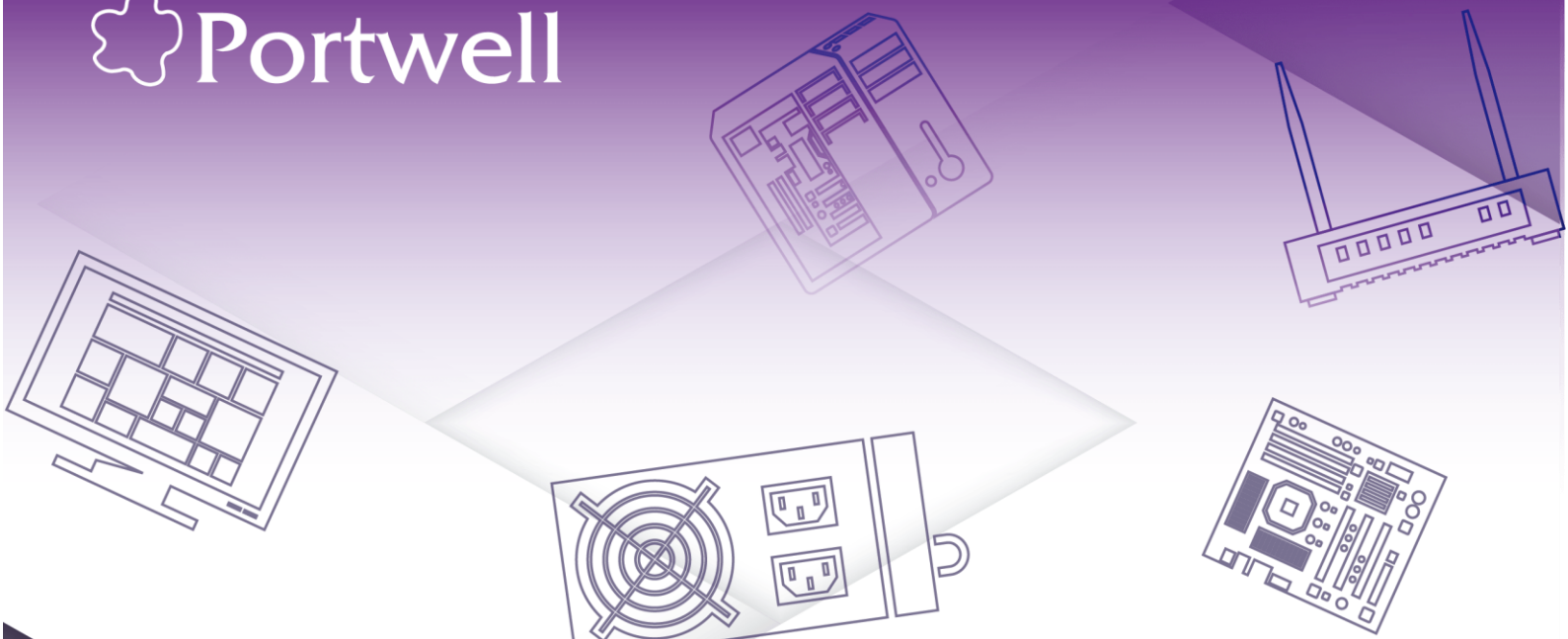




PCOM-B65C Series

COM EXPRESS TYPE 6

User Manual

Version R 0.2

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Revision History

Rev.	Date	Note
R0.1	Jun. 2026	Official Release
R0.2	Jul. 2026	Modify PCIe Configuration

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.

Chapter 1

Overview

- 1 Introduction
- 1.1 PCOM-B65C SKU List

1. Introduction

PCOM-B65C is COM Express module based on AMD Ryzen™ Embedded 8000 series platform. It is compliance with COM Express Rev.3.1 standard. The platform adopts AMD Zen4 CPU cores, RDNA3 graphics workgroups and the integrated NPU XNDA™ architecture offering advanced computing power with 28~45W thermal and embedded use condition for wide range applications. PCOM-B65C supports new integrated NPU for dedicated AI acceleration with up to 15 tops performance. The PCOM-B65C module provides (up to) 16x PCIe Gen4 lanes, 4x USB 3.2 Gen 2, and 2x SATA. The complete and flexible I/O capacity also mapped to wide range of embedded/industrial applications, which is suit for mission critical use conditions and AI edge computing

1.1 PCOM-B65C SKU List

PCOM-B65C Series				
P/N	AB1-3T97	AB1-3T96	AB1-3U89	AB1-3U88
CPU Specification				
Processor	8845HS	8840U	8645HS	8640U
# of Cores	8C	8C	6C	6C
# of Threads	16T	16T	12T	12T
LLC	Base Freq	Base Freq	Base Freq	Base Freq
Base Freq.	3.8 GHz	3.3 GHz	4.3 GHz	3.5 GHz
Turbo Freq.	5.1 GHz	5.1 GHz	5.0 GHz	4.9 GHz
TDP	45W (35-54W)	28W (15-30W)	45W (35-54W)	28W (15-30W)
GPU (WGPs)	6		4	
GPU Max Freq.	2.7 GHz		2.6 GHz	
NPU	16 Tops			
eTemp	Not Support			
Memory Specification				
Type/Speed	2x DDR 5 SO-DIMM up to 96GB 5600MT/s			
ECC	Support ECC/Non ECC			
IO & Storage				
SATA	2x SATA III			
USB	4x USB 3.2 Gen 2 / 8x USB 2.0			
Ethernet	Intel I210 Series			
Serial I/O	GPIO		8 but GPIO (Default 4 input / 4 output)	
	I2C		Baud Rate 400KHz	
	SMBUS		Baud Rate 100KHz	
	UART		TX/RX signal only	
PCIe	1x Gen4 x8, 6x Gen4 x1, 1x Gen4 x2			
Display	Module Display Interface	Carrier Output Option		Resolution
	eDP / LVDS (Default eDP)	eDP up to HBR3		3840 x 2160@120Hz
				1920 x 1200@60Hz
	DDI 1/2/3	LVDS (24bit, Dual Channel)		3840 x 2160@120Hz
		HDMI 2.1		3840 x 2160@120Hz
	VGA	VGA		1920 x 1200@60Hz
Security	TPM 2.0			
Storage	Optional, Support PCIe SSD up to 1TB (Share w/ SATA)			

Table 1 PCOM-B65C SKU List

Chapter 2

Overview

2 Block Diagram

2. Block Diagram

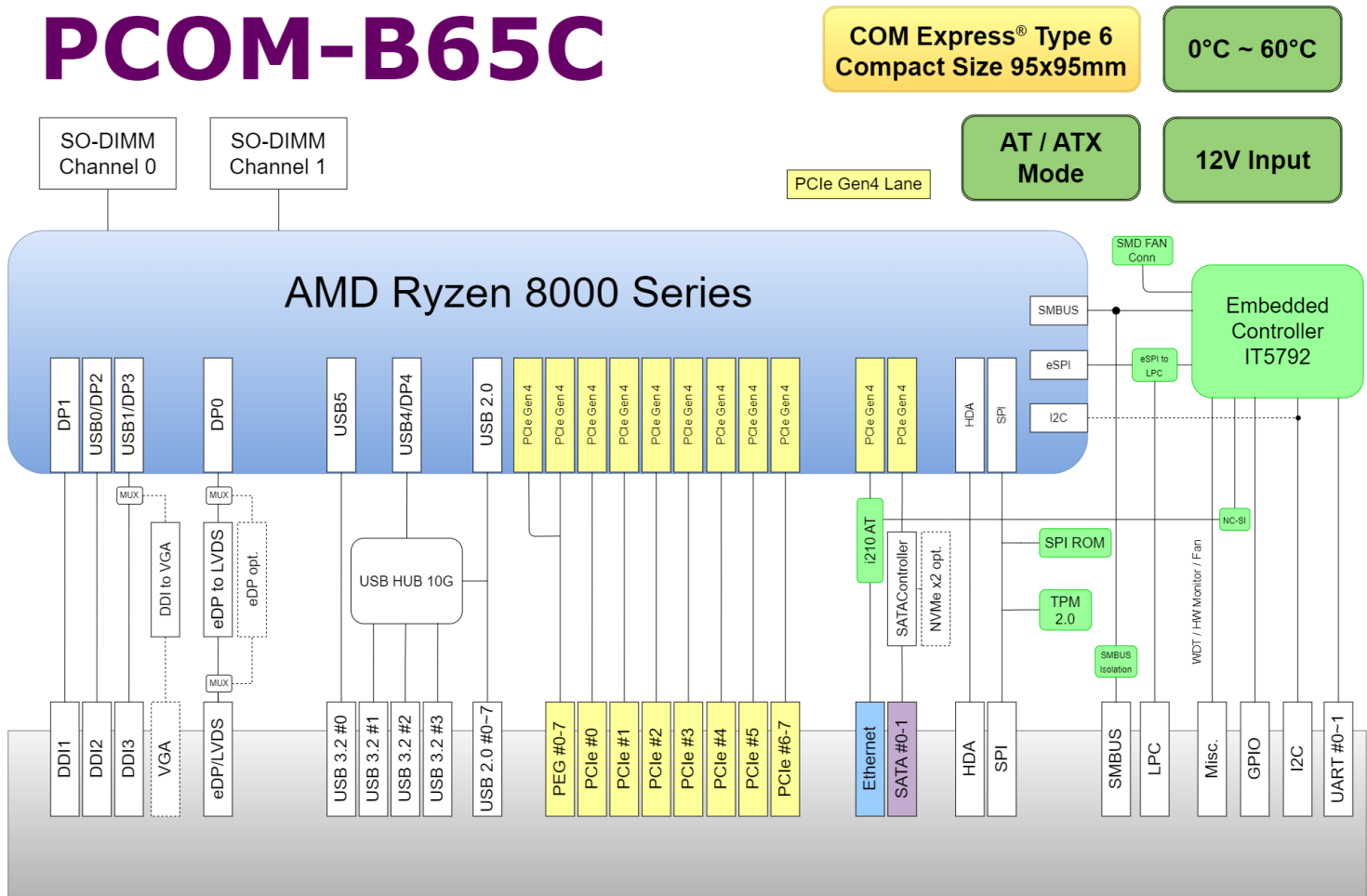


Figure 1 Block Diagram

Chapter 3

Overview

- 3 Specifications
- 3.1 Function switch
- 3.2 Ethernet
- 3.3 PCIe Configurations
- 3.4 Support Operating System
- 3.5 Windows OS Driver
- 3.6 Electrical Characteristics
- 3.7 Power Consumption
- 3.8 Mechanical Dimension
- 3.9 Environmental Specification
- 3.10 Ordering Guide
- 3.11 Fan Cable Instructions

3. Specification

Product	PCOM-B65C
Form Factor	COM Express® Type 6, Compact Size (95mm x95mm)
Processor	<u>AMD Ryzen™ Embedded 8000 Series</u> AMD Ryzen™ Embedded 8845HS AMD Ryzen™ Embedded 8840U AMD Ryzen™ Embedded 8645HS AMD Ryzen™ Embedded 8640U
BIOS	AMI UEFI BIOS
Memory	Support Dual Channel, ECC and Non-ECC 2x DDR5 SO-DIMM up to 96GB, 5600MT/s
GPU	RDNA3 graphics with up to 6 WGP
NPU	XDNA Architecture, 16 TOPs
Display	3x DDI 1x ePD/LVDS 1x VGA (Share w/ DDI3)
Ethernet	1x 1GbE (via Intel® i210I Series)
Audio	HDA
PCI Express	16x PCIe 4.0
Storage	1x NVMe up to 1TB (Optional)
I/O	4x USB3.0 /2.0 2x SATA 8 bit GPIO (default 4 in / 4 out) I2C / SMBus
Hardware Monitors	ITE Series Embedded Controller, Voltage, Fan and Temperature
Security	TPM 2.0
Power Management	ACPI 4.0
Environment	Operating Temperature Standard: 0° C ~+60° C Storage Temperature: -40° C ~+85° C Relative Humidity 5%~95%
Additional Features	Out of Band Management (OOB)

Table 2 Specification

3.1 Function switch

PCOM-B65C supports eDP / LVDS switching, DDI #3 / VGA switching, and an onboard physical switch is used for this function.

R0	
SW1	Function
1-ON	LVDS
1-OFF	eDP (Default)
2-ON	VGA
2-OFF	DDI#3 (Default)

Top Side

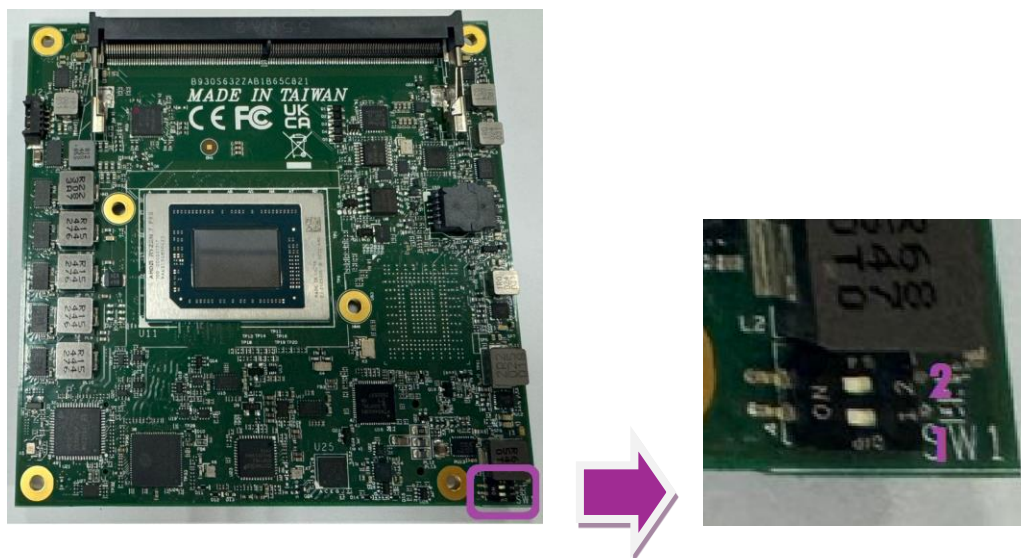


Table 3 Function Switch

3.2 Ethernet

1G:

The B65C supports 1x 1GbE Base-T ethernet using Intel i210 ethernet controller for commercial grades (0°C to 60°C).

3.3 PCIe Configurations

PCOM-B65C PCIe Configuration																	
Port	PEG								PCIe								
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	
Speed	GEN4																
Default	x8								x1	x1	x1	x1	x1	x1	x2		
Option 1	x8								x4				x4				
Option 2	x8								x2		x2		x4				
Option 3	x8								x1	x1	x2		x4				
Option 4	x8								x2		x1	x1	x4				
Option 5	x8								x1	x1	x1	x1	x4				
Option 6	x8								x4				x2		x2		
Option 7	x8								x2		x2		x2		x2		
Option 8	x8								x1	x1	x2		x2		x2		
Option 9	x8								x2		x1	x1	x2		x2		
Option 10	x8								x1	x1	x1	x1	x2		x2		
Option 11	x8								x4				x2		x1	x1	
Option 12	x8								x2		x2		x2		x1	x1	
Option 13	x8								x1	x1	x2		x2		x1	x1	
Option 14	x8								x2		x1	x1	x2		x1	x1	
Option 15	x8								x1	x1	x1	x1	x2		x1	x1	
Option 16	x8								x4				x1	x1	x2		
Option 17	x8								x2		x2		x1	x1	x2		
Option 18	x8								x1	x1	x2		x1	x1	x2		
Option 19	x8								x2		x1	x1	x1	x1	x2		
Option 20	x4				x4				x4				x4				
Option 21	x4				x4				x2		x2		x4				
Option 22	x4				x4				x1	x1	x2		x4				
Option 23	x4				x4				x2		x1	x1	x4				
Option 24	x4				x4				x1	x1	x1	x1	x4				
Option 25	x4				x4				x4				x2		x2		
Option 26	x4				x4				x2		x2		x2		x2		
Option 27	x4				x4				x1	x1	x2		x2		x2		
Option 28	x4				x4				x2		x1	x1	x2		x2		
Option 29	x4				x4				x1	x1	x1	x1	x2		x2		

Table 4 PCIe Configurations

3.4 Support Operating System

The PCOM-B65C supports the following operating systems.

Vendor	Operating System	Support
Windows	Windows 11 IoT LTSC 24H2	Intel, Microsoft
Linux	Ubuntu 22.04 LTS / 24.04 LTS	Open Source

Table 5 Support OS List

Portwell does not endorse/validate/support any specific Linux distribution or entity mentioned on this list.

Portwell recommends customers to work with Linux vendors/open-source communities to find feature list and support model.

3.5 Windows OS Driver

Please download the drivers from Portwell download center website

<https://download.portwell.tw/>

3.6 Electrical Characteristics

Input Voltage	+12V $\pm 5\%$
RTC Battery	From Carrier
Power on Mode	ATX Mode & AT Mode

Table 6 Electrical Characteristics

ATX Power Sequence

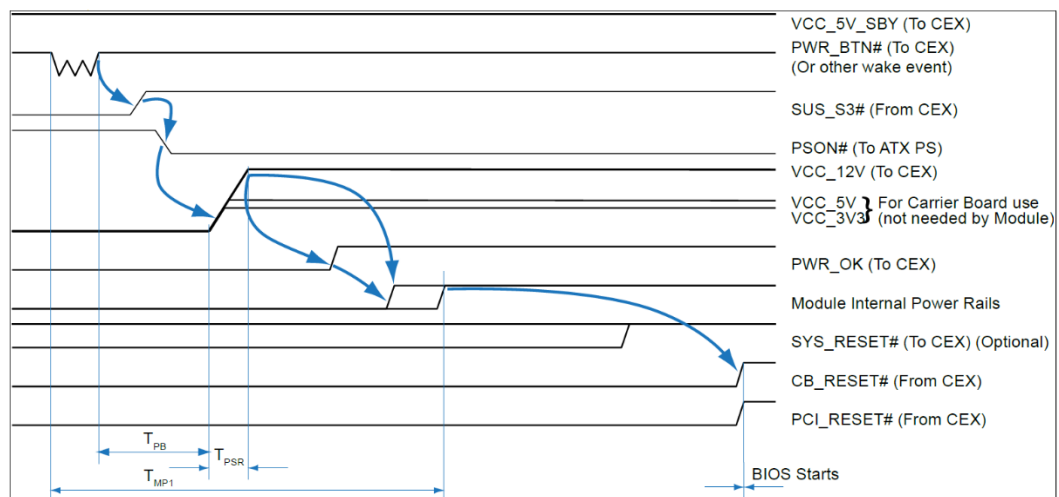


Figure 2 ATX Power Sequence

AT Power Sequence

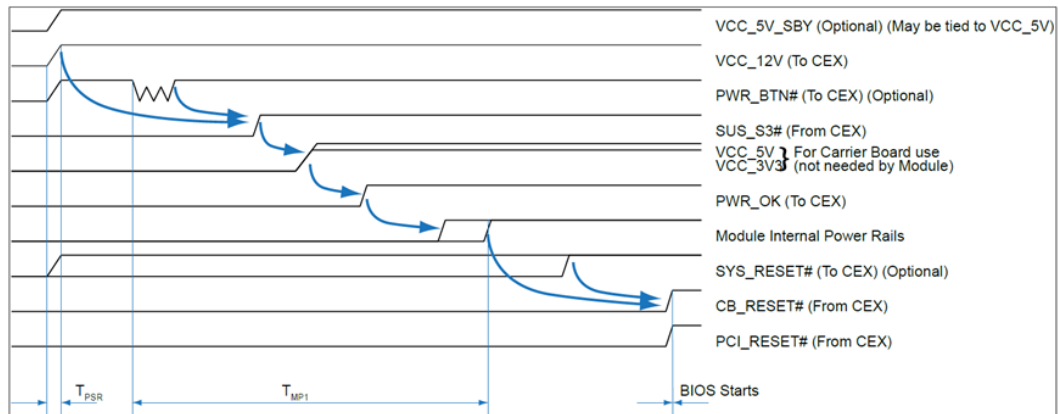


Figure 3 AT Power Sequence

PWR_OK Signal

Carrier board hardware must keep this signal low until all power rails and clocks are stable. Releasing PWR_OK too early or not driving it low at all may cause boot up abnormal symptom. It is a good design implementation to delay the PWR_OK signal a little (at least 100ms) after all carrier board power rails are up, to ensure a stable system.

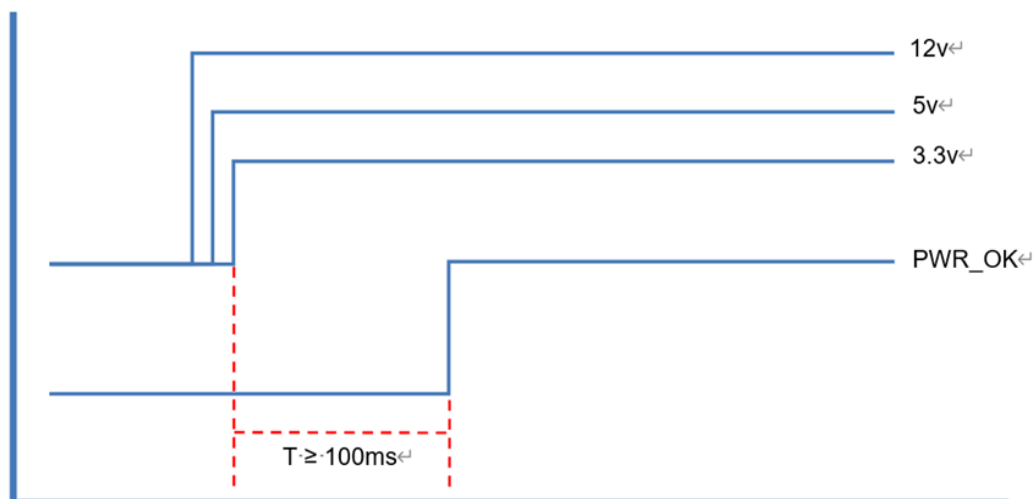


Figure 4 PWR OK Signal

3.7 Power Consumption

The power consumption values were measured with the following conditions:

- ATX power supply
- PCOM-B65C module
- PCOM-C60B carrier (modified module 12v input)
- PCOM-B65C standard cooler
- Windows 11 IoT LTSC 24H2

The power consumption values were recorded during the following methods:

- S0 Idle: 12v current, boot into Windows desktop and idle for 5 min
- 100% Workload with turbo: The average 12v current during 100% workload
- Peak Current: The maximum 12v current during the beginning of turbo mode running
- S3: 5v standby current, wait 5 min later after system into sleeping status
- S5: 5v standby current, wait 5 min later after system into shutdown status

Please Note: Power consumption results are measured at Portwell laboratory and are for reference only.

● Embedded / Industrial SKU

PCOM-B65C				
P/N	AB1-3T97	AB1-3T96	AB1-3U89	AB1-3U88
Processor	8845HS	8840U	8645HS	8640U
Core / Threads	8/16	8/16	6/12	6/12
TDP	45W	28W	28W	28W
Power Consumption				
S0 Idle	TBD	TBD	TBD	TBD
100% Workload with turbo mode	TBD	TBD	TBD	TBD
Peak Current	TBD	TBD	TBD	TBD
S3	TBD	TBD	TBD	TBD
S5	TBD	TBD	TBD	TBD

Table 7 Power Consumption

3.8 Mechanical Dimension

Top Side Dimension

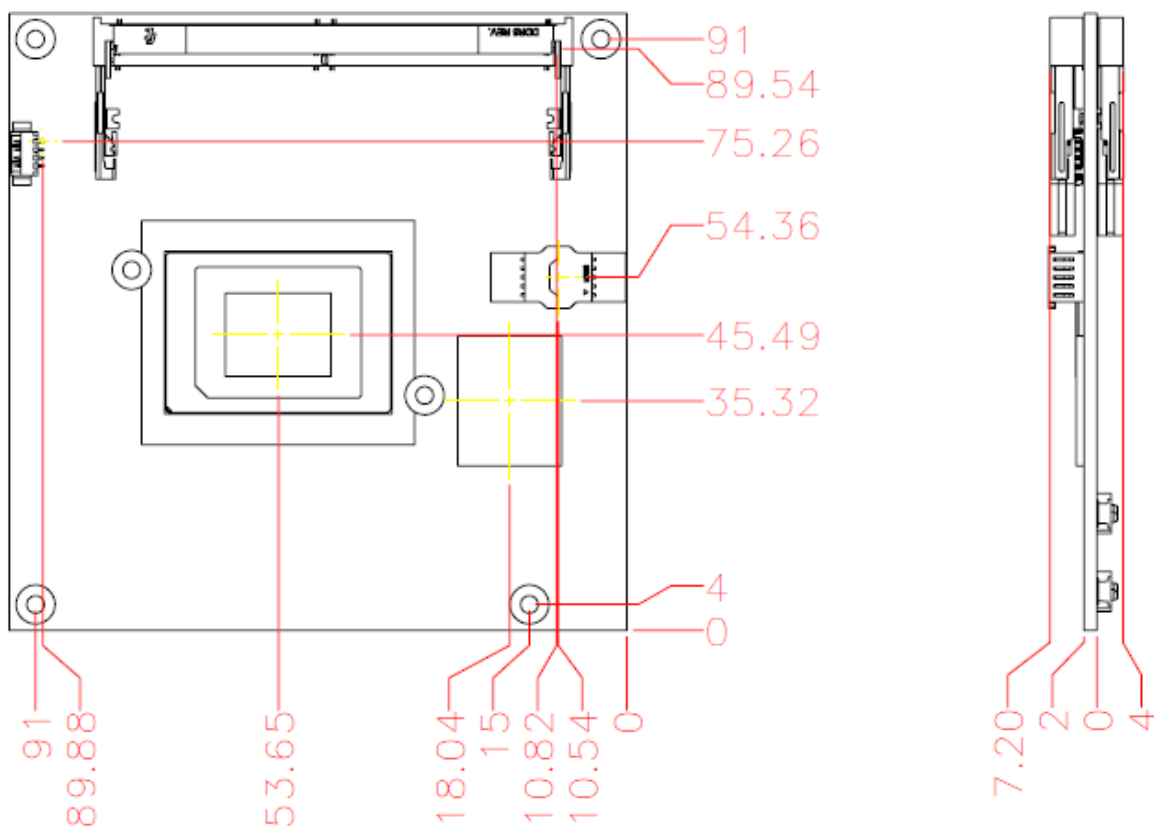


Figure 5 Mechanical Dimension - Top

Bottom Side Dimension

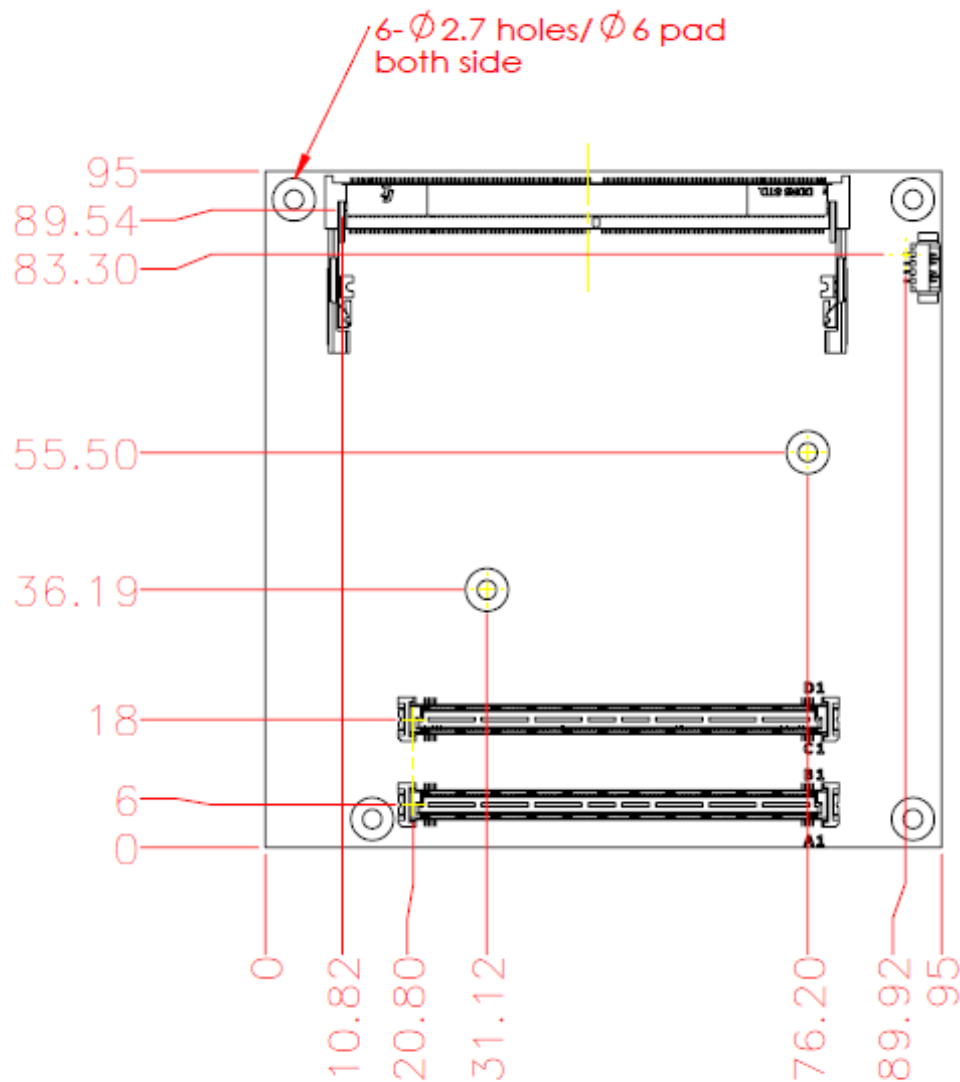


Figure 6 Mechanical Dimension - Bottom

3.9 Environmental Specification

Storage Temperature	-40°C~85°C
Operation Temperature	0°C~60°C
Storage Humidity	0%~95%
Operation Humidity	0%~95%

Table 8 Environmental Specification

3.10 Ordering Guide

Module

Product	Ordering P/N
PCOM-B65C-8845HS	AB1-3T97
PCOM-B65C-8840U	AB1-3T96
PCOM-B65C-8645HS	AB1-3U89
PCOM-B65C-8640U	AB1-3U88

Table 9 Ordering Guide - Module

Accessory

Accessory	Ordering P/N
Cooler	B9972520
Heatsink	B830D450
Heatspreader	B830D460
PCOM-C605R Mini-ITX (Carrier)	AB1-3P78
PCOM-C60B ATX Evaluation (Carrier)	AB1-3G22

Table 10 Ordering Guide - Accessory

3.11 Fan Cable Instructions

PCOM-B65C provides signals for a primary (onboard) and secondary (carrier) FAN, here is the picture indicating the location of onboard FAN connector.

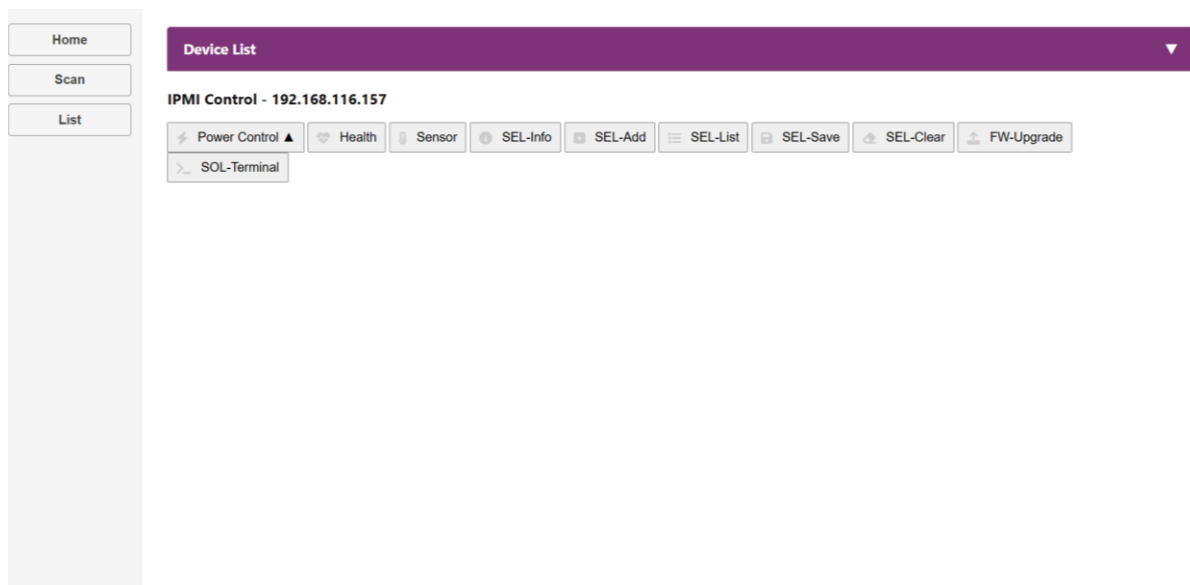
This FAN cable transforms the 4-pin standard FAN connector to a SMD type onboard connector.

J2 Fan	
1	GND
2	+12V
3	FAN_IN
4	FAN_OUT



3.12 Out of Band Management

PCOM-B65C features out of band management which allows the user to remotely operate with functions such as **Power On/Off/Reset, HW Monitor** and **BIOS recovery**. (For more details, please refer to OOB API and Utility User Manual v1.1 on download center)



Chapter 4

Overview

- 4 Thermal
- 4.1 Cooler Dimensions
- 4.2 Heatsink Dimensions
- 4.3 Heatspreader Dimensions

4. Thermal

4.1 Cooler Dimensions

Cooler

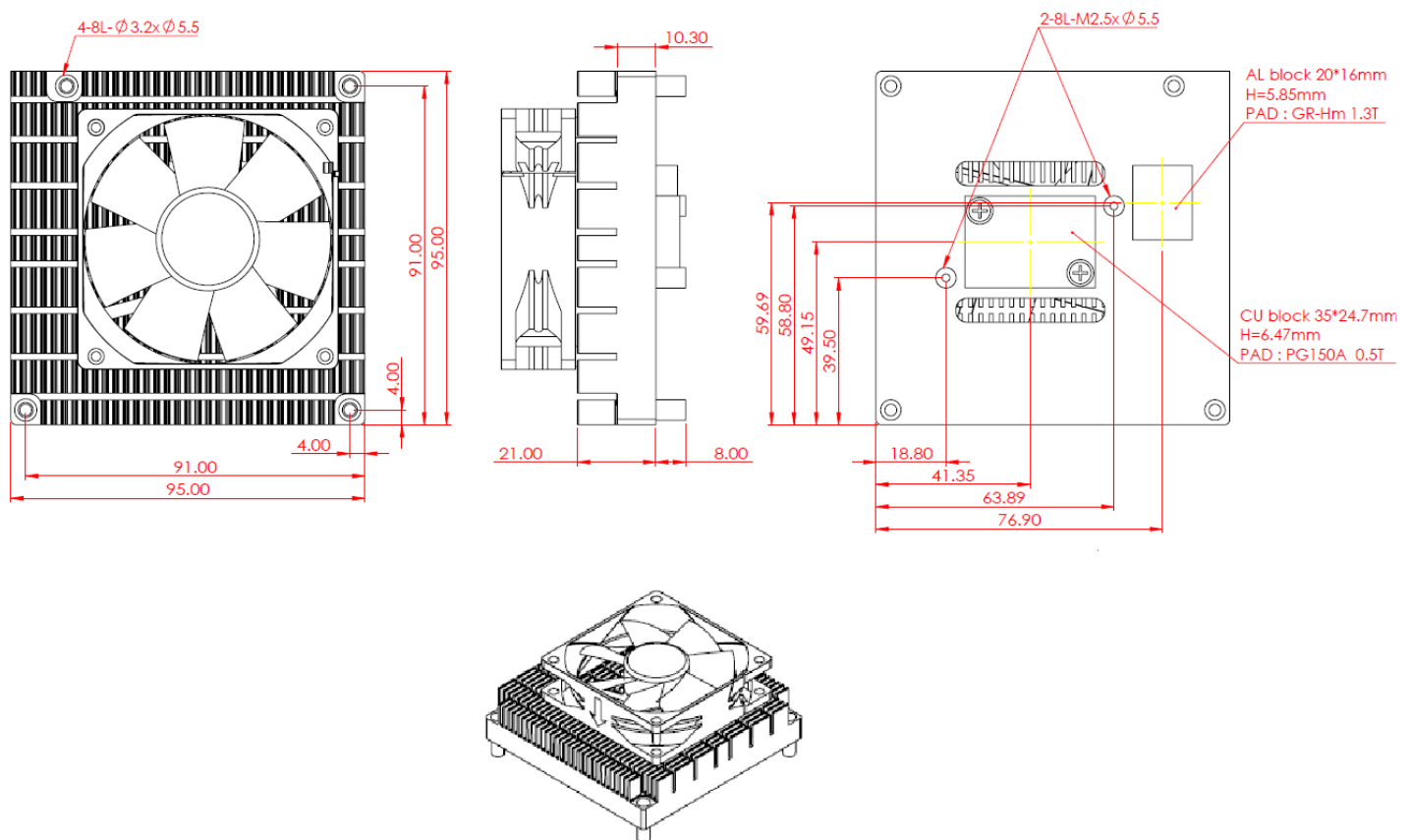


Figure 7 Cooler Mechanical Dimension

4.2 Heatsink Dimensions

Heatsink

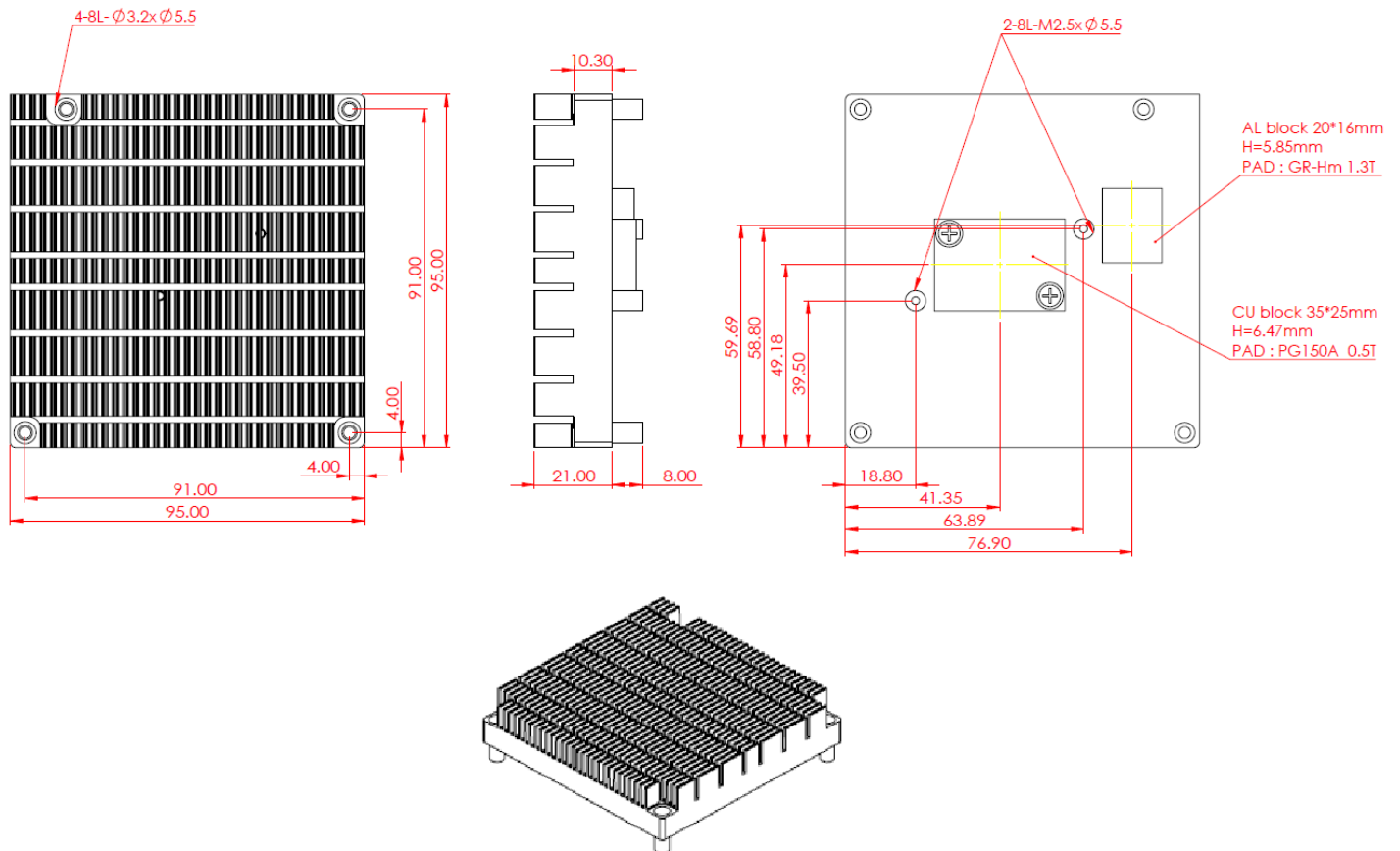


Figure 8 Heatsink Mechanical Dimension

4.3 Heatspreader Dimensions

Heat Spreader

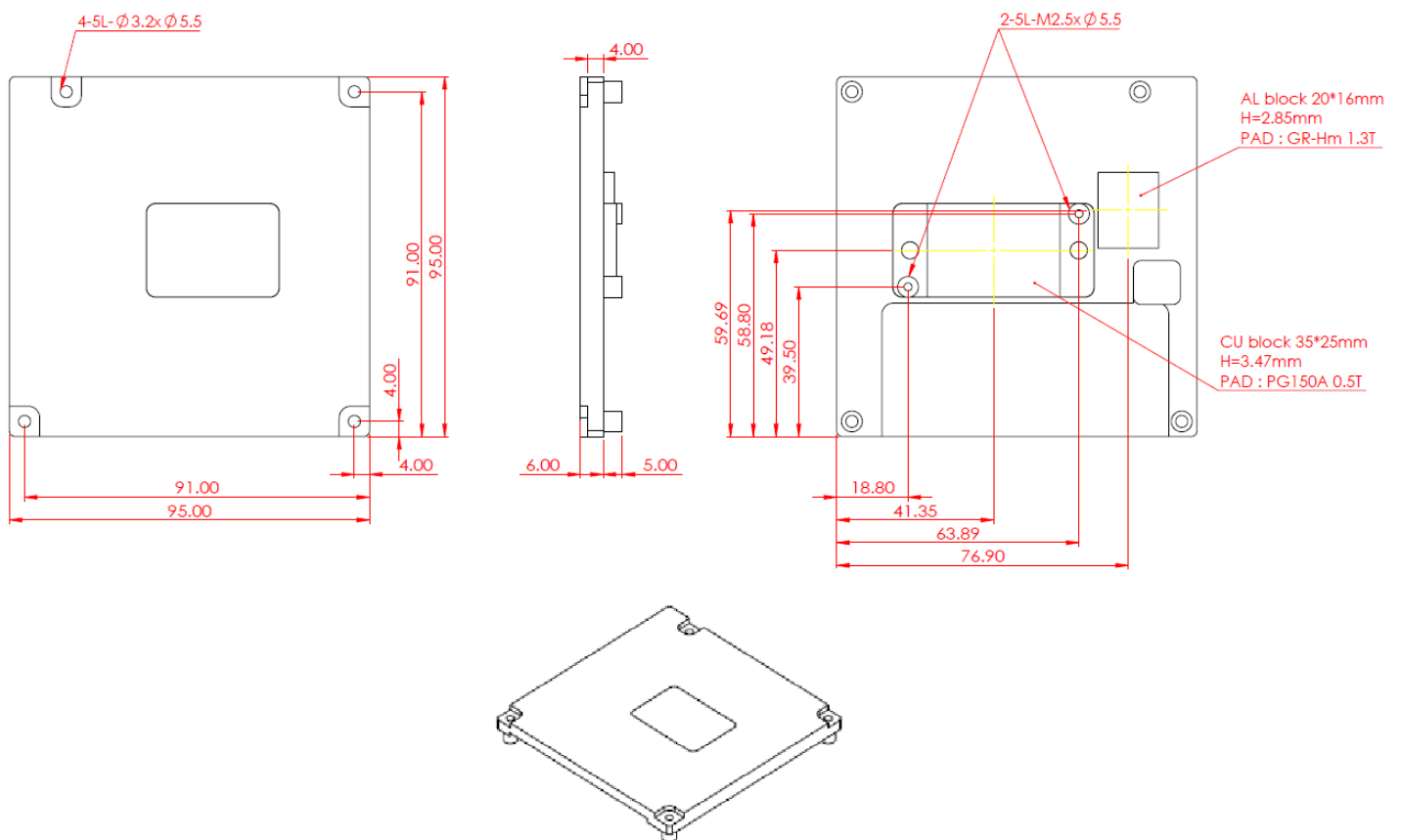


Figure 9 Heatspreader Mechanical Dimension

Chapter 5

Overview

5 Pin Out Table

5. Pin Out Table

Pin	Row A	Pin	Row B	Pin	Row C	Pin	Row D
A1	GND(FIXED)	B1	GND(FIXED)	C1	GND(FIXED)	D1	GND(FIXED)
A2	LAN_MDI3N	B2	LAN_LED_LNK_ACT_N	C2	GND(FIXED)	D2	GND(FIXED)
A3	LAN_MDI3P	B3	LPC_FRAME#	C3	USB3_RN1	D3	USB3_TN1
A4	LAN_LED_100_N	B4	LPC_AD0	C4	USB3_RP1	D4	USB3_TP1
A5	LAN_LED_1000_N	B5	LPC_AD1	C5	GND(FIXED)	D5	GND(FIXED)
A6	LAN_MDI2N	B6	LPC_AD2	C6	USB3_RN2	D6	USB3_TN2
A7	LAN_MDI2P	B7	LPC_AD3	C7	USB3_RP2	D7	USB3_TP2
A8	LAN_LED_LINK_N	B8	N/A	C8	GND(FIXED)	D8	GND(FIXED)
A9	LAN_MDI1N	B9	N/A	C9	USB3_RN3	D9	USB3_TN3
A10	LAN_MDI1P	B10	CLK_LPC	C10	USB3_RP3	D10	USB3_TP3
A11	GND	B11	GND(FIXED)	C11	GND(FIXED)	D11	GND(FIXED)
A12	LAN_MDI0N	B12	PWRBTN#_D	C12	USB3_RN4	D12	USB3_TN4
A13	LAN_MDI0P	B13	SMB_CLK	C13	USB3_RP4	D13	USB3_TP4
A14	N/C	B14	SMB_DATA	C14	GND(FIXED)	D14	GND(FIXED)
A15	KBC_SLP_S3#	B15	SMBALERT	C15	N/C	D15	DPB_CTRLCLK_AUX_P
A16	SATA_TXP0	B16	SATA_TXP1	C16	N/C	D16	DPB_CTRLDATA_AUX_N
A17	SATA_TXN0	B17	SATA_TXN1	C17	N/C	D17	N/C
A18	KBC_SLP_S4#	B18	ICH_SUS_STAT	C18	N/C	D18	N/C
A19	SATA_RXP0	B19	SATA_RXP1	C19	PCIE_RXP6	D19	PCIE_TXP6
A20	SATA_RXN0	B20	SATA_RXN1	C20	PCIE_RXN6	D20	PCIE_TXN6
A21	GND(FIXED)	B21	GND(FIXED)	C21	GND(FIXED)	D21	GND(FIXED)
A22	N/C	B22	N/C	C22	PCIE_RXP7	D22	PCIE_TXP7
A23	N/C	B23	N/C	C23	PCIE_RXN7	D23	PCIE_TXN7
A24	KBC_SLP_S5#	B24	CB_PWROK	C24	DDPB_HPD	D24	N/C
A25	N/C	B25	N/C	C25	N/C	D25	N/C
A26	N/C	B26	N/C	C26	N/C	D26	DPB_TXP0
A27	BATLOW_N	B27	WDTO#	C27	N/C	D27	DPB_TXN0
A28	SATA_LED#	B28	HDA_SDI2	C28	N/C	D28	N/C
A29	HDA_SYNC	B29	HDA_SDI1	C29	N/C	D29	DPB_TXP1
A30	HDA_RST#	B30	HDA_SDI0	C30	N/C	D30	DPB_TXN1

Pin	Row A	Pin	Row B	Pin	Row C	Pin	Row D
A31	GND(FIXED)	B31	GND(FIXED)	C31	GND(FIXED)	D31	GND(FIXED)
A32	PCH_HDA_BIT_CLK	B32	PCH_SPKR	C32	DPC_CTRLCLK_AU X_P	D32	DPB_TXP2
A33	PCH_HDA_SDO	B33	KBC_SCL1	C33	DPC_CTRLDATA_A UX_N	D33	DPB_TXN2
A34	BIOS_DIS0#	B34	KBC_SDA1	C34	DPC_AUX_SEL	D34	DPB_AUX_SEL
A35	THERMTRIP#_3V_ C	B35	THRM#	C35	N/A	D35	N/A
A36	USB_PN6	B36	USB_PN7	C36	DPD_CTRLCLK_AU X_P	D36	DPB_TXP3
A37	USB_PP6	B37	USB_PP7	C37	DPD_CTRLDATA_A UX_N	D37	DPB_TXN3
A38	USB_OC#_6_7	B38	USB_OC#_4_5	C38	DPD_AUX_SEL	D38	N/A
A39	USB_PN4	B39	USB_PN5	C39	DPD_TXP0	D39	DPC_TXP0
A40	USB_PP4	B40	USB_PP5	C40	DPD_TXN0	D40	DPC_TXN0
A41	GND	B41	GND(FIXED)	C41	GND(FIXED)	D41	GND(FIXED)
A42	USB_PN2	B42	USB_PN3	C42	DPD_TXP1	D42	DPC_TXP1
A43	USB_PP2	B43	USB_PP3	C43	DPD_TXN1	D43	DPC_TXN1
A44	USB_OC#_2_3	B44	USB_OC#_0_1	C44	DDPD_HPD	D44	DDPC_HPD (DDI2_HPD)
A45	USB_PN0	B45	USB_PN1	C45	N/A	D45	N/A (RSVD15)
A46	USB_PP0	B46	USB_PP1	C46	DPD_TXP2	D46	DPC_TXP2
A47	VCC3P3_RTC	B47	BUF_PLT_RST#	C47	DPD_TXN2	D47	DPC_TXN2
A48	BUF_PLT_RST#	B48	EXCD1_CPPE#	C48	N/A	D48	N/A (RSVD15)
A49	EXCD0_CPPE#	B49	RSTBTN_N	C49	DPD_TXP3	D49	DPC_TXP3
A50	PCH_INT_SERIRQ	B50	BUF_PLT_RST#	C50	DPD_TXN3	D50	DPC_TXN3
A51	GND(FIXED)	B51	GND(FIXED)	C51	GND(FIXED)	D51	GND(FIXED)
A52	PCIE_TXP5	B52	PCIE_RXP5	C52	PEG0_RX_DP	D52	PEG0_TX_DP
A53	PCIE_TXN5	B53	PCIE_RXN5	C53	PEG0_RX_DN	D53	PEG0_TX_DN
A54	GPI0	B54	GPO1	C54	N/A (TYPE0)	D54	CFG2 (PEG_LANE_RV#)
A55	PCIE_TXP4	B55	PCIE_RXP4	C55	PEG1_RX_DP	D55	PEG1_TX_DP
A56	PCIE_TXN4	B56	PCIE_RXN4	C56	PEG1_RX_DN	D56	PEG1_TX_DN
A57	GND	B57	GPO2	C57	N/A (TYPE1)	D57	GND (TYPE2)
A58	PCIE_TXP3	B58	PCIE_RXP3	C58	PEG2_RX_DP	D58	PEG2_TX_DP

Pin	Row A	Pin	Row B	Pin	Row C	Pin	Row D
A59	PCIE_TXN3	B59	PCIE_RXN3	C59	PEG2_RX_DN	D59	PEG2_TX_DN
A60	GND(FIXED)	B60	GND(FIXED)	C60	GND(FIXED)	D60	GND(FIXED)
A61	PCIE_TXP2	B61	PCIE_RXP2	C61	PEG3_RX_DP	D61	PEG3_TX_DP
A62	PCIE_TXN2	B62	PCIE_RXN2	C62	PEG3_RX_DN	D62	PEG3_TX_DN
A63	GPI1	B63	GPO3	C63	N/A	D63	N/A
A64	PCIE_TXP1	B64	PCIE_RXP1	C64	N/A	D64	N/A
A65	PCIE_TXN1	B65	PCIE_RXN1	C65	PEG4_RX_DP	D65	PEG4_TX_DP
A66	GND	B66	PCIE_WAKE#	C66	PEG4_RX_DN	D66	PEG4_TX_DN
A67	GPI2	B67	WAKE1#	C67	N/A	D67	GND(FIXED)
A68	PCIE_TXP0	B68	PCIE_RXP0	C68	PEG5_RX_DP	D68	PEG5_TX_DP
A69	PCIE_TXN0	B69	PCIE_RXN0	C69	PEG5_RX_DN	D69	PEG5_TX_DN
A70	GND(FIXED)	B70	GND(FIXED)	C70	GND(FIXED)	D70	GND(FIXED)
A71	"LVDS0_EDP2_P	B71	N/A	C71	PEG6_RX_DP	D71	PEG6_TX_DP
A72	(EDP_TXP2_CN)"	B72	N/A	C72	PEG6_RX_DN	D72	PEG6_TX_DN
A73	"LVDS0_EDP2_N	B73	N/A	C73	GND(FIXED)	D73	GND(FIXED)
A74	(EDP_TXN2_CN)"	B74	N/A	C74	PEG7_RX_DP	D74	PEG7_TX_DP
A75	"LVDS1_EDP1_P	B75	N/A	C75	PEG7_RX_DN	D75	PEG7_TX_DN
A76	(EDP_TXP1_CN)"	B76	N/A	C76	GND(FIXED)	D76	GND(FIXED)
A77	"LVDS1_EDP1_N	B77	N/A	C77	N/A	D77	N/A
A78	(EDP_TXN1_CN)"	B78	N/A	C78	PEG8_RX_DP	D78	PEG8_TX_DP
A79	"LVDS2_EDP0_P	B79	"LVDS_BKLT_EN	C79	PEG8_RX_DN	D79	PEG8_TX_DN
A80	(EDP_TXP0_CN)"	B80	(EDP_BKLT_EN)"	C80	GND(FIXED)	D80	GND(FIXED)
A81	"LVDS2_EDP0_N	B81	GND(FIXED)	C81	PEG9_RX_DP	D81	PEG9_TX_DP
A82	(EDP_TXN0_CN)"	B82	N/A	C82	PEG9_RX_DN	D82	PEG9_TX_DN
A83	"VDDEN	B83	N/A	C83	N/A	D83	N/A
A84	(EDP_VDD_EN)"	B84	"LVDS_BKLT_CTRL	C84	GND(FIXED)	D84	GND(FIXED)
A85	N/A	B85	(EDP_BKLTCTRL/	C85	PEG10_RX_DP	D85	PEG10_TX_DP
A86	N/A	B86	EC_BKLTCTRL/	C86	PEG10_RX_DN	D86	PEG10_TX_DN
A87	GND(FIXED)	B87	DP_UTIL/	C87	GND(FIXED)	D87	GND(FIXED)
A88	"LVDSCK_DP3_P	B88	PWMO_PTN/)"	C88	PEG11_RX_DP	D88	PEG11_TX_DP
A89	(EDP_TXP3_CN)"	B89	5VSB	C89	PEG11_RX_DN	D89	PEG11_TX_DN
A90	"LVDSCK_DP3_N	B90	5VSB	C90	GND(FIXED)	D90	GND(FIXED)
A91	(EDP_TXN3_CN)"	B91	5VSB	C91	PEG12_RX_DP	D91	PEG12_TX_DP
A92	"LVSDCK_EDPAUX_P	B92	5VSB	C92	PEG12_RX_DN	D92	PEG12_TX_DN
A93	(EDP_AUX_P_CN)"	B93	BIOS_DIS1#	C93	GND(FIXED)	D93	GND(FIXED)

Pin	Row A	Pin	Row B	Pin	Row C	Pin	Row D
A94	"LVSDDA_EDPAUX_N	B94	CRT_RED	C94	PEG13_RX_DP	D94	PEG13_TX_DP
A95	(EDP_AUX_N_CN)"	B95	GND(FIXED)	C95	PEG13_RX_DN	D95	PEG13_TX_DN
A96	GPI3	B96	CRT_GREEN	C96	GND(FIXED)	D96	GND(FIXED)
A97	"N/A	B97	CRT_BLUE	C97	N/A	D97	N/A
A98	(RSVD15)"	B98	CRT_HSYNC	C98	PEG14_RX_DP	D98	PEG14_TX_DP
A99	"EPD_HPD_CN	B99	CRT_VSYNC	C99	PEG14_RX_DN	D99	PEG14_TX_DN
A100	(eDP_HDP)"	B100	CRT_DDC_CLK	C100	GND(FIXED)	D100	GND(FIXED)
A101	CK_PCIE_SLOT_P	B101	CRT_DDC_DATA	C101	PEG15_RX_DP	D101	PEG15_TX_DP
A102	CK_PCIE_SLOT_N	B102	SPI_CS#0	C102	PEG15_RX_DN	D102	PEG15_TX_DN
A103	GND	B103	N/A	C103	GND(FIXED)	D103	GND(FIXED)
A104	VCC3M_SPI	B104	N/A	C104	VIN	D104	VIN
A105	SPI_SO	B105	GND(FIXED)	C105	VIN	D105	VIN
A106	GPO0	B106	FAN_PWMOUT_R	C106	VIN	D106	VIN
A107	SPI_CLK	B107	FAN_TACHIN_R	C107	VIN	D107	VIN
A108	SPI_SI	B108	SLEEP#_R	C108	VIN	D108	VIN
A109	"N/C	B109	VIN	C109	VIN	D109	VIN
A110	(TPM_PP)"	B110	VIN	C110	GND(FIXED)	D110	GND(FIXED)

Table 11 Pin Out Description

Chapter 6

Overview

- 6 System Resource
- 6.1 LPC
- 6.2 SMBUS

6. System Resource

6.1 LPC

Device	I/O Address	Note
Embedded Controller	0x4E / 0x4F	Config Port
	0x66 / 0x62	CMD Port
	0xE300-0xE3FF	SRAM
	0x3F8-0x3FF	SER0
	0x2F8-0x2FF	SER1

Table 12 System Resource - LPC

6.2 SMBUS

SMBUS Address	Information
0x20	PTN3460 eDP-LVDS

Table 13 System Resource - SMBUS

Chapter 7

Overview

- 7 BIOS Setup Items
- 7.1 Entering Setup – Launch System Setup
- 7.2 Main
- 7.3 Configuration
- 7.4 Security
- 7.5 Boot
- 7.6 Save & Exit

7. BIOS Setup Items

The PCOM-B65C is equipped with AMI BIOS stored in Flash ROM. This BIOS includes a built-in setup program that allows users to easily modify the system's basic configuration. The configuration data is stored in SPI ROM, ensuring it is retained even during power-off periods. Upon startup, the PCOM-B65C communicates with peripheral devices and verifies the hardware resources against the configuration stored in the BIOS. If any discrepancies are found, or if the BIOS parameters need to be configured initially, the diagnostic program will prompt the user to enter the setup program. Some errors may be critical enough to abort the startup process.

7.1 Entering Setup

Launch System Setup

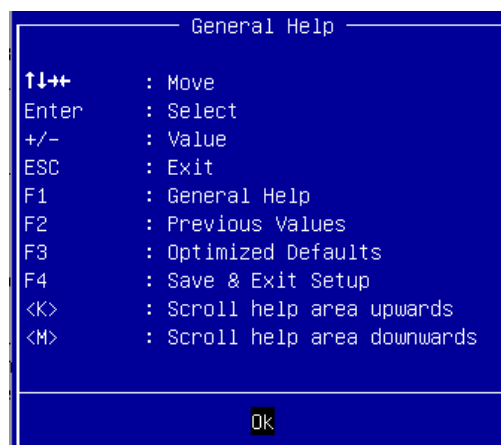
Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key will enter BIOS setup screen.

Press to enter SETUP

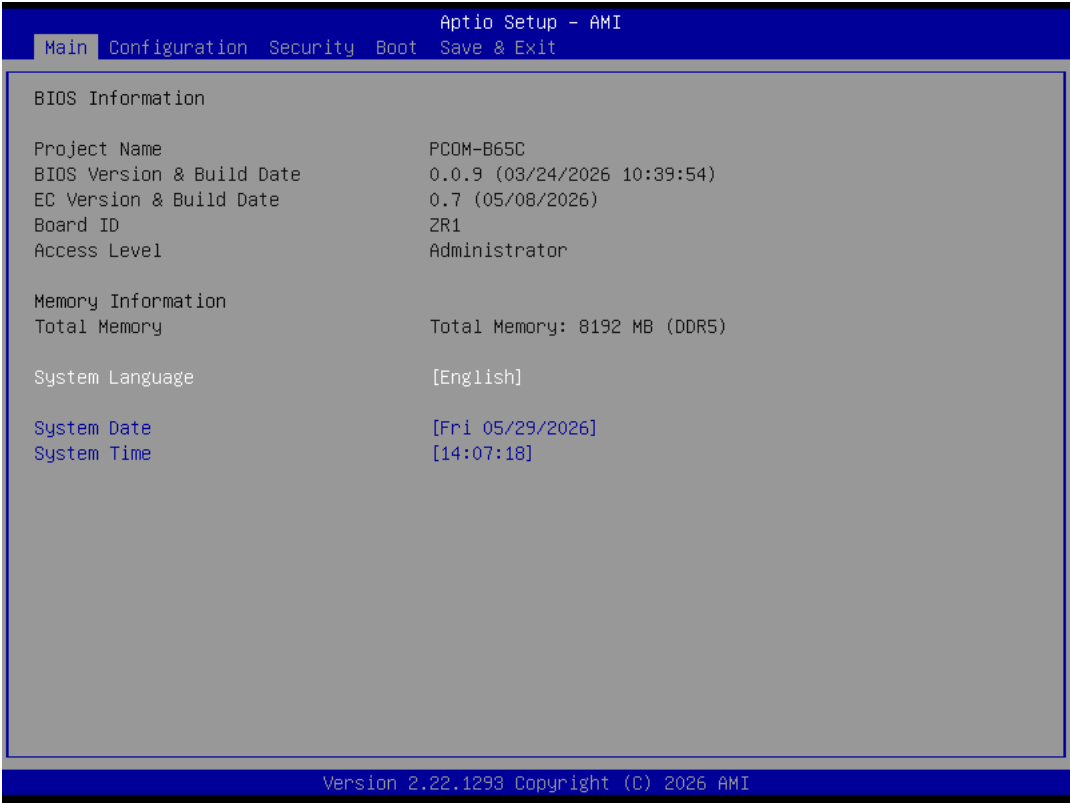
If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help screen.

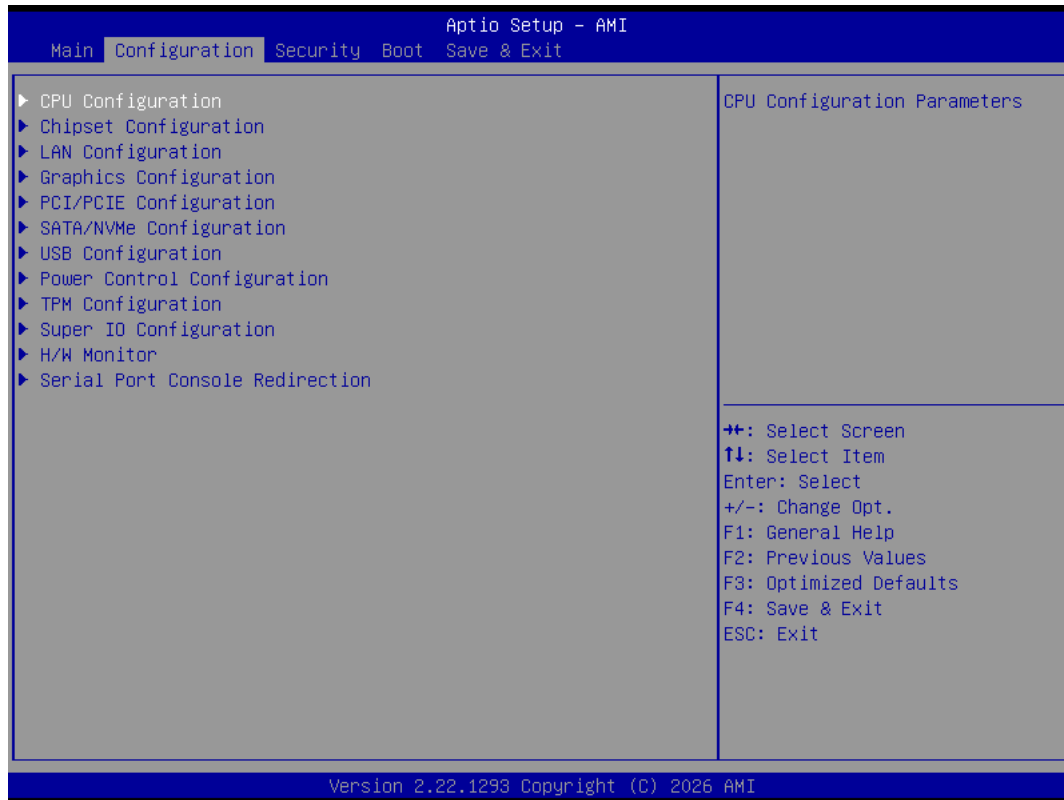


7.2 Main

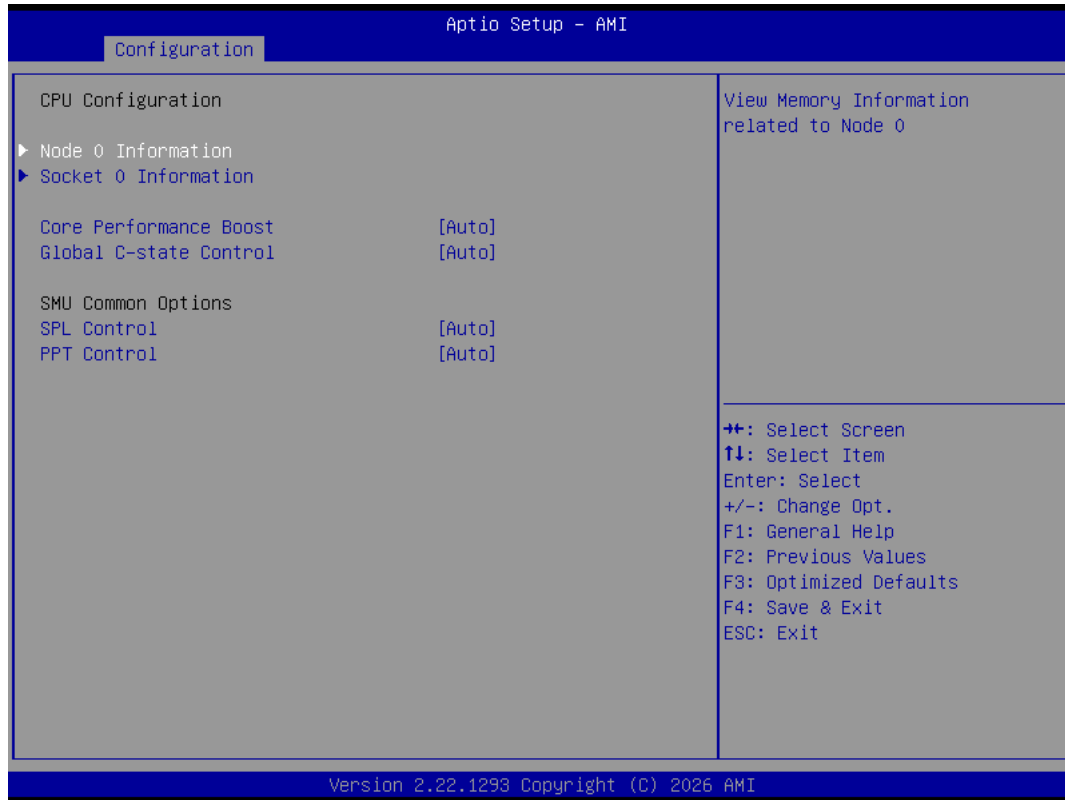


Feature	Description	Options
System Date	The date format is <Day>, <Month> <Date> <Year>. Use [+] or [-] to configure system Date.	
System Time	The time format is <Hour> <Minute> <Second>. Use [+] or [-] to configure system Time.	

7.3 Configuration



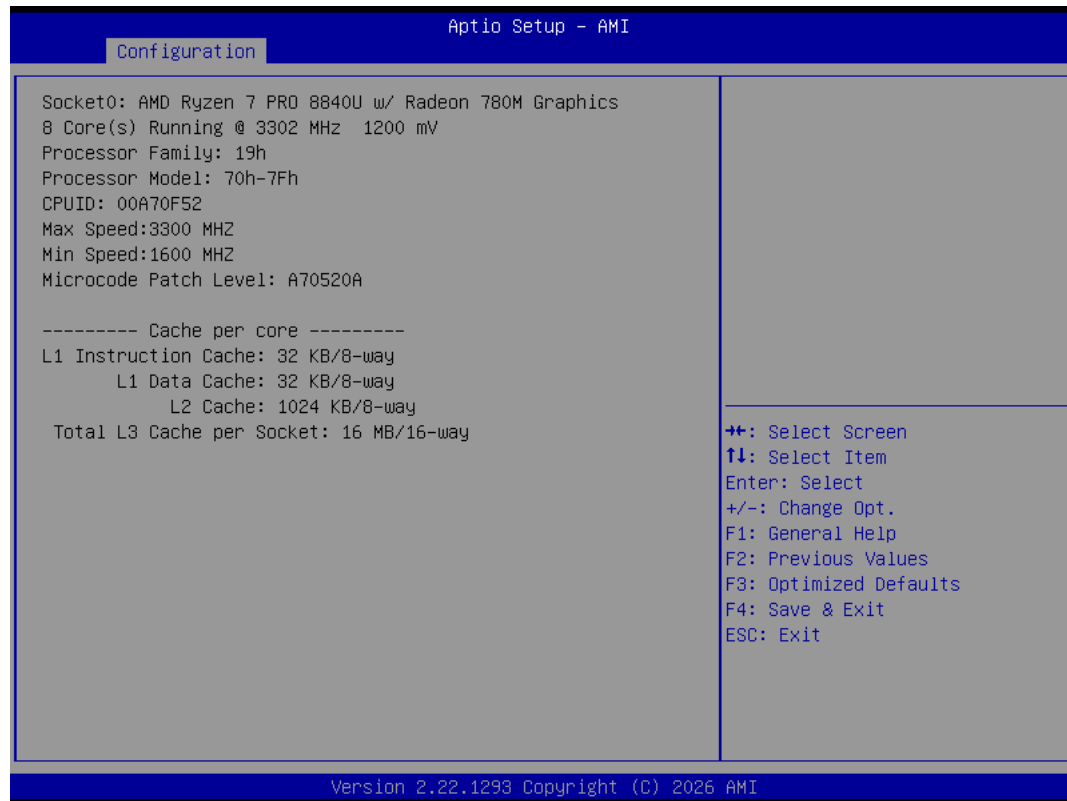
7.3.1 CPU Configuration



Feature	Description	Options
Core Performance Boost	Disable CPB	Disabled, ★Auto
Global C-state Control	Controls IO based C-state generation and DF C-states. There is another DF Cstate option which will be synchronized with this option if DF Cstate option is auto.	Disabled, Enabled ★Auto
SMU Common Options		
SPL Control	Auto = Use the default Sustained Power Limit Manual = User can set customized Sustained Power Limit	Manual, ★Auto
PPT Control	Auto = Use the default PPT Limits Manual = User can set customized PPT Limits	Manual, ★Auto

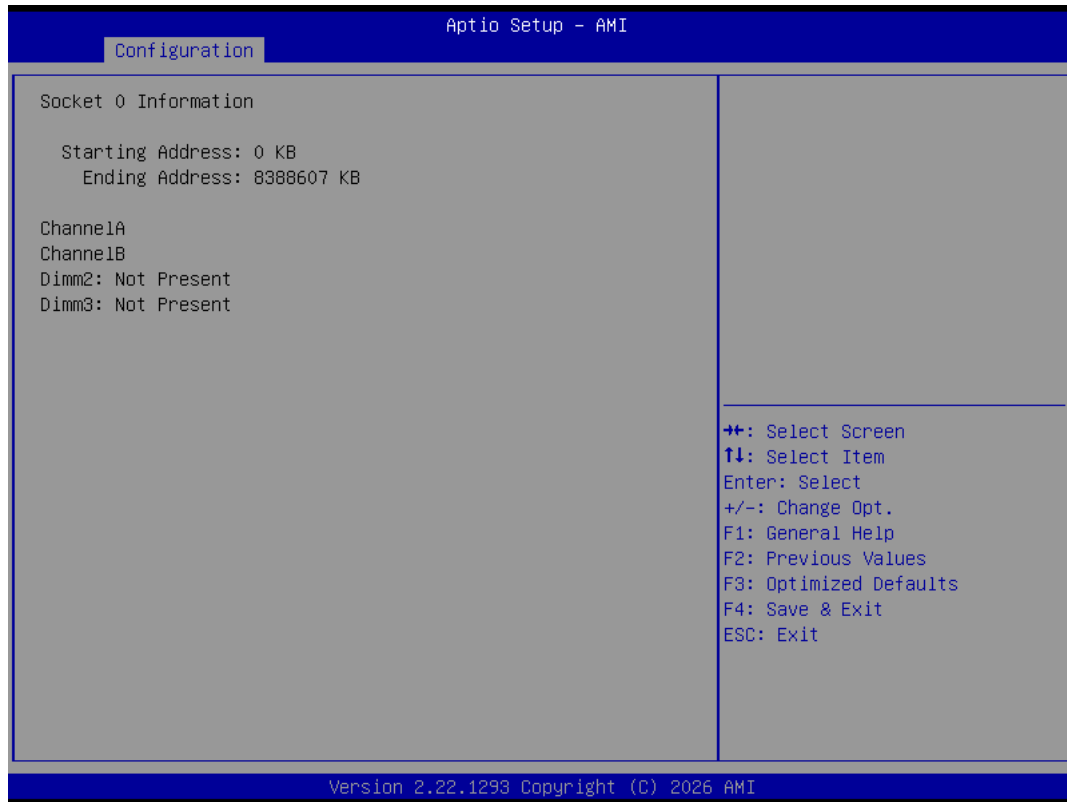
Node-0-information

View Memory Information related to Node 0

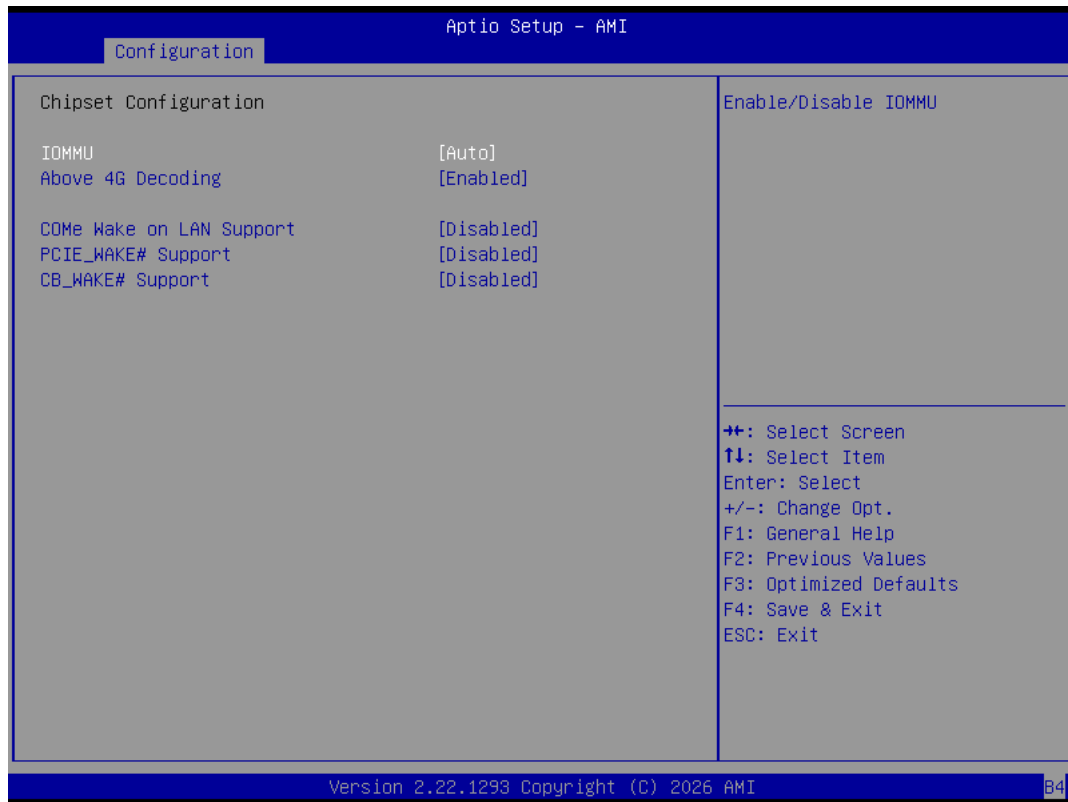


Socket 0 Information

View Information related to Socket 0

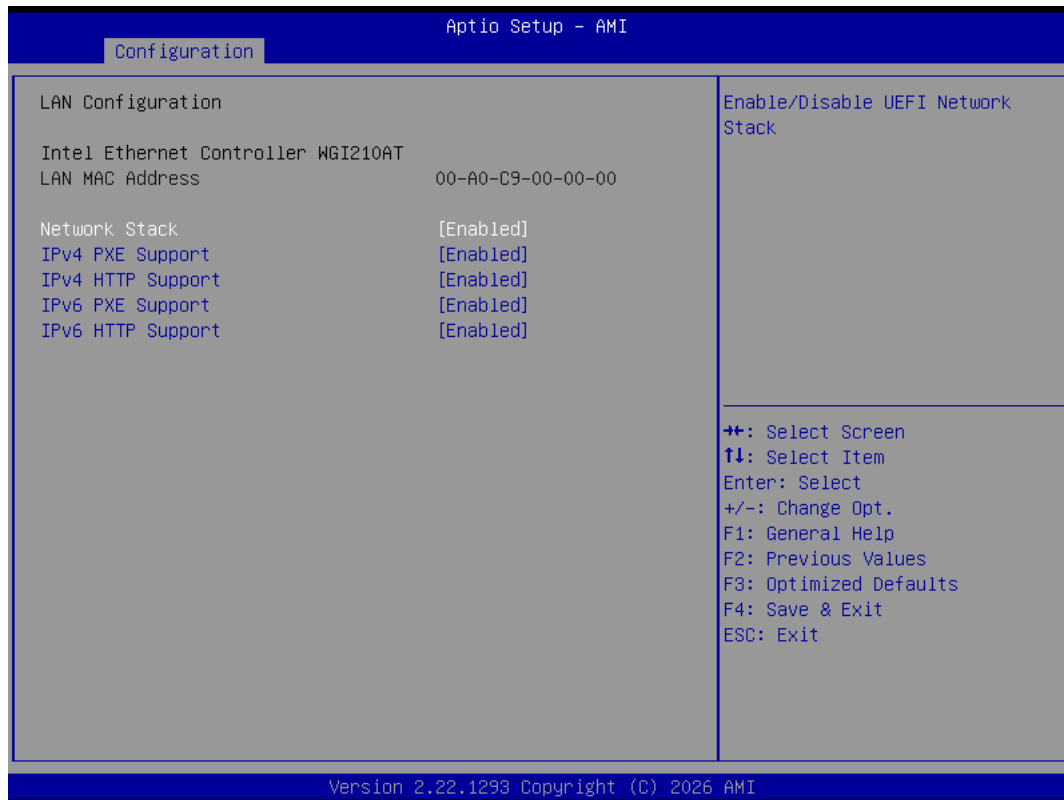


7.3.2 Chipset Configuration



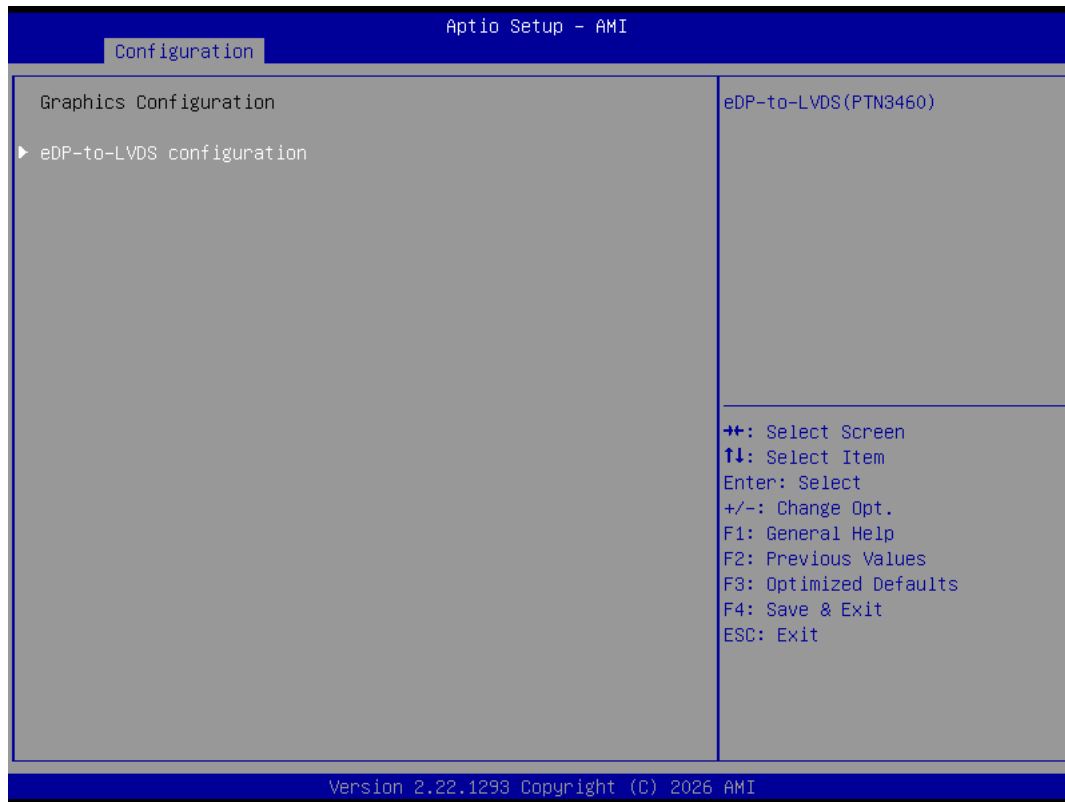
Feature	Description	Options
IOMMU	Enabled/Disable IOMMU	Disabled, Enabled ★Auto
Above 4G Decoding	Globally Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address space (only if system supports 64	Disabled, ★Enabled
COMe Wake on LAN Support	COMe Wake on LAN Support	★Disabled, Enabled
PCIE_WAKE# Support	PCIE_WAKE# Support	★Disabled, Enabled
CB_WAKE# Support	CB_WAKE# Support	★Disabled, Enabled

7.3.3 Lan Configuration



Feature	Description	Options
Network Stack	Enable/Disable UEFI Network Stack	★Disabled, Enabled
Network Stack [Enabled]		
IPv4 PXE Support	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.	Disabled, ★Enabled
IPv4 HTTP Support	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.	Disabled, ★Enabled
IPv6 PXE Support	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.	Disabled, ★Enabled
IPv6 HTTP Support	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.	Disabled, ★Enabled

7.3.4 Graphics Configuration



eDP-to-LVDS configuration



Feature	Description	Options
EDID ROM Emulation Control	Enable EDID emulation	Emulation OFF, ★ Emulation ON
Panel Profile	Select Panel Profile for current use	640x480, 800x480, 800x600, ★1024x768, 1280x800, 1280x1024, 1366x768, 1440x900, 1920x1080, OEM Profile
Color depth and data format	Select Color depth and data format.	VESA 24 bpp, JEIDA 24 bpp, ★VESA and JEIDA 18 bpp
Channel Mode	Select LVDS Channel Mode	★Single Channel Dual Channel
V Sync Polarity Mode	Select V Sync Polarity Mode	★Positive, Negative
H Sync Polarity Mode	Select H Sync Polarity Mode	★Positive, Negative
Clock Mode	Select clock output for LVDS.	★Even Bus, Odd Bus, Both Buses

OEM Profile: PANEL 1 Configuration

Aptio Setup - AMI

Configuration

PANEL 1 Configuration

Profile Name : empty

Rename Profile

Color depth and data format [VESA and JEIDA 18 bpp]

Channel Mode [Single Channel]

Clock Mode [Even Bus]

Pixel Clock 0.000 Mhz 2500

H Active Pixels 0 640

H Blank Pixels 0 160

H Offset Pixels 0 16

H Width Pixels 0 96

V Active Lines 0 480

V Blank Lines 0 45

V Offset Lines 0 10

V Width Lines 0 2

H & V sync Signal Polarity [Postive]

←+: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F3: Optimized Defaults

F4: Save & Exit

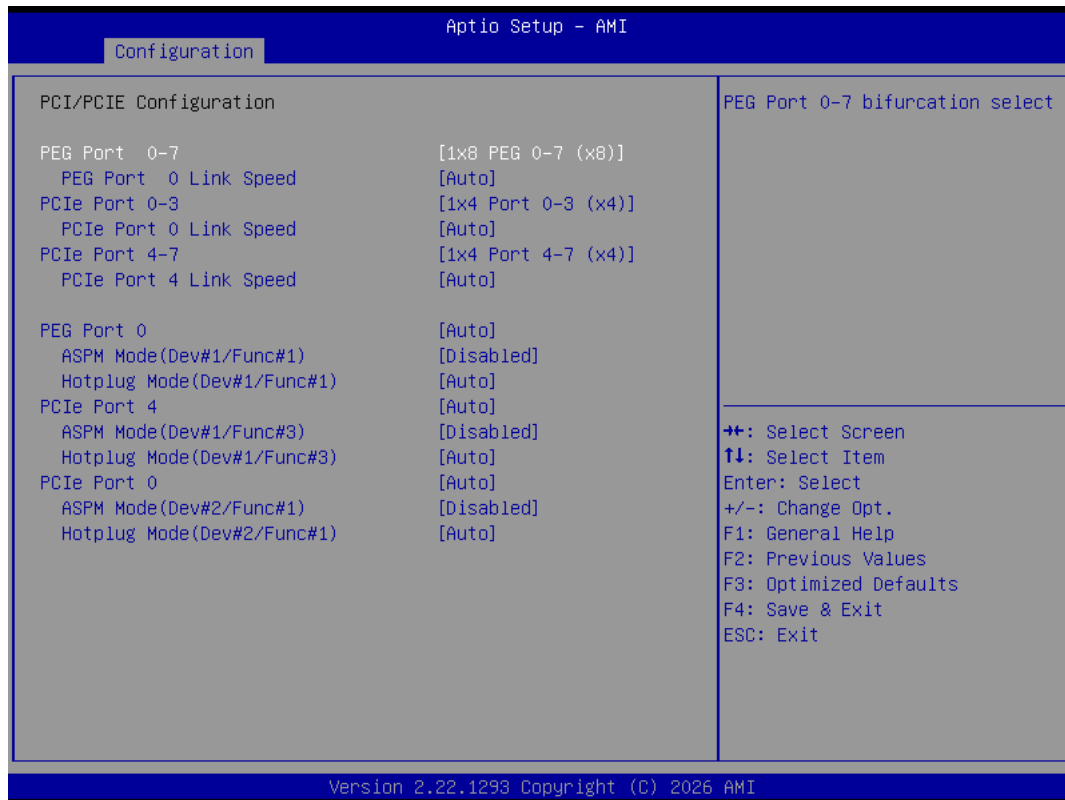
ESC: Exit

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Feature	Description	Options
Rename Profile	Rename Profile name	
Color depth and data format	Select Color depth and data format.	VESA 24 bpp JEIDA 24 bpp ★VESA and JEIDA 18 bpp
Channel Mode	Select LVDS Channel Mode	★Single Channel Dual Channel
Clock Mode	Select clock output for LVDS.	★Even Bus, Odd Bus, Both Buses
Pixel Clock	Pixel Clock (10Khz)	★ 2500
H Active Pixels	H Active Pixels (Pixel)	★ 640

Feature	Description	Options
H Blank Pixels	H Blank Pixels (Pixel)	★ 160
H Offset Pixels	H Offset Pixels (Pixel)	★ 16
H Width Pixels	H Width Pixels (Pixel)	★ 96
V Active Lines	V Active Lines (Line)	★ 480
V Blank Lines	V Blank Lines (Line)	★ 45
V Offset Lines	V Offset Lines (Line)	★ 10
V Width Lines	V Width Lines (Line)	★ 2
H & V sync Signal Polarity	Flag: 0x1E Signal Polarity is Postive; 0x18 Signal Polarity is Non-Postive	★ Postive, Non-Postive

7.3.5 PCI/PCIE Configuration



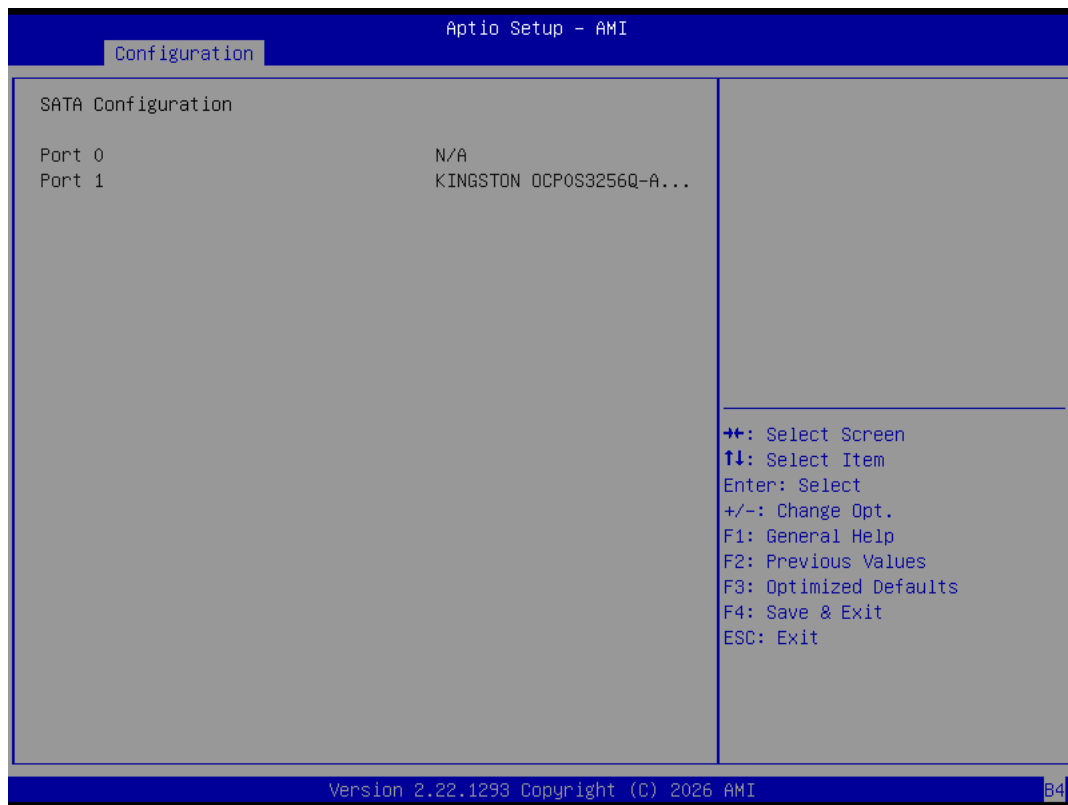
Feature	Description	Options
PEG Port 0-7	PEG Port 0-7 bifurcation select	★1x8 PEG 0-7 (x8) 2X4 PEG 0-3 (x4), PEG 4-7 (x4)
PEG Port 0 Link Speed	PCIe Gen speed select	★Auto, Gen1, Gen2, Gen3, Gen4
PCIe Port 0-3	PCIe Port 0-3 bifurcation select	★1x4 Port 0-3 (x4) 2X2 Port 0-1 (x2), Port 2-3 (x2) 1x2 2x1 Port 0-1 (x2), Port 2 (x1), Port 3 (x1) 2x1 1x2 Port 0 (x1), Port 1 (x1), Port 2-3 (x2) 4x1 Port 0 (x1), Port 1 (x1), Port 2 (x1), Port 3 (x1)
PCIe Port 0 Link Speed	PCIe Gen speed select	★Auto, Gen1, Gen2, Gen3, Gen4
PCIe Port 4-7	PCIe Port 4-7 bifurcation select	★1x4 Port 4-7 (x4) 2X2 Port 4-5 (x2), Port 6-7 (x2) 1x2 2x1 Port 4-5 (x2), Port 6 (x1), Port 7 (x1) 2x1 1x2 Port 4 (x1), Port 5 (x1), Port 6-7 (x2)
PCIe Port 4 Link Speed	PCIe Gen speed select	★Auto, Gen1, Gen2, Gen3, Gen4

Feature	Description	Options
PEG Port 0	Enable/Disable/ Auto, Auto used board default setting	Disabled, Enabled, ★Auto
ASPM Mode(Dev#1/Func#1)	NB Root Port ASPM Mode Control	★Disabled, L0s Entry, L1 Entry, L0s and L1 Entry, Auto
Hotplug Mode(Dev#1/Func#1)	NB Root Port Hotplug Mode Control	Disabled, Hotplug Basic, Hotplug Server, Hotplug Enhanced, Hotplug Inboard, ★Auto
PCIe Port 4	Enable/Disable/ Auto, Auto used board default setting	Disabled, Enabled, ★Auto
ASPM Mode(Dev#1/Func#3)	NB Root Port ASPM Mode Control	★Disabled, L0s Entry, L1 Entry, L0s and L1 Entry, Auto
Hotplug Mode(Dev#1/Func#3)	NB Root Port Hotplug Mode Control	Disabled, Hotplug Basic, Hotplug Server, Hotplug Enhanced, Hotplug Inboard, ★Auto
PCIe Port 0	Enable/Disable/ Auto, Auto used board default setting	Disabled, Enabled, ★Auto
ASPM Mode(Dev#2/Func#1)	NB Root Port ASPM Mode Control	★Disabled, L0s Entry, L1 Entry, L0s and L1 Entry, Auto
Hotplug Mode(Dev#2/Func#1)	NB Root Port Hotplug Mode Control	Disabled, Hotplug Basic, Hotplug Server, Hotplug Enhanced, Hotplug Inboard, ★Auto

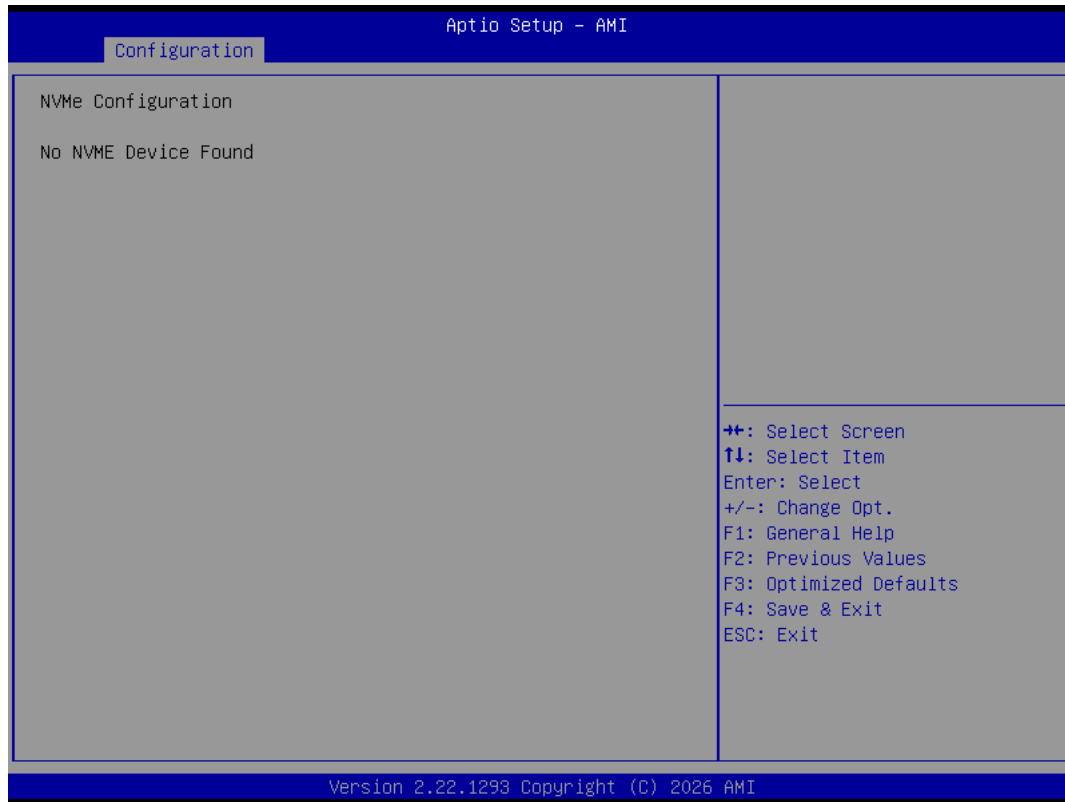
7.3.6 SATA/NVMe Configuration



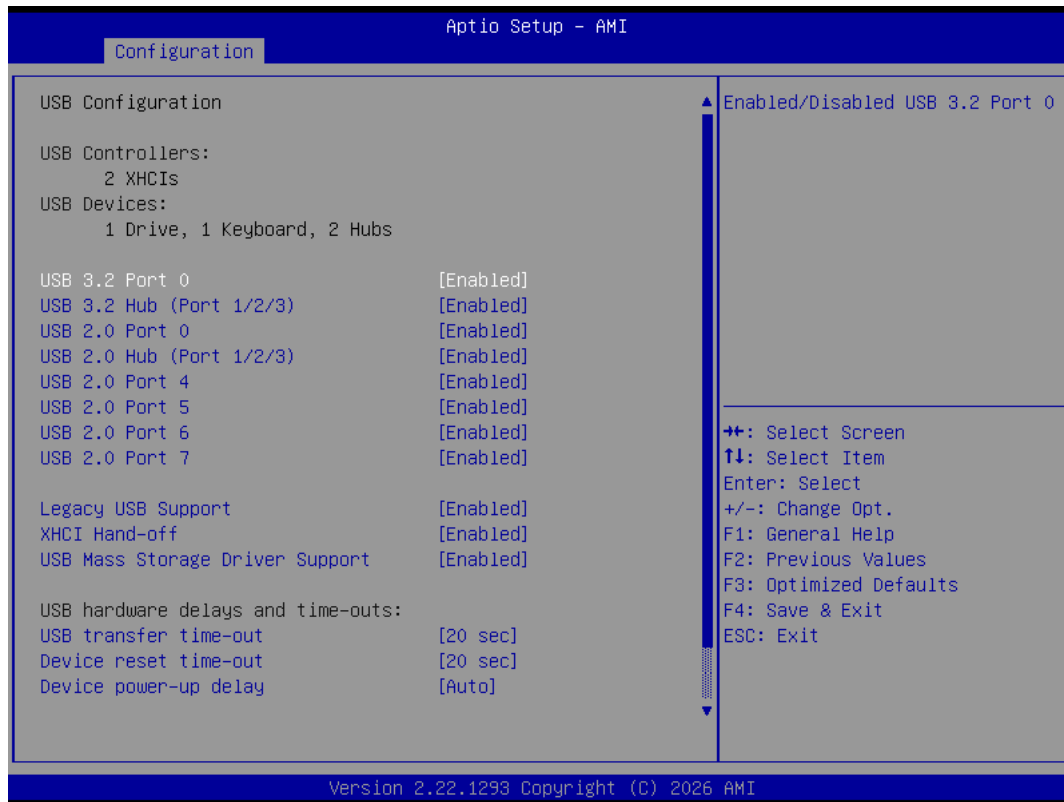
SATA Configuration



NVMe Configuration



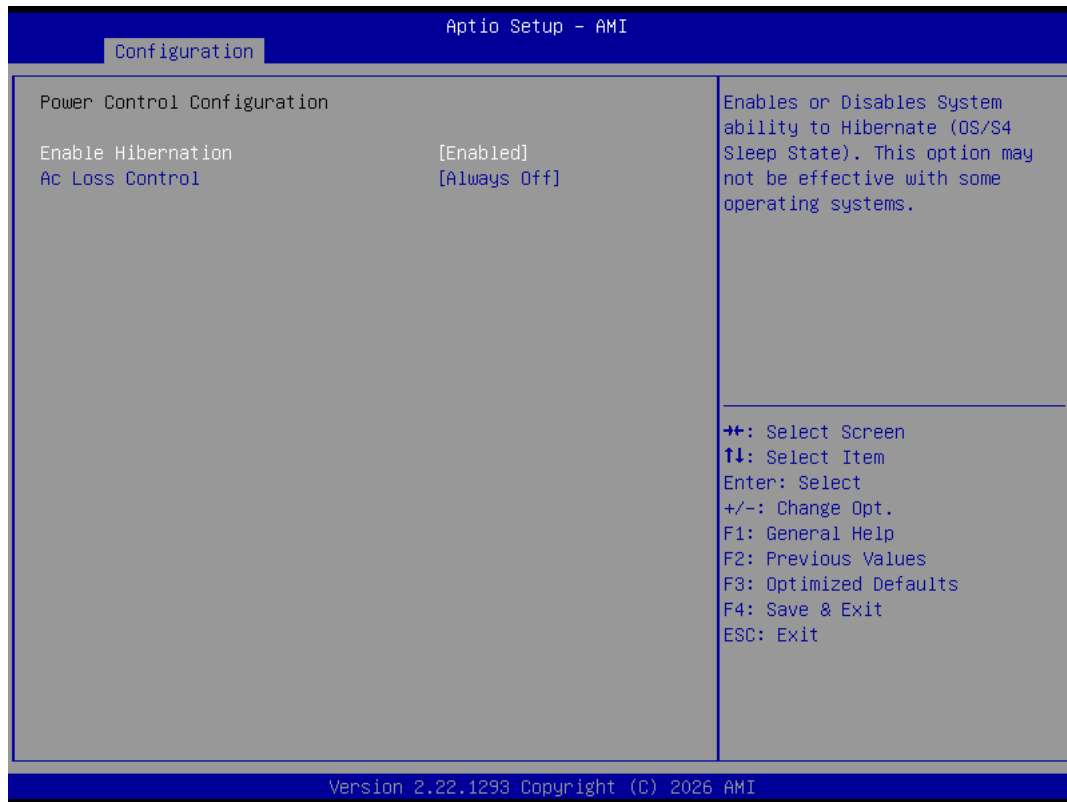
7.3.7 USB Configuration



Feature	Description	Options
USB 3.2 Port 0	Enabled/Disabled USB 3.2 Port 0	Disabled, ★Enabled
USB 3.2 Hub (Port	Enabled/Disabled USB 3.2 Hub	Disabled, ★Enabled
USB 2.0 Port 0	Enabled/Disabled USB 2.0 Port 0	Disabled, ★Enabled
USB 2.0 Hub (Port	Enabled/Disabled USB 2.0 Hub	Disabled, ★Enabled
USB 2.0 Port 4	Enabled/Disabled USB 2.0 Port 4	Disabled, ★Enabled
USB 2.0 Port 5	Enabled/Disabled USB 2.0 Port 5	Disabled, ★Enabled
USB 2.0 Port 6	Enabled/Disabled USB 2.0 Port 6	Disabled, ★Enabled
USB 2.0 Port 7	Enabled/Disabled USB 2.0 Port 7	Disabled, ★Enabled

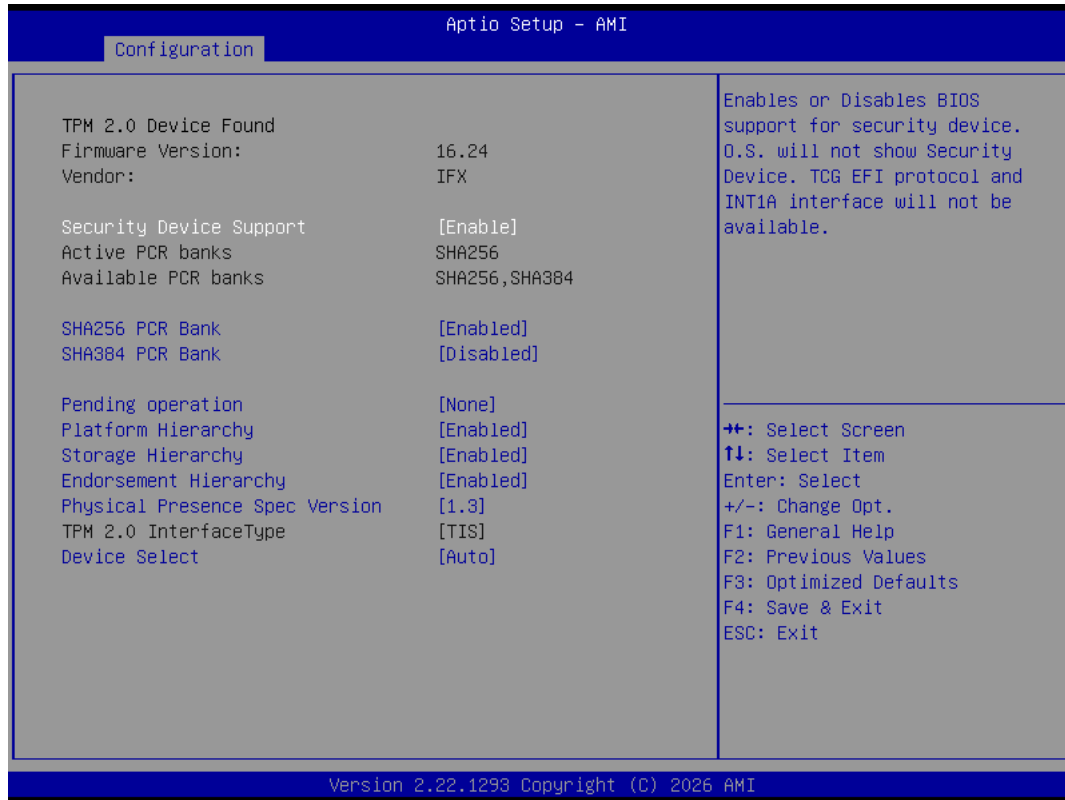
Feature	Description	Options
Legacy USB Support	Enables Legacy USB Support. Auto option disable legacy Support if no USB devices are connected. Disable option will keep USB device available only for EFI applications.	★Enabled, Disabled, Auto
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver	Disabled, ★Enabled
USB Mass Storage Driver Support	Enable/Disable USB Mass Storage Driver Support	Disabled, ★Enabled
USB transfer time-out	The time-out value for Control, Bulk, and Interrupt transfers.	1, 5, 10, ★20 sec
Device reset time-out	USB mass storage device Start Unit command time-out.	10, ★20, 30, 40 sec
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 100 ms, for a Hub port the delay is taken from	★AUTO, Manual

7.3.8 Power Control Configuration



Feature	Description	Options
Enable Hibernation	Enables or Disables System ability to Hibernates (OS/S4 Sleep State). This option may not be effective with some operating systems.	Disabled, ★Enabled
AC Loss Control	Select Ac Loss Control Method	★Always Off, Always On, Previous

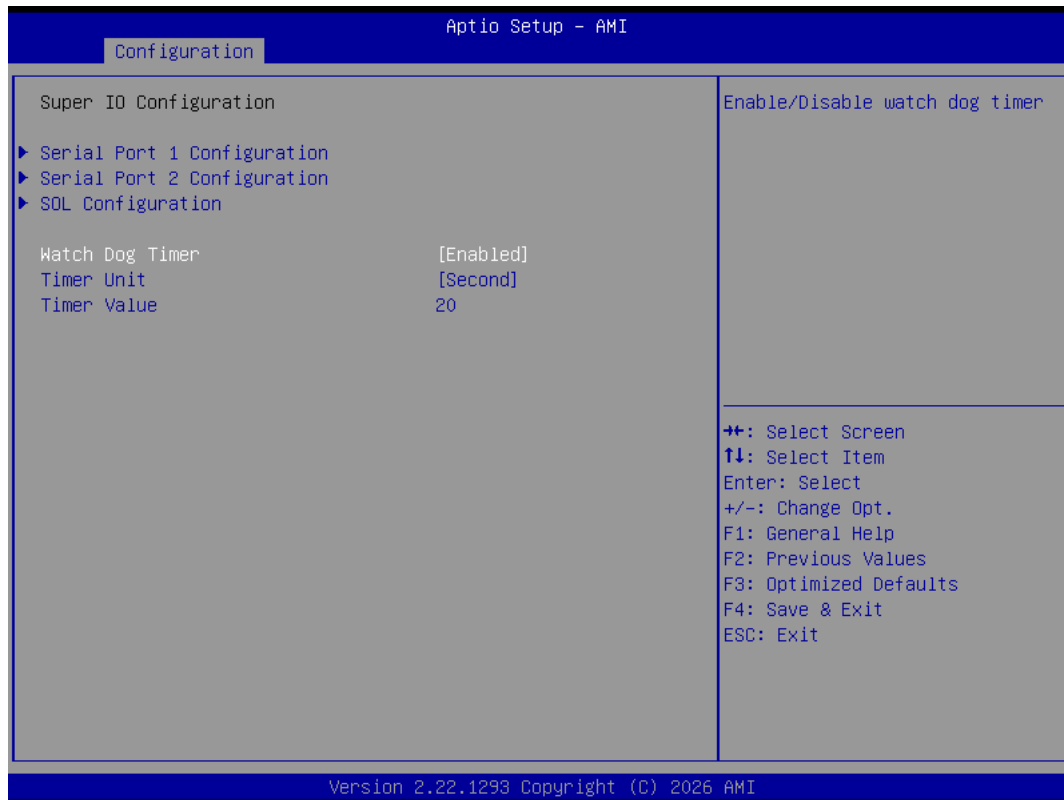
7.3.9 TPM Configuration



Feature	Description	Options
Security Device Support	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A Interface will not be available.	Disabled, ★Enabled
SHA256 PCR Bank	Enables or Disables SHA256 PCR Bank.	Disabled, ★Enabled
SHA384 PCR Bank	Enables or Disables SHA384 PCR Bank.	★Disabled, Enabled
Pending operation	Schedule an Operation for the Security Device. Note: Your Computer will reboot during restart in order to change State of	★None, TPM Clear
Platform Hierarchy	Enables or Disables Platform Hierarchy.	Disabled, ★Enabled
Storage Hierarchy	Enables or Disables Storage Hierarchy.	Disabled, ★Enabled
Endorsement Hierarchy	Enables or Disables Endorsement Hierarchy.	Disabled, ★Enabled

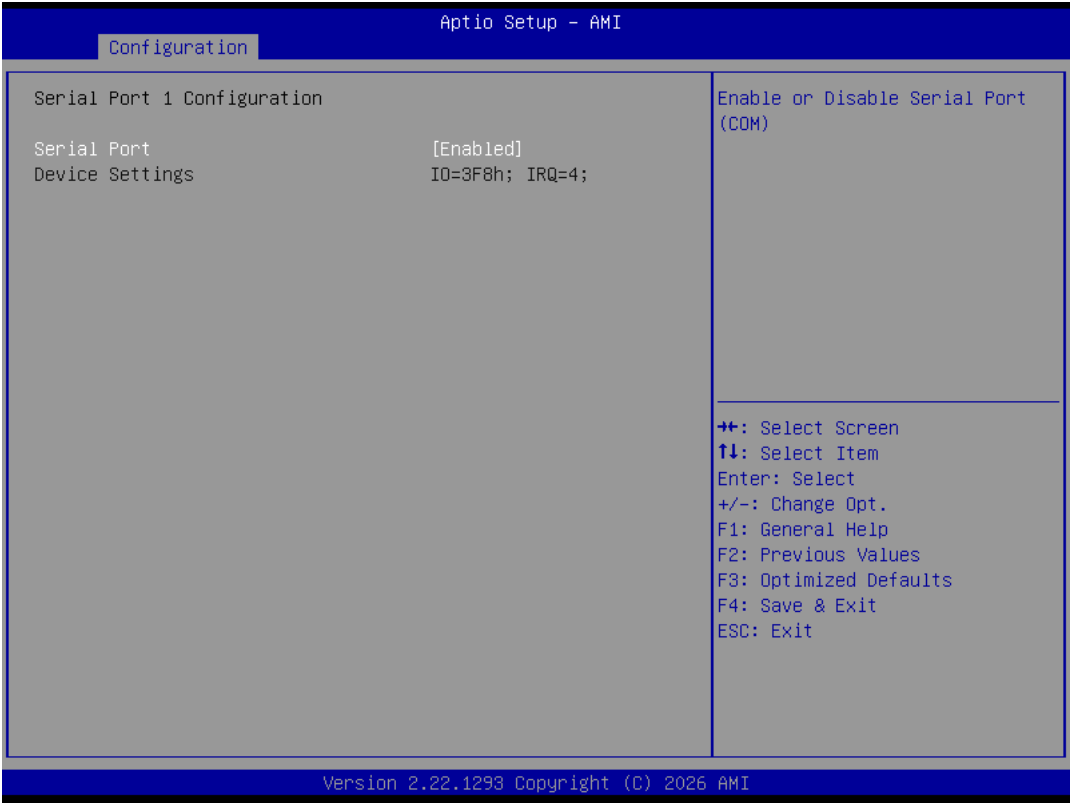
Feature	Description	Options
Physical Presence Spec Version	Select to Tell O.S. to Support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.	1.2, ★1.3
Device Select	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.	TPM 1.2, TPM 2.0 ★Auto,

7.3.10 Super IO Configuration



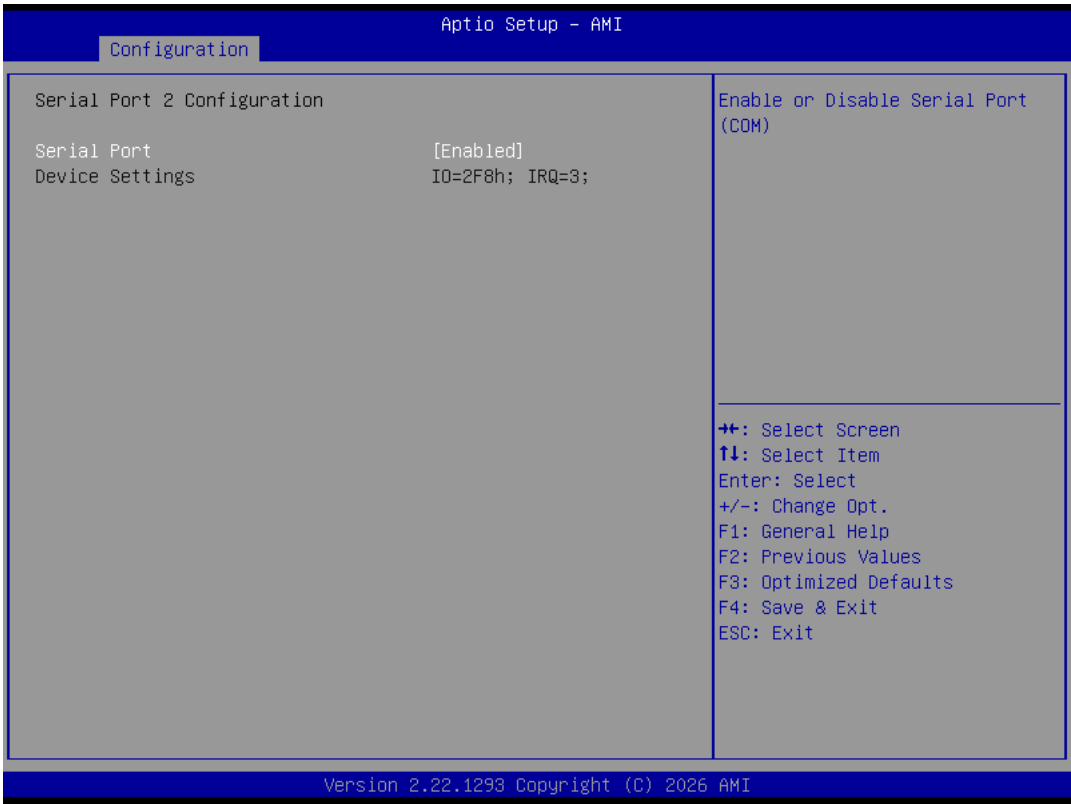
Feature	Description	Options
Serial Port 1 Configuration		
Serial Port 2 Configuration		
SOL Configuration		
Watch Dog Timer	Enable / Disable Watch Dog Timer	★Disabled, Enabled
Watch Dog Timer [Enabled]		
Timer Unit	Select Timer count unit of WDT	★Second, Minute
Timer Value	Set WDT Timer Value seconds / minutes	★20

Serial Port 1 Configuration



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	Disabled, ★Enabled

Serial Port 2 Configuration



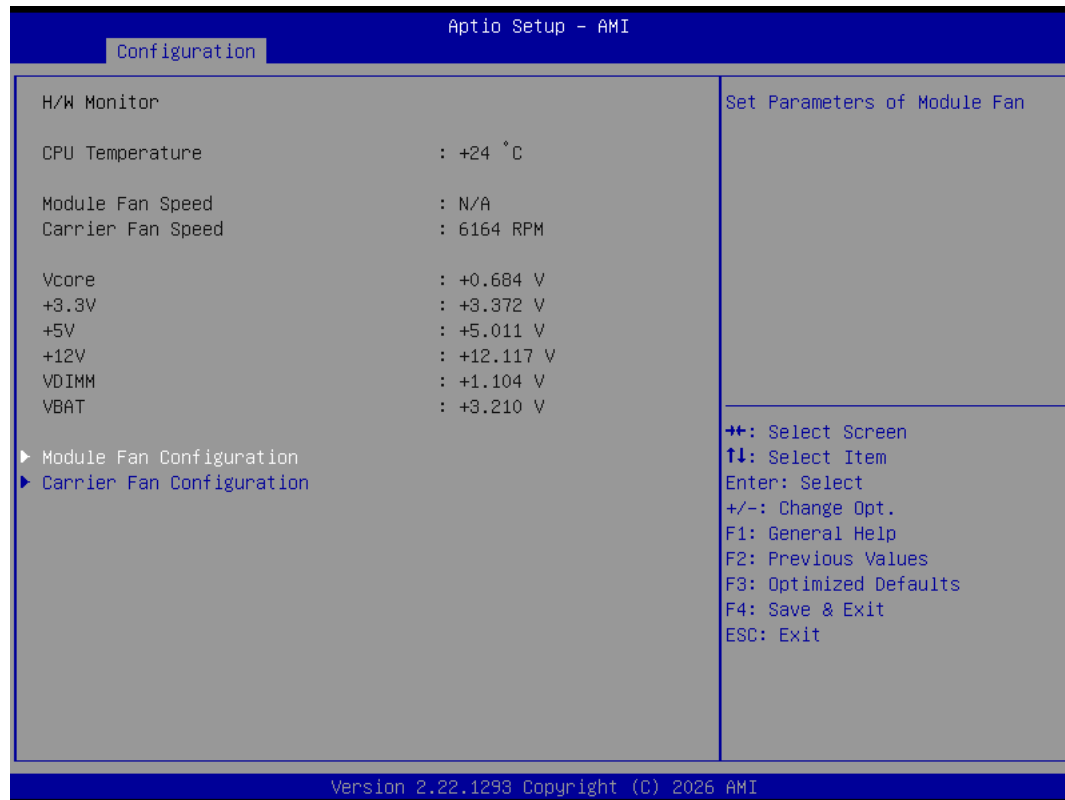
Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	Disabled, ★Enabled

SOL Configuration

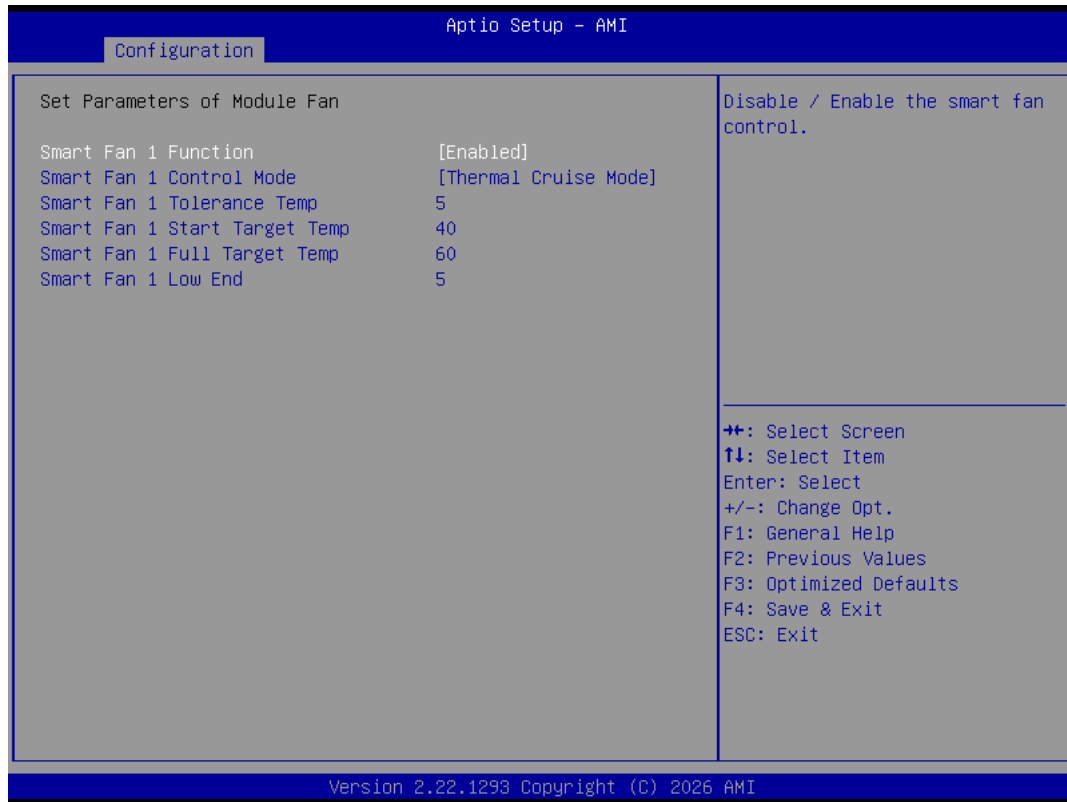


Feature	Description	Options
Change Settings	Select an optimal settings for Super IO Device	★Disabled, OOB SOL

7.3.11 H/W Monitor

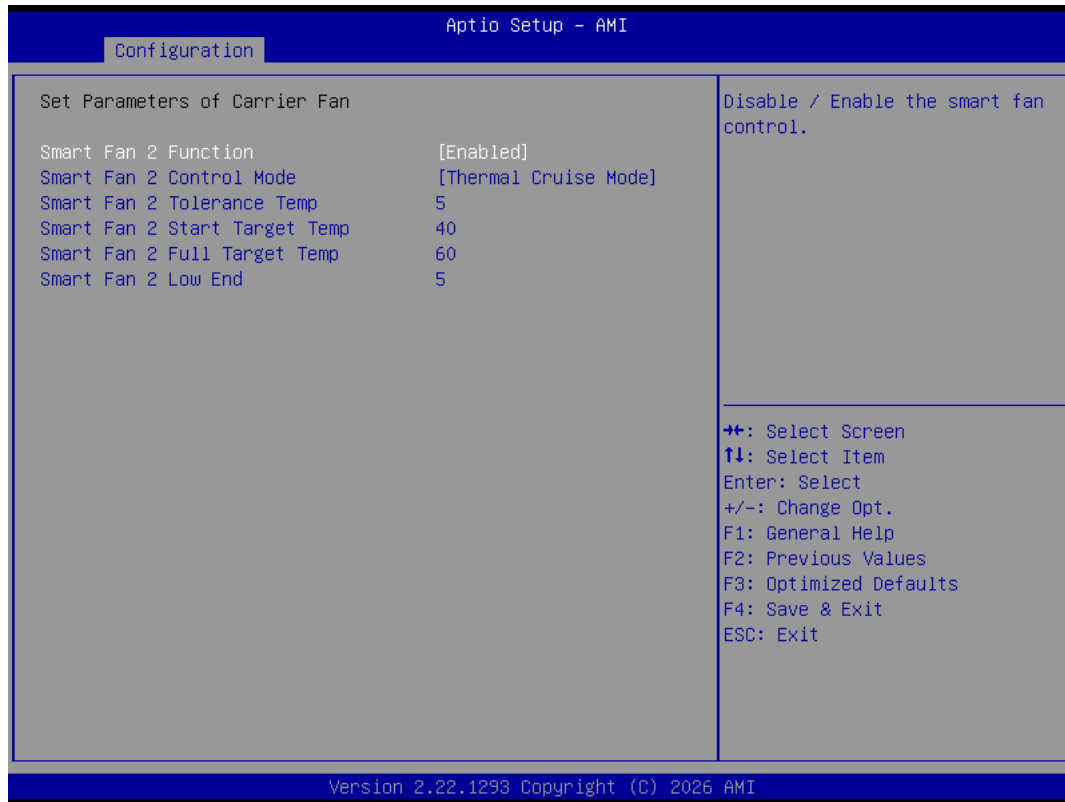


Module Fan Configuration



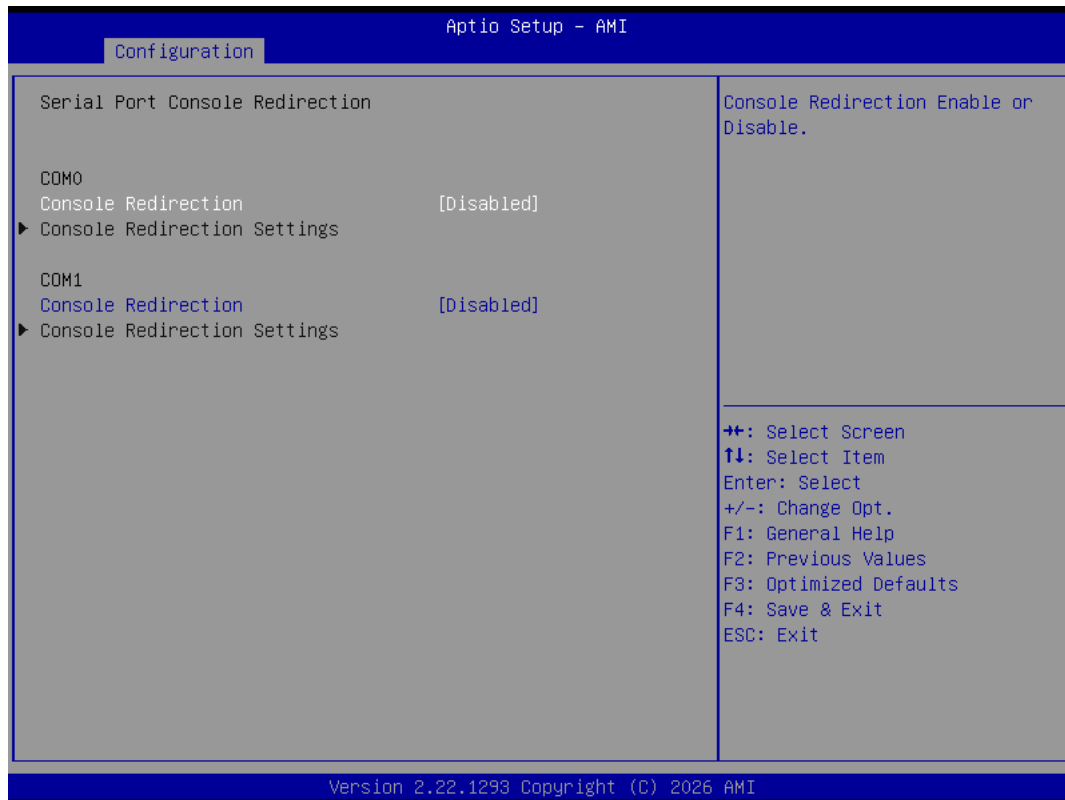
Feature	Description	Options
Smart Fan 1 Function	Disable / Enable the smart fan control.	★Disabled, Enabled
Smart Fan 1 Function [Enabled]		
Smart Fan 1 Control Mode	Select Smart Fan Control Mode.	★Thermal Cruise
Smart Fan 1 Control Mode [Thermal Cruise Mode]		
Smart Fan 1 Tolerance	In Thermal Cruise Mode: tolerance of target temperature.	★5
Smart Fan Start 1 Target	In Thermal Cruise Mode: Start temperature.	★40
Smart Fan Full 1 Target	In Thermal Cruise Mode: Full speed temperature.	★60
Smart Fan 1 Low End	In Thermal Cruise Mode: low end of fan speed (0-100%)	★5
Smart Fan 1 Control Mode [Fan Control Mode]		
Smart Fan 1 Speed (%)	Set Smart speed 0-100%.	★100

Carrier Fan Configuration



Feature	Description	Options
Smart Fan 2 Function	Disable / Enable the smart fan control.	★Disabled, Enabled
Smart Fan 2 Function [Enabled]		
Smart Fan 2 Control Mode	Select Smart Fan Control Mode.	★Thermal Cruise Mode
Smart Fan 2 Control Mode [Thermal Cruise Mode]		
Smart Fan 2 Tolerance	In Thermal Cruise Mode: tolerance of target temperature.	★5
Smart Fan Start 2 Target	In Thermal Cruise Mode: Start temperature.	★40
Smart Fan Full 2 Target	In Thermal Cruise Mode: Full speed temperature.	★60
Smart Fan 2 Low End	In Thermal Cruise Mode: low end of fan speed (0-100%)	★5
Smart Fan 2 Control Mode [Fan Control Mode]		
Smart Fan 2 Speed (%)	Set Smart speed 0-100%.	★100

7.3.12 Serial Port Console Redirection



Feature	Description	Options
Console Redirection	Console Redirection Enable or Disable	★Disabled, Enabled
Console Redirection Settings [Enabled]		
Console Redirection Settings	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or	

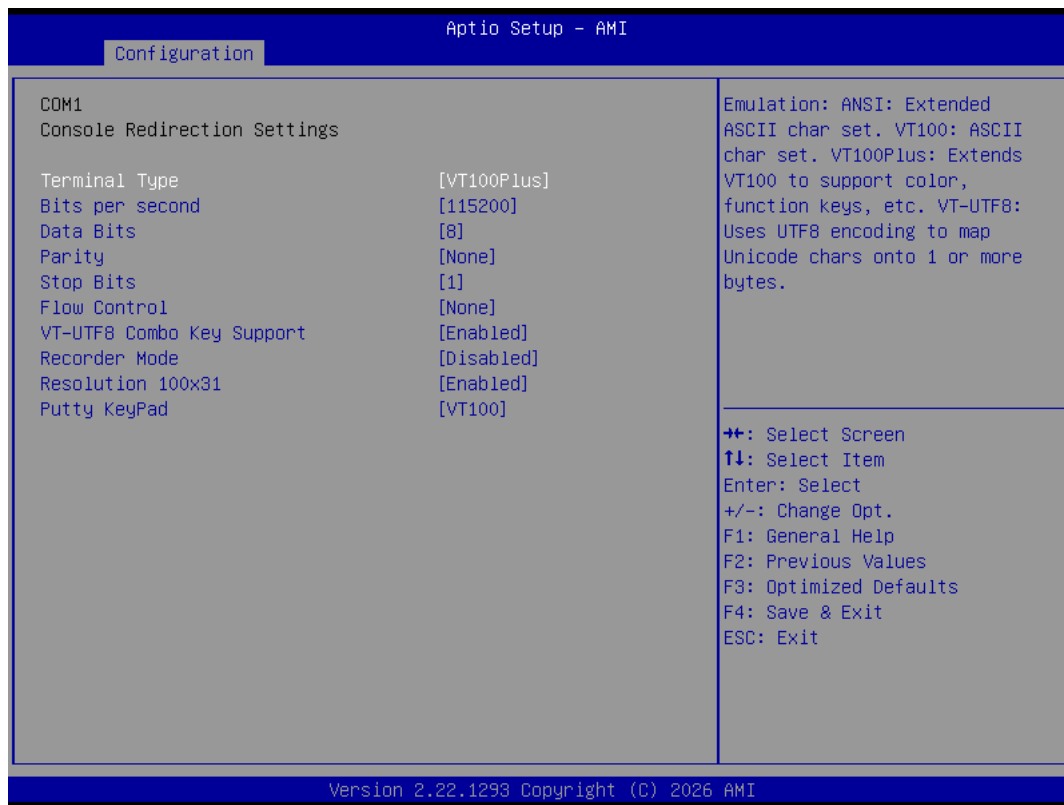
COM0 Console Redirection Settings



Feature	Description	Options
Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	★VT100Plus, VT100, VT-UTF8, , ANSI
Bits per second	Select Serial port transmission speed. The speed must be matched on other side. Long or noisy lines may require lower speeds.	★115200, 9600, 19200, 38400, 57600
Data bits	Data bits	★8, 7
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.	★None, Even, Odd, Mark, Space

Feature	Description	Options
Stop Bits	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	★1,2
Flow Control	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	★None, Hardware RTS/CTS
VT-UTF8 Combo Key Support	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals	Disabled, ★Enabled
Recorder Mode	With this mode enabled only text will be sent. This is to capture Terminal data.	★Disabled, Enabled
Resolution 100x31	Enables or disables extended terminal resolution	★Disabled, Enabled
Putty KeyPad	Select FunctionKey and KeyPad on Putty	★VT100, LINUX, XTERMR6, SCO, ESCN, VT400

COM1 Console Redirection Settings



Feature	Description	Options
Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	★VT100Plus, VT100, VT-UTF8, , ANSI
Bits per second	Select Serial port transmission speed. The speed must be matched on other side. Long or noisy lines may require lower speeds.	★115200, 9600, 19200, 38400, 57600
Data bits	Data bits	★8, 7
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.	★None, Even, Odd, Mark, Space

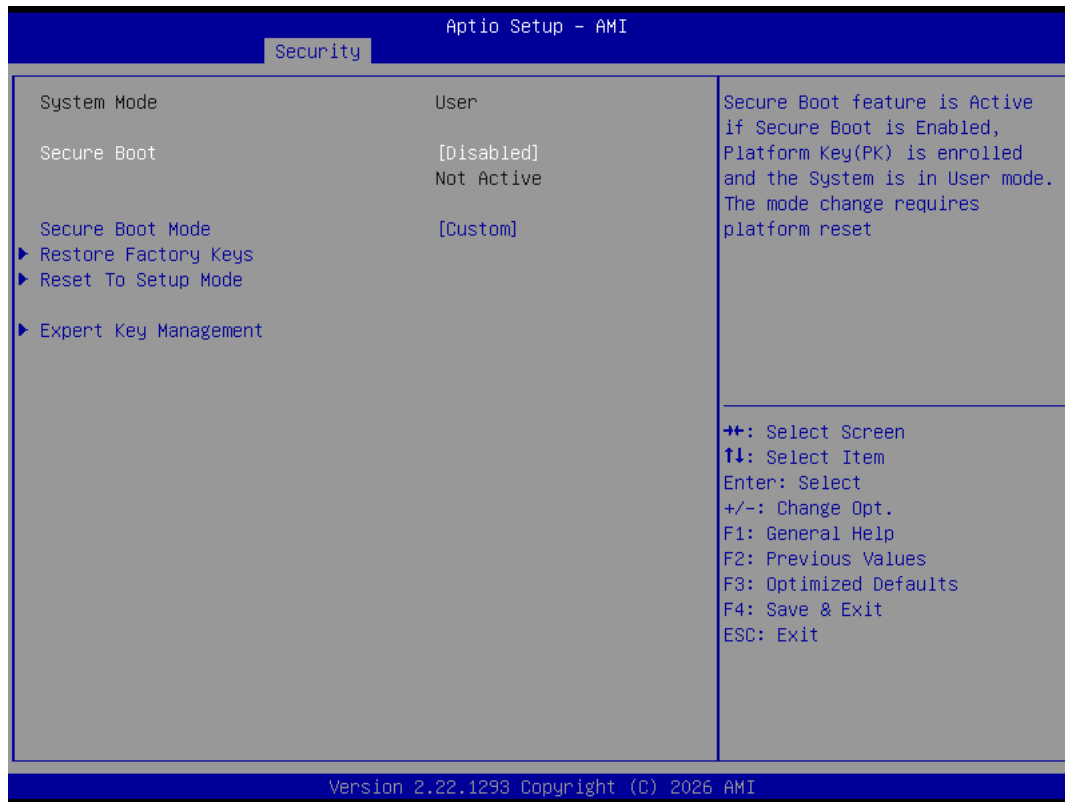
Feature	Description	Options
Stop Bits	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	★1,2
Flow Control	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	★None, Hardware RTS/CTS
VT-UTF8 Combo Key Support	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals	Disabled, ★Enabled
Recorder Mode	With this mode enabled only text will be sent. This is to capture Terminal data.	★Disabled, Enabled
Resolution 100x31	Enables or disables extended terminal resolution	★Disabled, Enabled
Putty KeyPad	Select FunctionKey and KeyPad on Putty	★VT100, LINUX, XTERMR6, SCO, ESCN, VT400

7.4 Security



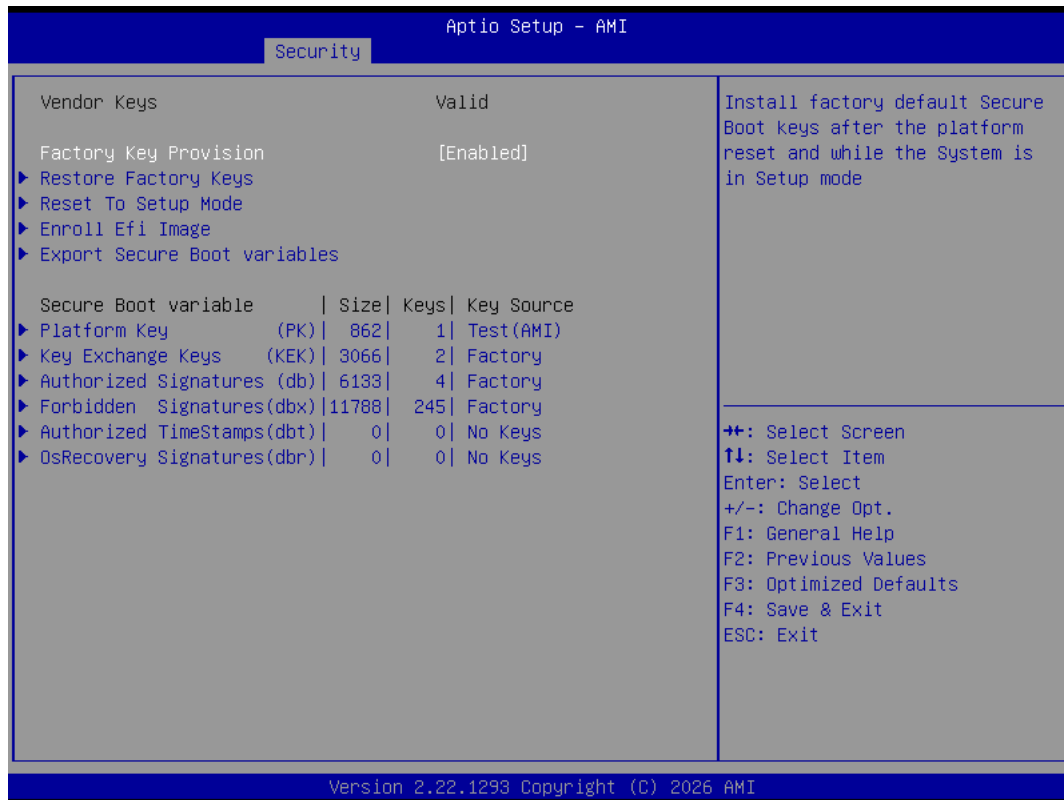
Feature	Description	Options
Password Check Mode	[Setup] check password when enter setup screen. [Power on] check password on every time system power on.	★Setup, Power On
Administrator Password	Set Administrator Password	
User Password	Set User Password	
Secure Boot	Secure Boot configuration	

7.4.1 Secure Boot



Feature	Description	Options
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.	★Disabled, Enabled
Secure Boot Mode	Secure Boot Mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication	★Custom, Standard
Restore Factory keys	Force System to User Mode. Install factory default Secure Boot key databases	Yes, No
Restore To Setup Mode	Delete all Secure Boot key databases from NVRAM	Yes, No
Expert Key Management	Enables expert users to modify Secure Boot Policy variables without variable authentication	

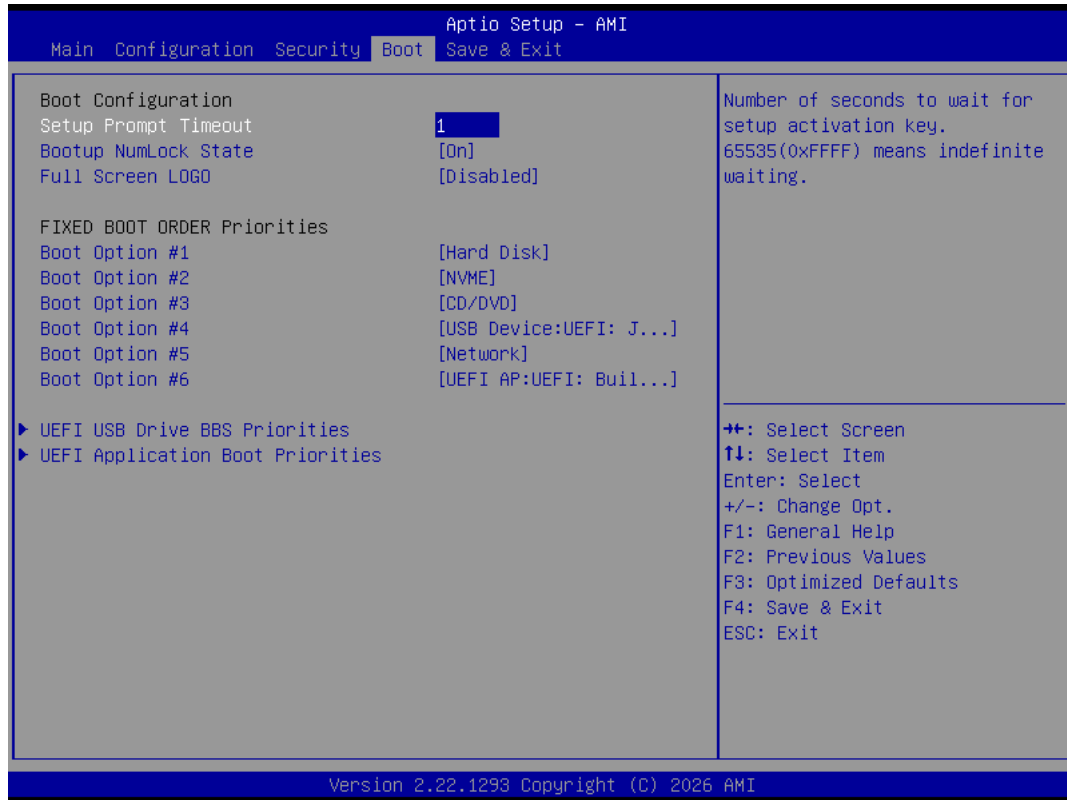
7.4.2 Key Management



Feature	Description	Options
Factory keys Provision	Install factory default Secure Boot key after the platform reset and while the System is in Setup mode.	Disabled, ★Enabled
Restore Factory keys	Force System to User Mode. Install factory default Secure Boot key databases	Yes, No
Reset To Setup Mode	Delete all Secure Boot key databases from NVRAM	Yes, No
Enroll Efi Image	Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)	
Export Secure Boot variables	Save NVRAM content of Secure Boot variable to a file	

Secure Boot variables	Description	Key source
Platform Key(PK)	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER) c) EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory, Modified, Mixed	Details, Export, Update, Delete
Key Exchange Keys(KEK)		Details, Export, Update, Delete Append
Authorized Signatures (db)		Details, Export, Update, Delete Append
Forbidden Signatures (dbx)		Details, Export, Update, Delete Append
Authorized TimeStamps (dbt)		Update, Append
OsRecovery Signatures (dbr)		Update, Append

7.5 Boot



Feature	Description	Options
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	★1
Bootup NumLock State	Select the keyboard NumLock state.	★On, Off
Full Screen LOGO	Enables or disables Quiet Boot option and Full screen Logo.	★Disabled, Enabled
Boot Option #1 ~ #6	Sets the system boot order	Hard Disk, NVME, CD/DVD USB Device: ; Network, UEFI AP: UEFI: Built-in EFI Shell, Disabled
UEFI USB Drive BBS Priorities	Specifies the Boot Device Priority sequence from available UEFI USB Drive	
UEFI Application Boot Priorities	Specifies the Boot Device Priority sequence from available UEFI Application	

UEFI USB Drive BBS Priorities:



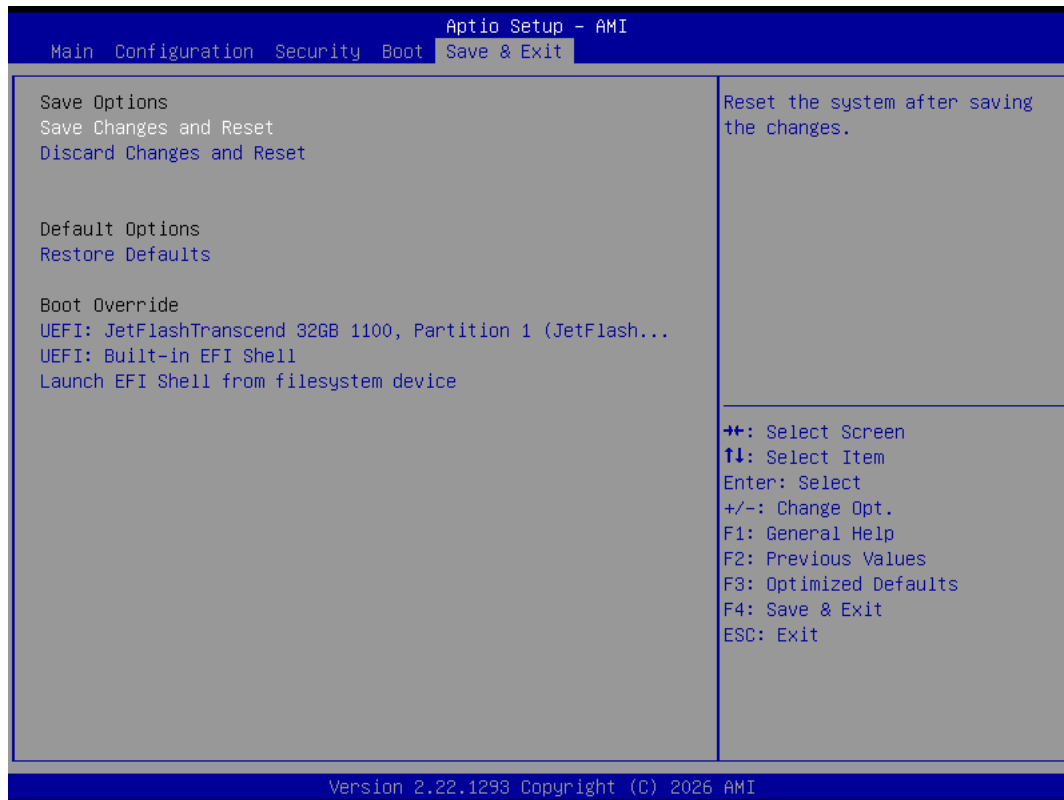
Feature	Description	Options
Boot Option #1	Sets the system boot order.	

UEFI Application Boot Priorities:



Feature	Description	Options
Boot Option #1	Sets the system boot order.	

7.6 Save & Exit



Feature	Description	Options
Save Changes and Exit	Reset the system after saving the changes.	
Discard Changes and Exit	Reset system setup without saving any changes.	
Restore Defaults	Restore/Load Default values for all the setup options.	
UEFI: Built-in EFI Shell		
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.	

Chapter 8

Overview

- 8 BIOS / EC Update
- 8.1 BIOS Update
- 8.2 EC Update

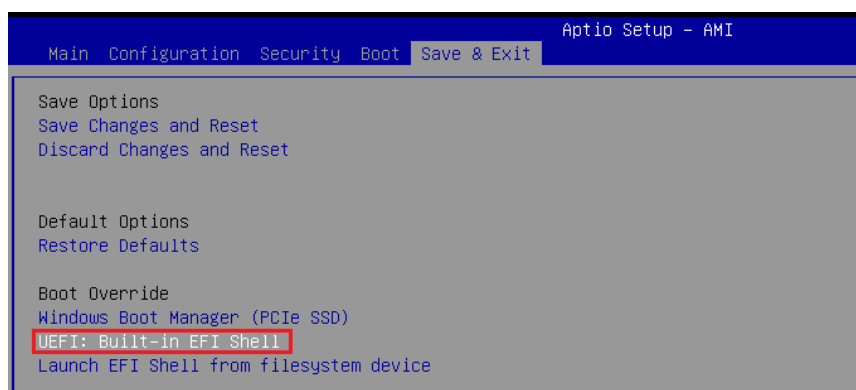
8. BIOS / EC Update

8.1 BIOS Update

Step 1. Unzip update file to the USB DOK (USB DOK must be FAT or FAT32 format)

Step 2. Plug the USB DOK on the target system and select "Built-in EFI Shell" in the BIOS "Save&Exit" page

Step 3. Shown as below picture



Step 3. Under the UEFI shell, change prompt to your USB DOK, the below example is "fs0: "

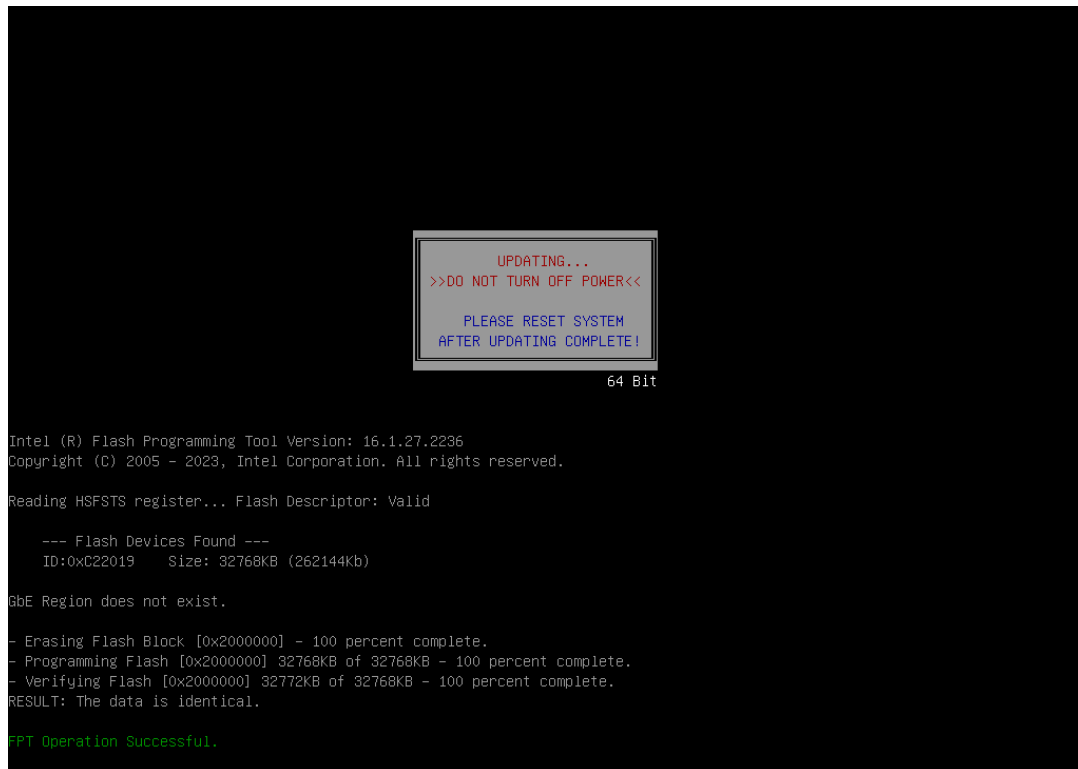
Step 4. Then change the folder with updated file and use command: "update " and press enter

```
EFI Shell version 2.80 [5.26]
Current running mode 1.1.2
Device mapping table
fs0      :Removable HardDisk - Alias hd14n0b blk0
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0xD,0x0)/HD(1,MBR,0xD4F264B2,0x3F,0x3A1FFC1)
blk0     :Removable HardDisk - Alias hd14n0b fs0
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0xD,0x0)/HD(1,MBR,0xD4F264B2,0x3F,0x3A1FFC1)
blk1     :Removable BlockDevice - Alias (null)
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0x6,0x0)/USB(0x0,0x0)
blk2     :Removable BlockDevice - Alias (null)
          :PciRoot(0x0)/Pci(0x14,0x0)/USB(0xD,0x0)

Press ESC in 4 seconds to skip startup.nsh, any other key to continue.
Shell> fs0:

fs0:\> update.efi_
```

Step 5. The updating process will start and show the updating progress



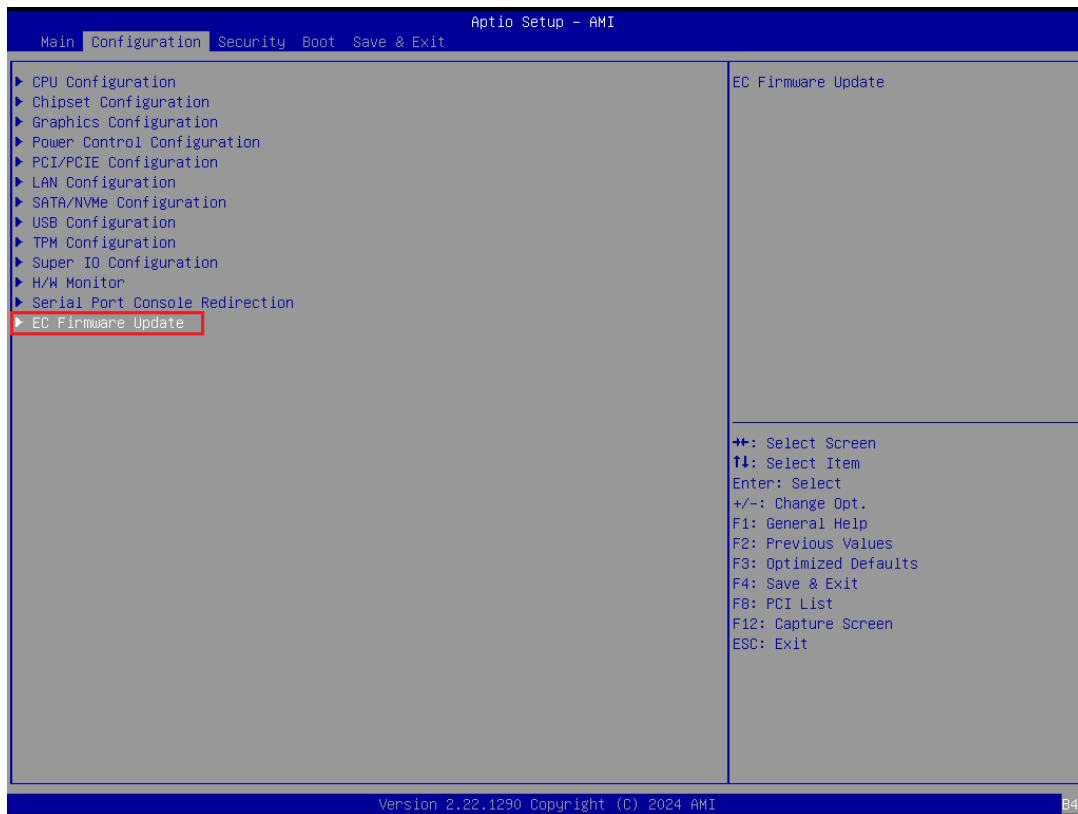
(BIOS updating finished)

Step 6. Please power off and restart the system once updating finished

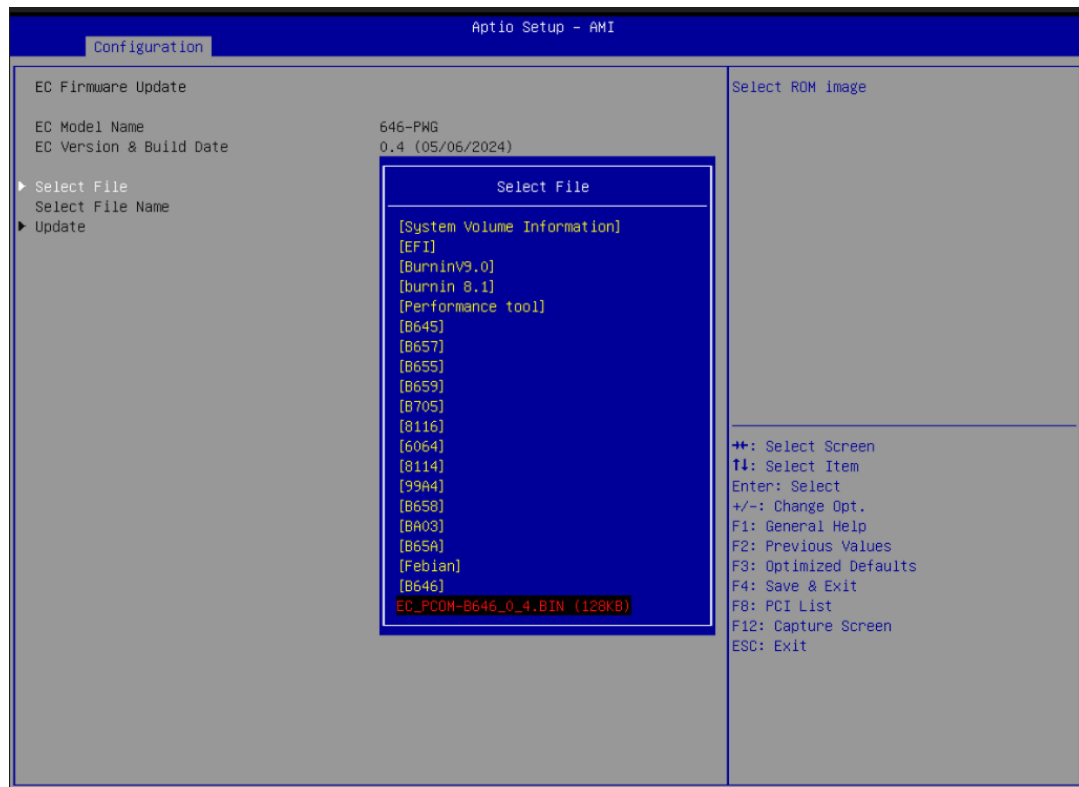
8.2 EC Update

Step 1. Unzip EC binary file to the USB DOK (USB DOK must be FAT or FAT32 format)

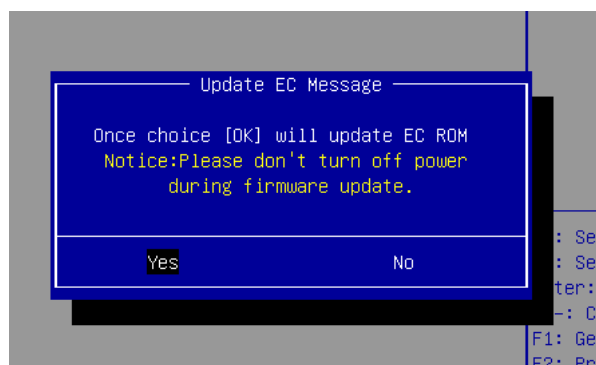
Step 2. Select “EC Firmware Update” item in BIOS setup menu



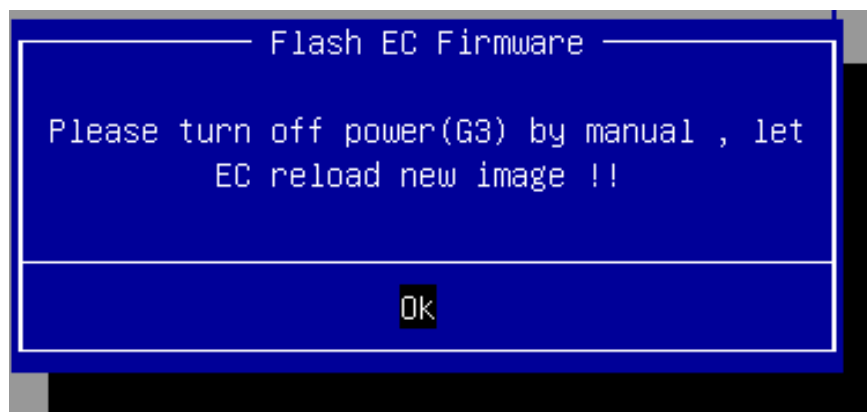
Step 3. Select EC binary file by option item shown as below



Step 4. Select “Yes” to start EC update (Please don’t turn off power during firmware update)



Step 5. Turn off power to make system into G3 status once updating finished, then power on the system



Chapter 9

Overview

9 Portwell Software Tool

9. Portwell Software Tool

PORTWELL Download Center

<https://www.portwell.com.tw/support-center/download-center/>

PORTWELL Evaluation Tool (PET)

The PORTWELL Evaluation Tool (PET) is an API which PORTWELL's customers can access the GPIO, I2C, SMBus, etc under Windows and Linux OS. For further information please contact PORTWELL.

Chapter 10

Overview

10 Packaging Information

10. Packaging Information

PCOM-B646 packaging specification will follow the Portwell standard style.

Package	Appearance	Dimension
Anti-Static Bubble Bag		180x130mm
White Paper Box		210x150x40mm
Shipping Box (10 in 1)		595x300x185mm

Table 14 Packaging Information

Chapter 11

Overview

11 Industrial Specification

11. Industrial Specification

The list below provides links to industry specifications that apply to PORTWELL modules.

Low Pin Count Interface Specification, Revision 1.0 (LPC)

<http://www.intel.com/design/chipsets/industry/lpc.htm>

Universal Serial Bus (USB) Specification, Revision 2.0

<http://www.usb.org/home>

PCI Specification, Revision 2.3

<https://www.pcisig.com/specifications>

Serial ATA Specification, Revision 3.0

<http://www.serialata.org/>

PICMG® COM Express Module™ Base Specification

<http://www.picmg.org/>

PCI Express Base Specification, Revision 2.0

<https://www.pcisig.com/specifications>



Please verify specifications before quoting. This guide is intended for reference purposes only. All product specifications are subject to change without notice. No part of this publication may be reproduced in any form or by any means, such as electronically, by photocopying, recording, or otherwise, without prior written permission from the publisher. All brand and product names are trademarks or registered trademarks of their respective companies.



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