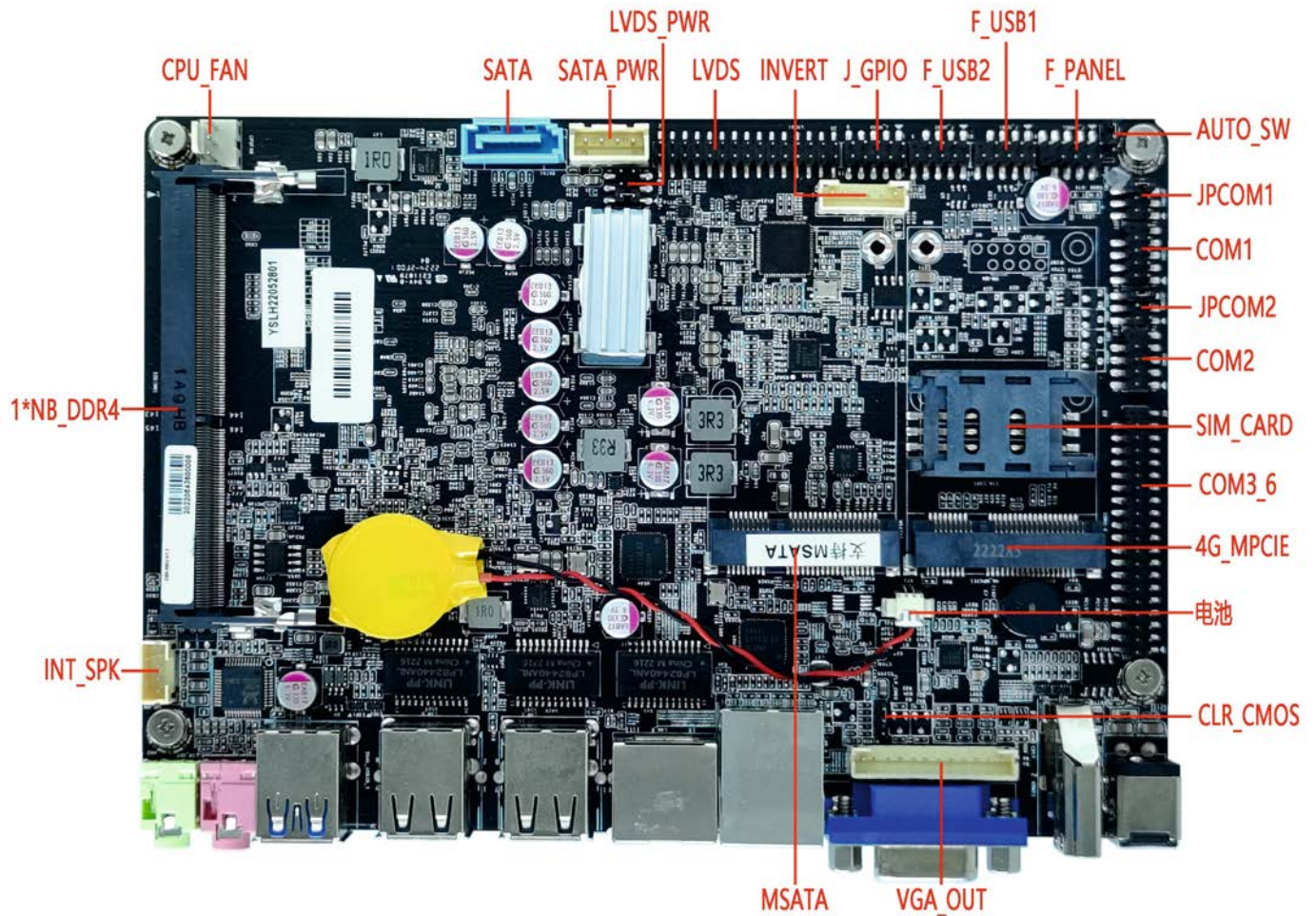
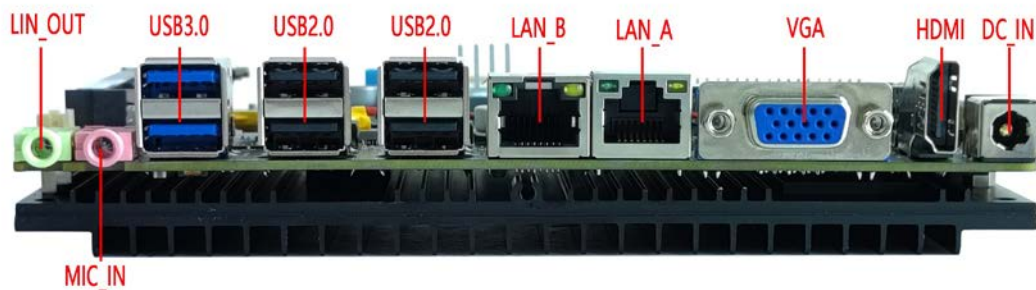


CB-KBU8 V1.0 specification

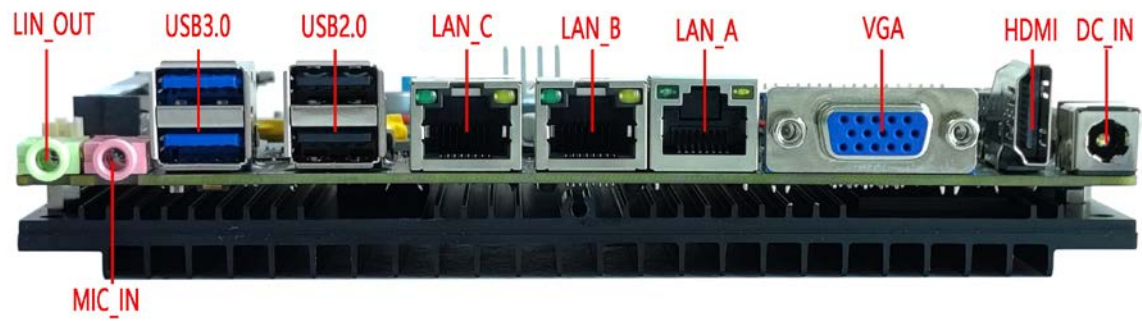
Motherboard diagram ↓



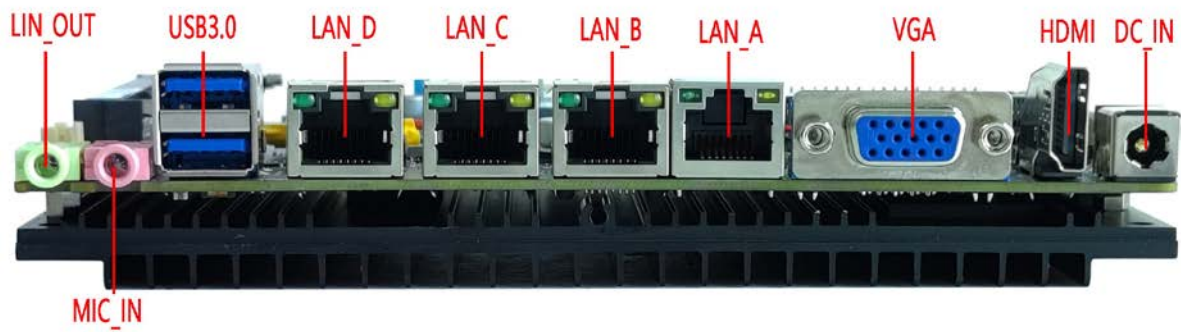
Dual lan motherboard diagram ↓



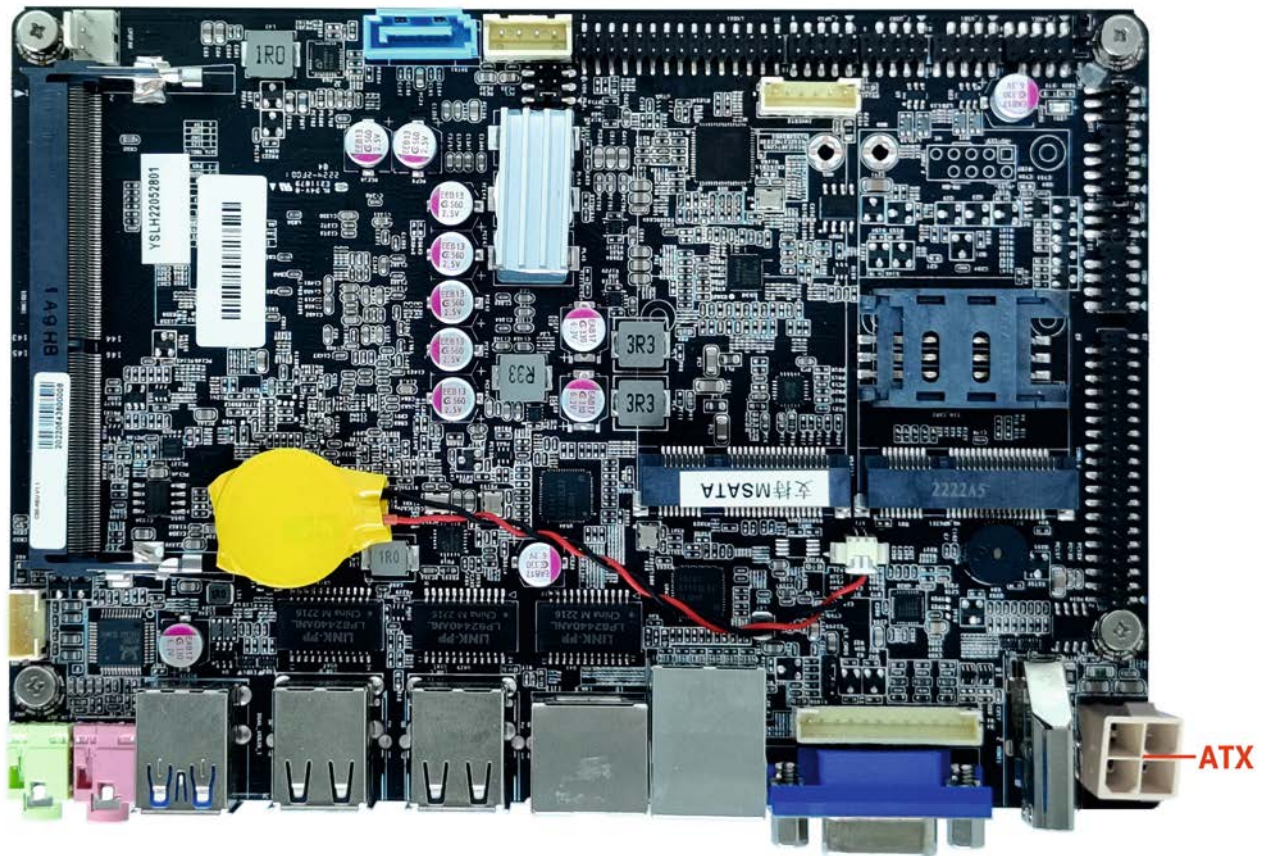
Three lan motherboard diagram



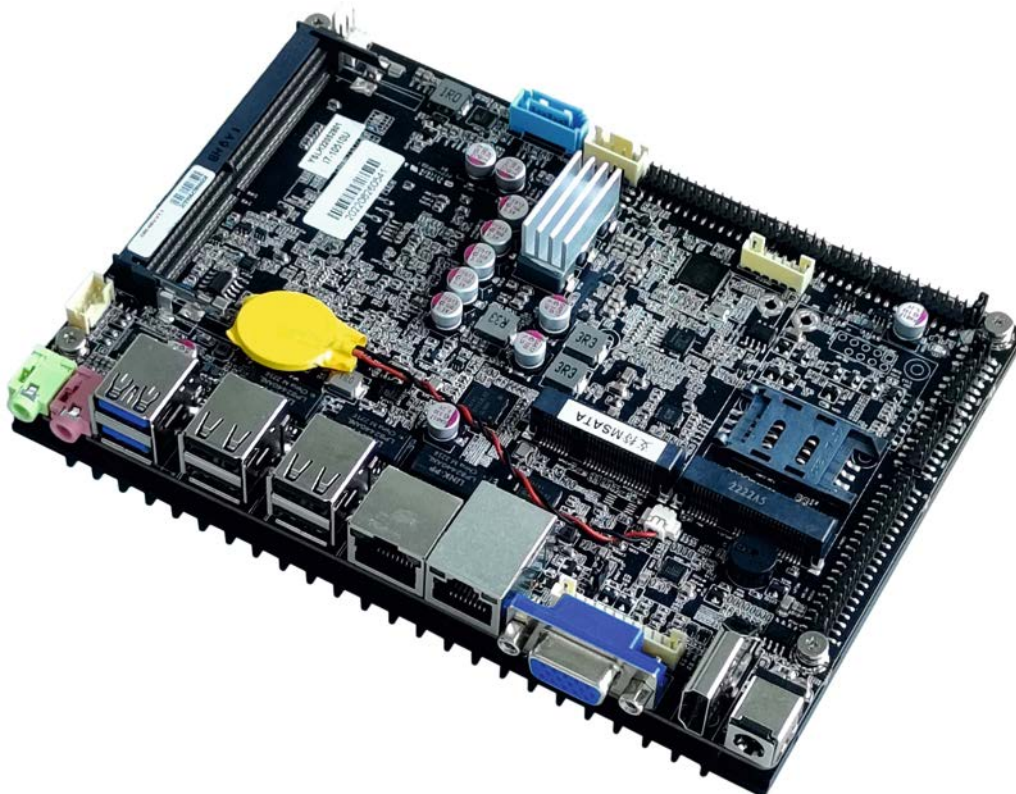
Four lan motherboard diagram



4Pin ATX interface pic



Motherboard profile





Because there are many optional specifications, the above pictures are for reference only, please refer to the actual object!

Product model ordering optional:

motherboard model	CPU	4K	LAN	COM	USB2.0	USB3.0	Memory	SSD	Power
4 inch motherboard CB5-KBU8	Support Whiskey Lake 8gen Comet Lake 10gen core i3、i5、i7	support	2	6	8	2	1*NB-DDR4 32G (MAX)	1*MSATA 1*SATA	+12V
			3	6	6	2			
			4	6	4	2			
Dual lan motherboard default 10*USB available, can be changed to support 4G, then 9*USB available ;									

⚠One important note:

Power supply interface:

The DC interface specification of the motherboard is 5.5*2.5, and the power supply can be changed to 4Pin ATX interface;

The mainboard supports 12V power supply only. Full load power consumption is about 60W, 12V7A or above power supply is recommended;

Display interface:

1, motherboard VGA, HDMI, LVDS/EDP support single display, double display/triple display replication, double display/triple display extension, DOS single display;

2, the motherboard support vertical 1.4 HDMI interface, support 4K output; Support resolution



4096/3840*2160@30Hz;

3, the motherboard LVDS and EDP signal two options, the default support LVDS, can be changed to support EDP, pin sharing, EDP with EDP-B screen line (20Pin backlight separate independent);

Mini-PCIE:

By default, the MSATA port on the mainboard supports SATA disks. No USB signal and cannot be changed to co-exist with USB signal, SATA signal can be changed to PCIE signal, after the change to support WiFi module;

By default, the Mini-PCIE port on the mainboard has PCIE signals but no USB signals. By default, only the WIFI module is supported. It can coexist with USB signals and support 4G/ Bluetooth /WIFI modules after modification. The 2/4/6/8/10 F_USB2 pin has no signal and the Mini-PCIE interface cannot change SATA signals.

USB interface:

The motherboard supports 10USB (2*USB3.0, 8*USB2.0) by default, and 9USB after changing to support 4G/ Bluetooth;

All USB ports and pins on the motherboard default S power (no power after shutdown), external USB ports can be changed to A power (power after shutdown), built-in USB pins can not change A power;

COM port:

Motherboard support 6*COM port, default support RS232; COM1 supports RS232/422/485 optional, which is set through the BIOS (page 21).

Mainboard COM1/2 pin 9 can be set through JPCOM1/2 power 0V/5V/12V, the default is 0V;

Network card:

The motherboard supports intel i225-LM dual gigabit network card, three gigabit network card, four gigabit network card optional; POE power supply cannot be changed.

Sound card:

The motherboard supports Realtek sound card by default, not USB sound card;

The following CPU information is for reference only, please consult sales for specific requirements!

CPU spec	CPU brand	CPU model	Base Frequency	Turbo Frequency	CPU TDP (W)	Full load power consumption (W)
8gen I3	core	8145U	Dual core 2.1G	3.9G	15	60
8gen I5	core	8365U	Quad core 1.6G	4.1G	15	60



		8265U	Quad core 1.6G	3.9G	15	60
8gen I7	core	8665U	Quad core 1.9G	4.8G	15	60
10gen I3	core	10110U	Dual core 2.1G	4.1G	15	60
10gen I5	core	10310U	Quad core 1.7G	4.4G	15	60
	core	10210U	Quad core 1.6G	4.2G	15	60
10gen I7	core	10510U	Quad core 1.8G	4.9G	15	60
	core	10610U	Quad core 1.8G	4.9G	15	60
	core	10810U	Six core 1.1G	4.9G	15	60
	core	10710U	Six core 1.1G	4.7G	15	60

Chapter 1, motherboard spec

Motherboard size	4 inch motherboard 165mm (L) *115mm (W) *31mm (H)	
CPU processor	Support 8 gen Whiskey Lake CPU: I3-8145U、I5-8265U、I7-8665U Etc.	
	Support 10 gen Comet Lake CPU: I3-10110U、I5-10210U、I7-10510U Etc.	
Chipset	Haswell-U、Broadwell-U high speed chipset	
Power	1*DC_IN Can change to 1*ATX (4Pin)	The inner diameter of the DC head is 2.5MM and supports 12V Full load power consumption of the motherboard is about 60W. 12V7A or above power supply is recommended
Memory	1*NB-DDR4 memory slots supporting 2133 MHZ, 2400 MHZ, and 2666MHz memory, up to 32GB	
Display	Integrated Intel UHD Graphics hypercore graphics card, support single display, double display/triple display copy, double display/triple display extension, DOS single display	
	1*VGA DB15 interface	Support resolution 1920 * 1080@60Hz
	1*VGA_OUT pin	Support resolution 1920 * 1200@60Hz (12Pin, 1*12Pin, 2.0mm)
	1*HDMI 1.4 interface	Support 4K resolution 4096/3840 * 2160@30Hz

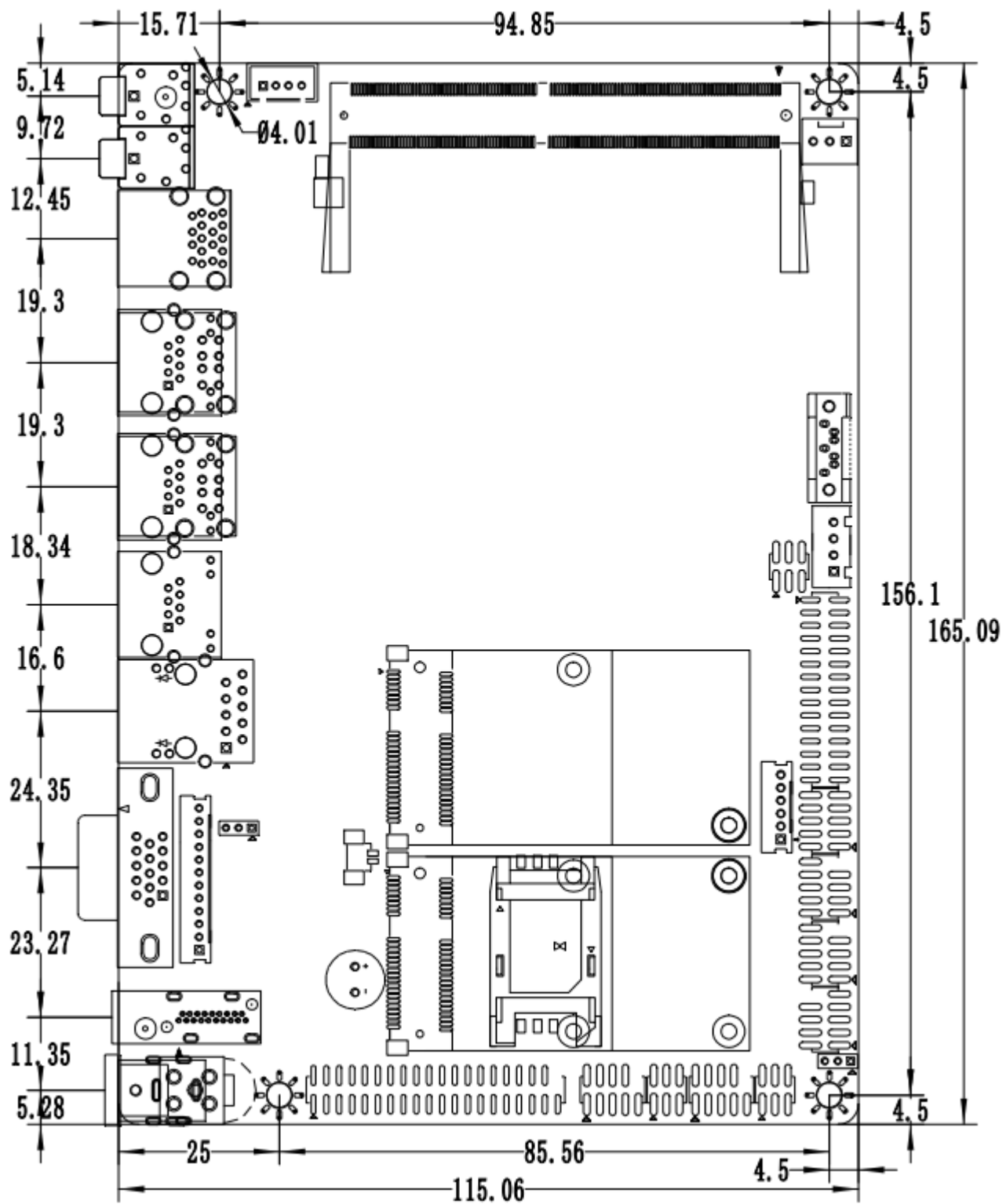


	1*LVDS pin	Support resolution 1920 * 1080@60Hz (30Pin,2*15Pin, 2.0mm)
	1*LVDS_PWR pin	LVDS Voltage control pin (6Pin,2*3Pin, 2.0mm)
	1*INVERT pin	LVDS Backlight control pins (6Pin,1*6Pin, 2.0mm)
	Mainboard LVDS and EDP signal two options, the default support LVDS, can be changed to support EDP, pin sharing	
Network	2*LAN/3*LAN/4*LAN	It supports intel i225-LM gigabit network adapter chips and supports network wake up and PXE diskless startup.
	1*4G_MPCIE interface	Support WIFI, can be changed to support 3G/4G/ Bluetooth /WIFI, etc
Hard disk	1*MSATA interface	Support MINI_SATA, support MSATA3.0
	1*SATA1 interface	Standard SATA3.0 hard disk interface, max transmission speed 6.0 Gbps
	1*SATA_PWR pin	The hard disk power supply pins provide 5V or 12V power. (4Pin,1*4Pin, 2.54mm)
Sound function	Integrated Realtek ALC897 HD digital audio decoder with 6-channel hi-fi audio controller	
	1*LINE_OUT interface	Audio output support (green)
	1*MIC_IN interface	Support microphone input (pink)
	1*INT_SPK pin	Power amplifier support 8 OH5 watt speaker dual channel output (4Pin,1*4Pin, 2.0mm)
USB	2*USB3.0 interface	A standard USB3.0 port is installed at the rear
	4*USB2.0 interface	A standard USB2.0 port is installed at the rear
	1*F_USB1 pin	Front USB2.0 pins, a set of 2*USB2.0 (9Pin,2*5Pin, 2.0mm)
	1*F_USB2 pin	Front USB2.0 pins, a set of 2*USB2.0 (9Pin,2*5Pin, 2.0mm)
	The USB signal for Mini-PCIE and F_USB2 2/4/6/8/10 are optional. By default, Mini-PCIE has no USB signal	
Switching function	1*F_PANEL pin	Switch, power indicator, hard disk indicator, restart pin (9Pin,2*5Pin, 2.0mm)
	1*AUTO_SW pin	Supports hardware control power-on and power-on (3Pin,1*3Pin, 2.0mm)
Other I/O	COM1 pin	Com port, RS232, RS422, or RS485 Optional (9Pin,2*5Pin, 2.0mm)
	COM2 pin	Comport,supporting standard RS232 (9Pin,2*5Pin, 2.0mm)
	COM3~6 pin	Comport,supporting standard RS232 (39Pin,2*20Pin, 2.0mm)
	1*JPCOM1/2 pin	Control COM1/2 pin 9 Voltage 0V/5V/12V Optional (6Pin,2*3Pin, 2.0mm)
	1*SIM slot	Support SIM card, 3G/4G need SIM card
	1*CLR_CMOS pin	Motherboard reset and discharge pins (2Pin,1*2Pin, 2.0mm)
	1*CPU_FAN pin	CPU fan pins: Full speed, temperature control is not supported (3Pin,1*3Pin, 2.54mm)
	1*J_GPIO pin	GPIO control pin (10Pin,2*5Pin, 2.0mm)

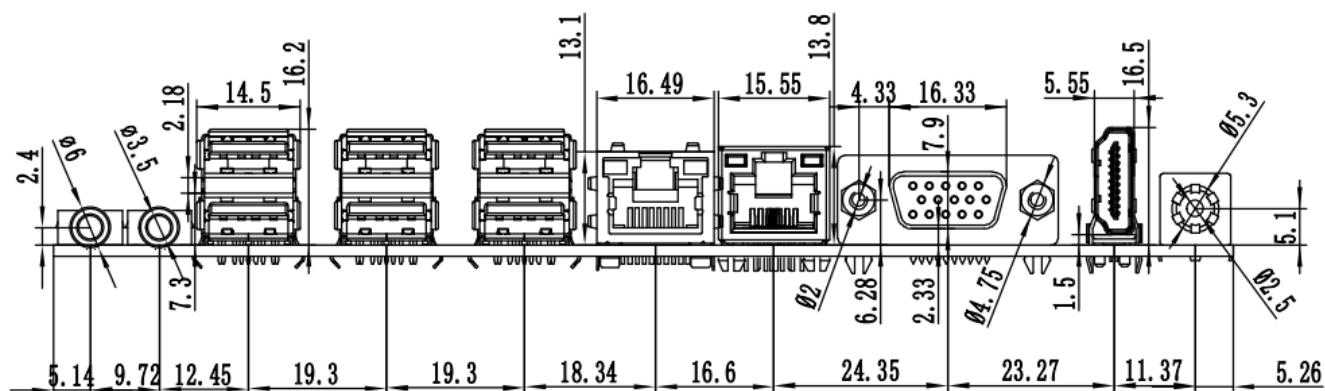


Operating environment	Operating temperature: -10°C~60°C; Operating humidity: 5% to 95% relative humidity, no condensation
BIOS	AMI BIOS supports power-on and power-on, timed power-on, and intelligent identification of remote power-on and power-off devices
Watch Dog	Watch dog programming, support hardware reset function (256 level, 0~255 seconds)
OS	Support Windows 10, Windows 11, Linux Etc.

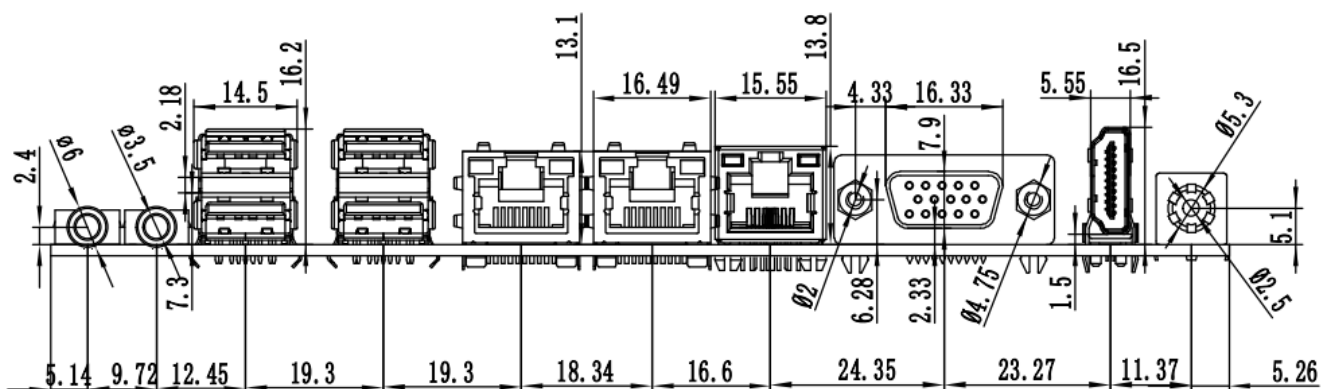
Motherboard drawing



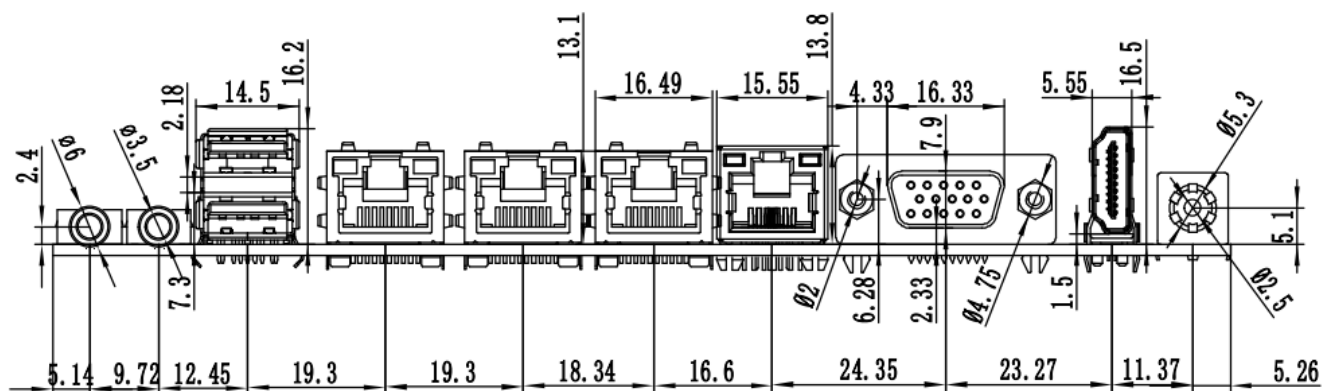
Dual lan



3 lan



4 lan



Definition and description of motherboard pins

2.0 Identification method for the first pin of the contact pin

Method 1: Look at the silk screen mark next to the pin on the front of the motherboard, and use a triangle symbol  Or bold lines  Or 1 represents;

Method 2: Look at the back solder pads of the motherboard, square solder pads  Is the first pin; When inserting devices and connecting wires, pay attention to distinguishing the first pin, otherwise it may damage the motherboard and device.

2.1 VGA Pin Definition:

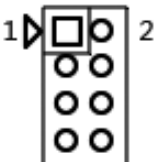
Tag Number: VGA_OUT (1*12Pin, 2.0mm)			
Pin	definition	Pin	definition
1	GND	2	VSYNC
3	HSYNC	4	GND
5	RED	6	GND
7	GRN	8	GND
9	BLUE	10	GND
11	DDC_DATA	12	DDC_CLK

Pin Tag Number diagram



⚠ Note: VGA_ The OIT pin signal and the rear VGA interface are the same signal and only support dual display replication.

2.2 LVDS Pin Definition:

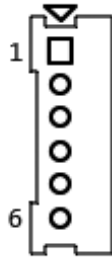
Tag Number: LVDS (2*15Pin, 2.0mm)				Pin Tag Number diagram
Pin	definition	Pin	definition	
1	VCC	2	VCC	
3	VCC	4	GND	
5	GND	6	GND	
7	ADO0-	8	ADO0+	

9	ADO1-	10	ADO1+
11	ADO2-	12	ADO2+
13	GND	14	GND
15	ACLK-	16	ACLK+
17	ADO3-	18	ADO3+
19	BDO0-	20	BDO0+
21	BDO1-	22	BDO1+
23	BDO2-	24	BDO2+
25	GND	26	GND
27	BCLK-	28	BCLK+
29	BDO3-	30	BDO3+

⚠ Attention: When inserting the screen cable, the first pin of the screen cable must correspond to the first pin of the motherboard. If it is inserted backwards or misaligned, there is a risk of burning the screen and motherboard!

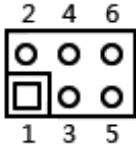
2.2.1 Backlight power supply definition:

Note: EDP and LVDS are shared

Tag Number: INVERT (1*6Pin, 2.0mm)		Pin Tag Number diagram
Pin	definition	
1	+12V	
2	+12V	
3	ON/OFF(Backlight switch)	
4	ADJ(Backlight brightness adjustment)	
5	GND	
6	GND	

2.2.2 Screen working voltage:

Note: EDP and LVDS are shared pin

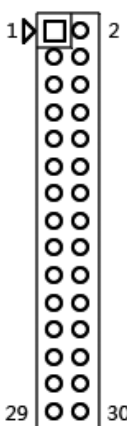
Tag Number: LVDS_PWR (2*3Pin, 2.0mm)		Pin Tag Number diagram
Pin	definition	
1-2short circuit	+3.3V	
3-4short circuit	+5V	
5-6short circuit	+12V	

⚠ Note: Different sizes of screens require different working voltages. The motherboard provides three types of screen working voltages: 3.3V, 5V, and 12V. Please set LVDS according to the required working voltage of the screen_ The corresponding value of PWR, otherwise there is a risk of screen

and motherboard burning!

2.3 EDP Pin Definition:

Note: EDP and LVDS share pins and use EDP-B type screen cables, with 20Pin screen cables and backlight separated;

Tag Number: EDP1 (2*15Pin, 2.0mm)				Pin Tag Number diagram	
Pin	definition	Pin	definition		
1	VCC	2	VCC		
3	VCC	4	HPD		
5	GND	6	GND		
7	TX0N	8	TX0P		
9	TX1N	10	TX1P		
11	NC	12	NC		
13	GND	14	GND		
15	AUX-	16	AUX+		
17	GND-	18	GND		
19	NC	20	NC		
21Pin~30Pin Signal is empty					

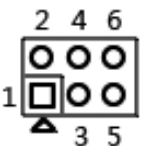
⚠ Attention: When inserting the screen cable, the first pin of the screen cable must correspond to the first pin of the motherboard. If it is inserted backwards or misaligned, there is a risk of burning the screen and motherboard!

2.4 Serial port (COM) function and Pin Definition:

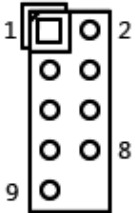
The motherboards COM1 to COM6 support standard RS232; COM1 supports RS232/422/485 options;

The RS232/RS422/RS485 signal of COM1 is directly set in the BIOS (page 23);

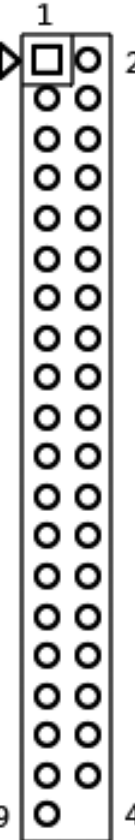
The 9th pin of COM1/COM2 can be changed by changing the jumper settings through JCOM1/JCOM2, and selecting the 9th pin to output+5V or+12V voltage

Tag Number: JCOM1 (2*3Pin, 2.0mm)		Tag Number: JCOM2 (2*3Pin, 2.0mm)		Pin Tag Number diagram	
Pin	COM1 pin 9 is live	Pin	COM2 pin 9 is live		
1-2short circuit	+5V	1-2short circuit	+5V		
3-4short circuit	+12V	3-4short circuit	+12V		
5-6short circuit	uncharged	5-6short circuit	uncharged		

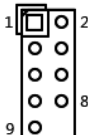
2.4.1 COM1/2 Pin Definition:

Tag Number: COM1/2 (2*5Pin, 2.0mm)				Pin Tag Number diagram
Pin	definition	Pin	definition	
1	DCD	2	RXD	
3	TXD	4	DTR	
5	GND	6	DSR	
7	RTS	8	CTS	
9	RI	10	NC	

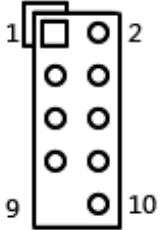
2.4.2 COM3~COM6 Pin Definition:

Tag Number: COM3~6 (2*20Pin, 2.0mm)				Pin Tag Number diagram
Pin	definition	Pin	definition	
1	COM3_DCD	2	COM3_RXD	
3	COM3_TXD	4	COM3_DTR	
5	GND	6	COM3_DSR	
7	COM3_RTS	8	COM3_CTS	
9	COM3-RI	10	NC	
11	COM4_DCD	12	COM4_RXD	
13	COM4_TXD	14	COM4_DTR	
15	GND	16	COM4_DSR	
17	COM4_RTS	18	COM4_CTS	
19	COM4-RI	20	NC	
21	COM5_DCD	22	COM5_RXD	
23	COM5_TXD	24	COM5_DTR	
25	GND	26	COM5_DSR	
27	COM5_RTS	28	COM5_CTS	
29	COM5-RI	30	NC	
31	COM6_DCD	32	COM6_RXD	
33	COM6_TXD	34	COM6_DTR	
35	GND	36	COM6_DSR	
37	COM6_RTS	38	COM6_CTS	
39	COM6-RI	40	NC	

2.4.3 COM1RS422 / RS485definition:

Tag Number: COM1 (2*5Pin, 2.0mm)			Pin Tag Number diagram
signal	Pindefinition		
RS485	1 (S485-)	2 (S485+)	
RS422	1 (TXD-)	2 (TXD+)	
	3 (RXD+)	4 (RXD-)	

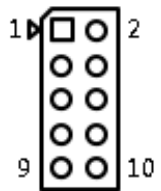
2.5 USB Pin Definition:

Tag Number: F_USB1/2 (2*5Pin, 2.0mm)				Pin Tag Number diagram
Pin	definition	Pin	definition	
1	VCC+5V	2	VCC+5V	
3	DATA0-	4	DATA1-	
5	DATA0+	6	DATA1+	
7	GND	8	GND	
9	NC	10	GND	

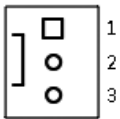
2.6 Horn (power amplifier) Pin Definition:

Tag Number: INT_SPK (1*4Pin, 2.0mm)		Pin Tag Number diagram
Pin	definition	
1	L+	
2	L-	
3	R-	
4	R+	

2.7 GPIO Pin Definition:

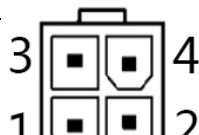
Tag Number: J_GPIO (2*5Pin, 2.0mm)				Pin Tag Number diagram
Pin	definition	Pin	definition	
1	GND	2	+5V	
3	GPIO_IN0	4	GPIO_OUT0	
5	GPIO_IN1	6	GPIO_OUT1	
7	GPIO_IN2	8	GPIO_OUT2	
9	GPIO_IN3	10	GPIO_OUT3	
GPIO_IN and OUT can be adjusted according to needs				

2.8 Fan connector definition:

Tag Number: CPU_FAN (1*3Pin, 2.54mm)		Pin Tag Number diagram
Pin	definition	
1	GND	
2	+12V	
3	TAC(Fan speed detection)	

2.9 Power supply and switch Pin Definition:

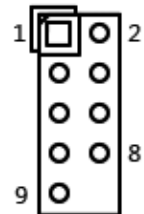
The motherboard provides a 2.5 standard DC head (DC_IN); Optional 4Pin ATX power interface, definition:

Tag Number: ATX (2*2Pin)		Pin Tag Number diagram
Pin	definition	

1	GND	
2	GND	
3	+12V	
4	+12V	

switch Pin Definition:

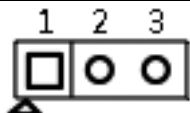
Tag Number: F_PANEL (2*5Pin, 2.0m)					Pin Tag Number diagram
Pin	definition		Pin	definition	
1	HDLED+	Hard drive light	2	PWRLED+	Power light
3	HDLED-		4	GND	
5	RST	Restart	6	P_SW IN	switch
7	GND		8	GND	
9	NC		10		



- (1) The hard drive indicator light (pin 1 and pin 3 HDDLED, pin 1 is the positive pole of the LED) will flash when the hard drive is performing read and write operations, indicating that the hard drive is running;
- (2) The power indicator light (pin 2 and pin 4 Power LED, pin 2 is the positive pole of the LED) lights up when the motherboard is powered on and turned on; When the motherboard is powered off, the power indicator light goes off;
- (3) When the reset button (pin 5 and pin 7 Reset Button) fails and the system cannot continue to operate, resetting can restart the system;
- (4) The power switch control (6th and 8th pin Power Button) is connected to the pop-up switch on the front panel of the chassis, which can be used to turn on or turn off the computer.

2.10 Power on and start up - hardware control

The motherboard provides AUTO_SW jump cap control power-on and power-on function

Tag Number: AUTO_SW (1*3Pin, 2.0mm)		Pin Tag Number diagram
set up	function	
1-2short circuit	Turn off the power on/off function	
2-3short circuit	Turn on the power on function	

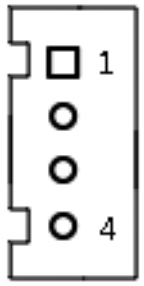
⚠ Note: Hardware control and software control (BIOS settings) cannot be set simultaneously when powering on or off.

2.11 Hard disk interface and definition:

1 SATA 3.0 hard drive interface, 1 * MSATA interface

SATA1definition:

SATA_PWR1definition:

Tag Number: SATA1		Tag Number: SATA_PWR2 (1*4Pin, 2.54mm)		Pin Tag Number diagram
Pin	definition	Pin	definition	
1	GND	1	12V	
2	SATA_TXP	2	GND	
3	SATA_TXN	3	GND	
4	GND	4	5V	
5	SATA_RXN			
6	SATA_RXP			
7	GND			

⚠ Attention: SATA_ The first pin of the PWR hard drive power interface is a 12V output, and the fourth pin is a 5V output. When using it, our standard power cord must be used to avoid burning the hard drive.

2.12

Clear motherboard discharge and battery:

CMOS is powered by a button battery on the motherboard. Clearing CMOS will cause the previous BIOS settings to be cleared and set to the original factory settings

The steps are: (1) Turn off the computer and disconnect the power supply;

(2) Short circuit "CLR_CMOS" Pin1 and 2 using a metal conductor for 5-6 seconds;

(3) Press the "Delete" button on the keyboard to enter the BIOS interface when turning on the computer;

(4) Enter the BIOS interface and press "F9" - "Enter" to reload the optimal default value;

(5) Press F10 to save and exit the settings.

CMOS Pin Definition:

Tag Number: CLR_CMOS (1*3Pin, 2.0mm)	
Pin	function
1-2short circuit	Clear CMOS content and restore BIOS to factory values

⚠ Attention: Please do not clear the CMOS when the computer is powered on to avoid damaging the motherboard.

After power off, reinserting and unplugging the button battery can also achieve the motherboard reset function. Button battery specification: 3V CR2032

Attention: Please ensure that the positive electrode of the battery is facing upwards; Please ensure that the battery voltage is sufficient for 2.8V-3V; Please be sure to use the same model or type of battery recommended by the manufacturer when replacing the battery. If the battery is improperly replaced, there is a risk of explosion!