

Product Description
SUP - AMF - T (V1.1)



Wu xi Super Laser Technology Co.Ltd

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Update Record

Version	Updates	Time	Editor
V1.0	First Edition	24.4.2	Liu Chen
V1.1	Three instructions for wire feeding copper spout	24.8.24	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 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
	<p>Danger! High Voltage</p>
	<p>Must be grounded</p>
	<p>Must unplug</p>
	<p>Do not close the circuit</p>

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 During the process of replacing the welding wire reel of this equipment, care should be taken to avoid accidental startup and injury.

Marking	Name
	<p>Beware of mechanical injuries</p>
	<p>Beware of pinching your hand</p>
	<p>Do not start</p>

II. Product Overview

This product is an auxiliary wire feeding device for laser welding. The wire feeder is equipped with an auxiliary wire breaking function. Supports feeding up to three wires simultaneously. Compatible with carbon steel and stainless steel wires, it meets the wire feeding requirements for most laser wire feeders.

Table 1- Shipping List

SUP-AMF-T shipment list			
Serial Numbers	Product Name	Specification Model	Quantity
1	Make your own multi-functional three-thread automatic threading machine	SUP-AMF-T	1
2	Base		2
3	3-Core Aviation Power Cable	5M	1
4	2-Core Aviation Signal Cable	10M	1
5	Black three wire feeders	Fe0820-5	1
6	Three wire feeders	Three wire feeders	1
7	Three wire feed copper spout	AS-16T	2
8	Three wire feed copper spout	AS-20T	2
9	Three wire feeding guide pins	1.6	1
10	Three wire feeding guide pins	2.0	1
11	Three wire feeding adjustment blocks	Length 59	1
12	Double wire feeder connection block (21S)	Double wire feeding	1
13	Double wire feeder connection block (20S)	Double wire feeding	1

The physical picture is shown below.

If the goods received differ from the picture, please refer to the specific order.



Figure 1 Shipment products and accessories

III. Product Functions

Main features and parameters:

- Speed range: 15 to 600cm/min;
- Maximum load: 3x20kg;
- Wire material: carbon steel, stainless steel;
- 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	Screen	7-inch touchscreen
2	Side door of the chassis	
3	Side door of the chassis	
4	Wire outlet	Corresponding to Motor A
5	Wire outlet	Corresponding to Motor B
6	Wire outlet	Corresponding to Motor C
7	Power switch	
8	3-core aviation socket	220V power interface
9	2-core aviation socket	Control signal interface
10	Nameplate	

3.2 Product Parameters

Key product parameters are shown in Table 3.2:

Table 3.2 List of Key Product Parameters

Supply voltage	220V±10% AC 50/60Hz	
Operating ambient temperature	-10 to 50°C	
Maximum power	145W	
Wire feeding speed	15 to 600cm/min	
Wire feeding mode	Continuous mode, pulse mode	
Applicable to welding wire	Carbon steel solid core wire, stainless steel solid core wire	
Net weight	31kg	
Suitable for 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 two navigation plug interfaces on the back of the Wire feed are respectively the "Control Signal Interface" and the "Power Interface". The power supply of the wire feeder is 220V AC input. The specific range is subject to the equipment nameplate.

The wire feeding enable signal of the Wire feed supports the ① (relay) passive conductive communication signal and ②(MOSFET) open-drain output signal output by the welding control box. Wire according to the [+ , -] sign on the wire label when in use.

4.1.1 Standard version definitions



Figure 4.1 Diagram of the aviation plug-in interface

Table 4.1 Definition of Standard Version Aviation Plug-in Interface

Interface Definitions - Standard Edition				
Aviation socket	Corresponding attachment	Interface pins	Definition	Notes
2-core aviation socket	2-Core Aviation Signal Cable	1	Wire feed enable -START	Welding control box - wire feeder +
		2	Wire feeder enable -GND	Solder control box - wire feeder -
3-core aviation socket	3-Core Aviation Power Cable	1	220V-L	Plug in a 220V power supply with a three-pin plug.
		2	220V-N	
		3	PE	

4.2 Internal structure of the device

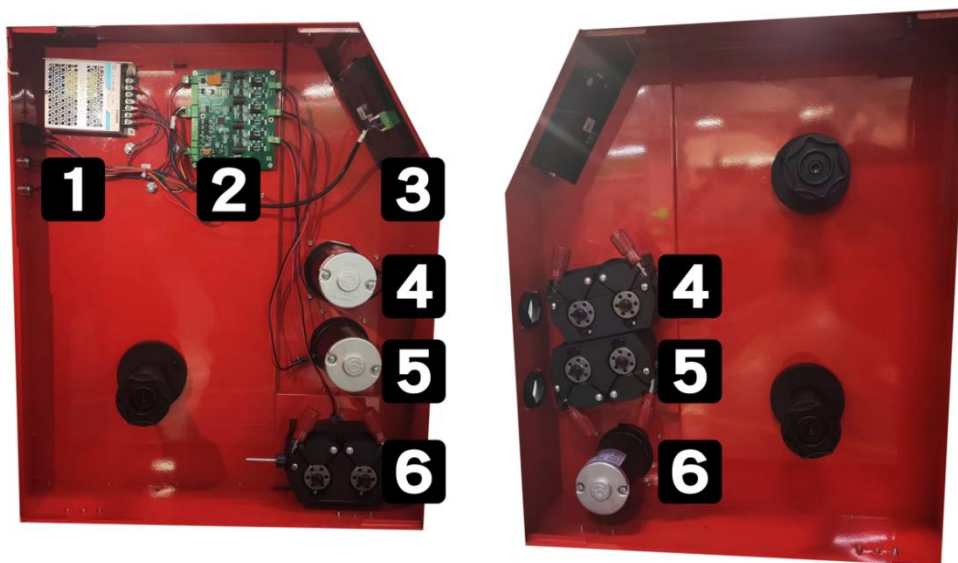


Figure 4.2 Internal structure

Number	Component name	Features
1	24V switching power supply	System power supply
2	Main control board	Control system operation
3	Touchscreen	Human-computer interaction
4	Wire feeder motor-a	Wire feeding motion
5	Wire feeding motor-b	
6	Wire feeder motor -c	

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 4.2 List of Wire Feeding wheel models

Wire feeding wheel model			
Applicable welding wire	Material		Carbon steel, stainless steel
	Wire feeding wheel -V type	Standard	Phi is 1.6 mm / 2.0 mm



Figure 4.2 Schematic diagram of wire feeding tube and wire feeding wheel

4.2.2 Wire reel installation

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 feeder wheel that matches the wire. For example, if 2.0mm wire is used, the side of the wire feed wheel marking [V2.0] should face outward;
- The wire reel positioning holes should be aligned with the positioning pins 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 inserting it into the appropriate position, tighten the screws until the hand-cranked wire feeding tube does not shake.



Figure 4.2.3

4.2.4 Wire feeding tube and welding head assembly

Take the 21T model hand-held welding gun as an example. The wire feeding tube is assembled as shown in the following figure. Note:

- Select the corresponding connection block according to the welding head model;
- Make sure the wire is stuck in the copper mouth slot and then tighten the hex socket screw.
- Take Figure 4.2.5 as an example. When in use, adjust (speed balance A/B) to make the actual Feeding speed of AB consistent, which is used to control the welding speed. Adjust (speed balance C) to control the stacking height of the weld seam.



Figure 4.2.4

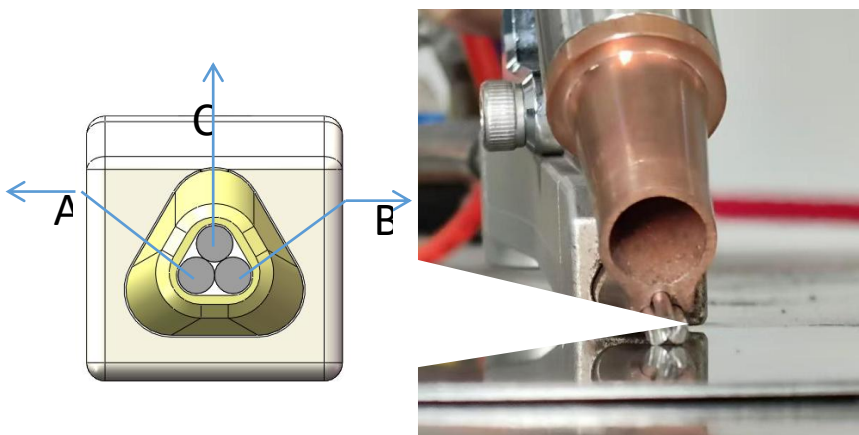
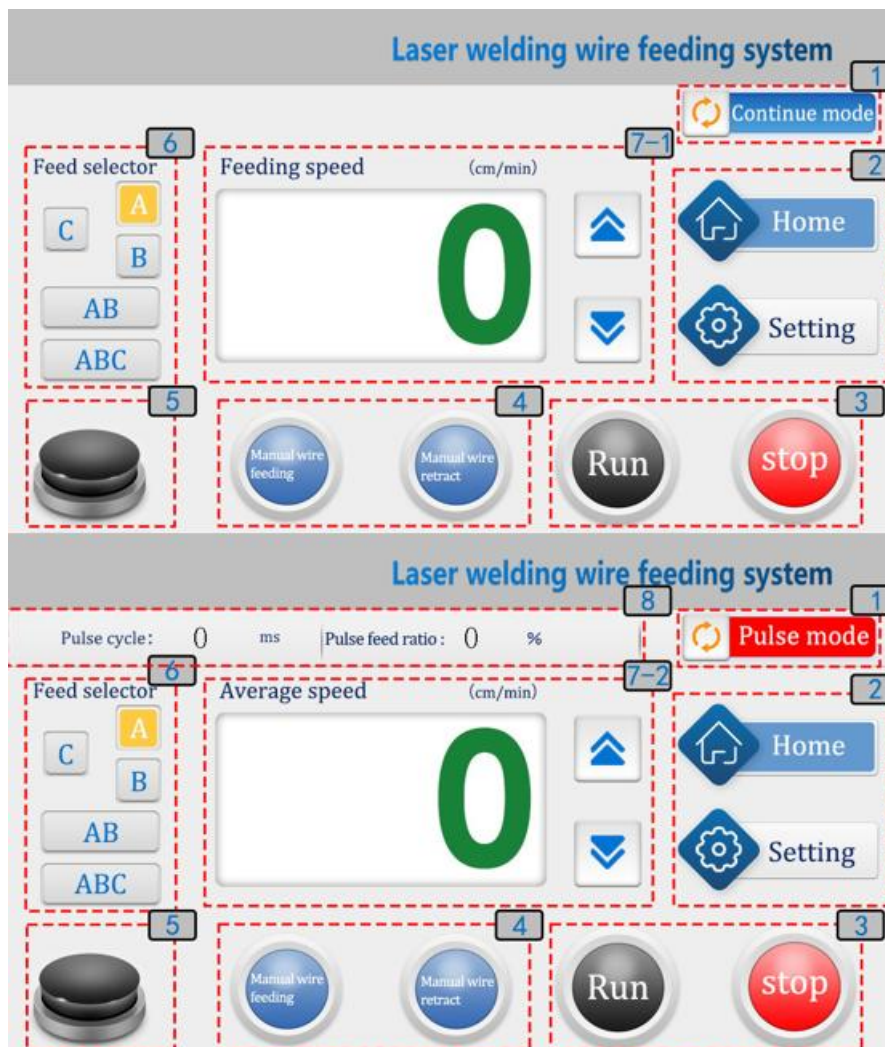


Figure 4.2.5

4.3 Operation Interface

The Wire feed is equipped with a 7-inch touch screen with a resolution of 1024x600.

4.3.1 Interface Home



Number	Key names	Functions	Notes
1	Pulse mode/continuous mode	Click to switch to another mode	Pulse mode is used for fish-scale pattern welding
2	Settings	Click to enter the Settings page	
3	Run/Stop	Click to switch to the corresponding state	Both are mutually exclusive, and the motor does not operate when [stop]
4	Manual wire feeding/Manual wire retract	Click the motor forward/reverse	The Manual feed speed is not equal to the Feeding speed
5	Status indication	The green light indicates that the	Click invalid

		motor is running	
6	Motor Settings	Select multiple motor wire feeding or single motor wire feeding	
7-1	Feeding speed	Adjust the Feeding speed during welding	Effective in continuous mode
7-2	Average speed		
8	Pulse cycle/Pulse feed ratio	Show relevant values	It takes effect in Pulse mode

4.3.2 Interface Settings Page



Number	Key names	Functions	Notes
9-1	Feeding speed	Adjust the overall Feeding speed during welding	Continuous mode takes effect
	Startup delay	The wire ejection is delayed compared to the luminous signal at the welding head	Global effect
	Retraction length	When the wire breaks, the motor reverses to assist in breaking the wire	
	Wire filling delay	The interval between threading and redrawing to avoid threading too fast and sticking	
	Manual wire feeding speed	The wire feeding speed for the forward rotation of the motor, for manual debugging	
	Manual retraction speed	Motor reverse retraction speed for manual debugging	
9-2	Average speed	Adjust the overall wire feeding speed during welding	Pulse mode takes effect
	Pulse period	Adjust the length of individual fish scales	
	Smoothness	Adjust the clarity of the fish-scale pattern; the smaller it is, the more obvious it becomes	
	Retraction length		Global effect
	Filament delay		
10	Speed balance	Fine-tune the speed of a single motor. Actual speed = Wire feeding speed (average speed) + speed balance	
11	Wire feeder length	Set the patch length for a single motor	
12	System Version	Show the hardware and software version numbers of the system	Avoid mixing.
	Communication Status	Display the communication connection between the main control board and the screen	
	Language	Click to switch interface language	Supports 19 languages

V. Maintenance and upkeep

5.1 Daily Maintenance

Daily use precautions:

- The equipment should be effectively grounded;
- Protect the touchscreen from being crushed or smashed;
- 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 feeder is connected to pin 5/6 (standard wire feeder +/-) of signal interface 2 of the control box via the two-core plug signal line at the tail. When the welding is bright, the main board of the control box gives the wire feeder enable signal, and the main board of the wire feeder drives the single machine to operate, and the wire feeder begins to work.

5.2.2 Motherboard interface

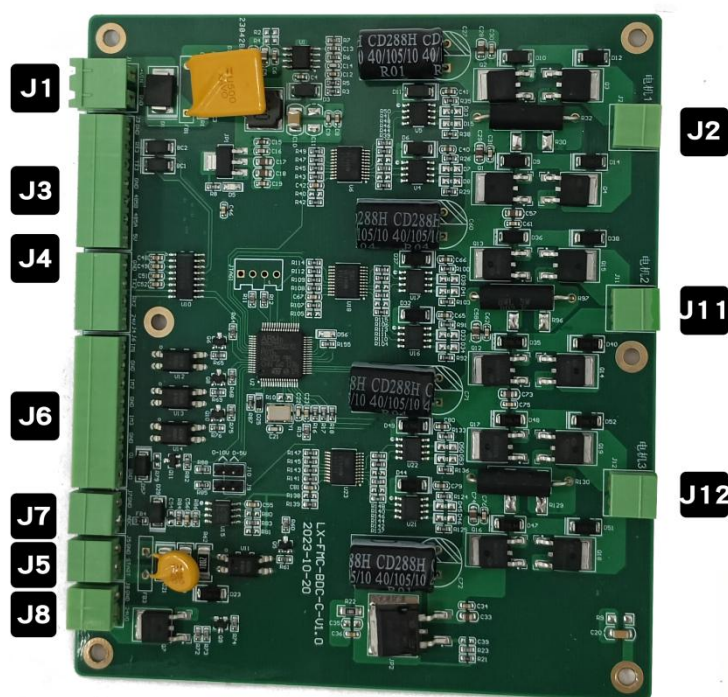


Figure 5.2.2

Interface screen printing	Interface Definition	Interface pins	Pin definition	Corresponding interface	
J1	24V power interface	1	WIN	Switching power supply	+V0
		2	GND		-V0
J2	Dc motor interface	1	Motor +	A- Motor	Red wire
		2	Motor -		Black wire
J11	Dc motor interface	1	Motor +	B- Motor	Red wire
		2	Motor -		Black wire
J12	Dc motor interface	1	Motor +	C- motor	Red wire
		2	Motor -		Black wire
J3	Communication interface	Reserved interfaces, usually not connected			
J4	Screen	1	-	Screen	GND

	interface	2	T		RXD
		3	R		TXD
		4	+		VCC
J5	Wire feeding enable interface	1	GND	2-core aviation plug	2
		2	START		1
J6	External I/O interface	Reserved input, usually not connected			
J7	External V0C interface	Reserved input, usually not connected			
J8	External 24V interface	Reserve output, usually not connected			

5.2.3 Common Exceptions and Handling

The Feeding speed is inconsistent

The final wire output effect is affected by the bending of the wire feeding tube, the assembly of the welding wire, the quality of the motor, etc. Under the premise of keeping the wire feeding tube in a straight line, the "speed balance" parameter of each motor can be adjusted separately to make the actual effect consistent.

2. Inconsistent wire breakage effect

The difference in broken wires between welding wires can be compensated by adjusting the "Supplement length" separately.

3. Individual motor malfunctions

It could be an abnormality at the main control board port, a motor failure, or loose wiring. Normal and abnormal motors can be cross-tested, as shown in "J2", "J11", "J12" in Figure 5.2.2. Further identify the point of failure.

4. The Wire feed does not feed wire as a whole

It may be a main control board failure or a line failure.

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, and the theoretical output status light will be on (green). However, if the Wire feed does not actually feed wire, it is initially determined that the Wire feed is not working properly.



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