USER MANUAL

BE-U236

3.5" Intel® 12th Gen. Core®
I7 / i5 / 83 / Celeron® SoC SBC

BE-U236 M1

BE-U236

3.5" Intel® 12th Gen. Core® i7 / i5 / i3 / Celeron® SoC SBC

DISCLAIMER
This user's manual is meant to assist users in installing and setting up the board. The information contained in this document is subject to change without any notice.

CE NOTICE
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

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

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

	**CAUTION:** Danger of explosion may occur when the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
	**CAUTION:** Always touch the board components by the edges. Never touch components such as a processor by its pins. Take special cares while you are holding electronic circuit boards by the edges only. Do not touch BE-U236 components.

	**WARNING:** Some internal parts of BE-U236 may have high electrical voltage. We strongly recommend that only qualified engineers are allowed to service and disassemble the board. If any damages should occur on BE-U236 and are caused by unauthorized servicing, it will not be covered by the product warranty.

Contents

1 Introduction 1-1

1.1 About This Manual 1-2

2 Getting Started 2-1

2.1 Package List 2-2

2.2 BE-U236 Specifications 2-3

2.3 Safety Precautions 2-5

3 Hardware Configuration 3-1

3.1 JUMPER & CONNECTOR QUICK REFERENCE TABLE 3-2

3.2 COMPONENT LOCATIONS 3-4

3.2.1 BE-U236 Top View 3-4

3.2.2 BE-U236 Jumper Setting 3-5

3.2.3 BE-U236 Bottom View 3-6

3.2.4 BE-U236 I/O View 3-7

3.3 HOW TO SET JUMPERS 3-8

3.4 SETTING CONNECTORS AND JUMPERS 3-10

3.4.1 LAN PORT (LAN1, LAN2) 3-10

3.4.2 DISPLAYPORT and HDMI PORT (DP_HDMI1) 3-11

3.4.3 DUAL USB 3.2 PORT (USB1) 3-13

3.4.4 DUAL USB 3.2 PORT (USB2) 3-14

3.4.5 DUAL USB 2.0 PORT (USB3) 3-15

3.4.6 COM & DIO CONNECTOR (JCOM1) 3-16

3.4.7 Front Panel Connector (JFP1) 3-17

3.4.8 DC-IN Connector (PWR1) 3-18

3.4.9 M.2 E-Key 2230 Slot (M2_E1) 3-19

3.4.10 M.2 2280 PCI Express Slot (M2_PCIE1) (M-Key) 3-21
3.4.11 M.2 B-KEY 3042 Slot (M2_B1) 3-23
3.4.12 BATTERY WAFER (JBAT1) 3-25
3.4.13 INTERNAL USB 2.0 WAFER (JUSB1) 3-26
3.4.14 MICRO SIM CARD CONNECTOR (JSIM1) 3-27
3.4.15 B2B CONNECTOR (J2) 3-28
3.4.16 SATA 3.0 & SATA Power Connectors (SATA1, JSATA_PWR1) 3-29
3.4.17 LVDS / eDP Connector (CN1) 3-30
3.4.18 INVERTER WAFER (JINV1) 3-31
3.4.19 HD AUDIO PIN HEADER (AUDIO1) 3-32
3.4.20 SYSTEM FAN CONNECTOR (SYS_FAN1) 3-32
3.4.21 POWER BUTTON (JBUTTON1) 3-33
3.4.22 BUZZER WAFER (JBZ1) 3-33
3.4.23 PWM Brightness Control Selection (JP2) (Function 1) 3-34
3.4.24 USB Power Selection (JP2) (Function 2) 3-34
3.4.25 SPI OVERRIDE PROTECTION SELECTION (JP3) 3-35
3.4.26 INVERTER LED POWER SELECTION (JP4) 3-36
3.4.27 LVDS POWER SELECTION (JP5) 3-36
3.4.28 I2C WAFER (JI2C1) 3-37
3.4.29 M.2 E-KEY WLAN LED WAFER (LED_WLAN1) 3-37
3.4.30 CLEAR CMOS DATA SELECTION (JP1) 3-38

4 Software Utilities 4-1

4.1 Introduction 4-2
4.2 Installing Intel® Chipset Software Installation Utility 4-3
4.3 Installing Graphics Driver Utility 4-4
4.4 Installing Sound Driver Utility 4-5

4.5 Intel® Management Engine Components Driver Installer Installation 4-6

4.6 Installing LAN Driver Utility 4-7

4.7 Installing Intel® Human Interface Devices Driver Utility 4-8

4.8 Installing Intel® Serial I/O Driver Utility 4-9

5 BIOS SETUP 5-1

5.1 Introduction 5-2

5.2 Accessing Setup Utility 5-3

5.3 Main 5-6

5.4 Advanced 5-8

5.4.1 Advanced – Connectivity Configuration 5-9

5.4.2 Advanced – CPU Configuration 5-11

Advanced – CPU Configuration – Efficient-core Information 5-12

Advanced – CPU Configuration – Performance-core Information 5-13

5.4.3 Advanced – PCH-FW Configuration 5-14

Advanced – PCH-FW Configuration – PTT Configuration 5-15

5.4.4 Advanced – Trusted Computing 5-16

5.4.5 Advanced – ACPI Settings 5-17

5.4.6 Advanced – F81967 Super IO Configuration 5-18

F81967 Super IO Configuration – Serial Port 1 Configuration 5-19

F81967 Super IO Configuration – Serial Port 2 Configuration 5-20

5.4.7 Advanced – Hardware Monitor 5-21

Smart Fan Mode Configuration 5-22

5.4.8 Advanced – F81967 Watchdog 5-23

5.4.9 Advanced – S5 RTC Wake Settings 5-24

5.4.10 Advanced – USB Configuration 5-27

5.4.11 Advanced – Network Stack Configuration 5-28
5.4.12 Advanced – NVMe Configuration 5-30

5.5 Chipset 5-31
5.5.1 Chipset – System Agent (SA) Configuration 5-32
System Agent (SA) Configuration – Memory Configuration 5-33
System Agent (SA) Configuration – VMD setup menu 5-34
System Agent (SA) Configuration – Display setup menu 5-35
5.5.2 Chipset – PCH IO Configuratioin 5-36
PCH-IO Configuration – SATA Configuration 5-37

5.6 Security 5-38

5.7 Boot 5-40

5.8 Save & Exit 5-41

Appendix A Technical Summary A-1

BE-U236 Block Diagram A-2
Interrupt Map A-3
I/O MAP A-14
Memory Map A-16
Configuring WatchDog Timer A-18
Flash BIOS Update A-20

Appendix B Mating Connectors B-1

Mating Connectors B-2

Revision History

The revision history of BE-U236 User Manual is described below:

Version No.	Revision History	Date
M1	Initial Release	2023/03/30

1 Introduction

This chapter provides the introduction for BE-U236 board as well as the framework of the user manual.

The following topic is included:

- About This Manual

1.1 About This Manual

Thank you for purchasing our BE-U236 system. BE-U236 provides faster processing speed, greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the whole system. It contains 5 chapters and 2 appendixes. Users can configure the system according to their own needs. This user manual is intended for service personnel with strong hardware background. It is not intended for general users.

The following section outlines the structure of this user manual.

Chapter 1 Introduction
This chapter provides the introduction for BE-U236 board as well as the framework of the user manual.

Chapter 2 Getting Started
This chapter describes the package contents and outlines BE-U236 specifications. Read the safety reminders carefully on how to take care of your system properly.

Chapter 3 Hardware Configuration
This chapter outlines the locations of the motherboard components and their respective functions. You will learn how to set the jumpers and configure the system to meet your own needs.

Chapter 4 Software Utilities
This chapter contains helpful information for proper installations of the Intel® Chipset Software Installation Utility, Graphics Driver Utility, Sound Driver Utility, Intel® Management Engine Components Driver Installer, Intel® LAN Driver Utility, Intel® Human Interface Devices Driver Utility and Intel® Serial I/O Driver Utility.

Chapter 5 BIOS Setup
This chapter indicates you how to change the BIOS configurations.

Appendix A Technical Summary
This appendix provides the information about the allocation maps for BE-U236 block diagram, system resources, Watchdog Timer Configuration and Flash BIOS Update.

Appendix B Mating Connectors
This appendix provides the list table of Mating Connectors.

2 Getting Started

This chapter provides the information for BE-U236 board. It describes the package contents and outlines the BE-U236 specifications.

The following topics are included:

- Package List
- BE-U236 Specification
- Safety Precautions

Experienced users can go to Chapter 3 Hardware Configuration on page 3-1 for a quick start.

2.1 Package List

If you discover any of the items listed below are damaged or lost, please contact your local distributor immediately.

Item	Q'ty
BE-U236	1
Quick Reference Guide	1
Manual / Driver DVD	1
Jumper (2.0 mm)	6
Fillister Head Screw for M.2	2
HEX CU BOSS for M.2	2
SATA & SATA Power Cable (L=150 mm)	1

2.2 BE-U236 Specifications

System	
CPU Support	➢ Intel® Core™ i7-1265UE, 2P8E, 96EU ➢ Intel® Core™ i5-1245UE, 2P8E, 80EU ➢ Intel® Core™ i3-1215UE, 2P6E, 64EU ➢ Intel® Celeron® 7305E, 1P4E, 48EU
Chipset	➢ Intel® SoC
Memory Support	➢ 1 x SO-DIMM socket, supporting DDR5 up to 32GB (non-ECC)
BIOS	➢ AMI UEFI BIOS
API/SW/FW	➢ Hardware Monitor API/utility, Watchdog API/utility, selectable timer: 1~255 seconds
Power Supply	➢ DC In 12V~24V
Power Consumption	➢ TBD
Dimensions	➢ 145 x 102 mm (5.71" x 4.02")
Certifications	➢ FCC / CE
O.S. Support	➢ Windows IoT Enterprise 2021 LTSC ➢ Windows 11 IoT Enterprise (GAC) ➢ Ubuntu 22.04 LTS (Kernel 5.15)
I/O Ports	
SATA Interface	➢ 1 x SATA III port (6.0Gb/s)
Serial Ports	➢ 2 ports (wafer) ➢ COM1: RS-232/422/485 ➢ COM2: RS-232/422/485 ➢ All selectable under BIOS, default RS-232
LAN	➢ Dual LAN ➢ LAN 1: Intel® I225 supports 2.5GbE LAN ➢ LAN 2: Intel® I225 supports 2.5GbE LAN
Audio	➢ Line-out / Mic-In (pin header)
Digital I/O	➢ 4 in / 4 out (pin header)
USB	8 ports: ➢ 2 x USB 2.0 (internal wafer) ➢ 4 x USB 3.2 Gen 2x1 (rear I/O) ➢ 2 x USB 2.0 (rear I/O)

Expansion Bus	➢ 1 x M.2 E-Key 2230 (PCIe x1, USB2.0) ➢ 1 x M.2 B-Key 3042 LTE/ 5G (PCIe x1, USB2.0) w/ SIM signal ➢ 1 x M.2 M-Key 2280 (PCIe Gen4 x4 NVMe)
Graphics	
HDMI	➢ 1 x HDMI, resolution up to 4096 x 2160 @60Hz
DisplayPort	➢ 1 x DP, up to 4096 x 2304 @60Hz
LVDS	➢ 1 x LVDS/eDP, resolution up to 1920 x 1200
Environment	
Operating Temp.	➢ 0°C ~ 60°C (32°F ~ 140°F) with standard Heatsink ➢ -20°C~75°C (-4°F~167°F): with qualified thermal solution, T.B.D
Storage Temp.	➢ -40°C ~ 85°C (-40°F ~ 185°F)
Humidity	➢ Operation & Storage humidity: 20%~95%

2.3 Safety Precautions

Follow the instructions below to avoid your system from damages:

1. Keep your system away from static electricity on all occasions.
2. Prevent electric shock. Don't touch any components of this board when it is powered on. Always disconnect power when the system is not in use.
3. Disconnect power source 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.

3 Hardware Configuration

This chapter contains helpful information about the jumper & connector settings, and component locations.

The following sections are included:

- Jumper & Connector Quick Reference Table
- Component Locations
- Configuration and Jumper Settings
- Connector Pin Assignments

3.1 JUMPER & CONNECTOR QUICK REFERENCE TABLE

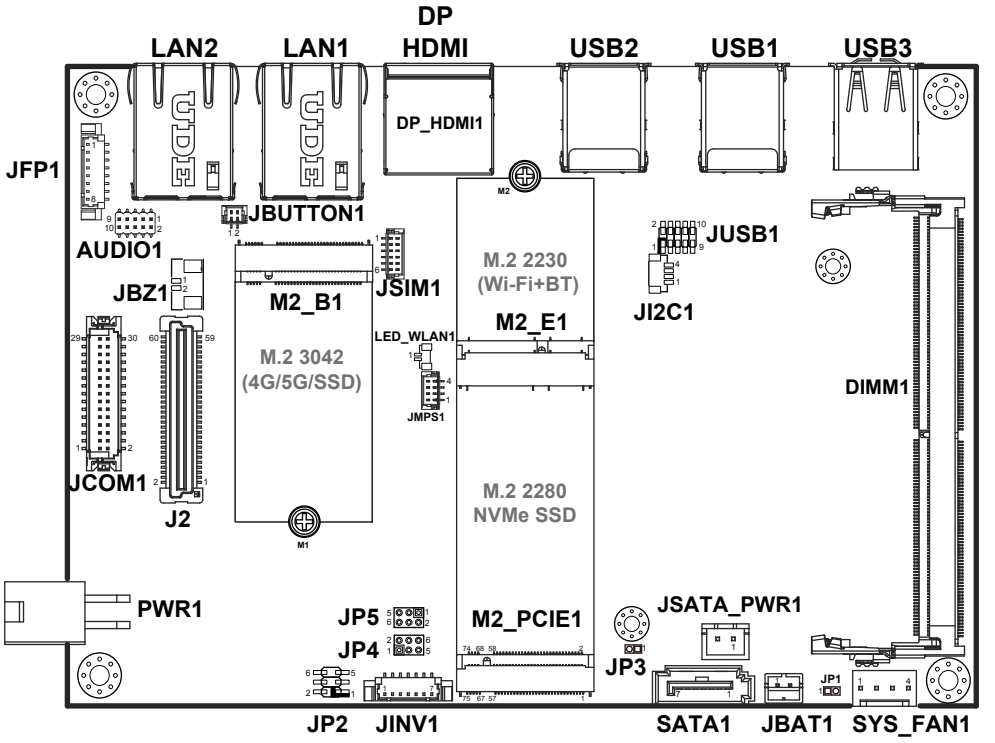
JUMPER Description	NAME
Clear CMOS Data Selection	JP1
PWM Brightness Control Selection	JP2 (Function1)
USB Power Selection	JP2 (Function 2)
SPI Override Protection Selection	JP3
Inverter LED Power Selection	JP4
LVDS Power Selection	JP5

CONNECTOR Description	NAME
LAN Ports	LAN1, LAN2
DisplayPort (upper) and HDMI Port (bottom)	DP_HDMI1
Dual USB 3.2 Ports	USB1
Dual USB 3.2 Ports	USB2
Dual USB 2.0 Ports	USB3
COM & DIO Connector	JCOM1
Front Panel Connector	JFP1
DC-IN Connector	PWR1
M.2 E-Key 2230 Slot	M2_E1
M.2 2280 PCI Express Slot (M-Key)	M2_PCIE1
M.2 B-KEY 3042 Slot	M2_B1
Battery Wafer	JBAT1
Internal USB 2.0 Wafer	JUSB1
Micro SIM Card Connector	JSIM1
B2B Connector	J2
SATA 3.0 Connector	SATA1
SATA Power Connector	JSATA_PWR1
LVDS / eDP Connector (located on the bottom side of BE-U236 Board)	CN1
Inverter Wafer	JINV1
HD Audio Pin Header	AUDIO1

CONNECTOR Description	NAME
System Fan Connector	SYS_FAN1
Power Button	JBUTTON1
BUZZER Wafer	JBZ1
I2C Wafer	JI2C1
M.2 E-Key WLAN LED Wafer	LED_WLAN1

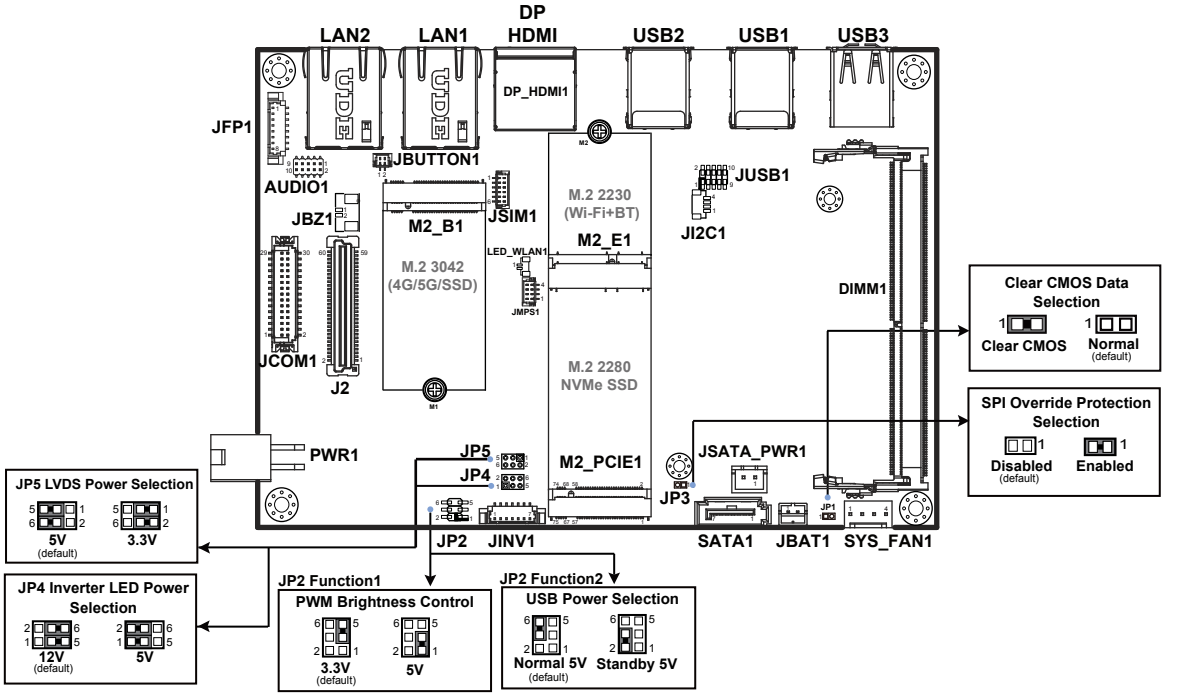
3.2 COMPONENT LOCATIONS

3.2.1 BE-U236 Top View

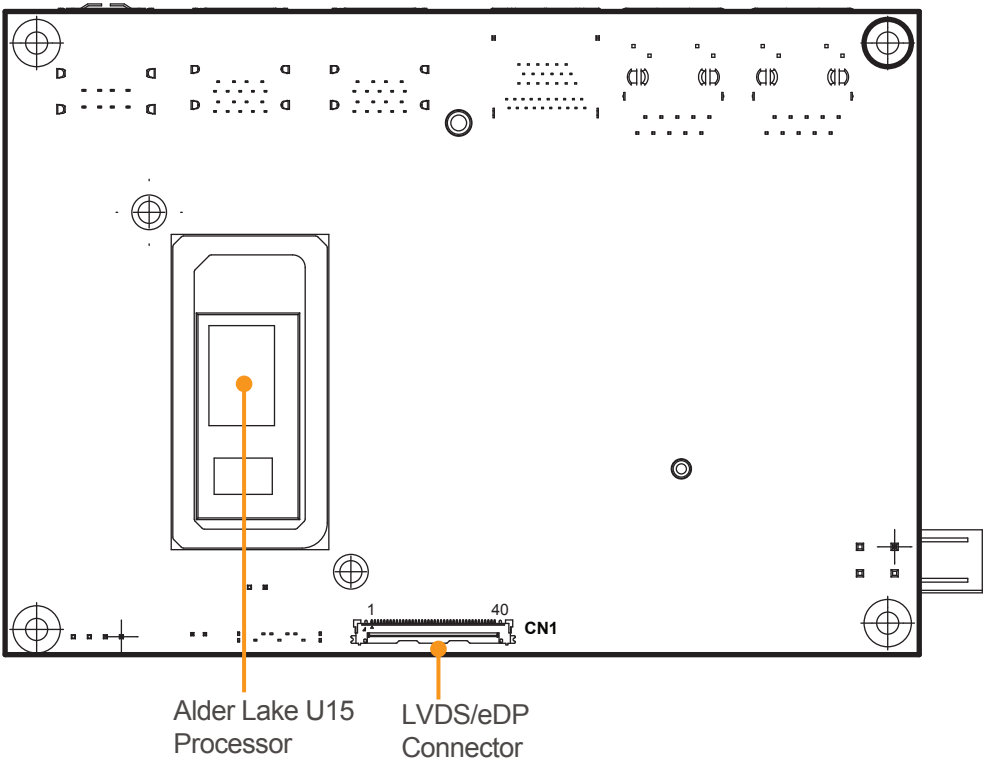


	**WARNING:** Always disconnect the power cord when you are working with connectors and jumpers on BE-U236. Make sure both the system and peripheral devices are turned OFF as sudden surge of power could damage sensitive components. Make sure the board is properly grounded.
	**CAUTION:** Observe precautions while handling electrostatic sensitive components. Make sure to ground yourself to prevent static charge while you are working on the connectors and jumpers. Use a grounding wrist strap and place all electronic components in any static-shielded devices.

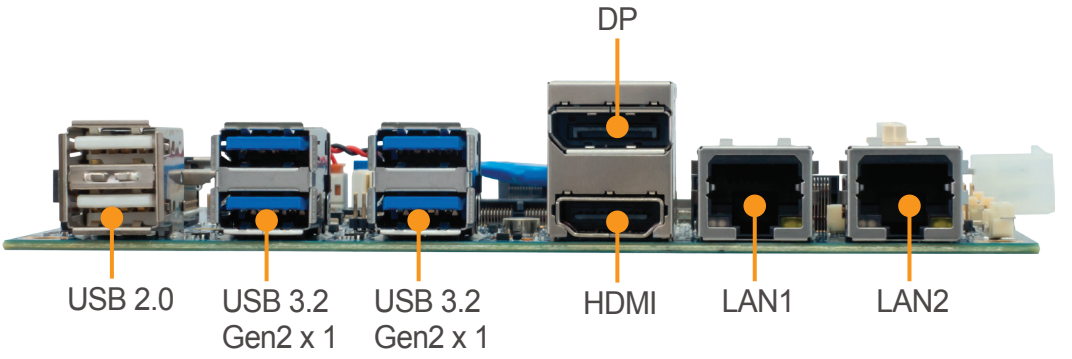
3.2.2 BE-U236 Jumper Setting



3.2.3 BE-U236 Bottom View



3.2.4 BE-U236 I/O View

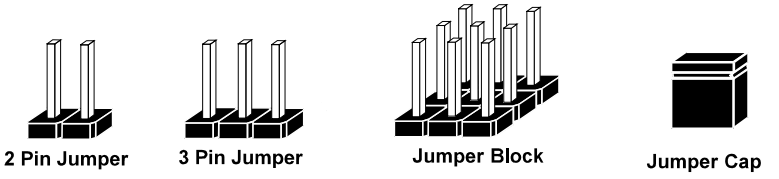


3.3 HOW TO SET JUMPERS

You can configure your board by setting jumpers. A jumper is consists of two or three metal pins with a plastic base mounted on the board. By using a small plastic "cap", (also known as the jumper cap (with a metal contact inside)), you are able to connect the pins. So you can set up your hardware configuration by "opening" or "closing" pins.

The jumper can be combined into sets that are called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks like.

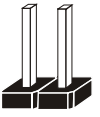
JUMPERS AND CAPS



If a jumper has three pins (for examples, labeled PIN1, PIN2, and PIN3), you can connect PIN1 & PIN2 to create one setting by shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below illustrates what the jumper diagrams look and what they represent.

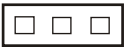
Jumper Diagrams

Jumper Cap looks like this

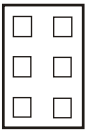


2 pin Jumper looks like this

3 pin Jumper looks like this

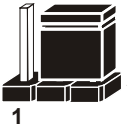


Jumper Block looks like this

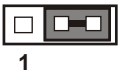


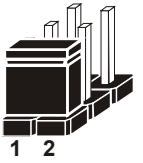
Jumper Settings

2 pin Jumper close(enabled) Looks like this

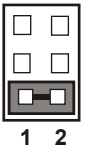


3 pin Jumper 2-3 pin close(enabled) Looks like this





Jumper Block 1-2 pin close(enabled) Looks like this

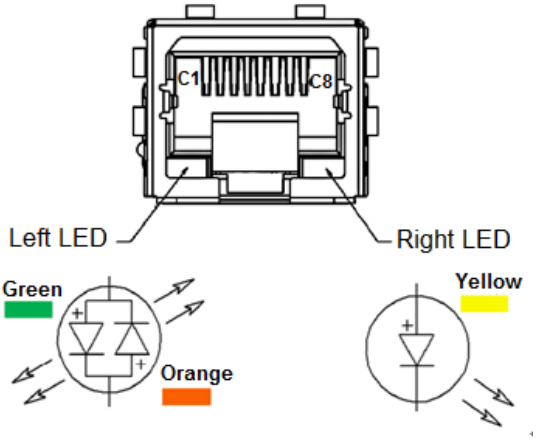


3.4 SETTING CONNECTORS AND JUMPERS

3.4.1 LAN PORT (LAN1, LAN2)

Port Location: LAN1, LAN2

Description: LAN Ports (rear I/O)



LAN1 / LAN2

LAN1 / LAN2 LED Indicator:

Left Side LED:

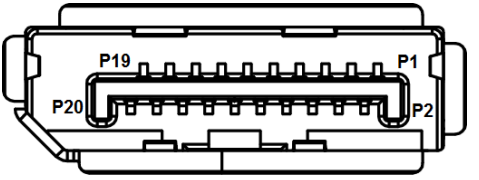
Green Color On	2500 LAN Speed Indicator
Orange Color On	1000 LAN Speed Indicator
Off	10/100 or no LAN connected

Right Side LED:

Yellow Color Blinking	LAN Message active
Off	No LAN Message active

3.4.2 DISPLAYPORT and HDMI PORT (DP_HDMI1)

Port Location: DP (located on the upper side)
Description: DisplayPort



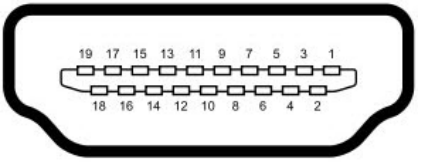
DP

DP signals:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
P1	DP_LANE0_DP	P2	GND
P3	DP_LANE0_DN	P4	DP_LANE1_DP
P5	GND	P 6	DP_LANE1_DN
P7	DP_LANE2_DP	P 8	GND
P9	DP_LANE2_DN	P10	DP_LANE3_DP
P11	GND	P 12	DP_LANE3_DN
P13	DP_C_AUX_ENJ	P14	DP_CONFIG_2
P15	DP_C_AUX_P_C	P16	GND
P17	DP_C_AUX_N_C	P18	DP_HPD
P19	GND	P20	V3P3_DP

Please see the next page for the pin assignment information of HDMI PORT connector (located on the bottom side).

HDMI Port Connector (HDMI)
Port Location: HDMI (located on the bottom side)
Description: HDMI Connector (rear I/O)



HDMI

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	HDMI_D2P	2	GND
3	HDMI_D2N	4	HDMI_D1P
5	GND	6	HDMI_D1N
7	HDMI_D0P	8	GND
9	HDMI_D0N	10	HDMI_CLKP
11	GND	12	HDMI_CLKN
13	HDMI1_CEC_HM_R	14	NC
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	V5P0_HDMI
19	HDMI_HPD	20	-

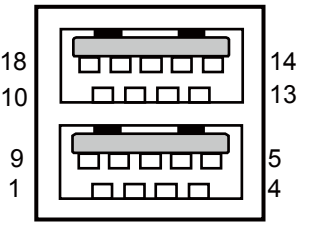
3.4.3 DUAL USB 3.2 PORT (USB1)

Port Location: USB1

Description: Dual Type-A USB 3.2 Gen 2x1 Ports

Dual USB 3.2:

PIN	ASSIGNMENT
1	VCC5_USB1
2	USB2_P1_DN_L
3	USB2_P1_DP_L
4	GND
5	USB3_P1_RX_DN
6	USB3_P1_RX_DP
7	GND
8	USB3_P1_TX_DN_CL
9	USB3_P1_TX_DP_CL
10	VCC5_USB2
11	USB2_P2_DN_L
12	USB2_P2_DP_L
13	GND
14	USB3_P2_RX_DN
15	USB3_P2_RX_DP
16	GND
17	USB3_P2_TX_DN_CL
18	USB3_P2_TX_DP_CL



USB1

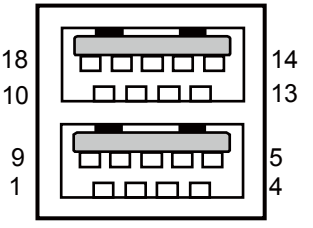
3.4.4 DUAL USB 3.2 PORT (USB2)

Port Location: USB2

Description: Dual Type-A USB 3.2 Gen 2x1 Ports

Dual USB 3.2:

PIN	ASSIGNMENT
1	VCC5_USB3
2	USB2_P3_DN_L
3	USB2_P3_DP_L
4	GND
5	USB3_P3_RX_DN
6	USB3_P3_RX_DP
7	GND
8	USB3_P3_TX_DN_CL
9	USB3_P3_TX_DP_CL
10	VCC5_USB4
11	USB2_P4_DN_L
12	USB2_P4_DP_L
13	GND
14	USB3_P4_RX_DN
15	USB3_P4_RX_DP
16	GND
17	USB3_P4_TX_DN_CL
18	USB3_P4_TX_DP_CL



USB2

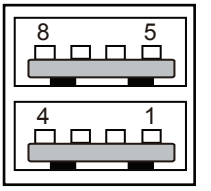
3.4.5 DUAL USB 2.0 PORT (USB3)

Port Location: USB3

Description: Dual Type-A USB 2.0 Ports

Dual USB 2.0:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5_USB5	5	VCC5_USB6
2	USB2_P5_DN_L	6	USB2_P6_DN_L
3	USB2_P5_DP_L	7	USB2_P6_DP_L
4	GND	8	GND

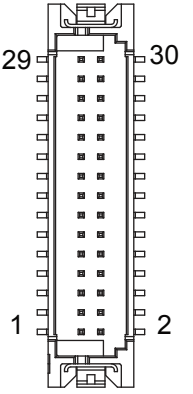


USB3

3.4.6 COM & DIO CONNECTOR (JCOM1)

Connector Location: JCOM1
Description: COM & DIO Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM1_DCD	2	COM2_DCD
3	COM1_RX	4	COM2_RX
5	COM1_TX	6	COM2_TX
7	COM1_DTR	8	COM2_DTR
9	GND	10	GND
11	COM1_DSR	12	COM2_DSR
13	COM1_RTS	14	COM2_RTS
15	COM1_CTS	16	COM2_CTS
17	COM1_RI	18	COM2_RI
19	GND	20	GND
21	SIO_DI1	22	SIO_DO1
23	SIO_DI2	24	SIO_DO2
25	SIO_DI3	26	SIO_DO3
27	SIO_DI4	28	SIO_DO4
29	GND	30	GND



JCOM1

3.4.7 Front Panel Connector (JFP1)

Connector Location: JFP1

Description: Front Panel Connector

PIN	ASSIGNMENT
1	HDD LED+
2	HDD LED-
3	PWR_LED+
4	PWR_LED-
5	PWR Button+
6	PWR Button-
7	Reset Button+
8	Reset Button-

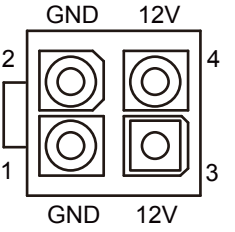
JFP1

3.4.8 DC-IN Connector (PWR1)

Connector Location: PWR1

Description: DC-IN Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	3	12V/24V
2	GND	4	12V/24V

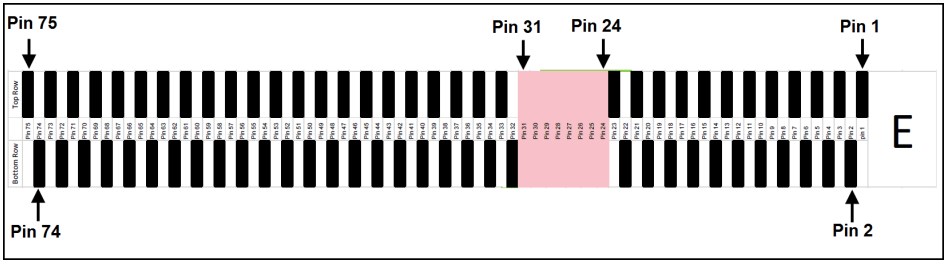


PWR1

3.4.9 M.2 E-Key 2230 Slot (M2_E1)

Connector Location: M2_E1

Description: M.2 E-Key Connector for Wi-Fi +BT



M2_E1

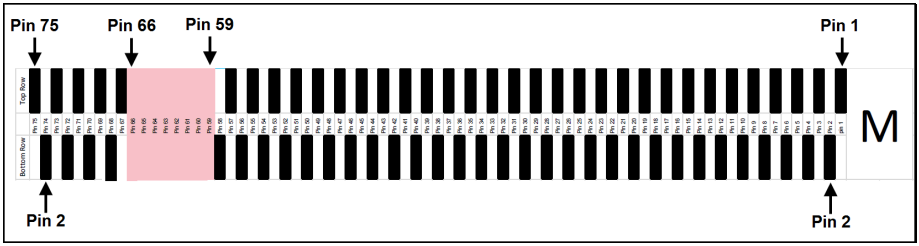
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	V3P3A_WLAN
3	USB2_P10_DP_L	4	V3P3A_WLAN
5	USB2_P10_DN_L	6	M.2_WLAN_LED1_N
7	GND	8	NC
9	CNV_WR_D1_DN	10	GPPC_F4_CNV_RF_RESET_N
11	CNV_WR_D1_DP	12	NC
13	GND	14	GPPC_F5_CNV_MODEM_CLKREQ
15	CNV_WR_D0_DN	16	M.2_BT_LED2_N
17	CNV_WR_D0_DP	18	GND
19	GND	20	KEYE_UART_WAKE_N
21	CNV_WR_CLK_DN	22	KEYE_CNV_BRI_RSP
23	CNV_WR_CLK_DP	24	KEY
25	KEY	26	KEY
27	KEY	28	KEY
29	KEY	30	KEY
31	KEY	32	KEYE_CNV_RGI_DT
33	GND	34	KEYE_CNV_RGI_RSP
35	M2_WLAN_TX_DP	36	KEYE_CNV_BRI_DT
37	M2_WLAN_TX_DN	38	KEYE_CLINK_RST_N
39	GND	40	KEYE_CLINK_DATA
41	PCIE3_P6_RX_DP	42	KEYE_CLINK_CLK
43	PCIE3_P6_RX_DN	44	DISC_WLAN_WWAN_COEX3
45	GND	46	DISC_WLAN_WWAN_COEX2
47	PCIE3_P1_CLK_DP	48	DISC_WLAN_WWAN_COEX1
49	PCIE3_P1_CLK_DN	50	KEYE_SUSCLK
51	GND	52	WLAN_RST_N

PIN	ASSIGNMENT	PIN	ASSIGNMENT
53	GPPC_D6_SRCCLKREQ1_N	54	BT_KILL_N
55	WLAN_PEWAKE0_N	56	WIFI_KILL_N
57	GND	58	NC
59	CNV_WT_D1_DN	60	NC
61	CNV_WT_D1_DP	62	NC
63	GND	64	NC
65	CNV_WT_D0_DN	66	NC
67	CNV_WT_D0_DP	68	NC
69	GND	70	NC
71	CNV_WT_CLK_DN	72	V3P3A_WLAN
73	CNV_WT_CLK_DP	74	V3P3A_WLAN
75	GND	-	-

3.4.10 M.2 2280 PCI Express Slot (M2_PCIE1) (M-Key)

Connector Location: M2_PCIE1

Description: M.2 2280 PCI Express Slot (M-Key, PCIe Gen4 x4 NVMe)



M2_PCIE1

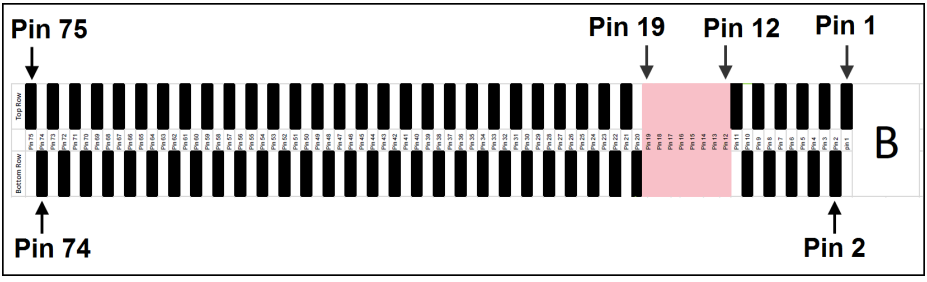
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	V3P3S_M2_CPU
3	GND	4	V3P3S_M2_CPU
5	PCIEX4_A_P3_RX_DN	6	NC
7	PCIEX4_A_P3_RX_DP	8	M.2_CPU_SSD_PLN_N
9	GND	10	M2_M_LED
11	PCIE4_P3_M.2_SSD_TX_DN	12	V3P3S_M2_CPU
13	PCIE4_P3_M.2_SSD_TX_DP	14	V3P3S_M2_CPU
15	GND	16	V3P3S_M2_CPU
17	PCIEX4_A_P2_RX_DN	18	V3P3S_M2_CPU
19	PCIEX4_A_P2_RX_DP	20	NC
21	GND	22	NC
23	PCIE4_P2_M.2_SSD_TX_DN	24	NC
25	PCIE4_P2_M.2_SSD_TX_DP	26	NC
27	GND	28	NC
29	PCIEX4_A_P1_RX_DN	30	NC
31	PCIEX4_A_P1_RX_DP	32	NC
33	GND	34	NC
35	PCIE4_P1_M.2_SSD_TX_DN	36	NC
37	PCIE4_P1_M.2_SSD_TX_DP	38	DEVSLP1B_R
39	GND	40	NC
41	PCIEX4_A_P0_RX_DN	42	NC
43	PCIEX4_A_P0_RX_DP	44	NC
45	GND	46	NC
47	PCIE4_P0_M.2_SSD_TX_DN	48	NC
49	PCIE4_P0_M.2_SSD_TX_DP	50	M2_KEYM_CPU_SSD_RST
51	GND	52	GPPC_D8_SRCCLKREQ3_N

PIN	ASSIGNMENT	PIN	ASSIGNMENT
53	PCIE4_P3_CLK_DN	54	PM_WAKE_N
55	PCIE4_P3_CLK_DP	56	NC
57	GND	58	NC
59	KEY	60	KEY
61	KEY	62	KEY
63	KEY	64	KEY
65	KEY	66	KEY
67	NC	68	NC
69	PCIE_M.2_CPU_SSD_DETECT	70	V3P3S_M2_CPU
71	GND	72	V3P3S_M2_CPU
73	GND	74	V3P3S_M2_CPU
75	GND	-	-

3.4.11 M.2 B-KEY 3042 Slot (M2_B1)

Connector Location: M2_B1

Description: M.2 B-Key Connector (4G/5G/SSD)



M2_B1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	KEYB_WWAN_DET_1	2	V3P3A_WWAN
3	GND	4	V3P3A_WWAN
5	GND	6	GPPC_F15_WWAN_FCP_OFF_N
7	USB2_P9_DP_L	8	GPPC_D15_WWAN_KEYB_DISABLE
9	USB2_P9_DN_L	10	M.2_WWAN_LED_N
11	GND	12	KEY
13	KEY	14	KEY
15	KEY	16	KEY
17	KEY	18	KEY
19	KEY	20	NC
21	KEYB_WWAN_CONFIG0	22	NC
23	NC	24	NC
25	SAR_DPR_WWAN	26	KEYB_GNSS_DISABLE
27	GND	28	NC
29	NC	30	SIM1_RESET
31	NC	32	SIM1_CLK
33	GND	34	SIM1_DATA
35	NC	36	SIM1_PWR
37	NC	38	NC
39	GND	40	SIM_GPIO_0
41	PCIE3_P11_RX_R_DP	42	NC
43	PCIE3_P11_RX_R_DN	44	NC
45	GND	46	NC

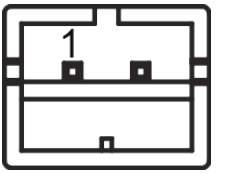
PIN	ASSIGNMENT	PIN	ASSIGNMENT
47	PCIE3_P11_TX_C_DN	48	NC
49	PCIE3_P11_TX_C_DP	50	M.2_WWAN_PERST_R_N
51	GND	52	GPPC_F19_SRCCLKREQ6_N
53	PCIE3_P6_CLK_DN	54	GPPC_D16
55	PCIE3_P6_CLK_DP	56	NC
57	GND	58	NC
59	NC	60	WLAN_WWAN_COEX3
61	NC	62	WLAN_WWAN_COEX2
63	NC	64	WLAN_WWAN_COEX1
65	NC	66	M.2_SIM1_DET
67	GPPC_F14_KEYB_RST_N	68	NC
69	KEYB_WWAN_SSD_DET	70	V3P3A_WWAN
71	GND	72	V3P3A_WWAN
73	GND	74	V3P3A_WWAN
75	KEYB_WWAN_DET_75	-	-

3.4.12 BATTERY WAFER (JBAT1)

Wafer Location: JBAT1

Description: Battery Wafer

PIN	ASSIGNMENT
1	VBAT+
2	GND



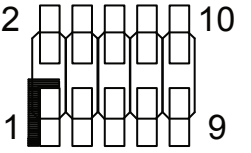
JBAT1

3.4.13 INTERNAL USB 2.0 WAFER (JUSB1)

Wafer Location: JUSB1

Description: Internal USB 2.0 Type-A Wafer

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	5V	2	5V
3	USB2_P7_DN	4	USB2_P8_DN
5	USB2_P7_DP	6	USB2_P8_DP
7	GND	8	GND
9	GND	10	GND



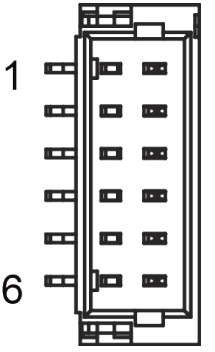
JUSB1

3.4.14 MICRO SIM CARD CONNECTOR (JSIM1)

Connector Location: JSIM1

Description: Micro SIM Card Connector

PIN	ASSIGNMENT
1	SIM_PWR
2	GND
3	SIM1_RESET
4	SIM1_DET_CONN
5	SIM1_DATA
6	SIM1_CLK



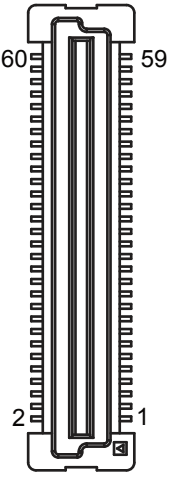
JSIM1

3.4.15 B2B CONNECTOR (J2)

Connector Location: J2

Description: B2B Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	12V	2	12V
3	12V	4	12V
5	GND	6	GND
7	5V_SB	8	HD_FRONT_L_B2B
9	5V_SB	10	HD_FRONT_R_B2B
11	3.3V_SB	12	GND
13	3.3V_SB	14	I2C2_SCL
15	GND	16	I2C2_SDA
17	PCIE3_P10_RX_DP	18	LCLK_DIG2
19	PCIE3_P10_RX_DN	20	SERIRQ_SEG_A
21	GND	22	LFRAME_SEG_B
23	PCIE3_P10_TX_DP	24	LRESET_SEG_C
25	PCIE3_P10_TX_DN	26	LAD0_SEG_D
27	GND	28	LAD1_SEG_F
29	PCIE3_P5_CLK_DP	30	LAD2_SEG_E
31	PCIE3_P5_CLK_DN	32	LAD3_SEG_G
33	GND	34	GND
35	PCIE3_P9_RX_DP	36	SIO_GPIO_12
37	PCIE3_P9_RX_DN	38	SIO_GPIO_13
39	GND	40	SIO_GPIO_93
41	PCIE3_P9_TX_DP	42	SIO_GPIO_94
43	PCIE3_P9_TX_DN	44	GPP_H19_SRCCLKREQ4_N
45	GND	46	GPP_H23_SRCCLKREQ5_N
47	PCIE3_P4_CLK_DP	48	PM_PLTRST_N
49	PCIE3_P4_CLK_DN	50	PM_WAKE_N
51	GND	52	SMB_CLK
53	PM_SLP_S3_N	54	SMB_DATA
55	3.3V	56	5V
57	3.3V	58	5V
59	GND	60	GND

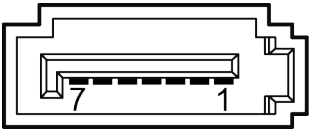


J2

3.4.16 SATA 3.0 & SATA Power Connectors (SATA1, JSATA_PWR1)

Connector Location: SATA1
Description: Serial ATA 3.0 Connector

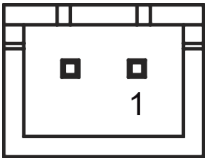
PIN	ASSIGNMENT
1	GND
2	SATA1_TX_DP_C
3	SATA1_TX_DN_C
4	GND
5	SATA1_RX_DN_C
6	SATA1_RX_DP_C
7	GND



SATA1

Connector Location: JSATA_PWR1
Description: SATA Power Connector

PIN	ASSIGNMENT
1	5V
2	GND

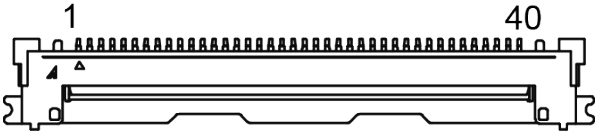


JSATA_PWR1

3.4.17 LVDS / eDP Connector (CN1)

Connector Location: CN1

Description: LVDS Connector
(located on the bottom side of BE-U236 board)



CN1

PIN	ASSIGNMENT
1	EDP_BKLT_EN
2	EDP_BKLT_CTRL
3	PANEL_SEL_4
4	DDIA_TX3_DP
5	DDIA_TX3_DN
6	GND
7	DDIA_TX2_DP
8	DDIA_TX2_DN
9	GND
10	LVDS_YAP0
11	LVDS_YAM0
12	LVDS_YAP1
13	LVDS_YAM1
14	LVDS_YAP2
15	LVDS_YAM2
16	LVDS_YAP3
17	LVDS_YAM3
18	GND
19	LVDS_CLKAP
20	LVDS_CLKAM
21	GND
22	LVDS_YBP0
23	LVDS_YBM0
24	LVDS_YBP1
25	LVDS_YBM1
26	LVDS_YBP2
27	LVDS_YBM2
28	LVDS_YBP3

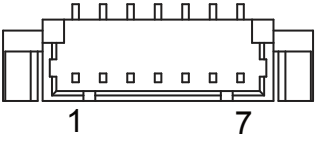
PIN	ASSIGNMENT
29	LVDS_YBM3
30	GND
31	LVDS_CLKBP
32	LVDS_CLKBM
33	GND
34	LVDS_VCC
35	LVDS_VCC
36	GND
37	GND
38	INV_VLED
39	INV_VLED
40	INV_VLED

3.4.18 INVERTER WAFER (JINV1)

Wafer Location: JINV1

Description: Inverter Wafer

PIN	ASSIGNMENT
1	LVDS_BKLTEN_R
2	LVDS_BKLTEN_R
3	LVDS_BKLTEN_R
4	GND
5	BRCTR_PWM1
6	GND
7	BKLTEN

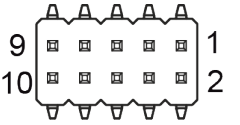


JINV1

3.4.19 HD AUDIO PIN HEADER (AUDIO1)

Pin Header Location: AUDIO1
Description: HD Audio Pin Header

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	MIC_L	2	GND
3	LINE-IN_L	4	GND
5	LINE-OUT_L	6	MIC_R
7	GND	8	LINE-IN_R
9	GND	10	LINE-OUT_R

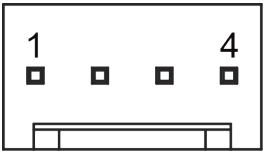


AUDIO1

3.4.20 SYSTEM FAN CONNECTOR (SYS_FAN1)

Connector Location: SYS_FAN1
Description: System Fan Connector

PIN	ASSIGNMENT
1	GND
2	VCC12
3	TAC
4	CTL

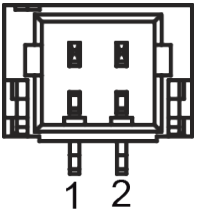


SYS_FAN1

3.4.21 POWER BUTTON (JBUTTON1)

Wafer Location: JBUTTON1
Description: Power Button

PIN	ASSIGNMENT
1	PWRBTN+
2	PWRBTN-

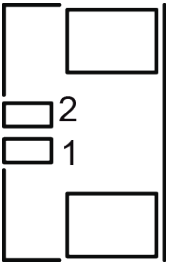


JBUTTON1

3.4.22 BUZZER WAFER (JBZ1)

Wafer Location: JBZ1
Description: Buzzer Wafer

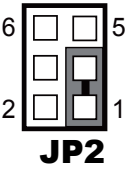
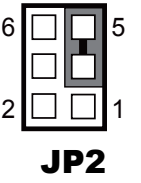
PIN	ASSIGNMENT
1	SPKR+
2	SPKR-



JBZ1

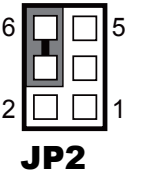
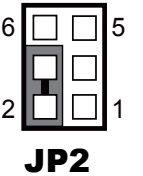
3.4.23 PWM Brightness Control Selection (JP2) (Function 1)

Jumper Location: JP2 (Function 1)
Description: PWM Brightness Control Selection

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
5V	1-3	
3.3V	***3-5 (Default Setting)***	

3.4.24 USB Power Selection (JP2) (Function 2)

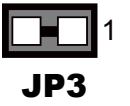
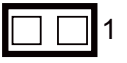
Jumper Location: JP2 (Function 2)
Description: USB Power Selection

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
Standby 5V	2-4	
Normal 5V	***4-6 (Default Setting)***	

3.4.25 SPI OVERRIDE PROTECTION SELECTION (JP3)

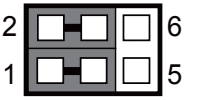
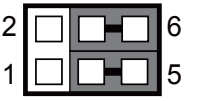
Jumper Location: JP3

Description: SPI Override Protection Selection

Selection	Jumper Setting (Pin Closed)	Jumper Illustration
Enabled	1-2	 **JP3**
Disabled	**Open** ***(Default Setting)***	 **JP3**

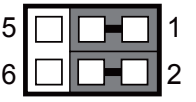
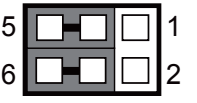
3.4.26 INVERTER LED POWER SELECTION (JP4)

Jumper Location: JP4
Description: Inverter LED Power Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
5V	1-3, 2-4	 **JP4**
12V	***3-5,*** ***4-6*** ***(Default Setting)***	 **JP4**

3.4.27 LVDS POWER SELECTION (JP5)

Jumper Location: JP5
Description: LVDS Power Selection

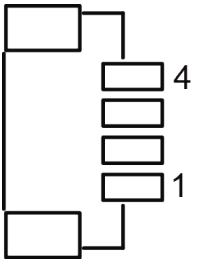
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	1-3, 2-4	 **JP5**
5V	***3-5,*** ***4-6*** ***(Default Setting)***	 **JP5**

3.4.28 I2C WAFER (JI2C1)

Wafer Location: JI2C1

Description: I2C Wafer

PIN	ASSIGNMENT
1	3.3V
2	GND
3	I2C1_SCL
4	I2C1_SDA



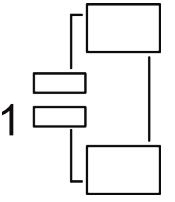
JI2C1

3.4.29 M.2 E-KEY WLAN LED WAFER (LED_WLAN1)

Wafer Location: LED_WLAN1

Description: M.2 E-Key WLAN LED Wafer

PIN	ASSIGNMENT
1	M.2_WLAN_LED+
2	M.2_WLAN_LED-

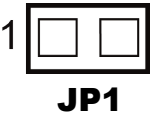
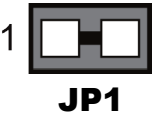


LED_WLAN1

3.4.30 CLEAR CMOS DATA SELECTION (JP1)

Jumper Location: JP1
Description: Clear CMOS Data Selection

Step 1. Turn off the main power of the PC.
Step 2. Close JP1 (pins 1-2) for 6 seconds by a cap.
Step 3. Remove the cap which is just used on JP1 (1-2), so that JP1 returns to "OPEN".
Step 4. Power on the PC and the PC will then auto-reboot for once in order to set SoC's register.
Step 5. Done!

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	**Open** ***(Default Setting)***	
Clear CMOS	1-2	

4 Software Utilities

This chapter provides the detailed information that guides users to install driver utilities for BE-U236 board. The following topics are included:

- Installing Intel® Chipset Software Installation Utility
- Installing Graphics Driver Utility
- Installing Sound Driver Utility
- Installing Intel® Management Engine Components Driver Installer
- Installing LAN Driver Utility
- Installing Intel® Human Interface Devices Driver Utility
- Installing Intel® Serial I/O Driver Utility

4.1 Introduction

Enclosed with the BE-U236 Series package is our driver utilities contained in a DVD-ROM disk. Refer to the following table for driver locations:

Filename (Assume that DVD- ROM drive is D :)	Purpose
D:\Driver\Platform\1_Main Chip\Win10(2021)_Win11	Intel(R) Chipset Device Software installer
D:\Driver\Platform\2_Graphics\ Win10(2021)_Win11	Intel(R) HD Graphics Driver installer
D:\Driver\Platform\3_Sound\ Win10(2021)_Win11	Realtek(R) ALC888S HD Audio Driver installer
D:\Driver\Platform\4_ME\ Win10(2021)_Win11	Intel(R) *Management Engine* Driver installer
D:\Driver\Platform\5_LAN Chip\ Win10(2021)_Win11	Intel(R) LAN Driver installer
D:\Driver\Platform\6_HID\ Win10(2021)_Win11	Intel(R) Human Interface Devices Driver installer
D:\Driver\Platform\7_ Serial IO \ Win10(2021)_Win11	Intel(R) Serial IO Driver installer

Note: Install the driver utilities immediately after the OS installation is completed.

For more details on the installation sequence, refer to the Readme.txt file.

4.2 Installing Intel® Chipset Software Installation Utility

Introduction

The Intel® Chipset Software Installation Utility installs the Windows *.INF files to the target system. These files outline to the operating system how to configure the Intel chipset components in order to ensure that the following functions work properly:

- Core PCI and ISAPNP Services
- PCI-e Support
- SATA Storage Support
- USB Support
- Identification of Intel® Chipset Components in the Device Manager

Intel® Chipset Software Installation Utility

The utility pack is to be installed only for Windows 10 (2021) / Windows 11, and it should be installed immediately after the OS installation is finished. Please follow the steps below:

1. Connect the USB DVD-ROM device to BE-U236 and insert the driver disk.
2. Enter the **1_Main Chip \ Win10(2021)_Win11** folder where the Chipset driver is located.
3. Click **SetupChipset.exe** file for driver installation.
4. Follow the on-screen instructions to install the driver.
5. Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

4.3 Installing Graphics Driver Utility

To install the Graphics driver utility, follow the steps below:

1. Connect the USB DVD-ROM device to BE-U236 and insert the driver disk.
2. Enter the **2_Graphics \ Win10(2021)_Win11** folder where the driver is located.
3. Click the **Installer.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

4.4 Installing Sound Driver Utility

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to BE-U236 and insert the driver disk.
2. Open the 3_Sound \ Win10(2021)_Win11 folder where the driver is located.
3. Click the **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

4.5 Intel® Management Engine Components Driver Installer Installation

Installation Instructions for Intel® Management Engine Components Driver Installer

1. Connect the USB DVD-ROM device to BE-U236 and insert the driver disk.
2. Enter the **4_ME \ Win10(2021)_Win11** folder where the driver is located.
3. Click **SetupME.exe** file for ME driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

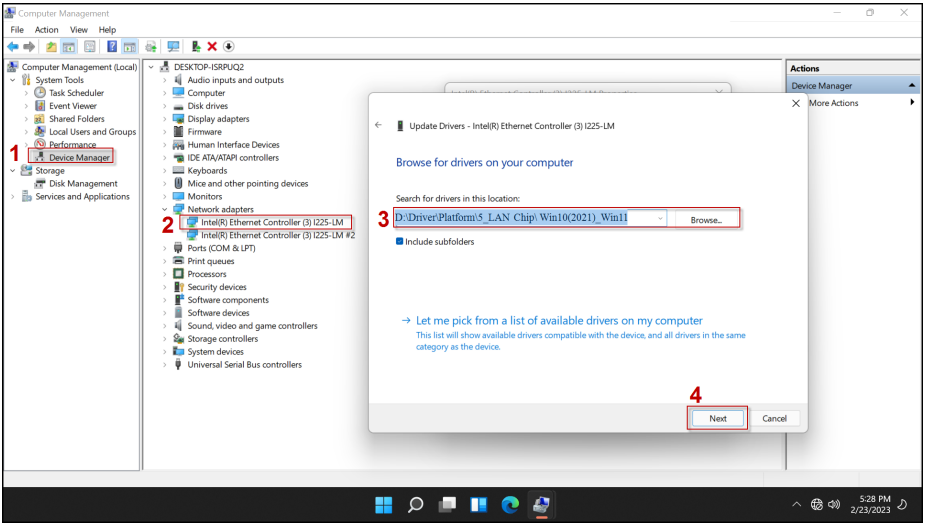
4.6 Installing LAN Driver Utility

Follow the steps below to install LAN Driver:

1 Go to **Computer Management** of your PC and select **Device Manager**.

2 Select **Network adapters > Intel(R) Ethernet Connection (3) I225-LM**.

3 Enter "**D:\Driver\Platform\5_LAN Chip\ Win10(2021)_Win11**" in the entry box to browse for LAN driver.



4 Click **"Next"** to continue and follow the on-screen instructions to install the driver.

5 Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

For more details on the installation procedure, refer to the Readme.txt file that you can find on LAN Driver Utility.

4.7 Installing Intel® Human Interface Devices Driver Utility

To install the Human Interface Devices Driver, follow the steps below:

1. Connect the USB DVD-ROM device to BE-U236 and insert the driver disk.
2. Open the **6_HID \ Win10(2021)_Win11** folder where the driver is located.
3. Click the **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

4.8 Installing Intel® Serial I/O Driver Utility

To install the Serial I/O Driver, follow the steps below:

1. Connect the USB DVD-ROM device to BE-U236 and insert the driver disk.
2. Open the **7_Serial IO \ Win10(2021)_Win11** folder where the driver is located.
3. Click the **SetupSerialIO.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down and restart BE-U236 for the changes to take effect.

5 BIOS SETUP

This chapter guides users how to configure the basic system configurations via the BIOS Setup Utilities. The information of the system configuration is saved in BIOS NVRAM so that the Setup information is retained when the system is powered off. The BIOS Setup Utilities consist of the following menu items:

- Main Menu
- Advanced Menu
- Chipset Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

5.1 Introduction

The BE-U236 board uses an AMI (American Megatrends Incorporated) Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the built-in BIOS setup program, Power-On Self-Test (POST), PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

Aptio is AMI's BIOS firmware based on the UEFI (Unified Extensible Firmware Interface) specifications and the Intel Platform Innovation Framework for EFI. The UEFI specification defines an interface between the operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These elements have combined to provide a standard environment for booting the operating system and running pre-boot applications.

The diagram below shows the Extensible Firmware Interface's location in the software stack.

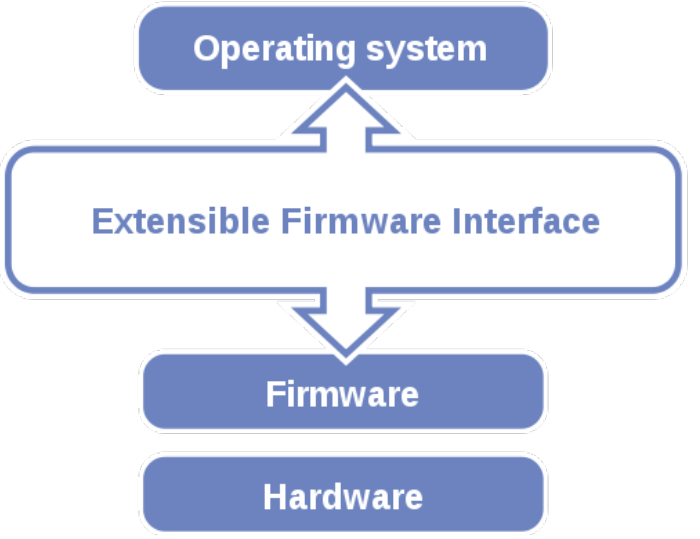


Figure 5-1. Extensible Firmware Interface Diagram

EFI BIOS provides an user interface that allows you to modify hardware configuration, e.g. change the system date and time, enable/disable a system component, determine bootable device priority, set up personal password, etc., which is convenient for engineers to perform modifications and customize the computer

system and allows technicians to troubleshoot the occurred errors when the hardware is faulty.

The BIOS setup menu allows users to view and modify the BIOS settings for the computer. After the system is powered on, users can access the BIOS setup menu by pressing <Del> or <Esc> immediately while the POST message is running before the operating system is loading.

All the menu settings are described in details in this chapter.

5.2 Accessing Setup Utility

After the system is powered on, BIOS will enter the Power-On Self-Test (POST) routines and the POST message will be displayed:

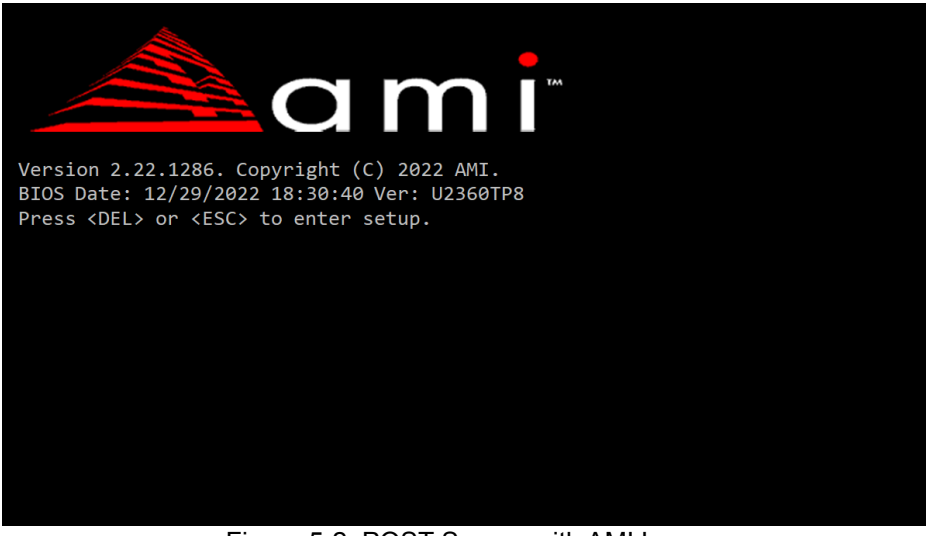
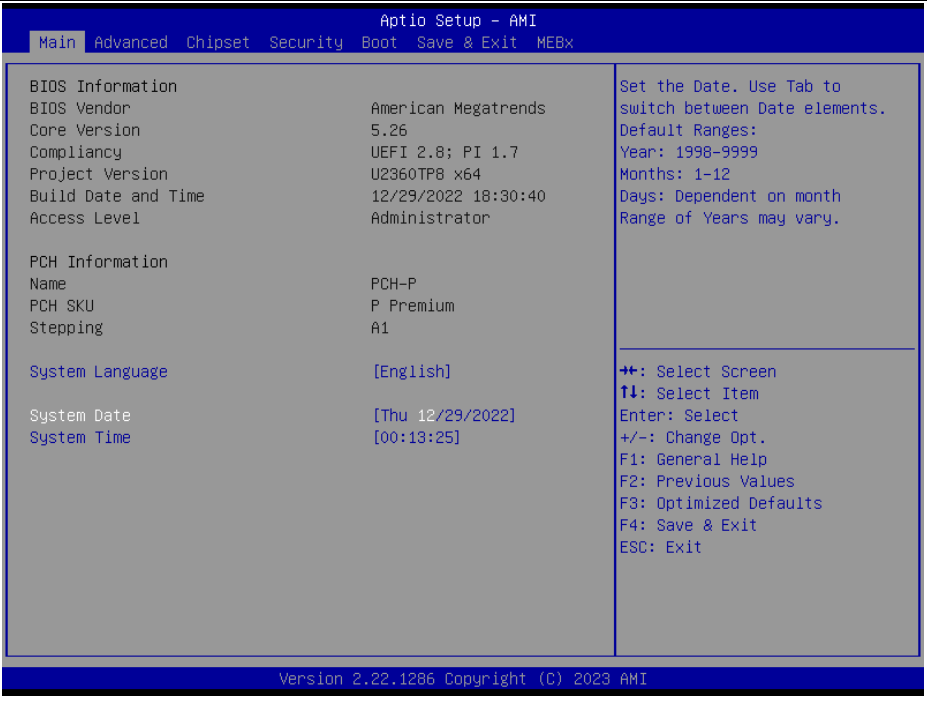


Figure 5-2. POST Screen with AMI Logo

Press **<Del>** or **<Esc>** to access the Setup Utility program and the **Main** menu of the Aptio Setup Utility will appear on the screen as below:



BIOS Setup Menu Initialization Screen

You may move the cursor by <↑> and <↓> keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear on the right side of the screen.

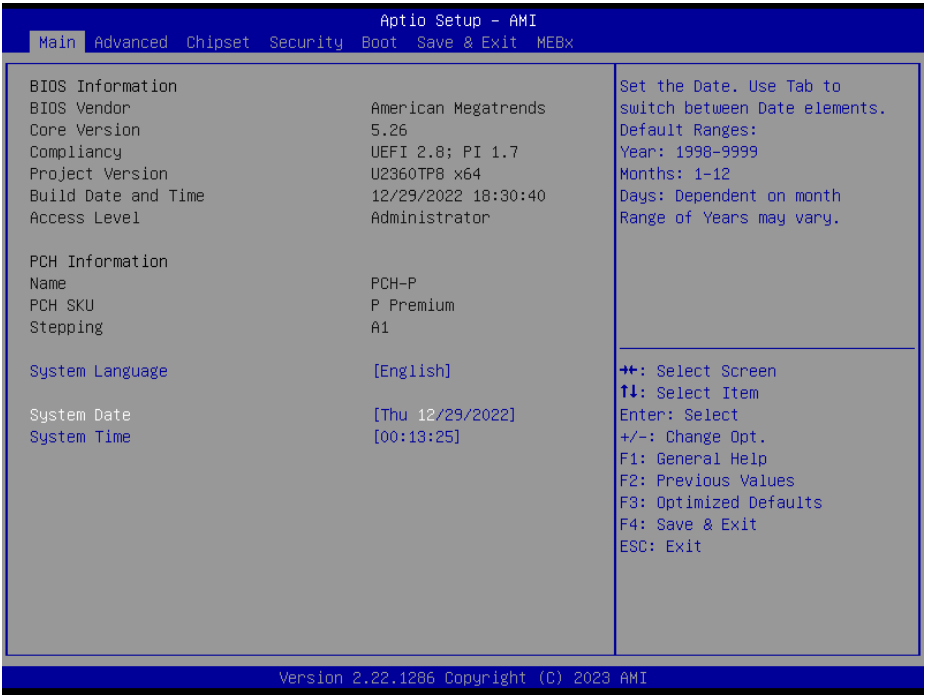
The language of the BIOS setup menu interface and help messages are shown in US English. You may use <↑> or <↓> key to select among the items and press <Enter> to confirm and enter the sub-menu. The following table provides the list of the navigation keys that you can use while operating the BIOS setup menu.

BIOS Setup Navigation Key	Description
<←> and <→>	Select a different menu screen (move the cursor from the selected menu to the left or right).
<↑> and <↓>	Select a different item (move the cursor from the selected item upwards or downwards)
<Enter>	Execute the command or select the sub-menu.
<F2>	Load the previous configuration values.
<F3>	Load the default configuration values.
<F4>	Save the current values and exit the BIOS setup menu.
<Esc>	Close the sub-menu. Trigger the confirmation to exit BIOS setup menu.

5.3 Main

Menu Path *Main*

The **Main** menu allows you to view the BIOS Information and change the system date and time. Use tab to switch between date elements. Use <↑> or <↓> arrow keys to highlight the item and enter the value you want in each item. This screen also displays the BIOS version (project) and BIOS Build Date and Time.



Main Screen

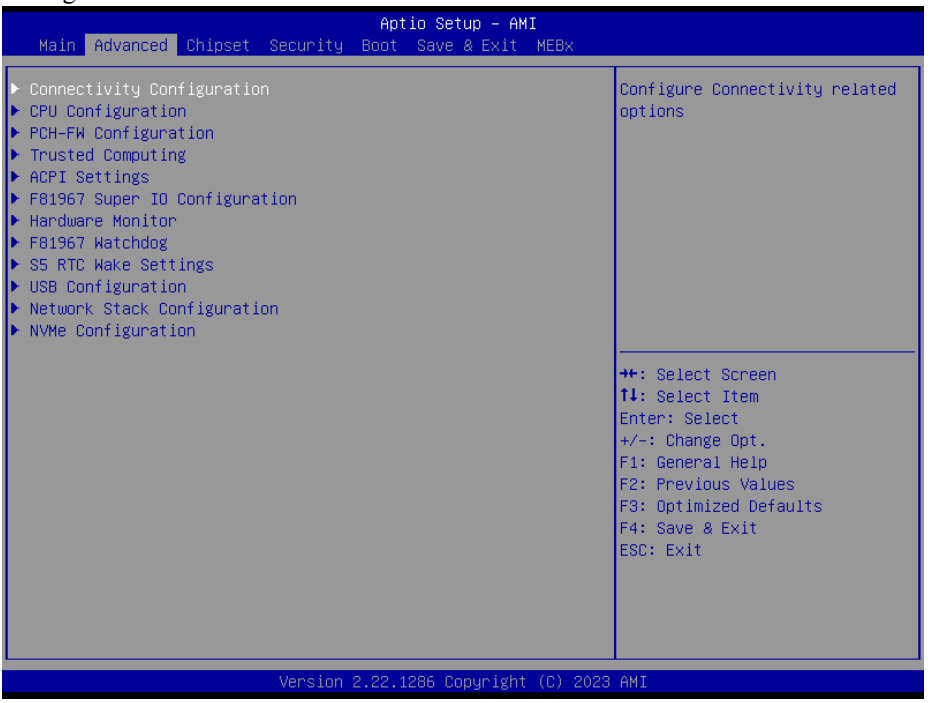
BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the name of the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Compliancy	No changeable options	Displays the current UEFI version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date and Time	No changeable options	Displays the date that the current BIOS version is built.
Access Level	No changeable options	Displays the Access Level.
Name	No changeable options	Displays the name of the PCH.
PCH SKU	No changeable options	Displays the SKU for the PCH.

BIOS Setting	Options	Description/Purpose
Stepping	No changeable options	Displays the stepping of the PCH.
System Language	No changeable options	Displays the system language.
System Date	Month, day, year	Sets the system date. The format is [Day Month/ Date/ Year]. Users can directly enter values or use <+> or <-> arrow keys to increase/decrease it. The "Day" is automatically changed.
System Time	Hour, minute, second	Sets the system time. The format is [Hour: Minute: Second]. Users can directly enter values or use <+> or <-> arrow keys to increase/decrease it.

5.4 Advanced

Menu Path *Advanced*

This menu provides advanced the sub-menu items such as Connectivity Configuration, CPU Configuration, PCH-FW Configuration, Trusted Computing, ACPI Settings, F81967 Super IO Configuration, Hardware Monitor, F81967 Watchdog, S5 RTC Wake Settings, USB Configuration, Network Stack Configuration and NVMe Configuration.



Advanced Menu Screen

BIOS Setting	Options	Description/Purpose
Connectivity Configuration	Sub-Menu	Configure Connectivity related options.
CPU Configuration	Sub-Menu	CPU Configuration Parameters.
PCH-FW Configuration	Sub-Menu	Management Engine Technology Parameters.
Trusted Computing	Sub-Menu	Trusted Computing Settings.
ACPI Settings	Sub-Menu	System ACPI Parameters.
F81967 Super IO Configuration	Sub-Menu	System Super IO Chip Parameters.
Hardware Monitor	Sub-Menu	Monitor hardware status
F81967 Watchdog	Sub-Menu	Super IO Watchdog Parameters.
S5 RTC Wake Settings	Sub-Menu	S5 RTC Wake Parameters.
USB Configuration	Sub-Menu	USB Configuration Parameters.
Network Stack Configuration	Sub-Menu	Network Stack Settings

BIOS Setting	Options	Description/Purpose
NVMe Configuration	Sub-Menu	NVMe Device Options Settings

5.4.1 Advanced – Connectivity Configuration

Menu Path *Advanced > Connectivity Configuration*

The **Connectivity Configuration** provides advanced CNVi settings and some information about CNVi.

Connectivity Configuration Screen

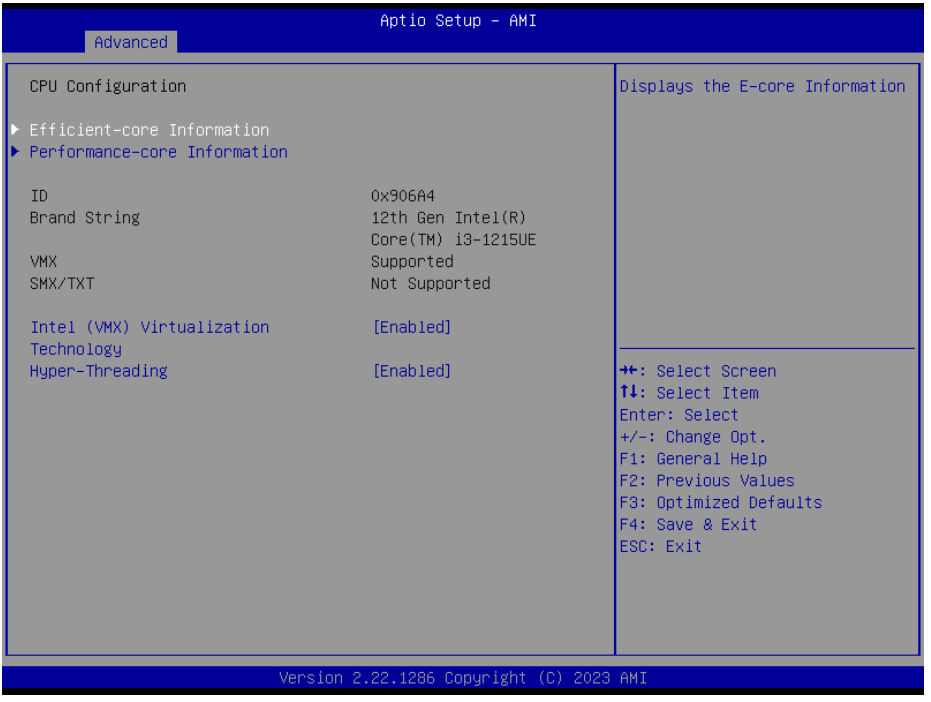
BIOS Setting	Options	Description/Purpose
CNVi CRF Present	No changeable options	[Yes] means CNVi is the active Connectivity Solution, [No] means CNVi was not discovered
CNVi Configuration	No changeable options	CNVi Configuration
CNVi Mode	- Disable Integrated - Auto Detection [Default]	This option configures Connectivity. [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled; [Disable Integrated] disables Integrated Solution.

BIOS Setting	Options	Description/Purpose
Wi-Fi Core	No changeable options	This is an option intended to Enable/Disable Wi-Fi Core in CNVi.
BT Core	No changeable options	This is an option intended to Enable/Disable BT Core in CNVi.
BT Audio Offload	No changeable options	This is an option to Enable/Disable BT Audio Offload which enables audio input from BT device in HFP format to the audio DSP and enables power efficient audio output to BT device via A2DP format. This feature only support with Intel(R) Wireless-AX 22560.
RFI Mitigation	- Disabled - Enabled [Default]	This is an option intended to Enable/Disable DDR-RFIM feature for Connectivity. This RFI mitigation feature may result in temporary slowdown of the DDR speed.

5.4.2 Advanced – CPU Configuration

Menu Path *Advanced > CPU Configuration*

The **CPU Configuration** provides advanced CPU settings and some information about CPU.



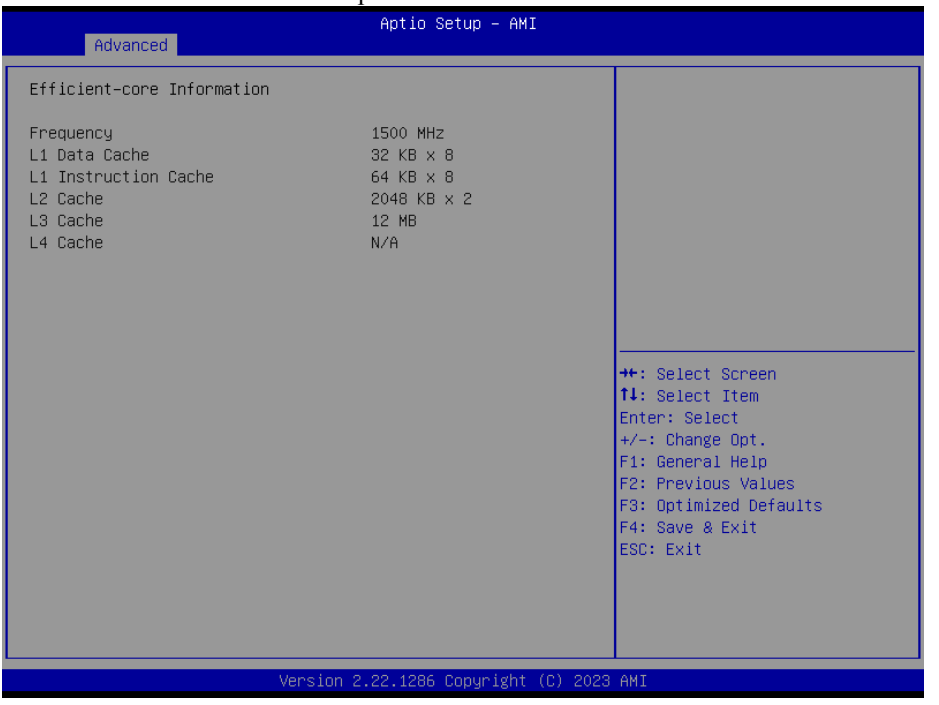
CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
Efficient-core Information	Sub-Menu	Displays the E-core Information
Performance-core Information	Sub-Menu	Displays the P-core Information
ID	No changeable options	Displays the CPU ID.
Brand String	No changeable options	Brand String of the Performance Processor.
VMX	No changeable options	CPU VMX hardware support for virtual machines.
SMX/TXT	No changeable options	Secure Mode extensions support.
Intel (VMX) Virtualization Technology	- Disabled - Enabled [Default]	When enabled, VMM can utilize the additional hardware capabilities provided by Vanderpool Technology
Hyper-Threading	- Disabled - Enabled [Default]	Enable or Disable Hyper-Threading Technology.

Advanced – CPU Configuration – Efficient-core Information

Menu Path *Advanced > CPU Configuration> Efficient-core Information*

The **Efficient-core Information** provides E-Core information.



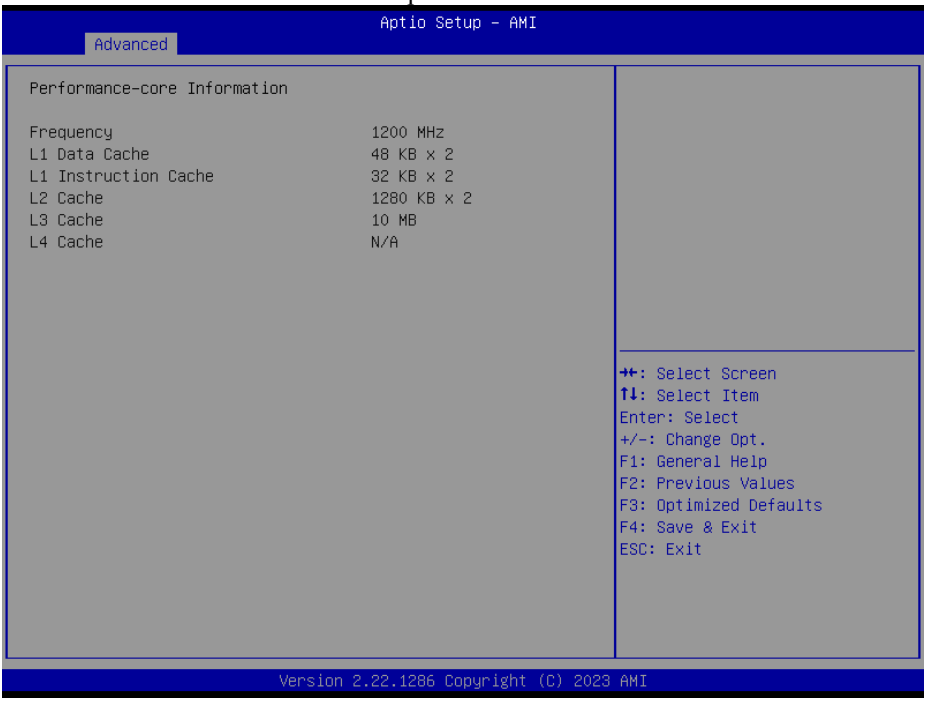
Efficient-core Information Screen

BIOS Setting	Options	Description/Purpose
Frequency	No changeable options	Displays the Processor Frequency.
L1 Data Cache	No changeable options	Displays the Processor L1 Data Cache size.
L1 Instruction Cache	No changeable options	Displays the Processor L1 Instruction Cache size.
L2 Cache	No changeable options	Displays the Processor L2 Cache size.
L3 Cache	No changeable options	Displays the Processor L3 Cache size.
L4 Cache	No changeable options	Displays the Processor L4 eDRAM size.

Advanced – CPU Configuration – Performance-core Information

Menu Path	*Advanced > CPU Configuration> Performance-core Information*

The **Performance-core Information** provides P-Core information.



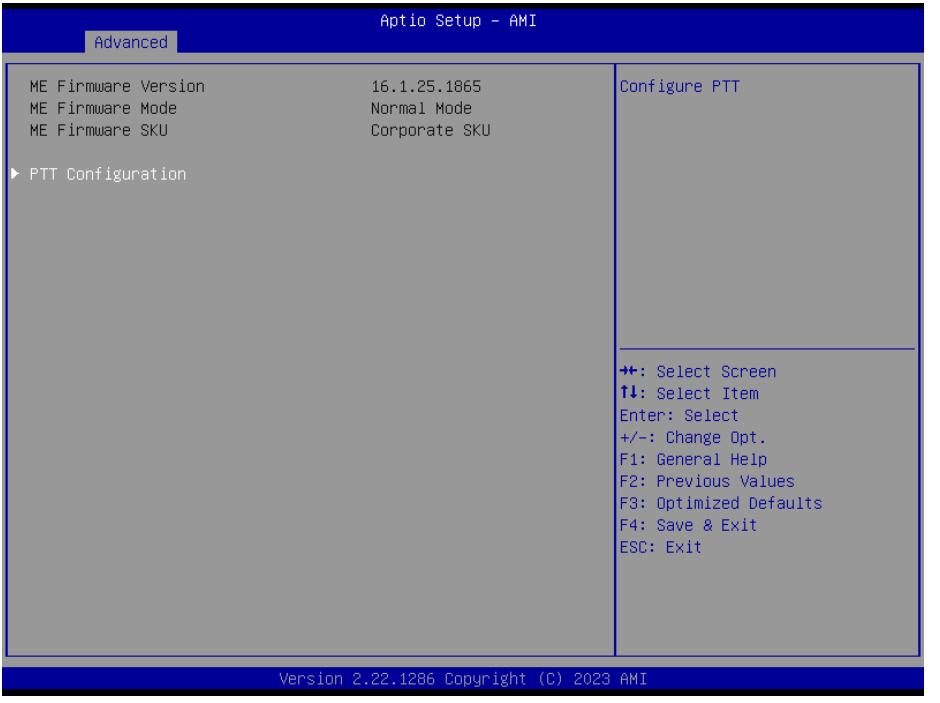
Performance-core Information Screen

BIOS Setting	Options	Description/Purpose
Frequency	No changeable options	Displays the Processor Frequency.
L1 Data Cache	No changeable options	Displays the Processor L1 Data Cache size.
L1 Instruction Cache	No changeable options	Displays the Processor L1 Instruction Cache size.
L2 Cache	No changeable options	Displays the Processor L2 Cache size.
L3 Cache	No changeable options	Displays the Processor L3 Cache size.
L4 Cache	No changeable options	Displays the Processor L4 eDRAM size.

5.4.3 Advanced – PCH-FW Configuration

Menu Path *Advanced > PCH-FW Configuration*

The **PCH-FW** allows users to view the information about ME (Management Engine) firmware information, such ME firmware version, firmware mode and firmware SKU.

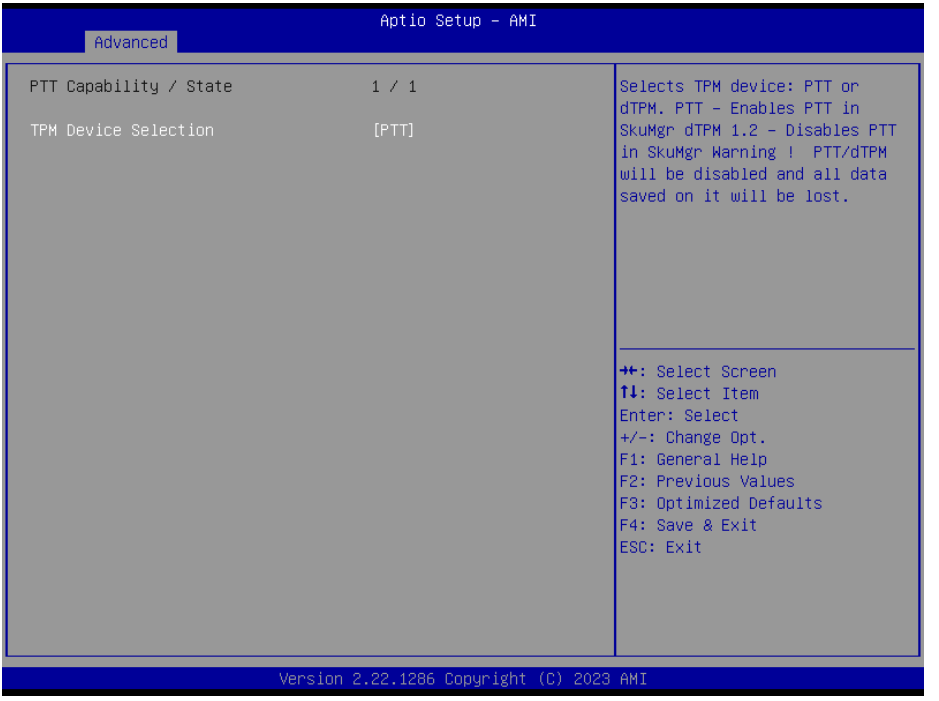


PCH-FW Configuration Screen

BIOS Setting	Options	Description/Purpose
ME Firmware Version	No changeable options	Displays the ME Firmware Version.
ME Firmware Mode	No changeable options	Displays the ME Firmware Mode.
ME Firmware SKU	No changeable options	Displays the ME Firmware SKU.
PTT Configuration	Sub-Menu	Configures PTT.

Advanced – PCH-FW Configuration – PTT Configuration

Menu Path *Advanced > Trusted Computing > PTT Configuration*



PTT Configuration Screen

BIOS Setting	Options	Description/Purpose
TPM Device Selection	- dTPM - PTT [Default]	Selects TPM device: PTT or dTPM. PTT - Enables PTT in SkuMgr dTPM 1.2 - Disables PTT in SkuMgr Warning ! PTT/dTPM will be disabled and all data saved on it will be lost.

5.4.4 Advanced – Trusted Computing

Menu Path *Advanced > Trusted Computing*

The Trusted Computing allows users to enable/disable BIOS support for security device. The operating system will now show Security Device. The TCG EFI protocol and INT1A interface will not be available.

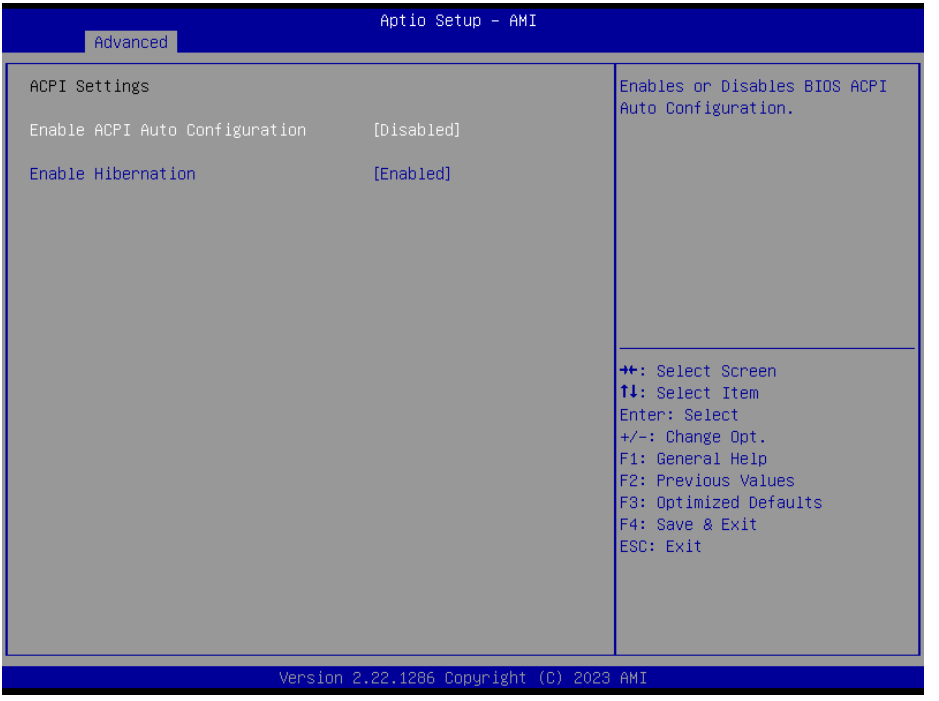
Trusted Computing Screen

BIOS Setting	Options	Description/Purpose
Security Device Support	- Enable [Default] - Disable	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.

5.4.5 Advanced – ACPI Settings

Menu Path *Advanced > ACPI Settings*

The **ACPI Settings** allows users to configure relevant ACPI (Advanced Configuration and Power Management Interface) settings, such as enable/disable ACPI Auto Configuration and enable/disable Hibernation.



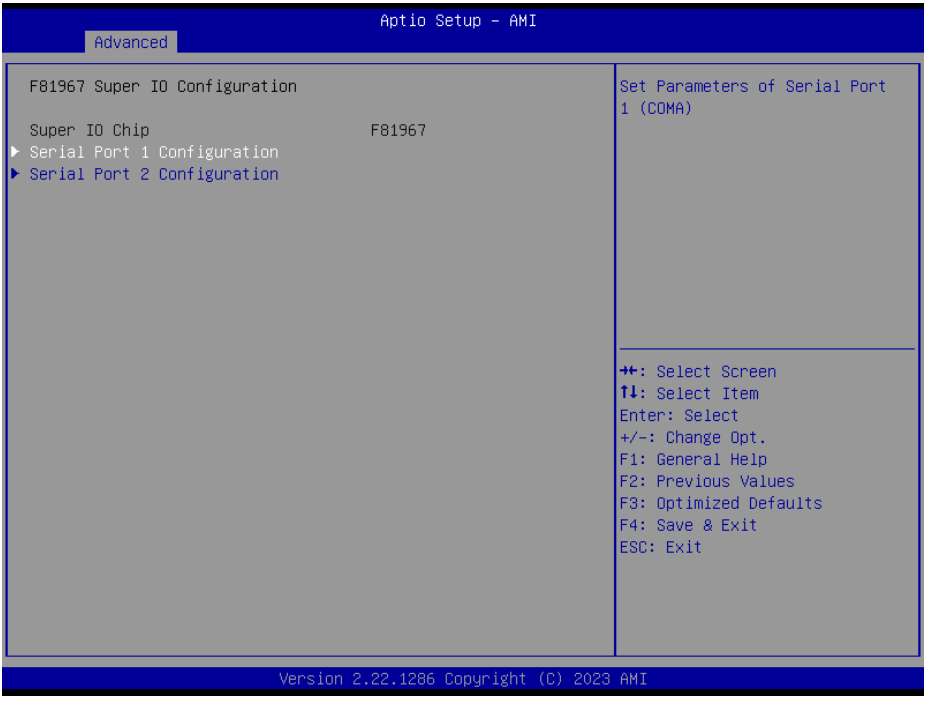
ACPI Settings Screen

BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	- Disabled [Default] - Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	- Disabled - Enabled [Default]	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

5.4.6 Advanced – F81967 Super IO Configuration

Menu Path *Advanced > F81967 Super IO Configuration*

The **F81967 Super IO Configuration** allows users to configure the serial ports 1-2.

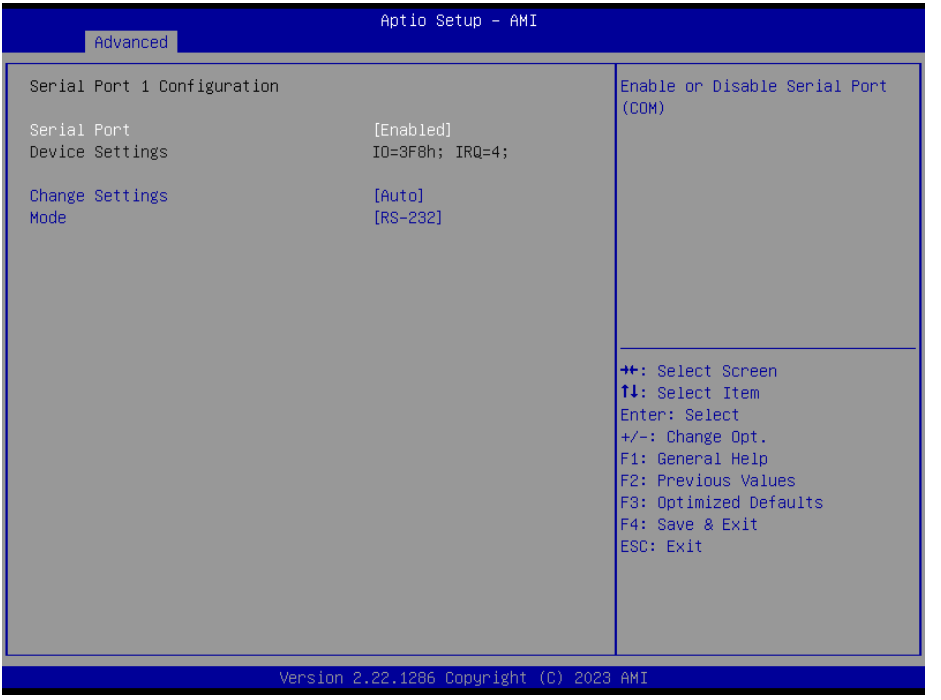


F81967 Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port 1 Configuration	Sub-Menu	Configures Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Sub-Menu	Configures Parameters of Serial Port 2 (COMB).

F81967 Super IO Configuration – Serial Port 1 Configuration

Menu Path *Advanced > F81967 Super IO Configuration > Serial Port 1 Configuration*

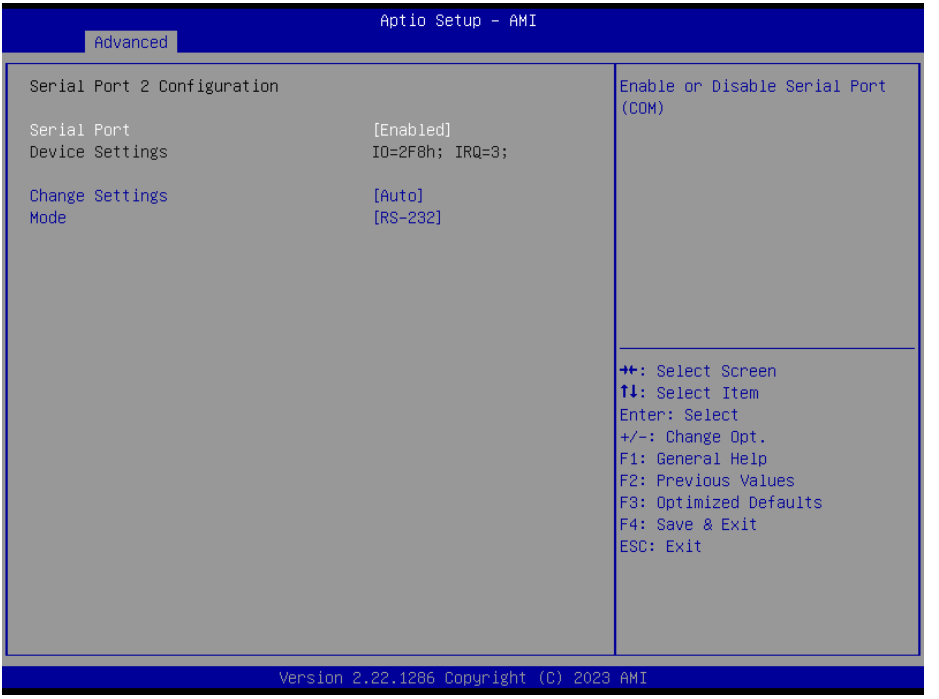


Serial Port 1 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled [Default]	Enables or Disables Serial Port 1.
Device Settings	No changeable options	Displays the current settings of Serial Port 1.
Change Settings	- Auto [Default] - IO=3F8h; IRQ=4; - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Selects IRQ and I/O resource settings for Serial Port 1.
Mode	- RS-232 [Default] - RS-422 - RS-485	Selects COM mode.

F81967 Super IO Configuration – Serial Port 2 Configuration

Menu Path	*Advanced > F81967 Super IO Configuration > Serial Port 2 Configuration*



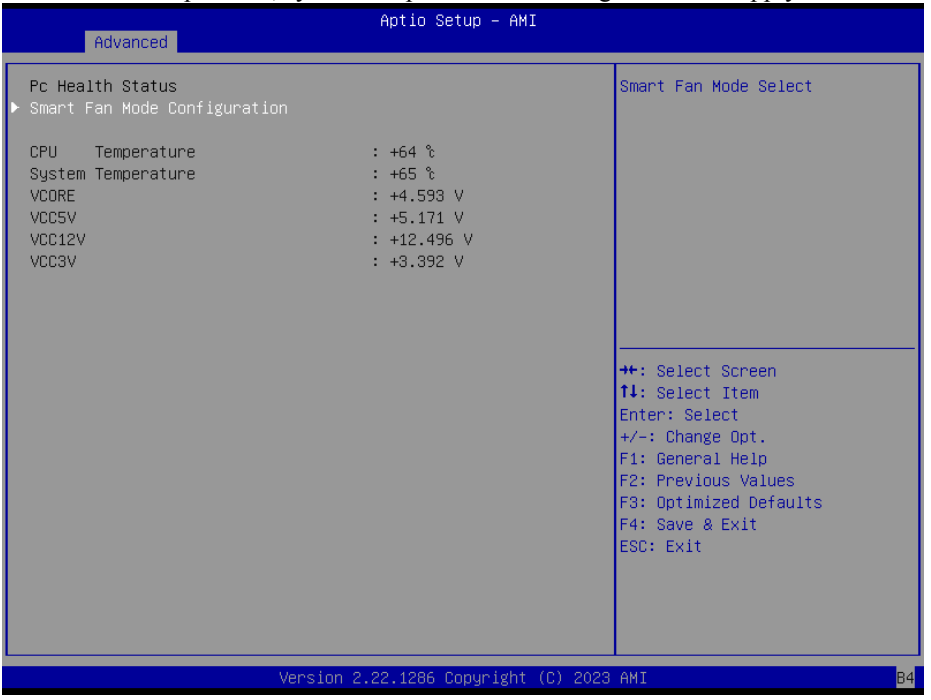
Serial Port 2 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled [Default]	Enables or Disables Serial Port 2.
Device Settings	No changeable options	Displays the current settings of Serial Port 2.
Change Settings	- Auto [Default] - IO=2F8h; IRQ=3; - IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Selects IRQ and I/O resource settings for Serial Port 2.
Mode	- RS-232 [Default] - RS-422 - RS-485	Selects COM mode.

5.4.7 Advanced – Hardware Monitor

Menu Path *Advanced > Hardware Monitor*

The **Hardware Monitor** allows users to monitor the health and status of the system such as CPU temperature, system temperature and voltage levels in supply.

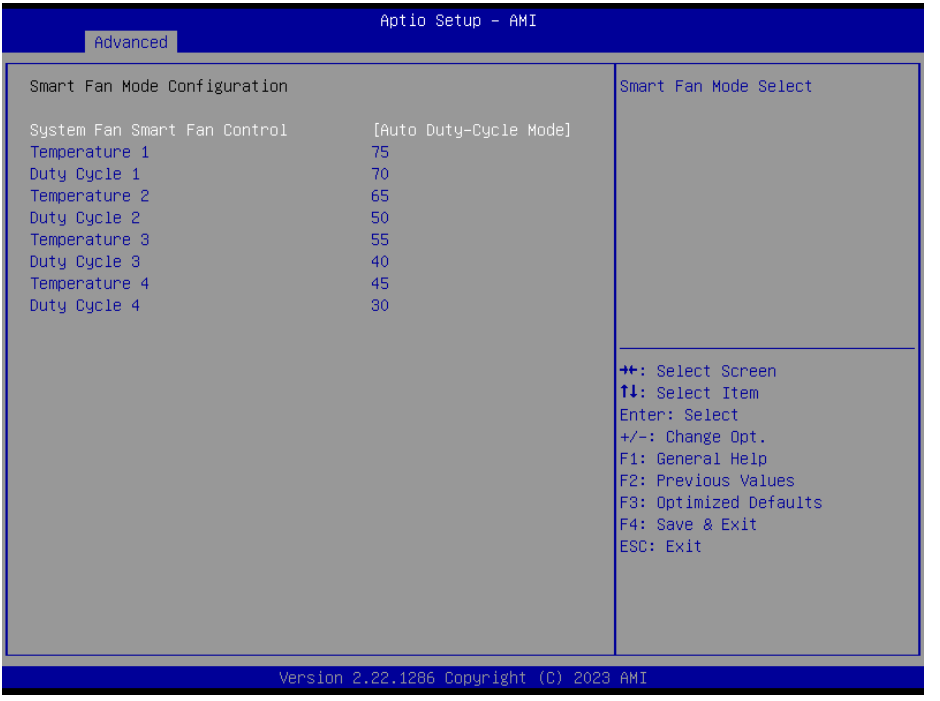


Hardware Monitor Screen

BIOS Setting	Options	Description/Purpose
Smart Fan Mode Configuration	Sub-Menu	Smart Fan Mode Selection.
CPU Temperature	No changeable options	Displays the processor's temperature.
System Temperature	No changeable options	Displays the system's temperature.
VCORE	No changeable options	Displays the voltage level of VCORE in supply.
VCC5V	No changeable options	Displays the voltage level of VCC5V in supply.
VCC12V	No changeable options	Displays the voltage level of VCC12V in supply.
VCC3V	No changeable options	Displays the voltage level of VCC3V in supply.

Smart Fan Mode Configuration

Menu Path *Advanced > Hardware Monitor > Smart Fan Mode Configuration*



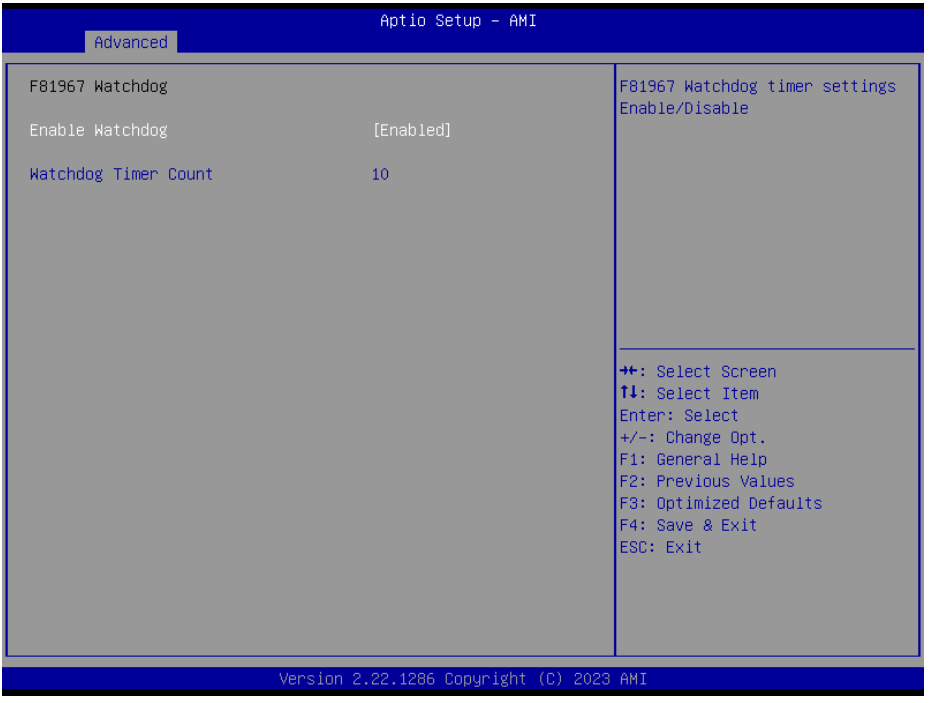
Smart Fan Mode Configuration Screen

BIOS Setting	Options	Description/Purpose
System Fan Smart Fan Control	- Disabled - Enabled [Default]	Smart Fan Function.
Temperature 1	Numeric (from 1 to 100), 75[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.
Duty Cycle 1	Numeric (from 1 to 100), 70[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.
Temperature 2	Numeric (from 1 to 100), 65[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.
Duty Cycle 2	Numeric (from 1 to 100), 50[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.
Temperature 3	Numeric (from 1 to 100), 55[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.

BIOS Setting	Options	Description/Purpose
Duty Cycle 3	Numeric (from 1 to 100), 40[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.
Temperature 4	Numeric (from 1 to 100), 45[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.
Duty Cycle 4	Numeric (from 1 to 100), 30[Default]	Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.

5.4.8 Advanced – F81967 Watchdog

Menu Path *Advanced > F81967 Watchdog*



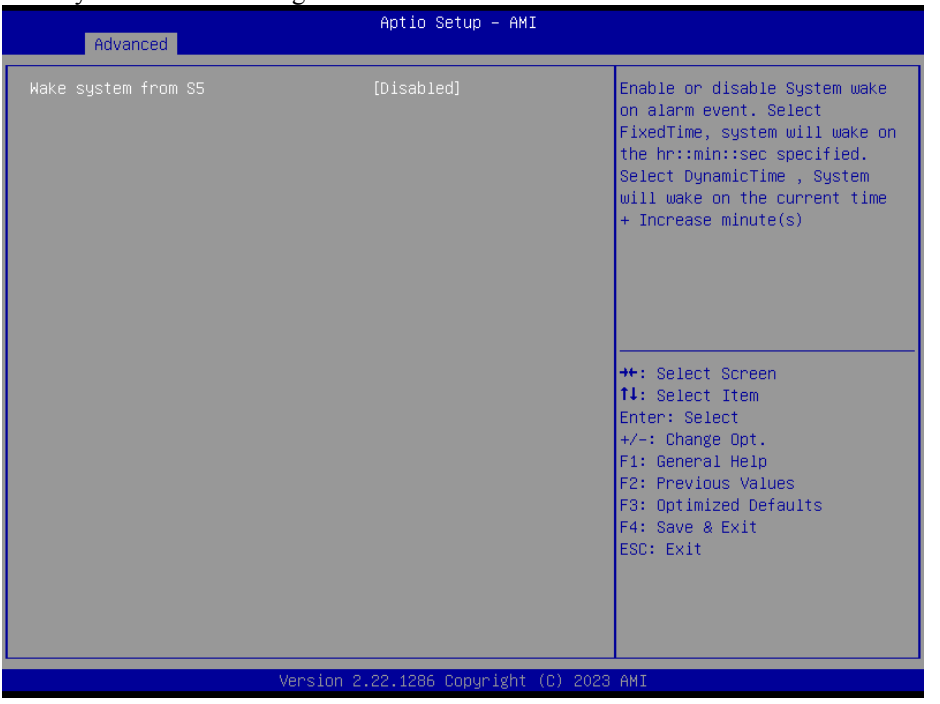
F81967 Watchdog Screen

BIOS Setting	Options	Description/Purpose
Enable WatchDog	- Enabled - Disabled [Default]	Super IO Watchdog timer settings Enable/Disable.
Count for Timer	Numeric (from 1 to 255)	Selects count of watchdog timer. Watchdog Timer = 1sec * Count

5.4.9 Advanced – S5 RTC Wake Settings

Menu Path *Advanced > S5 RTC Wake Settings*

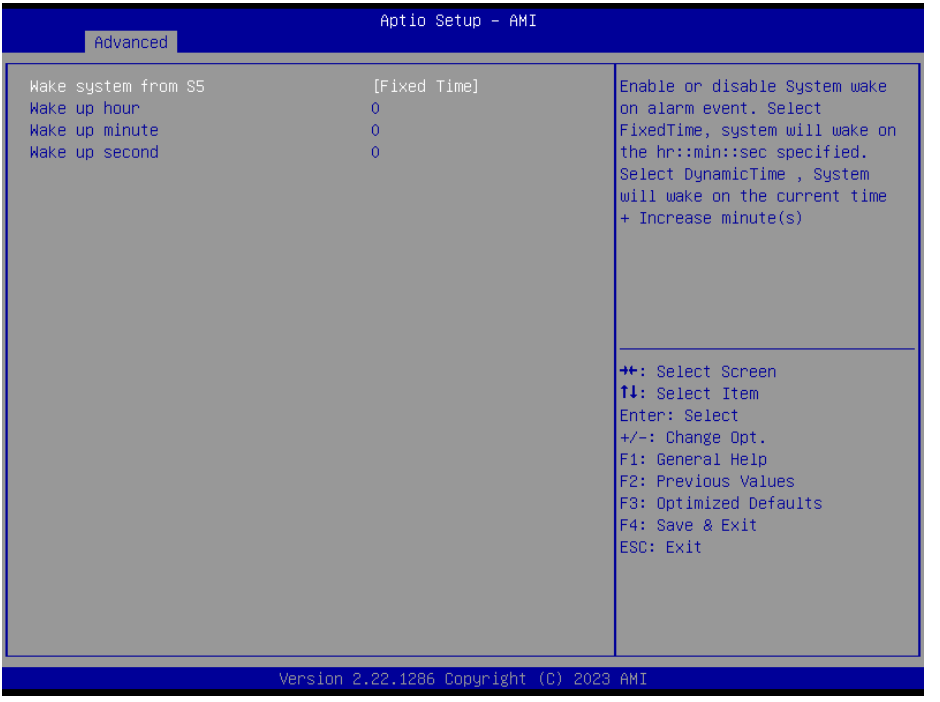
The **S5 RTC Wake Settings** enables/disables the system to wake up at a preset time of a day from S5 State using RTC alarm.



S5 RTC Wake Settings Screen

BIOS Setting	Options	Description/Purpose
Wake system from S5	- Disabled (Default) - Fixed Time - Dynamic Time	Allows enabling scheduled S5 to S0 (option **enabled**). • **Fixed Time:** The system will wake on the time (hr::min::sec) specified. • **Dynamic Time:** The system will wake on the current time + Increase minute(s).

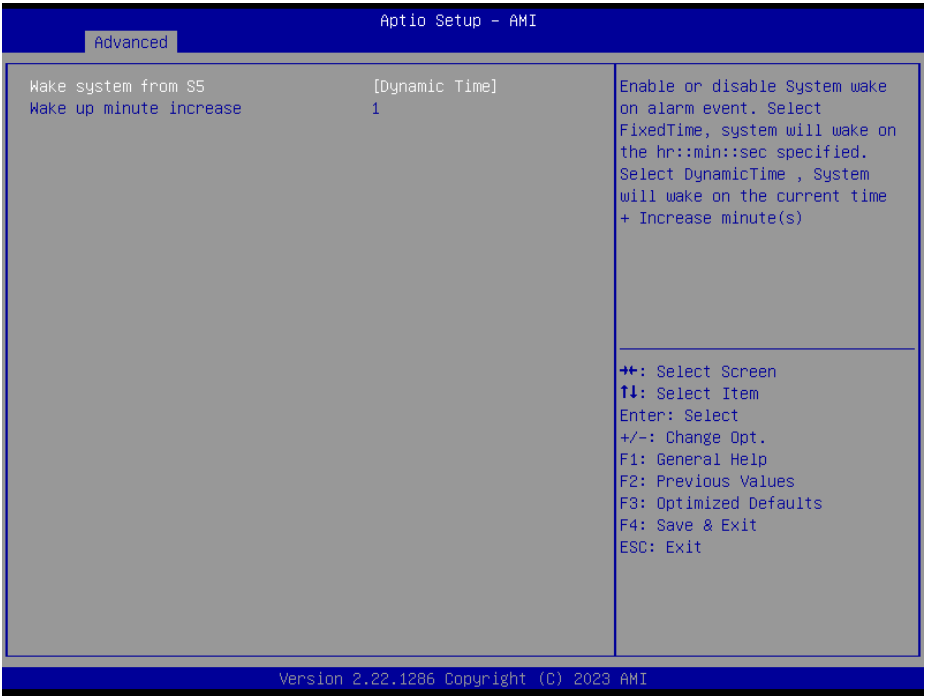
Menu Path *Advanced > S5 RTC wake Settings (Fixed Time)*



S5 RTC Wake Settings Screen (Fixed Time)

BIOS Setting	Options	Description/Purpose
Wake system from S5	- Disabled - Fixed Time - Dynamic Time	Allows enabling scheduled S5 to S0 (option: **enabled**). • **Fixed Time:** System will wake on the hr::min::sec specified. • **Dynamic Time:** System will wake on the current time + Increase minute(s).
Wake up hour	Multiple options ranging from 0 to 23	Sets an hour for schedule power on event.
Wake up minute	Multiple options ranging from 0 to 59	Sets a minute for schedule power on event.
Wake up second	Multiple options ranging from 0 to 59	Sets a second for schedule power on event.

Menu Path *Advanced > S5 RTC Wake Settings (Dynamic Time)*



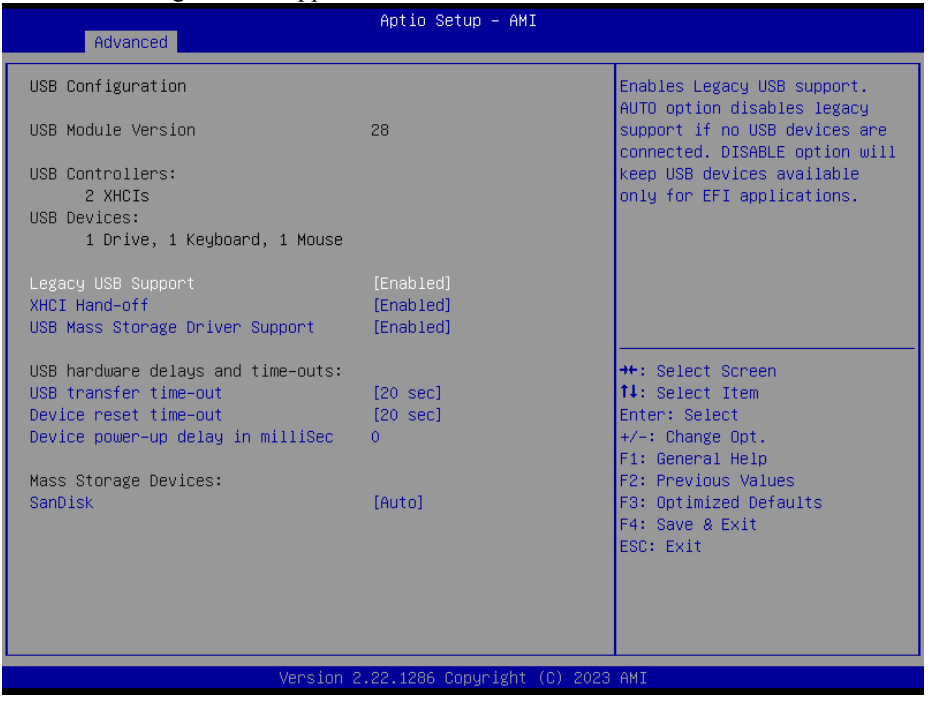
S5 RTC Wake Settings Screen (Dynamic Time)

BIOS Setting	Options	Description/Purpose
Wake system from S5	- Disabled - Fixed Time - Dynamic Time	Allows enabling scheduled S5 to S0 (option: **enabled**). • **Fixed Time:** System will wake on the hr::min::sec specified. • **Dynamic Time:** System will wake on the current time + Increase minute(s).
Wake up minute increase	Multiple options ranging from 1 to 5	Sets a period of time (in minutes) after which the board wakes up from S5 state.

5.4.10 Advanced – USB Configuration

Menu Path *Advanced > USB Configuration*

The **USB Configuration** allows users to configure advanced USB settings such as USB mass storage driver support



USB Configuration Screen

BIOS Setting	Options	Description/Purpose
Legacy USB Support	- Disabled - Enabled [Default]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected.
XHCI Hand-off	- Disabled - Enabled [Default]	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver."
USB Mass Storage Driver Support	- Disabled - Enabled [Default]	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	- 1 sec - 5 sec - 10 sec - 20 sec	The time-out value for Control, Bulk, and Interrupt transfers.

BIOS Setting	Options	Description/Purpose
Device reset time-out	- 1 sec - 5 sec - 10 sec - 20 sec	USB mass storage device Start Unit command time-out.
Device power-up delay in milliSec	Multiple options ranging from 0 to 65535	Delay range is 1..65535 milliSec in one millisecond increments.

5.4.11 Advanced – Network Stack Configuration

Menu Path *Advanced > Network Stack Configuration*

The **Network Stack Configuration** allows users to enable/disable UEFI Network Stack, IPv4/IPv6 PXE (Pre-Boot Execution) support and configure PXE boot wait time and detects the media presence.

PXE allows a workstation to boot from a server on a network prior to booting the operating system on the local hard drive. A PXE-enabled workstation connects its NIC to the LAN via a jumper, which keeps the workstation connected to the network even when the power is turned off.

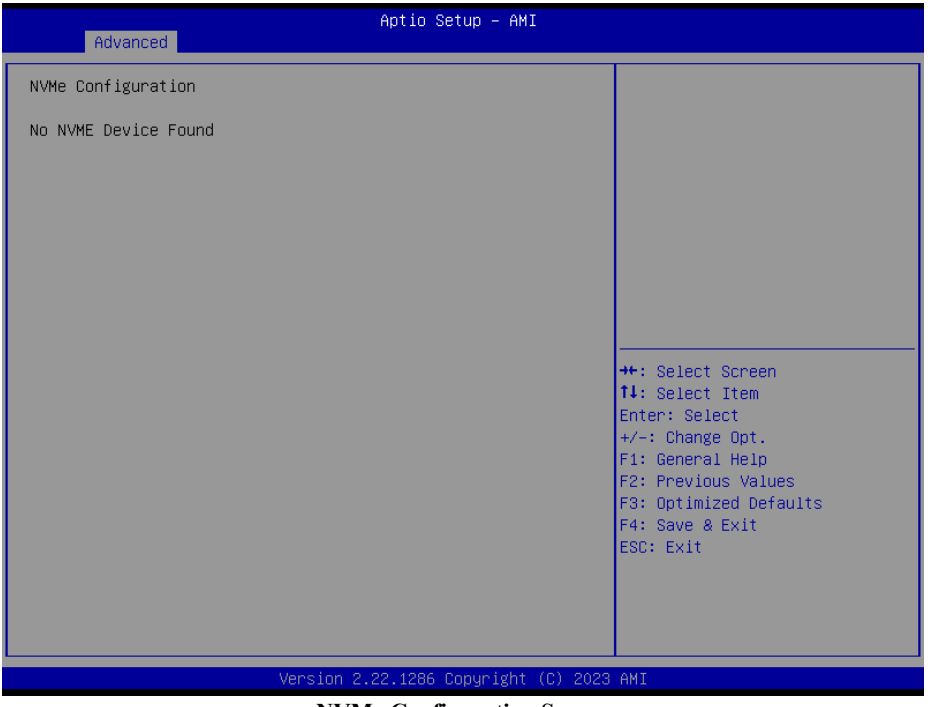
Network Stack Configuration Screen

BIOS Setting	Options	Description/Purpose
Network Stack	- Disabled [Default] - Enabled	Enables or Disables UEFI Network Stack.
Ipv4 PXE Support	- Disabled [Default] - Enabled	Enables Ipv4 PXE Boot Support. If disabled, Ipv4 PXE boot option will not be created.
IPv4 HTTP Support	- Disabled [Default] - Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
Ipv6 PXE Support	- Disabled [Default] - Enabled	Enables Ipv6 PXE Boot Support. If disabled, Ipv6 PXE boot option will not be created.
IPv6 HTTP Support	- Disabled [Default] - Enabled	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
PXE boot wait time	Numeric (from 0 to 5)	Number of seconds to wait for PXE boot to abort after the Esc key is pressed.
Media detect count	Numeric (from 1 to 50)	Number of times that the media presence will be checked.

5.4.12 Advanced – NVMe Configuration

Menu Path *Advanced > NVMe Configuration*

The **NVMe Configuration** allows users to view the information about NVMe Device.



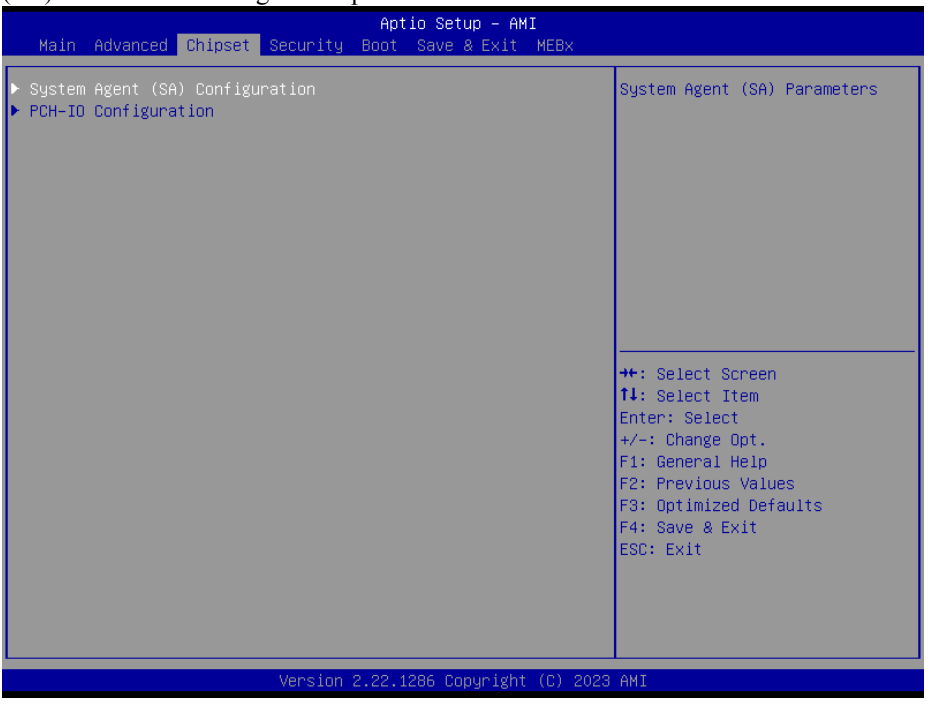
NVMe Configuration Screen

BIOS Setting	Options	Description/Purpose
NVMe Configuration	No changeable options	Displays NVMe device.

5.5 Chipset

Menu Path *Chipset*

This menu allows users to configure advanced Chipset settings such as System Agent (SA) and PCH-IO configuration parameters.

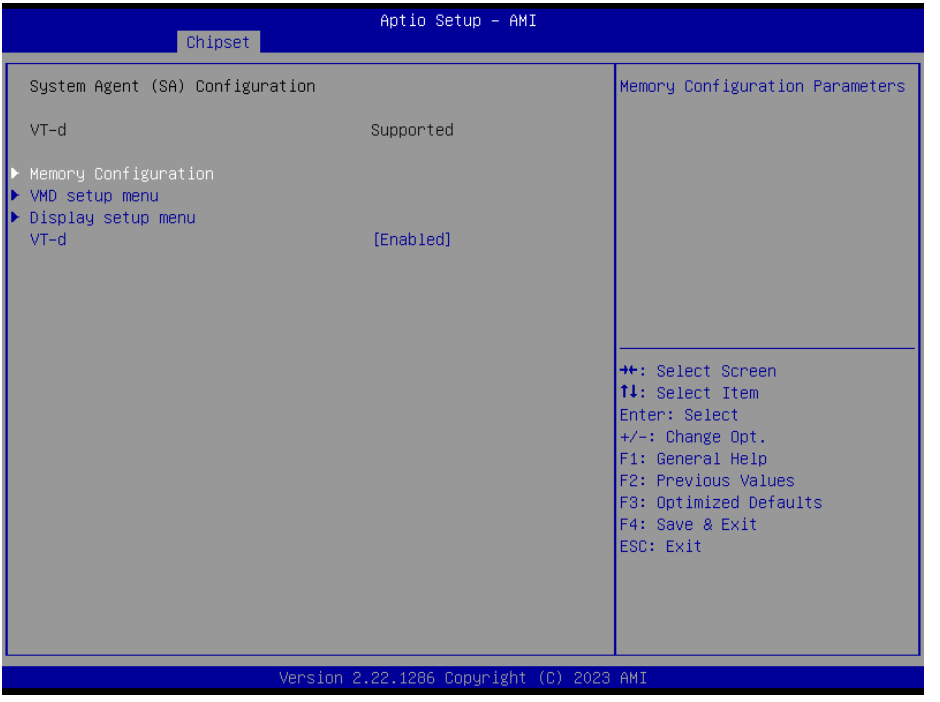


Chipset Screen

BIOS Setting	Options	Description/Purpose
System Agent (SA) Parameters	Sub-Menu	System Agent (SA) Parameters.
PCH-IO Configuration	Sub-Menu	PCH Parameters.

5.5.1 Chipset – System Agent (SA) Configuration

Menu Path *Chipset > System Agent (SA) Configuration*

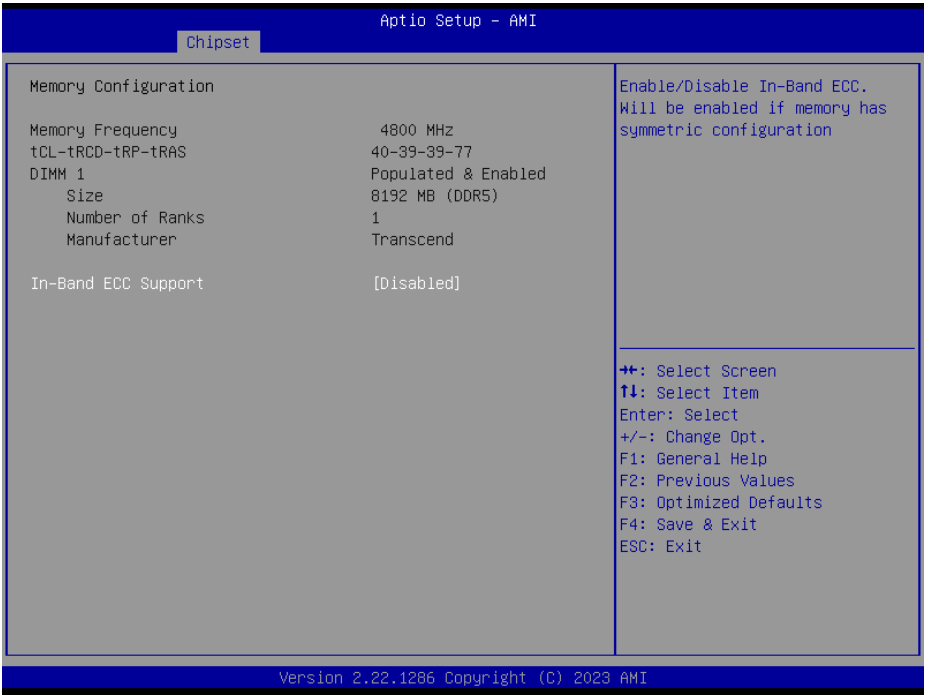


System Agent (SA) Configuration Screen

BIOS Setting	Options	Description/Purpose
Memory Configuration	Sub-Menu	Memory Configuration.
VMD setup menu	Sub-Menu	VMD Configuration settings.
Display setup menu	Sub-Menu	Display Configuration settings.
VT-d	- Disabled - Enabled [Default]	Enables or Disables VT-d function.

System Agent (SA) Configuration – Memory Configuration

Menu Path *Chipset > System Agent (SA) Configuration > Memory Configuration*

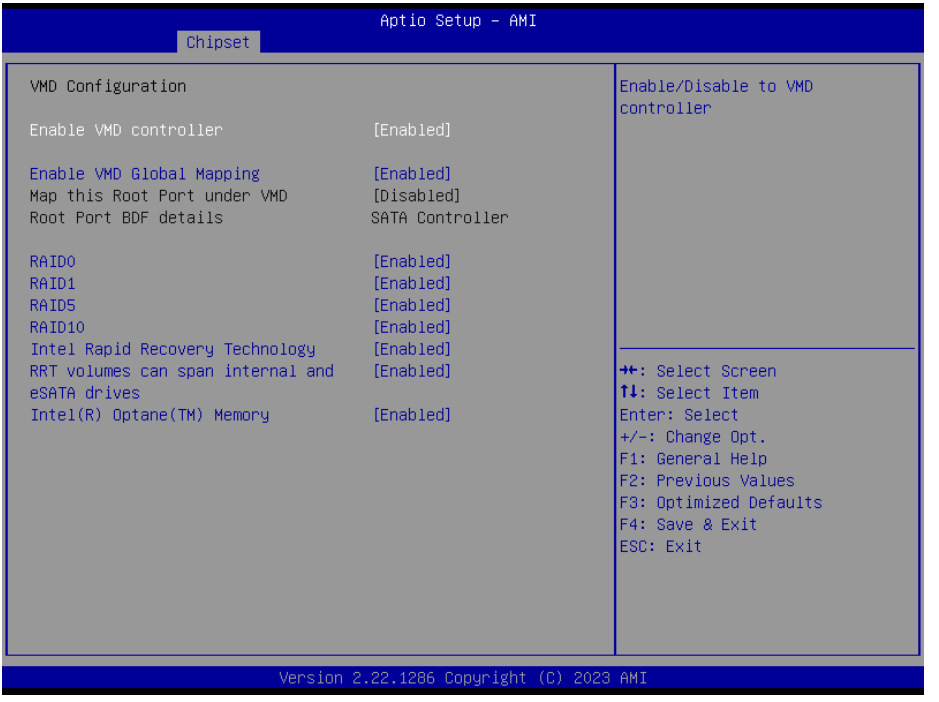


Memory Configuration Screen

BIOS Setting	Options	Description/Purpose
Memory Frequency	No changeable options	Displays the Frequency of Memory.
tCL-tRCD-tRP-tRAS	No changeable options	Memory Timings.
DIMM1	No changeable options	Controller Channel Slot Subtitle.
Size	No changeable options	Memory Size in the Slot.
Number of Ranks	No changeable options	Number of Ranks in the slot.
Manufacturer	No changeable options	DIMM /DRAM Manufacturer Value.
In-Band ECC Support	- Disabled[Default] - Enabled	Enables/Disables In-Band ECC. Will be enabled if memory has symmetric configuration.

System Agent (SA) Configuration – VMD setup menu

Menu Path *Chipset > System Agent (SA) Configuration > VMD setup menu*



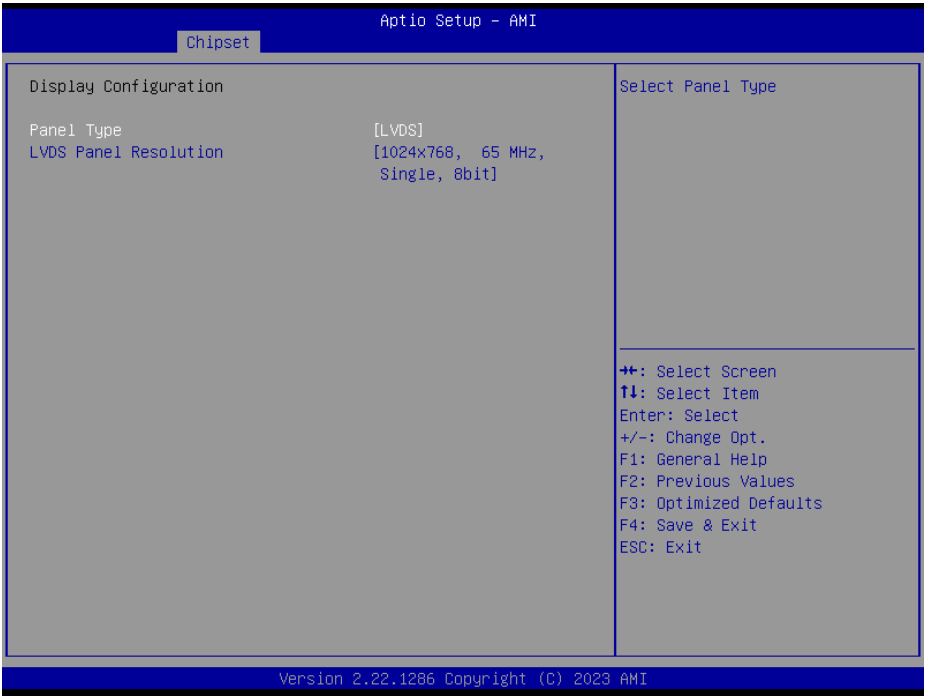
VMD setup menu Screen

BIOS Setting	Options	Description/Purpose
Enable VMD controller	- Disabled - Enabled[Default]	Enable/Disable to VMD controller.
Enable VMD Global Mapping	- Disabled - Enabled[Default]	Enable/Disable to VMD Global Mapping.
Map this Root Port under VMD	- Disabled[Default] - Enabled	Map/UnMap this Root Port to VMD.
RAID0	- Disabled - Enabled[Default]	Enables/Disables RAID0 support.
RAID1	- Disabled - Enabled[Default]	Enables/Disables RAID1 support.
RAID5	- Disabled - Enabled[Default]	Enables/Disables RAID5 support.
RAID10	- Disabled[Default] - Enabled	Enables/Disables RAID10 support.

BIOS Setting	Options	Description/Purpose
Intel Rapid Recovery Technology	- Disabled - Enabled[Default]	Enables/Disables Intel Rapid Recovery Technology.
RRT volumes can span internal and eSATA drives	- Disabled - Enabled[Default]	Enables/Disables RRT volumes can span internal and eSATA drives.
Intel(R) Optane(TM) Memory	- Disabled - Enabled[Default]	Enables/Disables System Acceleration with Intel(R) Optane(TM) Memory feature.

System Agent (SA) Configuration – Display setup menu

Menu Path *Chipset > System Agent (SA) Configuration > Display setup menu*



Display setup menu Screen

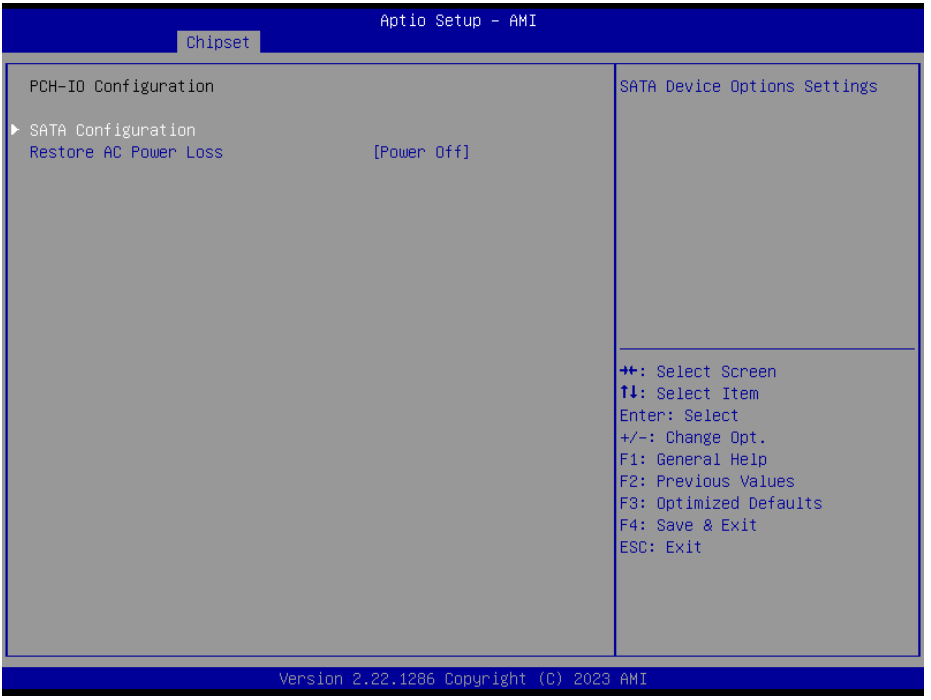
BIOS Setting	Options	Description/Purpose
Panel Type	- eDP - LVDS [Default]	Selects Panel Type.
LVDS Panel Resolution	- 1024x768, 65 MHz, Single, 8bit [Default] - 1024x768, 65 MHz, Single, 6bit - 800x600, 40 MHz, Single, 6bit - 1280x768, 79.5 MHz, Single, 6bit	Selects LCD panel used by Internal graphics device by selecting the appropriate setup item.

BIOS Setting	Options	Description/Purpose
	- 1280x800, 83.5 MHz, Single, 6bit - 1280x960, 108 MHz, Single, 6bit - 1280x1024, 108 MHz, Dual, 8bit - 1366x768, 85.5 MHz, Single, 6bit - 1366x768, 85.5 MHz, Single, 8bit - 1440x900, 106.5 MHz, Dual, 8bit - 1400x1050, 121.75 MHz, Dual, 8bit - 1600x900, 119 MHz, Dual, 8bit - 1680x1050, 146.25 MHz, Dual, 8bit - 1600x1200, 162 MHz, Dual, 8bit - 1920x1080, 148.5 MHz, Dual, 8bit	

5.5.2 Chipset – PCH IO Configuratioin

Menu Path *Chipset > PCH-IO Configuration*

The **PCH-IO Configuration** allows users to set SATA Configuration and Restore AC Power Loss.



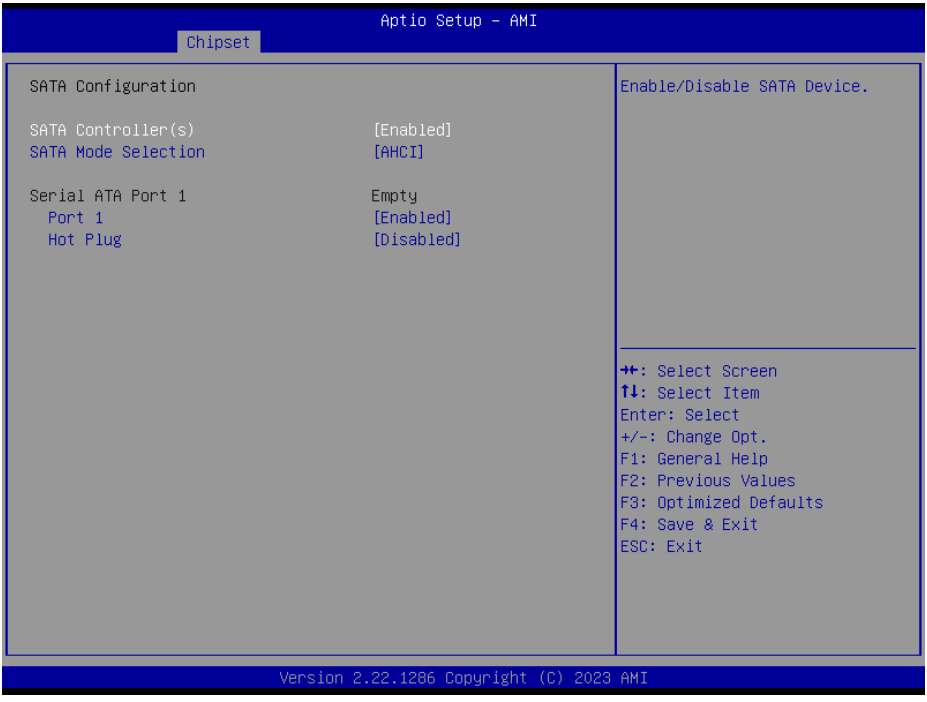
PCH-IO Configuration Screen

BIOS Setting	Options	Description/Purpose
SATA Configuration	Sub-Menu	SATA Configuration settings.
Restore AC Power Loss	- Power On - Power Off [Default]	Specifies what state to go to when power is re-applied after a power failure (G3 state).

PCH-IO Configuration – SATA Configuration

Menu Path *Chipset > PCH-IO Configuration > SATA Configuration*

The **SATA Configuration** allows users to enable / disable the SATA controller as well as the operational mode after the SATA controller is enabled. The following screen indicates the functions available when the SATA controller is enabled and the AHCI mode is selected.



SATA Configuration Screen

BIOS Setting	Options	Description/Purpose
SATA Controller(s)	- Disabled - Enabled [Default]	Enables or Disables SATA Device.
SATA Mode Selection	- AHCI [Default]	Determines how SATA controller(s) operate.

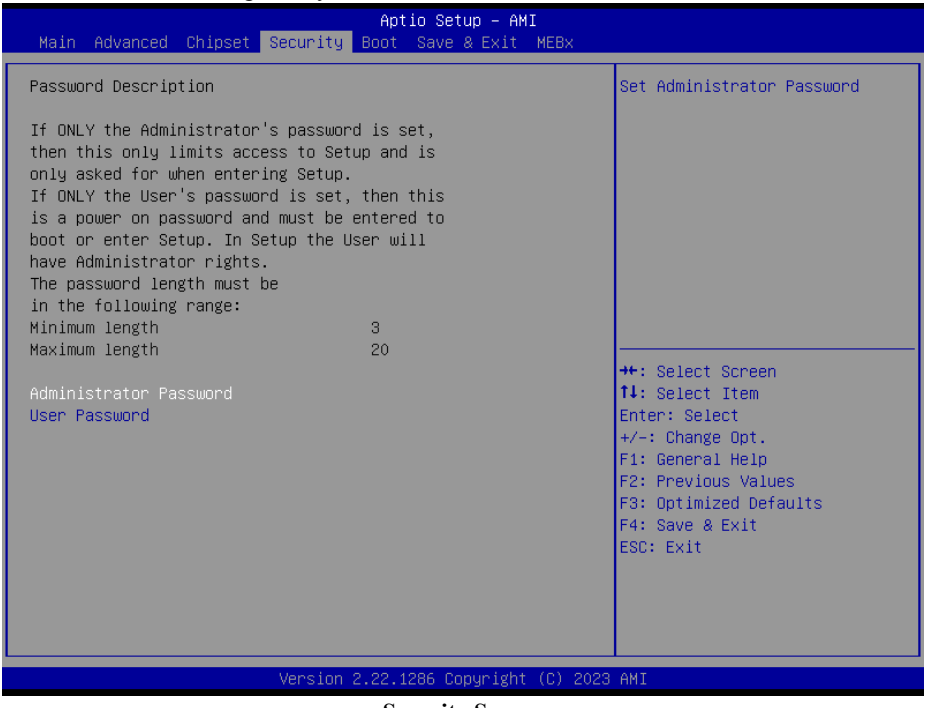
BIOS Setting	Options	Description/Purpose
Serial ATA Port 1	No changeable options	Displays the SATA device's name.
Port 1	- Disabled - Enabled [Default]	Enables or Disables SATA Port Device.
HotPlug	- Disabled [Default] - Enabled	Enables or Disables Hot Plug function to designate a SATA port device as hot-pluggable.

5.6 Security

Menu Path *Security*

From the **Security** menu, you are allowed to create, change or clear the administrator password. You will be asked to enter the configured administrator password before you can access the Setup Utility.

By setting an administrator password, you will prevent other users from changing your BIOS settings. You can configure an Administrator password and then configure a user password. An administrator has much more privileges over the settings in the Setup utility than a user. Heed that a user password does not provide access to most of the features in the Setup utility.



Security Screen

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be 3-20 alphanumeric characters.	Specifies the administrator password.
User Password	Password can be 3-20 alphanumeric characters.	Specifies the user password.

Create an Administrator or User Password

1. Select the **Administrator Password** / **User Password** option from the Security menu and press <Enter>, and the password dialog entry box appears.
2. Enter the password you want to create. A password can be 3-20 alphanumeric characters. After you have configured the password, press <Enter> to confirm.
3. Type the new password again and press <Enter>.

Change an Administrator or User Password

1. Select the **Administrator Password** / **User Password** option from the Security menu and press <Enter>, and the password dialog entry box appears.
2. Select the Administrator Password or User Password that you want to change. A password can be 3-20 alphanumeric characters. After you have changed the password, press <Enter> to confirm.
3. Type the changed password again and press <Enter>.

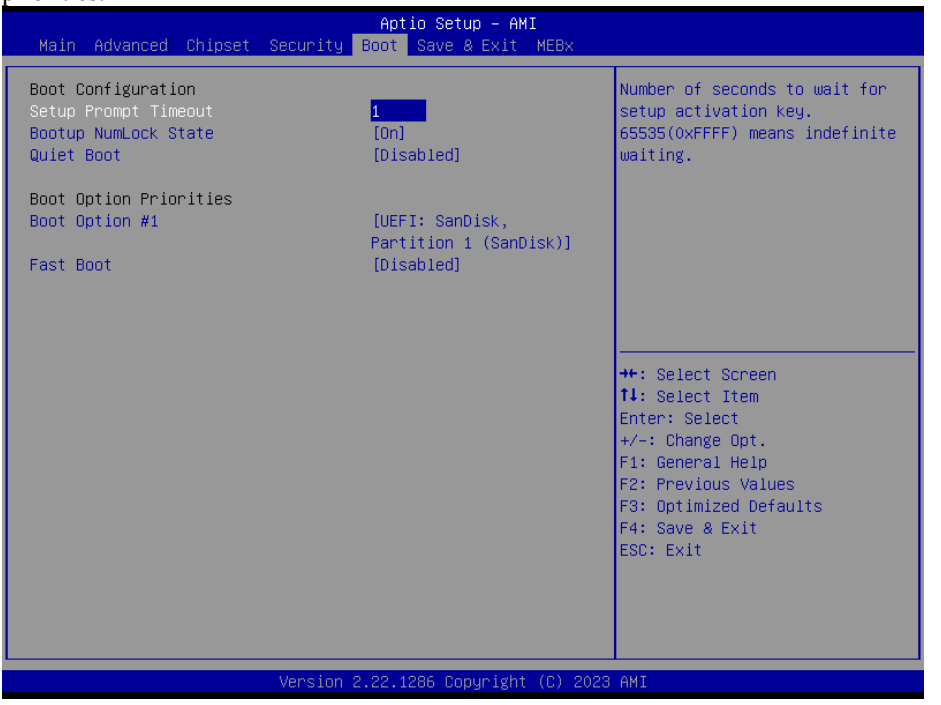
Remove an Administrator or User Password

1. Select the **Administrator Password** / **User Password** option from the Security menu and press <Enter>, and the password dialog entry box appears.
2. Select the configured Administrator Password or User Password that you want to delete. Leave the dialog box blank and press <Enter>.
3. Press <Enter> again when the password confirmation box appears.

5.7 Boot

Menu Path *Boot*

This menu provides control items for setting system boot configuration and boot priorities.



Boot Screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric (from 1 to 65535)	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On (Default) - Off	Specifies the power-on state of the NumLock Key.
Quiet Boot	- Disabled (Default) - Enabled	Enables or Disables Quiet Boot option.
Boot Option #1~#n	- [Drive(s)] - Disabled	Sets the system boot order.
Fast Boot	- Disabled [Default] - Enabled	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.

5.8 Save & Exit

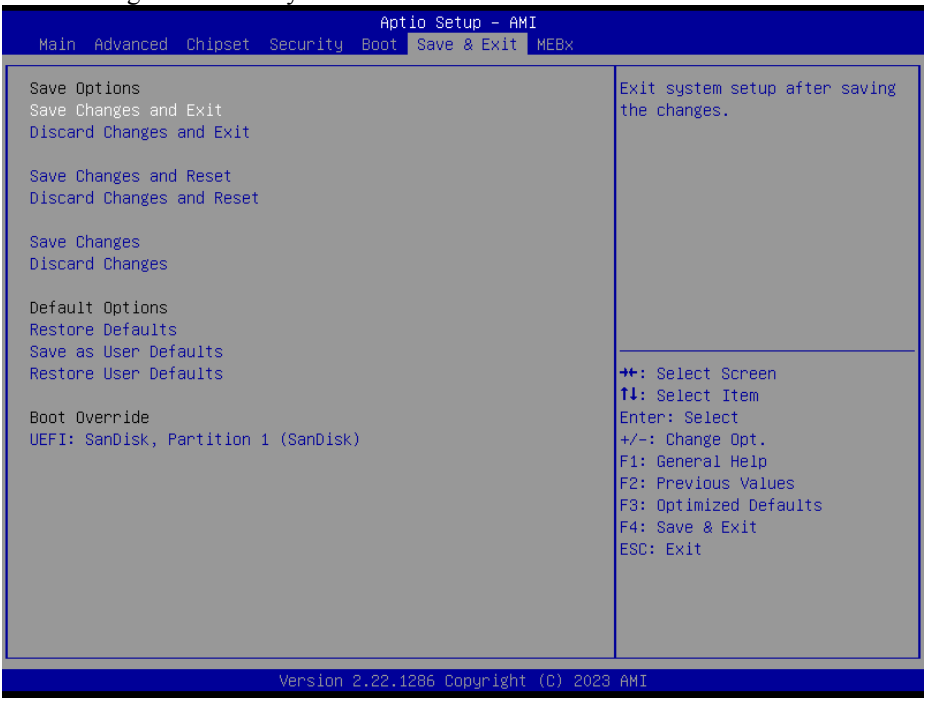
Menu Path *Save & Exit*

The **Save & Exit** allows users to save or discard changed BIOS settings as well as load factory default settings.

Save Changed BIOS Settings
To save and validate the changed BIOS settings, select **Save Changes** from the **Save & Exit** menu, or you can select **Save Changes and Exit** (or press **F4**) to validate the changes and then exit the system. Select **Save Changes and Reset** to validate the changed BIOS settings and then restart the system.

Discard Changed BIOS Settings
To cancel the BIOS settings you have previously configured, select **Discard Changes and Exit** from this menu, or simply press **Esc** to exit the BIOS setup. You can also select **Discard Changes and Reset** to discard any changes you have made and restore the factory BIOS defaults.

Load User Defaults
You may simply press **F3** at any time to load the **Optimized Values** which resets all BIOS settings to the factory defaults.



Save & Exit Screen

BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and resets.
Discard Changes and Reset	No changeable options	Resets without saving any changes made in BIOS settings.
Save Changes	No changeable options	Saves Changes done so far to any of the setup options.
Discard Changes	No changeable options	Discards Changes done so far to any of the setup options.
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Save as User Defaults	No changeable options	Saves the changes done so far as User Defaults.
Restore User Defaults	No changeable options	Restores the User Defaults to all the setup options.
Boot Override	- [Drive(s)]	Forces to boot from selected [drive(s)].

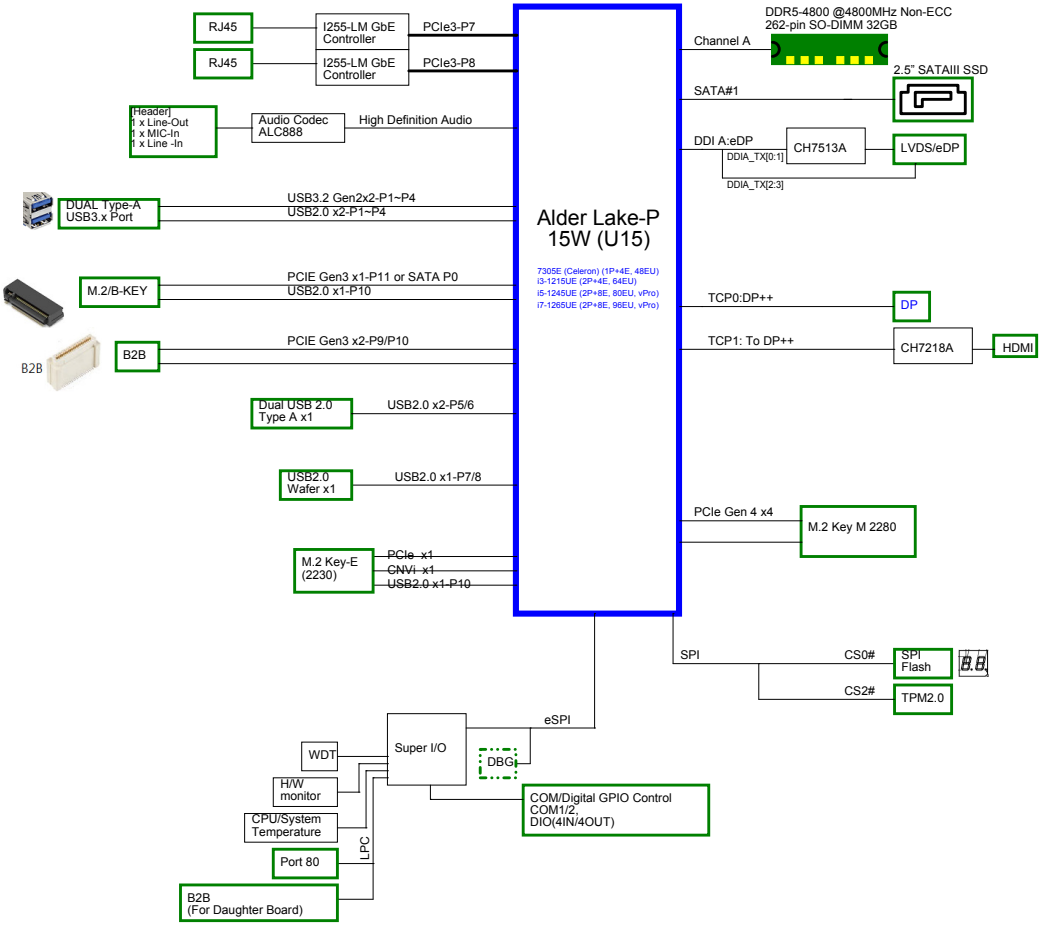
Appendix A Technical Summary

This appendix will give you a brief introduction of the allocation maps for BE-U236 resources.

The following topics are included:

- BE-U236 Block Diagram
- Interrupt Map
- I/O Map
- Memory Map
- Configuring WatchDog Timer
- Flash BIOS Update

BE-U236 Block Diagram



Interrupt Map

IRQ	ASSIGNMENT
IRQ 0	System timer
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INTC1055
IRQ 16	High Definition Audio Controller
IRQ 19	Intel(R) Active Management Technology - SOL (COM3)
IRQ 27	Intel(R) Serial IO I2C Host Controller - 51E8
IRQ 29	Intel(R) Serial IO I2C Host Controller - 51EA
IRQ 40	Intel(R) Serial IO I2C Host Controller - 51E9
IRQ 43	Intel(R) Serial IO I2C Host Controller - 51EB
IRQ 55	Microsoft ACPI-Compliant System
IRQ 56	Microsoft ACPI-Compliant System
IRQ 57	Microsoft ACPI-Compliant System
IRQ 58	Microsoft ACPI-Compliant System
IRQ 59	Microsoft ACPI-Compliant System
IRQ 60	Microsoft ACPI-Compliant System
IRQ 61	Microsoft ACPI-Compliant System
IRQ 62	Microsoft ACPI-Compliant System
IRQ 63	Microsoft ACPI-Compliant System
IRQ 64	Microsoft ACPI-Compliant System
IRQ 65	Microsoft ACPI-Compliant System
IRQ 66	Microsoft ACPI-Compliant System
IRQ 67	Microsoft ACPI-Compliant System
IRQ 68	Microsoft ACPI-Compliant System
IRQ 69	Microsoft ACPI-Compliant System
IRQ 70	Microsoft ACPI-Compliant System
IRQ 71	Microsoft ACPI-Compliant System
IRQ 72	Microsoft ACPI-Compliant System
IRQ 73	Microsoft ACPI-Compliant System
IRQ 74	Microsoft ACPI-Compliant System
IRQ 75	Microsoft ACPI-Compliant System
IRQ 76	Microsoft ACPI-Compliant System
IRQ 77	Microsoft ACPI-Compliant System
IRQ 78	Microsoft ACPI-Compliant System
IRQ 79	Microsoft ACPI-Compliant System
IRQ 80	Microsoft ACPI-Compliant System
IRQ 81	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 82	Microsoft ACPI-Compliant System
IRQ 83	Microsoft ACPI-Compliant System
IRQ 84	Microsoft ACPI-Compliant System
IRQ 85	Microsoft ACPI-Compliant System
IRQ 86	Microsoft ACPI-Compliant System
IRQ 87	Microsoft ACPI-Compliant System
IRQ 88	Microsoft ACPI-Compliant System
IRQ 89	Microsoft ACPI-Compliant System
IRQ 90	Microsoft ACPI-Compliant System
IRQ 91	Microsoft ACPI-Compliant System
IRQ 92	Microsoft ACPI-Compliant System
IRQ 93	Microsoft ACPI-Compliant System
IRQ 94	Microsoft ACPI-Compliant System
IRQ 95	Microsoft ACPI-Compliant System
IRQ 96	Microsoft ACPI-Compliant System
IRQ 97	Microsoft ACPI-Compliant System
IRQ 98	Microsoft ACPI-Compliant System
IRQ 99	Microsoft ACPI-Compliant System
IRQ 100	Microsoft ACPI-Compliant System
IRQ 101	Microsoft ACPI-Compliant System
IRQ 102	Microsoft ACPI-Compliant System
IRQ 103	Microsoft ACPI-Compliant System
IRQ 104	Microsoft ACPI-Compliant System
IRQ 105	Microsoft ACPI-Compliant System
IRQ 106	Microsoft ACPI-Compliant System
IRQ 107	Microsoft ACPI-Compliant System
IRQ 108	Microsoft ACPI-Compliant System
IRQ 109	Microsoft ACPI-Compliant System
IRQ 110	Microsoft ACPI-Compliant System
IRQ 111	Microsoft ACPI-Compliant System
IRQ 112	Microsoft ACPI-Compliant System
IRQ 113	Microsoft ACPI-Compliant System
IRQ 114	Microsoft ACPI-Compliant System
IRQ 115	Microsoft ACPI-Compliant System
IRQ 116	Microsoft ACPI-Compliant System
IRQ 117	Microsoft ACPI-Compliant System
IRQ 118	Microsoft ACPI-Compliant System
IRQ 119	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 120	Microsoft ACPI-Compliant System
IRQ 121	Microsoft ACPI-Compliant System
IRQ 122	Microsoft ACPI-Compliant System
IRQ 123	Microsoft ACPI-Compliant System
IRQ 124	Microsoft ACPI-Compliant System
IRQ 125	Microsoft ACPI-Compliant System
IRQ 126	Microsoft ACPI-Compliant System
IRQ 127	Microsoft ACPI-Compliant System
IRQ 128	Microsoft ACPI-Compliant System
IRQ 129	Microsoft ACPI-Compliant System
IRQ 130	Microsoft ACPI-Compliant System
IRQ 131	Microsoft ACPI-Compliant System
IRQ 132	Microsoft ACPI-Compliant System
IRQ 133	Microsoft ACPI-Compliant System
IRQ 134	Microsoft ACPI-Compliant System
IRQ 135	Microsoft ACPI-Compliant System
IRQ 136	Microsoft ACPI-Compliant System
IRQ 137	Microsoft ACPI-Compliant System
IRQ 138	Microsoft ACPI-Compliant System
IRQ 139	Microsoft ACPI-Compliant System
IRQ 140	Microsoft ACPI-Compliant System
IRQ 141	Microsoft ACPI-Compliant System
IRQ 142	Microsoft ACPI-Compliant System
IRQ 143	Microsoft ACPI-Compliant System
IRQ 144	Microsoft ACPI-Compliant System
IRQ 145	Microsoft ACPI-Compliant System
IRQ 146	Microsoft ACPI-Compliant System
IRQ 147	Microsoft ACPI-Compliant System
IRQ 148	Microsoft ACPI-Compliant System
IRQ 149	Microsoft ACPI-Compliant System
IRQ 150	Microsoft ACPI-Compliant System
IRQ 151	Microsoft ACPI-Compliant System
IRQ 152	Microsoft ACPI-Compliant System
IRQ 153	Microsoft ACPI-Compliant System
IRQ 154	Microsoft ACPI-Compliant System
IRQ 155	Microsoft ACPI-Compliant System
IRQ 156	Microsoft ACPI-Compliant System
IRQ 157	Microsoft ACPI-Compliant System
IRQ 158	Microsoft ACPI-Compliant System
IRQ 159	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 160	Microsoft ACPI-Compliant System
IRQ 161	Microsoft ACPI-Compliant System
IRQ 162	Microsoft ACPI-Compliant System
IRQ 163	Microsoft ACPI-Compliant System
IRQ 164	Microsoft ACPI-Compliant System
IRQ 165	Microsoft ACPI-Compliant System
IRQ 166	Microsoft ACPI-Compliant System
IRQ 167	Microsoft ACPI-Compliant System
IRQ 168	Microsoft ACPI-Compliant System
IRQ 169	Microsoft ACPI-Compliant System
IRQ 170	Microsoft ACPI-Compliant System
IRQ 171	Microsoft ACPI-Compliant System
IRQ 172	Microsoft ACPI-Compliant System
IRQ 173	Microsoft ACPI-Compliant System
IRQ 174	Microsoft ACPI-Compliant System
IRQ 175	Microsoft ACPI-Compliant System
IRQ 176	Microsoft ACPI-Compliant System
IRQ 177	Microsoft ACPI-Compliant System
IRQ 178	Microsoft ACPI-Compliant System
IRQ 179	Microsoft ACPI-Compliant System
IRQ 180	Microsoft ACPI-Compliant System
IRQ 181	Microsoft ACPI-Compliant System
IRQ 182	Microsoft ACPI-Compliant System
IRQ 183	Microsoft ACPI-Compliant System
IRQ 184	Microsoft ACPI-Compliant System
IRQ 185	Microsoft ACPI-Compliant System
IRQ 186	Microsoft ACPI-Compliant System
IRQ 187	Microsoft ACPI-Compliant System
IRQ 188	Microsoft ACPI-Compliant System
IRQ 189	Microsoft ACPI-Compliant System
IRQ 190	Microsoft ACPI-Compliant System
IRQ 191	Microsoft ACPI-Compliant System
IRQ 192	Microsoft ACPI-Compliant System
IRQ 193	Microsoft ACPI-Compliant System
IRQ 194	Microsoft ACPI-Compliant System
IRQ 195	Microsoft ACPI-Compliant System
IRQ 196	Microsoft ACPI-Compliant System
IRQ 197	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 198	Microsoft ACPI-Compliant System
IRQ 199	Microsoft ACPI-Compliant System
IRQ 200	Microsoft ACPI-Compliant System
IRQ 201	Microsoft ACPI-Compliant System
IRQ 202	Microsoft ACPI-Compliant System
IRQ 203	Microsoft ACPI-Compliant System
IRQ 204	Microsoft ACPI-Compliant System
IRQ 256	Microsoft ACPI-Compliant System
IRQ 257	Microsoft ACPI-Compliant System
IRQ 258	Microsoft ACPI-Compliant System
IRQ 259	Microsoft ACPI-Compliant System
IRQ 260	Microsoft ACPI-Compliant System
IRQ 261	Microsoft ACPI-Compliant System
IRQ 262	Microsoft ACPI-Compliant System
IRQ 263	Microsoft ACPI-Compliant System
IRQ 264	Microsoft ACPI-Compliant System
IRQ 265	Microsoft ACPI-Compliant System
IRQ 266	Microsoft ACPI-Compliant System
IRQ 267	Microsoft ACPI-Compliant System
IRQ 268	Microsoft ACPI-Compliant System
IRQ 269	Microsoft ACPI-Compliant System
IRQ 270	Microsoft ACPI-Compliant System
IRQ 271	Microsoft ACPI-Compliant System
IRQ 272	Microsoft ACPI-Compliant System
IRQ 273	Microsoft ACPI-Compliant System
IRQ 274	Microsoft ACPI-Compliant System
IRQ 275	Microsoft ACPI-Compliant System
IRQ 276	Microsoft ACPI-Compliant System
IRQ 277	Microsoft ACPI-Compliant System
IRQ 278	Microsoft ACPI-Compliant System
IRQ 279	Microsoft ACPI-Compliant System
IRQ 280	Microsoft ACPI-Compliant System
IRQ 281	Microsoft ACPI-Compliant System
IRQ 282	Microsoft ACPI-Compliant System
IRQ 283	Microsoft ACPI-Compliant System
IRQ 284	Microsoft ACPI-Compliant System
IRQ 285	Microsoft ACPI-Compliant System
IRQ 286	Microsoft ACPI-Compliant System
IRQ 287	Microsoft ACPI-Compliant System
IRQ 288	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 289	Microsoft ACPI-Compliant System
IRQ 290	Microsoft ACPI-Compliant System
IRQ 291	Microsoft ACPI-Compliant System
IRQ 292	Microsoft ACPI-Compliant System
IRQ 293	Microsoft ACPI-Compliant System
IRQ 294	Microsoft ACPI-Compliant System
IRQ 295	Microsoft ACPI-Compliant System
IRQ 296	Microsoft ACPI-Compliant System
IRQ 297	Microsoft ACPI-Compliant System
IRQ 298	Microsoft ACPI-Compliant System
IRQ 299	Microsoft ACPI-Compliant System
IRQ 300	Microsoft ACPI-Compliant System
IRQ 301	Microsoft ACPI-Compliant System
IRQ 302	Microsoft ACPI-Compliant System
IRQ 303	Microsoft ACPI-Compliant System
IRQ 304	Microsoft ACPI-Compliant System
IRQ 305	Microsoft ACPI-Compliant System
IRQ 306	Microsoft ACPI-Compliant System
IRQ 307	Microsoft ACPI-Compliant System
IRQ 308	Microsoft ACPI-Compliant System
IRQ 309	Microsoft ACPI-Compliant System
IRQ 310	Microsoft ACPI-Compliant System
IRQ 311	Microsoft ACPI-Compliant System
IRQ 312	Microsoft ACPI-Compliant System
IRQ 313	Microsoft ACPI-Compliant System
IRQ 314	Microsoft ACPI-Compliant System
IRQ 315	Microsoft ACPI-Compliant System
IRQ 316	Microsoft ACPI-Compliant System
IRQ 317	Microsoft ACPI-Compliant System
IRQ 318	Microsoft ACPI-Compliant System
IRQ 319	Microsoft ACPI-Compliant System
IRQ 320	Microsoft ACPI-Compliant System
IRQ 321	Microsoft ACPI-Compliant System
IRQ 322	Microsoft ACPI-Compliant System
IRQ 323	Microsoft ACPI-Compliant System
IRQ 324	Microsoft ACPI-Compliant System
IRQ 325	Microsoft ACPI-Compliant System
IRQ 326	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 327	Microsoft ACPI-Compliant System
IRQ 328	Microsoft ACPI-Compliant System
IRQ 329	Microsoft ACPI-Compliant System
IRQ 330	Microsoft ACPI-Compliant System
IRQ 331	Microsoft ACPI-Compliant System
IRQ 332	Microsoft ACPI-Compliant System
IRQ 333	Microsoft ACPI-Compliant System
IRQ 334	Microsoft ACPI-Compliant System
IRQ 335	Microsoft ACPI-Compliant System
IRQ 336	Microsoft ACPI-Compliant System
IRQ 337	Microsoft ACPI-Compliant System
IRQ 338	Microsoft ACPI-Compliant System
IRQ 339	Microsoft ACPI-Compliant System
IRQ 340	Microsoft ACPI-Compliant System
IRQ 341	Microsoft ACPI-Compliant System
IRQ 342	Microsoft ACPI-Compliant System
IRQ 343	Microsoft ACPI-Compliant System
IRQ 344	Microsoft ACPI-Compliant System
IRQ 345	Microsoft ACPI-Compliant System
IRQ 346	Microsoft ACPI-Compliant System
IRQ 347	Microsoft ACPI-Compliant System
IRQ 348	Microsoft ACPI-Compliant System
IRQ 349	Microsoft ACPI-Compliant System
IRQ 350	Microsoft ACPI-Compliant System
IRQ 351	Microsoft ACPI-Compliant System
IRQ 352	Microsoft ACPI-Compliant System
IRQ 353	Microsoft ACPI-Compliant System
IRQ 354	Microsoft ACPI-Compliant System
IRQ 355	Microsoft ACPI-Compliant System
IRQ 356	Microsoft ACPI-Compliant System
IRQ 357	Microsoft ACPI-Compliant System
IRQ 358	Microsoft ACPI-Compliant System
IRQ 359	Microsoft ACPI-Compliant System
IRQ 360	Microsoft ACPI-Compliant System
IRQ 361	Microsoft ACPI-Compliant System
IRQ 362	Microsoft ACPI-Compliant System
IRQ 363	Microsoft ACPI-Compliant System
IRQ 364	Microsoft ACPI-Compliant System
IRQ 365	Microsoft ACPI-Compliant System
IRQ 366	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 367	Microsoft ACPI-Compliant System
IRQ 368	Microsoft ACPI-Compliant System
IRQ 369	Microsoft ACPI-Compliant System
IRQ 370	Microsoft ACPI-Compliant System
IRQ 371	Microsoft ACPI-Compliant System
IRQ 372	Microsoft ACPI-Compliant System
IRQ 373	Microsoft ACPI-Compliant System
IRQ 374	Microsoft ACPI-Compliant System
IRQ 375	Microsoft ACPI-Compliant System
IRQ 376	Microsoft ACPI-Compliant System
IRQ 377	Microsoft ACPI-Compliant System
IRQ 378	Microsoft ACPI-Compliant System
IRQ 379	Microsoft ACPI-Compliant System
IRQ 380	Microsoft ACPI-Compliant System
IRQ 381	Microsoft ACPI-Compliant System
IRQ 382	Microsoft ACPI-Compliant System
IRQ 383	Microsoft ACPI-Compliant System
IRQ 384	Microsoft ACPI-Compliant System
IRQ 385	Microsoft ACPI-Compliant System
IRQ 386	Microsoft ACPI-Compliant System
IRQ 387	Microsoft ACPI-Compliant System
IRQ 388	Microsoft ACPI-Compliant System
IRQ 389	Microsoft ACPI-Compliant System
IRQ 390	Microsoft ACPI-Compliant System
IRQ 391	Microsoft ACPI-Compliant System
IRQ 392	Microsoft ACPI-Compliant System
IRQ 393	Microsoft ACPI-Compliant System
IRQ 394	Microsoft ACPI-Compliant System
IRQ 395	Microsoft ACPI-Compliant System
IRQ 396	Microsoft ACPI-Compliant System
IRQ 397	Microsoft ACPI-Compliant System
IRQ 398	Microsoft ACPI-Compliant System
IRQ 399	Microsoft ACPI-Compliant System
IRQ 400	Microsoft ACPI-Compliant System
IRQ 401	Microsoft ACPI-Compliant System
IRQ 402	Microsoft ACPI-Compliant System
IRQ 403	Microsoft ACPI-Compliant System
IRQ 404	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 405	Microsoft ACPI-Compliant System
IRQ 406	Microsoft ACPI-Compliant System
IRQ 407	Microsoft ACPI-Compliant System
IRQ 408	Microsoft ACPI-Compliant System
IRQ 409	Microsoft ACPI-Compliant System
IRQ 410	Microsoft ACPI-Compliant System
IRQ 411	Microsoft ACPI-Compliant System
IRQ 412	Microsoft ACPI-Compliant System
IRQ 413	Microsoft ACPI-Compliant System
IRQ 414	Microsoft ACPI-Compliant System
IRQ 415	Microsoft ACPI-Compliant System
IRQ 416	Microsoft ACPI-Compliant System
IRQ 417	Microsoft ACPI-Compliant System
IRQ 418	Microsoft ACPI-Compliant System
IRQ 419	Microsoft ACPI-Compliant System
IRQ 420	Microsoft ACPI-Compliant System
IRQ 421	Microsoft ACPI-Compliant System
IRQ 422	Microsoft ACPI-Compliant System
IRQ 423	Microsoft ACPI-Compliant System
IRQ 424	Microsoft ACPI-Compliant System
IRQ 425	Microsoft ACPI-Compliant System
IRQ 426	Microsoft ACPI-Compliant System
IRQ 427	Microsoft ACPI-Compliant System
IRQ 428	Microsoft ACPI-Compliant System
IRQ 429	Microsoft ACPI-Compliant System
IRQ 430	Microsoft ACPI-Compliant System
IRQ 431	Microsoft ACPI-Compliant System
IRQ 432	Microsoft ACPI-Compliant System
IRQ 433	Microsoft ACPI-Compliant System
IRQ 434	Microsoft ACPI-Compliant System
IRQ 435	Microsoft ACPI-Compliant System
IRQ 436	Microsoft ACPI-Compliant System
IRQ 437	Microsoft ACPI-Compliant System
IRQ 438	Microsoft ACPI-Compliant System
IRQ 439	Microsoft ACPI-Compliant System
IRQ 440	Microsoft ACPI-Compliant System
IRQ 441	Microsoft ACPI-Compliant System
IRQ 442	Microsoft ACPI-Compliant System
IRQ 443	Microsoft ACPI-Compliant System
IRQ 444	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 445	Microsoft ACPI-Compliant System
IRQ 446	Microsoft ACPI-Compliant System
IRQ 447	Microsoft ACPI-Compliant System
IRQ 448	Microsoft ACPI-Compliant System
IRQ 449	Microsoft ACPI-Compliant System
IRQ 450	Microsoft ACPI-Compliant System
IRQ 451	Microsoft ACPI-Compliant System
IRQ 452	Microsoft ACPI-Compliant System
IRQ 453	Microsoft ACPI-Compliant System
IRQ 454	Microsoft ACPI-Compliant System
IRQ 455	Microsoft ACPI-Compliant System
IRQ 456	Microsoft ACPI-Compliant System
IRQ 457	Microsoft ACPI-Compliant System
IRQ 458	Microsoft ACPI-Compliant System
IRQ 459	Microsoft ACPI-Compliant System
IRQ 460	Microsoft ACPI-Compliant System
IRQ 461	Microsoft ACPI-Compliant System
IRQ 462	Microsoft ACPI-Compliant System
IRQ 463	Microsoft ACPI-Compliant System
IRQ 464	Microsoft ACPI-Compliant System
IRQ 465	Microsoft ACPI-Compliant System
IRQ 466	Microsoft ACPI-Compliant System
IRQ 467	Microsoft ACPI-Compliant System
IRQ 468	Microsoft ACPI-Compliant System
IRQ 469	Microsoft ACPI-Compliant System
IRQ 470	Microsoft ACPI-Compliant System
IRQ 471	Microsoft ACPI-Compliant System
IRQ 472	Microsoft ACPI-Compliant System
IRQ 473	Microsoft ACPI-Compliant System
IRQ 474	Microsoft ACPI-Compliant System
IRQ 475	Microsoft ACPI-Compliant System
IRQ 476	Microsoft ACPI-Compliant System
IRQ 477	Microsoft ACPI-Compliant System
IRQ 478	Microsoft ACPI-Compliant System
IRQ 479	Microsoft ACPI-Compliant System
IRQ 480	Microsoft ACPI-Compliant System
IRQ 481	Microsoft ACPI-Compliant System
IRQ 482	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
IRQ 483	Microsoft ACPI-Compliant System
IRQ 484	Microsoft ACPI-Compliant System
IRQ 485	Microsoft ACPI-Compliant System
IRQ 486	Microsoft ACPI-Compliant System
IRQ 487	Microsoft ACPI-Compliant System
IRQ 488	Microsoft ACPI-Compliant System
IRQ 489	Microsoft ACPI-Compliant System
IRQ 490	Microsoft ACPI-Compliant System
IRQ 491	Microsoft ACPI-Compliant System
IRQ 492	Microsoft ACPI-Compliant System
IRQ 493	Microsoft ACPI-Compliant System
IRQ 494	Microsoft ACPI-Compliant System
IRQ 495	Microsoft ACPI-Compliant System
IRQ 496	Microsoft ACPI-Compliant System
IRQ 497	Microsoft ACPI-Compliant System
IRQ 498	Microsoft ACPI-Compliant System
IRQ 499	Microsoft ACPI-Compliant System
IRQ 500	Microsoft ACPI-Compliant System
IRQ 501	Microsoft ACPI-Compliant System
IRQ 502	Microsoft ACPI-Compliant System
IRQ 503	Microsoft ACPI-Compliant System
IRQ 504	Microsoft ACPI-Compliant System
IRQ 505	Microsoft ACPI-Compliant System
IRQ 506	Microsoft ACPI-Compliant System
IRQ 507	Microsoft ACPI-Compliant System
IRQ 508	Microsoft ACPI-Compliant System
IRQ 509	Microsoft ACPI-Compliant System
IRQ 510	Microsoft ACPI-Compliant System
IRQ 511	Microsoft ACPI-Compliant System
IRQ 4294967280	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967281	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967282	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967283	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967284	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967285	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967286	Intel(R) Ethernet Controller (3) I225-IT
IRQ 4294967287	Intel(R) Management Engine Interface #1
IRQ 4294967288	Intel(R) UHD Graphics
IRQ 4294967289	Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)

IRQ	ASSIGNMENT
IRQ 4294967290	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
IRQ 4294967291	Standard SATA AHCI Controller
IRQ 4294967292	Intel(R) PCI Express Root Port #1 - 51B8
IRQ 4294967293	Intel(R) PCI Express Root Port #7 - 51BE
IRQ 4294967294	Intel(R) PCI Express Root Port #8 - 51BF
IRQ 0	System timer
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INTC1055
IRQ 16	High Definition Audio Controller
IRQ 19	Intel(R) Active Management Technology - SOL (COM3)
IRQ 27	Intel(R) Serial IO I2C Host Controller - 51E8
IRQ 29	Intel(R) Serial IO I2C Host Controller - 51EA
IRQ 40	Intel(R) Serial IO I2C Host Controller - 51E9
IRQ 43	Intel(R) Serial IO I2C Host Controller - 51EB
IRQ 55	Microsoft ACPI-Compliant System
IRQ 56	Microsoft ACPI-Compliant System
IRQ 57	Microsoft ACPI-Compliant System

Note: These resource information were gathered using Windows 10 (the IRQ could be assigned differently depending on OS).

I/O MAP

I/O	ASSIGNMENT
0x00000000-0x00000CF7	PCI Express Root Complex
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x0000004E-0x0000004F	Motherboard resources

I/O	ASSIGNMENT
0x00000050-0x00000053	System timer
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B2-0x000000B3	Motherboard resources
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003F8-0x000003FF	Communications Port (COM1)
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x0000164E-0x0000164F	Motherboard resources
0x00001854-0x00001857	Motherboard resources
0x00002000-0x000020FE	Motherboard resources
0x00003000-0x0000303F	Intel(R) UHD Graphics
0x00003060-0x0000307F	Standard SATA AHCI Controller
0x00003080-0x00003083	Standard SATA AHCI Controller
0x00003090-0x00003097	Standard SATA AHCI Controller
0x0000FFF8-0x0000FFFF	Intel(R) Active Management Technology - SOL (COM3)
0x00000000-0x00000CF7	PCI Express Root Complex
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources

I/O	ASSIGNMENT
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller

Memory Map

MEMORY MAP	ASSIGNMENT
0xFEDC0000-0xFEDC7FFF	Motherboard resources
0xFEDA0000-0xFEDA0FFF	Motherboard resources
0xFEDA1000-0xFEDA1FFF	Motherboard resources
0xC0000000-0xCFFFFFFF	Motherboard resources
0xFED20000-0xFED7FFFF	Motherboard resources
0xFED90000-0xFED93FFF	Motherboard resources
0xFED45000-0xFED8FFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0x1110000-0x111FFFF	Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
0x81200000-0x812FFFFF	Intel(R) Ethernet Controller (3) I225-IT
0x811FC000-0x811FFFFF	Intel(R) Ethernet Controller (3) I225-IT
0xFD6E0000-0xFD6EFFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFD6D0000-0xFD6DFFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFD6A0000-0xFD6AFFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFD690000-0xFD69FFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFE010000-0xFE010FFF	Intel(R) SPI (flash) Controller - 51A4
0xBFFFF000-0xBFFFFFFF	Intel(R) Active Management Technology - SOL (COM3)
0xFED00000-0xFED003FF	High precision event timer
0x80800000-0x810FFFFF	Intel(R) PCI Express Root Port #7 - 51BE
0xFFEFB000-0xFFEFBFFF	Intel(R) Management Engine Interface #1
0xFFEFA000-0xFFEFAFFF	Intel(R) Serial IO I2C Host Controller - 51E8
0xFFEFC000-0xFFEFFFFF	High Definition Audio Controller
0xFFF00000-0xFFFFFFFF	High Definition Audio Controller
0x80400000-0xBFFFFFFF	PCI Express Root Complex
0xFFEF7000-0xFFEF7FFF	Intel(R) Serial IO I2C Host Controller - 51EB

MEMORY MAP	ASSIGNMENT
0xFED40000-0xFED44FFF	Trusted Platform Module 2.0
0x81300000-0x81301FFF	Standard SATA AHCI Controller
0x81303000-0x813030FF	Standard SATA AHCI Controller
0x81302000-0x813027FF	Standard SATA AHCI Controller
0x1100000-0x110FFFF	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
0x81100000-0x812FFFFF	Intel(R) PCI Express Root Port #8 - 51BF
0xFFEF9000-0xFFEF9FFF	Intel(R) Serial IO I2C Host Controller - 51E9
0x0000-0xFFFFFF	Intel(R) UHD Graphics
0x0000-0xFFFFFFF	Intel(R) UHD Graphics
0xFFEF8000-0xFFEF8FFF	Intel(R) Serial IO I2C Host Controller - 51EA
0xA0000-0xBFFFF	PCI Express Root Complex
0xFEDC0000-0xFEDC7FFF	Motherboard resources
0xFEDA0000-0xFEDA0FFF	Motherboard resources
0xFEDA1000-0xFEDA1FFF	Motherboard resources
0xC0000000-0xCFFFFFFF	Motherboard resources
0xFED20000-0xFED7FFFF	Motherboard resources
0xFED90000-0xFED93FFF	Motherboard resources
0xFED45000-0xFED8FFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0x1110000-0x111FFFF	Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
0x81200000-0x812FFFFF	Intel(R) Ethernet Controller (3) I225-IT
0x811FC000-0x811FFFFF	Intel(R) Ethernet Controller (3) I225-IT
0xFD6E0000-0xFD6EFFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFD6D0000-0xFD6DFFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFD6A0000-0xFD6AFFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFD690000-0xFD69FFFF	Intel(R) Serial IO GPIO Host Controller - INTC1055
0xFE010000-0xFE010FFF	Intel(R) SPI (flash) Controller - 51A4
0xBFFFF000-0xBFFFFFFF	Intel(R) Active Management Technology - SOL (COM3)
0xFED00000-0xFED003FF	High precision event timer
0x80800000-0x810FFFFF	Intel(R) PCI Express Root Port #7 - 51BE

Configuring WatchDog Timer

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. Users must first assign the address of register by writing address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

Configuration Sequence

To program F81967 configuration registers, the following configuration sequence must be followed:

(1) Enter the extended function mode

To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, i.e. 2Eh or 4Eh).

(2) Configure the configuration registers

The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1). First, write the Logical Device Number (i.e. 0x07) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required. Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR.

(3) Exit the extended function mode

To exit the Extended Function Mode, writing 0xAA to the EFER is required. Once the chip exits the Extended Function Mode, it is in the normal running mode and is ready to enter the configuration mode.

Code example for watch dog timer

Enable watchdog timer and set timeout interval to 30 seconds.

```
; ---------------------- Enter to extended function mode ----------------------------
mov    dx,    2Eh
mov    al,    87h
out    dx,    al
out    dx,    al
; ---------------------- Select Logical Device 7 of watchdog timer ----------------------
mov    al,    07h
out    dx,    al
inc    dx
mov    al,    07h
out    dx,    al
;--------------------------------Enable Watch dog feature ----------------------------
dec    dx
mov    al,    30h
out    dx,    al
inc    dx
mov    al,    01h
out    dx,    al
; ---------------- Set timeout interval as 30seconds and start counting -------------
dec    dx
mov    al,    F6h
out    dx,    al
inc    dx
mov    al,    1Eh
out    dx,    al
;------------------------------ Enable Watch PME----------------------------------------
dec    dx
mov    al,    FAh
out    dx,    al
inc    dx
in     al,    dx
or     al,    51h
out    dx,    al
;------------------------ Set second as counting unit ------------------------------------
dec    dx
mov    al,    F5h
out    dx,    al
inc    dx
in     al,    dx
and    al,    D7h
out    dx,    al
;------------------------ Start the watchdog timer ---------------------------------
or     al,    20h
out    dx,    al
;--------------------------------Exit the extended function mode ------------------------
dec    dx
mov    al,    AAh
out    dx,    al
```

Flash BIOS Update

I. Prerequisites

1 Prepare a bootable media (e.g. USB storage device) which can boot system to EFI Shell.

Note: Copy UEFI Shell into the storage device under specific directory path. (/efi/boot/bootx64.efi)

2 Download and save the BIOS file (e.g. U2360PP1.bin) to the bootable device.

3 Copy AMI flash utility – AfuEfix64.efi (v5.14.01.0015) into bootable device.

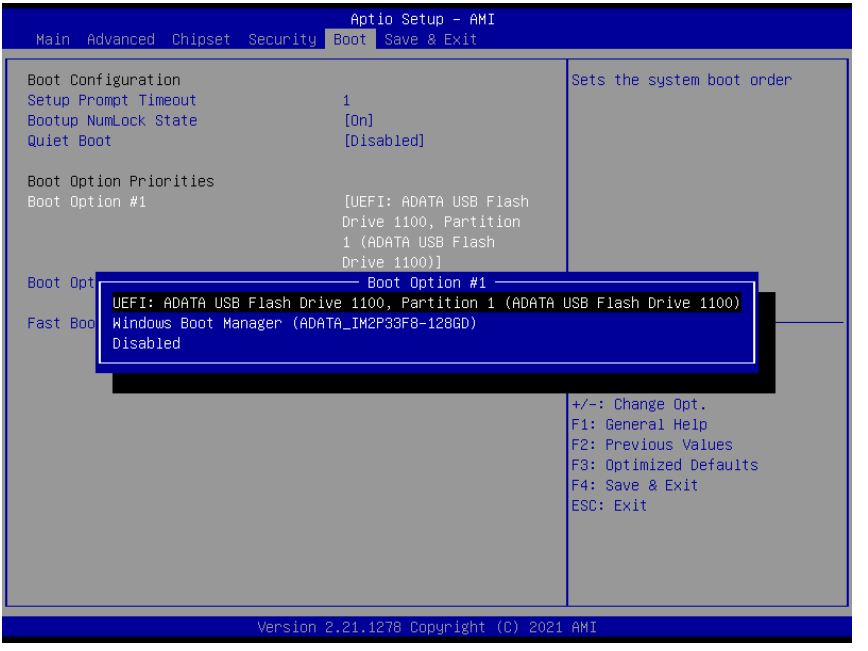
4 Make sure the target system can first boot to the bootable device.

(1) Connect the bootable USB device.

(2) Turn on the computer and press **<ESC>** or **<DEL>** during boot to enter BIOS Setup.

(3) Select [**Boot**] menu and set the USB bootable device as the 1st boot device.

(4) Press **<F4>** to save the configuration and exit the BIOS setup menu.



II. AFUEFI Command For System BIOS Update

AfuEfix64.efi is the AMI firmware update utility. The command line is shown as below:

AfuEfix64 <ROM File Name> [option1] [option2]….

Users can type "AfuEfix64/ ?" to view the definition of each control option. The recommended options for BIOS ROM update include the following parameters:

/P: Program main BIOS image.
/B: Program Boot Block.
/N: Program NVRAM.
/X: Don't check ROM ID.

III. BIOS Update Procedure

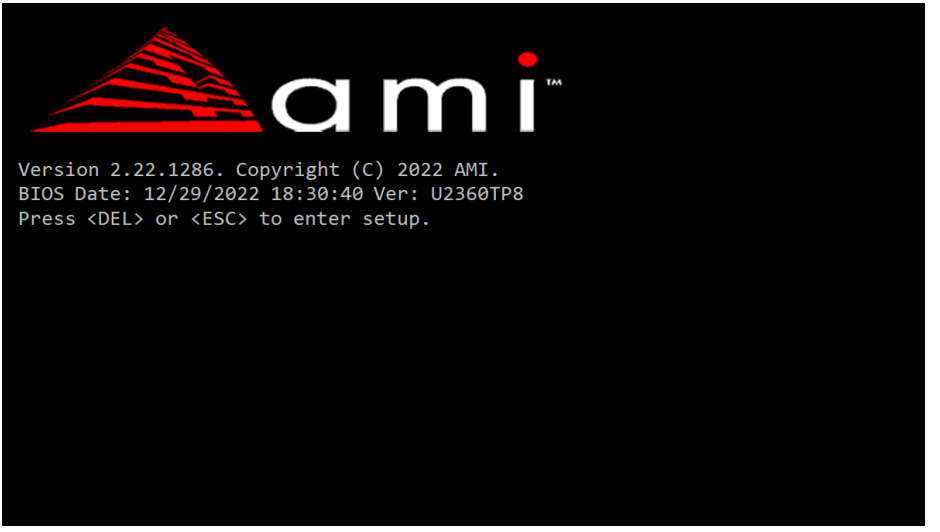
1. Use the bootable USB storage to boot up the system into the EFI Shell.
2. Type "**AfuEfix64 U236xxxx.bin /p /b /n /x /r1"** and press "Enter" to start the flash procedure. (xxxx means the BIOS revision part, e.g. 0PU1…)
3. During the update procedure, you will see the BIOS update process status and its percentage. Beware! **DO NOT** turn off the system power or reset your computer if the whole procedure is not completed yet, or it may crash the BIOS ROM and make the system unable to boot up next time.
4. After BIOS update procedure is completed, the messages below will display:

```
Shell> fs0:
fs0:\>AfuEfix64 U2360TP8.bin /p /b /n /x /r1
 +-------------------------------------------------------------------------+
 |          AMI Firmware Update Utility  v5.14.02.0026                     |
 |   Copyright (C) 1985-2021 American Megatrends International LLC.        |
 |       All Rights Reserved. Subject to AMI licensing agreement.          |
 +-------------------------------------------------------------------------+
Reading flash ..... done
 - ME Data Size Checking . ok
 - FFS checksums ..... ok
 - Check RomLayout ..... ok.
 Erasing Boot Block ..... done
 Updating Boot Block ..... done
 Verifying Boot Block ..... done
 Erasing Main Block ..... done
 Updating Main Block ..... done
 Verifying Main Block ..... done
 Erasing NVRAM Block ..... done
 Updating NVRAM Block ..... done
 Verifying NVRAM Block ..... done

 Process completed.

 fs0:\afuefix64> _
```

5 Restart the system and boot up with the new BIOS configurations.

6 The BIOS Update is completed after the system is restarted.

7 Reboot the system and verify if the BIOS version shown on the initialization screen has been updated.



Appendix B Mating Connectors

This appendix contains the list table of connector vendors and model numbers for BE-U236 mating connectors.

The following topic is included:

- Mating Connectors Table

Mating Connectors

Label	Function	Connector Pitch	Mating Connector	
			Vendor	Model NO.
AUDIO1	Audio	1.27	LS	H210800388
CN1	LVDS/eDP Connector	0.5	Aces	50473-0400M-001
J2	Board-to-Board connector	0.8	Amphenol	61082-064402LF
JBAT1	Battery	2.0	LS	1720218060
JBUTTON1	Power Button Cable	1.0	LS	1790205061
JBZ1	Buzzer Signal	1.25	LS	1760205067
JCOM1	COM1, COM2&DIO	1.25	HIROSE	DF13E-30DP-1.25V
JINV1	LVDS Inverter	1.25	LS	1760705067
JSATA_PWR1	SATA Power	2.5	LS	1710218060
JSIM1	SIM Signal	1.0	LS	1790605062
PWR1	Power DC-IN	4.2	N/A	AP1-2022228-531
JFP1	Front Panel	1.25	LS	1760805067
JSPI1	SPI	1.27	LS	H208810388
JUSB1	Internal USB 2.0	1.27	LS	H210800388
JI2C1	I2C	1.0	LS	1790405062
LED_WLAN1	M.2 E KEY WLAN LED	0.8	Contact	WF-0800VS02-S304
SYS_FAN1	FAN CONNECTOR	2.54	LS	1700405080