Product description
SUP - AMF - C (V1.1)

Wuxi Super Laser Technology Co.Ltd

Catalogue

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Update Record

Version	Updates	Time	Editor
V1.0	First Edition	25.4.28	Liu Chen
V1.1	Update with V6.4/V7.4 wiring methods	25.7.18	Liu Chen

I. Notes

This product belongs to welding wire feeding equipment. To ensure safe production and normal operation of the equipment, it is recommended that users post the following safety signs on the equipment to inform all personnel using, maintaining and approaching the equipment of the following safety matters.

1.1 Electrical Safety

① This device is powered by 24V output from a switching power supply. The switching power supply is powered by 220V AC. Users should pay attention to electrical safety and avoid electric shock.

② The four legs of this device are insulated support blocks. To ensure the normal operation of the equipment and to prevent static damage and leakage of the equipment. The equipment should pay attention to safety grounding measures, that is, connecting the easily conductive parts to the protective (grounding) wire in the fixed wiring of the product, so that the easily accessible conductive parts will not become electrified when the basic insulation fails. Additional safety measures (such as double insulation or reinforced insulation) may be added as appropriate.

③ This product does not contain accessories that require user operation on the inner side of the chassis. Any installation, maintenance or disassembly of this product should be carried out with the switch open and the power off.

Marking	Name
	Danger！High Voltage
	Must be grounded
	Must unplug
	Do not close the circuit

1.2 Mechanical Safety

① This equipment contains motor-driven gear, rollers and other structures that should be protected from injury from touching during operation.
② In the process of replacing the wire reel of this equipment, avoid accidental startup and injury.

Signpost	Name
	Beware of mechanical injuries
	Beware of pinching your hand
	Do not start

II. Product Overview

The instruction manual includes a summary of the product functions, installation and usage of the SUP-AMF-C series multi-functional automatic wire feeder (hereinafter referred to as the wire feeder).

The wire feeder supports multiple wire feeding modes and is compatible with various welding wires, meeting the wire feeding requirements for most laser wire filling welding.

III. Product Features

Main features and parameters:

- Speed range: 15 to 300cm/min;
- Maximum load: 20kg;
- Wire material: carbon steel, stainless steel, aluminium;
- Operation mode: Touchscreen;
- Control system: Self-developed, supporting various custom expansion functions.

3.1 Product Appearance

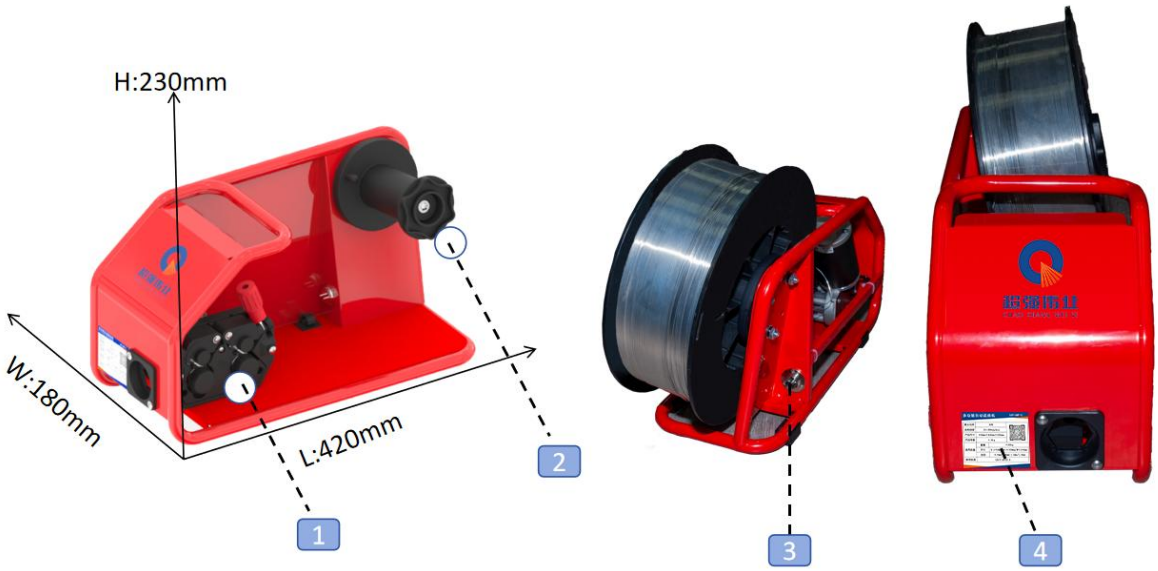

Figure 3.1 Product appearance drawing

Table 3.1 List of Components of the product

Number	Name	Notes
1	Motor	
2	Damping shaft	
3	Two-core aviation socket	Control signal interface
4	Nameplate	

3.2 Product Parameters

Key product parameters are shown in Table 3.2:

Table 3.2 List of Key Product Parameters

Supply voltage		24V±10% AC 50/60Hz
Operating ambient temperature		-10 to 50℃
Maximum power		50W
Wire feeding speed		15 to 300cm/min
Wire feeding mode		Continuous mode/pulse mode
Applicable to welding wire		Carbon steel solid core wire, stainless steel solid core wire, aluminium solid core wire
Net weight		4.6kg
Applicable to wire reels	Shaft diameter	Min 50mm
	Outer diameter	Max 300mm
	Width	Max 105mm
	Weight	Max 20kg

IV.Installation and Use

4.1 Equipment Wiring

The wire feeder control box and the welding system control box share 24V power supply output from the same switching power supply, and the wire feeder control box communicates with the welding system control box via signal lines. The two-core air plug interface on the back of the wire feeder is the [Control Signal Interface], which is connected to the wire feeder control box. The minimum version requirement for the control box is [V6.3-824-806]. Detailed wiring is shown in Figure 4.1, and the communication port wiring instructions are shown in Table 4.1:

Table 4.1 Definitions of Communication Port Interfaces

Communication port interface definitions			
Name Definition	Interface Definition	Welding system control box	
Wire feeding -	Wire feed enable signal, wire according to the line mark of the signal line	Signal Interface 2	Wire feeding -
Wire feeding +			Wire feeding +
TX	RS232_RXD. Connect the control box [RX] when communicating	Communication Interface	RX
RX	RS232_RXD. Use the control box [TX] for communication		TX
GND	Signal ground		GND

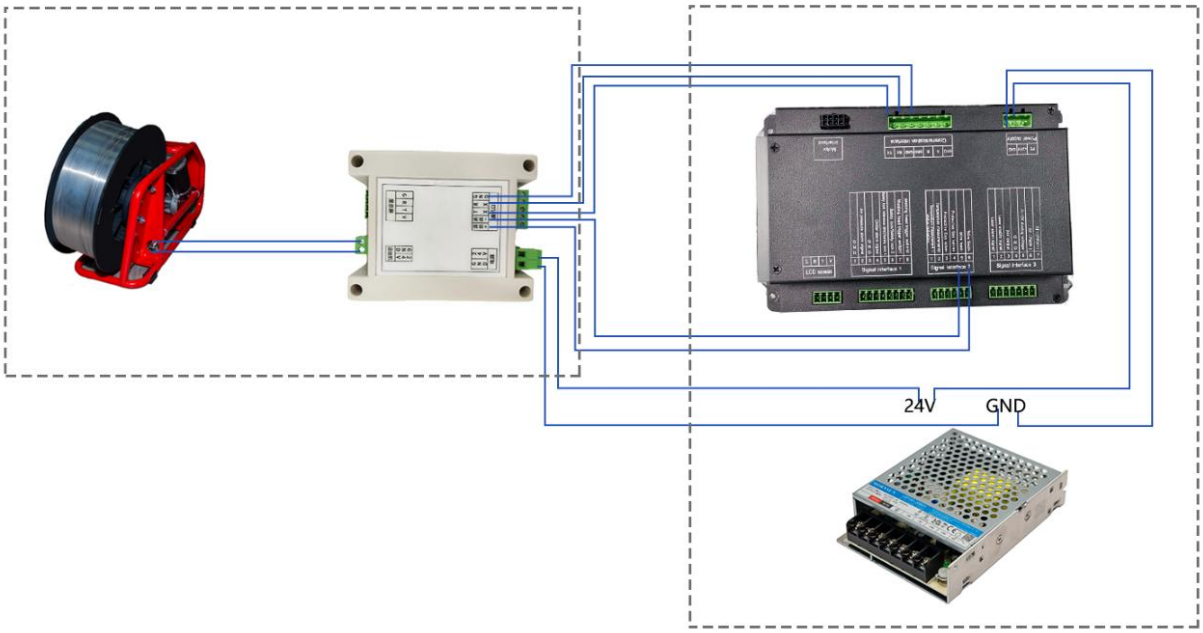

Figure 4.1 [V6.3] Wiring diagram

When the control box version is [V6.4] or [V7.4], the wire feeder can be directly connected to the control box. Wiring as shown in the following figure; The wiring instructions are as shown in Table 4.2: Pay attention to the wiring sequence. If it is connected in reverse, the motor will reverse.

Table 4.2 [V6.4] Interface Definitions

Communication port interface definition			
Name definition	Interface Definition	Welding system control box	
Motor -	Wire feeder signal line	Signal Interface 2	Motor -
Motor +			Motor +

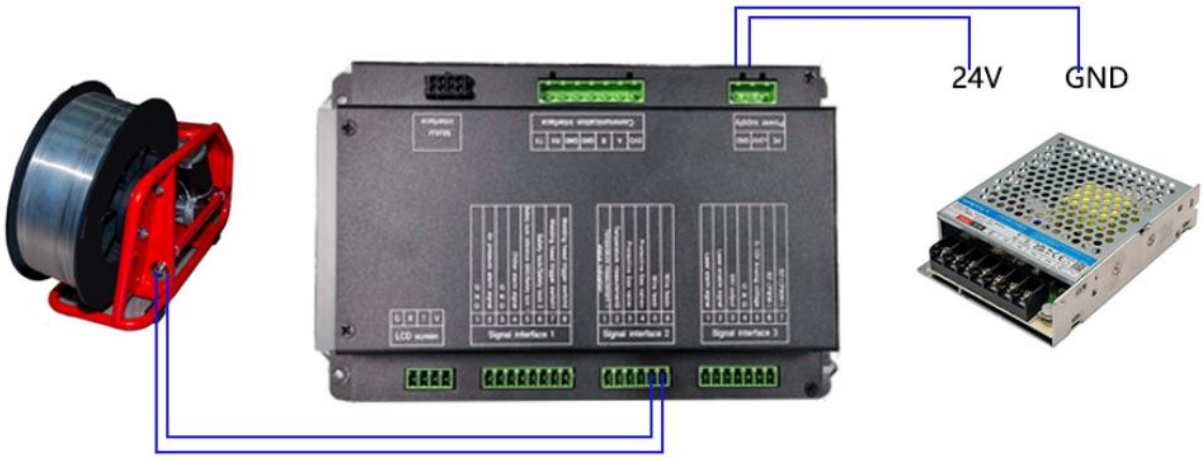

Figure 4.2 [V6.4] Wiring

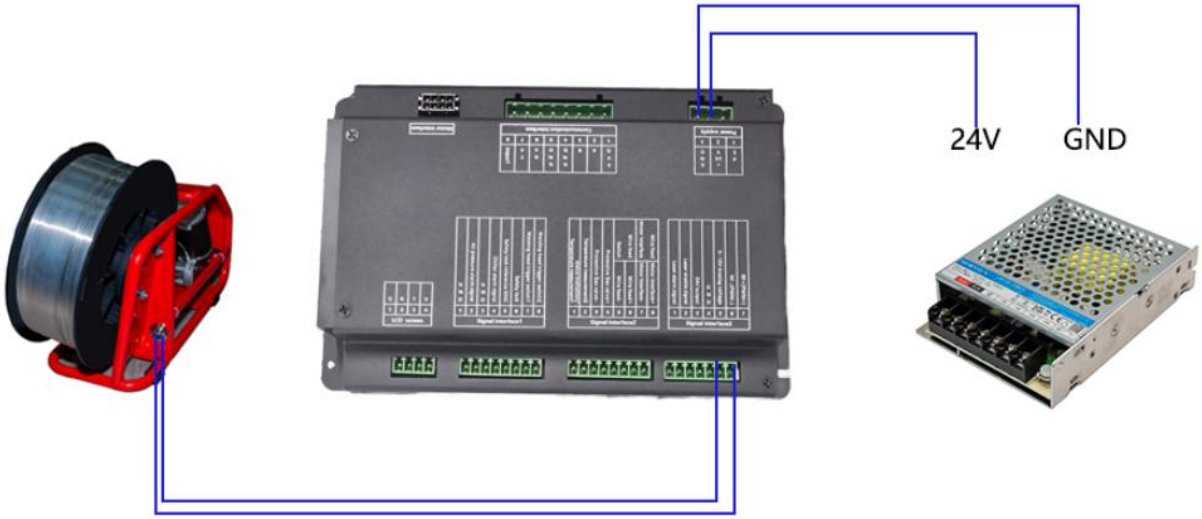

Figure 4.3 [V7.4] version wiring

4.1.1 Definition of a two-core aviation plug-in cable

Figure 4.4 Illustration of two-core aviation

Table 4.3 Definition of Two-core Aviation Plug-in Interface

Interface Definitions				
Aviation socket	Corresponding attachment	Interface pins	Definition	Notes
Two-core aviation socket	Two-core aviation plug signal line	1	24V	Red wire
		2	GND	Black wire

4.2 Wire installation

4.2.1 Wire feeding tube and wire feeding wheel selection

Please select the corresponding wire feeding wheel and wire feeding tube according to the wire material and diameter, and avoid bending the wire feeding tube when in use.

Table 4.4 List of Wire Feeding wheel models

Wire feeding wheel model			
Suitable for welding wire	Material		Carbon steel, stainless steel
	Wire feeding wheel -V type	Standard	φ0.8/1.0mm φ1.2/1.6mm
		Custom	Phi 1.6/2.0 mm
Suitable for welding wire	Material		aluminum
	Wire feeding wheel - U type	Custom	φ0.8/1.0mm φ1.2/1.6mm φ1.6/2.0mm

The standard configuration of the wire feeder is two V-shaped wire feeders each of φ0.8/1.0mm and φ1.2/1.6mm for carbon steel welding wire feeding. If the weld seam is wider, a custom φ2.0/2.5mm wire feeding wheel should be used.

Figure 4.5 Schematic diagram of the wire feeding tube and wire feeding wheel

If aluminium welding wire is to be used, the U-shaped wire feed wheel and the matching black graphite wire feed tube should be replaced.

Figure 4.6 Schematic diagram of wire feeding tube and wire feeding wheel

4.2.2 Installation of the wire reel

Figure 4.7 Front view of the wire reel

Table 4.5 Description of Damping Component Shaft

Number	Name	Notes
1	Damping shaft	Maximum load: 20kg
2	Damping shaft - locating pin	Wire reel positioning

When installing the wire reel, note:

- Select the wire according to the welding material;
- The wire passes through the center of the groove;
- Use a wire feeding wheel that matches the welding wire. As shown in the figure, for V-shaped φ1.0 stainless steel welding wire, the side marked [V1.0] on the wire feeding wheel should face outward.
- The wire reel positioning holes should be aligned with the positioning pin of the damping shaft so that the wire reel and the damping shaft rotate smoothly and avoid friction between the wire reel and the damping shaft, which may cause unstable wire feeding.

4.2.3 Installation of the wire feeding tube

When installing the wire feeder, note:

- Loosen the locking screw and insert the wire feeding tube so that the wire feeding tube does not rub against the wire feeding wheel and it is convenient to insert the welding wire;
- After the screw is inserted into the proper position, it should be tightened until the hand-cranked wire feeder does not shake.

4.2.4 Assembly of the wire feeder with the welding head

When assembling the wire feeding tube and the welding head, note:

- Select the corresponding connection block according to the model of the welding head;
- Make sure the wire is stuck in the copper mouth slot and then tighten the hexagon socket screw;
- Select the wire guide according to the wire diameter;
- Adjust the length of the guide tube according to the actual focal length of the welding head.

4.3 Operating Interface

The Wire feed is used in conjunction with the welding machine and shares a 7-inch touch screen with the welding system, featuring a resolution of 1024×600.

4.3.1 Instructions for Operation Interface

When [J7] is connected to the [Welding System], the parameters of the Wire feed take effect. Click on [Wirefeed - Connected] to enter the [Wire feed page], and then you can modify the parameters of the Wire feed. For detailed parameter descriptions, see Table 4.5:

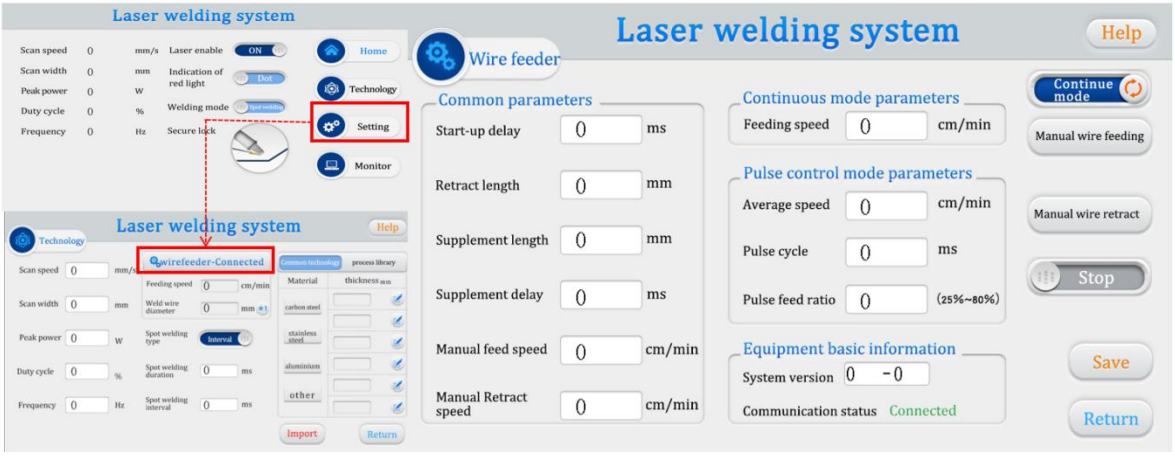

Figure 4.6 Home Page, Process page, Wire Feeding machine page

The wire feeder can be equipped with the [6.4-835-809] / [7.4-115-854] control box. Taking the [854] interface as an example, on the Settings page [Wire feeder Motor] select [C] (do not enter the wire feeder interface when the selection is incorrect or the speed error is large), click the [process page] blue [Wire Feeder] to enter the wire feeder interface. You can modify the parameters of the wire feeder.

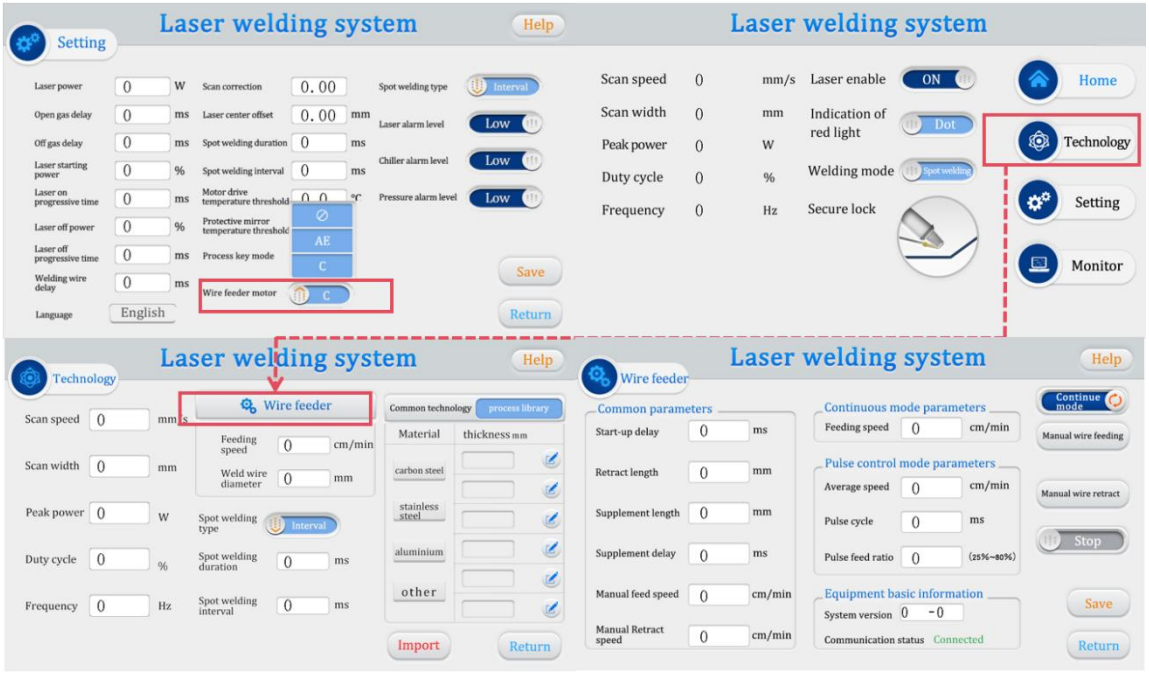

Figure 4.7 Home Page, Process page, Wire feeder page

Table 4.5 Wire Feeder Parameters Description

Key names	Functions	Notes
Pulse mode/continuous mode	Click to switch to another mode	Pulse mode is used for fish-scale pattern welding
Run/Stop	Click to switch to the corresponding state	Both are mutually exclusive, and the motor does not rotate when [stop]
Manual wire feeding/manual retraction	Click the motor forward/reverse	Manual Feeding speed is not equal to Feeding speed
Feeding speed	Adjust the Feeding speed during welding	Effective in continuous mode
Average speed		It takes effect in Pulse mode
Pulse cycle	Adjust the length of individual fish scales	
Pulse feed ratio	Adjust the visibility of the fish-scale pattern, the smaller the more noticeable	
Start-up delay	Delay wire ejection relative to the light signal of the welding head	Global effect
Retract length	When the wire breaks, the motor reverses to assist in breaking the wire	
Supplement length	The motor rotates forward after the retraction for balancing the retraction	
Supplement delay	The interval between threading and redrawing to avoid threading too fast and sticking	
Manual feed speed	The Feeding speed of the forward rotation of the motor is used for manual adjustment	
Manual retract speed	Motor reverse retraction speed for manual debugging	
System Version	Show the master board version and interface version	Avoid mixing the main control board with the screen
Language	Click to switch the operating interface language	The system supports 19 languages

V.Maintenance and servicing

5.1 Daily Maintenance

Daily use precautions:

- The equipment should be effectively grounded;
- Protect the touch screen to prevent the screen panel from being damaged by being hit.
- Properly install the welding wire, regularly inspect and unclog to avoid friction caused by improper assembly, which can lead to metal shavings blocking the wire feed wheel box and wire feed pipe;
- When working in harsh conditions, pay attention to waterproofing and dustproofing, and do not immerse the equipment in water.

5.2 Troubleshooting

5.2.1 Control Logic

The Wire feed is connected to the signal interface [J3] of the control box through the two-core plug motor wire at the tail. When the welding light comes out, the main board of the control box gives the wire feeding enable signal, and the Wire feed starts to work.

5.2.2 Motherboard interface

Interface silk-screen	Interface Definition	Interface pins	Pin definition	Notes	
J1	24V power Interface	1	WIN	Switching power supply	+V0
		2	GND		-V0
J3	Dc motor Interface	1	24V+	Motor	Red line
		2	GND		Black wire
J7	Communicatio n Interface	1	GND	Control box	GND
		2	RX		TXD
		3	TX		RXD
		4	Wire feeding -		Wire feeding -
		5	Wire feeding +		Wire feeding +
J8	Reserved				

5.2.3 Common Faults

When troubleshooting the Wire feed, it is necessary to ensure that the wire feeding enable signal of the welding control box is normal. The normal operation of the Wire feed can be initially determined by observing the [Wire Feeding Enable Signal] on the [Monitoring Page] or [Diagnosis Page] of the welding system.

If the trigger is pressed, the [Wire Feeding Enable Signal] indicator light on the [Monitoring Page] of the welding system lights up (green), but the Wire feed does not actually feed wire. Or enter the [Diagnosis Page] of the welding system, turn on the [Wire Feeding Enable] switch, the theoretical output status light will be on (green), but the Wire feed is not actually feeding wire. Check if there is a signal between [Wire Feeding +] and [Wire Feeding -] on the welding main board. If there is a signal, it is initially determined that the Wire feed is not working properly.

Possible causes and solutions:

1、Parameter setting error: The Wire feed interface will only feed wire when the operation status is [Running], and will not feed wire when it is [stopped].

2、Component failure: Check the wiring between the main board and the motor, and report the faulty component for repair or replacement.

Note:

- Check the power: After powering on, check if the power indicator light is on and if the running light is flashing. If the power indicator light is on, the running light remains on or is not on, it indicates a motherboard failure;
- When the power and operation lights are both normal, check if there is a signal on the interface of the two-core aviation plug-in when the trigger is pressed. If there is no signal, the aviation plug-in is faulty.

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