

User Manual

ALN-10 Mini ITX Motherboard

A decorative graphic consisting of multiple overlapping, wavy lines in shades of gray, creating a sense of motion and depth. The lines are most prominent in the lower half of the page, starting from the left edge and extending towards the right.

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ALN10 Motherboard

User Manual

(Version 0.5)

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Chapter 1 Product Introduction

1.1 Brief Introduction

The ALN-10 is a mini ITX motherboard based on the Intel Alder Lake-N series processor; features a small form factor, low power consumption, and high performance.

1.2 Parameters

CPU:

- Intel Core i3-N305, 8Cores 8Threads, Max Turbo Frequency 3.8GHz, TDP15W
- Intel Processor N200, 4Cores 4Threads, Max Turbo Frequency 3.7GHz, TDP6W
- Intel Processor N100, 4Cores 4Threads, Max Turbo Frequency 3.4GHz, TDP6W
- Intel Processor N95, 4Cores 4Threads, Max Turbo Frequency 3.4GHz, TDP15W
- Intel Processor N97, 4Cores, Max Turbo Frequency 3.6GHz, TDP12W
- Intel Processor N50, 2Cores, Max Turbo Frequency 3.4GHz, TDP6W

Memory: 1x SO-DIMM DDR4-3200, supports dual-channel, maximum capacity: 16GB

GPU: Integrated Graphics based on CPU, display via 1x HDMI2.0b, 1x DP1.4a, 1xLVDs (eDP optional)

Storage: 1 x M.2 Key_B slot for 2242/2280 SATA SSD or 4G Module with optional SIM Slot, 1 x SATA3.0

USB: 2x USB3.2 Gen 2, 3x USB2.0 (1xUSB Dongle onboard), 4x USB2.0 onboard header.

Ethernet: 2x Intel i226-V Network Controllers (Data Rate Per Port: 2.5 GbE)

Audio: High-Definition Audio Codec, support Line_out, Mic_in and power amplifier.

Serial I/O: 6x RS232 COM Ports (COM2 can be set as RS485 through hardware changes)

Expansion: 1x M.2_Key E, type 2230 (PCIe/USB2/CNVi), 1*PCIe4X (PCIe 2X Signal)

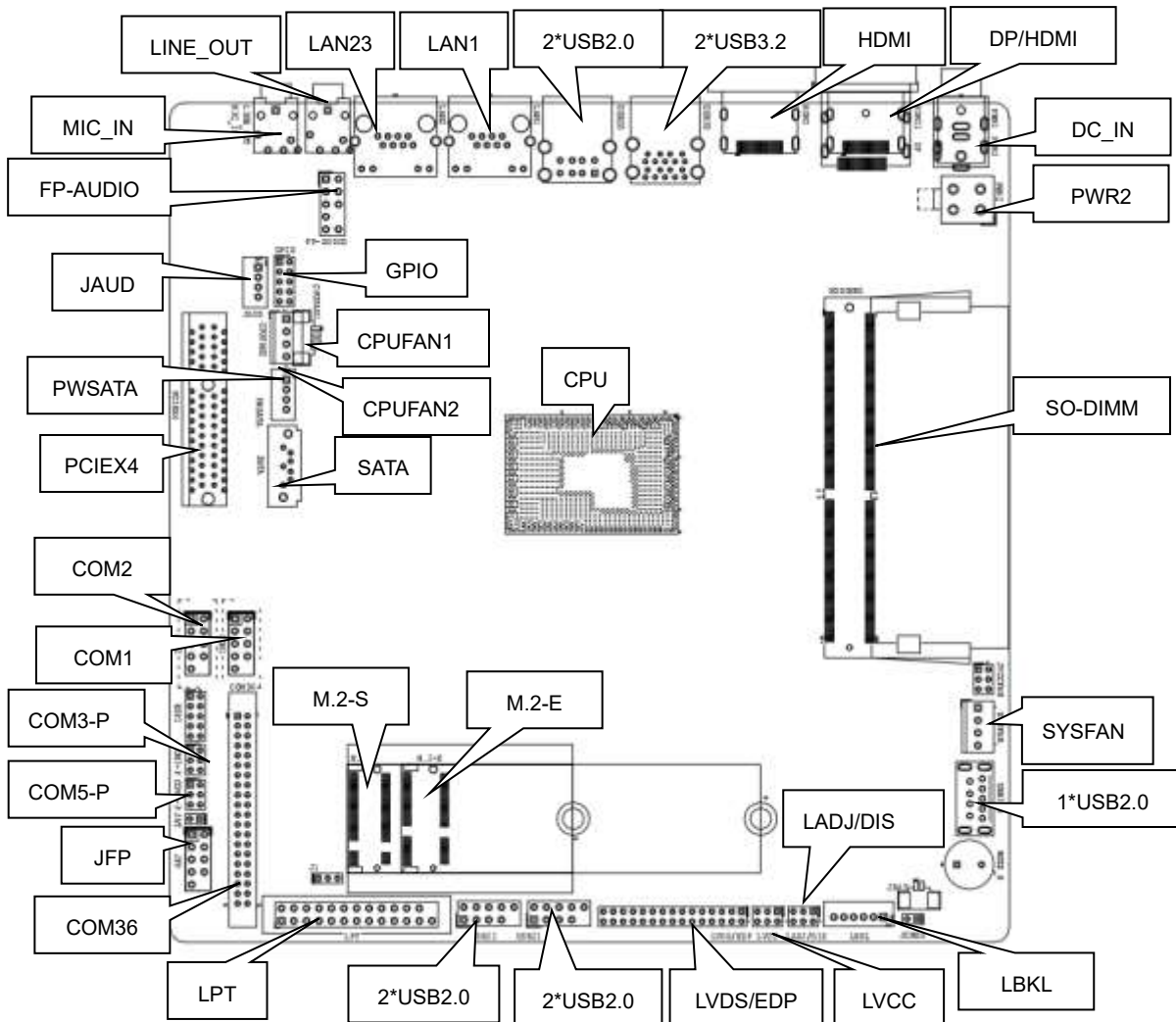
Other I/O: A group of LPT pins, a group of GPIO pins, 1x JFP switch pin

Dimension: 170mm x 170mm

Power: 12V/19V DC-in

Operating Temperature: -20°C~60°C

1.3 Connector Diagram



Chapter 2 Hardware

2.1 Installations

Please refer to the following steps for installations:

1. Read the user manual carefully to make sure all the adjustments on the ALN10 are correct.
2. Installing the Memory:
 - Press the ejector tab of the memory slot outwards with your fingertips.
 - Hold the memory module and align the key to the module with that on the memory slot.
 - Gently push the module into the slot until the ejector levers return completely to the closed position, holding the module in place when the module touches the bottom of the slot. To remove the module, press the ejector levers outwards to unseat the module.
3. Installing the expansion cards:
 - Locate the expansion slots and remove the screw, insert the cards into the slot at a 45-degree angle then attach the screw to the expansion cards, gently press down on it then install the screw back.
4. Connect all signal wires, cables, panel control wiring, and power supplies.
5. Start the computer and complete the setup of the BIOS program.

The board's components are integrated circuits and can easily be damaged by Electrostatic Discharge or ESD; therefore, please follow the instructions:

- Hold the board's edge when handing, and do not touch onboard pins, components, or plug sockets.
- When touching integrated circuit components (such as CPU, RAM, etc.), please wear an anti-static wrist strap/glove to avoid electrostatic discharge damage to the board or other sensitive components.
- Before installing the integrated circuits/sensitive components, place the sensitive components in anti-static bags to keep them safe from ESD.
- Please make sure the power switch is OFF before plugging the power plug.

2.2 Jumper Setting

Please configure the jumpers according to your requirements before installing the hardware.

How to identify the first header of jumpers and pins: Observe the mark beside the jumper or pins and find the header marked by "1" or bold line or triangular symbol. Or observe the rear panel and the header with a square solder pad is the first header.

2.3 Memory Slots

The board provides 1 x SO-DIMM DDR4-3200, supports dual-channel, maximum capacity: 16GB.

Attention: Make sure to hold the memory module and align the key to the module with that on the memory slot. While choosing a memory module, please make sure the module matches the specification.

2.4 Display Interfaces

Integrated Intel UHD graphics. Display via 1xHDMI2.0b, 1x DP1.4a, 1x LVDs (eDP optional), supports

multiple displays.

2.4.1 LVDS

The board is equipped with a dual-channel 24-bit LVDS interface. LVDS screen power is controlled via LVCC jumpers, LBKL is the LVDS backlight power control, and LADJ/DIS is the backlight polarity control (standard/reverse control) and LVDS switch pins.

LVDS Data Pin (Screen printing: LVDS/EDP)

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	GND
GND	5	6	GND
A_DATA0_DN	7	8	A_DATA0_DP
A_DATA1_DN	9	10	A_DATA1_DP
A_DATA2_DN	11	12	A_DATA2_DP
GND	13	14	GND
A_CLK_DN	15	16	A_CLK_DP
A_DATA3_DN	17	18	A_DATA3_DP
B_DATA0_DN	19	20	B_DATA0_DP
B_DATA1_DN	21	22	B_DATA1_DP
B_DATA2_DN	23	24	B_DATA2_DP
GND	25	26	GND
B_CLK_DN	27	28	B_CLK_DP
B_DATA3_DN	29	30	B_DATA3_DP

Screen Backlight Brightness Adjustment Pins (Screen printing: LBKL)

Pin	Signal
1	GND
2	GND
3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V/19V (The output voltage is the same as the DC power supply)
6	12V/19V (The output voltage is the same as the DC power supply)

LVDS Screen Power Supply (Screen Printing: LVCC)

Interface	Setting	Function
1-2	Close	VCC 3.3V
3-4	Close	VCC 5V
5-6	Close	VCC 12V/19V (The output voltage is the

		same as the DC power supply)
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Backlight Polarity Adjustment Jumper Settings (Screen Printing: LADJ/DIS)

Interface	Setting	Function
1-3	Close	LVDS OFF
3-5	Close	LVDS ON
2-4	Close	REV (Backlight Control Reverse)
4-6	Close	STD (Backlight Control Standard)

2.4.2 EDP (Optional)

As an optional feature, it supports a 2-lane eDP (1.3) interface. When configured for eDP, the LVDS function is canceled. The screen power supply is controlled by the LVCC jumper, and the LBKL is the screen backlight power control. The LADJ/DIS is the backlight polarity control and LVDS switch pin.

eDP Data Pin (Screen Printing: LVDS/EDP)

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	EDP_HPD
GND	5	6	GND
EDP_AUXN	7	8	EDP_AUXP
NC	9	10	NC
EDP_DATA0_P	11	12	EDP_DATA0_N
GND	13	14	GND
NC	15	16	NC
EDP_DATA1_P	17	18	EDP_DATA1_N
NC	19	20	NC
NC	21	22	NC
NC	23	24	NC
GND	25	26	GND
NC	27	28	NC
NC	29	30	NC

Screen Backlight Brightness Adjustment Pins (Screen printing: LBKL)

Pin	Signal
1	GND
2	GND
3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V/19V (The output voltage is the same as the DC power supply)

6	12V/19V (The output voltage is the same as the DC power supply)
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eDP Screen Power Supply (Screen Printing: LVCC)

Interface	Setting	Function
1-2	Close	VCC 3.3V
3-4	Close	VCC 5V
5-6	Close	VCC 12V/19V (The output voltage is the same as the DC power supply)

Backlight Polarity Adjustment Jumper Settings (Screen Printing: LADJ/DIS)

Interface	Setting	Function
1-3	Close	NULL
3-5	Close	NULL
2-4	Close	REV (Backlight Control Reverse)
4-6	Close	STD (Backlight Control Standard)

2.5 Storage

The board features one standard SATA3.0 interface with a transfer rate of up to 6Gb/s and one hard disk power supply socket (spacing 2.0mm). It also has one M.2 Key B slot, which supports 2242/2280 SSD (SATA protocol). The M.2 interface also supports a 4G module with a SIM card slot as an optional choice.

2.6 Expansion Slot

The board provides a M.2 key E slot, type 2230 (PCIe/USB2/CNVi). A PCIe4X interface (PCIe2X signal) which can be used for expansion network adapter, graphic card or other PICE devices.

2.7 USB Interface

The board provides 2x USB3.2 Gen1 ports, 3x USB2.0 ports (one USB Dongle onboard), and 4xUSB2.0 headers onboard, with 2.54mm spacing.

USB (Screen Printing: USB21, USB22)

Signal	Pin		Signal
VCC 5V	1	2	VCC 5V
USB DATA-	3	4	USB DATA-
USB DATA+	5	6	USB DATA+
GND	7	8	GND
NC	9	10	(NC)

2.8 LAN

The board features 2xRJ45 interfaces with Intel high-speed Gigabit network controllers. Two Intel i226-V data rate per port: 2.5Gbps, the MAC address only can be used once and cannot be changed after used. Supports Magic packet wake up; LAN 1 supports UEFI PXE network boot, to use the PXE network boot functions IPv4 PXE supports must be set enabled under the BIOS.

LED Status Indicators:

LI_LED Status (Green)	Function	ACT_LED Status (Orange)	Function
Always on	Network Connected	Blinking	Data transfer

2.9 COM

The board provides six serial ports, RS232 by default, 2.54mm pin spacing between COM1 and COM2; 2.0mm pin spacing for COM36. The COM2 can be changed to RS485 through hardware changes. Additionally, the COM3 and COM5 can have 5V or 12V for the voltages by using COM3-P and COM5-P, the powered pin is the ninth pin of the serial headers.

COM1, COM2 (Screen Printing: COM1, COM2)

Signal	Pin		Signal
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	(NC)

COM36 (Screen Printing: COM36)

信号名称	管脚		信号名称
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	(NC)
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RI#	19	20	(NC)
DCD#	21	22	RXD
TXD	23	24	DTR#
GND	25	26	DSR#
RTS#	27	28	CTS#
RI#	29	30	(NC)
DCD#	31	32	RXD

TXD	33	34	DTR#
GND	35	36	DSR#
RTS#	37	38	CTS#
RI#	39	40	(NC)

COM3-P, COM5-P:

Interface	Setting	Function
1-2	Close	5V
3-4	Close	RI
5-6	Close	12V

COM2 as RS485

Signal	RS232	RS485
1	DCD#	DATA-
2	RXD	DATA+
3	TXD	(NC)
4	DTR#	(NC)
5	GND	GND
6	DSR#	(NC)
7	RTS#	(NC)
8	CTS#	(NC)
9	RI#	(NC)

2.10 LPT

The board features a 2X13PIN parallel interface that requires an adapter cable to convert it to a standard parallel interface before use. The interface allows users to connect parallel port devices, such as printers. Additionally, the LPT features a voltage selection jumper J1 which is set to 5V by default, it also can be configured for 3.3V for option choices which allow greater flexibility and customization based on specific user requirements.

LPT:

Signal	Pin		Signal
STB	1	2	AFD
LPT_PPD0	3	4	ERROR
LPT_PPD1	5	6	INIT
LPT_PPD2	7	8	SLIN
LPT_PPD3	9	10	GND
LPT_PPD4	11	12	GND
LPT_PPD5	13	14	GND
LPT_PPD6	15	16	GND
LPT_PPD7	17	18	GND
ACK	19	20	GND
BUSY	21	22	GND
PE	23	24	GND

SLCT	25	26	(NC)
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J1:

Pin	Setting	Function
1-2	Close	VCC 3.3V
2-3	Close	VCC 5V

2.11 GPIO (Screen Printing: GPIO)

The board provides a set of 2x5Pin GPIO (2.0mm spacing) 8 programmable I/O lanes in total.

GPIO:

Signal	Pin		Signal
GPP_F11	1	2	3.3V
GPP_F12	3	4	GPP_F15
GPP_F13	5	6	GPP_F16
GPP_F14	7	8	GPP_F17
GND	9	10	GPP_F18

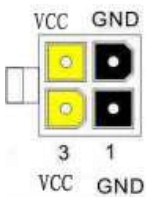
2.12 Board Power Supply (Screen Printing: PWR1, PWR2)

The board supports a 12V/19V DC-IN or ATX supplementary power (2x2pin).

PWR1: 12V/19V DC-in



PWR2: ATX supplementary power supply socket (2x2PIN)



2.13 Switch Panel Pin (Screen Printing: JPOWER)

The front control panel interfaces are to connect the functional buttons and indicators on the front panel.

Switch Panel Pin (Screen Printing: JFP)

Signal	Pin		Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED-	3	4	PWR_LED-
RSTBTN-	5	6	PWR_ON+
RSTBTN+	7	8	PWR_ON-

NC	9	10	(NC)
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2.14 Audio (Screen Printing: FP_AUDIO, JAUD)

The board is equipped with the advanced ALC897 audio control chip, which ensures high-quality sound output. The green interface functions as the audio output (LINE_OUT), while the pink interface serves as the microphone input (MIC_IN). Additionally, the JAUD connector is dedicated to amplifier output, providing an optimal audio experience.

FP-AUDIO:

Signal	Pin		Signal
MIC2-L	1	2	AGND
MIC2-R	3	4	NC
FRO-R	5	6	MIC2-JD
F-IO-SEN(AGND)	7	8	N/A
FRO-L	9	10	LIN2-JD

JAUD:

Pin	Signal
1	L+
2	L-
3	R-
4	R+

2.15 System Fan/CPU Fan Socket

The board offers two types of CPU heatsink fan sockets, powered at the default 5V and labeled as CPUFAN1 on the silkscreen. Additionally, there is one system fan socket powered at the default 5V. Users can set the CPU/system fan power to 12V by jumping the JVCCFAN pin.

CPUFAN1:

Pin	Signal
1	VCC
2	GND
3	TAC
4	CTL

CPUFAN2:

Pin	Signal
1	VCC
2	GND
3	TAC
4	CTL

SYSFAN:

Pin	Signal
1	GND
2	VCC
3	TAC
4	CTL

CPU/System Fan Power Supply Voltage Setting Pins (Screen Printing: JVCCFAN)

Interface	5V	12V
CPUFAN	1-3	3-5
SYSFAN	2-4	4-6

2.16 CMOS Clearance/Retention

CMOS is powered by onboard button batteries. Clearing CMOS will permanently remove the previous system settings and restore the board system to original settings (factory settings).

Step 1: Turn off the PC and disconnect the power adapter.

Step 2: Use the jumper cap to connect the 1st and 2nd header of JCMOS for 20 seconds, then disconnect.

Step 3: Restart the device, press the button to enter the BIOS, load the optimal default value, save, and exit the settings.

CMOS (Screen Printing: JCMOS)

Setting	Setting	JCMOS
Close	Close	Clear CMOS



Please do not clear COMS when the PC is connected to power in case of any board damage.