

HS31 Fibre Optic Handheld Vibroscope Welding Head User manual



Wuhan Xinghong Photoelectric Technology Co., Ltd.

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Revision history



**Be sure to read the product manual in detail before
before installing and using the product**

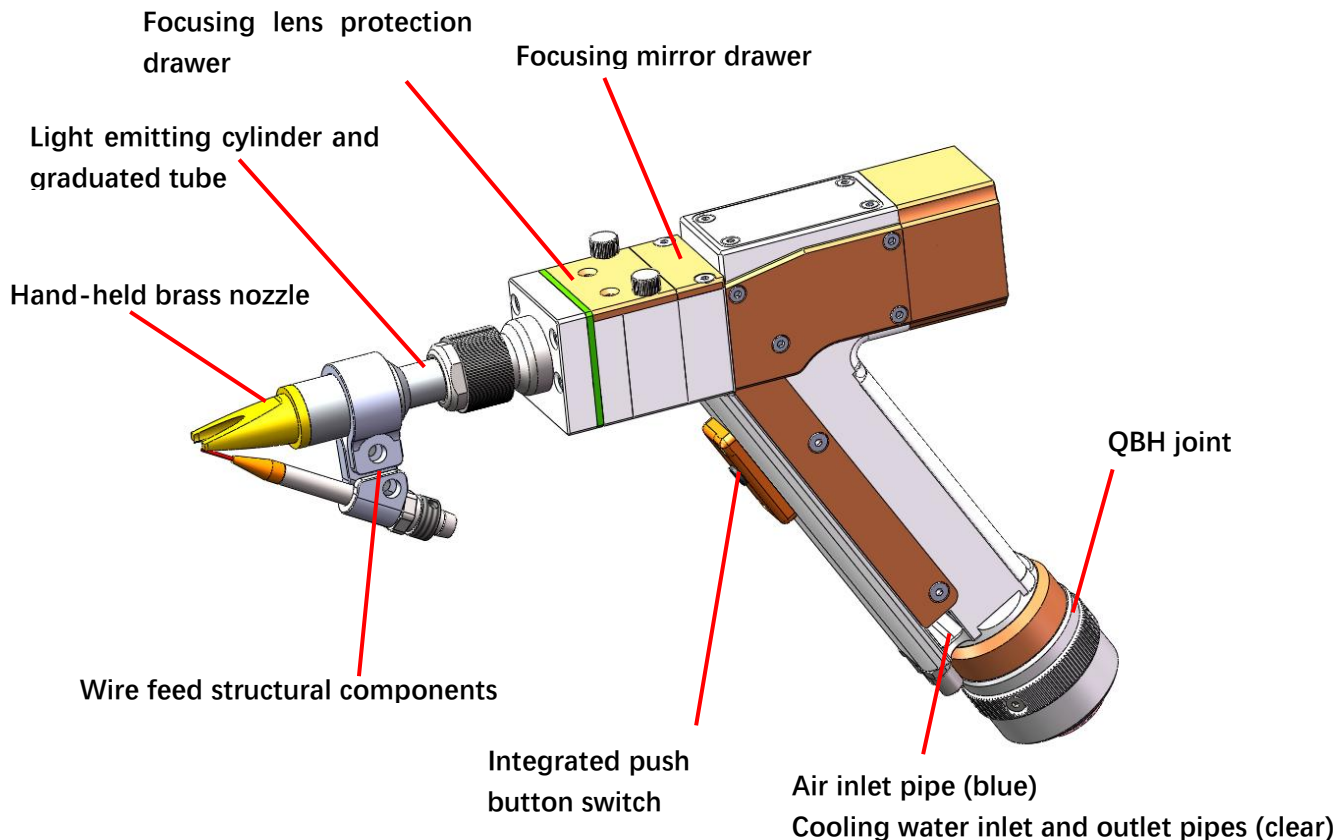
You must wear safety glasses when operating the laser equipment. Safety glasses should be selected appropriately for the wavelength of the laser emitted by the laser. If the device is a laser tunable or Raman product, it emits laser light outside the normal output wavelength range of the device's laser and requires appropriate safety protection for this phenomenon. Laser safety glasses should be selected to shield the laser from the entire wavelength range emitted by the laser device.

Chapter 1 Product Introduction and Display

1. product description

The "Fiber Optic Handheld Oscillating Mirror Welding" consists of a "Fiber Optic Continuous Welding Controller" and a "Fiber Optic Handheld Oscillating Mirror Welding Head" (the wire feed handheld oscillating welding system also includes the wire feed structure and its (the wire feeder also includes the wire feed structure and the wire feeder). The vibrating mirror has a frequency of 300 Hz and a spot width of 0-4 mm. The perfect air channel design protects the inner cavity of the gun head and increases the service life of the focusing mirror. The overall gun head is about 0.75KG, light weight design, improve the use of product appearance.

When you receive the product, open the box, it contains: a set of fibre optic handheld vibrating mirror welding head, 1 set of drive control box, 1 set of touch screen, 1 motor control cable, adjustment tools, and several accessories.



Note: The water pipes are transparent pipes on the left and right respectively, please read the logo and then pass the water; the gas pipe is in the middle of the two pipes by default as a blue pipe, please read the logo and then pass the gas, if the water line to the gas line orifice will cause very serious losses, please be sure to pay attention to do not connect the wrong.

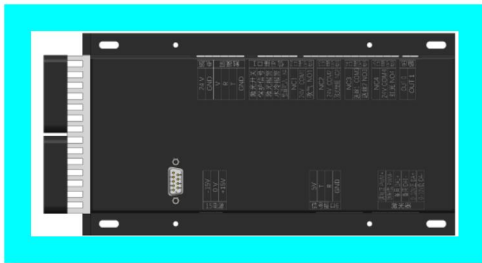
2. Accessories display



Hand-held vibrating mirror welding head (sample)



Touch screen (sample)



Control Box (Sample)



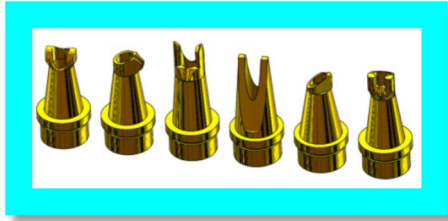
Galvo Control Line (Sample)



3-core switch wire (sample picture)



Protective lenses (sample)



Solder brass nozzle (sample drawing)

3.Special attention: 5 steps for plugging and unplugging optical fibers

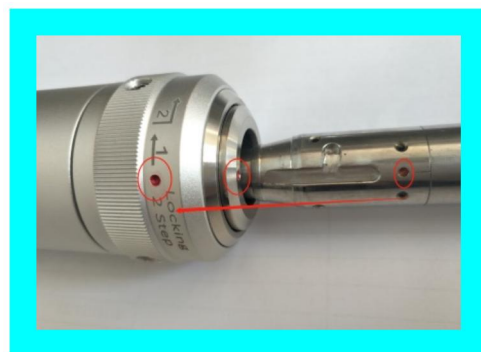
Note: The laser head needs to be placed horizontally when inserting the fiber; ensure that the fiber is inserted horizontally

3.1 Check whether the QBH connector and optical fiber plug are dirty, and wipe it clean with alcohol and cotton swab (tissue paper) in time



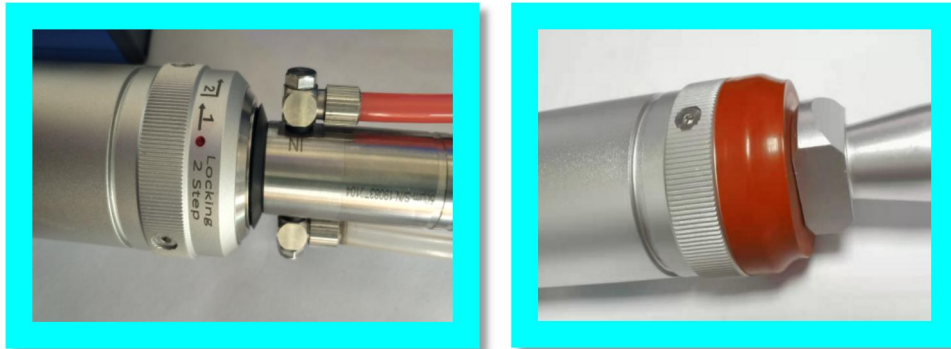
3.2 QBH homing "two points and one line"

3.3 Inserting the optical fiber plug into position



3.4 Double locking clockwise

3.5 Fiber Protection Jacket for full protection



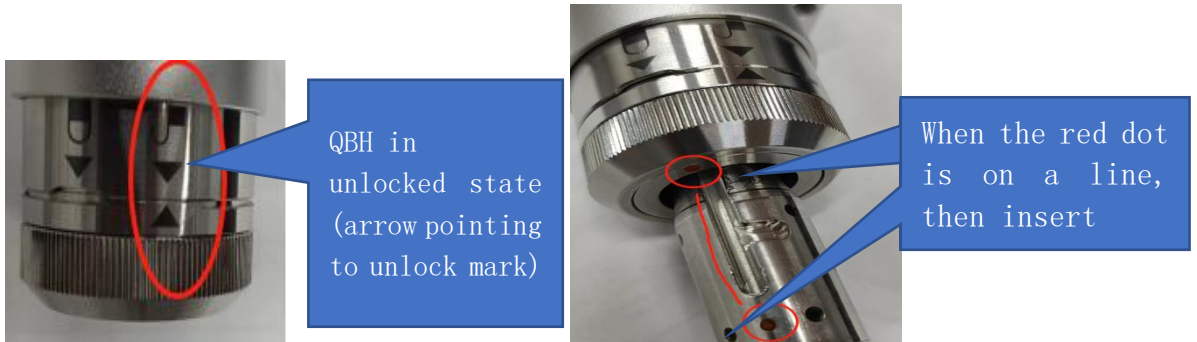
Note: The laser head needs to be placed horizontally when inserting the fiber; ensure that the fiber is inserted horizontally

4.Special note: Steps for plugging and unplugging optical fibres (new QBH connectors)

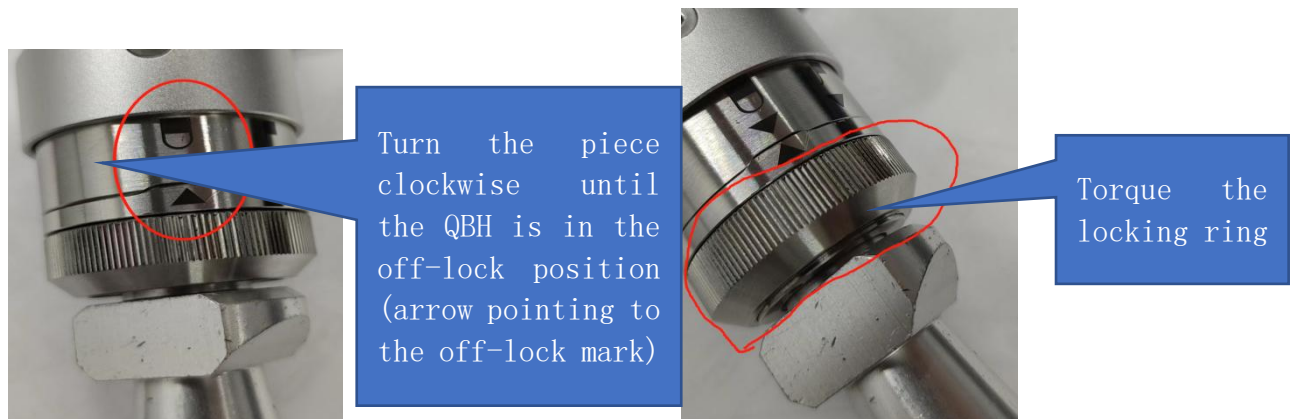
4.1 Inspect QBH connectors and fibre plugs for dirt and wipe them clean promptly with alcohol and cotton swabs (cotton paper).



4.2 The QBH is in the unlocked position (arrow pointing to the unlocked logo) and the red dot of the fibre optic plug is inserted into place against the red dot on the end of the QBH.



4.3 Turn the ring with the lock mark on the QBH connector clockwise until the QBH is in the off-lock position (arrow pointing to the off-lock mark) and finally twist the locking ring to tighten it.



Chapter 2 Product features and general operation

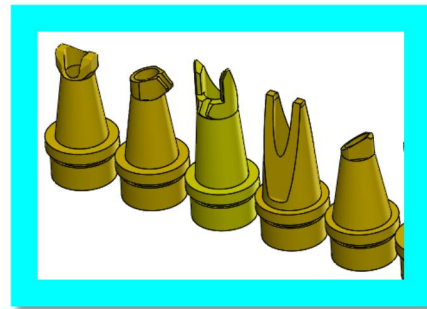
1. Introduction to hand-held vibrating mirror wire feeding

The hand-held vibrating mirror wire feed welding head consists of an oscillating head, a WZ fibre optic continuous welding controller, a wire feeder (with wire), and a wire feed structural component.

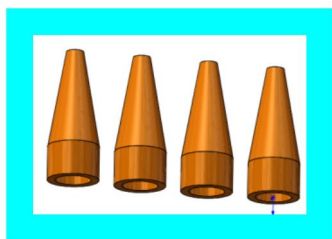
The wire feeder needs to be plugged into a triangular plug to give AC220V electricity to work, press the power switch (POWER ON) at which point the power indicator (POWER) will light up. The WIRE FEED and WIRE RETRACT panels on the wire feeder are operated as required.



Wire feeder brackets



Copper mouth



Wire fixing caps

The wire fixing cap needs to be matched to the size of the wire with a hole that fits right through the wire without wobbling.

To use the wire feed function the wire feed button switch on the touch screen must be switched on.

2. Defocus adjustment

The laser beam brightness is the strongest, the fusion sound is the largest, hear the snap only when, that is, the focus is located exactly on the surface of the workpiece, this is zero defocusing .

With negative defocusing, a greater depth of fusion can be achieved, and the internal power density of the material is even higher than the surface, making it easier to form stronger melting and vaporisation and to transfer light energy deeper into the material. Therefore, in practice, when a greater depth of fusion is required, negative defocusing is used; when welding thin materials, positive defocusing is appropriate.

At the front end of the hand-held light emitting cylinder, the scale tube can be adjusted according to the user's application requirements to record the amount of positive and negative defocusing to facilitate the user's operating habits.

3. Replacing the cleaning protection sheet

Importance: When cleaning and replacing the protective sheet, you will need the following:

1. Powder-free rubber gloves or finger gloves, lint-free cleaning wipes and cotton swabs
2. Isopropyl alcohol (optical grade, anhydrous), acetone (optical grade, anhydrous), ethanol

3. Compressed air (oil-free, water-free)

4. Light source

★Notice:

★ Do not go back and forth, use a lint-free cotton cloth or cotton swab to wipe the protective lens.

★ Do not touch the translucent surface of the protective lens with your fingers.

★ Do not blow directly with your mouth to protect the dirt on the surface of the lens, because it may bring new dirt.

★ Do not touch the tip of the cleaning swab with your fingers.

★ Don't forget to clean when replacing the mirror drawer.

★ When using compressed air, please do not blow the dirt directly from the front, and use the method of blowing from the side to prevent the dirt from sneaking into the surface.

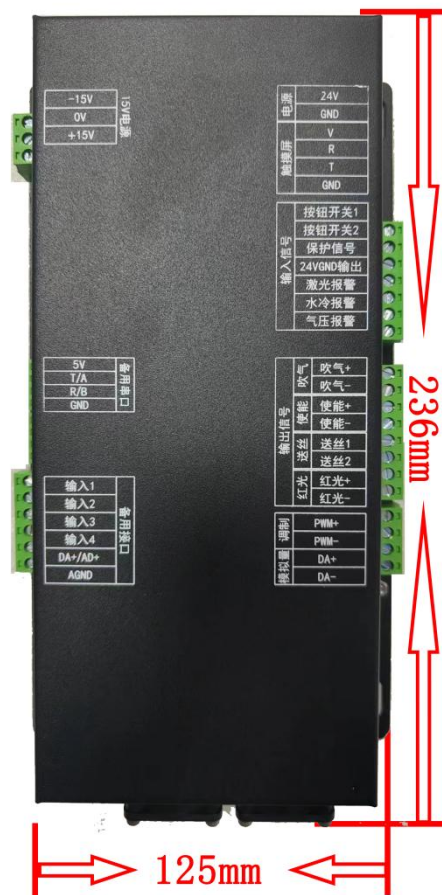
★ Special instructions, powder-free gloves or finger cots must be worn when cleaning the product. It is now clear that if the damage is caused by, improper handling or the use of incorrect cleaning procedures or chemical use, damage due to such causes is not covered by the warranty.

Chapter 3 Control System Manual

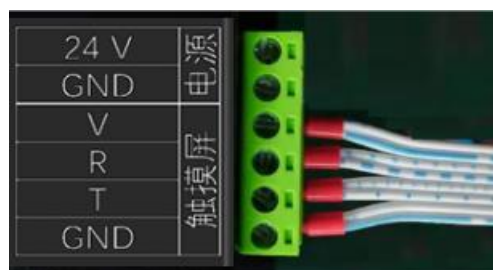
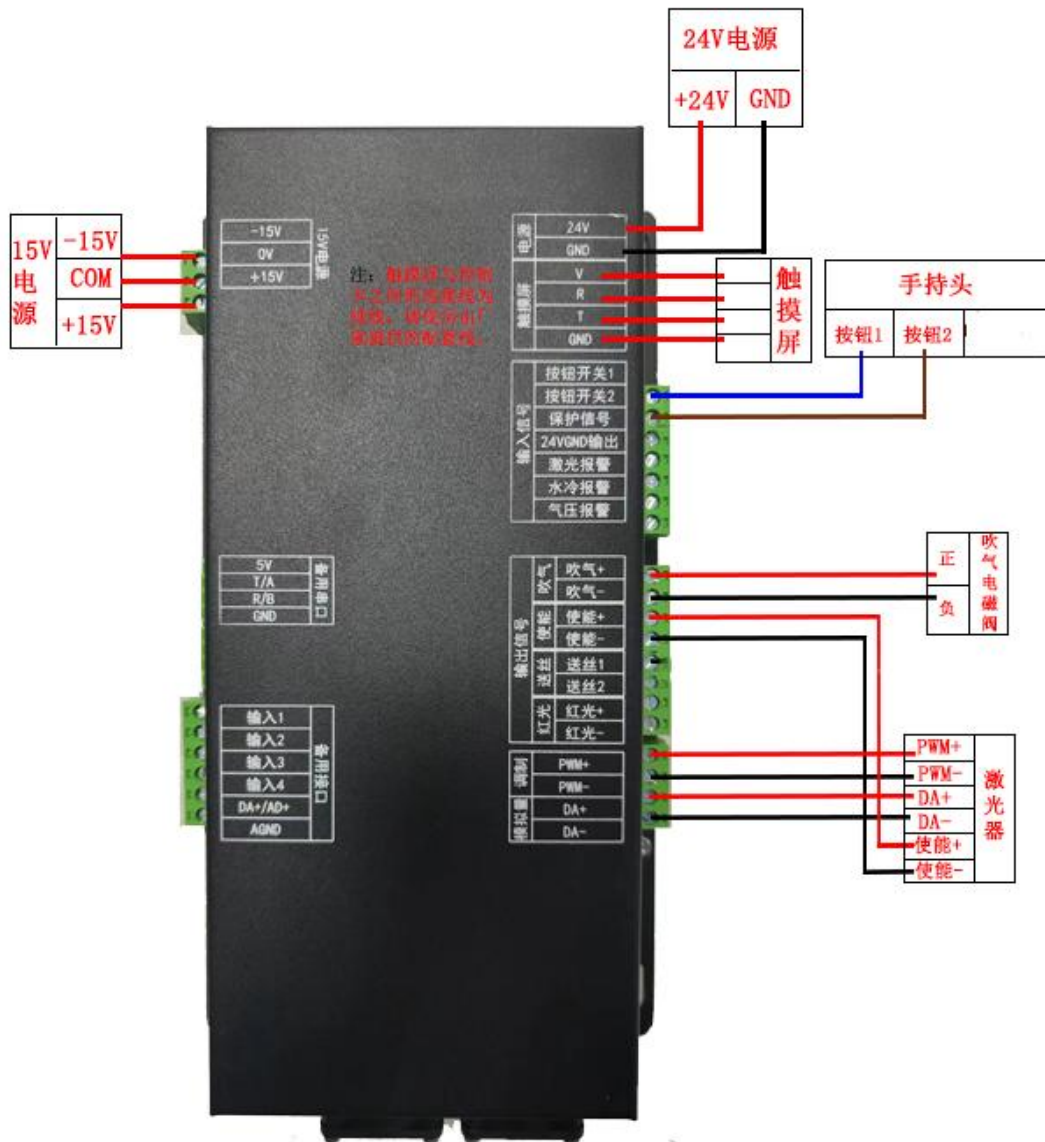
1. Control panel and control box reference dimensions and wiring diagram



屏幕安装开孔尺寸
197.4mm*137.1mm



Shell thickness 39mm



Correct connection of touch screen matching cable

2.Control card terminal definition description (below)

Left:

name	definition	illustrate
15V power supply	-15V	-15V
	COM	COM
	15V	+15V
Alternate serial port	5V	Alternate serial port
	T	
	R	
	GND	
Alternate interface	Enter 1	Spare
	Enter 2	Spare
	Enter 3	Spare
	Enter 4	Spare
	DA+/AD+	Spare
	AGND	Spare

Right:

name	definition	illustrate
power supply	+24V	+24V
	GND	24VGND
touch screen	V	For cable connection, please use the matching cable provided by the manufacturer
	R	
	T	
	GND	
input signal	push button switch 1	Take over the pistol switch button 1
	push button switch 2	Take over the pistol switch button 2
	protection signal	Connect to the isolation module control card protection signal
	24VGND output	Connect to isolation module 24VGND
	Laser Alarm	Connect to laser alarm signal, 24v ground conduction is effective
	water cooling alarm	Water-cooled alarm signal, 24v ground conduction is effective
	Air pressure alarm	Connected to the air pressure alarm signal, 24v ground conduction is effective
blow air	blow air +	air valve positive
	blow air -	air valve negative
Laser enabled	Laser enable+	Connect to laser enable positive
	Laser enable-	Connect to laser enable negative
wire feed switch	wire feed 1	wire transfer machine ss1
	wire feed 2	wire transfer machine ss2
red light	red light +	Connect to red light
	red light -	Red light negative
Modulation analog	PWM+	Connect to laser modulation+
	PWM-	Connected to Laser Modulation-
	DA+	0-10V signal The 0-10V analog signal connected to the laser is positive
	DA-	0-10V signal ground Connect the 0-10V analog signal negative of the laser

Chapter 4 Description of the main operating parameters

interface of the touch screen

1. main operation interface

After the power is turned on, the touch screen will enter the main operation interface (as shown in Figure A).

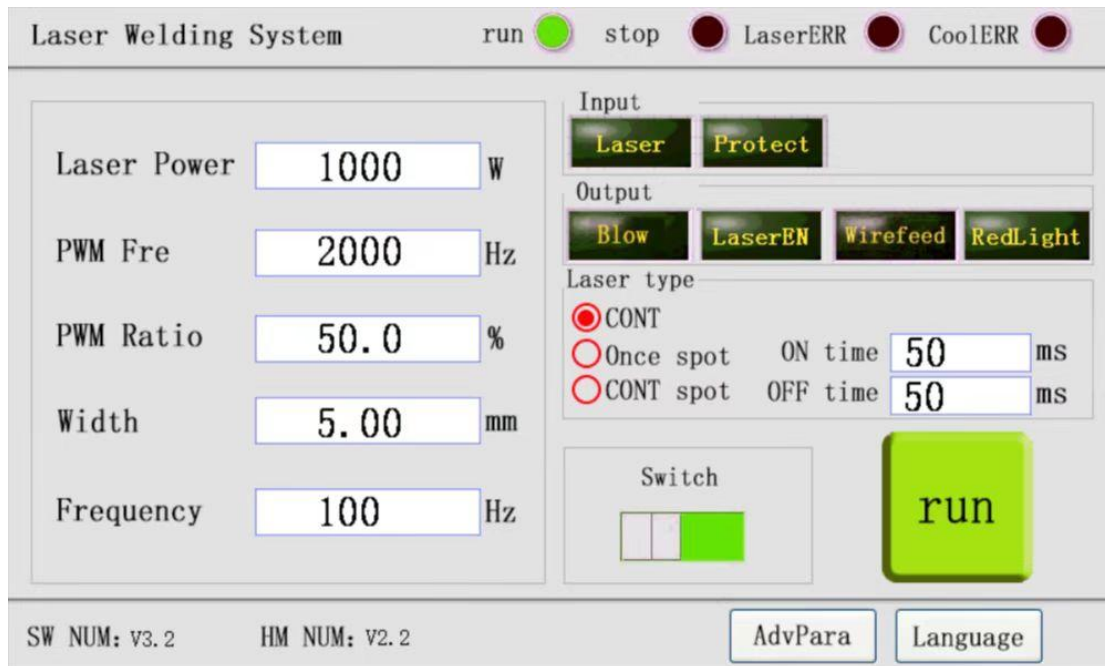


Figure A

● **Sequential display on the interface status bar: communication indication, air pressure alarm, laser alarm, water cooling alarm**

1. Communication indication: if the light is green and flashing, it means that the touch screen and the main control card are connected normally, and if it does not flash, it means that the communication between the control card and the touch screen is abnormal.

2. Air pressure alarm: When the red light is displayed, there is a problem with the laser, and the dark green is disconnected or the function is not connected to the signal.

3. Laser alarm: When the red light is displayed, there is a problem with the laser, and the dark green is disconnected or the function is not connected to the signal.

4. Water cooling alarm: The red light shows that there is a problem with the water cooler, and the dark green is disconnected or the function is not connected to the signal.

5. Run/Stop: Click the button to start/stop the welding program. When the button is green, the program is running, and when the button is red, the program is stopped.

6. Advanced parameter: Click to enter the advanced parameter setting interface as shown in Figure B.

7. Language: Click to switch language.

● parameter bar

1. Laser power: Set the current output power, which should not be greater than the laser power.

2. PWM frequency: set the frequency of PWM modulation signal, 0-200000HZ adjustable.

3. PWM duty cycle: set the duty cycle of the PWM modulation signal period, 0-100% adjustable.

4. Galvo width: set 0-5 (0-5 for welding mode, 0-120 for cleaning mode).

5. Galvo frequency: frequency can be set from 0-200.

6. Galvanometer switch: control the on and off of the galvanometer swing.

● Input status bar

1.Button switch: Display the on/off state of the hand-held switch signal, dark green is the off state, green is the on state, and the default is off

2.Protection signal: display the on/off state of the protection signal, dark green is the off state, green is the on state, and the default is off

● Output status bar (you can click to output the corresponding signal when the welding program is stopped. It is used for testing)

1. Blowing: Start/close the blowing signal function to test the on/off of the

blowing electronic valve

2. Laser enable: enable/disable the laser enable signal, test the laser enable of the laser

3. Wire feed: wire feed signal function tests the wire feed of the laser wire feeder.

4. Red light: turn on/off the red light signal, test the on/off of the red light function.

●light mode

1.Lighting time: This parameter is valid only in single spot welding and continuous spot welding. By setting this parameter, the light-emitting time of the laser can be controlled.

2.Interval time: This parameter only takes effect during continuous spot welding. By setting this parameter to match the light output time, the laser continuous spot welding light output is controlled.

3.Continuous: After triggering, the laser emits light continuously.

4.Single-shot spot welding: After triggering, the laser emits light according to the set light-emitting time.

5.Continuous spot welding: After triggering, the laser continuously spot welding light according to the set light output time and interval time.

●

1.Software version number: Display the current board software version number.

2. Firmware version number: Display the current board firmware version number.

3. Click the "Language" button in the lower right corner of the main interface to enter the English interface.

4. Click the "Advanced Parameters" button in the lower right corner of the main interface to enter the advanced parameter interface.

2. Advanced parameter interface

After clicking the advanced parameters on the main interface, enter the advanced parameter interface (the Chinese interface is as shown in Figure B below)

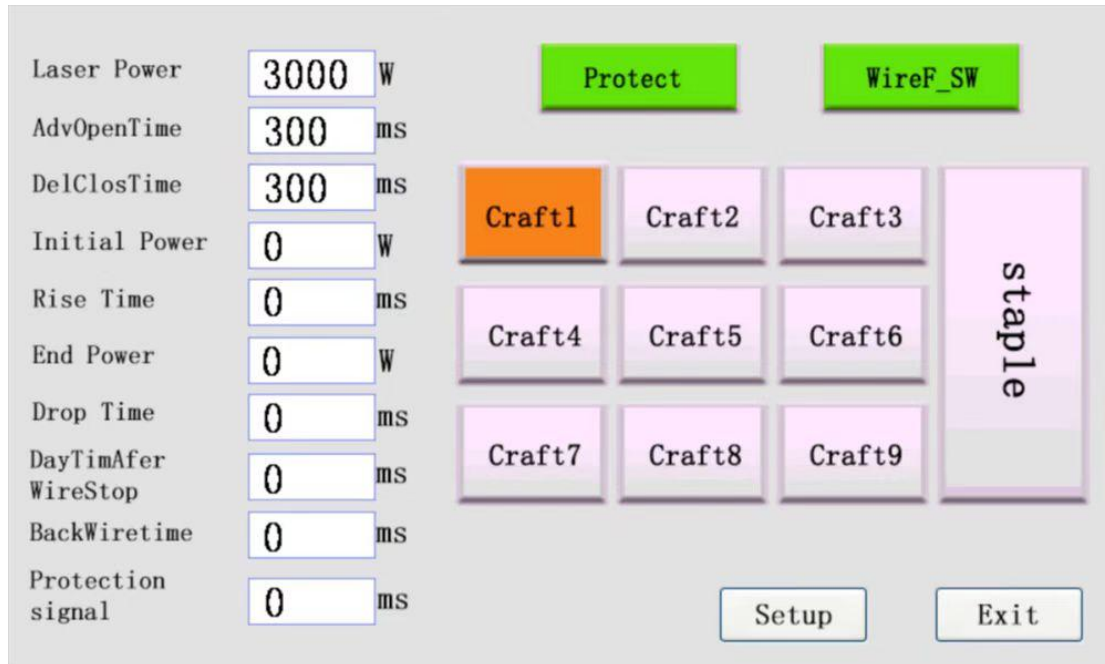


Figure B

● parameter bar

1. **Laser power:** Set the maximum power of the laser, in W.
2. **Air-on delay:** Set the air blowing time in advance before welding starts, in ms.
3. **Air off delay:** Set the time to keep air blowing after welding, the unit is ms.
4. **Optical power:** set the initial power of the laser when it emits light, the unit is W.
5. **Ramp-up time:** Set the ramp-up time at the beginning of the light-emitting stage, in ms.
6. **Off optical power:** Set the end power when the laser is receiving light, the unit is W.
7. **Slow down time:** Set the slow down time at the end of welding, in ms.
8. **Advance wire feeding time:** If you need to advance wire feeding before

laser welding, set the corresponding advance wire feeding time, if not, change it to 0, the unit is ms.

9. Light-off delay: Set the time for the laser to keep emitting light during the process of drawing back the wire at the end of the wire feeding welding, the unit is ms.

10. Protection signal disconnection time: the maximum time that the protection signal is allowed to be disconnected during the program running process to prevent hand shake and light interruption.



1. Protection signal: enable/disable protection signal, red is off state, green is on state, default on

2. Wire feed switch: enable/disable the wire feed switch signal, red is the off state, green is the open state, and the default is on.

●craft library

Calls of different parameters can be set separately by selecting different technology libraries



1. Click the "Galvanometer Setting" button in the lower right corner of the advanced parameter interface to enter the galvanometer setting interface.

2. Click the "Exit" button in the lower right corner of the advanced parameter interface to return to the main interface.

3.Galvo setting interface

Click the "Galvanometer Setting" button at the bottom left of the advanced

parameter interface to enter the galvanometer setting interface as shown in Figure C below.

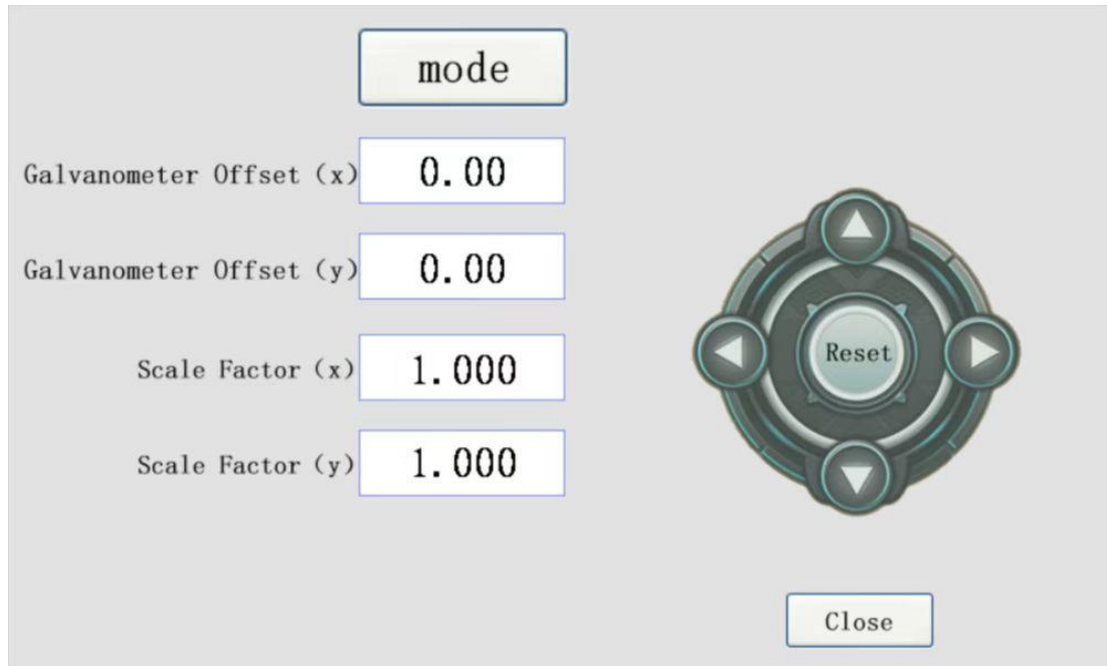


Figure C

● Galvo Settings

1. **Galvanometer offset:** The galvanometer offset button can control the offset of the light-emitting origin of the galvanometer. The galvanometer offset (x/y) respectively controls the offset of the horizontal axis and the vertical axis of the origin. The range is -5- 5 mm
2. **Back to the center:** the adjusted offset can be reset to zero
3. **Scale factor:** Adjust the magnification of the adjustment, the range is 0-5
4. **Close:** go back to the upper interface
5. **Mode:** Click to enter the mode selection interface, as shown in Figure D

4.Mode selection interface

Click the mode button on the upper left of the galvanometer settings to enter the mode selection interface, as shown in Figure D



Figure D

● Mode selection

The current mode is welding mode, click to enter the welding main interface as shown in Figure A. Click the cleaning button, then jump to Figure E

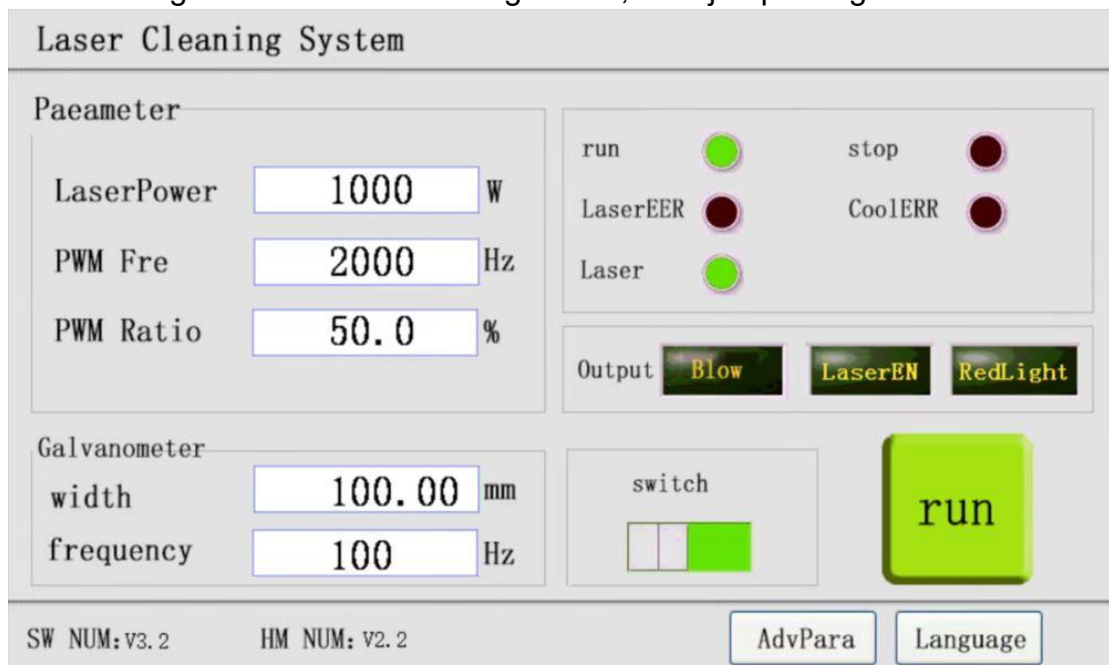


Figure E

5.Password change interface

Click the hidden button in the red box at the upper left of the advanced

parameter interface as shown in Figure F to enter the password modification interface as shown in Figure G.

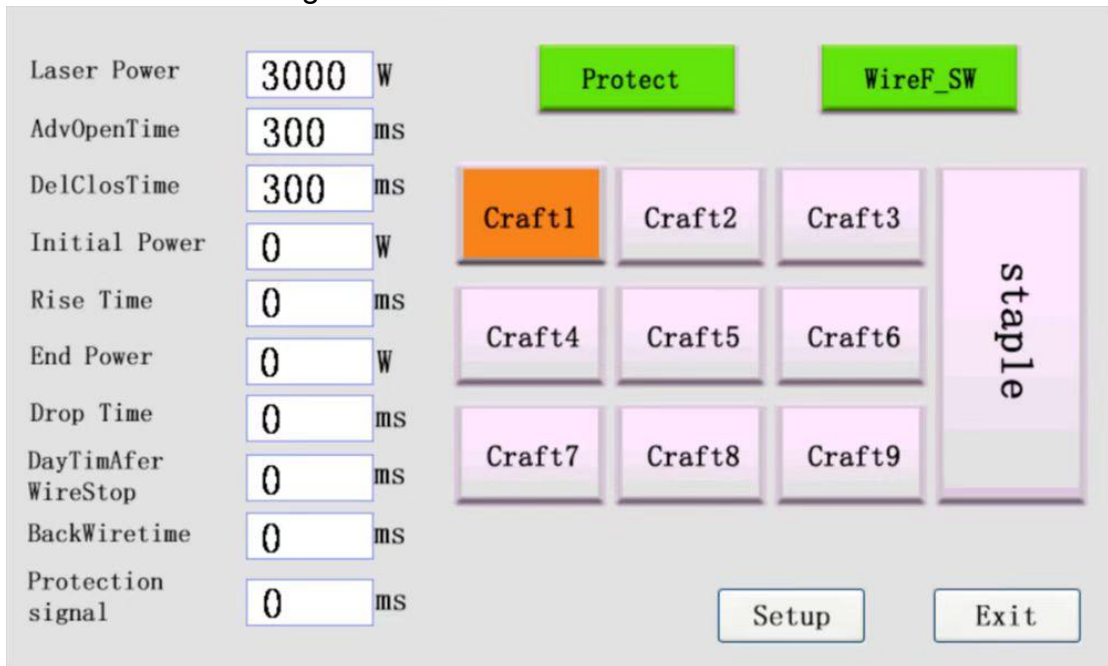


Figure F

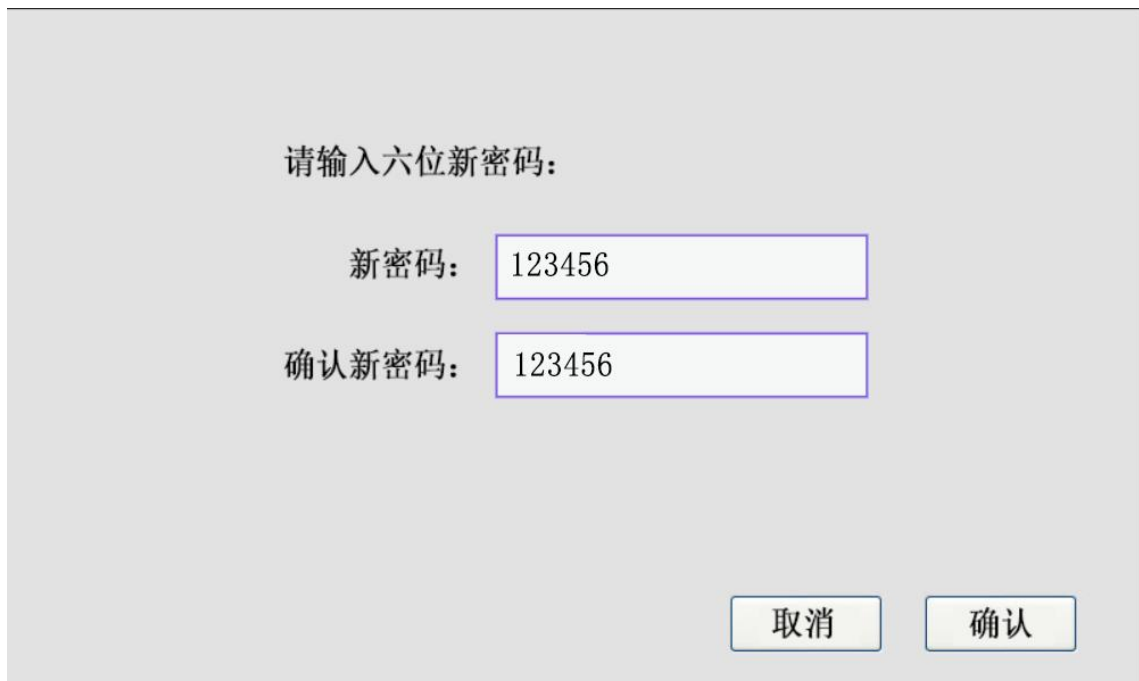


Figure G

● Change Password

To change the password, first enter the new password, then enter the new password to confirm, click OK to change the password, click Cancel to return to the upper interface.

Revision history

Date	Modify the content	Software version
20211101	First Edition (First Release)	V1.0
20220423	Version 2 (cosmetic adjustment of the welding head, upgrade of the oscillator controller system to version V3.0)	V1.1
Wuhan Xinghong Photoelectric Technology Co., Ltd. TEL: 18971055224(After Sales Manager of South China Office) 15888537533(After Sales Manager of East China Office) 18086021608(After Sales Manager of North China Office)		