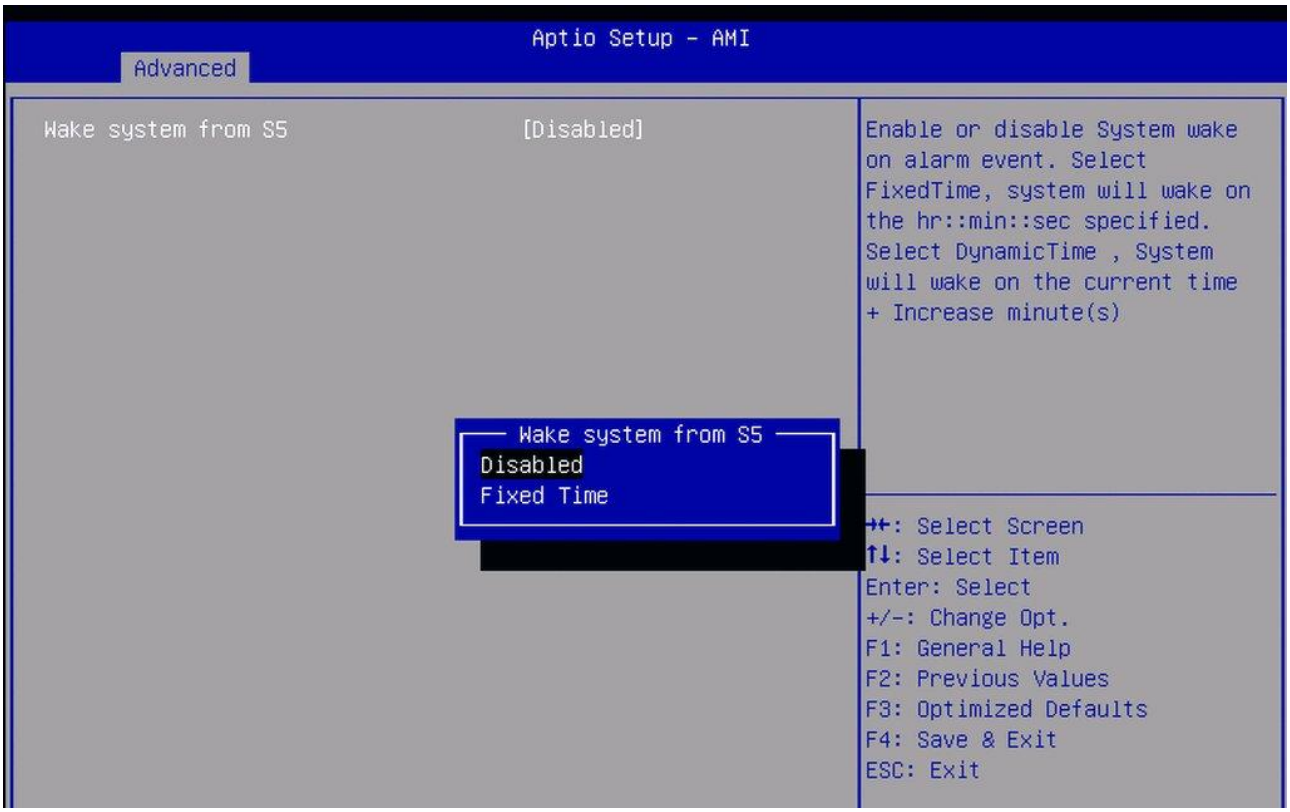


WDT Timeout Value:0~255 Miunte

WDT Timeout Value:0~255 Second.



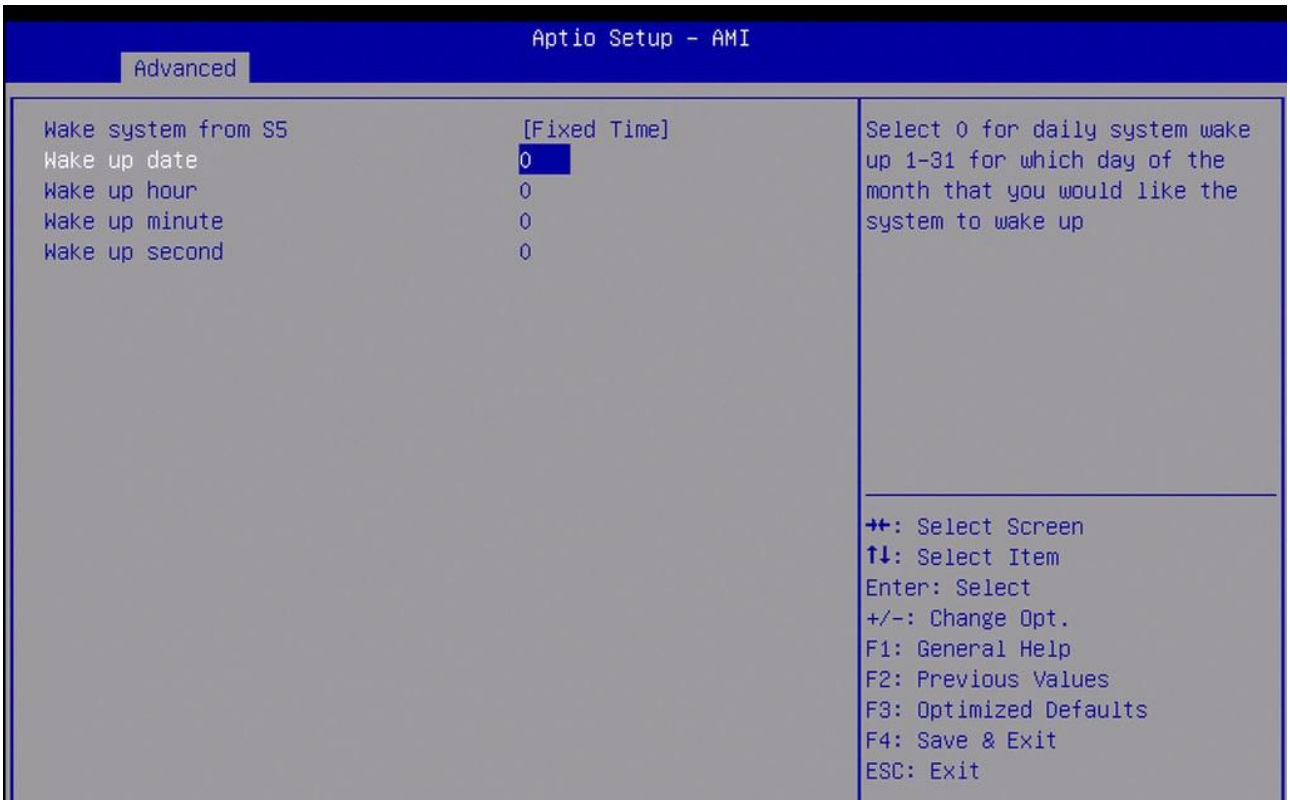
3.4.6 S5 RTC Wake Settings



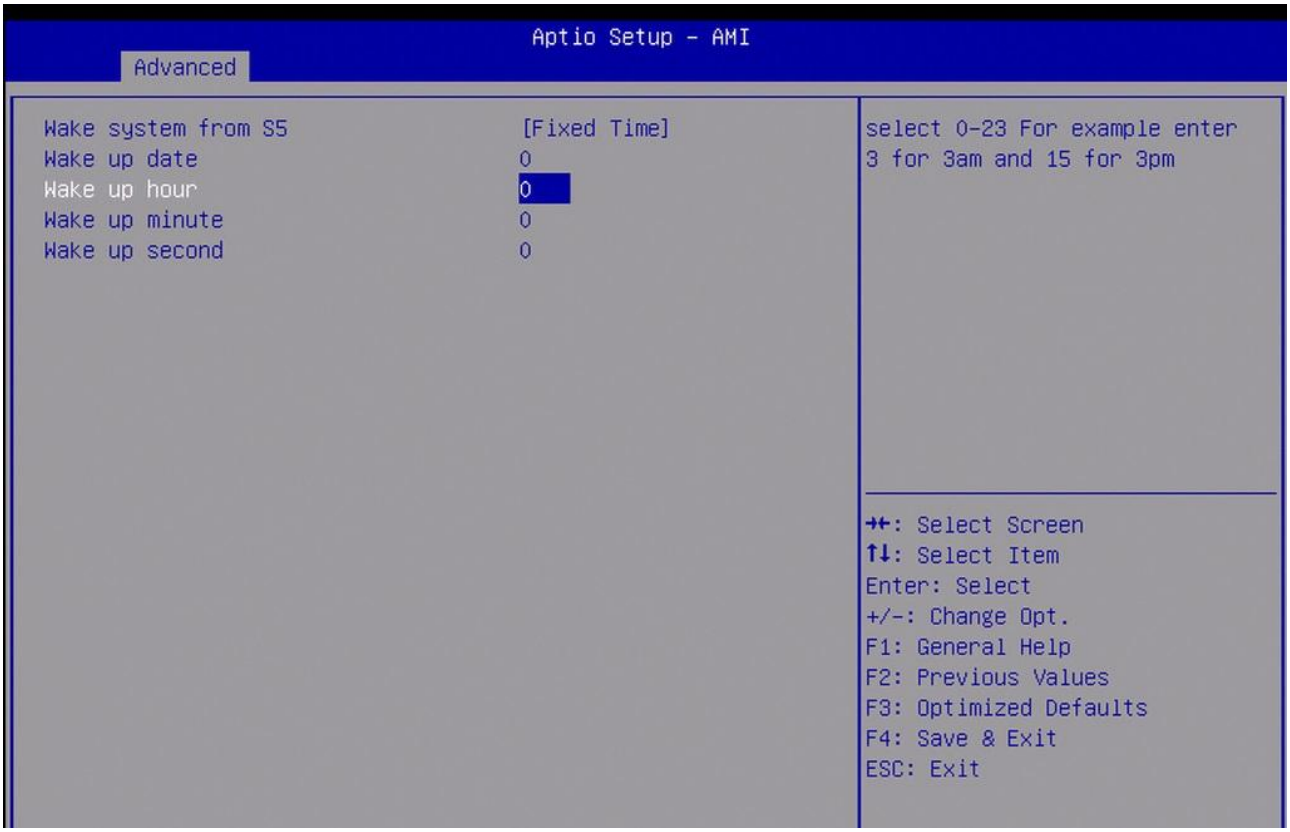
Wake system from S5:

Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr:min:sec specified. Select Dynamic Time , System will wake on the current time + Increase minute(s)

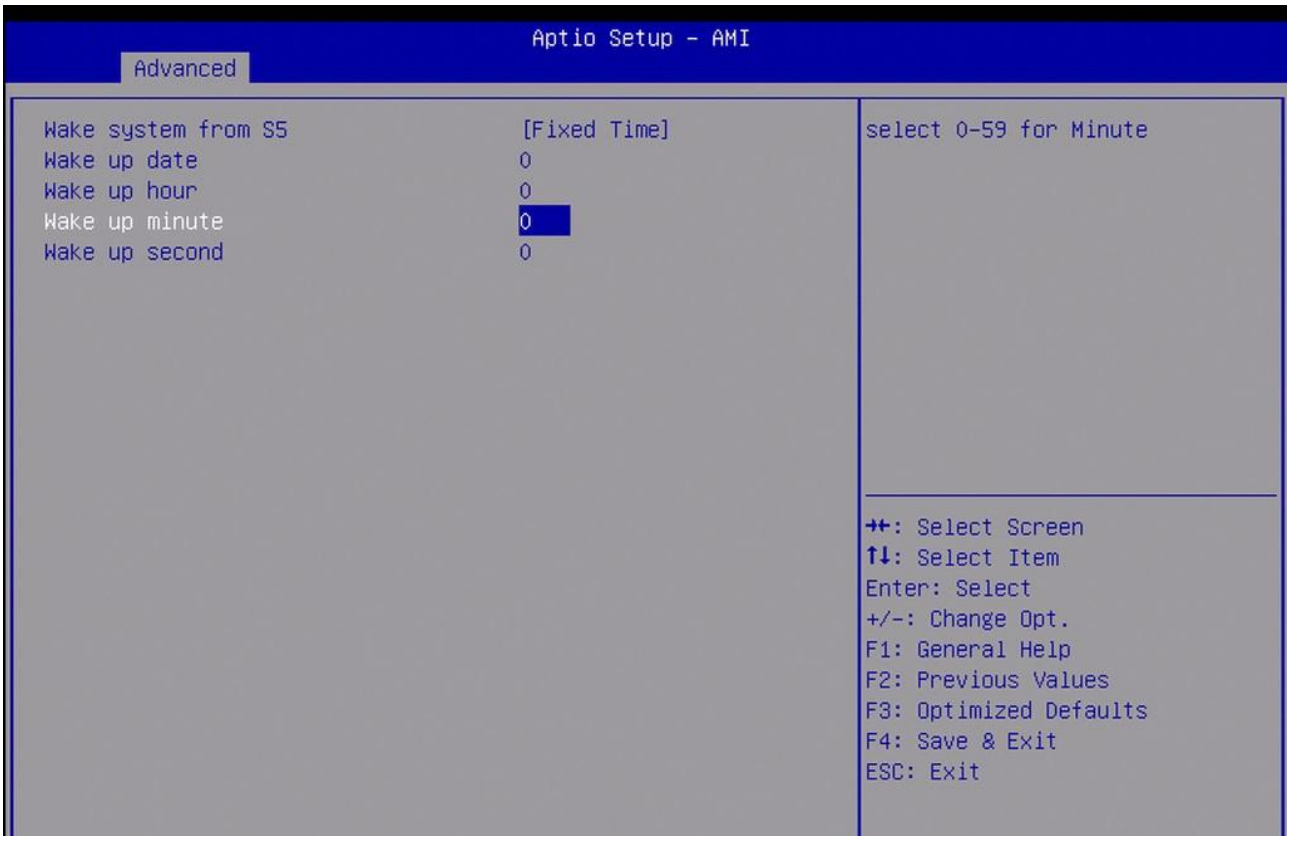
Wake up date: Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up



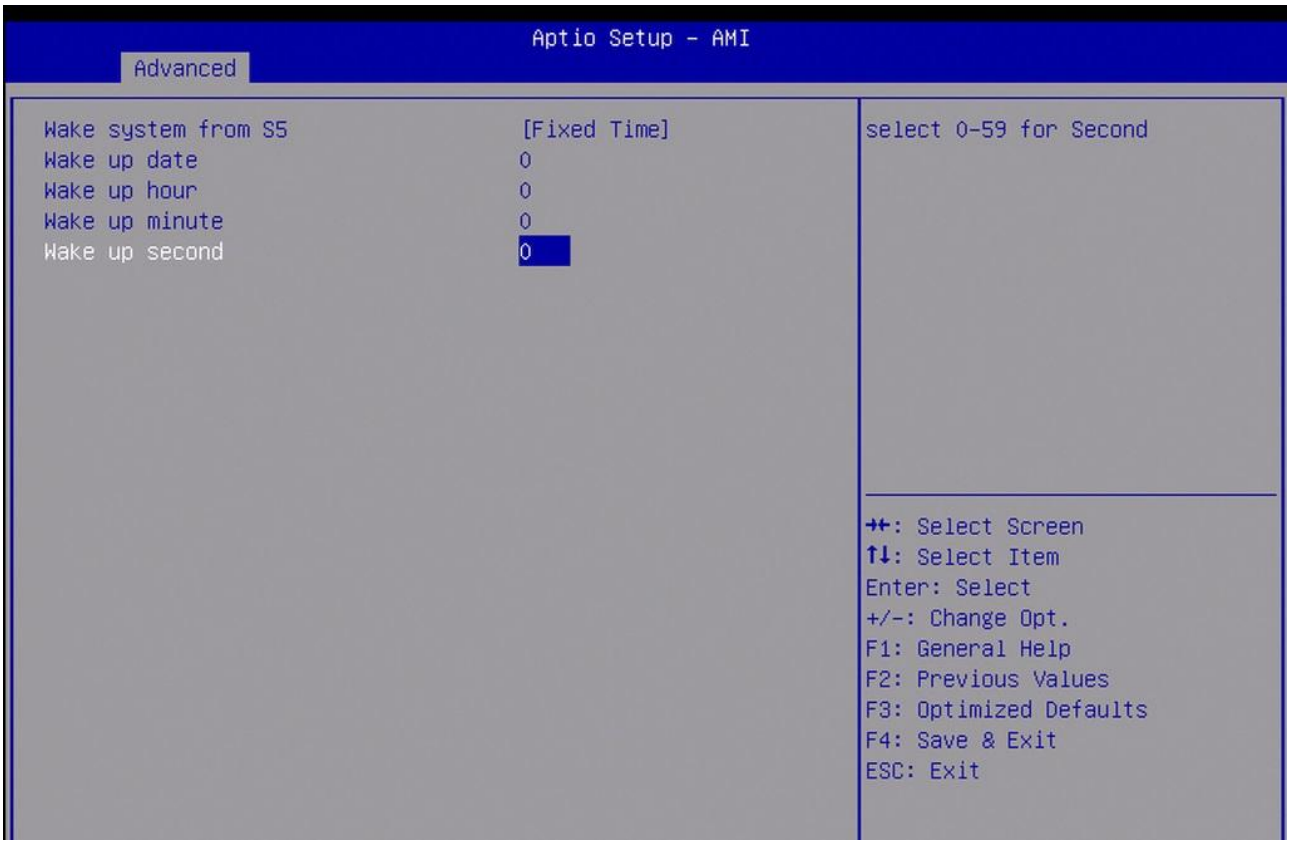
select 0-23 For example enter 3 for 3am and 15 for 3pm



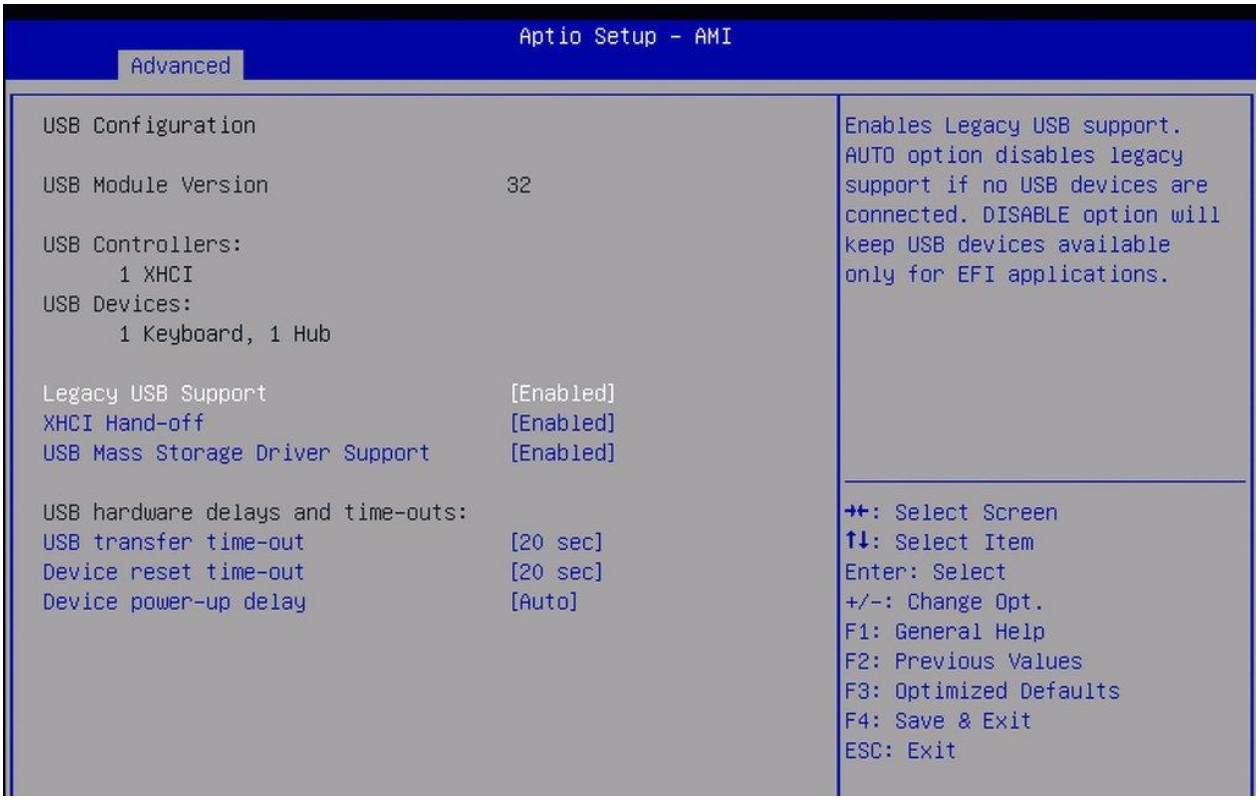
select 0-59 for Minute



select 0-59 for Second



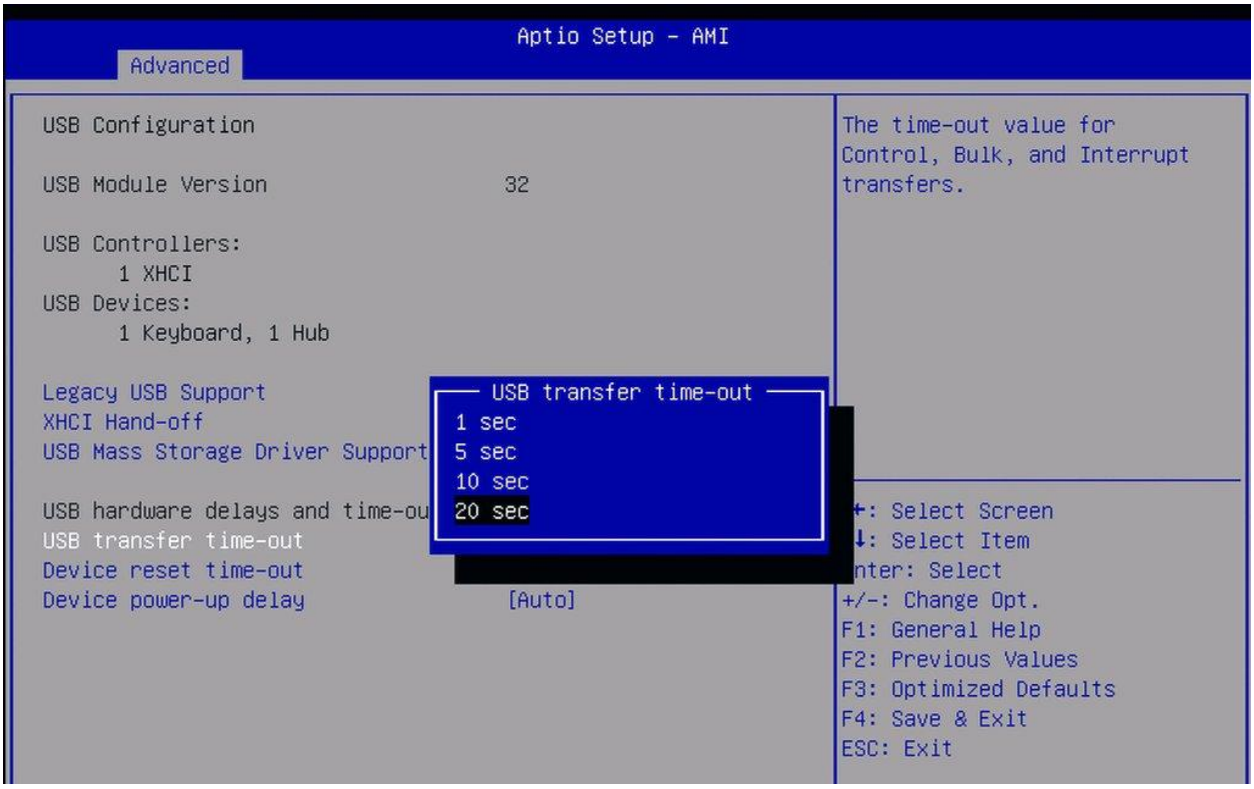
3.4.7 USB Confiruration



Legacy USB Support:

Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected.DISABLE option will keep USB devicesavailable only for EFl applications.

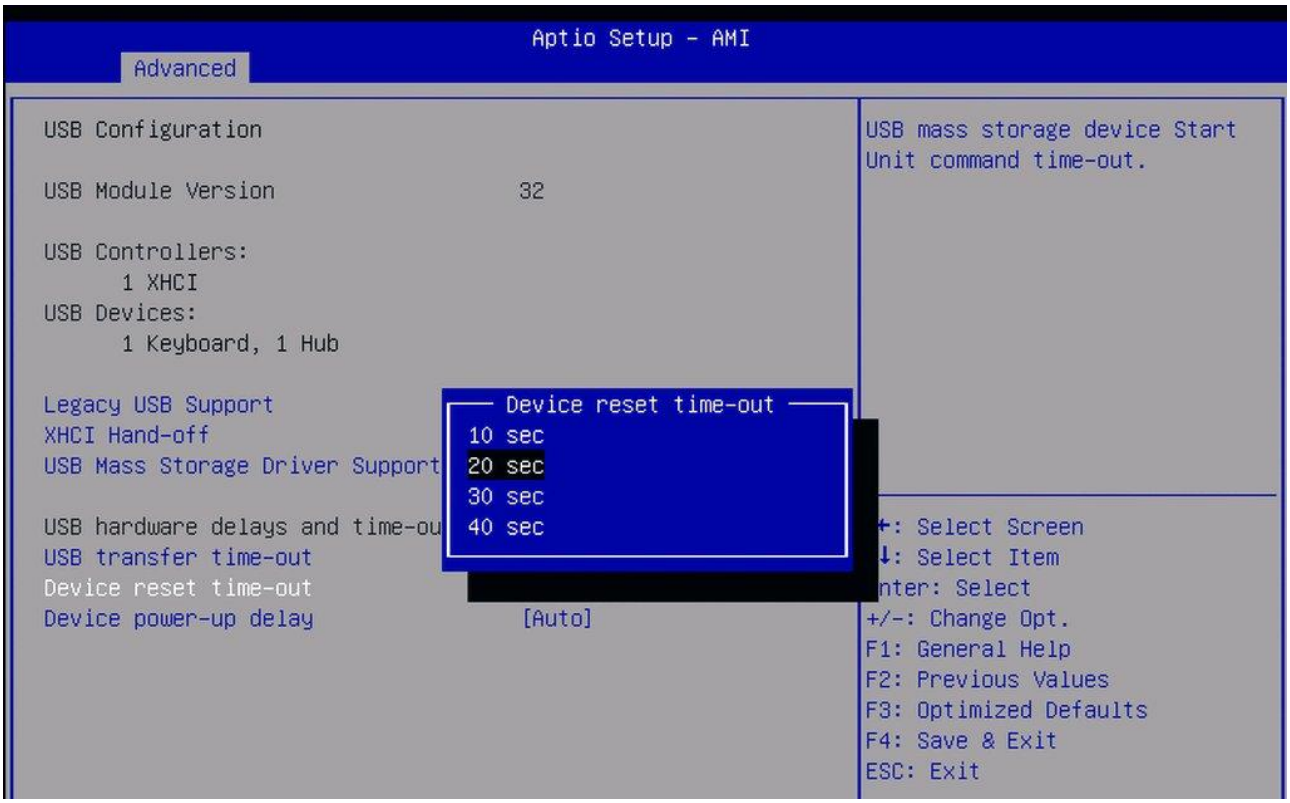
3.4.7.1 USB transfer time-out



USB transfer time-out:

The time-out value for Control,Bulk, and Interrupt transfers.

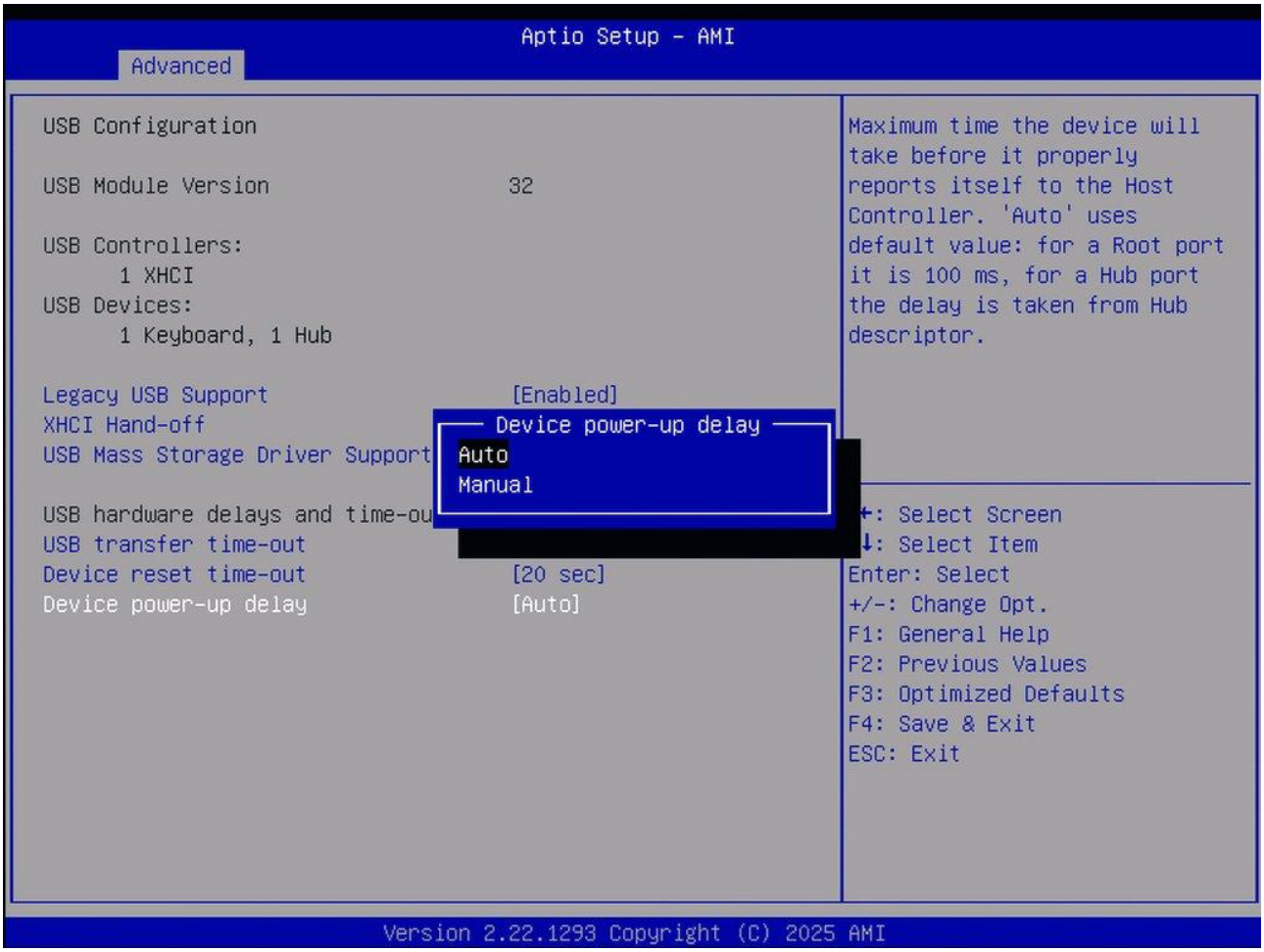
3.4.7.2 Device reset time-out



Device reset time-out:

USB mass storage device Start Unit command time-out.

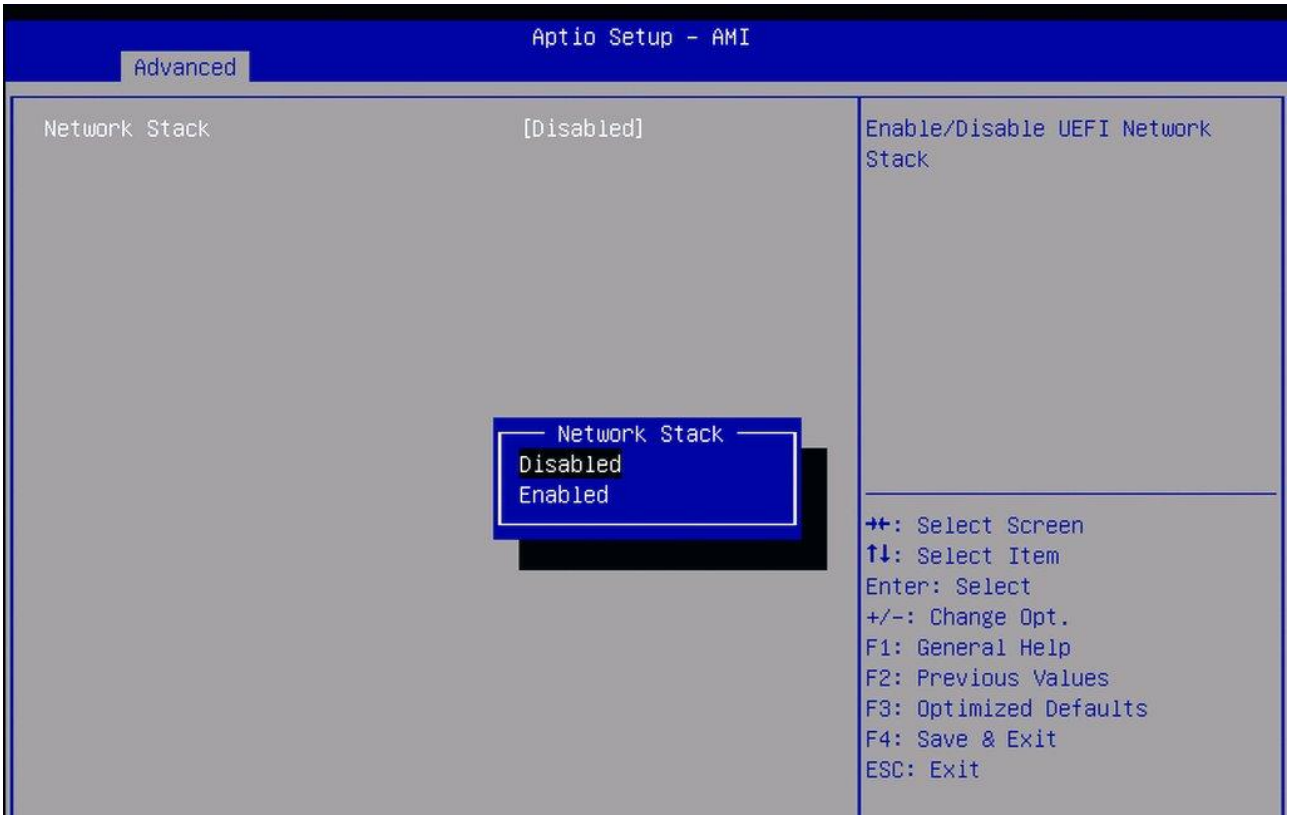
3.4.7.3 Device power-up delay



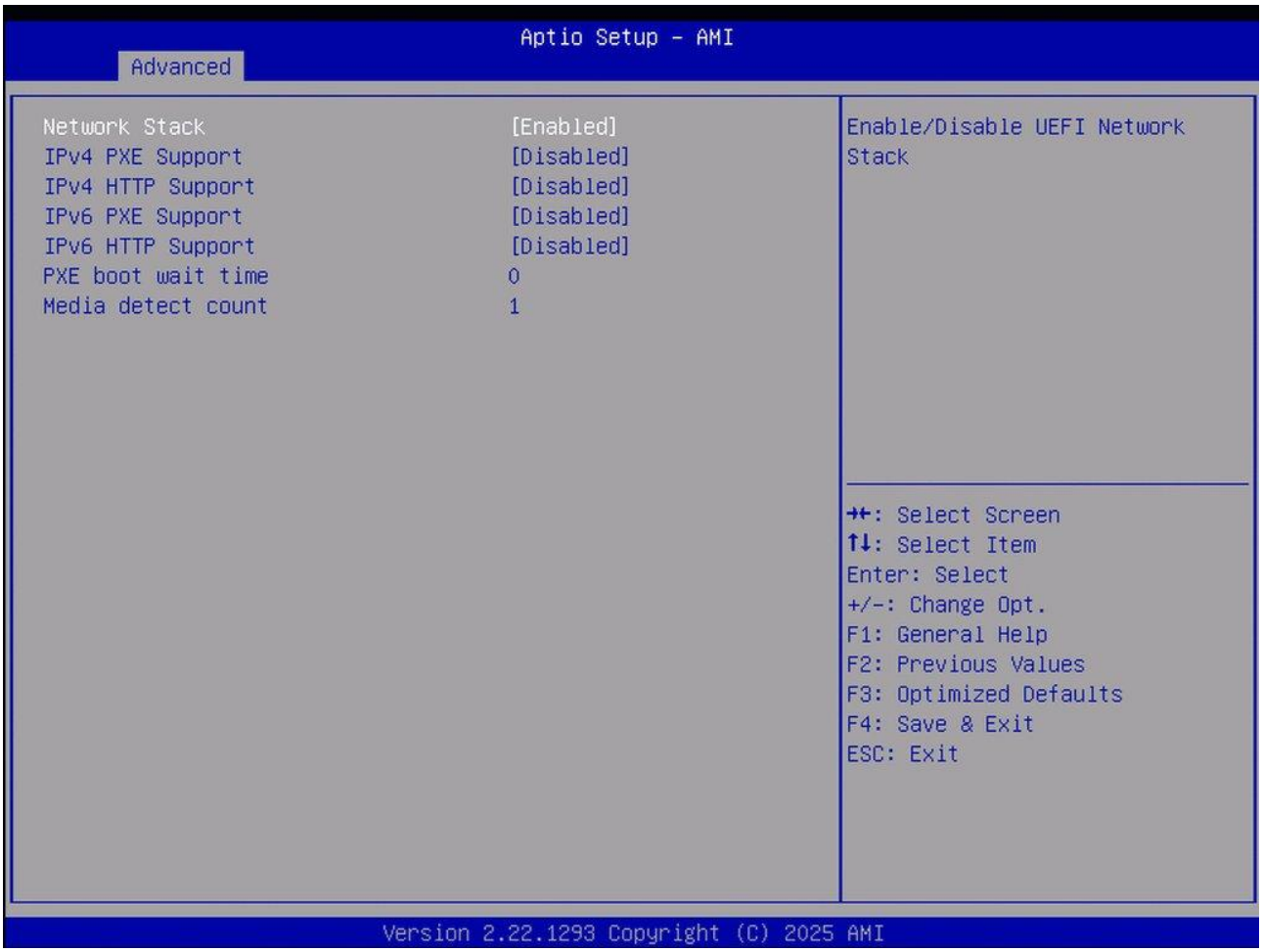
Device power-up delay:

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

3.4.8 Network Stack Configuration



3.4.8.1 PXE boot wait time



IPV4 PXE Support:

Enable/Disable lPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

IPV4 HTTP Support:

Enable/Disable lPv4 HTTP boot support. lf disabled, IPv4 HTTP boot support will not be available.

IPV6 PXE Support:

Enable/Disable lPv6 PXE boot support. lf disabled, IPv6 PXE boot support will not be available.

IPV6 HTTP Support:

Enable/Disable lPv6 HTTP boot support. If disabled,IPv6 HTTP boot support will not be available.

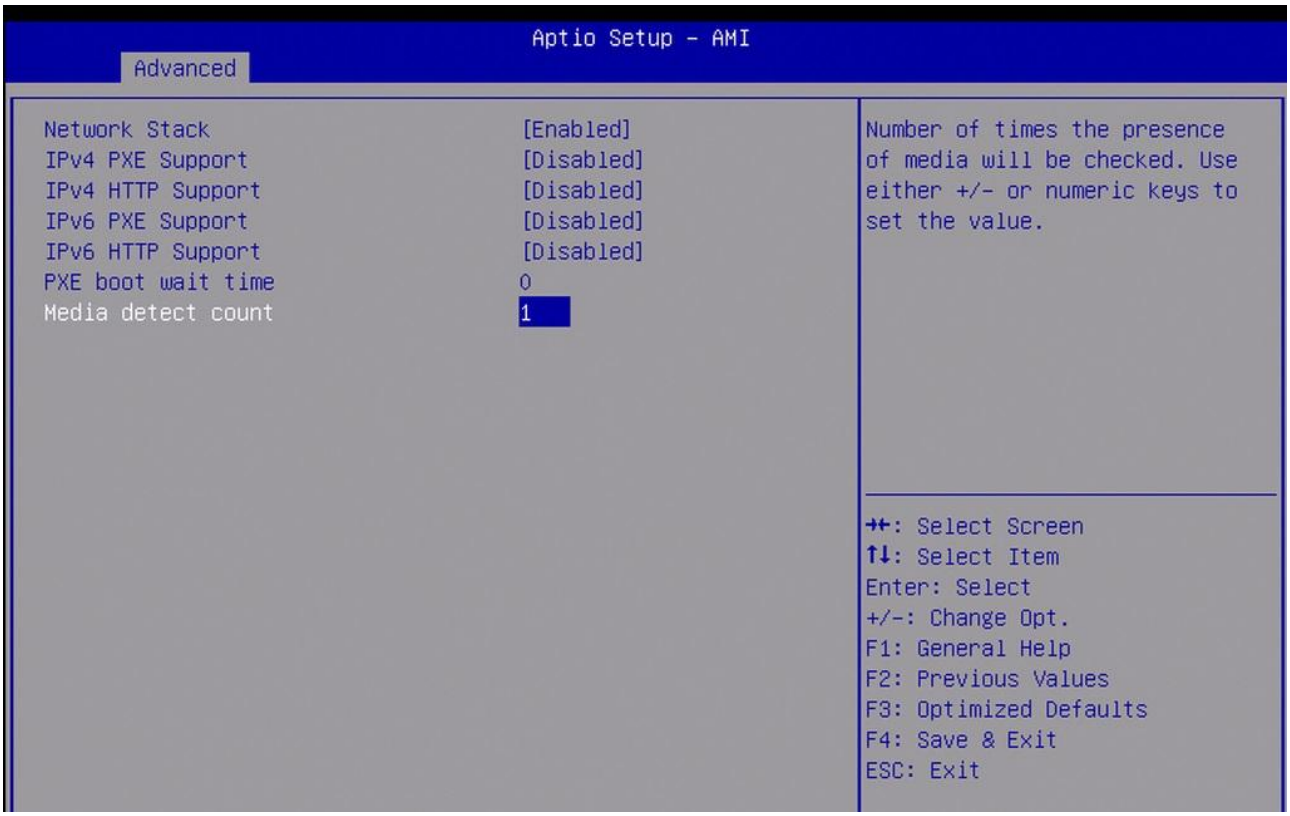
PXE Boot Wait Time:

Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value,

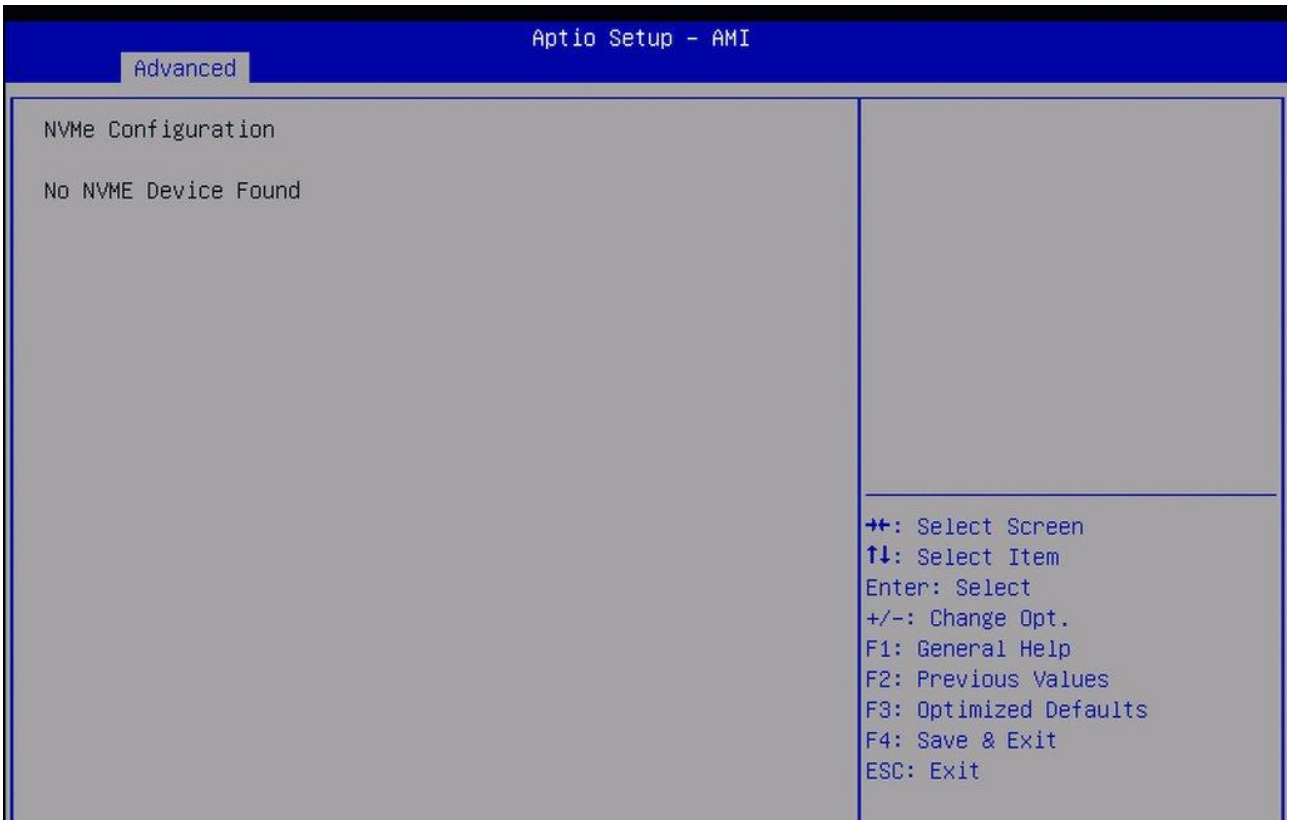
Media detect count:

Number of times the presence of media will be checked.Use either +/- or numeric keys to set the value.

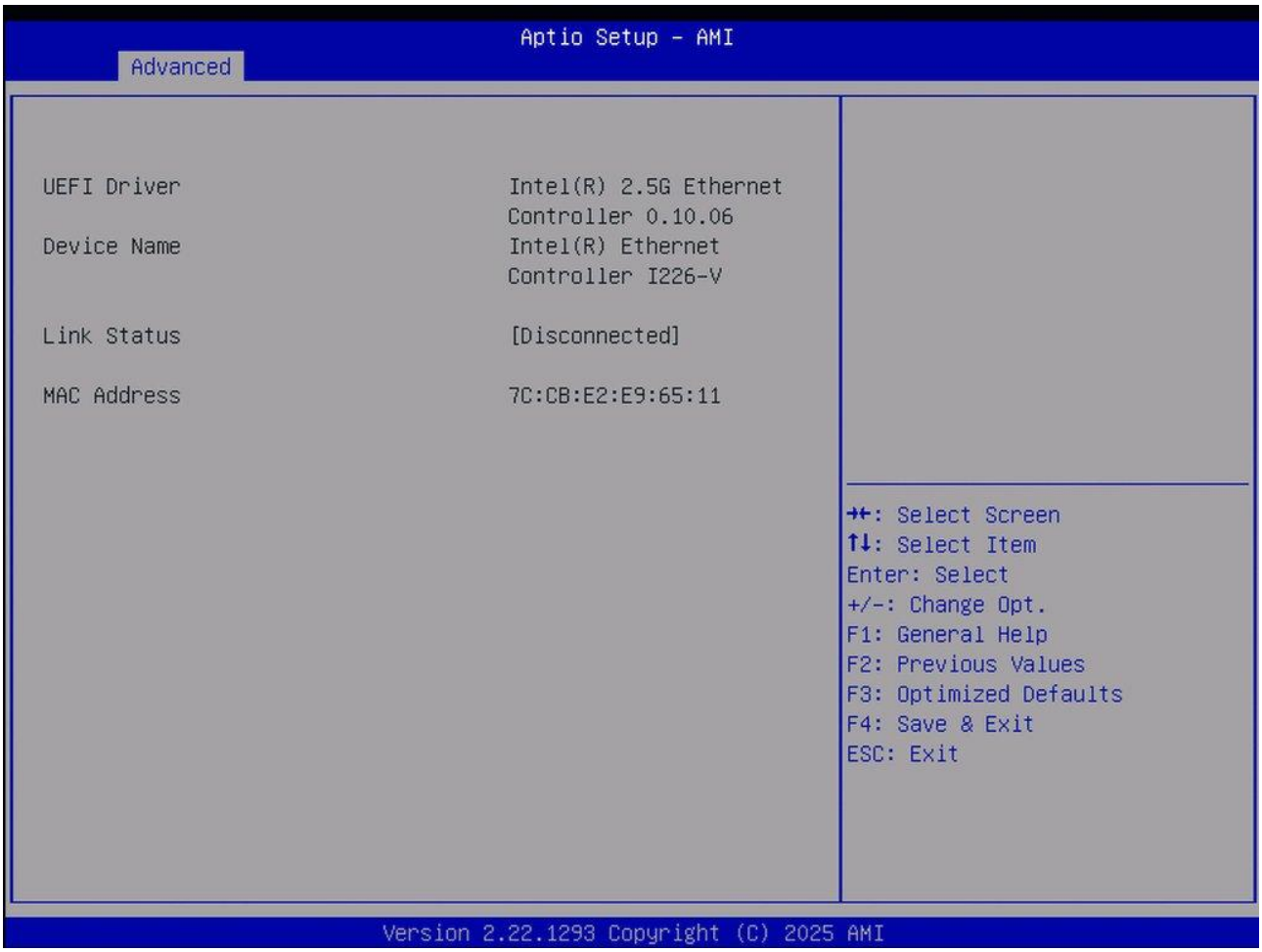
3.4.8.2 Media detect count



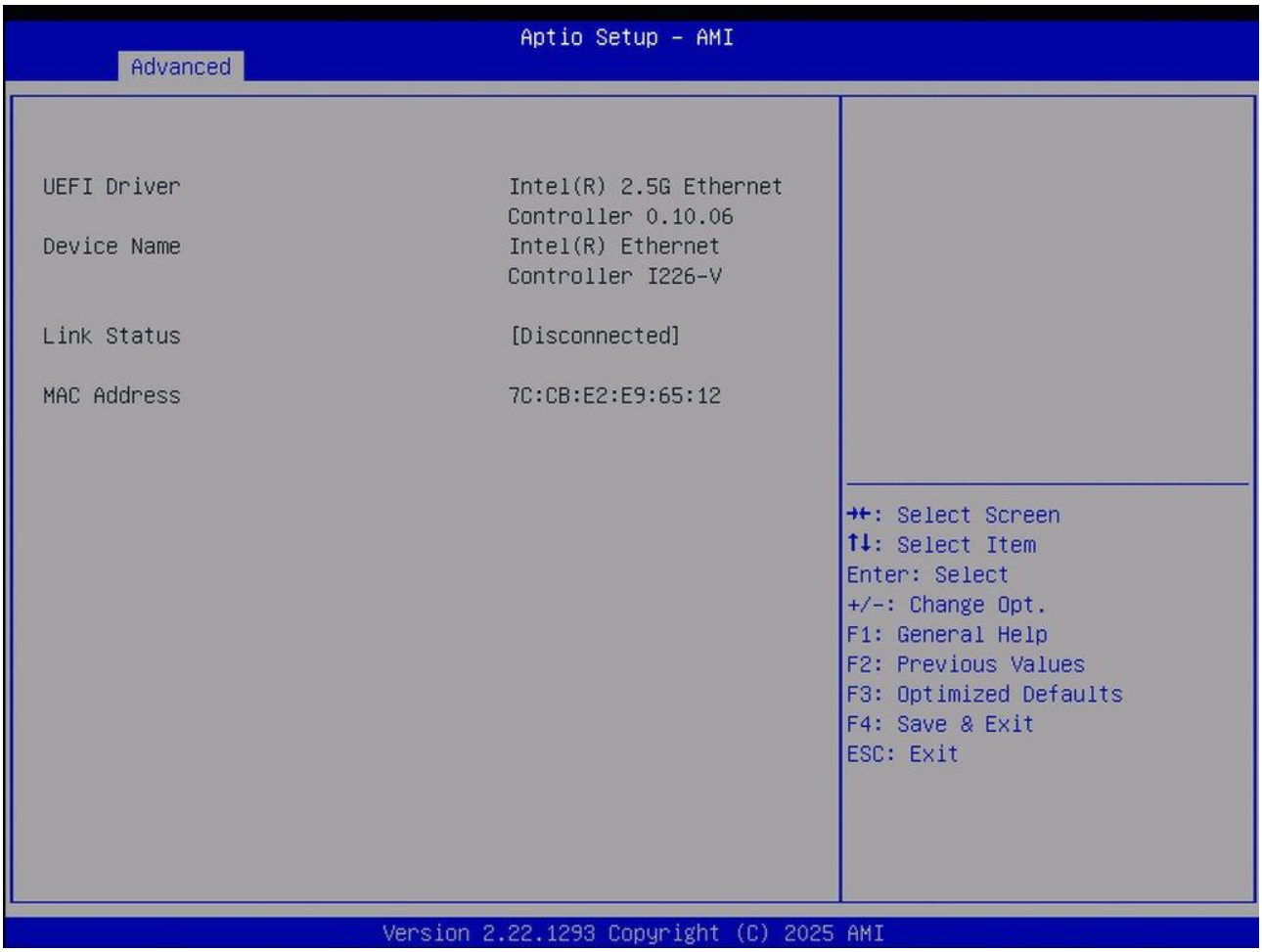
3.4.9 NVMe Configuration



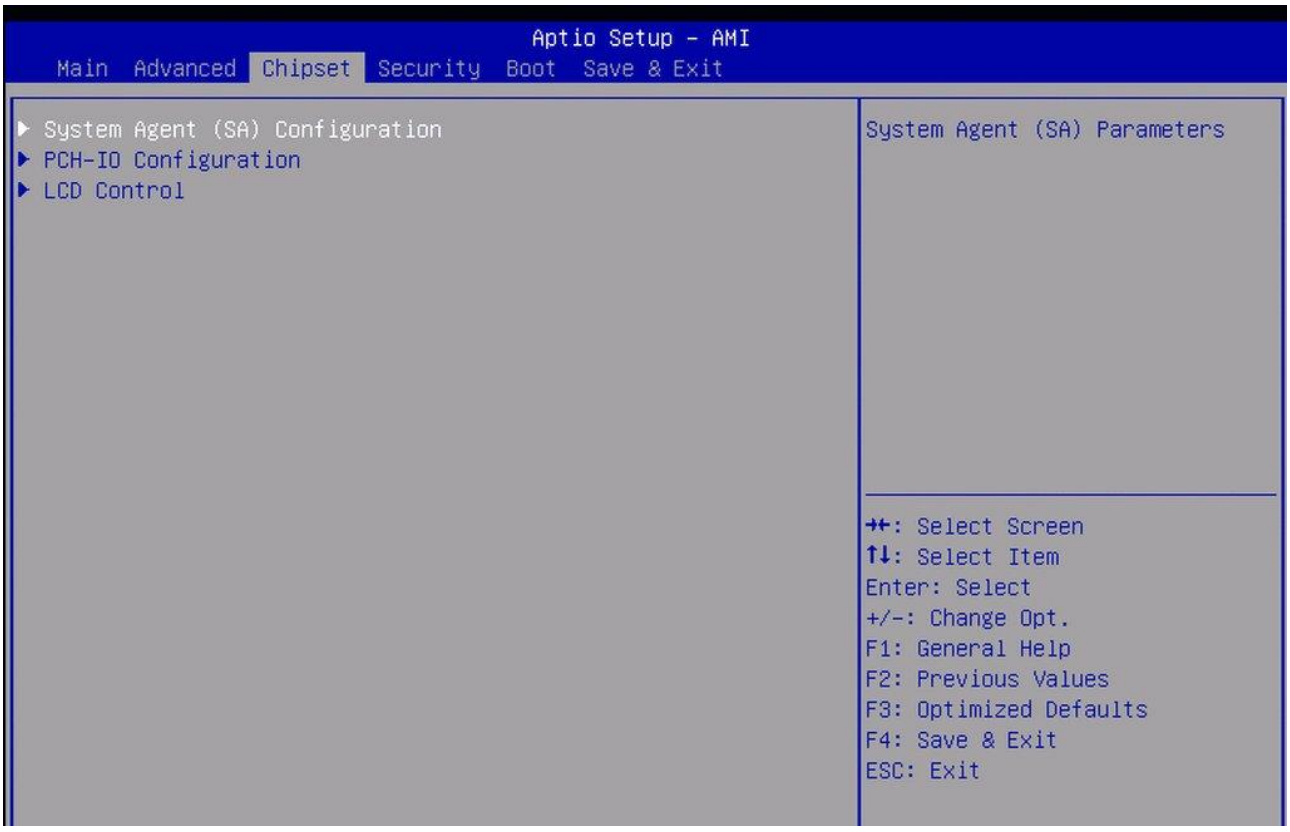
3.4.10 Intel(R) Ethernet Controller I226-V



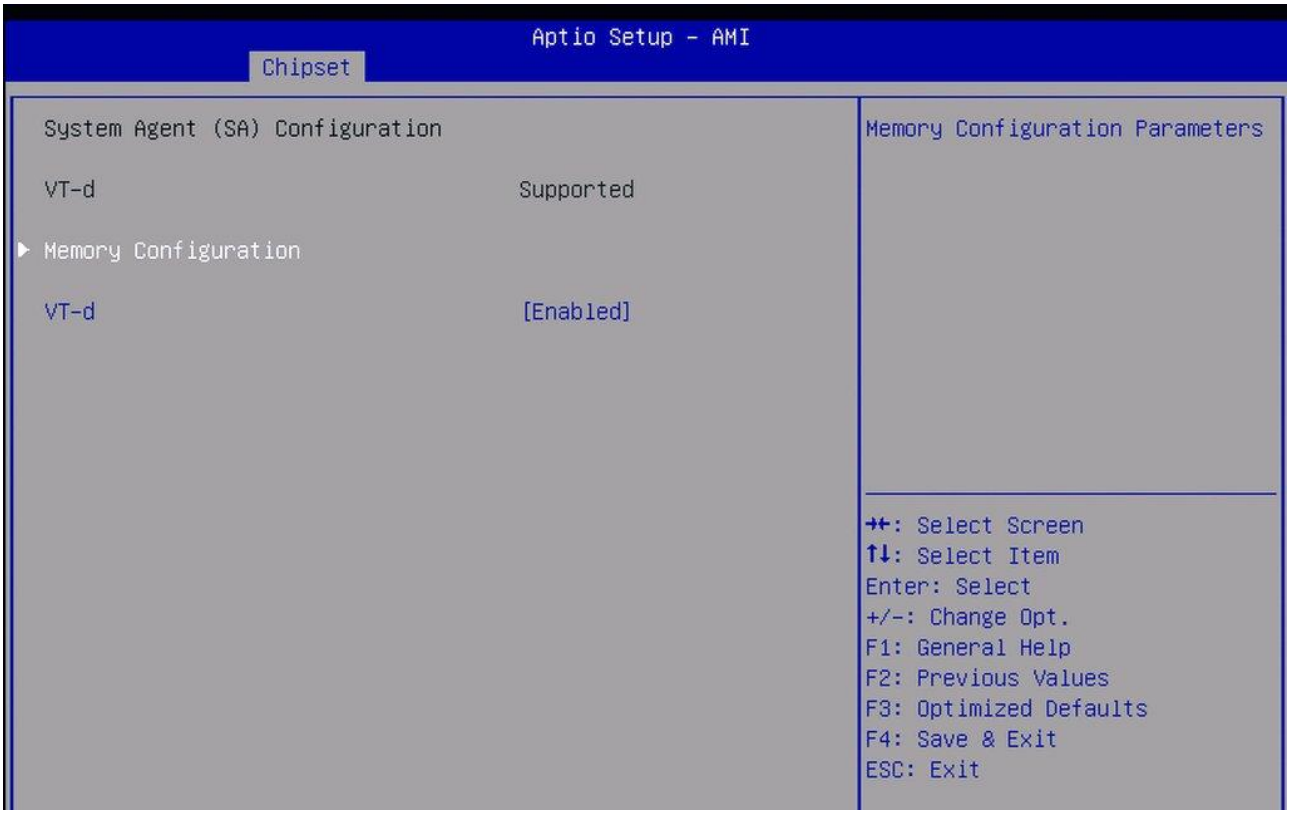
3.4.11 Intel(R) Ethernet Controller I226-V



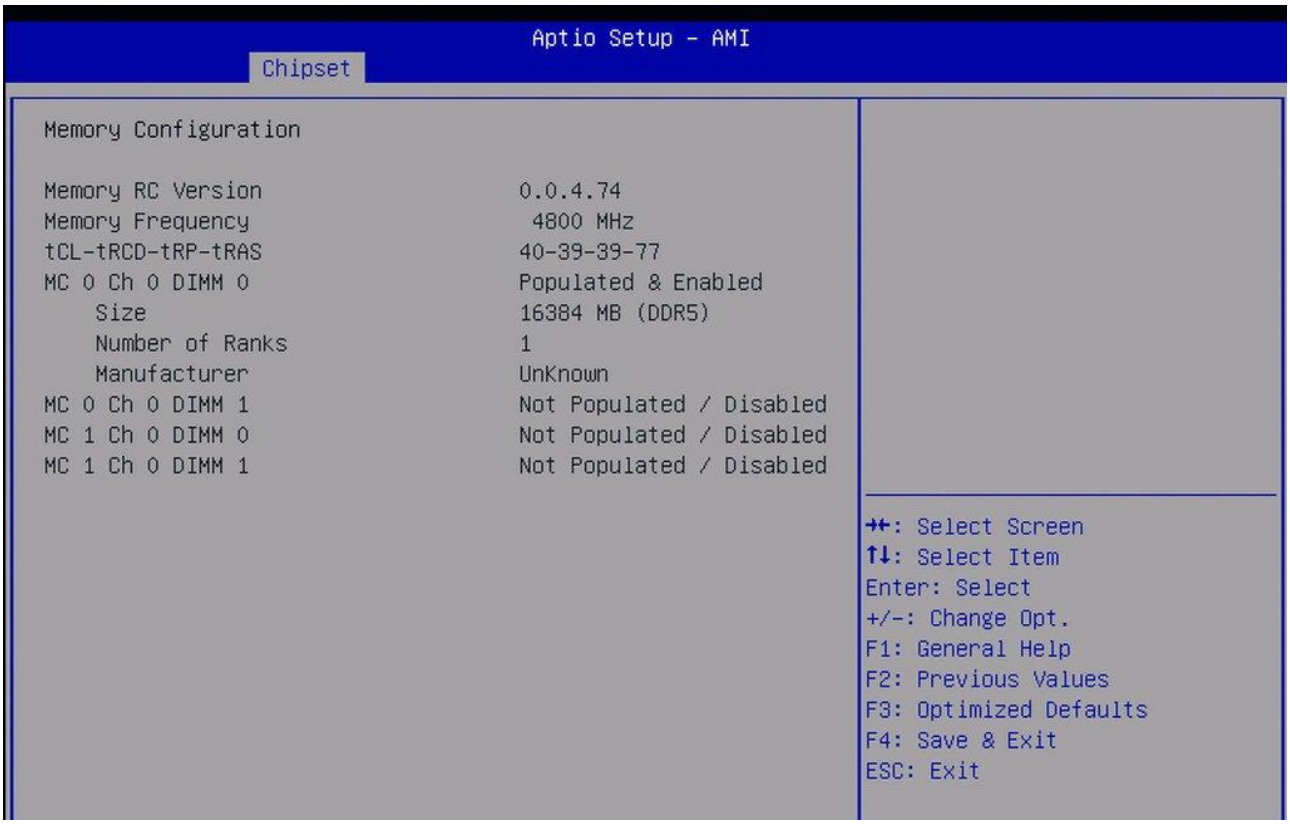
3.5 Chipset Settings



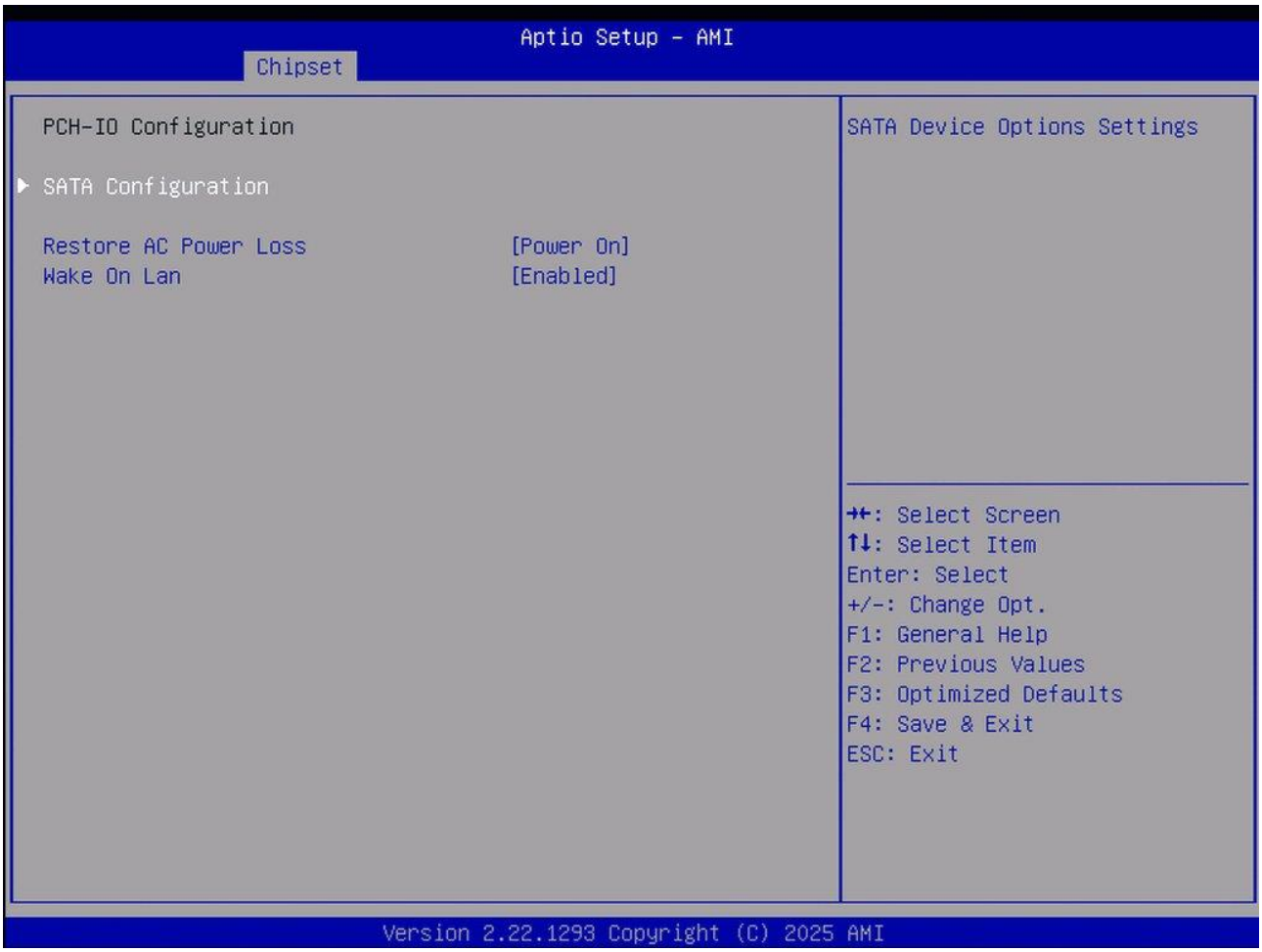
3.5.1 System Agent (SA) Configuration



3.5.1.1 Memory Configuration



3.5.2 PCH-IO Configuration



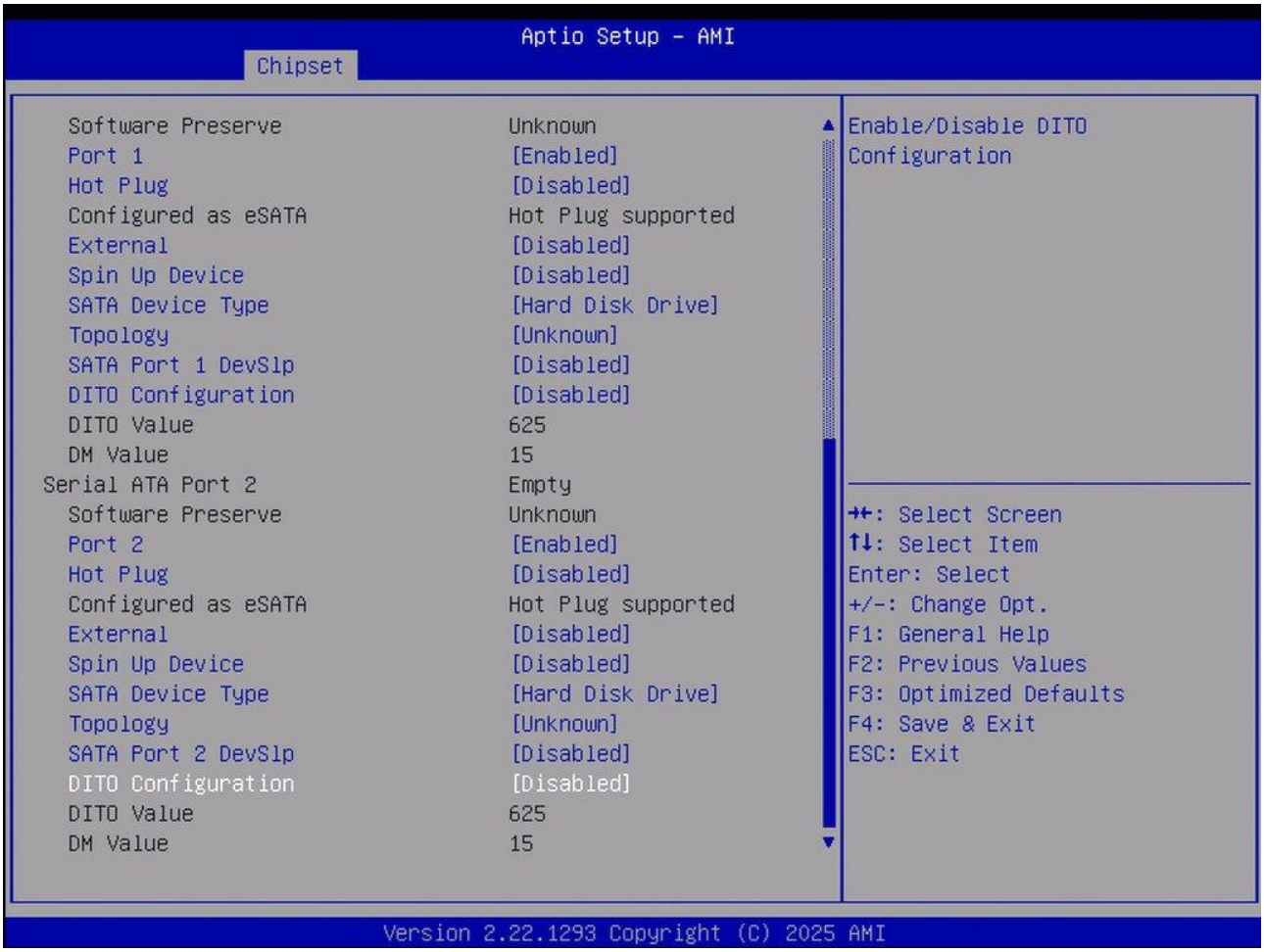
Note:

Restore AC Power Loss: Power ON(Default)

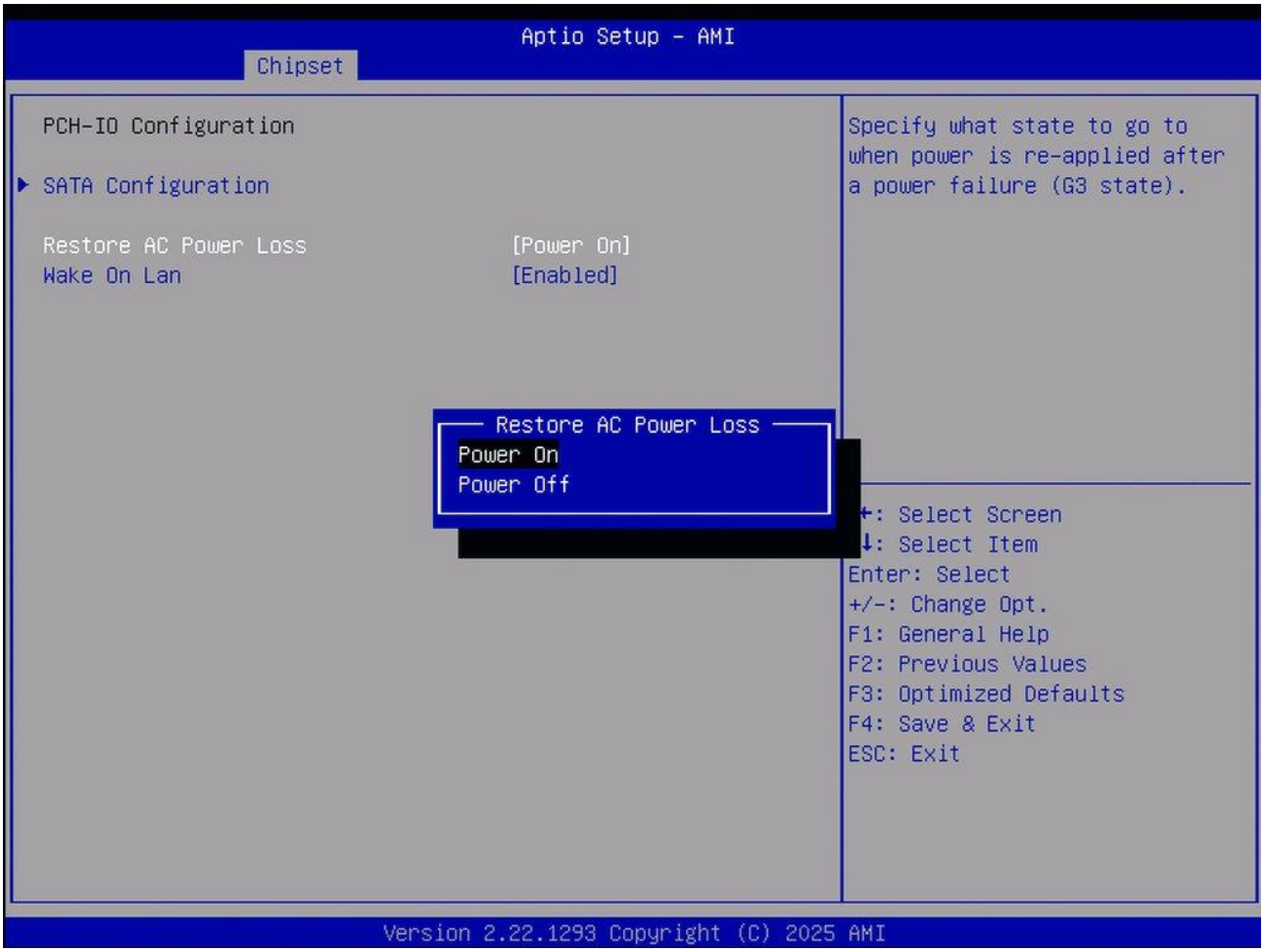
3.5.2.1 SATA Configuration

SATA Device Type:

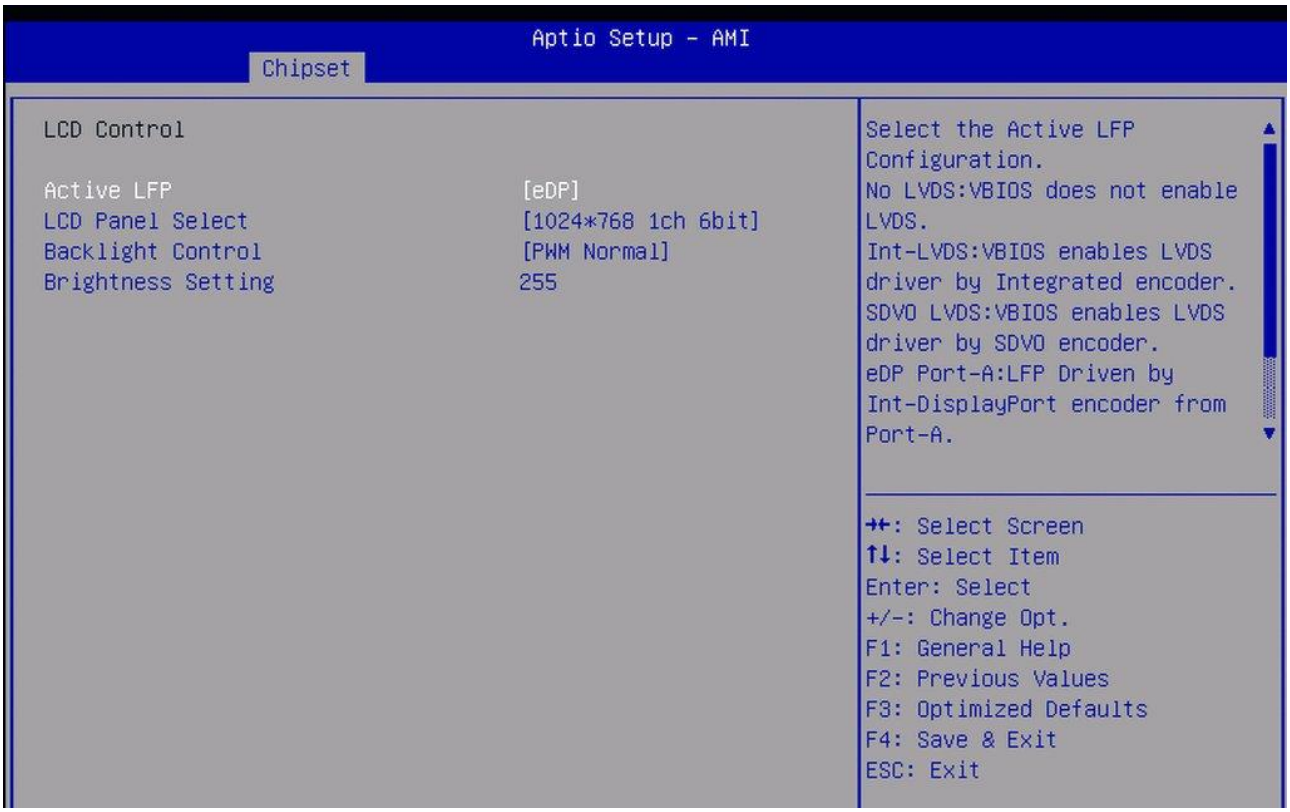
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive



3.5.2.2 Restore AC Power Loss



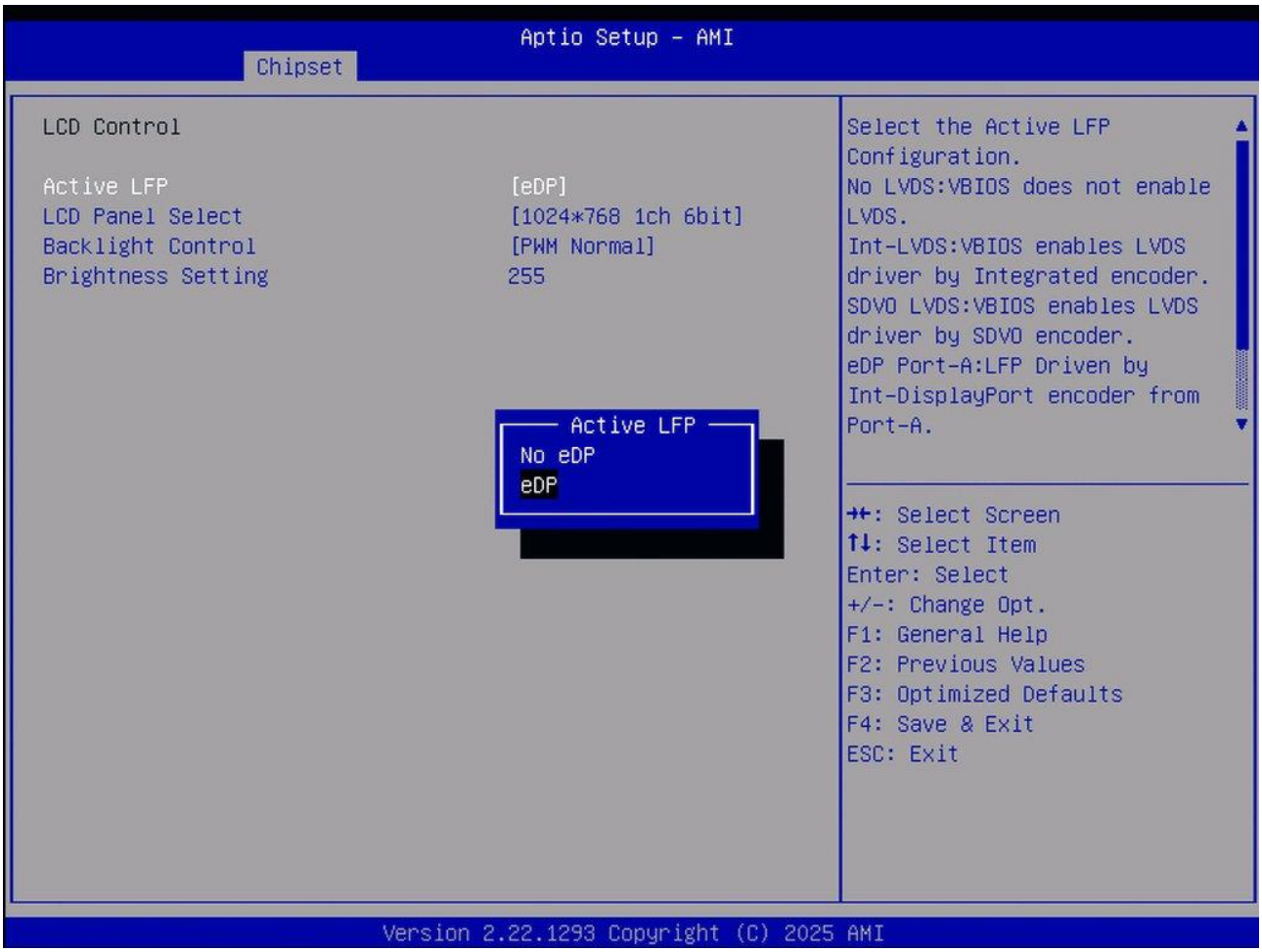
3.5.3 LCD Control



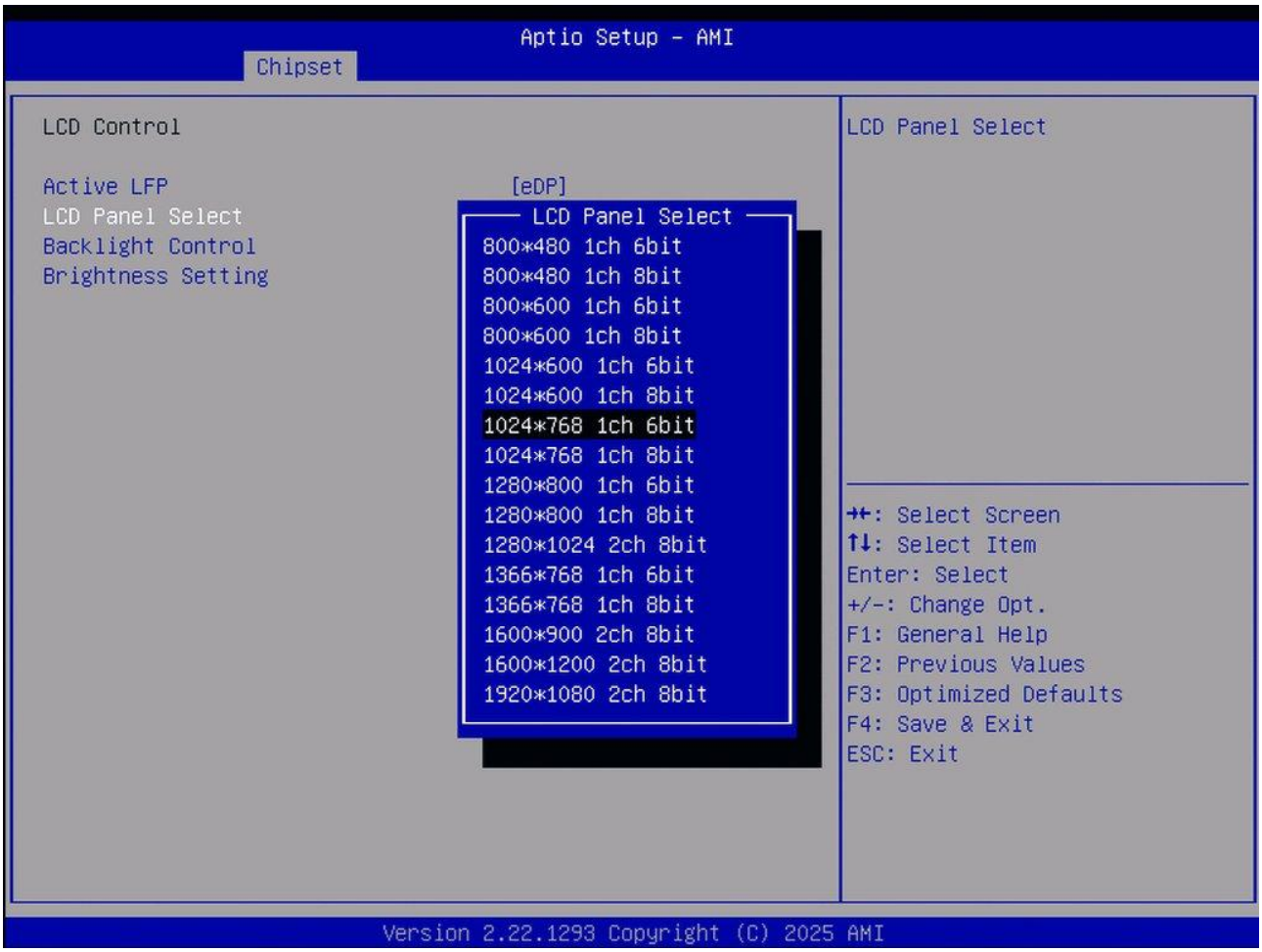
Active LFP:

Select the Active LFP Configuration. No edp: vBIos does not enable LVDS. edp: VBIOS enables LVDS driver by integrated encoder. .

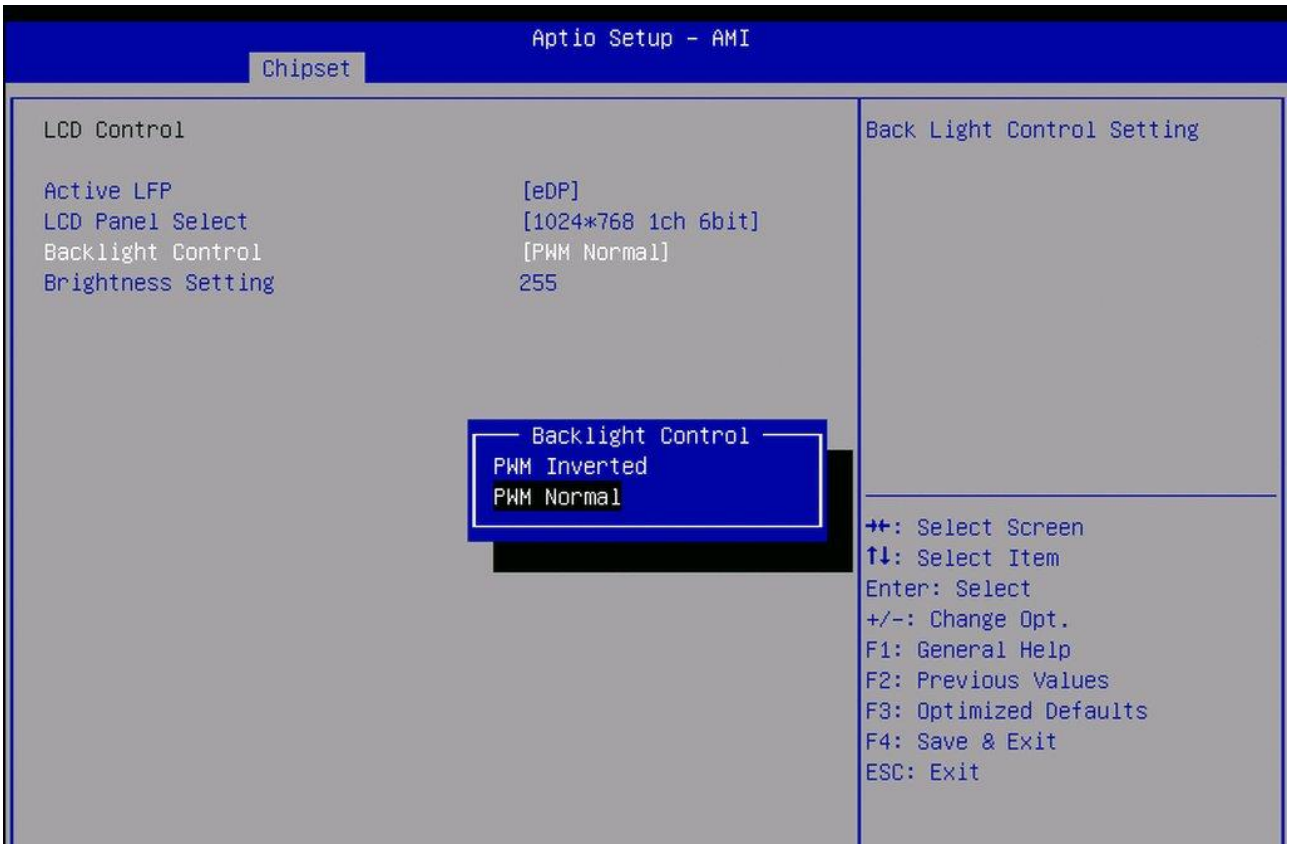
3.5.3.1 Active LFP



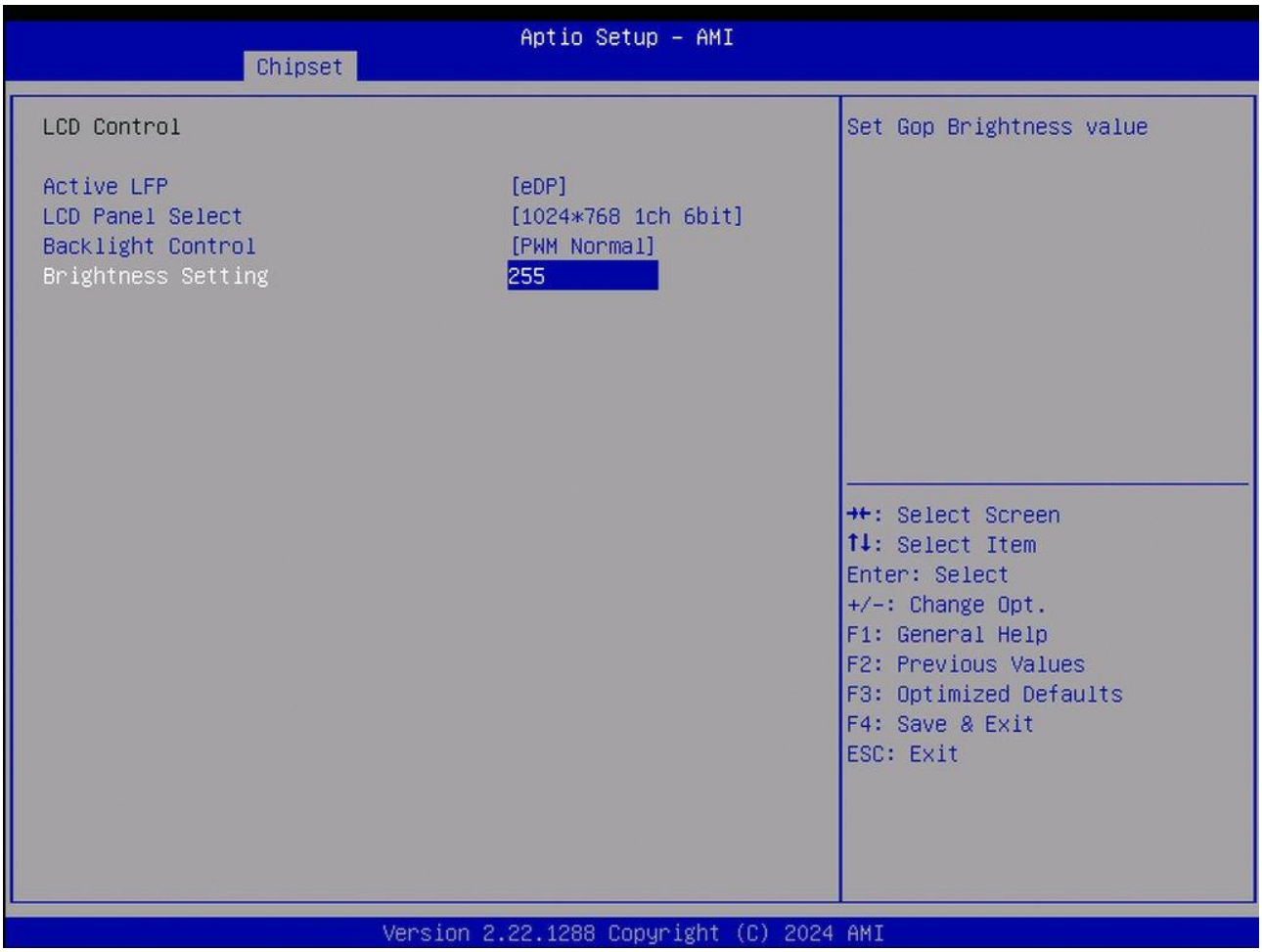
3.5.3.2 LCD Panel Select



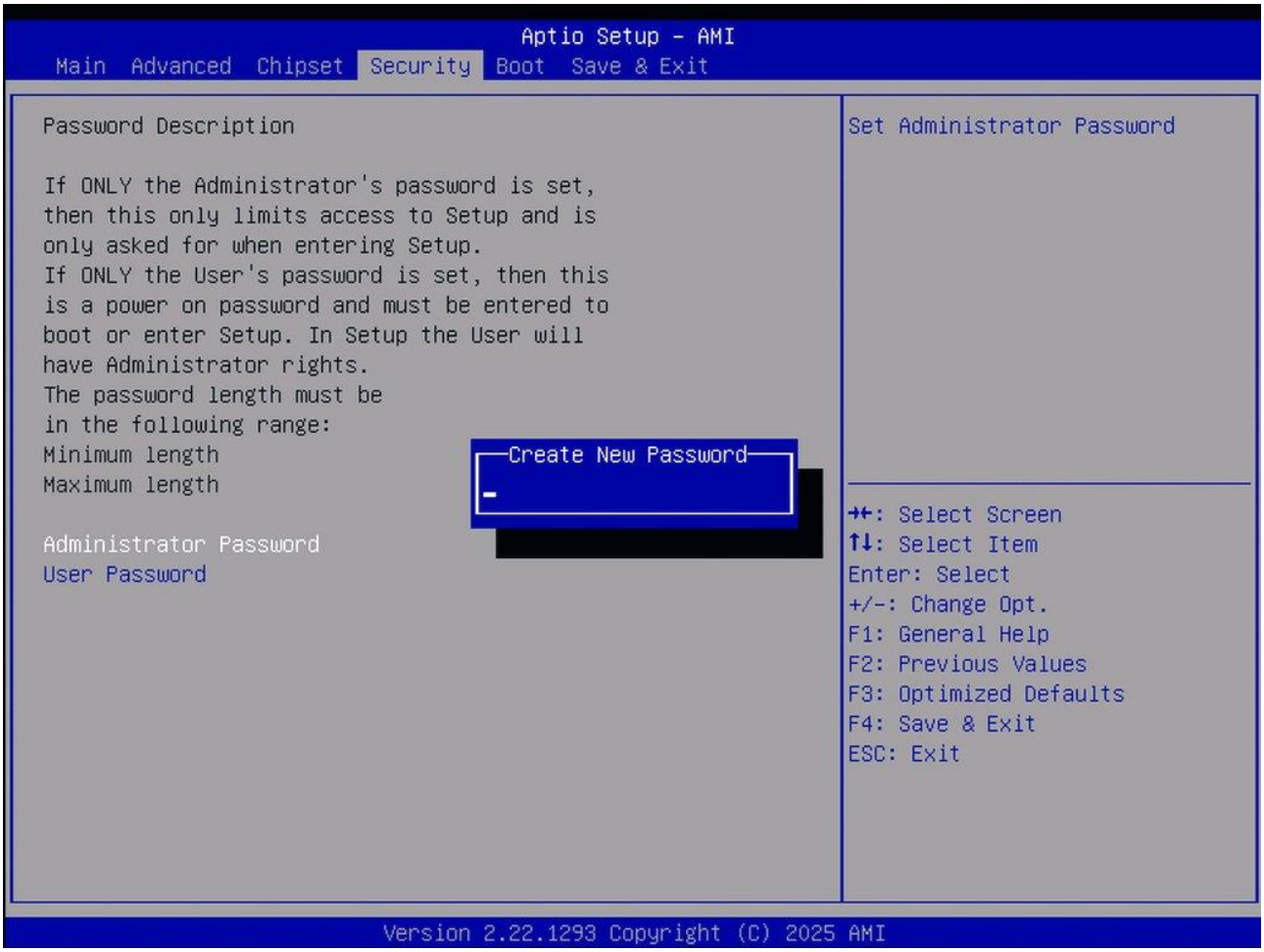
3.5.3.3 Backlight Control



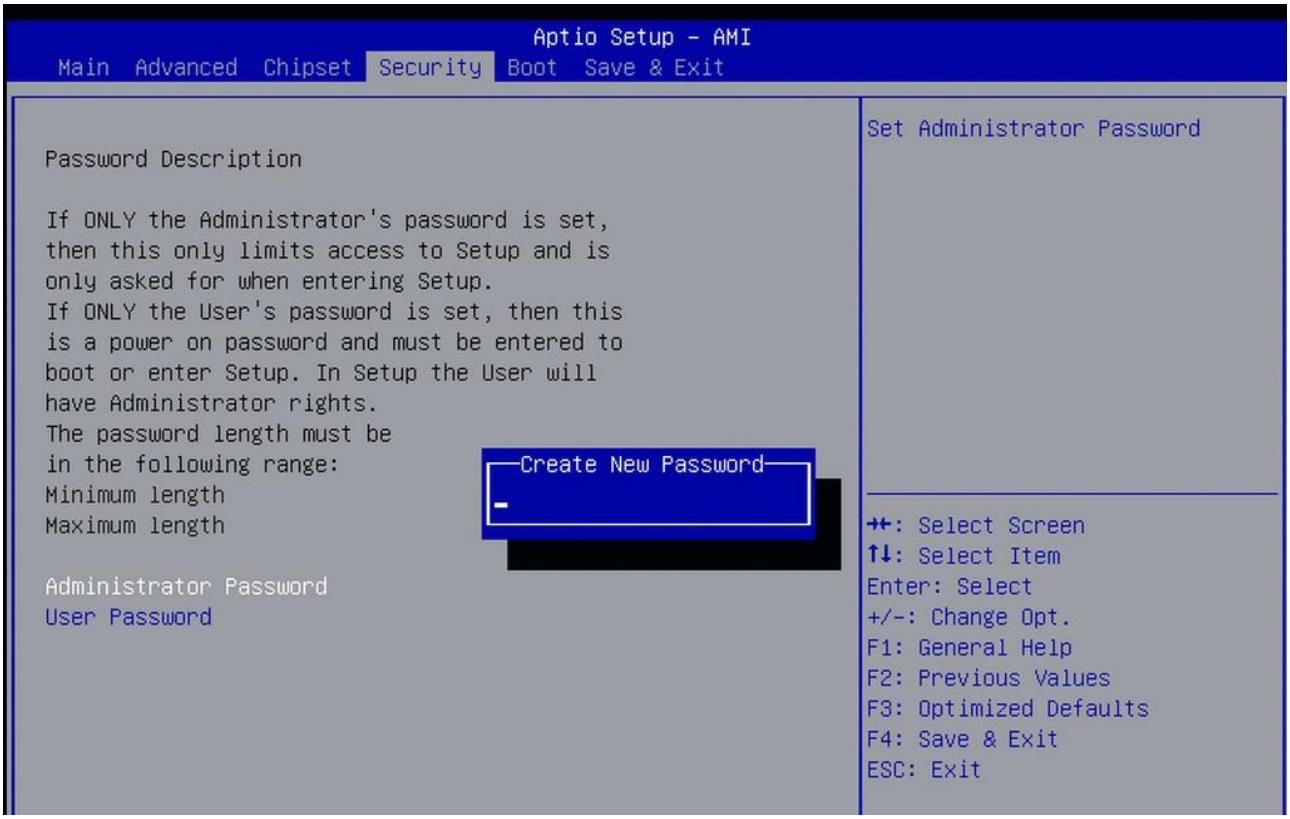
3.5.3.4 Brightness Setting



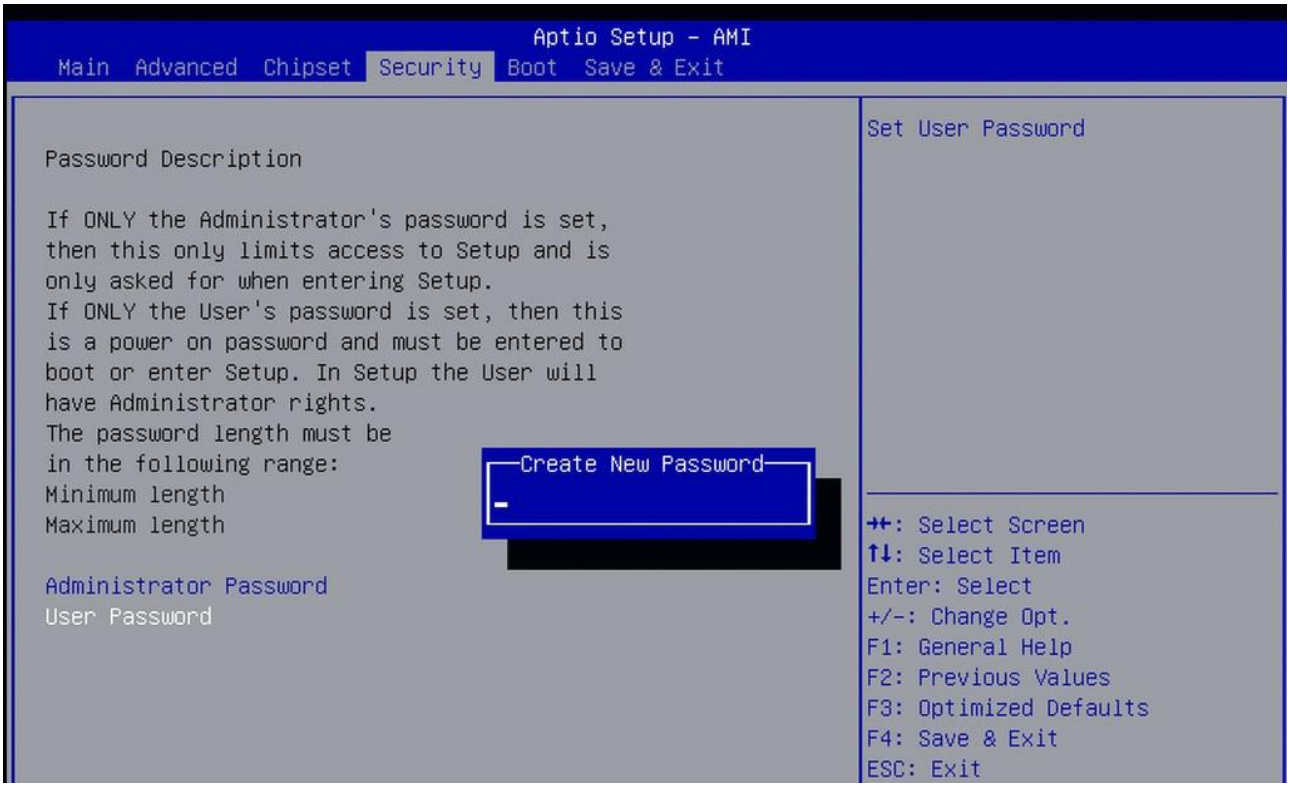
3.6 Security Settings



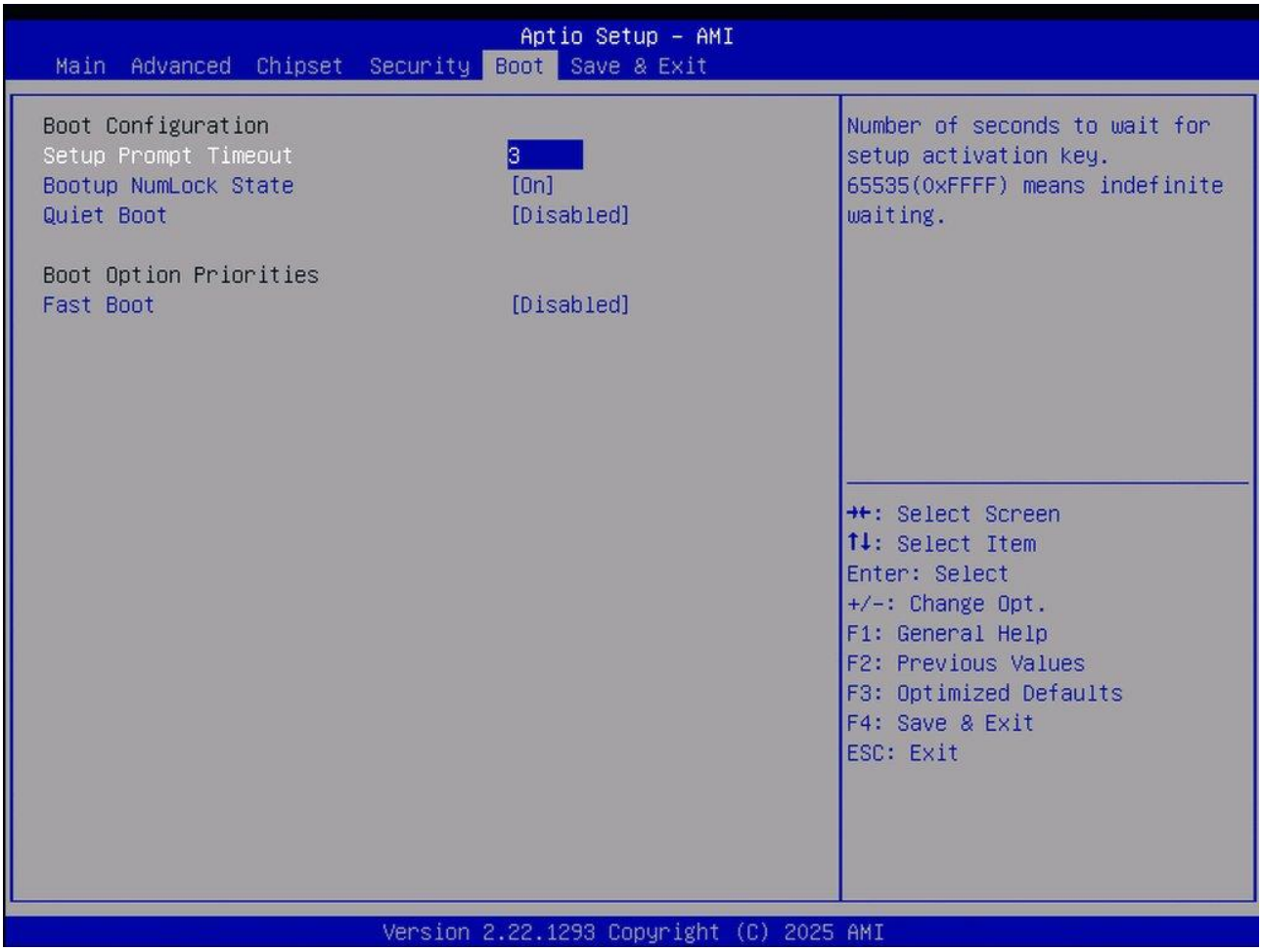
3.6.1 Administrator Password



3.6.2 User Password



3.7 Boot Settings



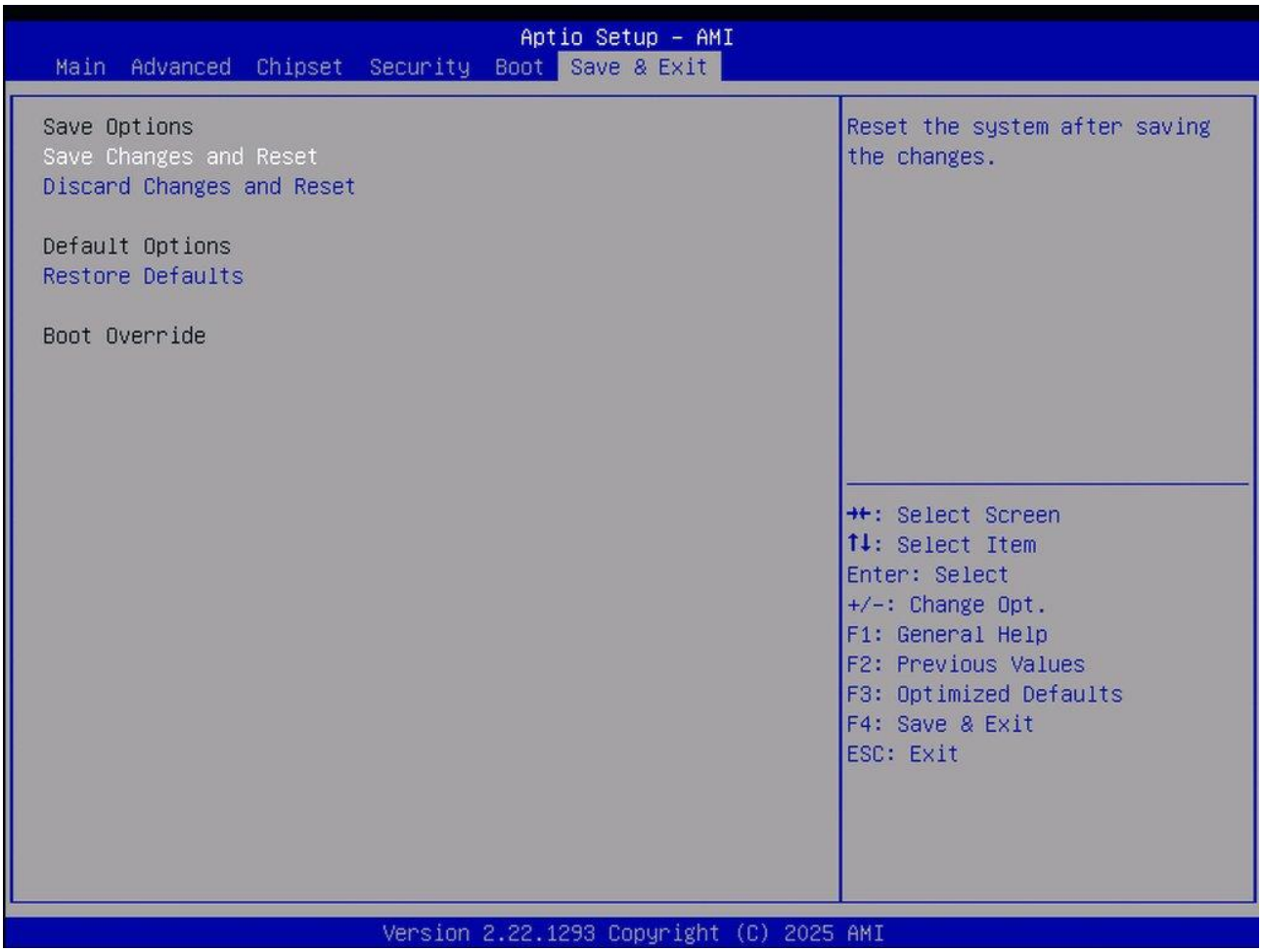
Setup Prompt Timeout:

Number of seconds to wait for setup activation key.65535(OxFFFF) means indefinite waiting.

Fast Boot:

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

3.8 Save & Exit Settings



Restore Defaults:

Restore/Load Default values for all the setup options.

3.9 Secure Boot Keys

How to Enroll Secure Boot Keys (PK, KEK, db) in BIOS/UEFI.

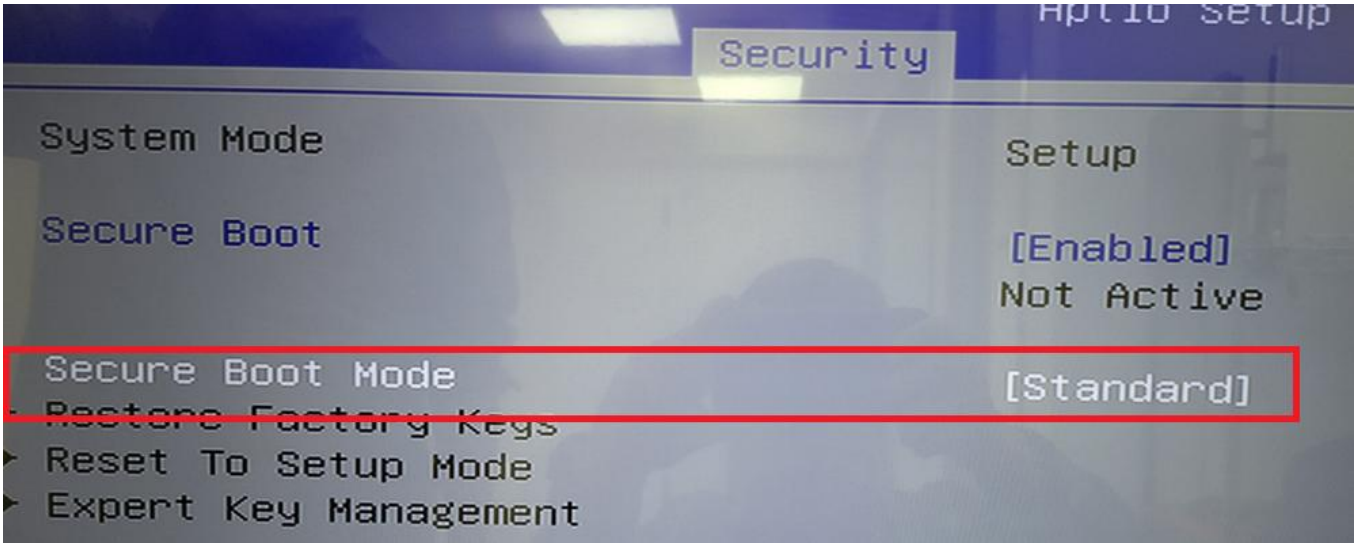
This document explains how to import Secure Boot keys into a UEFI firmware (BIOS). Procedures may vary slightly depending on the motherboard vendor, but the overall process is the same across most platforms supporting UEFI Secure Boot.

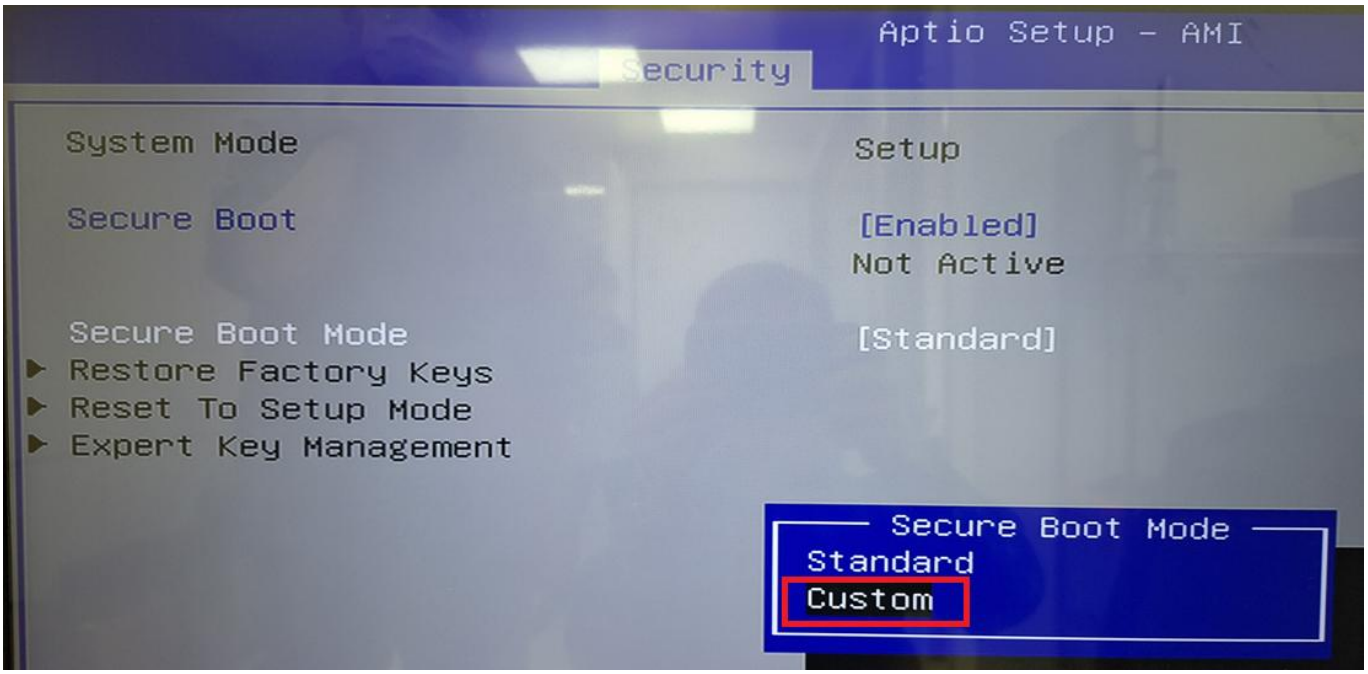
1. You must first obtain the Secure Keys (PK, KEK, db) from Microsoft.

After that, prepare a FAT32-formatted USB drive, UEFI firmware typically only reads key files from FAT32 file systems. Copy your secure keys (PK, KEK, db) to the root directory of the USB drive.

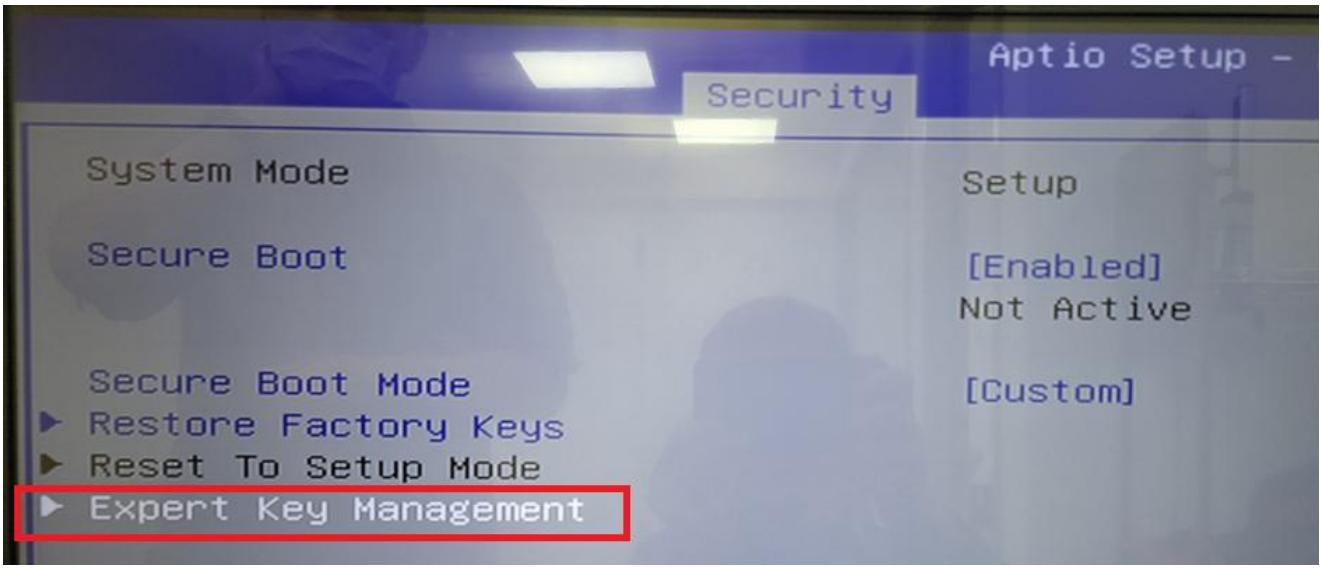
2. When boot up the unit, press DEL on the keyboard. Enter the BIOS menu and select the option shown in the image below.

Path: Security/Secure Boot Mode, and select “Custom”

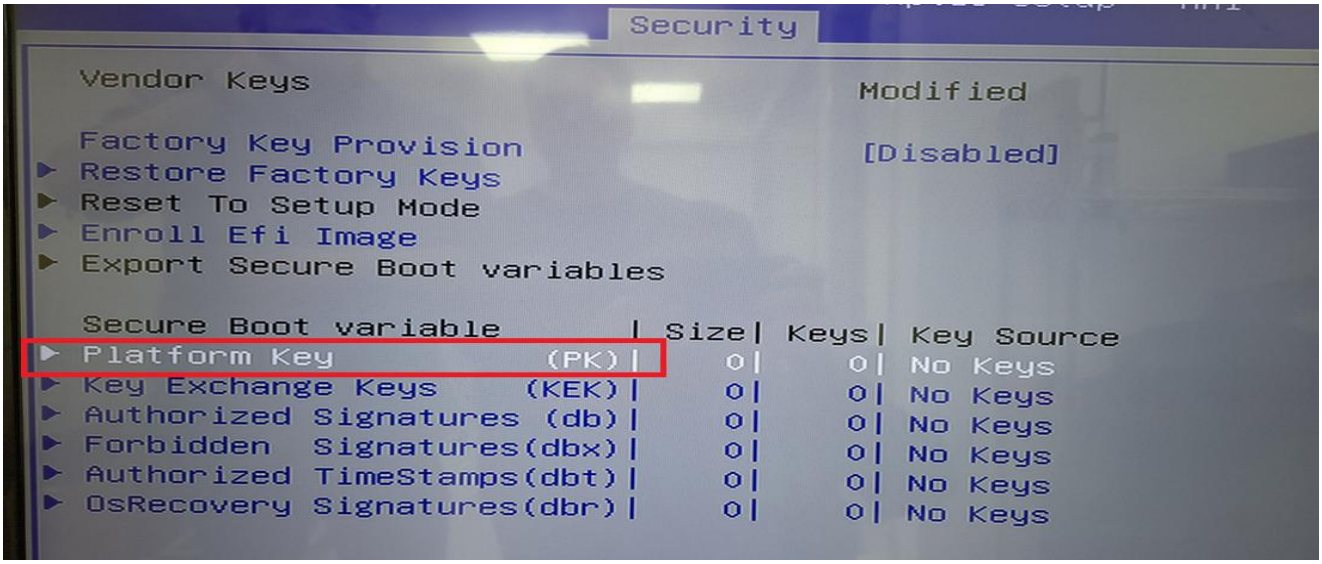




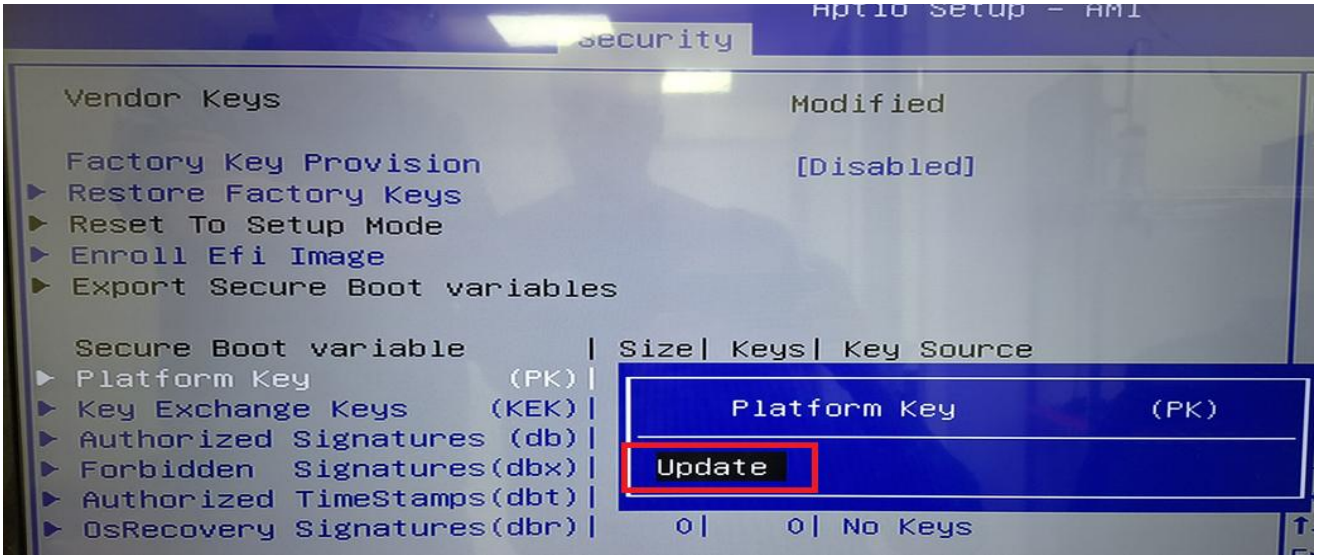
3. Then select “Expert Key Management”



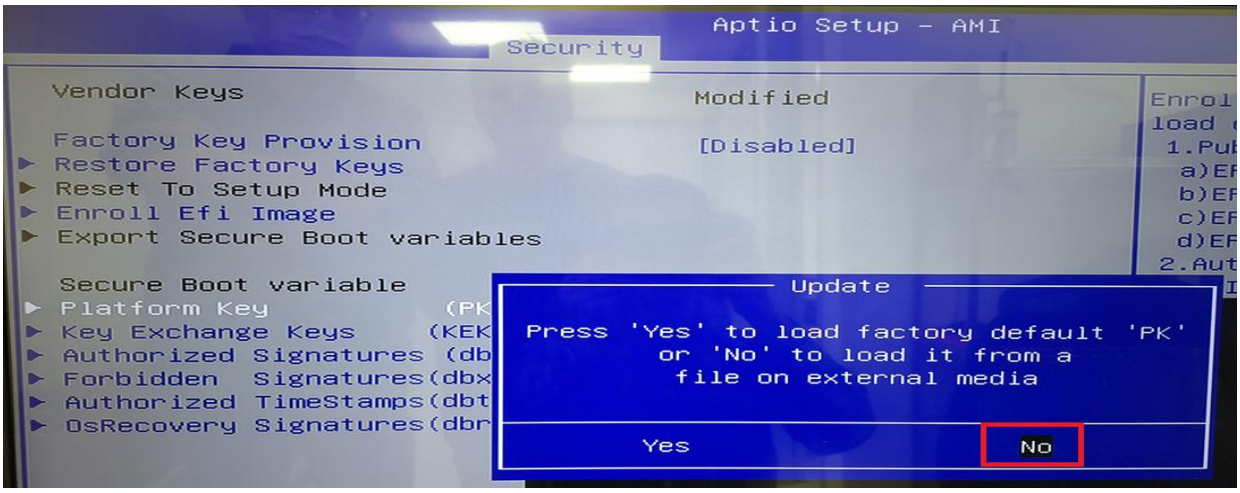
4. Select “Platform Key (PK)” , enter



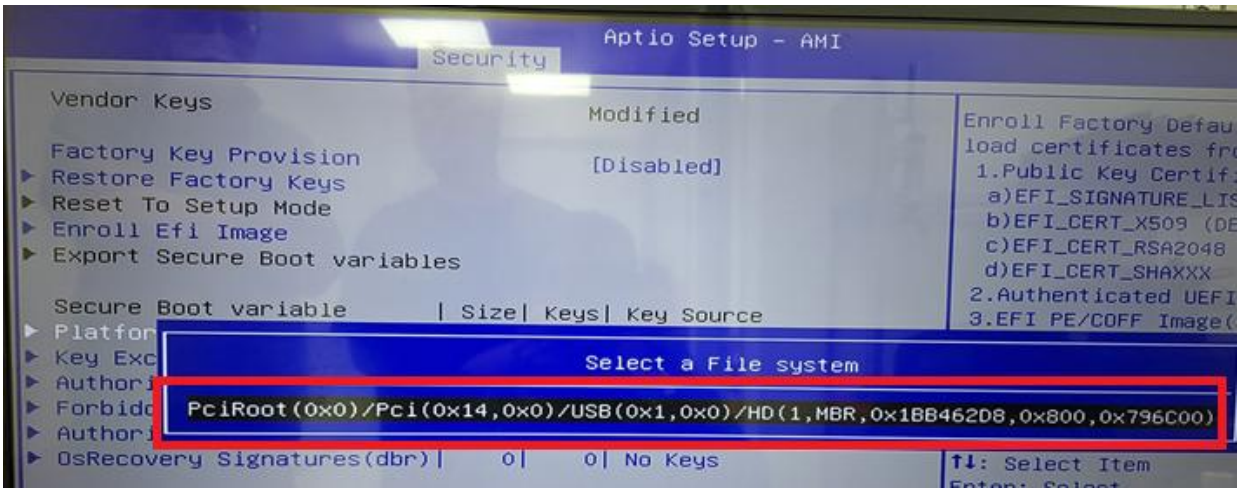
3.9.1 **Select** “Update”

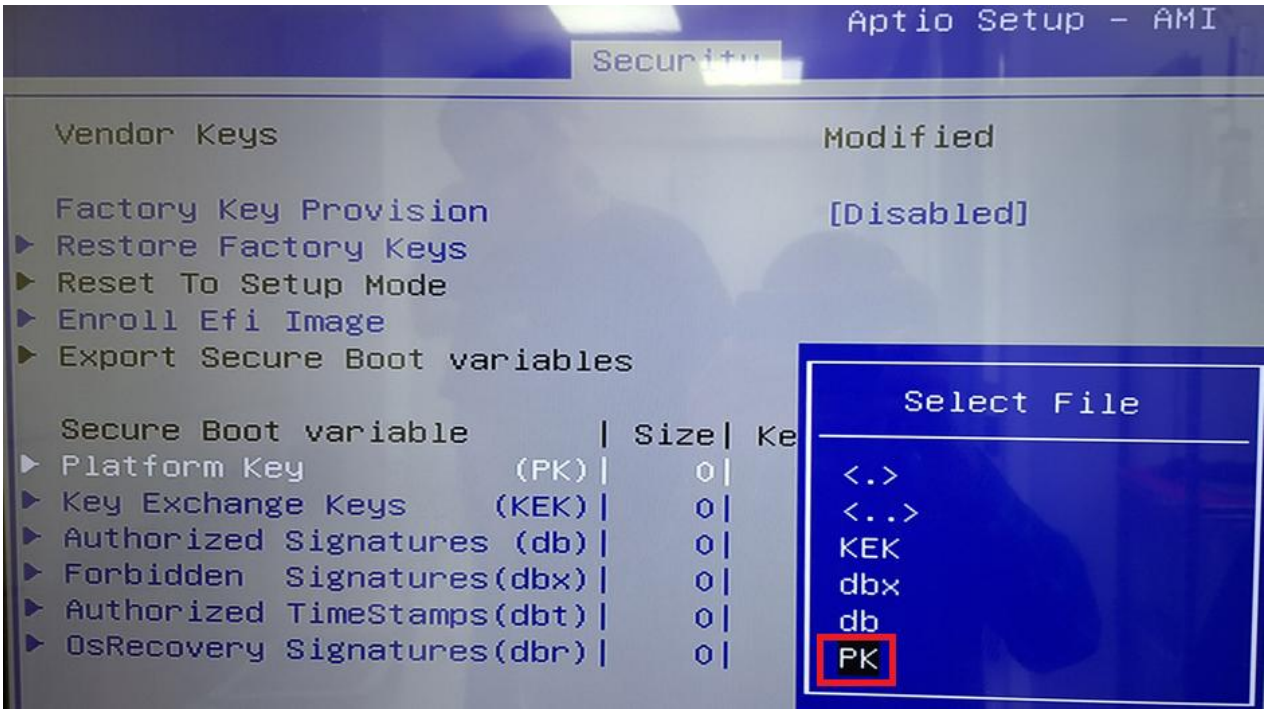


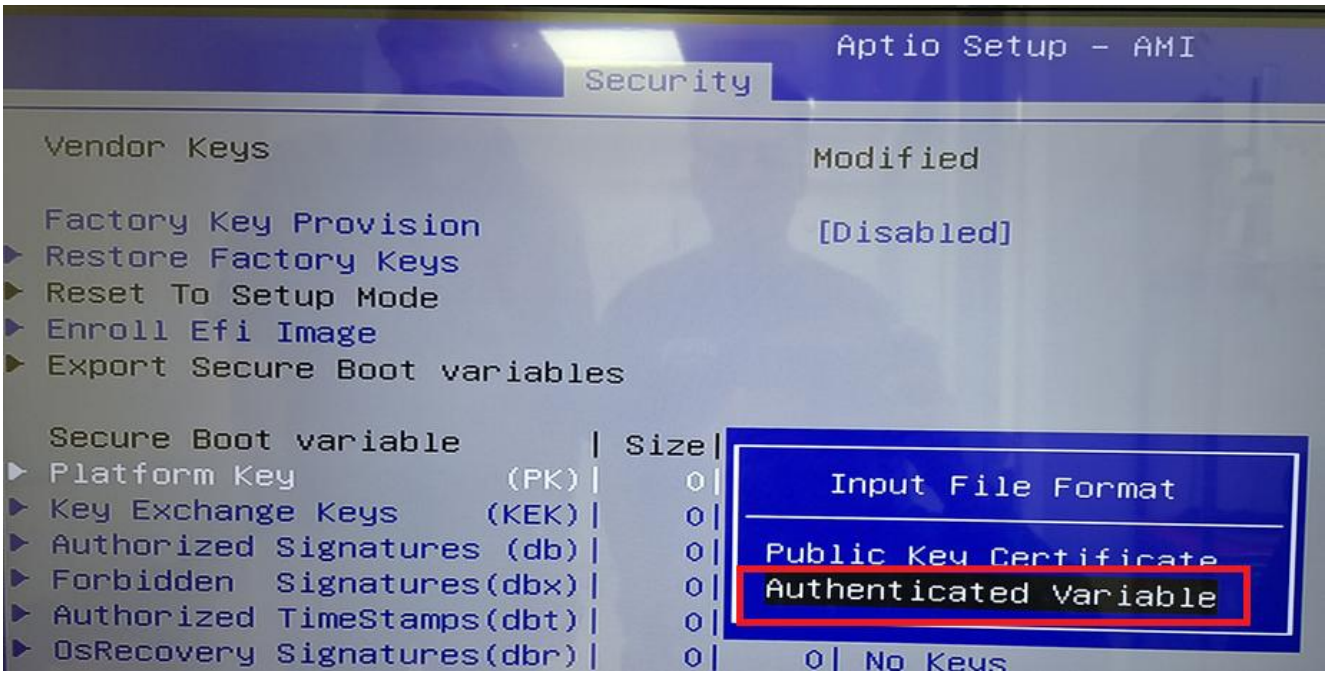
3.9.2 **Select** “No”

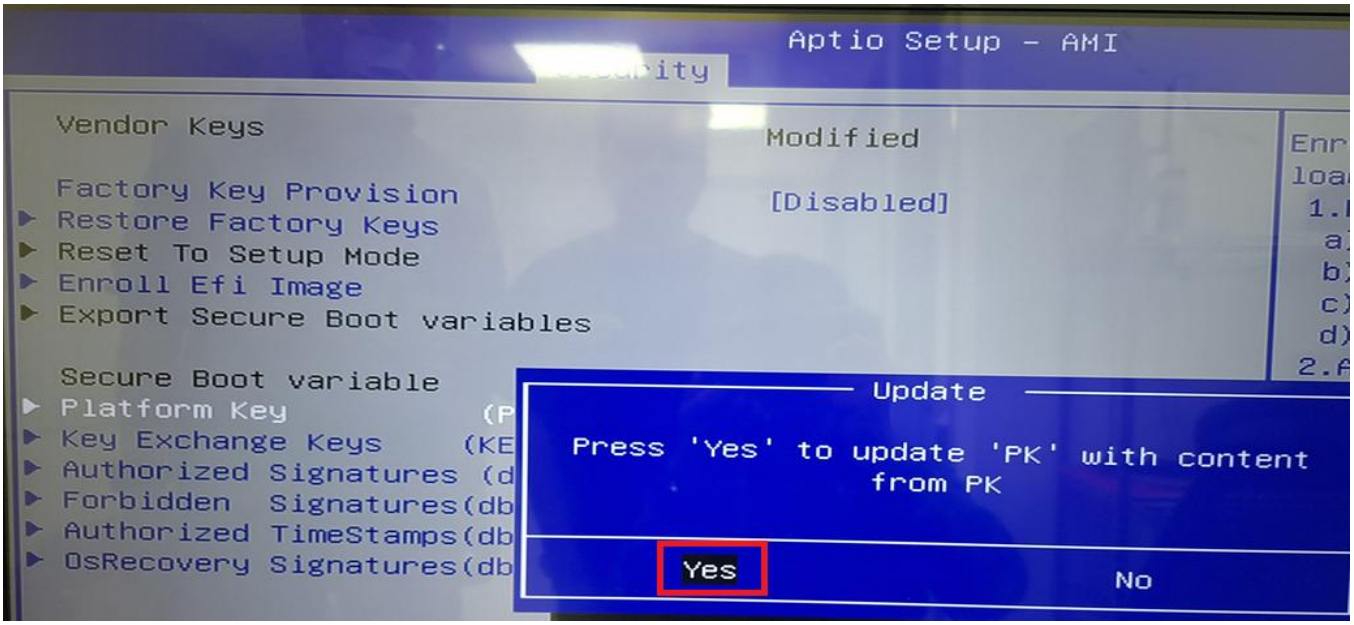


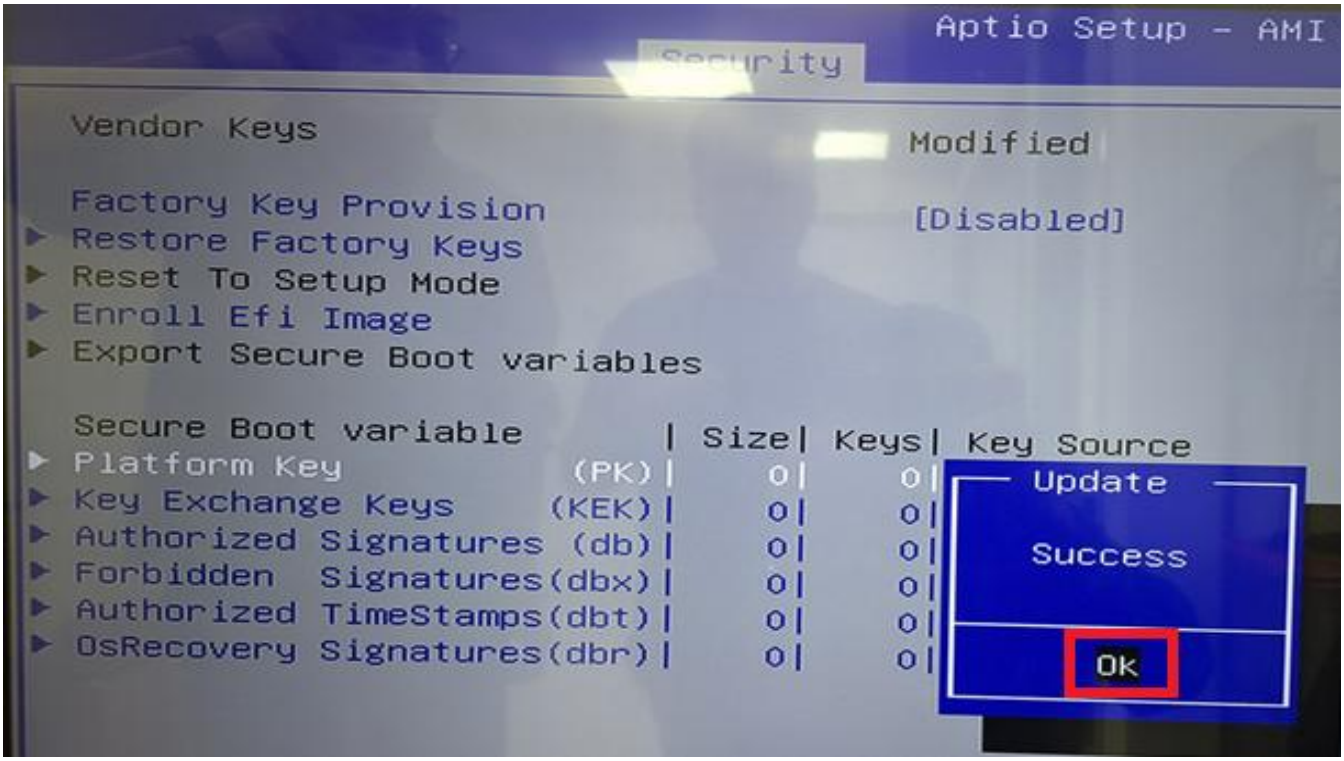
3.9.3 **Find** your USB drive to select your Keys (PK).

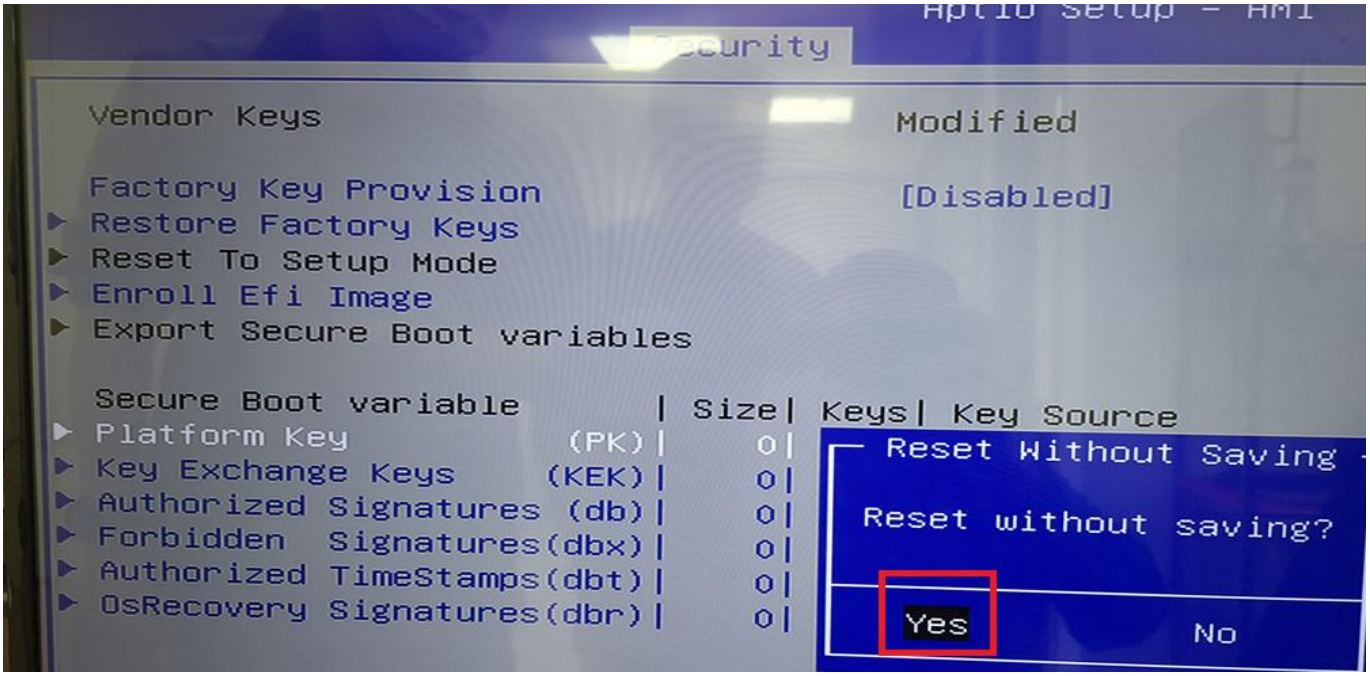




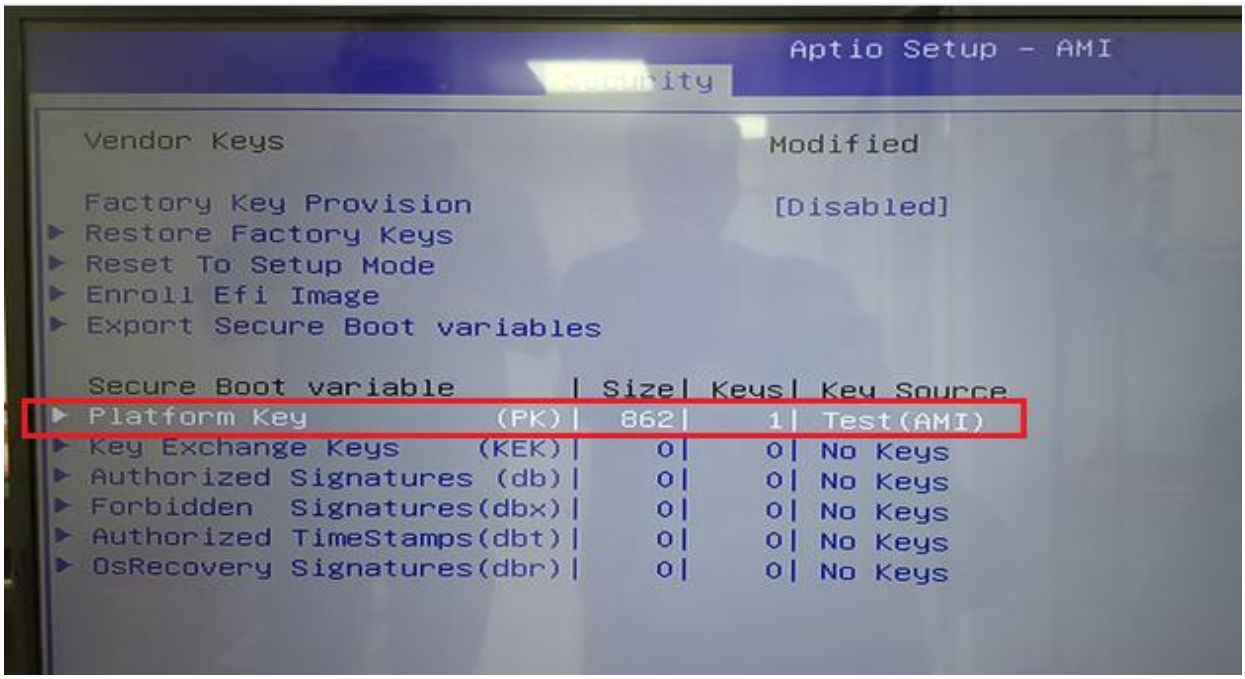

Aptio Setup – AMI
Security
Vendor Keys
Modified
Factory Key Provision
[Disabled]
Restore Factory Keys
Reset To Setup Mode
Enroll Efi Image
Export Secure Boot variables
Secure Boot variable
Size
Platform Key (PK)
Key Exchange Keys (KEK)
Authorized Signatures (db)
Forbidden Signatures(dbx)
Authorized TimeStamps(dbt)
OsRecovery Signatures(dbr)
Input File Format
Public Key Certificate
Authenticated Variable
No Keys


Aptio Setup – AMI
Vendor Keys
Modified
Factory Key Provision
[Disabled]
Restore Factory Keys
Reset To Setup Mode
Enroll Efi Image
Export Secure Boot variables
Secure Boot variable
Platform Key
Key Exchange Keys
Authorized Signatures
Forbidden Signatures(db
Authorized TimeStamps(db
OsRecovery Signatures(db
Update
Press 'Yes' to update 'PK' with content from PK
Yes
No

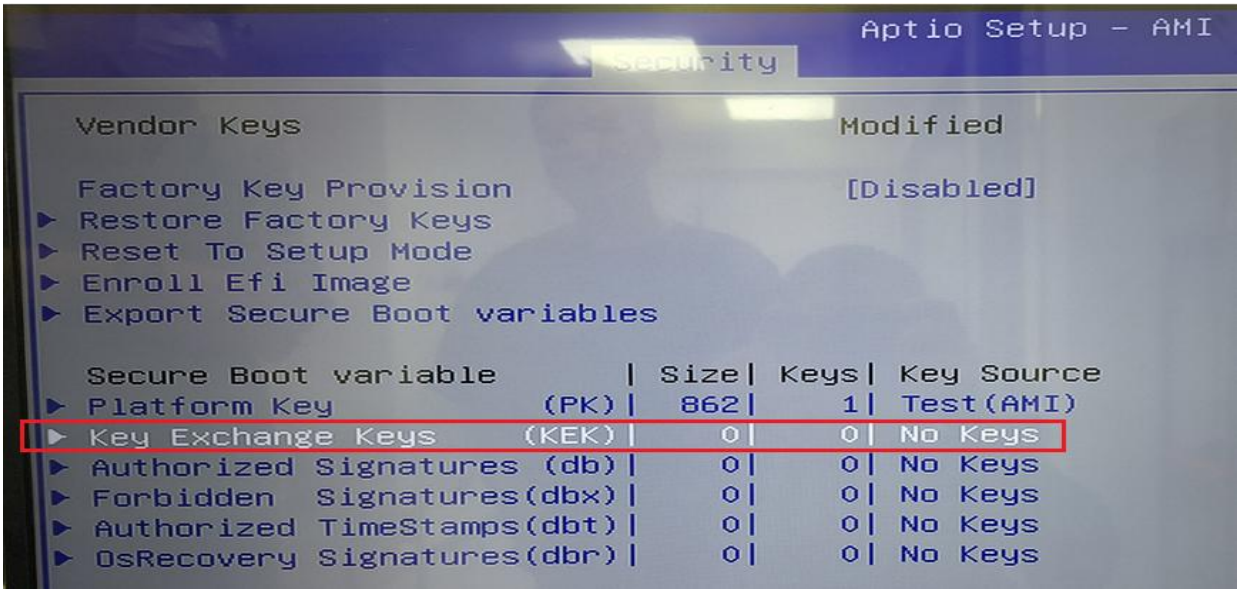




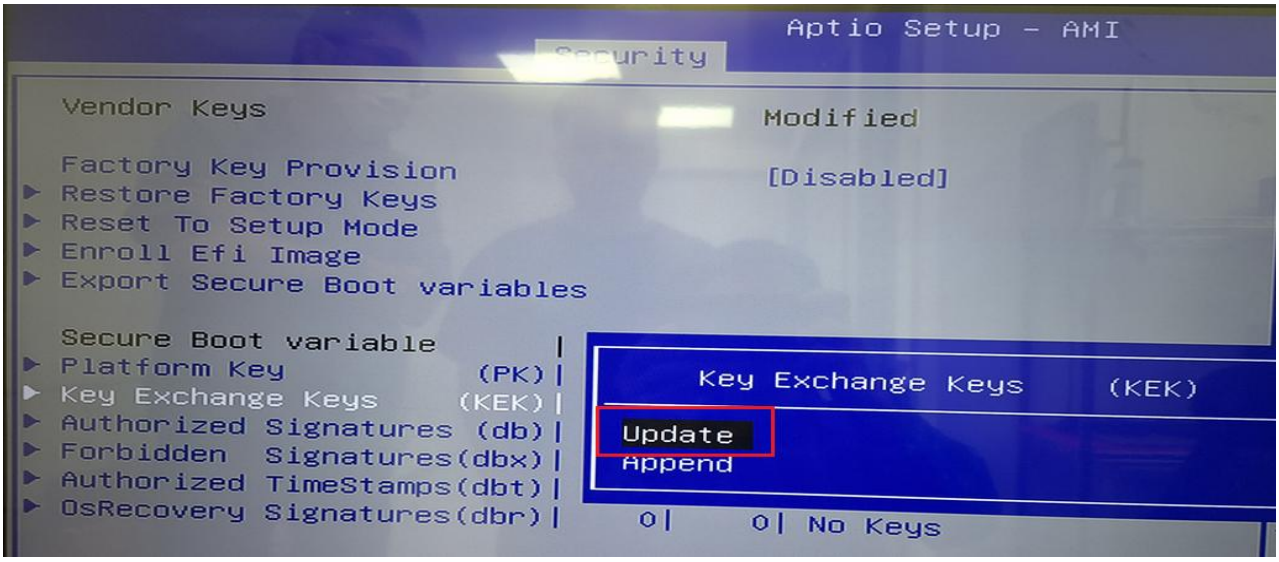
3.9.4 The image below shows that the Platform Key (PK) has already been successfully enrolled.



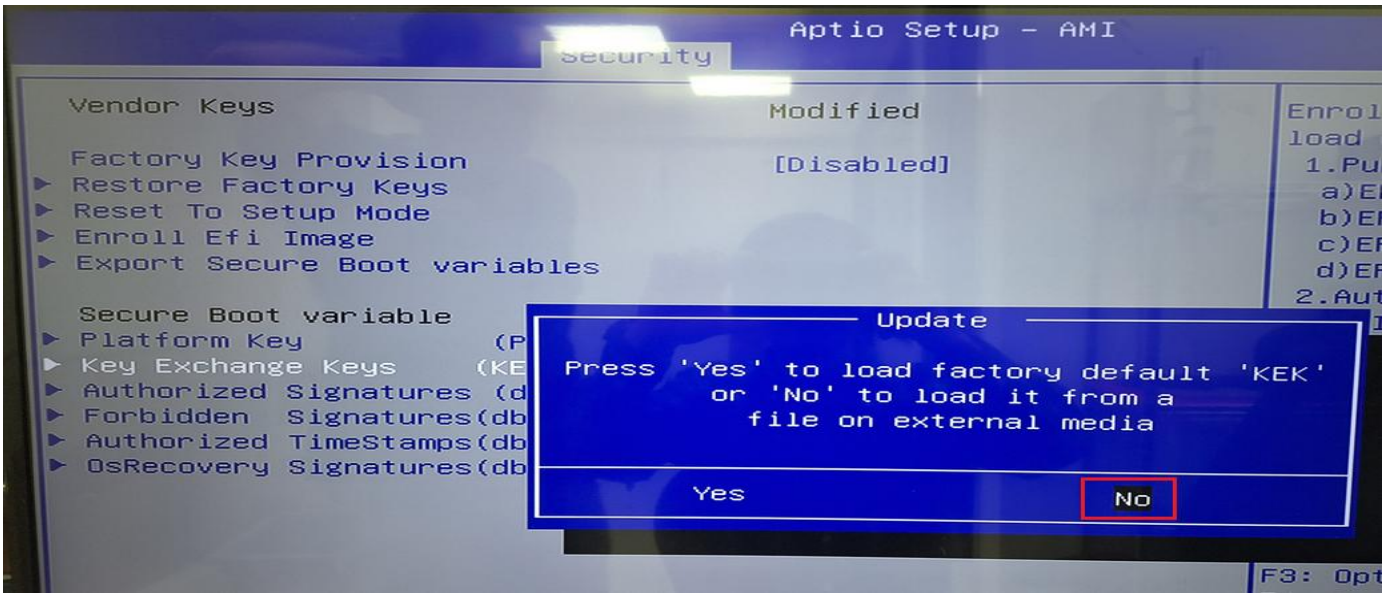
5. Select “Key Exchange Keys (KEK)” , enter



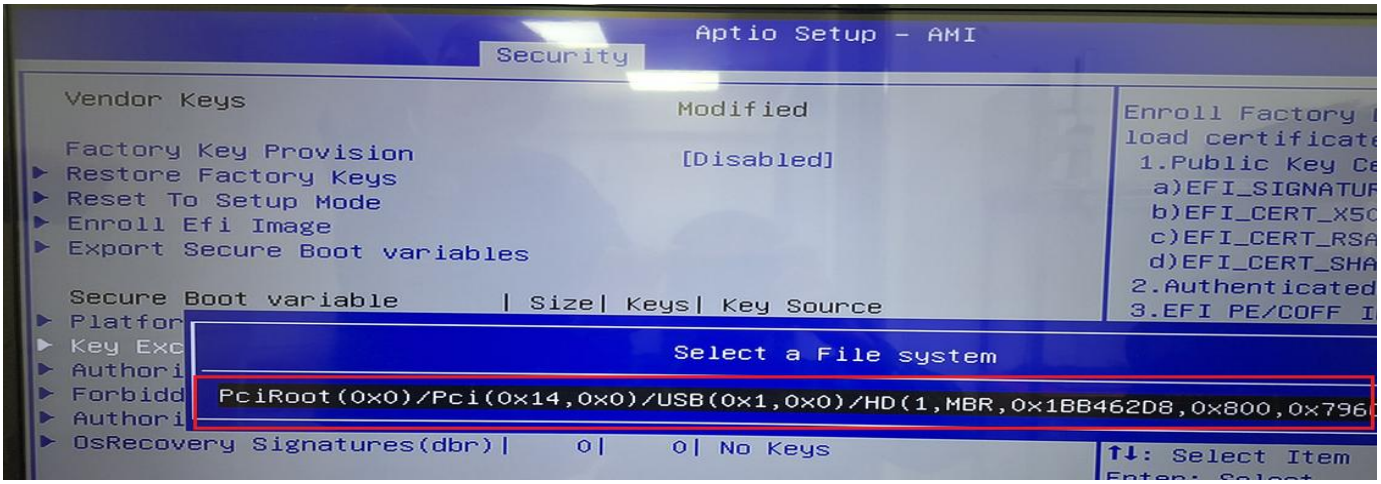
3.9.5 Sele**ct** “Update”

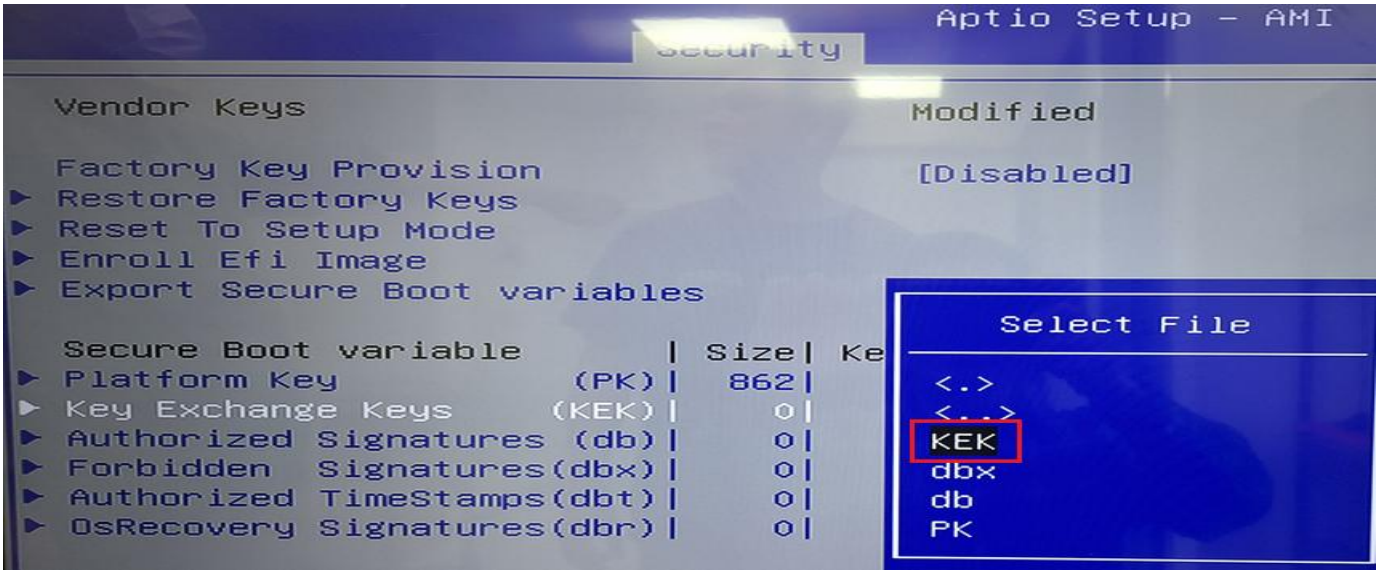


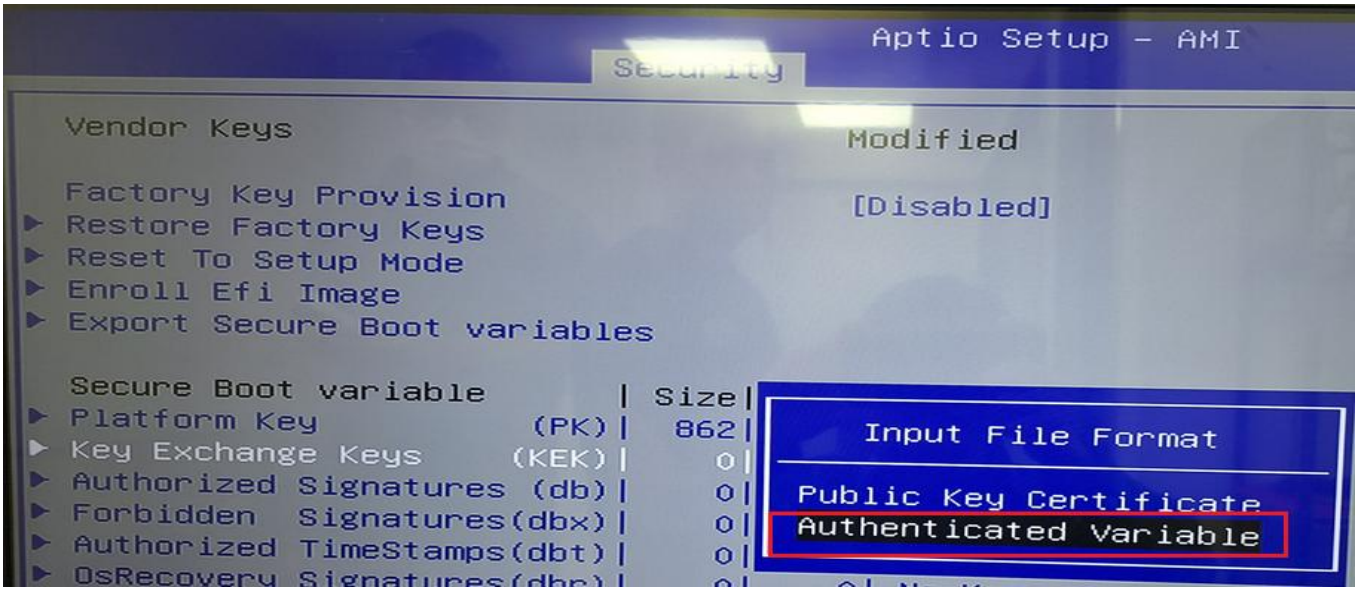
3.9.6 Select “No”

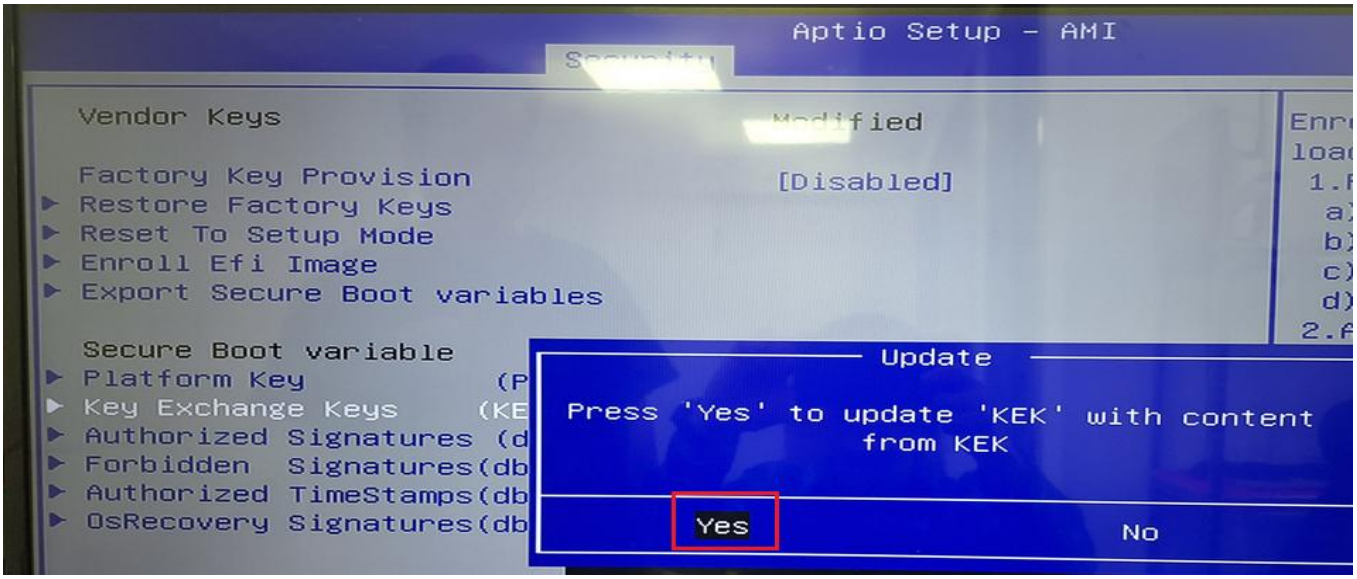


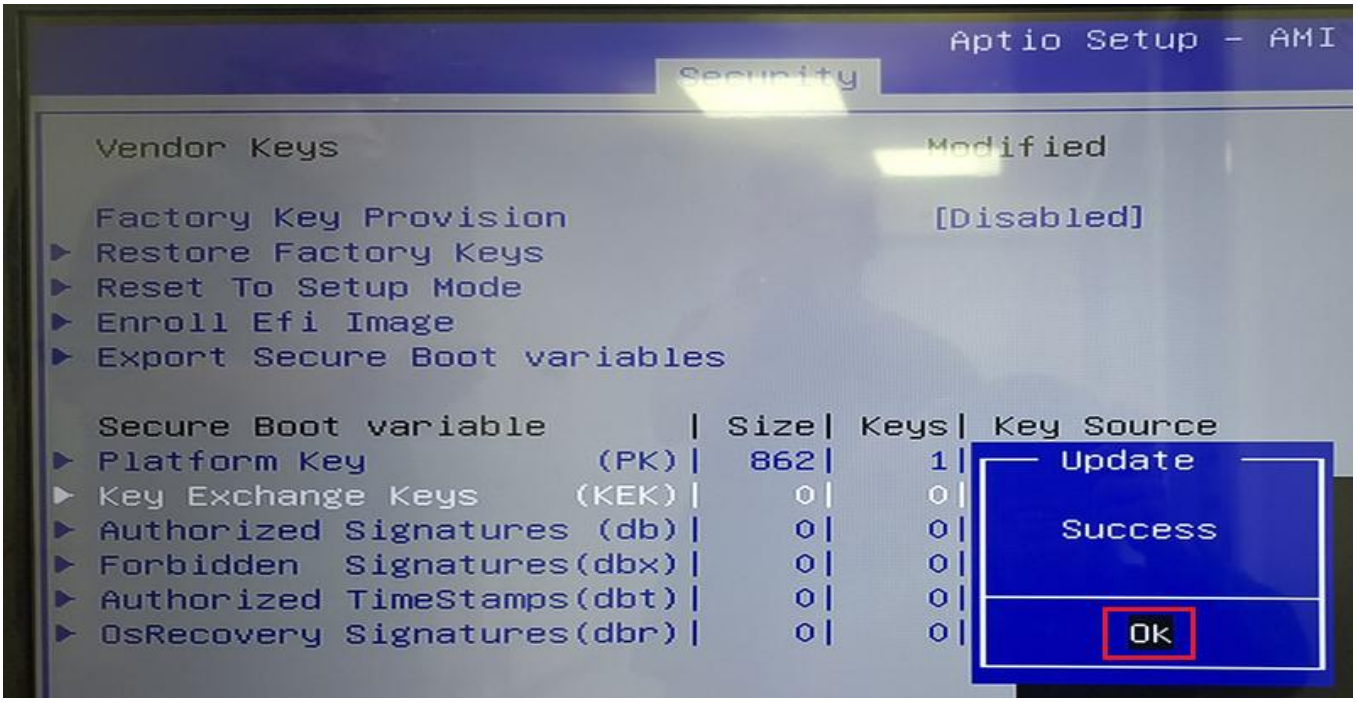
3.9.7 Find your USB **drive** to select your Key Exchange Keys (KEK).



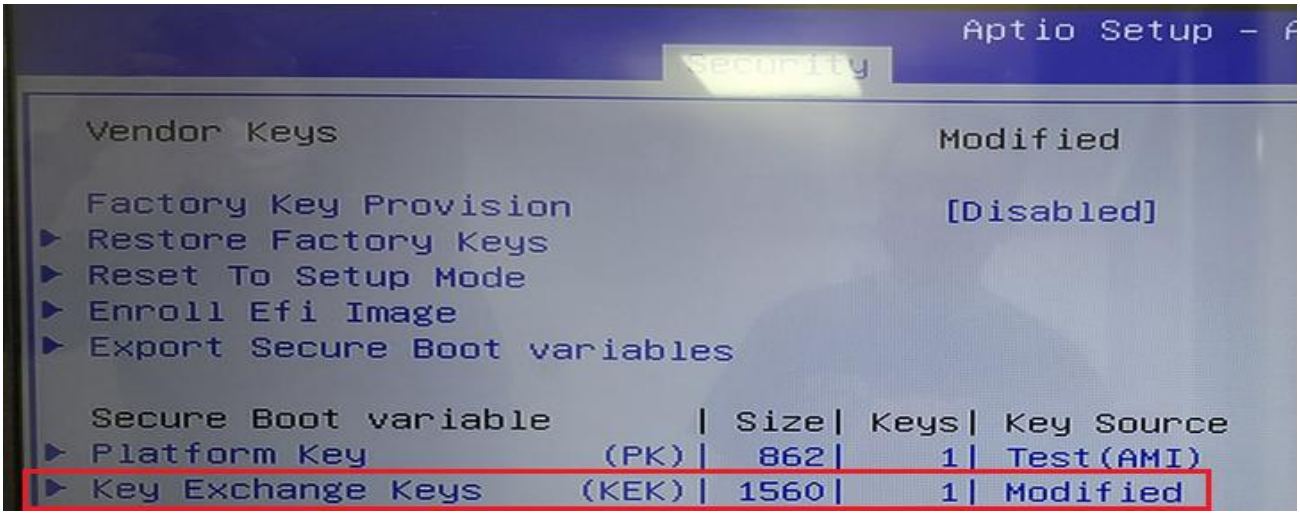



Aptio Setup – AMI
Security
Vendor Keys
Modified
Factory Key Provision
[Disabled]
Restore Factory Keys
Reset To Setup Mode
Enroll Efi Image
Export Secure Boot variables
Secure Boot variable
Size
Platform Key (PK)
862
Key Exchange Keys (KEK)
0
Authorized Signatures (db)
0
Forbidden Signatures(dbx)
0
Authorized TimeStamps(dbt)
0
Input File Format
Public Key Certificate
Authenticated Variable

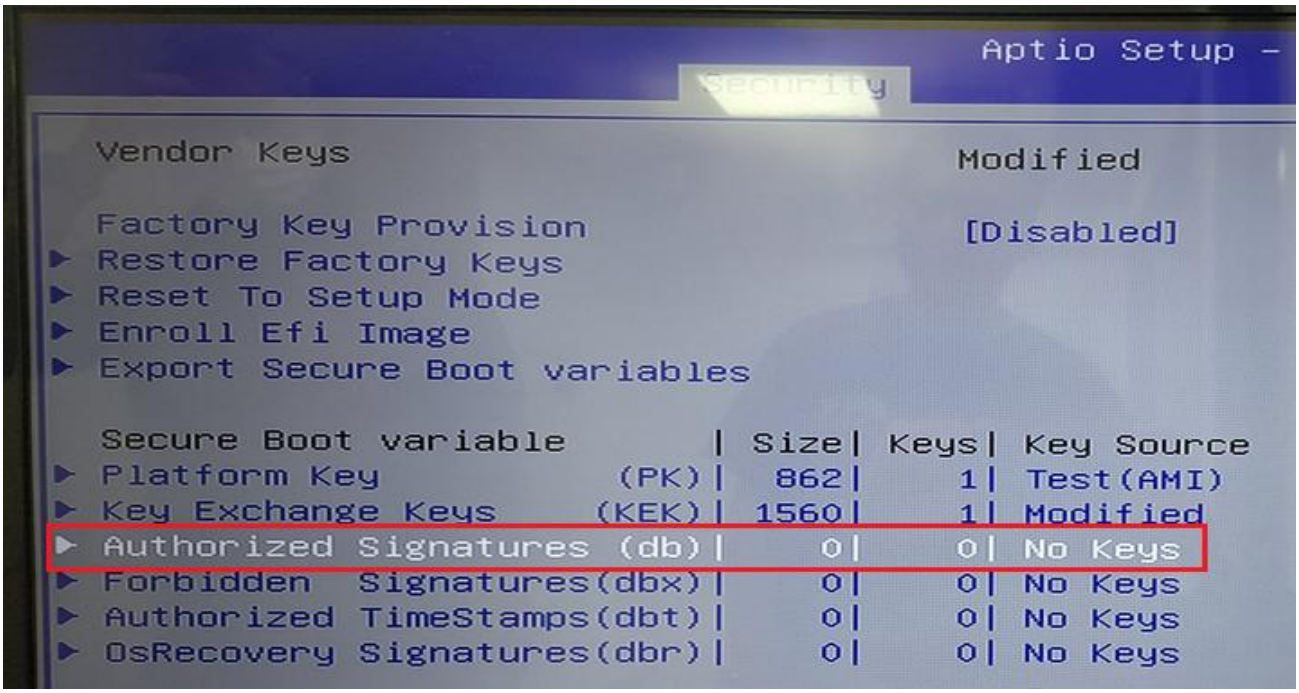

Aptio Setup – AMI
Vendor Keys
Factory Key Provision
[Disabled]
Restore Factory Keys
Reset To Setup Mode
Enroll Efi Image
Export Secure Boot variables
Secure Boot variable
Update
Press 'Yes' to update 'KEK' with content from KEK
Yes
No


Aptio Setup – AMI
Security
Vendor Keys
Modified
Factory Key Provision
[Disabled]
Restore Factory Keys
Reset To Setup Mode
Enroll Efi Image
Export Secure Boot variables
Secure Boot variable
Size
Keys
Key Source
Platform Key (PK)
862
1
Key Exchange Keys (KEK)
0
0
Authorized Signatures (db)
0
0
Forbidden Signatures(dbx)
0
0
Authorized TimeStamps(dbt)
0
0
OsRecovery Signatures(dbr)
0
0
Update
Success
Ok

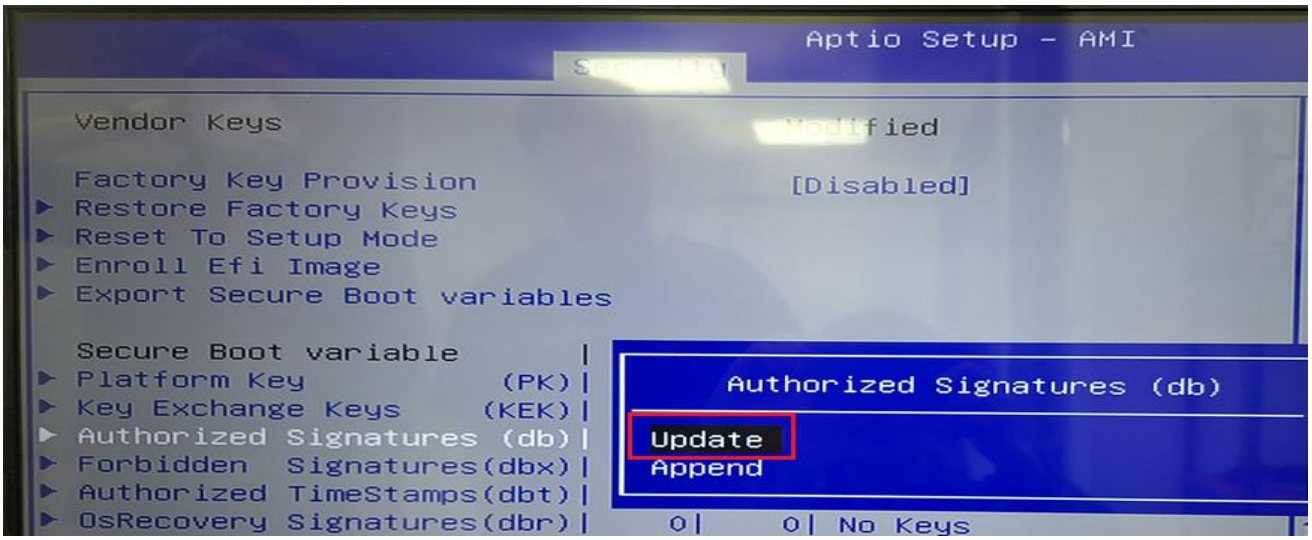
3.9.8 The image below shows that the **Key** Exchange Keys (KEK) has already been successfully enrolled.



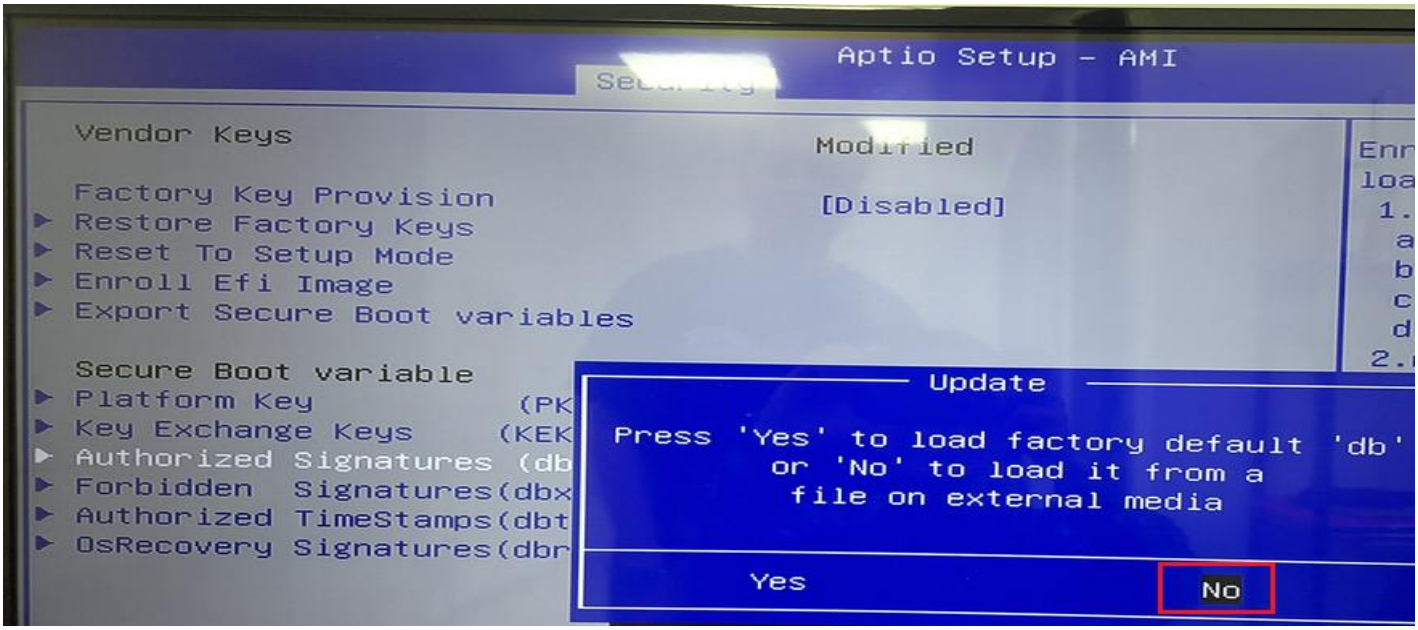
6. Select “Authorized Signatures (db)” , enter

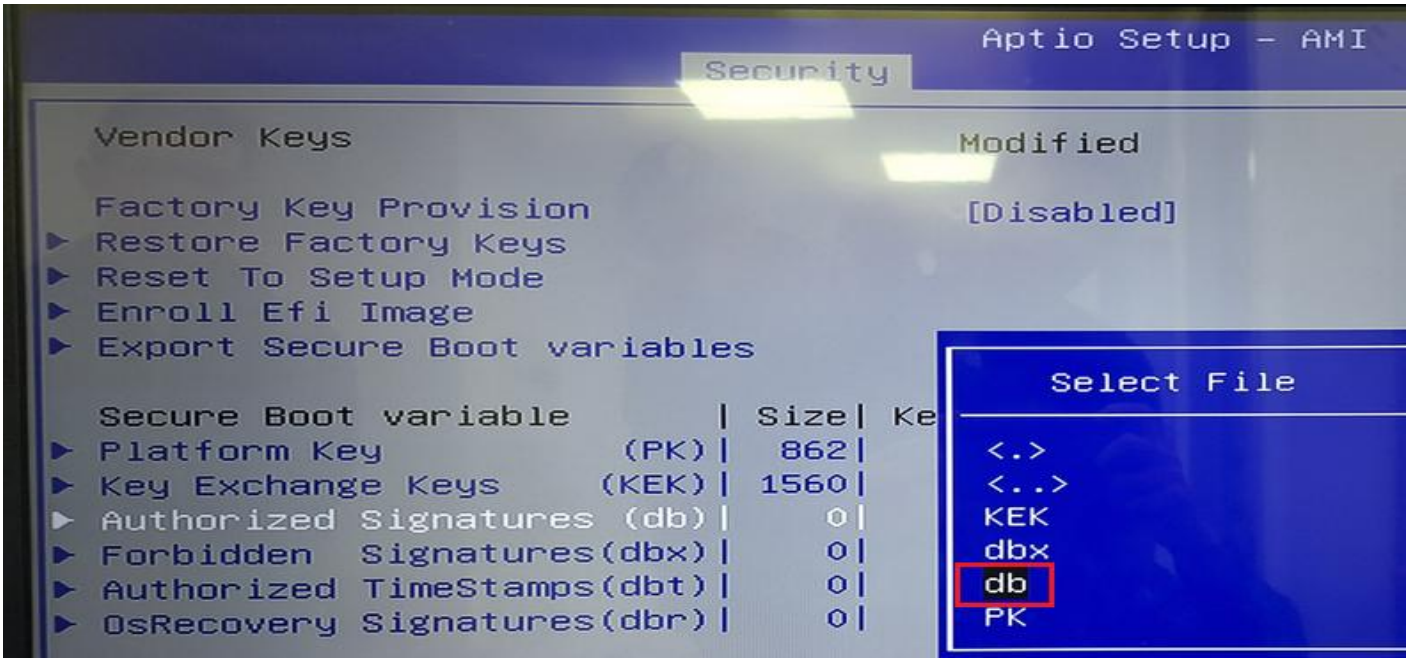


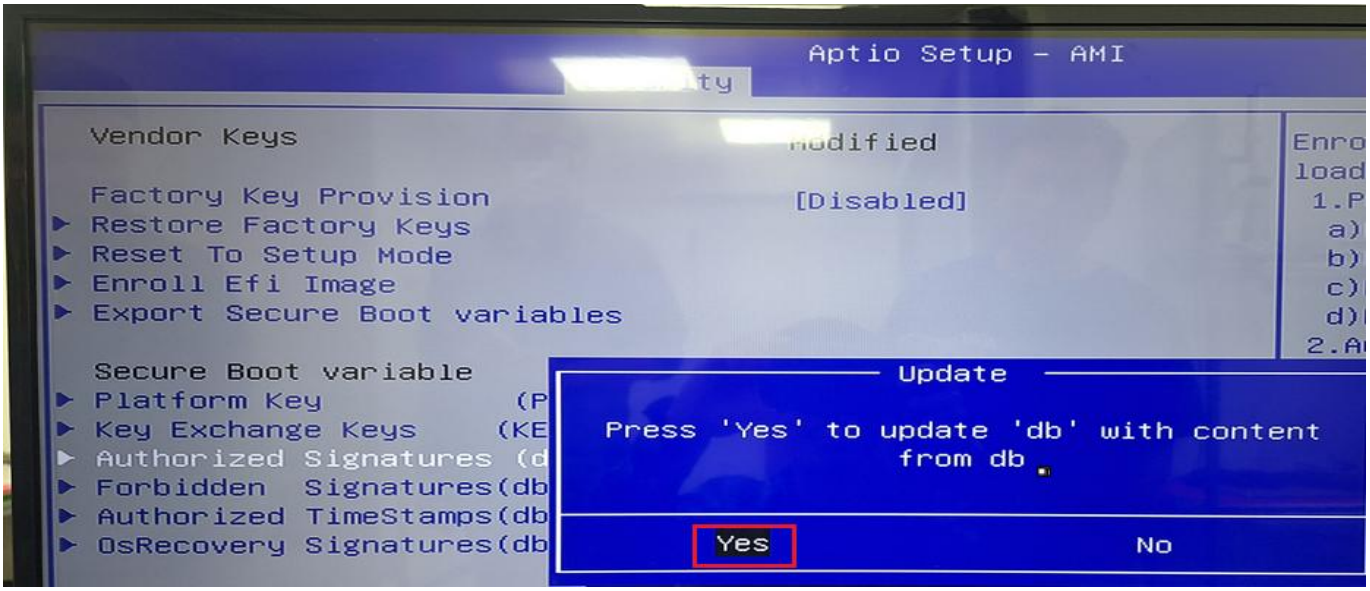
3.9.9 Select “**Update**”

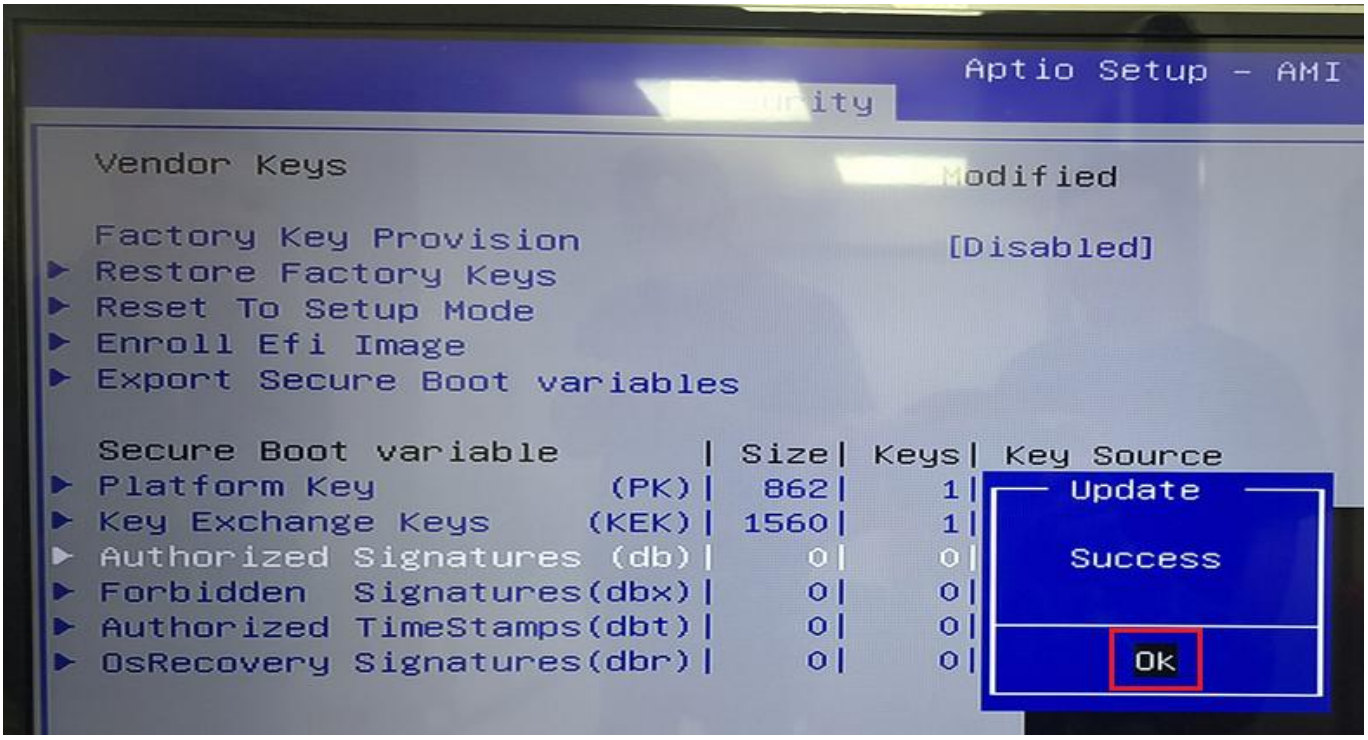


3.9.10 Select “No”





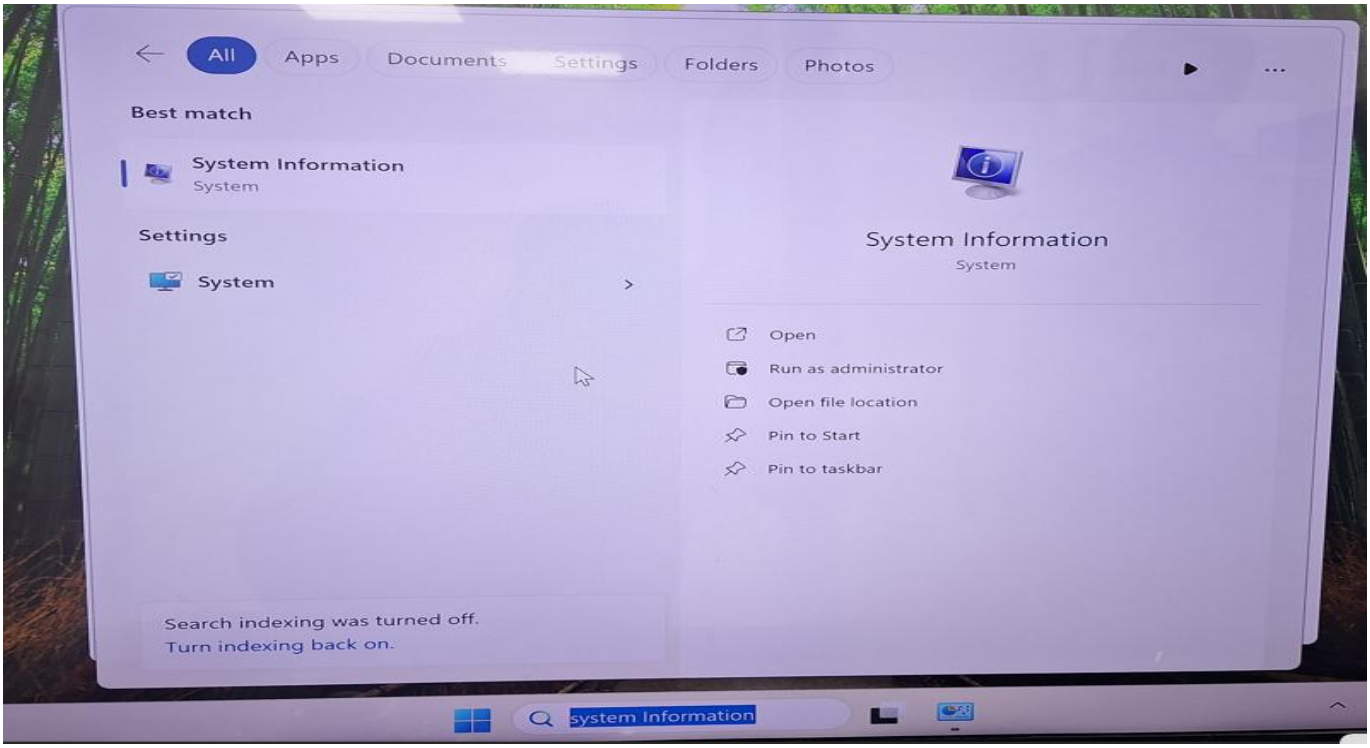




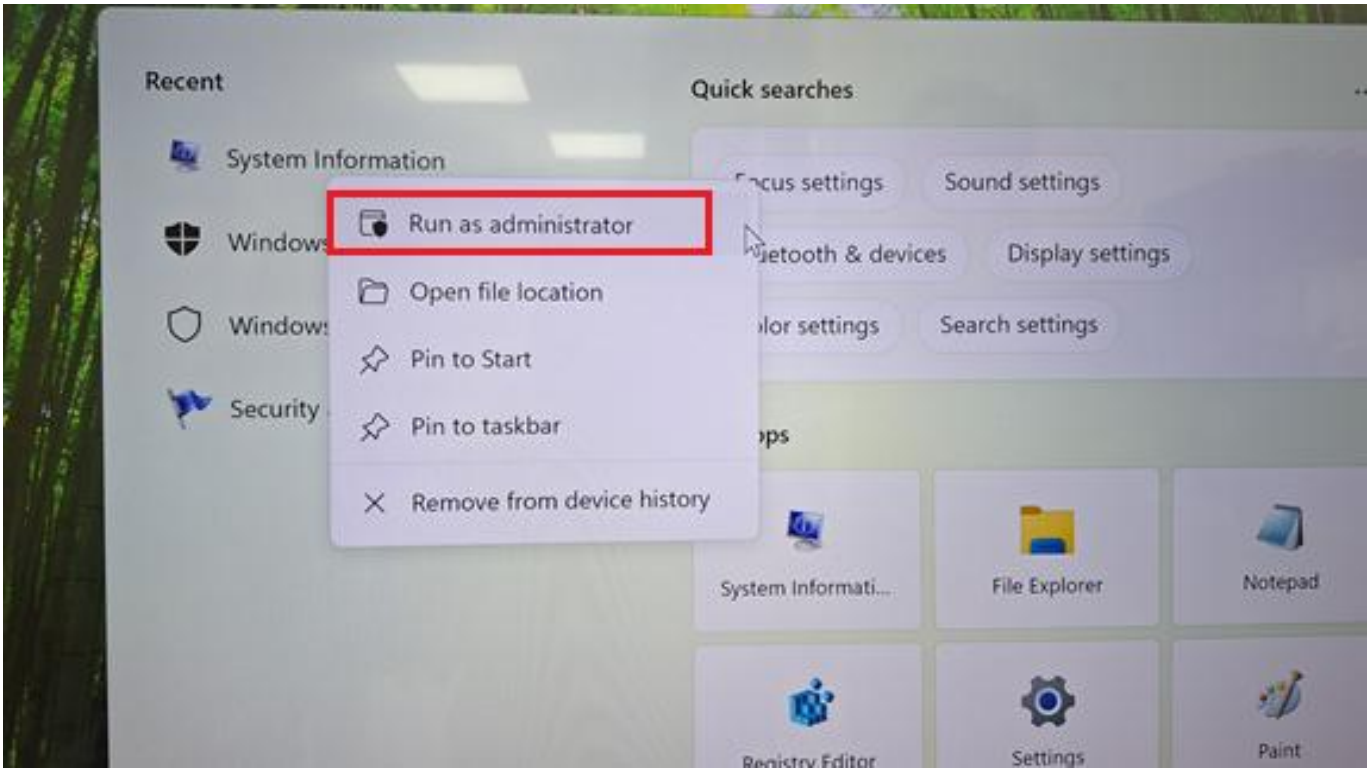
3.9.11 Once the above steps **are** completed, the key enrollment process is finished.

7. To verify that Secure Boot is functioning properly in the Windows environment.

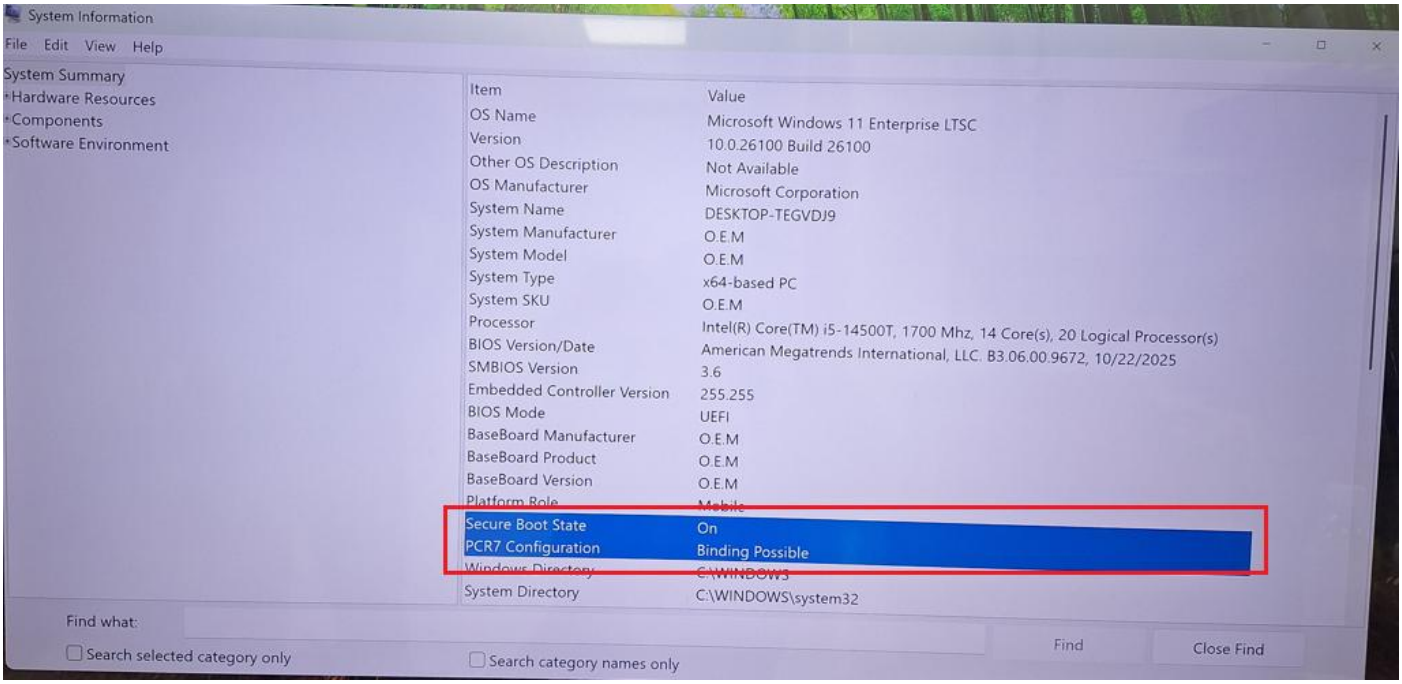
Search “System information” in Windows.



3.9.12 Right-**click**, and then select “Run as administrator”



3.9.13 Verify that Secure Boot State is shown as On, and PCR7 Configuration is listed as Binding **Possible**.



Thank you for **going** through this instruction. Following it will help you complete the setup smoothly

Chapter 4 Installation of Drivers

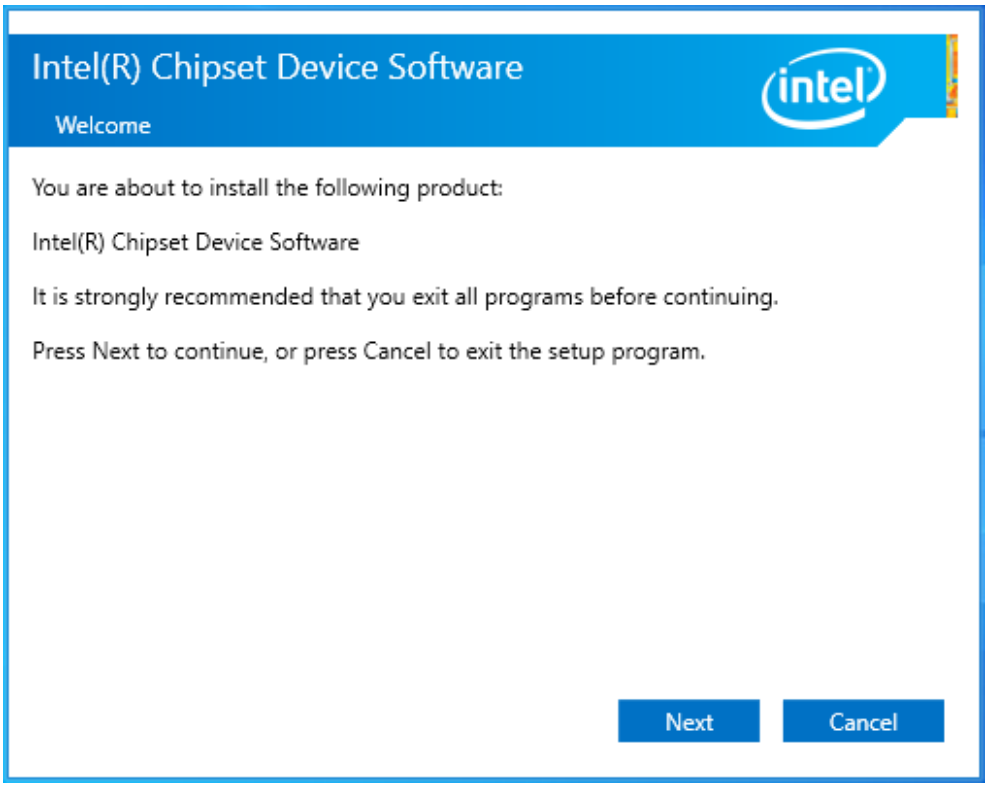
This chapter describes the installation procedures for software and drivers under the windows 10. The software and drivers are included with the motherboard. The contents include Intel Chipset, Graphics chipset driver, Audio driver, LAN driver and Intel® management engine interface. The instructions are as below.

Important Note:
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

4.1 Intel Chipset

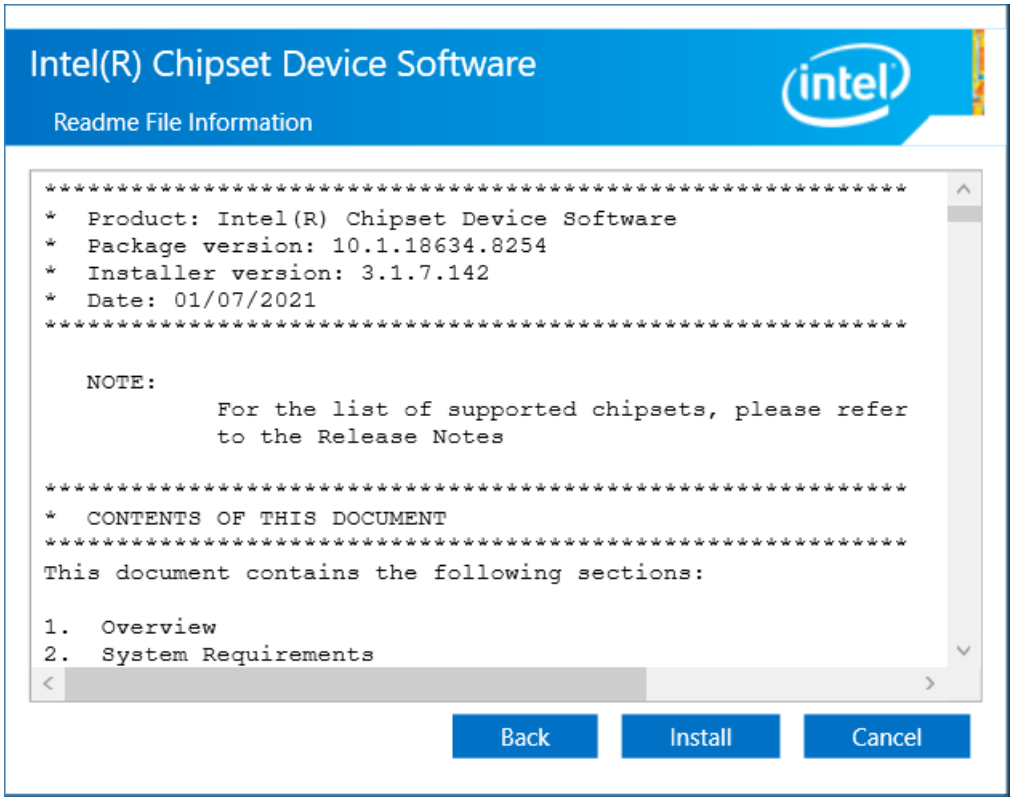
To install the Intel chipset driver, please follow the steps below.

Step 1. Here is welcome page. Please make sure you save and exit all programs before install. Click **Next**.



Step 2. Read the license agreement. Click **Accept** to accept all of the terms of the license agreement.

Step 3. Click **Install** to begin the installation.



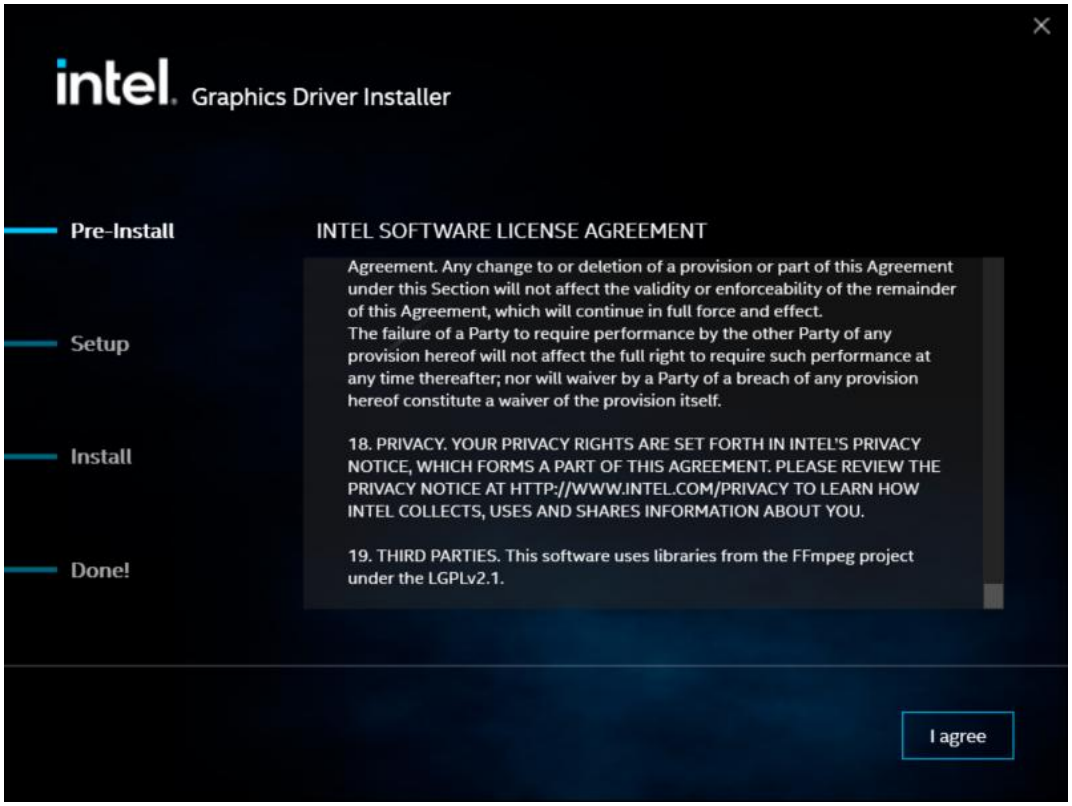
Step 4. Select **Restart Now** to reboot your computer for the changes to take effect.

4.2 Intel® HD Graphics Chipset

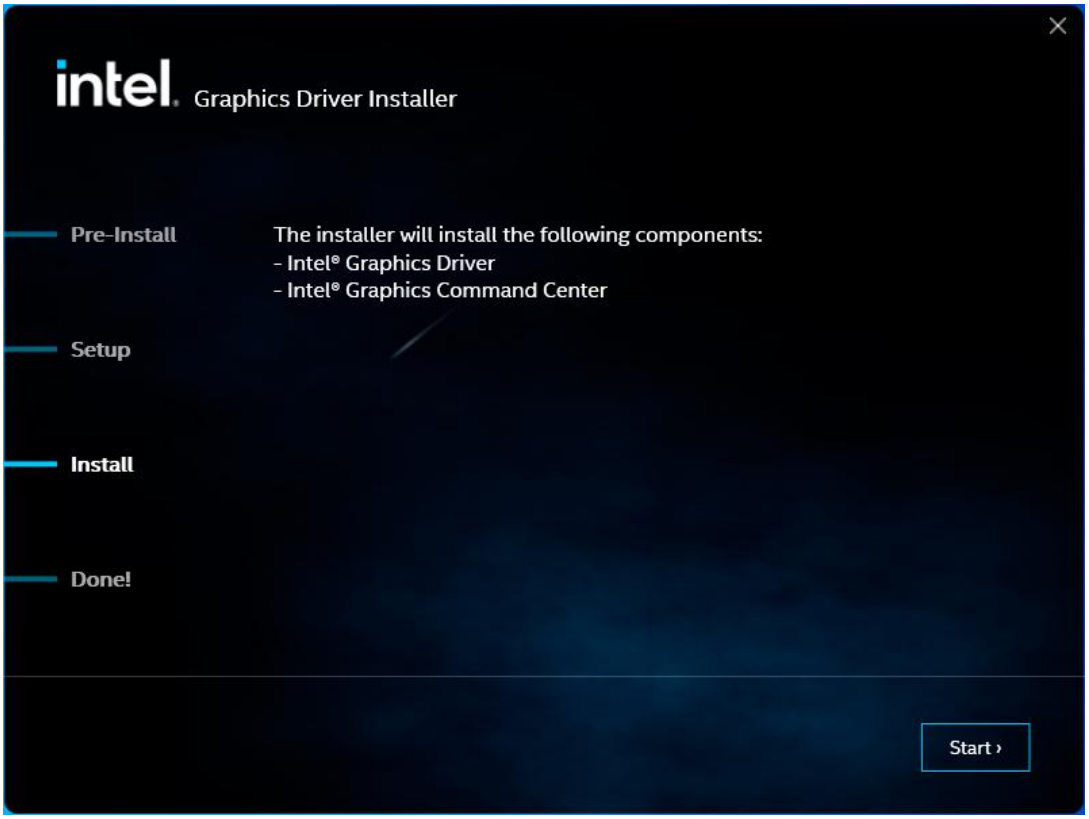
To install the Intel® HD Graphics Chipset, please follow the steps below.

Step 1. Click **Begin installation.**

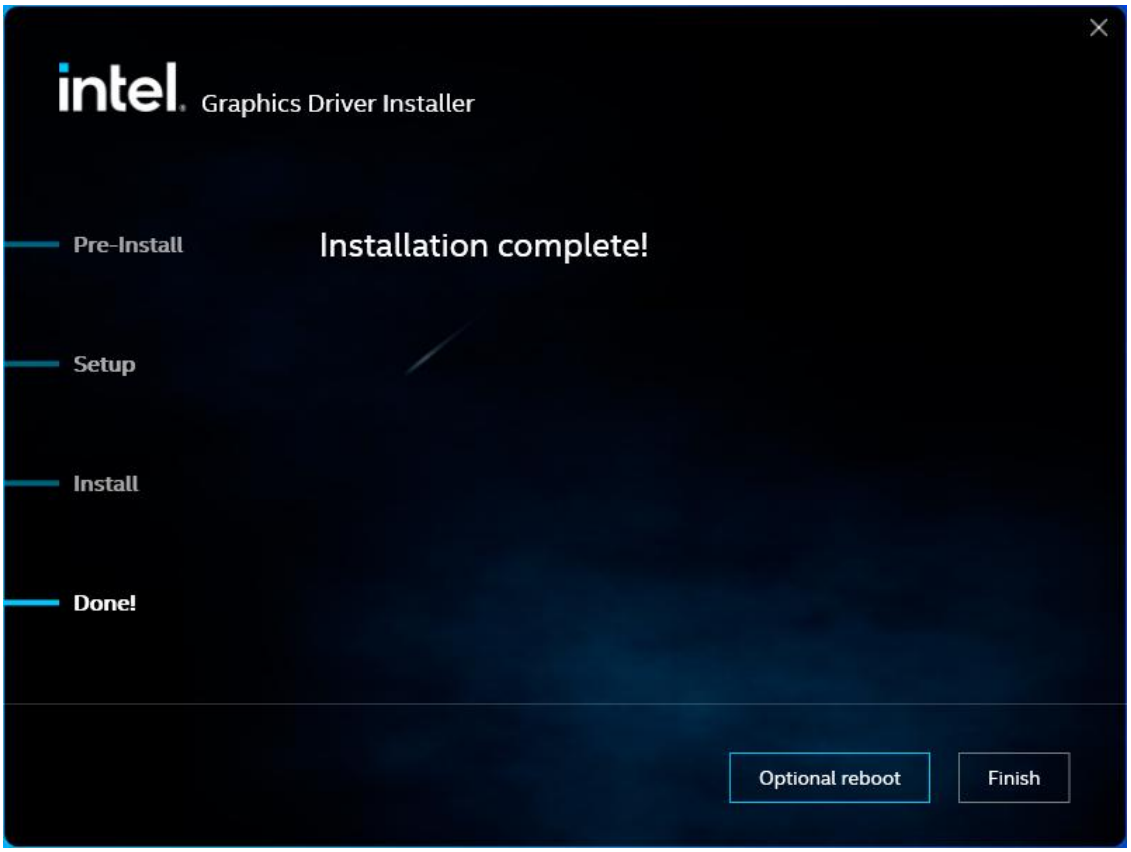
Step 2. Read the license agreement. Click **I agree** to accept all the terms of the license agreement.



Step 3. Choose **Install** function and Click **Start** to setup program.



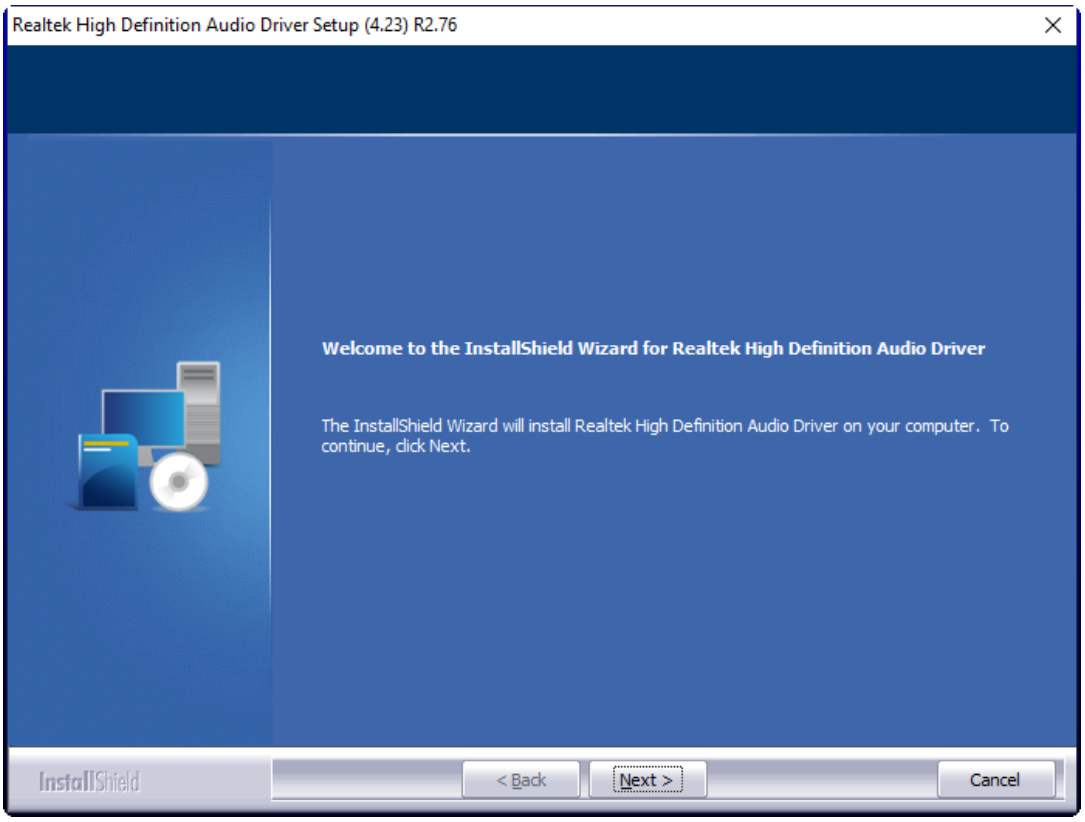
Step 4. Click **Finish** to complete installation.



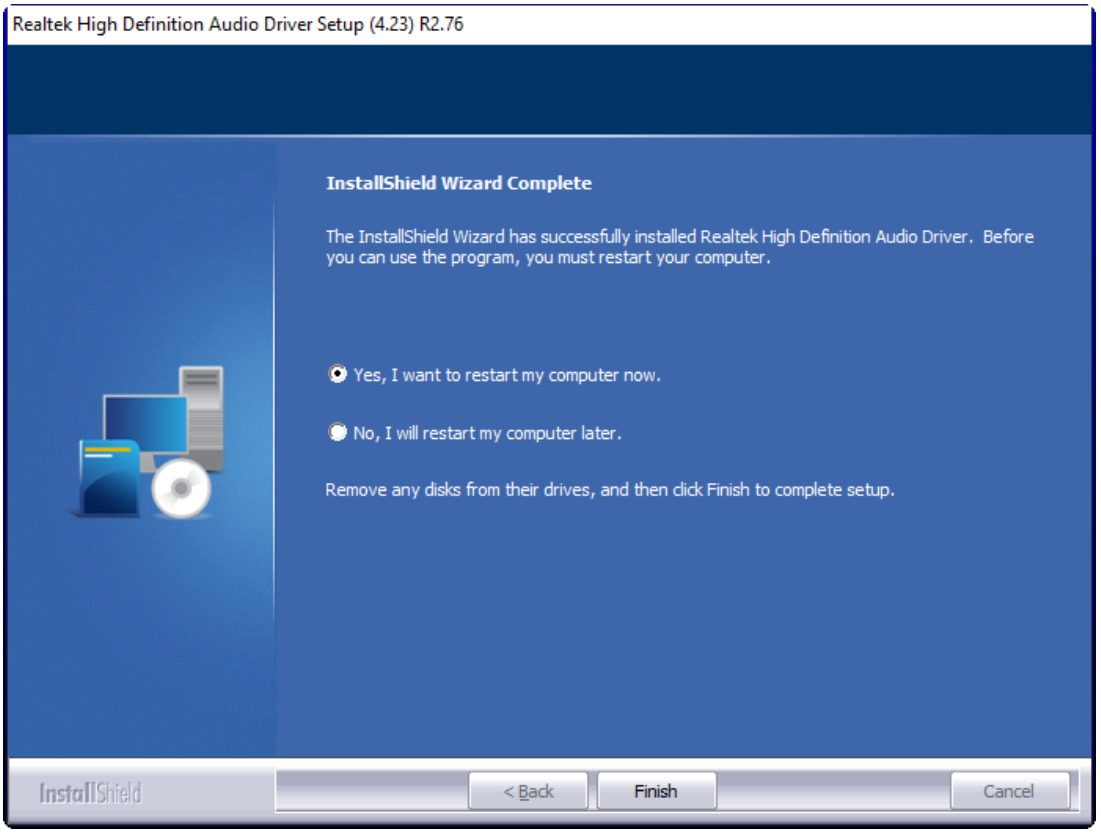
4.3 Intel® HD Graphics Chipset

To install the Realtek HD Audio Driver, please follow the steps below.

Step 1. Click **Next** to continue.



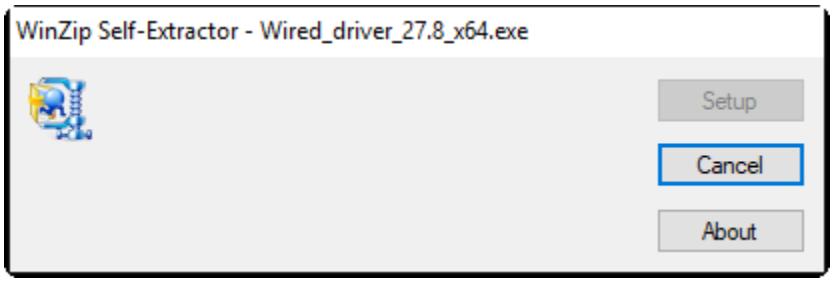
Step 2. Click **Yes, I want to restart my computer now**. Click **Finish** to complete the installation.



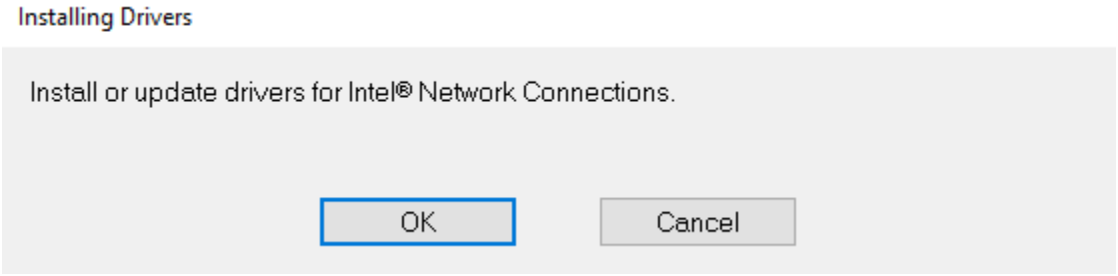
4.4 | LAN Driver

To install the LAN driver, please follow the steps below.

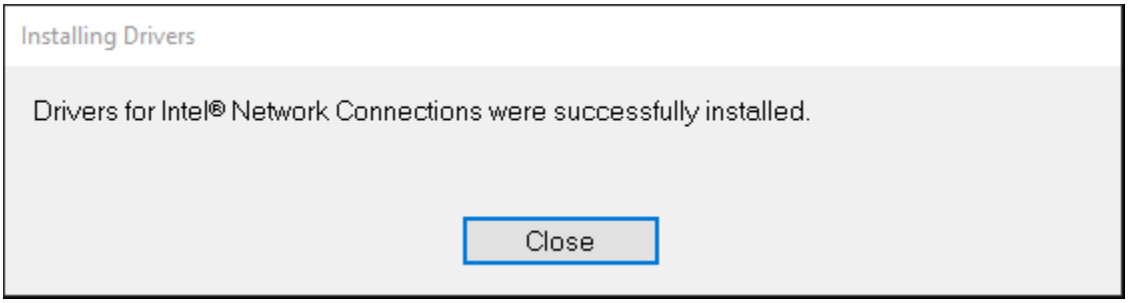
Step 1. Click **Zip File** to continue.



Step 3. Click **OK** to begin the installation.



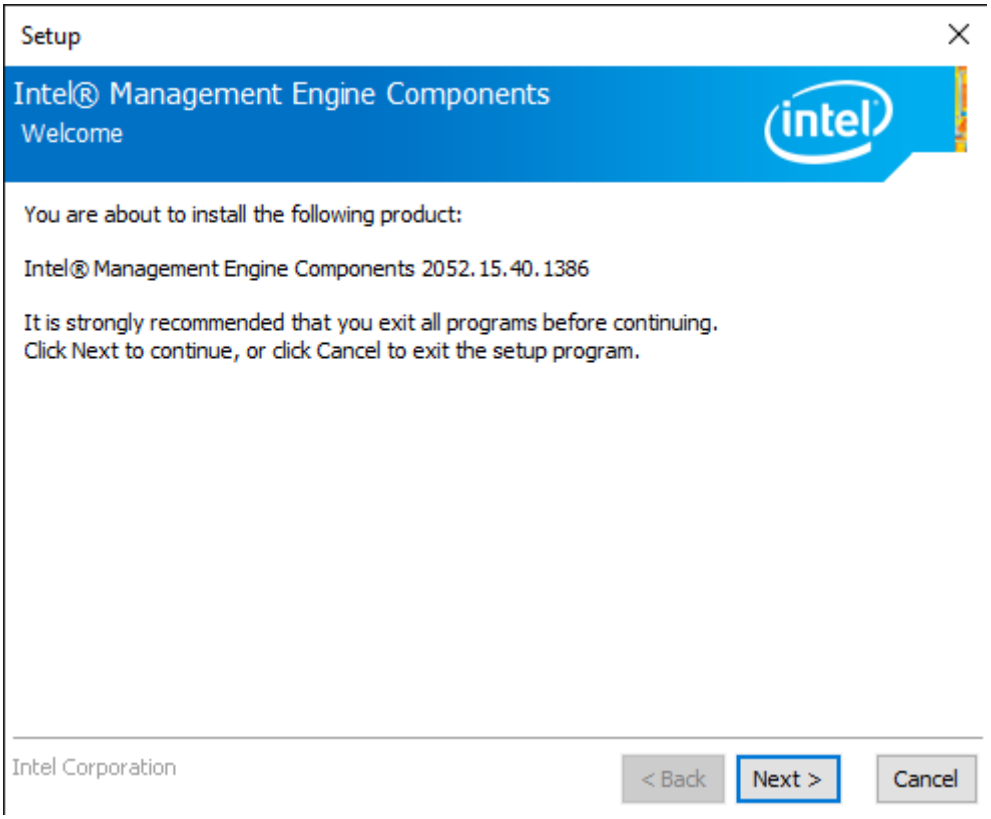
Step 4. Click **Close** to finish installation.



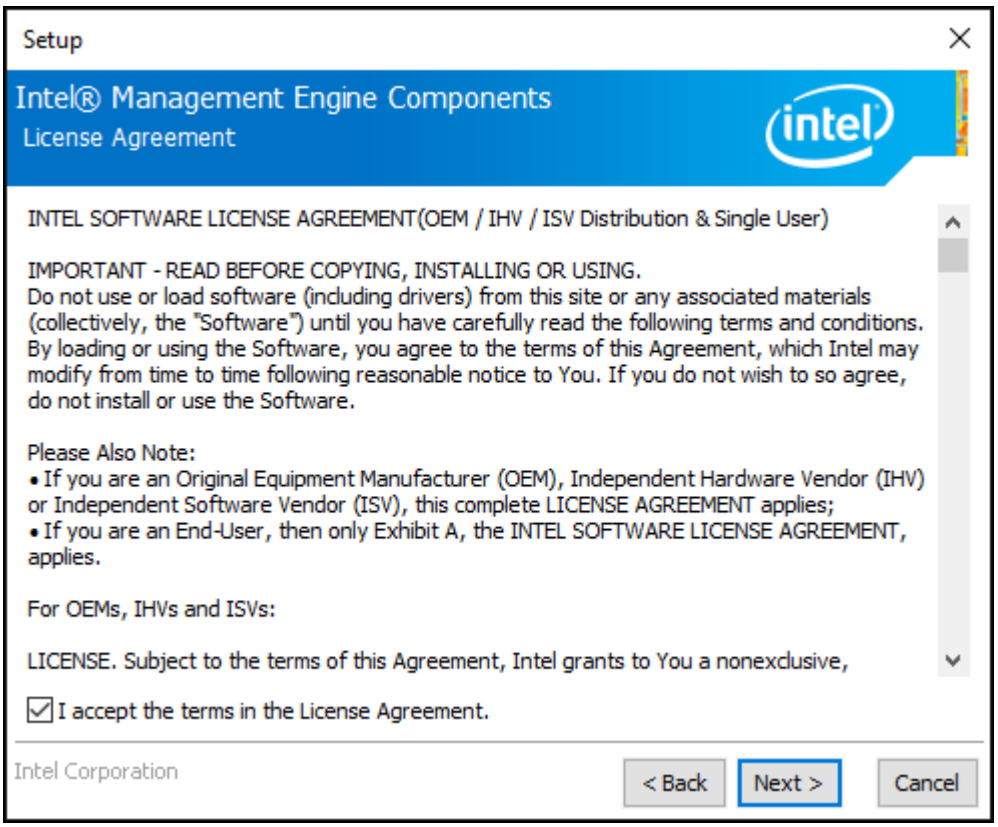
4.5 Intel® Management Engine Interface

To install the Intel® Management Engine Interface, please follow the steps below.

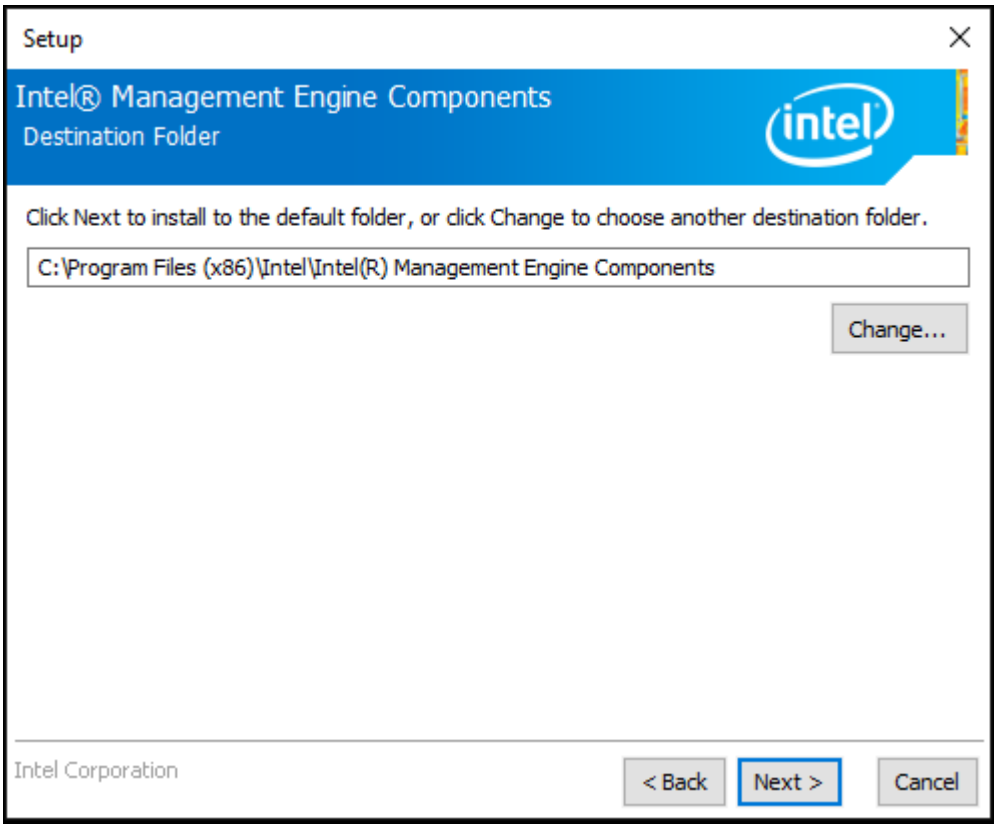
Step 1. Select setup language you need. Click **Next** to continue.



Step 2. Choose **I accept the terms in the License Agreement** and click **Next** to begin the installation.



Step 3. Click **Next** to continue.



Step 4. Click **Finish** to complete the installation.