

**MODEL:
KINO-ADL-PS**

**Mini-ITX SBC with Intel® Alder Lake-PS Core® i7/i5/i3
and Celeron®, DDR4 SO-DIMM, Triple Display,
SATA, Dual Intel 2.5GbE, USB3.2, M.2, RoHS**

User Manual

Revision

Date	Version	Changes
December 19, 2023	1.00	Initial release

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Manual Conventions



WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

Table of Contents

1 INTRODUCTION.....	15
1.1 INTRODUCTION.....	16
1.2 FEATURES.....	17
1.3 CONNECTORS	18
1.4 DIMENSIONS.....	19
1.5 DATA FLOW	20
1.6 TECHNICAL SPECIFICATIONS	21
2 PACKING LIST.....	23
2.1 ANTI-STATIC PRECAUTIONS.....	24
2.2 UNPACKING PRECAUTIONS.....	24
2.3 PACKING LIST	25
2.4 OPTIONAL ITEMS	26
3 CONNECTORS	28
3.1 PERIPHERAL INTERFACE CONNECTORS.....	29
3.1.1 KINO-ADL-PS Layout	29
3.1.2 Peripheral Interface Connectors	29
3.1.3 External Interface Panel Connectors.....	31
3.2 INTERNAL PERIPHERAL CONNECTORS	31
3.2.1 Battery Connector.....	31
3.2.2 AT/ATX Power Mode Setting	33
3.2.3 Chassis Intrusion Connector.....	34
3.2.4 12V Power Input Connector	35
3.2.5 Digital I/O Connector	36
3.2.6 EC Debug Connector.....	37
3.2.7 Clear CMOS Button.....	38
3.2.8 Flash Descriptor Security Override Setting Jumper	39
3.2.9 CPU Fan Connector	40
3.2.10 System FAN Connector.....	41
3.2.11 Audio Connector	42

3.2.12	<i>Front Panel Connector</i>	43
3.2.13	<i>I²C Connector</i>	44
3.2.14	<i>SMBus Connector</i>	45
3.2.15	<i>M.2 A-key Slot</i>	46
3.2.16	<i>M.2 M-key Slot</i>	48
3.2.17	<i>DDR4 SODIMM Slot</i>	50
3.2.18	<i>PCIe x4 Slots</i>	51
3.2.19	<i>IDPM Slot</i>	52
3.2.20	<i>RS-232 Serial Port Connectors</i>	54
3.2.21	<i>SATA 6Gb/s Connectors</i>	55
3.2.22	<i>SATA Power Connectors</i>	56
3.2.23	<i>Internal USB 2.0 connectors</i>	57
3.2.24	<i>BIOS Programmer Connector</i>	58
3.2.25	<i>BIOS Programmer Switch</i>	59
3.2.26	<i>Flash EC ROM Connector</i>	59
3.3	EXTERNAL PERIPHERAL INTERFACE CONNECTOR PANEL	61
3.3.1	<i>Power Connector</i>	61
3.3.2	<i>External Display port Connectors</i>	62
3.3.3	<i>External i225 2.5G LAN and USB3.2 Port Connector</i>	63
3.3.4	<i>External USB2.0 Connector</i>	65
3.3.5	<i>External RS232/422/485 Connector</i>	66
4	INSTALLATION	67
4.1	<i>ANTI-STATIC PRECAUTIONS</i>	68
4.2	<i>INSTALLATION CONSIDERATIONS</i>	68
4.3	<i>M.2 MODULE INSTALLATION</i>	69
4.4	<i>INTERNAL PERIPHERAL DEVICE CONNECTIONS</i>	73
4.4.1	<i>SATA Drive Connection</i>	73
4.4.2	<i>AT Power Connection</i>	74
4.4.3	<i>Channel Audio Kit Installation</i>	76
4.5	<i>SOFTWARE DRIVERS</i>	77
4.5.1	<i>Software Installation</i>	77
4.5.2	<i>Driver Download</i>	78
5	BIOS	80

KINO-ADL-PS

5.1 INTRODUCTION.....	81
5.1.1 Starting Setup.....	81
5.1.2 Using Setup	82
5.1.2.1 Keyboard Navigation	82
5.1.2.2 Touch Navigation	83
5.1.3 Getting Help.....	84
5.1.4 Unable to Reboot after Configuration Changes	84
5.1.5 BIOS Menu Bar.....	84
5.2 MAIN.....	85
5.3 ADVANCED.....	88
5.3.1 CPU Configuration	89
5.3.2 Firmware Update Configuration	93
5.3.3 Trusted Computing.....	94
5.3.4 iEi One Key Recovery	95
5.3.5 RTC Wake Settings	96
5.3.6 F81966 Super IO Configuration	98
5.3.6.1 Serial Port 1 Configuration	99
5.3.6.2 Serial Port 2 Configuration	100
5.3.6.3 Serial Port 3 Configuration	101
5.3.6.4 Serial Port 4 Configuration	102
5.3.6.5 Serial Port 5 Configuration	103
5.3.6.6 Serial Port 6 Configuration	104
5.3.7 EC KB9068 H/W Monitor.....	105
5.3.7.1 Smart Fan Mode Configuration	107
5.3.8 Serial Port Console Redirection	110
5.3.8.1 Console Redirection Settings	112
5.3.9 NVMe Configuration.....	114
5.4 CHIPSET	115
5.4.1 System Agent (SA) Configuration	116
5.4.1.1 Memory Configuration	117
5.4.1.2 Graphics Configuration.....	118
5.4.1.3 VMD setup menu	119
5.4.1.4 PEG Port Configuration.....	120
5.4.2 PCH-IO Configuration	121
5.4.2.1 PCI Express Configuration	123

5.4.2.1.1 PCIe Root Port Setting.....	124
5.4.2.2 SATA Configuration.....	125
5.4.2.3 HD Audio Configuration.....	127
5.5 SECURITY.....	128
5.6 BOOT.....	130
5.6.1 Boot Configuration	130
5.6.2 Boot Option Priorities.....	131
5.7 SAVE & EXIT	132
5.8 MEBX.....	133
A REGULATORY COMPLIANCE	134
B PRODUCT DISPOSAL	136
C BIOS OPTIONS	138
D WATCHDOG TIMER	142
E ERROR BEEP CODE.....	145
E.1 PEI BEEP CODES.....	146
E.2 DXE BEEP CODES	146
F HAZARDOUS MATERIALS DISCLOSURE.....	147
F.1 RoHS II DIRECTIVE (2015/863/EU)	148
F.2 CHINA RoHS.....	149

List of Figures

Figure 1-1: KINO-ADL-PS.....	16
Figure 1-2: Connectors	18
Figure 1-3: KINO-ADL-PS Dimensions (mm)	19
Figure 1-4: Data Flow Diagram.....	20
Figure 3-1: Peripheral Interface Connectors	29
Figure 3-2: Battery Connector Location.....	32
Figure 3-3: AT/ATX Power Mode Switch Location	33
Figure 3-4: Chassis Pin Header Connector Location	34
Figure 3-5: 12V Power Input Connector Location	35
Figure 3-6: Digital I/O Connector Location	36
Figure 3-7: EC Debug Connector Location	37
Figure 3-8: Clear CMOS Jumper Location	38
Figure 3-9: Flash Descriptor Security Override Setting Jumper Location	39
Figure 3-10: CPU Fan Connector Location	40
Figure 3-11: CPU Fan Connector Location	41
Figure 3-12: Audio Connector Location	42
Figure 3-13: Front Panel Connector Location	43
Figure 3-14: I ² C Connector Location	44
Figure 3-15: SMBus Connector Location	45
Figure 3-16: M.2 A-key Slot Location.....	46
Figure 3-17: M.2 M-key Slot Location	48
Figure 3-18: DDR4 DIMM Sockets Location	50
Figure 3-19: PCIe x4 Slot Location	51
Figure 3-20: IDPM Slot Location	52
Figure 3-21: RS-232 Connector Locations	54
Figure 3-22: SATA 6Gb/s Connector Location	55
Figure 3-23: SATA Power Connector Location	56
Figure 3-24: Internal USB 2.0 Connector Location	57
Figure 3-25: BIOS Programmer Connector Location.....	58
Figure 3-26: BIOS Programmer Switch Location	59
Figure 3-27: Flash EC ROM Connector Location	60

Figure 3-28: External Peripheral Interface Connector	61
Figure 3-29: Power Connector (4-pin DIN)	61
Figure 3-30: DP Connector	62
Figure 3-31: HDMI Connectors	63
Figure 3-32: External dual USB 3.2 Gen 2 connectors	64
Figure 3-33: LAN LED Location.....	64
Figure 3-34: USB 2.0 Connectors.....	65
Figure 4-1: Inserting the M.2 Module into the Slot at an Angle.....	70
Figure 4-2: Securing the M.2 Module.....	70
Figure 4-3: Press the Retainer.....	71
Figure 4-4: Aligning the M.2 Module with the Retainer.....	71
Figure 4-5: Securing the M.2 Module.....	72
Figure 4-6: SATA Drive Cable Connection.....	73
Figure 4-7: SATA Power Drive Connection	74
Figure 4-8: Power Cable to Motherboard Connection	75
Figure 4-9: Connect Power Cable to Power Supply	75
Figure 4-10: 7.1 Channel Audio Kit	76
Figure 4-11: IEI Resource Download Center.....	77
Figure 5-1: BIOS Starting Menu	81

List of Tables

Table 1-1: KINO-ADL-PS Specifications.....	22
Table 2-1: Packing List.....	25
Table 2-2: Optional Items.....	27
Table 3-1: Peripheral Interface Connectors.....	30
Table 3-2: Rear Panel Connectors.....	31
Table 3-3: Battery Connector Pinouts.....	32
Table 3-4: AT/ATX Power Mode Switch Settings.....	33
Table 3-5: Chassis Pin Header Connector Pinouts.....	34
Table 3-6: 12V Power Input Connector Pinouts.....	35
Table 3-7: Digital I/O Connector Pinouts.....	36
Table 3-8: EC Debug Connector Pinouts.....	37
Table 3-9: Clear CMOS Jumper Pinouts.....	38
Table 3-10: Flash Descriptor Security Override Setting Jumper Pinouts.....	39
Table 3-11: CPU Fan Connector Pinouts.....	40
Table 3-12: CPU Fan Connector Pinouts.....	41
Table 3-13: Audio Connector Pinouts.....	42
Table 3-14: Front Panel Connector Pinouts.....	43
Table 3-15: I ² C Connector Pinouts.....	44
Table 3-16: SMBus Connector Pinouts.....	45
Table 3-17: M.2 A-key Connector Pinouts.....	47
Table 3-18: M.2 B-key Connector Pinouts.....	49
Table 3-19: iDPM Connector Pinouts.....	53
Table 3-20: RS-232 Connector Pinouts.....	54
Table 3-21: SATA 6Gb/s Connector Pinouts.....	56
Table 3-22: SATA Power Connector Pinouts.....	56
Table 3-23: Internal USB 2.0 Connector Pinouts.....	57
Table 3-24: BIOS Programmer Connector Pinouts.....	58
Table 3-25: BIOS Programmer Switch Pinouts.....	59
Table 3-26: Flash EC ROM Connector Pinouts.....	60
Table 3-27: Power Connector Pinouts.....	61
Table 3-28: DP Connector Pinouts.....	62

Table 3-29: HDMI Connector Pinouts	63
Table 3-30: USB 3.2 Port Pinouts	64
Table 3-31: 2.5GbE RJ45 Pinouts	64
Table 3-32: LAN LED Pinouts	65
Table 3-33: USB 2.0 Port Pinouts	65
Table 3-34: External RS-232/422/485 Connector Pinouts	66
Table 3-35: DB-9 RS-232/422/485 Pinouts	66
Table 5-1: BIOS Navigation Keys	82
Table 5-2: BIOS On-screen Navigation Keys	83

BIOS Menus

BIOS Menu 1: Main (1/3).....	85
BIOS Menu 2: Main (2/3).....	86
BIOS Menu 3: Main (3/3).....	86
BIOS Menu 4: Advanced	88
BIOS Menu 5: CPU Configuration (1/3).....	89
BIOS Menu 6: CPU Configuration (2/3).....	90
BIOS Menu 7: CPU Configuration (3/3).....	90
BIOS Menu 8: Firmware Update Configuration	93
BIOS Menu 9: Trusted Computing Configuration	94
BIOS Menu 10: iEi One Key Recovery Settings.....	95
BIOS Menu 11: RTC Wake Settings (1/2).....	96
BIOS Menu 12: RTC Wake Settings (2/2).....	97
BIOS Menu 13: F81966 Super IO Configuration	98
BIOS Menu 14: Serial Port 1 Configuration Menu	99
BIOS Menu 15: Serial Port 2 Configuration Menu	100
BIOS Menu 16: Serial Port 3 Configuration Menu	101
BIOS Menu 17: Serial Port 4 Configuration Menu	102
BIOS Menu 18: Serial Port 5 Configuration Menu	103
BIOS Menu 19: Serial Port 6 Configuration Menu	104
BIOS Menu 20: EC KB9068 H/W Monitor (1/2)	105
BIOS Menu 21: EC KB9068 H/W Monitor (2/2)	106
BIOS Menu 22: Smart Fan Mode Configuration (1/2).....	107
BIOS Menu 23: Smart Fan Mode Configuration (2/2).....	108
BIOS Menu 24: Serial Port Console Redirection (1/3).....	110
BIOS Menu 25: Serial Port Console Redirection (2/3).....	111
BIOS Menu 26: Serial Port Console Redirection (3/3).....	111
BIOS Menu 27: COM Console Redirection Settings	112
BIOS Menu 28: NVMe Configuration.....	114
BIOS Menu 29: Chipset	115
BIOS Menu 30: System Agent (SA) Configuration	116
BIOS Menu 31: Memory Configuration.....	117

BIOS Menu 32: Graphics Configuration	118
BIOS Menu 33: VMD setup menu	119
BIOS Menu 34: PEG Port Configuration	120
BIOS Menu 35: PCH-IO Configuration	121
BIOS Menu 36: PCI Express Configuration	123
BIOS Menu 37: PCIe Slot Configuration Submenu	124
BIOS Menu 38: SATA Configuration	125
BIOS Menu 39: HD Audio Configuration	127
BIOS Menu 40: Security (1/2).....	128
BIOS Menu 41: Security (2/2).....	129
BIOS Menu 42: Boot	130
BIOS Menu 43: Save & Exit.....	132
BIOS Menu 44: MEBx	133

Chapter

1

Introduction

1.1 Introduction

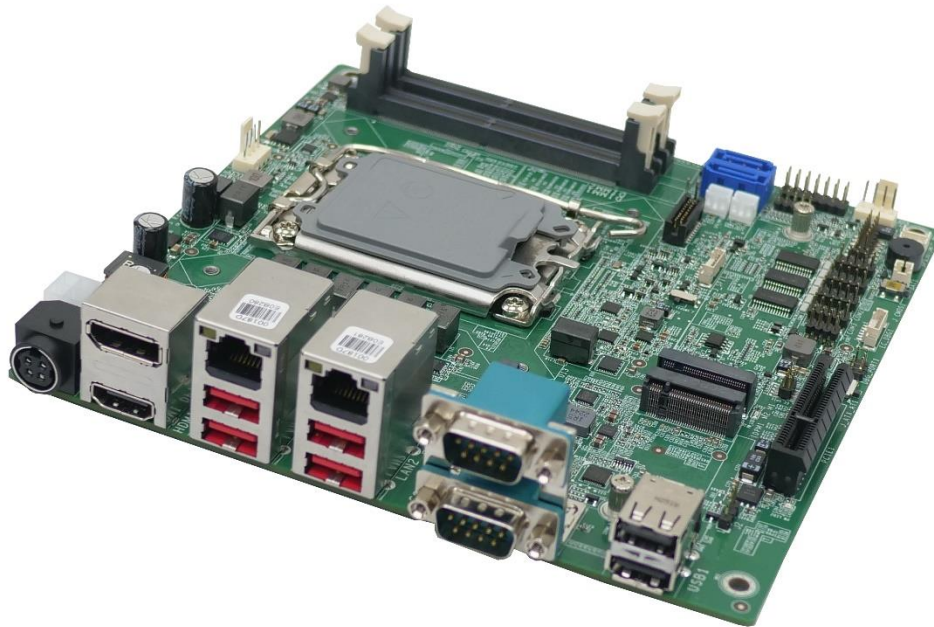


Figure 1-1: KINO-ADL-PS

It is powered by Intel® Alder Lake-PS Core® i7/i5/i3 and Celeron® processor and two 3200MHz DDR4 SO-DIMM. The KINO-ADL-PS includes one DP, one HDMI, one IEC iDPM, two SATA and two 2.5GbE LAN ports. Expansion and I/O include one PCIe x4 slot, two M.2 slots, six COM ports, four USB 3.2 Gen 2 and four USB 2.0.

KINO-ADL-PS

1.2 Features

Some of the KINO-ADL-PS motherboard features are listed below:

- Intel® Alder Lake-PS Processor (socket)
- Two 3200 MHz DDR4 SO-DIMMs
- 2 x Intel® I225-V/I226-V 2.5GbE controller
- Triple independent display by HDMI, DP and IEI iDPM slot
- Two SATA 6Gb/s connector
- Four USB 3.2 Gen 2 ports and four USB 2.0 ports
- One M.2 A key 2230; one M.2 M key 2242/3080
- 1 x PCIe x4 slot
- Six serial ports
- TPM 2.0 security function supported by PTT
- RoHS compliant

1.3 Connectors

The connectors on the KINO-ADL-PS are shown in the figure below.

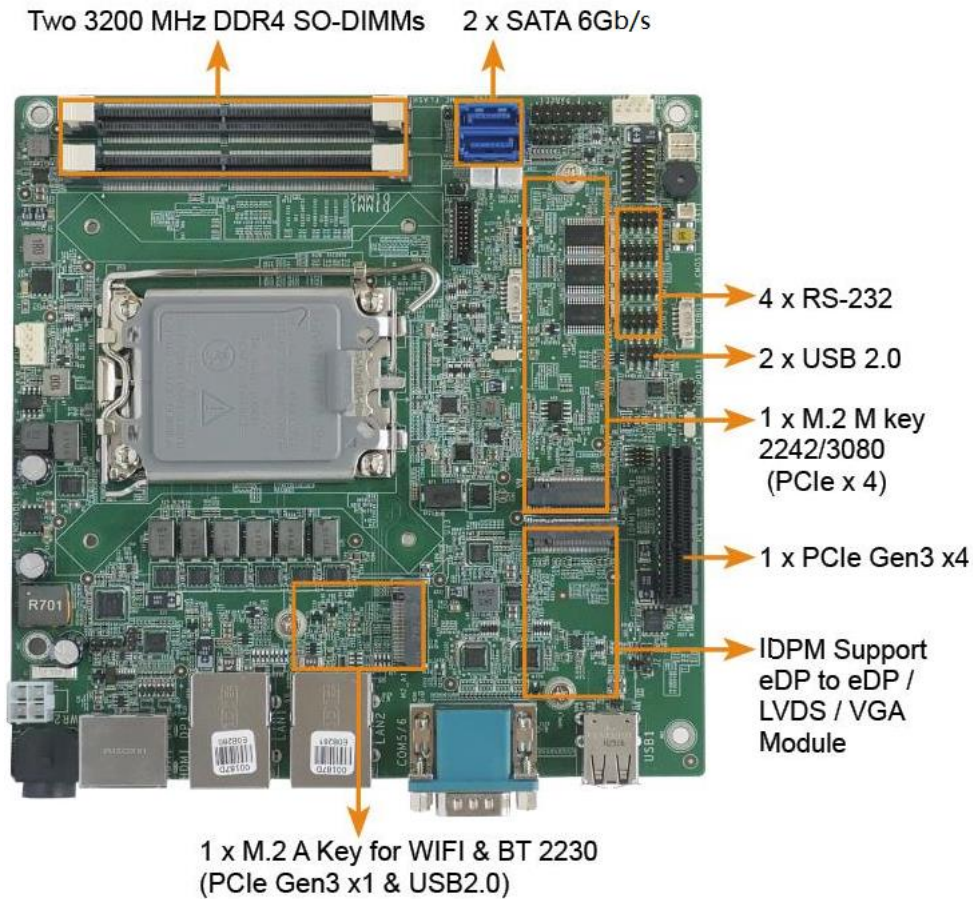


Figure 1-2: Connectors

1.5 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

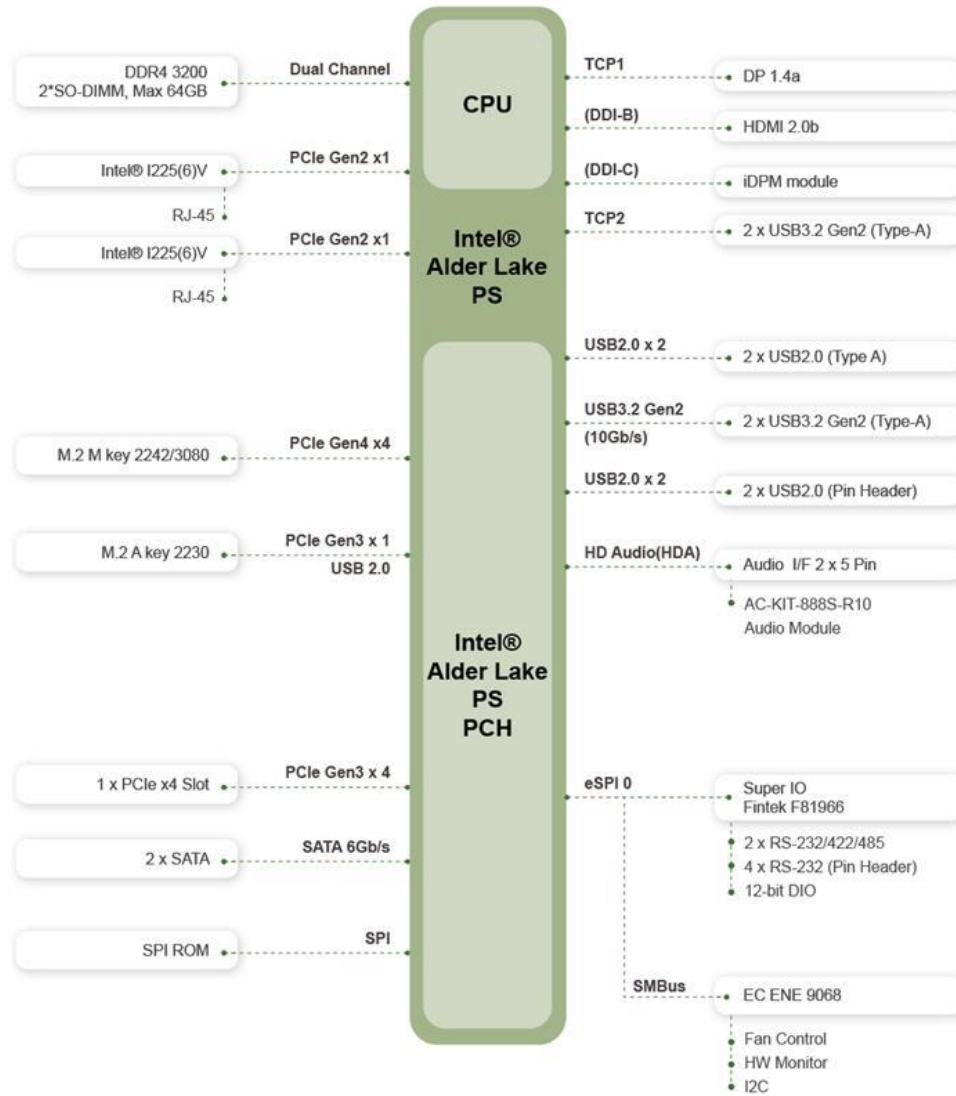


Figure 1-4: Data Flow Diagram

KINO-ADL-PS

1.6 Technical Specifications

The KINO-ADL-PS technical specifications are listed below.

Specification/Model	KINO-ADL-PS
Form Factor	Mini-ITX
CPU Supported	Intel® Alder Lake PS CPU
Memory	Two 3200 MHz DDR4 SO-DIMMs
Graphics Engine	Intel Iris XeGraphics architecture with up to 96 EUs, 4 Independent Displays (up to 8K), Pipe Lock (Display Synchronization) & SRIOV
Display Output	Triple independent display 1 x DP 1.4 (up to 4096 x 2304 @60Hz) 1 x HDMI 2.0 (up to 4096 x 2304 @60Hz) 1 x iDPM support iEi eDP/LVDS/VGA module
Ethernet Controllers	LAN1: Intel® I225-V/I226-V 2.5GbE controller LAN2: Intel® I225-V/I226-V 2.5GbE controller
Audio	1 x IAUDIO, support IEI AC-KIT-888s Audio Module (2x5 pin)
BIOS	AMI UEFI BIOS
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansions	1 x PCIe Gen3 x4 (x4 + x2 + x2 + x1 + x1) 1 x M.2 A Key for WIFI & BT 2230 (PCIe Gen3 x1 & USB2.0) 1 x M.2 M Key 2242/3080 (PCIe Gen4 x4)
I/O Interface Connectors	
Audio Connectors	One internal audio connector (10-pin header)
Digital I/O	12-bit digital I/O
Ethernet	Two RJ-45 GbE ports
Fan	1 x CPU fan connector (1x4 pin) 1 x System fan connector (1x4 pin)

Specification/Model	KINO-ADL-PS
Front Panel	1 x Front Panel Power LED & HDD LED (1x6 pin) 1 x Power button (1x2 pin) 1 x Reset button (1x2 pin)
I²C	One 4-pin wafer connector
Serial ATA	2 x SATA 6Gb/s connectors
Serial Ports	2 x RS-232/422/485 4 x RS-232
SMBus	One 4-pin wafer connector
USB Ports	2 x USB 2.0 (Type A) 4 x USB 3.2 Gen 2 (Type A) (10Gb/s) 2 x USB 2.0 (2 x 4 pin, P=2.0)
Environmental and Power Specifications	
Power Supply	AT/ATX power supply
Power Consumption	12V@2.59A (Intel@ Core i7-12700HL 2.3GHz 45W CPU with 32GB 3200MHZ DDR4 memory, max. loading, EuP mode enabled)
Operating Temperature	0°C ~ 60°C
Storage Temperature	-20°C ~ 70°C
Operating Humidity	5% ~ 95% (non-condensing)
Physical Specifications	
Dimensions	170 mm x 170 mm
Weight (GW/NW)	900g / 400g

Table 1-1: KINO-ADL-PS Specifications

Chapter

2

Packing List

2.1 Anti-static Precautions



WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- **Wear an anti-static wristband:** Wearing an anti-static wristband can prevent electrostatic discharge.
- **Self-grounding:** Touch a grounded conductor every few minutes to discharge any excess static buildup.
- **Use an anti-static pad:** When configuring any circuit board, place it on an anti-static mat.
- **Only handle the edges of the PCB:** Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the KINO-ADL-PS is unpacked, please do the following:

- Follow the anti-static guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

KINO-ADL-PS

2.3 Packing List



NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the KINO-ADL-PS was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The KINO-ADL-PS is shipped with the following components:



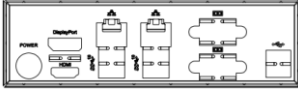
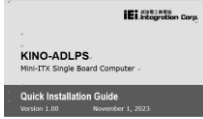








Quantity	Item and Part Number	Image
1	KINO-ADL-PS single board computer	
1	SATA cable	
1	I/O Shielding	
1	Quick installation guide	 

Table 2-1: Packing List

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Realtek ALC888S 7.1 Channel HD Audio board, RoHS (P/N: AC-KIT-888S-R10)	
Dual-port USB cable with bracket, 300mm, p=2.0 (P/N: CB-USB02A-RS)	
RS-232/422/485 cable, 200mm, p=2.0 (P/N: 32205-002700-200-RS)	
eDP to eDP converter board (for IEI iDPM connector) (P/N: iDPM-eDP-R10)	
eDP to LVDS converter board (for IEI iDPM connector) (P/N: iDPM-LVDS-R10)	
eDP to VGA converter board (for IEI iDPM connector) (P/N: iDPM-VGA-R10)	
High-performance LGA1700 cooler, 65W (78 x 78 x 45.8 mm) (P/N: 19100-000323-00-RS)	

KINO-ADL-PS


Item and Part Number	Image
High-performance 1 U LGA1700 cooler, 65W (95 x 90 x 27.45 mm) (P/N: 19100-000319-00-RS)	

Table 2-2: Optional Items

Chapter

3

Connectors

KINO-ADL-PS

3.1 Peripheral Interface Connectors

This chapter details all the peripheral interface connectors.

3.1.1 KINO-ADL-PS Layout

The figures below show all the peripheral interface connectors.

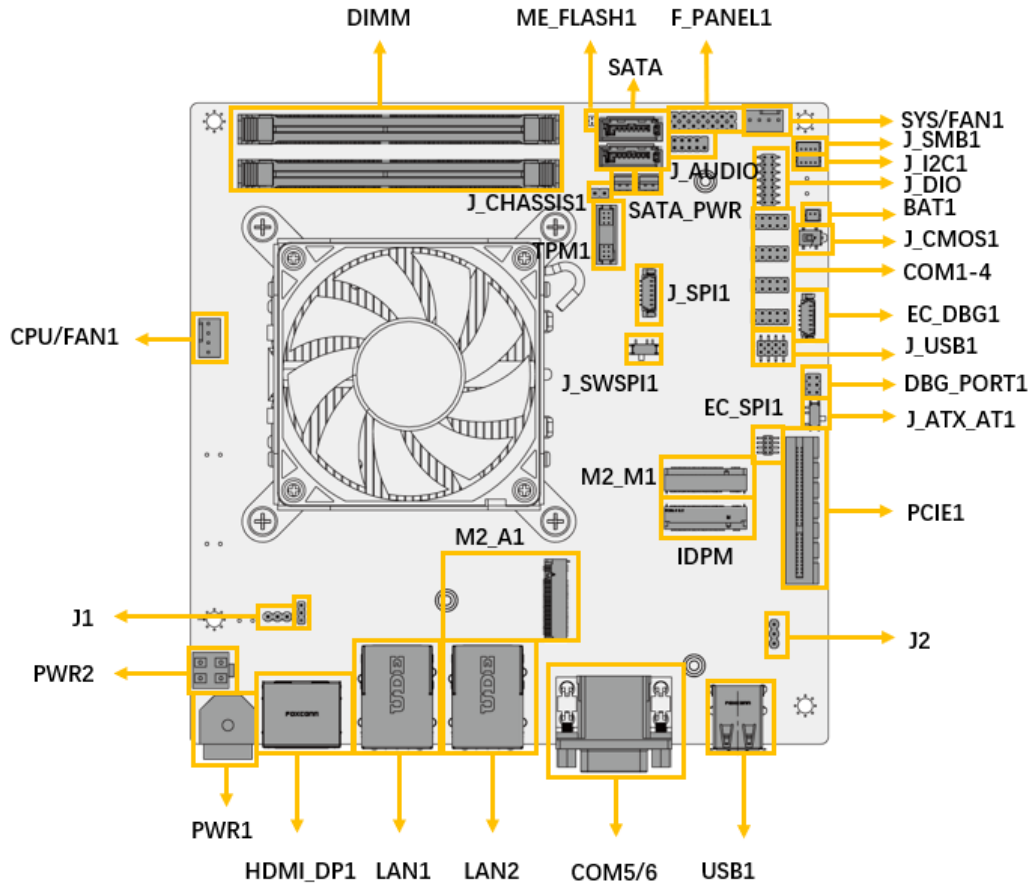


Figure 3-1: Peripheral Interface Connectors

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
RTC battery connector	2-pin header	BAT1
AT/ATX power mode setting	3-pin switch	J_ATX_AT1

Connector	Type	Label
Chassis Intrusion Connector	2-pin header	J_CHASSIS1
12V power input connector	4-pin Molex	PWR2
Digital I/O connector	14-pin header	J_DIO1
EC debug connector	6-pin header	EC_DBG1
Clear CMOS jumper	Button	J_CMOS1
Flash descriptor security override jumper	2-pin header	ME_FLASH1
Fan connector	4-pin header	CPU/FAN1
Fan connector	4-pin header	SYS/FAN1
Audio connector	10-pin header	J_AUDIO1
Front panel connector	6-pin header	F_PANEL1
I2C connector	4-pin wafer	J_I2C1
SMBus connector	4-pin wafer	J_SMB1
M.2 2230 M key slot	M-key slot	M2_M1
M.2 2242/3080 A key slot	M-key slot	M2_A1
DDR4 SODIMM Slot	288-pin socket	DIMM1/DIMM2
PCIe x4 slot	PCIe x4 slot	PCIE1
IEI iDPM slot	IEI iDPM slot	IDPM1
RS-232 serial port connectors	10-pin header	COM1, COM2, COM3, COM4
SATA 6Gb/s connector	7-pin SATA connector	SATA1, SATA2
SATA power connector	2-pin header	SATA_PWR1, SATA_PWR2
Flash SPI ROM connector	6-pin header	J_SPI1
BIOS Programmer Switch	Button	J_SWSPI1
Flash EC ROM connector	8-pin header	EC_SPI1
Internal USB 2.0 connectors	8-pin header	J_USB1

Table 3-1: Peripheral Interface Connectors

KINO-ADL-PS

3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
Power Connector	4-pin DIN	PWR1
External Display port Connector	HDMI, DP	HDMI_DP1
External RS232/422/485 Connector	DB9	COM5/6
External i225 2.5G LAN and USB3.2/USB2.0Port Connector	RJ45, USB 3.2	LAN1, LAN2
External USB2.0 Connector	USB 2.0	USB1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the KINO-ADL-PS.

3.2.1 Battery Connector



CAUTION:

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.



NOTE:

It is recommended to attach the RTC battery onto the system chassis in which the KINO-ADL-PS is installed.

- CN Label:** **BAT1**
- CN Type:** 2-pin header
- CN Location:** See **Figure 3-2**
- CN Pinouts:** See **Table 3-3**

A system battery is placed in the battery holder. The battery provides power to the system clock to retain the time when power is turned off.

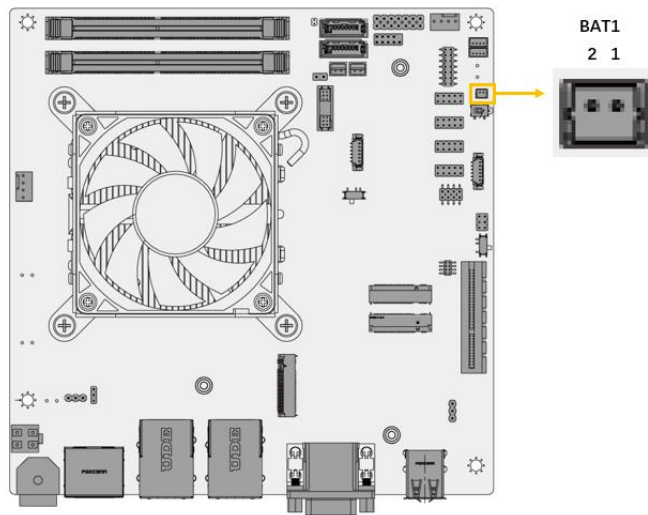


Figure 3-2: Battery Connector Location

Pin	Description	Pin	Description
1	VBAT+	2	GND

Table 3-3: Battery Connector Pinouts

KINO-ADL-PS

3.2.2 AT/ATX Power Mode Setting

- CN Label:** J_ATX_AT1
- CN Type:** 3-pin switch
- CN Location:** See Figure 3-3
- CN Pinouts:** See Table 3-4

The AT/ATX power mode selection is made through the AT/ATX power mode switch.

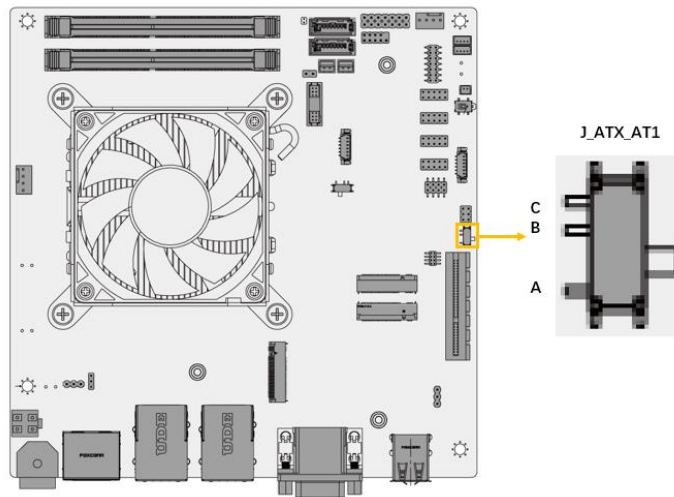


Figure 3-3: AT/ATX Power Mode Switch Location

Pin	Description	Pin	Description
Short A - B	ATX Mode	Short B - C	AT Mode

Table 3-4: AT/ATX Power Mode Switch Settings

3.2.3 Chassis Intrusion Connector

- CN Label:** J_CHASSIS1
- CN Type:** 2-pin header, p=2.54 mm
- CN Location:** See **Figure 3-4**
- CN Pinouts:** See **Table 3-5**

The chassis intrusion connector is for a chassis intrusion detection sensor or switch that detects if a chassis component is removed or replaced.

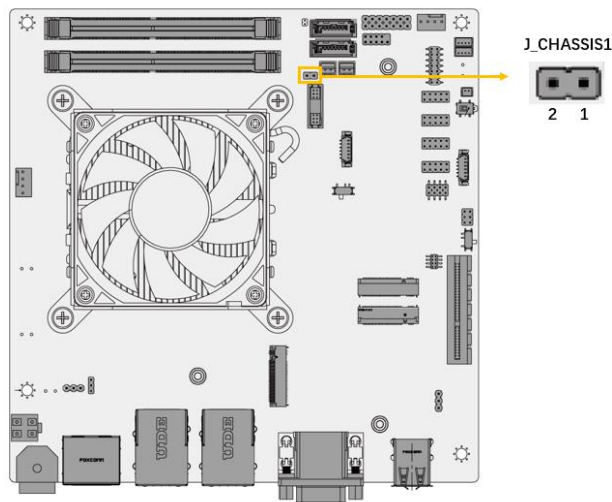


Figure 3-4: Chassis Pin Header Connector Location

Pin	Description	Pin	Description
1	CHASSIE	2	GND

Table 3-5: Chassis Pin Header Connector Pinouts

KINO-ADL-PS

3.2.4 12V Power Input Connector

- CN Label:** PWR2
- CN Type:** 4-pin Molex
- CN Location:** See **Figure 3-5**
- CN Pinouts:** See **Table 3-6**

The 12V power input connector supports the +12V power supply.

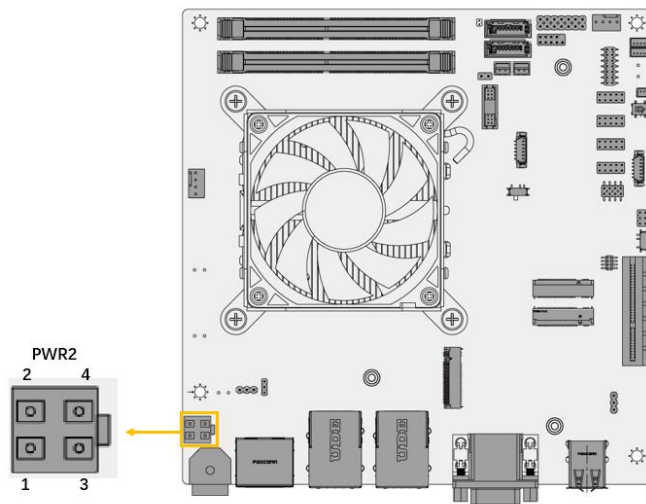


Figure 3-5: 12V Power Input Connector Location

Pin	Description	Pin	Description
1	VCC12V	2	GND
3	VCC12V	4	GND

Table 3-6: 12V Power Input Connector Pinouts

3.2.5 Digital I/O Connector

- CN Label:** J_DIO1
- CN Type:** 14-pin header, p=2.0 mm
- CN Location:** See **Figure 3-6**
- CN Pinouts:** See **Table 3-7**

The Digital I/O connector provides programmable input and output for external devices.

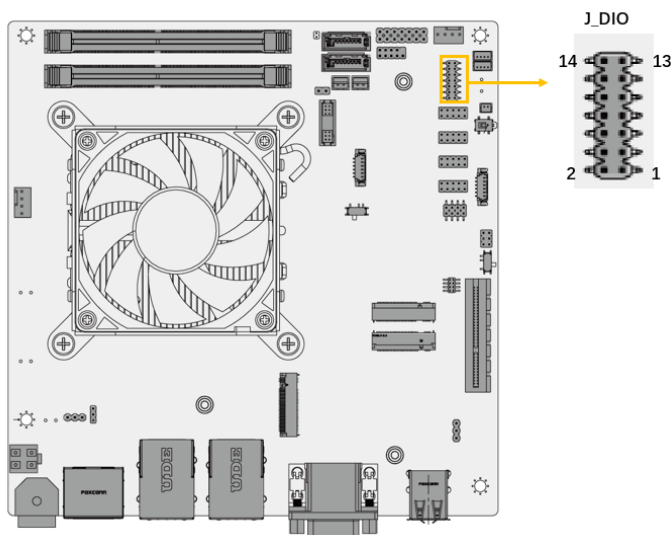


Figure 3-6: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC5V
3	DOUT5	4	DOUT4
5	DOUT3	6	DOUT2
7	DOUT1	8	DOUT0
9	DIN5	10	DIN4
11	DIN3	12	DIN2
13	DIN1	14	DIN0

Table 3-7: Digital I/O Connector Pinouts

KINO-ADL-PS

3.2.6 EC Debug Connector

- CN Label:** EC_DBG1
- CN Type:** 6-pin header
- CN Location:** See Figure 3-7
- CN Pinouts:** See Table 3-8

The EC debug connector is used for EC debug.

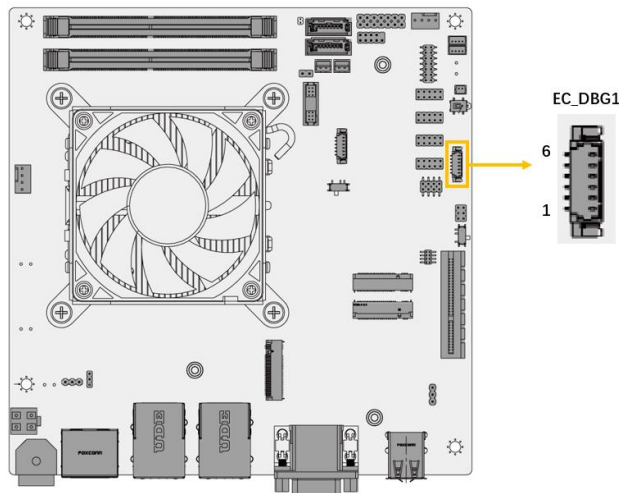


Figure 3-7: EC Debug Connector Location

Pin	Description	Pin	Description
1	EDIDO	4	EDICS
2	EDIDI	5	GND
3	EDICLK		

Table 3-8: EC Debug Connector Pinouts

3.2.7 Clear CMOS Button

- CN Label:** J_CMOS1
- CN Type:** Button
- CN Location:** See Figure 3-8
- CN Pinouts:** See Table 3-9

The J_CMOS1 is used to Clear CMOS Setup.

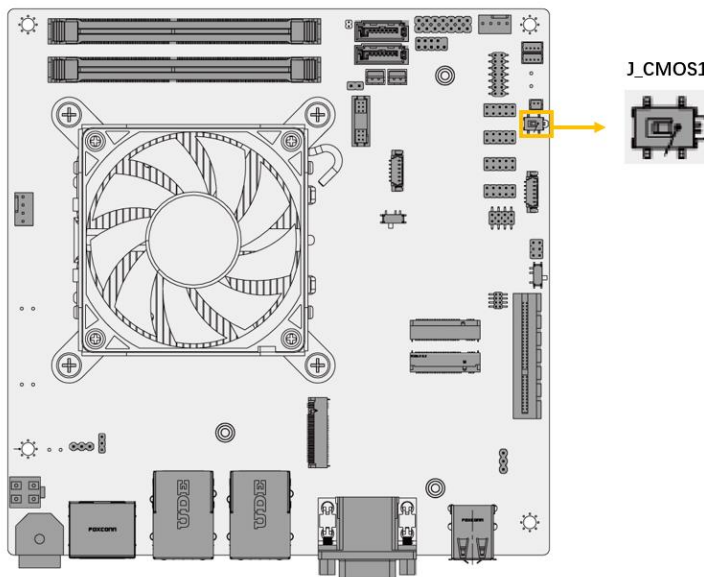


Figure 3-8: Clear CMOS Jumper Location

Pin	Description
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

Table 3-9: Clear CMOS Jumper Pinouts

KINO-ADL-PS

3.2.8 Flash Descriptor Security Override Setting Jumper

- CN Label:** ME_FLASH1
- CN Type:** 2-pin header
- CN Location:** See **Figure 3-9**
- CN Pinouts:** See **Table 3-10**

The Flash Descriptor Security Override Setting Jumper connector is used for Flash Descriptor Security Override.

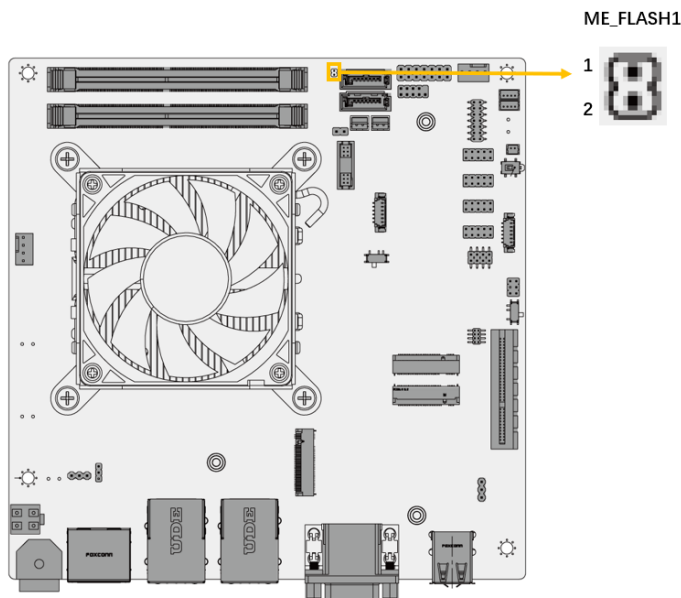


Figure 3-9: Flash Descriptor Security Override Setting Jumper Location

Pin	Description
Open	No override (Default)
Short	Override

Table 3-10: Flash Descriptor Security Override Setting Jumper Pinouts

3.2.9 CPU Fan Connector

- CN Label:** CPU/FAN1
- CN Type:** 4-pin header, p=2.54 mm
- CN Location:** See **Figure 3-10**
- CN Pinouts:** See **Table 3-11**

The fan connector attaches to a CPU cooling fan.

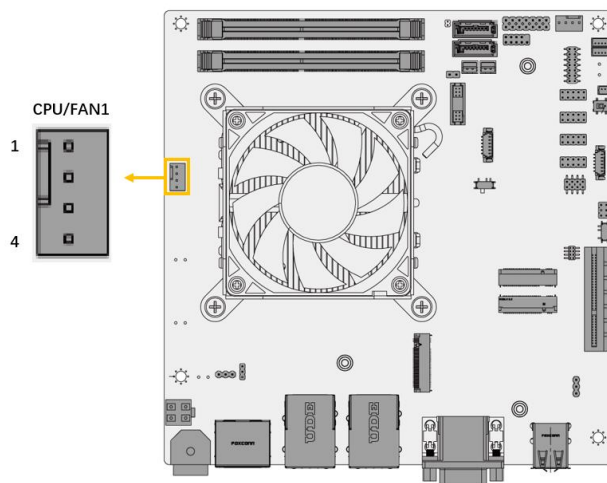


Figure 3-10: CPU Fan Connector Location

Pin	Description	Pin	Description
1	GND	3	FANIO
2	VCC12V	4	PWM

Table 3-11: CPU Fan Connector Pinouts

KINO-ADL-PS

3.2.10 System FAN Connector

- CN Label:** **SYS/FAN1**
- CN Type:** 4-pin header, p=2.54 mm
- CN Location:** See **Figure 3-11**
- CN Pinouts:** See **Table 3-12**

The fan connector attaches to a CPU cooling fan.

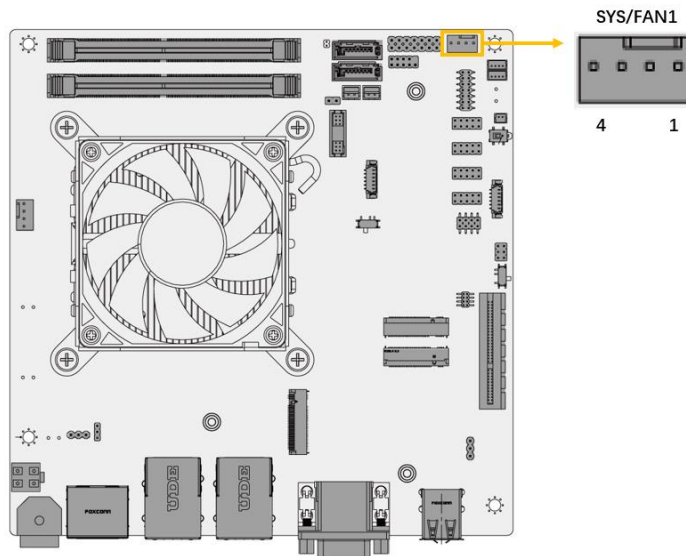


Figure 3-11: CPU Fan Connector Location

Pin	Description	Pin	Description
1	GND	3	FANIO
2	VCC12V	4	PWM

Table 3-12: CPU Fan Connector Pinouts

3.2.11 Audio Connector

- CN Label:** J_AUDIO1
- CN Type:** 10-pin header, p=2.54 mm
- CN Location:** See Figure 3-12
- CN Pinouts:** See Table 3-13

This connector connects to speakers, a microphone and an audio input.

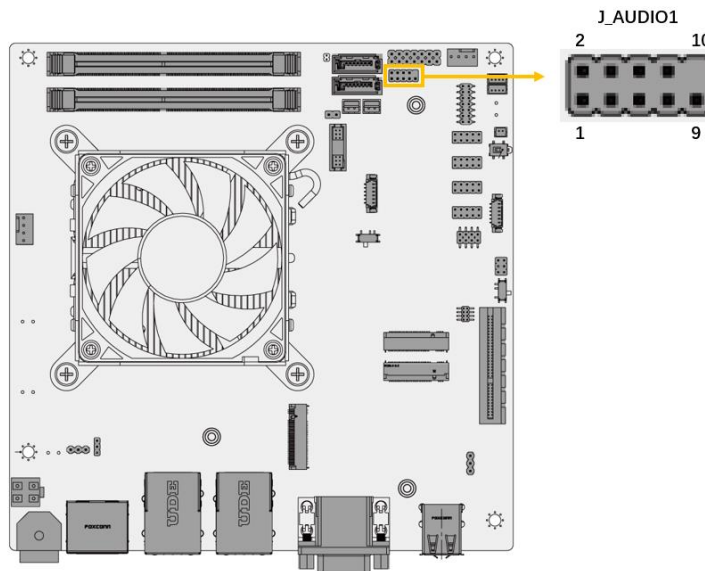


Figure 3-12: Audio Connector Location

Pin	Description	Pin	Description
1	HDA_SYNC_R	2	HDA_BCLK_R
3	HDA_SDO_R	4	HDA_PCBEEPC
5	HDA_SDI_0_R	6	HDA_RST_R
7	+5V	8	GND
9	+12V	10	GND

Table 3-13: Audio Connector Pinouts

KINO-ADL-PS

3.2.12 Front Panel Connector

- CN Label:** F_PANEL1
- CN Type:** 6-pin header, p=2.54 mm
- CN Location:** See Figure 3-13
- CN Pinouts:** See Table 3-14

The front panel connector connects to the power LED indicator and HDD LED indicator on the system front panel.

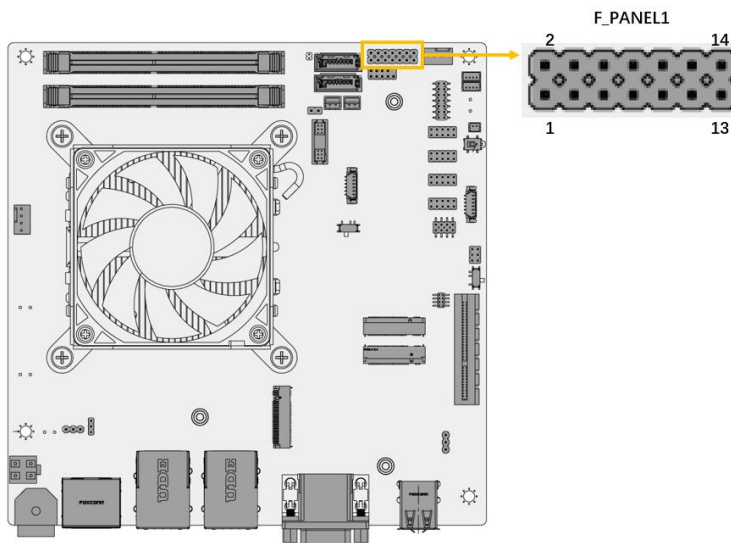


Figure 3-13: Front Panel Connector Location

Pin	Description	Pin	Description
1	PWR_LED+	2	SPKR+
3	NC	4	NC
5	PWR_LED-	6	NC
7	PWR_BTN+	8	SPKR-
9	PWR_BTN-	10	NC
11	HDD_LED+	12	RESET+
13	HDD_LED-	14	RESET-

Table 3-14: Front Panel Connector Pinouts

3.2.13 I²C Connector

- CN Label:** J_I2C1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See **Figure 3-14**
- CN Pinouts:** See **Table 3-15**

The I²C connector is used to connect I²C-bus devices to the mainboard.

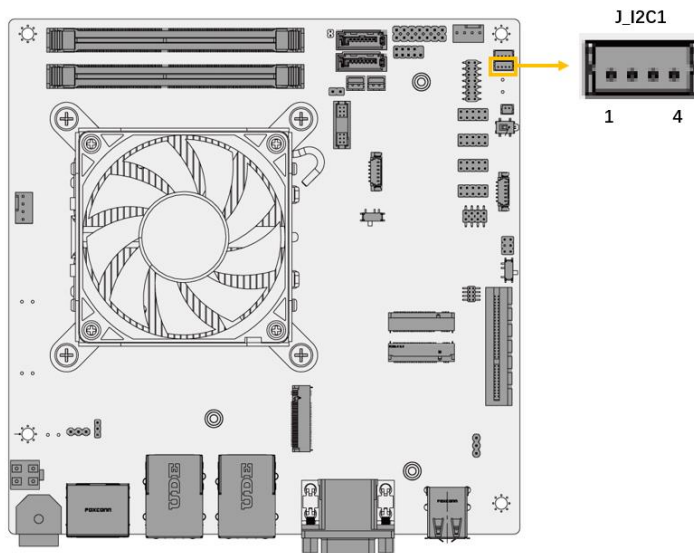


Figure 3-14: I²C Connector Location

Pin	Description	Pin	Description
1	GND	3	I2C_CLK
2	I2C_DATA	4	VCC5V

Table 3-15: I²C Connector Pinouts

KINO-ADL-PS

3.2.14 SMBus Connector

- CN Label:** J_SMB1
- CN Type:** 4-pin wafer, p=1.25 mm
- CN Location:** See Figure 3-15
- CN Pinouts:** See Table 3-16

The SMBus is a two-wire bus used for communication with low bandwidth devices on a motherboard such as power related chips and temperature sensors.

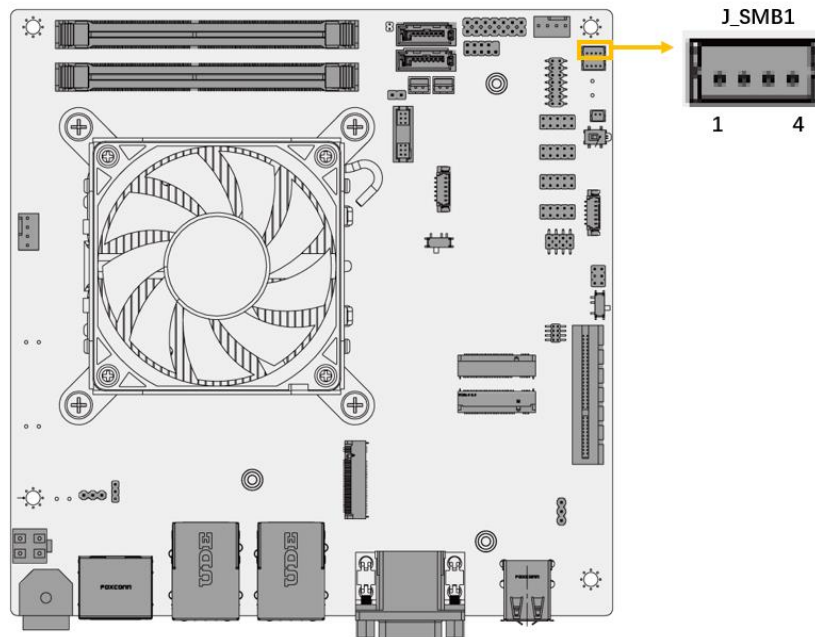


Figure 3-15: SMBus Connector Location

Pin	Description
1	GND
2	SMB_DATA
3	SMB_CLK
4	VCC5V

Table 3-16: SMBus Connector Pinouts

3.2.15 M.2 A-key Slot

- CN Label:** M2_A1
- CN Type:** M-key slot
- CN Location:** See Figure 3-16
- CN Pinouts:** See Table 3-17

The M.2 2230 slot is keyed in the A position.

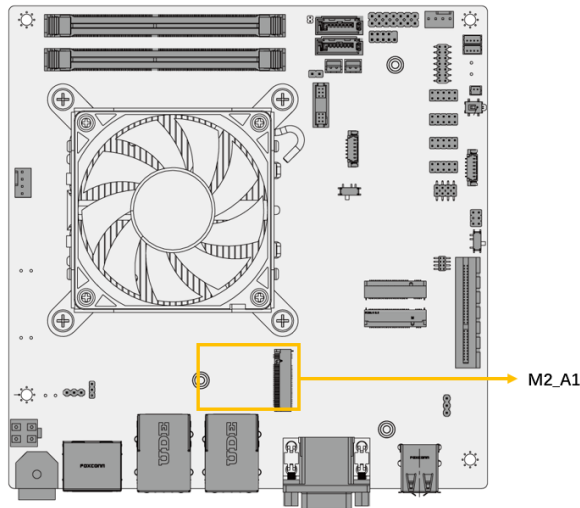


Figure 3-16: M.2 A-key Slot Location

Pin	Description	Pin	Description
1	GND	2	VCC3.3V
3	USB_D+	4	VCC3.3V
5	USB_D-	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC

KINO-ADL-PS

Pin	Description	Pin	Description
23	GND	24	GND
25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PET_P0	36	GND
37	PET_N0	38	NC
39	GND	40	NC
41	PER_P0	42	NC
43	PER_N0	44	NC
45	GND	46	NC
47	CLKP	48	NC
49	CLKN	50	NC
51	GND	52	PERST
53	NC	54	W_DISABLE2
55	PEWAKE	56	W_DISABLE1
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	VCC3.3V
73	NC	74	VCC3.3V
75	GND		

Table 3-17: M.2 A-key Connector Pinouts

3.2.16 M.2 M-key Slot

- CN Label:** M2_M1
- CN Type:** M-key slot
- CN Location:** See Figure 3-17
- CN Pinouts:** See Table 3-18

The M.2 2242/3080 slot is keyed in the M position.

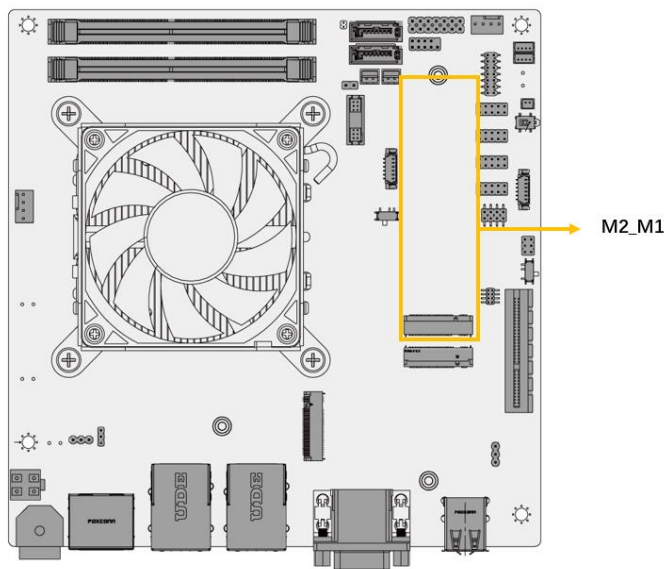


Figure 3-17: M.2 M-key Slot Location

Pin	Description	Pin	Description
1	GND	2	VCC3.3V
3	GND	4	VCC3.3V
5	PER_N3	6	NC
7	PER_P3	8	NC
9	GND	10	DAS/DSS
11	PET_N3	12	VCC3.3V
13	PET_P3	14	VCC3.3V
15	GND	16	VCC3.3V
17	PER_N2	18	VCC3.3V

KINO-ADL-PS

Pin	Description	Pin	Description
19	PER_P2	20	NC
21	GND	22	NC
23	PET_N2	24	NC
25	PET_P2	26	NC
27	GND	28	NC
29	PER_N1	30	NC
31	PER_P1	32	NC
33	GND	34	NC
35	PET_N1	36	NC
37	PET_P1	38	NC
39	GND	40	SMB_CLK
41	PER_N0	42	SMB_DATA
43	PER_P0	44	NC
45	GND	46	NC
47	PET_N0	48	NC
49	PET_P0	50	PERST
51	GND	52	NC
53	CLKN	54	PWEAKE
55	CLKP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	NC
69	PEDET	70	VCC3.3V
71	GND	72	VCC3.3V
73	GND	74	VCC3.3V
75	GND		

Table 3-18: M.2 B-key Connector Pinouts

3.2.17 DDR4 SODIMM Slot

CN Label: DIMM1, DIMM2

CN Type: 288-pin socket

CN Location: See **Figure 3-18**

The DIMM slots are for DDR4 DIMM memory modules

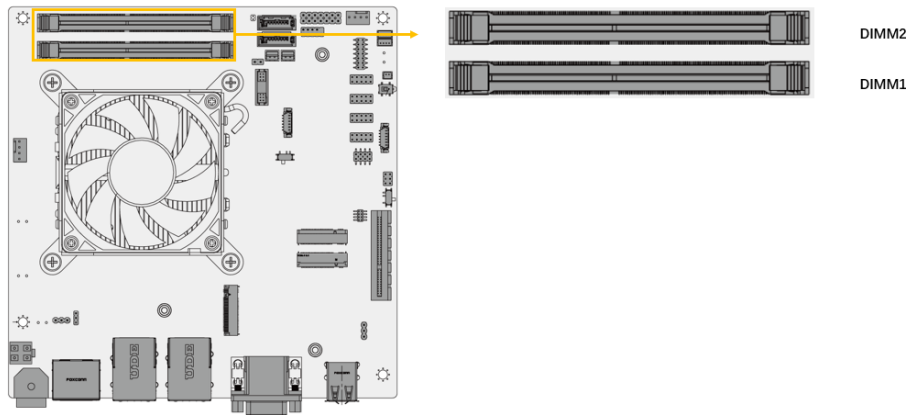


Figure 3-18: DDR4 DIMM Sockets Location

KINO-ADL-PS**3.2.18 PCIe x4 Slots**

- CN Label:** PCIE1
CN Type: PCIe x4 Slot
CN Location: See **Figure 3-19**

The PCIe x4 slot enables a PCIe x4 expansion module to be connected to the board.

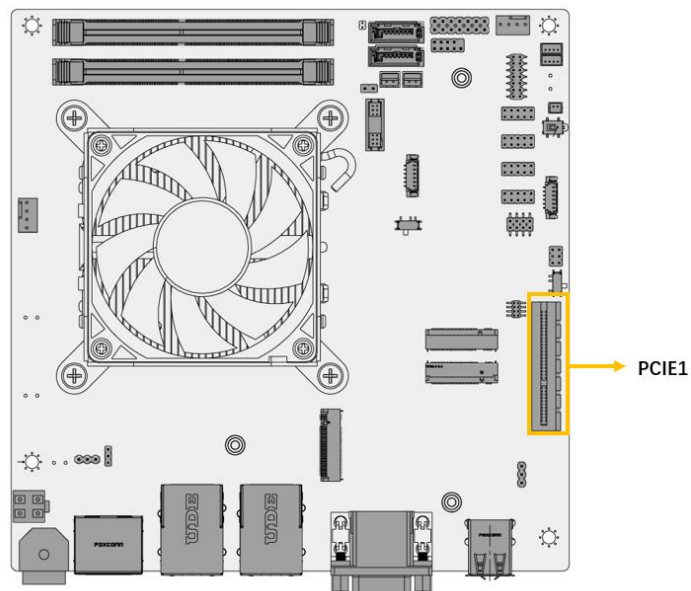


Figure 3-19: PCIe x4 Slot Location

3.2.19 IDPM Slot

- CN Label:** IDPM
- CN Type:** IEI iDPM slot
- CN Location:** See Figure 3-20
- CN Pinouts:** See Table 3-19

The iDPM slot is only for IEI eDP/LVDS/VGA module

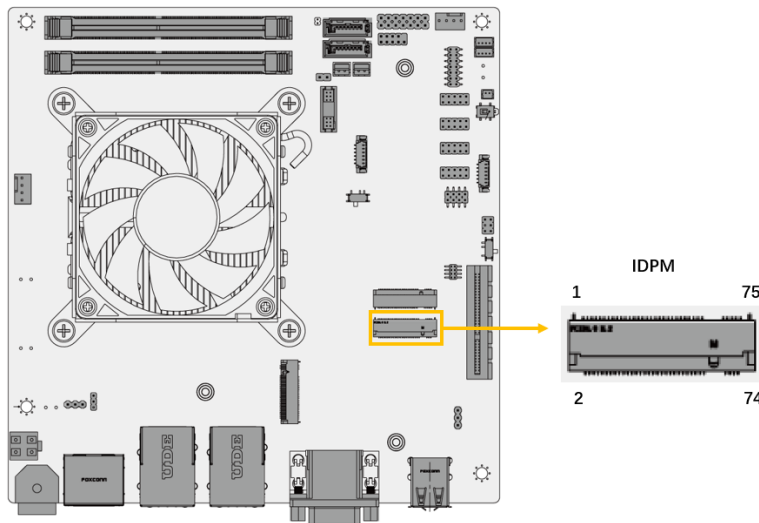


Figure 3-20: IDPM Slot Location

Pin	Description	Pin	Description
1	GND	2	VCC3.3A
3	GND	4	VCC3.3A
5	GND	6	VCC3.3A
7	GND	8	VCC3.3A
9	GND	10	VCC3.3A
11	VCC5V		
21	DETECT0#	20	VCC3.3V
23	DETECT1#	22	VCC3.3V
25	GND	24	VCC3.3V
27	GND	26	VCC3.3V
29	EDP_TX3_DN	28	GND

KINO-ADL-PS

31	EDP_TX3_DP	30	VCC12V
33	GND	32	VCC12V
35	EDP_TX2_DN	34	VCC12V
37	EDP_TX2_DP	36	VCC12V
39	GND	38	GND
41	EDP_TX1_DN	40	SMB_CLK
43	EDP_TX1_DP	42	SMB_DATA_
45	GND	44	GND
47	EDP_TX0_DN	46	EC_BKLT_CTRL
49	EDP_TX0_DP	48	EDP_BKLT_CTRL
51	GND	50	EDP_BKLT_EN
53	EDP_AUX_DN	52	EDP_VDD_EN
55	EDP_AUX_DP	54	EDP_HPD
57	GND	56	RST#
59	GND	58	LVDS_EN
61	GND	60	VCC5V
63	GND	62	VCC5V
65	GND	64	VCC5V
67	GND	66	VCC5V
69	GND	68	VCC12A
71	GND	70	VCC12A
73	GND	72	VCC12A
75	GND	74	VCC12A

Table 3-19: iDPM Connector Pinouts

3.2.20 RS-232 Serial Port Connectors

CN Label: COM1, COM2, COM3, COM4

CN Type: 10-pin header, p=2.54 mm

CN Location: See Figure 3-21

CN Pinouts: See Table 3-20

Each of these connectors provides RS-232 communications.

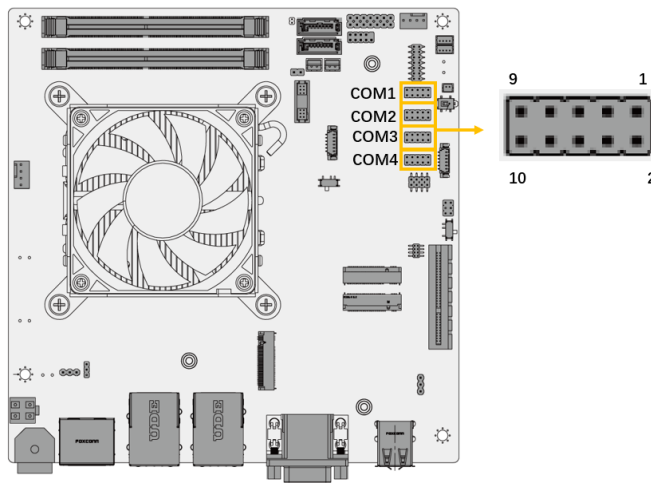


Figure 3-21: RS-232 Connector Locations

Pin	Description	Pin	Description
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	GND

Table 3-20: RS-232 Connector Pinouts

KINO-ADL-PS

3.2.21 SATA 6Gb/s Connectors

- CN Label:** SATA1/SATA2
- CN Type:** 7-pin SATA connector
- CN Location:** See **Figure 3-22**
- CN Pinouts:** See **Table 3-21**

The SATA drive connectors can be connected to SATA drives and support up to 6Gb/s data transfer rate.

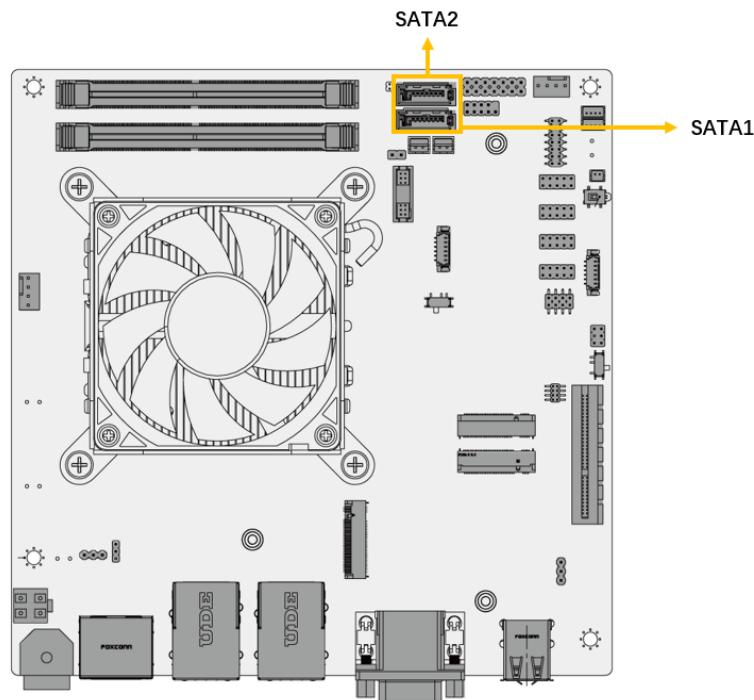


Figure 3-22: SATA 6Gb/s Connector Location

Pin	Description
1	GND
2	SATA_TXP
3	SATA_TXN
4	GND
5	SATA_RXN
6	SATA_RXP

Pin	Description
7	GND

Table 3-21: SATA 6Gb/s Connector Pinouts

3.2.22 SATA Power Connectors

CN Label: SATA_PWR1, SATA_PWR2

CN Type: 2-pin header

CN Location: See Figure 3-23

CN Pinouts: See Table 3-22

The SATA power connector provides +5 V power output to the SATA connector.

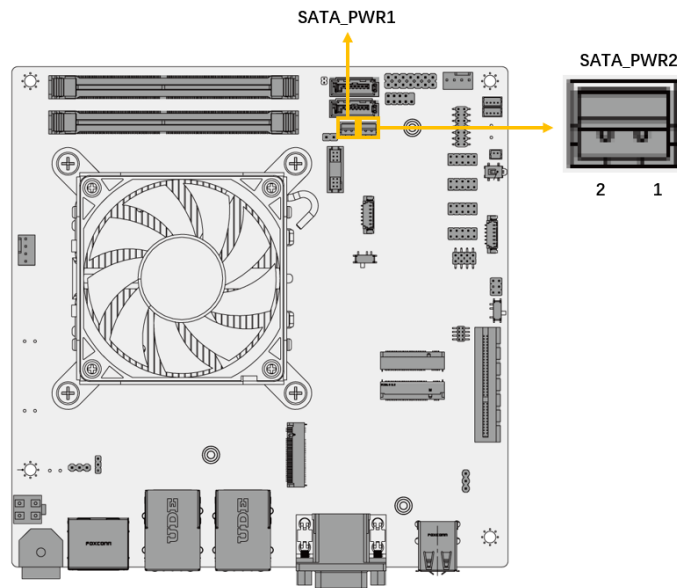


Figure 3-23: SATA Power Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC5V	2	GND

Table 3-22: SATA Power Connector Pinouts

KINO-ADL-PS

3.2.23 Internal USB 2.0 connectors

- CN Label:** J_USB1
- CN Type:** 8-pin header, p=1.25 mm
- CN Location:** See Figure 3-24
- CN Pinouts:** See Table 3-23

Each USB connector provides two USB 2.0 ports by dual-port USB cable.

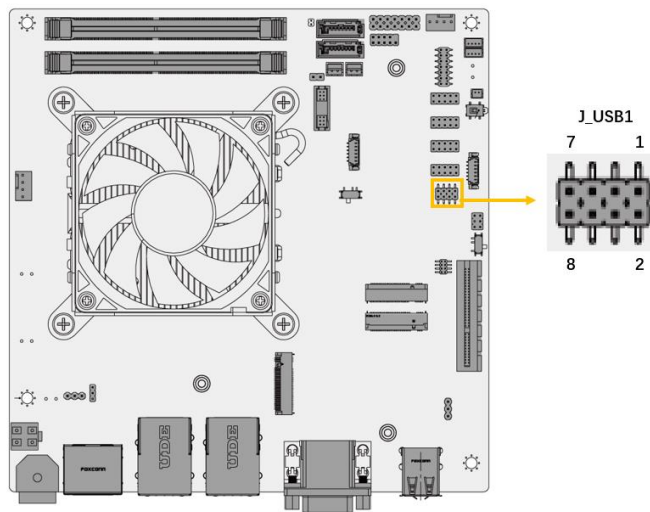


Figure 3-24: Internal USB 2.0 Connector Location

Pin	Description	Pin	Description
1	VCC5V	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC5V

Table 3-23: Internal USB 2.0 Connector Pinouts

3.2.24 BIOS Programmer Connector

- CN Label:** J_SPI1
- CN Type:** 6-pin header, p=1.25 mm
- CN Location:** See **Figure 3-25**
- CN Pinouts:** See **Table 3-24**

The BIOS Programmer connector is used to flash the BIOS.

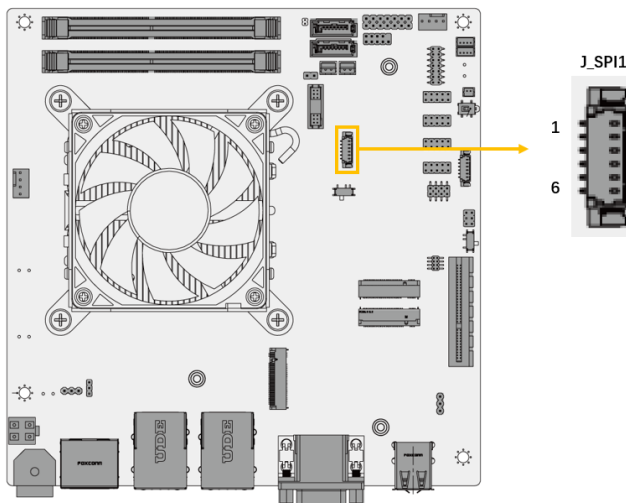


Figure 3-25: BIOS Programmer Connector Location

Pin	Description	Pin	Description
1	VCC3.3V	4	CLK
2	CS	5	MOSI
3	MISO	6	GND

Table 3-24: BIOS Programmer Connector Pinouts

KINO-ADL-PS

3.2.25 BIOS Programmer Switch

- CN Label:** J_SWSP11
- CN Type:** Button
- CN Location:** See Figure 3-26
- CN Pinouts:** See Table 3-25

The BIOS Programmer Switch is used to flash the BIOS.

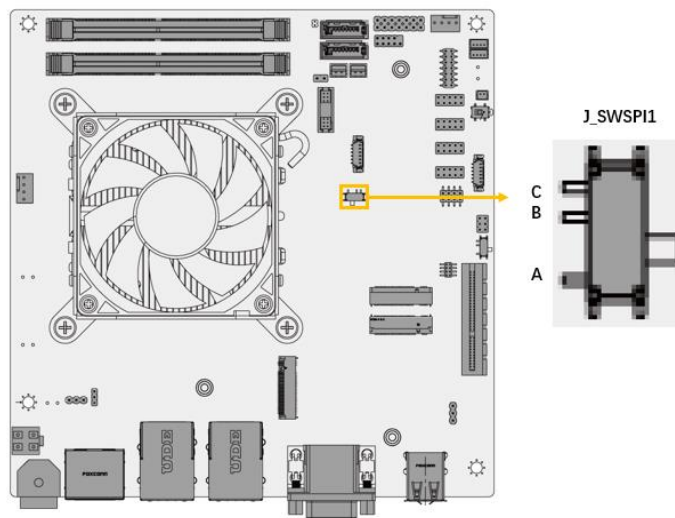


Figure 3-26: BIOS Programmer Switch Location

Pin	Description
A-B	Update BIOS Flash
B-C	Update Secure Flash

Table 3-25: BIOS Programmer Switch Pinouts

3.2.26 Flash EC ROM Connector

- CN Label:** EC_SPI1
- CN Type:** 8-pin header, p=1.25 mm
- CN Location:** See Figure 3-27
- CN Pinouts:** See Table 3-26

The Flash EC ROM connector is used to flash the EC ROM.

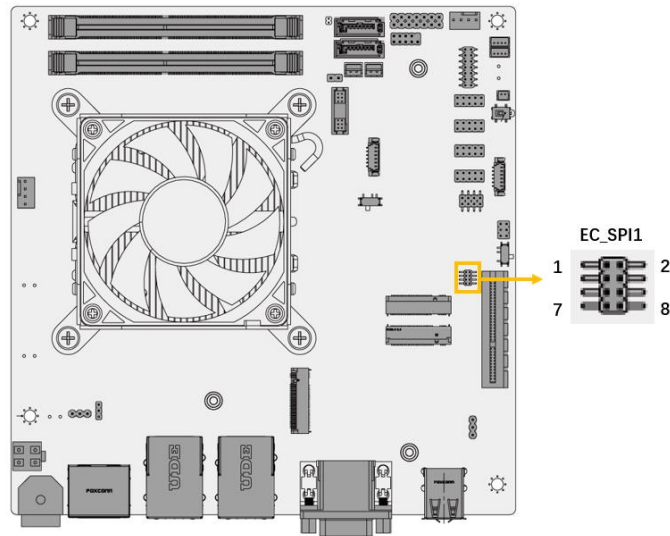


Figure 3-27: Flash EC ROM Connector Location

Pin	Description	Pin	Description
1	CS	2	VCC3.3V
3	MISO	4	HOLD
5	DET#	6	CLK
7	GND	8	MOSI

Table 3-26: Flash EC ROM Connector Pinouts

KINO-ADL-PS

3.3 External Peripheral Interface Connector Panel

The figure below shows the external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

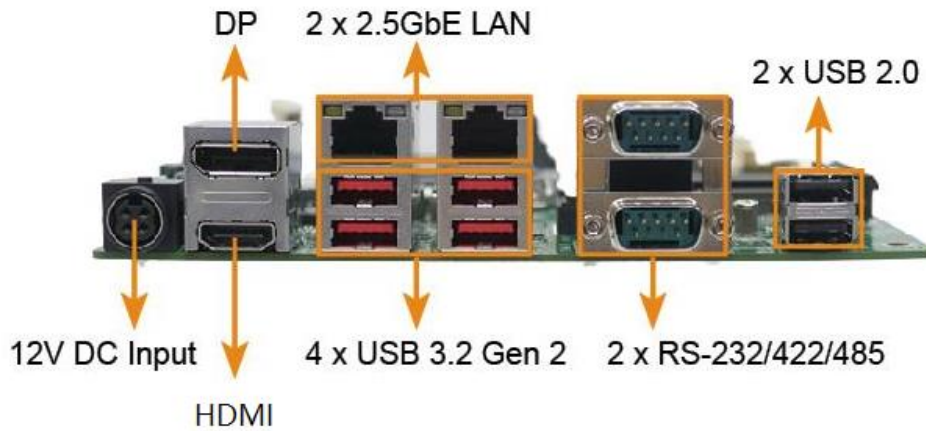


Figure 3-28: External Peripheral Interface Connector

3.3.1 Power Connector

- CN Label:** PWR1
- CN Type:** 4-pin DIN
- CN Location:** See Figure 3-29
- CN Pinouts:** See Table 3-27

The connector supports the 12V power adapter.

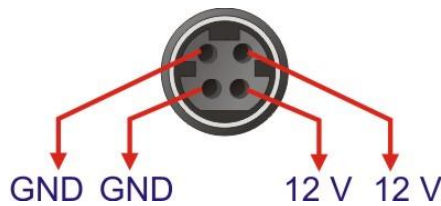


Figure 3-29: Power Connector (4-pin DIN)

Pin	Description	Pin	Description
1	VCC12V	2	GND
3	VCC12V	4	GND

Table 3-27: Power Connector Pinouts

3.3.2 External Display port Connectors

- CN Label:** HDMI_DP1
- CN Type:** HDMI, DP
- CN Location:** See Figure 3-30, Figure 3-31
- CN Pinouts:** See Table 3-28, Table 3-29

The external display port connector, UP = DP / Down = HDMI.

The external DP connectors:

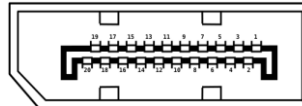


Figure 3-30: DP Connector

Pin	Description	Pin	Description
1	LANE0P	11	GND
2	GND	12	LANE3N
3	LANE0N	13	CONFIG_A_1
4	LANE1P	14	CONFIG_A_2
5	GND	15	AUXP
6	LANE1N	16	GND
7	LANE2P	17	AUXN
8	GND	18	HPD
9	LANE2N	19	GND
10	LANE3P	20	+5V

Table 3-28: DP Connector Pinouts

The HDMI Connectors:

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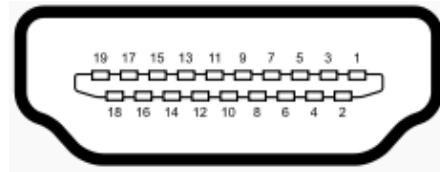


Figure 3-31: HDMI Connectors

Pin	Description	Pin	Description
1	HDMI_DATA2P	11	GND
2	GND	12	HDMI_CLKN
3	HDMI_DATA2N	13	N/C
4	HDMI_DATA1P	14	N/C
5	GND	15	HDMI_CLK
6	HDMI_DATA1N	16	HDMI_SDA
7	HDMI_DATA0P	17	GND
8	GND	18	+5V
9	HDMI_DATA0N	19	HDMI_HPD
10	HDMI_CLKP		

Table 3-29: HDMI Connector Pinouts

3.3.3 External i225 2.5G LAN and USB3.2 Port Connector

- CN Label:** LAN1, LAN2
- CN Type:** USB 3.2, RJ45
- CN Location:** See Figure 3-32, Figure 3-33
- CN Pinouts:** See Table 3-30, Table 3-31, Table 3-32

The external i225 2.5G LAN and USB3.2 port connector.

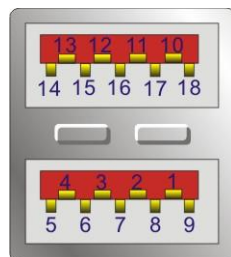


Figure 3-32: External dual USB 3.2 Gen 2 connectors

Pin	Description	Pin	Description
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 3-30: USB 3.2 Port Pinouts

The LAN connector connects to a local network.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	LAN1_MD0+	5	LAN1_MD2+
2	LAN1_MD0-	6	LAN1_MD2-
3	LAN1_MD1+	7	LAN1_MD3+
4	LAN1_MD1-	8	LAN1_MD3-

Table 3-31: 2.5GbE RJ45 Pinouts

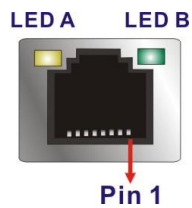


Figure 3-33: LAN LED Location

KINO-ADL-PS

LED	Description	LED	Description
Off	No link	Off	10 Mbps connection
Yellow	Linked	orange	1000 Mbps connection
Blinking	TX/RX activity	Green	2.5 Gbps connection

Table 3-32: LAN LED Pinouts

3.3.4 External USB2.0 Connector

- CN Label:** USB1
- CN Type:** USB2.0
- CN Location:** See **Figure 3-34**
- CN Pinouts:** See **Table 3-33**

The external USB2.0 connectors.

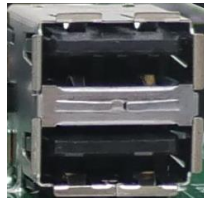


Figure 3-34: USB 2.0 Connectors

Pin	Description	Pin	Description
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 3-33: USB 2.0 Port Pinouts

3.3.5 External RS232/422/485 Connector

- CN Label:** COM5/6
- CN Type:** DB9
- CN Pinouts:** See Table 3-34, Table 3-35

The COM connector connects to a serial device that supports RS-232/422/485 communication.

	RS-232	RS-422	RS-485
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	--
4	DTR	RXD422-	--
5	GND	--	--
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

Table 3-34: External RS-232/422/485 Connector Pinouts

Use the optional RS-232/422/485 cable to connect to a serial device. The pinouts of the DB-9 connector are listed below.

RS-232 Pinouts	RS-422 Pinouts	RS-485 Pinouts
<p>DSR(6) RTS(7) CTS(8) RI(9)</p> <p>D-SUB 9PIN MALE MODE 01</p>	<p>D-SUB 9PIN MALE MODE 00</p>	<p>D-SUB 9PIN MALE MODE 10/11</p>

Table 3-35: DB-9 RS-232/422/485 Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the KINO-ADL-PS may result in permanent damage to the KINO-ADL-PS and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the KINO-ADL-PS. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the KINO-ADL-PS or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband:** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding:** Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** When configuring the KINO-ADL-PS, place it on an anti-static pad. This reduces the possibility of ESD damaging the KINO-ADL-PS.
- **Only handle the edges of the PCB:** When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations



NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

KINO-ADL-PS



WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
 - The user manual provides a complete description of the KINO-ADL-PS installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
 - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the KINO-ADL-PS on an anti-static pad:
 - When installing or configuring the motherboard, place it on an anti-static pad. This helps to prevent potential ESD damage.
- Turn all power to the KINO-ADL-PS off:
 - When working with the KINO-ADL-PS, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the KINO-ADL-PS, **DO NOT**:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.3 M.2 Module Installation

The KINO-ADL-PS provide two ways to install the M.2 expansion card. One is using screw, and the other is using the retainer. Please follow the steps below.

Mode One: Using screw

- Step 1:** Locate the M.2 module slot. See **Chapter 3**.
- Step 2:** Remove the retention screw secured on the motherboard.
- Step 3:** Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20° (**Figure 4-1**).

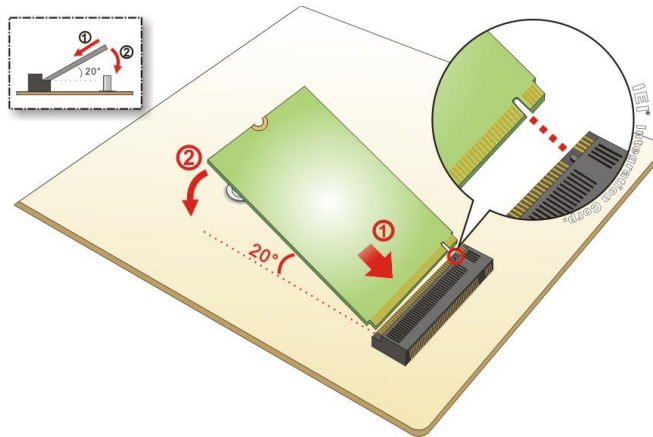


Figure 4-1: Inserting the M.2 Module into the Slot at an Angle

- Step 4:** Secure the M.2 module with the previously removed retention screw (**Figure 4-2**).

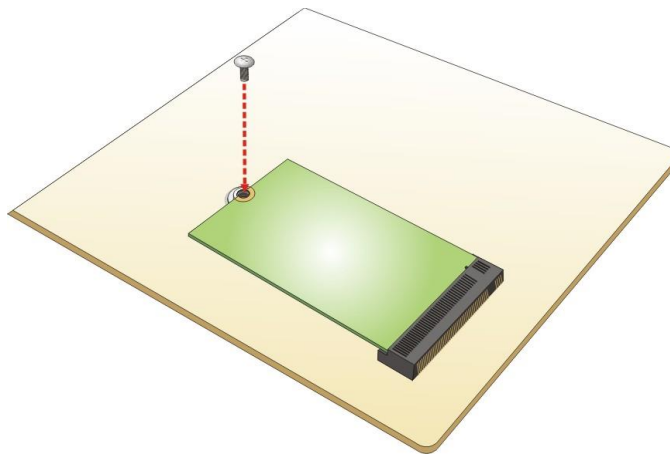


Figure 4-2: Securing the M.2 Module

KINO-ADL-PS

Mode Two: Using the Retainer

Step 1: Press the retainer down as shown below. (See **Figure 4-3**)

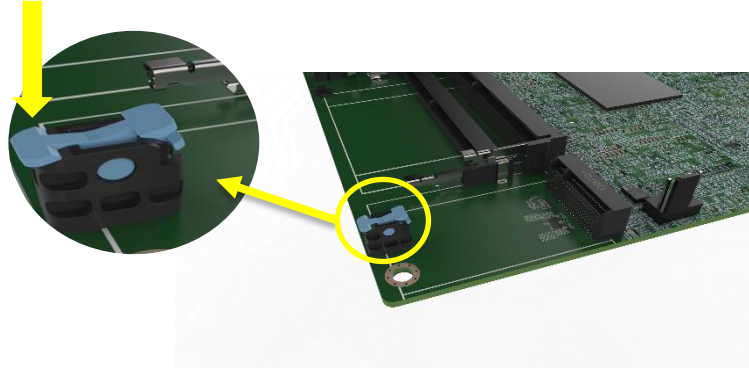


Figure 4-3: Press the Retainer

Step 2: Line up the notch on the M.2 module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20°. (See **Figure 4-1**)

Step 3: Align the notch on the end of the M.2 module with the clip of the retainer. (See

Step 4: **Figure 4-4**)

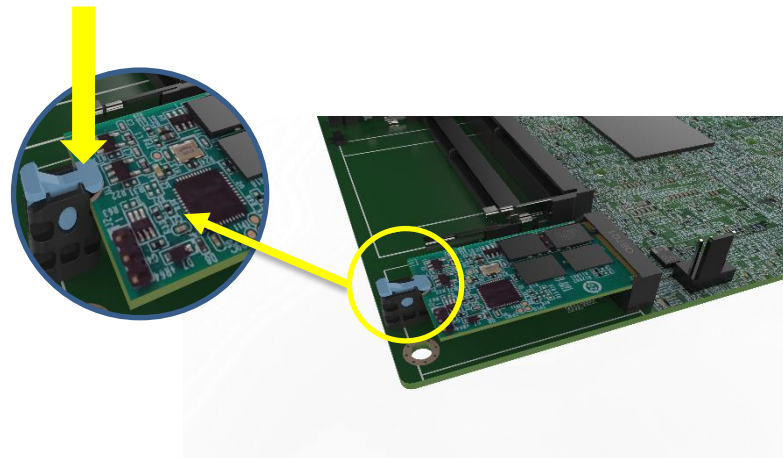


Figure 4-4: Aligning the M.2 Module with the Retainer

Step 5: Press the M.2 module down until it is secured into place by the retainer. (See **Figure 4-5**)

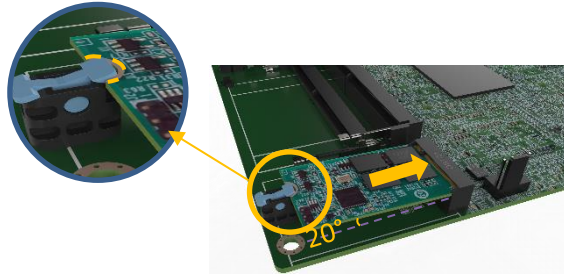


Figure 4-5: Securing the M.2 Module

Step 6: If you want to remove the M.2 module, you should press the retainer down as described in Step 1 to release the M.2 module. (See **Figure 4-3**)

KINO-ADL-PS

4.4 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors.

4.4.1 SATA Drive Connection

The KINO-ADL-PS is shipped with two SATA drive cables. To connect the SATA drives to the connectors, please follow the steps below.

Step 1: Locate the connectors. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 2: Insert the cable connector. Insert the cable connector into the on-board SATA drive connector until it clips into place. See **Figure 4-6**.

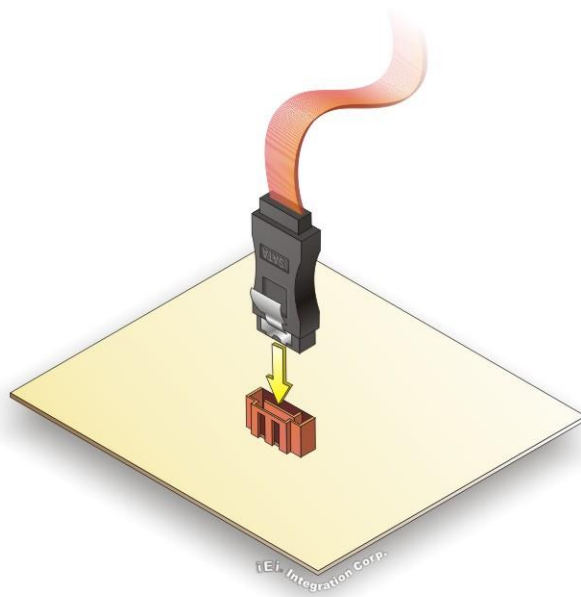


Figure 4-6: SATA Drive Cable Connection

Step 3: Connect the cable to the SATA disk. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-7**.

Step 4: Connect the SATA power cable. Connect the SATA power connector to the back of the SATA drive. See **Figure 4-7**.

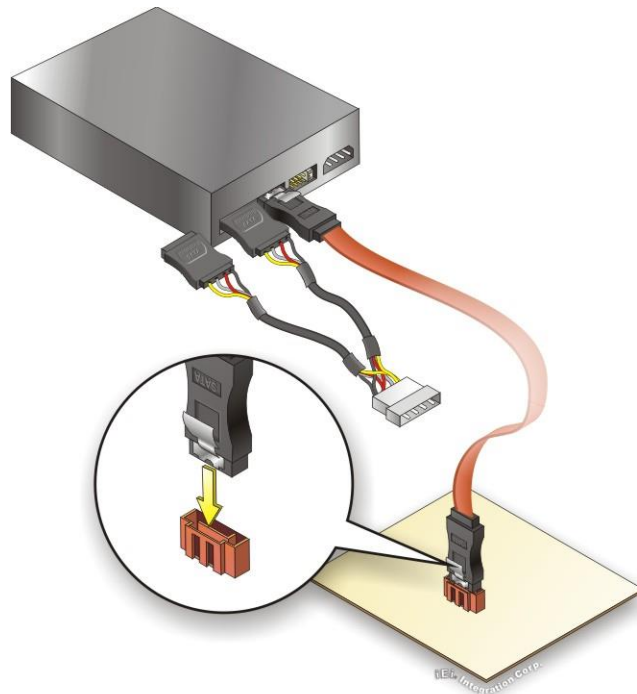


Figure 4-7: SATA Power Drive Connection

The SATA power cable can be bought from IEI. See Optional Items in Section 2.4.

4.4.2 AT Power Connection

Follow the instructions below to connect the KINO-ADL-PS to an AT power supply.



WARNING:

Disconnect the power supply power cord from its AC power source to prevent a sudden power surge to the KINO-ADL-PS.

Step 1: **Locate the power cable.** The power cable is shown in the packing list in Chapter 2.

KINO-ADL-PS

Step 2: Connect the power cable to the motherboard. Connect the 4-pin (2x2) Molex type power cable connector to the power connector on the motherboard. See

Figure 4-8

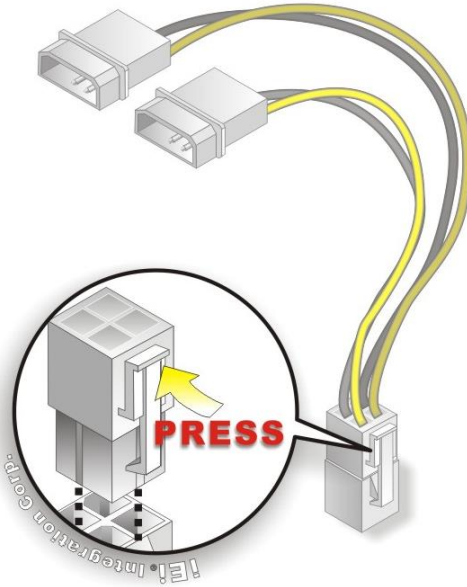


Figure 4-8: Power Cable to Motherboard Connection

Step 3: Connect power cable to power supply. Connect one of the 4-pin (1x4) Molex type power cable connectors to an AT power supply. See **Figure 4-9**

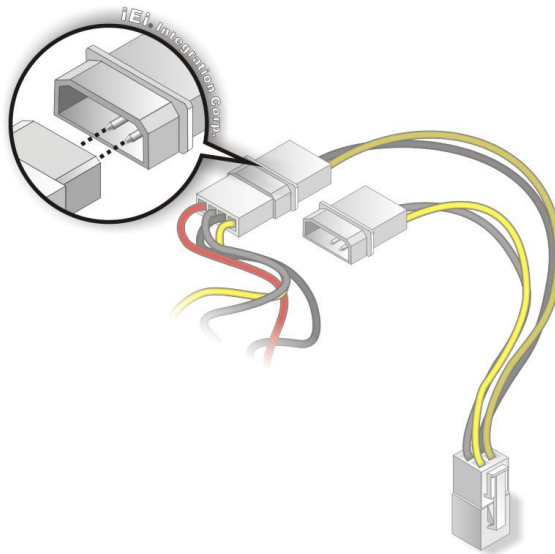


Figure 4-9: Connect Power Cable to Power Supply

4.4.3 Channel Audio Kit Installation

**NOTE:**

This item must be ordered separately, and connects to the audio connector. For further information please contact the nearest distributor, reseller or vendor or contact an IEI sales representative directly.

The audio kit attaches to the audio connector. The audio kit provides 7.1 channel audio. To install the audio kit, please refer to the steps below:

- Step 1:** **Connect the cable to the audio kit.** Connect the included cable to the audio kit. Make sure pin 1 aligns with the marked pin.
- Step 2:** **Connect the cable to the board.** Connect the other end of the cable to the board. Make sure to line up the marked pin 1.

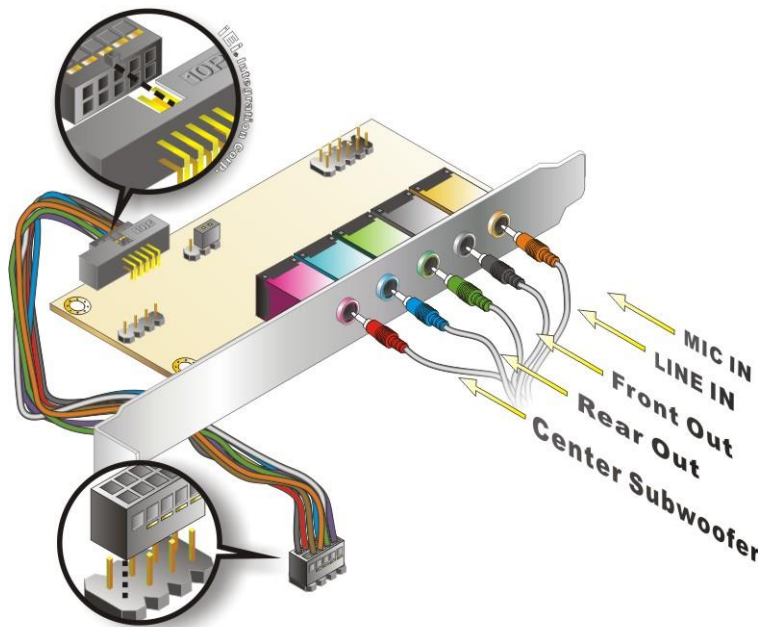


Figure 4-10: 7.1 Channel Audio Kit

- Step 3:** **Mount the audio kit onto the chassis.** Once the audio kit is connected to the board, secure the audio kit bracket to the system chassis.

KINO-ADL-PS

Step 4: Connect the audio devices. Connect speakers and external audio sources to the audio jacks on the audio kit.

Step 5: Install the driver. Install the 7.1 channel audio driver included with the board.

4.5 Software Drivers

4.5.1 Software Installation

All the drivers for the KINO-ADL-PS are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type KINO-ADL-PS and press Enter to find all the relevant software, utilities, and documentation.

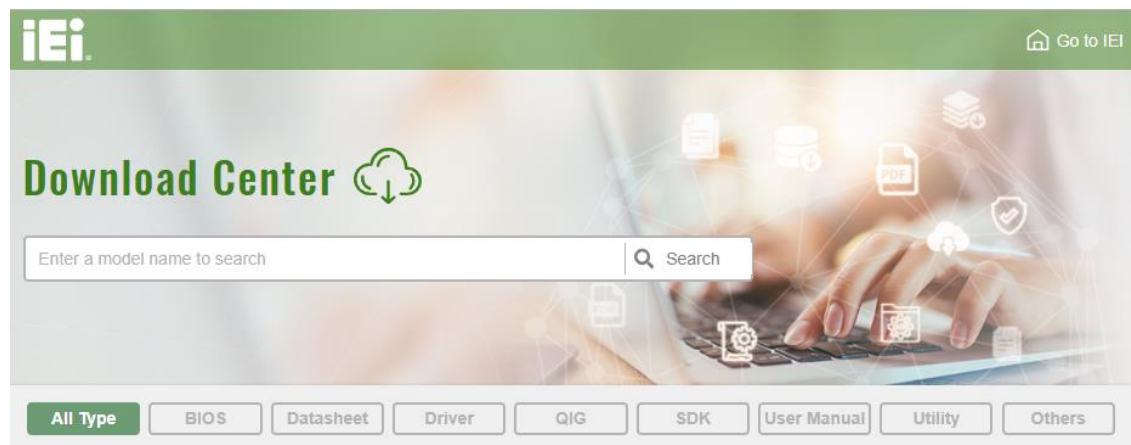
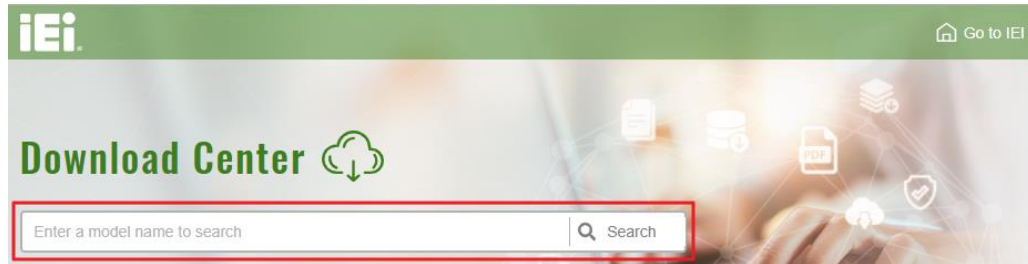


Figure 4-11: IEI Resource Download Center

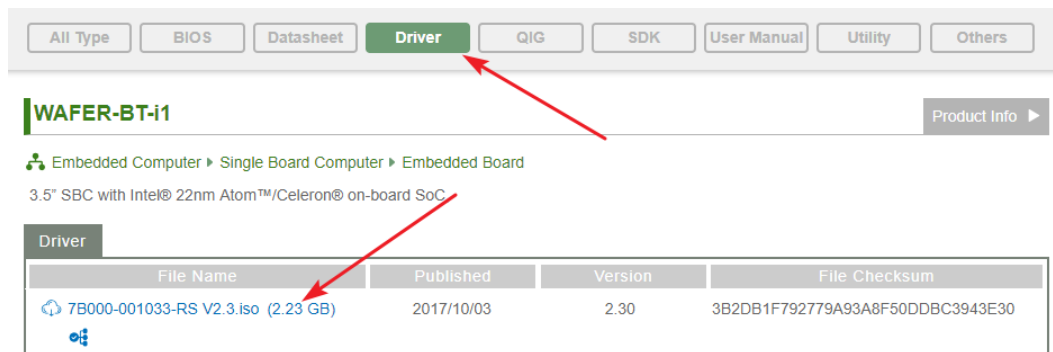
4.5.2 Driver Download

To download drivers from IEI Resource Download Center, follow the steps below.

Step 1: Go to <https://download.ieiworld.com>. Type KINO-ADL-PS and press Enter.

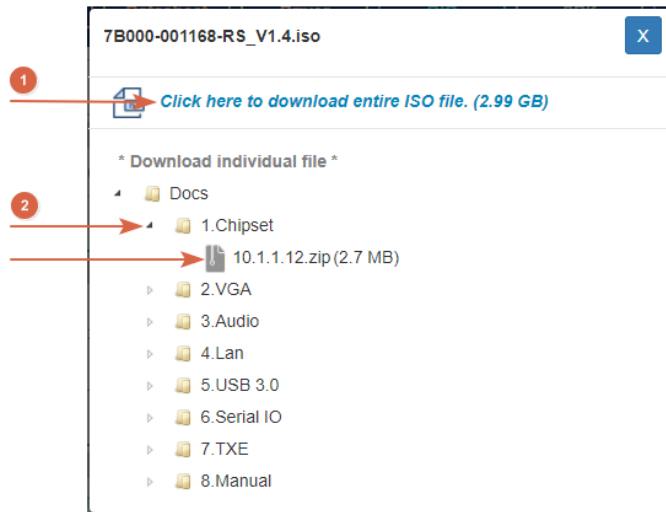


Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.



Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (❶), or click the small arrow to find an individual driver and click the file name to download (❷).

KINO-ADL-PS

**NOTE:**

To install software from the downloaded ISO image file in Windows 8, 8.1 or 10, double-click the ISO file to mount it as a virtual drive to view its content. On Windows 7 system, an additional tool (such as Virtual CD-ROM Control Panel from Microsoft) is needed to mount the file.

Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. **Using keyboard:** Press the **DEL** or **F2** as soon as the system is turned on.
2. **Using touchscreen:** Press the **Setup** button on the upper right corner of the BIOS Starting Menu.

If the message disappears before the **DEL** or **F2** key is pressed, restart the computer and try again, then the BIOS Starting Menu will appear. Select "Setup" and press Enter to get into the BIOS Setup.

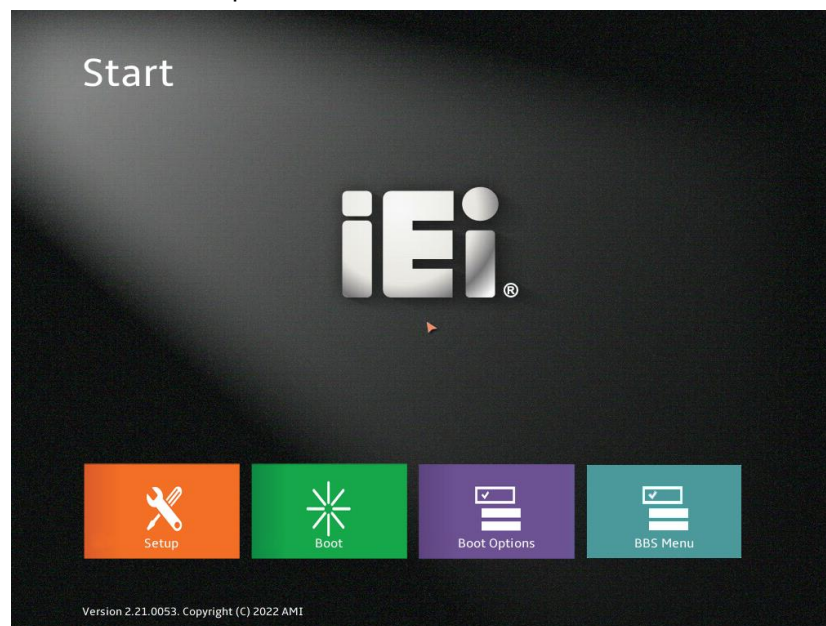


Figure 5-1: BIOS Starting Menu

5.1.2 Using Setup

The BIOS Setup menu can be navigated by using a keyboard or a touchscreen.

5.1.2.1 Keyboard Navigation

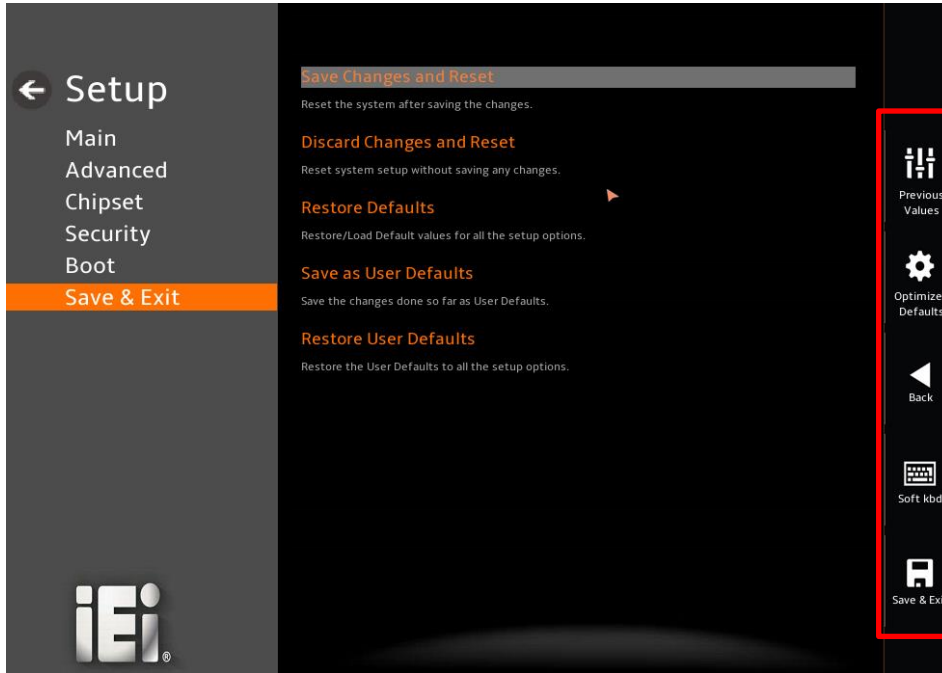
For keyboard navigation, use the navigation keys shown in **Table 5-1**.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up	Move to the previous page
Page Dn	Move to the next page
Esc	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS
<K>	Scroll help area upwards
<M>	Scroll help area downwards

Table 5-1: BIOS Navigation Keys

5.1.2.2 Touch Navigation

For touchscreen navigation, use the on-screen navigation keys shown below.



On-screen Button	Function
Previous Values	Load the last value you set.
Optimized Defaults	Load the factory default values in order to achieve the best performance.
Back	Return to the previous menu.
Soft kbd	Display the on-screen keyboard.
Save & Exit	Save the changes made to the BIOS options and reset the system.

Table 5-2: BIOS On-screen Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window, press the **Esc** key.

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the clear CMOS button described in **Chapter 4**.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

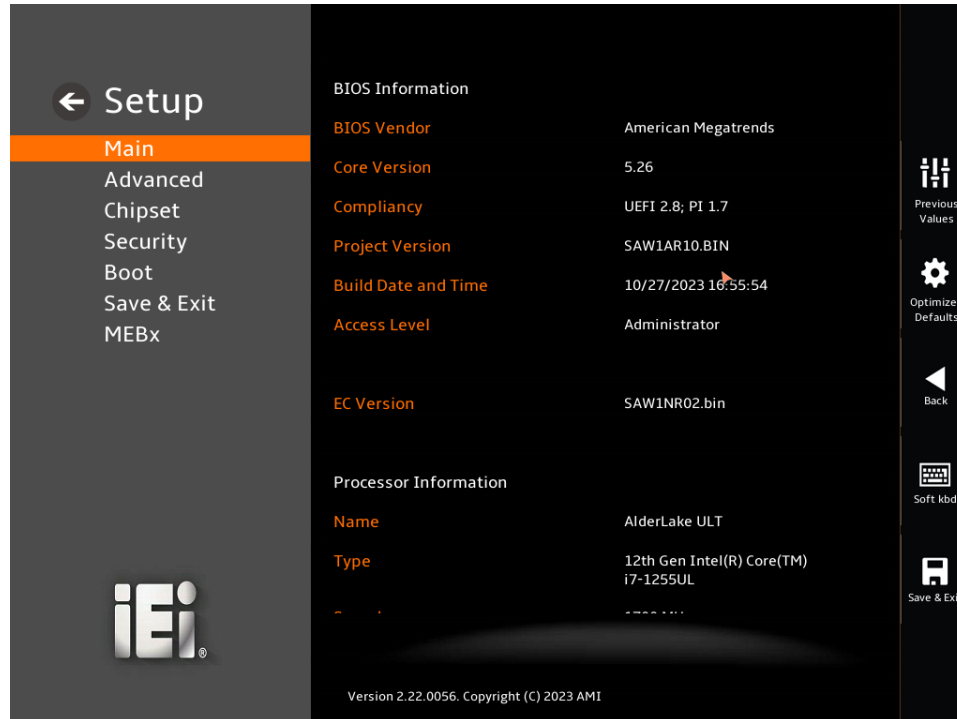
The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

KINO-ADL-PS

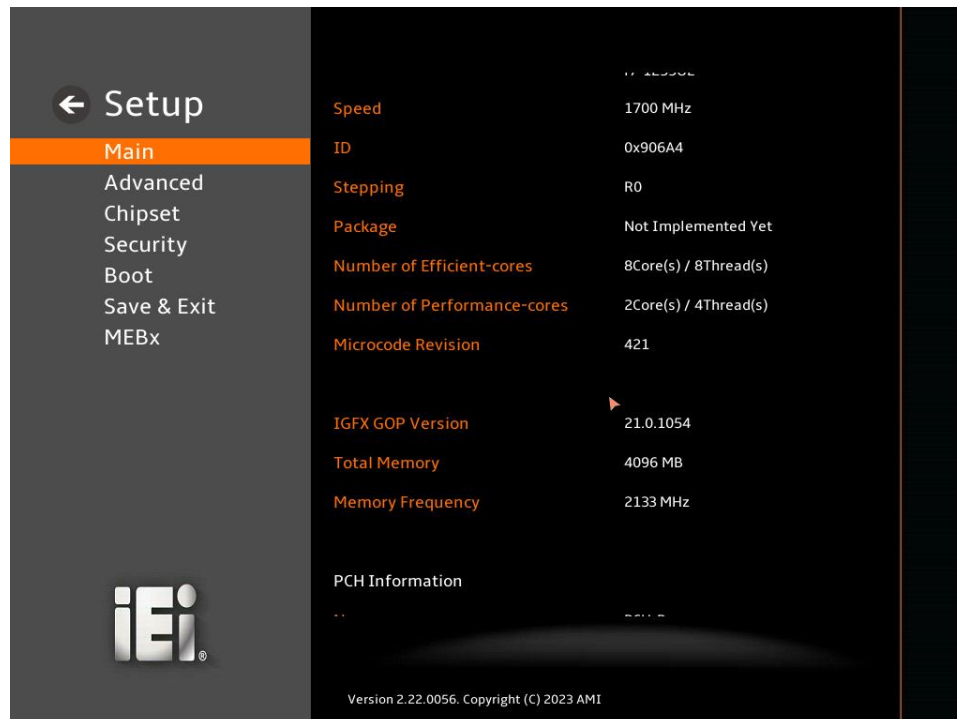
5.2 Main

The **Main** BIOS menu (**BIOS Menu 2**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main (1/3)



BIOS Menu 2: Main (2/3)



BIOS Menu 3: Main (3/3)

➔ **BIOS Information**

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Compliance:** Current UEFI & PI version
- **Project Version:** the board version
- **Build Date and Time:** Date the current BIOS version was made
- **EC Version:** Current EC version

➔ **Processor Information**

The **Processor Information** lists a brief summary of the Processor. The fields in **Processor Information** cannot be changed. The items shown in the system overview include:

- **Name:** Displays the Processor Details

KINO-ADL-PS

- **Type:** Displays the Processor Type
- **Speed:** Displays the Processor Speed
- **ID:** Displays the Processor ID

→ PCH Information

The **PCH Information** lists a brief summary of the PCH. The fields in **PCH Information** cannot be changed. The items shown in the system overview include:

- **Name:** Displays the PCH Name
- **PCH SKU:** Displays the PCH SKU
- **Stepping:** Displays the PCH Stepping
- **TXT Capability of Platform/PCH:** Displays the TXT Capability
- **Production Type:** Displays the Production Type
- **ME FW Version:** Displays the ME Firmware Version
- **ME Firmware SKU:** Displays the ME Firmware SKU
- **PMC FW Version:** Displays the PMC Firmware Version

→ System Date [xx/xx/xx]

Use the **System Date** option to set the system date. Manually enter the day, month and year.

→ System Time [xx:xx:xx]

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

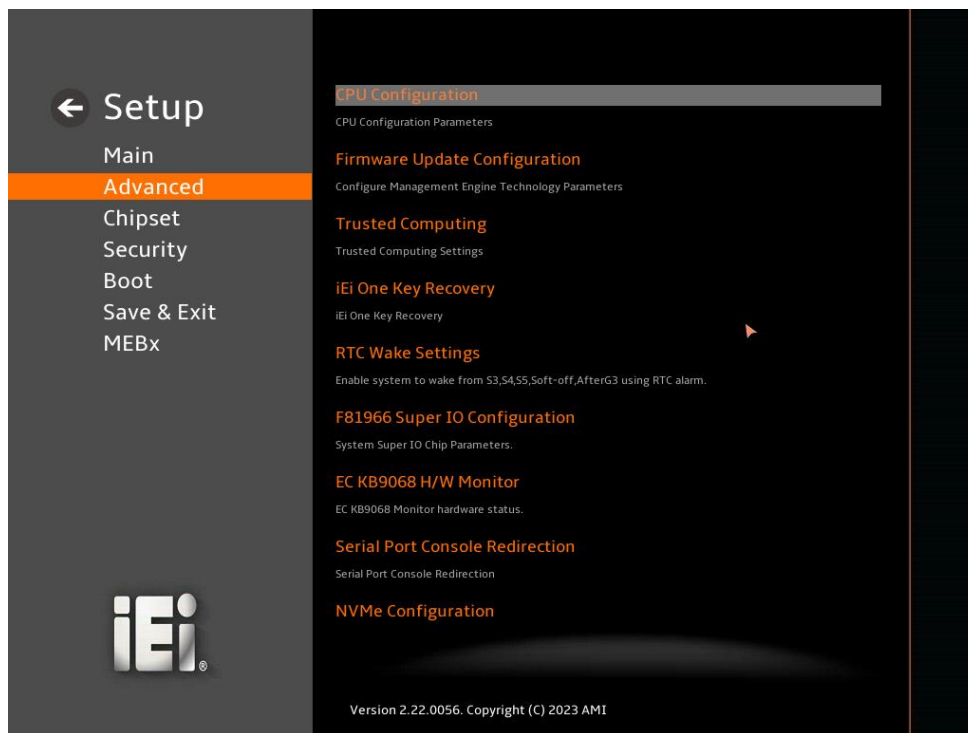
5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 4**) to configure the CPU and peripheral devices through the following sub-menus:



WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 4: Advanced

KINO-ADL-PS

5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 5**) to view detailed CPU specifications or enable the Intel Virtualization Technology.



BIOS Menu 5: CPU Configuration (1/3)



BIOS Menu 6: CPU Configuration (2/3)



BIOS Menu 7: CPU Configuration (3/3)

KINO-ADL-PS

→ Intel (VMX) Virtualization Technology [Enabled]

Use the **Intel (VMX) Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

- **Disabled** Disables Intel Virtualization Technology.
- **Enabled** **DEFAULT** Enables Intel Virtualization Technology.

→ Active Performance Cores [All]

Use the **Active Performance Cores** BIOS option to enable numbers of P-cores in the processor package.

- **All** **DEFAULT** Enable all P-cores in the processor package.
- **1** Enable one P-core in the processor package.

→ Active Efficient Cores [All]

Use the **Active Efficient Cores** BIOS option to enable numbers of E-cores in the processor package.

- **All** **DEFAULT** Enable all E-cores in the processor package.
- **0** Enable zero E-core in the processor package.
- **1** Enable one E-cores in the processor package.
- **2** Enable two E-cores in the processor package.
- **3** Enable three E-cores in the processor package.
- **4** Enable four E-cores in the processor package.
- **5** Enable five E-cores in the processor package.
- **6** Enable six E-cores in the processor package.
- **7** Enable seven E-cores in the processor package.

→ Hyper-Threading [Enabled]

Use the **Hyper-Threading** option to enable or disable the **Hyper-Threading** Technology.

- Disabled** Disables Hyper-Threading Technology
- Enabled** **DEFAULT** Enables Hyper-Threading Technology

→ Intel(R) SpeedStep(tm) [Enabled]

Use the **Intel(R) SpeedStep(tm)** option to enable or disable the Intel® SpeedStep Technology which allows more than two frequency ranges to be supported.

- Disabled** Disables Intel® SpeedStep Technology
- Enabled** **DEFAULT** Enables Intel® SpeedStep Technology

→ C states [Disabled]

Use the **C states** option to enable or disable CPU power management which allows CPU to go to C states when it is not 100% utilized.

- Disabled** **DEFAULT** Disables CPU power management
- Enabled** Enables CPU power management

→ Power Limit 1 [0]

Use the + or – key to change the **Power Limit 1** value. BIOS will program the default values for Limit 1 and Power Limit 1 Time Window. For 12.50W, enter 12500.

→ Power Limit 2 [0]

Use the + or – key to change the **Power Limit 2** value. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500.

→ Power Limit 1 Time Window [0]

Use the **Power Limit 1 Time Window** option to select the PL1 time duration. The value may vary from 0 to 128. For 0 is the default value

KINO-ADL-PS

5.3.2 Firmware Update Configuration

Use the **Firmware Update Configuration** menu (**BIOS Menu 9**) to configure settings related to the ME FW Update function.



BIOS Menu 8: Firmware Update Configuration

→ Me FW Image Re-Flash [Disabled]

Use the **Me FW Image Re-Flash** option to enable or disable Me FW Image Re-Flash function.

- **Disable** **DEFAULT** Me FW Image Re-Flash is disabled.
- **Enable** Me FW Image Re-Flash is enabled.

→ FW Update [Enabled]

Use the **FW Update** option to enable or disable Me FW Update function.

- **Disable** **DEFAULT** Me FW Image Re-Flash is disabled.
- **Enable** Me FW Image Re-Flash is enabled.

5.3.3 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 9**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 9: Trusted Computing Configuration

➔ **TPM Support [Enable]**

Use the **TPM Support** option to enable or disable BIOS support for security device.

- ➔ **Disable** TPM support is disabled.
- ➔ **Enable** **DEFAULT** TPM support is enabled.

➔ **Security Device Selection [PTT]**

Use the **Security Device Support** option to enable or disable BIOS support for security device.

- ➔ **dTPM.PTT** dTPM.PTT support is enabled.
- ➔ **PTT** **DEFAULT** PTT support is enabled.

KINO-ADL-PS

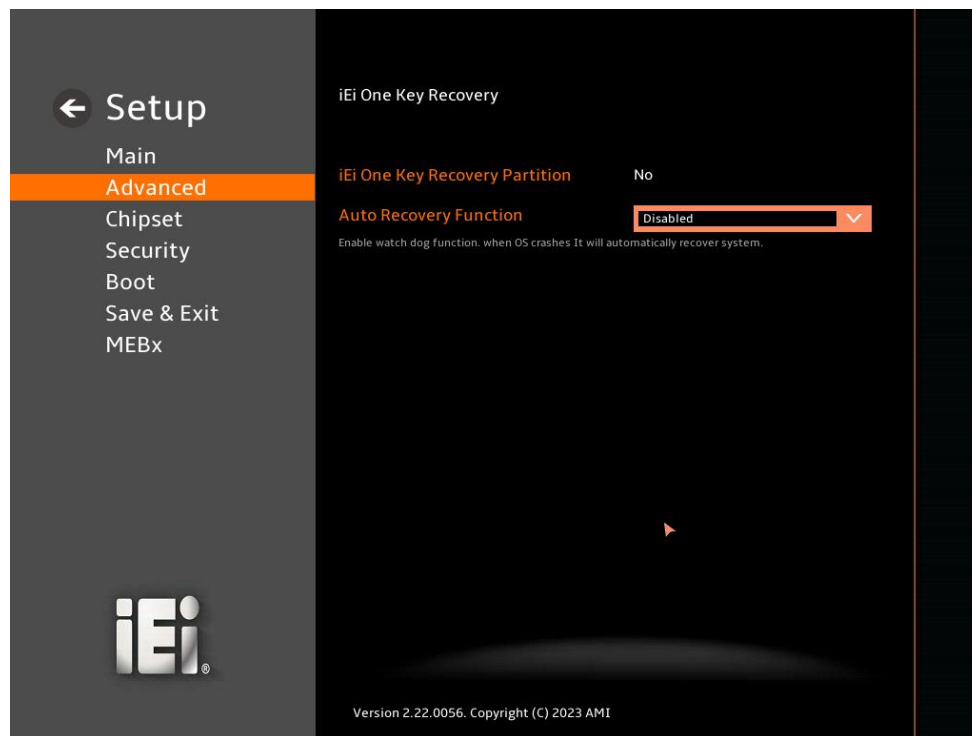
→ Pending Operation [None]

Use the **Pending Operation** option to schedule an operation for the security device.

- **None** **DEFAULT** TPM information is previous.S
- **TPM Clear** TPM information is cleared

5.3.4 iEi One Key Recovery

The **iEi One Key Recovery** menu (**BIOS Menu 11**) configures recovery event.



BIOS Menu 10: iEi One Key Recovery Settings

→ Auto Recovery Function [Disabled]

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

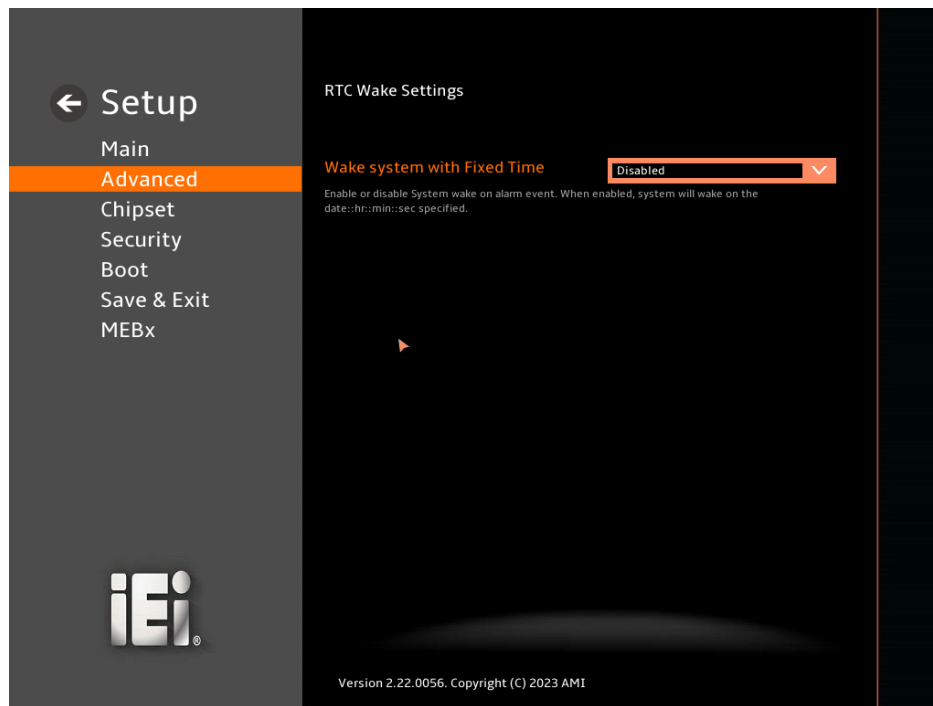
- **Disabled** **DEFAULT** The **iEi One Key Recovery** cannot automatically recover the system.

➔ Enabled

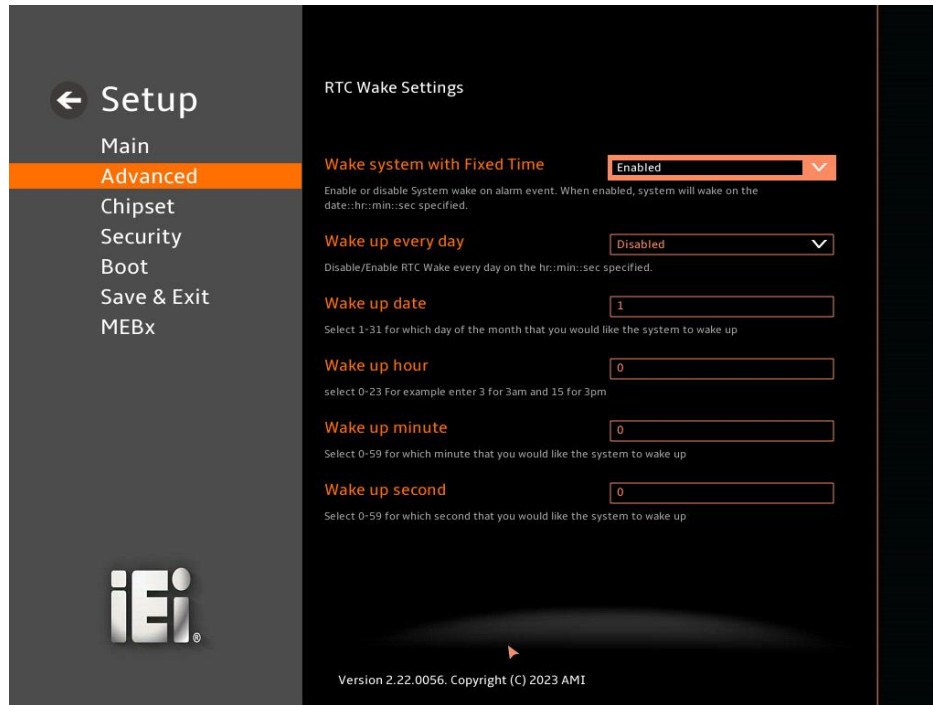
If selected, the **iEi One Key Recovery** option enable to disable the system to wake every day at the specified time. Besides, the following options appear with

5.3.5 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 11**) configures RTC wake event.



BIOS Menu 11: RTC Wake Settings (1/2)



BIOS Menu 12: RTC Wake Settings (2/2)

➔ **Wake system with Fixed Time [Enabled]**

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

➔ **Disabled** The real time clock (RTC) cannot generate a wake event

➔ **Enabled DEFAULT** If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected:

Wake up date

Wake up hour

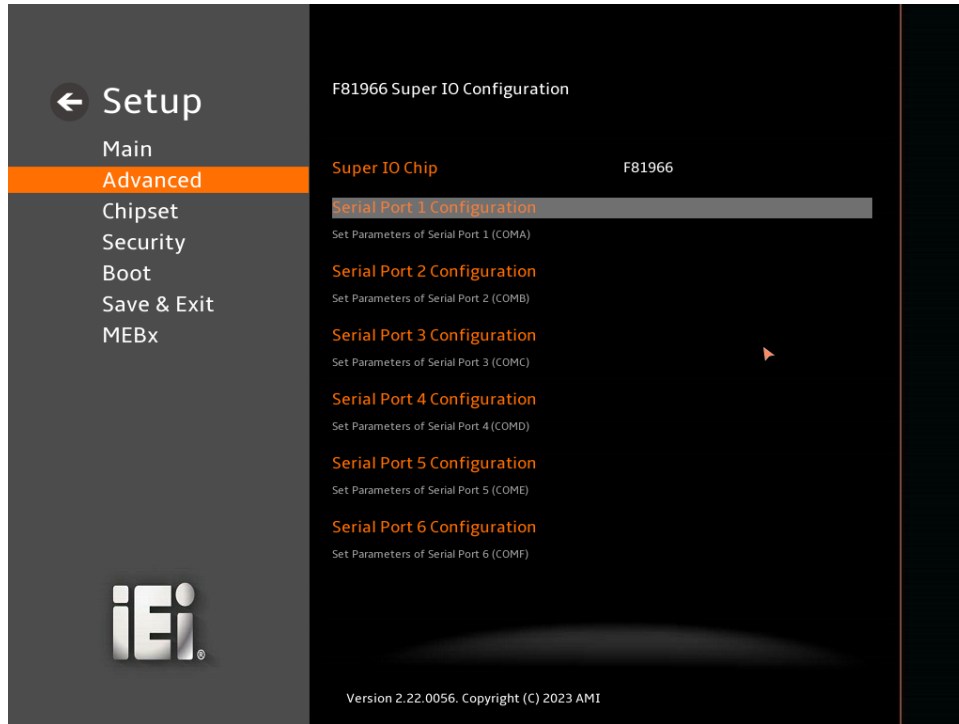
Wake up minute

Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.6 F81966 Super IO Configuration

Use the **F81966 Super IO Configuration** menu (**BIOS Menu 13**) to set or change the configurations for serial ports.

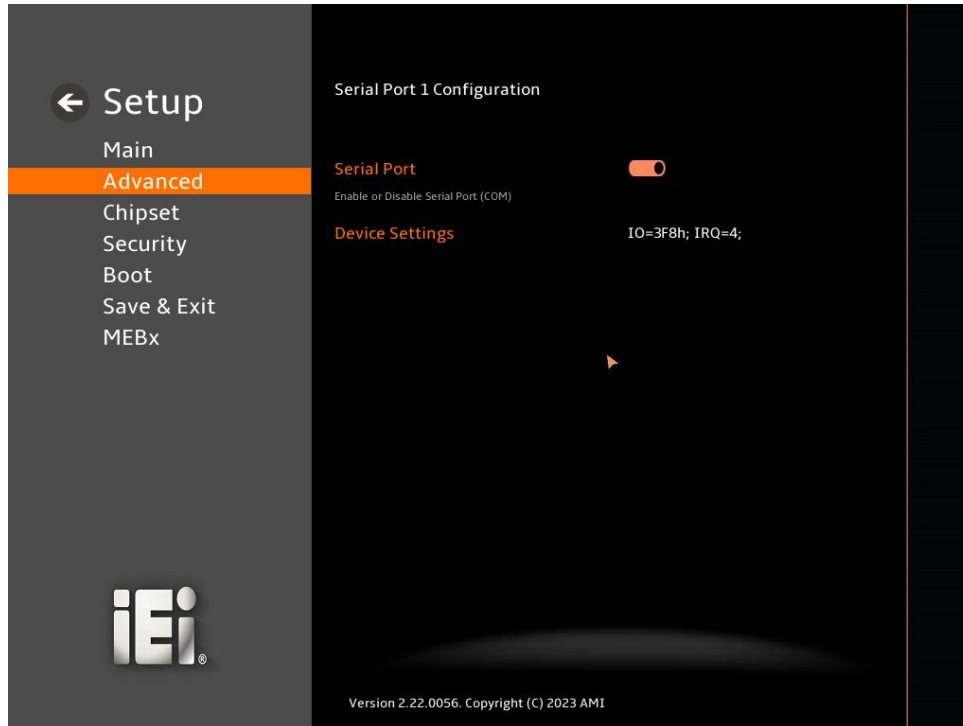


BIOS Menu 13: F81966 Super IO Configuration

KINO-ADL-PS

5.3.6.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 14**) to configure the serial port.



BIOS Menu 14: Serial Port 1 Configuration Menu

→ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

→ **Disabled** Disable the serial port

→ **Enabled** **DEFAULT** Enable the serial port

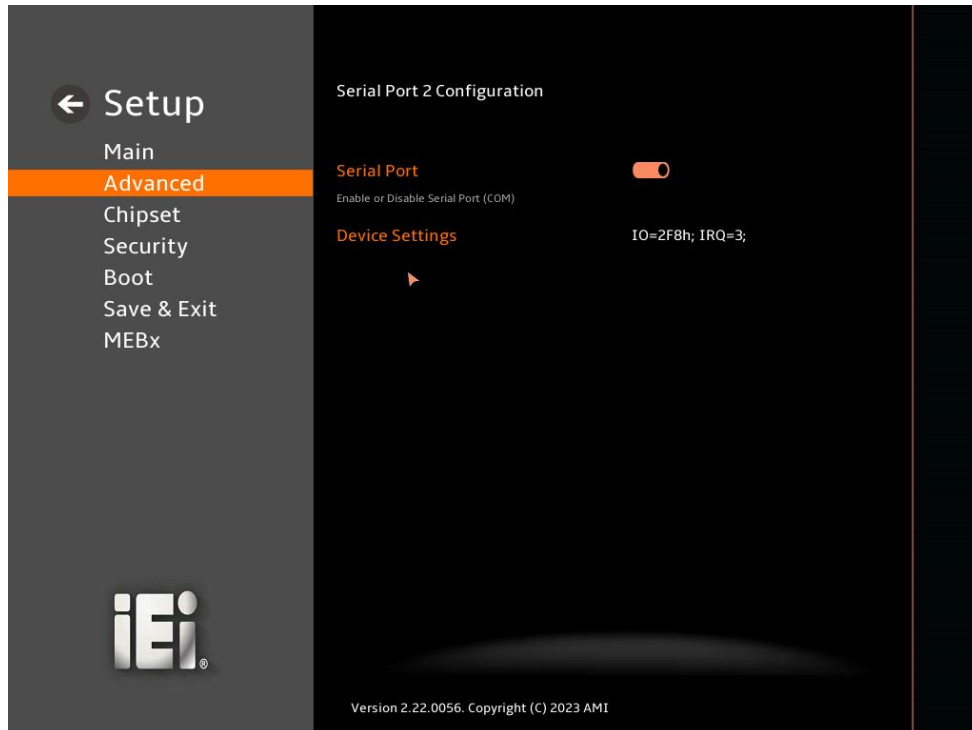
→ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

→ **IO=3F8h;** Serial Port I/O port address is 3F8h and the interrupt
IRQ=4 address is IRQ4

5.3.6.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 15**) to configure the serial port.



BIOS Menu 15: Serial Port 2 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled** Disable the serial port

➔ **Enabled** **DEFAULT** Enable the serial port

➔ Device Settings

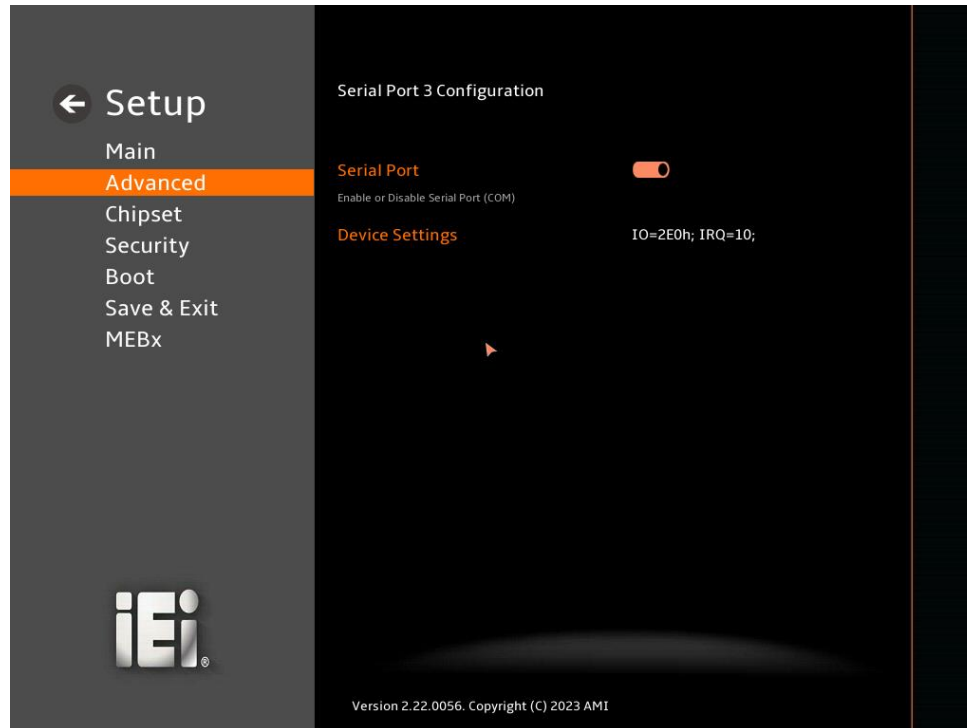
The **Device Settings** option shows the serial port IO port address and interrupt address.

➔ **IO=2F8h;** Serial Port I/O port address is 2F8h and the interrupt
IRQ=3 address is IRQ3

KINO-ADL-PS

5.3.6.3 Serial Port 3 Configuration

Use the **Serial Port 3 Configuration** menu (**BIOS Menu 16**) to configure the serial port.



BIOS Menu 16: Serial Port 3 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled** Disable the serial port

➔ **Enabled** **DEFAULT** Enable the serial port

➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

➔ **IO=2E0h;** Serial Port I/O port address is 2E0h and the interrupt
IRQ=10 address is IRQ10

5.3.6.4 Serial Port 4 Configuration

Use the **Serial Port 4 Configuration** menu (**BIOS Menu 17**) to configure the serial port.



BIOS Menu 17: Serial Port 4 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

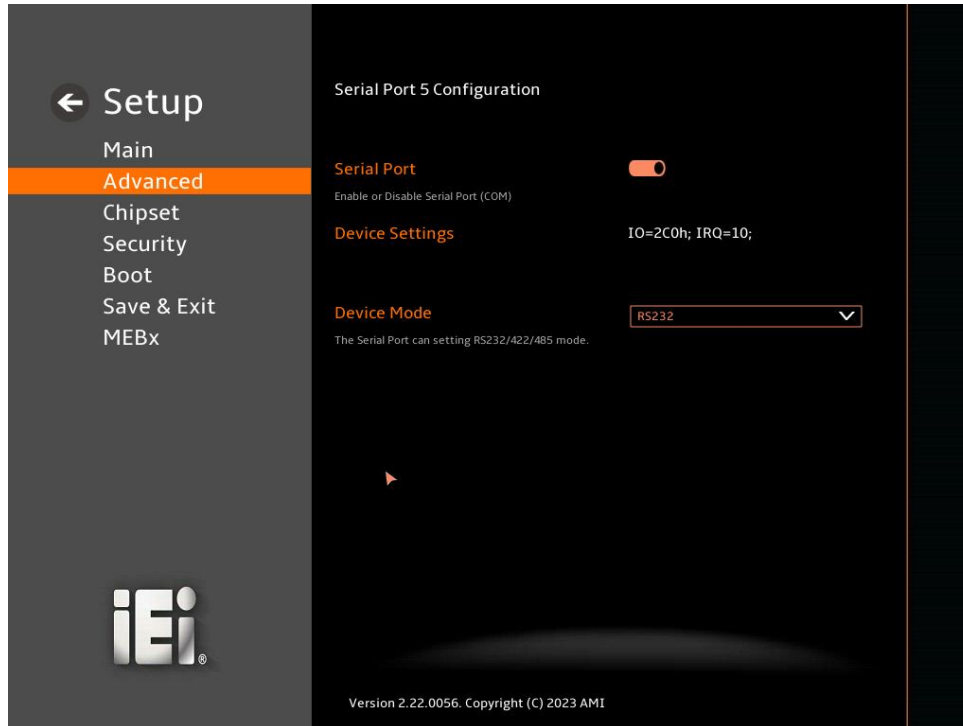
➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

- ➔ **IO=2E8h;** Serial Port I/O port address is 2E8h and the interrupt
IRQ=10 address is IRQ10

5.3.6.5 Serial Port 5 Configuration

Use the **Serial Port 5 Configuration** menu (**BIOS Menu 18**) to configure the serial port.



BIOS Menu 18: Serial Port 5 Configuration Menu

→ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

→ **Disabled** Disable the serial port

→ **Enabled** **DEFAULT** Enable the serial port

→ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

→ **IO=2C0h;** Serial Port I/O port address is 2C0h and the interrupt
IRQ=10 address is IRQ10

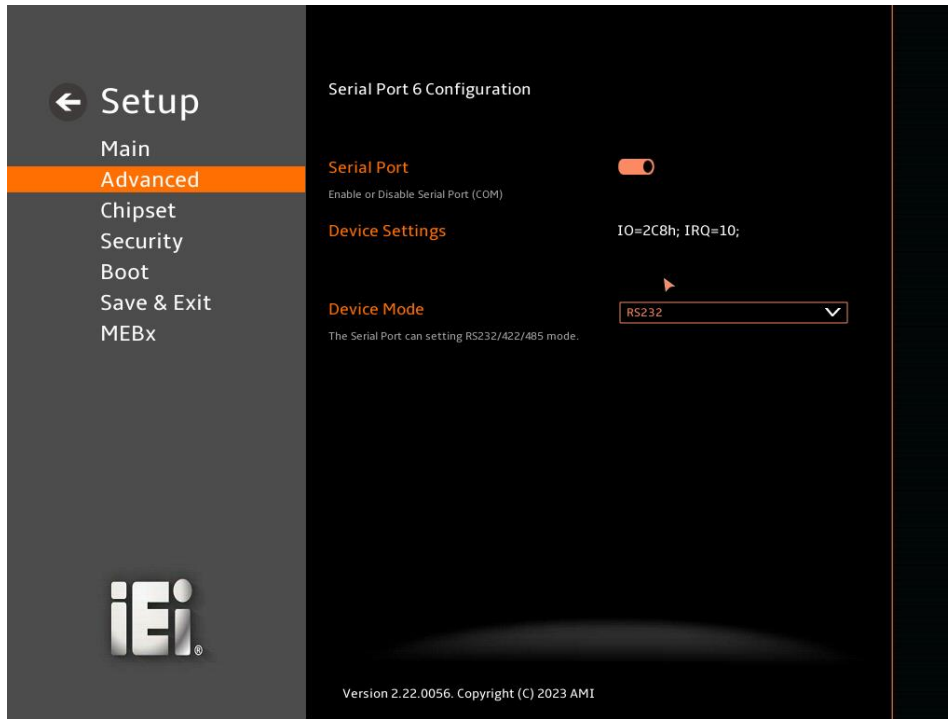
➔ **Device Mode [RS232]**

Use the **Device Mode** option to change the serial port mode.

- ➔ **RS232** **DEFAULT** The serial port mode is RS-232
- RS422 with Register** The serial port mode is RS-422
- RS485 with Register** The serial port mode is RS-485

5.3.6.6 Serial Port 6 Configuration

Use the **Serial Port 6 Configuration** menu (**BIOS Menu 19**) to configure the serial port.



BIOS Menu 19: Serial Port 6 Configuration Menu

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

KINO-ADL-PS

→ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

- **IO=2C8h;** Serial Port I/O port address is 2C8h and the interrupt
- IRQ=10** address is IRQ10

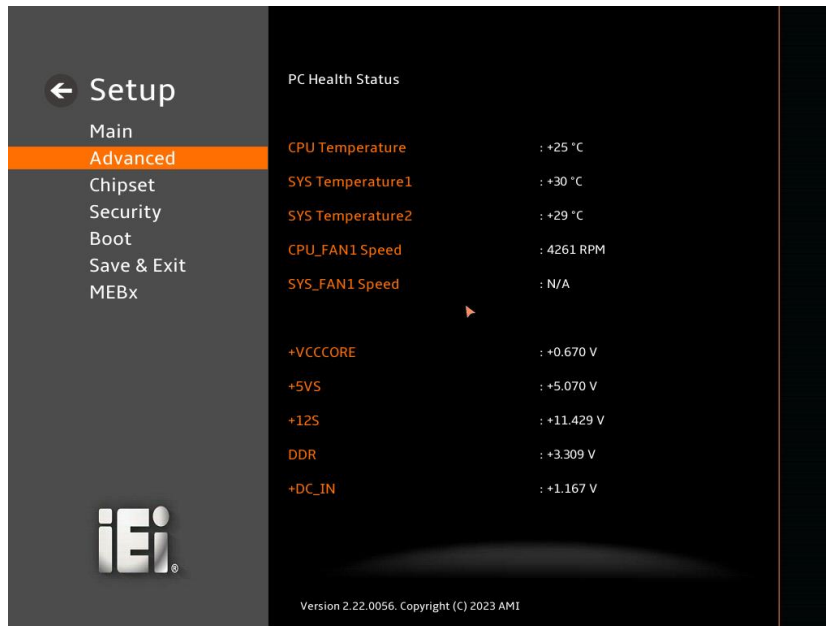
→ Device Mode [RS232]

Use the **Device Mode** option to change the serial port mode.

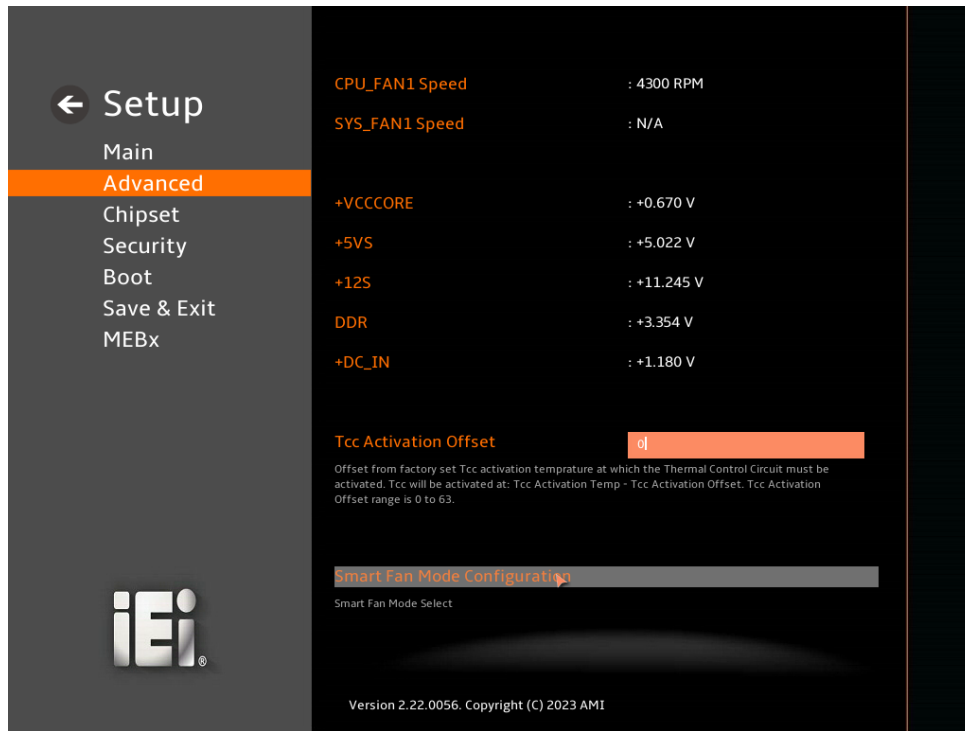
- **RS232** **DEFAULT** The serial port mode is RS-232
- RS422 with Register** The serial port mode is RS-422
- RS485 with Register** The serial port mode is RS-485

5.3.7 EC KB9068 H/W Monitor

The **EC KB9068 H/W Monitor** menu (**BIOS Menu 20**) contains the smart fan mode configuration submenu and shows the state of H/W real-time operating temperature, fan speeds and system voltages.



BIOS Menu 20: EC KB9068 H/W Monitor (1/2)



BIOS Menu 21: EC KB9068 H/W Monitor (2/2)

→ **PC Health Status**

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
 - CPU Temperature
 - System Temperature1
 - System Temperature2
- Fan Speeds:
 - CPU_FAN1 Speed
 - SYS_FAN1 Speed
- Voltages:
 - +VCCCORE
 - +5VS

KINO-ADL-PS

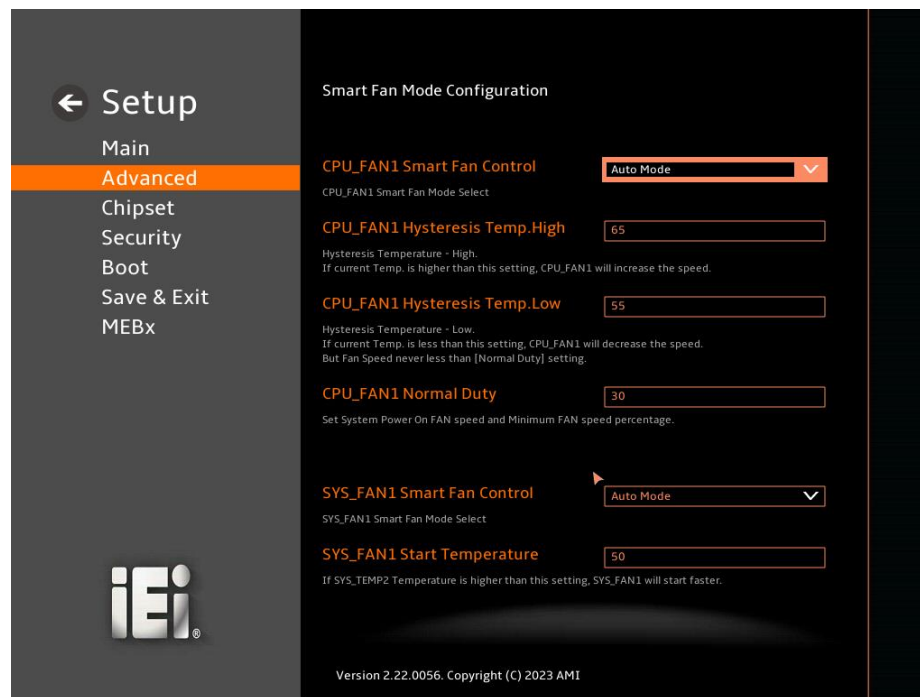
- +12S
- +DDR
- +DC_IN

➔ **Tcc Activation Offset [0]**

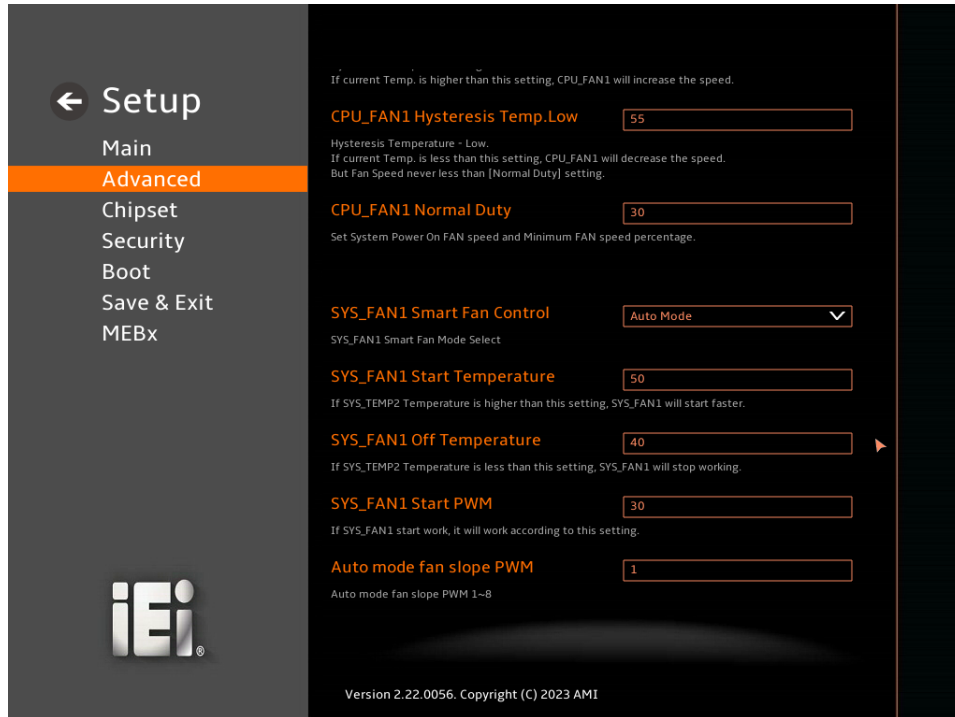
Use the + or – key to change the **Tcc Activation Offset** value. Use the **Tcc Activation Offset** option to select the **Tcc Activation** temperature values. The value may vary from 0 to 63. For 0 is the default value

5.3.7.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 22**) to configure the CPU/system fan start/off temperature and control mode.



BIOS Menu 22: Smart Fan Mode Configuration (1/2)



BIOS Menu 23: Smart Fan Mode Configuration (2/2)

➔ **CPU_FAN1 Smart Fan Control [Auto Mode]**

Use the **CPU_FAN1 Smart Fan Control** option to configure the CPU Smart Fan.

- ➔ **Manual Mode** The fan spins at the speed set in Manual Mode settings.
- ➔ **Auto Mode** **DEFAULT** The fan adjusts its speed using Auto Mode settings.

➔ **CPU_FAN1 Hysteresis Temp.High [65]**

If the current CPU temperature is higher than this setting, CPU_FAN1 will increase the speed.

➔ **CPU_FAN1 Hysteresis Temp.Low [55]**

If the current CPU temperature is lower than this setting, CPU_FAN1 will decrease the speed. But fan speed never less than [Normal Duty] setting.

KINO-ADL-PS

→ CPU_FAN1 Normal Duty [30]

Use the **CPU_FAN1 Start PWM** option to set the system power on fan speed and minimum fan speed percentage. Use the + or – key to change the value or enter a decimal number .

→ SYS_FAN1 Smart Fan Control [Auto Mode]

Use the **Smart Fan Control** option to configure the System Smart Fan.

- **Manual Mode** The fan spins at the speed set in Manual Mode settings.
- **Auto Mode** **DEFAULT** The fan adjusts its speed using Auto Mode settings.

→ SYS_FAN1 Start Temperature [50]

If the System temperature is between **fan off** and **fan start**, the fan speed change to **fan start PWM**. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ SYS_FAN1 Off Temperature [40]

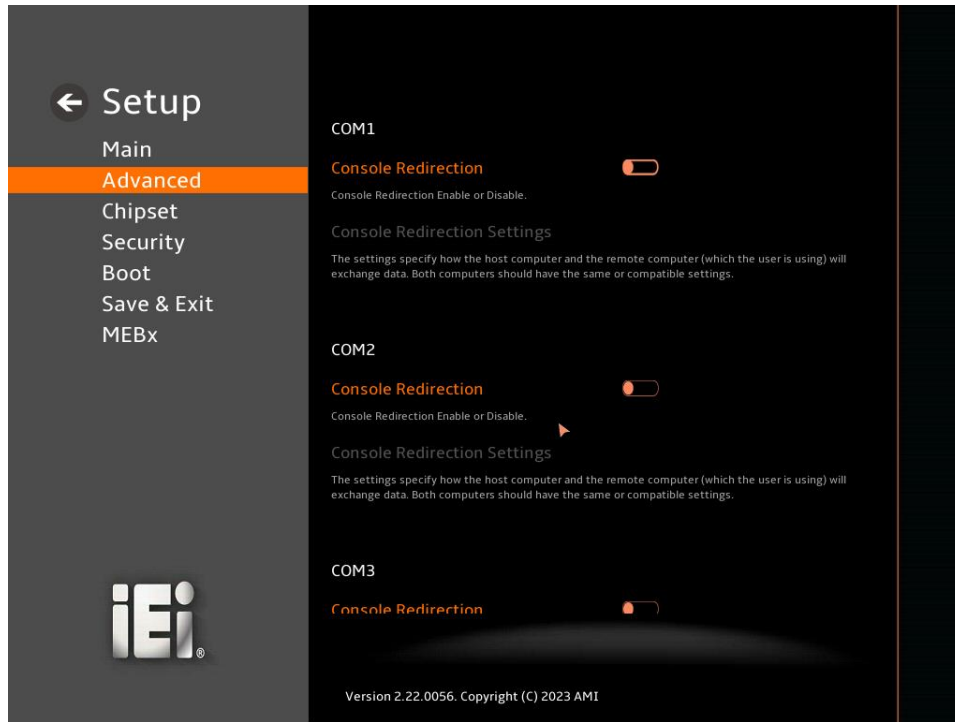
If the System temperature is lower than the value set this option, the fan speed change to be lowest. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ SYS_FAN1 Start PWM [30]

Use the **SYS_FAN1 Start PWM** option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

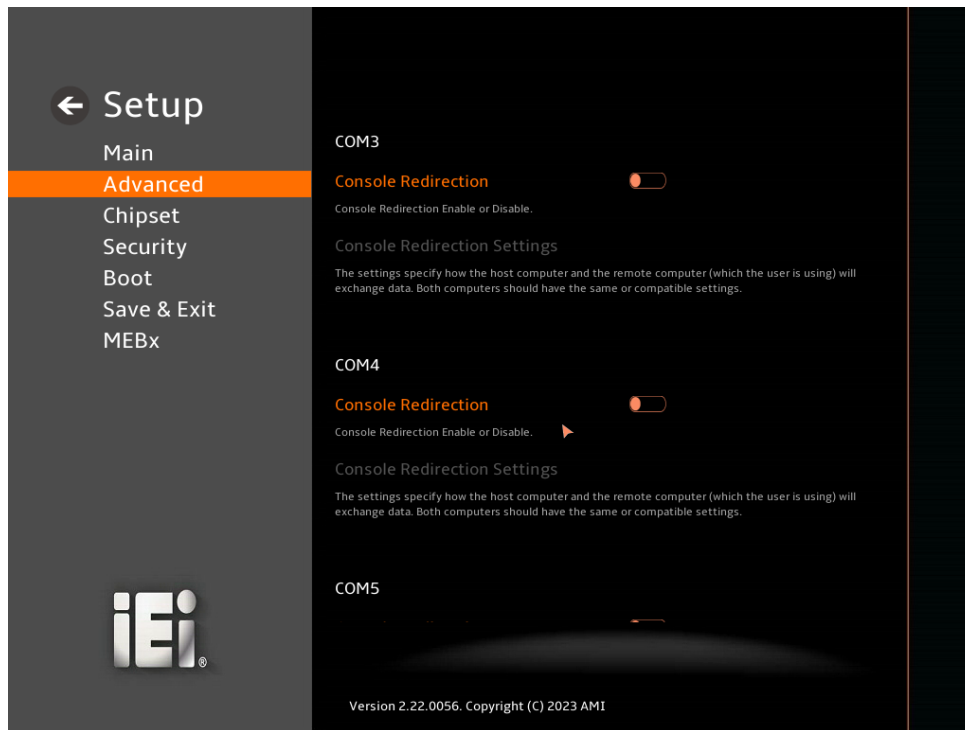
5.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 24**) allows the console redirection options to be configured. Console Redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

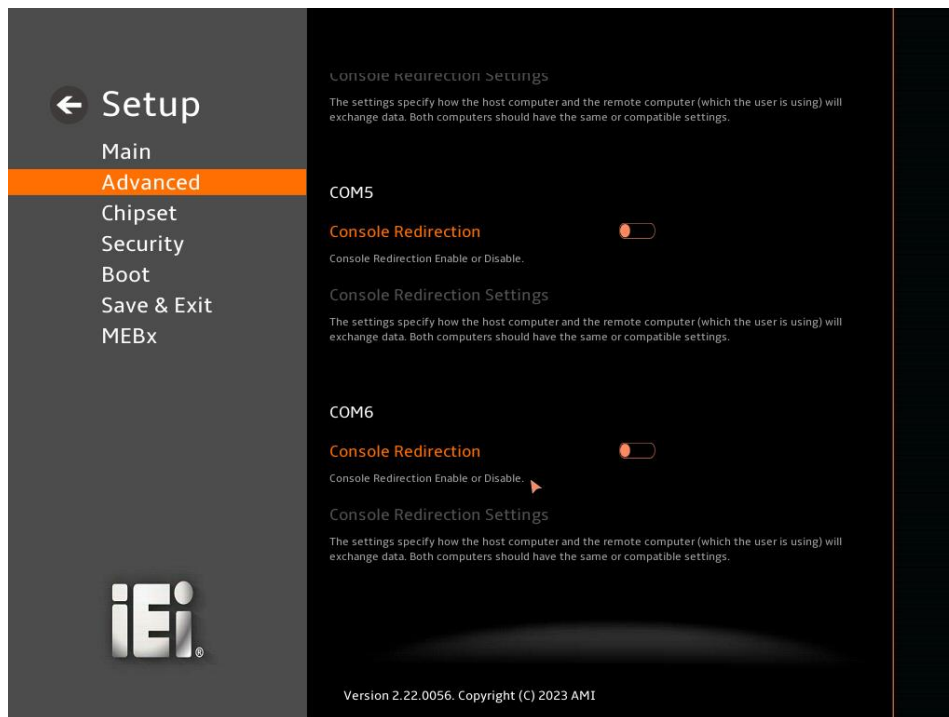


BIOS Menu 24: Serial Port Console Redirection (1/3)

KINO-ADL-PS



BIOS Menu 25: Serial Port Console Redirection (2/3)



BIOS Menu 26: Serial Port Console Redirection (3/3)

➔ **Console Redirection [Disabled]**

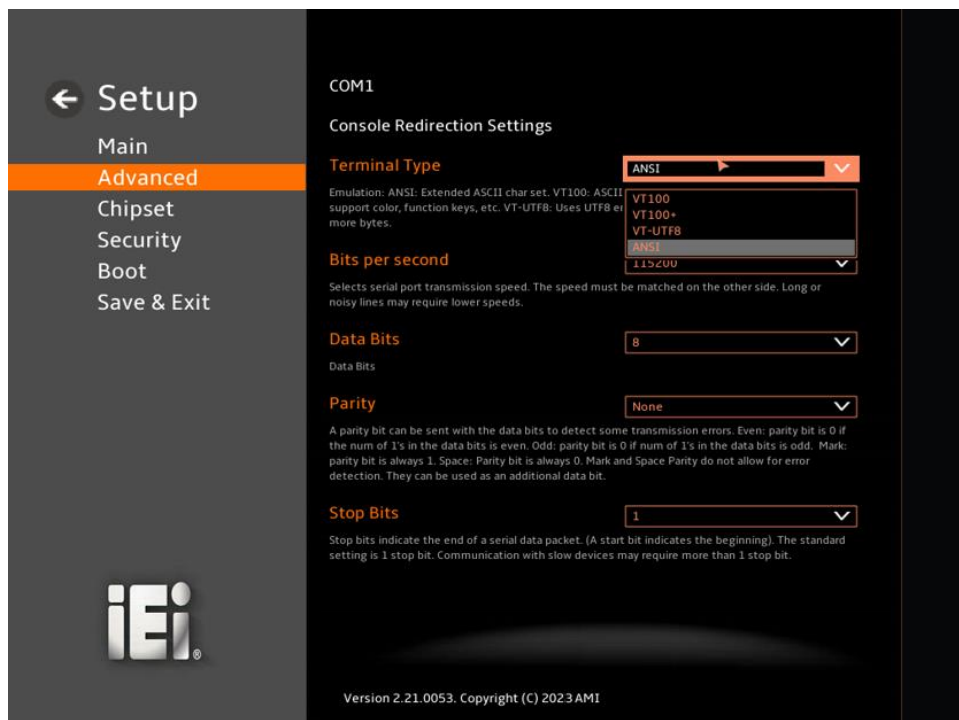
Use **Console Redirection** option to enable or disable the console redirection function.

- ➔ **Disabled** **DEFAULT** Disabled the console redirection function
- ➔ **Enabled** Enabled the console redirection function

The **Console Redirection Settings** submenu will be available when the **Console Redirection** option is enabled.

5.3.8.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 27**) when the **COM Console Redirection** (for COM1 to COM6) option is enabled.



BIOS Menu 27: COM Console Redirection Settings

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** option to specify the remote terminal type.

KINO-ADL-PS

- ➔ **VT100** The target terminal type is VT100
- ➔ **VT100+** The target terminal type is VT100+
- ➔ **VT-UTF8** The target terminal type is VT-UTF8
- ➔ **ANSI** **DEFAULT** The target terminal type is ANSI

➔ **Bits per second [115200]**

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match on the other side. Long or noisy lines may require lower speeds.

- ➔ **9600** Sets the serial port transmission speed at 9600.
- ➔ **19200** Sets the serial port transmission speed at 19200.
- ➔ **38400** Sets the serial port transmission speed at 38400.
- ➔ **57600** Sets the serial port transmission speed at 57600.
- ➔ **115200** **DEFAULT** Sets the serial port transmission speed at 115200.

➔ **Data Bits [8]**

Use the **Data Bits** option to specify the number of data bits.

- ➔ **7** Sets the data bits at 7.
- ➔ **8** **DEFAULT** Sets the data bits at 8.

➔ **Parity [None]**

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- ➔ **None** **DEFAULT** No parity bit is sent with the data bits.
- ➔ **Even** The parity bit is 0 if the number of ones in the data bits is even.
- ➔ **Odd** The parity bit is 0 if the number of ones in the data bits is odd.

→ **Mark** The parity bit is always 1. This option does not allow for error detection.

→ **Space** The parity bit is always 0. This option does not allow for error detection.

→ **Stop Bits [1]**

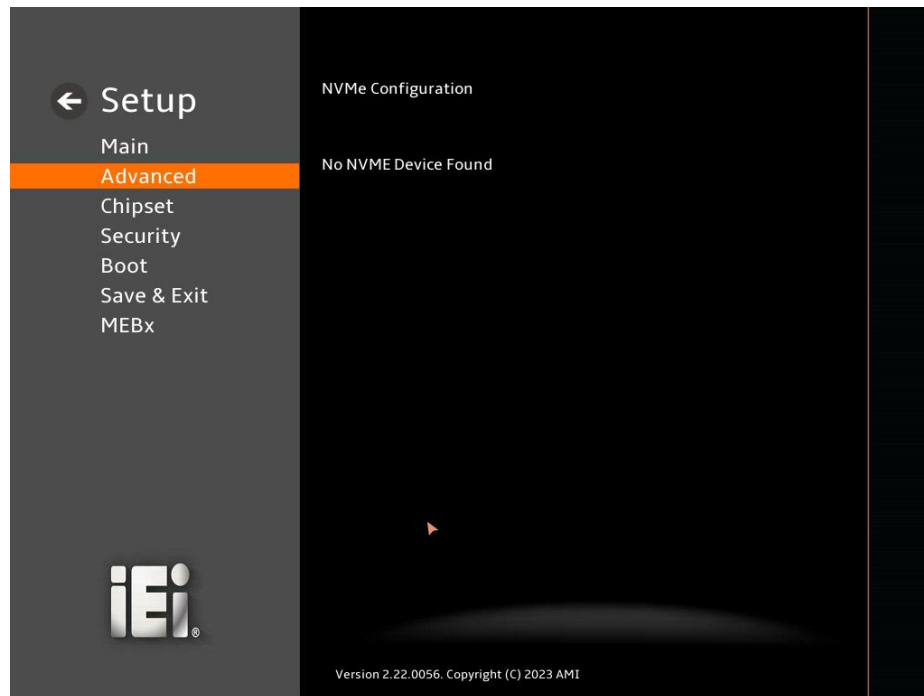
Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

→ **1** **DEFAULT** Sets the number of stop bits at 1.

→ **2** Sets the number of stop bits at 2.

5.3.9 NVMe Configuration

Use the **NVMe Configuration (BIOS Menu 28)** menu to display the NVMe controller and device information.



BIOS Menu 28: NVMe Configuration

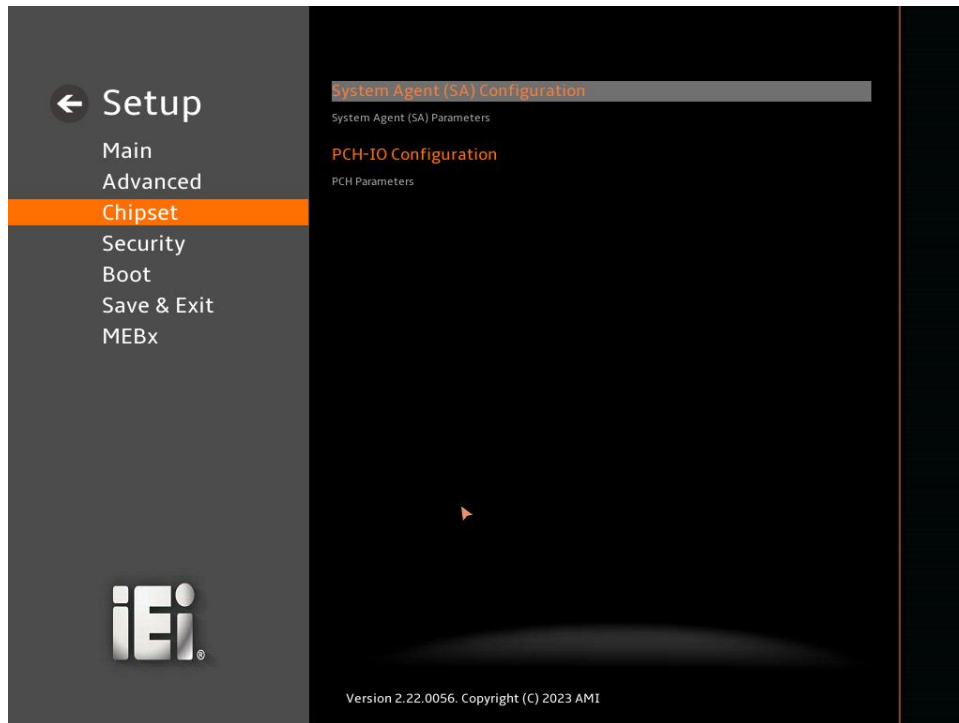
5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 29**) to access the PCH IO and System Agent (SA) configuration menus.



WARNING!

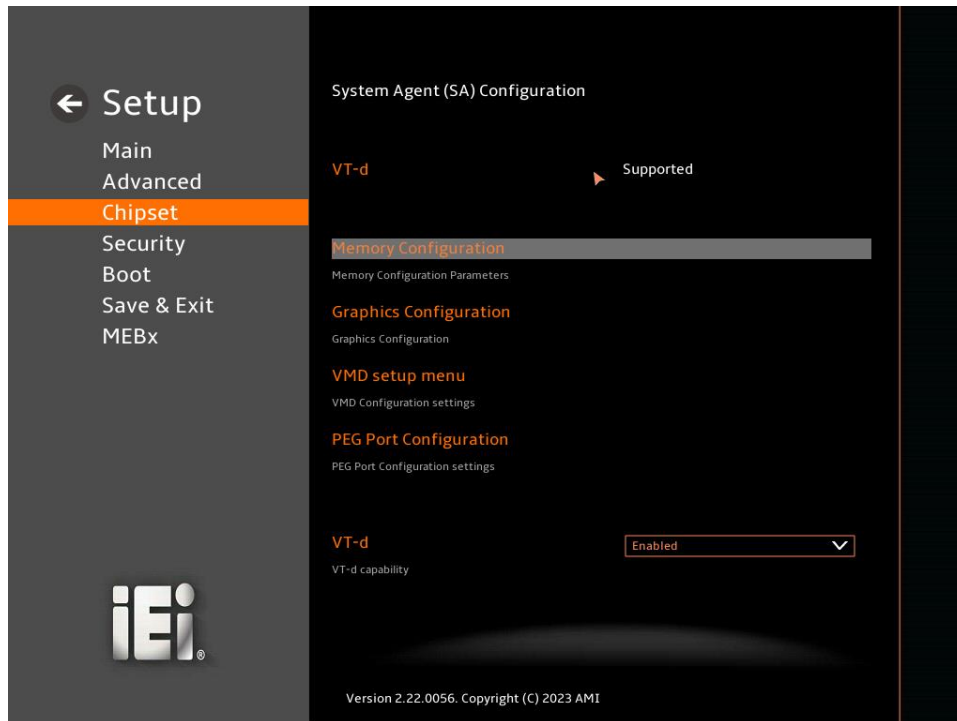
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 29: Chipset

5.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 30**) to configure the System Agent (SA) parameters.



BIOS Menu 30: System Agent (SA) Configuration

→ VT-d [Enabled]

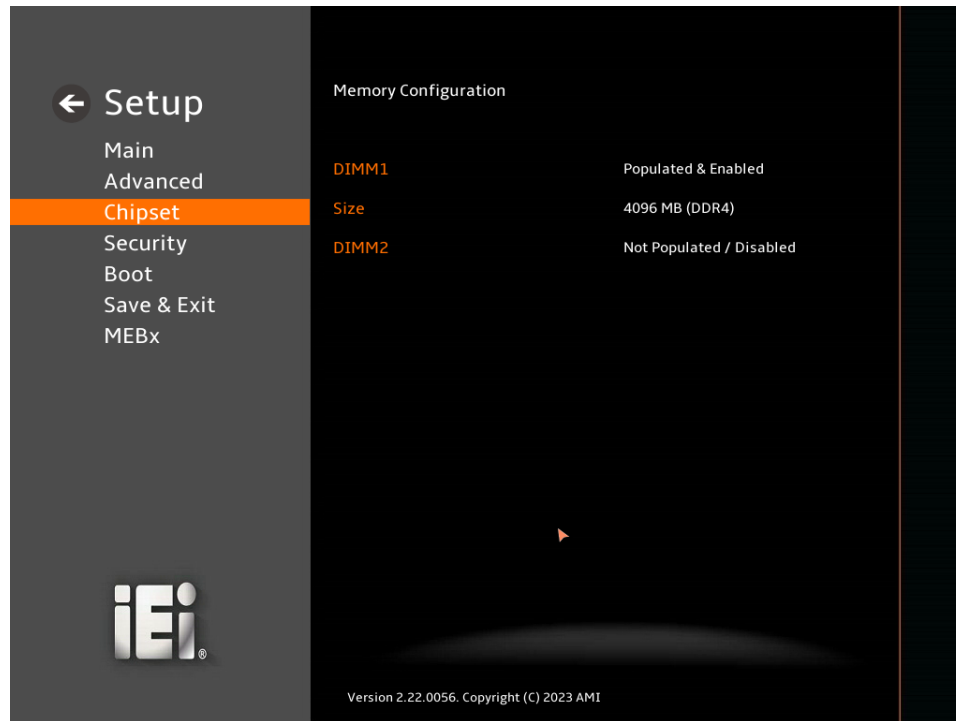
Use the **VT-d** option to enable or disable the VT-d capability.

- **Disabled** Disable the VT-d capability
- **Enabled** **DEFAULT** Enable the VT-d capability

KINO-ADL-PS

5.4.1.1 Memory Configuration

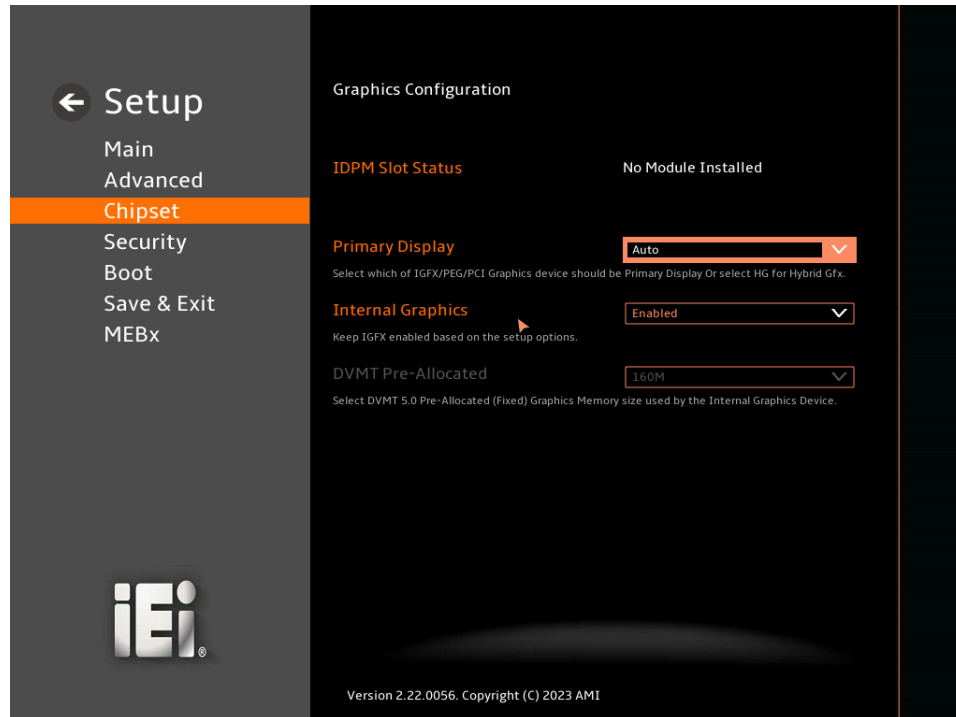
Use the **Memory Configuration** submenu (**BIOS Menu 31**) to view memory information.



BIOS Menu 31: Memory Configuration

5.4.1.2 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 32)** menu to configure the video device connected to the system.



BIOS Menu 32: Graphics Configuration

→ Primary Display [Auto]

Use the **Primary Display** option to select the primary graphics controller the system uses.

The following options are available:

- Auto **Default**
- IGFX
- PEG
- PCI
- HG

→ Internal Graphics [Enabled]

Use the **Internal Graphics** option to configure whether to keep IGFX enabled. If user wants to support dual display by internal graphics and external graphics, this Internal Graphics

KINO-ADL-PS

option should be set to Enabled and the above Primary Display option should be set to IGFX.

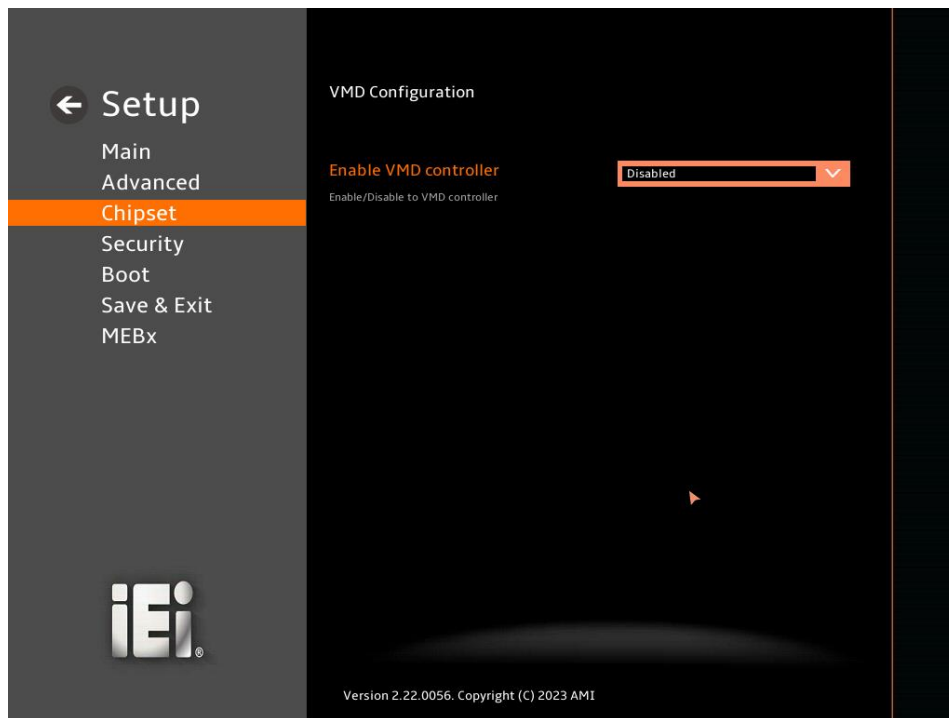
- ➔ **Auto** Auto mode
- ➔ **Disabled** Disables IGFX.
- ➔ **Enabled** **Default** Enables IGFX.

➔ DVMT Pre-Allocated [160M]

Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

- 80M
- 160M **Default**

5.4.1.3 VMD setup menu



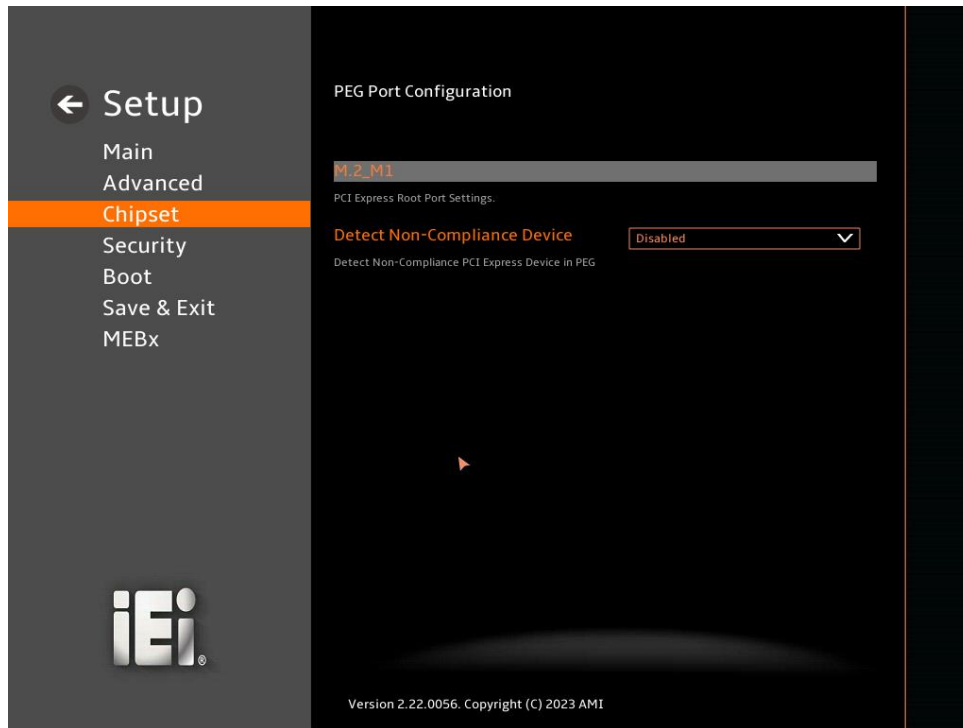
BIOS Menu 33: VMD setup menu

➔ **Enable VMD controller [Disabled]**

Use the **Enable VMD controller** option to enable or disable VMD controller.

- ➔ **Disabled** **Default** Disable VMD controller.
- ➔ **Enabled** Enable VMD controller.

5.4.1.4 PEG Port Configuration



BIOS Menu 34: PEG Port Configuration

5.4.2 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 35**) to configure the PCH parameters.



BIOS Menu 35: PCH-IO Configuration

➔ Auto Power Button Function [Disabled (AT)]

Use the **Auto Power Button Function** BIOS option to show the power mode state. Use the **J_ATX_AT1** to switch the AT/ATX power mode.

- ➔ **Enabled (AT)** **DEFAULT** The system power mode is AT.
- ➔ **Disabled (ATX)** The system power mode is ATX.

➔ Power Saving Function (EUP) [Disabled]

Use the **Power Saving Function (EUP)** BIOS option to enable or disable the power saving function.

- ➔ **Disabled** **DEFAULT** Power saving function is disabled.

- **Enabled** Power saving function is enabled. It will reduce power consumption when the system is off.

→ **USB Power Control(LAN1) [+5VDUAL]**

Use the USB Power Control(LAN1) option to enable or disable the USB Power.

- **+5VDUAL** **DEFAULT** USB Power is on.

- **+5V** USB Power is off.

→ **USB Power Control (LAN2/USB1/J_USB) [+5VDUAL]**

Use the **USB Power state** option to enable or disable the USB Power.

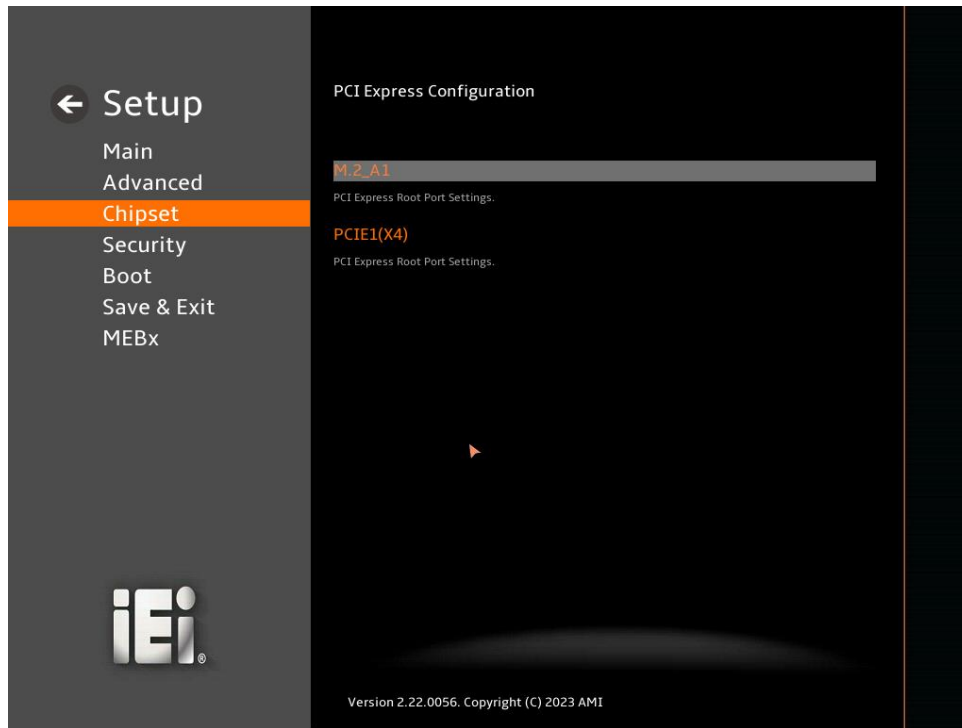
- **+5VDUAL** **DEFAULT** USB Power is on.

- **+5V** USB Power is off.

KINO-ADL-PS

5.4.2.1 PCI Express Configuration

Use the **PCI Express Configuration** submenu (**BIOS Menu 36**) to configure the PCI Express slots.



BIOS Menu 36: PCI Express Configuration

5.4.2.1.1 PCIe Root Port Setting

Use the **M.2 Slot(M.2_A1)**, **PCIE1 Slot(x4)** submenu (**BIOS Menu 37**) to configure the PCIe Root Port Setting.



BIOS Menu 37: PCIe Slot Configuration Submenu

➔ PCIe Speed [Auto]

Use the **PCIe Speed** option to specify the PCI Express port speed. Configuration options are listed below.

- | | | | |
|---|-------------|----------------|-------------------------------|
| ➔ | Auto | DEFAULT | Auto mode. |
| ➔ | Gen1 | | Configure PCIe Speed to Gen1. |
| ➔ | Gen2 | | Configure PCIe Speed to Gen2. |
| ➔ | Gen3 | | Configure PCIe Speed to Gen3. |

KINO-ADL-PS

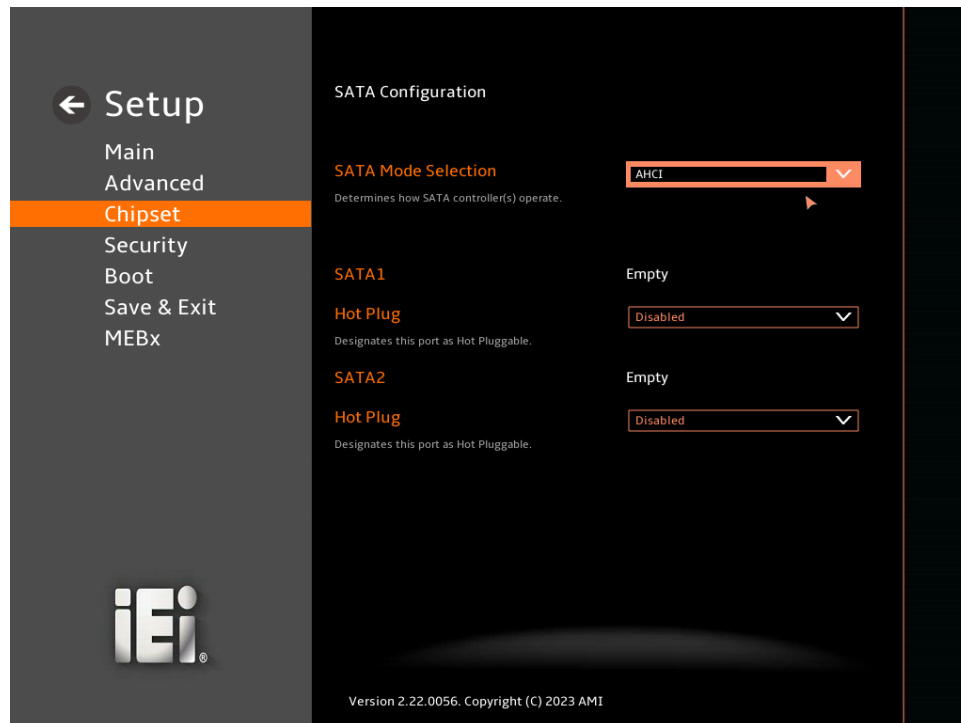
→ Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to configure whether to detect if a non-compliance PCI Express device is connected to the PCI Express port.

- **Disabled** **DEFAULT** Do not detect if a non-compliance PCI Express device is connected to the PCI Express port.
- **Enabled** Detect if a non-compliance PCI Express device is connected to the PCI Express port.

5.4.2.2 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 38**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 38: SATA Configuration

→ SATA Controller(s) [Enabled]

Use the **SATA Controller(s)** option to designate the correspondent port as hot-pluggable.

- ➔ **Disabled** Disable the SATA device.
- ➔ **Enabled** **DEFAULT** Enable the SATA device.

➔ **SATA Mode Selection [AHCI]**

Use the **SATA Mode Selection** option to determine how the SATA devices operate.

- ➔ **AHCI** **DEFAULT** Configures SATA devices as AHCI device.
- ➔ **Intel RST Premium
With Intel Optane
System Acceleration** Configures SATA devices to the Intel RST Premium With Intel Optane System Acceleration mode.

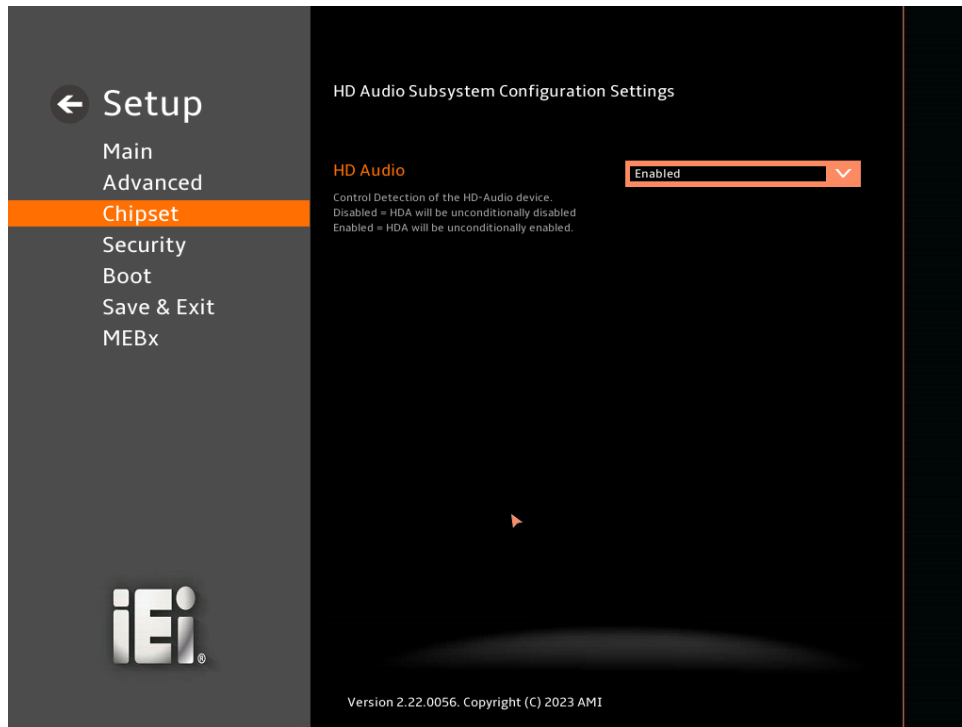
➔ **Hot Plug [Disabled]**

Use the **Hot Plug** option to designate the correspondent port as hot-pluggable.

- ➔ **Disabled** **DEFAULT** Disables the hot-pluggable function of the SATA port.
- ➔ **Enabled** Designates the SATA port as hot-pluggable.

5.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 39**) to configure the PCH Azalia settings.



BIOS Menu 39: HD Audio Configuration

→ HD Audio [Enabled]

Use the **HD Audio** option to enable or disable the High Definition Audio controller.

- **Disabled** The onboard High Definition Audio controller is disabled.
- **Enabled** **DEFAULT** The onboard High Definition Audio controller is enabled.

5.5 Security

Use the **Security** menu (**BIOS Menu 41**) to set system and user passwords.



BIOS Menu 40: Security (1/2)

KINO-ADL-PS



BIOS Menu 41: Security (2/2)

→ Administrator Password

Use the **Administrator Password** to set or change an administrator password.

→ User Password

Use the **User Password** to set or change a user password.

5.6 Boot

Use the **Boot** menu (**BIOS Menu 42**) to configure system boot options.



BIOS Menu 42: Boot

5.6.1 Boot Configuration

➔ Quiet Boot [Enabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- ➔ **Disabled** Normal POST messages displayed
- ➔ **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

➔ Launch PXE OpROM [Disabled]

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

- ➔ **Disabled** **DEFAULT** Ignore all PXE Option ROMs

KINO-ADL-PS

→ **Enabled** Load PXE Option ROMs.

→ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

→ **Force BIOS** **DEFAULT** Sets display mode to force BIOS.

→ **Keep Current** Sets display mode to current.

5.6.2 Boot Option Priorities

Use the Boot Option # N to choose the system boots from the peripherals you selected. The following Boot Options are listed as an example.

→ **Boot Option #1**

Sets the system boot order **ADATA SP580** as the first priority.

→ **Windows Boot Manager (P1: ADATA SSD SP580 240GB)**

→ **Disabled**

→ **Boot Option #2**

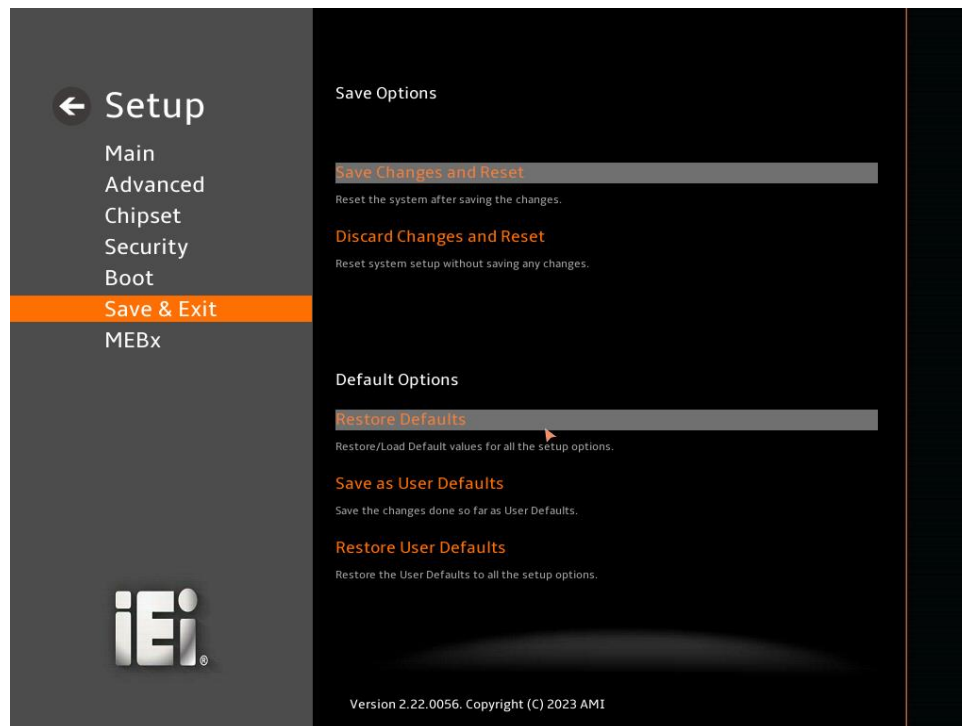
Sets the system boot order **USB Partition 1** as the second priority.

→ **UEFI: USB, Partition 1**

→ **Disabled**

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 44**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 43: Save & Exit

→ Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

→ Discard Changes and Reset

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

→ Restore Defaults

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

KINO-ADL-PS

→ Save as User Defaults

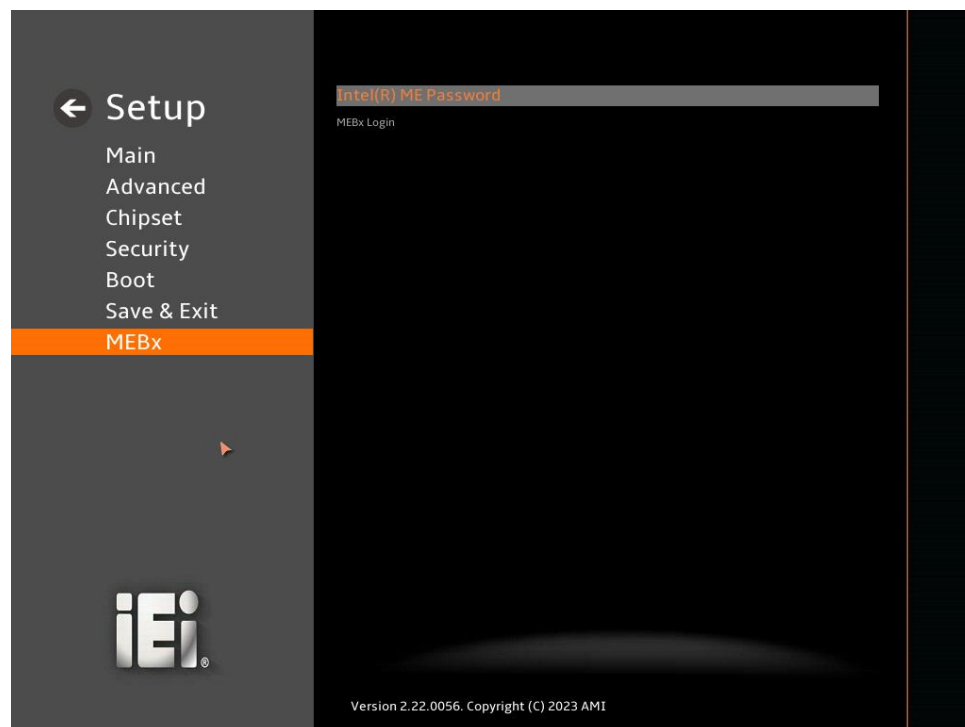
Use the **Save as User Defaults** option to save the changes done so far as user defaults.

→ Restore User Defaults

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

5.8 MEBx

Use the **MEBx** menu (**BIOS Menu 44**) to configure ME password.



BIOS Menu 44: MEBx

→ Intel(R) ME Password

Use the **Intel(R) ME Password** to set or change a ME password.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY



This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC WARNING



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

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

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.

Appendix

B

Product Disposal

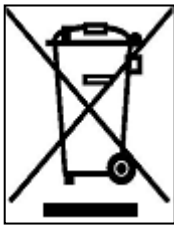
KINO-ADL-PS

**CAUTION:**

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union–If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union–The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your device, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

Appendix

C

BIOS Options

KINO-ADL-PS

Below is a list of BIOS configuration options in the BIOS chapter.

➔ BIOS Information	86
➔ Processor Information.....	86
➔ PCH Information.....	87
➔ System Date [xx/xx/xx].....	87
➔ System Time [xx:xx:xx].....	87
➔ Intel (VMX) Virtualization Technology [Enabled]	91
➔ Active Performance Cores [All].....	91
➔ Active Efficient Cores [All].....	91
➔ Hyper-Threading [Enabled].....	92
➔ Intel(R) SpeedStep(tm) [Enabled].....	92
➔ C states [Disabled].....	92
➔ Power Limit 1 [0]	92
➔ Power Limit 2 [0]	92
➔ Power Limit 1 Time Window [0].....	92
➔ Me FW Image Re-Flash [Disabled]	93
➔ FW Update [Enabled].....	93
➔ TPM Support [Enable]	94
➔ Security Device Selection [PTT].....	94
➔ Pending Operation [None]	95
➔ Auto Recovery Function [Disabled].....	95
➔ Wake system with Fixed Time [Enabled].....	97
➔ Serial Port [Enabled].....	99
➔ Device Settings	99
➔ Serial Port [Enabled].....	100
➔ Device Settings	100
➔ Serial Port [Enabled].....	101
➔ Device Settings	101
➔ Serial Port [Enabled].....	102
➔ Device Settings	102
➔ Serial Port [Enabled].....	103
➔ Device Settings	103
➔ Device Mode [RS232].....	104
➔ Serial Port [Enabled].....	104

- ➔ Device Settings105
- ➔ Device Mode [RS232].....105
- ➔ PC Health Status106
- ➔ Tcc Activation Offset [0].....107
- ➔ CPU_FAN1 Smart Fan Control [Auto Mode]108
- ➔ CPU_FAN1 Hysteresis Temp.High [65].....108
- ➔ CPU_FAN1 Hysteresis Temp.Low [55]108
- ➔ CPU_FAN1 Normal Duty [30]109
- ➔ SYS_FAN1 Smart Fan Control [Auto Mode].....109
- ➔ SYS_FAN1 Start Temperature [50].....109
- ➔ SYS_FAN1 Off Temperature [40]109
- ➔ SYS_FAN1 Start PWM [30].....109
- ➔ Console Redirection [Disabled].....112
- ➔ Terminal Type [ANSI].....112
- ➔ Bits per second [115200].....113
- ➔ Data Bits [8]113
- ➔ Parity [None].....113
- ➔ Stop Bits [1].....114
- ➔ VT-d [Enabled].....116
- ➔ Primary Display [Auto]118
- ➔ Internal Graphics [Enabled].....118
- ➔ DVMT Pre-Allocated [160M]119
- ➔ Enable VMD controller [Disabled]120
- ➔ Auto Power Button Function [Disabled (AT)]121
- ➔ Power Saving Function (EUP) [Disabled].....121
- ➔ USB Power Control(LAN1) [+5VDUAL]122
- ➔ USB Power Control (LAN2/USB1/J_USB) [+5VDUAL].....122
- ➔ PCIe Speed [Auto].....124
- ➔ Detect Non-Compliance Device [Disabled]125
- ➔ SATA Controller(s) [Enabled]125
- ➔ SATA Mode Selection [AHCI].....126
- ➔ Hot Plug [Disabled]126
- ➔ HD Audio [Enabled]127
- ➔ Administrator Password129
- ➔ User Password129

KINO-ADL-PS

→ Quiet Boot [Enabled]	130
→ Launch PXE OpROM [Disabled]	130
→ Option ROM Messages [Force BIOS].....	131
→ Boot Option #1	131
→ Boot Option #2	131
→ Save Changes and Reset	132
→ Discard Changes and Reset	132
→ Restore Defaults	132
→ Save as User Defaults	133
→ Restore User Defaults	133
→ Intel(R) ME Password	133

Appendix

D

Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. Contact IEI support or visit the IEI website for specific drivers for other operating systems.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

;

```
MOV     AX, 6F02H      ;setting the time-out value
MOV     BL, 30         ;time-out value is 48 seconds
INT     15H
```

;

; ADD THE APPLICATION PROGRAM HERE

;

```
CMP     EXIT_AP, 1     ;is the application over?
JNE     W_LOOP        ;No, restart the application
```

```
MOV     AX, 6F02H      ;disable Watchdog Timer
MOV     BL, 0         ;
INT     15H
```

;

; EXIT ;

Appendix

E

Error Beep Code

E.1 PEI Beep Codes

Number of Beeps	Description
4	Memory not Installed
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXE IPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

E.2 DXE Beep Codes

Number of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met



NOTE:

If you have any question, please contact IEI for further assistance.

Appendix

F

Hazardous Materials Disclosure

F.1 RoHS II Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS II Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS II Directive (2015/863/EU).

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	O	O	O	O	O	O
<p>O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863.</p> <p>X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.</p>										

KINO-ADL-PS

F.2 China RoHS

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	○	○	○	○	○	○
印刷电路板	○	○	○	○	○	○
金属螺帽	○	○	○	○	○	○
电缆组装	○	○	○	○	○	○
风扇组装	○	○	○	○	○	○
电力供应组装	○	○	○	○	○	○
电池	○	○	○	○	○	○

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。