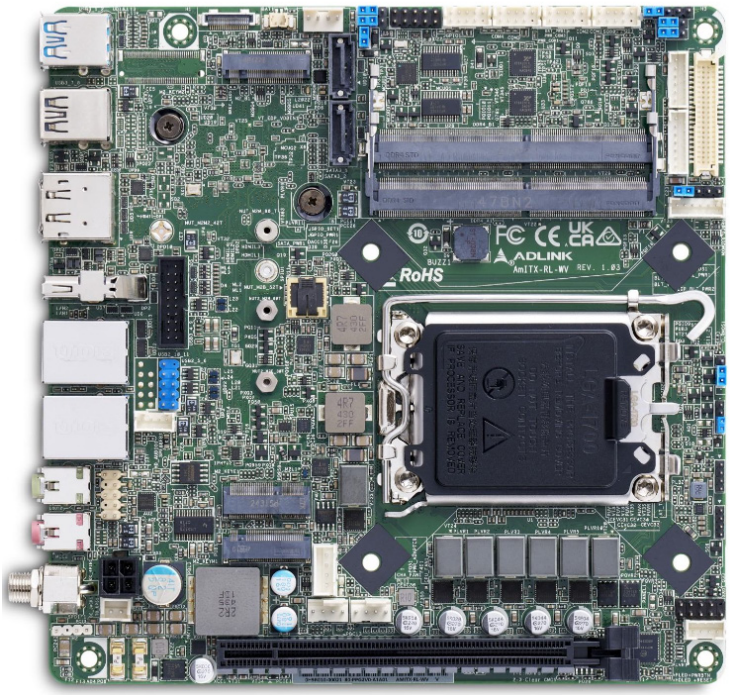
AmITX-RL-WV

User's Manual

Intel® Core™ Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen Core™ Processors with Intel® H610 Chipset



Manual Rev.:	Rev. 1.2
Revision Date:	February 09, 2026
Part Number:	50M-16008-2020

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Leading **EDGE COMPUTING**

Preface

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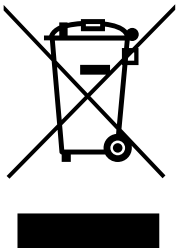
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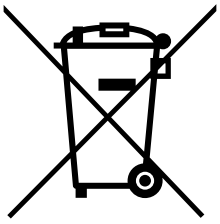
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Battery Labels (for products with battery)









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Revision History

Revision	Description	Date	By
1.0	Initial release	2025-02-18	AL
1.1	Mechanical layout and connectors and jumpers updated	2025-05-15	AL
1.2	Added product (All sections updated)	2026-02-09	AL

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1 Introduction

The AmITX-RL-WV is a Mini-ITX motherboard supporting Desktop Intel® Core™ Series 2 (Bartlett Lake-S) and14th/13 th/12th Gen Core™ processors with the Intel® H610 chipset. It is specifically designed for customerswho require a low-profile design, high-level processing performance, and a long product-life solution.

The AmITX-RL-WV features two DisplayPort outputs, one HDMI port, one LVDS interface, one eDP interface, two Ethernet ports, USB 3.2 Gen 2 and Gen 1 ports, USB 2.0 ports, and SATA 6 Gb/s ports. Expansion is provided by one PCIe x16 slot, while the onboard feature connector offers GPIO and SMBus support. The board is equipped with SPI AMI EFI BIOS, supporting embedded features such as hardware monitoring and a watchdog timer.

Model Number	Chipset	Memory
AmITX-RL-WV	H610	DDR4
AmITX-RL-WV-DDR5	H610	DDR5

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-RL-WV / AmITX-RL-WV-DDR5 Mini-ITX motherboard
- Rear I/O shield
- M.2 screws kit

1.2 Optional Accessories

- CPU 1U Cooler for 65W CPU (P/N: 32-21100-0000-A0)
- USB 2.0 Cable - 2 Ports (P/N: 30-21625-0000-B0)
- USB 2.0/3.0 Cable - 2 Ports (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 - 1 Port (P/N: 30-22155-0000-A0)

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2 Specifications

2.1 Core System

CPU	Intel® Core™ Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen Core™ Processors, LGA1700 socket					
	Family	**Number**	**CPU Core**	**Frequency (GHz)**	**Cache (MB)**	**Power**
	Bartlett Lake-S	251E	24	2.1 GHz	36MB	65
	Bartlett Lake-S	251TE	24	1.4 GHz	36MB	45
	Bartlett Lake-S	221E	14	2.7 GHz	24MB	65
	Bartlett Lake-S	221TE	14	1.8 GHz	24MB	45
	Bartlett Lake-S	211E	10	2.7 GHz	20MB	65
	Bartlett Lake-S	211TE	10	1.7 GHz	20MB	45
	Bartlett Lake-S	201E	4	3.6 GHz	12MB	60
	Bartlett Lake-S	201TE	4	2.9 GHz	12MB	45
	Raptor Lake-S Refresh	i9-14900	24	2.0GHz	36MB	65
	Raptor Lake-S Refresh	i9-14900T	24	1.1GHz	36MB	35
	Raptor Lake-S Refresh	i7-14700	20	2.1GHz	33MB	65
	Raptor Lake-S Refresh	i7-14700T	20	1.3GHz	33MB	35
	Raptor Lake-S Refresh	i5-14500	14	2.6GHz	24MB	65
	Raptor Lake-S Refresh	i5-14500T	14	1.7GHz	24MB	35
	Raptor Lake-S Refresh	i5-14400	10	2.5GHz	20MB	65
	Raptor Lake-S Refresh	i3-14100	4	3.5GHz	12MB	60
	Raptor Lake-S Refresh	i3-14100T	4	2.7GHz	12MB	35
	Raptor Lake-S Refresh	300	2	3.9GHz	6MB	46
	Raptor Lake-S Refresh	300T	2	3.4GHz	6MB	35
	Raptor Lake-S	i9-13900E	24	1.8GHz	36MB	65
	Raptor Lake-S	i9-13900	24	2.0GHz	36MB	65
	Raptor Lake-S	i9-13900TE	24	1.0GHz	36MB	35

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	Raptor Lake-S	i7-13700E	16	1.9GHz	30MB	65
	Raptor Lake-S	i7-13700	16	2.1GHz	30MB	65
	Raptor Lake-S	i7-13700TE	16	1.1GHz	30MB	35
	Raptor Lake-S	i5-13500E	14	2.4GHz	24MB	65
	Raptor Lake-S	i5-13500	14	2.5GHz	24MB	65
	Raptor Lake-S	i5-13500TE	14	1.3GHz	24MB	35
	Raptor Lake-S	i5-13400E	10	2.4GHz	20MB	65
	Raptor Lake-S	i5-13400	10	2.5GHz	20MB	65
	Raptor Lake-S	i3-13100E	4	3.3GHz	12MB	60
	Raptor Lake-S	i3-13100	4	3.4GHz	12MB	60
	Raptor Lake-S	i3-13100TE	4	2.4GHz	12MB	35
	Alder Lake-S	i9-12900E	16	2.3GHz	30MB	65
	Alder Lake-S	i9-12900	16	2.4GHz	30MB	65
	Alder Lake-S	i9-12900TE	16	1.1GHz	30MB	35
	Alder Lake-S	i7-12700E	12	2.1GHz	25MB	65
	Alder Lake-S	i7-12700	12	1.6GHz	25MB	65
	Alder Lake-S	i7-12700TE	12	1.4GHz	25MB	35
	Alder Lake-S	i5-12500E	6	2.9GHz	18MB	65
	Alder Lake-S	i5-12500	6	3.0GHz	18MB	65
	Alder Lake-S	i5-12500TE	6	1.9GHz	18MB	35
	Alder Lake-S	i5-12400	6	2.5GHz	18MB	65
	Alder Lake-S	i3-12100E	4	3.2GHz	12MB	60
	Alder Lake-S	i3-12100	4	3.3GHz	12MB	60
	Alder Lake-S	i3-12100TE	4	2.1GHz	12MB	35
	Alder Lake-S	G7400E	2	3.6GHz	6MB	46
	Alder Lake-S	G7400TE	2	3.0GHz	6MB	35
	Alder Lake-S	G6900E	2	3.0GHZ	4MB	46
	Alder Lake-S	G6900TE	2	2.4GHz	4MB	35
	Note: Availability of features may vary between processor SKUs and operating systems.					
Chipset	Intel® H610 Chipset					
Memory	**AmITX-RL-WV:** Two 260-pin DDR4 non-ECC SODIMM slots, DDR4 3200 MHz, up to 64 GB **AmITX-RL-WV-DDR5:** Two 260-pin DDR5 non-ECC SODIMM slots, DDR5 4800 MHz, up to 64 GB					
Embedded BIOS	AMI® UEFI BIOS, 256Mb SPI flash memory					

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2.2 Rear I/O Connectors

Display	1x HDMI 2.0b, 2x DP 1.4a
LAN	**AmITX-RL-WV:** 2x 2.5GbE RJ-45 **AmITX-RL-WV-DDR5:** 1x GbE and 1x 2.5GbE RJ-45
USB	2x USB3.2 Gen2 x1 2 x USB 2.0
Audio	1x Line-out, 1x Mic-in connector
Power	**AmITX-RL-WV only:** 12V to 28V DC-In DC Jack (screw type)

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2.3 Internal Headers and Connectors

PCI Express Slots	**AmITX-RL-WV:** 1x PCIe Gen4 x16 **AmITX-RL-WV-DDR5:** 1x PCIe Gen5 x16
USB	1x USB3.2 Gen1 x1 (via header) 3x USB2.0 (via header)
SATA	2x SATA 6.0 Gb/s connectors.
Expansion Slots	1x M.2 B-key 3042/3052 (PCIe x1, USB3.2 Gen1, USB 2.0) for 4G/5G module 1x M.2 E-key 2230 (PCIe x1, USB 2.0, CNVi) for Wireless 1x M.2 M-Key 2242/2260/2280 (PCIe Gen3 x4) for SSD 1x SIM socket connected to M.2 B Key
Serial	2x RS-232/422/485 headers 2x RS-232 headers (AmITX-RL-WV only)
PCI Express Slots	1x eDP 1.4b, supports max. resolution up to 4096x2160@60Hz
LVDS	1x LVDS, supports dual channel 24-bit up to 1920x1200@60Hz
DIO	1x 8-bit GPIO pin header
Others	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 ATX Power Connector (4-pin)

2.4 Form Factor

Mini-ITX: 170mm x 170mm

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2.5 Video

Controller	Intel® UHD Graphics
Display Interface Support	• 1x HDMI 2.0b, max resolution up to 4096x2160@60Hz • 2x DP 1.4a, DP++, max resolution up to 4096x2160@60Hz • 1x eDP 1.4b, max. resolution up to 4096x2160@60Hz • 1x LVDS, supports dual channel 24-bit, max resolution up to 1920x1200@60Hz

2.6 Audio

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

2.7 LAN

Controller	**AmITX-RL-WV:** 2x Intel® i225-V with 10/100/1000/2500 Mbps **AmITX-RL-WV-DDR5:** 1x Intel® i226-V with 10/100/1000/2500 Mbps and 1x Intel® i219-V with 10/100/1000Mbps
Interface	RJ45 connectors

2.8 Trusted Platform Module (TPM)

TPM 2.0	**AmITX-RL-WV:** Infineon SLB9670XQ2.0 **AmITX-RL-WV-DDR5:** Infineon SLB9672VU2.0

2.9 Power Specification

Input PWR	ATX PWR (4-pin) connector or **AmITX-RL-WV only:** 12V to 28V DC-In with DC Jack (screw type)
Power On	AT/ATX Supported - AT: Directly PWR on as power input ready - ATX: Press button to PWR on after power input ready

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2.10 Watchdog Timer

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

2.11 Temperatures

Standard Operating Temperature	0°C to 60°C
Storage Temperature	-40°C to 85°C

2.12 Environmental

Humidity	45°C @ 95% RH non-condensing
Vibration	1Grms, 5-500Hz, non-operation

2.13 Operating Systems

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

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2.14 Functional Block Diagram (AmITX-RL-WV)

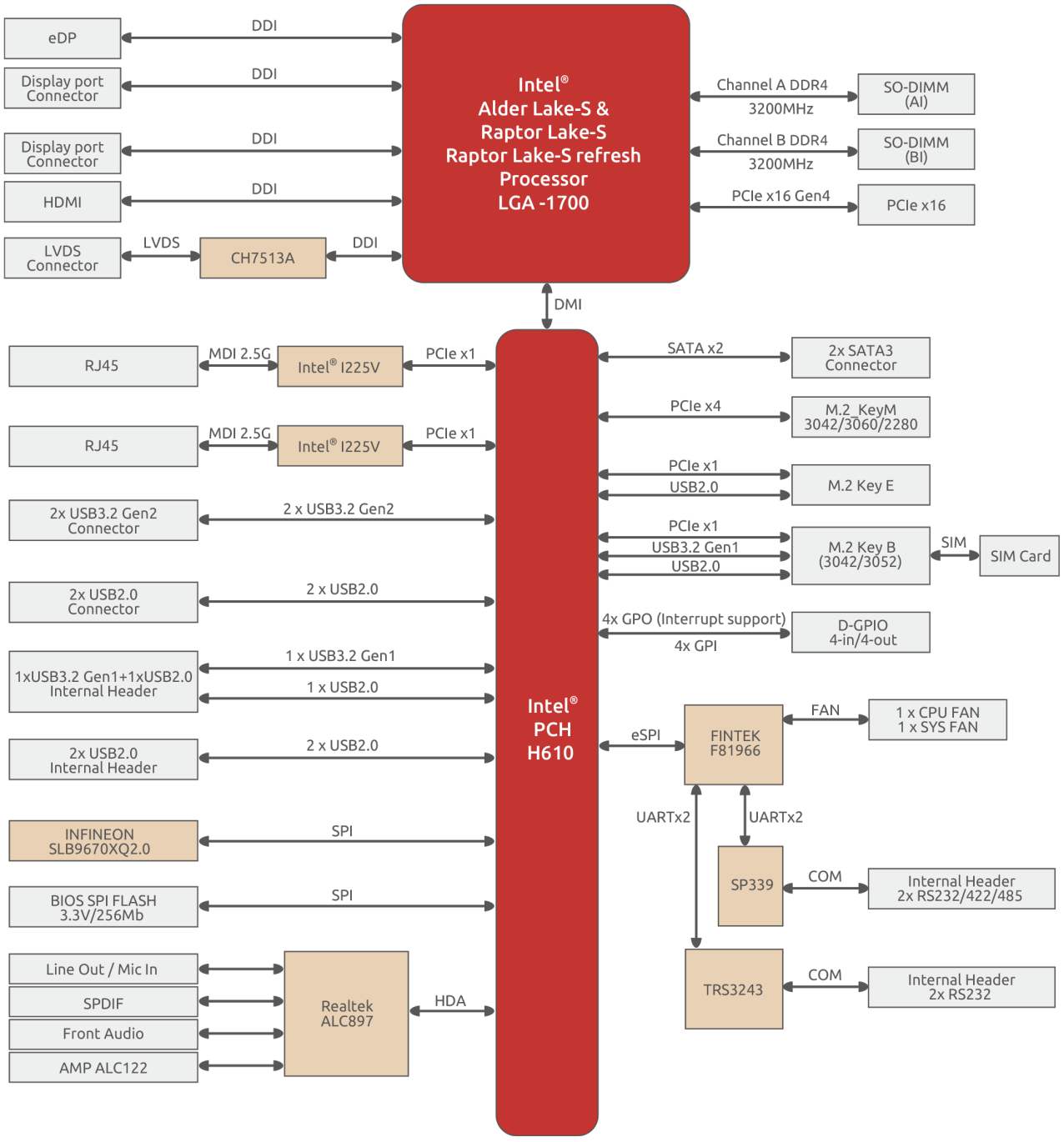


Figure 1: AmITX-RL-WV functional block diagram

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2.15 Functional Block Diagram (AmITX-RL-WV-DDR5)

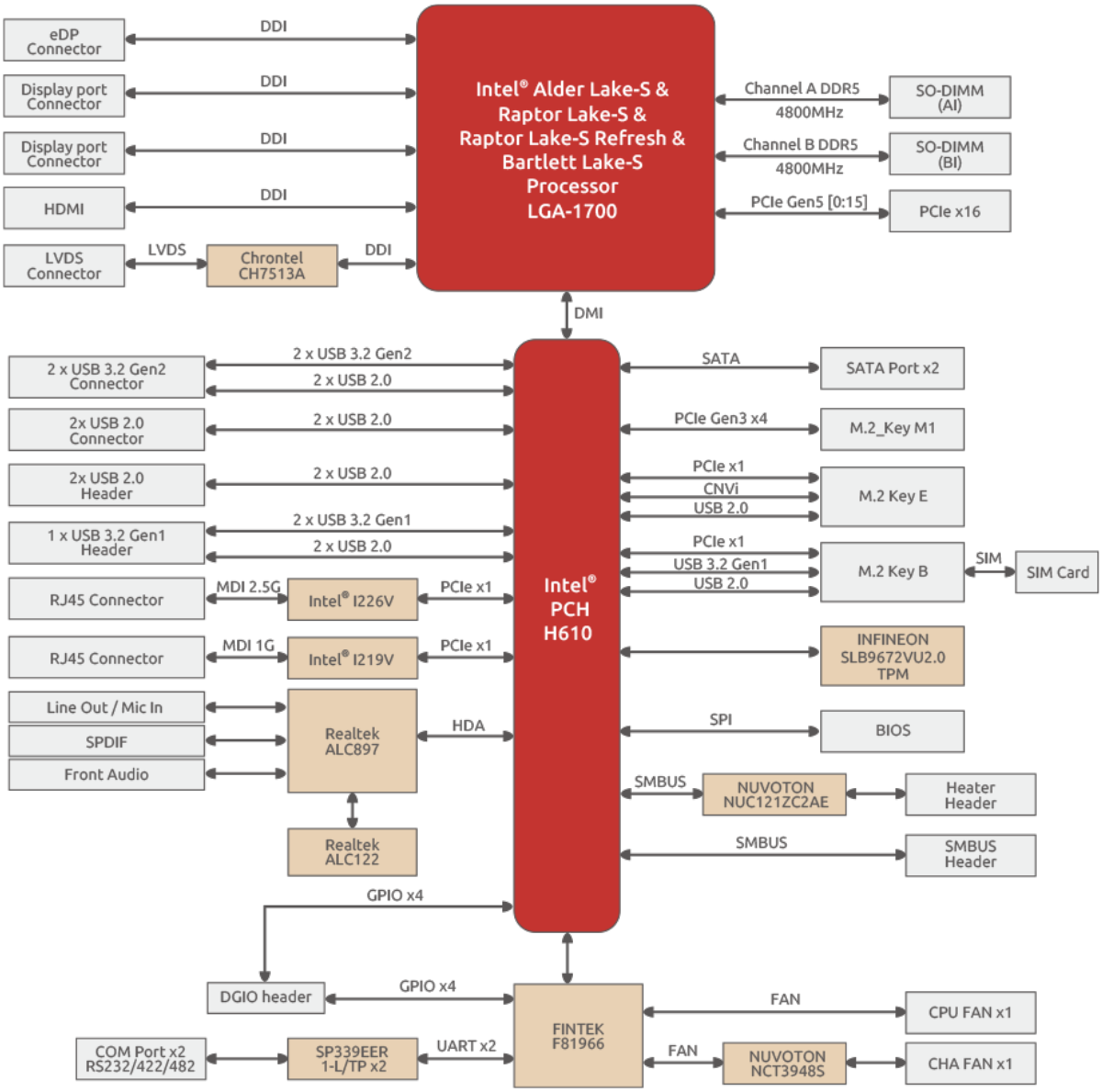


Figure 2: AmITX-RL-WV-DDR5 functional block diagram

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3 Mechanical Layout

3.1 Connector Locations

3.1.1 Rear I/O Connectors (AmITX-RL-WV)

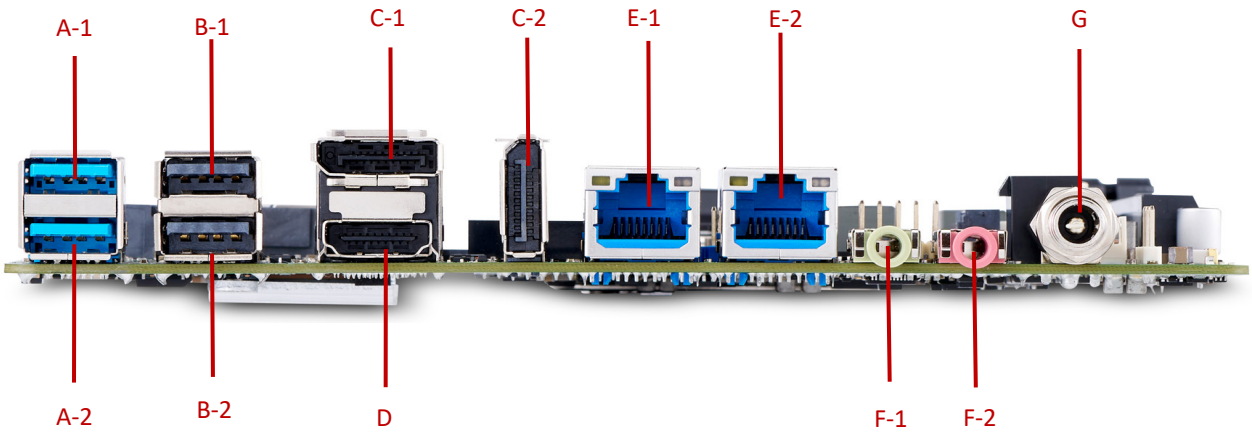


Figure 3: AmITX-RL-WV rear I/O

Location	Description
A-1	USB 3.2 Gen2 Ports (USB3_1)
A-2	USB 3.2 Gen2 Ports (USB3_2)
B-1	USB 2.0 Ports (USB2_7)
B-2	USB 2.0 Ports (USB2_8)
C-1	DisplayPort (DP1)
C-2	DisplayPort (DP2)
D	HDMI Port (HDMI1)
E-1	LAN RJ-45 Port (LAN2)
E-2	LAN RJ-45 Port (LAN1)
F-1	Line out (Green)
F-2	Microphone (Pink)
G	DC Jack (DC_JACK1)

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3.1.2 Rear I/O Connectors (AmITX-RL-WV-DDR5)

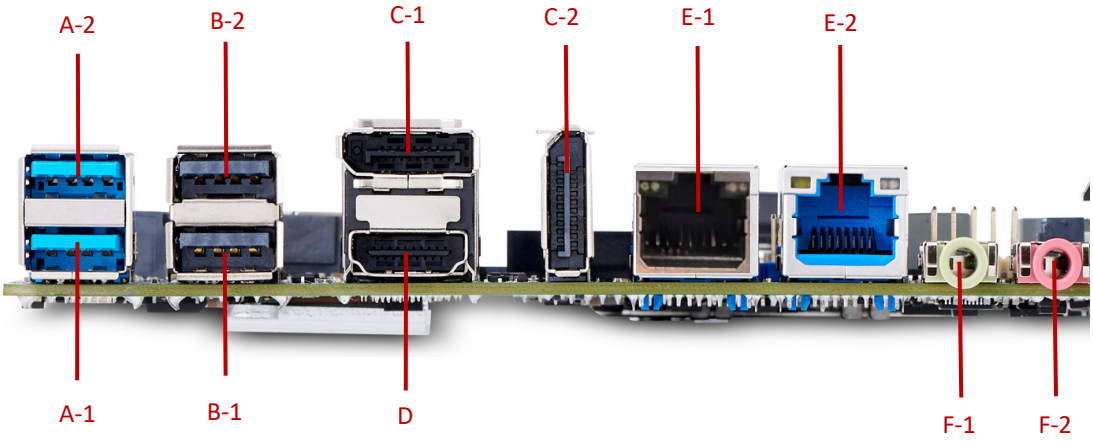


Figure 4:AmITX-RL-WV-DDR5 rear I/O

Location	Description
A-1	USB 3.2 Gen2 Ports (USB3_1)
A-2	USB 3.2 Gen2 Ports (USB3_2)
B-1	USB 2.0 Ports (USB2_7)
B-2	USB 2.0 Ports (USB2_8)
C-1	DisplayPort (DP1)
C-2	DisplayPort (DP2)
D	HDMI Port (HDMI1)
E-1	LAN RJ-45 Port (LAN2)
E-2	LAN RJ-45 Port (LAN1)
F-1	Line out (Green)
F-2	Microphone (Pink)

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3.1.3 Connectors and Jumpers

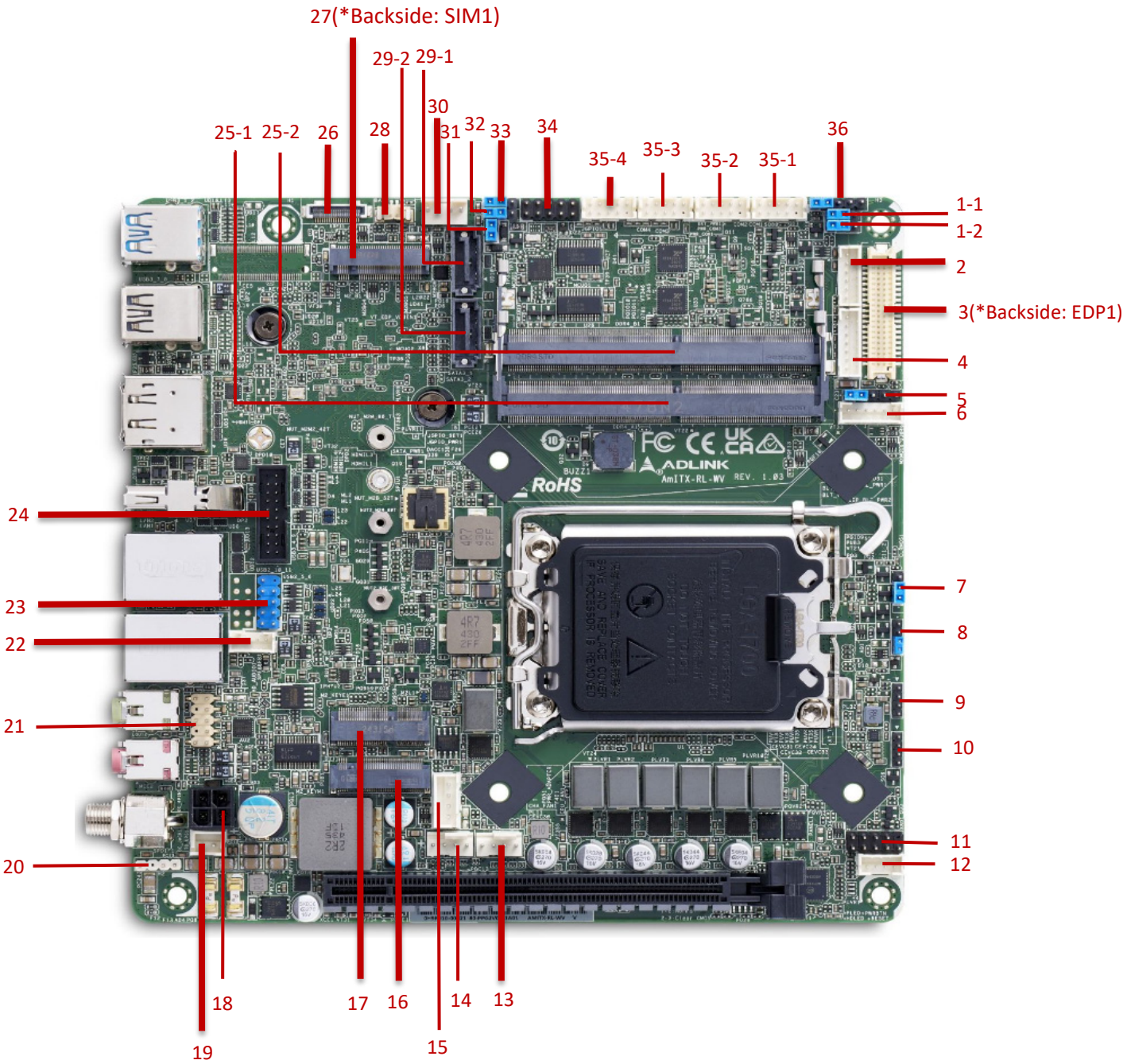


Figure 5: AmITX-RL-WV component-side connectors

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Location	Description	Location	Description
1-1	COM Port PWR Setting Jumpers (PWR_COM3)	21	Front Panel Audio Header
1-2	COM Port PWR Setting Jumpers (PWR_COM1)	22	3W Audio AMP Output Wafer
2	Inverter Power Control Wafer (BLT_PWR1)	23	USB2.0 Header (USB2_5_6)
3	LVDS Panel Connector* (LVDS1)	24	USB3.2 Gen1 Header (USB3_4_9)
*	eDP Connector (EDP1) (on the Backside of PCB)	25-1	DDR4 SO-DIMM Sockets (DDR4_A1)
4	Backlight Volume Control (BLT_VOL1)	25-2	DDR4 SO-DIMM Sockets (DDR4_B1)
5	Panel Power Select (LCD_VCC) (PNL_PWR1)	26	ESPI Header (ESPI1)
6	Inverter Power Control Wafer (EDP_ BLT_PWR2)	27	M.2 Key-B Socket (M2_B1)*
7	Clear CMOS Header (CLRMOS1)	*	SIM Card Socket (SIM1) (on the Backside of PCB)
8	Chassis Intrusion Header (CI1_2)	28	Battery Connector
9	PWR_BAT1_SIO_AT1	29-1	SATA3 Connectors (SATA3_1)
10	AT_TEST1_PCIE_PWR1	29-2	SATA3 Connectors (SATA3_2)
11	System Panel Header (PANEL1)	30	SATA Power Output Connector (SATA_PWR1)
12	SMBUS_TEST1	31	DACC Jumper (DACC1)
13	CPU FAN Connector (+12V) (CPU_FAN1)	32	Digital Input / Output Power Select (JGPIO_PWR1)
14	Chassis FAN Connector (+12V) (CHA_FAN1)	33	Digital Input / Output Default Value Setting (JGPIO_SET1)
15	Power Adapter (PWR_ADAPTER)	34	Digital Input/Output Pin Header (JGPIO1)
16	M.2 Key-M Socket (M2_KEYM1)	35-1	COM Port Headers (COM1)
17	M.2 Key-E Socket (M2_KEYE1)	35-2	COM Port Headers (COM2)
18	4-pin ATX PWR Connector (DC_4PIN1)	35-3	COM Port Headers (COM3)
19	2-pin UPS Module Power Input Connector	35-4	COM Port Headers (COM4)
20	SPDIF Header	36	Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)

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3.1.4 Connectors and Jumpers (AmITX-RL-WV-DDR5)

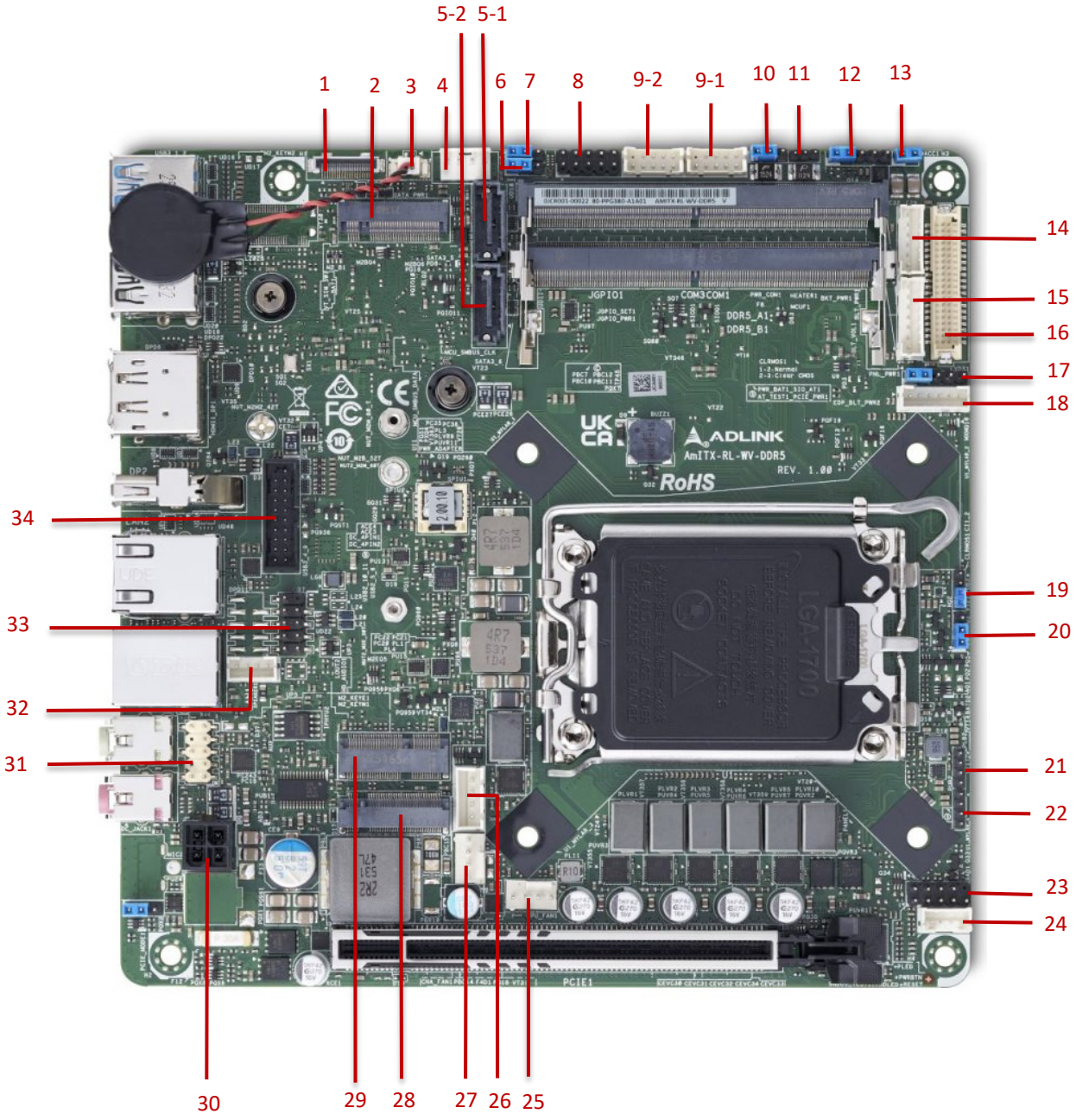


Figure 6: AmITX-RL-WV-DDR5 component-side connectors

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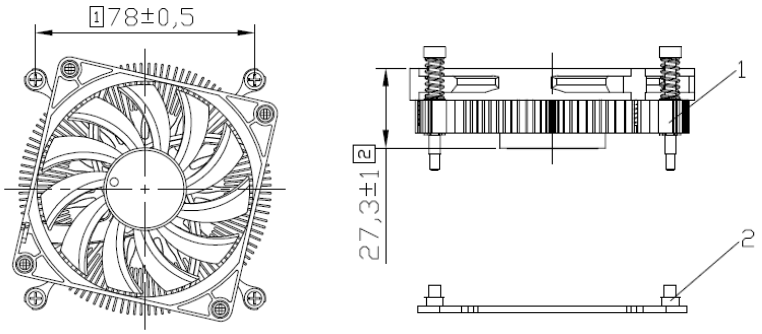
Item	Description (Location)	Item	Description (Location)
1	ESPI Header (ESPI1)	17	Panel Power Select (LCD_VCC) (PNL_PWR1)
2	M.2 Key-B Socket (M2_B1)	18	Inverter Power Control Wafer (EDP_BLT_PWR2)
3	Battery Connector (BAT1)	19	Chassis Intrusion Header (CI1_2)
4	SATA Power Output Connector (SATA_PWR1)	20	Clear CMOS Header (CLRMOS1)
5-1	SATA3 Connectors (SATA3_5)	21	PWR_BAT1_SIO_AT1
5-2	SATA3 Connectors (SATA3_6)	22	AT_TEST1_PCIE_PWR1
6	Digital Input / Output Power Select (JGPIO_PWR1)	23	System Panel Header (PANEL1)
7	Digital Input / Output Default Value Setting (JGPIO_SET1)	24	SMBUS_TEST1
8	Digital Input/Output Pin Header (JGPIO1)	25	CPU FAN Connector (+12V) (CPU_FAN1)
9-1	COM Port Headers (COM1)	26	Power Adapter (PWR_ADAPTER)
9-2	COM Port Headers (COM3)	27	Chassis FAN Connector (+12V) (CHA_FAN1)
10	COM Port PWR Setting Jumpers PWR_COM1 (For COM Port1)	28	M.2 Key-M Socket (M2_KEYM1)
11	HEATER1 Header (HEATER1)	29	M.2 Key-E Socket (M2_KEYE1)
12	Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)	30	4-Pin ATX PWR Connector (Black) (DC_4PIN1)
13	DACC Jumper (DACC1)	31	Front Panel Audio Header (HD_AUDIO1)
14	Inverter Power Control Wafer (BLT_PWR1)	32	3W Audio AMP Output Wafer (SPEAKER1)
15	Backlight Volume Control (BLT_VOL1)	33	USB 2.0 Headers (USB2_5_6)
16	LVDS Panel Connector (LVDS1)*	34	USB 2.0/USB 3.2 Gen1 Header (USB3_4_9)
*	eDP connector (EDP1) (on the Backside of PCB)		

3.2 Thermal Solutions

LGA1700 CPU Cooler, H=27.4mm, 65W

Standard Temp.: 0°C to 60°C

P/N: 32-21100-0000-A0



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4 Connectors and Jumpers

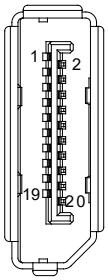
See 3.1 Connector Locations on page 11.

4.1 Rear IO Connectors

4.1.1 DisplayPort

One DisplayPort 1.4a specification port up to 4096x2160@60Hz

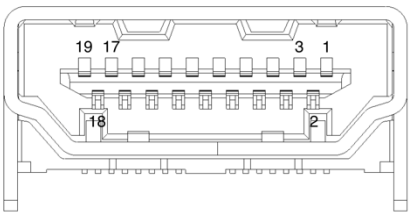
Pin	Signal Name	Pin	Signal Name
1	DP1_CON_DP0	2	GND
3	DP1_CON_DN0	4	DP1_CON_DP1
5	GND	6	DP1_CON_DN1
7	DP1_CON_DP2	8	GND
9	DP1_CON_DN2	10	DP1_CON_DP3
11	GND	12	DP1_CON_DN3
13	DP1_HDMI_DNG_DET	14	DP_CFG2
15	DP1_CON_AUXP	16	GND
17	DP1_CON_AUXN	18	DP1_CON_HPD
19	GND	20	+3.3V



4.1.2 HDMI

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

Pin	Signal Name	Pin	Signal Name
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		

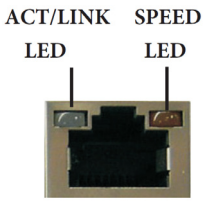


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4.1.3 Ethernet Connectors (LAN1, LAN2)

- LAN1/2: 10/100/1000/2500 Mbps LAN Ethernet controllers
- AmITX-RL-WV based on i225-V
- AmITX-RL-WV-DDR5 based on i-226V and i-219V

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-
7	--	LAN_MDI3+
8	--	LAN_MDI3-



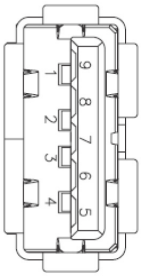
LED Behavior

LAN LED Indications			
Activity Link LED		SPEED LED	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10Mbps
On	Link	Orange	100Mbps/1Gbps connection
Blinking	Data Activity	Green	2.5Gbps connection

4.1.4 USB Connectors

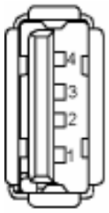
2x USB3.2 Gen2 x1, 2x USB2.0

Pin	Signal Name
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



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



4.1.5 Audio Connectors

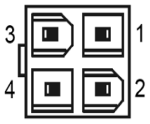
- One Line-out, and one Mic-in on rear I/O
- Realtek ALC897 codec

4.2 Internal Connectors

4.2.1 ATX Power Connector (DC_4PIN1)

Connect a DC +12V to +28V power supply to this connector

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



4.2.2 SATA3 Connectors

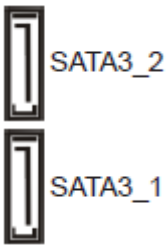
(SATA3_1, SATA3_2 for AmITX-RL-WV)

(SATA3_5, SATA3_6 for AmITX-RL-WV-DDR5)

Two SATA 6 Gbps ports are available on AmITX-RL-WV and AmITX-RL-WV-DDR5.

The Serial ATA3 (SATA3) connector supports SATA data cables for internal storage devices. 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



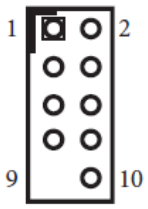
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4.2.3 USB 2.0 Header (USB2_5_6)

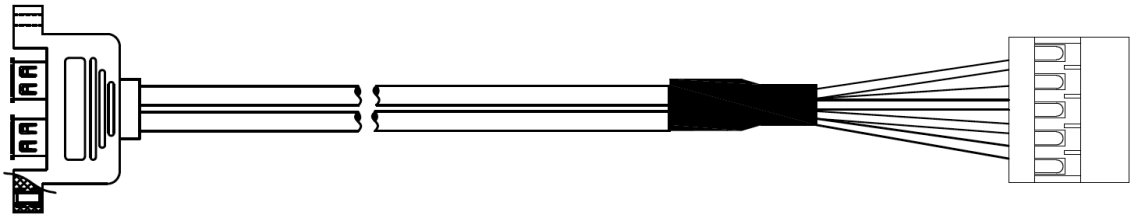
2x USB 2.0.

The board provides one internal USB 2.0 header and the connector can support two USB 2.0. The maximum current per port is 0.5A.

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



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

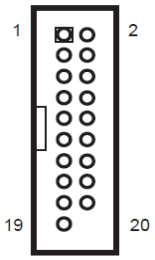


4.2.4 USB 2.0/USB 3.2 Gen1 Header (USB3_4_9)

1x USB 3.2 Gen1 and 1x USB 2.0

There is only a single USB 3.2 Gen1 connector on this motherboard. This header can support one port USB 3.2 Gen1 and one port USB 2.0 with a maximum power current of 0.9A per port.

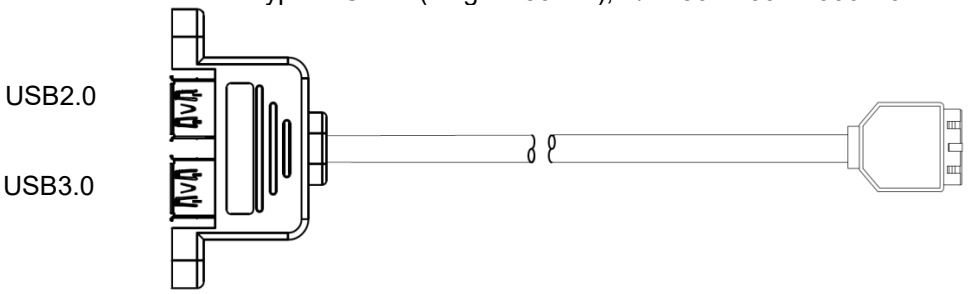
Pin	Signal Name	Pin	Signal Name
1	DUMMY	2	IntA_PA_D+
3	IntA_PB_D+	4	IntA_PA_D-
5	IntA_PB_D-	6	GND
7	GND	8	IntA_PA_SSTX+
9	DUMMY	10	IntA_PA_SSTX-
11	DUMMY	12	GND
13	GND	14	IntA_PA_SSRX+
15	DUMMY	16	IntA_PA_SSRX-
17	DUMMY	18	Vbus
19	Vbus	20	



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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 a line out/microphone interface for the front panel audio cable that allows jack detection,

and provides a convenient connection and control of audio devices.

1. High-Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.

2. If you use AC'97 audio panel, please install it to the front panel audio header as below:

A. Connect Mic_IN (MIC) to MIC2_L.

B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.

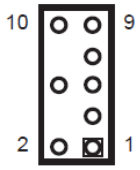
C. Connect Ground (GND) to Ground (GND).

D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.

E. To activate the front mic.

Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

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



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 that are compatible with

3-pin CPU fan. If you connect a 3-pin CPU fan to the CPU fan connector on this motherboard,

please connect it to 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 Connector (COM1,2,3,4)

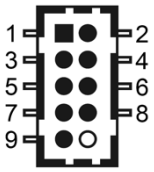
Four internal serial ports (COM1,2,3,4). Serial ports are over-current protected.

AmITX-RL-WV	
Serial Port	**Functions**
COM1,2	Supports RS-232/422/485
COM3,4	Supports RS-232
* This motherboard supports RS232/422/485 on COM1, 2 ports. Please refer to below table for the pin definition. In addition, COM1, 2 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration.	

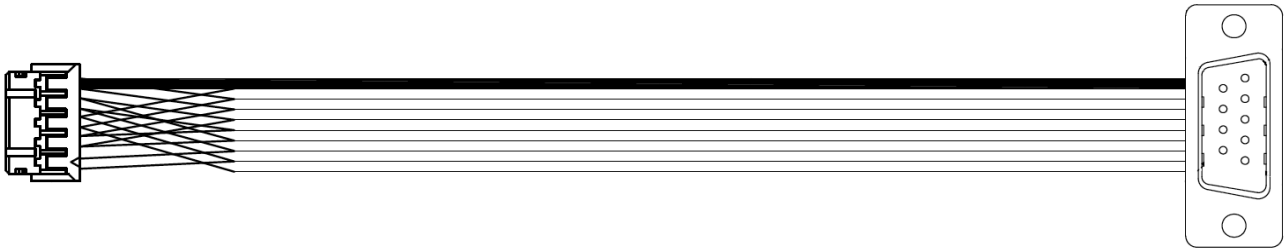
AmITX-RL-WV-DDR5	
Serial Port	**Functions**
COM1,3	Supports RS-232/422/485
* This motherboard supports RS232/422/485 on COM1 and COM3 ports. Please refer to the table below for the pin definition. In addition, COM1 and COM3 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration.	

2.54 mm-pitch COM port headers. Maximum current is 1 A per port. The power supply on pin 9 can be either 5 V or 12 V. Use the COM port pin 9 PWR Setting Jumper to control it.

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



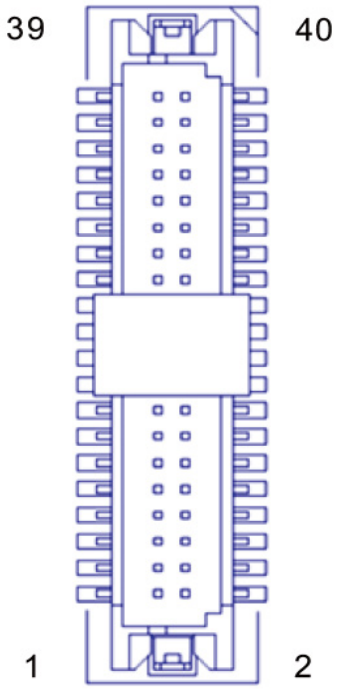
COM Cable (optional):
COM Port Cable (length 350mm), P/N: 30-22155-0000-A0



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4.2.8 LVDS Panel Connector* (LVDS1)

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



*PD (Panel Detection): Connect this pin to the LVDS panel's ground pin to detect the panel.

*eDP connector (on the rear side of PCB)

Pin	Signal Name
40	NA
39	LCD_BLT_VCC
38	LCD_BLT_VCC
37	LCD_BLT_VCC
36	LCD_BLT_VCC
35	SMB_CLK_MAIN
34	SMB_DATA_MAIN
33	eDP_BKLTCTL_R
32	eDP_BKLTEN
31	GND
30	GND
29	GND



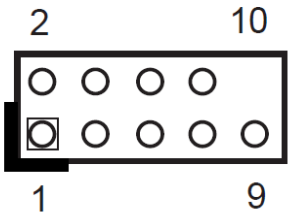
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28	GND
27	eDP_HPD_CON
26	GND
25	GND
24	GND
23	GND
22	NA
21	LCD_VCC
20	LCD_VCC
19	LCD_VCC
18	LCD_VCC
17	GND
16	eDP_AUX#_CON
15	eDP_AUX_CON
14	GND
13	eDP_TX0_CON
12	eDP_TX#0_CON
11	GND
10	eDP_TX1_CON
9	eDP_TX#1_CON
8	GND
7	eDP_TX2_CON
6	eDP_TX#2_CON
5	GND
4	eDP_TX3_CON
3	eDP_TX#3_CON
2	GND
1	NA

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. Note the positive and negative pins before connecting the cables.

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



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PWRBTN (Power Switch):

Connect to the power switch on the chassis front panel. You may configure how to turn off your system using the power switch.

RESET (Reset Switch):

Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):

Connect to the power status indicator on the chassis front panel. The LED is turned on when the system is operating. The LED blinks when the system is in the S1 sleep state. The LED is off when the system is in the S3/S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is turned 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, etc. When connecting your chassis front panel module to this header, make sure the wire and the pin assignments are matched correctly.

4.2.10 Chassis Intrusion Header (CI1_2)

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

PIN 1-2 Open	Normal
PIN 1-2 Short	Active Case Open
PIN 3-4 Open	Active Case Open (Default)
PIN 3-4 Short	Normal



4.2.11 ESPI Header (ESPI1)

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

Pin	Signal Name
1	GND
2	C_ESPI_CLK
3	GND
4	C_ESPI_CS#
5	DEBUG_RESET
6	GND
7	+3V
8	GND
9	SMB_CLK_MAIN
10	SMB_DATA_MAIN
11	C_ESPI_IO0
12	C_ESPI_IO1
13	C_ESPI_IO2

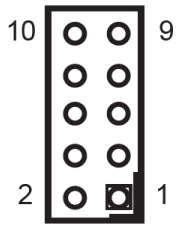


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Pin	Signal Name
14	C_ESPI_IO3
15	GND
16	+3VSB
17	N/A
18	N/A
19	C_ESPI_ALERT#
20	GND

4.2.12 Digital Input/Output Pin Header (JGPIO1)

Pin	Signal Name	Pin	Signal Name
1	SIO_GP71	2	GPP_H23
3	SIO_GP72	4	GPP_I10
5	SIO_GP73	6	GPP_E5
7	SIO_GP74	8	GPP_E6
9	JGPIOPWR_R	10	GND



AmITX-RL-WV	
Parameter	**Range**
GPIO input low voltage	Max: 0.8V
GPIO input high voltage	Low: 2.4V
GPIO output low voltage	Max: 0.9V
GPIO output high voltage	Low: 2.5V
Max. load per GPI/O pin: 3mA Current Max. 1A per power pin	

AmITX-RL-WV-DDR5	
Parameter	**Range**
GPIO input low voltage	Max: 0.8V
GPIO input high voltage	Low: 2.31V
GPIO output low voltage	Max: 0.4V
GPIO output high voltage	Low: 2.85V
Max. load per GPI/O pin: 2mA Current Max. 1A per power pin	

4.2.13 M.2 M-Key Socket (M2_B1)

Pin	Signal Name	Pin	Signal Name
1	NA	2	+3.3V
3	GND	4	+3.3V
5	GND	6	FuLL Card_Power_off
7	USB_D+	8	W_DISABLE
9	USB_D-	10	WWAN_LED#
11	GND		
21	GND	20	NA

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Pin	Signal Name	Pin	Signal Name
23	NA	22	NA
25	NA	24	NA
27	GND	26	NA
29	USB3_RX-	28	NA
31	USB3_RX+	30	UIM_RESET
33	GND	32	UIM_CLK
35	USB3_TX-	34	UIM_DATA
37	USB3_TX+	36	UIM_PWR
39	GND	38	NA
41	PERn0	40	NA
43	PERP0	42	NA
45	GND	44	NA
47	PETn0	46	NA
49	PETP0	48	NA
51	GND	50	PERST#
53	PEFCLKn	52	CLKREQ#
55	PEFCLKp	54	WAKE#
57	GND	56	NA
59	NA	58	NA
61	NA	60	NA
63	NA	62	NA
65	NA	64	NA
67	NA	66	NA
69	NA	68	NA
71	GND	70	+3.3V
73	GND	72	+3.3V
75	NA	74	+3.3V

4.2.14 M.2 Mkey Socket (M2_M1)

Pin	Signal Name	Pin	Signal Name
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PERn3	6	NA
7	PERp3	8	NA
9	GND	10	SATA_LED
11	PETn3	12	+3.3V

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Pin	Signal Name	Pin	Signal Name
13	PETp3	14	+3.3V
15	GND	16	+3.3V
17	PERn2	18	+3.3V
19	PERp2	20	NA
21	GND	22	NA
23	PETn2	24	NA
25	PETp2	26	NA
27	GND	28	NA
29	PERn1	30	NA
31	PERp1	32	NA
33	GND	34	NA
35	PETn1	36	NA
37	PETp1	38	DEVSLP
39	GND	40	NA
41	PERn0	42	NA
43	PERp0	44	NA
45	GND	46	NA
47	PETn0	48	NA
49	PETp0	50	PERST#
51	GND	52	CLKREQ#
53	PEFCLKn	54	WAKE#
55	PEFCLKp	56	NA
57	GND	58	NA
67	NA	68	NA
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	0	+3.3V
75	GND		

4.2.15 M.2 E-Key Socket (M2_E1)

Pin	Signal Name	Pin	Signal Name
1	GND	2	+3.3V
3	USB_D+	4	+3.3V
5	USB_D-	6	NA
7	GND	8	NA
9	CNV_WGR_D1-	10	CNV_RF_RESET

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Pin	Signal Name	Pin	Signal Name
11	CNV_WGR_D1+	12	NA
13	GND	14	MODEM_CLKREQ
15	CNV_WGR_D0-	16	NA
17	CNV_WGR_D0+	18	GND
19	GND	20	NA
21	CNV_WGR_CLK-	22	CNV_BRI_RSP
23	CNV_WGR_CLK+		
33	GND	32	CNV_BGI_DT
35	PETp	34	CNV_RGI_RSP
37	PETn	36	CNV_BRI_DT
39	GND	38	NA
41	PERp	40	NA
43	PERn	42	NA
45	GND	44	NA
47	PEFCLKp	46	NA
49	PEFCLKn	48	NA
51	GND	50	SUSCLK
53	CLKREQ#	52	PERST0#
55	WAKE#	54	W_DISABLE1#
57	GND	56	W_DISABLE2#
59	CNV_WT_D1-	58	NA
61	CNV_WT_D1+	60	NA
63	GND	62	NA
65	CNV_WT_D0-	64	CLKIN_XTAL_LCP
67	CNV_WT_D0+	66	NA
69	GND	68	NA
71	CNV_WT_CLK-	70	NA
73	CNV_WT_CLK+	72	+3.3V
75	GND	74	+3.3V

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4.2.16 PCIe Slot

PCIe1 slot: PCIe 4.0 for AmITX-RL-WV / PCIe 5.0 for AmITX-RL-WV-DDR5 is used for PCI Express x16 lane-width cards.

Due to the power design of the motherboard, we recommend customers use the power adapter with the suggested DC-input voltage shown in the table below for system stability.

PCIE add-on card (Power consumption)	Suggested DC-input voltage
N/A	12V to 28V
75W or lower	19V to 28V
Higher than 75W*	24V to 28V

4.3 Jumper and Switch Settings

4.3.1 PWR_BAT1_SIO_AT1

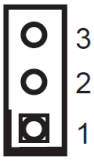
Only supported by chargeable battery.

PIN 1-2 Open	Normal
PIN 1-2 Short	Charge Battery *Only supported by chargeable battery
PIN 3-4 Open	ATX Mode
PIN 3-4 Short	AT Mode



4.3.2 Clear CMOS Header (CLRMOS1)

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



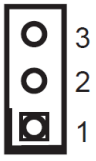
Note: CLRMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to the default setup, turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pins 2 and 3 on CLRMOS1 for 5 seconds. However, do not clear 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, then shut it down before performing the clear-CMOS action. Please note that the date, time, and user default profile will only be cleared if the CMOS battery is removed.

4.3.3 Brightness Control Mode (BLT_PWM1)

Please set to 1-2 when adjusting brightness by Brightness Control bar under OS.

Please set to 2-3 when adjusting brightness by BLT_VOL1.

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



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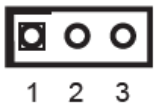
4.3.4 COM Port PWR Setting Jumpers

PWR_COM1 (For COM Port1)

PWR_COM3 (For COM Port3) - (AmITX-RL-WV only)

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

1-2	+5V
2-3	+12V



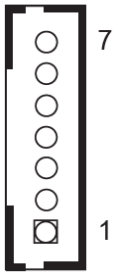
4.3.5 SATA Power Output Connector (SATA_PWR1)

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



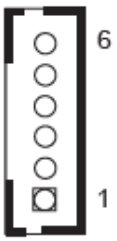
4.3.6 Backlight Volume Control (BLT_VOL1)

Pin	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	BLT_UP
5	BLT_DW
6	GND
7	GND



4.3.7 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

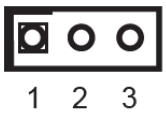


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4.3.8 Digital Input/Output Power Select (JGPIO_PWR1)

The maximum current JGPIO_PWR1 provides is 1A.

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



4.3.9 Panel Power Select (LCD_VCC)

(PNL_PWR1)

Use this to set up the VDD power of the LVDS connector.

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



4.3.10 Backlight Power Select (LCD_BLT_VCC)

(BKT_PWR1)

Use this header to set up the backlight power of the LVDS connector and the panel backlight power of BLT_PWM1.

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



4.3.11 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



4.3.12 DACC Jumper (DACC1)

Auto clear CMOS when system boot improperly.

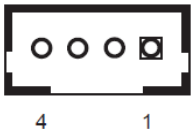
PIN1-2 Open	No ACC
PIN1-2 Short	ACC (Default)



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4.3.13 SMBUS_TEST1

Pin	Signal Name
1	+3V
2	SMB_CLK_MAIIN
3	SMB_DATA_MAIN
4	GND



4.3.14 SPIDF Header (SPDIF1)

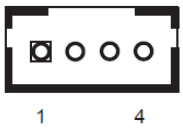
SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/projector/LCD devices. Please connect the SPDIF connector of HDMI VGA card to this header.

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



4.3.15 3W Audtio AMP Output Wafer (SPEAKER1)

Pin	Signal Name
1	OUTLN
2	OUTLP
3	OUTRP
4	OUTRN



4.3.16 Battery Connector (BAT1)

Pin	Signal Name
1	+BAT
2	GND



4.3.17 UPS Module Power Input Connector (TO_UPS1)

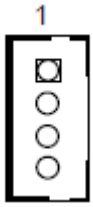
Pin	Signal Name
1	GND
2	DC Input



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4.3.18 Power Adapter (POWER_ADAPTER)

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



4.3.19 AT_TEST1_PCIE_PWR1

Pin	Signal Name
1	AT_TEST1 (For Internal Testing)
2	
3	PCIE_PWR1 (For VGA Power Card Only): Pin3: PSON# Pin4: GND
4	



4.3.20 Inverter Power Control Wafer (EDP_BLT_PWR2)

Pin	Signal Name
1	GND
2	GND
3	eDP_LBKLT_CTL
4	eDP_LBKLT_EN
5	+12_FUSE
6	+12_FUSE



4.3.21 Heater Header (HEATER1) (AmITX-RL-WV-DDR5 only)

Pin	Signal Name
1	Heater_PWR (5V/1A)
2	GND
3	NTC (Negative Temperature Coefficient) thermistors

*The 10k Ohm NTC thermistors is suggested.

*Deep mode is not supported when the preheat function is enabled.

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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-RL-WV

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6 BIOS Settings

6.1 Menu Structure

This section presents the six primary menus of the UEFI (BIOS) Setup Utility. Use the following table as a quick reference for the contents of the BIOS Setup Utility. The subsections in this section describe the submenus and setting options for each menu item. The function of each setting is described in the right-hand column of the respective table.

There are two options to enter UEFI Setup Utility:

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

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

6.2 Main

Upon entering the UEFI Setup Utility, the Main Menu is displayed, providing read-only information about your system and also allows you to set the System Date and Time. Refer to the 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-WV x.xx.xx
Processor Type	Info only
Processor Speed	Info only
Cache Size	Info only
Memory Information	
Total Memory	Info only
DDR5_A1	Info only
DDR5_B1	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	Instant Flash is 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 note 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 CPU Configuration

Feature	Description
Intel Hyper Threading Technology	Intel Hyper Threading Technology allows multiple threads to run on each core, improving the overall performance in threaded software.
Active Processor P-Cores	Select the number of cores to enable in each processor package.
Active Processor E-Cores	Select the number of E-Cores to enable in each processor package.
CPU C States Support	Enable CPU C States Support for power saving. It is recommended to keep C3, C6, and C7 all enabled for better power saving.
Enhanced Halt State (C1E)	The option allows you to enable Enhanced Halt State (C1E) for lower power consumption. Configuration options: [Enabled] [Disabled]
Package C States Support	The option allows you to enable CPU, PCIe, Memory, Graphics C State Support for power saving.
CFG Lock	The option allows you to enable or disable the CFG Lock. Configuration options: [Enabled] [Disabled]
Intel Virtualization Technology	When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.
Intel SpeedStep Technology	Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® OS 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	Use this item to enable or disable Intel Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].
CPU Thermal Throttling	You may select [Enabled] to enable CPU internal thermal control mechanism to keep the CPU from overheating.

6.3.2 Chipset Configuration

Feature	Description
Primary Graphics Adapter	This allows you to select [Onboard] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI Express].
Above 4G Decoding	Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64-bit PCI decoding).
VT-d	Use this to enable or disable Intel® VT-d technology (Intel® Virtualization Technology for Directed I/O). The default value of this feature is [Disabled].
PCIE1 Bandwidth Mode	Select the bandwidth mode for PCIE1.
PCIE1 Link Speed	Select the link speed for PCIE1.

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Share Memory	Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.
IGPU Multi-Moniter	Select disable to disable the integrated graphics when an external graphics card is installed. Select enable to keep the integrated graphics enabled at all times.
Render Standby	Power down the render unit when the GPU is idle for lower power consumption.
Active LVDS	Use this to enable or disable the LVDS. The default value is [Disabled]. Set the item to [enable]. Then press <F10> to save the setting and restart the system. Now the default value of Active LVDS is changed to ENABLE (F9 load default is also set to ENABLE). Change the setting from [Enable] to [Disable], and then press <F10> to save the setting and restart the system. Likewise, the default value of Active LVDS is changed to DISABLE (F9 load default is also set to DISABLE).
Onboard LAN1	This allows you to enable or disable the Onboard LAN1 feature.
Onboard LAN2	This allows you to enable or disable the Onboard LAN2 feature.
Onboard HD Audio	Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.
Deep Sleep	Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. The default value is [Disabled].
Restore on AC/Power Loss	Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

6.3.3 Storage Configuration

Feature	Description
SATA Controller(s)	Use this item to enable or disable the SATA Controller feature.
SATA Mode Selection	Use this to select SATA mode. The default value is [AHCI Mode]. *AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.*
Hybrid Storage Detection and Configuration Mode	Use this item to enable or disable Hybrid Storage Detection and Configuration Mode.
SATA Aggressive Link Power Management	Use this item to configure SATA Aggressive Link Power Management.
Hard Disk S.M.A.R.T.	Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

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6.3.4 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.

6.3.5 ACPI Configuration

Feature	Description
Suspend to RAM	Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.
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	Use this item to enable or disable RTC (Real Time Clock) to power on the system.

6.3.6 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.

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6.3.7 Trusted Computing

Feature	Description
Security Device Support	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	This item displays active PCR Banks.
Available PCR Banks	This item displays available PCR Banks.
SHA256 PCR Bank	SHA256 PCR Bank allows you to enable or disable SHA256 PCR Bank. Configuration options: [Enabled] [Disabled]
SHA384 PCR Bank	SHA384 PCR Bank allows you to enable or disable SHA384 PCR Bank. Configuration options: [Enabled] [Disabled]
Pending Operation	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	This item allows you to enable or disable Platform Hierarchy. Configuration options: [Enabled] [Disabled]
Storage Hierarchy	This item allows you to enable or disable Storage Hierarchy. Configuration options: [Enabled] [Disabled]
Endorsement Hierarchy	This item 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 InterfaceType	This item allows you to view the Communication Interface to TPM 2.0 Device: CRB or TIS.
Device Select	This item 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.

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Onboard TPM	The option enables or disables Intel PTT in ME. Disable this option to Use discrete TPM Module.

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	This item 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	This allows you to set chassis fan 1's speed. The default value is [Full On]. Configuration options: [Full On] [Automatic Mode]
Case Open Feature	This item 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.

6.5 Security

The Security Screen lets you change or clear the supervisor / user passwords for the system.

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.
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.

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Key Management	This item 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 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	The item 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	The item 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 Services

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

ADLINK Technology, Inc.
Address: No. 66, Huaya 1st Road, Guishan District
Taoyuan City 333, Taiwan
Tel: +886-3-216-5088
Fax: +886-3-328-5723
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 6450 Via Del Oro, San Jose, CA 95119-1208, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-600-1189
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 300 Fang Chun Rd., Zhangjiang Hi-Tech Park, Pudong New Area
Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 8-10, 68163 Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.

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