

3.5" SBC Supports Intel® Alder Lake-P Processor, Dual HDMI, Dual DP, Dual 2.5GbE, M.2 A Key + B Key + M Key, USB 3.2 Gen 2, SATA 6Gb/s, COM, PCIe x4 for Riser Card and RoHS

WAFER-ADL-P

Quick Installation Guide

Version 1.0

May 25, 2023

Package List

WAFER-ADL-P package includes the following items:

- 1 x WAFER-ADL-P single board computer with heat spreader
- 1 x SATA with power cable
- 1 x Power cable
- 1 x QIG



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Specifications

- CPU:
12th Gen. Intel® mobile Alder Lake-P on board SoC
- Memory:
On-board 8GB 3200 MHz LPDDR4x memory
- BIOS:
AMI UEFI BIOS
- Graphics Engine:
Intel® UHD Graphics for Celeron® 7305 and Core™ i3-1215U
Intel® Xe Graphics architecture for Core™ i5-1235U and Core™ i7-1255U
- Display Output:
Quadruple independent display
2 x HDMI 1.4a (up to 4096 x 2160 @ 30Hz)
2 x DP 1.4a (up to 4096 x 2160 @ 60Hz)
- Ethernet:
2 x Intel® I225V 2.5GbE controller (colay with I225-LM)
- External I/O Interface:
4 x USB 3.2 Gen 2 (Type-A) (10Gb/s)
- Internal I/O Interface:
1 x SATA 6Gb/s
4 x USB 2.0 (2x4 pin, p=2.0)
2 x RS-232/422/485 (2x5 pin, p=2.0)
4 x RS-232 (2x5 pin, p=2.0)
- Audio:
1 x Analog audio (2x5 pin, p=2.0) supports 7.1 channel HD audio by IEI AC-KIT-888S audio kit
- Front Panel:
1 x Front panel (1x6 pin, p=2.0; power LED, HDD LED)
1 x Power button connector (1x2 pin, p=2.0)
1 x Reset button connector (1x2 pin, p=2.0)
Expansions:
1 x M.2 2242/2280 M key (PCIe x4)
1 x M.2 2230 A key for Wi-Fi & BT (PCIe Gen3 x1 & USB 2.0)
1 x M.2 3042 B key with SIM slot (PCIe x2 & USB 2.0)
1 x PCIe x4 slot (PCIe x4 signal, x4 & x2+x2)

- Digital I/O:
1 x 12-bit digital I/O (2x7 pin, p=2.0)
- I²C/SMBus:
1 x I²C (1x4 pin, p=1.25)
1 x SMBus (1x4 pin, p=1.25)
- Fan Connector:
1 x System fan connector (1x4 pin)
- TPM
Intel® PTT
- Power Supply:
12V DC power supply
Support AT/ATX mode
- Power Consumption:
12V@2.83A
(12th Gen Intel® Core™ i7-1265UE CPU with 8 GB 3200 MHz LPDDR4x memory, max. loading, EuP mode enabled)
- Watchdog Timer:
Software programmable support 1–255 sec. system reset
- Operation Temperature: 0°C – 60°C
- Storage Temperature: -30°C – 70°C
- Operation Humidity: 5% – 95%, non-condensing
- Dimensions: 146 mm x 102 mm
- Weight: GW:850 g / NW:350 g

All the drivers and utility for the WAFER-ADL-P are available on IEI Resource Download Center. Type WAFER-ADL-P and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



Ordering Information

- **WAFER-ADL-P-i7C-R10:**
3.5" SBC supports Intel® Alder Lake-P Core™ i7-1255U processor, with 8GB LPDDR4x memory on board, dual DP, dual HDMI, dual 2.5 GbE, USB 3.2 Gen 2 , M.2, SATA 6Gb/s, COM, PCIe x4 for riser card and RoHS
- **WAFER-ADL-P-i5C-R10:**
3.5" SBC supports Intel® Alder Lake-P Core™ i5-1235U processor, with 8GB LPDDR4x memory on board, dual DP, dual HDMI, dual 2.5 GbE, USB 3.2 Gen 2 , M.2, SATA 6Gb/s, COM, PCIe x4 for riser card and RoHS
- **WAFER-ADL-P-i3C-R10:**
3.5" SBC supports Intel® Alder Lake-P Core™ i3-1215U processor, with 8GB LPDDR4x memory on board, dual DP, dual HDMI, dual 2.5 GbE, USB 3.2 Gen 2 , M.2, SATA 6Gb/s, COM, PCIe x4 for riser card and RoHS
- **WAFER-ADL-P-CC-R10:**
3.5" SBC supports Intel® Alder Lake-P Celeron® 7305 processor, with 8GB LPDDR4x memory on board, dual DP, dual HDMI, dual 2.5 GbE, USB 3.2 Gen 2 , M.2, SATA 6Gb/s, COM, PCIe x4 for riser card and RoHS
- **AC-KIT-888S-R10:** Realtek ALC888S 7.1 Channel HD Audio board
- **CB-USB02A-RS:** Dual-port USB cable with bracket, 300mm, p=2.0
- **32102-000100-200-RS:** SATA power cable
- **32205-002700-200-RS:** RS-232/422/485 cable, 200mm, p=2.0
- **CM-WAFER-WF-R10:** Cooler module (with fan), RoHS
- **CM-WAFER-WOF-R10:** Cooler module (without fan), RoHS
- **NWR2-L2S-R10:** PCIe x4 to two PCIe x2 riser card on the left side
- **NWR2-R2S-R10:** PCIe x4 to two PCIe x2 riser card on the right side

Jumpers Setting and Connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX power mode setting
J_CMOS1	Clear CMOS button
ME_FLASH1	Flash descriptor security override jumper
J_AUDIO1	Audio connector for IEI AC-KIT-888S kit
PWR1	12V power input connector
BAT1	RTC battery connector
SP1	Buzzer connector
J_CHASSIS1	Chassis intrusion connector
J_DIO1	Digital I/O connector
EC_DBG1	EC debug connector
CPU/FAN1	Fan connector
F_PANEL1	Front panel connector
J_I2C1	I ² C connector
PWR_BTN1	Power button connector
RST_BTN1	Reset button connector
COM1, COM2, COM3, COM4	RS-232 serial port connectors
COM5, COM6	RS-232/422/485 serial port connectors
SATA1	SATA 6Gb/s connector
SATA_PWR1	SATA power connector
J_SMB1	SMBus connector
J_SPI1	Flash SPI ROM connector
EC_SPI1	Flash EC ROM connector
USB2_1, USB2_2	Internal USB 2.0 connectors
PCIEX4_1	PCIe x4 slot
M2_A1	M.2 2230 A key slot
M2_B1	M.2 3042 B key slot
M2_M1	M.2 2242/2280 M key slot
SIM1	SIM card slot
HDMI1	External dual HDMI connector
DP1	External dual DP connector
LAN1, LAN2	External 2.5GbE RJ-45 connectors
USB3_1, USB3_2	External dual USB 3.2 Gen 2 connectors

J_ATX_AT1: AT/ATX Power Mode Setting	
PIN NO.	DESCRIPTION
Short A - B	ATX Power Mode (default)
Short B - C	AT Power Mode

J_CMOS1: Clear CMOS Button	
Status	DESCRIPTION
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

ME_FLASH1: Flash Descriptor Security Override Jumper	
PIN NO.	DESCRIPTION
Open	Disabled (default)
Short	Enabled

J_AUDIO1: Audio Connector for IEI AC-KIT-888S kit			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDA_SYNC_R	2	HDA_BCLK_R
3	HDA_SDO_R	4	HDA_PCBEEP
5	HDA_SDI_0_R	6	HDA_RST_R
7	+5V	8	GND
9	+12V	10	GND

PWR1: 12V Power Input Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	+12V
2	GND	4	+12V

BAT1: RTC Battery Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBATT	2	GND

SP1: Buzzer Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+5V	2	PC_BEEP_N

J_CHASSIS1: Chassis Intrusion Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CASEOPEN_N	2	GND

J_DIO1 : Digital Input/Output Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 5	4	Output 4
5	Output 3	6	Output 2
7	Output 1	8	Output 0
9	Input 5	10	Input 4
11	Input 3	12	Input 2
13	Input 1	14	Input 0

EC_DBG1: EC Debug Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	4	EDICLK
2	EDICS	5	EDIDI
3	EDIDO	6	GND

CPU/FAN1: CPU Fan Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	FANIO
2	+12V	4	PWM (+5V)

F_PANEL1: Front Panel Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	4	PWR_LED-
2	GND	5	HDD_LED+
3	PWR_LED+	6	HDD_LED-

J_I2C1: I²C Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	SMB_CLK_EC
2	SMB_DATA_EC	4	+5V

PWR_BTN1: Power Button Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	PWRBTN_SW#	2	GND

RST_BTN1: Reset Button Connector			
PIN	DESCRIPTION	PIN	DESCRIPTION
1	EXTRST-	2	GND

COM1, COM2, COM3, COM4: RS-232 Serial Port Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

COM5, COM6: RS-232/422/485 Serial Port Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

SATA1: SATA 6Gb/s Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA_RX+
3	SATA_TX-	7	GND
4	GND		

SATA_PWR1: SATA Power Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC5V	2	GND

J_SMB1: SMBus Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	SMB_CLK
2	SMB_DATA	4	+5V

J_SPI1: Flash SPI ROM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	4	SPI_CLK
2	SPI_CS#	5	SPI_SI
3	SPI_SO	6	GND

EC_SPI1: Flash EC ROM Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CS	2	VCC3.3V
3	MISO	4	HOLD
5	DET#	6	CLK
7	GND	8	MOSI

USB2_1, USB2_2: Internal USB 2.0 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

J1: MP2960GQKT FW Flash Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PM_SCL	2	PM_SDA
3	GND		

M2_A1: M.2 2230 A Key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	USB2_DP	4	+3.3V
5	USB2_DN	6	NC
7	GND	8	Module Key
9	Module Key	10	Module Key
11	Module Key	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	GND	24	GND

25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PCIE_TX_DP	36	GND
37	PCIE_TX_DN	38	WLAN_CL_RST_N
39	GND	40	WLAN_CL_DATA
41	PCIE_RX_DP	42	WLAN_CL_CLK
43	PCIE_RX_DN	44	NC
45	GND	46	NC
47	PCIE_CLK+	48	NC
49	PCIE_CLK-	50	NC
51	GND	52	SLOT_RST
53	NC	54	+3.3V
55	M.2_A_WAKE	56	+3.3V
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	NC
71	NC	72	+3.3V
73	NC	74	+3.3V
75	GND		

M2_B1: M.2 3042 B Key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V3.3
3	GND	4	+V3.3
5	GND	6	NC
7	USB2_DP	8	W_DISABLE_N

9	USB2_DN	10	NC
11	GND	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	NC
21	GND	22	NC
23	M.2_B_WAKE	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE_1_RX_DN	30	SIM_RST
31	PCIE_1_RX_DP	32	SIM_CLK
33	GND	34	SIM_CIO
35	PCIE_1_TX_DN	36	SIM_VCC
37	PCIE_1_TX_DP	38	NC
39	GND	40	NC
41	PCIE_0_RX_DN	42	NC
43	PCIE_0_RX_DP	44	NC
45	GND	46	NC
47	PCIE_0_TX_DN	48	NC
49	PCIE_0_TX_DP	50	SLOT_RST
51	GND	52	NC
53	PCIE_CLK_DN	54	M.2_B_WAKE
55	PCIE_CLK_DP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	NC
69	NC	70	+V3.3
71	GND	72	+V3.3
73	GND	74	+V3.3
75	GND		

M2_M1: M.2 2242/2280 M Key Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V3.3
3	GND	4	+V3.3
5	PCIE_3_RX_DN	6	NC
7	PCIE_3_RX_DP	8	NC
9	GND	10	NGFF1_ACT_N
11	PCIE_3_TX_DN	12	+V3.3
13	PCIE_3_TX_DP	14	+V3.3
15	GND	16	+V3.3
17	PCIE_2_RX_DN	18	+V3.3
19	PCIE_2_RX_DP	20	NC
21	GND	22	NC
23	PCIE_2_TX_DN	24	NC
25	PCIE_2_TX_DP	26	NC
27	GND	28	NC
29	PCIE_1_RX_DN	30	NC
31	PCIE_1_RX_DP	32	NC
33	GND	34	NC
35	PCIE_1_TX_DN	36	NC
37	PCIE_1_TX_DP	38	M_2_SSD_SLP
39	GND	40	NC
41	PCIE_0_RX_DN	42	NC
43	PCIE_0_RX_DP	44	NC
45	GND	46	NC
47	PCIE_0_TX_DN	48	NC
49	PCIE_0_TX_DP	50	SLOT_RST
51	GND	52	NC
53	PCIE_CLK_DN	54	NC
55	PCIE_CLK_DP	56	NC
57	GND	58	NC
59	Module Key	60	Module Key
61	Module Key	62	Module Key
63	Module Key	64	Module Key
65	Module Key	66	Module Key

67	NC	68	NC
69	NC	70	+V3.3
71	GND	72	+V3.3
73	GND	74	+V3.3
75	GND		

SIM1: SIM Card Slot			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
C1	SIM_VCC	C2	SIM_RST
C3	SIM_CLK	C5	GND
C6	NC	C7	SIM_CIO
G1	GND	G2	GND
G3	GND	G4	GND

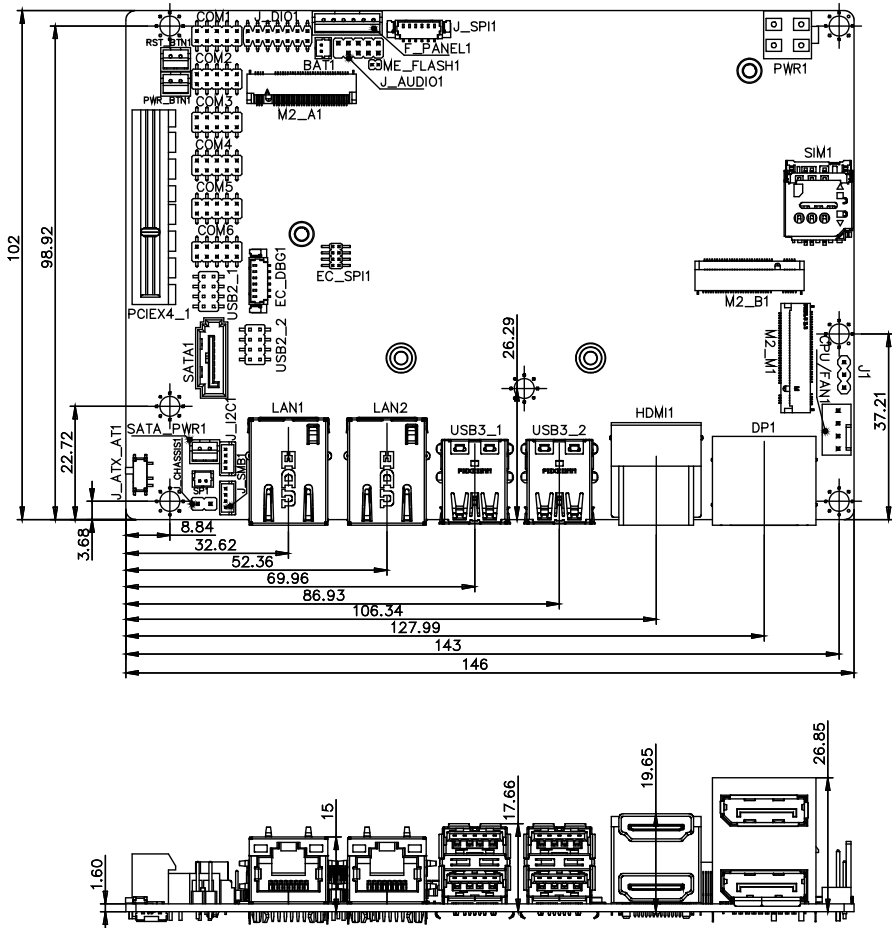
DP1: External Dual DisplayPort Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LANE0P	11	GND
2	GND	12	LANE3N
3	LANE0N	13	CONFIG_A_1
4	LANE1P	14	CONFIG_A_2
5	GND	15	AUXP
6	LANE1N	16	GND
7	LANE2P	17	AUXN
8	GND	18	HPD
9	LANE2N	19	GND
10	LANE3P	20	+5V

HDMI1: External Dual HDMI Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI_DATA2P	11	GND
2	GND	12	HDMI_CLKN
3	HDMI_DATA2N	13	N/C
4	HDMI_DATA1P	14	N/C
5	GND	15	HDMI_CLK
6	HDMI_DATA1N	16	HDMI_SDA
7	HDMI_DATA0P	17	GND
8	GND	18	+5V
9	HDMI_DATA0N	19	HDMI_HPD
10	HDMI_CLKP		

USB3_1, USB3_2: External Dual USB 3.2 Gen 2 Connector			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

LAN1, LAN2: 2.5GbE RJ-45 Connectors			
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LAN1_MD0+	5	LAN1_MD2+
2	LAN1_MD0-	6	LAN1_MD2-
3	LAN1_MD1+	7	LAN1_MD3+
4	LAN1_MD1-	8	LAN1_MD3-

Board Layout: Jumper and Connector Locations



(Unit: mm)