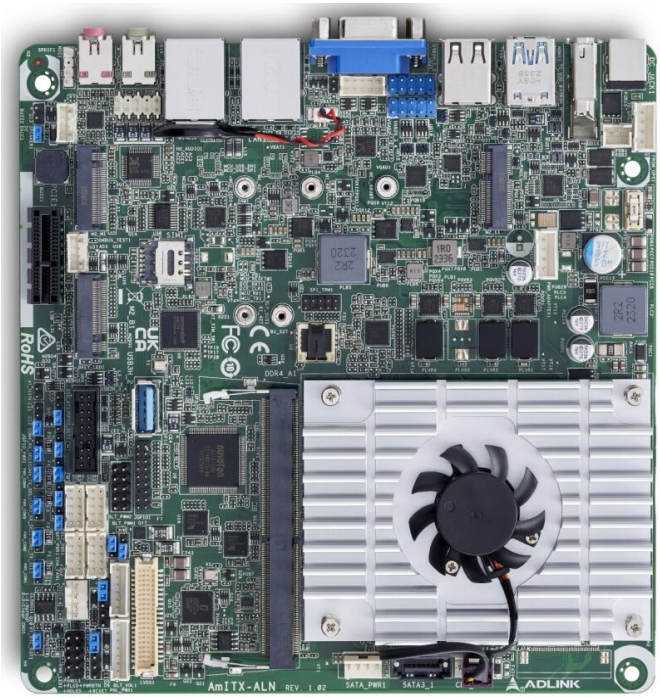
AmITX-ALN

User's Manual

Mini-ITX Embedded Motherboard with
Intel® Processor N97



Manual Rev.: 1.1
Revision Date: September 11, 2025
Part Number: 50M-16009-1010

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Leading EDGE COMPUTING

Preface

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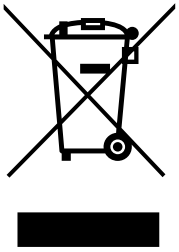
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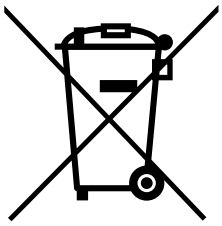
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WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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Revision History

Revision	Description	Date	By
1.0	Initial release	2024-07-12	AL
1.1	Connectors and jumpers updated	2025-09-11	AL

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1 Introduction

The AmITX-ALN is a Mini-ITX motherboard supporting the Desktop Intel® Processor N97. The AmITX-ALN is specifically designed for customers who need high-level processing and graphics performance with a long product life solution.

The AmITX-ALN features one DisplayPort (from Type-C), one HDMI, one VGA, one LVDS or eDP, dual 2.5 Gigabit Ethernet ports, USB 3.2 Gen 2 and Gen1 ports, USB 2.0 ports, and SATA 6 Gb/s ports. Expansion is provided by one PCIe Gen3 x1 slot. The onboard feature connector provides GPIO, SMBus support. The board is equipped with SPI AMI EFI BIOS, supporting embedded features such as hardware monitor and watchdog timer.

Model Number
AmITX-ALN-N97

Latest revisions of the datasheet, user's manual, BIOS, drivers, and board support packages, can be downloaded from the product webpage on the ADLINK web site: www.adlinktech.com

1.1 Packing List

- AmITX-ALN Mini-ITX motherboard
- Rear I/O shield
- M.2 screw kits

1.2 Optional Accessories

- USB 2.0 Cable (P/N: 30-21625-0000-B0)
- USB 3.0 Cable (P/N: 30-21597-1000-A0)
- SATA Cable (P/N: 30-10057-7000)
- SATA Power Cable (P/N: 30-22156-0000-A0)
- COM Port Cable (P/N: 30-22155-0000-A0)
- 120W 24V/5A Adapter (P/N: 31-62196-0000-A0)

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2 Specifications

2.1 Core System

CPU	**Intel® Processor N97, 3.6GHz, 12W**
Memory	One 260-pin DDR4 non-ECC SODIMM slots, DDR4 3200 MHz, up to 32 GB
Embedded BIOS	AMI® UEFI BIOS, 256Mb SPI flash memory

2.2 Rear I/O Connectors

Display	1x HDMI 2.0b, 1x DP 1.4a (from Type-C), 1x VGA
LAN	2x 2.5GbE RJ-45
USB	1x USB 3.2 Gen2 (Type-C, supports DP1.4a display output) 1x USB 3.2 Gen1 2x USB 2.0
Audio	1x Line-out, 1x Mic-in connector
DC Jack	1

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2.3 Internal Headers and Connectors

PCI Express Slots	1x PCIe Gen3 x1
USB	2x USB 3.2 Gen1 x1 (via header) 1x USB 3.2 Gen1 x1 (Type A vertical connector) 4x USB 2.0 (via header)
SATA	1x SATA 6.0 Gb/s connectors.
Expansion Slots	1x M.2 B-Key 3042/3052 (PCIe x1, USB 3.0, USB 2.0) for 4G/5G modules 1x M.2 E-Key 2230 (PCIe x1, USB 2.0, CNVi) for wireless 1x M.2 M-Key 2242/2260/2280 (PCIe Gen3 x1 or SATA, USB 2.0) for SSD 1x SIM socket connected to B-Key
Serial	2x RS-232/422/485 (via header) 2x RS-232 (via header)
LVDS	1x LVDS pin header, supports dual channel 24-bit up to 1920x1200@60Hz (Connector shared with eDP)
DIO	1x 8-bit GPIO pin header
Other	ESPI Header CPU Fan Connector Chassis Fan Connector System Panel Header Front Panel Audio Header Chassis Intrusion Header SPDIF Header Speaker Header SATA PWR Output TPM Header DC-in PWR Connector (Input +12V~+28V) (4-pin)

2.4 Form Factor

Mini-ITX: 170mm x 170mm

2.5 Video

Controller	Intel® UHD Graphics
Display Interface Support	• 1x HDMI 2.0b, max resolution up to 4096x2160@60Hz • 1x DP 1.4a, max resolution up to 4096x2160@60Hz (from Type C) • 1x VGA, resolution up to 1920x1200 @ 60Hz • 1x LVDS, supports dual channel 24-bit, max resolution up to 1920x1200@60Hz (Connector shared with eDP)

2.6 Audio

Audio Codec	Realtek ALC897
Interfaces	1x Line-out, 1x Mic-in connector

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2.7 LAN

Controller	2x Realtek RTL8125BG, 2.5GbE
Interface	RJ45 connectors

2.8 Power Specification

Input PWR	12~28V DC-In with 4-pin wafer PWR cable or DC Jack
Power On	AT/ATX Supported • AT: Directly PWR on as power input ready • ATX: Press the button to PWR on after power input ready

2.9 Watchdog Timer

Output	From Super I/O to drag RESETCON#
Interval	256 Segments, 0, 1, 2, ...255 Sec

2.10 Temperatures

Standard Operating Temperature	-20°C to 70°C
Storage Temperature	-40°C to 85°C

2.11 Environmental

Humidity	60°C @ 95% RH non-condensing
Vibration	1Grms, 5-500Hz, operation

2.12 Operating Systems

Standard Support	Microsoft® Windows® 10/11 64-bit, Ubuntu 22.04.4 LTS 64-bit

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2.13 Functional Block Diagram

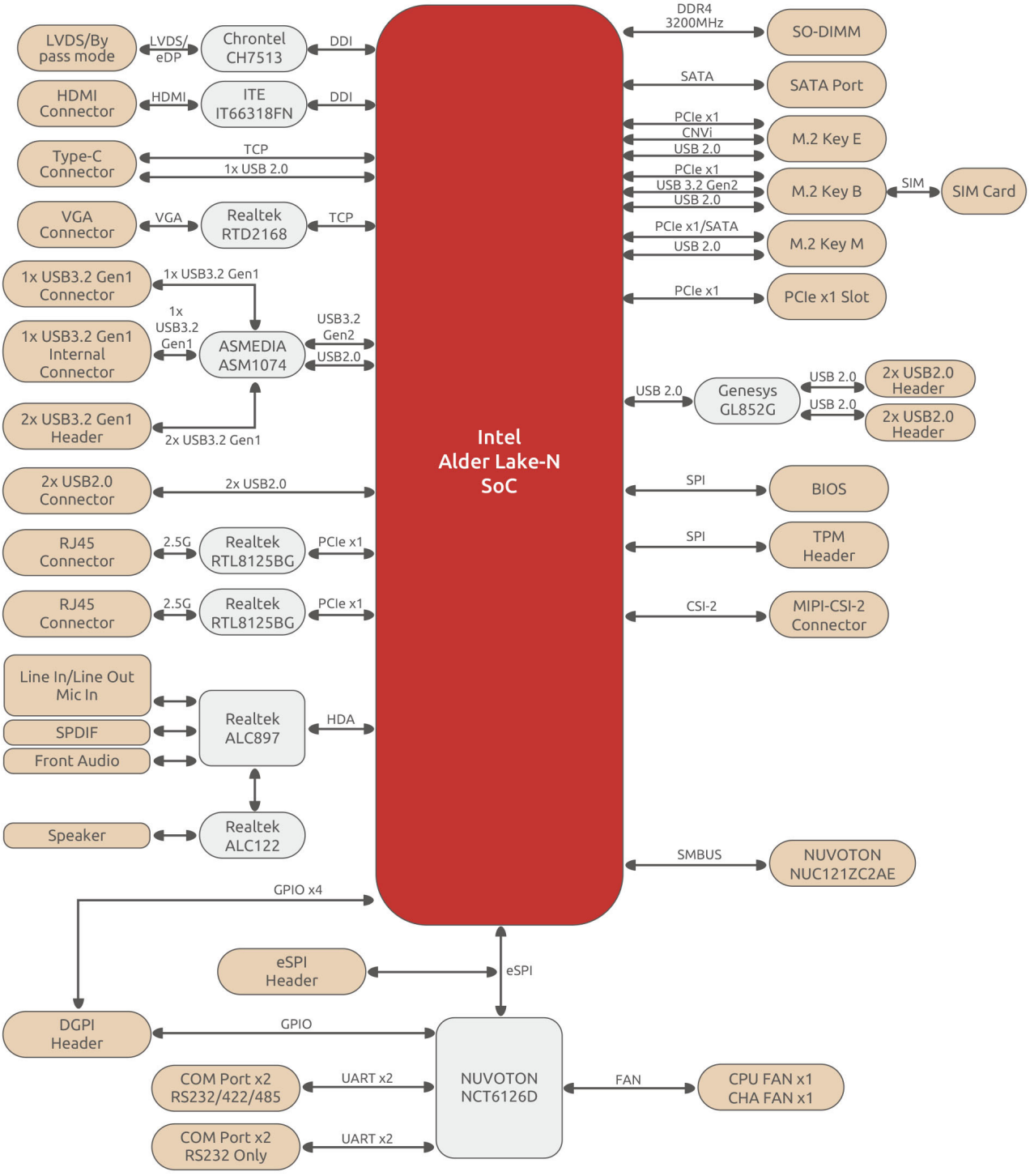


Figure 1: Functional block diagram

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3 Mechanical Layout

3.1 Connector Locations

3.1.1 Rear I/O Connectors

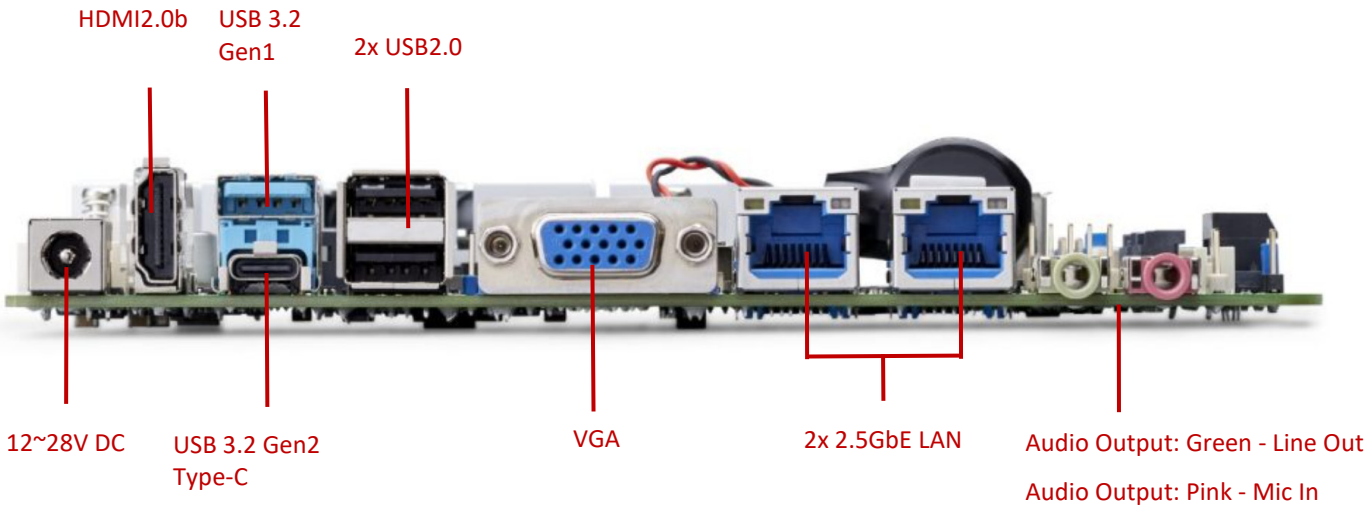
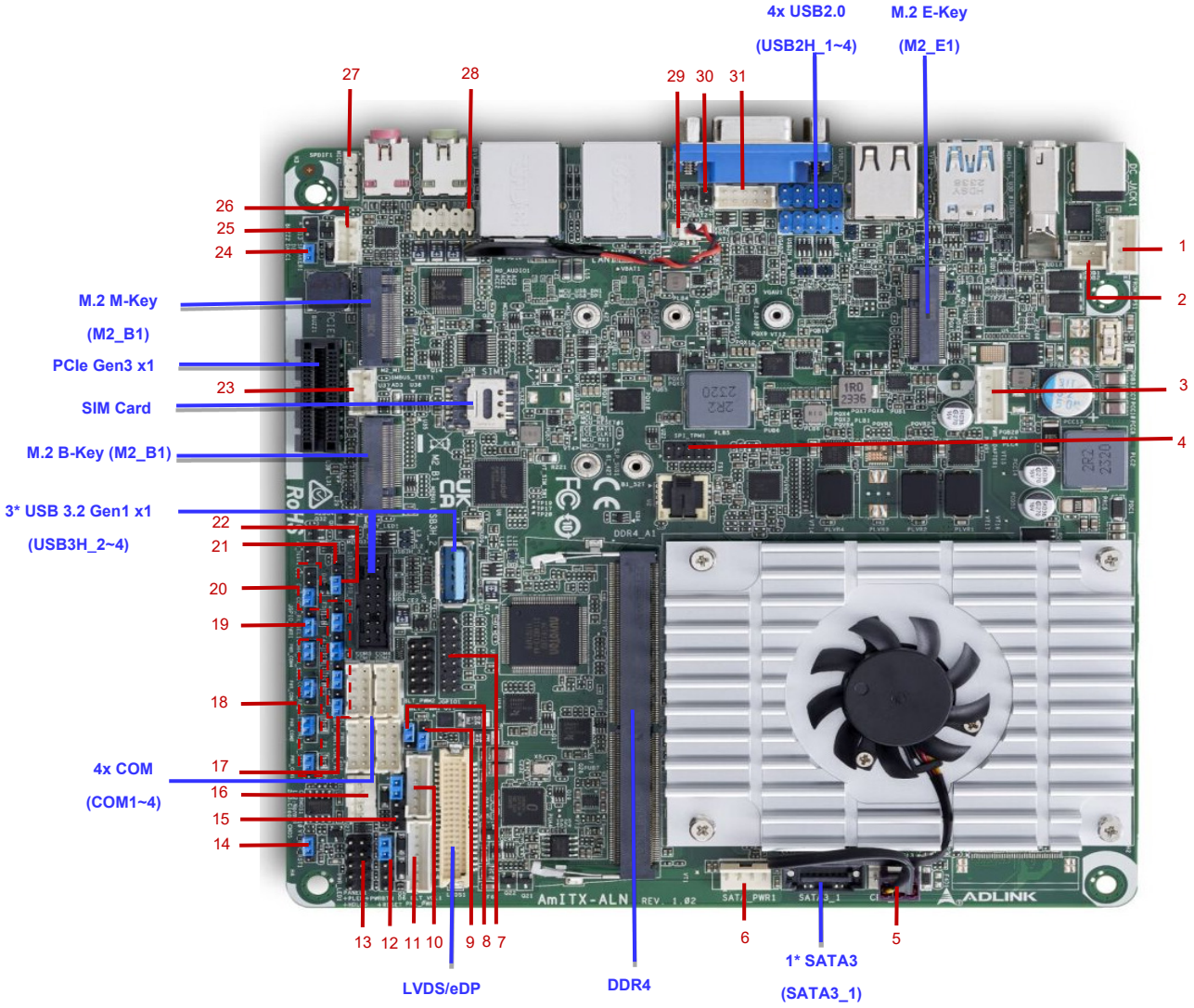


Figure 2: Rear I/O connectors

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3.1.2 Connectors and Jumpers



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1	4-pin DC-in PWR Connector (Input +12V~+28V) & UPS Module Power Output Connector (FROM_UPS1)	17	COM3, COM4 TX RX Selection Header (From left to right) COM4_RX_SEL1 COM4_TX_SEL1 COM3_RX_SEL1 COM3_TX_SEL1
2	2-pin UPS Module Power Input Connector (TO_UPS1)	18	COM Port PWR Setting Headers (PWR_COM1~4)
3	PWR_ADAPTER1	19	Digital Input / Output Power Select (JGPIO_PWR) (JGPIO_PWR1)
4	SPI_TPM Header (SPI_TPM1)	20	Chassis Intrusion Headers (CI1)
5	CPU FAN Connector (+12V) (CPU_FAN1)	21	ATX/AT Mode Jumper (SIO_AT1)
6	SATA Power Output Connector (SATA_PWR1)	22	Digital Input / Output Default Value Setting (JGPIO_SET1)
7	ESPI Header (ESPI1)	23	SMB_TEST1 (SMBUS_TEST1)
8	CON_LBKLT_CTL Voltage Level (BLT_PWM2)	24	DACC Jumper (DACC1)
9	Brightness Control Mode (BLT_PWM1)	25	Buzzer Header (BUZZ2)
10	Backlight Power Connector (BLT_PWR1)	26	3W Audio AMP Output Wafer (SPEAKER1)
11	Backlight Volume Control (BLT_VOL1)	27	SPDIF Header (SPDIF1)
12	eDP and LVDS Panel Power Select (LCD_VCC) (PNL_PWR1)	28	Front Panel Audio Header (HD_AUDIO1)
13	System Panel Header (PANEL1)	29	Battery Connector (BAT1)
14	Clear CMOS Header (CLRMOS1)	30	PWR_BAT2
15	eDP and LVDS Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)	31	VGA Header (VGA2)
16	4-pin Chassis FAN Connector (+12V) (CHA_FAN1)		

Figure 3: Component-side connectors

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4 Connectors and Jumpers

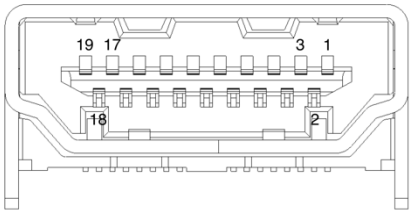
See 3.1 Connector Locations on page 7.

4.1 Rear IO Connectors

4.1.1 HDMI

One HDMI 2.0b specification port up to 4096 x 2160 @ 60 Hz.

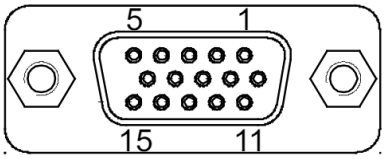
Pin	Signal	Pin	Signal
1	HDMI1_CON_DP2	2	GND
3	HDMI1_CON_DN2	4	HDMI1_CON_DP1
5	GND	6	HDMI1_CON_DN1
7	HDMI1_CON_DP0	8	GND
9	HDMI1_CON_DN0	10	HDMI1_CON_CKP
11	GND	12	HDMI1_CON_CKN
13	N/C	14	N/C
15	HDMI1_DDC_CLK	16	HDMI1_DDC_DATA
17	GND	18	+5V
19	HDMI1_CON_HPD		



4.1.2 VGA

One VGA, resolution up to 1920x1200 @ 60Hz.

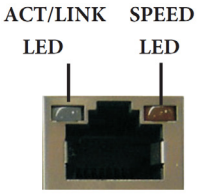
Pin	Signal
1	VCC
2	UV0-
3	UV0+
4	GND



4.1.3 Ethernet Connectors (LAN1, LAN2)

10/100/1000/2500 Mbps LAN Ethernet controllers based on Realtek RTL8125BG, supporting PXE and WOL.

Pin	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	LAN_MDI0+
2	TX-	LAN_MDI0-
3	RX+	LAN_MDI1+
4	--	LAN_MDI2+
5	--	LAN_MDI2-
6	RX-	LAN_MDI1-



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Pin	10BASE-T/ 100BASE-TX	1000BASE-T
7	--	LAN_MDI3+
8	--	LAN_MDI3-

LED Behavior

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

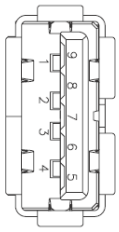
4.1.4 USB Connectors

1x USB 3.2 Gen2 x1 (Type C)

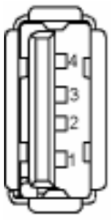
1x USB 3.2 Gen1 x1

2x USB 2.0

Pin	Signal
1	+5VDC
2	USB_N
3	USB_P
4	GND
5	USB3_RX_N
6	USB3_RX_P
7	GND
8	USB3_TX_N
9	USB3_TX_P



Pin	Signal
1	VCC
2	UV0-
3	UV0+
4	GND



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4.1.5 Audio Connectors

- One Line-out and one Mic-in on rear I/O
- Realtek ALC897 codec

4.2 Internal Connectors

4.2.1 4-Pin DC-In PWR Connector & UPS Module Power Output Connector (Input +12V to +28V) (FROM_UPS1)

Connect a DC +12V~+28V power supply to the following pins.

Pin	Signal Name
1	GND
2	DC Input
3	DC Input
4	GND



4.2.2 SATA Connectors (SATA3_1)

One SATA 6 Gbps ports are available on AmITX-ALN. The Serial ATA3 (SATA3) connector supports SATA data cables for internal storage devices and the current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

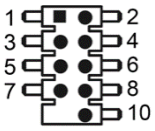
Pin	Signal Name
1	GND
2	SATA-A+
3	SATA-A-
4	GND
5	SATA-B-
6	SATA-B+
7	GND



4.2.3 USB 2.0 Header (USB2_10_11)

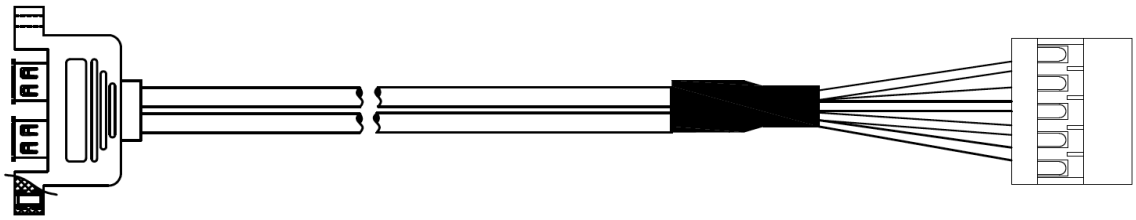
2x USB 2.0.

Pin	Signal Name	Signal Name	Pin
1	USB_PWR	USB_PWR	2
3	P-	P-	4
5	P+	P+	6
7	GND	GND	8
9		DUMMY	10



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USB Cable (optional):
USB 2.0 Header to 2x Female Type-A Cable (length 150mm), P/N: 30-21625-0000-B0



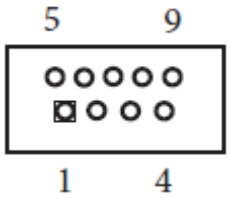
4.2.4 USB 3.2 Gen1 (USB3H_2-4)

1x USB 3.2 Gen1

- **Connector (USB3H_2)**

1x USB 3.2 Gen1 Type-A vertical connector on this motherboard. The maximum supported power current is 0.5A.

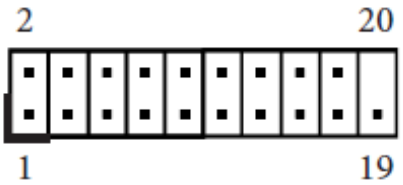
Pin	Signal Name
1	USB_PWR
2	USB_D-
3	USB_D+
4	GND
5	SSRX-
6	SSRX+
7	GND
8	SSTX-
9	SSTX+



- **Header (USB3H_3_4)**

This header can support two USB 3.2 Gen1 ports with maximum power current 0.9A per port.

Pin	Signal Name	Signal Name	Pin
1	DUMMY	IntA_PA_D+	2
3	IntA_PB_D+	IntA_PA_D-	4
5	IntA_PB_D-	GND	6
7	GND	IntA_PA_SSTX+	8
9	DUMMY	IntA_PA_SSTX-	10
11	DUMMY	GND	12
13	GND	IntA_PA_SSRX+	14
15	DUMMY	IntA_PA_SSRX-	16
17	DUMMY	Vbus	18

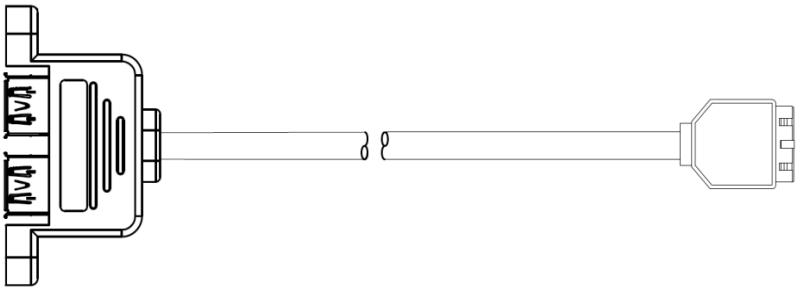


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Pin	Signal Name	Signal Name	Pin
19	Vbus		20

USB Cable (optional):

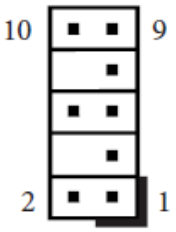
USB 3.0 Header to 2x Female Type-A Cable (length 150mm), P/N: 30-21597-1000-A0



4.2.5 Front Panel Audio Header (HD_AUDIO1)

This is the line out/microphone interface for the front panel audio cable, allowing jack detection, convenient connection, and control of audio devices.

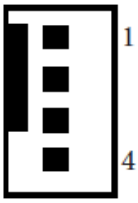
Pin	Signal Name	Signal Name	Pin
1	MIC2_L	OUT_RET	2
3	MIC2_R		4
5	OUT2_R	PRESENCE#	6
7	J_SENSE		8
9	OUT2_L	GND	10



4.2.6 CPU Fan and Chassis Fan Connectors (+12V) (CPU_FAN1, CHA_FAN1)

The board offers three 4-pin CPU fan (Smart Fan) connectors which are compatible with 3-pin CPU fan. If you connect a 3-pin CPU fan to the CPU fan connector on this motherboard, use pin 1-3. The maximum current is 1A.

Pin	Signal Name
1	GND
2	+12V
3	FAN_SPEED
4	FAN_SPEED_CONTROL



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4.2.7 Serial COM Port Header

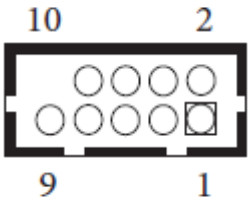
There are four 2.54mm-pitch COM port headers (COM1 to COM4) and the serial ports are over-current protected. The maximum current per port is 1A, and the power supply of pin 9 is either 5V or 12V. Use COM Port PWR Setting Jumper to set the power for COM port pin 9.

Serial Port	Functions
COM1	Supports RS232/422/485
COM2	
COM3	Supports RS-232
COM4	

Please refer to the table below for the pin definition. In addition, COM1, 2 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration. You may refer to our user manual for details.

Serial COM Port Header (COM 1-4)

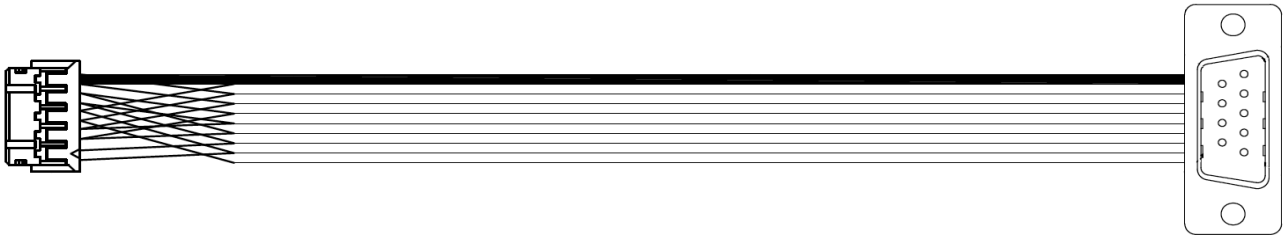
Pin	Signal Name	Signal Name	Pin
1	DDCD#1	RRXD	2
3	TTXD	DDTR#	4
5	GND	DDSR#	6
7	RRTS#	CCTS#	8
9	PWR		10



COM 1, 2 Ports Pin Definition

Pin	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	TX+	RTX+
3	TXD	RX+	N/A
4	DTR	RX-	N/A
5	GND	GND	GND
6	DSR	N/A	N/A
7	RTS	N/A	N/A
8	CTS	N/A	N/A
9	PWR	PWR	PWR
10	N/A	N/A	N/A

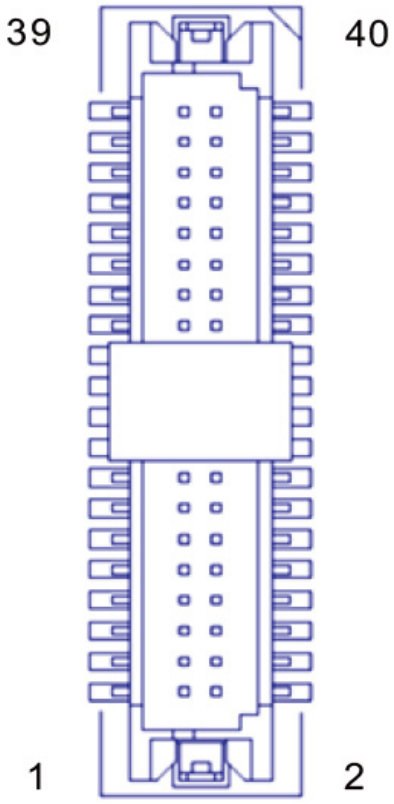
COM Cable (optional):
COM Port Cable (length 350mm), P/N: 30-22155-0000-A0



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4.2.8 LVDS Panel Connector (LVDS1)

Pin	Signal Name	Signal Name	Pin
1	LCD_VCC	LCD_VCC	2
3	+3.3V	NA	4
5	NA	LVDS_A_DATA0#	6
7	LVDS_A_DATA0	GND	8
9	LVDS_A_DATA1#	LVDS_A_DATA1	10
11	GND	LVDS_A_DATA2#	12
13	LVDS_A_DATA2	GND	14
15	LVDS_A_DATA3#	LVDS_A_DATA3	16
17	GND	LVDS_A_CLK#	18
19	LVDS_A_CLK	GND	20
21	LVDS_B_DATA0#	LVDS_B_DATA0	22
23	GND	LVDS_B_DATA1#	24
25	LVDS_B_DATA1	GND	26
27	LVDS_B_DATA2#	LVDS_B_DATA2	28
29	DPLVDD_EN	LVDS_B_DATA3#	30
31	LVDS_B_DATA3	GND	32
33	LVDS_B_CLK#	LVDS_B_CLK	34
35	GND	CON_LBKLT_EN	36
37	CON_LBKLT_CTL	LCD_BLT_VCC	38
39	LCD_BLT_VCC	LCD_BLT_VCC	40



* eDP pin definition (switch by BIOS)

Pin	Signal Name	Signal Name	Pin
1	LCD_VCC	LCD_VCC	2
3	N/A	N/A	4
5	N/A	N/A	6
7	N/A	GND	8
9	EDP_TX1#	EDP_TX1	10
11	GND	EDP_TX0#	12
13	EDP_TX0	GND	14
15	N/A	N/A	16
17	GND	EDP_AUXN	18
19	EDP_AUXP	GND	20
21	N/A	N/A	22
23	GND	N/A	24
25	N/A	GND	26

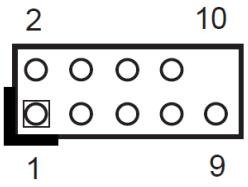
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Pin	Signal Name	Signal Name	Pin
27	N/A	N/A	28
29	DPLVDD_EN	N/A	30
31	N/A	GND	32
33	N/A	N/A	34
35	GND	CON_LBKLT_EN	36
37	CON_LBKLT_CTL	LCD_BLT_VCC	38
39	LCD_BLT_VCC	LCD_BLT_VCC	40

4.2.9 System Panel Header (PANEL1)

This header accommodates several system front panel functions. Connect the power switch, reset switch, and system status indicator on the chassis to this header according to the pin assignments below. Make sure you identify the positive and negative pins before connecting the cables.

Pin	Signal Name	Signal Name	Pin
1	HDLED+	PLED+	2
3	HDLED-	PLED-	4
5	GND	PWRBTN#	6
7	RESET#	GND	8
9	GND		10



PWRBTN (Power Switch): Connects to the power switch on the chassis front panel. You can configure how to turn off your system using the power switch.

RESET (Reset Switch): Connects to the reset switch on the chassis front panel. Press the reset switch to restart the computer if it freezes and fails to perform a normal restart.

PLED (System Power LED): Connects to the power status indicator on the chassis front panel. The LED is on when the system is operating. It blinks when the system is in the S1 sleep state and turns off when the system is in the S3/S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED): Connects to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker, and more. When connecting your chassis's front panel module to this header, make sure the wire and pin assignments match.

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4.2.10 Chassis Intrusion Header

This motherboard supports CASE OPEN detection feature that determines if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

CI1

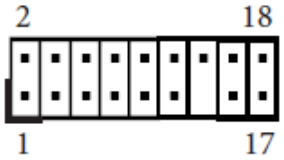
Setting	Description
Close	Active Case Open
Open	Normal (Default)



4.2.11 ESPI Header (ESPI1)

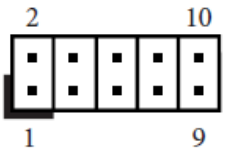
The header is reserved for Port 80 code display and for debugging purposes.

Pin	Signal Name	Signal Name	Pin
1	ESPI_CLK	GND	2
3	ESPI_CS#	SMB_CLK_MAIN	4
5	ESPI_RST#	SMB_DATA_MAIN	6
7	ESPI_IO3	ESPI_IO2	8
9	+3V	ESPI_IO1	10
11	ESPI_IO0	GND	12
13		S_PWRDWN#	14
15	+3VSB	DUMMY	16
17	GND	GND	18



4.2.12 8-bit GPIO (JGPIO1)

Pin	Signal Name	Signal Name	Pin
1	SIO_GP34	SOC_E15	2
3	SIO_GP35	SOC_E01	4
5	SIO_GP36	SOC_E02	6
7	SIO_GP37	SOC_E13	8
9	JGPIO_PWR	GND	10



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4.2.13

4.2.13 M.2 M-Key Socket (M2_M1)

Pin	Signal Name	Signal Name	Pin
1	GND	+3.3V	2
3	GND	+3.3V	4
5	NA	NA	6
7	NA	NA	8
9	GND	SATA_LED	10
11	NA	+3.3V	12
13	NA	+3.3V	14
15	GND	+3.3V	16
17	NA	+3.3V	18
19	NA	NA	20
21	GND	NA	22
23	NA	NA	24
25	PETp2	NA	26
27	GND	NA	28
29	NA	NA	30
31	NA	GND	32
33	GND	USB_D+	34
35	NA	USB_D-	36
37	NA	NA	38
39	GND	NA	40
41	PERn0 /	NA	42
	SATA-B+		
43	PERp0 /	NA	44
	SATA-B-		
45	GND	NA	46
47	PETn0 /	NA	48
	SATA-A-		
49	PETp0 /	PERST#	50
	SATA-A+		
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

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Pin	Signal Name	Signal Name	Pin
73	GND	+3.3V	74
75	GND		

4.2.14 M.2 B-Key Socket (M2_B1)

Pin	Signal Name	Signal Name	Pin
1	NA	+3.3V	2
3	GND	+3.3V	4
5	GND	FULL_Card_ Power_off	6
7	USB_D+	W_DISABLE1#	8
9	USB_D-	WWAN_LED#	10
11	GND		
		NA	20
21	GND	NA	22
23	NA	NA	24
25	NA	W_DISABLE2#	26
27	GND	NA	28
29	USB3_RX-	UIM_RESET	30
31	USB3_RX+	UIM_CLK	32
33	GND	UIM_DATA	34
35	USB3_TX-	UIM_PWR	36
37	USB3_TX+	NA	38
39	GND	NA	40
41	PERn0	NA	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
59	NA	NA	60
61	NA	NA	62
63	NA	NA	64
65	NA	NA	66

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Pin	Signal Name	Signal Name	Pin
67	NA	NA	68
69	PEDET	+3.3V	70
71	GND	+3.3V	72
73	GND	+3.3V	74
75	NA		

4.2.15 M.2 E-Key Socket (M2_E1)

Pin	Signal Name	Signal Name	Pin
1	GND	+3.3V	2
3	USB_D+	+3.3V	4
5	USB_D-	NA	6
7	GND	NA	8
9	CNV_WGR_D1-	CNV_RF_	10
		RESET	
11	CNV_WGR_	NA	12
	D1+		
13	GND	MODEM_	14
		CLKREQ	
15	CNV_WGR_D0-	NA	16
17	CNV_WGR_	GND	18
	D0+		
19	GND	NA	20
21	CNV_WGR_	CNV_BRI_RSP	22
	CLK-		
23	CNV_WGR_		
	CLK+		
33	GND	CNV_BGI_DT	32
35	PETp	CNV_RGI_RSP	34
37	PETn	CNV_BRI_DT	36
39	GND	NA	38
41	PERp	NA	40
43	PERn	NA	42
45	GND	NA	44
47	PEFCLKp	NA	46
49	PEFCLKn	NA	48

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Pin	Signal Name	Signal Name	Pin
51	GND	SUSCLK	50
53	CLKREQ#	PERST0#	52
55	NA	W_DISABLE1#	54
57	GND	W_DISABLE2#	56
59	CNV_WT_D1-	SMB_DATA	58
61	CNV_WT_D1+	SMB_CLK	60
63	GND	NA	62
65	CNV_WT_D0-	NA	64
67	CNV_WT_D0+	NA	66
69	GND	NA	68
71	CNV_WT_CLK-	NA	70
73	CNV_WT_	+3.3V	72
	CLK+		
75	GND	+3.3V	74

4.3 Jumper and Switch Settings

4.3.1 ATX/AT Mode Jumper (SIO_AT1)

The header provides auto boot function when AC power on. If you need the function, short SIO_AT1 pin 1 and pin 2.

Setting	Description
Open	ATX Mode (Default)
Short	AT Mode



4.3.2 Clear CMOS Header (CLRMOS1)

CLRMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, turn off the computer and unplug the power cord.

Setting	Description
1-2	Normal (Default)
2-3	Clear CMOS

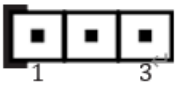


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4.3.3 Brightness Control Mode (BLT_PWM1)

Set to 1-2 when adjusting brightness by Brightness Control bar under OS, 2-3 when adjusting brightness by BLT_VOL1.

Setting	Description
1-2	From eDP PWM to CON_LBKLT_CTL
2-3	From LVDS PWM to CON_LBKLT_CTL (Default)



COM Port PWR Setting Headers (PWR_COM1~4 (For COM Port1~4))

- PWR_COM1 (For COM Port1)
- PWR_COM2 (For COM Port2)
- PWR_COM3 (For COM Port3)
- PWR_COM4 (For COM Port4)

Setting	Description
1-2	+5V (Default)
2-3	+12V



The maximum current per port is 1A, and the power supply is either 5V or 12V. Use the jumper to set the power for COM port pin 9.

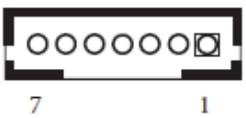
SATA Power Output Connector (SATA_PWR1)

Pin	Signal Name
1	+5V
2	GND
3	GND
4	+12V



Backlight Volume Control (BLT_VOL1)

Pin	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	BRIGHTNESS_UP
5	BRIGHTNESS_DW
6	GND
7	GND



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Inverter Power Control Wafer (BLT_PWR1)

Pin	Signal Name
1	GND
2	GND
3	CON_LBKLT_CTL
4	CON_LBKLT_EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC



Digital Input / Output Power Select (JGPIO_PWR) (JGPIO_PWR1)

1-2	+12V
2-3	+5V (Default)



eDP and LVDS Panel Power Select (LCD_VCC) (PNL_PWR1)

1-2	LCD_VCC : +3V (Default)
2-3	LCD_VCC : +5V
4-5	LCD_VCC : +12V



eDP and LVDS Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)

1-2	LCD_BLT_VCC : +5V (Default)
2-3	LCD_BLT_VCC : +12V
4-5	LCD_BLT_VCC : DC Input



CON_LBKLT_CTL Voltage Level (BLT_PWM2)

1-2	3V Level (Default)
2-3	5V Level



Digital Input / Output Default Value Setting (JGPIO_SET1)

The header is used for GPIO default value setting for either pull high or pull low. Pulling the header to a high/low value means the voltage is anchored to VCC/GND, in a stable, non-floating state.

1-2	Pull-High (Default)
2-3	Pull-Low



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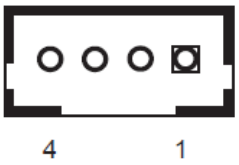
DACC Jumper (DACC1)

Open	Normal
Short	Auto Clear CMOS (Power off) (Default)



SMBUS_TEST1

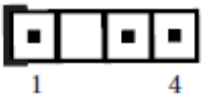
Pin	Signal Name
1	GP_E01
2	SMB_CLK
3	SMB_DATA
4	GND



SPDIF Header (SPDIF1)

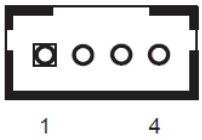
SPDIF header provides SPDIF audio output to HDMI VGA card, allowing the system to connect to HDMI Digital TV/projector/LCD devices. Connect the SPDIF connector of the HDMI VGA card to this header.

Pin	Signal Name
1	+5V
2	
3	SPDIF OUT
4	GND



3W Audio AMP Output Wafer (SPEAKER1)

Pin	Signal Name
1	OUTLN
2	OUTLP
3	OUTRP
4	OUTRN



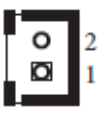
Battery Connector (BAT1)

Pin	Signal Name
1	+BAT
2	GND



2-pin UPS Module Power Input Connector (TO_UPS1)

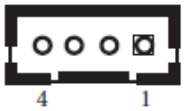
Pin	Signal Name
1	GND
2	DC Input



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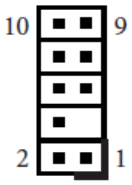
PWR_ADAPTER1 (PWR_ADAPTER1)

Pin	Signal Name
1	GND
2	5VA_CONTROL
3	5VA
4	GND



SPI_TPM Header (SPI_TPM1)

Pin	Signal Name	Signal Name	Pin
1	TPM PWR	RST#	2
3		CS#	4
5	IRA	MOSI	6
7	MISO	GND	8
9	CLK	GND	10



COM3, COM4 TX RX Selection Headers

(From left to right)

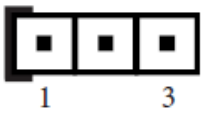
COM4_RX_SEL1

COM4_TX_SEL1

COM3_RX_SEL1

COM3_TX_SEL1

Pin	Signal Name
1-2	TTL: 0V~5V
2-3	-5V~+5V (RS-232) (Default)



Buzzer Header (BUZZ2)

This header provides additional external Buzzer to boot up debugging.

Pin	Signal Name
1	Buzz+
2	Buzz-



PWR BAT2

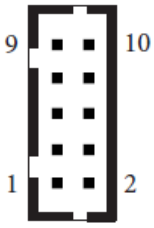
Setting	Description
Open	Normal (Default)
Short	Charge Battery



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VGA Header (VGA2)

Pin	Signal Name	Signal Name	Pin
1	RED	GND	2
3	GREEN	GND	4
5	BLUE	GND	6
7	HSYNC	VSYNC	8
9	DDC_CLK	DDC_DATA	10



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5 Driver Installation

Drivers can be downloaded through the following link.

https://www.adlinktech.com/Products/Industrial_Motherboards_SBCs/Mini-ITXEmbeddedBoards/AmITX-ALN

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6 BIOS Setup

This section presents the primary menus of the UEFI Setup Utility.

2 Options to enter UEFI Setup Utility:

- Press [F2] or [Del] during POST (Power-On-Self-Test)
- Press [Ctl] + [Alt] + [Del] after POST

6.1 Menu Structure

This section presents the six primary menus of the BIOS Setup Utility. Use the following table as a quick reference for BIOS Setup Utility. The subsections in this section describe the submenus and setting options for each menu item.

Main	**Advanced**	**H/W Monitor**
Sets up the system time/date and displays the system information: - System Date - System Time - BIOS Information - Memory Information -	Contains advanced system configurations, including: ▶ CPU Configuration ▶ Chipset Configuration ▶ Storage Configuration ▶ Super IO Configuration ▶ ACPI Configuration ▶ USB Configuration ▶ Trusted Computing ▶ Instant Flash	Displays Hardware Status info, including: - Hardware Health Event Monitoring - CPU_FAN1 Setting - CHA_FAN1 Setting - Case Open Feature
Security	**Boot**	**Exit**
Changes or clears the supervisor/user password for the system - Supervisor Password - User Password - Secure Boot	Configures the boot settings and boot priority for available devices - Boot Option #1 - Boot From Onboard LAN - Setup Prompt Timeout - Bootup Num-Lock - Full Screen Logo	Exits the UEFI Setup Utility while saving or discard the changes made - Save Changes and Exit - Discard Changes and Exit - Discard Changes - Load UEFI Defaults - Launch EFI Shell from filesystem device

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6.2 Main

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

Feature	Options
System Date	xxx mm/dd/yyyy
System Time	hh:mm:ss
BIOS Information	
UEFI Version	AmITX-RL-I x.xx.xx
Processor Type	Info only
Processor Speed	Info only
Cache Size	Info only
Memory Information	
Total Memory	Info only
DDR4_A1	Info only
LVDS Rom Version	Info only

6.3 Advanced

Contains the configurations for the following: CPU Configuration, Chipset Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration, and Trusted Computing.

Feature
▶ CPU Configuration
▶ Chipset Configuration
▶ Storage Configuration
▶ Super IO Configuration
▶ ACPI Configuration
▶ USB Configuration
▶ Trusted Computing

Feature	Description
▶Instant Flash	A UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, and then you can update your UEFI in only a few clicks without preparing an additional floppy diskette or other com- plicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

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6.3.1 Advanced > CPU Configuration

Feature	Description
Active Processor E-Cores	Allows you to select the number of E-Cores to enable in each processor package. NOTE: Number of P-Cores and E-Cores are looked at together. When both are {0,0}, Pcode will enable all cores.
CPU C States Support	Allows you to enable CPU C States Support for power saving. It is recommended to keep C3, C6, and C7 enabled for better power saving. Configuration options: [Enabled] [Disabled]
Enhanced Halt State (C1E)	Allows you to enable Enhanced Halt State (C1E) for lower power consumption. Configuration options: [Enabled] [Disabled]
Package C States Support	Allows you to enable CPU, PCIe, Memory, Graphics C State Support for power saving.
CFG Lock	Allows you to enable or disable the CFG Lock. Configuration options: [Enabled] [Disabled]
Intel Virtualization Technology	Allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems. Configuration options: [Enabled] [Disabled]
Intel SpeedStep Technology	Allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation. CPU turbo ratio can be fixed when Intel SpeedStep Technology is set to [Disabled] and Intel Turbo Boost Technology is set to [Enabled]. Configuration options: [Enabled] [Disabled]. If you install Windows® 10 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology. *Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.*
Intel Turbo Boost Technology	Enables the processor to run above its base operating frequency when the operating system requests the highest performance state. The default value is [Enabled]. Configuration options: [Enabled] [Disabled]
CPU Thermal Throttling	Allows you to enable CPU internal thermal control mechanisms to keep the CPU from overheating. Configuration options: [Enabled] [Disabled]
Power Limit 1	"Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Overclocking SKU: Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and Processor Base Power (TDP) Limit. If value is 0, BIOS will program Processor Base Power (TDP) value."
Power Limit 2	"Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. If the value is 0, BIOS will program this value as 1.25*Processor Base Power (TDP). For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit."

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6.3.2 Advanced > Chipset Configuration

Feature	Description
VT-d	Intel® Virtualization Technology for Directed I/O helps your virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance. Configuration options: [Enabled] [Disabled]
Re-Size BAR Support	If a system has Resizable BAR capable PCIe devices, this option enables or disables Resizable BAR Support.
Share Memory	Allows you to configure the size of memory that is allocated to the integrated graphics processor when the system boots up. Configuration options: [Auto][32M][64M][128M][256M][512M] (Options vary depending on the memory you Use on your motherboard.)
In-Band ECC Support	Allows you to enable or disable In-Band ECC. Configuration options: [Enabled] [Disabled]
Render Standby	Power down the render unit when the GPU is idle for lower power consumption.
Active LVDS	Use this option to enable or disable the LVDS. The default value is [Disabled]. Set the item to [Enabled]. Then press <F10> to save the setting and restart the system. Now the default value of Active LVDS is changed to ENABLED (F9 load default is also set to ENABLED). Change the setting from [Enabled] to [Disabled], and then press <F10> to save the setting and restart the system. Likewise, the default value of Active LVDS is changed to DISABLED (F9 load default is also set to DISABLED).
Onboard LAN1	Allows you to enable or disable the Onboard LAN1 feature.
Onboard LAN2	Allows you to enable or disable the Onboard LAN2 feature.
Onboard HD Audio	Allows you to enable or disable the onboard HD audio controller. Set this item to [Auto] to enable the onboard HD and automatically disable it when a sound card is installed. Configuration options: [Enabled] [Disabled]
Restore on AC/Power Loss	Allows you to select the power state after a power failure. [Power Off] sets the power to remain off when the power recovers. [Power On] sets the system to start to boot up when the power recovers.

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6.3.3 Advanced > Storage Configuration

Feature	Description
SATA Controller(s)	The option allows you to enable or disable the SATA controllers. Configuration options: [Enabled] [Disabled]
SATA Mode Selection	AHCI supports new features that improve performance. Configuration option: [AHCI]
Hybrid Storage Detection and Configuration Mode	The option allows you to select Hybrid Storage Detection and Configuration Mode. Configuration options: [Dynamic Configuration for Hybrid Storage Enable] [Disabled]
SATA Aggressive Link Power Management	SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is supported only by AHCI mode. Configuration options: [Enabled] [Disabled]
Hard Disk S.M.A.R.T.	S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability. Configuration options: [Enabled] [Disabled]

6.3.4 Advanced > Super IO Configuration

Feature	Description
COM1 Configuration	Use this to set parameters of COM1. Type Select Use this to select COM1 port type: [RS232], [RS422] or [RS485].
COM2 Configuration	Use this to set parameters of COM2. Type Select Use this to select COM2 port type: [RS232], [RS422] or [RS485].
COM3 Configuration	Use this to set parameters of COM3.
COM4 Configuration	Use this to set parameters of COM4.
WDT Timeout Reset	Use this to set the Watch Dog Timer.

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6.3.5 Advanced > ACPI Configuration

Feature	Description
Suspend to RAM	Allows you to select [Disabled] for ACPI suspend type S1. It is recommended to select [Auto] for ACPI S3 power saving. Configuration options: [Auto] [Disabled]
PCIE Devices Power On	Use this item to enable or disable PCIE devices to turn on the system from the power-soft- off mode.
RTC Alarm Power On	Allows the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system. Configuration options: [Enabled] [Disabled] [By OS]

6.3.6 Advanced > USB Configuration

Feature	Description
USB Power Control	Use this option to control USB power.
M.2 Key B USB Function	The item enables or disables M.2 Key_B USB function.

6.3.7 Advanced > Trusted Computing

Feature	Description
Security Device Support	Allows you to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. Configuration options: [Enabled] [Disabled]
Active PCR banks	Displays active PCR Banks.
Available PCR Banks	Displays available PCR Banks.
SHA256 PCR Bank	Allows you to enable or disable SHA256 PCR Bank. Configuration options: [Enabled] [Disabled]
SHA384 PCR Bank	Allows you to enable or disable SHA384 PCR Bank. Configuration options: [Enabled] [Disabled]
SM3_256 PCR Bank	Allows you to enable or disable SM3_256 PCR Bank. Configuration options: [Enabled] [Disabled]

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Feature	Description
Pending Operation	Allows you to schedule an Operation for the Security Device. NOTE: Your computer will reboot during restart in order to change State of the Device. Configuration options: [None] [TPM Clear]
Platform Hierarchy	Allows you to enable or disable Platform Hierarchy. Configuration options: [Enabled] [Disabled]
Storage Hierarchy	Allows you to enable or disable Storage Hierarchy. Configuration options: [Enabled] [Disabled]
Endorsement Hierarchy	Allows you to enable or disable Endorsement Hierarchy. Configuration options: [Enabled] [Disabled]
Physical Presence Spec Version	Select this item to tell OS to support PPI spec version 1.2 or 1.3. Please note that some HCK tests might not support version 1.3. Configuration options: [1.2] [1.3]
TPM 2.0 Interface Type	Allows you to view the Communication Interface to TPM 2.0 Device: CRB or ITS.
Device Select	Allows you to select the TPM device to be supported. [TPM 1.2] restricts support to TPM 1.2 devices. [TPM 2.0] restricts support to TPM 2.0 devices. [Auto] supports both TPM 1.2 and TPM 2.0 devices with the default set to TPM 2.0 de- vices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

6.4 HW Monitor

This screen allows you to monitor the status of your system and installed devices, such as CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.

Feature	Description
CPU_Fan 1 Setting	Allows you to select a fan mode for CPU Fan 1. The default value is [Full On]. Configuration options: [Full On] [Automatic Mode]
CHA_Fan 1 Setting	Allows you to set chassis fan 1’s speed. The default value is [Full On]. Configuration options: [Full On] [Automatic Mode]
Case Open Feature	Allows you to enable or disable case open detection feature. The default is value [Disabled].
Clear Status	This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

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6.5

6.5 Security

Feature	Description
Supervisor Password	Set or change the password for the administrator account. Only the administrator has the authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.
User Password	Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.
Secure Boot	Press [Enter] to configure the Secure Boot Settings. The feature protects the system from unauthorized access and malwares during POST.
Intel(R) Platform Trust Technology	Enables/disables Intel PTT in ME. Disable this option to use discrete TPM Module.
Secure Boot Mode	[Standard] Select this item and the system will automatically load the Secure Boot keys from the BIOS database. [Custom] Select this item and Secure Boot Policy variables can be configured by a physically present user without full authentication.
Install Default Secure Boot Keys	Please install default secure boot keys if it's the first time you use secure boot.
Clear Secure Boot Keys	This item appears only when you load the default Secure Boot keys. Use this item to clear all default Secure Boot keys.
Key Management	Enables expert users to modify Secure Boot Policy variables without full authentication. This appears only when you set Secure Boot Mode to [Custom].

6.6 Boot

This section displays the available devices on your system for you to configure the boot priority and settings.

Feature	Description
Boot From Onboard LAN	The item allows the system to be waked up by the onboard LAN. Configuration options: [Enabled] [Disabled]
Setup Prompt Timeout	The item allows you to configures the number of seconds to wait for the UEFI setup utility. Configuration options: [1] - [65535]
Bootup Num-Lock	The item allows you to select whether Num Lock should be turned on or off when the system boots up. Configuration options: [On] [Off]
Full Screen Logo	[Enabled] Select this item to display the boot logo. [Disabled] Select this item to show normal POST messages.

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6.7 Save & Exit

Feature	Description
Save Changes and Exit	When you select this option, the following message “Save configuration changes and exit setup?” will pop out. Select [Yes] to save the changes and exit the UEFI SETUP UTILITY.
Discard Changes and Exit	When you select this option, the following message “Discard changes and exit setup?” will pop out. Select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.
Discard Changes	When you select this option, the following message “Discard changes?” will pop out. Select [Yes] to discard all the changes.
Load UEFI Defaults	Allows you to load UEFI default values for all options. The F9 key can be used for this operation.
Launch EFI Shell from filesystem device	Allows you to copy shellx64.efi to the root directory to launch EFI Shell.

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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

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