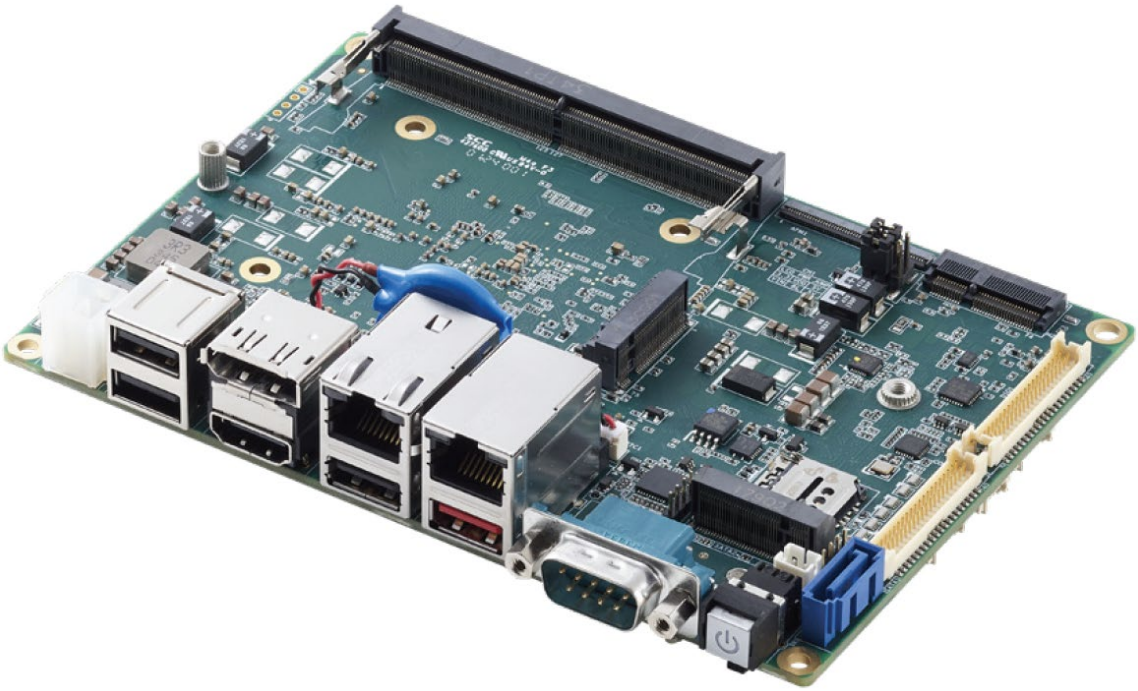
SBC35-ALN

User's Manual

3.5" Single Board Computer with
Intel® N97 Processor



Manual Rev.: 1.0
Revision Date: July 10, 2024
Part Number: 50M-44840-1000

Leading **EDGE COMPUTING**

Preface

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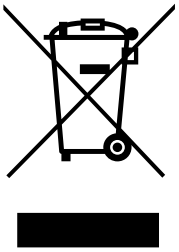
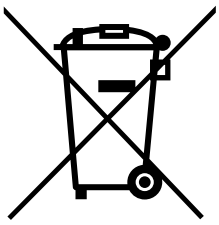


Battery Labels (for products with battery)



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Revision History

Revision	Description	Date
1.0	Initial release	2024-07-10

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1 Introduction

ADLINK SBC35-ALN is a 3.5-inch single board computer powered by Intel® N97 processor. It includes a DDR5 4800MHz memory of up to 16GB, 2x GbE ports (2x 1G-Intel i210IT), and provides support for 3 independent displays (LVDS, HDMI, DP), with LVDS shared with eDP and supported based on project requirements. Additionally, it features SBC-FM interface for I/O expansion, including 1x PCIe, 1x USB2.0, and LPC interfaces. TPM 2.0 is optional.

1.1 Packing List

- SBC35-ALN motherboard
- M.2 screw kit

1.2 Optional Accessories

- Passive Heatsink for 12W CPU (Part Number: 32-21039-0000-A0)
- Heat Spreader (Part Number: 32-21039-1000-A0)
- USB 2.0 Type A connector (Part Number: 30-21363-0000-A0)
- RS-232x2 + RS-232/485/422x2 (Part Number: 30-21534-0010-A0)
- RS-232x2 (Part Number: 30-21611-0000-A0)
- DI/Dox8-bits + Audio + USB2.0x2 (Part Number: 30-22122-0000-A0)
- SATA + SATA Power (Part Number: 30-22121-0000-A0)

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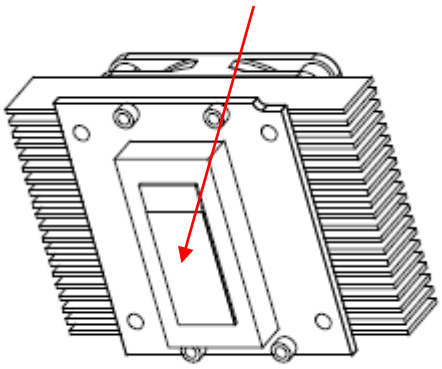
2 Quick Installation

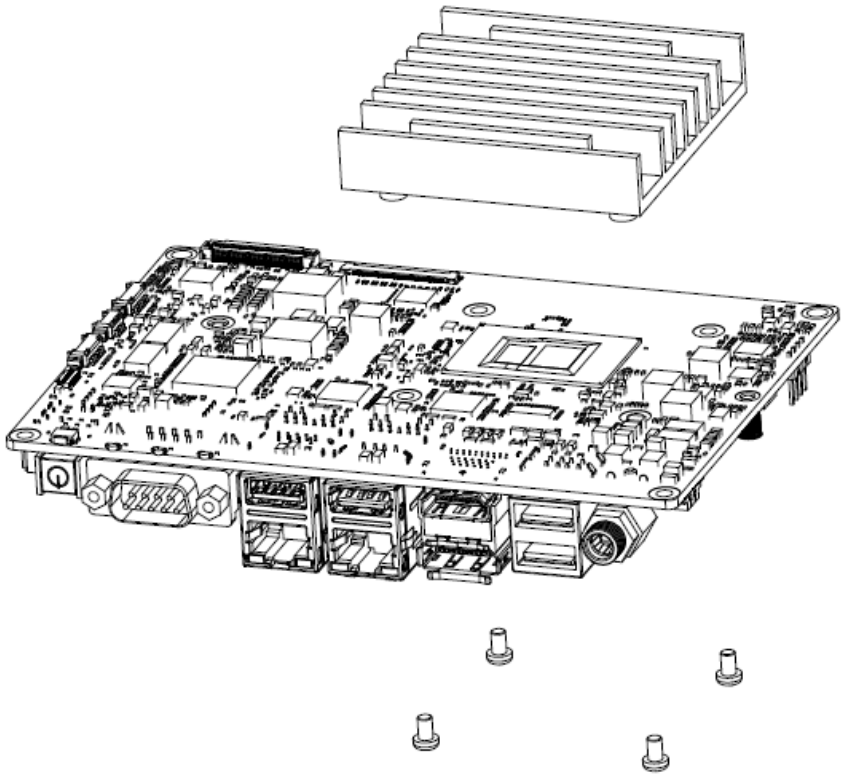
This chapter covers how to assemble cooling solutions and M.2 expansion modules for the ADLINK SBC35-ALN.

2.1 Assembling Thermal Solution

1. Remove the plastic seal from the thermal pad.

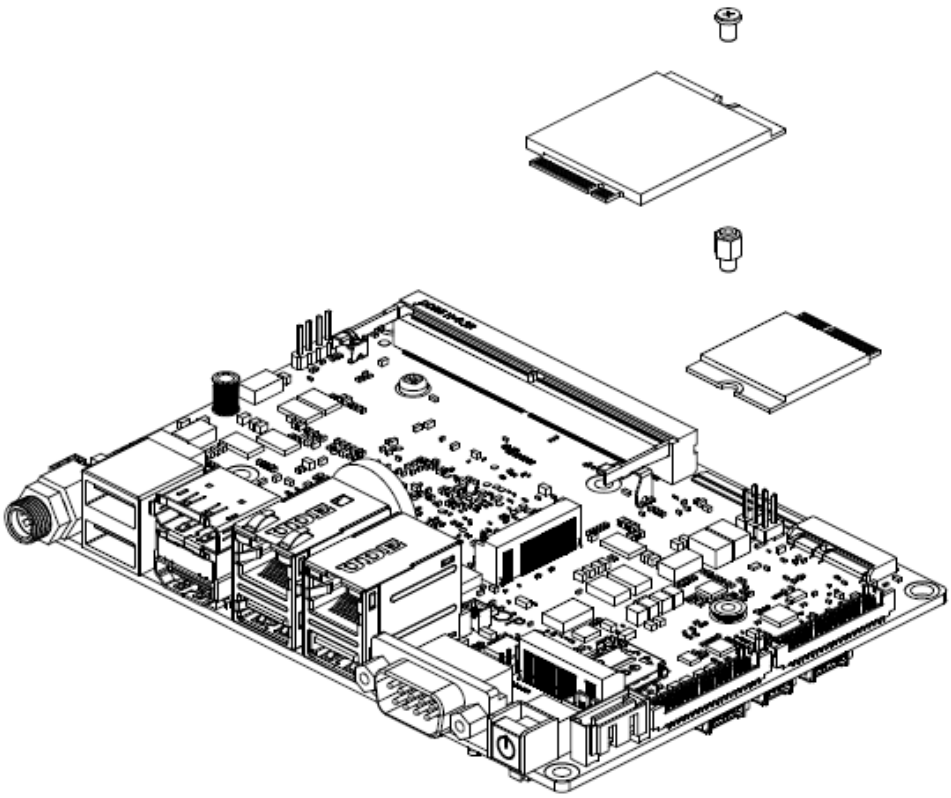


2. Assemble and secure the heatsink using the screws provided, as illustrated below.



2.2 Installing M.2 Expansion Modules

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



3 Specifications

3.1 Core System

- **CPU:**
  - Intel® Core™ N97 processor
- **Memory:** DDR5 SO-DIMM, up to 4800MHz, 16GB

3.2 I/O Interface

- **USB:**
  - 1x USB 3.2 Gen2x1 port (10Gbps) (rear)
  - 1x USB 2.0 via the 40-pin header (for use with internal dongles only)
- **COM:**
  - RS-232/422/485 (rear)
  - RS-232/422/485 DB9 or 40-pin box header (default) (by BOM option)
  - 2x RS-232 via 40-pin box headers
- **Serial ATA:** 1x SATA 6Gb/s port w/ 5V SATA power
- **DI/DO:** 8DI, 8DO
- **TPM:** TPM 2.0 (option)
- **M.2 connectors:**
  - M.2 2280 M Key (PCIex2)
  - M.2 2230 E Key with (PCIex1, USB2.0)
  - M.2 3042 B Key (USB3.0/2.0) w/ SIM card
- **SBC-FM Board Expansion:** 1x PCIe x1, 1x USB 3.0/2.0

3.3 Video

- **Interfaces:** 1x LVDS (shared with eDP based on BOM option), 1x HDMI, 1x DisplayPort

3.4 Audio

- **Audio Codec:** Realtek® ALC888S
- **Interfaces**: 1x Mic-in, 1x Line-in, and 1x Line-out

3.5 LAN

- **LAN1:** Intel® i210IT, supporting 1Gbps/ 100Mbps / 10Mbps
- **LAN2:** Intel® i210IT, supporting 1Gbps/ 100Mbps / 10Mbps

3.6 Dimension

- 3.5" SBC: 5.75" x 4" (146mm x 102mm)

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 +/- 4kV, Air +/- 8kV

3.10 Certificate (EMC)

- CE/FCC Class B

3.11 Operating Systems

- Microsoft® Windows 10 IoT Enterprise LTSC 21H2 (64-bit)
- Ubuntu® Desktop 22.04 LTS

3.12 Functional Block Diagram

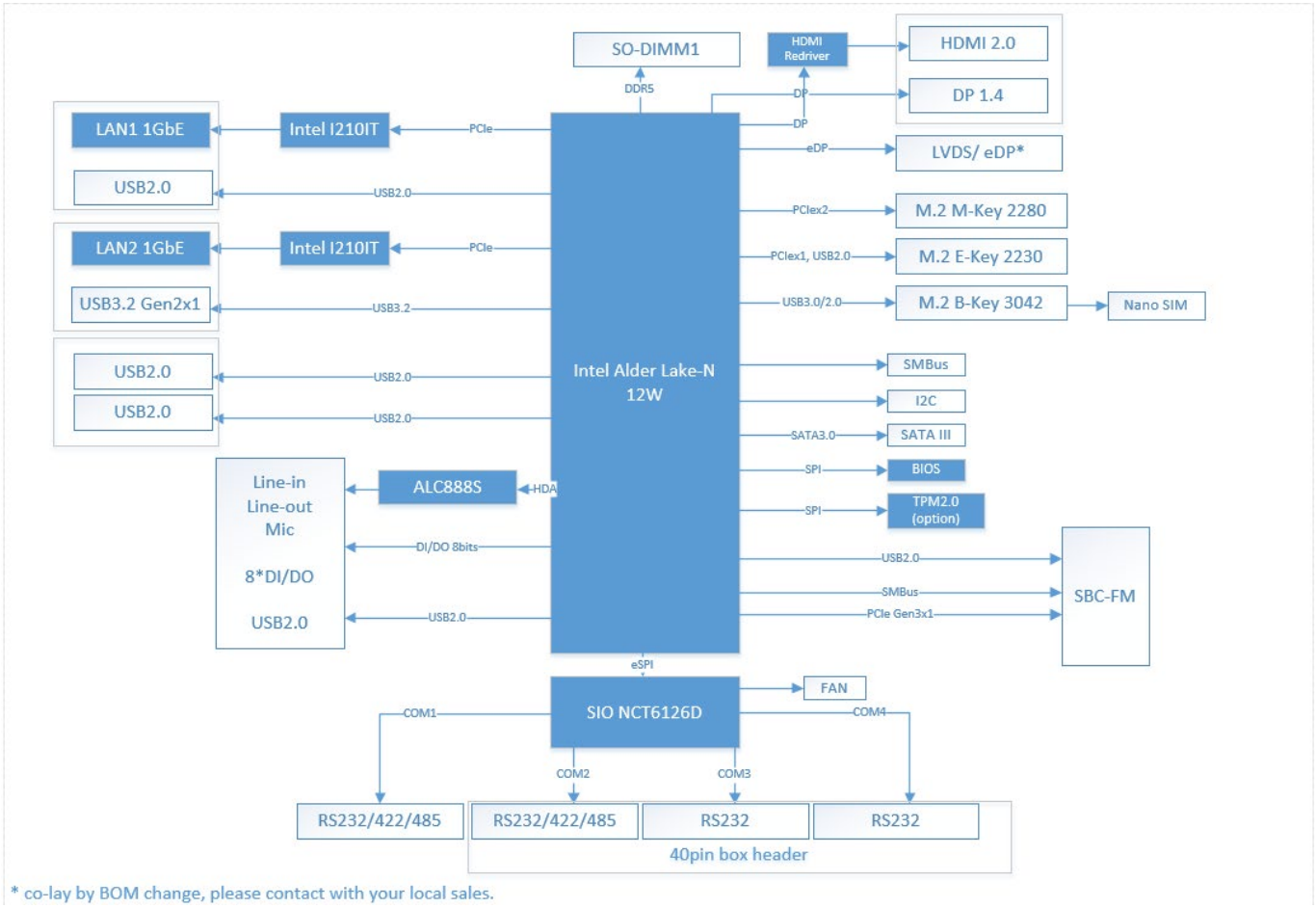


Figure 1: Functional Block Diagram

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4 Mechanical Layout

4.1 Connector Locations

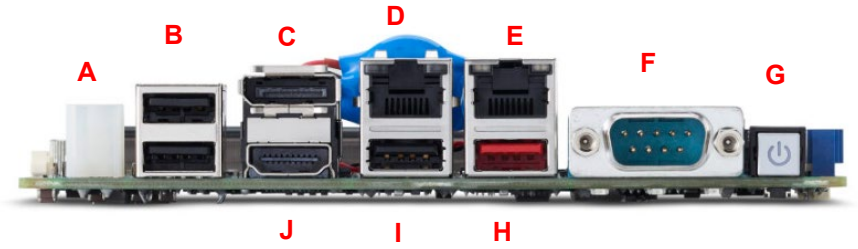


Figure 2: IO Panel Connector Locations

Table 1: IO Panel Connector Definitions

IO Panel Connectors	
Item	**Description**
A	DC In connector
B	2x USB 2.0 connectors
C	DisplayPort connector
D, E	RJ45 LAN port
F	COM1
G	Power button
H	USB 3.0 Gen2
I	USB 2.0
J	HDMI connector

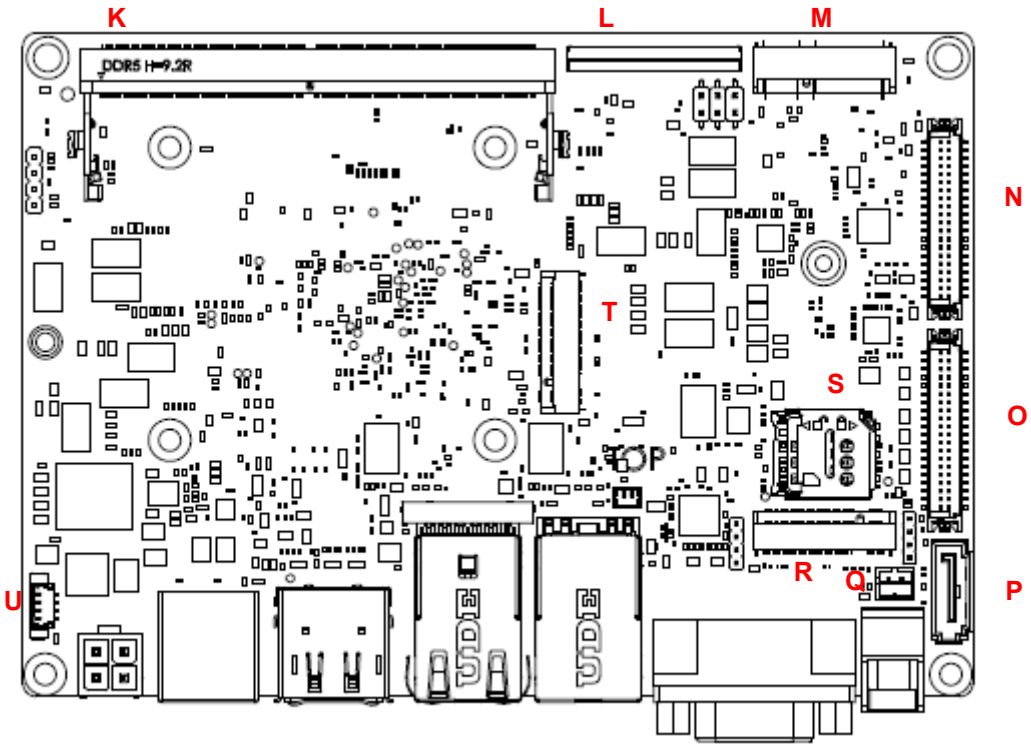


Figure 3: Onboard Connector Locations (Top)

Table 2: Onboard Connector Definitions (Top)

Onboard Connectors	
Item	Description
K	DDR5 SO-DIMM
L	SBC-FM connector
M	M.2 E-key (PCIe Gen3 x1, 1x USB 2.0)
N	Wafer for DIDO + MIC + Line-in + Line-out + USB 2.0
O	Wafer for COM 2,3,4
P	SATA connector
Q	SATA Power connector
R	M.2 B-key (1x USB 3.0 + 2.0)
S	Nano SIM1 connector
T	M.2 M-key (PCIe Gen 3 x2)
U	External Power connector for SBC-FM board

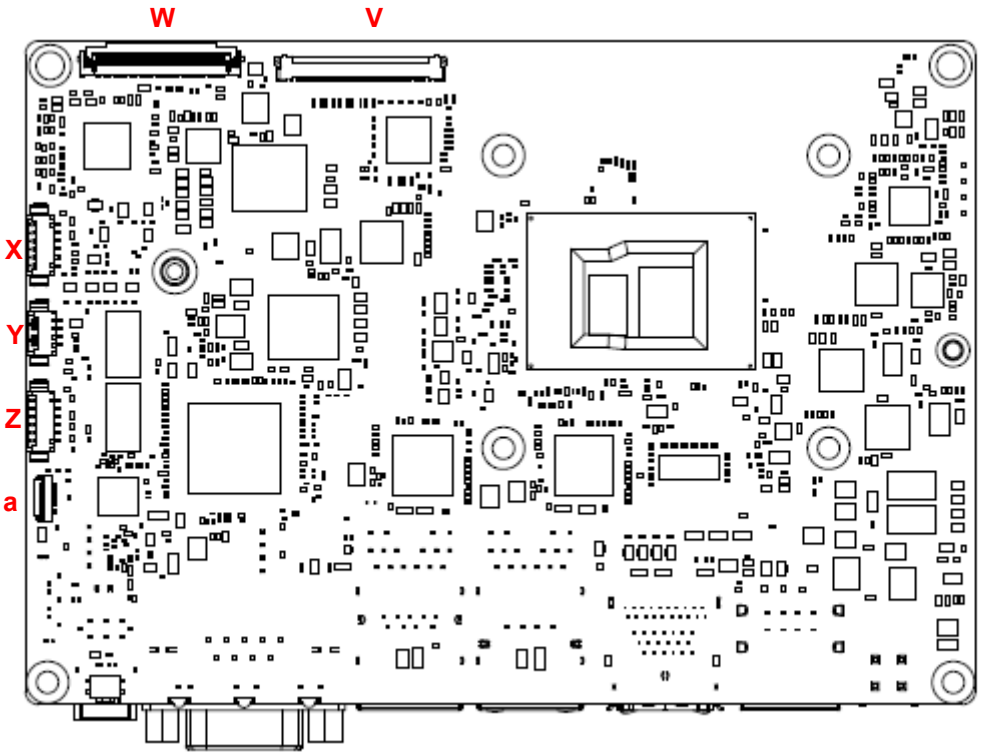


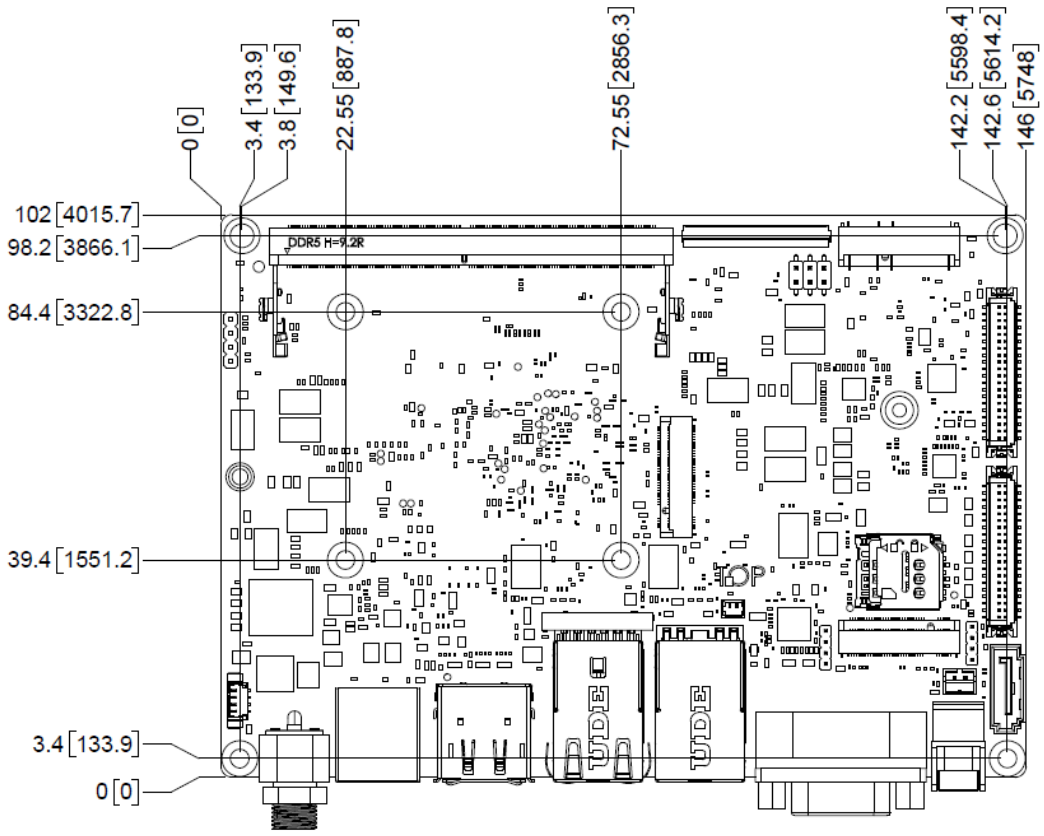
Figure 4: Onboard Connector Locations (Bottom)

Table 3: Onboard Connector Definitions (Bottom)

Onboard Connectors	
Item	Description
V	eDP/LVDS connector **Note:** Defaulted as LVDS, please contact ADLINK sales representative for eDP support.
W	DB40 Debug port
X	SMBus connector
Y	Fan connector
Z	I2C connector
a	ESPI Debug connector

4.2 Mechanical Dimensions

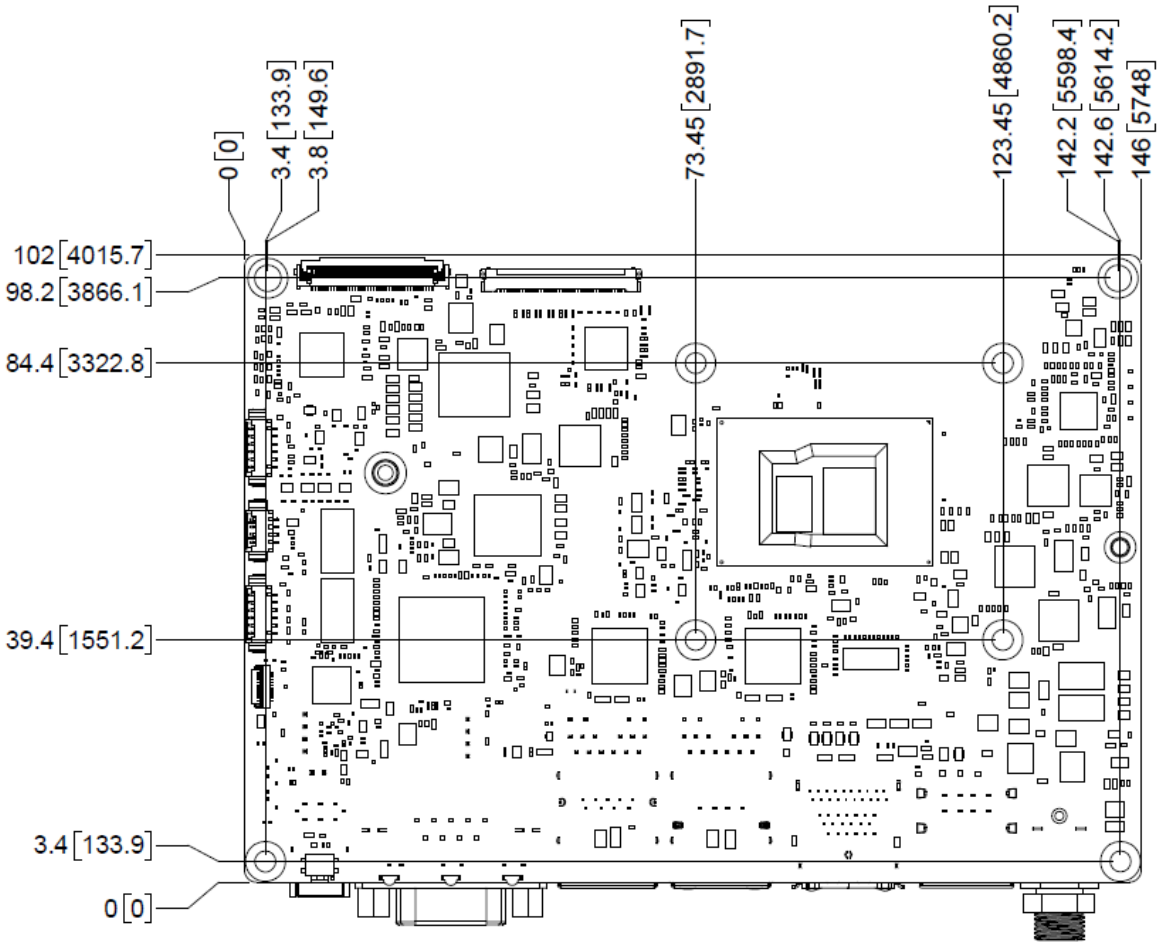
Top View



Dimensions: mm

Figure 5: Mechanical Dimensions (Top)

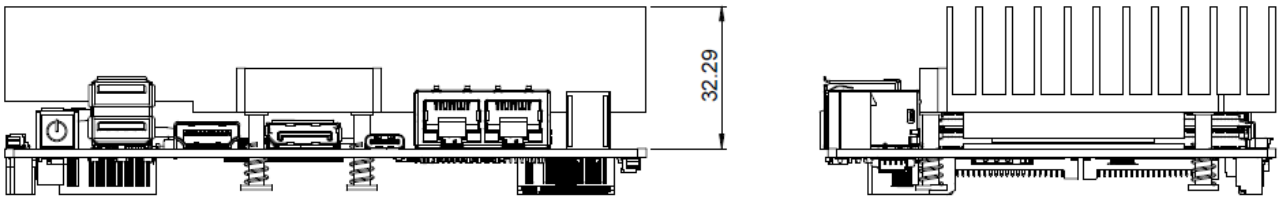
Bottom View



Dimensions: mm

Figure 6: Mechanical Dimensions (Bottom)

Side View



Dimensions: mm

Figure 7: Mechanical Dimensions – Heatsink / Heat Spreader

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5 Connector Pinouts

5.1 LEDs

There are three LEDs on the front panel, as indicated below.

5.1.1 Indicator LEDs

LED Indication	Location	Color	Description
Hard disk drive (HD)	LED1	Red	Blinking indicates that the SATA HDD and/or SSD are active.
Diagnostic (DG)	LED2	Red	Lighting continuously indicates that no physical storage is connected. Blinking indicates that no memory is installed on either SO-DIMM socket.
User-defined	LED3	Red	User-defined LED

5.1.2 Power LED

The power LED is a non-latched button with a blue color LED indicator on the front panel.

System status	Power LED
System Turned on	Light On
Suspend (S3)	Blinking
Hibernation (S4)	Blinking
Power Off (S5)	Light Off

5.1.3 LAN LED

LAN Active/Link LED (Right LED)

LED Color	Status	Description
Yellow	Off	Ethernet port is disconnected.
	On	Ethernet port is connected with no activity.
	Flashing	Ethernet port is connected and active.

LAN Speed LED (Left LED)

LED Color	Status	Description
Green/Yellow	Off	10 Mbps
	Green	100 Mbps
	Yellow	1000 Mbps

5.2 I2C & SMBus Interface Connector

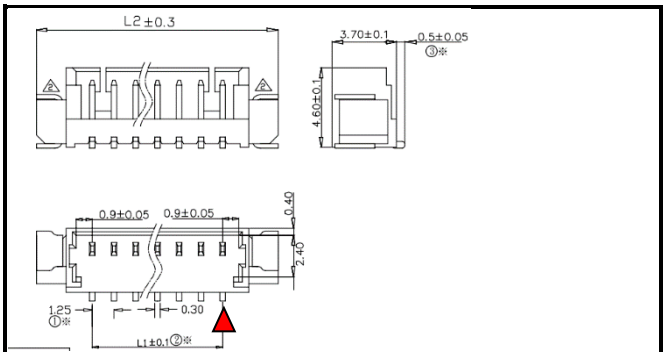
There are two I2C interface connectors on both side of MB for customer to use from, 3.3V or 5V.

Manufacturer: JVE

MFG P/N: 24W1125A-06S10-01T-0.5-CF01

ADLINK P/N: 61-69J0X-1060

Location: I2C1



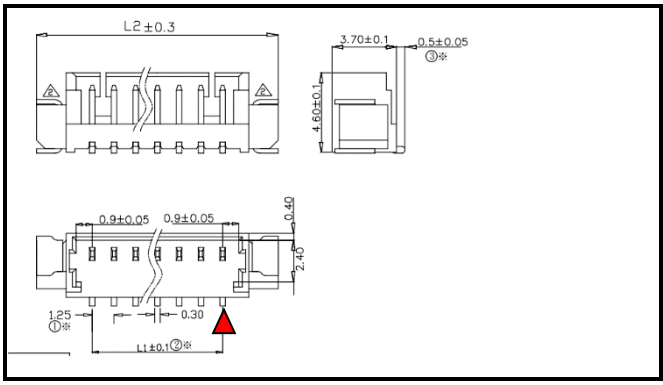
Pin	Signal
1	P_+5V_A
2	P_+3V3_A
3	PCH_I2C0_SDA
4	PCH_I2C0_SCL
5	I2C1_GPIO-L
6	GND

Manufacturer: JVE

MFG P/N: 24W1125A-06S10-01T-0.5-CF01

ADLINK P/N: 61-69J0X-1060

Location: SMB1



Pin	Signal
1	P_+5V_A
2	P_+3V3_A
3	PCH_SMB_DAT_A
4	PCH_SMB_CLK_A
5	PCH_SMB_ALERT-L
6	GND

5.3 DC In Connector

The SBC35-ALN has two types of DC In connector options: a DC jack with lock and a box header designed for customizable DC cables.

- Input Power: 12-24V, 8A
- OVP: 28.84V
- UVP: 7.4V
- Reverse power protect: *Yes*

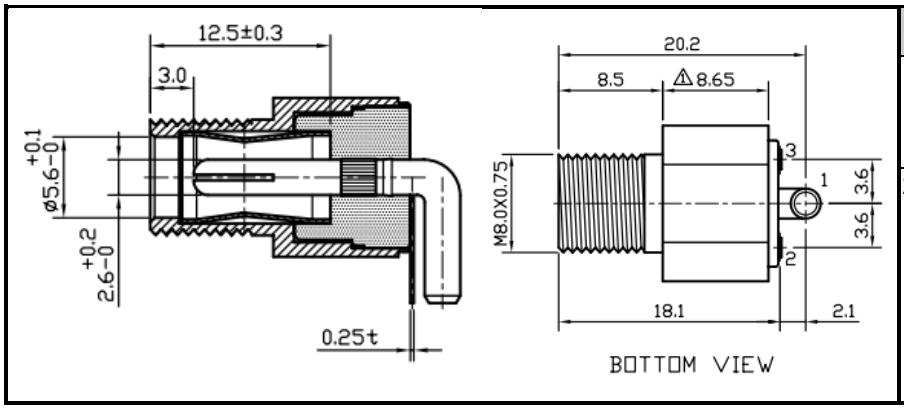
DC Jack Power Connector

Manufacturer: Shen Ming

MFG P/N: 655-125

ADLINK P/N: 20-920N0-0030

Location: DC1



Pin	Signal
1	Power
2	GND

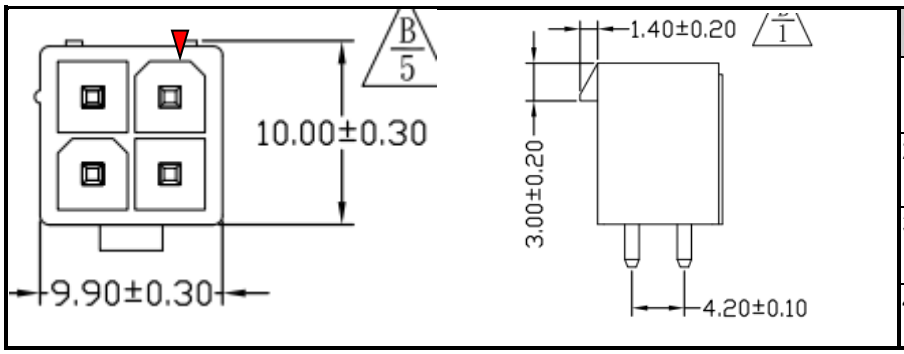
DC Input Power Connector

Manufacturer: DECA

MFG P/N: MPE101-76202P, Green

ADLINK P/N: 20-65710-2020

Location: DC2



Pin	Signal
1	GND
2	GND
3	PWR
4	PWR

5.4 RS-232/422/485

There are four COM ports designed on this board, Port 1 is designated for the SMT connector, while Port 2 can accommodate either a box header or an SMT connector based on the BOM option. Ports 3 and 4 are exclusively for wafer connectors, Ports 1 and 2 can be set to RS-232, 422, or 485 in BIOS menu, while Ports 3 and 4 only support RS-232.

Manufacturer: HIROSE

MFG P/N: DF13E-40DP-1.25V(52)

ADLINK P/N: 61-61000-2200

Location: COM1

Manufacturer: FOXCONN

MFG P/N: DM10151-H531-4F,TEAL

ADLINK P/N: 21-12P81-0090

Location: COM2

or

Manufacturer: FOXCONN

MFG P/N: DT10121-M5W3-4F,Teal

ADLINK P/N: 21-12P31-0090

Location: COM3 (co-lay with COM2)

5.4.1 RS-232/422/485 DB9 Connector Pin Definition

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#		

5.5 Digital Input/Output

There are 8 DI +8 DO on the wafer connector. DO signal is PH *P_+5V_S0” on the MB side, with an output current of 8mA. DI signal only has one pull down, 100k, on the MB side.

Manufacturer: HIROSE

MFG P/N: DF13E-40DP-1.25V(52)

ADLINK P/N: 61-61000-2200

Location: DIO1

5.6 M.2 Key-B

M.2 Key-B connector supports 304-size card and 2 USIM slots for two-SIM card situation. This connector only supports USB3.0+USB2.0 interface, and not PCIe.

5.7 M.2 Key-M

M.2 Key-M supports NVMe SSD and only PCIe GEN3 x2 speed along with 2280-size card.

5.8 M.2 Key-E

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

5.9 USB Connector

There are 3x USB 2.0 Ports + 1x USB 3.0 Gen 2 port on the front panel. The 3x USB 2.0 ports provide 0.5A current per port, while the USB 3.0 Gen 2 port provides 1A current. All ports have overcurrent protection. There is a USB2.0 wafer port available for USB dongle using.

5.10 SBC-FM Connector

The SBC-FM connector includes PCIe, USB 2.0, SMBus, and LPC interfaces.

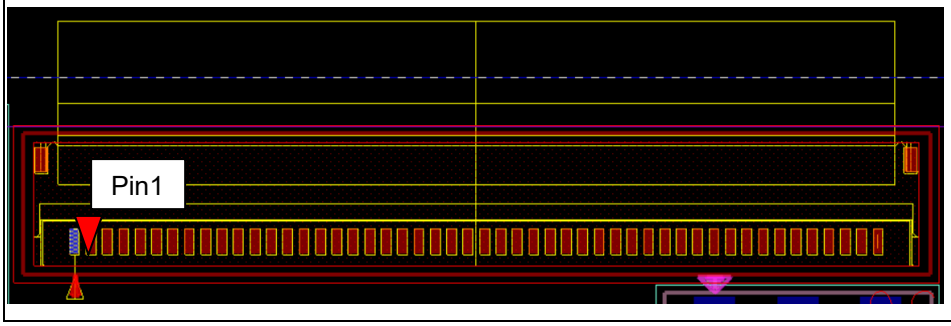
The SBC-FM connector is designed for an additional ADLINK function board. The function board connector is designed for ODM projects requiring function boards tailored to varying customer requirements.

Manufacturer: HIROSE

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

ADLINK P/N: 61-02010-0500

Location: AFM1



Pin	Signal
Follow the below table	

SBC-FM Connector Pin Definition					
Description	Signal Name	Pin#	Pin#	Signal Name	Description
GND	GND	1	27	PCH_CLK_REQ_P6_N	PCIE3 CLK Request
PCIe4 x4 (ALN not supported)	NC	2	28	NC	USB3.0 (ALN not supported)
	NC	3	29	NC	
	NC	4	30	NC	
	NC	5	31	NC	
	NC	6	32	U2_USB0_P	USB2.0
	NC	7	33	U2_USB0_N	
	NC	8	34	LPC_CLK	LPC
	NC	9	35	LPC_AD3	
	NC	10	36	LPC_AD2	
	NC	11	37	LPC_AD1	
	NC	12	38	LPC_AD0	
	NC	13	39	LPC_LFRAME#	
	NC	14	40	LPC_SERIRQ	
	NC	15	41	LPC_LRESET#	
	NC	16	42	PCIE_WAKE-L	PCIE Wake
	NC	17	43	PCH_SLP_S3_N	PCH_SLP3

PCIe4 CLK Request (ALN not supported)	NC	18	44	PCH_PLTRST-L_BUF	PCH_PLTRST
PCIe4 CLK (ALN not supported)	NC	19	45	SMB_CLK_S	SMB
	NC	20	46	SMB_DAT_S	
PCIe3 x1	X_PCIEX10_FM_TX_P	21	47	PCH_SMB_ALERT-L	
	X_PCIEX10_FM_TX_N	22	48	GND	GND
	X_PCIEX10_FM_RX_P	23	49	P_+3V3_A	3.3V PWR
	X_PCIEX10_FM_RX_N	24	50	P_+3V3_A	(Standby)
PCIe3 CLK	C_REFCLK_P6_100M_P	25			
	C_REFCLK_P6_100M_N	26			

5.11 SBC-FM Power Connector

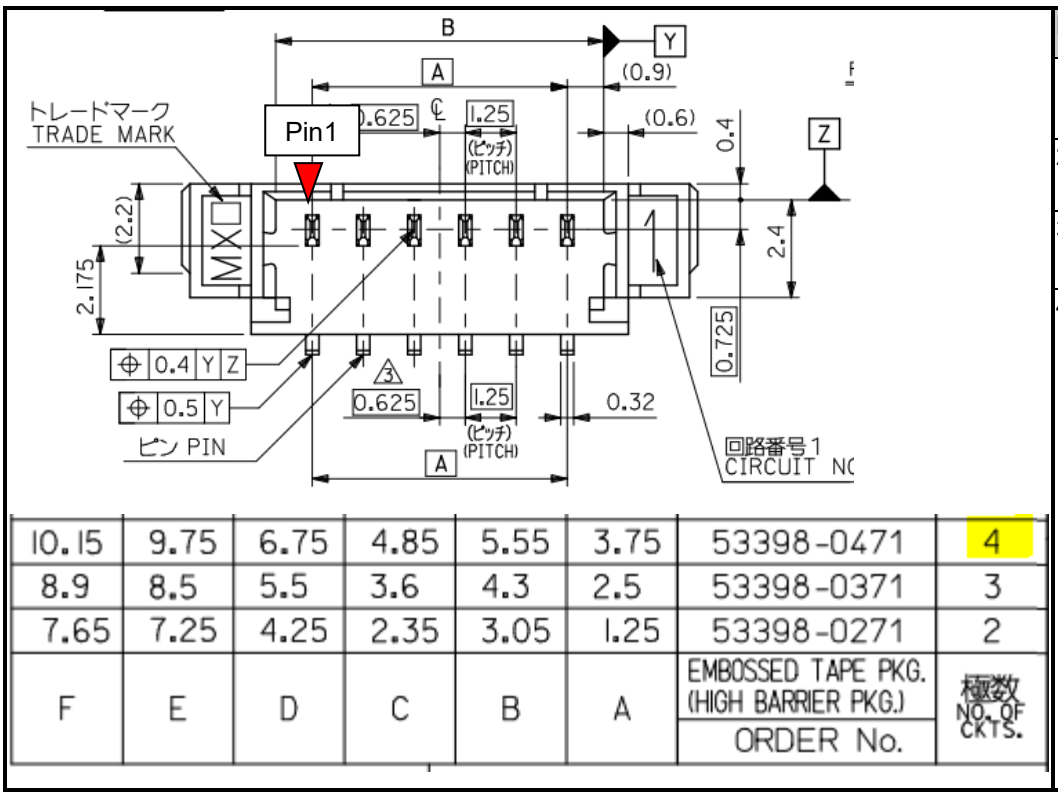
This connector provides DC In power to the SBC-FM board, with a maximum current of 2A.

Manufacturer: MOLEX

MFG P/N: 53398-0471, Natural

ADLINK P/N: 61-69J03-1040

Location: AFM2



Pin	Signal
1	P_+VIN_S
2	P_+VIN_S
3	GND
4	GND

5.12 Micro SIM

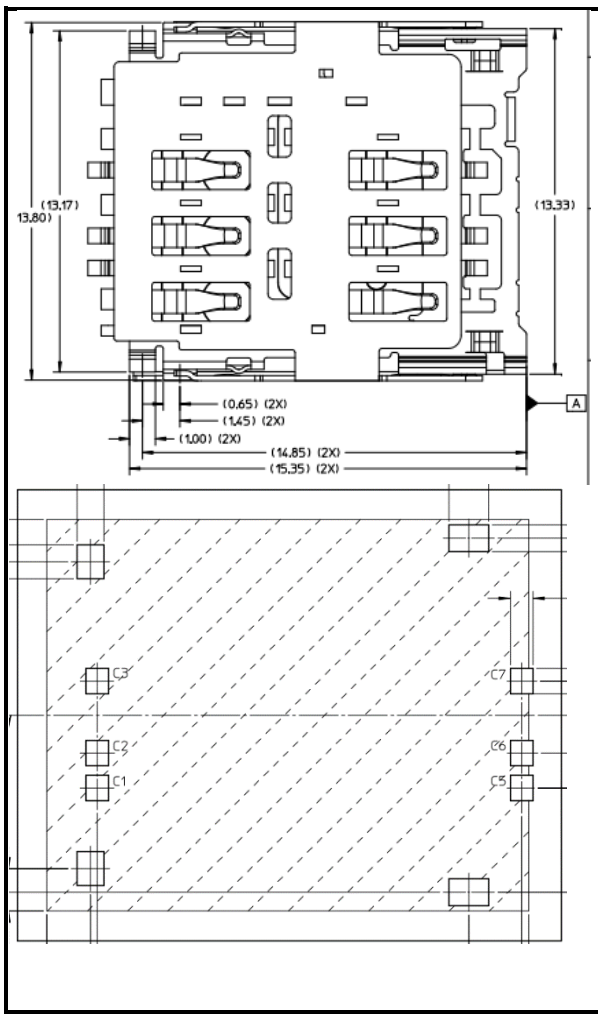
There are two SIM connectors for WWAN card (M.2 B Key).

Manufacturer: Molex

MFG P/N: 78800-0001, BLACK

ADLINK P/N: 61-E0013-0060

Location: M2B2, M2B3



Pin	Signal
1	SIM PWR
2	REST#
3	CLK
5	GND
6	VPP
7	DATA

5.13 Fan Connector

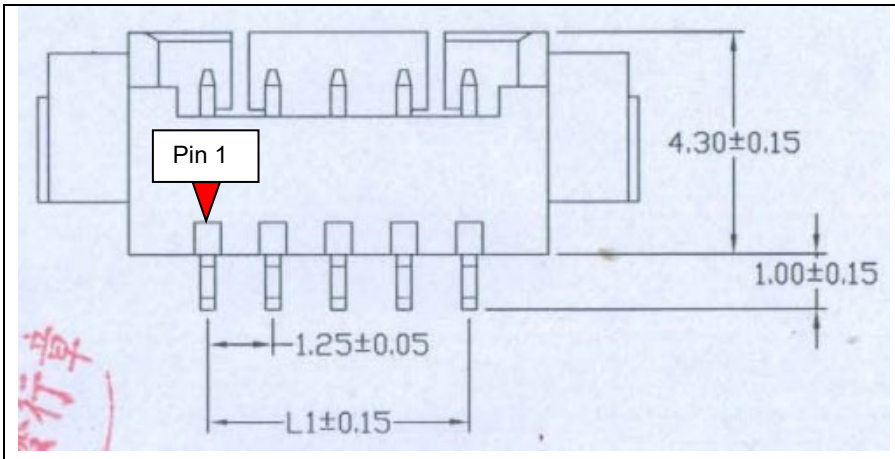
The fan connector provides a 5V CPU fan, with a maximum current of 1A.

Manufacturer: JVE

MFG P/N: 24W1125A-04M00-01T-1-CF01, Beige

ADLINK P/N: 61-6AJ0X-1040

Location: FAN1



Pin	Signal
1	GND
2	P_+5V_S0
3	FAN_FG
4	FAN_PWM

5.14 LCD Connector

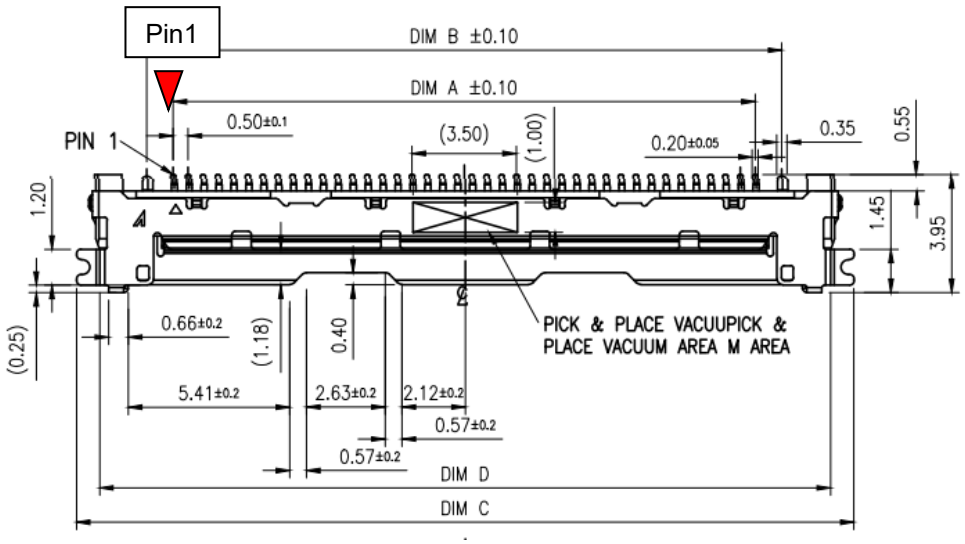
The LCD connector is based on BOM SKU. It can carry LVDS signal (2-channels) or EDP signal (4-channels) via one connector.

Manufacturer: ACES

MFG P/N: 50473-0400M-001

ADLINK P/N: 61-72005-0400

Location: LCD2



Pin	Signal
1	HPD
2	BKLT_EN
3	BKLT_CTL
4	LVDS_I2C_CLK
5	LVDS_I2C_DAT
6	GND
7	G_LVDS_B_TX3_P
8	G_LVDS_B_TX3_N
9	G_LVDS_B_CLK_P
10	G_LVDS_B_CLK_N
11	GND
12	G_LVDS_B_TX2_P
13	G_LVDS_B_TX2_N
14	G_LVDS_B_TX1_P
15	G_LVDS_B_TX1_N
16	GND
17	G_LVDS_B_TX0_P
18	G_LVDS_B_TX0_N
19	GND
20	LVDS_TX3_EDP_TX3_P
21	LVDS_TX3_EDP_TX3_N
22	GND
23	LVDS_CLK_EDP_TX2_P
24	LVDS_CLK_EDP_TX2_N
25	GND
26	LVDS_TX2_EDP_TX1_P
27	LVDS_TX2_EDP_TX1_N
28	GND
29	LVDS_TX1_EDP_TX0_P
30	LVDS_TX1_EDP_TX0_N
31	GND
32	LVDS_TX0_EDP_AUX_P

	33	LVDS_TX0_EDP_AUX_N
	34	GND
	35	GND
	36	GND
	37	P_+LCDBL_S
	38	P_+LCDBL_S
	39	P_+LCDBL_S
	40	P_+LCDVDDCN_S

5.15 DB40 Connector

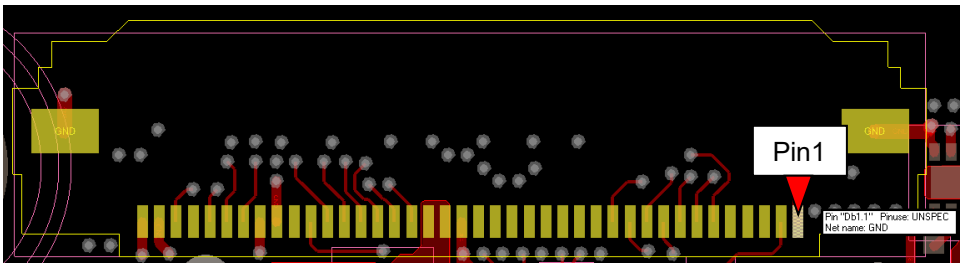
The DB40 connector is used for internal debug purposes.

Manufacturer: ACES

MFG P/N: 50520-04001-001

ADLINK P/N: 61-02000-0400

Location: DB1



Pin	Signal
1	GND
2	PCH_RSMRST_R_N
3	NC
4	NC
5	NC
6	PCH_SLP_S5_N
7	PCH_SLP_S4_N
8	PCH_SLP_S3_N
9	SYS_PWROK
10	PCH_PLTRST-L
11	DB40_RSTBTN-L
12	PCH_PWRBTN-L
13	NC
14	NC
15	NC
16	NC
17	NC
18	NC
19	NC
20	NC
21	GND
22	P_+3V3_A
23	P_+3V3_A
24	LPC_AD0

	25	LPC_AD1
	26	LPC_AD2
	27	LPC_AD3
	28	LPC_LFRAME#
	29	LPC_CLK
	30	PCH_PLTRST-L
	31	NC
	32	GND
	33	P_+3V3_S0
	34	DB40_SPI_CLK
	35	DB40_SPI_MOSI
	36	DB40_SPI_MISO
	37	NC
	38	DB40_SPI_CS0-L
	39	GND
	40	P_+3V3_SPI_A

6 BIOS Setup

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:

- Press [Delete] or [Del] during POST (Power-On-Self-Test)

Main	**Advanced**	**Chipset**
Sets up the system time/date and displays the system information: 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 Panel Configuration Network Stake Configuration	Memory Configuration PCI Express Configuration SATA Configuration USB Configuration Security Configuration
Security	**Boot**	**Save & Exit**
Changes or clears the administrator/user password for the system Password Description User Password Secure Boot	Configures the boot settings and boot priority for available devices Boot Configuration Fixed Boot Order Priorities	Exits the BIOS Setup Utility while saving or discard the changes made 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

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	Description
BIOS Information	
BIOS Vendor	American Megatrends Inc.
BIOS Version	1.00.10
Build Date	04/23/2024
MRC Version	0.0.4.74
GOP Version	21.0.1063
ME FW Version	16.50.10.1351
System Information	
Project Name	SBC35-ALN
CPU Board Version	A2
CPU Brand String	Intel(R) N97
CPU Frequency	2.00GHz
Total Memory	8192 MB (DDR5)
Memory Frequency	4800 MHz
PCH SKU	N Premium SKU
Access Level	Administrator

6.3 Advanced Menu

6.3.1 Advanced > CPU Configuration

Feature	Option	Description
ID		0xB06E0
Brand String		Intel(R) N97
Microcode Revision		15
L1 Data Cache		32 KB x 4
L1 Instruction Cache		64 KB x 4
L2 Cache		2048 KB
L3 Cache		6 MB
VMX		Supported
SMX/TXT		Not Supported
Active Efficient-cores	All, 3, 2, 1	Number of E-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores.
Intel(R) SpeedStep(tm)	Disabled, Enabled	Allows more than two frequency ranges to be supported.
Turbo Mode	Disabled, Enabled	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
Intel(R) Speed Shift Technology	Disabled, Enabled	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware-controlled P-states.
Intel (VMX) Virtualization Technology	Disabled, Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
VT-d	Enabled, Disabled	VT-d capability
C states	Disabled, Enabled	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

6.3.2 Advanced > Power Management

Feature	Option	Description
Enable Hibernation	Disabled, Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
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.
State After G3	S0 State, S5 State	Specify what state to go to when power is re-applied after a power failure (G3 state).

6.3.3 Advanced > Hardware Monitor

Feature	Option	Description
Board Temperature 1	N/A	
Board Temperature 2	N/A	
Board Fan Speed	N/A	
Fan1 Mode	Manual mode, SMART FAN IV, Auto Mode	Fan control mode select
Manual PWM	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x00, 0x01]	Fan will work with this Manual PWM Value (0 to 255 for 0% to 100%)
Temperature 1	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x00, 0x01]	The value of temperature1.
Percent of full FD/RPM 1	[Max-Value, Min-Value, Step-Value] = [0x64, 0x00, 0x01]	The percent of full Fan Duty/RPM when temperature is T1.
Temperature 2	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x00, 0x01]	The value of temperature2.
Percent of full FD/RPM 2	[Max-Value, Min-Value, Step-Value] = [0x64, 0x00, 0x01]	The percent of full Fan Duty/RPM when temperature is T2.
Temperature 3	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x00, 0x01]	The value of temperature3.
Percent of full FD/RPM 3	[Max-Value, Min-Value, Step-Value] = [0x64, 0x00, 0x01]	The percent of full Fan Duty/RPM when temperature is T3.
Temperature 4	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x00, 0x01]	The value of temperature4.
Percent of full FD/RPM 4	[Max-Value, Min-Value, Step-Value] = [0x64, 0x00, 0x01]	The percent of full Fan Duty/RPM when temperature is T4.
Critical temperature	[Max-Value, Min-Value, Step-Value] = [0xFF, 0x00, 0x01]	Fan temperature critical value.
VCORE	N/A	
VIN0	N/A	
VIN1	N/A	
VIN2	N/A	
AVSB	N/A	
VBAT	N/A	

6.3.4 Advanced > BIOS Watchdog Timer

Feature	Option	Description
BIOS POST Watchdog	Disabled, Second Mode, Minute Mode	1. Disable: Disable Watchdog Timer; 2. Second Mode: Enable Watchdog Timer in second mode; 3. Minute Mode: Enable Watchdog Timer in minute mode.

6.3.5 Advanced > Onboard Device Configuration

Feature	Option	Description
> Serial Port 1 Configuration		
COM1 Mode Control	RS232, RS422, RS485	Select COM1 mode. RS232, RS422, RS485
> Serial Port 2 Configuration		
COM2 Mode Control	RS232, RS422, RS485	Select COM2 mode. RS232, RS422, RS485
> Serial Port 3 Configuration		
> Serial Port 4 Configuration		
COM1 TX termination	Enable, Disable	COM1 TX termination Enable/Disable
COM1 RX termination	Enable, Disable	COM1 RX termination Enable/Disable
COM2 TX termination	Enable, Disable	COM2 TX termination Enable/Disable
COM2 RX termination	Enable, Disable	COM2 RX termination Enable/Disable
LAN #1	Enabled, Disabled	Enable/Disable
LAN #2	Enabled, Disabled	Enable/Disable

6.3.6 Advanced > Serial Console Redirection

Feature	Option	Description
Console Redirection	Port Is Disabled	
Console Redirection	Disabled, Enabled	Console Redirection Enable or Disable.

6.3.6.1. Advanced > Serial Console Redirection > Serial Console Redirection Settings

Feature	Option	Description
Terminal Type	VT100, VT100Plus, VT-UTF8, ANSI	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.
Bits per second	9600, 19200, 38400, 57600, 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7, 8	Data Bits
Parity	None, Even, Odd, Mark, Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not
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 from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop
VT-UTF8 Combo Key Support	Disabled, Enabled	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals
Recorder Mode	Disabled, Enabled	With this 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.

6.3.7 Advanced > TPM 2.0 Configuration

Feature	Option	Description
Firmware Version:		600.18
Vendor:		INTC
Security Device Support	Disable, Enable	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.
Active PCR banks		
Available PCR banks		
SHA256 PCR Bank	Enable, Disable	Enable or Disable SHA256 PCR Bank
SHA384 PCR Bank	Enable, Disable	Enable or Disable SHA384 PCR Bank
SHA_256 PCR Bank	Enable, Disable	Enable or Disable SHA_256 PCR Bank
Pending operation	None, TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Platform Hierarchy	Disabled, Enabled	Enable or Disable Platform Hierarchy
Storage Hierarchy	Disabled, Enabled	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	Disabled, Enabled	Enable or Disable Endorsement Hierarchy
Physical Presence Spec Version	1.2, 1.3	Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.
TPM 2.0 Interface Type	CRB,TIS	Select the Communication Interface to TPM 20 Device
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

6.3.8 Advanced > Panel Configuration

Feature	Option	Description
eDP/LVDS	Disabled, Enabled	Enable/Disable eDP/LVDS
LFP Panel Type	VBIOS Default, 640x480, 800x600, 1024x768, 1280x1024, 1400x1050 LVDS1, 1400x1050 LVDS2, 1600x1200, 1366x768, 1680x1050, 1920x1200, 1440x900, 1600x900, 1024x768, 1280x800, 1920x1080, 2048x1536	Select LFP panel used by Internal Graphics Device by selecting the appropriate setup item.

6.3.8.1. Advanced > Panel Configuration > NXP Configuration

Feature	Option	Description
Data format and Color Depth	VESA 24 bpp, JEIDA 24 bpp, JEIDA/VESA 18 bpp	Select COM1 mode. RS232, RS422, RS485
LVDS Output Mode	Single LVDS bus, Dual LVDS Bus	Select data format and color depth
DE Polarity	Active High, Active Low	Select DE polarity
Vsync Polarity	Active High, Active Low	Select Vsync polarity
Hsync Polarity	Active High, Active Low	Select Hsync polarity
Spreading Depth	No Spreading, 0.5%, 1.0%, 1.5%, 2.0%, 2.5%	Select clock frequency center spreading depth.

6.3.9 Advanced > Network Stack Configuration

Feature	Option	Description
Network Stack	Enable, Disable	Enable/Disable UEFI Network Stack
IPv4 PXE Support	Enable, Disable	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available
IPv4 HTTP Support	Enable, Disable	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available
IPv6 PXE Support	Enable, Disable	Enable/Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available
IPv6 HTTP Support	Enable, Disable	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 ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value
Media detect count	1	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value

6.4 Chipset

6.4.1 Chipset > Memory Configuration

Feature	Description
Memory RC Version	0.0.4.74
Memory Frequency	4800 MHz
tCL-tRCD-tRP-tRAS	40-39-39-77
MC 0 Ch 0 DIMM 0	Populated & Enabled
Size	8192 MB (DDR5)
Number of Ranks	1
Manufacturer	Transcend

6.4.2 Chipset > PCI Express Configuration

Feature	Option	Description
PCI Express Root Port 3 ,4, 7, 9, 10, 11	Disabled, Enabled	Control the PCI Express Root Port.
PCIe Speed*	Auto, Gen1, Gen2, Gen3	Configure PCIe Speed
Detect Non-Compliance Device*	Disabled, Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

6.4.3 Chipset > SATA Configuration

Feature	Option	Description
SATA Controller(s)	Enabled, Disabled	Enable/Disable SATA Device.
Serial ATA Port 1	Empty	
Software Preserve	Unknown	
Port 1	Disabled, Enabled	Enable or Disable SATA Port

6.4.4 Chipset > USB Configuration

Feature	Option	Description
USB Port Disable Override	Disabled, Select Per-Pin	Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.
USB SS Physical Connector #0	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB HS Physical Connector #0	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB HS Physical Connector #3	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB HS Physical Connector #4	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB HS Physical Connector #5	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB HS Physical Connector #6	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.
USB HS Physical Connector #7	Disabled, Enabled	Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.

6.4.5 Chipset > Security 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 flash.

6.5 Security

Feature	Option	Description
Administrator Password		Set Administrator Password
User Password		Set User Password
► Secure Boot Menu		Secure Boot Configuration

6.6 Boot

6.6.1 Boot > Boot Configuration

Feature	Option	Description
Setup Prompt Timeout	[Max-Value, Min-Value, Step-Value] = [0x0008, 0x0001, 0x0001]	Number of seconds to wait for setup activation key. The maximum value is 8
Bootup NumLock State	On, Off	Select the keyboard NumLock state
Quiet Boot	Disabled, Enabled	Enables or disables Quiet Boot option
Fast Boot	Disabled, Enabled	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot option.

6.6.2 Boot > Fixed Boot Order Priorities

Feature	Option	Description
Boot Option #1	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #2	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #3	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #4	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #5	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #6	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #7	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #8	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #9	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #10	Hard Disk, NVME, CD/DVD, SD, USB Hard Disk, USB CD/DVD, USB Key:UEFI: SanDisk, Partition 1, USB Floppy, USB Lan, Network, Disabled	Sets the system boot order
Boot Option #1*	Hard Disk, 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 #2*	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 #3*	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*	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 #5*	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 #6*	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 #7*	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 #8*	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 #9*	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 #10*	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

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		Attempts to launch EFI Shell application (Shell.efi) from one of the available filesystem devices

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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.

Getting Service

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