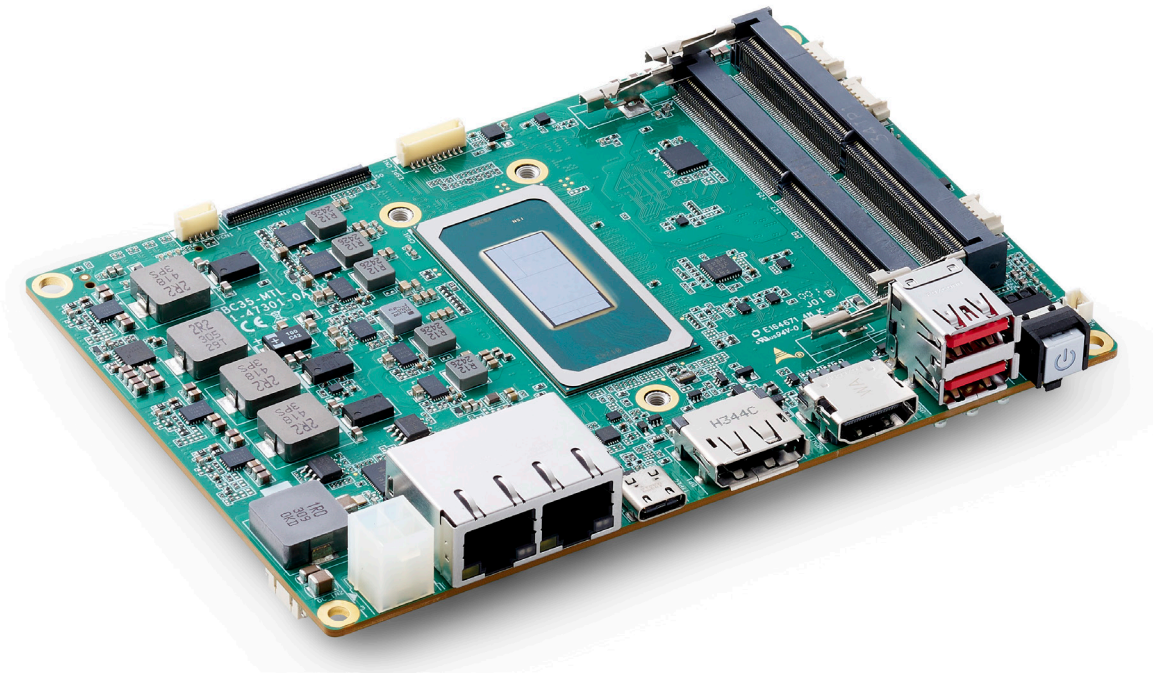
SBC35-MTL

User's Manual

3.5" Single Board Computer with
Intel® Core™ Ultra Processor



Manual Rev.: Rev 1.0

Revision Date: January 2, 2025

Part Number: 50M-47301-1000

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Leading **EDGE COMPUTING**

Preface

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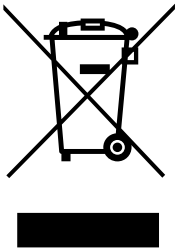
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Revision History

Revision	Description	Date
1.0	Initial release	2025-01-02

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1 Introduction

ADLINK SBC35-MTL is a 3.5-inch single board computer powered by Intel® Core™ Ultra processors for efficient, high-performance computing. an integrated NPU to enhance AI processing capabilities and includes a reserved MIPI-CSI signal pathway for easy camera integration, making it ideal for real-time and vision-based applications. The SBC35-MTL is designed to meet the needs of modern embedded systems, delivering cutting-edge performance in a compact form factor.

1.1 Packing List

- SBC35-MTL motherboard
- M.2 screw kit (Part Number: 58-10515-0000)
- Thermal kit (Part Number: 58-10514-0000)

1.2 Optional Accessories

- CPU cooler for 28W CPU (Part Number: 32-21014-1000-A0)
- Passive heatsink for 15W CPU (Part Number: 32-21015-1000-A0)
- USB 2.0 Type A connector (Part Number: 30-21363-0000-A0)
- RS-232/485/422 x2 (Part Number: 30-22139-2000-A0)
- GPIO + audio + USB 2.0 x2 (Part Number: 30-21535-6000-A0)
- SATA + SATA Power (Part Number: 30-22121-0000-A0)
- SBC-FM PWR cable (Part Number: 30-22224-0000-A0)
- 2x 2P to DC jack cable (Part Number: 30-22238-0000-A0)
- SBC35-MTL LVDS FPC (Part Number: 91-49076-0010)

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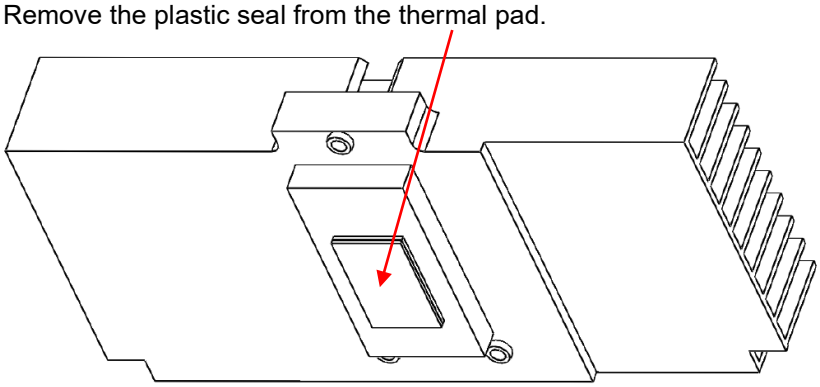
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2 Quick Installation

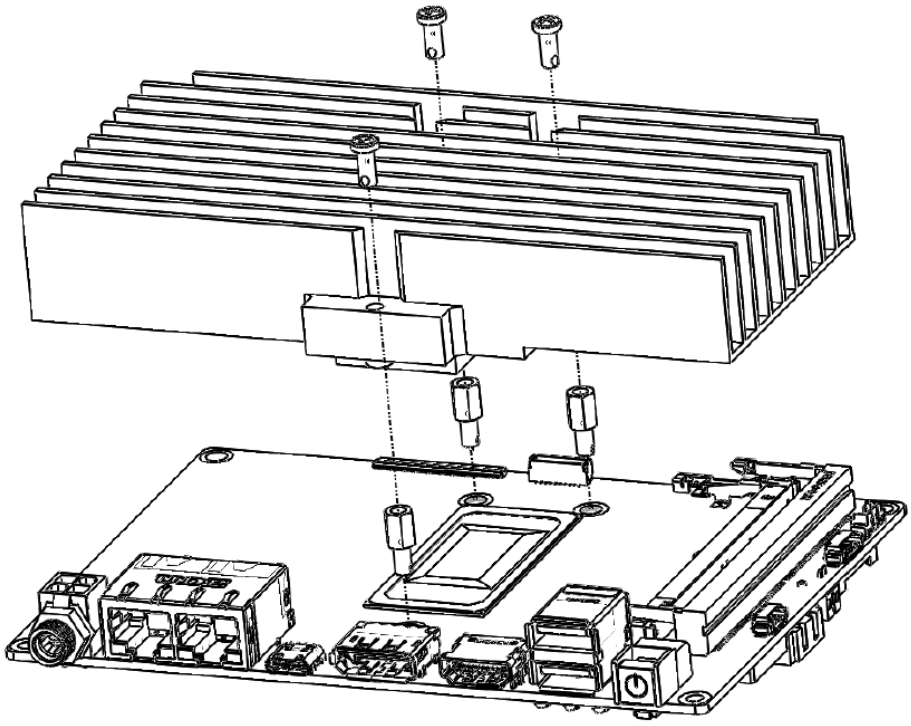
This chapter covers how to assmelbe cooling solutions and M.2 expansion modules for the ADLINK SBC35-MTL.

2.1 Assembling Passive Heatsink for 15W SKU

1. Remove the plastic seal from the thermal pad.



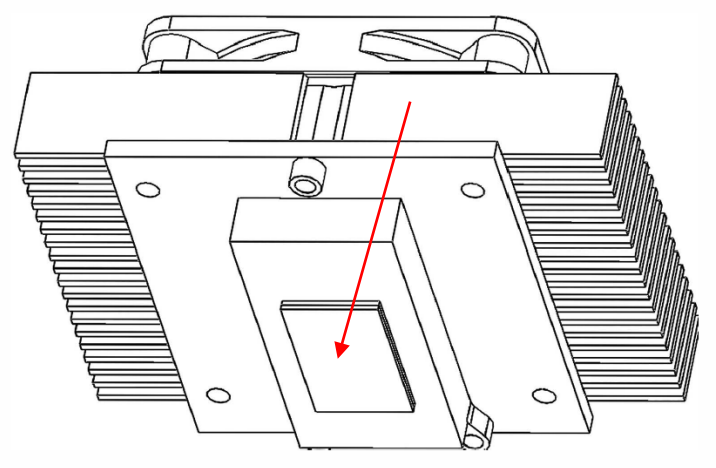
2. Assemble and secure the heatsink using the screws provided, as illustrated below.



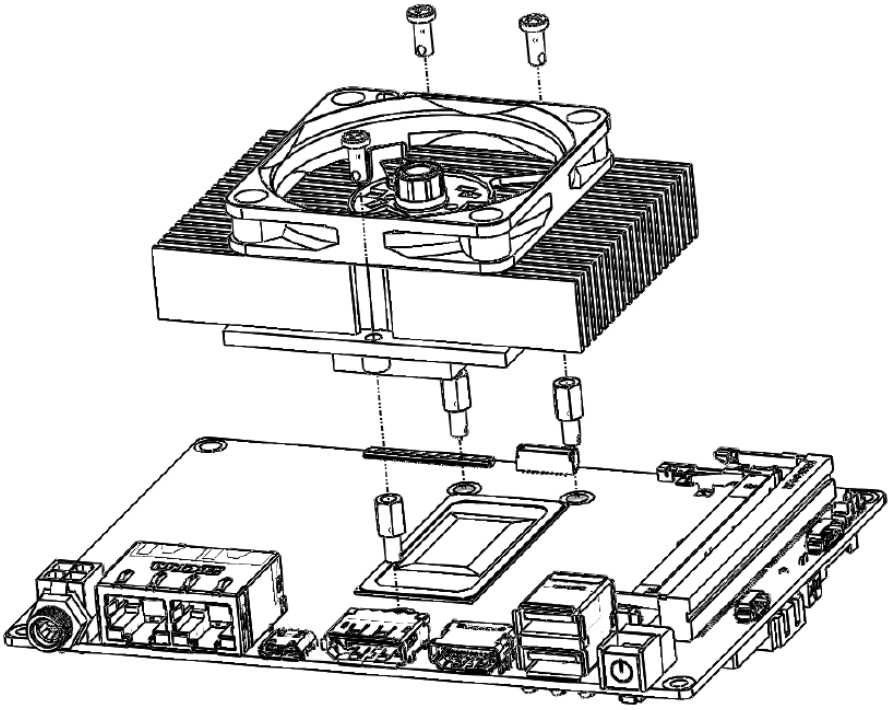
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2.2 Assembing Cooler Solution for 28W SKU

1. Remove the plastic seal from the thermal pad.



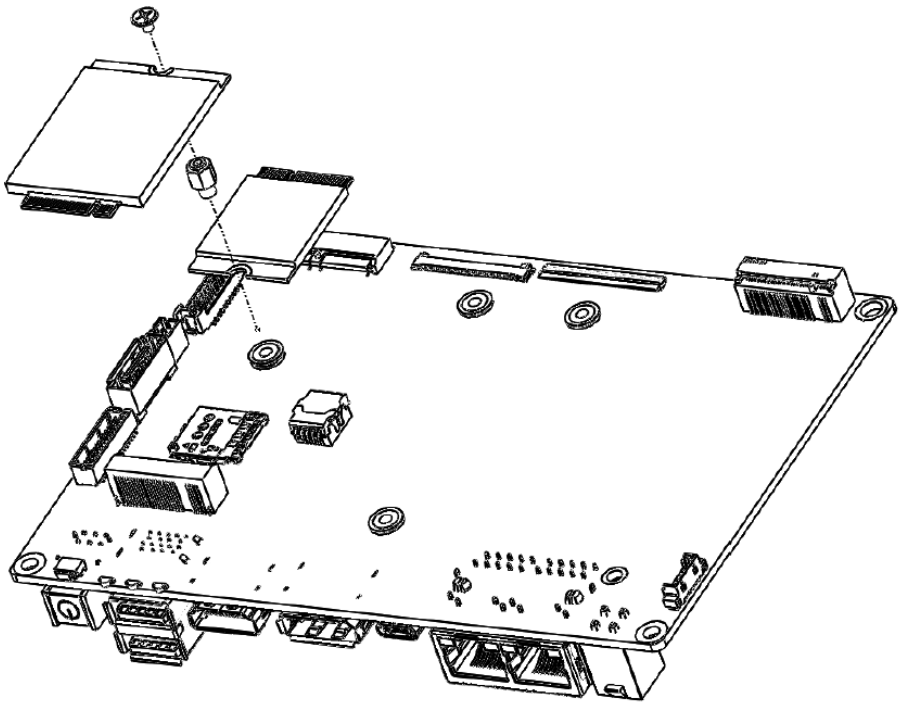
2. Assemble and secure the CPU cooler using the screws provided, as illustrated below.



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2.3 Installing M.2 Expansion Modules

M.2 B-key and M.2 E-key share the same mounting hole, please install as illustrated below.



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3 Specifications

3.1 Core System

- **CPU:** MTL-U, 15W /MTL-H, 28W
- **Memory:** 2x DDR5 SO-DIMMs 5600MHz, up to 96 GB, non-ECC

3.2 I/O Interface

- **USB:**
  - 2x USB 3.2 Gen 2x1 ports (10Gbps) (rear I/O)
  - 2x USB 2.0 through 30-pin header
  - 1x USB 2.0 via headers
- **USB Type-C:** 1x USB TYPE-C (USB 3.2, DP, Power delivery 5V, 3A)
- **COM:**
  - 2x RS-232/422/485 pin headers
- **Serial ATA:** 1x SATA 6Gb/s ports w/ 5V SATA power
- **DI/DO:** GPIO 8-bit through 30-pin header
- **TPM:** TPM2.0 (option)
- **M.2 connectors:**
  - M.2 2280 M Key (PCIe x4)
  - M.2 2230 E Key with (Wi-Fi (PCIe Gen 4x1), (USB))
  - M.2 3042/ 3052 B-key (USB3.0/2.0, PCIe) w/ SIM card
- **SBC-FM Board Expansion:** 1x PCIe x1, 1x PCIe x4**,** 1x USB 3.0/2.0**,** 1x eSPI

3.3 Video

- **Interfaces:** 1x Type-C, 1x eDP (LVDS via driving board), 1x HDMI 2.0, 1x DisplayPort 1.4

3.4 Audio

- **Audio Codec:** Realtek® ALC888S
- **Interfaces**: 1x Line-in, 1x Line-out, and 1x Mic-in through a 30-pin header

3.5 LAN

- **LAN:** 2x Intel® I226-V with 10/100/1000/2500 Mbps

3.6 Dimension

- **ATX**: 5.75" x 4" (146mm x 102mm)

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3.7 Power Supply

- 12V-24V, Reserved DC Jack connector (option)

3.8 Temperatures

- **Operating Temperature:** 0°C to 60°C
- **Storage Temperature:** -40°C to 85°C

3.9 ESD

- Contact +/- 8kV, Air +/- 12kV

3.10 Certificate (EMC)

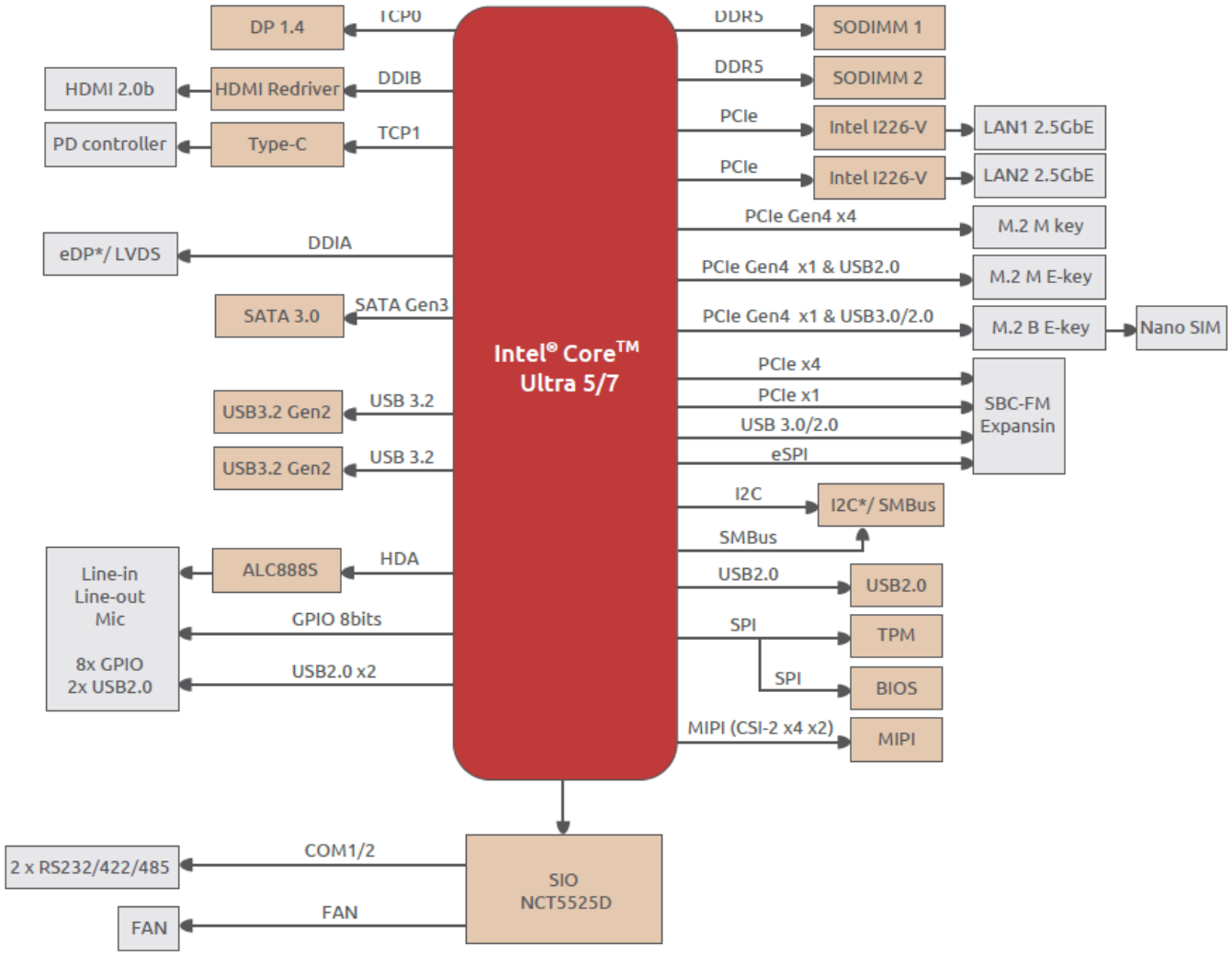
- CE/FCC Class B

3.11 Operating Systems

- Microsoft® Windows 10/Windows 11 IoT Enterprise LTSC 24H2
- Ubuntu® 22.04 LTS (by project basis)

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3.12 Functional Block Diagram



* Default by BOM change, contact with your local sales to support option.

Figure 1: Functional block diagram

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4 Mechanical Layout

4.1 Connector Locations

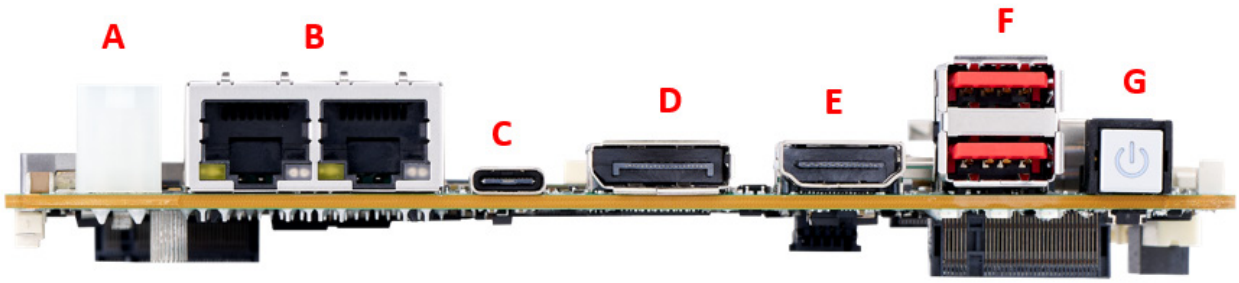


Figure 2: I/O Panel connector locations

Table 1: I/O Panel connector definitions

IO Panel Connectors	
Item	**Description**
A	DCIN Connector
B	RJ45*2(I226*2)
C	Type-C Connector
D	DP Connector
E	HDMI Connector
F	USB3.2 Gen. 2x1 *2 Connector
G	Power Button

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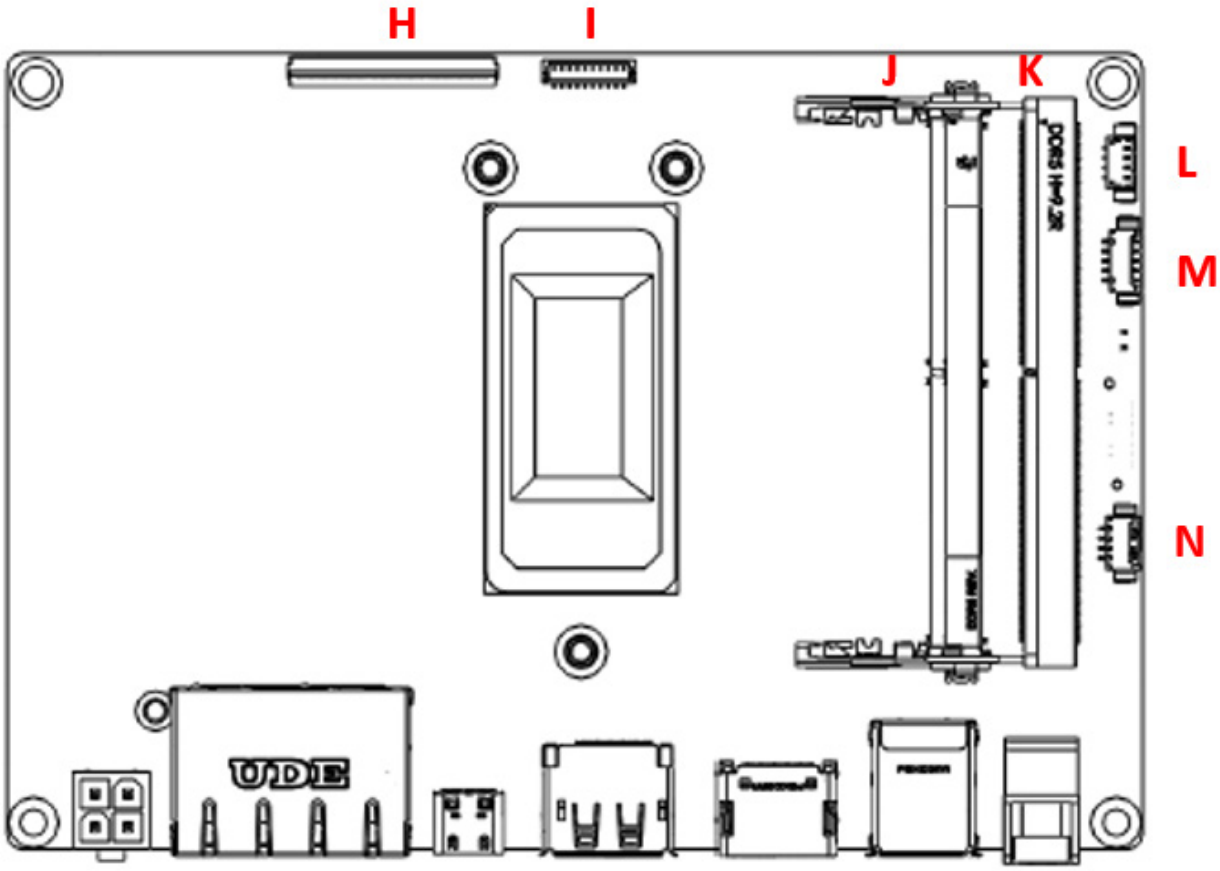


Figure 3: Onboard connector locations (Top)

Table 2: Onboard connector definitions (Top)

Onboard Connectors	
Item	**Description**
H	MIPI Connector
I	eSPI Debug Port
J	SO-DIMM1 DDR5_5.2mm
K	SO-DIMM2 DDR5_9.2mm
L	System Fan Connector
M	I2C Connector (Co-lay SMBus)
N	USB2.0 Connector

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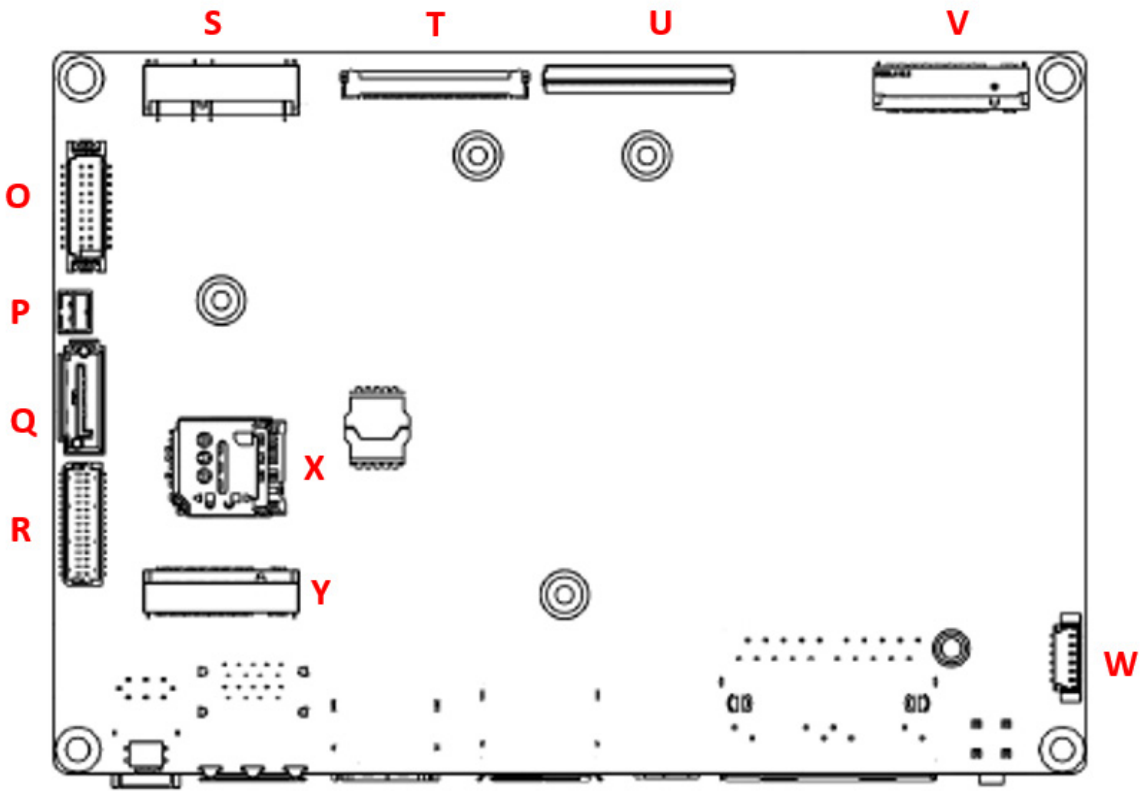


Figure 4: Onboard connector locations (Bottom)

Table 3: Onboard connector definitions (Bottom)

Onboard Connectors	
Item	**Description**
O	Wafer for COM1,2
P	SATA PWR Connector
Q	SATA Connector
R	Wafer for GPIO + MIC + Line-In+Line-Out+USB2.0*2
S	NGF E.Key (PCIe4.0x1, USB2.0*1)
T	eDP*/LVDS Connector
U	SBC-FM FPC Connector
V	NGF M.key (PCIe4.0x4)
W	External Power Connector for SBC-FM board
X	Nano SIM1 Connector
Y	NGF B.Key (PCIe4.0x1 USB3.0/2.0*1)

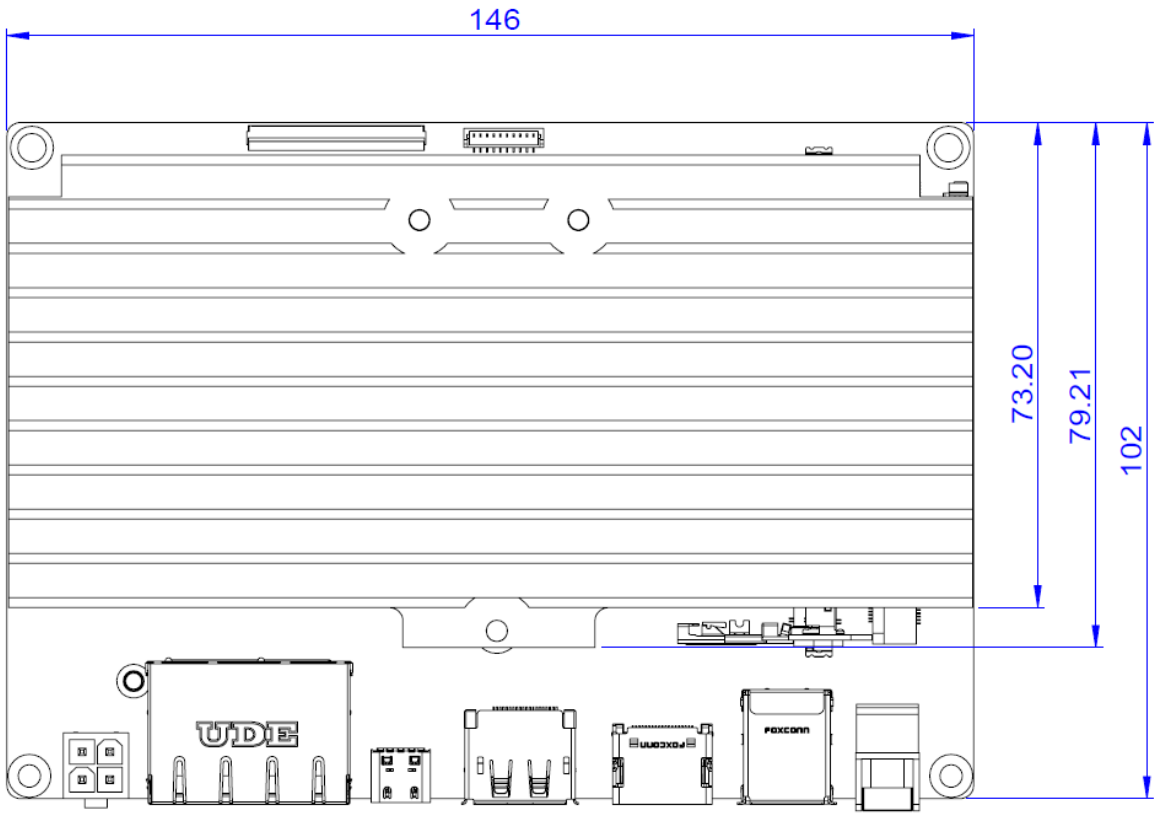
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4.2 Mechanical Dimensions

4.2.1 With Passive Heatsink for 15W SKU

(ADLINK Part Number: 32-21015-1000-A0)

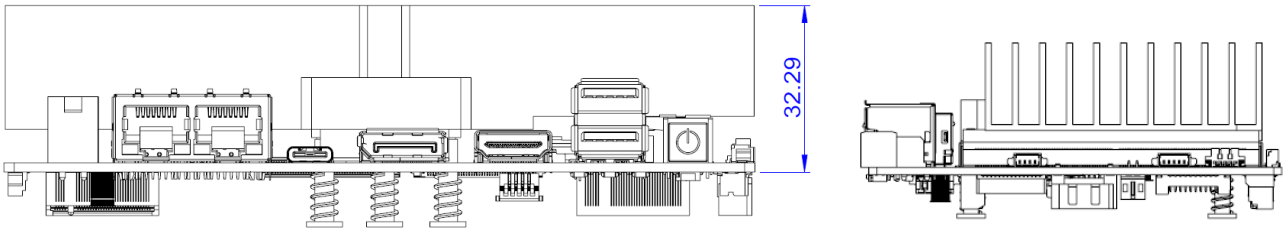
Top View



Dimensions: mm

Figure 5: Mechanical dimensions

Side View



Dimensions: mm

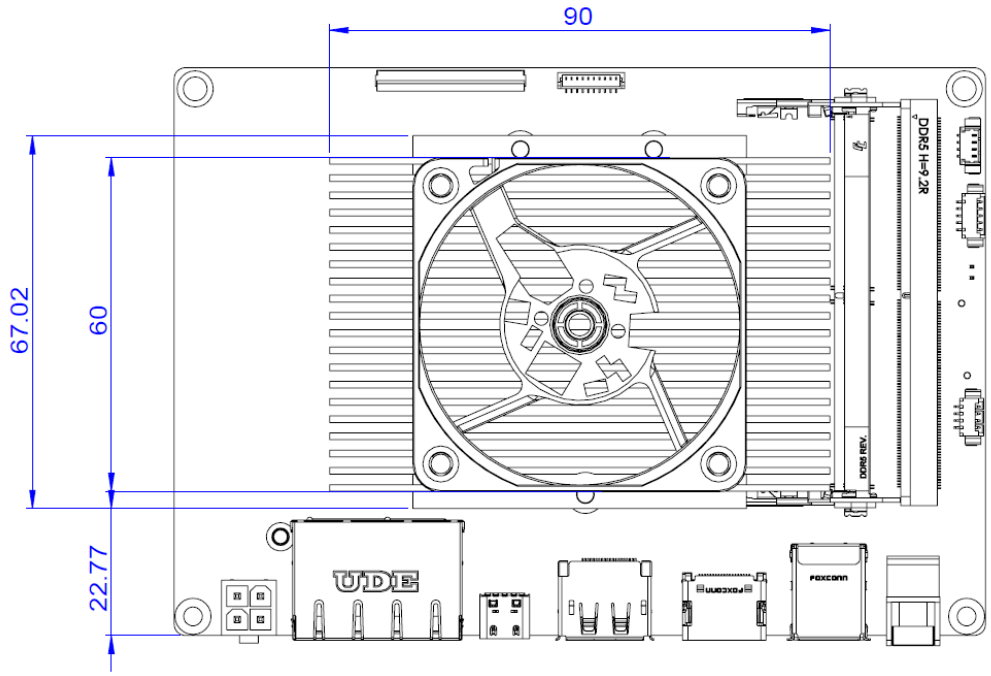
Figure 6: Mechanical dimensions – I/O panel

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4.2.2 With Cooler Solution for 28W SKU

(ADLINK Part Number: 32-21014-1000-A0)

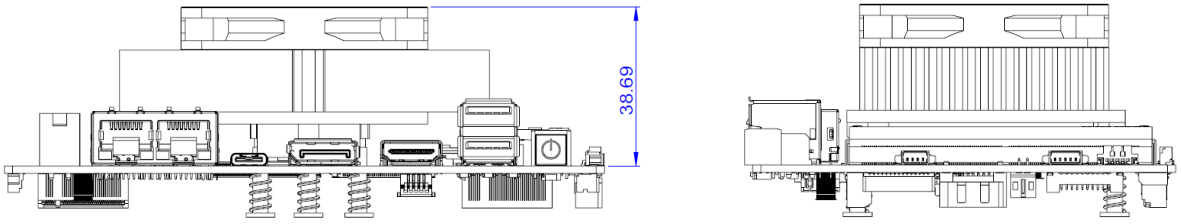
Top View



Dimensions: mm

Figure 7: Mechanical dimensions

Side View



Dimensions: mm

Figure 8: Mechanical dimensions – I/O panel

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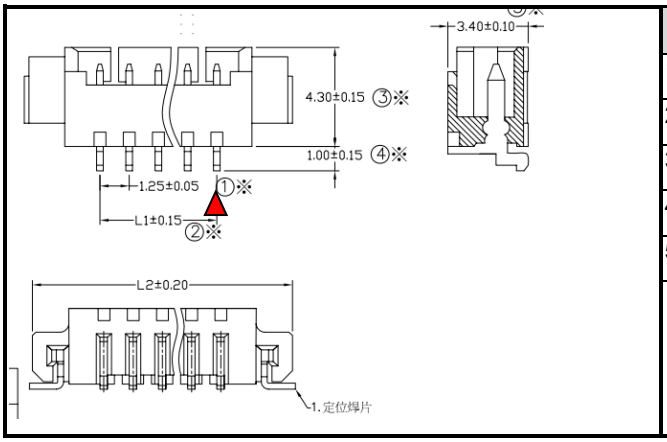
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5 Connector Pinouts

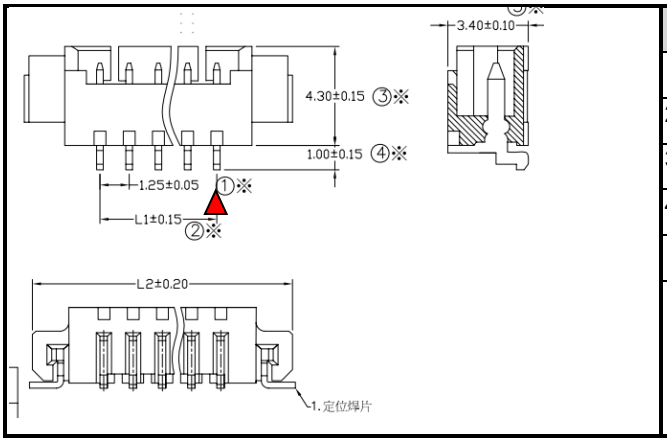
5.1 Interface Connectors

5.1.1 I2C/SMB Connector



Pin	Signal
1	P_+3V3_S0
2	I2C0_CLK_CON
3	I2C0_DAT_CON
4	I2C1_GPIO-L
5	GND

5.1.2 USB2 Connector



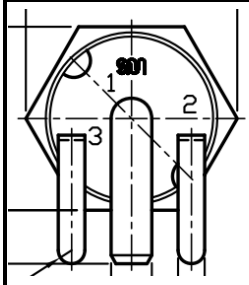
Pin	Signal
1	P_+5V_A
2	U2_USB8_N
3	U2_USB8_P
4	GND

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5.2 Power Input & DC-In Connector

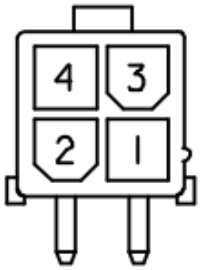
- Input power voltage range: DC 12V~24V
- Input current: 8A to 12A
- Suggest Adapter: 100 to 144W (CPU 15W or 28W type)
- OVP: 28.5V
- UVP: 7.53V
- Reverse power protection: Yes

DC Power Jack RT Φ2.6 24V/12A



Pin	Signal
1	Power
2	GND1
3	GND2

Power Header ML 2x2P ST D4.2



Pin	Signal	Pin	Signal
1	GND	3	Power
2	GND	4	Power

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5.3 RS-232/422/485

There are two COM ports on the board. Port 1 and 2 can be set to RS232, 422, or 485 within BIOS. All COM port signals are separated within one wafer connector.

Pin	Signal	Pin	Signal
1	GND	2	GND -
3	CON1_COM_CTS-L	4	CON1_COM_RI
5	CON1_COM_DSR-L	6	CON1_COM_RTS-L
7	CON1_COM_TXD	8	CON1_COM_DTR-L
9	CON1_COM_DCD-L	10	CON1_COM_RXD
11	CON2_COM_RXD	12	CON2_COM_DCD-L
13	CON2_COM_DTR-L	14	CON2_COM_TXD
15	CON2_COM_DSR-L	16	CON2_COM_RTS-L
17	CON2_COM_RI	18	CON2_COM_CTS-L
19	GND	20	GND

5.3.1 RS-232 to 422/485 Pin Comparison in DB9 Connector

Pin	RS232	RS422	RS485
1	DCD#	TXD-	DATA-
2	RX	TXD+	DATA+
3	TX	RXD+	
4	DTR#	RXD-	
5	GND	GND	
6	DSR#		
7	RTS#		
8	CTS#		
9	RI#		

5.4 GPIO/USB2/Audio Header

DO signal has PH *P_+5V_S0” on MB side, output current is 5mA. 2x USB2 signals are for internal use.
Audio: 1x line-in, 1x line-out, MIC-in

Pin	Signal	Pin	Signal
1	P_+5V_USB20_CN	2	GND
3	P_+5V_USB20_CN	4	U2_USB4_N_CON
5	P_+5V_USB20_CN	6	U2_USB4_P_CON
7	GPIO_S0	8	GND
9	GPIO_S2	10	U2_USB2_N_CON
11	GPIO_S4	12	U2_USB2_P_CON

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13	GPIO_S6	14	GND
15	GND	16	GPIO_S1
17	GND_AUD	18	GPIO_S3
19	LINL	20	GPIO_S5
21	LINR	22	GPIO_S7
23	GND_AUD	24	GND_AUD
25	MIC1L	26	LOUTL
27	MIC1R	28	LOUTR
29	GND_AUD	30	GND_AUD

5.5 M.2 Key-B

The M.2 Key-B connector supports 304 and 3052 two-sized card, and supports 1 Nano SIM.

This connector only supports Key-B card, and not B+M card.

Pin	Signal	Pin	Signal
1	M2B_CONFIG_3	2	P_+3V3_NGFF_B
3	GND	4	P_+3V3_NGFF_B
5	GND	6	PU 100K to P_+3V3_NGFF_B
7	U2_USB3_P	8	NC
9	U2_USB3_N	10	NC
11	GND		
21	M2B_CONFIG_0	20	NC
23	NC	22	NC
25	NC	24	NC
27	GND	26	W_DISABLE2#
29	U3_P2_RX_N	28	NC
31	U3_P2_RX_P	30	UIM_RST
33	GND	32	UIM_CLK
35	U3_P2_TX_N	34	UIM_DATA
37	U3_P2_TX_P	36	P_UIM_PWR
39	GND	38	NC
41	X_PCIEX1_P8_RX_N	40	NC
43	X_PCIEX1_P8_RX_P	42	NC
45	GND	44	NC
47	X_PCIEX1_P8_TX_N	46	NC
49	X_PCIEX1_P8_TX_P	48	NC
51	GND	50	PCH_PLTRST-L_BUF
53	C_REFCLK_P5_100M_N	52	PCH_CLK_REQ_P5_5G_N

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55	C_REFCLK_P5_100M_P	54	PCIE_WAKE_N_3V3 (NC)
57	GND	56	NC
59	NC	58	NC
61	NC	60	NC
63	NC	62	NC
65	NC	64	NC
67	WWAN_RESET-L (NC)	66	UIM_DET
69	M2B_CONFIG_1	68	NC
71	GND	70	P_+3V3_NGFF_B
73	GND	72	P_+3V3_NGFF_B
75	M2B_CONFIG_2	74	P_+3V3_NGFF_B

5.6 Nano SIM

Pin	Signal
C1	P_UIM_PWR
C2	UIM_RST
C3	UIM_CLK
C5	GND
C6	NC
C7	UIM_DATA

5.7 M.2 Key-M

M.2 Key-M 2280 connector supports PCIe Gen4

Pin	Signal	Pin	Signal
1	GND	2	P_+3V3_M.2_M
3	GND	4	P_+3V3_M.2_M
5	X_PCIE4_P12_RX_N	6	NC
7	X_PCIE4_P12_RX_P	8	NC
9	GND	10	M2M_LED
11	X_PCIE4_P12_TX_N	12	P_+3V3_M.2_M
13	X_PCIE4_P12_TX_P	14	P_+3V3_M.2_M
15	GND	16	P_+3V3_M.2_M
17	X_PCIE4_P11_RX_N	18	P_+3V3_M.2_M
19	X_PCIE4_P11_RX_P	20	NC
21	GND	22	NC
23	X_PCIE4_P11_TX_N	24	NC
25	X_PCIE4_P11_TX_P	26	NC

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27	GND	28	NC
29	X_PCIE4_P10_RX_N	30	NC
31	X_PCIE4_P10_RX_P	32	NC
33	GND	34	NC
35	X_PCIE4_P10_TX_N	36	NC
37	X_PCIE4_P10_TX_P	38	PCH_SATA_DEVSLP0 (NC)
39	GND	40	NC
41	X_PCIE4_P9_RX_N	42	NC
43	X_PCIE4_P9_RX_P	44	NC
45	GND	46	NC
47	X_PCIE4_P9_TX_N	48	NC
49	X_PCIE4_P9_TX_P	50	PCH_PLTRST-L_BUF
51	GND	52	CLKREQ_P3_SSD_N
53	C_PCIECLK_P3_100M_N	54	PCIE_WAKE_N_3V3 (NC)
55	C_PCIECLK_P3_100M_P	56	NC
57	GND	58	NC
67	NC	68	NC
69	M2M_CONFIG_1	70	P_+3V3_M.2_M
71	GND	72	P_+3V3_M.2_M
73	GND	74	P_+3V3_M.2_M
75	GND		

5.8 M.2 Key-E

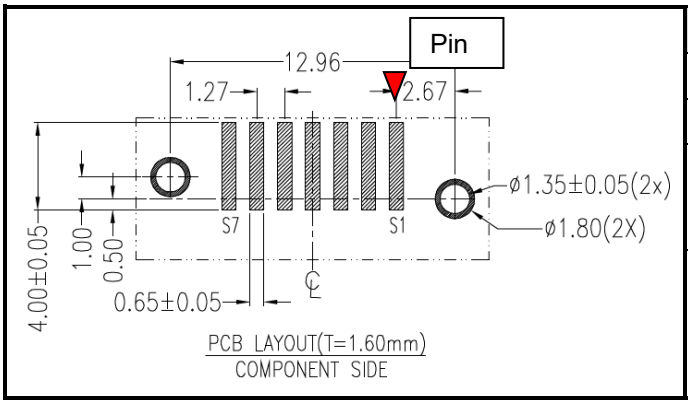
M.2 Key-E connector supports 2230-size card.

Pin	Signal	Pin	Signal
1	GND	2	P_+3V3_M.2_E
3	U2_USB0_P	4	P_+3V3_M.2_E
5	U2_USB0_N	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
23	NC		

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33	GND	32	NC
35	X_PCIEX1_P7_TX_P	34	NC
37	X_PCIEX1_P7_TX_N	36	NC
39	GND	38	NC
41	X_PCIEX1_P7_RX_P	40	NC
43	X_PCIEX1_P7_RX_N	42	NC
45	GND	44	NC
47	C_PCIECLK_P4_100M_P	46	NC
49	C_PCIECLK_P4_100M_N	48	NC
51	GND	50	NC
53	CLKREQ_P4_WIFI_N	52	PCH_PLTRST-L_BUF
55	PCIE_WAKE_N_3V3 (NC)	54	BT_DISABLE#
57	GND	56	WIFI_DISABLE#
59	NC	58	NC
61	NC	60	NC
63	GND	62	NC
65	NC	64	NC
67	NC	66	NC
69	GND	68	NC
71	NC	70	NC
73	NC	72	P_+3V3_M.2_E
75	GND	74	P_+3V3_M.2_E

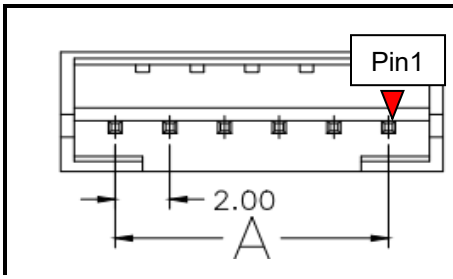
5.9 SATA Connector



Pin	Signal	Pin	Signal
P1	GND	P5	SATA3_P1_RX_N
P2	SATA3_P1_TX_P	P6	SATA3_P1_RX_P
P3	SATA3_P1_TX_N	P7	GND
P4	GND		

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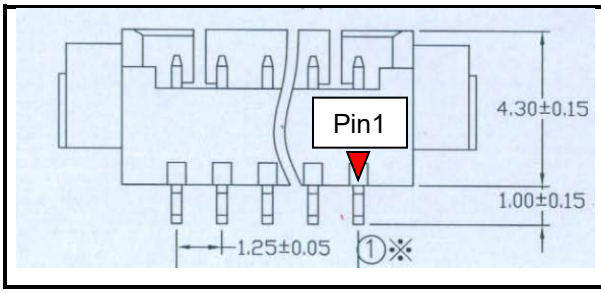
5.10 SATA Power Connector



Pin	Signal
P1	P_+5V_S0
P2	GND

5.11 Fan Connector

This connector is for system FAN design requirements. FAN speed is based on the RT2 sensor resistor, which detects the board temperature. Please refer to the RT2 location below.



Pin	Signal
P1	GND
P2	P_+5V_S0
P3	FAN_FG (FAN TACH)
P4	FAN_PWM (FAN PWM)

5.12 USB Connector

There are two USB3.2 Gen2 Ports on front panel, 2x USB 2.0 via headers, 1x USB 2.0 via WAFER.

USB3.2 Gen 2 ports provide over current protection design, 1A current.

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5.13 SBC-FM Connector

SBC-FM connector is reserved for I/O expansion flexibility through FPC.

Manufacturer: HIROSE

MFG P/N: FH34SRJ-50S-0.5SH

ADLINK P/N: 61-02010-0500

Location: FPC1

SBC-FM Connector Pin Definition					
Describe	**Signal**	**Pin#**	**Pin#**	**Signal**	**Describe**
PCIE4	X_PCIEX4_P16_TX_P	2	27	CLKREQ_P2_FM_N	PCIE3 CLK Request
	X_PCIEX4_P16_TX_N	3	28	U3_P3_TX_P	USB3.0
	X_PCIEX4_P15_TX_P	4	29	U3_P3_TX_N	
	X_PCIEX4_P15_TX_N	5	30	U3_P3_RX_P	
	X_PCIEX4_P14_TX_P	6	31	U3_P3_RX_N	
	X_PCIEX4_P14_TX_N	7	32	U2_USB5_P_CON	USB2.0
	X_PCIEX4_P13_TX_P	8	33	U2_USB5_N_CON	
	X_PCIEX4_P13_TX_N	9	34	ESPI_CLK_FM	eSPI
	X_PCIEX4_P16_RX_P	10	35	ESPI_IO3_FM	
	X_PCIEX4_P16_RX_N	11	36	ESPI_IO2_FM	
	X_PCIEX4_P15_RX_P	12	37	ESPI_IO1_FM	
	X_PCIEX4_P15_RX_N	13	38	ESPI_IO0_FM	
	X_PCIEX4_P14_RX_P	14	39	ESPI_CS1_FM-L	
	X_PCIEX4_P14_RX_N	15	40	ESPI_ALERT1_FM-L	
	X_PCIEX4_P13_RX_P	16	41	ESPI_RESET_FM-L	
	X_PCIEX4_P13_RX_N	17	42	PCIE_WAKE_N_3V3	PCIE Wake
PCIE4 CLK Request	CLKREQ_P7_FM_N	18	43	PCH_SLP_S3_N	PCH_SLP3
PCIE4 CLK	C_PCIECLK_P7_100M_P	19	44	PCH_PLTRST-L_BUF	PCH_PLTRST
	C_PCIECLK_P7_100M_N	20	45	SMB_CLK_S	SMB
PCIE3	X_PCIEX1_FM_TX_P	21	46	SMB_DAT_S	
	X_PCIEX1_FM_TX_N	22	47	I2C1_GPIO-L	
	X_PCIEX1_FM_RX_P	23	48	GND	GND
	X_PCIEX1_FM_RX_N	24	49	P_+1V8_A	3.3V PWR (Standby)
PCIE3 CLK	C_REFCLK_P2_100M_P	25	50	P_+1V8_A	
	C_REFCLK_P2_100M_N	26			
GND	GND	1			

5.13.1 SBC-FM Power Connector

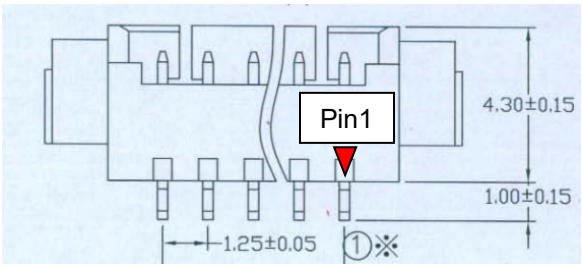
Manufacturer: JVE

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MFG P/N: 24W1125A-04M00-06S10-01T

ADLINK P/N: 61-6AJ0X-1060

Location: FM_PWR



Pin	Signal
P1	GND
P2	
P3	
P4	P_+VIN_S (Standby)
P5	
P6	

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6 BIOS Settings

6.1 Menu Structure

This section presents the primary menus of the AMIBIOS® EFI BIOS setup utility. Use the following table as a quick reference for the contents of the BIOS Setup Utility. The subsections describe the submenus and options for each menu item.

To enter the BIOS Setup Utility:

1. Power on the motherboard
2. Press < Delete > when the prompt appears.

Main	**Advanced**	**Chipset**
- System Date - System Time	►CPU Configuration ►Power Management ►Serial Console Redirection ►USB Configuration ►TPM 2.0 Configuration ►Onboard Devices Configuration ►Hardware Monitor ►BIOS Watchdog Timer ►Network Stake Configuration ►Intel® Ethernet Controller (3) I226-V ►Intel® Ethernet Controller (3) I226-V	►System Agent (SA) Configuration ►PCH-I/O Configuration
Security	**Boot**	**Save & Exit**
- Administrator Password - User Password ►Secure Boot menu	- Boot Option #1,2,3,4,5,6,7,8,9,10,11 - Setup Prompt Timeout - Bootup Num-Lock - Quiet Boot - Fast Boot	- Save Changes and Exit - Discard Changes and Exit - Save Changes and Reset - Discard Changes and Reset - Save Changes - Discard Changes - Restore Defaults - Save as User Defaults - Restore User Defaults - Launch EFI Shell from filesystem Device
MEBx		
- Intel(R) ME Password	-	-

Note: ► indicates a submenu

Gray text indicates info only

Bold italics font indicates default setting

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6.2 Main Menu

Upon entering the BIOS Setup Utility, the Main Menu is displayed, providing read-only information about your system and also allows you to set the System Date and Time. Refer to the tables below for details of the submenus and settings.

Feature	Option	Description
System Date	xxx mm/dd/yyyy	Sets the date. Use Tab to switch between date elements.
System Time	hh:mm:ss	Sets the time. Use Tab to switch between time elements.

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6.3 Advanced Menu

This menu contains the settings for most of the user interfaces in the system.

Feature	Option	Description
► CPU Configuration		CPU Configuration
► Power Management		System ACPI Parameters
► Serial Console Redirection		Serial Console Redirection
► USB Configuration		USB Configuration Parameters
► TPM 2.0 Configuration		TPM 2.0 Configuration
► Onboard Devices Configuration		Onboard Device Parameters
► Hardware Monitor		Monitor hardware status
► BIOS Watchdog Timer		BIOS Watch Dog Configuration
► Network Stack Configuration		Network Stack Settings
► Intel® Ethernet Controller I226-V		Configure Gigabit Ethernet Device Parameters
► Intel® Ethernet Controller I226-V		Configure Gigabit Ethernet Device Parameters

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6.3.1 Advanced > CPU Configuration

Feature	Option	Description
► Efficient-core Information		Displays the E-core Information. *Note1
► Performance-core		Displays the P-core Information. *Note1
Hyper-threading	***Enabled*** Disabled	Enable or Disable Hyper-Threading Technology
Active Performance-cores	***All*** *7* *6* *5* *4* 3 2 1 0	The number of P-cores to enable in each processor package. Note: The number of cores and E-cores are considered together. When both are {0,0}, Pcode will enable all cores.
Active Efficient-cores	***All*** *7* *6* *5* *4* 3 2 1 0	The number of E-cores to enable in each processor package. Note: The number of cores and E-cores are considered together. When both are {0,0}, Pcode will enable all cores.
Active SOC-North Efficient-cores	All ***0***	The number of SOC-North Efficient-cores to enable in SOC North. *Note1
Intel (VMX) Virtualization Technology	***Enabled*** Disabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Intel(R) SpeedStep(TM)	***Enabled*** Disabled	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	***Enabled*** Disabled	Enables/Disables Intel(R) Speed Shift Technology Support. Enabling will expose the CPPC v2 interface to allow for hardware-controlled P-states.
Turbo Mode	***Enabled*** Disabled	Enable/Disable processor Turbo Mode.
C states	***Disabled*** Enabled	Enables/Disables CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
► Efficient-core Information		Displays the E-core Information. *Note1

*Note1: This item shows information, depending on "ACPI Sleep State."

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6.3.2 Advanced > Power Management

Feature	Option	Description
ACPI Sleep State	***Suspend Disabled*** S3 (Suspend to RAM)	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. Note: For MTL, 'Active SOC-North Efficient-cores' will change to 'All' after setting 'ACPI Sleep State' to 'Suspend Disabled
Power Supply Unit	***ATX Mode*** Emulate AT Mode	Select Emulation AT or ATX function. If this option is set to [Emulation AT], the BIOS will report no suspend functions (S3 & S4) to ACPI OS. In Windows XP, it will cause the OS to display a shutdown message during system shutdown. ATX: The OS will turn off system power when shutdown.
State After G3	***S0 State*** S5 State	Specify the state to which the system should turn when power is re-applied after a power failure (G3 states).
RTC Wake system from S5	***Disabled*** Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select FixedTime to have the system wake at the hr::min::sec specified. Select DynamicTime to have the system wake at the current time + Increase minutes(S).
Wake up hour	***0***	Range: 0-23 hr For example, enter 3 for 3am and 15 for 3pm
Wake up minute	***0***	Range: 0-59 min
Wake up second	***0***	Range: 0-59 sec
Wake up minute increase	***1***	Range: 1-5 min
PCIe Wake	***Enabled*** Disabled	Enable or disable PCI Express wake capability.

6.3.3 Advanced > Serial Console Redirection

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

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

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6.3.4 Advanced > USB Configuration

Feature	Option	Description
XHCI Hand-off	***Enabled*** Disabled	Enable/Disable USB Mass Storage Driver Support
USB Mass Storage Driver Support	***Enabled*** Disabled	Enable/Disable USB Mass Storage Driver Support
USB transfer time-out	***20 sec*** 1 sec 5 sec 10 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	***20 sec*** 10 sec 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	***Auto*** Manual	The maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses the default value: for a Root port, it is 100 ms, for a Hub port the delay is taken from the Hub descriptor.

6.3.5 Advanced > TPM 2.0 Configuration

Feature	Option	Description
Security Device Support	***Enable*** Disable	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA256 PCR Bank	***Enabled*** Disabled	Enable or Disable SHA256 PCR Bank
SHA384 PCR Bank	***Disabled*** Enabled	Enable or Disable SHA384 PCR Bank
Pending operation	***None*** TPM Clear	Schedule an Operation for the Security Device. Note: Your computer will reboot during a restart in order to change the State of the Security Device.
Platform Hierarchy	***Enabled*** Disabled	Enable or Disable Platform Hierarchy
Storage Hierarchy	***Enabled*** Disabled	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	***Enabled*** Disabled	Enable or Disable Endorsement Hierarchy
Physical Presence Spec Version	***1.3*** 1.2	Select to Tell O.S. to support PPI Spec. Version 1.2 or 1.3. Please note that some HCK tests might not support 1.3.
Device Select	***Auto*** TPM 1.2 TPM 2.0	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated

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6.3.6 Advanced > Onboard Devices Configuration

Feature	Option	Description
COM1 Mode Control	***RS232*** RS422 RS485	Select COM1 mode. RS232, RS422, RS485
COM1 TX termination	***Disabled*** Enabled	COM1 TX termination Enable/Disable
COM1 RX termination	***Disabled*** Enabled	COM1 RX termination Enable/Disable
COM2 Mode Control	***RS232*** RS422 RS485	Select COM1 mode. RS232, RS422, RS485
COM2 TX termination	***Disabled*** Enabled	COM2 TX termination Enable/Disable
COM2 RX termination	***Disabled*** Enabled	COM2 RX termination Enable/Disable
LAN #1	***Enabled*** Disabled	Enable/Disable
LAN #2	***Enabled*** Disabled	Enable/Disable

6.3.7 Advanced > Hardware Monitor

Feature	Option	Description
CPU Fan Control Mode(Fan 1)	***SMART FAN IV*** Manual mode	Configure Fan Control Mode. Select Manual Mode, user can configure a fix fan duty. Select SMART FAN IV, user can configure 4 temperatures and 4 fan duties. Select Auto Mode, FAN will run at automatic speed with thermal.
Manual PWM	***128***	Fan will work with this Manual PWM Value(0~255 for 0%~100%)
Temperature 1	***30***	The value of temperature1.
Temperature 2	***50***	The value of temperature2.
Temperature 3	***60***	The value of temperature3.
Temperature 4	***70***	The value of temperature4.
FD/RPM 1	***77***	The value of Fan Duty/RPM when temperature is T1.
FD/RPM 2	***128***	The value of Fan Duty/RPM when temperature is T2.
FD/RPM 3	***204***	The value of Fan Duty/RPM when temperature is T3.
FD/RPM 4	***255***	The value of Fan Duty/RPM when temperature is T4.
Critical Temperature	***71***	Fan temperature critical value.

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6.3.8 Advanced > BIOS Watchdog Timer

Feature	Option	Description
BIOS POST Watchdog	***Disabled*** Second Mode Minute Mode	1. Disable: Disables WatchDog Timer; 2. Second Mode: Enables Watchdog Timer in second mode; 3. Minute Mode: Enables Watchdog Timer in minute mode.
BIOS Watchdog Timer	***1***	Set watchdog timer for BIOS POST process. Minute Mode
BIOS Watchdog Timer	***15***	Set watchdog timer for BIOS POST process. Second Mode

6.3.9 Advanced > Network Stack Configuration

Feature	Option	Description
Network Stack	***Disabled*** Enabled	Enable/Disable UEFI Network Stack
IPv4 PXE Support	***Disabled*** Enabled	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	***Disabled*** Enabled	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
IPv6 PXE Support	***Disabled*** Enabled	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
IPv6 HTTP Support	***Disabled*** Enabled	Enable/Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
PXE boot wait time	***0***	Wait time in seconds to press the ESC key to abort the PXE boot. Use either the +/- or numeric keys to set the value.
Media detect count	***1***	The number of times the presence of media will be checked. Use either the +/- or numeric keys to set the value.

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6.4 Chipset

Feature	Option	Description
► System (SA) Configuration		System Agent (SA) Parameters
► PCH-IO Configuration		PCH Parameters

6.4.1 Chipset > System Agent (SA) Configuration

Feature	Option	Description
► Memory Configuration		Memory Configuration Parameters
► Graphics Configuration		Graphics Configuration
VT-d	***Enabled*** Disabled	VT-d Capability
NPU Device (B0:D11:F0)	***Disabled*** Enabled	Enable/Disable NPU (Neural Processing Unit) Device.

6.4.2 Chipset > Graphics Configuration

Feature	Option	Description
Primary Display	***Auto*** IGFX PEG Slot PCH PCI	Select which of the IGFX/PEG/PCI graphics devices should be the primary display, or select HG for Hybrid Gfx.
INTERNAL GRAPHICS	Auto ***Enabled*** Disabled	Keep IGFX enabled based on the setup options.

6.4.3 Chipset > PCH-IO Configuration

Feature	Option	Description
BIOS Lock	***Disabled*** Enabled	Enable/Disable the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of the flash.
► SATA Configuration		SATA Device Options Settings
► NVMe Configuration		NVMe Device Options Settings

6.4.3.1. Chipset > PCH-IO Configuration > SATA Configuration

Feature	Option	Description
SATA Controller	***Enabled*** Disabled	Enable/Disable SATA Device.
SATA Mode Selection	***AHCI***	Determines how SATA controller(s) operate.
SATA Controller Speed	***Default*** Gen3 Gen1 Gen2	Indicates the maximum speed the SATA controller can support.

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6.5 Security

Feature	Option	Description
Administrator Password		Set Administrator Password
User Password		Set User Password
► Secure Boot menu		Secure Boot Configuration
► Security Configuration		Security Configuration Settings

6.5.1 Security > Secure Boot Menu

Feature	Option	Description
Secure Boot Control	***Disabled*** Enabled	The secure Boot feature is Active if Secure Boot is Enabled, the Platform key(PK) is enrolled, and the system is in User mode. Changing the mode requires platform reset.
Secure Boot Mode	***Standard*** Custom	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

6.6 Boot

Feature	Option	Description
Setup Prompt Timout	***1***	The number of seconds to wait for setup activation key. The maximum value is 8.
Bootup NumLock State	***Off*** On	Select the keyboard NumLock state
Quiet Boot	***Enabled*** Disabled	Enables or disables the Quiet Boot option
Fast Boot	***Disable Link*** Enabled	Enables or disables boot with the initialization of a minimal set of devices required to launch the active boot option. Has no effect on BBS boot options.
Boot Option #1	***Hard Disk*** NVME UEFI AP CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #2	***NVME*** Hard Disk UEFI AP CD/DVD SD USB Hard Disk	Sets the system boot order

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	USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	
Boot Option #3	***UEFI AP*** Hard Disk NVME CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #4	***CD/DVD*** Hard Disk NVME UEFI AP SD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #5	***SD*** Hard Disk NVME UEFI AP CD/DVD USB Hard Disk USB CD/DVD USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #6	***USB Hard Disk*** Hard Disk NVME UEFI AP CD/DVD SD USB CD/DVD USB Key USB Floppy USB Lan	Sets the system boot order

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	Network Disabled	
Boot Option #7	***USB CD/DVD*** Hard Disk NVME UEFI AP CD/DVD SD USB Hard Disk USB Key USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #8	***USB Key*** Hard Disk NVME UEFI AP CD/DVD SD USB Hard Disk USB CD/DVD USB Floppy USB Lan Network Disabled	Sets the system boot order
Boot Option #9	***USB Floppy*** Hard Disk NVME UEFI AP CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Lan Network Disabled	Sets the system boot order
Boot Option #10	***USB Lan*** Hard Disk NVME UEFI AP CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy Network Disabled	Sets the system boot order

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6.7 Save & Exit

Feature	Option	Description
Save Changes and Exit		Exit system setup after saving the changes.
Discard Changes and Exit		Exit system setup without saving any changes.
Save Changes and Reset		Reset the system after saving the changes.
Discard Changes and Reset		Reset the system without saving any changes.
Save Changes		Save Changes done so far to any of the setup options.
Discard Changes		Discard Changes done so far to any of the setup options.
Restore Defaults		Restore/Load Default values for all the setup options.
Save as User Defaults		Save the changes done so far as User Defaults.
Restore User Defaults		Restore the User Defaults to all the setup options.
Launch EFI Shell from filesystem device		Attemps to Launch the EFI Shell application (Shell.efi) from one of the available filesystem devices.

6.8 MEBx

Feature	Option	Description
Intel(R) ME Password		MEBx Login
Intel(R) AMT	Disabled Enable	

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Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User‘s Manual for later reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment, turn off the power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources.
  - Keep equipment away from high heat or high humidity.
  - Keep equipment properly ventilated (do not block or cover ventilation openings).
  - Make sure to use recommended voltage and power source settings.
  - Always install and operate equipment near an easily accessible electrical socket-outlet.
  - Secure the power cord (do not place any object on/over the power cord).
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings.
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

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Getting Service

Ask an Expert: https://www.adlinktech.com/en/Askanexpert

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