

MS-Q670M vPro

User Manual

VER: A0

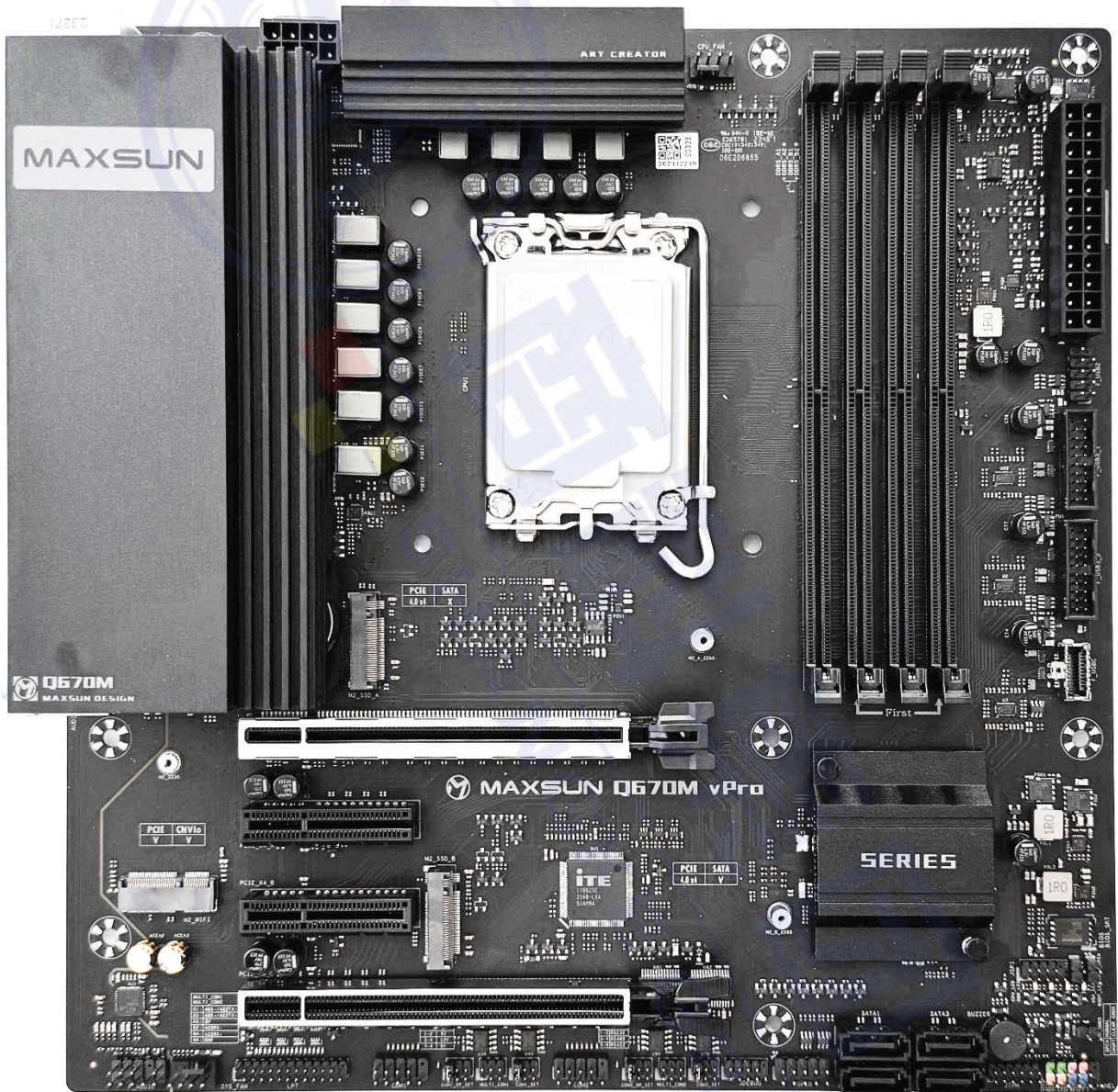
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Chapter 1: Mainboard Appearance Diagram

(The images in this manual are for reference only; some details may be adjusted based on actual design. Please refer to the physical product, and our company reserves the right to interpret.)



Chapter 2: Mainboard Hardware Introduction

2.1. Precautions Before Installation

The mainboard is composed of many precision integrated circuits and components, which may be damaged by strong static electricity. Please read this user manual carefully and prepare as follows before installation:

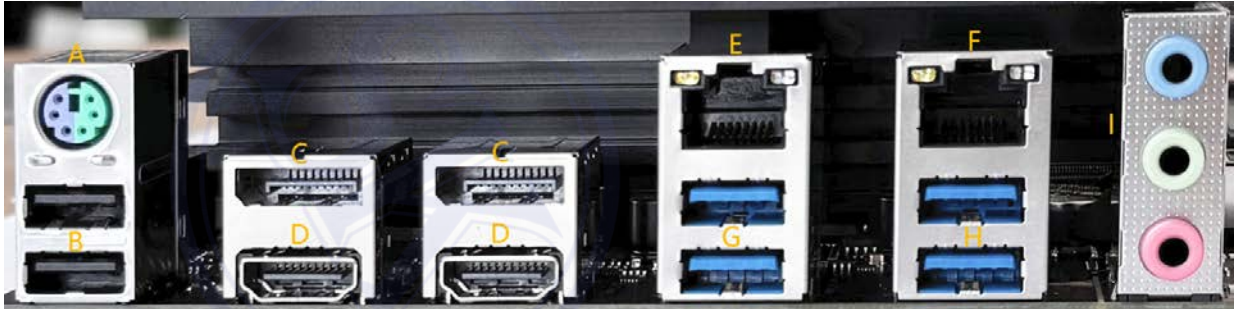
- 2.1.1 Before installation, please confirm that the chassis/case structure you are using is compatible with the mainboard.
- 2.1.2 Please do not arbitrarily tear off the stickers on the mainboard, especially the serial number barcode stickers, as this will affect the product warranty.
- 2.1.3 Before performing any installation or removal of hardware, please be sure to turn off the power and ensure that it is disconnected.
- 2.1.4 When installing peripherals into the mainboard socket, please ensure that the peripherals are tightly connected to the mainboard socket.
- 2.1.5 When handling the mainboard, please try to avoid touching the metal connection parts to prevent short circuits.
- 2.1.6 When handling the mainboard, CPU, or memory modules and other precision electronic components, it is recommended to wear an anti-static wrist strap.
If you do not have an anti-static wrist strap, please ensure your hands are dry and touch a metal object first to discharge static electricity.
- 2.1.7 Before turning on the power, please ensure that the output voltage of the power supply meets the standard values required by the mainboard.
- 2.1.8 Before turning on the power, please ensure that all hardware connections and power cables are correctly connected.
- 2.1.9 Do not place the mainboard in an environment with excessively high temperatures or humidity.
- 2.1.10 If you are not familiar with installing the mainboard or encounter any technical issues with this product, please consult a professional technician.
- 2.1.11 When using adapters, extension cords, or wires, please refer to the installation and grounding requirements for the corresponding devices.

2.2 Mainboard Hardware Specifications

Mainboard Dimensions	M-ATX 24.5*24.5cm
CPU Support	Intel 12th/13th/14th Generation Official CPUs (see CPU support list), engineering sample CPUs are not supported.
Chipset	Intel Q670 Chipset
Memory	4 UDIMM DDR5 memory slots Supports up to 192GB (depending on CPU specifications) Supports dual-channel memory technology Supports memory frequency up to 4400MHz
Display	Display functionality based on processors with integrated graphics, using shared display memory technology 2 2 HDMI ports, supporting a maximum resolution of 4096x2160@60Hz 2 2 DP ports, supporting a maximum resolution of 4096x2160@60Hz <small>When a discrete graphics card is connected, the integrated graphics card is disabled by default, and the display output functionality is determined by the discrete graphics card</small>
Audio	Integrated Conexant CX20632 sound card chip Supports multiple sampling depths and rates Supports up to 5.1 channels 1 One rear MIC interface (pink), one rear AUDIO OUT interface (green), one rear LINE OUT interface (blue) 1 A set of front audio headers, supporting HD AUDIO
Network	Integrated with one Intel I210 network card chip (10/100/1000Mbit) Integrated with one Intel I226LM network card chip (10/100/1000/2500Mbit), supporting vPro 2 One onboard RJ45 interface Supports Wake-on-LAN Supports PXE boot without a disk

Storage	2 One M.2 slot M2_SSD_A (near the CPU) supports 2280 NVME SSD (up to PCIE4.0 X4 lanes) M2_SSD_B (far from the CPU) supports 2280 SATA/NVME SSD (NVME up to PCIE3.0 X4 lanes SSD, SATA/NVME adaptive recognition) Four SATA3.0 interfaces
USB	Rear Ports: 2 USB 3. 2 GEN1 (5Gbps) TYPE A Ports 2 USB 3. 2 GEN2x1 (10Gbps) TYPE A Ports 2 USB 2. 0 TYPE A Ports Onboard Pins: 1 set (1*9 Pin) USB 2. 0 Pins (can expand to 2 USB Ports) 2 Set (1*19 Pin) USB 3. 2 GEN2x1 (10Gbps) Pins (each set can expand to 2 USB Ports, can expand to a total of 4 USB Ports; to achieve 10Gbps speed, high-quality adapters are required) 1 USB 3. 2 GEN2x1 (10Gbps) TYPE E Port
Onboard Socket	1 1 ATX 24-Pin Power Connector 1 8-Pin CPU power connector 1 CPU fan header 1 SYS fan header 1 TPM module header 1 CLR_CMOS header 1 CASE_OPEN header 1 Power switch indicator header (F_PANEL) 1 GPIO header 2 RS232 COM header 2 RS422/RS485 combo header 1 LPT header 1 M.2 wireless card interface (PCIE/CNVIO) 1 PCIE 5. 0 X16 slot 1 PCIE 4. 0 X4 slot (open-ended) 1 PCIE 3. 0 X4 slot (closed-ended) 1 A PCIE 4. 0 X4 slot (slot length is X16 slot)
Hardware Monitoring	Voltage Monitoring Temperature Monitoring Fan Monitoring Smart Fan Control (Motherboard support is required, and the fan must also support smart fan control)
Operating System	Supports UEFI Windows 10/11 64bit Supports UEFI Ubuntu 64bit Supports UEFI UOS 64bit etc. (only supports UEFI mode systems)
ESD Protection	Air Discharge $\pm 8\text{KV}$ Class B Contact Discharge $\pm 6\text{KV}$ Class B ※ Tested under the condition of good grounding for the entire machine
Special Features	Intel® vPro® Enterprise Ready
Operating Ambient Temperature	-10°C (non-condensing) to 45°C
Storage Ambient Temperature	-20°C (non-condensing) to 60°C

Chapter 3: Introduction to Rear Panel Interfaces



A: PS2 Interface

Used for connecting PS2 devices, such as PS2 keyboards/PS2 mice.

B: USB2.0 TYPE A Interface

Used for connecting USB2.0 TYPE A devices, backward compatible with USB1.1 standard.

C: DP Interface

Used for connecting DP display devices, supporting a maximum resolution of 4096x2160@60Hz.

D: HDMI Interface

Used for connecting HDMI display devices, supporting a maximum resolution of 4096x2160@60Hz.

E: RJ45 Interface (1000Mbps)

Network cable interface, used for connecting the main system to the network via a network cable, with a maximum bandwidth of 1000Mbps.

Connection bandwidth indicator	
Bandwidth	Light status
No connection	Off
10Mbps	Off
100Mbps	Solid green
1000Mbps	Solid orange

Operation indicator	
No data transmission	Off
Data transmission in progress	Blinking

F: RJ45 Interface (2500Mbps)

Network cable interface, used for connecting the main system to the network via a network cable, with a maximum bandwidth of 2500Mbps.

Connection bandwidth indicator	
Bandwidth	Light status
No connection	Off
10Mbps	Off
100Mbps	Solid green
1000Mbps	Solid orange
2500Mbps	Solid orange

Operation indicator	
No data transmission	Off
Data transmission in progress	Blinking

G: USB3.2 GEN1 TYPE A port

For connecting USB TYPE A devices, with a maximum speed of USB3.2 GEN1 (5G), backward compatible with USB2.0/1.1 standards.

H: USB3.2 GEN2x1 TYPE A port

For connecting USB TYPE A devices, with a maximum speed of USB3.2 GEN2x1 (10G), backward compatible with USB2.0/1.1 standards.

I: Audio port

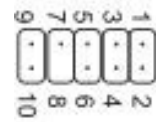
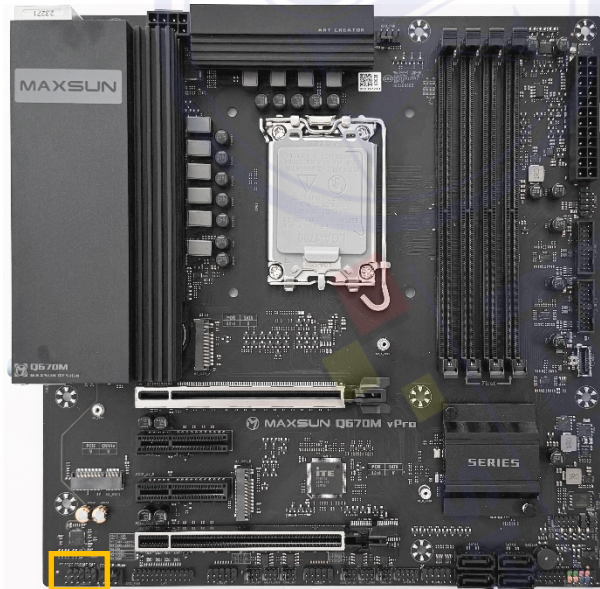
For connecting audio output devices, such as headphones, speakers, and other external playback devices;

1 One rear MIC port (pink), one rear AUDIO OUT port (green), and one rear LINE OUT port (blue).

Chapter 4: Introduction to Mainboard Pins and Jumpers

4.1, F_AUDIO Header

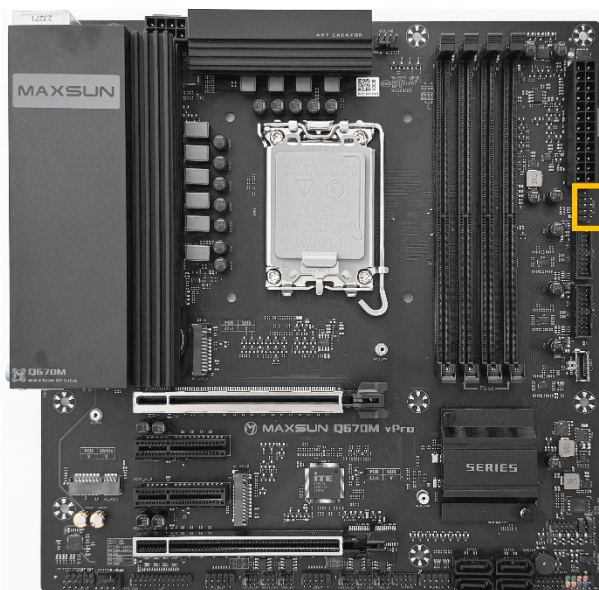
The front audio header is used to connect front audio cables to support external audio devices, compliant with HD Audio specifications. Before installation, please confirm that the connector pin definitions match the header definitions, as improper installation may result in the device being unusable 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, F_USB2 Header

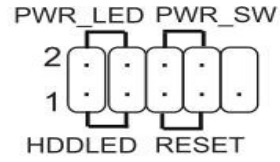
Used to connect USB2.0 header conversion cables to expand USB ports, supporting USB2.0/1.1 specifications . One set of 9 pins can be converted into 2 USB ports.



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)

4.3, F_PANEL (Switch Control Indicator Pins)

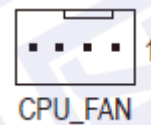
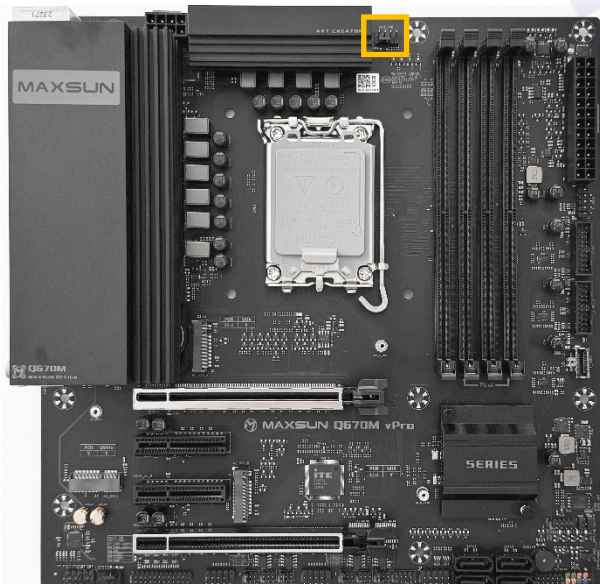
Used for connecting the power button, reset button, hard drive indicator light, and power indicator light.



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

4.4, CPU_FAN Pins

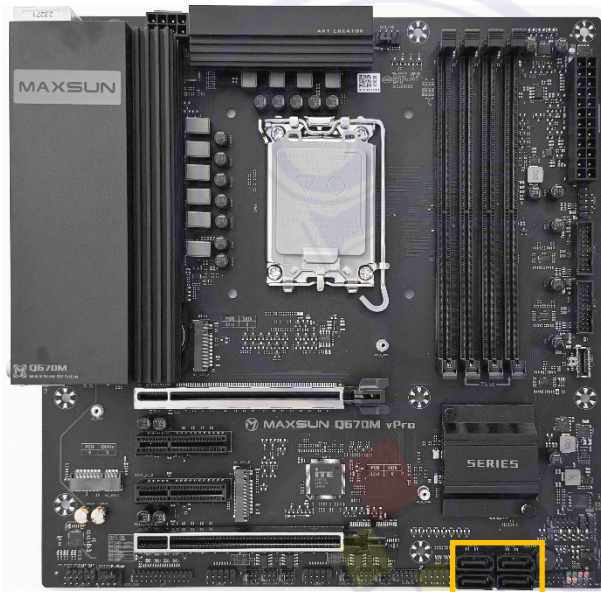
Used to connect the CPU cooler fan wire, featuring smart fan control functionality (smart fan control also requires fan support). The socket has a foolproof design; please pay attention to the orientation of the plug during installation to avoid damaging the motherboard and fan. When installing into the chassis, please ensure that the airflow design of the case is reasonable to achieve optimal cooling performance, to prevent reduced processor performance due to poor heat dissipation.



Pin Number	Definition
1	GND
2	+12VS/Voltage Speed Control
3	RPM Detection
4	PWM Speed Control

4. 5, SATA Interface

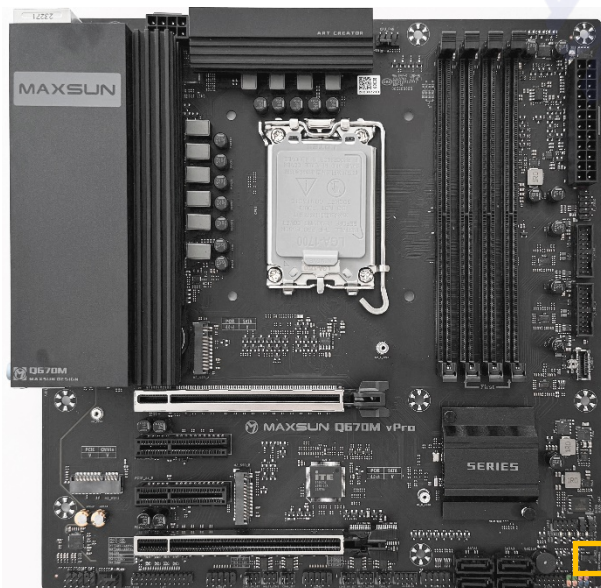
Used for connecting the hard disk SATA cable; the hard disk SATA cable can connect this socket to the hard disk data port to transfer data to the hard disk.





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

4. 6, CLR_CMOS Jumper

Short the jumper to restore the BIOS settings to their default state; please ensure that the motherboard is powered off before performing this operation.



-  开路：一般运行
-  短路：清除CMOS数据

4.7, CASE_OPEN Jumper

This function is disabled by default in the BIOS and must be manually enabled in the BIOS to work with the chassis alarm.

When the jumper is open: CASE_OPEN function is disabled; when the motherboard is powered on and the chassis is opened, there will be no action from the motherboard.

When the jumper is shorted: CASE_OPEN function is enabled; when the motherboard is powered on and the chassis is opened, the motherboard's buzzer will sound an alarm.

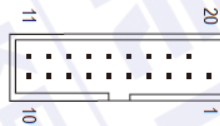
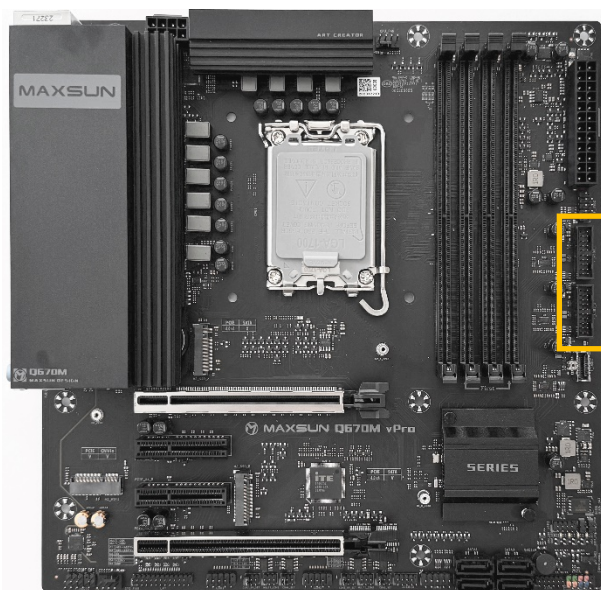


-  开路
-  短路

Pin Status	Definition
Open Circuit	Power on does not trigger CASE_OPEN
Short Circuit	Power on triggers CASE_OPEN

4.8, USB3.2 GEN2x1 Header

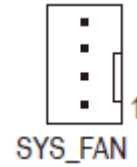
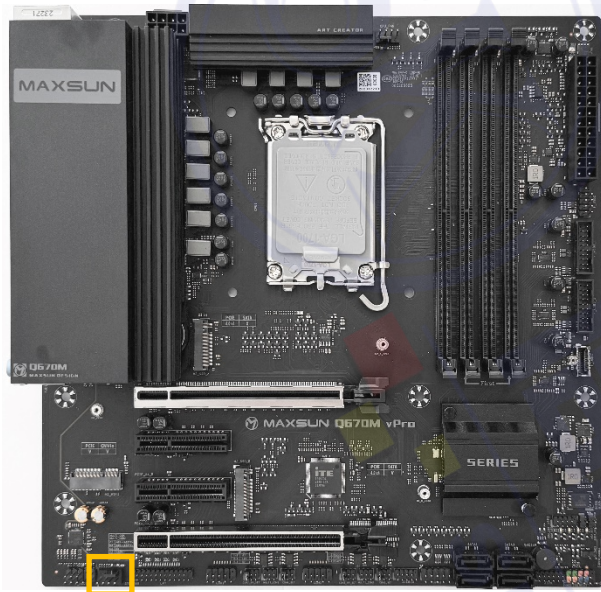
Used to connect USB3.2 GEN2x1 header conversion cables to expand USB interfaces, supporting USB3.2 GEN2x1/2.0/1.1 standards. One set of 19 pins can be converted into 2 USB3.2 GEN2x1 interfaces. To achieve a 10Gbps speed, high-quality adapter cables are required.



Pin Number	Definition	Pin Number	Definition
1	VBUS	11	D2+
2	SSRX1-	12	D2-
3	SSRX1+	13	GND
4	GND	14	SSTX2+
5	SSTX1-	15	SSTX2-
6	SSTX1+	16	GND
7	GND	17	SSRX2+
8	D1-	18	SSRX2-
9	D1+	19	VBUS
10	NC	20	NONE

4. 9, SYS_FAN Header

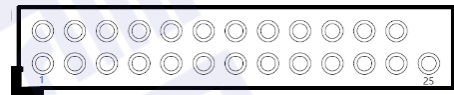
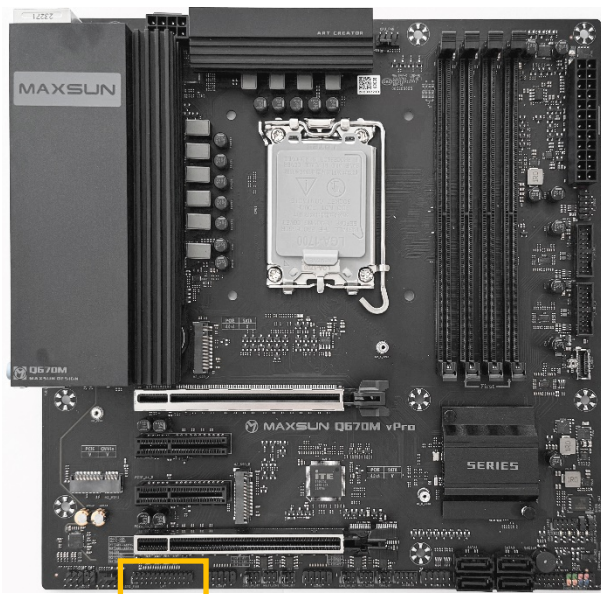
Used to connect the system cooling fan cable. The socket has a foolproof design; please pay attention to the orientation of the plug during installation to avoid damaging the motherboard and the fan. When installing into the chassis, please ensure that the airflow design of the case is reasonable to achieve optimal cooling performance, so as to avoid reduced processor performance due to poor heat dissipation.



Pin Number	Definition
1	GND
2	+12VS/Voltage Speed Control
3	RPM Detection
4	PWM Signal

4. 10, LPT Header

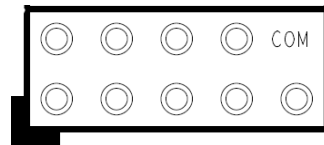
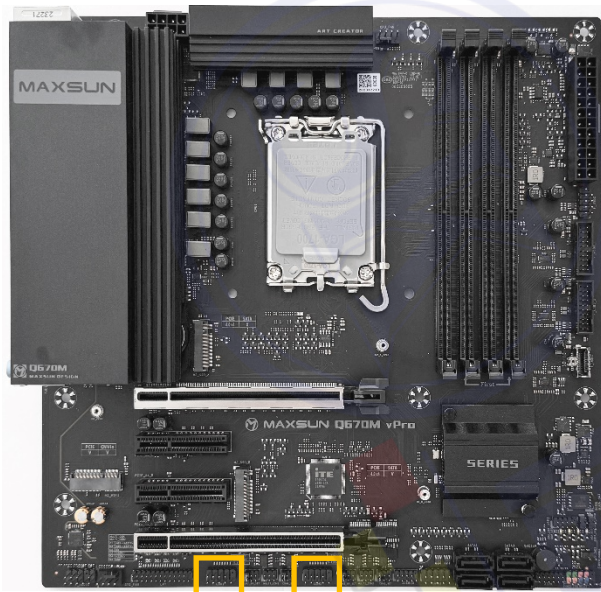
Used for connecting LPT devices.



Pin Number	Definition	Pin Number	Definition
1	STB	2	AFD
3	D0	4	ERR
5	D1	6	INIT
7	D2	8	SLIN
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	N/A

4. 11, COM Header

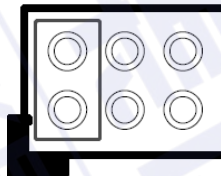
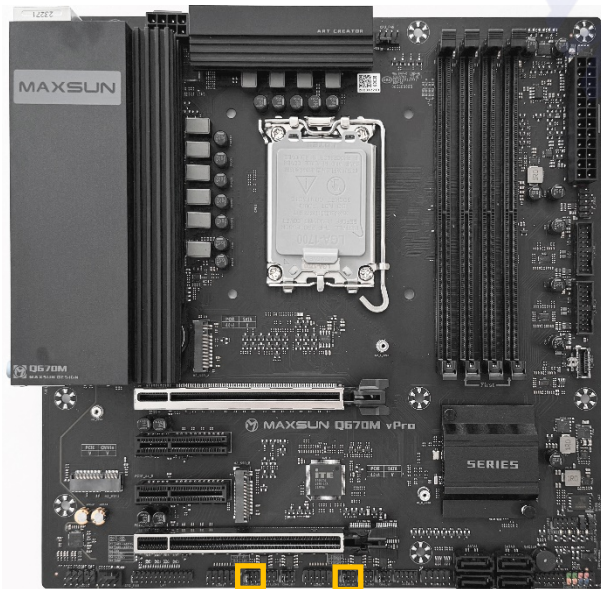
Used for connecting RS232 interface devices.



Pin Number	2	4	6	8	10
Definition	SIN	DTR	DSR	CTS	N/A
Pin Number	1	3	5	7	9
Definition	DCD	SOUT	GND	RTS	RI/PWR

4. 12, COM1_9P_SET/COM2_9P_SET Interface

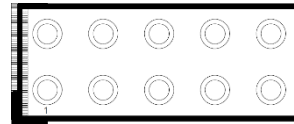
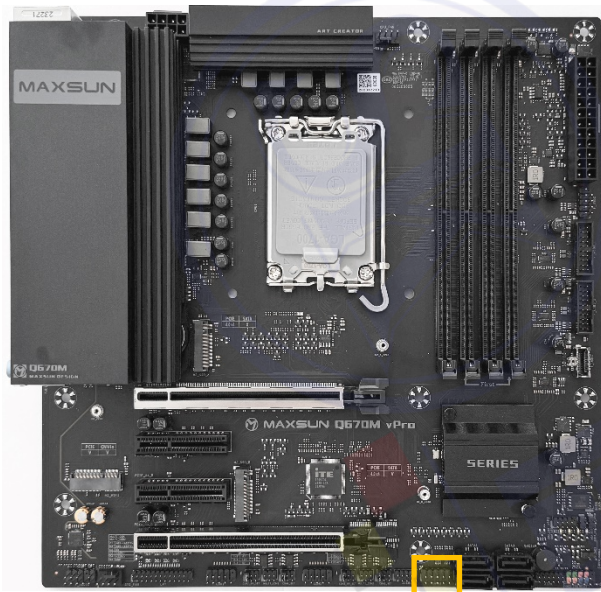
Used to set the function of the 9th pin of COM1/COM2 header, default is RI, can be switched to 12V/5V.



Pin Jumper Status	Definition
1-2 (default)	RI
3-4	12V
5-6	5V

4. 13, GPIO Header

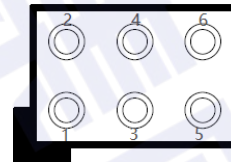
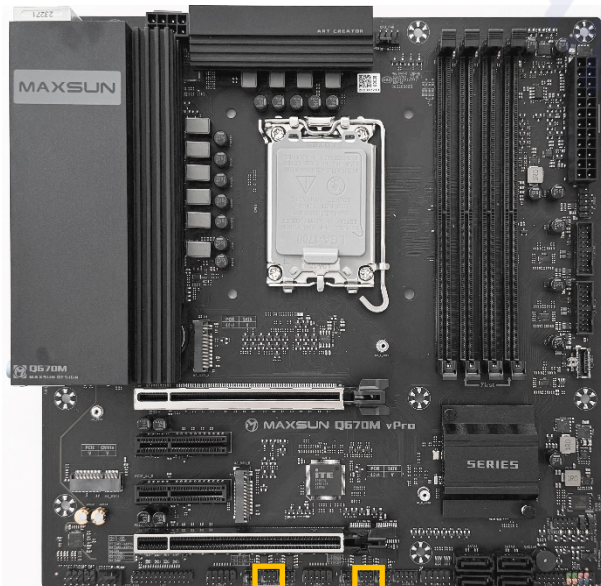
GPIO header, can define the pins as Input/Output, default configuration is Output, high level.



Pin Number	2	4	6	8	10
Definition	GND	GP14	GP13	GP12	GP11
Pin Number	1	3	5	7	9
Definition	5V	GP04	GP03	GP02	GP01

4. 14, MULTI_COM Pin Header

RS485 and RS422 Combined Pin Header. Effective only after setting the COM1_SET/COM2_SET function.



Pin Number	2	4	6
Definition	422-	422+	GND
Pin Number	1	3	5
Definition	485-	485+	5V

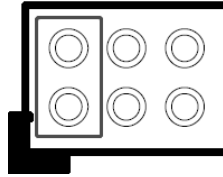
4. 15, COM1_SET/COM2_SET Pin Header

Used to switch between the functions of the COM1/COM2 and MULTI_COM1/MULTI_COM2 pin headers:

Default jumper cap is on 1-2, supporting RS232, enabling COM1/COM2 functionality, with MULTI_COM1/MULTI_COM2 having no function;

Switching jumper cap to 3-4, MULTI_COM1/MULTI_COM2 set to RS485, with COM1/COM2 having no function;

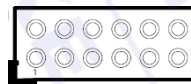
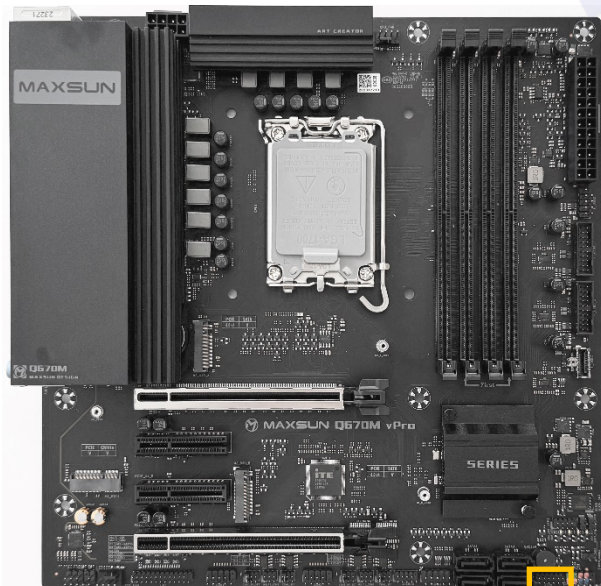
Switching jumper cap to 5-6, MULTI_COM1/MULTI_COM2 set to RS422, with COM1/COM2 having no function.



Pin Jumper Status	Definition
1-2 (default)	RS232
3-4	RS485
5-6	RS422

4. 16, JTPM Pin Header

Used to connect to the TPM module.



Pin Number	2	4	6	8	10	12
Definition	+3.3V	MOSI	CLK	WP#	CS2#	IRQ#
Pin Number	1	3	5	7	9	11
Definition	NC	MISO	CS0#	GND	HOLD#	PLTRST