

Be sure to read the manual before using the system

- This manual is the user manual of the handheld laser welding system
- Read the manual carefully first to ensure the correct electrical connection

# DWT22

Qilin single axis swing handheld laser welding system user manual



Guangdong Qilin Laser Technology Co., Ltd

Address: Room 901, Building E1, SongshanLake Intelligent Valley, Yanhe North Road No.9, Liaobu Town, Dongguan City, Guangdong China

Tel.: 0755-27999931

mail:

address: [www.qilinlaser.co](http://www.qilinlaser.co)

## Copyright Statement

Guangdong Qilin Laser Technology Co., Ltd.(hereinafter referred to as Qilin Laser) reserves all powers.

— Qilin Laser has the patent copyright and intellectual property rights of this product. Without the authorization and permission of Qilin Laser, it shall not directly or indirectly copy, manufacture, process and use the product and its related parts, otherwise Qilin Laser will be investigated for relevant legal liabilities according to law.

— Qilin Laser retains the right to modify the documents included in this manual without prior notice, while retaining the right to modify any documents attached to this product.

— Users should read this manual carefully when using the products described in this article. Qilin Laser shall not bear the direct, indirect, special, incidental or corresponding losses or liabilities caused by the improper use of this manual or this product. Qilin Laser does not bear the following direct or indirect liabilities or losses:

- User shall improperly use this manual or this product
- The loss caused by the user does not follow the relevant safety operation procedures

— The loss caused by natural force makes the machine in the movement dangerous, the user has the responsibility to design an effective error handling and safety protection mechanism in the machine, and Qilin laser has no obligation or responsibility to be responsible for the incidental or corresponding losses caused thereby.

## Certification statement

### The CE Certification Statement

This product has passed the European Union CE (Communate Europene) safety, certification, has passed the corresponding conformity assessment procedures and the manufacturer's declaration of conformity, in accordance with the relevant EU directives.

### ROHS, the certification statement

This product has been approved by the European Union legislation on restricting the use of certain Hazardous ingredients in electronic and Electrical Equipment (Restriction of Hazardous Substances) safety certification, in accordance with the relevant environmental regulations of the European Union.

### FCC Certification statement

This product has passed the Federal Communications Commission (Federal Communications Commission) security certification and complies with the relevant safety regulations of American electronic products

## security information

When using the system, please ensure that the operation is correct and the use safely. Some signs or words will be used to remind you of dangerous matters and some important information.



### **danger:**

Represents a serious danger. In the process of use, if the operation is improper or the use method is wrong, it may lead to serious injury or even death, please users and related personnel do not operate easily, until to ensure that the correct operation method and the correct way of use.



### **warn:**

Indicates that a danger exists. In the process of use, if the operation is improper or the use method is wrong, which may cause injury to the personnel, please do not operate easily, until you ensure that the operation method is correct and the use method is correct.



### **prudent:**

Represents a product potential risk. During use, if the use method is wrong or improper operation, the product or some parts may be damaged. Please users and related personnel do not operate easily until the operation method is correct and the use method is correct before use.



### **important:**

Represents an important information to note during the product. Please do not ignore this information, which provides effective operational help.



This label indicates laser radiation, which will generally be affixed to the output laser products. Please, be careful of laser and safety when using such equipment.

## Receiving goods, unpacking and inspection

The product uses shock-proof soft packaging. If the package has any external damage marks, please check the damage to the equipment and notify the carrier and the carrier of the damage in written documents.



**important:**

**After receiving the product, please check whether the outer package is in good condition, and check whether the products are complete and all parts are intact after unpacking. If any damage is found, please contact the Qilin Laser immediately.**

Remove all the goods from the packaging and keep the packaging materials and wiring spare parts. When dismantling the package and removing the goods,

Please be careful of the goods for safety. After removing the goods, please check if the parts are complete and intact. If any missing parts or parts are damaged, please contact Qilin Laser immediately. If any obvious damage to the equipment, do not install or debug the equipment.

DWT 22 The delivery list of the user manual is shown in the following table: (As the product will be updated and upgraded, the delivery list may also be adjusted.)

	<b>fittings of a machine</b>	<b>quantity</b>	<b>explain</b>
1	DWT 22 Hand-held welding torch	1	
2	V23 control box	1	
3	7-inch LCD screen (HMI)	1	
4	Copper mouth accessories box	1	
5	24V power cord	1	
6	The 10 m TYPE C line	1	
7	7-inch display cable (DB9 head)	1	
8	Safety clip (with clip)	1	
9	T 20 wire feeding machine	1	standard configuration

# catalogue

Chapter 1 Overview	7
1.1 D WT 22 Qilin single axis swing handheld laser welding system user manual	8
1.2 Product installation size drawing	8
1.2.1 Touch-screen installation dimensions	8
1.2.2 Control box mounting dimensions	9
Chapter 2. System Wiring	10
2.1 Control box wiring	11
2.2 Structural diagram of the gun and the pipe interface	12
2.3 Power joggle	14
2.4 human-computer interface HMI	15
2.5 Welding head interface	15
2.6 Security clipping interface	16
2.7 Control interface of the wire feeder	16
2.8 Description of keys of T20 wire feeder	,
2.9 Laser device control interface	18
2.10 Definition of laser wiring of different manufacturers	19
2.11 Gas control, air pressure detection interface	20
2.12 Laser chiller, alarm signal interface	21
2.13 Alarm lamp interface	21
2.14 Dial switch	22
Chapter 3 HMI Introduction	23
3.1 Introduction to HMI function and operation	24
3.2 Alarm indicator on red alarm	28
Chapter 4: Notes	31

# Chapter 1 summary

**The main contents of this section are as follows:**

- Introduction of handheld laser welding system
- Product installation dimension diagram

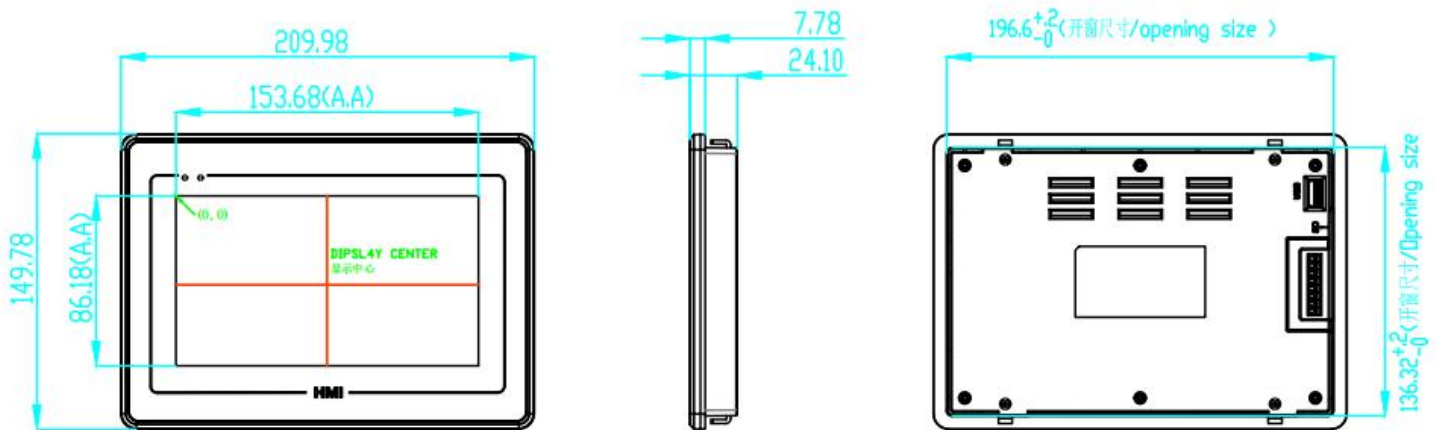
## 1.1 Qilin single axis swing handheld laser welding system introduction

Qilin single axis handheld laser welding system is a control system developed for fiber laser welding. Single vibration motor design, the overall weight is light, fast cooling optical cavity, ergonomic design, high-end chip, a variety of safety protection measures and other functions and features.

## 1.2 Product installation size drawing

### 1.2.1 Touch-screen installation dimensions

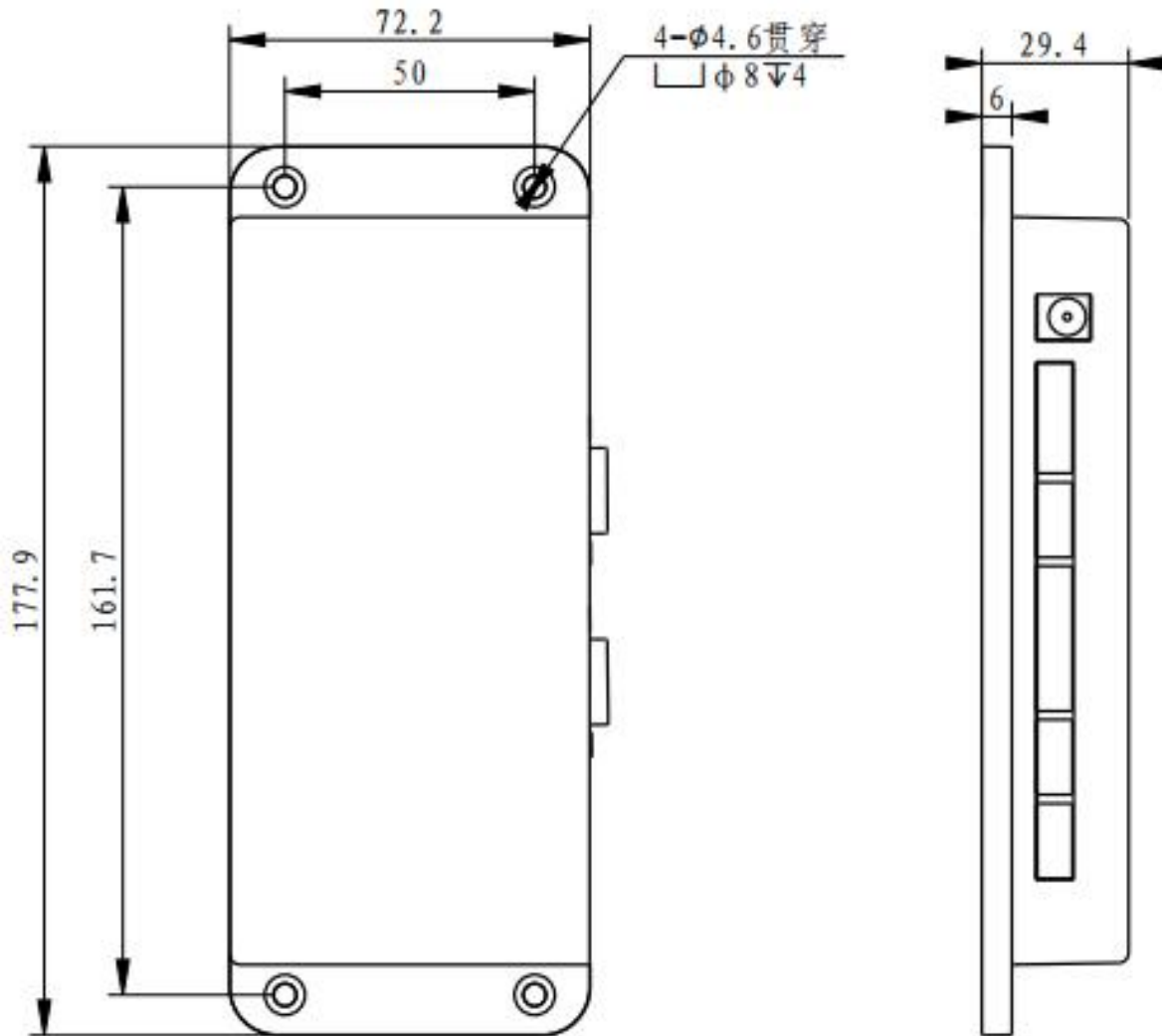
The installation dimensions of the touch screen are shown below:





### 1. 2. 2 Control box mounting dimensions

The installation size of the control box is shown in the following figure



## Chapter 2 System wiring

**The main contents of this section are as follows:**

- Control box wiring
- Structural diagram of the gun and the pipe interface
- Power interface
- Human machine interface HMI
- Welding head interface
- Safety clamp interface
- Control interface of the wire feeder
- Description of keys of T20 wire feeder
- Laser device control interface
- Definition of laser wiring of different manufacturers
- Gas control, air pressure detection interface
- Laser chiller alarm signal interface
- Alarm lamp interface

## 2.1 Control box wiring

The following figure shows the wiring diagram of the whole system. The system wiring can refer to the schematic diagram and refer to the relevant chapter for detailed interface definition.

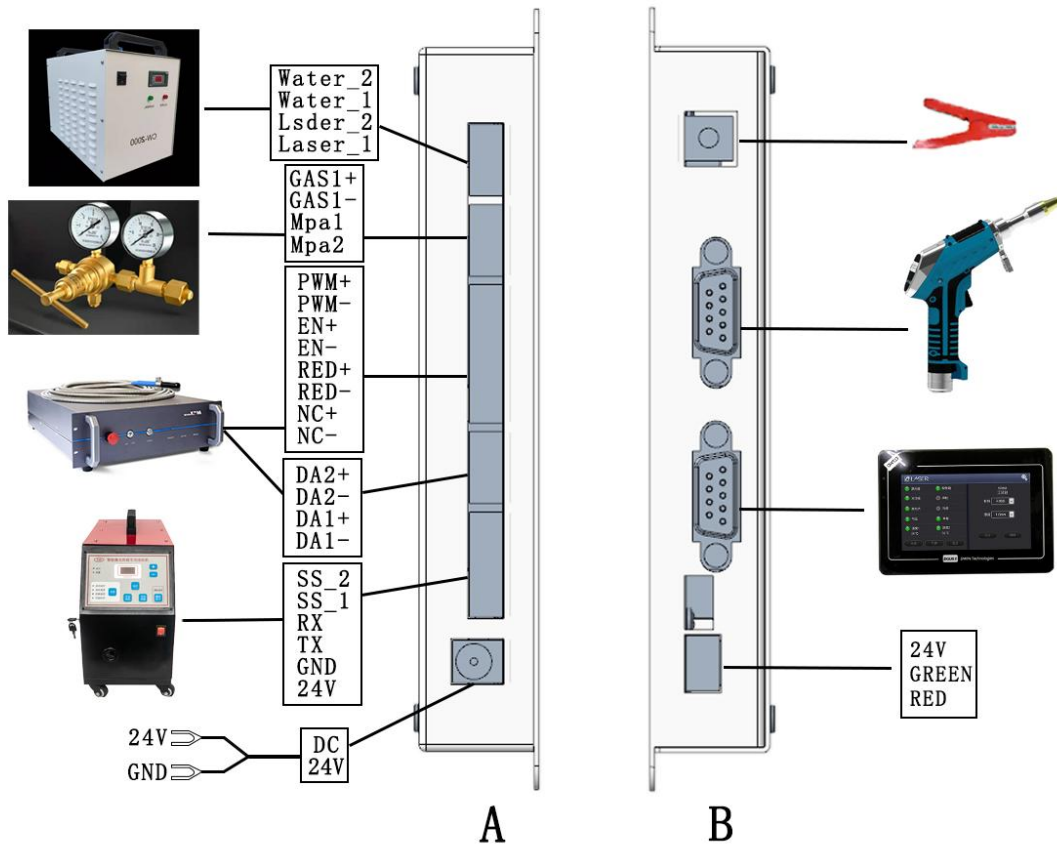


Figure 2.1 Schematic diagram of the system wiring



**important:**

**Do not connect any instructions in the control box to other lines.**

## 2.2 Structural diagram of the gun and the pipe interface

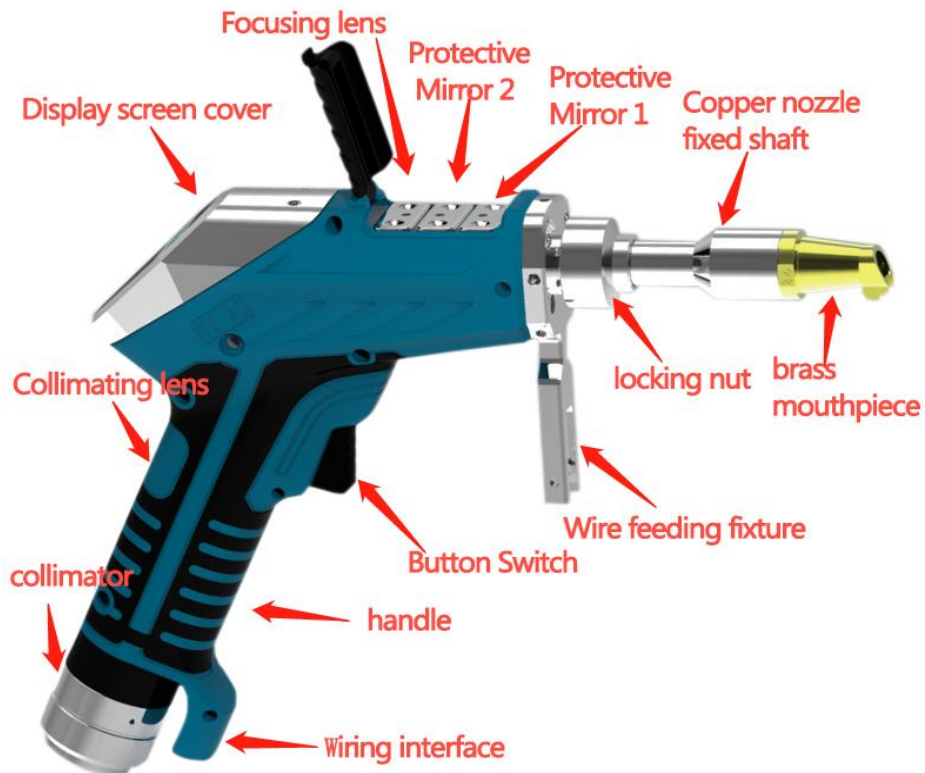


Figure 2.2.1 Structural diagram of DWT 22 gun

parameter	scope
interface type	QBH connect
Maximum carrying power	3000W
Collar focal length	50
Focus focal length	150
Regulate the spot	Point, line
Adjustable surface	0—5mm
Applicable wavelength	1064-1080nm
Collimine lens	D 16F50
Focus on the lens	D20F150
Protection mirror specifications	D20T2
Maximum air pressure support	0.6Mpa
Focus of vertical adjustment range	±3mm
TBM	0.8KG

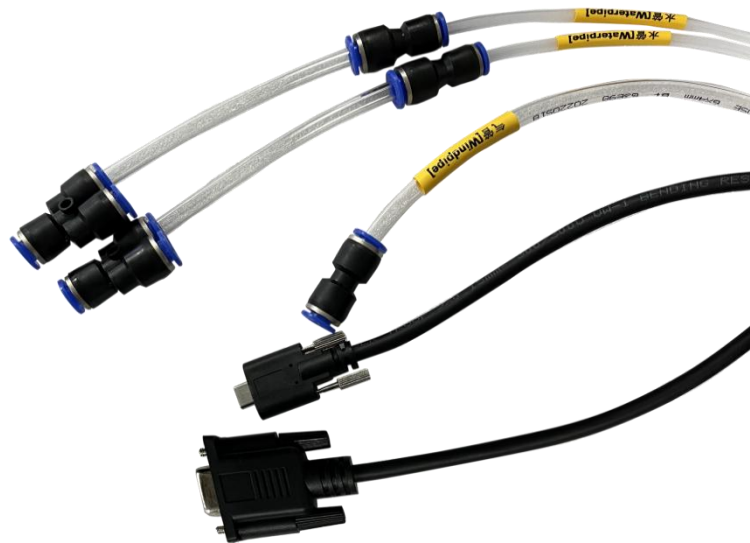


Figure 2.2.2 Schematic diagram of trachea and water pipe interface

Water pipe: a water pipe in and out, forming a closed water cycle.

Tracheal: single connector, gas output.

DB 9 interface: connect the connector for the control system.

TYPE C Interface: Connect the TYPE C connector for the gun head communication.

## 2.3 Power joggle

The DC24V interface is the interface for providing the power supply for the internal control system of the control box, and the voltage is DC 24V (DC24V)

Table 2.3 defines the wiring of the POWER power cord



Figure 2.3 shows the schematic diagram of the POWER power supply line



Table 2.3 shows the definition of the 24V interface power line.

**Table 2.3**

pin	signal	definition	explain
1	24V	power input	+ 24V external power supply input, power supply output power requirements: above 100W, that is, the output current is greater than 4A (wire supply for mechanical and electrical requirements)
2	COM	Power reference	Power to

## 2.4 human-computer interface HMI



Control box 7 " HMI, the interface is a DB9 black plug, the motherboard through this port to HMI Power supply and communication



Figure 2.4 HMI, schematic diagram

Table 2.4 defines the HMI interface.

**Table 2.4**

pin	signal	definition	explain
1	24V	Power supply output, 500 mA	HMI supply electricity
2	GND	Power supply output ground	Power reference
3	T XD	The sender of the HMI	Serial port communication with the TXD signal
4	RXD	The receiving end of the HMI	Serial port communication with the RXD signal

## 2.5 Welding head interface



The control box MOTOR interface is the vibration interface provided by the main board and the communication port with the handheld welding head.

Table 2.5 shows the definition of the vibration scope interface.

**Table 2.5**

order number	signal	definition	explain
1	DB 9	Hand-held solder interface	Power supply and communication interface with the handheld welding head

## 2.6 Safety wire clamp interface



The control box interface is a special safety wire clamp interface, and the light conditions can be achieved Operation provides the security guarantee.

Table 2.6 shows the definition of the safety clip interface.

**Table 2.6**

order number	signal	definition	explain
1	GND	Security line clip interface	The light condition can be achieved when the copper nozzle on the welding gun

## 2.7 Control interface of the wire feeder

The power supply and communication interface between the control box and the wire transmission machine, and the 24V power supply is directly connected to the power input end of the control box, which is equivalent to the direct supply of external power supply

Table 2.7 shows the definition of the control interface for the wire feeder.

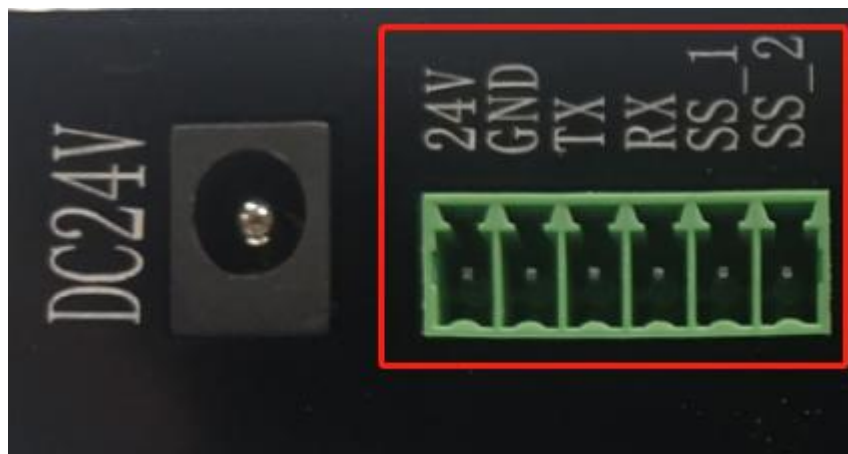


Figure 2.7 Schematic diagram of the control interface of the wire feeder

**Table 2.7**

pin	signal	definition	explain
1	24V	Power supply output end of wire feeder	Wfeeder 24V + power interface
2	GND	GND	GND
3	TX	Silk feeder and board card communication port	The wire transmitter communicates with the control system on TX signals
4	RX	Silk feeder and board card communication port	The wire feeder communicates the RX signals with the control system
5	SS_1	Wfeeder trigger signal 1	When short circuit SS_1 and SS_2
6	SS_2	Wfeeder trigger signal 2	When short circuit SS_1 and SS_2



## 2.8 Description of T 20 wire machine

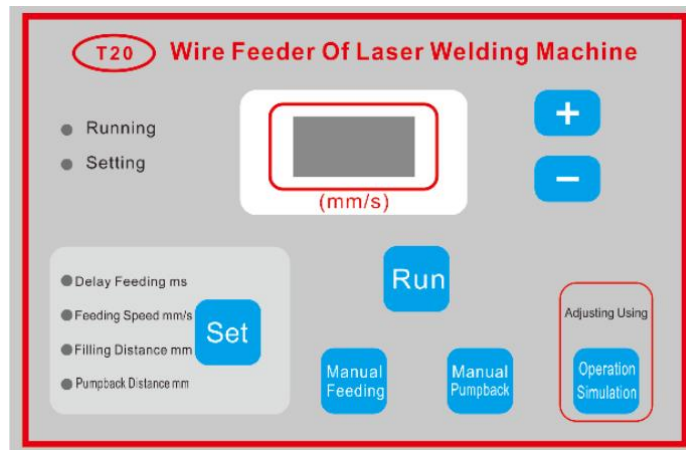


Figure 2.8, Schematic diagram of the wire feeder panel

### Function Settings:

Silk delay: after setting, light delay and then wire.

Wire speed: running speed of the wire wheel.

Filling distance: silk compensation distance after pulldrawing stops.

Return distance: after the wire stops, the wire pulls back.



: Send wire setting selection +



: Send wire setting selection-



: Set wire delay, wire speed, wire filling distance and withdrawal distance.



: Save the parameters after setting the parameters.



: Click manual wire, wire wheel run wire.



: Click manual drawing to send the welding wire.



: After the wire feeder speed is set, manually trigger the wire feeder to simulate the welding operation.

## 2.9, Laser control interface

The laser interface is an 8 PIN, green terminal + 4 PIN green terminal

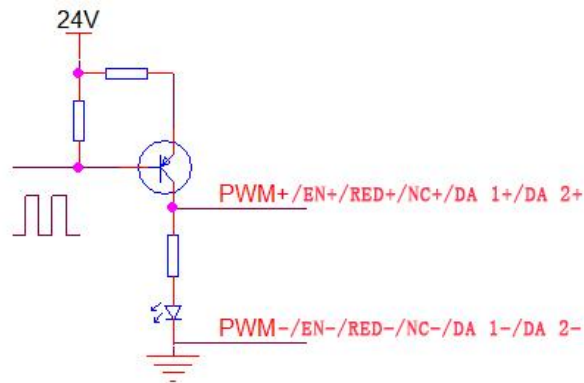


Figure 2.9 Schematic diagram of the laser control interface

Table 2.9 is for the definition of the laser interface.

**Table 2.9**

pin	signal	definition	explain
1	PWM+	Laser-modulation signal +	Duty cycle 1% -100% adjustable, 24V and 5V switchable
2	PWM-	Laser Modulated signal-	Reference to the power source
3	EN+	Laser enabling signal +	Control laser light signal, high level effective, 24V and 5V can be switched
4	EN-	Laser-enabling signal-	Reference to the power source
5	RED+	Laser red light signal	Laser red light control (optional)
6	RED-	GND	Reference to the power source
7	NC+	The laser enables the backup port	Laser 24V backup port
8	NC-	Laser backup port ground	Reference to the power source
9	DA 1+	Analog voltage output +	For laser peak power adjustment, 0-10V and 0-4V analog voltage can be selected, can refer to the 2.13 dial code switch
10	DA 1-	GND	Reference to the power source
11	DA 2+	Analog voltage output	For proportional valve adjustment, 0-10V analog voltage,
12	DA 2-	GND	Reference to the power source

## 2.10, definition of laser wiring of different manufacturers

control	Laser models from different manufacturers												
Qilin system	Re ci FSC1000/1500/2000/3000	Kai pu lin 500T/1000T/ 1500T		Fe bo YDFL-1000-CW	Chuang xin MFSC -1000X/1500X		Rui ke RFL-C-series		Rui ke RFL-C-X/H		Jie pu te kou CTRL- INTERFACE		
PWM+	12.MOD SW IN+	21.PWM+		15.GATE	17.Modulation In +		15.MOD+		15.MOD+		3.modulate+		
PWM-	13.MOD SW IN-	8.PWM-		16.GND IO	4.Modulation In -		16.MOD-		16.MOD-		16.modulate-		
EN+	5.LASER EN+	19.enable+		18.EX-EN	18.enable input +		18.Laser EN		18.Laser EN		4.enable+		
EN-	6.LASER EN-	6.enable-		20.GND IO	5.enable input -		20.EGND		20.EGND		5.enable-/Alarm		
DA1+	14.ANG 0~10V+	15.AD+		12.IFWD SET	15.DA (0-10V) input+		12.Analog		12.0-10V		18.0-10V+		
DA1-	15.ANG GND-	14.AD-		14.CASE	2.DA (0-10V) input-		14.AGND		14.AGND		6.0-10V-/Analog input ground		
RED+				17.RED-EN		17.Red Laser							
RED-								23.EVCC		24V			
备注		10.interlocking 1+	short circuit	1.INTLK1A	short circuit	19.interlocking +	short circuit	2.Reserve Interlock	short circuit	2.ITL-A	short circuit	8.interlocking 1+	short circuit
		23.interlocking 1-		4.INTLK1B		6.interlocking-		3.Reserve Interlock		3.ITL-B		21.interlocking 1-	
		12.interlocking 2+	short circuit	2.INTLK2A	short circuit			8.Reserved remote	short circuit	8.RPA	short circuit	9.interlocking 2+	short circuit
		25.interlocking 2-		3.INTLK2B			9.Reserved remote	9.RPB		22.interlocking 2-			
							10.Reserved emergency stop	short circuit					
							11.Reserved emergency stop						
						Turn the key to ON, wait for the self test to complete and press START after starting the machine							Turn the key on the front panel of the laser to the robot and press start

Figure 2.10, Defindigram of laser wiring of different manufacturers

## 2.11 Gas control and air pressure detection interface

### Gas Control Interface GAS 1 +, GAS 1-:

The control box provides a dedicated IO interface, all output IO are using OC output can directly drive the relay, the maximum current Up to 500 mA, the wiring diagram is shown below.



Figure 2.11.1, a schematic diagram of the gas control interface

### Gas Detection Interface Mpa 1, Mpa 2:

The feedback signal of the pressure detection valve is connected to Mpa 1 and Mpa 2. When the pressure is lower than the set value, the short circuit signal is output

Mpa 1 and Mpa 2 are short-connected to realize the air pressure alarm function. The wiring diagram is shown below.

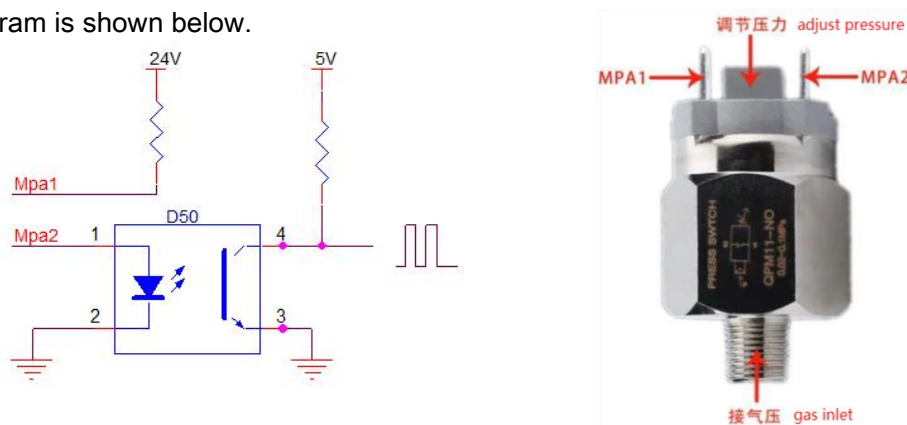


Figure 2.11.2, Schematic diagram of the air pressure detection interface

Table 2.11 defines the gas control interface and the air pressure detection interface

**Table 2.11**

pin	signal	definition	explain
1	CAS 1+	Used to protect the gas blowing control positive electrode	Air valve + board card GAS 1 +
2	CAS 1-	Used to protect the gas to blow the gas to control the negative electrode	Valve-board card GAS 1-
3	Mpa1	Used to detect the air pressure alarm	Air pressure alarm + connecting plate Mpa 1
4	Mpa2	Used to detect the air pressure alarm	Air pressure alarm + connecting plate Mpa 2

## 2.12 The alarm signal interface of the laser chiller

Laser1 And 2 are the laser alarm signal interface, not on the green light, on the red light.

Water1 And 2 are the alarm signal interface of chiller, red light.

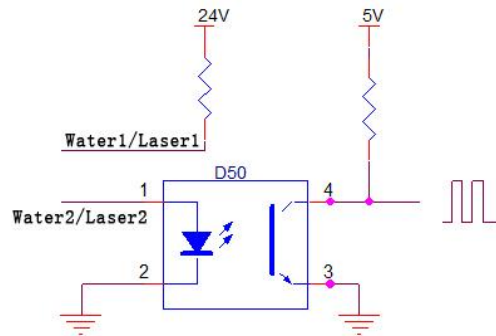


Fig. 2.12, Schematic diagram of the alarm signal interface

Table 2.12 is the definition of the alarm signal.

Table 2.12

pin	signal	definition	explain
1	Laser_1	Laser device alarm signal	Short contact during the laser alarm
2	Laser_2	GND	Laser alarm signal ground
3	Water_1	Chiller machine alarm signal	When the chiller alarms, open and break
4	Water_2	GND	Cold water machine alarm

## 2.13 Alarm lamp interface

24V is connected to the positive electrode of the common anode alarm, RED is connected to the red indicator of the common anode alarm, and GREEN is connected to the green indicator. When the abnormal alarm occurs, the RED signal output is low level signal. When the abnormal alarm is removed, the RED signal output is high level signal.

This alarm interface is also usually used as a status feedback interface to facilitate real-time monitoring of the status of the optical device.

Table 2.13 is the definition of the alarm signal light.

Table 2.13

pin	signal	definition	explain
1	24V	Power supply output end of the alarm signal lamp	Connect to the power supply terminal of the alarm signal lamp
2	GREEN	Alarm signal light-green light	Connect the alarm signal light
3	RED	Alarm signal light-red light	Connect the alarm signal light red

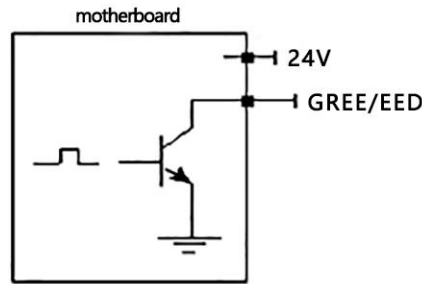


Fig. 2.13, Schematic diagram of the alarm signal interface

## 2.14, the dial-code switch



Figure 2.15, schematic diagram of dial switch

order number	characteristic	definition	explain
1	IPG	Laser control signal	PWM, EN, RED, NC output 5V Power adjustment (DA1): 0-4V analog voltage adjustable section
2	NO IPG	Laser control signal	PWM, EN, RED, NC output of 24V Power adjustment (DA1): analog voltage adjustable section 0-10V

## Chapter 3

# Human-machine interface HMI introduction

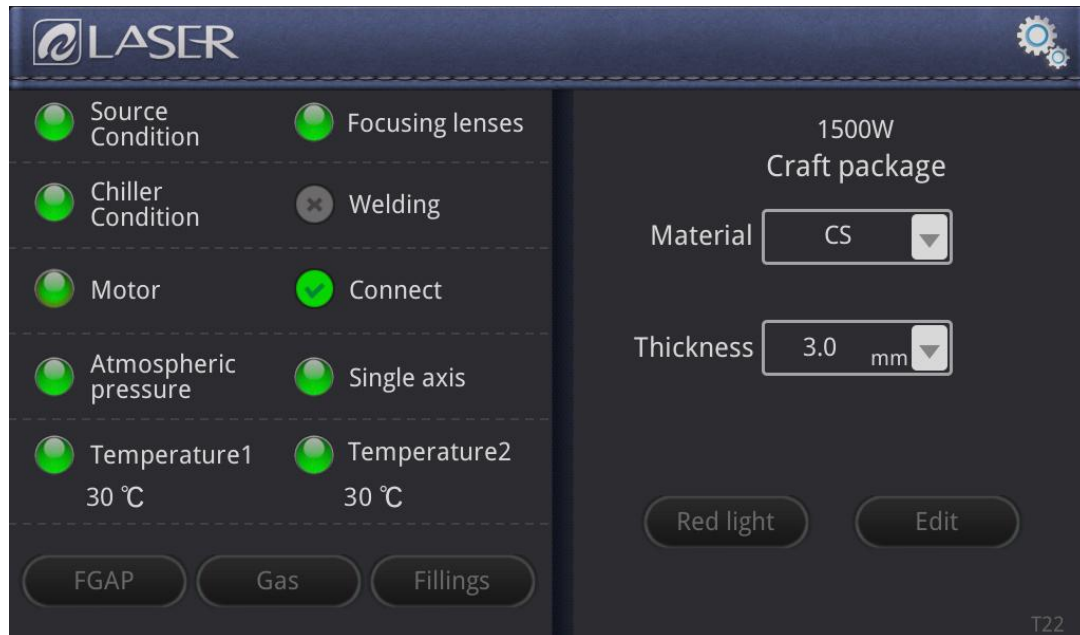
The main contents of this section are as follows:

- Human-machine interface  
function and operation  
introduction
- When the alarm indicator is red  
alarm  
Problem screening
- Protective mirror drawer and  
focus mirror drawer  
Screw installation

### 3.1 Introduction of HMI function and operation of human-machine interface

#### Introduction of the main interface function and operation

The operating panel of Qilin single-axis laser welding system adopts 7-inch configuration capacitive touch screen, which is dignified and generous. Add multiple alarm detection function, you can set the laser, laser swing head related parameters, but also can control the continuous pulse light out mode, the operation is simple and convenient, without editing the complex process, choose the corresponding material and thickness can be directly welded.



3.1.1 Schematic diagram of the main interface 1

**Laser:** laser alarm signal light, red light when the laser alarm.

**Water cooling box:** alarm signal light of the water cooling box, and red light when the water cooling box alarms.

**Laser head:** handheld welding torch alarm signal light, when the handheld welding torch motor E signal alarm red light.

**Air pressure:** air pressure monitoring alarm signal lamp, when there is no gas or gas pressure is insufficient, the alarm red light.

**Focus mirror:** focus mirror drawer alarm signal light, when the focus mirror drawer is pulled out or the focus mirror drawer is installed back, the alarm is red.

**Welding torch:** handheld welding torch button signal light, display welding torch green light when the button is pressed.

**Pilot:** the ground clamp guides the signal light, and the green light is turned on when the clamp clamp is formed on the outer plate and the torch nozzle.

**Single axis:** the system automatically identifies the single axis handheld welding.

**Temperature 1:** motor lens alarm signal lamp, when the motor lens temperature is greater than the temperature alarm threshold on the hardware setting, the temperature 1 alarm is red light.



**Temperature 2:** protection lens alarm signal light. When the protection lens temperature is greater than the temperature alarm threshold on the hardware setting, the temperature 1 alarm turns red.

**Light lock:** the light switch is open to the normal light.

**Gas:** When the gas opens, the air valve port will output 24V voltage. There is no need to open the gas during welding, and it will automatically blow before the light out.

**Wire delivery:** When the wire is opened, it can be sent normally during welding. When the wire is opened, it can be sent normally during welding.

**(Note: When the wire is opened and the guide is not bright, long press the torch button to extend the wire for 500ms, and press the welding twice in 0.5S The n key is not released, delay 500ms wire)**

**Process package:** The process package has four common materials, and the thickness and parameters corresponding to "custom" and "other" are described as follows:

**Stainless steel (SUS):** "SUS/1.0mm" means: stainless steel 1.0mm, and so on: "SUS/3.5mm" means: stainless steel 3.5mm

**Carbon steel (CS):** "CS/1.0mm" means: carbon steel 1.0mm, and so on: "CS/3.5mm" means: carbon steel 3.5mm

**Galvanized sheet (SECC):** "SECC/1.0mm": galvanized sheet 1.0mm, and so on: "SECC/3.5mm": galvanized sheet 3.5mm

**Aluminum plate (AL):** "AL/1.0mm" means: aluminum plate 1.0mm, and so on: "AL/3.5mm" means: aluminum plate 3.5mm

**Custom (UDC):** can edit parameters, convenient for customers to process for welding at any time.

**Other (OTS):** internal manufacturer special process editing, special process can be used for special material welding.

**Red light:** open the red light preview, you can preview the welding position in advance, achieving the effect of adjusting the position in advance before welding.

**Click "Edit"** to enter the main editing interface. After editing parameters, you can save the parameters without clicking confirmation.



3.1.2, to edit the schematic diagram of the main interface

Custom name

Click "Custom name" to enter the interface of editing process package name, and can set the material name and material thickness freely, convenient for customers to edit themselves Process Pack storage process.



### 3.1.3 Name diagram of editing process package

#### Laser control:

**Power:** Set the peak power of the laser at welding.

**PWM frequency:** Set the frequency of the

**Duty cycle:** Set the pulse width of the laser PWM modulation signal.

#### Laser head control:

**Mode:** Set the motor swing mode.

**Frequency:** Set the speed of the motor to swing.

**Width:** Set the width of the motor to swing.

#### Out-of-light control:

**Mode:** Continuous light out mode and pulsed light mode.

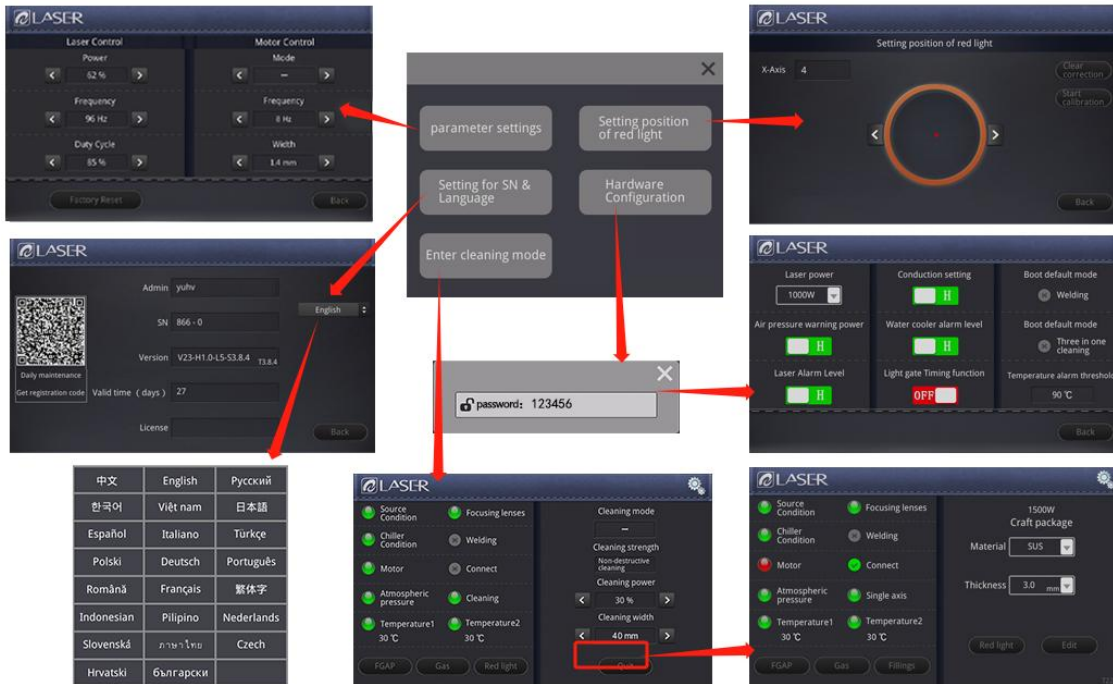
**Light time:** set the light time.

**Light out interval:** set, the interval of each light out.

**Restore factory Settings:** After entering the editing page, restore the single page parameters.



Press the " " on the main interface to enter the setting interface, as shown in the figure below



**parameter setting:**

**Advance quantity:** When starting processing, the delay opening can be set.

When the external start button is pressed, the air blow delays for a period of time, and then the laser starts.

**Delency:** When stopping processing, the delay shutdown can be set. When stop processing, stop the laser first, After a delay, then stop blowing.

**Proportional valve:** if the equipment has a proportional valve to control the gas size, the size of the protective gas can be controlled by this function percentage.

**Start lift:**

**Slow rise time:** the laser power slowly reaches the peak power after the set slow rise time.

**Slow descent time:** After the laser power is turned off, the laser energy is slowly turned off.

**Light off delay:** after the laser is turned off, the set power will continue to shine until the set time ends, optimizing the wire breaking function.

**Red light offset setting:**

**Red light offset setting:** When the red light is not in the center position of the nozzle, it can be adjusted through the red light offset setting position of X and Y coordinates.

**Start with the correction:** clear up the coordinates of X and Y.

**Clear correction:** clear the previous step.

**SN and language settings:**

**System SN identification code:** the factory setting of handheld welding, used for decryption function.

**Firmware version:** is the version currently used by the system.

**Available period (days):** available term, all functions are invalid after expiration.(Automatic reminder within 7 days)

**Registration code:** used for decryption. After receiving the registration code, enter and click confirm to decrypt.

**Language:** 23 languages, can switch languages (China, Britain, Russia, Korea, Vietnam and Japan, etc.)

**hardware configuration:**

**Password:** 123456.

**Laser power:** The laser power used can be selected to retrieve the corresponding process package of this laser.

**Alarm level conversion:** switch between high and low power, can match the external alarm signal (PNP (high level) or NPN (low level) or short connection), You can also block this function (not recommended).

**Lead setting:** the shield conduction function can be switched through H / L (for safety reasons, handheld welding is disabled and suitable for platform welding And manipulator welding)

**Optical lock timing function:** After opening this function, the optical lock will automatically close for 15 minutes without operation. Closing this function requires you to manually close the optical lock.

**Startup default mode:** Set the startup default mode: welding mode or three-in-one cleaning mode.

**Temperature alarm threshold:** the upper limit of the torch temperature alarm can be set. For 40°, the torch can protect the position temperature of the lens or motor lens The 40° display screen will alarm.

### 3.2 Alarm indicator troubleshooting when the red light is on

#### 1. Laser, water cooling box, air pressure and red light alarm investigation.



**Use this function:** laser, water cooling box, air pressure should turn red before the external signal control box (if the green light can enter the "hardware configuration" interface). When the corresponding external signal access, the alarm system is in normal working condition. (Note: high and low level switch, to match the external equipment alarm signal access mode (PNP corresponds to high level or NPN corresponds to low level or short connection))

**Not using this feature (not recommended):**

You can select high and low levels through the hardware configuration to remove the alarm, that is, to shield this function (not recommended).

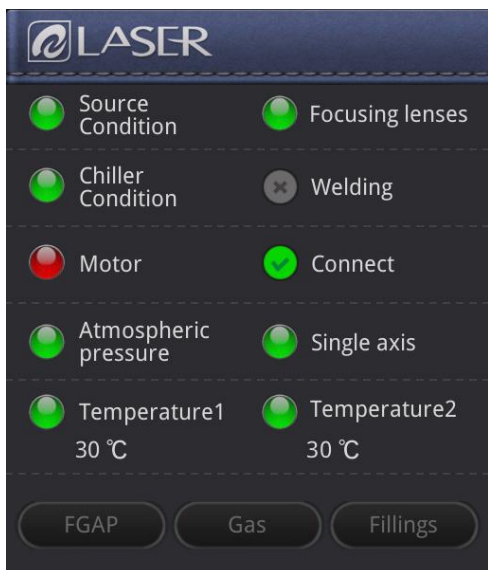
2. Temperature 1, temperature 2 red light alarm investigation.



Temperature 1: corresponding to the welding torch head mirror, please check whether the welding torch lens is burned out, if so, please replace it in time to avoid burning out other internal parts.

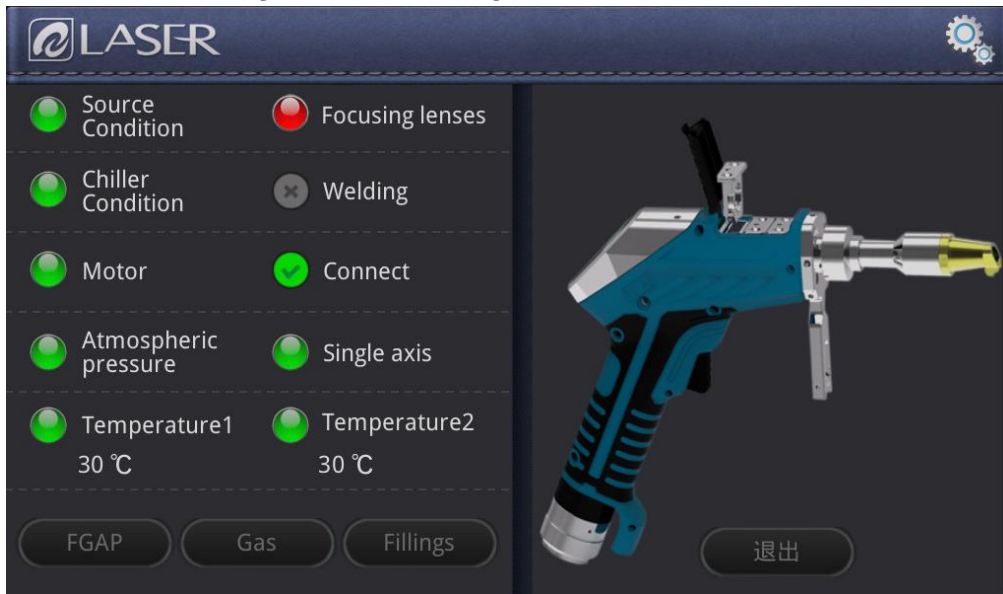
Temperature 2: corresponding welding torch head protection lens, please check whether the protective lens is damaged, if so, please replace it in time to avoid burning other internal parts.

3. Laser head bright red light alarm investigation.



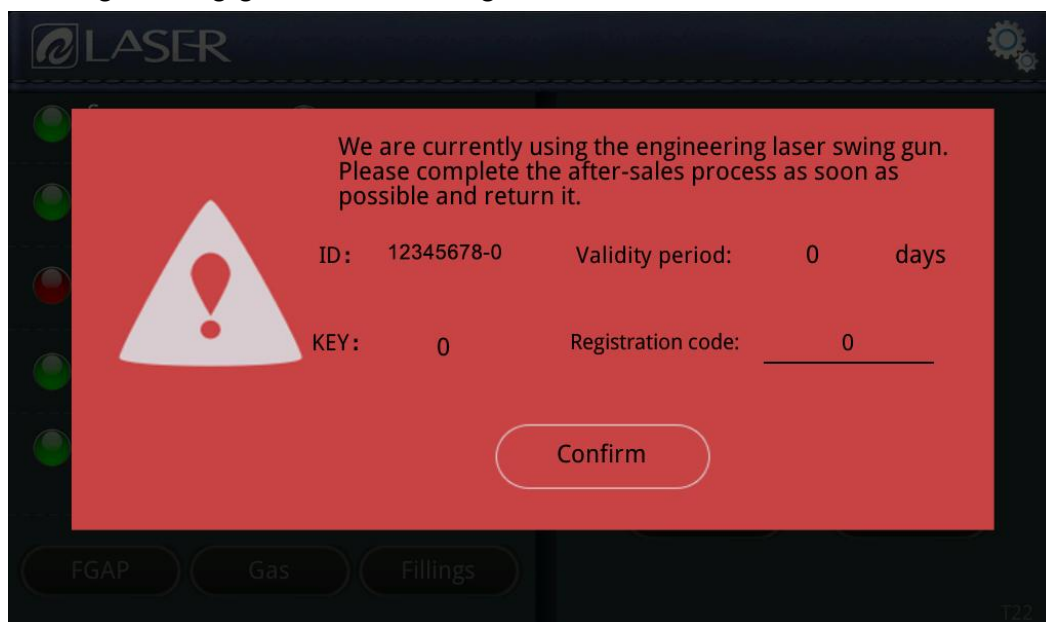
Please check whether the switch power supply is stable output, whether the motor lens is damaged or off, and whether the plug is off or poor contact.

4. Focus on the mirror red light alarm investigation.



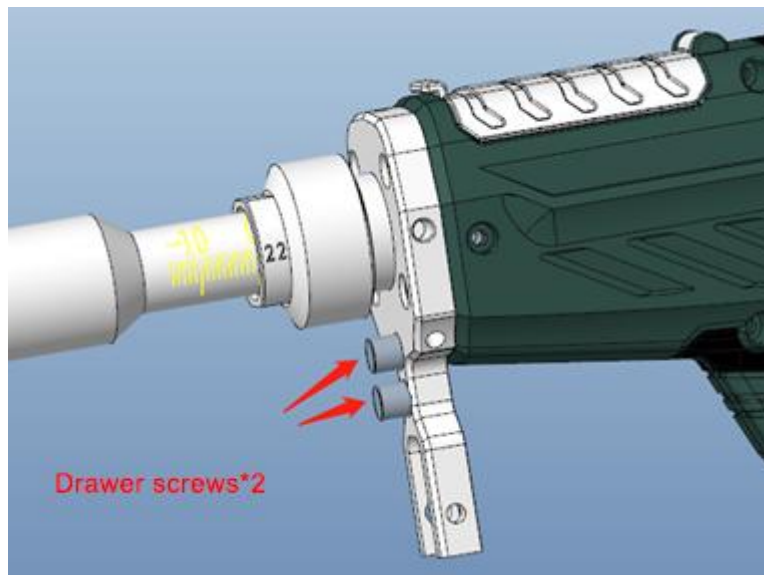
Please check whether the focus lens is installed in place or whether the focus lens is installed in the opposite direction.

5. After-sales engineering gun alarm investigation.

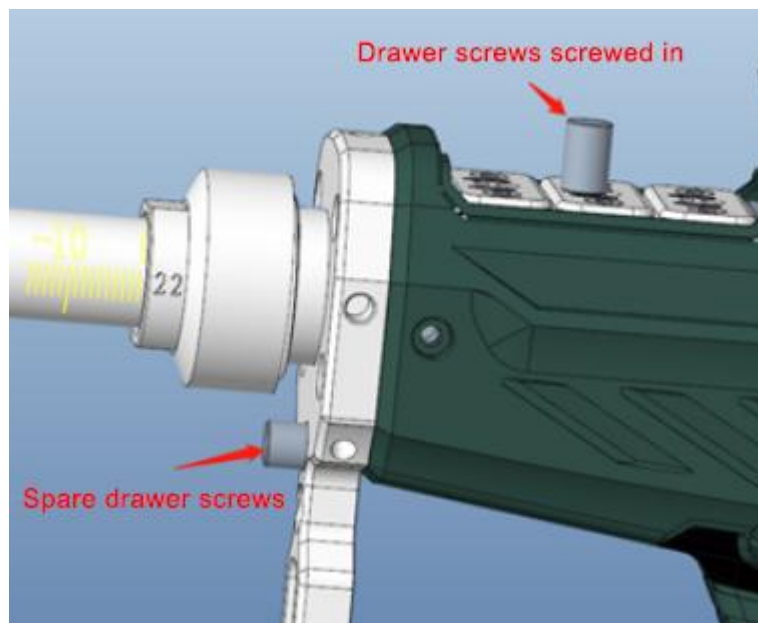


Please contact Qilin laser business or after-sales engineer to provide the registration code. After entering the registration code, the engineering gun can be decrypted for one month or permanent.

### 3.3 Protective mirror drawer and focus mirror drawer screws



1. Protect the lens drawer and focus the lens drawer screw placement position.

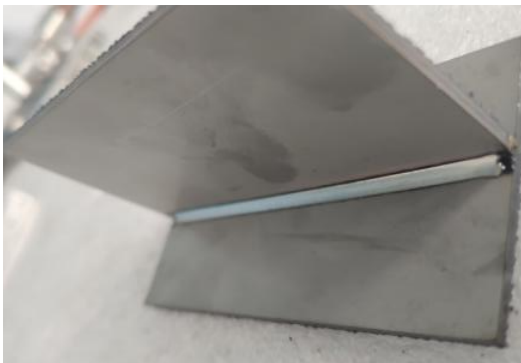


2. Pull the drawer screws out of the screw hole of the protective mirror / focus drawer to facilitate the insertion of the protective lens / focus drawer.

### Process Package of Reference Parameters:

Standard welding process package (0-5mm single wire)							
The 2000W laser control					Laser head control		
order number	Material and thickness	power	frequency	duty cycle	pattern	frequency	width
1	Stainless Steel 1.0	28%	3000HZ	100%	—	10hz	1.2mm
	Stainless Steel 1.5	35%	3000HZ	100%	—	10hz	1.6mm
	Stainless Steel 2.0	45%	3000HZ	100%	—	10hz	2.6mm
	Stainless Steel 2.5	50%	3000HZ	100%	—	10hz	3mm
	Stainless Steel 3.0	65%	3000HZ	100%	—	10hz	3.2mm
	Stainless Steel 3.5	75%	3000HZ	100%	—	10hz	3.6mm
	Stainless Steel 4.0	85%	3000HZ	100%	—	10hz	3.8mm
2	Carbon steel 1.0	28%	3000HZ	100%	—	10hz	1.2mm
	Carbon steel 1.5	35%	3000HZ	100%	—	10hz	1.6mm
	Carbon steel 2.0	45%	3000HZ	100%	—	10hz	2.6mm
	Carbon steel 2.5	50%	3000HZ	100%	—	10hz	3mm
	Carbon steel 3.0	65%	3000HZ	100%	—	10hz	3.2mm
	Carbon steel 3.5	75%	3000HZ	100%	—	10hz	3.6mm
	Carbon steel 4.0	85%	3000HZ	100%	—	10hz	3.8mm
3	Galvanized plate 1.0	28%	3000HZ	100%	—	16hz	1.2mm
	Galvanized plate 1.5	35%	3000HZ	100%	—	16hz	1.6mm
	Galvanized plate 2.0	45%	3000HZ	100%	—	16hz	2.6mm
	Galvanized plate 2.5	50%	3000HZ	100%	—	16hz	3mm
	Galvanized plate 3.0	65%	3000HZ	100%	—	10hz	3.2mm
	Galvanized plate 3.5	75%	3000HZ	100%	—	10hz	3.6mm
	Galvanized plate 4.0	85%	3000HZ	100%	—	10hz	3.8mm
4	Aluminum plate 1.0	28%	3000HZ	100%	—	10hz	1.2mm
	Aluminum plate 1.5	35%	3000HZ	100%	—	10hz	1.6mm
	Aluminum board 2.0	45%	3000HZ	100%	—	8hz	2.4mm
	Aluminum board 2.5	50%	3000HZ	100%	—	8hz	3mm
	Aluminum board 3.0	65%	3000HZ	100%	—	10hz	3.2mm
	Aluminum board 3.5	75%	3000HZ	100%	—	10hz	3.6mm
	Aluminum plate 4.0	85%	3000HZ	100%	—	10hz	3.8mm

The above parameters are provided for your reference only



Description: For different lasers, other parameters in the process package parameters remain unchanged, only the power modification, can be set according to this formula:

$$\text{When selecting 1000W laser: } P(1000W \text{ laser}) = P(1500W \text{ laser}) * (1000 / 1500)$$

$$\text{When selecting 2000W laser: } P(2000W \text{ laser}) = P(1500W \text{ laser}) * (2000 / 1500)$$



## Use the laser welding system precautions

- 1.The handheld single pendulum welding head includes lasers, water cooler, laser welding system and laser welding head. In order to avoid interference, the argon arc welding machine and related equipment with large interference can ensure that the safe distance is kept at more than 5 meters. Ensure that the laser welding machine has independent space when conditions permit.
- 2.In order to reduce equipment leakage or static electricity, ensure that the handheld single pendulum welding head equipment uses effective ground wire.
- 3.Please repeatedly confirm whether the cable joint is connected and locked normally. After locking, it can be wrapped with insulation tape.
- 4.Check whether the laser head and the optical fiber are locked and connected. After confirming that it is normal, the beautiful strip tape can be sealed and wound to ensure that the dust does not enter the laser head cavity.
- 5.Check whether there is water seepage in the cavity and many waterways in the cavity. Do not loosen screws without professional training to prevent water droplets from entering the cavity.
6. Check whether the protective lens drawer is normal, ensure that the sealing ring is normal and effective, when replacing the protective lens, ensure that the alcohol wipes the external stains of the laser head, at least 5 times, and ensure that the lens environment is clean and clean before the lens is replaced.
- 7.The laser head is so complex. To avoid short circuit, stay away from the water source and make sure that no liquid can be sprayed on the laser head.
- 8.Laser head refuses to use strong wind to blow and clean the laser head, and can only be wiped with alcohol and dust-free cloth.
- 9.The laser head is installed with a digital motor. When used, it must be put gently to prevent motor failure.
- 10.When the laser head is not used, please use the system gas blowing air for many times to discharge the dust, and remove the copper nozzle, use the sealing tape to seal, and use the copper nozzle to blow the air for more than 2 times before using it.
- 11.Continuous interruption of power supply will cause damage to the welding control system, if the external wire transmitter, 24V power supply, please provide 200W (power voltage 24V, output current is equal to or greater than 8A) above the reliable power supply!

**Quality assurance description:**

The warranty period of this product is 12 months, starting from the date of factory. If the product is faulty during the warranty period, it can be sent back Our company, free maintenance, free of labor costs. All lens categories (e. g. collimated lens, focusing lens, mirror, cover Protection lens, motor lens, etc.), appearance parts (cavity and handle, etc.) and consumables (copper nozzle, stainless steel pipe, and other easy to lose Product) is not in the warranty scope.

All parts of this description, the property right of the book belongs to Guangdong Qilin Laser Technology Co., Ltd. Without the permission of the Company, any unit or individual shall not reprint, copy or spread the relevant content of this product description, if the content and information of this product will be changed without notice.

If you have any comments or suggestions on the product and instructions during use, please call for consultation. Tel.: 18018735163

Fax: 0755-27999931

Address: Room 901, Building E1, SongshanLake Intelligent Valley, Yanhe North Road No.9, Liaobu Town, Dongguan City, Guangdong China

Thank you for using the products of Guangdong Qilin Laser Technology Co., Ltd.!