SK-Thin mini H610-AIO T2C

Manual

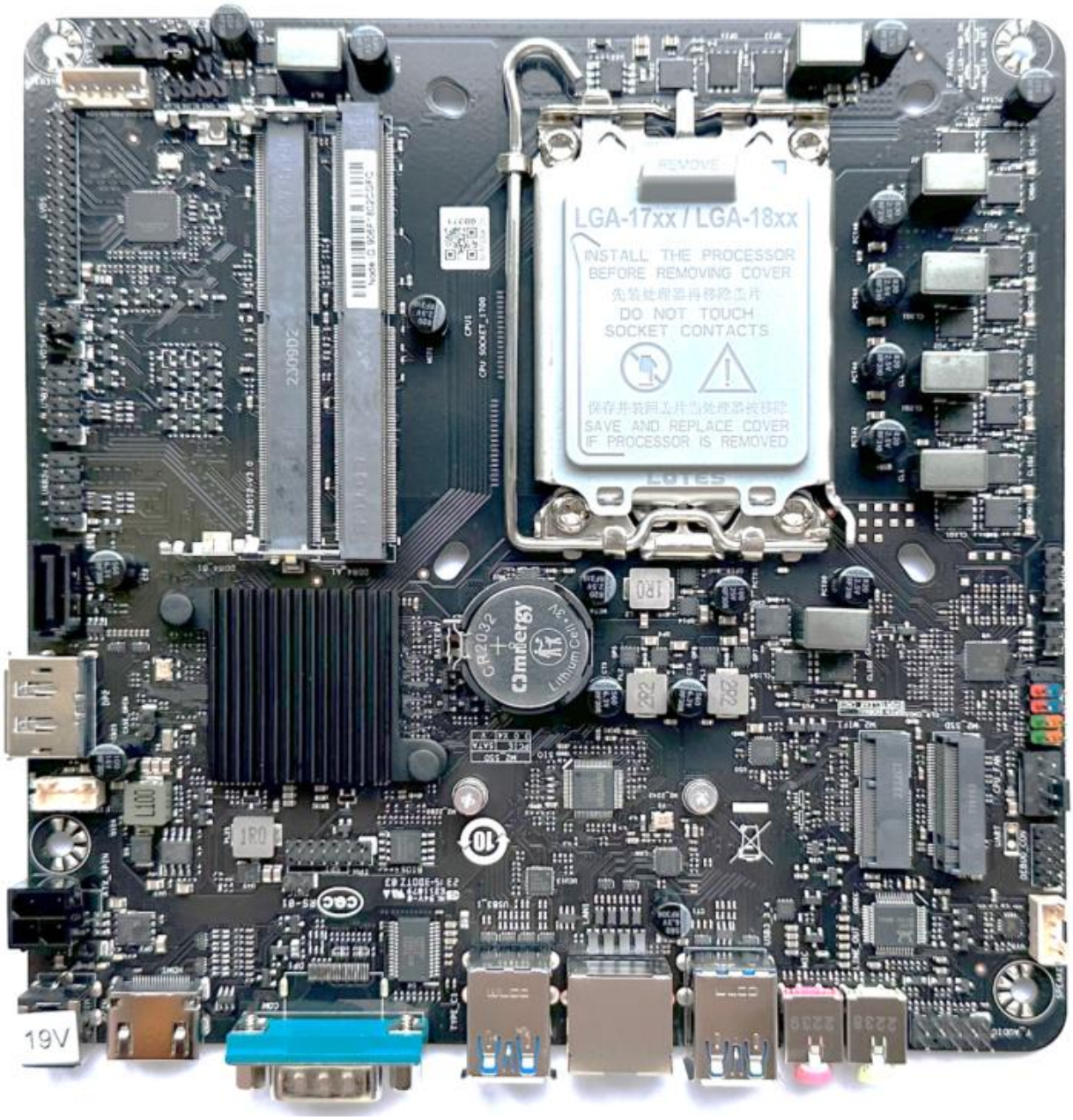
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Catalog

Chapter 1 Motherboard Configuration Diagram 3
Chapter 2 Introduction to Motherboard Hardware 4
Chapter 3 Introduction to the rear on-board port 7
Chapter 4: Introduction to motherboard pins and jumpers 8

Chapter 1 Motherboard Configuration Diagram

(This figure is for reference only, some details will be adjusted according to the actual design, please prevail in kind, we reserve the right to interpret)



Chapter 2 Introduction to motherboard hardware

2.1. Precautions before installation

The motherboard is made up of many precision integrated circuits and components that can be damaged by the effects of strong static electricity. Please read this manual in detail and prepare the following before installation:

2.1.1, before installation, please confirm that the chassis/case mechanism used is compatible with the motherboard.

2.1.2, please do not arbitrarily tear the stickers on the motherboard, especially the serial number bar code stickers, otherwise it will affect the production Product Warranty.

2.1.3. Be sure to turn off the power and ensure a power failure before performing all installation/removal hardware operations.

2.1.4. When installing the external socket to the motherboard, please make sure that the external socket is tightly integrated with the motherboard.

2.1.5, please try not to touch the metal wiring part to avoid a short circuit in the line when taking the motherboard.

2.1.6, pick and place the motherboard, CPU or memory sticks and other precision electronic peripherals, it is recommended to wear anti-static hand ring. If there is no anti Static hand ring, please make sure your hands are dry and touch the metal object first to eliminate static electricity.

2.1.7. Before turning on the power supply, please make sure that the output voltage value of the power supply meets the standard value required by the motherboard.

2.1.8 Please make sure that all hardware external cables and power cables are properly connected before turning on the power.

2.1.9, please do not place the motherboard in a high temperature or humid environment to use.

2.1.10, if you are not familiar with the installation of the motherboard, or the use of this product occurs when any technical problems, please consult Professional technical staff.

2.1.11. When using adapters, extension cords or wires, please check the corresponding installation and grounding-related requirements for this equipment.

2.2, motherboard hardware specifications

Motherboard Size	Mini ITX 17*17cm
CPU Support	Supports LGA17XX slots Intel 12th and 13th generation processors CPU without integrated graphics with F suffix are not supported
Chipsets	Intel® H610 Chipset
Memory	2x SO-DIMM DDR4 memory slots

	Supports up to 128GB total (depending on CPU specifications) Supports dual-channel memory technology Support 3200/2933/2666/2400/2133MHz memory frequency
Display	Based on the display function with integrated graphics processor, using shared display memory technology 1 HDMI port supporting up to 4096x2160@30Hz resolution (HDMI version 1.4 and HDCP2.2) 1x set of LVDS pins, supports up to 8bit dual channel LVDS signal, 1920*1200@60Hz resolution 1x DP port, supporting up to 4096x2160@60Hz resolution If the LVDS function is not used, it is recommended to turn off LVDS SUPPORT in the BIOS
Audio	Integrated ALC897 sound card chip Support 2.0 sound channel 1x rear on-board 3.5mm MIC connector, 1x rear on-board 3.5mm Audio OUT connector 1x set of front audio pins with HD Audio support 1x set of 4pin speaker SPEAKER pins, support external chassis built-in speaker output, recommended with 3W speaker set
Network	Integrated Realtek® RTL8111H NIC chip (10/100/1000Mbit) 1 on-board RJ45 connector Support network wake-up Support PXE disk-less boot
Storage	1x M.2 slot (supports 2280 SATA/NVME up to PCIE3.0 X4 channel SSD with adaptive switching) 1x SATA 3.0 port
USB	On-board rear ports: 4x USB 3.1 GEN1 (3x TYPE A ports, 1x TYPE C port) TYPE C port supports USB function as well as forward and reverse plugging function, does not support display output function, does not support power input On-board pins: 2x groups (4) USB2.0 pins
In-board sockets	1x DC-IN connector, 12V-19V input, 5.5*2.5mm size specification (120W or more adapter recommended) 1x set of HDD_PWR hard drive power pins 1x SATA port 1x set of LVDS screen OC voltage selection pins (default is 5V) 1x set of booster board power supply pins (recommended with 0-3.3V negative dimming (0V brightest, 3.3V darkest) way booster board) 1x set of LVDS screen backlight adjustment pins 1x set of system fan pins 1x set of buzzer pins 1x set of CPU fan pins 1x set of CLR_CMOS pins 1x set of CASE_OPEN pins 1x set of switch control indicator pins (F_PANEL) 1x M.2 wireless NIC port (CNVi/PCIE)

Hardware Monitoring	Voltage monitoring Temperature monitoring Fan Monitoring Intelligent fan speed control (the motherboard has been made to support, intelligent fan speed control also requires fan support)
Operating System	UEFI Windows 11 64bit support UEFI Windows 10 64bit support UEFI Ubuntu 64bit support UEFI UOS 64bit support etc. (only UEFI mode systems are supported)
ESD protection	Air discharge ±8KV Class C ±6KV Class B Contact discharge ±6KV Class C ±3KV Class B * Tested with good grounding of the whole machine
Special Features	Support gravity-sensitive screen rotation function (for LVDS display only)
Working ring temperature	-10°C (non-condensing) to 45°C
Storage ring temperature	-20°C (non-condensing) to 60°C

2.3.Install CPU

Before installing the CPU, please confirm the following key points:

Do not remove the protective cover before installing the CPU. This cover will automatically fall off after installing the CPU and snapping back the lever.

Verify that the CPU is within the supported range of this motherboard.

Before installing the CPU, be sure to turn off the power and power off.

Confirm the location of the concave corners on both sides of the CPU and the location and orientation of the bumps on the CPU socket.

After installing the CPU, just apply a thin layer of thermal paste on the metal surface of the CPU, no need to be too thick too much.

After applying the CPU thermal paste, properly assemble the heatsink and connect the heatsink fan connection cable to the CPU fan pins.

Chapter 3 Introduction to the rear on-board port



A: DC-IN power connector

Motherboard power input connector, 5.5*2.5 size specifications, supports 12V/19V voltage input.

B: HDMI port

Supports up to 4096x2160@30Hz resolution (HDMI version 1.4 and HDCP2.2) for connecting to HDMI displays.

C: COM port

Used to connect RS232 protocol devices.

D: Dual layer USB3.1 GEN1 port, upper layer TYPE A port, lower layer TYPE C port

Supports up to USB 3.1 GEN1 standard, backward compatible with USB 2.0/1.1 standard.

TYPE C port supports USB function as well as forward and reverse plugging function, does not support display output function, does not support power input

E: RJ45 port

Network cable port for accessing the network cable to link the host system to the network with a maximum bandwidth of 1000Mbps.

Connection bandwidth indicator	
Bandwidth	Lamp Status
No connection	extinguish
10Mbps	extinguish
100Mbps	Green always on
1000Mbps	Orange always on

Operation indicator	
No data transfer	extinguish
In data transmission	Blinking

F: Dual-layer USB3.1 GEN1 TYPE A port

Supports up to USB 3.1 GEN1 standard, backward compatible with USB 2.0/1.1 standard. For connecting USB TYPE A devices.

G: Audio-in port (pink)

For accessing audio input devices, such as microphones and other radio devices.

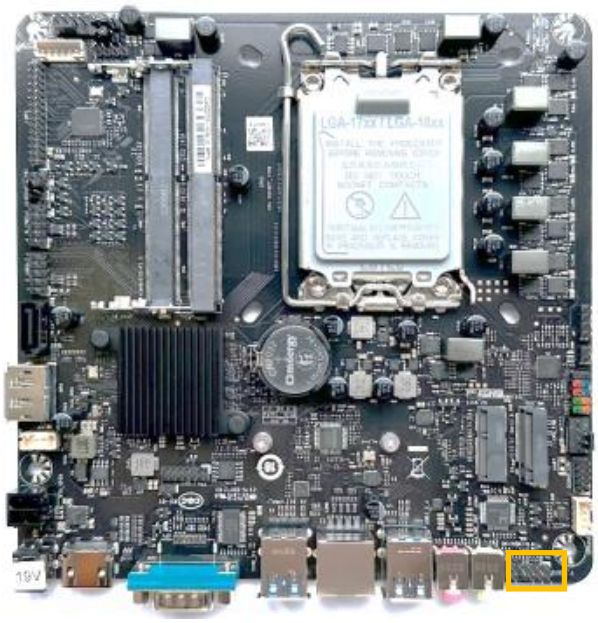
H: Audio-out port (light green)

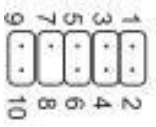
Used to access audio output devices, such as headphones, speakers and other external amplification devices.

Chapter 4 Introduction to motherboard pins and jumpers

4.1, F_AUDIO pins

Front audio pins, used to support the front audio connection cable access to support external audio devices, support HD Audio specification, please confirm the connection cable terminal definition and pin definition before installation, improper installation will lead to equipment can not be used properly or damaged.





Pin number	Definition	Pin number	Definition
1	MIC2_L	2	GND_AUD
3	MIC2_R	4	VCC3P3_S
5	LINE2_R	6	MIC2-JD
7	FRONT-IO	8	KEY(No Pin)
9	LINE2_L	10	LINE2-JD

4.2、Horn SPEAKER pins

For accessing 4PIN dual channel speakers.

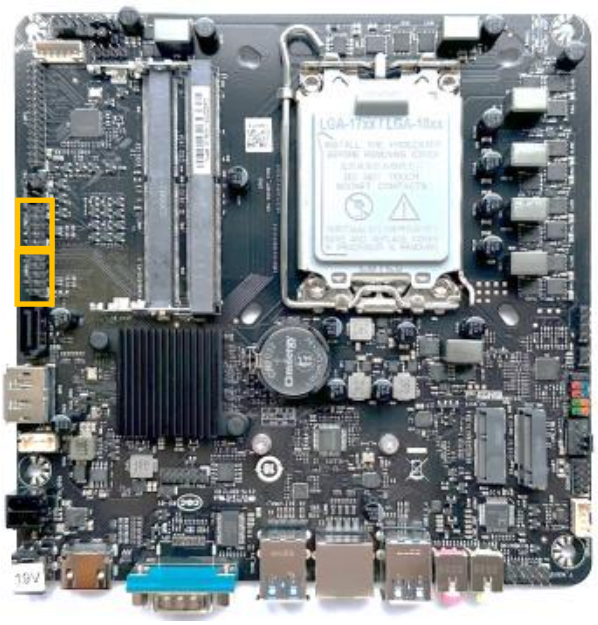


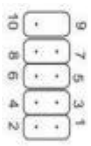


Pin number	Definition
1	OUT_R-
2	OUT_R+
3	OUT_L+
4	OUT_L_

4.3, F_USB2 pins

For access to USB2.0 pin conversion cable to expand the USB port, support USB2.0/1.1 specification, a group of 9-pin pins can be converted to 2 USB port.

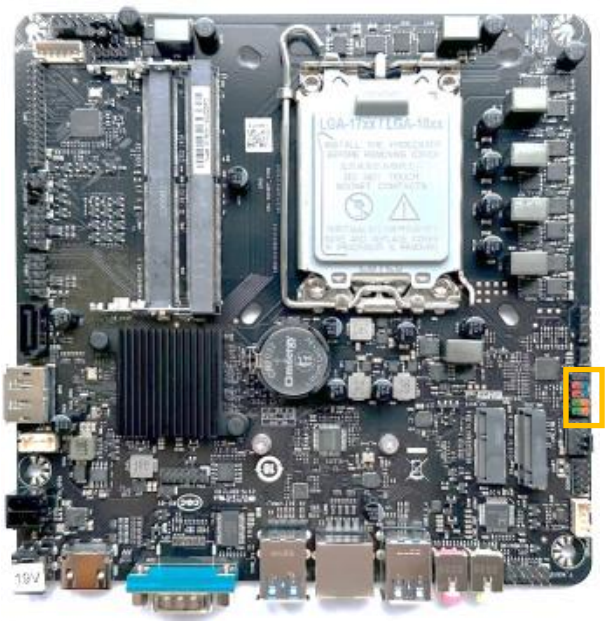


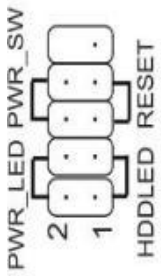


Pin number	Definition
1	5V
2	5V
3	D-
4	D-
5	D+
6	D+
7	GND
8	GND
9	KEY(No Pin)
10	Pin(No signal)

4.4, F_PANEL (switch control indicator pins)

Used to access the on/off button, reboot button, hard disk indicator, and power indicator.

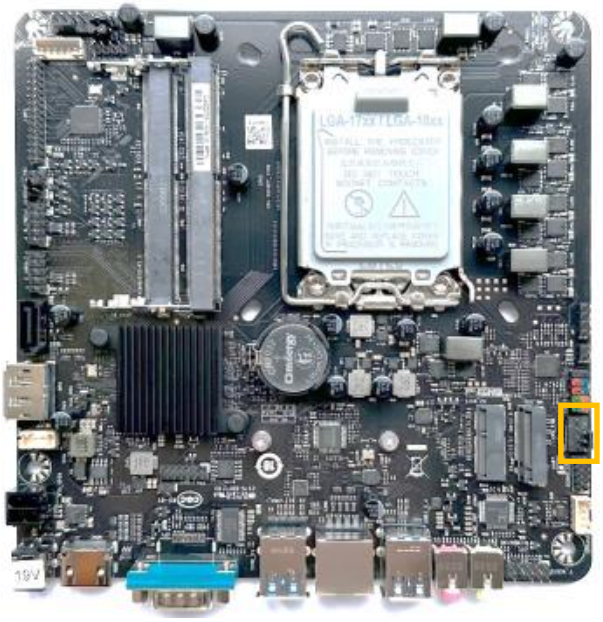




Pin number	Definition	Pin number	Definition
1	HDD-LED+	2	PWR-LED+
3	HDD-LED-	4	PWR-LED-
5	GND	6	PWR_SW
7	RESET	8	GND
9	NC	10	NO PIN

4.5, CPU_FAN pins

Used to connect the CPU cooler fan cable, with intelligent fan speed control function (intelligent fan speed control also requires fan support), the socket has an anti-dull design, please pay attention to the direction of the plug when installing to avoid damage to the motherboard and fan. If installed into a chassis or all-in-one, please make sure the air ducts are reasonably designed to achieve the best cooling function, so as not to reduce the processor performance due to poor cooling performance.

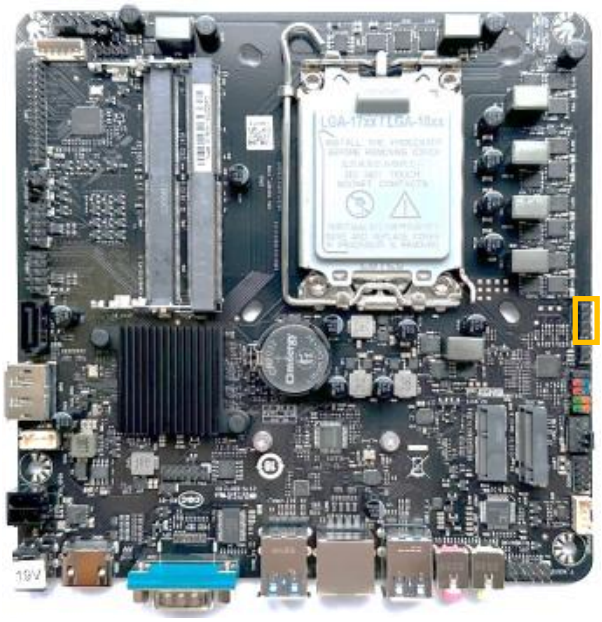


Pin number	Definition
1	GND
2	+12VS/Voltage speed control
3	Rotational speed detection
4	PWM speed control

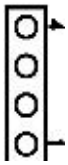


4.6, BUZZER pins

Used to access the motherboard status prompt buzzer, the motherboard power-on self-test will be based on the detection of different external with the fault, with different and the number of rings and intervals for the alarm, if the motherboard normal power-on will only be a short beep.

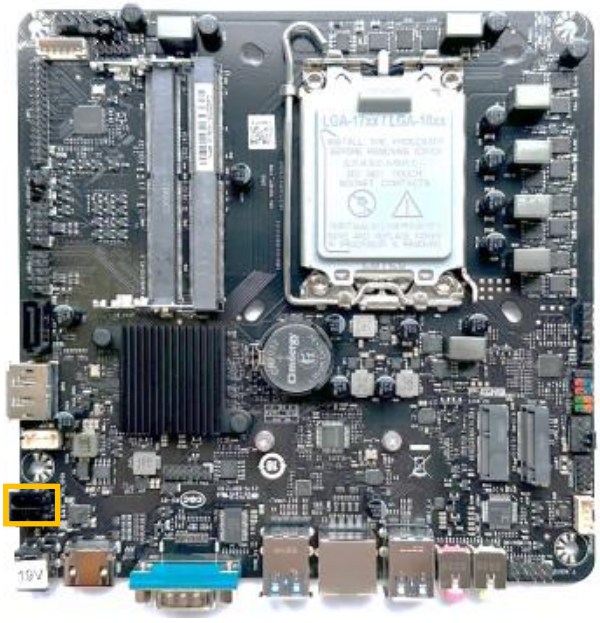


Pin number	Definition
1	+
2	NC
3	NC
4	-

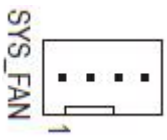


4.7. SYS_FAN pins

Used to connect the chassis radiator fan cable, with intelligent fan speed control function (intelligent fan speed control also requires fan support), the socket has an anti-dull design, please pay attention to the plug direction when installing to avoid damage to the motherboard and fan. The chassis radiator is used to supplement the internal space of the chassis/integrated machine for heat dissipation, and is connected on demand.

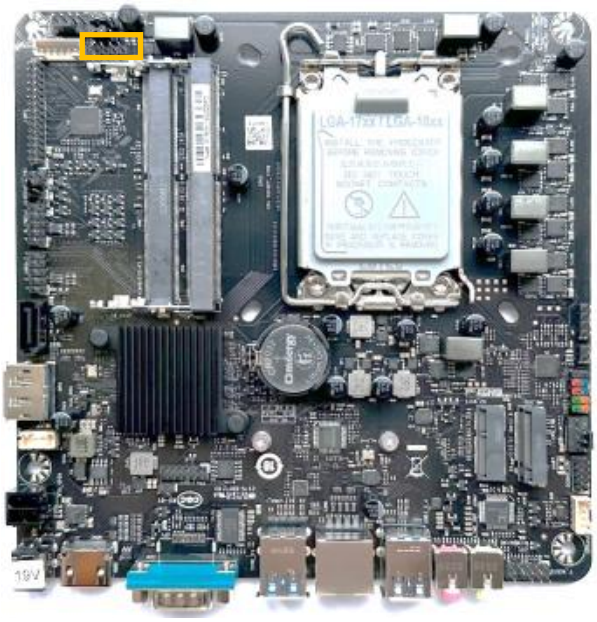


Pin number	Definition
1	GND
2	+12VS/Voltage speed control
3	Rotational speed detection
4	PWM speed control



4.8, BL_CTRL pin

Used for hardware keypad control of the three functions of LVDS backlight brightness plus, brightness minus, and backlight on/off, with optional wiring as required. Each function pin control signal is pulled low to take effect.





Pin number	Definition
1	Backlight brightness+
2	Backlight brightness-
3	GND
4	Backlight switch

4.9, INVERTER pins

Used to connect the LVDS screen booster board to provide power and control signal to the booster board. (Recommended with 0-3.3V negative dimming (0V brightest, 3.3V darkest) way booster board)

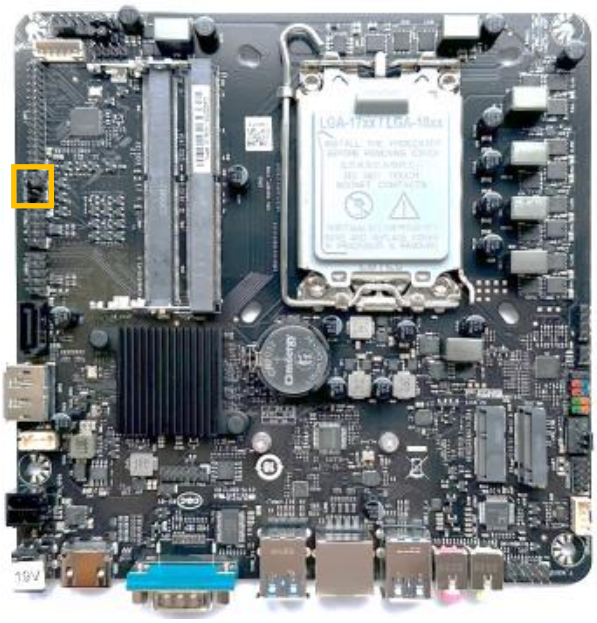


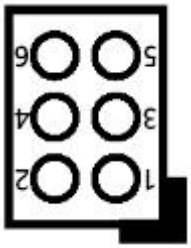


Pin number	Definition
1	VCC
2	VCC
3	EN
4	ADJ
5	GND
6	GND

4.10, LVDS_PWR_SEL pins

Used to switch the power supply voltage of LVDS screen Open Cell, please select the matching voltage as needed according to the specification parameter of the Open Cell used. Support 3.3V, 5V and 12V.

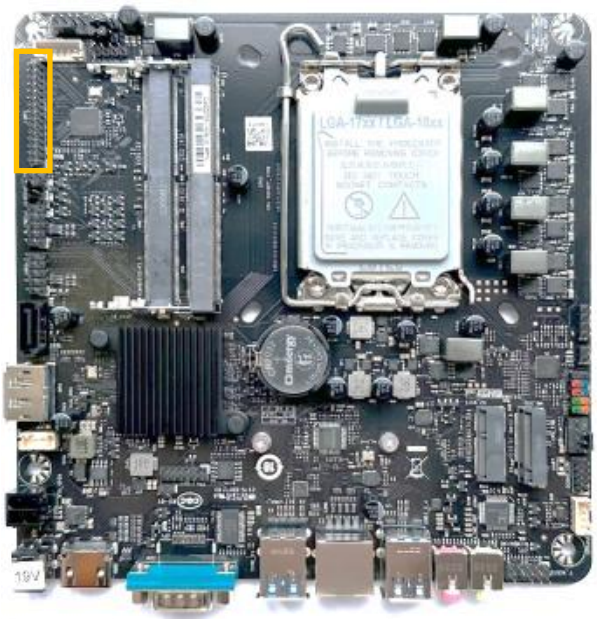


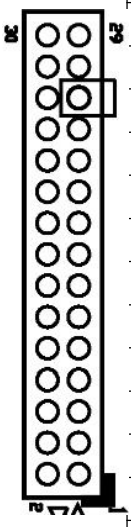


Pin Jump Cap Status	Definition
1-2	3.3V
3-4 (default)	5V
5-6	12V

4.11, LVDS pins

For accessing LVDS signal line, this pin is 30PIN and supports up to 8bit dual channel LVDS signal with 1920*1200@60Hz resolution.

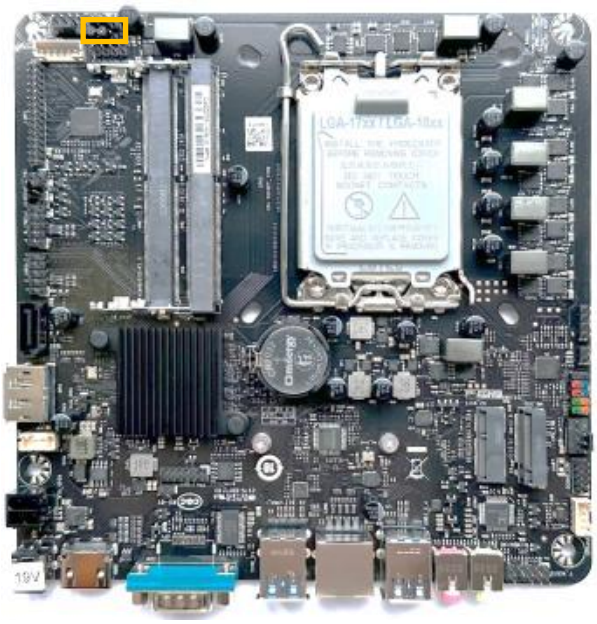


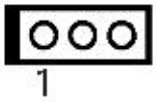


Pins	Definition	Pins	Definition
1	VCC	2	VCC
3	VCC	4	GND
5	LVDS_Detect	6	GND
7	TX_TA0N	8	TX_TA0P
9	TX_TB0N	10	TX_TB0P
11	TX_TC0N	12	TX_TC0P
13	GND	14	GND
15	TX_TCLK0N	16	TX_TCLK0P
17	TX_TD0N	18	TX_TD0P
19	TX_TA1N	20	TX_TA1P
21	TX_TB1N	22	TX_TB1P
23	TX_TC1N	24	TX_TC1P
25	GND	26	GND
27	TX_TCLK1N	28	TX_TCLK1P
29	TX_TD1N	30	TX_TD1P

4.12, BL_PWM pins

Used for hardware switching LVDS backlight control mode, default setting jump cap 1-2 pins, backlight adjustment control mode is negative dimming (ADJ voltage 0V backlight brightest, 3.3V backlight darkest). Switch the jump cap to 2-3 pins to switch to positive dimming mode (ADJ voltage 3.3V backlight is the brightest, 0V backlight is the darkest).

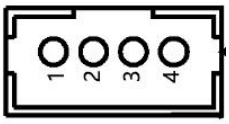




4.13, HDD_PWR pins

For accessing the hard drive power cable, you can use the hard drive power cable to connect this pin and the hard drive power input port to power the hard drive.





Pin number	Definition
1	5V
2	GND
3	GND
4	12V

Pin Jump Cap Status	Definition
1-2 (default)	NEGATIVE (negative dimming)
2-3	POSITIVE (positive dimming)

4.14, SATA port

Used to access the hard disk SATA cable, you can use the hard disk SATA cable to connect this socket and the hard disk data port to transfer data to the hard disk.

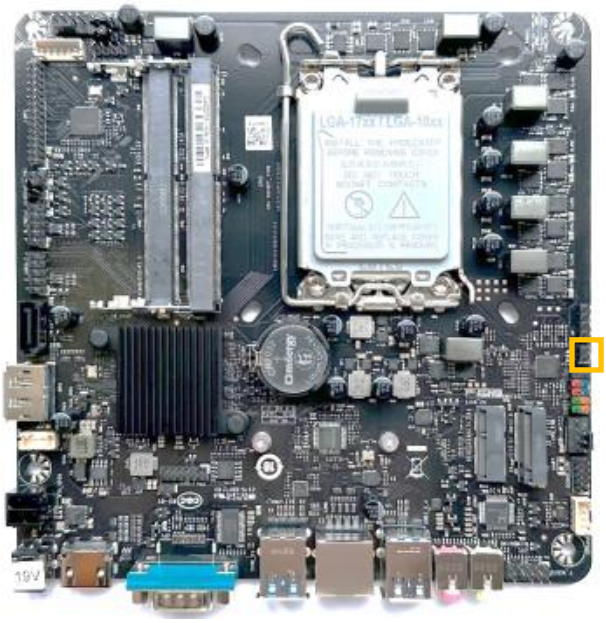


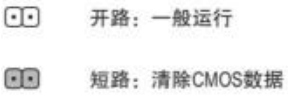


Pin number	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

4.15, CLR_CMOS pins

Please make sure the motherboard is disconnected from the power supply before operation.





4.16, CASE_OPEN pins

This function is disabled by default in the BIOS and needs to be turned on manually in the BIOS to make the function effective with the chassis alarm.

When the pins are open: CASE_OPEN function is turned off, the motherboard is turned on and the motherboard will not have any action when the chassis is opened.

When the pins are shorted: CASE_OPEN function is turned on, the motherboard is turned on, the motherboard buzzer alarm when the chassis is opened (the buzzer needs to be accessed to the BUZZER pins by itself), the display port stays in the BIOS POST port and prompts CASEOPEN, at which point you can press any key on the keyboard to skip the warning and enter the system.





Pin Jump Cap Status	Definition
1-2 (default)	LVDS ON
2-3	LVDS OFF

Pin Status	Definition
Open Road	CASE_OPEN is not triggered by power on
Short Circuit	Power on trigger CASE_OPEN

4.17, LVDS_CTRL pins

It is used for hardware control to switch LVDS function. The default setting of jump cap to pin 1-2 turns on LVDS function by default; setting jump cap to pin 2-3 turns off LVDS function. If the terminal whole machine does not need LVDS function, it is recommended to jump cap to pin 2-3 to turn off LVDS function.

