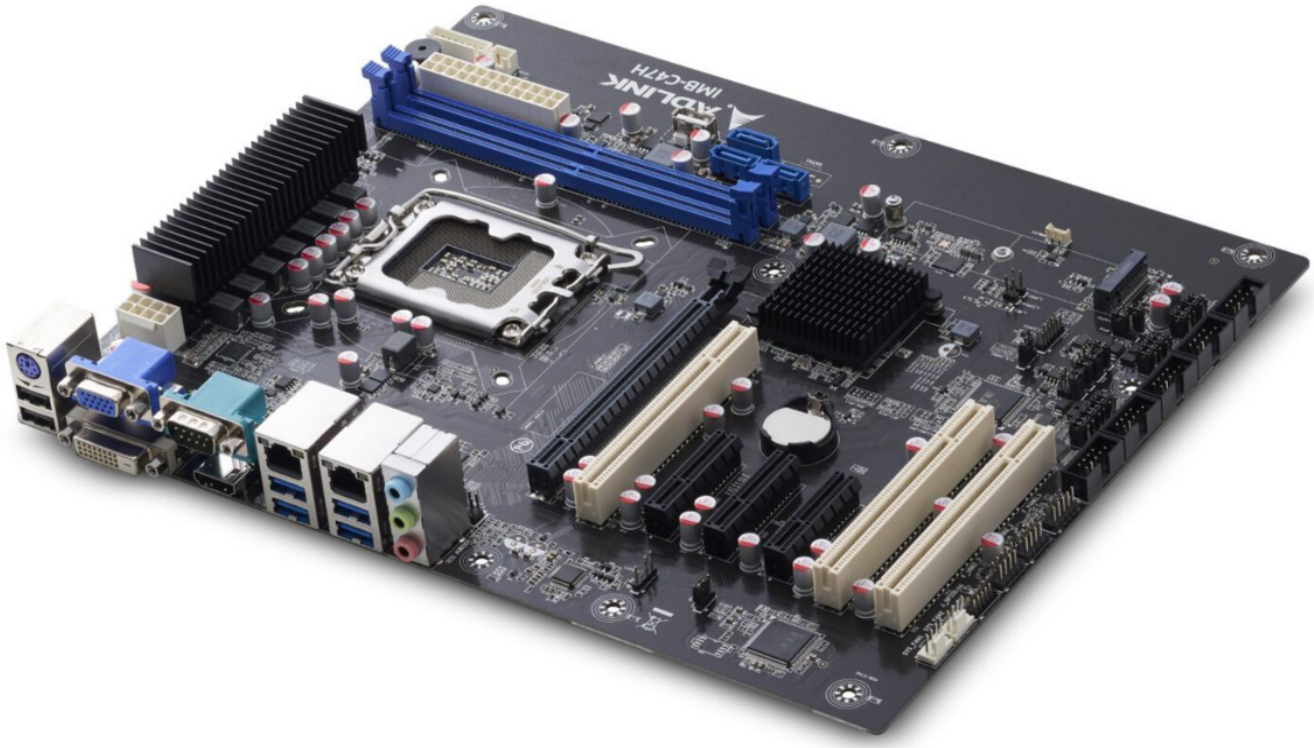
IMB-C47H

User's Manual

ATX Motherboard with Intel® Core™ 200S Series
and 14th/13th/12th Gen Core™ Processors and Intel® H610 Chipset



Manual Rev.: Rev. 1.3
Revision Date: October 27, 2026
Part Number: 50M-13020-1030

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Preface

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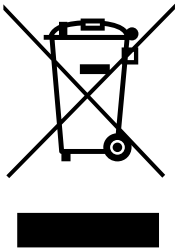
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Revision History

Revision	Description	Date	By
1.0	Initial release	2024-10-15	AL
1.1	Introduction and specifications updated	2025-01-20	AL
1.2	Specifications and connector pinouts updated	2025-03-14	AL
1.3	Intel processors, CPU list, specifications, block diagram, and onboard headers updated	2026-10-27	AL

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1 Introduction

ADLINK IMB-C47H ATX is an industrial motherboard supporting Intel® Core™ 200S Series and 14/13/12th Gen Core™, an Intel® H610 Chipset, and 7 PCIe expansion slots to provide a cost-competitive embedded computing solution. It includes high-speed data transfer interfaces such as PCIe 4.0, USB 3.0, and SATA 6 Gb/s (SATA III), and dual-channel DDR4 3200 MHz or DDR5 4400 MHz RAM (optional) for industrial automation applications. With industrial-grade I/O port design, the IMB-C47H offers a significant competitive advantage for embedded computing applications in terms of device compatibility, durable connectivity, and extreme environment readiness.

Table 1: IMB-C47H Series

Model Name	M.2 M-Key signal
IMB-C47H	SATA
IMB-C47H/NVMe	NVMe

1.1 Packing List

- IMB-C47H ATX motherboard
- Rear I/O shield

1.2 Optional Accessories

- CPU cooler for 65W CPU (Part Number: 32-20976-0000-A0)
- 2-port USB2.0 cable with bracket (Part Number: 30-25010-3010)
- 4-port USB 2.0 cable with bracket (Part Number 30-25009-3000)
- SATA cable with bracket (Part Number: 30-10057-7000)
- 2-port COM cable (L=450mm) with bracket (Part Number: 30-25003-3000)
- 2-port COM cable (L=600mm) with bracket (Part Number: 30-25003-5000-A0)

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2 Specifications

2.1 Core System

- **CPU:**

Family	Number	CPU Core	Frequency(GHz)	Cache(MB)	Power	Since BIOS
Bartlett Lake-S	273PE	12	2.3GHz	36MB	65	2.01.10
Bartlett Lake-S	273PTE	12	1.4GHz	36MB	45	2.01.10
Bartlett Lake-S	253PE	10	2.5GHz	33MB	65	2.01.10
Bartlett Lake-S	253PTE	10	1.8GHz	33MB	45	2.01.10
Bartlett Lake-S	223PE	8	2.9GHz	24MB	65	2.01.10
Bartlett Lake-S	223PTE	8	2.3GHz	24MB	45	2.01.10
Bartlett Lake-S	213PE	8	2.7GHz	24MB	65	2.01.10
Bartlett Lake-S	213PTE	8	2.1GHz	24MB	45	2.01.10
Bartlett Lake-S	251E	24	2.1 GHz	36MB	65	2.00.10
Bartlett Lake-S	251TE	24	1.4 GHz	36MB	45	2.00.10
Bartlett Lake-S	221E	14	2.7 GHz	24MB	65	2.00.10
Bartlett Lake-S	221TE	14	1.8 GHz	24MB	45	2.00.10
Bartlett Lake-S	211E	10	2.7 GHz	20MB	65	2.00.10
Bartlett Lake-S	211TE	10	1.7 GHz	20MB	45	2.00.10
Bartlett Lake-S	201E	4	3.6 GHz	12MB	60	2.00.10
Bartlett Lake-S	201TE	4	2.9 GHz	12MB	45	2.00.10
Raptor Lake-S Refresh	i9-14900T	24	1.1GHz	36MB	35	1.00.10
Raptor Lake-S Refresh	i9-14900	24	2.0GHz	36MB	65	1.00.10
Raptor Lake-S Refresh	i7-14700T	20	1.3GHz	33MB	35	1.00.10
Raptor Lake-S Refresh	i7-14700	20	2.1GHz	33MB	65	1.00.10
Raptor Lake-S Refresh	i5-14500T	14	1.7GHz	24MB	35	1.00.10
Raptor Lake-S Refresh	i5-14500	14	2.6GHz	24MB	65	1.00.10
Raptor Lake-S Refresh	i5-14400	10	2.5GHz	20MB	65	1.00.10
Raptor Lake-S Refresh	i3-14100T	4	2.7GHz	12MB	35	1.00.10
Raptor Lake-S Refresh	i3-14100	4	3.5GHz	12MB	60	1.00.10
Raptor Lake-S	i9-13900E	24	1.8GHz	36MB	65	1.00.10
Raptor Lake-S	i9-13900	24	2.0GHz	36MB	65	1.00.10
Raptor Lake-S	i7-13700E	16	1.9GHz	30MB	65	1.00.10
Raptor Lake-S	i7-13700	16	2.1GHz	30MB	65	1.00.10
Raptor Lake-S	i7-13700TE	16	1.1GHz	30MB	35	1.00.10
Raptor Lake-S	i7-13700T	16	1.4GHz	30MB	35	1.00.10
Raptor Lake-S	i5-13600	14	2.0GHz	24MB	65	1.00.10
Raptor Lake-S	i5-13500E	14	2.4GHz	24MB	65	1.00.10
Raptor Lake-S	i5-13500	14	2.5GHz	24MB	65	1.00.10
Raptor Lake-S	i5-13500T	14	1.6GHz	24MB	35	1.00.10
Raptor Lake-S	i5-13400	10	1.8GHz	20MB	65	1.00.10
Raptor Lake-S	i3-13100E	4	3.3GHz	12MB	60	1.00.10
Raptor Lake-S	i3-13100	4	3.4GHz	12MB	60	1.00.10

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Raptor Lake-S	i3-13100T	4	2.5GHz	12MB	35	1.00.10
Alder Lake-S	i9-12900E	16	2.3GHz	30MB	65	1.00.10
Alder Lake-S	i9-12900	16	2.4GHz	30MB	65	1.00.10
Alder Lake-S	i7-12700E	12	2.1GHz	25MB	65	1.00.10
Alder Lake-S	i7-12700	12	1.6GHz	25MB	65	1.00.10
Alder Lake-S	i7-12700TE	12	1.4GHz	25MB	35	1.00.10
Alder Lake-S	i5-12500	6	3.0GHz	18MB	65	1.00.10
Alder Lake-S	i5-12500E	6	2.9GHz	18MB	65	1.00.10
Alder Lake-S	i5-12400	6	2.5GHz	18MB	65	1.00.10
Alder Lake-S	i3-12100E	4	3.2GHz	12MB	60	1.00.10
Alder Lake-S	i3-12100	4	3.3GHz	12MB	60	1.00.10
Alder Lake-S	i3-12100TE	4	2.1GHz	12MB	35	1.00.10
Alder Lake-S	G7400TE	2	3.0GHz	6MB	35	1.00.10

- **Chipset:** Intel® H610 Express Chipset
- **Memory:** 2x 288-pin dual-channel DDR4 3200 MHz, up to 64 GB
  2x 288-pin dual-channel DDR5 4800 MHz, up to 96 GB
- **BIOS:** AMI® UEFI BIOS, 256 Mb SPI Flash Memory
- **Hardware Monitor:** CPU voltage
  - +3.3V voltage
  - +5V voltage
  - +12V voltage
  - CPU temperature
  - System temperature
  - CPU fan speed
  - System fan speed

2.2 I/O Interface

- **Expansion slots:**
  - 1x PCIe Gen4 x16
  - 3x PCIe x4 (Support PCIe Gen3 x2 signal, slot3 co-lay with M.2 M-key 2242/2280, BOM selection)
    - IMB-C47H: 3x PCIe x4 slot
    - IMB-C47H/NVMe: 2x PCIe x4 slot
  - 3x PCI
- **SATA:** 4x SATA 6.0 Gb/s connectors, SATA1 co-lay with M.2 M-key 2242/2280, BOM selection
  - IMB-C47H: 3x SATA3.0 connectors
  - IMB-C47H/NVMe: 4x SATA3.0 connectors
- **USB:**
  - 4x USB 3.0 connector (rear)
  - 2x USB 2.0 connector (rear)

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  - 4x USB 2.0 (via pin headers, 1x co-lay with vertical Type A)
- **COM:**
  - 4x RS-232 (COM1 by DB9/M, others via headers)
  - 2x RS-232/485 (via headers)
- **PS/2 Combo Port:** 1x PS/2 keyboard/mouse pin header
- **DIO:** 8-bit GPIO
- **TPM:** Support Intel PTT
- **M.2 connectors**:
  - 1x M.2 M-key 2242/2280 (supports SATA/NVMe SSD, BOM selection)
    - IMB-C47H: SATA SSD
    - IMB-C47H/NVMe: NVMe SSD

2.3 Video

Supports four independent displays:

- 1x DVI-D (DVI-I), max resolution up to 1920x1200@60Hz
- 1x HDMI® 1.4b, max resolution up to 4096x2160@30Hz
- 1x VGA, max resolution up to 1920x1200@60Hz

2.4 Audio

- **Audio Codec:** Realtek® ALC897
- **Interfaces**: 1x Mic-in, 1x Line-in, and 1x Line-out connectors (rear)

2.5 LAN

- **LAN1:** Intel® I219-V via RJ45 connector, with 10/100/1000 Mbps
- **LAN2:** Intel® I226-V via RJ45 connector, with 10/100/1000 Mbps

2.6 Temperatures

- **Operating Temperature:** 0°C to 60°C
- **Storage Temperature:** -20°C to 75°C

2.7 Humidity

- 60° C at 95% RH, non-condensing

2.8 Certificate (EMC)

- CE/FCC Class A

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2.9 Form Factor

- **ATX**: 305 mm x 244 mm (W x L)

2.10 Operating Systems

- Microsoft® Windows® 10, 64-bit
- Microsoft® Windows® 11, 64-bit

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2.11 Functional Block Diagram

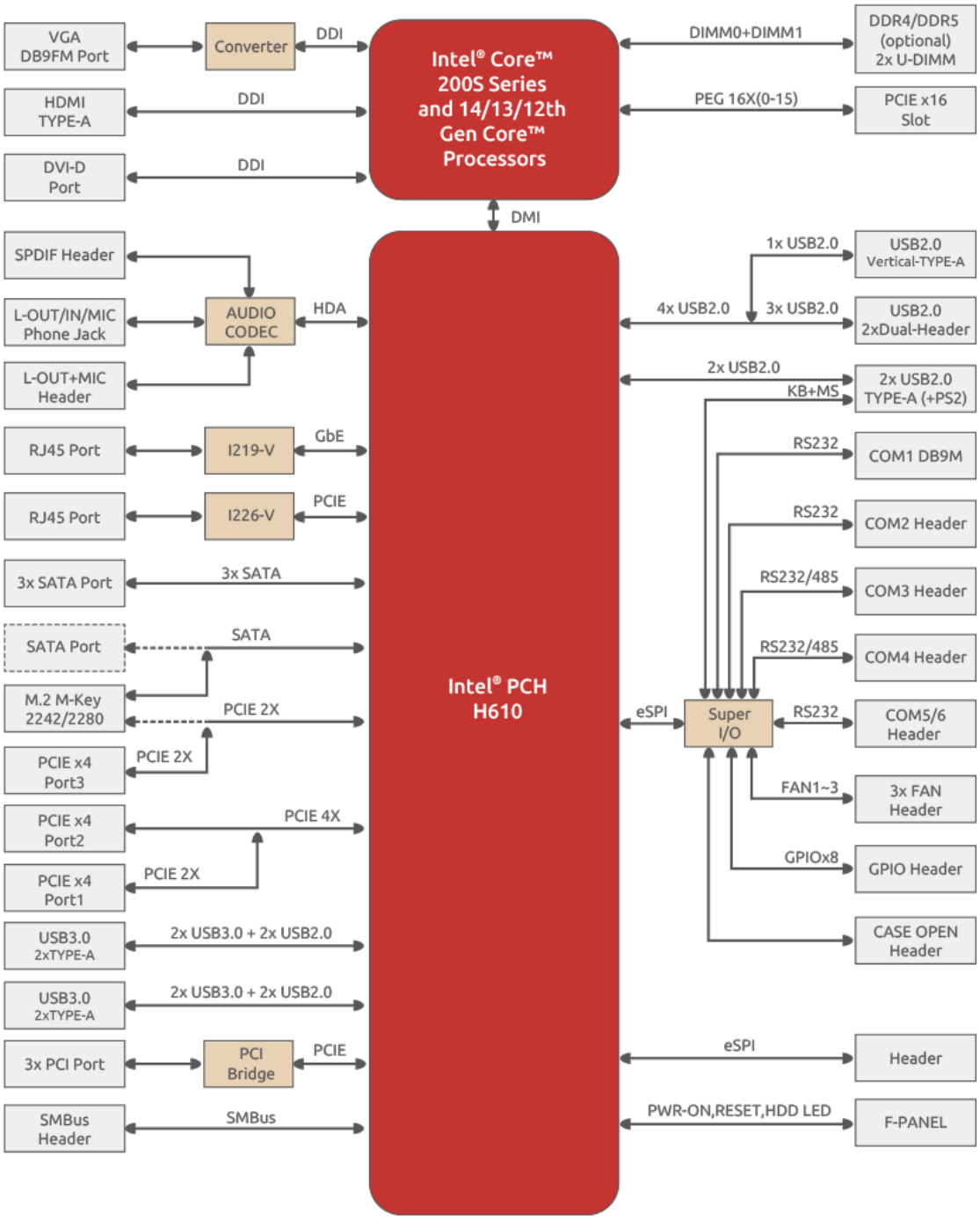


Figure 1: Functional block diagram

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3 Mechanical Layout

3.1 I/O Panel Connector Locations

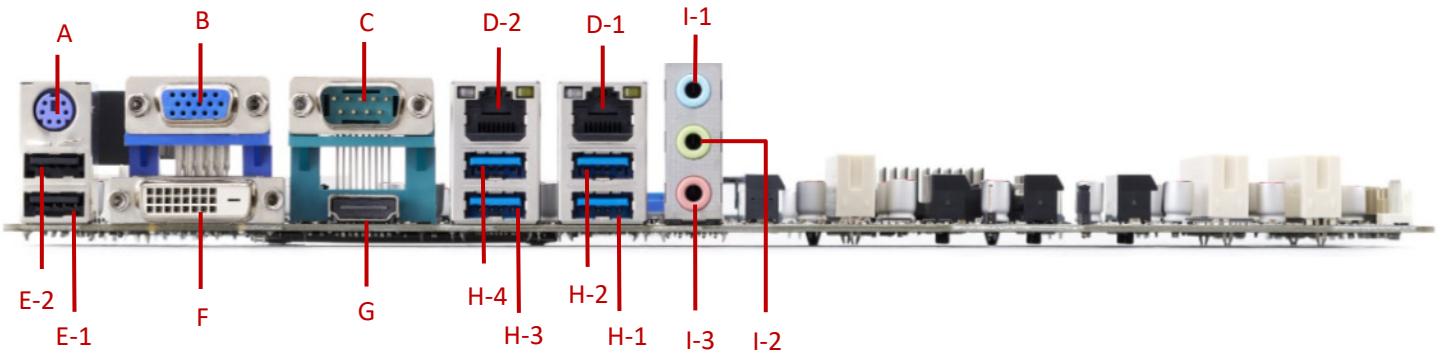


Figure 2: I/O panel connector locations

Table 2: I/O panel connector definitions

Item	Description	Description
A	PS/2_USB1 (PS/2)	PS/2 Connector (Keyboard & Mouse)
B	DVI_VGA1 (VGA)	VGA DB15 Connector
C	COM1	COM1 Connector
D-1	RJ45_USB1 (LAN1)	GBE LAN RJ45 Connector1
D-2	RJ45_USB2 (LAN2)	GBE LAN RJ45 Connector2
E-1	PS/2_USB1 (USB1)	USB2.0 TYPE-A Connector
E-2	PS/2_USB1 (USB2)	USB2.0 TYPE-A Connector
F	DVI_VGA1 (DVI-D)	DVI-I 24+4P/F Connector (Support DVI-D)
G	HDMI1	HDMI TYPE-A Connector
H-1	RJ45_USB1 (USB1)	USB3.0 TYPE-A Connector1
H-2	RJ45_USB1 (USB2)	USB3.0 TYPE-A Connector2
H-3	RJ45_USB2 (USB3)	USB3.0 TYPE-A Connector3
H-4	RJ45_USB2 (USB4)	USB3.0 TYPE-A Connector4
I-1	AUDIO1 (BLUE)	Line-In 3.5mm Jack
I-2	AUDIO1 (GREEN)	Line-Out 3.5mm Jack
I-3	AUDIO1 (PINK)	MIC-In 3.5mm Jack

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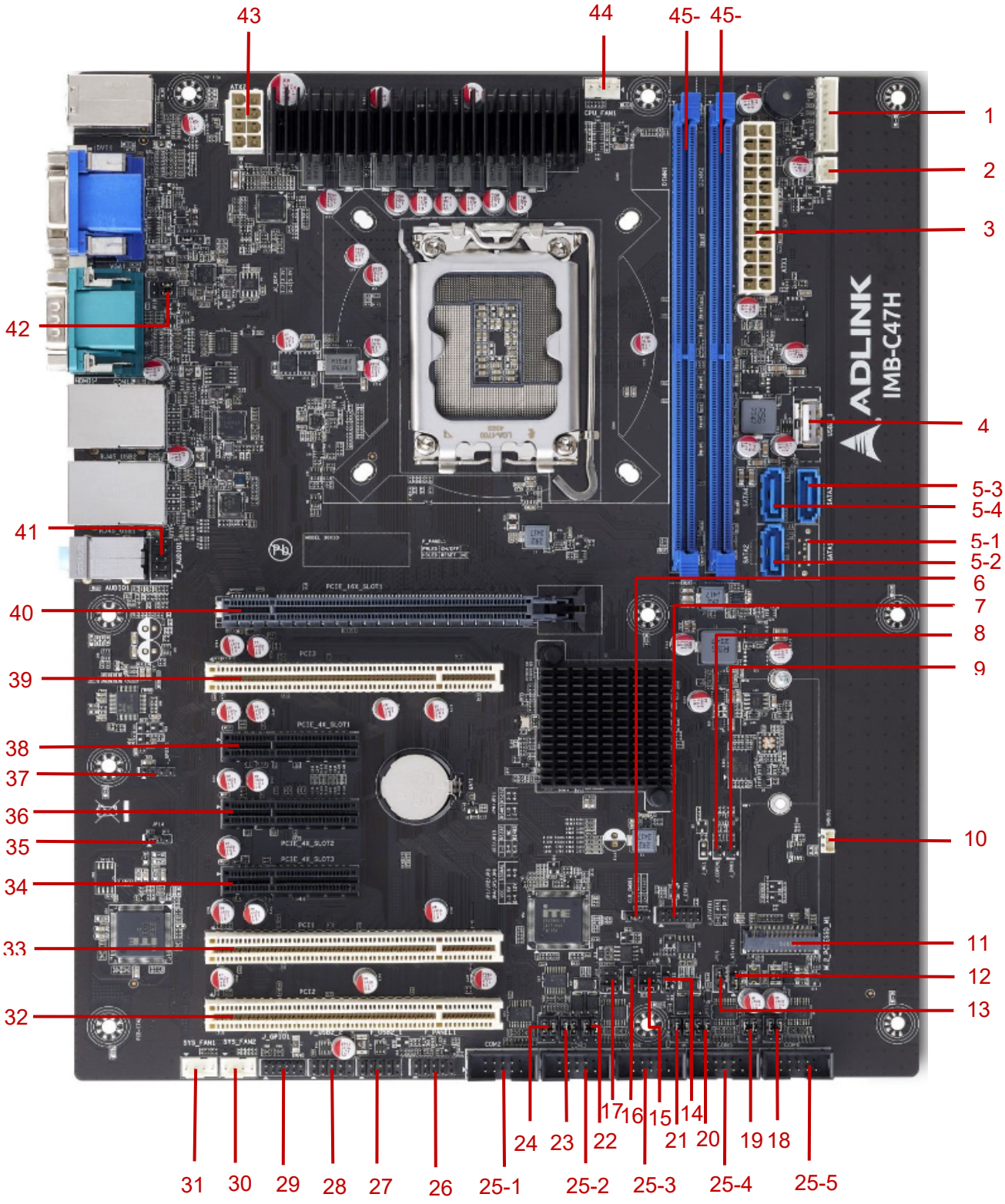


Figure 3: Onboard connector – header and jumper locations

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Table 3: Onboard connector – header and jumper definitions

Item	Description	Description
1	VOLT1	Power Monitor Wafer
2	PSON1	Power On Wafer
3	ATX1	ATX 24P Power Input Connector
4	USB2_1	USB2.0 Internal Vertical TYPE-A Connector
5-1	SATA1	SATA3.0 Connector1, IMB-C47H/NVMe only
5-2	SATA2	SATA3.0 Connector2
5-3	SATA3	SATA3.0 Connector3
5-4	SATA4	SATA3.0 Connector4
6	CLR_CMOS1	CMOS Clear Select Jumper
7	J_ESPI1	ESPI Header
8	J_COPEN1	Case Open Header
9	J_DNX1	DNX Force Reload Disable/Enable Select Jumper
10	SMBUS1	SMBus Wafer
11	M.2_SSD_M1	M.2 M-Key 2242/2280 (Supports SATA/NVMe SSD, BOM selection) • IMB-C47H: SATA SSD • IMB-C47/NVMe: NVMe SSD
12	J_AT/ATX1	AT or ATX Select Jumper
13	JP19	Watch Dog Reset Enable/Disable Select Jumper
14	JP12	COM4 RS485 Signal 120Ω Resistive Termination Select Jumper
15	JP10	COM4 RS232/RS485 Select Jumper1
16	JP9	COM3 RS485 Signal 120Ω Resistive Termination Select Jumper
17	JP7	COM3 RS232/RS485 Select Jumper1
18	JP6	COM6 DCD/5V+ RI/12V Select Jumper
19	JP5	COM5 DCD/5V+ RI/12V Select Jumper
20	JP11	COM4 RS232/RS485 Select Jumper2
21	JP4	COM4 DCD/5V+ RI/12V Select Jumper
22	JP8	COM3 RS232/RS485 Select Jumper2
23	JP3	COM3 DCD/5V+ RI/12V Select Jumper
24	JP2	COM2 DCD/5V+ RI/12V Select Jumper
25-1	COM2	COM2 Headers
25-2	COM3	COM3 Headers
25-3	COM4	COM4 Headers
25-4	COM5	COM5 Headers
25-5	COM6	COM6 Headers
26	F_PANEL1	Front Panel Header
27	F_USB2_1	Front Dual-USB2.0 Header
28	F_USB2_2	Front Dual-USB2.0 Header

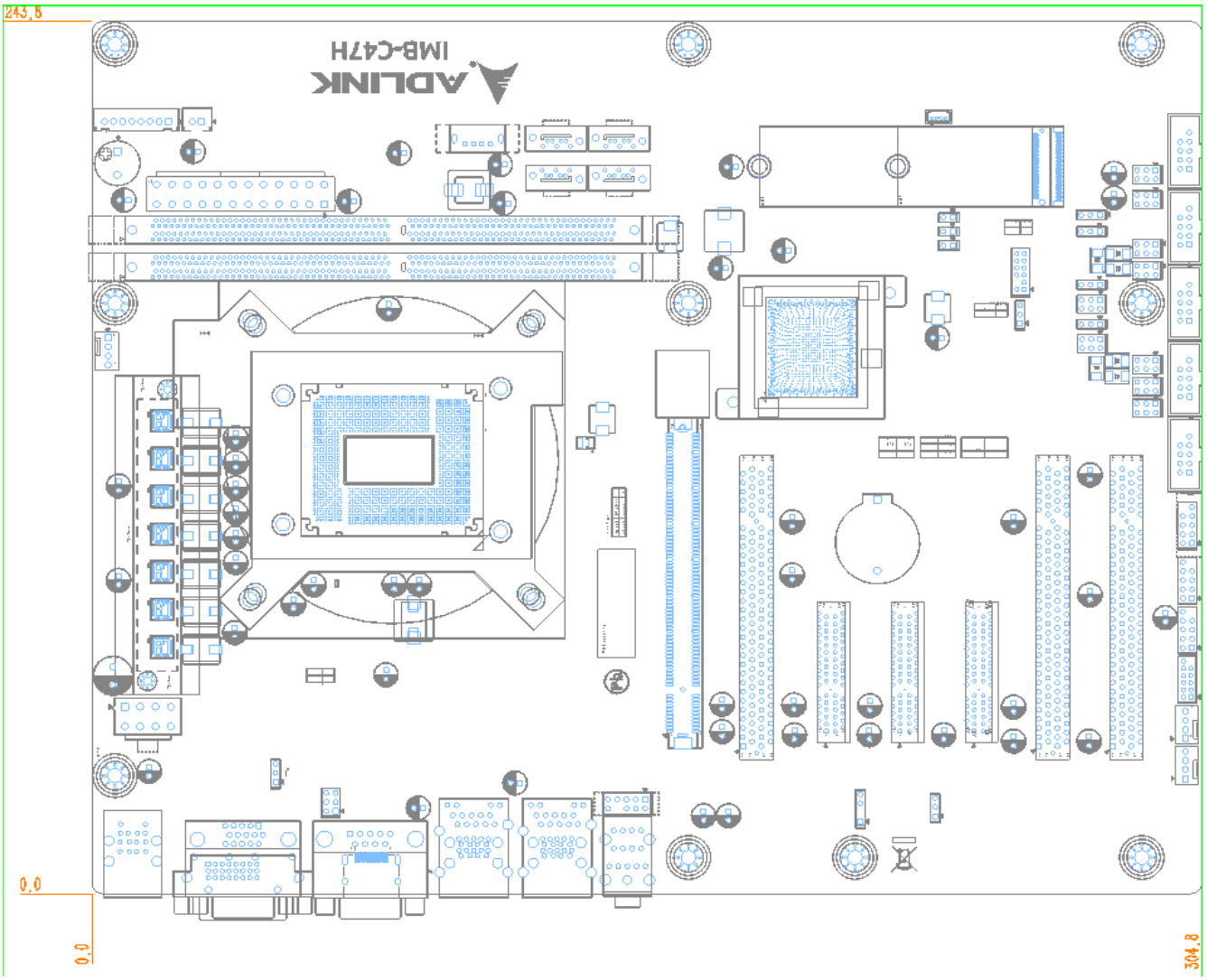
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29	J_GPIO1	GPIO Header
30	SYS_FAN2	System FAN2 Wafer
31	SYS_FAN1	System FAN1 Wafer
32	PCI2	PCI Slot2
33	PCI1	PCI Slot1
34	PCIE_4X_SLOT3	PCIE4X Slot3, IMB-C47H only
35	JP14	PCI CLK 66MHz Disable/ Enable Select Jumper
36	PCIE_4X_SLOT2	PCIE4X Slot2
37	J_SPDIF1	SPDIF Out Header
38	PCIE_4X_SLOT1	PCIE4X Slot1
39	PCI3	PCI Slot3
40	PCIE_16X_SLOT1	PCI-E 16x Slot
41	F_AUDIO1	Front Audio Header
42	JP1	COM1 DCD/5V+ RI/12V Select Jumper
43	ATX2	ATX 8P CPU Power Input Connector
44	CPU_FAN1	CPU Fan Wafer
45-1	DIMM1	DDR4/DDR5 (BOM option)
45-2	DIMM2	DDR4/DDR5 (BOM option)

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3.2 Mechanical Dimensions

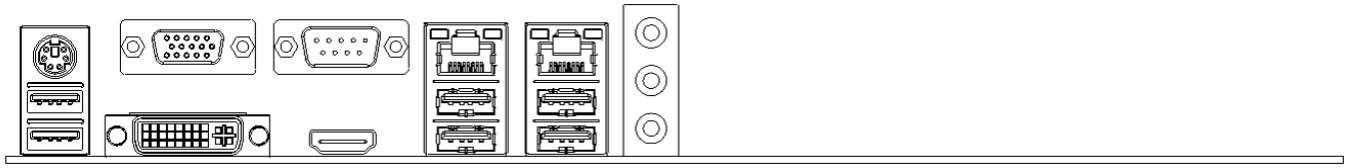
Top View



Dimensions: mm

Figure 4: Mechanical dimensions

Side View



Dimensions: mm

Figure 5: Mechanical dimensions – I/O panel

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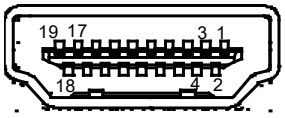
4 Connector Pinouts

See 3.1 Connector Locations on page 9.

4.1 Rear I/O Connectors

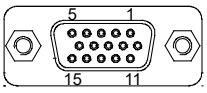
4.1.1 HDMI

Pin	Signal	Pin	Signal
1	HDMI1_CON_DP2	2	GND
3	HDMI1_CON_DN2	4	HDMI1_CON_DP1
5	GND	6	HDMI1_CON_DN1
7	HDMI1_CON_DP0	8	GND
9	HDMI1_CON_DN0	10	HDMI1_CON_CKP
11	GND	12	HDMI1_CON_CKN
13	NC	14	NC
15	HDMI1_DDC_CLK	16	HDMI1_DDC_DATA
17	GND	18	+5V_HDMI
19	HDMI1_CON_HPD		



4.1.2 VGA Connector

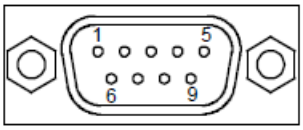
Pin	Signal	Pin	Signal
1	VGA_CON_RED	2	VGA_CON_GREEN
3	VGA_CON_BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V_HDMI	10	GND
11	NC	12	VGA_DDCDAT
13	VGA_CON_HS	14	VGA_CON_VS
15	VGA_DDCCLK		



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4.1.3 COM 1 (COM1 DB9/M Connector)

Pin	Signal
	RS-232
1	PIN 1 [1]
2	RxD
3	TxD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	PIN 9 [1]

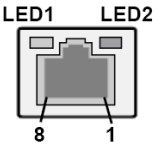


Note: PIN1 of COM1 can be DCD (default) /5V and Pin9 of COM1 can be RI(Default) / 12V, selectable by “COM1 DCD/RI Select Jumper”. (JP3)

4.1.4 Ethernet Connectors (LAN1, LAN2)

RJ45_USB1 (LAN1) (GBE LAN RJ45 Connector1)

Pin	Signal		Pin	Signal	
1	MDI1_0+		5	MDI1_2+	
2	MDI1_0-		6	MDI1_2-	
3	MDI1_1+		7	MDI1_3+	
4	MDI1_1-		8	MDI1_3-	
LED1	Active LED	ACT: Blinking Green	LED2	Speed LED	1000M: Turn Orange
		LINK only: Lights On			100M: Turn Green
		Stop: Lights Off			10M: Lights Off



Note: RJ45_USB1 (LAN1) I219-V does not support Intel AMT 12.0 and Intel vPro by default.

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RJ45_ USB2 (LAN2) (GBE LAN RJ45 Connector2)

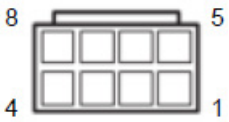
Pin	Signal		Pin	Signal	
1	MDI2_0+		5	MDI2_2+	
2	MDI2_0-		6	MDI2_2-	
3	MDI2_1+		7	MDI2_3+	
4	MDI2_1-		8	MDI2_3-	
LED1	Active LED	ACT: Blinking Green	LED2	Speed LED	1000M/2.5G: Turn Orange
		LINK only: Lights On			100M: Turn Green
		Stop: Lights Off			10M: Lights Off

4.2 Onboard Headers / Connectors

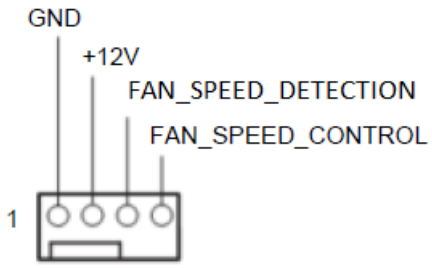
4.2.1 ATX12V Power Connector (ATX2)

This motherboard provides an 8-pin ATX 12V power connector.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
8	ATX12V	7	ATX12V	6	ATX12V	5	ATX12V
4	GND	3	GND	2	GND	1	GND



4.2.2 Fan Connectors (SYS_FAN1/2, CPU_FAN1)



FAN Wafer 4*1 Pin 2.54mm

4.2.3 USB Connectors (USB2_1)

There are one USB 2.0 Type-A vertical connectors on this motherboard.

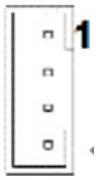
Pin	Signal
4	GND
3	USB_D+
2	USB_D-
1	USB_PWR



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4.2.4 SMBUS1

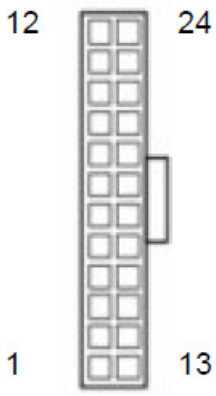
Pin	Signal
1	GND
2	SMB_DATA
3	SMB_CLK
4	VCC5



Wafer 4*1 Pin 1.25mm

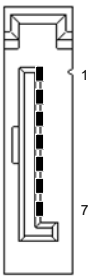
4.2.5 24-pin ATX Power Input Connector (ATX1)

Pin	Signal	Pin	Signal
12	+3V	24	GND
11	+12V	23	+5V
10	+12V	22	+5V
9	ATX+5VSB	21	+5V
8	PWROK_PS	20	NA
7	GND	19	GND
6	+5V	18	GND
5	GND	17	GND
4	+5V	16	PSON#
3	GND	15	GND
2	+3V	14	-12V
1	+3V	13	+3V



4.2.6 SATA Connector (SATA 1/2/3/4)

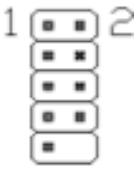
Pin	Signal	Pin	Signal
1	GND	5	SATA-B-
2	SATA-A+	6	SATA-B+
3	SATA-A-	7	GND
4	GND		



4.2.7 Front Panel Header (F_PANEL1)

This header accommodates several system front panel functions.

Pin	Signal	Pin	Signal
1	HDD 3.3V LED+	2	POWER 3.3V LED+
3	HDD 3.3V LED-	4	POWER 3.3V LED-
5	RESET-	6	POWER+
7	RESET+	8	POWER-



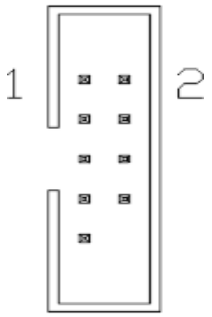
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Pin	Signal	Pin	Signal
9	N/C		

Front Panel Header 5*2 Pin 2.54mm

4.2.8 COM Port Header (COM 2-6)

	Pin	Signal	Pin	Signal
COM2	1	COM2_PIN1 [1]	2	COM2_DSR
	3	COM2_RXD	4	COM2_RTS
	5	COM2_TXD	6	COM2_CTS
	7	COM2_DTR	8	COM2_PIN8 [1]
	9	GND		
	Pin	**Signal**	**Pin**	**Signal**
COM3	1	COM3_PIN1 [2] [3]	2	COM3_DSR
	3	COM3_PIN3 [3]	4	COM3_RTS
	5	COM3_PIN5 [3]	6	COM3_CTS
	7	COM3_PIN7 [3]	8	COM3_PIN8 [2] [3]
	9	GND		
	Pin	**Signal**	**Pin**	**Signal**
COM4	1	COM4_PIN1 [4] [5]	2	COM4_DSR
	3	COM4_PIN3 [4]	4	COM4_RTS
	5	COM4_TXD	6	COM4_CTS
	7	COM4_DTR	8	COM4_PIN8 [5]
	9	GND		
	Pin	**Signal**	**Pin**	**Signal**
COM5	1	COM5_PIN1 [6]	2	COM5_DSR
	3	COM5_RXD	4	COM5_RTS
	5	COM5_TXD	6	COM5_CTS
	7	COM5_DTR	8	COM5_PIN8 [6]
	9	GND		
	Pin	**Signal**	**Pin**	**Signal**
COM6	1	COM6_PIN1 [7]	2	COM6_DSR
	3	COM6_RXD	4	COM6_RTS
	5	COM6_TXD	6	COM6_CTS
	7	COM6_DTR	8	COM6_PIN8 [7]
	9	GND		



Box Header 5*2 Pin 2.54mm

Note: [1]: PIN1 of COM2 can be DCD (default) or 5V, and Pin8 of COM2 can be RI (Default) or 12V, selectable by the “COM2 VCC5/DCD+VCC12/RI Select Jumper”. (JP2)

[2]: PIN1 of COM3 can be DCD (default) or 5V, and Pin8 of COM3 can be RI(Default)or 12V, selectable by the “COM3 VCC5/DCD+VCC12/RI Select Jumper”. (JP3)

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[3]: COM3 can be RS232 (default) or RS485 selecting by JP7 and JP8. COM3 can also be to RS485 by using the jumper and setting the BIOS to RTS mode.

[4]: COM4 can be RS232 (default) or RS485 selecting by JP10 and JP11. COM4 can also be set RS485 by using the jumper and setting the BIOS to RTS mode.

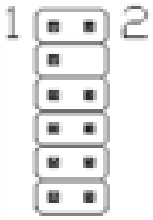
[5]: PIN1 of COM4 can be DCD (default) or 5V, and Pin8 of COM4 can be RI(Default) or 12V, selectable by the “COM4 VCC5/DCD+VCC12/RI Select Jumper”. (JP4)

[6]: PIN1 of COM5 can be DCD (default) or 5V, and Pin8 of COM5 can be RI(Default) or 12V, selectable by the “COM5 VCC5/DCD+VCC12/RI Select Jumper”. (JP10)

[7]: PIN1 of COM6 can be DCD (default) or 5V, and Pin8 of COM6 can be RI(Default) or 12V, selectable by the “COM5 VCC5/DCD+VCC12/RI Select Jumper”. (JP11)

4.2.9 ESPI Header (J_ESPI1)

Pin	Signal	Pin	Signal
1	ESPI_IO0	2	VCC3.3_Dual
3	ESPI_IO1		
5	ESPI_IO2	6	ESPI_CLK
7	ESPI_IO3	8	GND
9	ESPI_CS0	10	VCC3.3S
11	ESPI_ALERT0_N	12	PLT_RST_N [1]

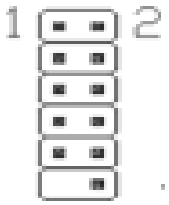


ESPI Header (Debug Only) 6*2 Pin 2.00mm

Note: “H” or “L” indicates whether the default voltage is at high or low level. 95V GPIO)

4.2.10 GPIO Header (J_GPIO1)

Pin	Signal	Pin	Signal
1	SIO_GPI70 (0xA06 Bit0, H [1])	2	SIO_GPI71 (0xA06 Bit1, H)
3	SIO_GPI72 (0xA06 Bit2, H)	4	SIO_GPI73 (0xA06 Bit3, H)
5	GND	6	SIO_GPO74 (0xA06 Bit4, H)
7	SIO_GPO75 (0xA06 Bit5, H)	8	SIO_GPO76 (0xA06 Bit6, H)
9	SIO_GPO77 (0xA06 Bit7, H)	10	VCC5
		12	N/C



GPIO Header 6*2 Pin 2.00mm

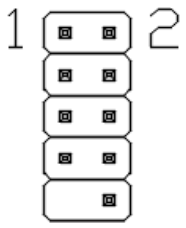
Note: “H” or “L” indicates whether the default voltage is at high or low level. 5V GPIO)

4.2.11 USB 2.0 Header (F_USB2_1, F_USB2_2)

Pin	Signal	Pin	Signal
1	VCC5	2	VCC5
3	USB2.0_1-	4	USB2.0_2-

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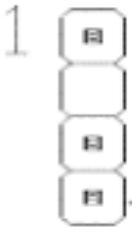
Pin	Signal	Pin	Signal
5	USB2.0_1+	6	USB2.0_2+
7	GND	8	GND
		10	N/C



Front USB2.0 Header2 5*2 Pin 2.54mm

4.2.12 SPDIF Header (J_SPIDIF1)

Pin	Signal	Pin	Signal
1	VCC5		
3	SPDIF_OUT	4	GND



SPDIF Out Header 4*1 Pin 2.54mm

4.3 Jumper and Switch Settings

4.3.1 COM1 VCC5/DCD+VCC12/RI Select Jumper (JP1)

Setting	Function
1-3, 2-4	COM1_PIN1: VCC5 COM1_PIN8: VCC12
3-5 , 4-6(Default)	COM1_PIN1: DCD COM1_PIN8: RI



Jumper 3*2 Pin 2.54mm

Note: Jumper 1-3/3-5 select the COM1_PIN1 signal. Jumper 2-4/4-6 select the COM1_PIN8 signal.

4.3.2 COM2 VCC5/DCD+VCC12/RI Select Jumper (JP2)

Setting	Function
1-3, 2-4	COM2_PIN1: VCC5 COM2_PIN8: VCC12
3-5, 4-6(Default)	COM2_PIN1: DCD COM2_PIN8: RI



Jumper 3*2 Pin 2.54mm

Note: Jumper 1-3/3-5 select the COM2_PIN1 signal. Jumper 2-4/4-6 select the COM2_PIN8 signal.

4.3.3 COM3 VCC5/DCD+VCC12/RI Select Jumper (JP3)

Setting	Function
1-3, 2-4	COM3_PIN1: VCC5 COM3_PIN8: VCC12
3-5, 4-6(Default)	COM3_PIN1: DCD/ RS485-COM3_PIN8: RI



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Jumper 3*2 Pin 2.54mm

Note: Jumper 1-3/3-5 select the COM3_PIN1 signal. Jumper 2-4/4-6 select the COM3_PIN8 signal.

4.3.4 COM4 VCC5/DCD+VCC12/RI Select Jumper (JP4)

Setting	Function
1-3, 2-4	COM4_PIN1: VCC5 COM4_PIN8: VCC12
3-5, 4-6(Default)	COM4_PIN1: DCD/RS485 COM4_PIN8: RI



Jumper 3*2 Pin 2.54mm

Note: Jumper 1-3/3-5 select the COM4_PIN1 signal. Jumper 2-4/4-6 select the COM4_PIN8 signal.

4.3.5 COM5 VCC5/DCD+VCC12/RI Select Jumper (JP5)

Setting	Function
1-3, 2-4	COM5_PIN1: VCC5 COM5_PIN8: VCC12
3-5, 4-6(Default)	COM5_PIN1: DCD COM5_PIN8: RI



Jumper 3*2 Pin 2.54mm

Note: Jumper 1-3/3-5 select the COM5_PIN1 signal. Jumper 2-4/4-6 select the COM5_PIN8 signal.

4.3.6 COM6 VCC5/DCD+VCC12/RI Select Jumper (JP6)

Setting	Function
1-3, 2-4	COM6_PIN1: VCC5 COM6_PIN8: VCC12
3-5, 4-6(Default)	COM6_PIN1: DCD COM6_PIN8: RI



Jumper 3*2 Pin 2.54mm

Note: Jumper 1-3/3-5 select the COM6_PIN1 signal. Jumper 2-4/4-6 select the COM6_PIN8 signal.

4.3.7 COM3 RS232/422/485 Select Jumpers (JP7/JP8)

Setting	Function
JP7: 1-2 JP8: 3-5、4-6 (Default)	COM3: RS232 (COM3_PIN1: DCD/VCC5 COM3_PIN3: RXD
JP7: 5-6 JP8: 1-3、2-4	COM3: RS485 (COM3_PIN1: RS485- COM3_PIN3: RS485+)





Jumper 3*2 Pin 2.54mm

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4.3.8 COM4 RS232/485 Select Jumpers (JP10/JP11)

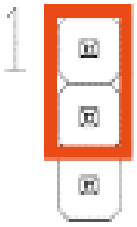
Setting	Function
JP10: 1-2 JP11: 3-5、4-6 (Default)	COM4: RS232 (COM4_PIN1: DCD COM4_PIN3: RXD)
JP10: 5-6 JP11: 1-3、2-4	COM4: RS485 (COM4_PIN1: RS485- COM4_PIN3: RS485+)



Jumper 3*2 Pin 2.54mm

4.3.9 COM3 RS485 Signal 120Ω Resistive Termination Select Jumper (JP9)

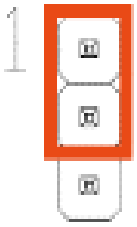
Setting	Function
1-2 (Default)	Disable
2-3	Enable



Jumper 3*1 Pin 2.54mm

4.3.10 COM4 RS485 RX Signal 120Ω Resistive Termination Select Jumper (JP12)

Setting	Function
1-2 (Default)	Disable
2-3	Enable



Jumper 3*1 Pin 2.54mm

4.3.11 Case Open Headers (J_COPEN1)

Setting	Function
1-2: Connected	Active Case Open
1-2: Open	Normal



Header 2*1 Pin 2.54mm

4.3.12 MCU Debug Header (J_DNX1)

Setting	Function
1-2: Connected	Enable
1-2: Open	Disable



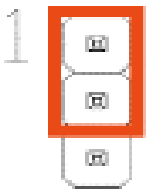
Header 2*1 Pin 2.54mm

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4.3.13 ATX/AT Mode Jumper (J_AT/ATX1)

Setting	Function
1-2 (Default)	ATX Mode
2-3	AT Mode

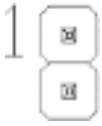
Jumper 3*1 Pin 2.54mm



4.3.14 ME Flash Jumper (J_ME1)

Setting	Function
1-2: Open (Default)	ME Protect Enable
1-2: Connected	ME Protect Disable

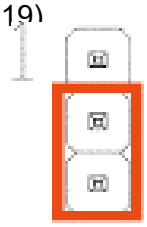
Jumper 2*1 Pin 2.54mm



4.3.15 Watchdog Reset Enable/Disable Select Jumper (JP19)

Setting	Function
1-2	Normal
2-3(Default)	Reset

Jumper 3*1 Pin 2.54mm



4.3.16 Clear CMOS Jumper (CLR_CMOS1)



CLR_CMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to the default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin 2 and pin 3 on CLR_CMOS1 for 5 seconds. However, please do not clear the CMOS immediately after updating the BIOS. If you need to clear the CMOS right after updating the BIOS, you must first boot up the system, and then shut it down before performing the clear-CMOS action. Please do note that the date, time, and user default profile will only be cleared if the CMOS battery is removed.

4.3.17 Power Monitor Wafer (VOLT1)

Pin	Signal	Pin	Signal
1	VCC5A	5	VCC5S
2	GND	6	VCC3.3S
3	GND	7	VCC12_N
4	VCC5PS	8	VCC12S

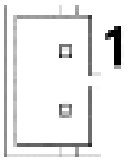
Jumper 8*1 Pin 2.54mm



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4.3.18 Power on Wafer (PSON1)

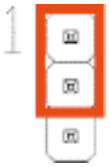
Pin	Signal	Pin	Signal
1	PSON_N	2	GND



Jumper 2*1 Pin 2.54mm

4.3.19 PCI CLK 66MHz Enable/Disable Select Jumper (JP14)

Setting	Function
1-2 (Default)	Disable PCI CLK 66MHz
2-3	Enable PCI CLK 66MHz



4.4 Expansion Slots

There are 4 PCI Express slots, 3 PCI slots, 1 M.2 sockets on this motherboard.

4.4.1 PCIe and PCI slots:

	Slot1 (PCIe1)	Slot2 (PCI)	Slot3 (PCIe3)	Slot4 (PCIe4)	Slot5 (PCIe5)	Slot6 (PCI)	Slot7 (PCI)
Source	CPU	PCI bridge	PCH	PCH	PCH	PCI bridge	PCI bridge
Bandwidth	PCIe 4.0	PCI	PCIe 3.0	PCIe 3.0	PCIe 3.0	PCI	PCI
Lane Config (IMB-C47H)	X16	PCI	X2	X2	X2	PCI	PCI
Lane Config2 (IMB-C47H/NVMe)	X16	PCI	X2	X2	-	PCI	PCI

4.4.2 M.2 sockets:

- M.2 Key-M (M_2_PCIESSD_M1)

Pin	Signal	Signal	Pin
1	GND	+3.3V	2
3	GND	+3.3V	4
5	PERn3	NA	6
7	PERp3	NA	8
9	GND	LED	10
11	PETn3	+3.3V	12
13	PETp3	+3.3V	14
15	GND	+3.3V	16
17	PERn2	+3.3V	18
19	PERp2	NA	20
21	GND	NA	22

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Pin	Signal	Signal	Pin
23	PETn2	NA	24
25	PETp2	NA	26
27	GND	NA	28
29	PERn1	NA	30
31	PERp1	NA	32
33	GND	NA	34
35	PETn1	NA	36
37	PETp1	DEVSLP	38
39	GND	SMB_CLK	40
41	PERn0	SMB_DATA	42
43	PERp0	NA	44
45	GND	NA	46
47	PETn0	NA	48
49	PETp0	PERST#	50
51	GND	CLKREQ#	52
53	PEFCLKn	WAKE#	54
55	PEFCLKp	NA	56
57	GND	NA	58
67	NA	NA	68
69	PEDET	+3.3V	70
71	GND	+3.3V	72
73	GND	+3.3V	74
75	GND		

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5 Driver Installation

Download the requisite drivers for your system from the IMB-C47H product page:
https://www.adlinktech.com/Products/Industrial_Motherboards_SBCs/ATXMotherboards/IMB-C47H

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6 BIOS Settings

6.1 Menu Structure

This section presents the primary menus of the BIOS (UEFI) Setup Utility. Use the following table as a quick reference forthe contents of the BIOS Setup Utility. The subsections describe the submenus and options for each menu item.

Options to enter BIOS Setup Utility:

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

Main	**Advanced**	**Chipset**
Sets up the system time/date and displays the system information: - BIOS Information - Memory Information - System Date - System Time	Contains advanced system configurations, including: ▶ CPU Configuration ▶ PCH-FW Configuration ▶ Trusted Computing ▶ ACPI Settings ▶ Super IO Configuration ▶ Hardware Monitor ▶ Power Control ▶ S5 RTC Wake Settings ▶ USB Configuration ▶ Network Stack Configuration ▶ NVMe Configuration	Displays Hardware Status info, including: ▶ System Agent (SA) Configuration ▶ PCH-IO Configuration
Security	**Boot**	**Save & Exit**
Changes or clears the supervisor/user password for the system: - Administrator Password - User Password ▶ Secure Boot	Configures the boot settings and boot priority for available devices: - Setup Prompt Timeout - Bootup Num Lock State - Full Screen Logo FIXED BOOT ORDER Priorities - Boot Option #X	Exits the BIOS Setup Utility while saving or discard the changes made: Save Options - Save Changes and Exit - Discard Changes and Exit - Save Changes and Reset - Discard Changes and Reset - Save Changes - Discard Changes Default Options - Restore Defaults - Save as User Defaults - Restore User Defaults Boot Override - BIOS: Built-in EFI shell Launch EFI Shell from filesystem device

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6.2 Main Menu

Upon entering the BIOS Setup Utility, the six primary menus are displayed, providing read-only information about your system and allowing you to set the System Date and Time. Refer to the screenshots and tables below for details of the submenus and settings.

Feature	Options
BIOS Information	
BIOS Vendor	Info only
Core Version	Info only
Compliancy	Info only
Project Version	IMB-C47H_x.xx.xx
Build Date and Time	Info only
Access Level	Info only
Memory Information	
Total Memory	Info only
Memory Frequency	Info only
System Date	xxx mm/dd/yyyy
System Time	hh:mm:ss

6.3 Advanced

This menu contains the following information:

Feature	
▶ CPU Configuration	▶ Power Control
▶ PCH-FW Configuration	▶ S5 RTC Wake Settings
▶ Trusted Computing	▶ USB Configuration
▶ ACPI Settings	▶ Network Stack Configuration
▶ Super IO Configuration	▶ NVME Configuration
▶ Hardware Monitor	

6.3.1 CPU Configuration

Feature	Description
Efficient-core Information	Displays the E-core Information.
Performance-core Information	Displays the P-core Information.
ID	Displays the Processor ID.
Brand String	Displays the Brand String.
VMX	VMX (Virtual-Machine Extensions) supported or not.
SMX/TXT	SMX (Safer Mode Extensions) /TXT (Trusted Execution Technology) Supported or Not.
Intel (R) SpeedStep(tm)	Allows more than two frequency ranges to be supported.
Intel (R) Speed Shift Technology	Enables or disables Intel (R) Speed Shift Technology Support. Enabling will expose the CPPC v2 interface to allow for hardware-controlled P-states.
Turbo Mode	Enables or disables processor Turbo Mode (requires EMTTM enabled too). Auto means enabled.
C states	Enables or disables CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Enables or disables C1E. When enabled, CPU will switch to minimum speed when all

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	cores enter C-State.
Package C State Limit	Maximum Package C State Limit Setting. CPU Default: Leaves to factory default value. Auto: Initializes to deepest available Package C State Limit.
Intel (VMX) Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Hyper-Threading	Enables or disables Hyper-Threading Technology.

6.3.2 PCH-FW Configuration

Configure Management Engine Technology Parameters.

Feature	Description
ME State	Displays the ME Firmware information.

6.3.3 Trusted Computing

Trusted Computing Settings.

Feature	Description
TPM 2.0 Device information	Displays the information of the TPM 2.0 device.
Security Device Support	Enables or Disables BIOS support for security devices. The O.S. will not show security devices. The TCG EFI protocol and INT1A interfaces will not be available.

6.3.4 ACPI Settings

Set ACPI (Advanced Configuration and Power Management Interface) Parameters.

Feature	Description
Enable Hibernation	Enables or disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

6.3.5 Super IO Configuration

System Super IO Chip Parameters.

Feature	Description
COM1-6	Sets Parameters of Serial Port 1-6. The options after entering the interface settings above are as follows. • Serial Port: Enable or Disable Serial Port (COM). • Device Settings: Displays the Current Device Settings. • Change Settings: If the board is supported, this menu shows. Select an optimal setting for Super IO devices.
CHASSIS OPEN	Enables or disables the CHASSIS OPEN function.

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To Set Up the Chassis Open Detection:

1) Select “Advanced – Super IO Configuration - CHASSIS OPEN” (This menu shows that only this function is supported);

2) Set the item to “Enabled”.

Sound the alarm if the chassis is opened; stop the alarm when closed.

When the open-box detection cap is shorted, the chassis is considered to have been compromised. The POST interface will prompt for chassis intrusion alarms, and the status record needs to be cleared to close the alarm.

Clear Chassis Open Status:

1) In the BIOS Setup Utility, press the F3 key and then the Enter key to load the optimization default values. Save & exit to clear the out-of-box status record.

6.3.6 Hardware Monitor

Monitor hardware status.

Feature	Description
PC Health status	Displays the current of PC Health Status.
► **Fan function**	Fan function settings. **To Set Up the Fan Control:** 1) Select “Advanced - Hard Monitor - Fan Function” (This menu shows that only this function is supported); 2) Select the fan to set up, such as “CPU_FAN1 Mode”. Select the operating mode for this fan: Full on Mode, Automatic Mode, or Manual Mode. 3) After selecting manual mode, input the PWM value (range 0-255) to specify the fan speed. 4) After selecting Automatic mode, you will find options for Fan off Temperature Limit, Fan start Temperature Limit, Fan start PWM, and PWM SLOPE SETTING. Due to differences in fan performance, the actual performance of smart fans may differ from the set values, it is generally recommended to set the PWM SLOPE SETTING to 8 PWM to ensure that the fan speed correlates with the temperature rise.
CHASSIS OPEN	Sound the alarm if chassis is opened; Stop the alarm when closed. **To Set Up the Chassis Open Detection:** 1) Select “Advanced – Hardware Monitor - CHASSIS OPEN” (This menu shows that only this function is supported). 2) Set the item to “Enabled”. When the open-box detection cap is shorted, the chassis is considered to have been compromised. The POST interface will prompt for chassis intrusion alarms, and the status record needs to be cleared to close the alarm. **To Clear the Chassis Open Status:** In the BIOS Setup Utility, press the F3 key and the Enter key to load the optimization default value. Then save & exit to clear the out-of-box status record.

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6.3.7 Power Control

Power Button Control Settings.

Feature	Description
PowerOn After PowerFail	Specify which state to enter when power is re-applied after a power failure (G3 state).
Soft-Off by PWR-BTTN	Soft-Off by PWR-BTTN. Instant-Off/Delay 4 Sec.
PCIE OOR FIXED Enabled	Enables or disables PCIE OOR FIXED.

Set Up Power-on Self:

1) Select “Advanced - Power Control - PowerOn After PowerFail”.
2) Change “PowerOn After PowerFail” value: Power Off, Power On, or Last State.

6.3.8 S5 RTC Wake Settings

Enable system to wake from S5 using RTC alarm.

Feature	Description
Wake system from S5	Enables or disables System wake on alarm event. Select Fixed Time for the system to wake at the specified hr::min::sec. Select Dynamic Time for the system to wake at the current time + the specified increase in minute(s).

To Set Up the Timed Power On:

1) Select “Advanced - S5 RTC Wake Settings - Wake system from S5”;
2) Change it from Disabled to Fixed Time;
3) Set the desired time by customizing the “Wake up day, Wake up hour, Wake up minute, wake up second” that appear. For example, day: 2, hour: 13, minute: 0, second: 0 means the system will boot on the 2nd of each month at 13:00. When day is set to 0, it means the system will power on every day at the specified time.

6.3.9 USB Configuration

USB Configuration parameters.

Feature	Description
USB Module Version	Displays the USB module version.
USB Controllers	Displays the USB controllers.
USB Devices	Displays the USB devices.
Legacy USB Support	Enables Legacy USB support. The AUTO option disables legacy support if no USB devices are connected. The DISABLE option keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by the XHCI driver.
USB Mass Storage Driver Support	Enables or disables USB Mass Storage Driver support.
USB hardware delays and time-outs	USB transfer time-out: The time-out value for control, bulk, and interrupt transfers. Device reset time-out: The USB mass storage device Start Unit command time-out. Device power-up delay: The maximum time the device will take before it properly reports itself to the host controller. ‘Auto’ uses default value: for a Root port, it is 100ms, for a hub port, the delay is taken from the hub descriptor.

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6.3.10 Network Stack Configuration

Network Stack Settings.

Feature	Description
Network Stack	Enables or disables BIOS Network Stack

Open BIOS PXE:

1) Select “Advanced - Network Stack Configuration”.
2) Set Network Stack or BIOS PXE to Enabled.

6.3.11 NVME Configuration

NVME Device options settings.

Feature	Description
NVMe Configuration	Displays the NVME device information

6.4 Chipset

This menu contains the following information:

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

6.4.1 System Agent (SA) Configuration

Feature	Description
► **Memory Configuration**	Memory Configuration Parameters.
► **Graphics Configuration**	Graphics Configuration.
► **VMD setup menu**	VMD Configuration Settings.
► **PCI Express Configuration**	PCI Express Configuration Settings.

6.4.1.1 Memory Configuration

Feature	Description
Memory Information	Displays the Memory RC version, speed, Timings, and other related information.

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6.4.1.2 Graphics Configuration

Feature	Description
Primary Display	Select which of IGFX/PEG/PCI graphics devices should be the primary display, or select HG for hybrid graphics.
Internal Graphics	Keep IGFX enabled based on the setup options.
Above 4GB MMIO BIOS assignment	Enables or disables above 4GB memory-mapped IO BIOS assignment. This is enabled automatically when the aperture size is set to 2048 MB.
PCIE Resizable BAR Support	Enables or disables PCIE resizable BAR support.

6.4.1.3 VMD setup menu

Feature	Description
Enable VMD controller	Enables or disables to VMD controller.

6.4.1.4 PCI Express Configuration

Feature	Description
PCIE_16X_SLOT1	PCI Express Root Port Settings.

6.4.2 PCH-IO Configuration

Feature	Description
► **PCI Express Configuration**	PCI Express Configuration settings.
► **SATA Configuration**	SATA Device Configuration settings.
LAN1 Controller	Enables or disables onboard NIC.
Wake on LAN Enable	Enables or disables integrated LAN to wake the system.

6.4.2.1 PCI Express Configuration

Feature	Description
PCI Express Configuration	PCI Express Root Port Settings. ► PCIE_4X_SLOT2 ► PCIE_4X_SLOT1 ► PCIE_4X_SLOT3/M.2_PCIESSD_M1 ► PCI1/PCI2/PCI3 ► LAN2

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6.4.2.2 SATA Configuration

Feature	Description
SATA Controller(s)	Enables or disables SATA devices.
SATA Mode Selection	Determines how SATA controller(s) operate.
M.2_KEYM_SSD1	Displays SSD Information.
Serial ATA Port X	Enables or Disables SATA ports.

6.5 Security

This menu contains the following information:

Feature	Description
Administrator Password	Sets Administrator Password.
User Password	Sets User Password.
▶ **Secure Boot**	Secures Boot configuration.

When you set up an administrator password, it is recommended that you enter the administrator password when you access the BIOS setup program to avoid encountering unavailable BIOS information or settings due to insufficient user rights. (no password is entered as a user).

When you set a user password, you must use the user password to access the BIOS setup program, which means that you need to enter the user password when booting the operating system (using the BIOS boot feature).

To Set/Change the Administrator Password:

1) Select “Security - Administrator Password”.

2) Enter the password you want to set in the “Create New Password” window and press Enter. You will need to enter your current password to confirm when changing your administrator password before accessing the “Create New Password” window.

3) Enter the password you want to set again to make sure it is entered correctly.

When you want to delete an administrator password, you should change the password by pressing carriage return directly in the “Create New Password” window to clear the password.

To Set/Change the User Password:

1) Select “Security - User Password”.

2) Enter the password you want to set in the “Create New Password” window that appears and press Enter. You will need to enter the current password to confirm when changing the user's password before accessing the “Create New Password” window.

3) Enter the password you want to set again to make sure it is entered correctly.

When you want to delete a user password, you should change the password by pressing carriage return directly in the “Create New Password” window to clear the password.

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6.5.1 Secure Boot

Feature	Description
Secure Boot	Secure Boot feature is active if Secure Boot is enabled, Platform Key (PK) is enrolled, and the system is in user mode. The mode change requires platform reset.
Secure Boot Mode	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

6.6 Boot

This menu contains the following information:

Feature	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup Num Lock State	Select the keyboard Num Lock state.
Full Screen Logo	Enables or disables Full Screen Logo option.
FIXED BOOT ORDER Priorities	Displays Boot order and allow to set Hard Drive/USB/XXX boot order in this group.
► **BIOS USB Key Drive BBS Priorities**	Sets the system boot order.

Set Boot Sequence:

1) Select the “Boot” menu page.

2) Change “Boot Option #1” to the desired device.

3) If there are more than one similar device, such as multiple hard drives, enter “Hard Disk Drive BBS Priorities” and change the boot order priority among the drives.

When the Boot page has the Boot mode select option, it is recommended that the value of “dual” so that both Legacy and BIOS boot projects can be booted. BIOS boot items will be filtered when selected for Legacy, and legacy boot items will be filtered when selected as BIOS.

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6.7 Save & Exit

This menu contains the following information:

Feature	Description
Save Options	
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets the system setup without saving any changes.
Save Changes	Saves changes done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Default Options	
Restore Defaults	Restores/Loads default values for all the setup options.
Save as User Defaults	Saves the changes done so far as User Defaults.
Restore User Defaults	Restores the User Defaults to all the setup options.
Boot Override	
BIOS: Built-in EFI shell	Launches BIOS Built-in BIOS Shell.
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.

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