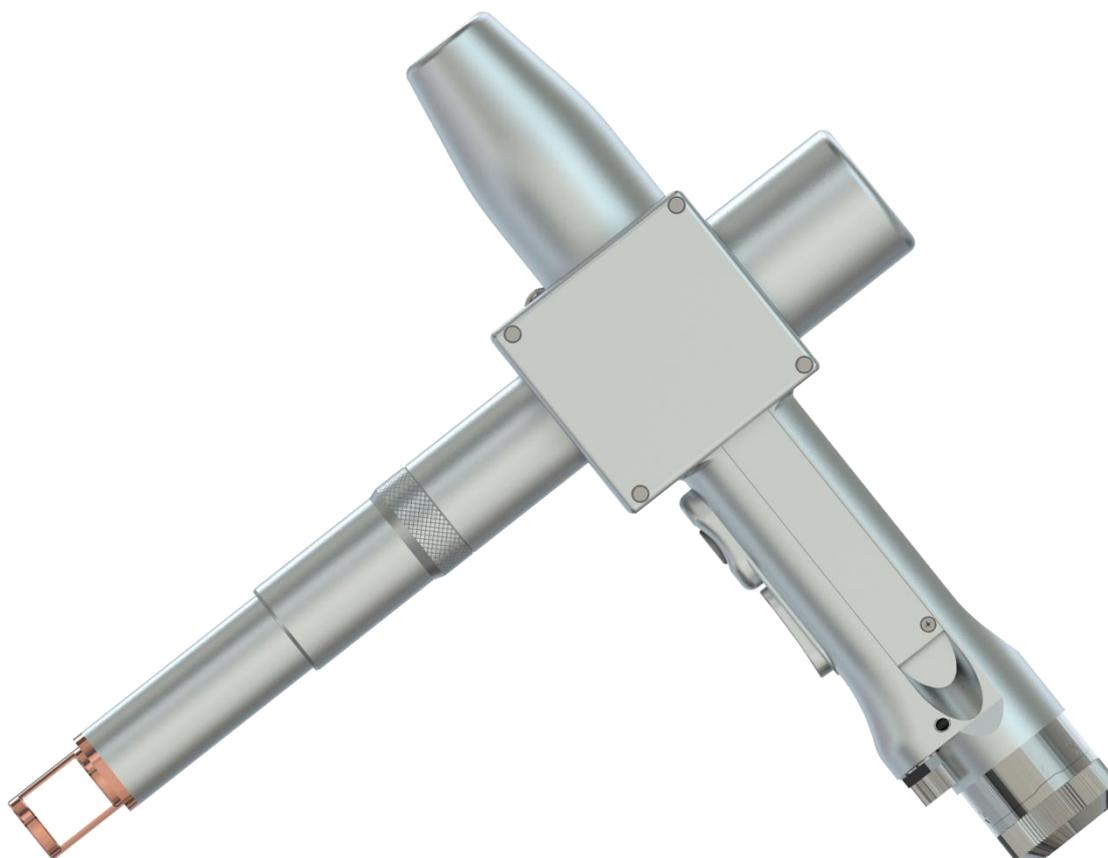




Instruction of product SUP27S (V1.12)



Wuxi Super Laser Technology Co.,Ltd

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Update Record

Version	Update content	Time	Hardware version	Software version	Screen version
V0.1	First edition	2024.11.11	V7.2	950	570
			V3.1	900	
V1.0	1. Optimized external structure 2. Optimized control box-welding gun wiring	2025.3.19	V7.2	952	572
			V3.1	900	
V1.1	1. Safety lock structure optimization 2. Configuration update: changed from 150 focus to 200 focus 3. Added copper nozzle instructions	2025.8.20	V7.2	952	572
			V3.1	900	
V 1.11	1.Add accessories	2025.12.3	V7.2	952	572
			V3.1	900	
V1.12	1. Modify the copper nozzle specifications	2026.2.4	V7.2	952	572
			V3.1	900	

I. Matters needing attention

This product belongs to laser processing equipment accessories and is applied to the field of metal material processing. According to the relevant regulations, this product meets the basic safety standards of handheld, movable and fixed electrical products for indoor and outdoor use. According to the actual demand, it is suggested that each product be equipped with an operation area of 2~10 square meters (the recommended indoor height is more than 3 meters).

Warning! Please read all safety warnings, instructions, illustrations and specifications in this manual. Failure to follow all the following instructions may lead to electric shock, fire or other serious injuries! ! This product is only suitable for professional industrial fields and must be used by professionals! Personnel who have not obtained professional qualification shall not use it!

1.1. Transportation and storage requirements

The hand-held laser should be able to work normally under the following environmental conditions.

(1) Ambient air temperature range:

During transportation and storage: $-25^{\circ}\text{C} \sim +55^{\circ}\text{C}$.

(2) Relative humidity of air:

At 40°C , no more than 70%;

At 20°C , no more than 90%.

(3) The dust, acid, corrosive gas or substance in the surrounding air shall not exceed the normal content, except for these substances generated due to the welding process.

(4) No obvious vibration and impact.

1.2. Description of possible hazards

1.2.1 Machine hazards

① Pinch injury or other secondary hazards caused by fastening structure.

② Smash injury or other secondary hazards caused by equipment falling.

1.2.2 Electrical hazards

① Electric shock or other secondary hazards caused by power leakage of equipment.

② Electric shock or other secondary hazards caused by static electricity generated by equipment operation.

1.2.3 Thermal hazard

- ①Heatstroke, dehydration or other secondary hazards caused by a large amount of heat generated by laser processing.
- ②Personal burns, environmental fires or other secondary hazards caused by high-temperature materials, residues and splashes generated by laser processing.

1.2.4 Radiation hazards

- ①Skin damage, retinal damage or other secondary hazards caused by direct laser irradiation or secondary irradiation after reflection.
- ②laser energy produces electrolytic plasma hazards or other secondary hazards.
- ③Secondary radiation or other secondary hazards caused by material decomposition and stimulated radiation caused by laser irradiation.

1.2.5 External interference hazards

Abnormal operation of products caused by external factors may lead to dangerous conditions due to equipment failure.

External environment refers to:

- ①Temperature
- ②Humidity
- ③External shock/vibration
- ④Steam, dust or gas in the environment.
- ⑤Electromagnetic interference
- ⑥The original power supply interruption/fluctuation.
- ⑦All landowners lightning strike
- ⑧Insufficient hardware/software compatibility or completeness.

Pet-name ruby external communication does not comply with the communication protocol.

1.2.6 Confined space hazards

Possible hazards caused by using hand-held laser processing equipment in confined space;

- ①The concentration of harmful substances in the space increases.
- ②The concentration of process gas (argon, nitrogen, etc.) in the space is too high.
- ③Hypoxia
- ④Current enhancement
- ⑤Temperature rise
- ⑥Radiation hazards caused by direct laser or reflection and diffuse reflection.

1.2.7 Hazards of aerial work

- ①Hazard of falling objects.
- ②The use of personnel falling hazards.

1.3. Preventive measures

In view of the above hazards, in order to ensure safe production and normal operation of the product, the following safety signs are posted on the whole product, which clearly inform all personnel who use, maintain and approach the product to pay attention to the following safety matters and must take the following safety measures.

Warning! Please read all safety warnings, instructions, illustrations and specifications in this manual. Failure to follow all the following instructions may lead to electric shock, fire or other serious injuries! !

1.3.1 Production and operation environment

- ①the product use should be divided into special laser welding area.
- ②inflammable and explosive articles should be prohibited around the product to avoid potential safety hazards.
- ③When working outdoors, products should avoid exposure to fog, strong wind, thunder and lightning, rain, snow, hail and other bad weather environments.
- ④Good ventilation and visibility (sunlight or lighting) should be maintained when the product works indoors.
- ⑤The dust, acid, alkali and corrosive gas in the working environment of the product should not exceed the normal level.
- ⑥The temperature range of the product working environment: $-10\sim 50^{\circ}\text{C}$, and the humidity range $\leq 70\%$.
- ⑦The working environment of products should avoid obvious vibration and impact.

1.3.2 Engineering protection measures

- ①An isolation fence should be set at the periphery of the laser work area, which should be able to withstand a certain amount of laser energy to prevent the laser from shining outside the area.
- ②Other personnel shall not enter the laser welding area without the authorization of the operator.
- ③This product is powered by 220V AC, and its application range is 220 V 5% AC 50/60 Hz, and the power supply voltage should be stable without impact. Please pay attention to the safety of electricity use to avoid electric shock.

④In order to ensure the normal operation of the product and avoid electrostatic injury and product leakage, the product should adopt safety grounding measures, that is, connect the easily conductive part to the protective (grounding) conductor in the fixed wiring of the product, so that the easily accessible conductive part will not become a live part when the basic insulation fails; Depending on the situation, safety measures (such as double insulation or reinforced insulation) can be added, or grounding can be done separately;

⑤There must be an emergency stop switch control device within 2m around the individual in the working area of the operator.

1.3.3 Personal protective measures

Warning! The operator must be a professional. Besides being familiar with this product and related welding systems, he must also be familiar with the properties of processed materials and the possible side effects, and be able to assess health risks and ensure effective preventive measures.

①Individuals should wear professional laser protective clothing and gloves.

②Individuals should wear laser protective glasses and masks with corresponding power and wavelength.

1.3.4.Product maintenance and protection measures

①When replacing wearing parts, make sure that the product is powered off to avoid light.

②The control box of this product does not contain accessories that need user's operation. Any installation, maintenance and disassembly of this product should be carried out at the designated maintenance point under the condition of power failure. Please contact the local dealer.

1.3.5 Other precautions

①Warning! The product is suitable for lasers with a wavelength of 1080nm and its vicinity. This band is invisible, and its radiation is difficult to detect before it has a direct impact, so special attention should be paid! Operators must wear all protection, the work area must be protected as required, and no other personnel can enter the work area!

②The instantaneous output energy of the laser is very high, so it is forbidden to point the light outlet at people or other objects when working, placing or idling.

③Even if the Class 4 laser does not directly irradiate the skin and eyes, it will indirectly irradiate the skin and eyes due to the diffuse reflection of the material, and irreversible damage will still occur at this time. Operators must wear protective equipment such as glasses and protective clothing.

- ④Laser irradiation on smooth surfaces will produce specular reflection, which is especially obvious when processing high-reflectivity materials such as copper and aluminum. When processing materials, the reflection angle will also change due to the change of molten pool. The operator should have a full understanding of the possible reflection angle to avoid laser reflection from harming personnel and equipment.
- ⑤The gas around the molten pool will form electrolytic plasma when irradiated by high-energy laser. Splash waste and waste gas produced by laser action on materials will also do harm to people. Operators must wear protective equipment such as masks.
- ⑥When working, add the emergency stop switch control device within 2m around the person in the working area of the operator.
- ⑦When working high above the ground, the operator should wear safety ropes, helmets, etc., and take fixed measures to prevent the equipment from falling.
- ⑧When working indoors or in a confined space, adequate ventilation measures should be maintained to avoid the deposition of harmful substances. Maintain sufficient visibility to prevent human eyes from being stimulated by strong light. Appropriate measures need to be provided to remove the smoke and waste gas that may be generated from the processing area, and it needs to be sufficiently purified and discharged into the atmosphere far away from people.

1.3.6 Safety signs

The following safety signs must be fully understood and used.

Sign	Name
	Hot work area
	Warning! caution
	Beware of high temperature surface
	No chemical fiber clothes.

	<p>Prohibit flammable materials</p>
	<p>Laser radiation protects eyes and skin from direct or scattered radiation. Four types of laser products</p>
	<p>Laser radiation protects eyes and skin from direct or scattered radiation. Four types of laser products</p>
	<p>Safety goggles must be worn.</p>
	<p>Beware of laser</p>
	<p>Beware of ionizing radiation</p>
	<p>Beware of electric shock</p>
	<p>Must be grounded</p>
	<p>The plug must be pulled out.</p>
	<p>No closing</p>

II. The Product Overview

This product belongs to laser welding equipment accessories and is applied to the field of metal material processing, including carbon steel, stainless steel, aluminum, copper and other common metals that can absorb 1080nm-band laser. It is suitable for continuous laser with laser power of 3000W and wavelength of $1080 \pm 10\text{nm}$.

It is suitable for continuous laser with laser power of 3000W and wavelength of $1080 \pm 10\text{nm}$.

The cooling mode is water cooling.

Can't be used for underwater work. See [Production and Operation Environment] for detailed working conditions.

This manual includes a general description of the basic functions, installation, operation, use and maintenance of SUP27S series hand-held laser double pendulum welding head products.

2.1 Gun body description

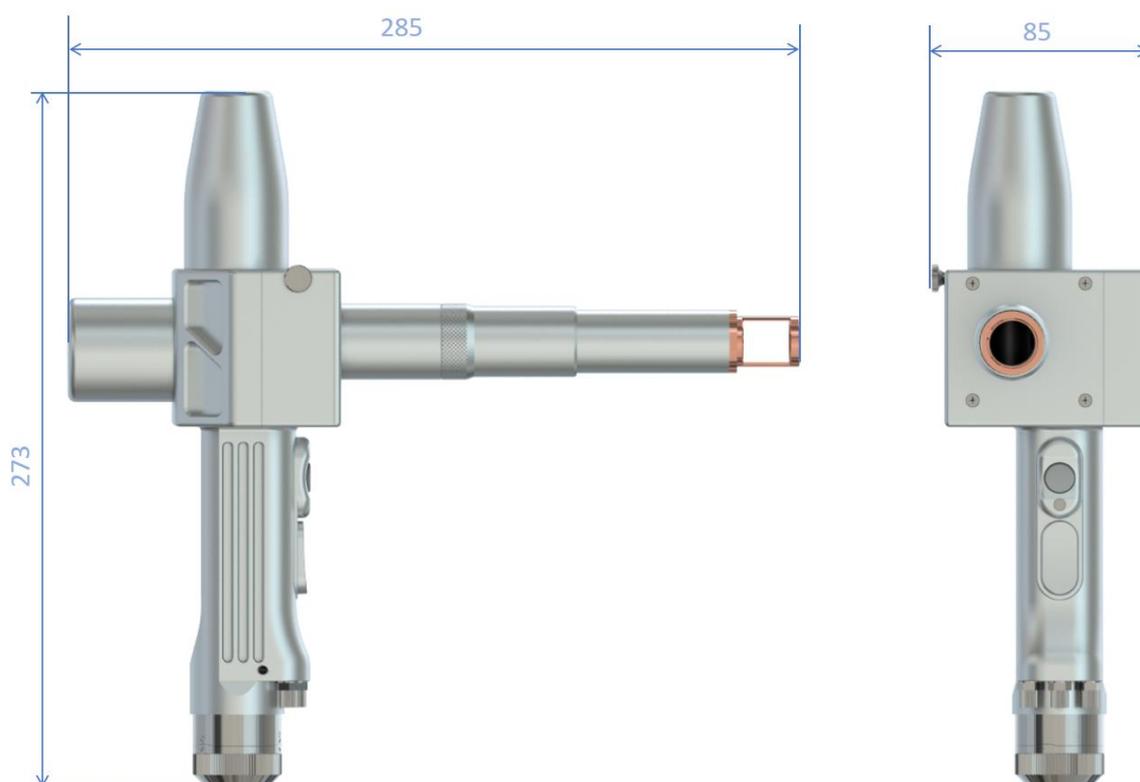


Figure 2.1 SUP27S Gun body size drawing

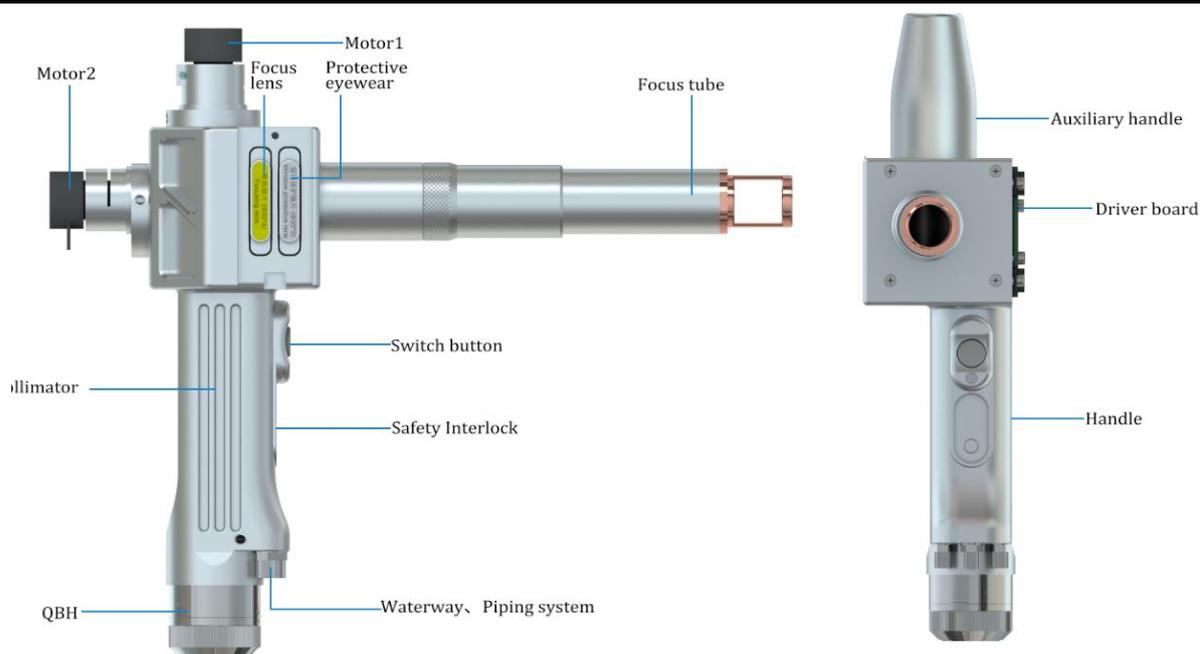


Figure 2.2 SUP27S Gun body

When using the product, press the [Switch button] and [Safety Interlock] simultaneously to activate the light. Hold the [Handle] with one hand and the [Auxiliary handle] with the other hand to enhance stability.

2.2 Product Function、Product operating environment and basic parameters

- general features:

- ①Gun body built-in driving plate;
- ②Water cooling structure;
- ③Water cooling structure;
- ④4 kinds of process graphics are optional.

- fundamental function

model	27S
1	Laser welding function
2	System fault diagnosis
3	Multiple scanning modes
4	Various welding processes
5	scan-round
6	Safety Interlock

As shown in Table 2.1, the operating environment requirements and main parameters of SUP27S handheld laser double pendulum welding head are as follows: Table 2.1 Operating Environment Requirements and Basic Parameters

Supply voltage (v)	220V \pm 5% AC 50/60Hz
Working environment temperature ($^{\circ}$ C)	-10 \sim 50 $^{\circ}$ C
Humidity of working environment (%)	\leq 70
Cooling mode	water-cooling
Suitable wavelength	1080nm (\pm 10nm)
Applicable power	\leq 3000W
Collimator	D16T5F60
Focusing mirror	D30T4F200
Protective mirror	D30T3
Reflective lens	21.8*17*2/24*21*2
Air flow rate	10~15L/min (20 $^{\circ}$ C 0.15MPa)
Vertical adjustment range of Focus	\pm 15mm
Weight	1.1kg
Adaptive spot	After the beam is collimated, $\phi \leq$ 10mm.

III. The Product Accessories Installation

3.1 Unpacking list

Take the standard version as an example. The ex-factory list of products is shown in Table 3.1 and the actual product may be different from the following figure. Please refer to the specific order.

SUP 27S Packing list			
Number	Name	Specifications	Quantity
1	Hand-held laser swing welding head	SUP27S	1
2	Optical fiber swing welding system	SUP-ALWS-B	1
3	Nine-core system connecting wire	10M	1
4	Screen	SUP-DW128	1
5	Display line (vertical side out)	1M	1
6	Switching power supply	LM90-12A15(JSY)	1
7	Switching power supply	LM100-20B24 (JSY)	1
8	Protective lens	D30T3	5
9	Copper spout	Φ6	1
10	Copper spout	Φ18	1
11	Copper spout	10*3.5	1
12	Copper spout	19*8	1
13	Copper spout	M22-C	1
14	Pull-up resistor	10K	2

Table 3.1 Factory Configuration List of



Figure 3.1 The first layer of packaging



Figure 3.2 The second layer of packaging

3.2 Control box wiring and interface definition

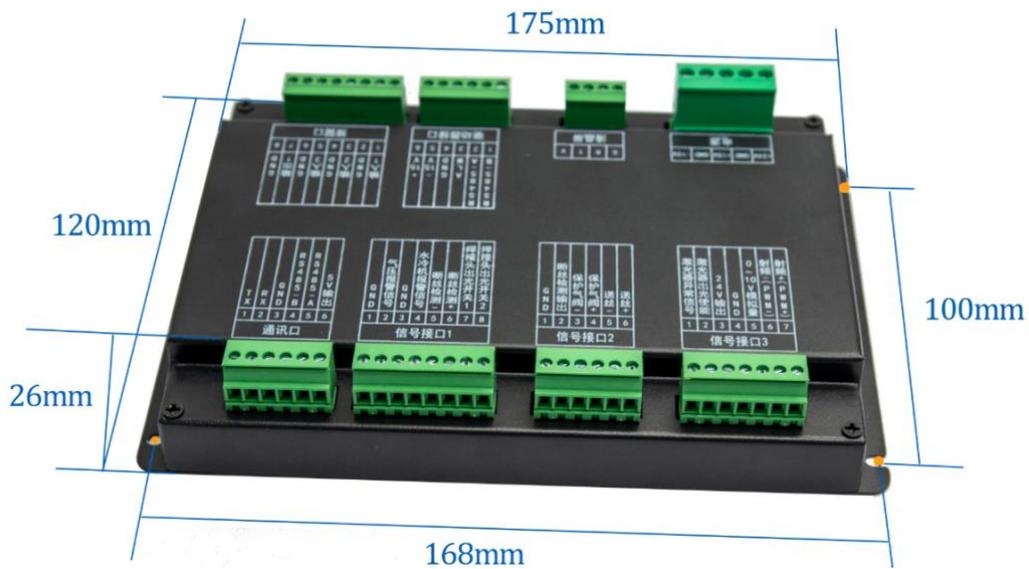


Figure 3.3 Controller

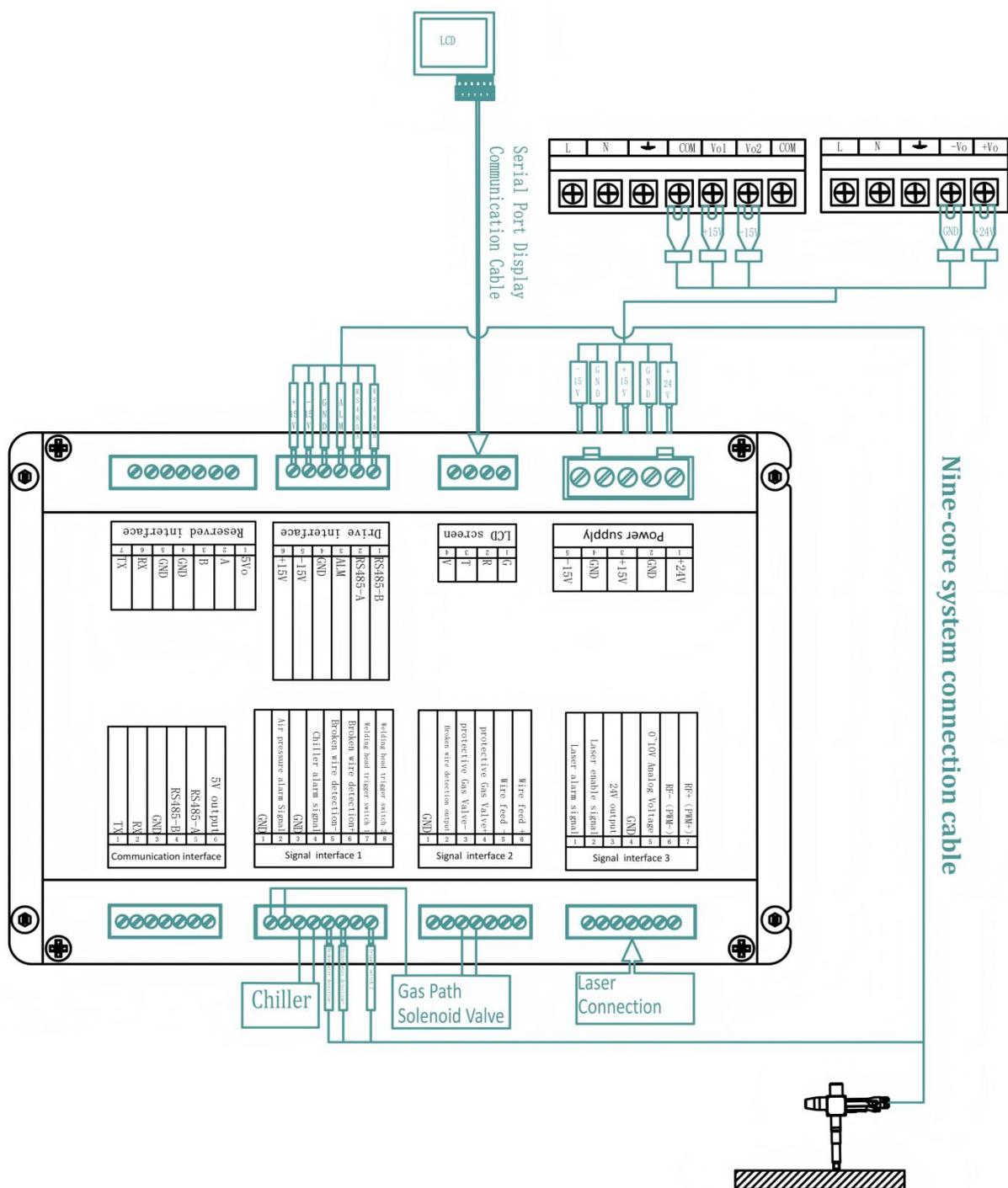


Figure 3.5 Wiring Diagram

- ① In order to avoid abnormal power consumption of the product, the ground wire of the switching power supply must be effectively grounded! The product shell must be grounded!
 - ② The icons used in Figure 3.5 only refer to a certain product, not the corresponding product.
- Note:** The GND terminal of the control board detecting the ALM signal must be connected to the probe tip's GND terminal to ensure the control board can properly detect the ALM signal.

3.2.1 Control Box-[power supply]

The power supply terminal uses 5P interface (included), and uses 24V switching power supply and $\pm 15V$ switching power supply included.

When installing, please pay attention to the positive and negative poles of the 15V switching power supply. V1 is connected to +15V, V2 is connected to -15V, and any COM on the 15V switching power supply is connected to pin GND!

The switching power supply must be grounded!

Control box signal [power] interface, as shown in Table 3.2.

Table 3.2 Power Interface Function Description

Power Supply		
Pin serial number	Signal definition	Function Declaration
1	+24V	24V input, connected to 24V switching power supply, output positive, marked [+Vo].
2	GND	Connect 24V switching power supply and output negative, marked [-Vo].
3	+15V	+15V input, connected to 15V switching power supply output, marked [Vo1].
4	GND	Connect 15V switching power supply to output negative, marked [CMO].
5	-15V	-15V input, connected to 15V switching power supply output, marked [Vo2].
<p>Note: Be sure to ground effectively. 1, confirm the ground conduction, no connection, open circuit; 2. The ground wire itself is stable and uncharged (the AC and DC voltages of the live wire and the zero wire to the PE wire are less than 10V, and it is best to maintain 0V).</p>		

3.2.2 Control Box-[LCD]

The wiring of LCD screen comes with it, just plug in the corresponding interface directly, as shown in Table 3.3.

Table 3.3 [LCD] Interface Function Description

[LCD] interface		
Pin serial number	Signal definition	Function Declaration
1	G	White wire, two terminals [4P-1] - [6P-G], 24V power load cable shielding layer。
2	R	Black line, two terminals [4P-2]-[6p-R], 232 signal.
3	T	Brown line, two terminals [4P-3]-[6p-T], 232 signal.
4	V	Blue cable, two terminals [4P-4]-[6p-V], and 24V power supply is positive.
Note: complete screen line is attached randomly, plug and play.		

3.2.3 Control Box-[Drive Interface]

The system connecting wire connects [Driver Interface] and [Hand-held laser swing welding head], and the wiring is shown in Table 3.4.

Table 3.4 [Drive Interface] Interface Function Description

Driver interface		
Pin serial number	Signal definition	Function Declaration
1	RS485A	Blue line, marked [RS485A]
2	RS485B	Blue and white line, marked [RS485B]
3	ALM	Yellow line, marked [ALM]
4	GND	Black line+shielding layer, marked [GND]
5	-15V	Red and white, marked [-15V]
6	+15V	Green line, marked [+15V]

3.2.4 Control Box-[Signal Interface 1]

The signal interface 1 is connected with an external water cooler, an air valve, an optical switch, etc. As shown in Table 3.5.

Table 3.5 Function Description of Signal Interface 1

Signal interface 1		
Pin serial number	Signal definition	Function Declaration
1	GND	For the air pressure alarm signal input port, please set the "air pressure alarm level" on the setting page of the display screen to be consistent with the actually used air valve alarm level.
2	Air pressure alarm signal	
3	GND	For the water cooler alarm signal input port, please set the "water cooler alarm level" on the display screen setting page to be consistent with the actual water cooler alarm level.
4	Alarm signal of water cooler	
5	Broken wire detection-	Connect the green and white wires of the [Nine-core System connection Wire] and mark it with [Broken Wire Detection -].
6	Broken wire detection+	Connect the brown wire of the [Nine-core System connection Wire] and mark it with [Broken Wire Detection +/- Safety Lock].
7	Welding head light switch 1	Floating (effective when connected to the black wire [GND])
8	Welding head light switch 2	Connect the green wire of the [Nine-core System Connection Cable], and mark the wire as [Light Output Switch 2].
Note: Only when there is no alarm and the switch signal is green, the subsequent output ports will have normal output signals.		

3.2.5 Control Box-[Signal Interface 2]

Table 3.6 Function Description of Signal Interface 2

Signal interface 2		
Pin serial number	Signal definition	Function Declaration
1	GND	hang in the air
2	Broken wire monitoring output	
3	Protective air valve-	Air valve opening: protect air valve+output 24V; ; Air valve closed: protection air valve+no output
4	Protective air valve+	
5	Wire feeding-	hang in the air
6	Send silk+	

3.2.6 Control Box-[Signal Interface 3]

Table 3.7 [Signal Interface 3]Interface Function Description

Signal interface 3		
Pin serial number	Signal definition	Function Declaration
1	Laser abnormal signal	Please set the "laser alarm level" on the display screen setting page to be consistent with the alarm level of the actually used laser.
2	Laser light emission enabling	Enable+,connect the enable+of the laser.
3	24V output	24V output, normally output 24V voltage after power-on.
4	GND	It is the common ground (the reference ground of feet 1/2/3/5).
5	Analog+	Analog output (0 ~ 10V analog voltage by default).
6	Radio frequency - (PWM-)	PWM- modulation signal
7	Radio frequency+ (PWM+)	PWM+ modulation signal

3.2.7 Control Box-[Communication Port]

Table 3.8 Interface Function Description of Communication Port

[communication port] interface		
Pin serial number	Signal definition	Function Declaration
1	TX	External communication
2	RX	
3	GND	Signal ground
4	RS485-B	External 485 communication
5	RS485-A	
6	5V output	Normal 5V output

3.2.8 Control Box-[Reserved opening]

Table 3.9 [Reserved opening] Interface Function Description

[Reserved opening] interface		
Pin serial number	Signal definition	Function Declaration
1	Input 1	Reserved extension interface, without specific definition.
2	GND	
3	Input 2	
4	GND	
5	Input 3	
6	GND	
7	Output 1	
8	GND	

As shown in Figure 3.6, the gun body interface mainly includes waterway and air interface.



Figure 3.6 Gun Head Interface Diagram

As shown in the figure:

Red and blue represent trachea and white represents water pipe. Φ 6mm tracheal interface is attached randomly.

3.3 Connection of optical fiber head and control box

①The product [QBH] interface is suitable for most industrial lasers. Attention should be paid when installing:

Keep the device clean;

②During installation, the optical fiber head is placed horizontally with [QBH];

③According to the scales of [Locking] and [Unlocking] in Figure 3.7, rotate and loosen QBH first, and then lock it after inserting the optical fiber head. After locking, the optical fiber head is placed in [QBH] without shaking.



Figure 3.7 QBH [Unlocked] and [Locked] States

The handheld laser swing welding head is connected with the control box through the [nine-core system connecting line]. See Table 3.4 [Driver Interface] for the definition of control box wiring.

3.4 Choosing a copper spout

The product includes four types of copper nozzles. Select the appropriate copper nozzle and process diagram according to the actual weld requirements. Avoid laser burnout of the copper nozzle.

Product images	Product Name	Structural dimensions
	Copper spout 10*3.5	inner rectangle:10*3.5mm outer rectangle:14*7.5mm Thread: M22 x 1; Height: 35mm
	Copper spout 19*8	inner rectangle:19*8mm outer rectangle:25*12mm Thread: M22 x 1; Height: 35mm
	Copper spout ϕ 6	inner circle: ϕ 6mm outer circle: ϕ 10mm Thread: M22 x 1; Height: 35mm
	Copper spout ϕ 18	inner circle: ϕ 18mm outer circle: ϕ 20mm Thread: M22 x 1; Height: 35mm
	Copper spout 22M-C8	Inner diameter: ϕ 8mm Outer diameter: ϕ 16mm Thread: M22 x 1; Height: 35mm

IV. Interface operation

4.1 Home page

Switches used to display current process, alarm information and adjust main output signals, as shown in Figure 4.1.

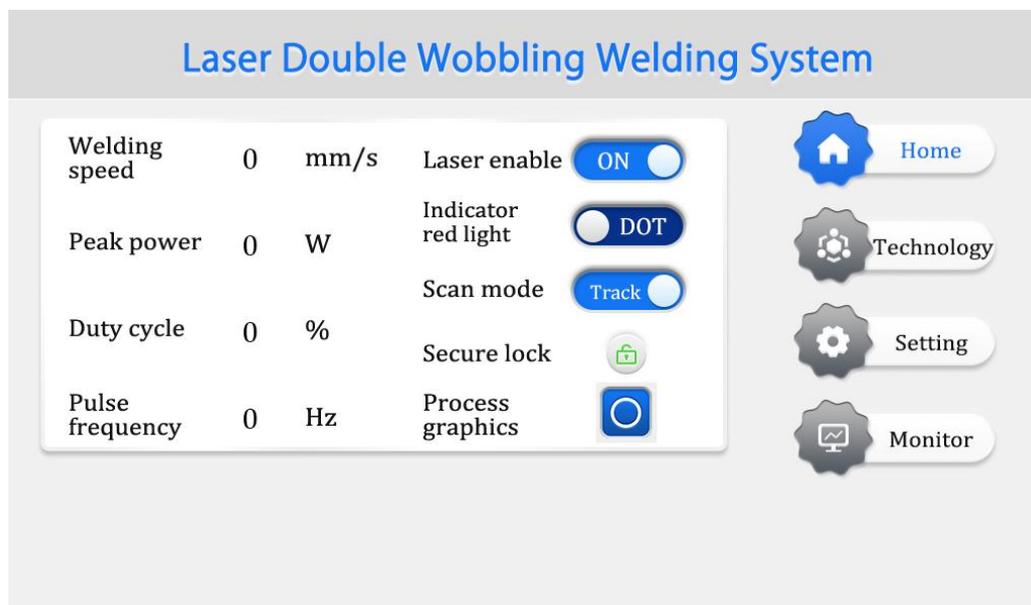


Figure 4.1 Laser Swing Welding System Home Page

- ① [Laser Enable-On/Off]: controls and indicates whether to output [Laser Light Enable Signal].
- ② [Indicating red light-point/line]: It controls and indicates whether the galvanometer motor swings, and adjusts the red light to [point]or [line], which does not affect the presence or absence of red light.
- ③ [Scan Mode-Trajectory/Profile]: Control the welding scan mode, and choose to scan by graphic trajectory or by graphic profile.
- ④ [Safety lock]: The gun head is pressed against the to a fixed position, the safety lock is turned on, and the trigger is pressed to emit light.
- ⑤ [Process Graphics]: Displays the currently scanned process graphics.

4.2 Process page

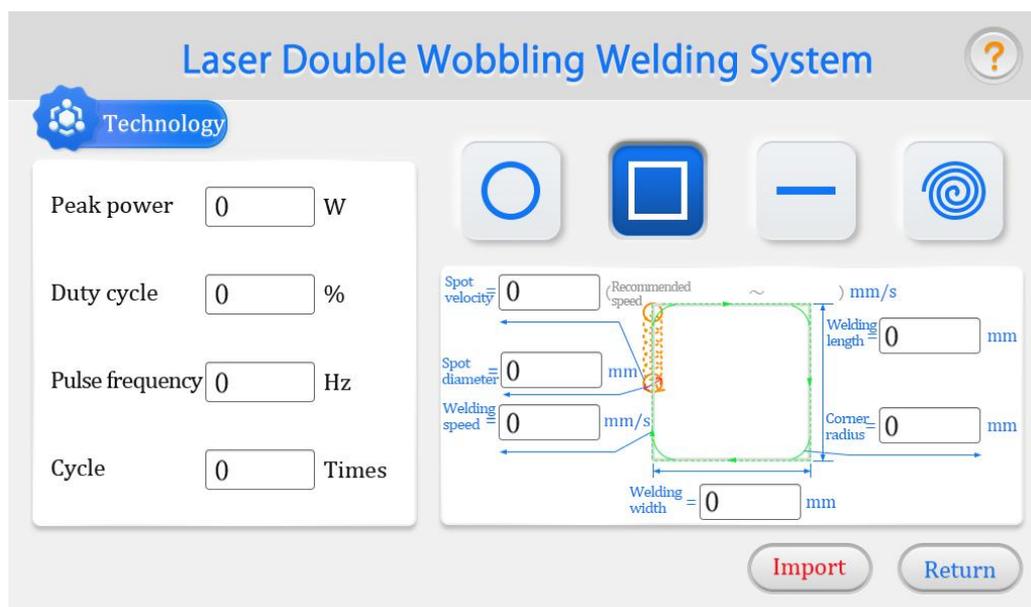


Figure 4.2 Process Page of Laser Swing Welding System

- ① [Spot speed]: As shown in Figure 4.2, the speed at which the focused spot moves along the yellow track. The yellow circle is called "light spot" below.
- ② [Spot diameter]: the diameter of the yellow circle.
- ③ [Welding speed]: the speed at which the "light spot" moves along the welding trajectory (green). Take [rectangle] as an example, the speed of the "spot" moving around the rectangle. According to the dynamic change of welding diameter and the actual welding effect, it should not be too large.
- ④ Speed: the speed at which the focused light spot moves around the blue spiral track. Spiral-specific parameters.
- ⑤ [Welding Diameter, Welding Length, Welding Width, Corner Radius, Inner Diameter and Outer Diameter]: Geometric parameters of welding trajectory. Take [I-shaped] as an example. In the actual welding effect, the actual weld = welding diameter + spot diameter.

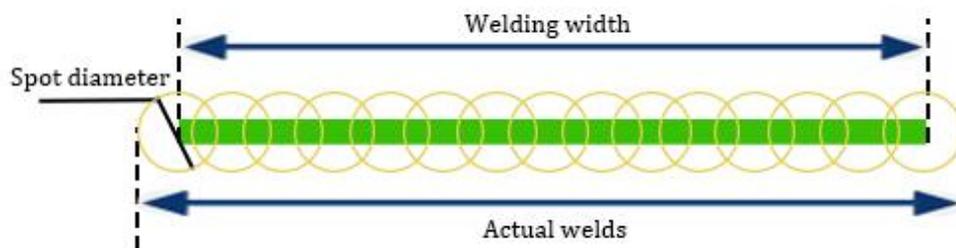


Figure 4.3 Schematic diagram of welding effect

Constraint condition:

[Circle]: spot diameter + welding diameter $\leq 15\text{mm}$ (spot diameter is preferred).

[Rectangle]: spot diameter + welding width or welding length $\leq 11\text{mm}$ (spot diameter is preferred).

[In-line]: spot diameter + welding length $\leq 15\text{mm}$ (spot diameter is preferred).

[Spiral]: $0.5\text{mm} \leq \text{inner diameter} + 2 * \text{spacing} \leq \text{outer diameter} \leq 15\text{mm}$.

⑥[Spacing]: the distance between graphic tracks.

⑦[Peak power]: the maximum power when the light comes out, or machining power and welding power.

⑧[Duty ratio, pulse frequency]: Generally, [Duty ratio 100%] and [pulse frequency 2000] are set. The equivalent machining power can be changed by adjusting the duty ratio and pulse frequency according to the characteristics of the laser, usually without adjustment.

⑨[Cycle]: 0~10, when it is set to 5, press the light-emitting switch, and then continuously emit light and scan the set area for 5 times, and then automatically stop emitting light. When set to 0, the light will be emitted continuously and will not stop automatically.

⑩ [Recommended Speed]: Derived parameters automatically given based on the current process, as a reference when adjusting the process.

4.3 Setting page

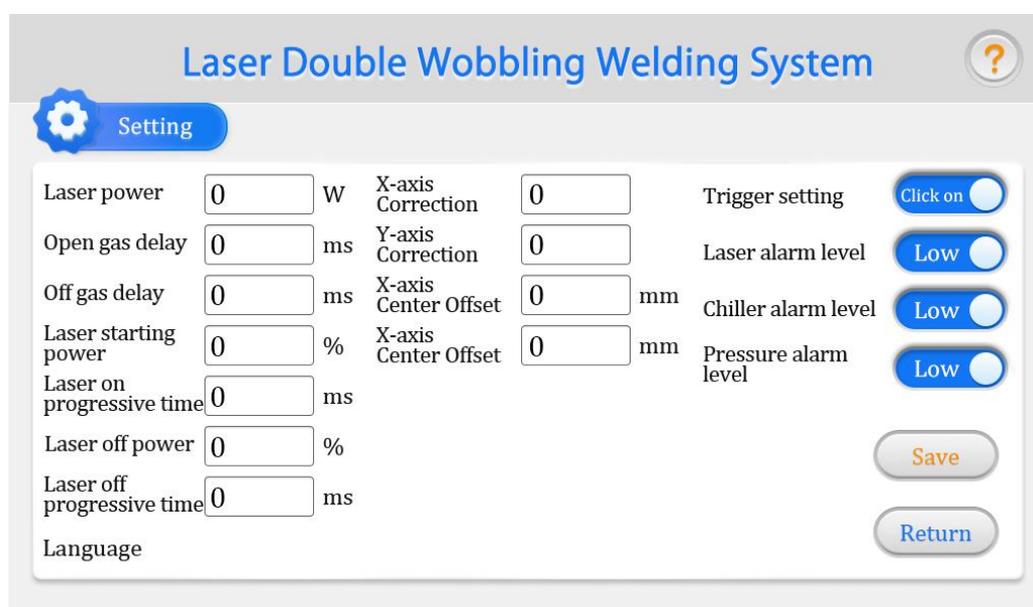


Figure 4.4 Settings page of laser swing welding system

The page shown in Figure 4.4 is used to set factory parameters, including product power and alarm level.

①[Laser power]: It is subject to the actual laser.

②[Delay of gas closing]: After the light is turned off, the gas closing is delayed.

③[Air-opening delay]: Vent in advance before the light comes out.

④ [On/Off Power][On/Off Progressive Time]: As shown in Figure 4.4,[On Progressive Time T1]represents the time from[On Power N1]to[Peak Power N3], and[Off Progressive Time T2]represents the time from[Peak Power N3]to[Off Power N2].

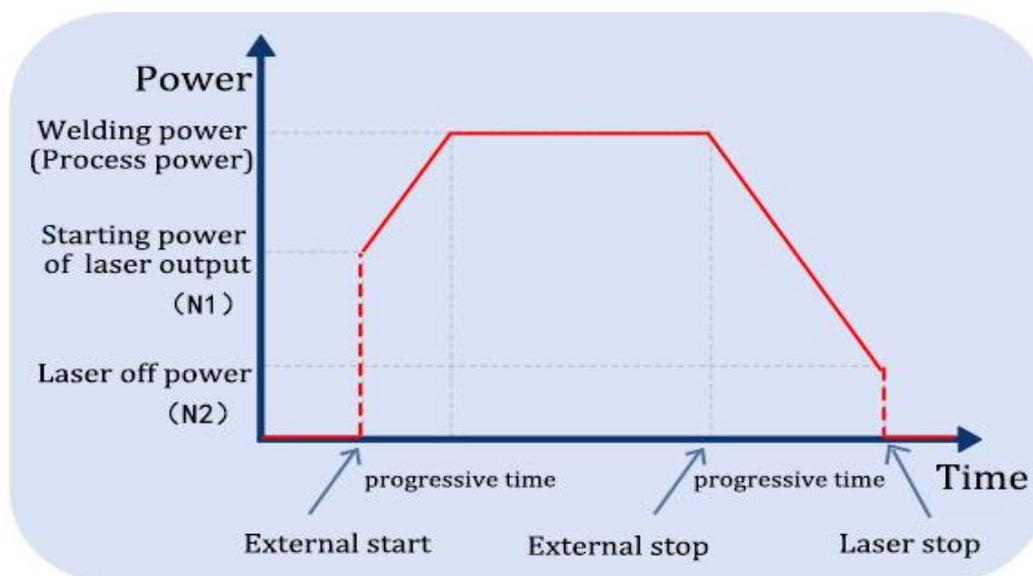


Figure 4.5 Power Time Relationship

- ⑤ [X-axis /Y-axis correction]: correction coefficient = target line width/measured line width, which is used to adjust the actual spot size to make it consistent with the system display.
- ⑥ [X-axis /Y-axis correction center offset] is used to adjust the light spot to center it.
- ⑦ [Trigger Settings-Click/Double Click]: Control the trigger mode. Usually set to [double click].
- ⑧ [Alarm Level-High/Low]: Set it to low level when not in use, and set it according to external products.

4.4 Monitor page

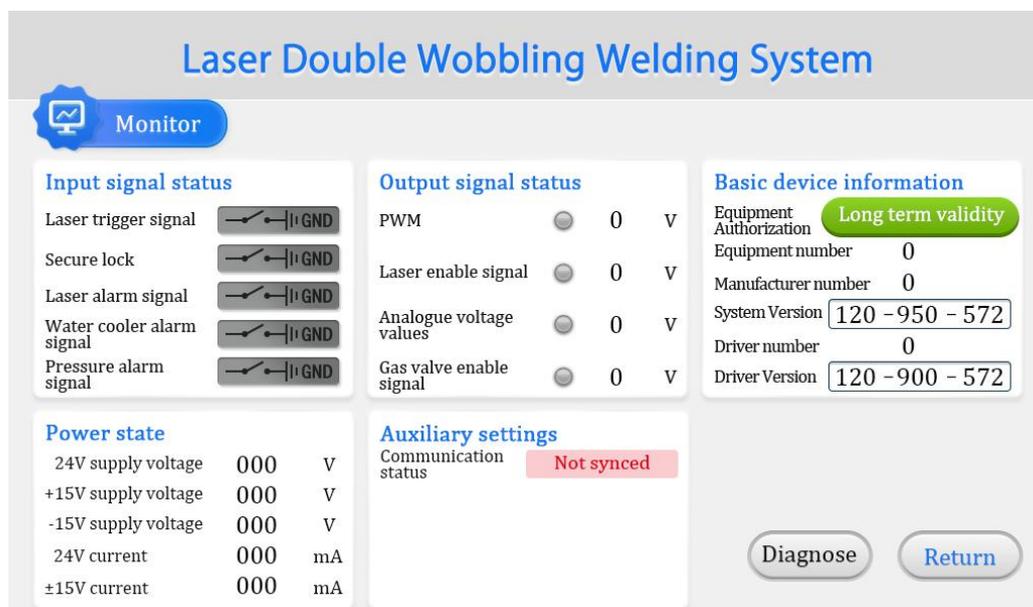


Figure 4.6 Monitoring Page of Laser Swing Welding System

The page shown in Figure 4.6 shows the monitored real machine information.

- ① Among them, [Input signal transition] [Output signal state] and [Power state] are real-time monitoring signals, which are used to judge whether the product works normally.
- ② [Basic Product Information]:

[Product Authorization] can be clicked to operate for product encryption.

[Product No.] [Manufacturer No.] and [System Version] are simple display information, which is used to provide technicians in after-sales work.

③[Auxiliary Status]:

[Communication status] indicates that the control system and the gun head are connected normally.

4.5 Diagnosis page

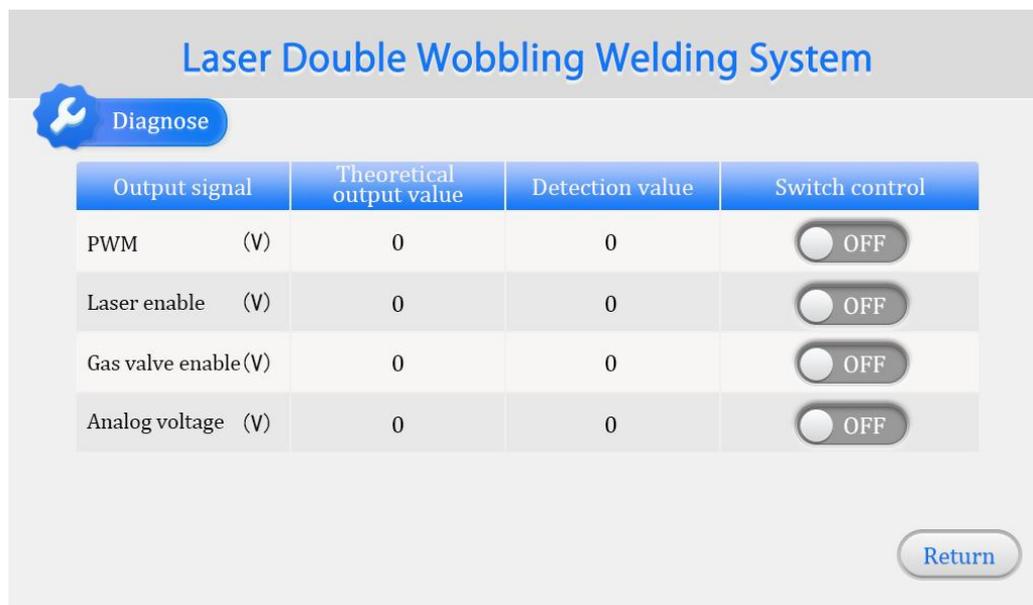


Figure 4.7 Diagnosis Page of Laser Welding System

The page shown in Figure 4.7 is a system diagnosis page. This mode can only be used for single [output signal] output, which is used to judge whether the output signals of the main control board are normal in a safe situation. This mode cannot emit light.

V. Daily maintenance of products

1. Users are advised to change the water in the water cooler once a month to effectively prevent the water pipes inside the gun body from being blocked. The water quality should be pure water or distilled water, and antifreeze should be added at low temperature.

2. The lens maintenance and replacement should be carried out in a relatively clean field environment. When opening the protective lens, focusing the lens cover, pulling out the lens bracket and other open operations, it should be well protected (covered with masking paper). The replacement methods of different lenses corresponding to all gun types can be found in WeChat applet → Super Laser → Lens Installation.

3. Please handle with care when using. For complex production environment, please clean the ash in time.



VI. Frequently asked questions of products and treatment measures

Warning! Before dealing with any problems, all power supplies must be cut off to avoid any danger! !

The repair and maintenance of this product must be completed by professionals! Do not operate without training! If you have any questions, please contact the dealer for professional treatment!

Once the product has any appearance damage, it will not be repaired. Please scrap it directly.

Description of common alarms and solutions to problems are as follows:

Problem item	Phenomenon	Solution
Chiller/laser/air pressure alarm	The pop-up window on the home page shows the chiller/laser/air pressure alarm.	<p>Alarm logic of level: the system will compare the wiring mode of the corresponding product with the setting level on the setting page, and alarm if it is different.</p> <p>Usually, the alarm is an alarm level setting error, so just change the corresponding alarm level.</p> <p>If there is an alarm when there is an alarm signal, please unplug the alarm signal line and set it to low level.</p>
Poor welding effect	At first, the light is very strong, and it gradually becomes weak/weak.	<p>Usually, the lens of the gun body is damaged, including but not limited to protective mirror, focusing and collimation, and any one or more of them may cause this situation. Replace the protective lens and look at the focus first, then check the collimator lens and replace the damaged lens. In addition, check whether the laser fiber head part is dirty or damaged.</p>
The motor does not swing.	The light spot is a point.	<p>1. Is the software part set correctly? Set -X /Y axis correction: 1.0 . Technology-width/height/inner diameter/outer diameter: greater than 0 Home-indicates red light: line</p> <p>2. Hardware inspection (first installation)</p> <p>1. The power supply of the swing motor is 15V power supply. We should first measure whether the power supply of the 15V switching power supply is normal. In addition, the 15V switching power supply is divided into positive and negative, and the wrong wiring will also cause the motor not to work. Please note that V1 is connected to 15V+, V2 is connected to 15V-, and any COM on the 15V switching power supply is connected to the 2nd pin GND.</p>

		<p>2. Check whether the communication status of Monitoring Page on the screen is Synchronized.</p>
<p>Abnormal motor swing</p>	<p>① After electrifying, the motor at the tail of welding head appears howling/abnormal red light swing/fever/unable to adjust swing width. ② Directly burn out the lens, and the sealing ring and focusing lens burn out at the same time.</p>	<p>The driver in the gun body controls the motor to swing. Through the motor wire link, when there is a signal error (poor contact of the motor wire, open circuit), external interference, or mismatch between the driver and the motor, the problem ① may occur. If there is a problem in ②, it is suggested to check the surrounding interference sources. If there is no interference source, it may be a motor line fault, so just replace the motor line directly.</p>

For more problem solving schemes, please refer to the [Problem Solving] page of WeChat applet



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