

Be sure to read the manual before using the system

- This manual is the user manual of double pendulum industrial independent welding head
- Read the manual carefully first to ensure the correct electrical connection

BWH21

Qilin double pendulum industrial independent welding head 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.com

Copyright Statement

Guangdong Qilin Laser Application 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 or 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 forces makes the machine in motion dangerous, and the user has the responsibility in the machine

Design an effective error handling and safety protection mechanism, 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 Europpene) safety certification, has passed the corresponding conformity assessment procedures and the manufacturer's conformity declaration, 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 been certified by the Federal Communications Commission (Federal Communications Commission) 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 safe. Some signs or text 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 product output of laser. 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 product is 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.

BWT 20 The shipping list of the user's manual is shown in the following table:
(As the product is constantly updated, the shipping list may also be adjusted.)

	component	quantity	explain
1	BWH21 welding head	1	
2	monitor	1	
3	Video line	1	
4	Power signal line	1	
5	Blu-ray adjustable focus for 12V	1	
6	The DC12V power supply	1	
7	One point and two DC lines	1	
8	Power extension line	1	
9	Blu-ray light transfer wiring	1	
10	Coaxial components	1	
12	protective glass	5	
13	Blu-ray lamp clip block	1	
14	laser goggles	1	

catalogue

An Overview of Chapter 1	7
1.1 Qilin double pendulum industrial independent welding head brief introduction	8
1.2 Product installation dimension drawing	10
1.2.1 Installation dimension of the welding head	10
1.2.2 Installation size of the monitor	11
Chapter 2. System Wiring	12
2.1 Wiring diagram of the welding head	13
2.2 Monitor wiring	15
Chapter 3: Introduction of welding head use and related welding mode	16
3.1 Introduction of the panel parameters	17
3.2 Introduction of parameter adjustment	19
3.3 CCD lens adjustment mode	21
precautions	23
Qilin laser technical support and service scope:	25

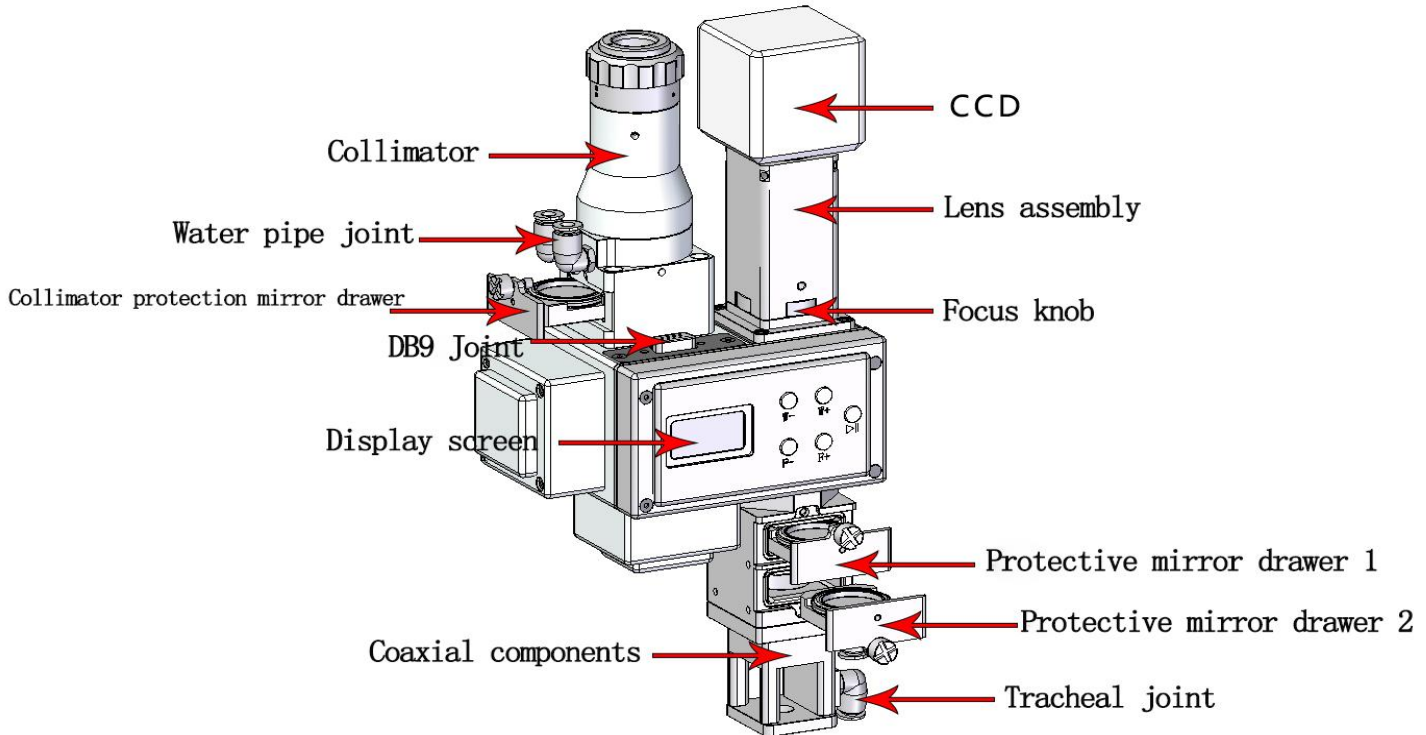
An Overview of Chapter 1

The main contents of this section are:

- Double pendulum industrial independent welding head brief introduction
- Product installation size drawing

1.1 Qilin double pendulum industrial independent welding head brief introduction

Qilin double pendulum industrial independent welding head is a welding head specially used for platform and robot fiber laser welding developed by Qilin laser. Double vibration lens motor control, there are seven swing modes: point, line, ring, oval, triangle, eight characters, semicircle. There are control buttons on the front panel of the welding head, which can adjust the swing mode, swing frequency, swing width and red light position of the motor. The welding head OLED shows the motor fault E signal alarm function.



Product Parameter:

parameter	scope
interface type	QBH
laser power	3000W
Collar focal length	75
Focus focal length	200/250/300/350
hunting range	The 0- -5mm is adjustable
cooling-down method	hydrocooling
Applicable wavelength	1064-1080nm
Collimine lens	D30F75
Focus on the lens	D30F200
Reflective mirror	31×28T3
Protection mirror specifications	D30T5
Maximum air pressure support	0.6Mpa
Focus of vertical adjustment range	±15mm
TBM	2.3KG
Surveillance mode	CCD

1.2 Product installation dimension drawing

1.2.1 Installation dimension of the welding head

The installation size of the welding head is shown in Figure 1.21 below, and the mounting screw hole position is 6-M6 depth 10.

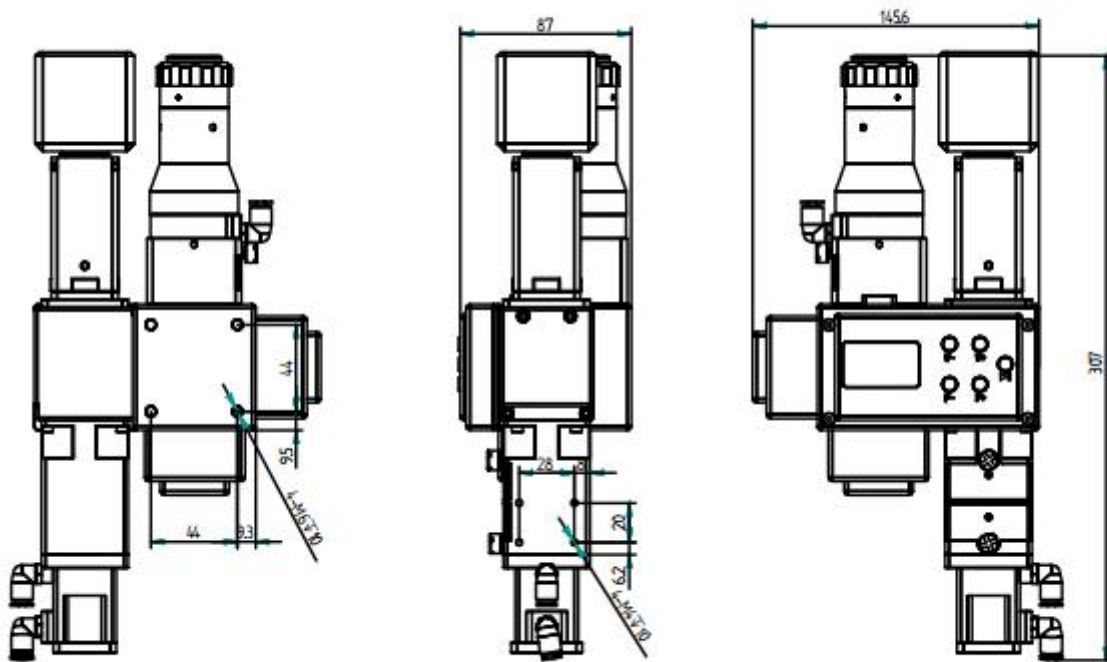


Figure 1.21 Installation dimension drawing of the welding head

1.2.2 Installation size of the monitor

The monitor installation dimensions are shown in Figure 1.2.2 below:

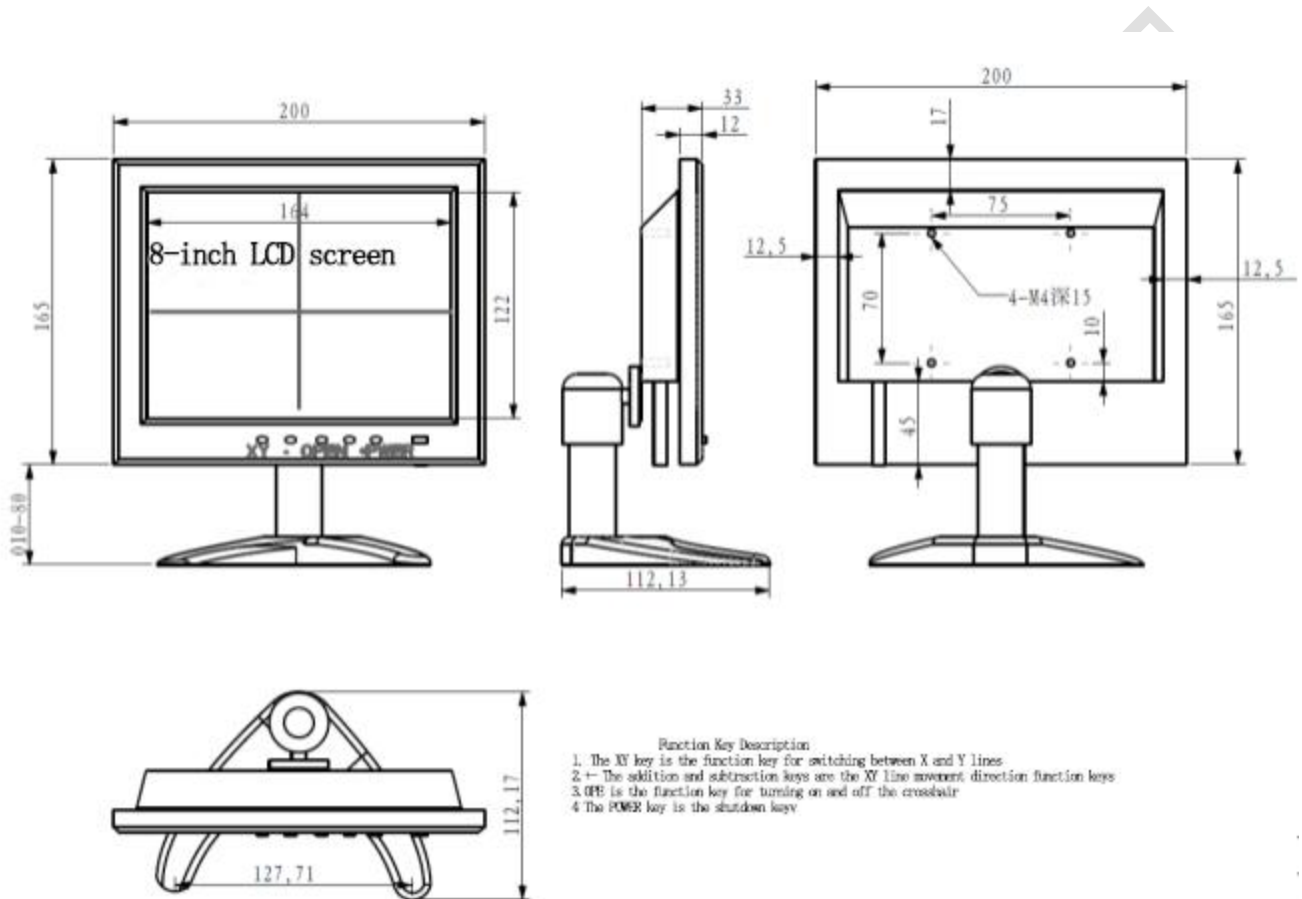


Figure 1.2.2 Diagram of monitor installation size

Chapter 2. System Wiring

The main contents of this section are:

- Welding head wiring diagram
- Monitor wiring

2.1 Wiring diagram of the welding head

Figure 2.1 shows the wiring diagram of the whole welding head, and the system wiring can refer to the schematic diagram.

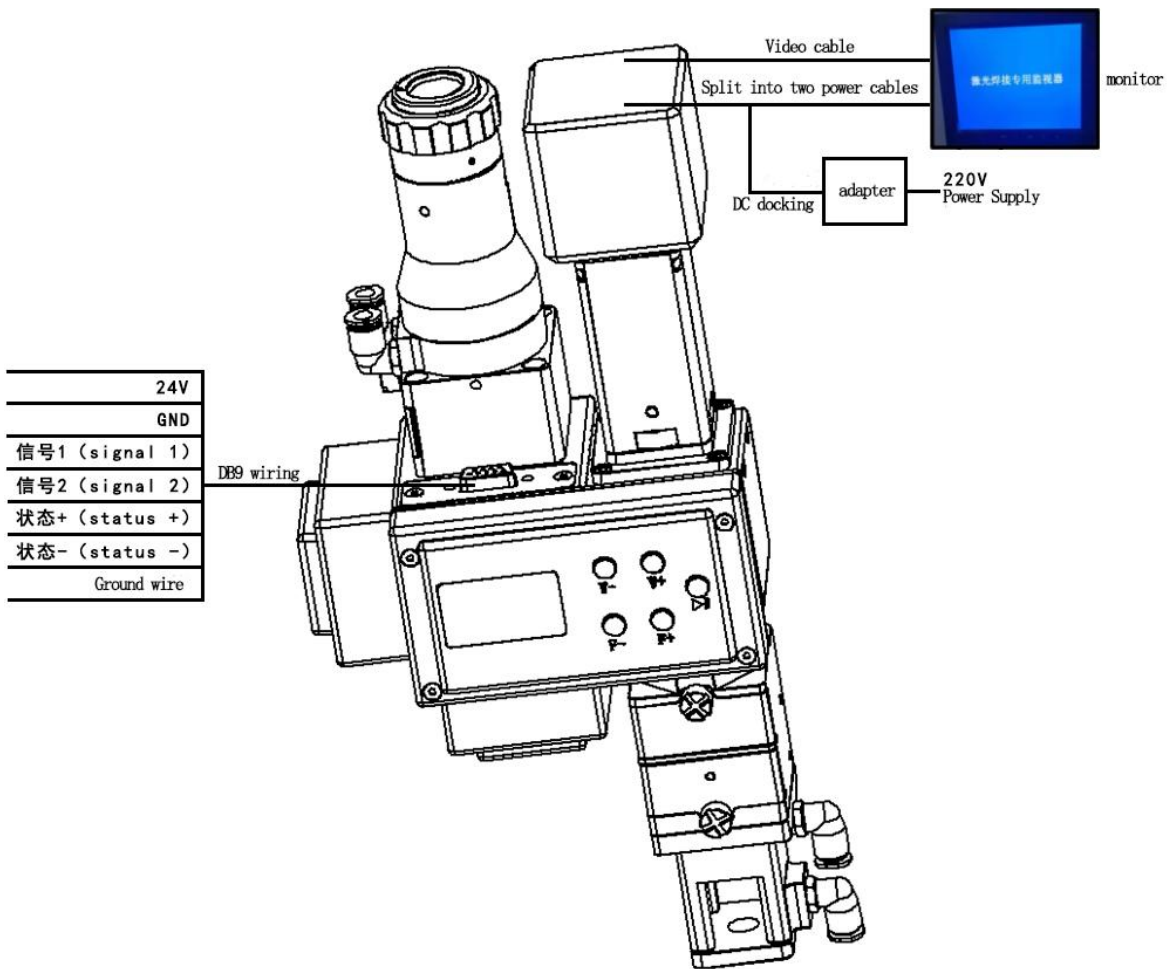


Figure 2.1 Schematic diagram of welding head wiring

Table 2.1 Definition of the DB 9-line set

order number	pin	Corresponding line logo	remarks
1	1	24V	power line
2	3	GND	
3	5		
4	6	Signal # 1 (signal 1)	Swing with short contact with signal 2
5	7	state +(status+)	When the E signal alarms, the state + - 10V voltage output will change to 0V
6	8	state-(status-)	
7	9	Signal # 2 (signal 2)	Swing with short contact with signal 1
8	shielding layer	earth wire	Power to

Special attention:

- ① Connecting mode of welding head power cord: 24V connected to power supply 24V port, GND connected to power supply COM port.
- ② For signal 1 (signal 1) and signal 2 (signal 2).
- ③ State + (status +), state- (status-), E signal alarm, the state + -10V voltage output will change to 0V.
- ③ Shield ded grounding wire.

2.2 Monitor wiring

The monitor is used with the CCD camera with the wiring mode as shown in Figure 2.1.

The adapter passes through a 1-minute 2DC power interface, one end is connected to the CCD and the other end to the monitor power interface to supply power to the CCD and the monitor respectively. The video line connects to the CCD at one end and the other to the monitor, transmitting the image model and being displayed on the monitor.

Special attention:

The power supply of CCD and monitor must be connected from the adapter. If it leads from other switching power supply, the monitor may appear ripples and affect the imaging effect.

Chapter 3: Introduction of welding head use and related welding mode

The main contents of this section are:

- Introduction to panel parameters
- Parameter adjustment introduction
- CCD camera adjustment introduction

3.1 Introduction of the panel parameters

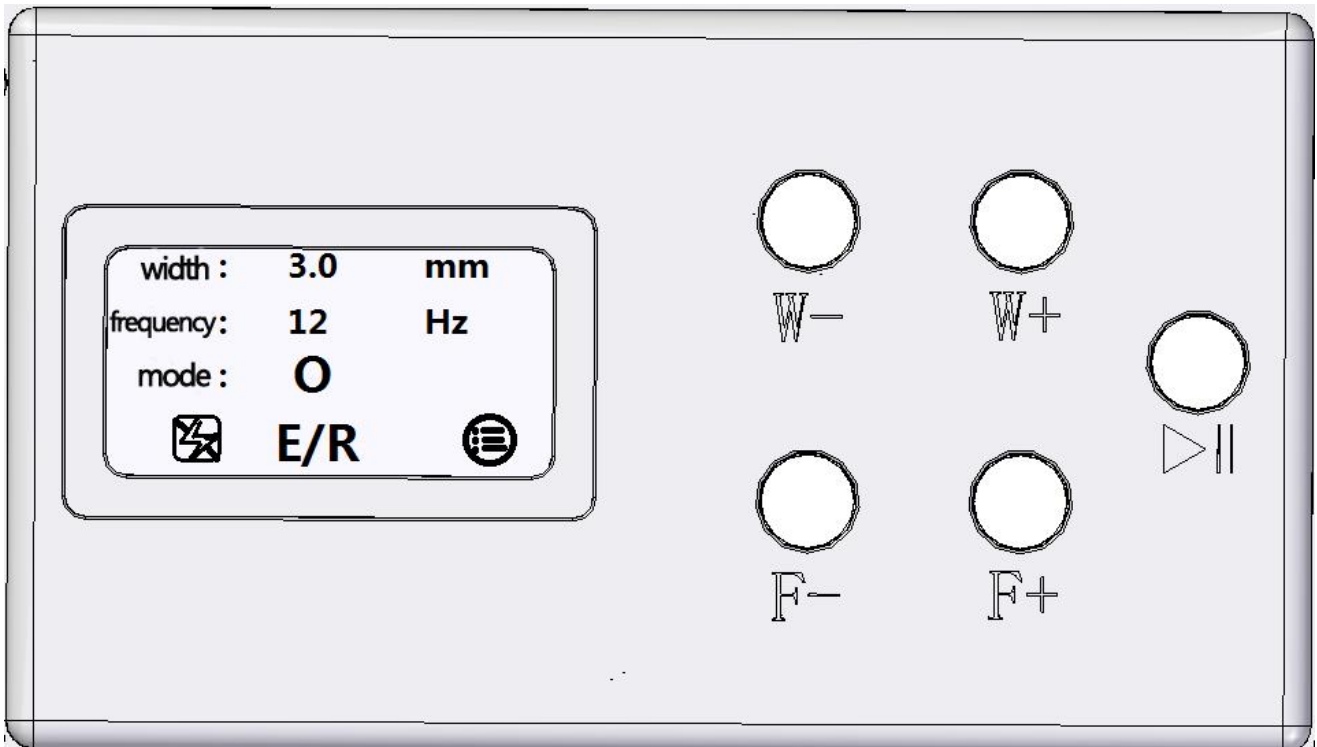


Figure 3.1 Schematic diagram of the panel interface

Qilin double pendulum industrial independent welding head is an independent welding head, on the panel of the welding head, it can directly control the swing width, swing frequency, swing mode and red light position. Welding head parameter adjustment control is independent of laser light output control and platform motion control.

Therefore, customers need to bring their own laser control system and the platform motion control system.

Introduction of the panel parameters:

Width: Swing amplitude at the focus (0.2-5mm range adjustable).

Frequency: number of swing circles in 1 second (2-30Hz range adjustable, with 1Hz motor turning about 9 turns).

R: The swing signal enables the display.

⚡: Shake stop signal enables display (if ⚡ played, stop swing, swing enable does not work).

E: Abnormal display of swing system (no light during E signal).

ⓘ The system parameter setting is quiet, select to enter the system parameter setting.

Swing mode: welding head can choose swing mode common point, line, circle, ellipse, triangle, eight characters, half circle seven swing mode.

Point mode: the motor does not swing, the spot density is strong, often used for equipment focus, spot welding, penetration welding

Line mode: a motor swings, the light spot into a linear shape, the energy density distribution is more uniform, often used for medium and thick plate welding, Laser wire filling and welding, etc.

Round mode: two motors swing, circular light spot, small energy density, often used for thin plate welding; small swing amplitude, swing

The parameter with low moving frequency can also be used for medium thickness plate welding.

Elliptical mode: two motors swing, elliptical spot, energy density is slightly larger than the circle, commonly used to weld with aluminum plate; in the swing

The parameters of small movement amplitude and low swing frequency can also be used for medium thickness plate welding.

Triangle mode: two motors swing, triangular spot, energy density distribution is concentrated than circular mode, often used in laser wire filling welding come into contact with.

8-word mode: two motors swing, 8-word spot, the weld is scaly.

Semi cle mode: two motors swing, showing semicircle light spot, welding uniform and does not accumulate, commonly used in laser wire filling welding come into contact with.

Note: The above welding modes are only for reference, and shall be used flexibly, according to the actual welding requirements on site.

3.2 Introduction of parameter adjustment

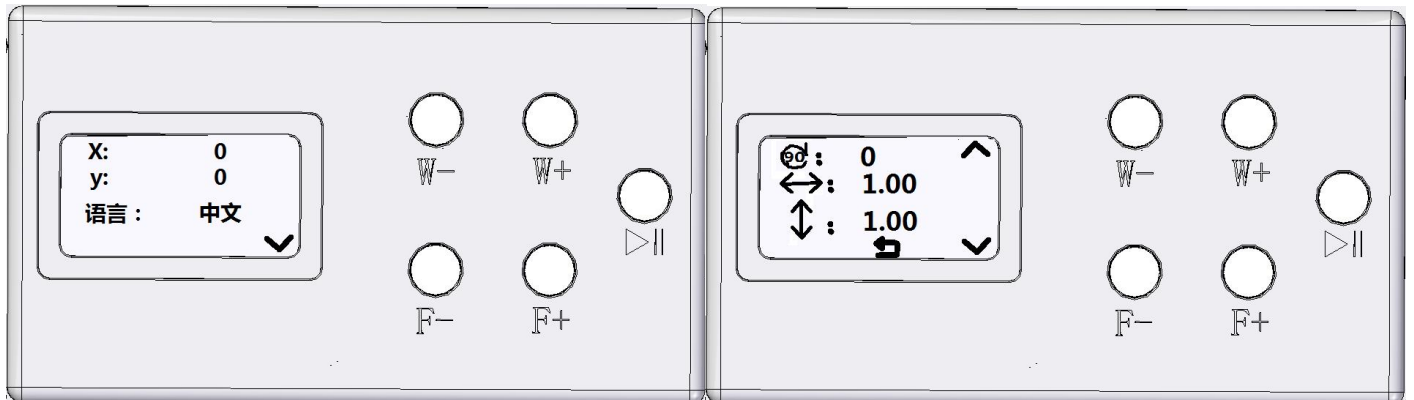


Figure 3.2 Schematic diagram of the panel interface

Width adjustment: W- \ W + key adjust the swing width, W-width decrease, W + width increase, key press the width change

0.2mm, with the adjustment range of 0.2-5mm;

Frequency adjustment: F- \ F + key adjust the swing frequency, F-frequency decreases, F + frequency increases, press the frequency change

2Hz, with the a > || djustment range of 2-30Hz;

Swing switch: press the "" key on the control panel ⚡, "" appeε⚡; on the display, if "" appears on the pane ⚡

It represents the welding head swing. If the "" is displayed on the panel, the welding head will not swing according to the display parameters.

Mode adjustment: In the parameter adjustment mode, move to the swing mode through F- \

F +, and select the required welding mode through W- \ W +. The swing mode has seven swing modes, line, circle, oval, triangle, eight and semicircular.

X: The display screen enters the parameter adjustment mode, and the coordinate value of X can be adjusted by W- \ W +, and X adjusts the left and right coordinates of the red light.

Y: The display screen enters the parameter adjustment mode, and the coordinate value of Y can be adjusted by W- \ W +, and Y can adjust the upper and lower coordinates of the red light.

Language: In the parameter adjustment mode, move to language selection through F- \ F + and select the required language through W- \ W +: Chinese, Japanese, English and Russian.

Rotation Angle: can set the Angle to change the direction of the drawing, can set: 0-180 Angle change.

Coefficient X: Set the motor swing X-axis zoom coefficient, adjust the figure size, the range is 0.5-1.5 times adjustable

Coefficient Y: Motor swing X-axis scaling coefficient can be set, adjust the figure size, the range is 0.5-1.5 times adjustable

3.3 CCD lens adjustment mode

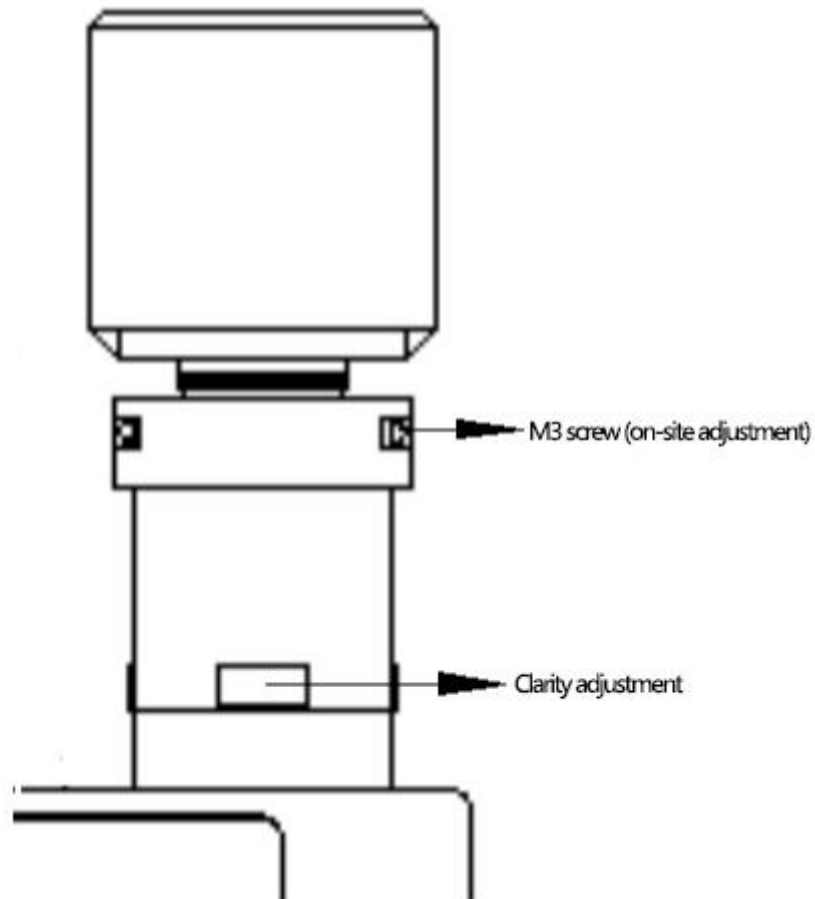


Figure 3.3 Schematic diagram of the CCD lens adjustment mode

Clarity adjustment: it can be achieved by adjusting the convex cylindrical structure at the upper end of the box in the right figure.

Field adjustment: Field adjustment can be achieved by tightening / releasing the two M3 adjustment screws in front of the large triangle block.

Note: when the definition adjustment, should not be too hard to ensure that the adjustment does not exceed the internal travel, all anti-disassembly labels without permission

The condition cannot be removed

Process Package of Reference Parameters:

order number	1500W laser control				Laser head control		
	Material and thickness	power	frequency	duty cycle	pattern	frequency	width
1	Stainless Steel 1.0	30%	3000HZ	100%	○	10hz	1.6mm
	Stainless Steel 2.0	60%	3000HZ	100%	△	10hz	2.6mm
	Stainless Steel 3.0	90%	3000HZ	100%	⊠	10hz	3mm
2	Carbon steel 1.0	30%	3000HZ	100%	○	10hz	1.6mm
	Carbon steel 2.0	60%	3000HZ	100%	△	10hz	2.6mm
	Carbon steel 3.0	85%	3000HZ	100%	⊠	10hz	3mm
3	Galvanized plate 1.0	35%	3000HZ	100%	○	16hz	1.6mm
	Galvanized plate 2.0	65%	3000HZ	100%	△	16hz	2.6mm
	Galvanized plate 3.0	85%	3000HZ	100%	⊠	16hz	3mm
4	Aluminum plate 1.0	40%	3000HZ	100%	○	10hz	1.6mm
	Aluminum board 2.0	70%	3000HZ	100%	△	8hz	2.6mm
	Aluminum board 3.0	85%	3000HZ	100%	⊠	8hz	3mm
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:

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

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

When selecting 3000W laser: $P(3000W \text{ laser}) = P(1500W \text{ laser}) * (3000 / 1500)$

Use the laser welding system precautions

1. The light double pendulum industrial welding independent joint includes laser, water cooler, laser welding system and laser welding head. In order to avoid interference, ensure away from the argon arc welding machine and related equipment with large interference, and 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 the use of light double pendulum industrial welding head equipment.
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 there are many waterways in the cavity. Do not loosen the screws without professional training to prevent the 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 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!
12. The external safety lock is 24V high level, do not short connect with the aviation plug GND shell of the system sleeve cable, or do not pay attention to the installation Collision with each other, otherwise the short circuit may burn down the power supply or the main control board.

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, etc., 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 Application 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.!