GM08B0-H03 User Manual

Product Description

Shenzhen Ospri Intelligent Technology Co., LTD

Foreword

Dear Users:

Welcome to use GM08B fiber laser autofocus cutting head produced by Shenzhen Ospri Intelligent Technology Co., LTD. We are honored to have your confidence in our products.

In order to make you have an overall view of the product, convenient for your use, we specifically provide the user manual for you, including product characteristics, structural feature, technical feature, direction for use, maintenance, etc. It's an essential guide when you use this product.

Please read the user manual carefully before use. I'm sure it will be helpful for you to use this product. In addition, if you have any questions during use, please contact us, and we will serve you wholeheartedly.

Declaration:

The contents of User Manual are protected by the Copyright Law. Without the approval of Shenzhen Ospri Intelligent Technology Co., Ltd, any organization or individual shall not copy or tamper it by any means and forms.

In order to ensure your safety and the product works normally, please read the guide book carefully before using.

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Chapter 1 Overview

1.1 Product Parameter

① Product parameters, as shown in Table 1.0:

Name	Fiber Laser Cutting Head
Model	GM08B
Interface Type	QBH, QD, G5
Wavelength	1080±10nm
Rated Power	≤8KW
Focus Length	150mm/200mm
Collimation Length	100mm
Nozzle	Various models and specifications
Focusing range	-15mm~+15mm -35mm~+30mm
Centering range	±1.5mm
Focusing speed	100mm/s
Gas Pressure	≤3Mpa
Weight	5KG

Table 1.0

1.2 Precautions

① Please wear special fiber laser safety goggles to ensure human safety when the cutting head is used in coordination with laser cutting machine.

② Precautions should be taken to avoid burning cutting head and laser nozzle due to the deviation of laser beams from central axis.

③ Keep the cutting head clean to prevent coolant, condensate or other foreign matters from entering the sensor; otherwise, sensor failure may be caused.

④ When processing products with laser, use a protective device to prevent the laser beams from causing injury to human body.

Chapter 2 Structural Features

2.1 Brief Description of Product Structure

Brief description of product structure, as shown in Figure 1.0:

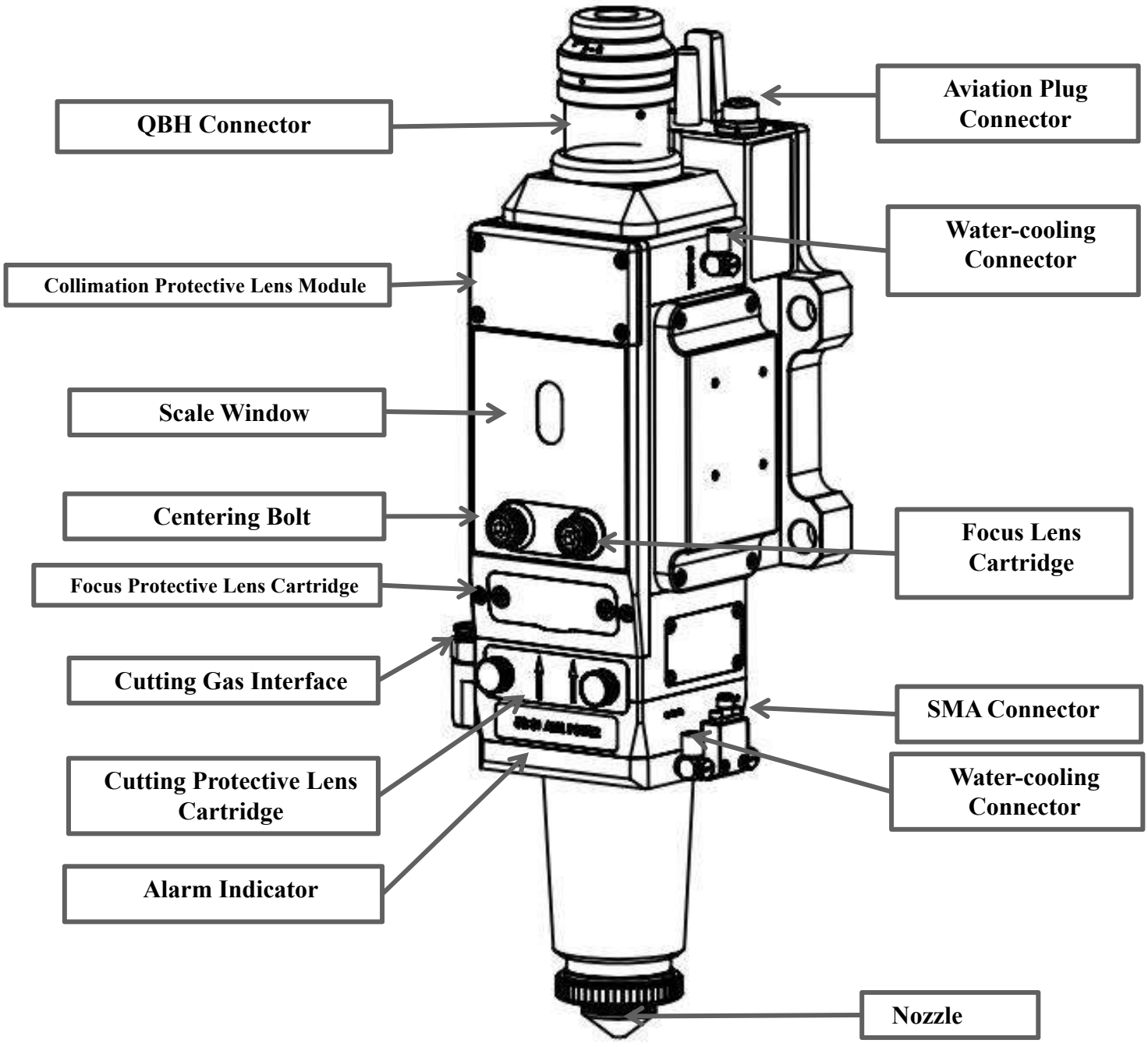


Figure 1.0

2.2 Brief Description of Product Parts

1. Water cooling connector: Mainly cool QBH and cutting head.
2. Aviation plug connector: Power lines for motors, encoder lines, and outputs for limit signals.
3. Collimation protective lens module: Prevent the dust from entering into the cutting head for protecting the collimation lenses when plugging or unplugging the fiber splice.
4. Scale window: Observation window for cutting focus, for reference only.
5. Focus lens cartridge: Plugging and unplugging window for replacing and maintaining the focus lens, and center the beam spot.
6. Focus protective lens cartridge: Protect the focus lens for fast replacement.
7. Cutting protective lens cartridge: Seal the cutting gas and protect the focus lens.
8. Cutting gas inlet: φ10 mm gas pipe connector for inputting cutting gas, as shown in Figure 1.1.
9. Cooling gas inlet: φ6 mm gas connector for cooling the nozzles and ceramic ring during cutting, as shown in Figure 1.1.
10. Centering bolt: Adjust the center so that the light beams pass through the center of the nozzle.
11. SMA connector: Connect to the connector of the amplifier line.
12. Alarm indicator: Show green in normal working state and red in case of alarm.

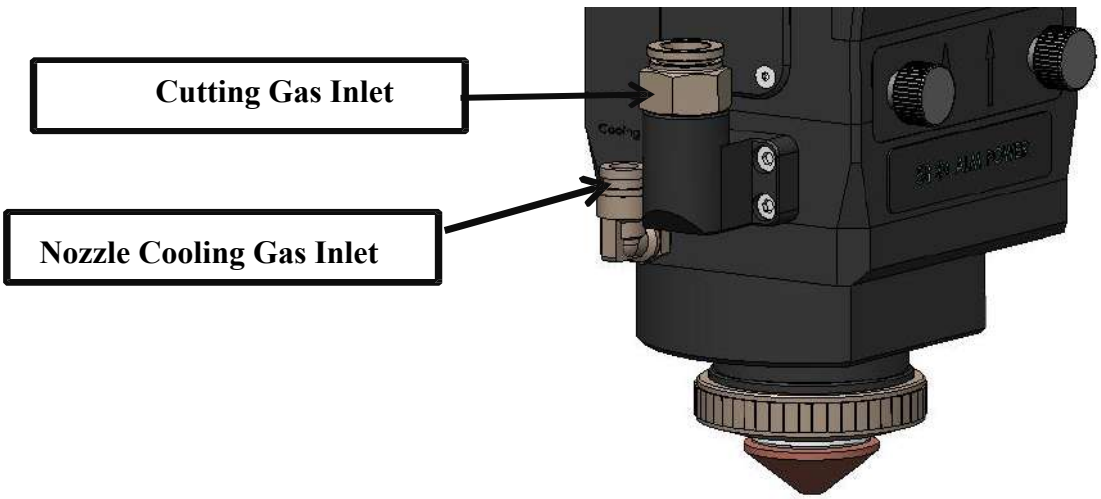


Figure 1.1

2.3 Brief Description of Product Parts (Lens Size)

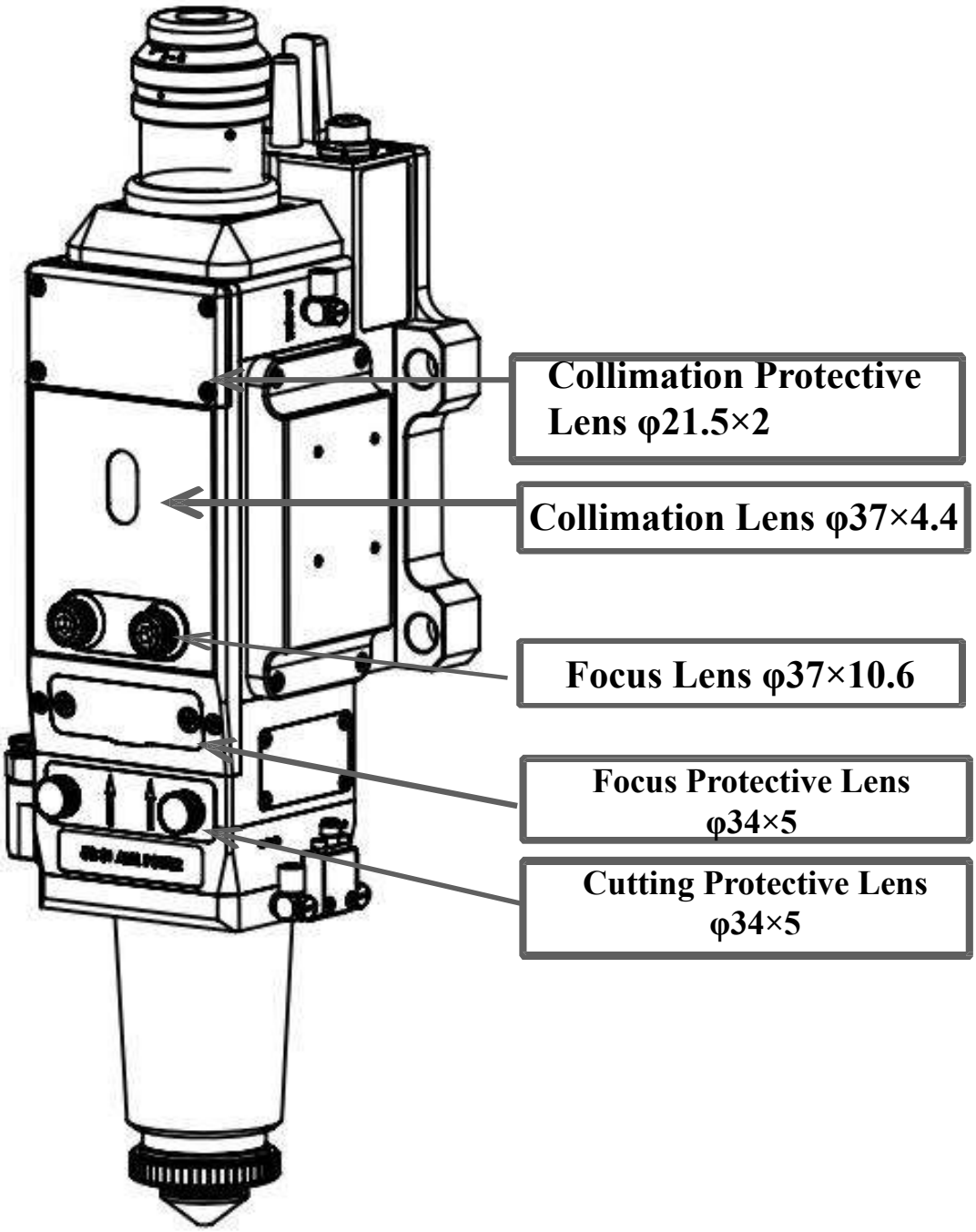


Figure 1.2

Chapter 3 Product Installation

3.1 Cutting Head Installation

Dimension drawing of the cutting head (Collimation F100/Focus F200) as shown in Figure 1.3:

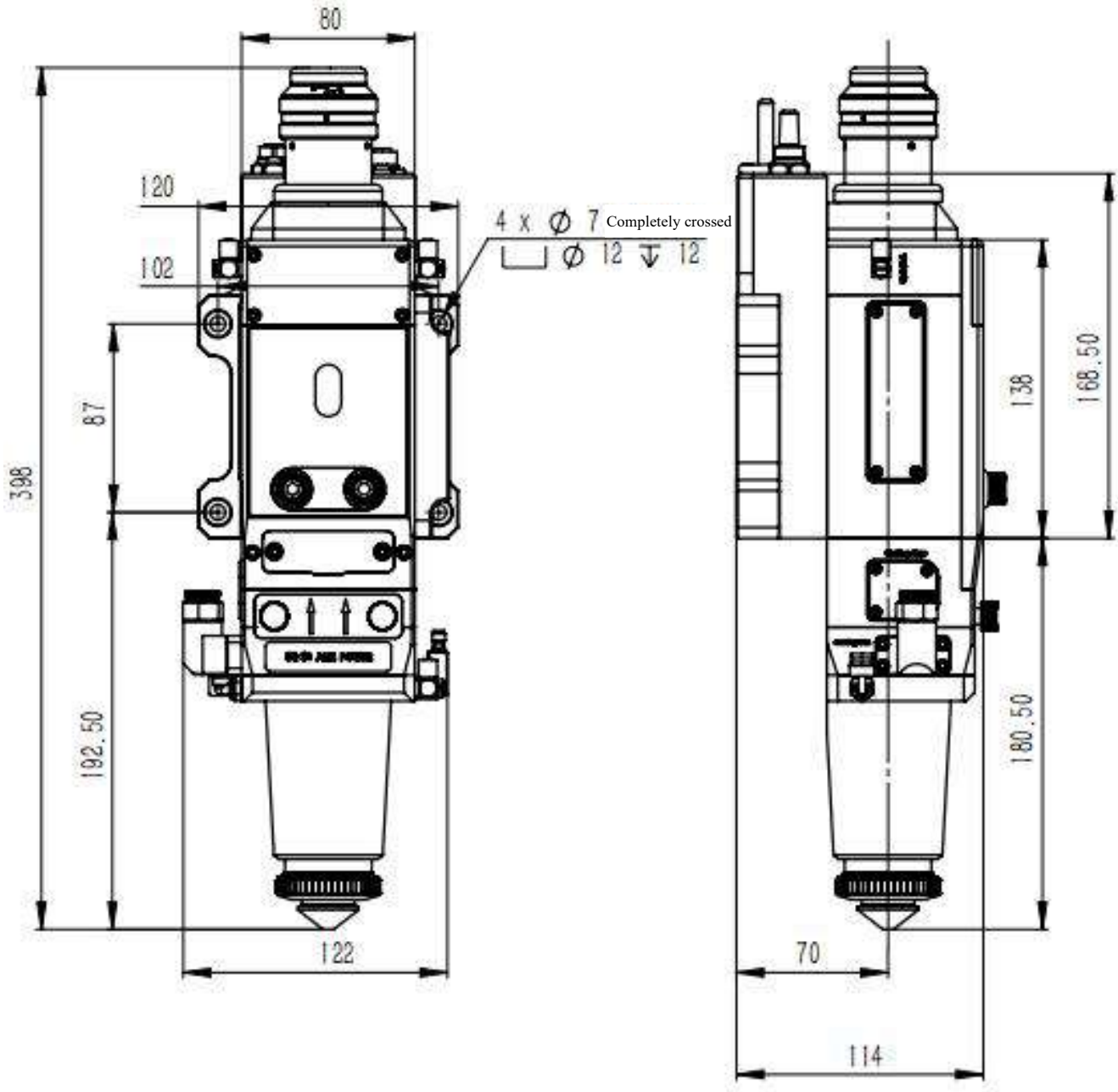


Figure 1.3

3.2 Cutting Head Connection

3.2.1 Water Cooling Pipeline

① Used for cooling the QBH and cutting head, with one inlet and one outlet cooling pipeline, as shown in Figure 1.4:

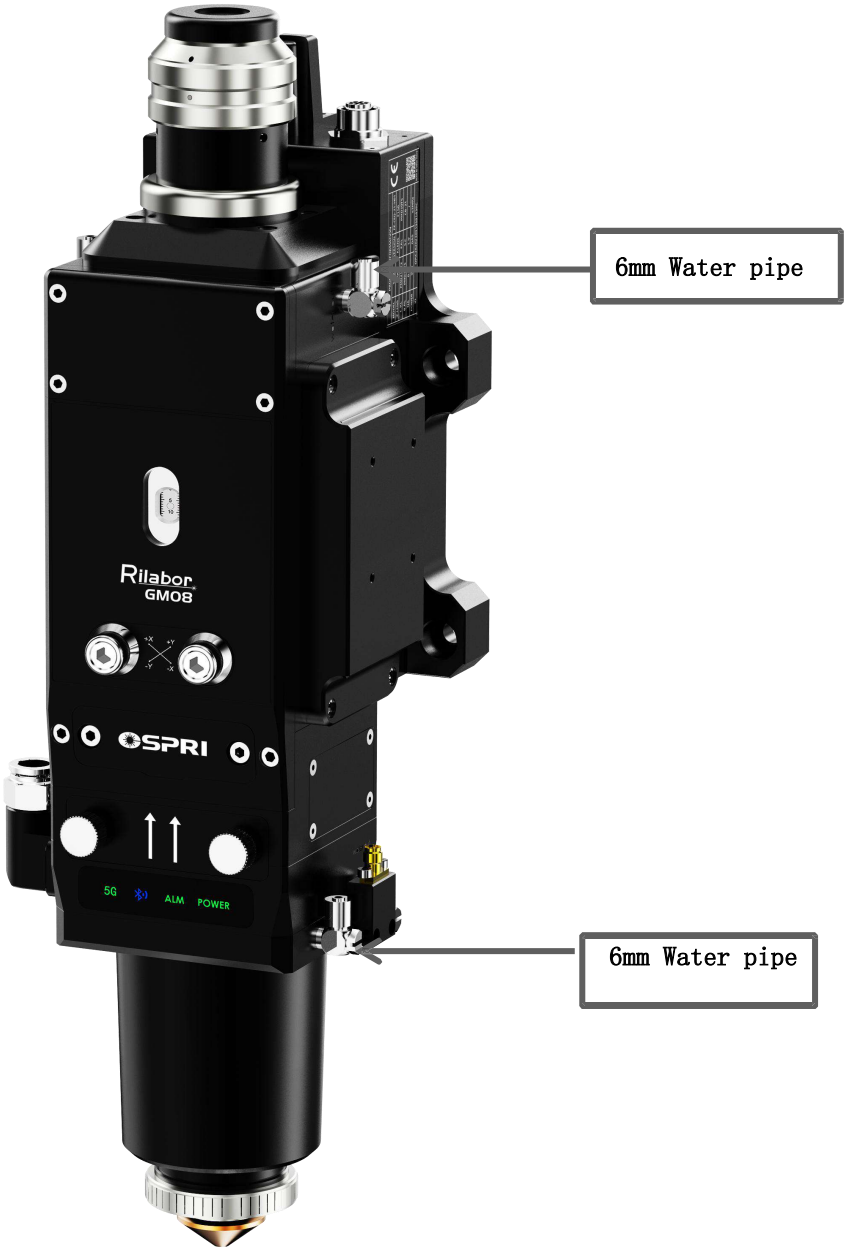


Figure 1.4

3.2.2 Gas Connection

① The inlet is connected to a 10mm gas pipe, as shown in Figure 1.5, for docking cutting gas, input pressure ＜3.0Mpa.

Common gas: Oxygen, nitrogen and compressed air.

② The inlet is connected to a 6mm gas pipe, as shown in Figure 1.5, for docking cooling gas, input pressure ＜0.6Mpa.

Common Gas: Compressed air.

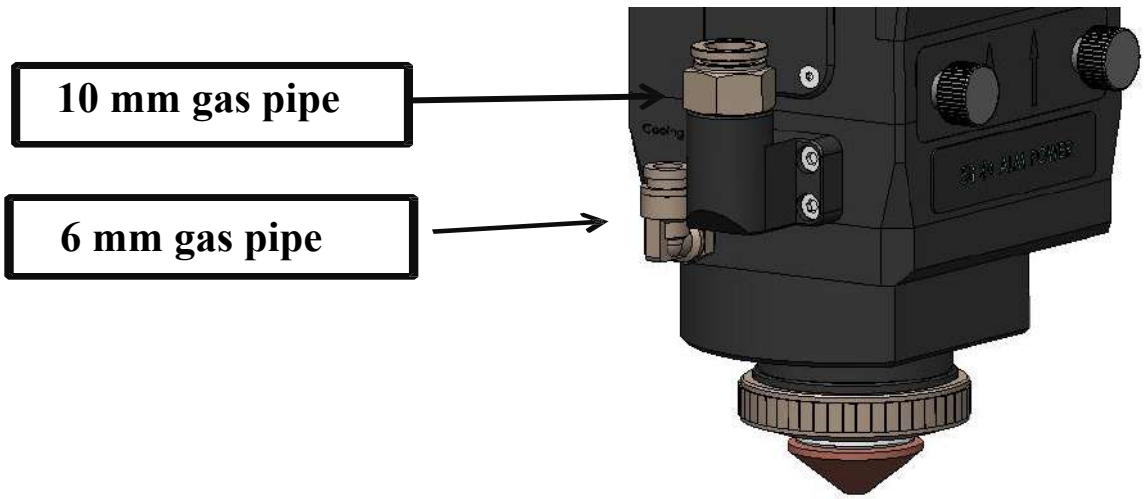
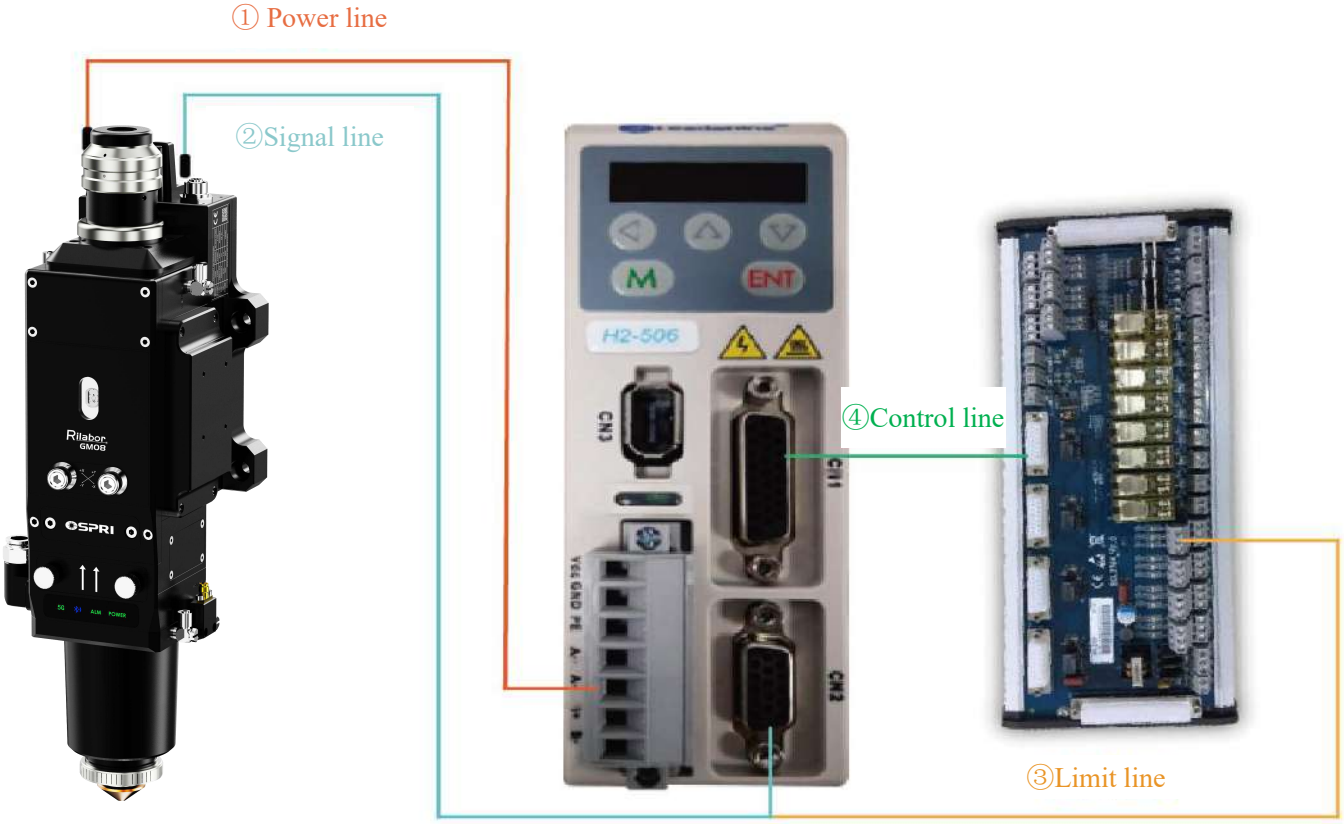


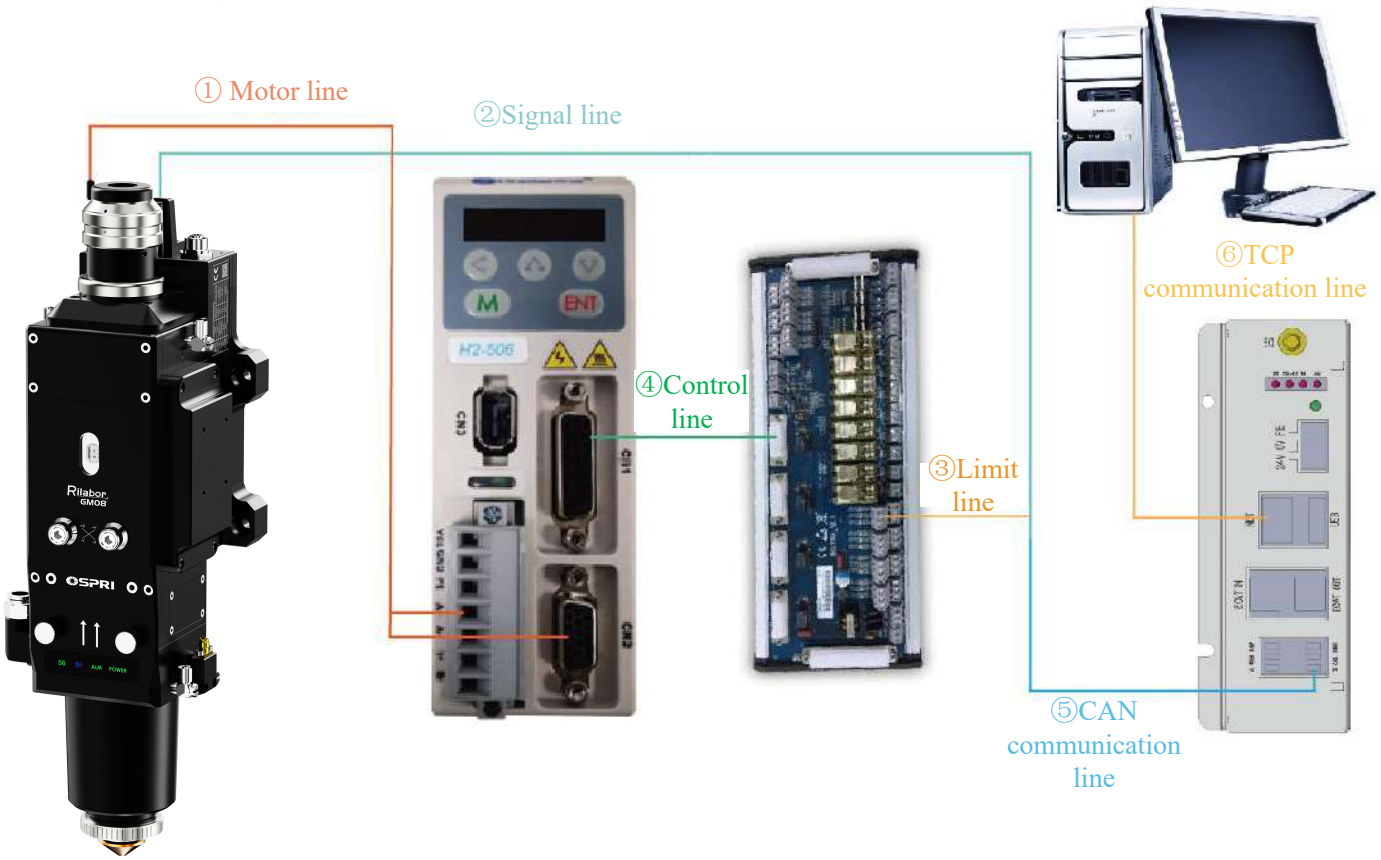
Figure 1.5

Note: The gas entering auxiliary pipelines must be filtered and dried; otherwise, it will contaminate the protective lens, leading to their damage.

3.3 Wiring of the Cutting Head to the Cypcut Pulse System (Without EtherCAT Bus Module)

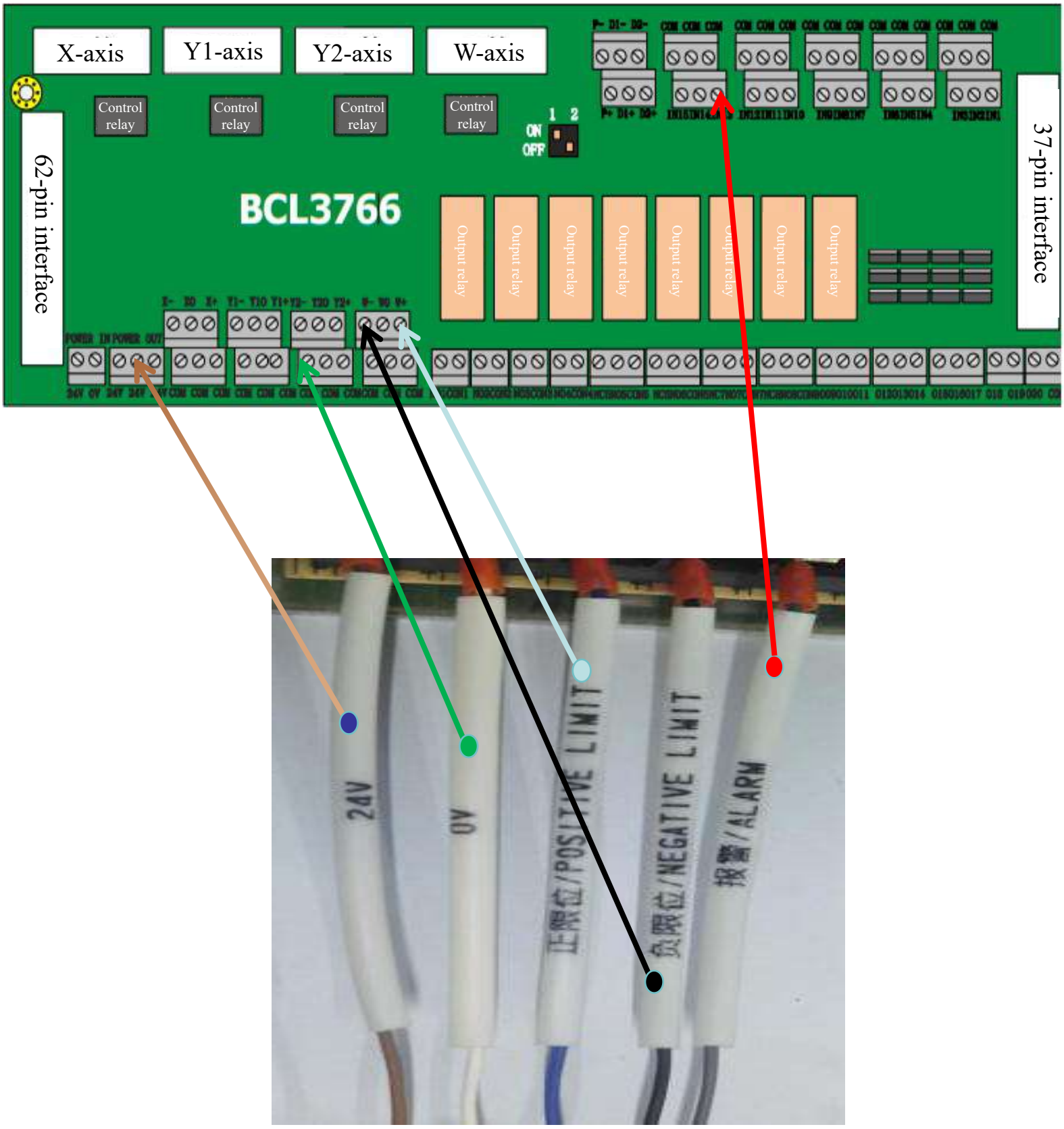


3.4 Wiring of the Cutting Head to the Cypcut Pulse System (With EtherCAT Bus Module)



3.5 FSCUT2000C System Wiring (Example: BCL3766)

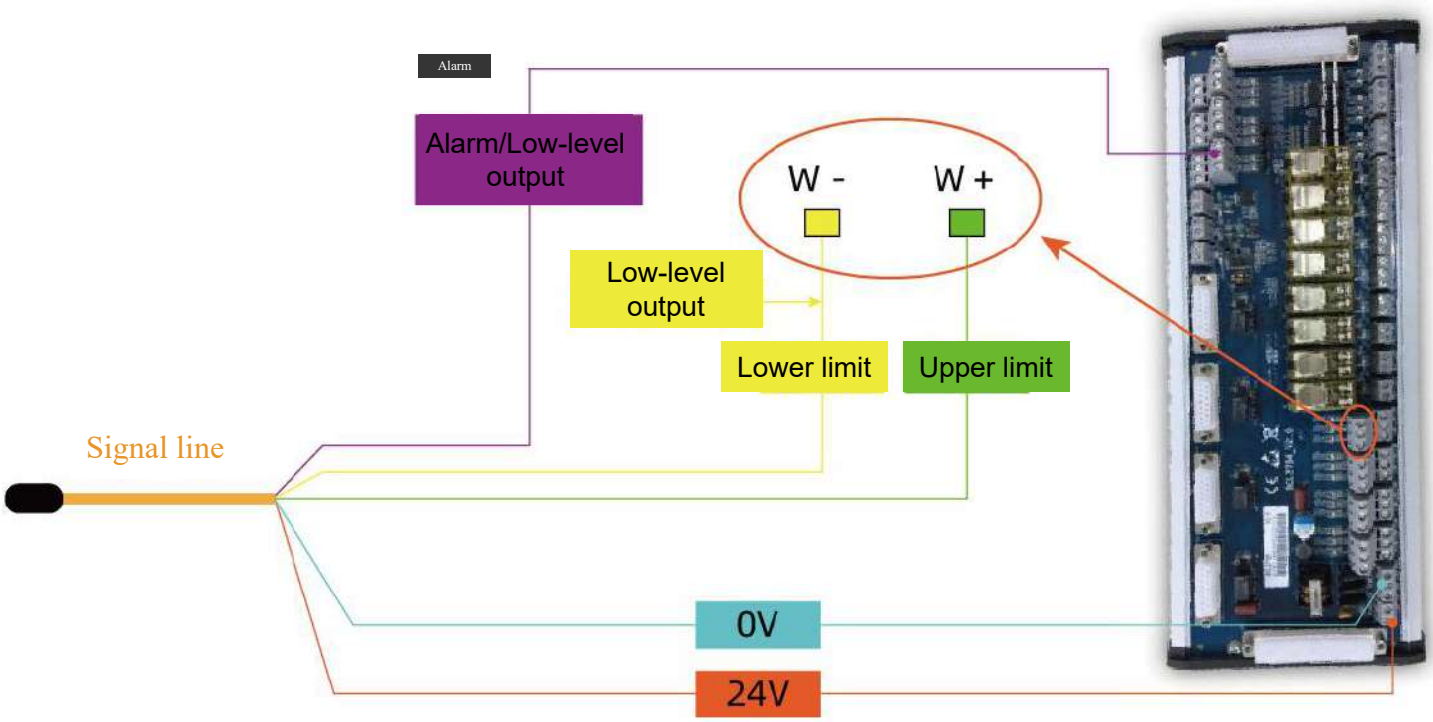
3.5.1 PCB Board I/O Wiring



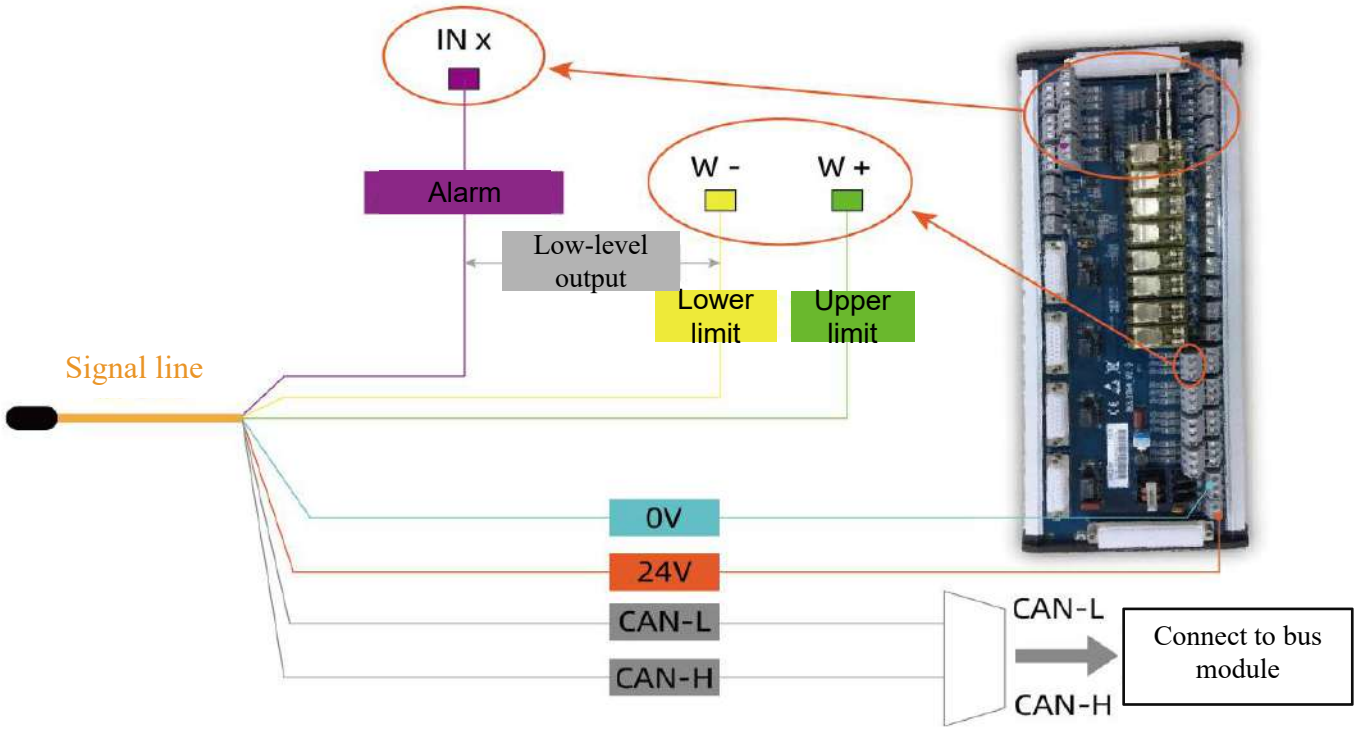
Limit and alarm signals are both NPN outputs; the alarm signal must be connected to the system. If damage to the cutting head occurs due to an unconnected alarm signal, the customer is fully responsible.

3.5.2 Servo Driver Power Wiring (DC24V)

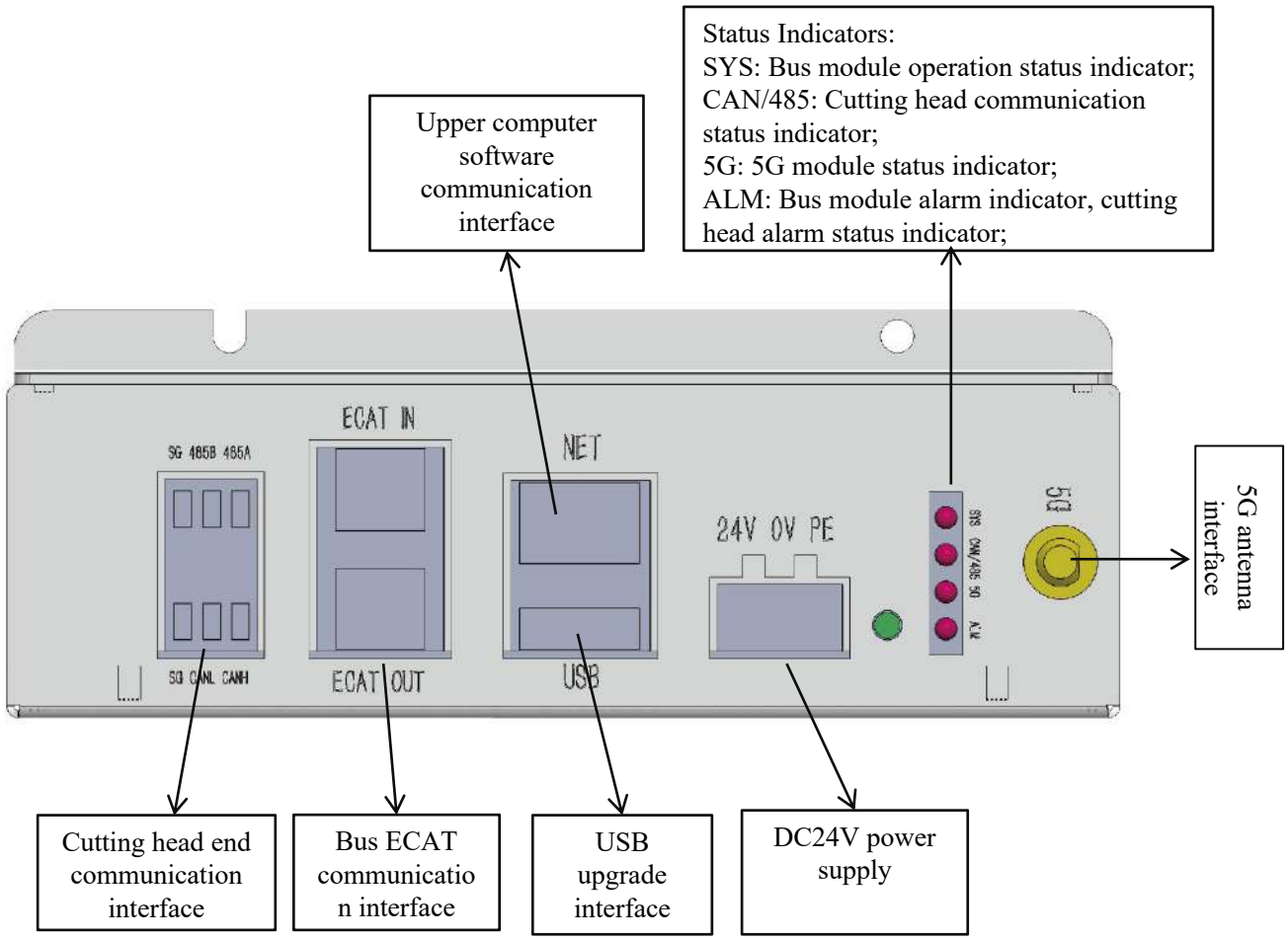
3.5.3 Signal Line Wiring (Without EtherCAT Bus Module)



3.5.4 Signal Line Wiring (With EtherCAT Bus Module)



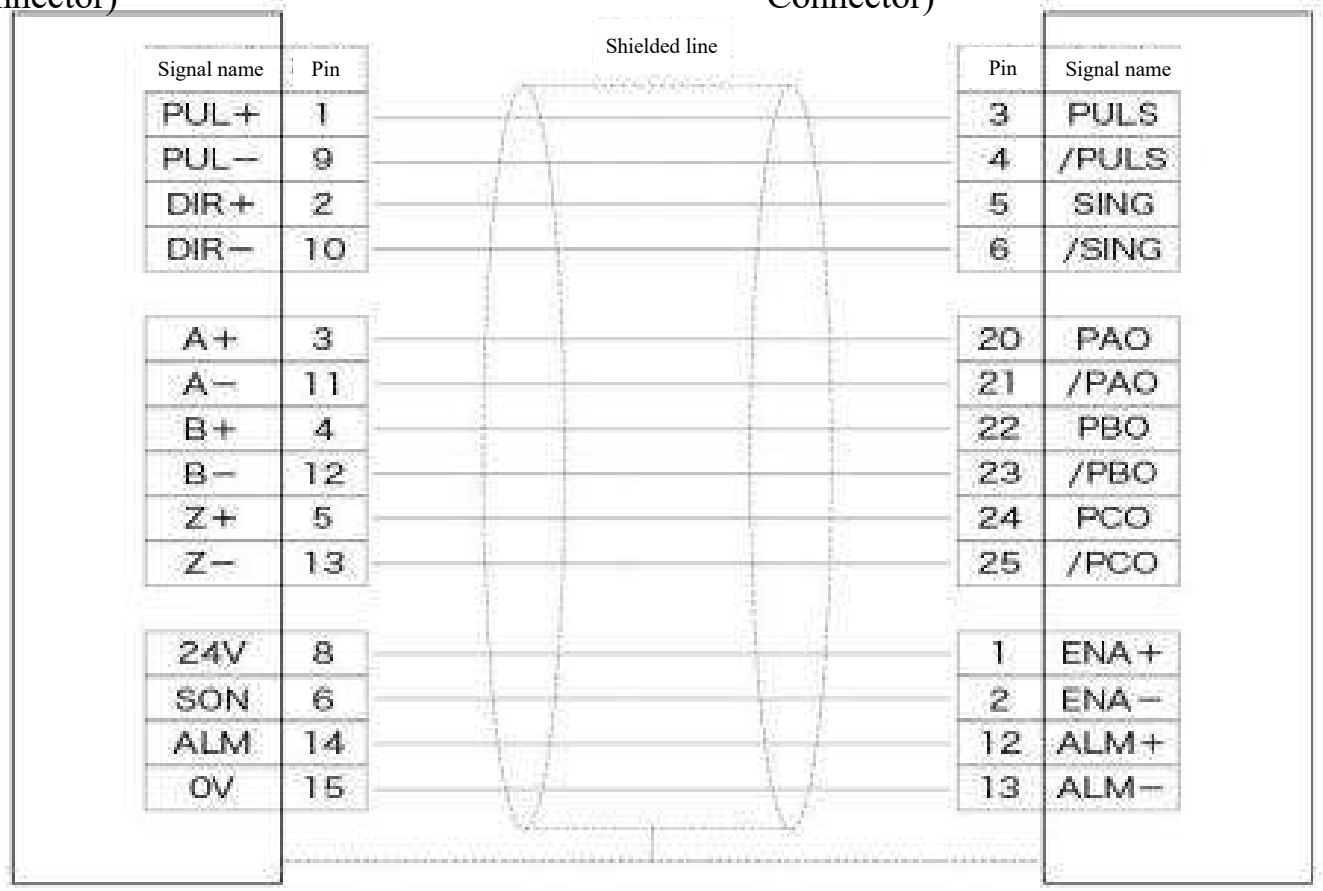
3.5.5 Bus Module Wiring



3.5.6 PCB Board Axis Port Wiring

Cypcut System End (DB15 Pin Double Row Male Connector)

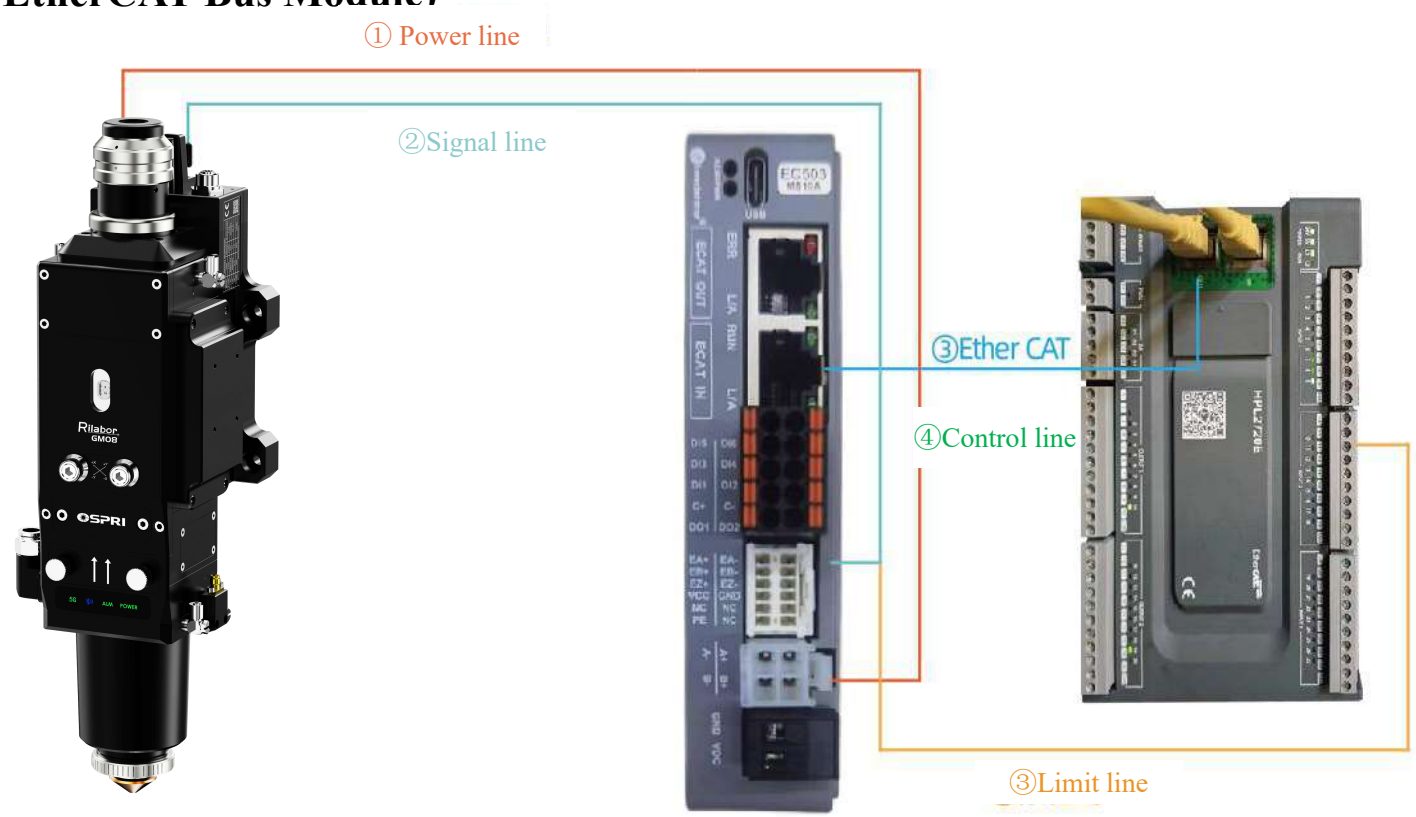
Servo End (DB26 Pin Triple Row Male Connector)



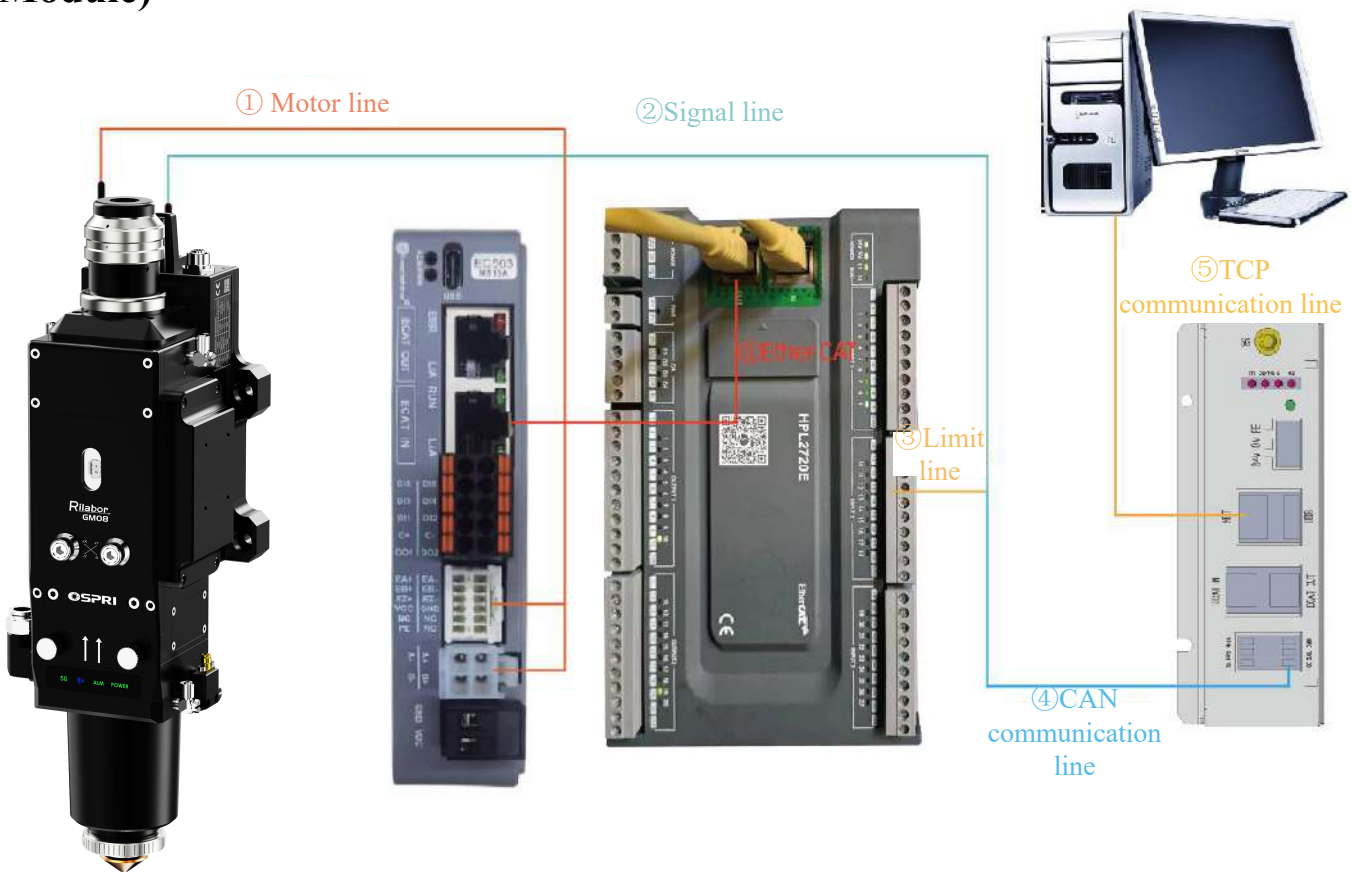
3.5.7 Driver Parameters

Parameter Index	Parameter Value	Parameter Content
PR007	10000	Pulses per revolution
PR008	4000	Resolution
PR015	0	Enable level
PR019	0	Motor direction
PR020	1	Bandwidth selection
PR042	6	Motor type

3.6 Wiring of the Cutting Head to the Cypcut Bus System (Without EtherCAT Bus Module)

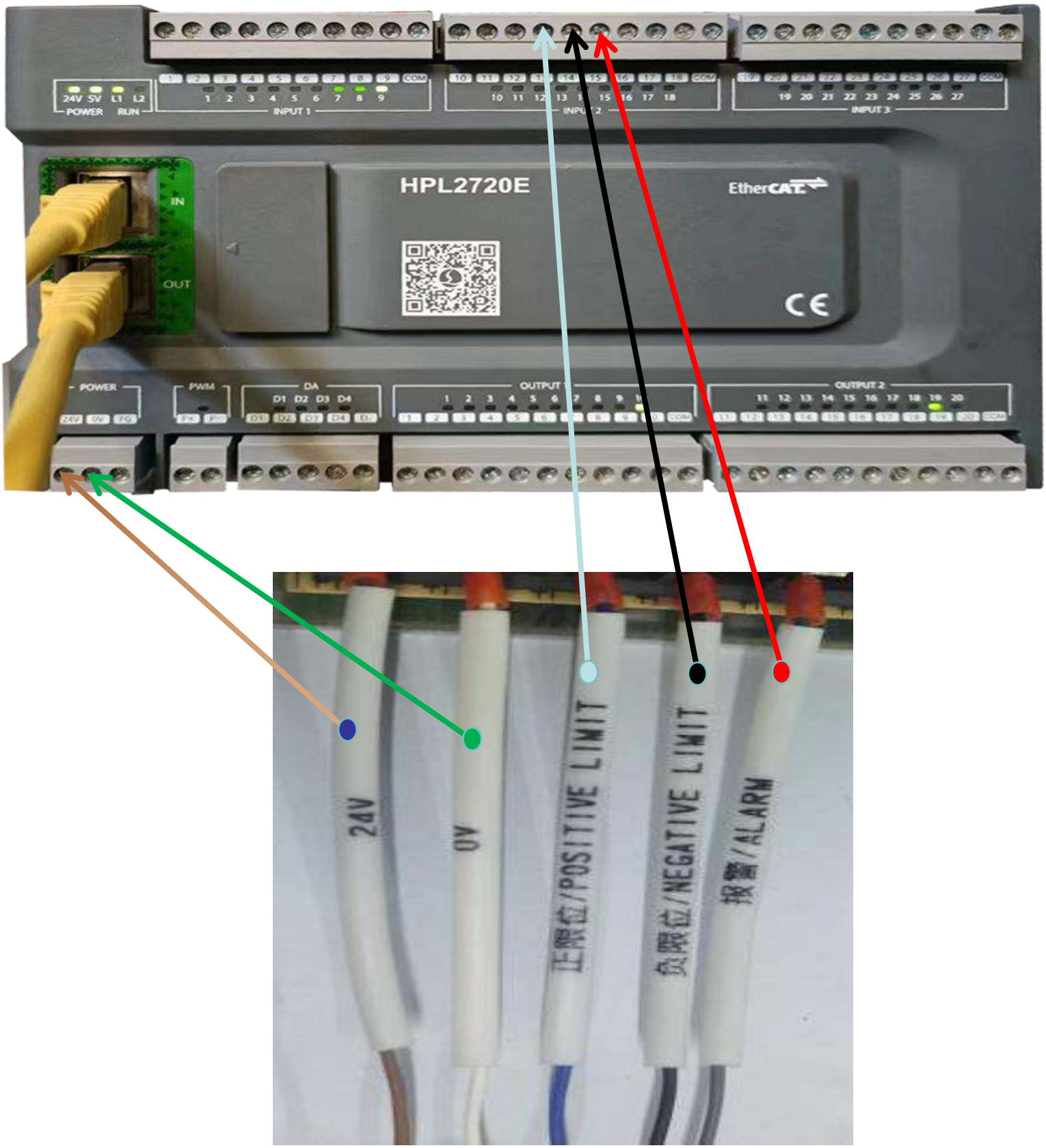


3.7 Wiring of the Cutting Head to the Cypcut Bus System (With EtherCAT Bus Module)



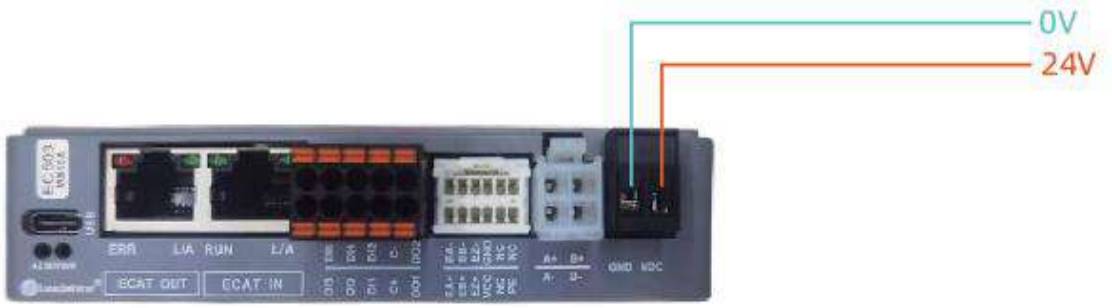
3.8 FSCUT8000 System Wiring (Example: HPL2720E)

3.8.1 PCB Board I/O Wiring (Example: HPL2720E)

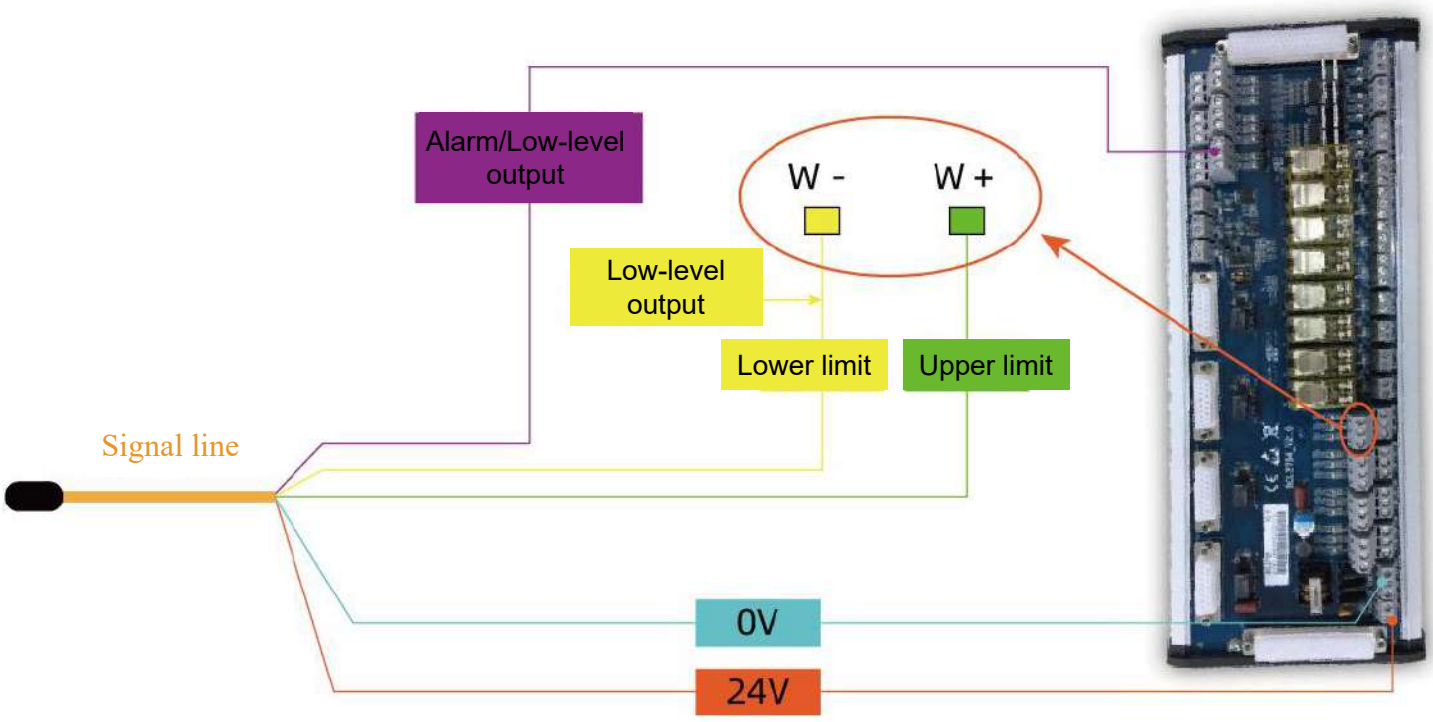


Limit and alarm signals are both NPN outputs; the alarm signal must be connected to the system. If damage to the cutting head occurs due to an unconnected alarm signal, the customer is fully responsible.

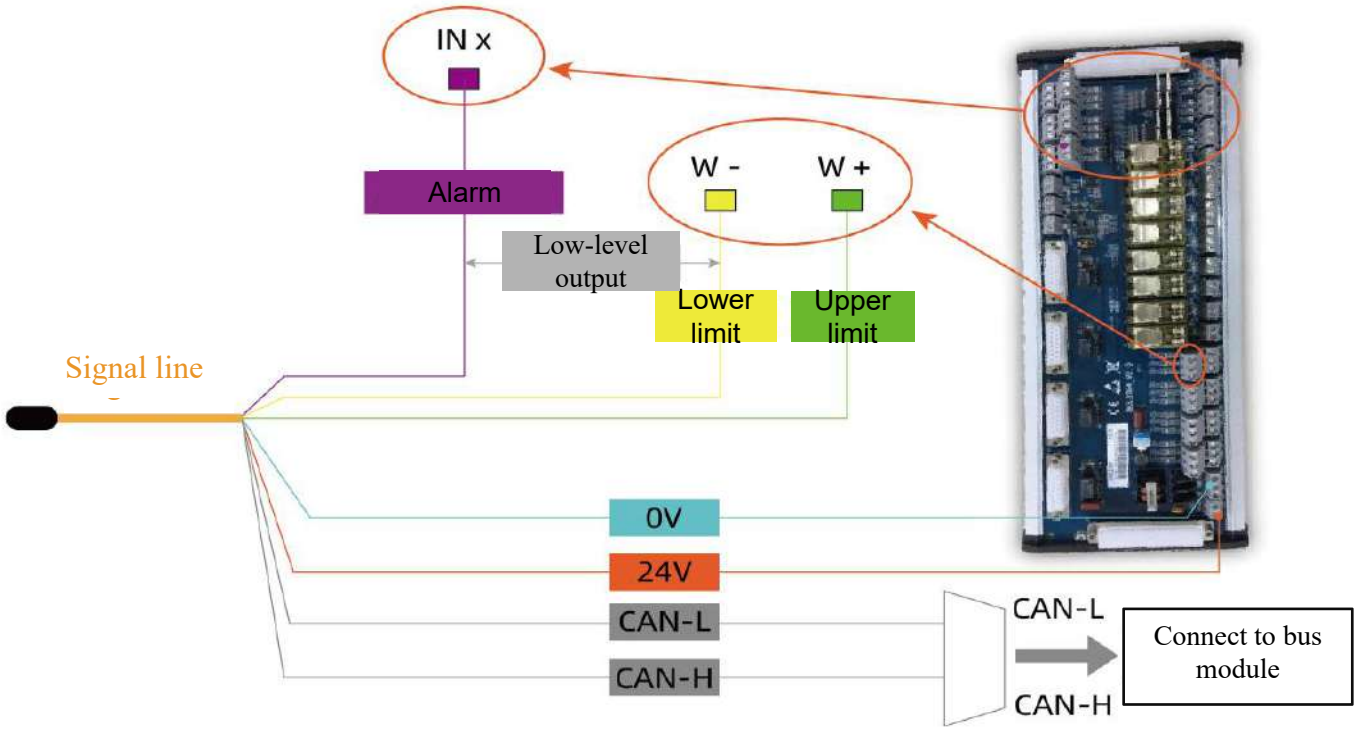
3.8.2 Servo Driver Power Wiring (Power Connection: DC24V)



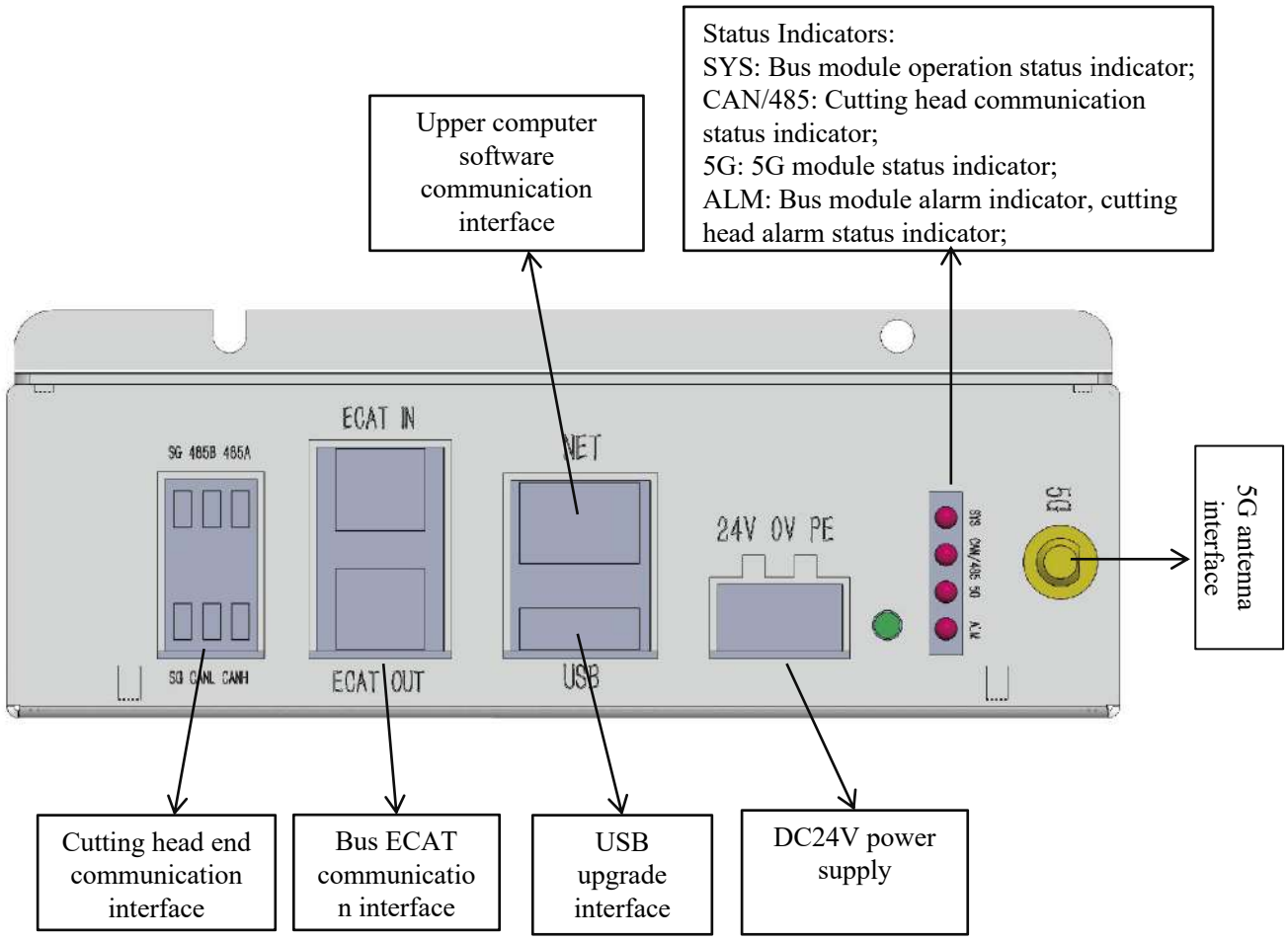
3.8.3 Signal Line Wiring (Without EtherCAT Bus Module)



3.8.4 Signal Line Wiring (With EtherCAT Bus Module)



3.8.5 Bus Module Wiring

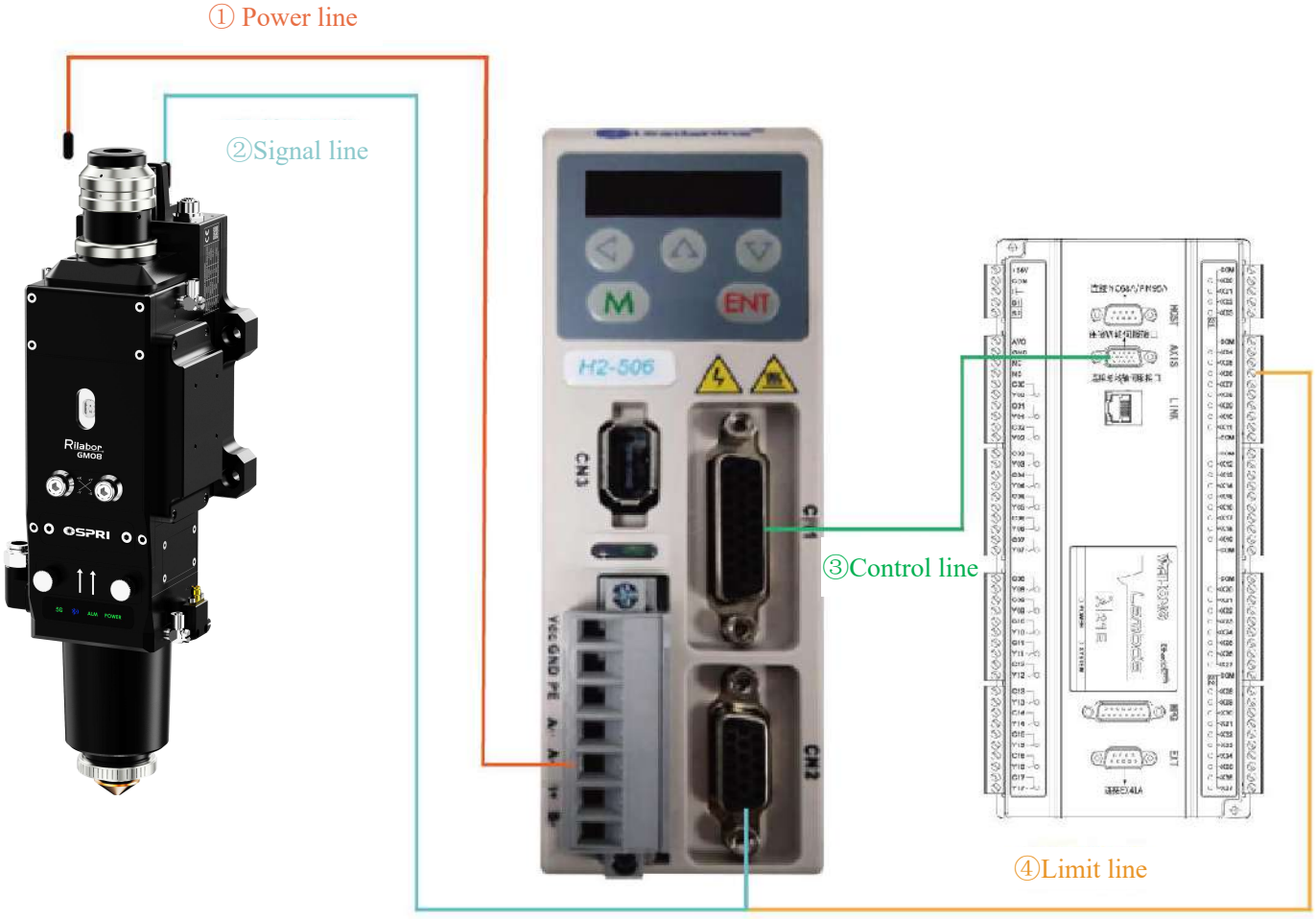


3.8.6 Driver Parameters

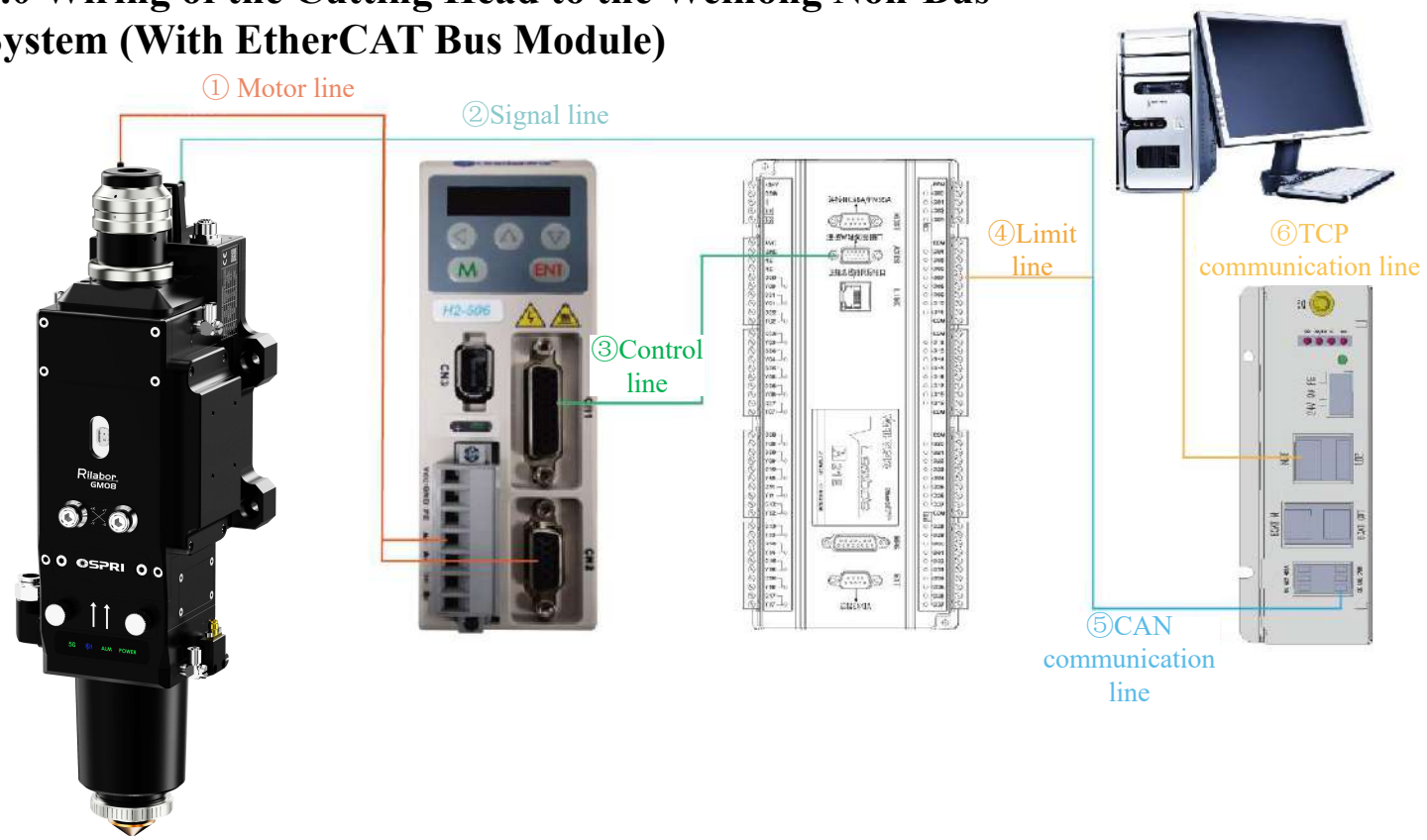
Parameter Index	Parameter Value	Parameter Content
PA000	10000	Pulses per revolution
PA003	1	Rotation direction
PA411	81	Servo alarm logic (NC)
PR438	0	Slave source

Note: Electronic gear ratio numerator: 8192;
Electronic gear ratio denominator: 10000;
Encoder bits: 13;

3.9 Wiring of the Cutting Head to the Weihong Non-Bus System (Without EtherCAT Bus Module)

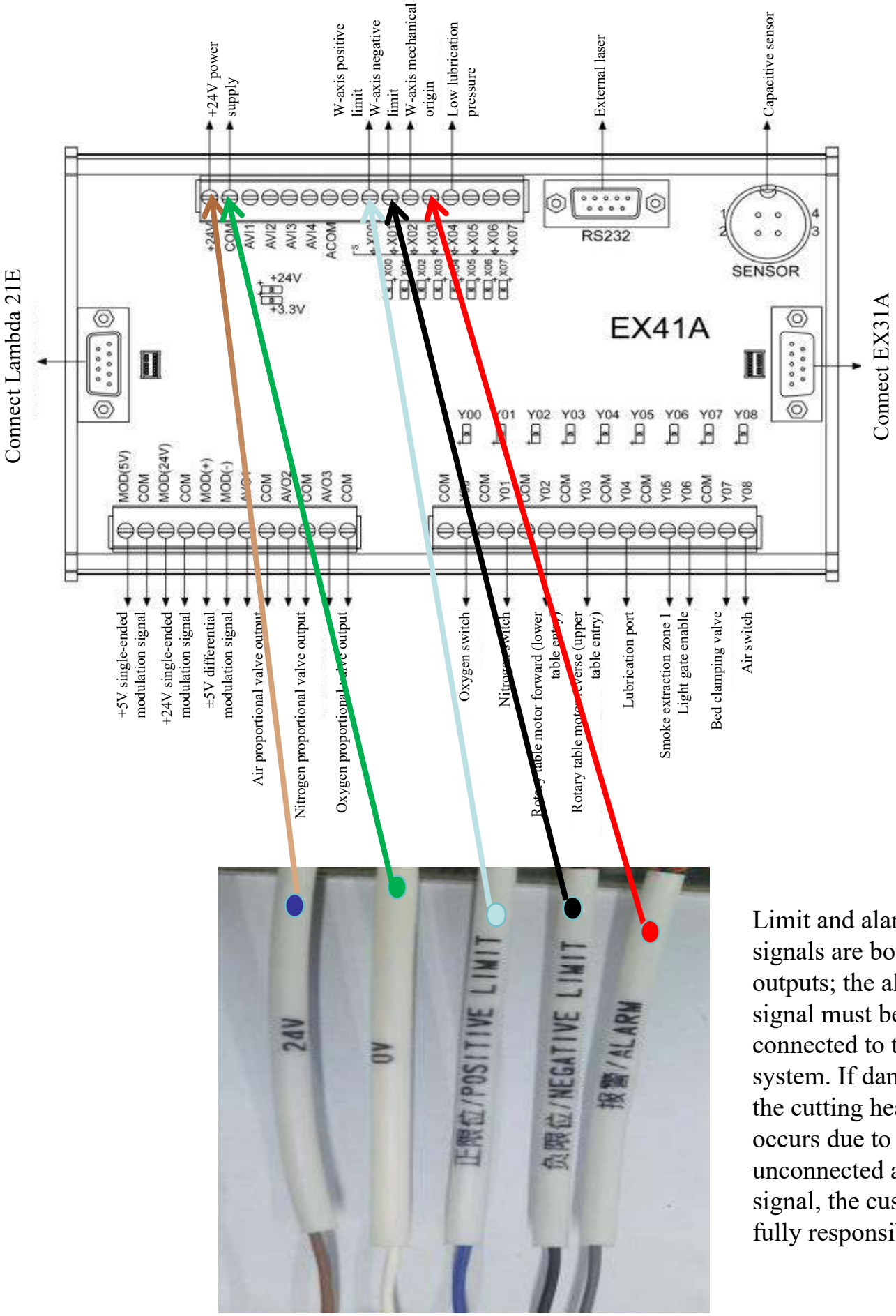


4.0 Wiring of the Cutting Head to the Weihong Non-Bus System (With EtherCAT Bus Module)



4.1 LS6000M Weihong Non-Bus System Wiring (Example: EX41A)

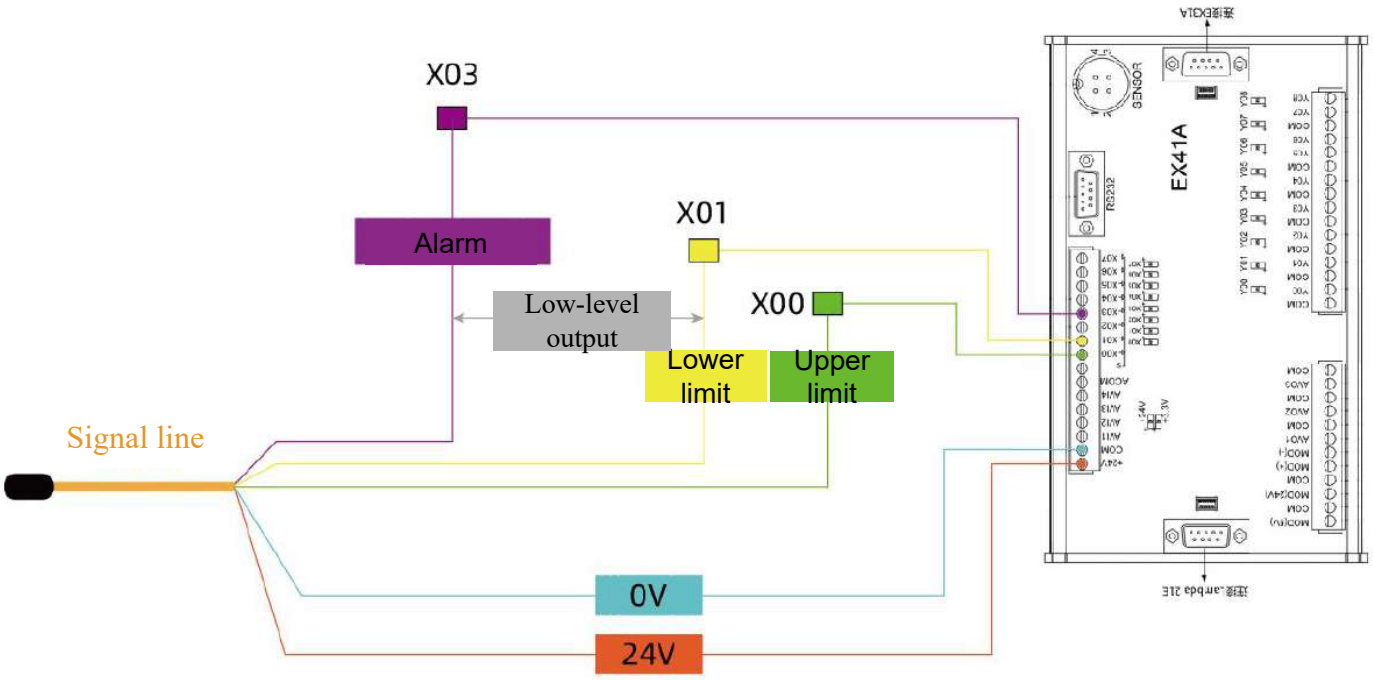
4.1.1 PCB Board Wiring



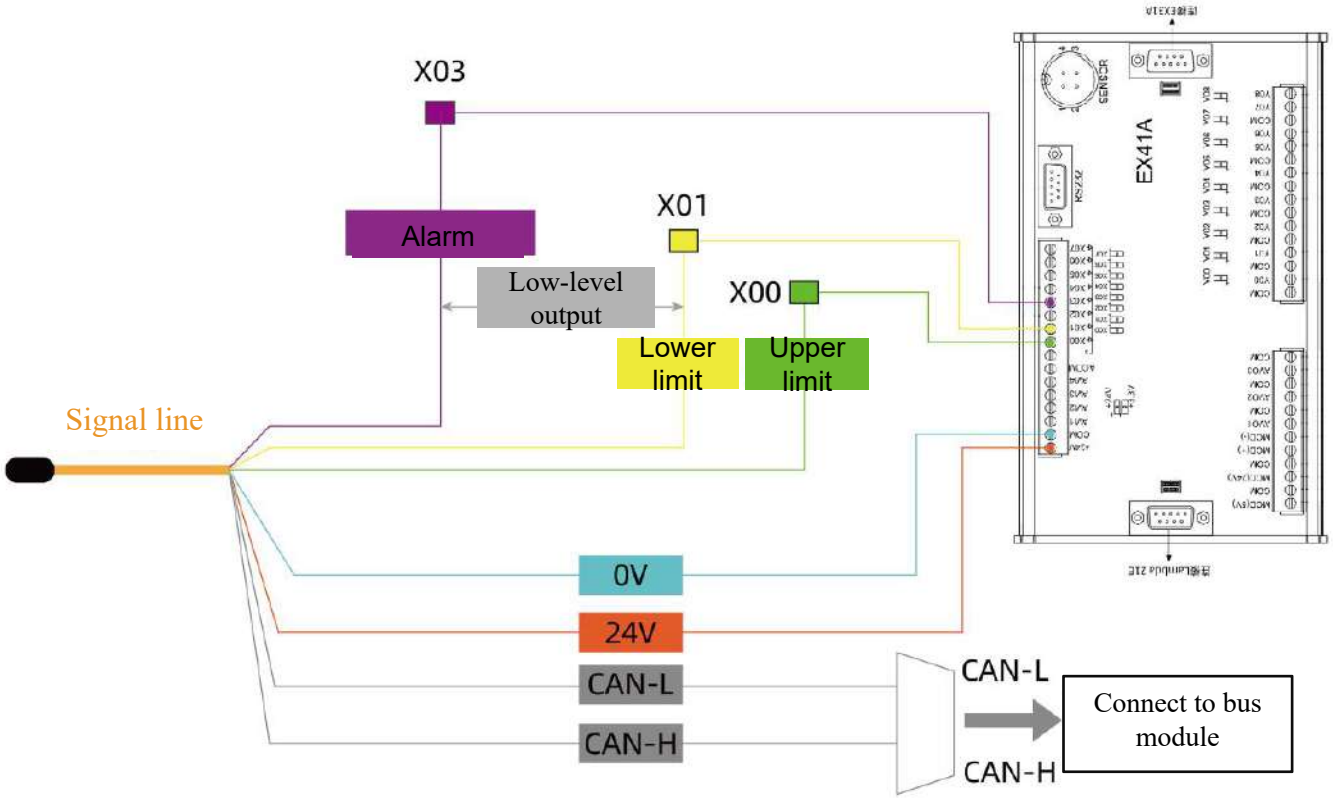
Limit and alarm signals are both NPN outputs; the alarm signal must be connected to the system. If damage to the cutting head occurs due to an unconnected alarm signal, the customer is fully responsible.

4.1.2 Servo Driver Power Wiring (DC24V)

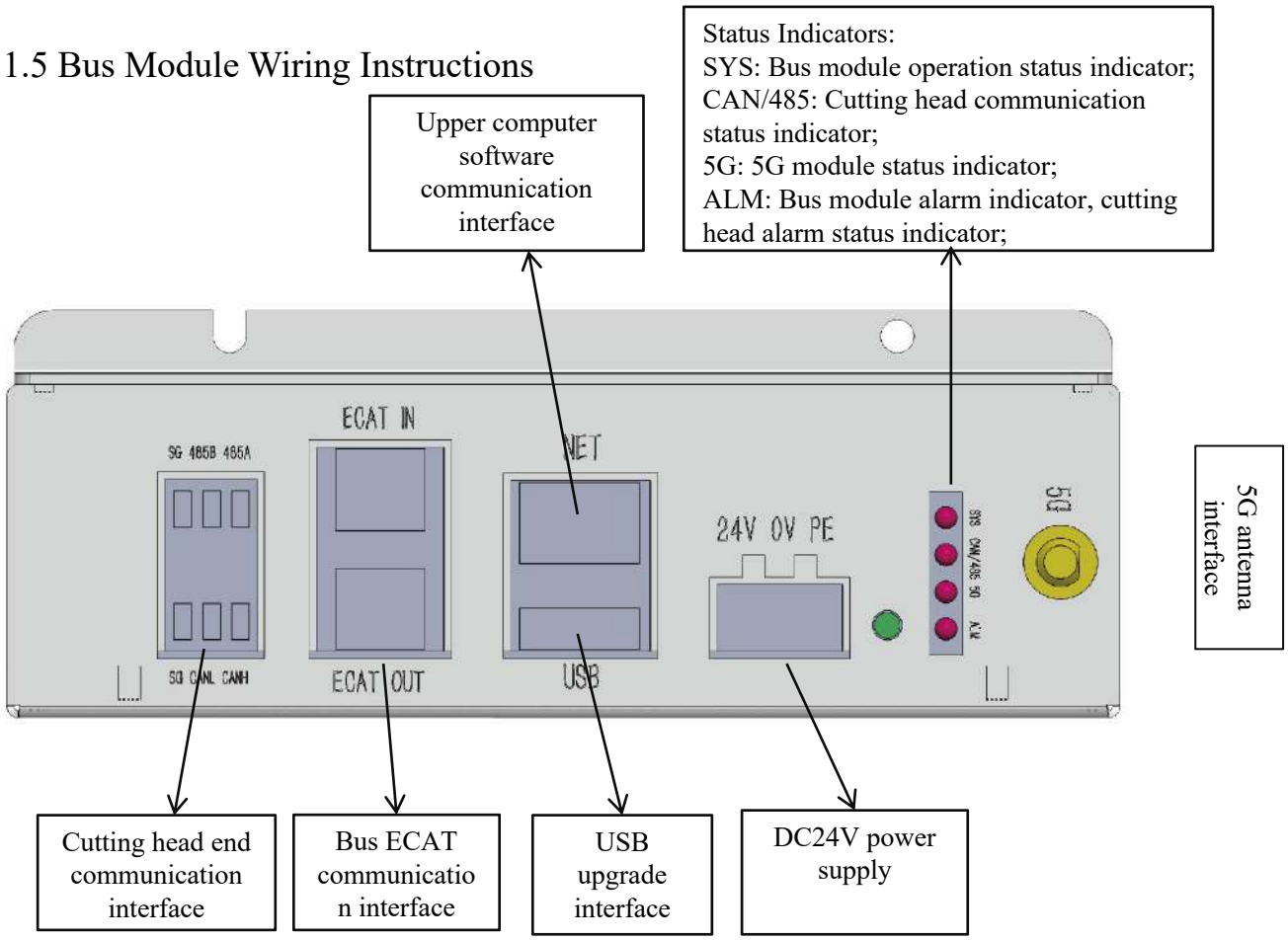
4.1.3 Signal Line Wiring (Without EtherCAT Bus Module)



4.1.4 Signal Line Wiring (With EtherCAT Bus Module)



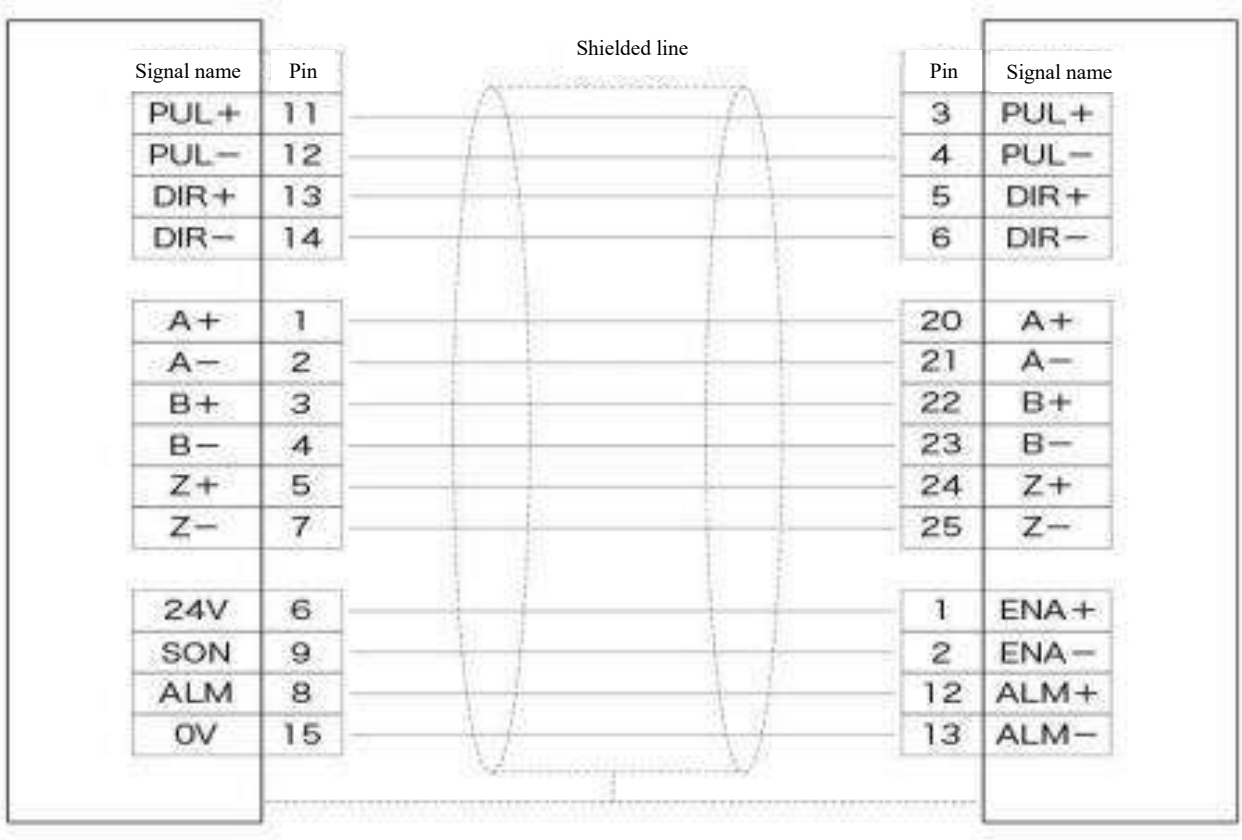
4.1.5 Bus Module Wiring Instructions



4.1.6 PCB Board Axis Port Wiring

Weihong System End (DB15 Pin Triple Row Male Connector)

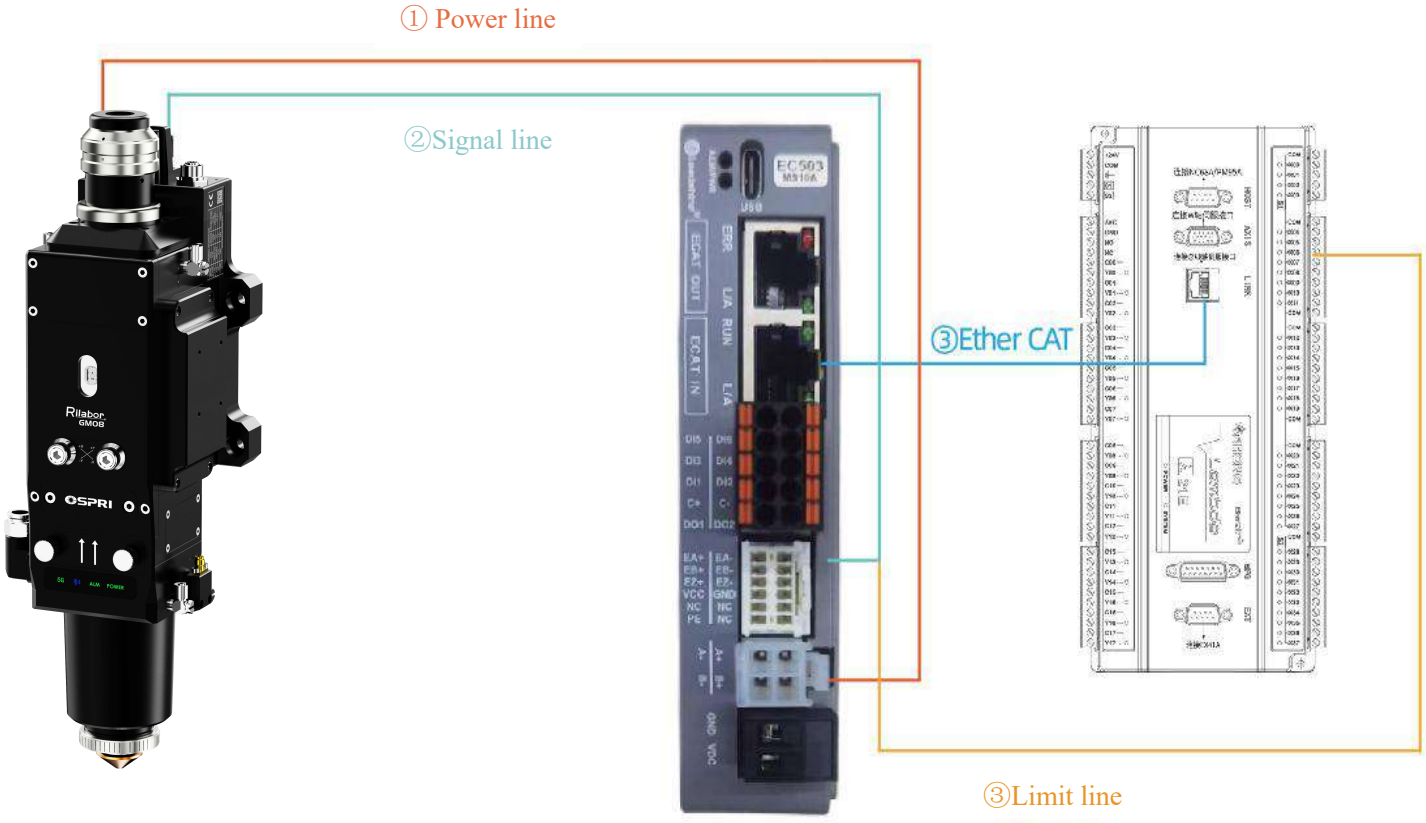
Servo End (DB26 Pin Triple Row Male Connector)



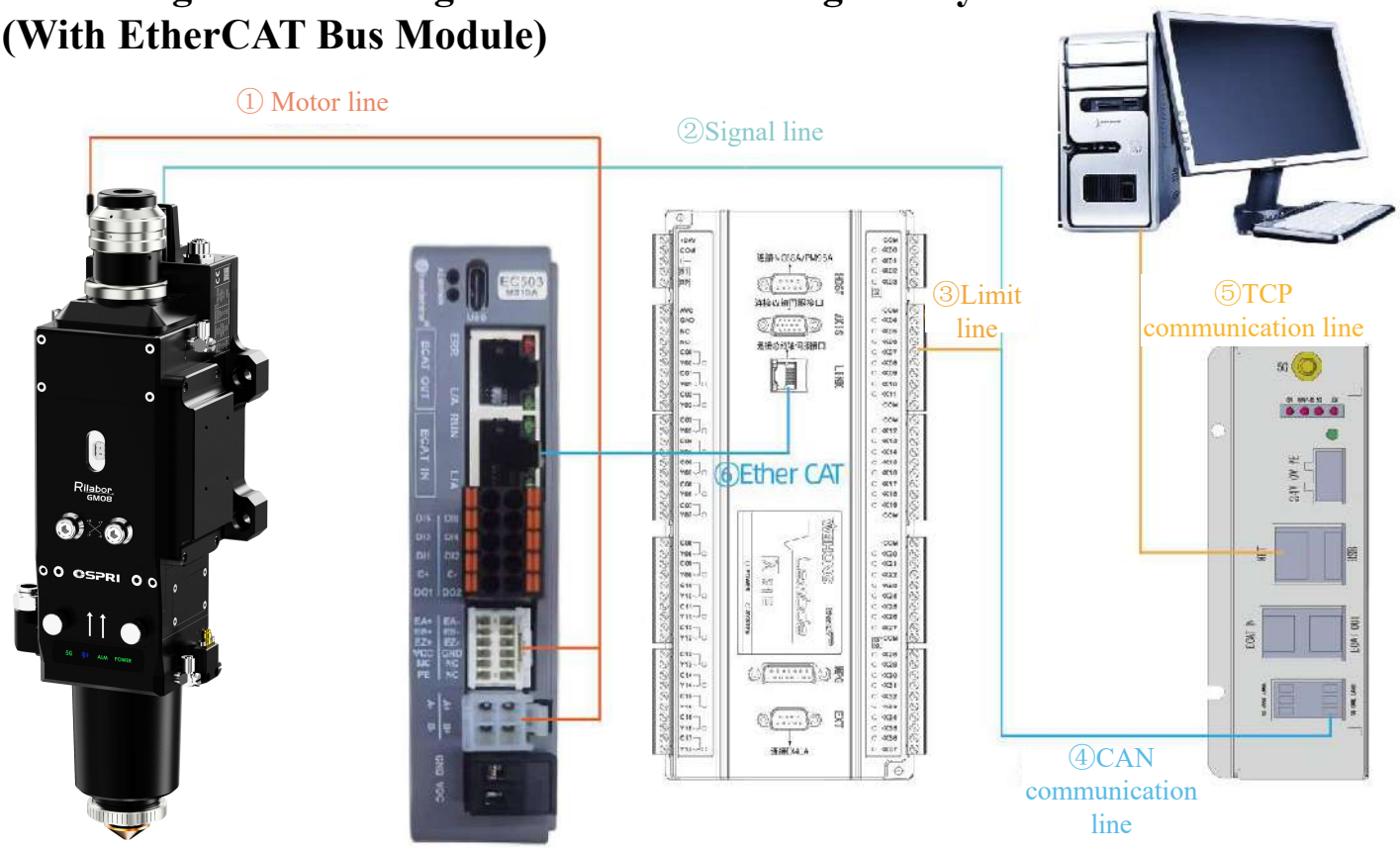
4.1.7 Driver Parameters

Parameter Index	Parameter Value	Parameter Content
PR007	10000	Pulses per revolution
PR008	4000	Resolution
PR015	0	Enable level
PR019	0	Motor direction
PR020	1	Bandwidth selection
PR042	6	Motor type

4.2 Wiring of the Cutting Head to the Weihong Bus System (Without EtherCAT Bus Module)

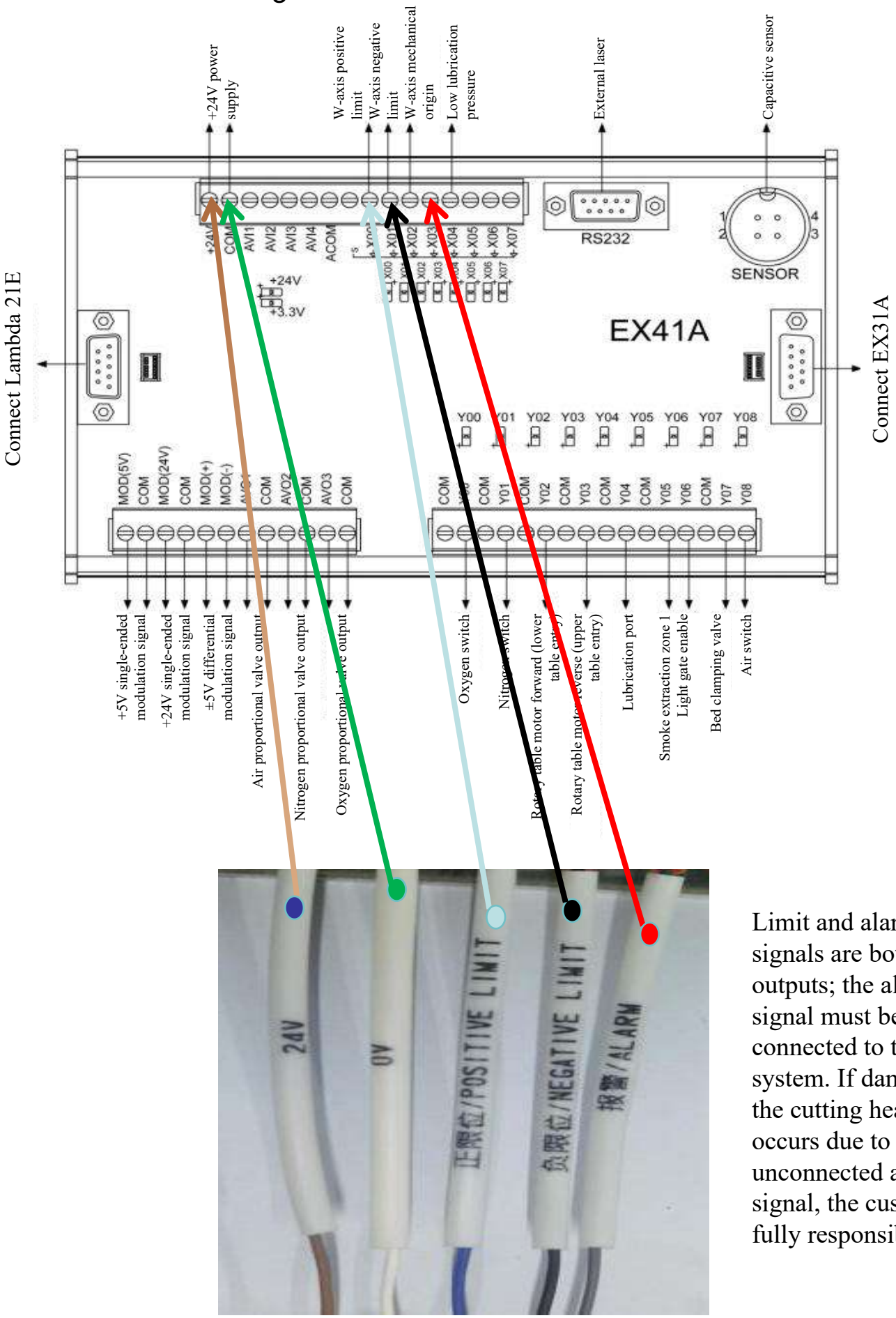


4.3 Wiring of the Cutting Head to the Weihong Bus System (With EtherCAT Bus Module)



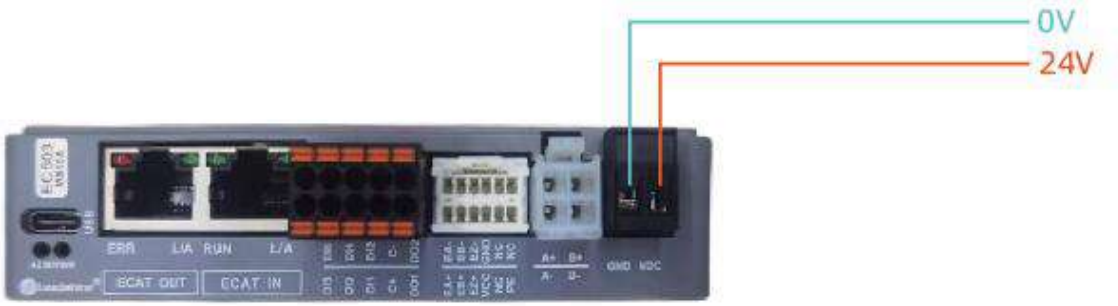
4.4 LS6000M Bus System Wiring (Example: EX41A)

4.4.1 PCB Board Wiring

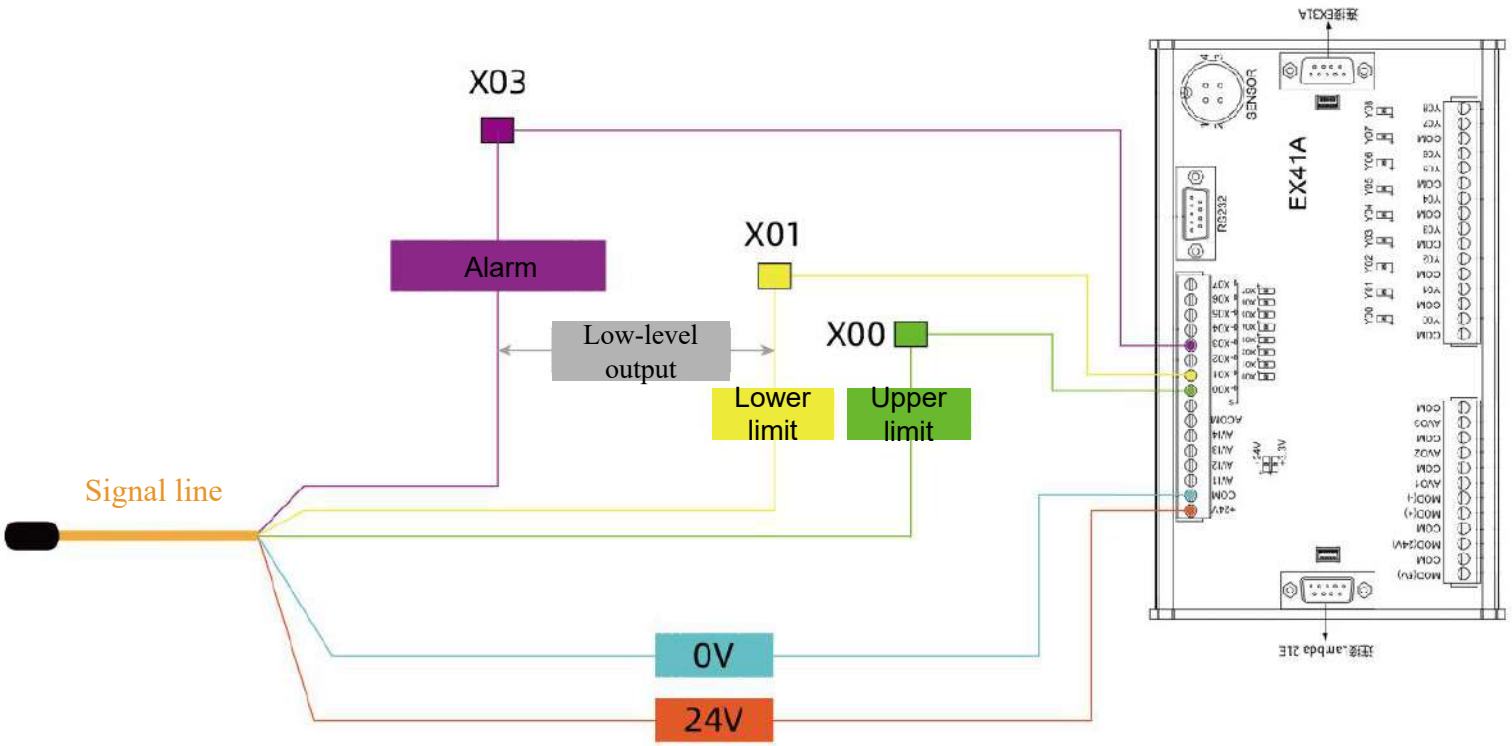


Limit and alarm signals are both NPN outputs; the alarm signal must be connected to the system. If damage to the cutting head occurs due to an unconnected alarm signal, the customer is fully responsible.

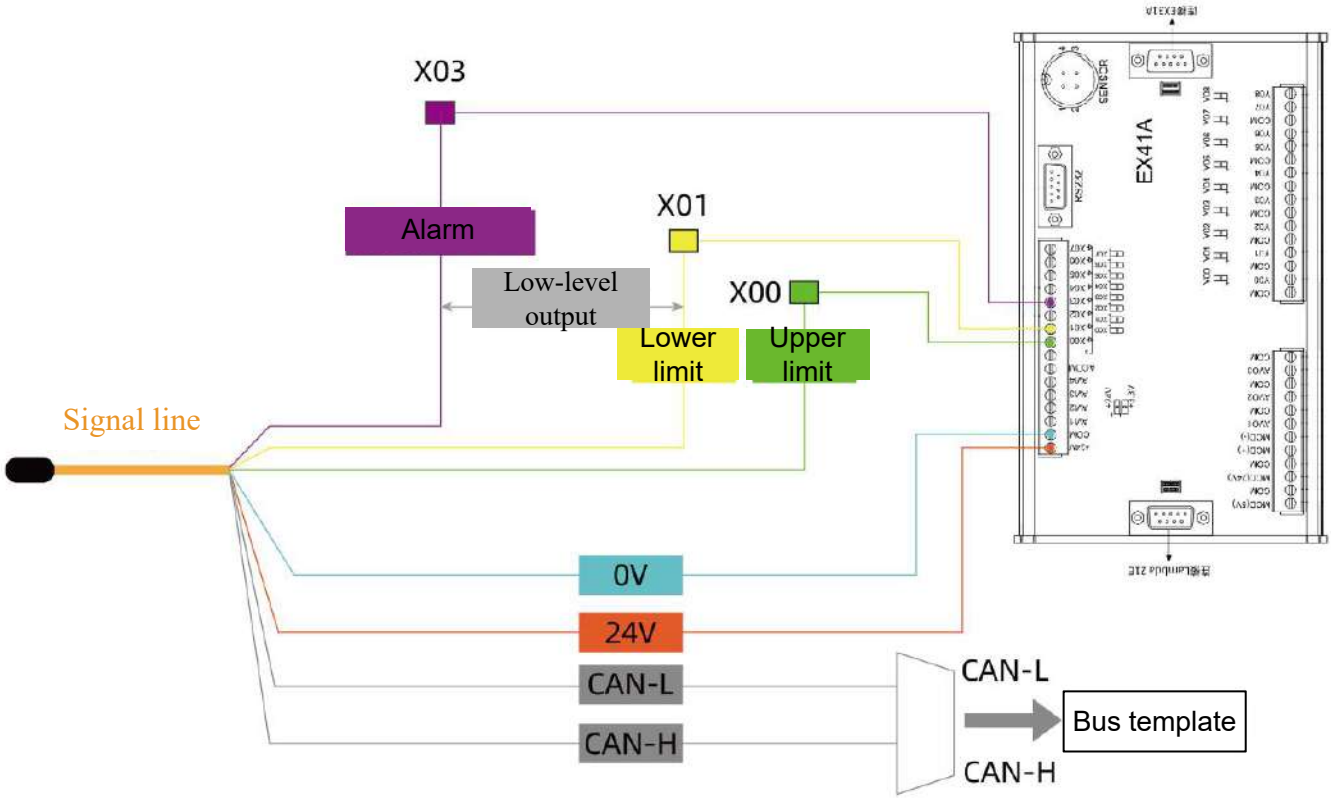
4.4.2 Servo Driver Power Wiring (DC24V)



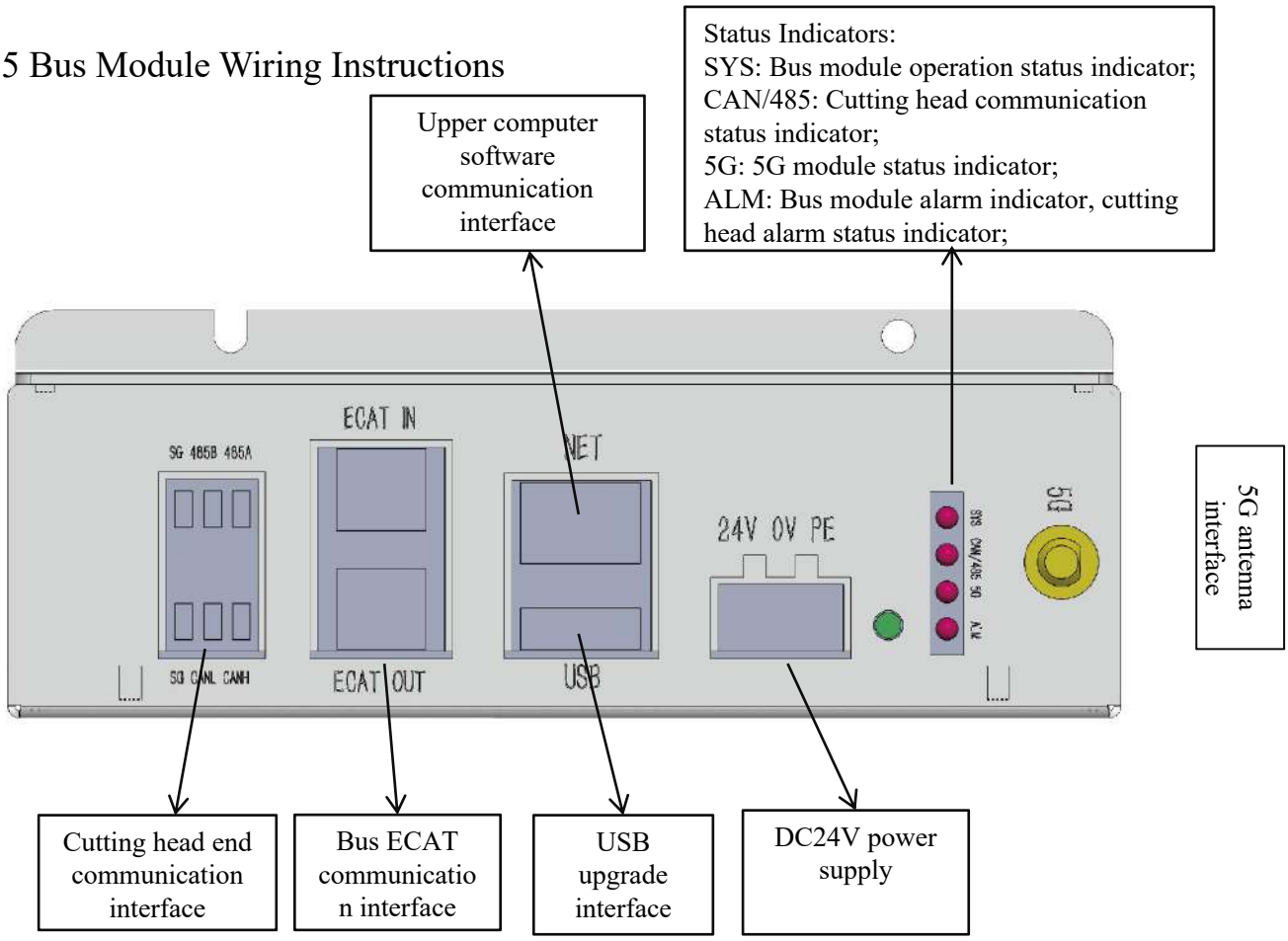
4.4.3 Signal Line Wiring (Without EtherCAT Bus Module)



4.4.4 Signal Line Wiring (With EtherCAT Bus Module)



4.4.5 Bus Module Wiring Instructions



4.4.6 Driver Parameters

Parameter Index	Parameter Value	Parameter Content
PA000	10000	Pulses per revolution
PA003	1	Rotation direction
PA411	81	Servo alarm logic (NC)
PR438	0	Slave source

Note: Electronic gear ratio numerator: 8192;
Electronic gear ratio denominator: 10000;
Encoder bits: 13;

4.5 QBH Fiber Laser Head Installation

① Put the welding head horizontally, remove the white cover and static sticker, and then take out the dust-proof plug and dust-proof cover, as shown in Figure 1.6:

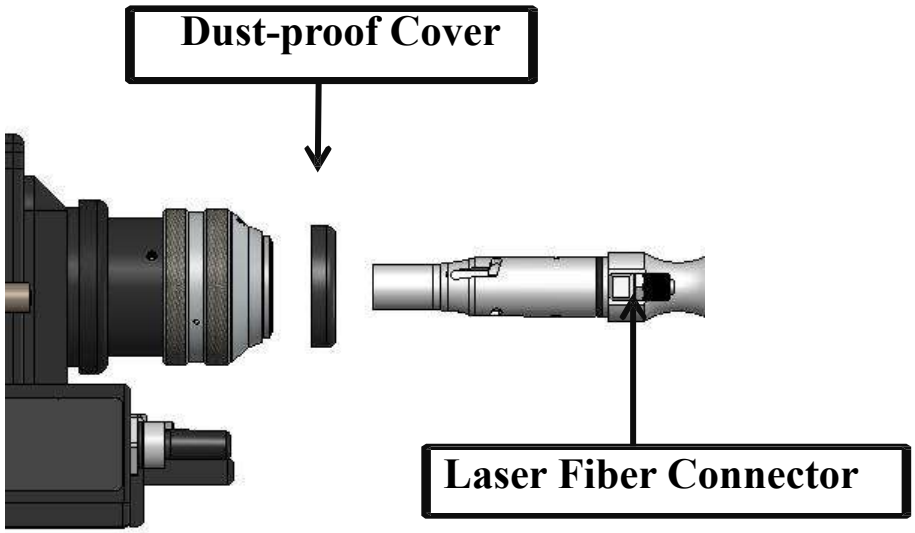


Figure 1.6

② Cover the dust-proof cover which is in the white accessory box, onto the fiber laser tip, as shown in Figure 1.7:

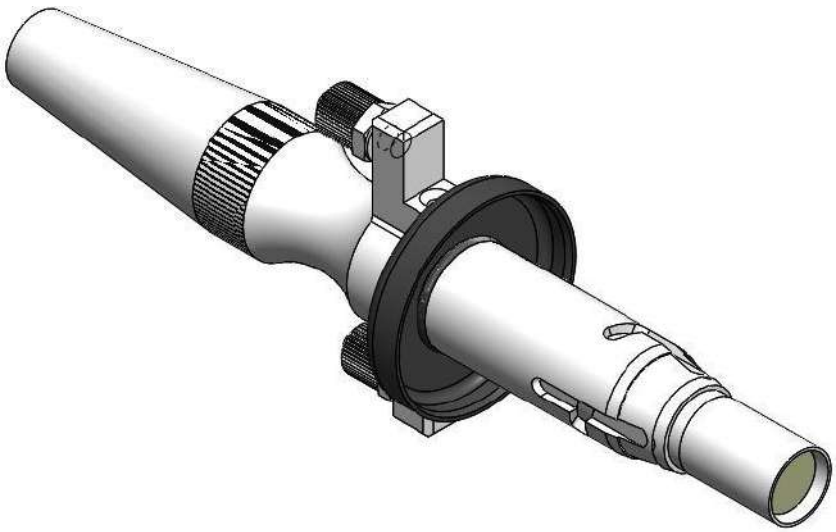


Figure 1.7

Attention: In case the fiber head is with original dust-proof gasket, users can choose whether install dust-proof cover or not according to the actual condition.

③ Turn the QBH connector into the open state, that is, turn it to the limit position counterclockwise (a "thud" sound can be heard). Do not twist with great force, otherwise the internal structure of the QBH may be damaged, as shown in Figure 1.8:

Figure 1.8

④ Align the red dot on the fiber head with the red dot on the QBH connector, and slowly insert the fiber head into the QBH connector, as shown in Figure 1.9:

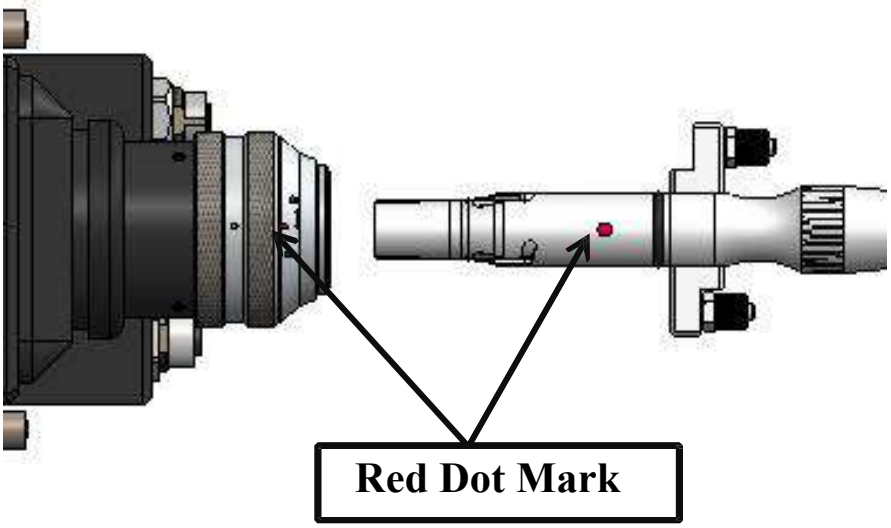


Figure 1.9

⑤ Screw it toward the limit position clockwise (a "thud" sound can be heard), then lift the swivel nut up and screw the nut clockwise again until the fiber splice is compacted tightly, and turn the QBH connector to the locked state (Do not twist it with great force, otherwise the internal structure of the QBH may be damaged). As shown in Figure 2.0:

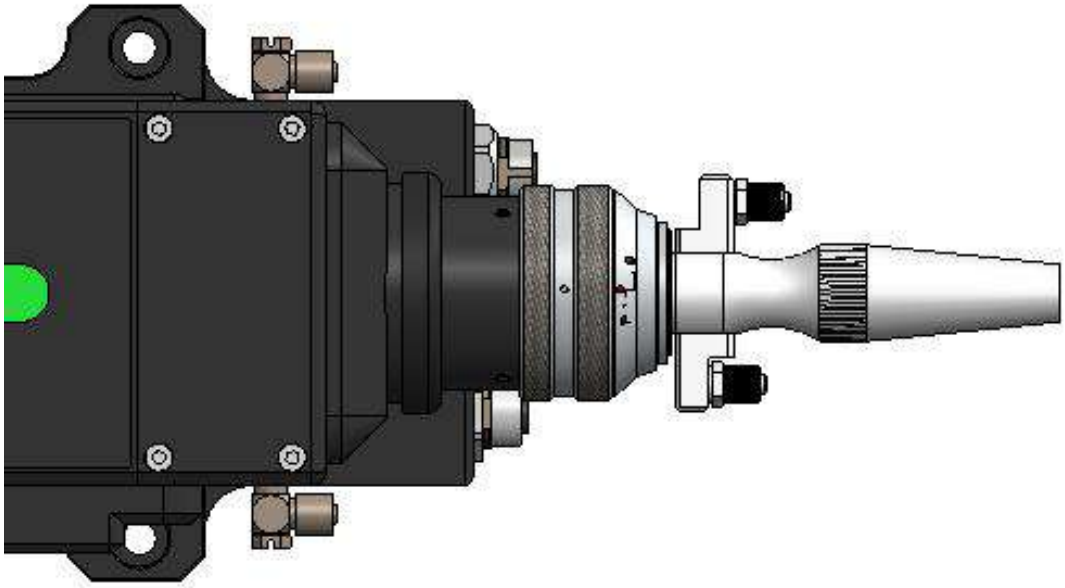


Figure 2.0

Attention: Wrap it with masking tape after plugging fiber to better protect the laser head from dust.

Chapter 4 Product Debugging

4.1 Focusing Instructions (Example: FSCUT2000C Pulse System)

Focus Reset - After powering up the machine, the fourth axis must be reset first to position the focus at zero. The following diagram shows the cutting head platform parameters configuration for collimation 100/focus 200:

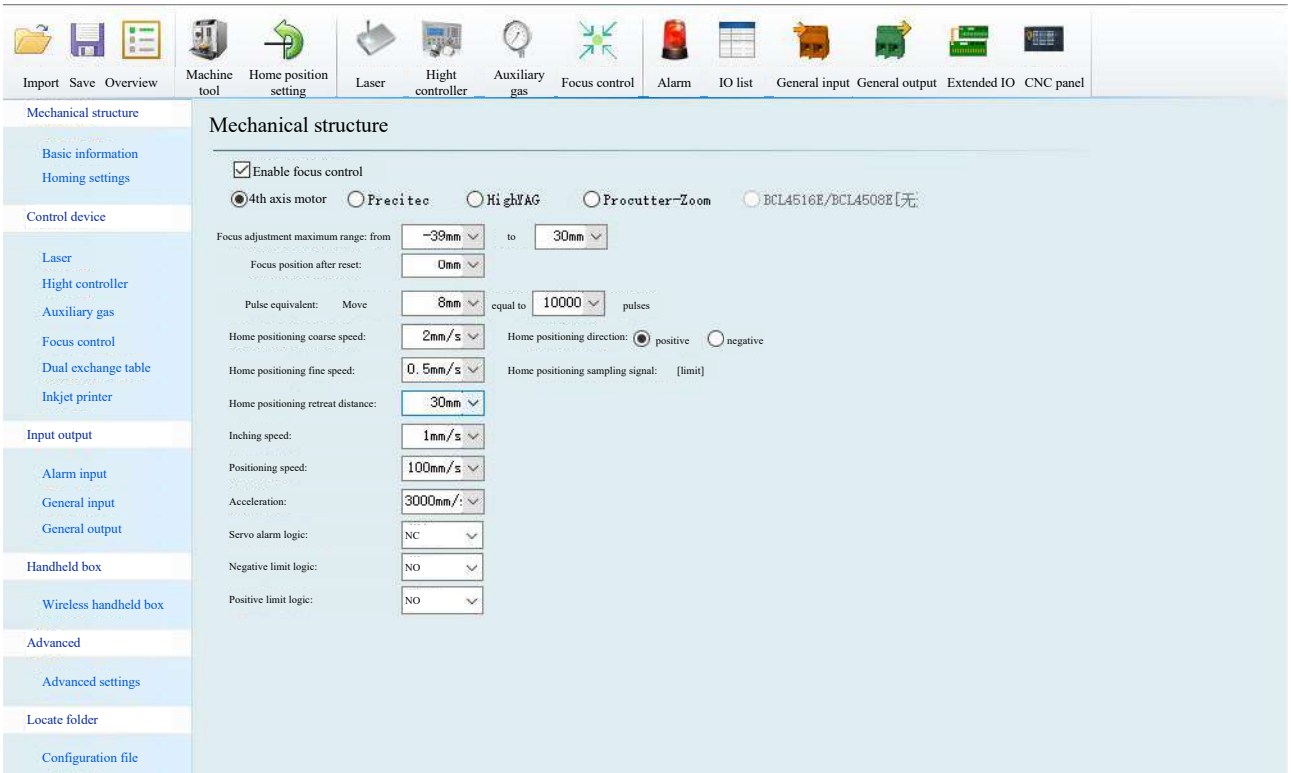


Figure 2.1

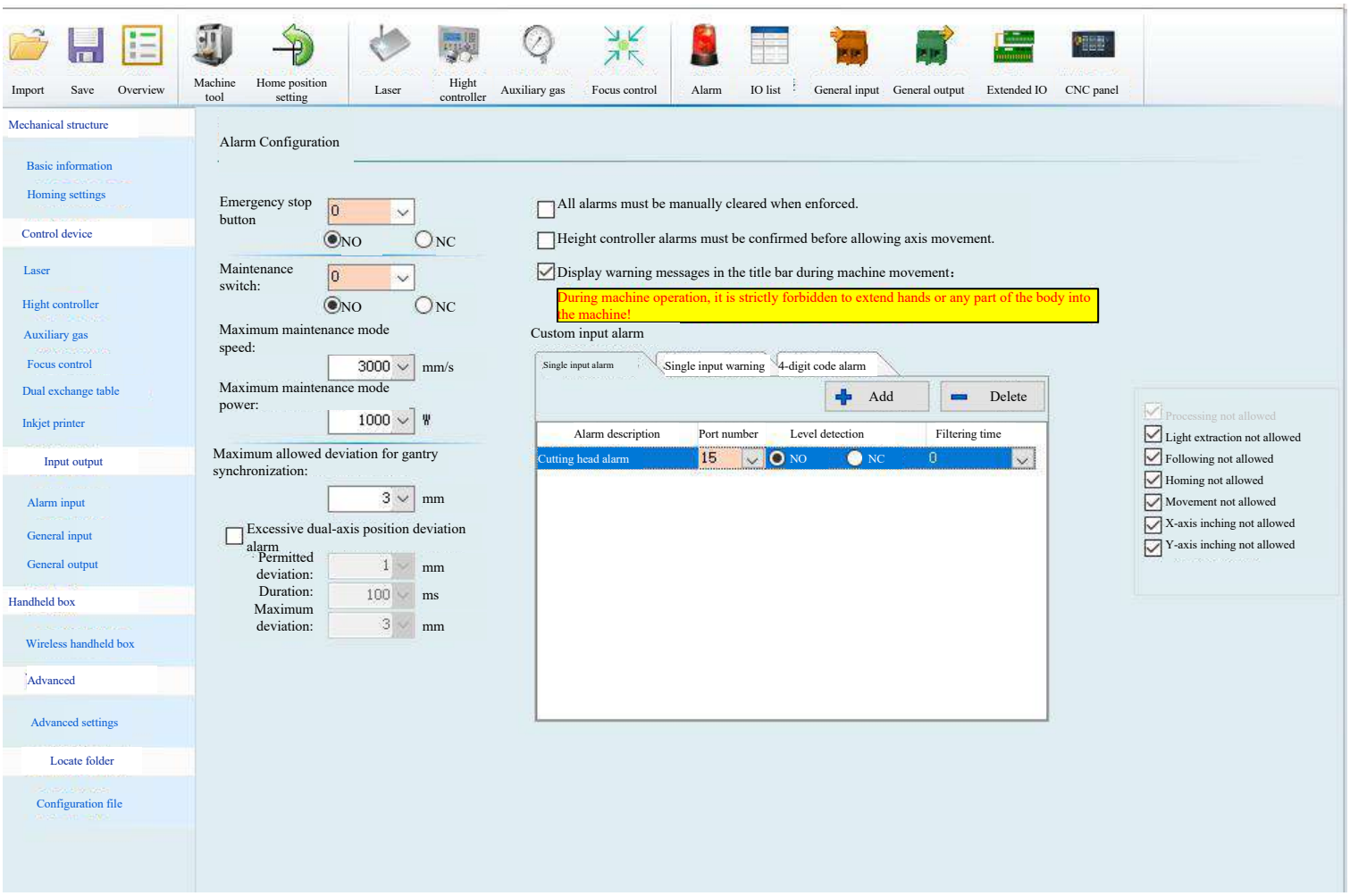
① Open the software configuration platform, set the focus retraction distance to 30mm (adjustable based on actual conditions) to position the collimation focus at the zero scale (using Cypcut as an example) as shown in Figure 2.1.

Note: The retraction distance should be fine-tuned based on the actual cutting focus.

4.1.1 GM08B Cypcut Platform Configuration

Collimation 100/focus 150:
Maximum focus adjustment range: -15mm to15mm；
Pulse equivalent: Every 4.5mm movement corresponds to 10,000 pulses;
Home direction: Forward;
Retraction distance: 15mm;
Limit logic: NO;
Collimation 100/focus 200:
Maximum focus adjustment range: -35mm to 30mm;
Pulse equivalent: Every 8mm movement corresponds to 10,000 pulses;
Home direction: Forward;
Retraction distance: 30mm;
Limit logic: NO;

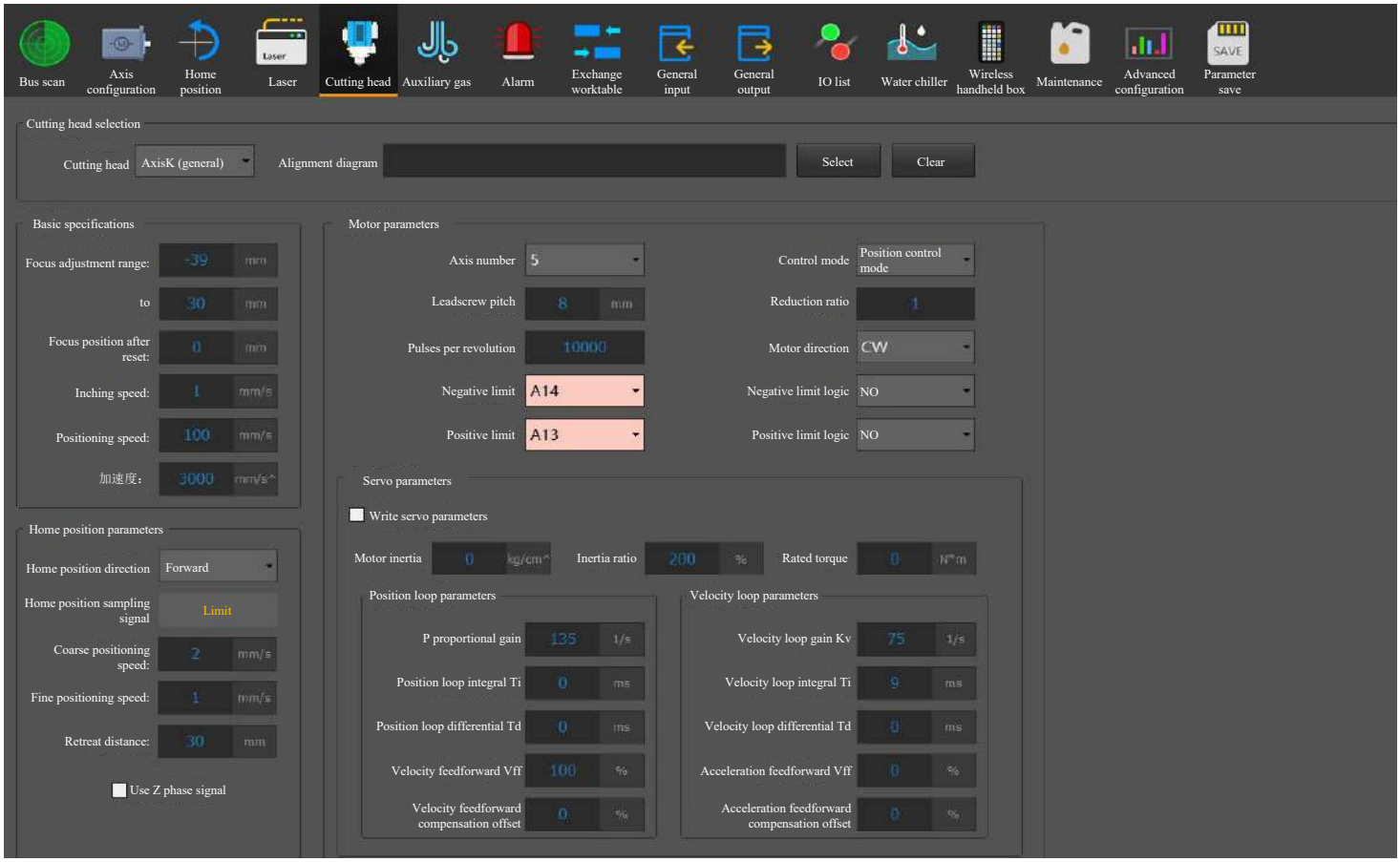
4.2 Alarm Signal Configuration



Set input port IN15 as the cutting head alarm signal, with NO logic. The I/O is customizable to the corresponding input port.

4.3 FSCUT8000 System Configuration (Bus System)

4.3.1 Focus Control and Limit Configuration

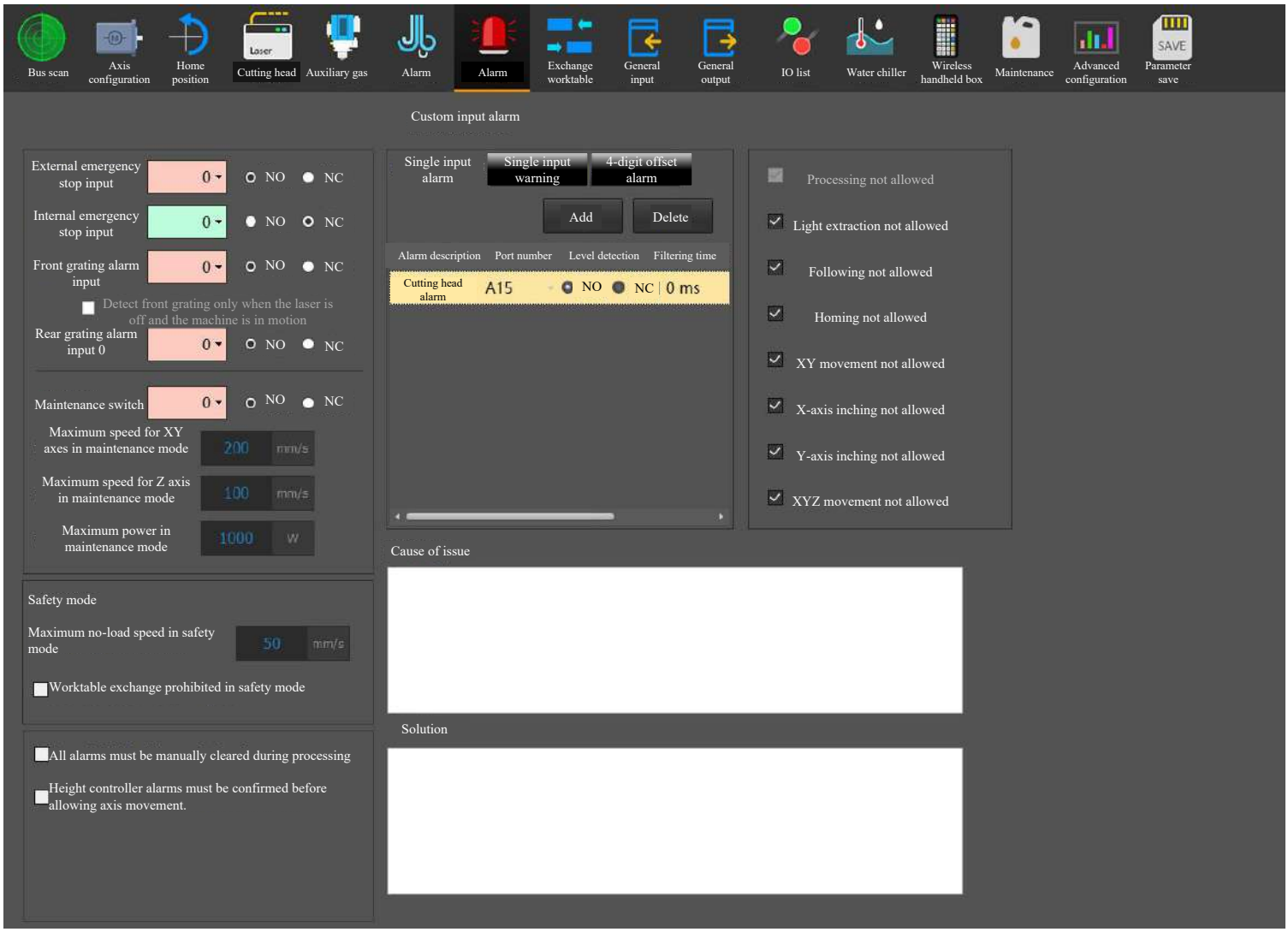


4.3.2 GM08B Cypcut Platform Configuration

Collimation 100/focus 150:
Maximum focus adjustment range: -15mm to 15mm；
Lead screw pitch: 4.5mm;
Pulses per revolution: 10,000;
Positive limit: A13;
Negative limit: A14;
Limit logic: NO;
Home direction: Forward;
Retraction distance: 15mm;

Collimation 100/focus 200:
Maximum focus adjustment range: -35mm to 30mm;
Lead screw pitch: 8mm;
Pulses per revolution: 10,000;
Positive limit: A13;
Negative limit: A14;
Limit logic: NO;
Home direction: Forward;
Retraction distance: 30mm;

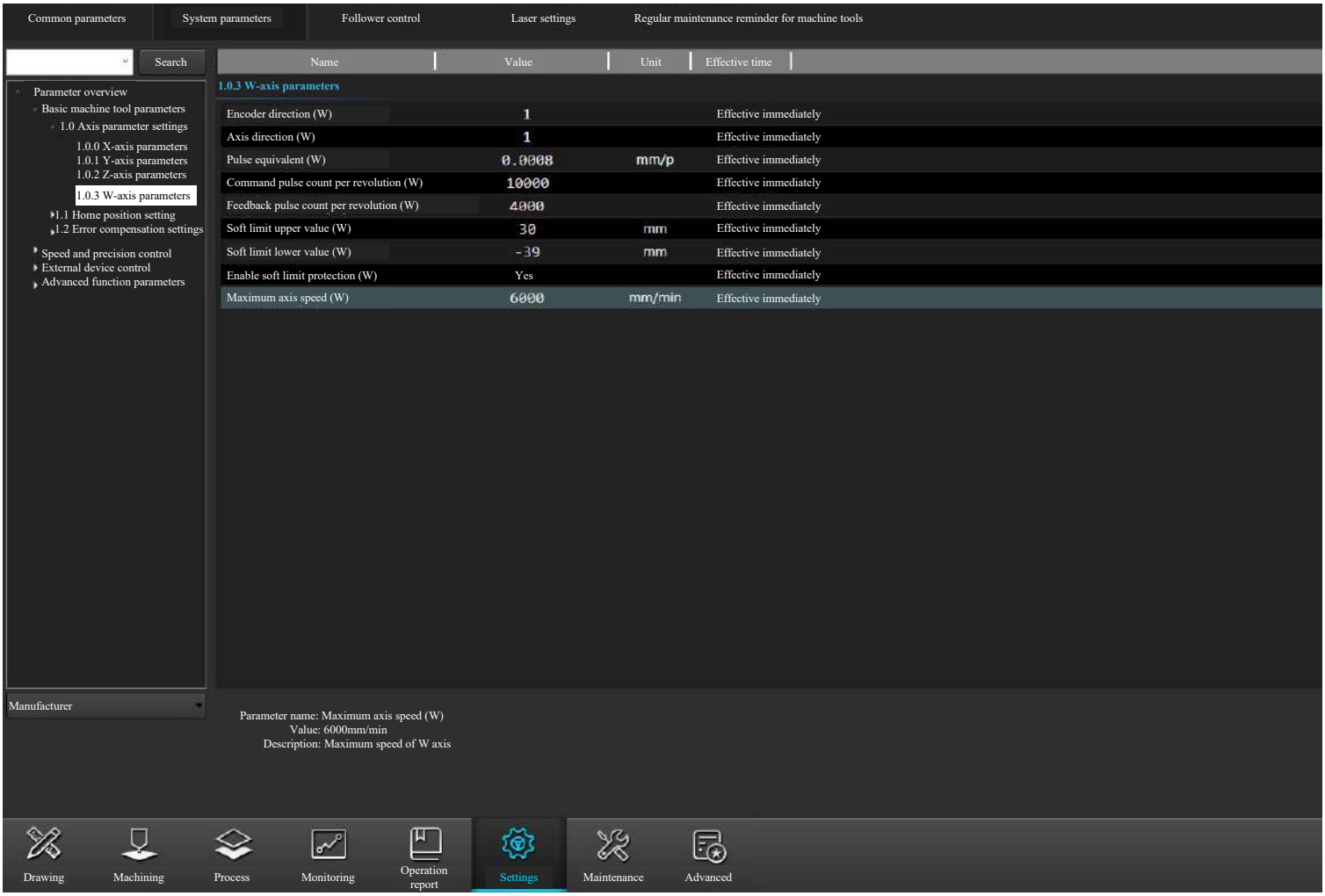
4.4 Alarm Signal Configuration



Set input port IN15 as the cutting head alarm signal, with NO logic. The I/O is customizable to the corresponding input port.

4.5 LS6000M Non-Bus System Configuration

4.5.1 W-Axis Parameter Configuration



4.5.2 GM08B Weihong Platform Configuration

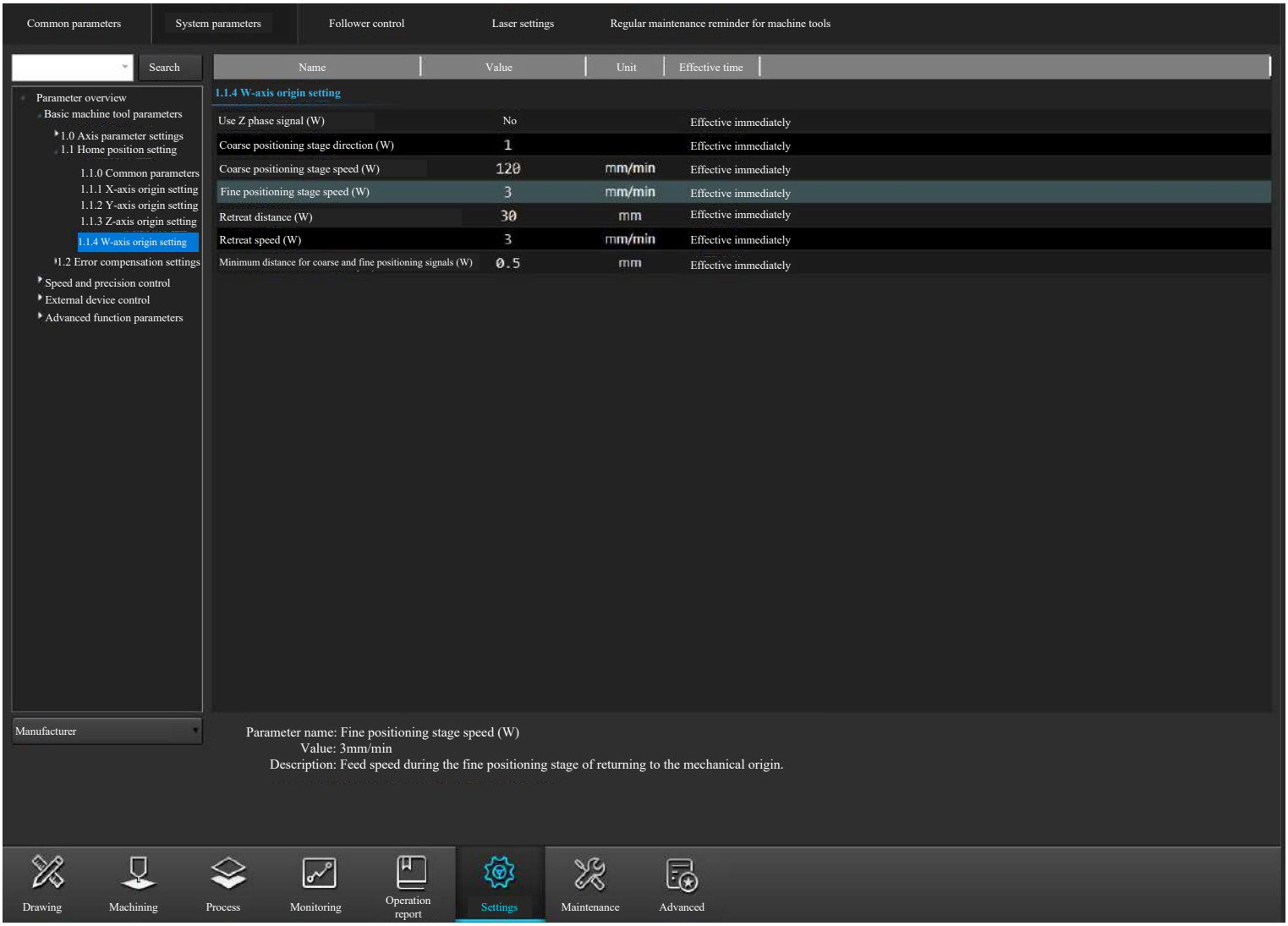
Collimation 100/focus 150:

Encoder direction: 1;
Axis direction: 1;
Pulse equivalent: 0.00045;
Pulses per revolution: 10,000;
Feedback pulses per revolution: 4,000;
Upper soft limit: 15;
Lower soft limit: -15;
Soft limit protection enabled: Yes;
Maximum axis speed: 6000mm/s;

Collimation 100/focus 200:

Encoder direction: 1;
Axis direction: 1;
Pulse equivalent: 0.0008;
Pulses per revolution: 10,000;
Feedback pulses per revolution: 4,000;
Upper soft limit: 30;
Lower soft limit: -35;
Soft limit protection enabled: Yes;
Maximum axis speed: 6000mm/s;

4.5.3 W-Axis Home Configuration

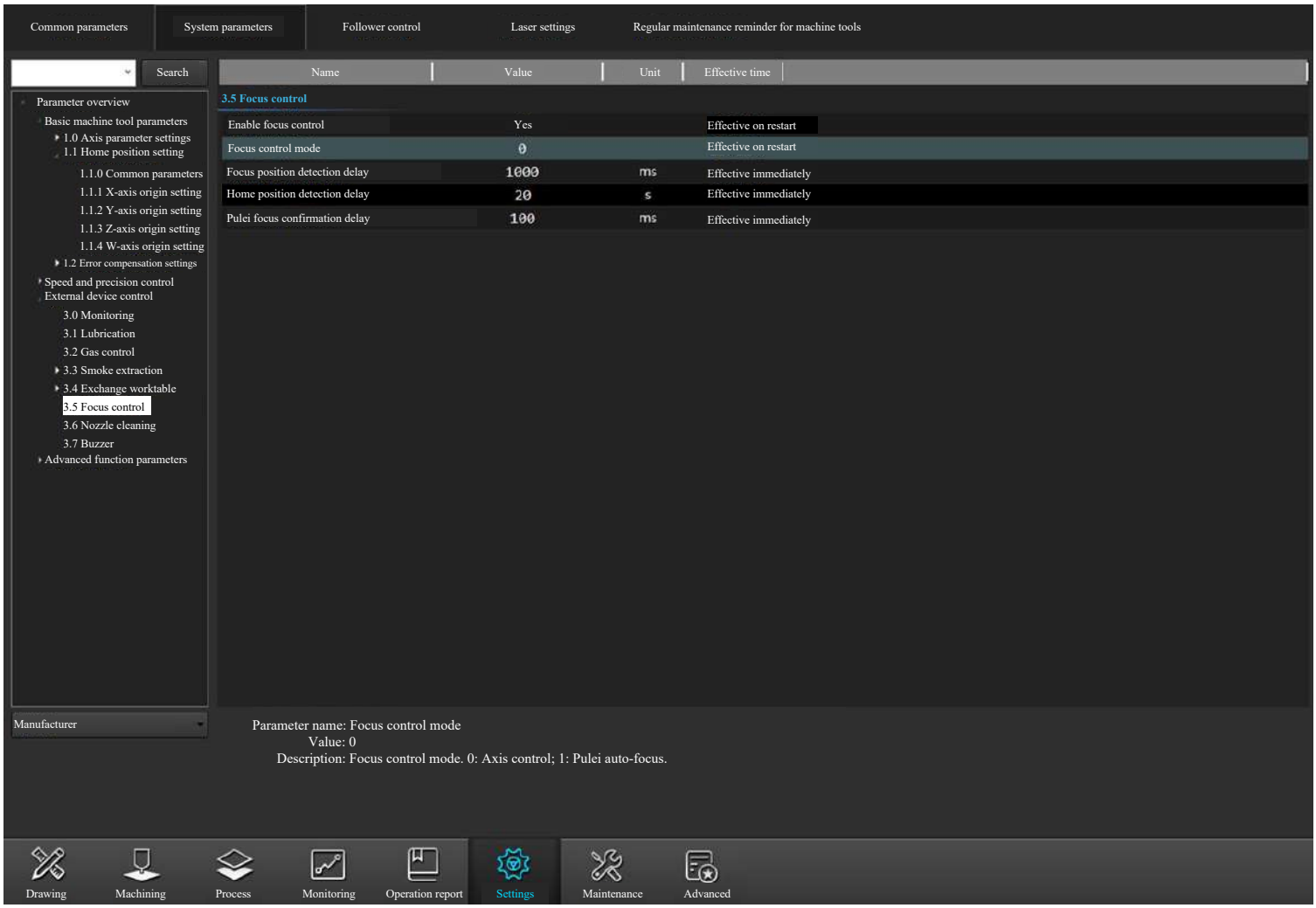


4.5.4 GM08B Weihong Platform Configuration

Collimation 100/focus 150:
Use Z-phase signal: No;
Coarse positioning direction: 1;
Coarse positioning speed: 600mm/min;
Fine positioning speed: 60mm/min;
Coarse positioning direction: 1;
Retraction distance: 15;
Retraction speed: 200mm/min;

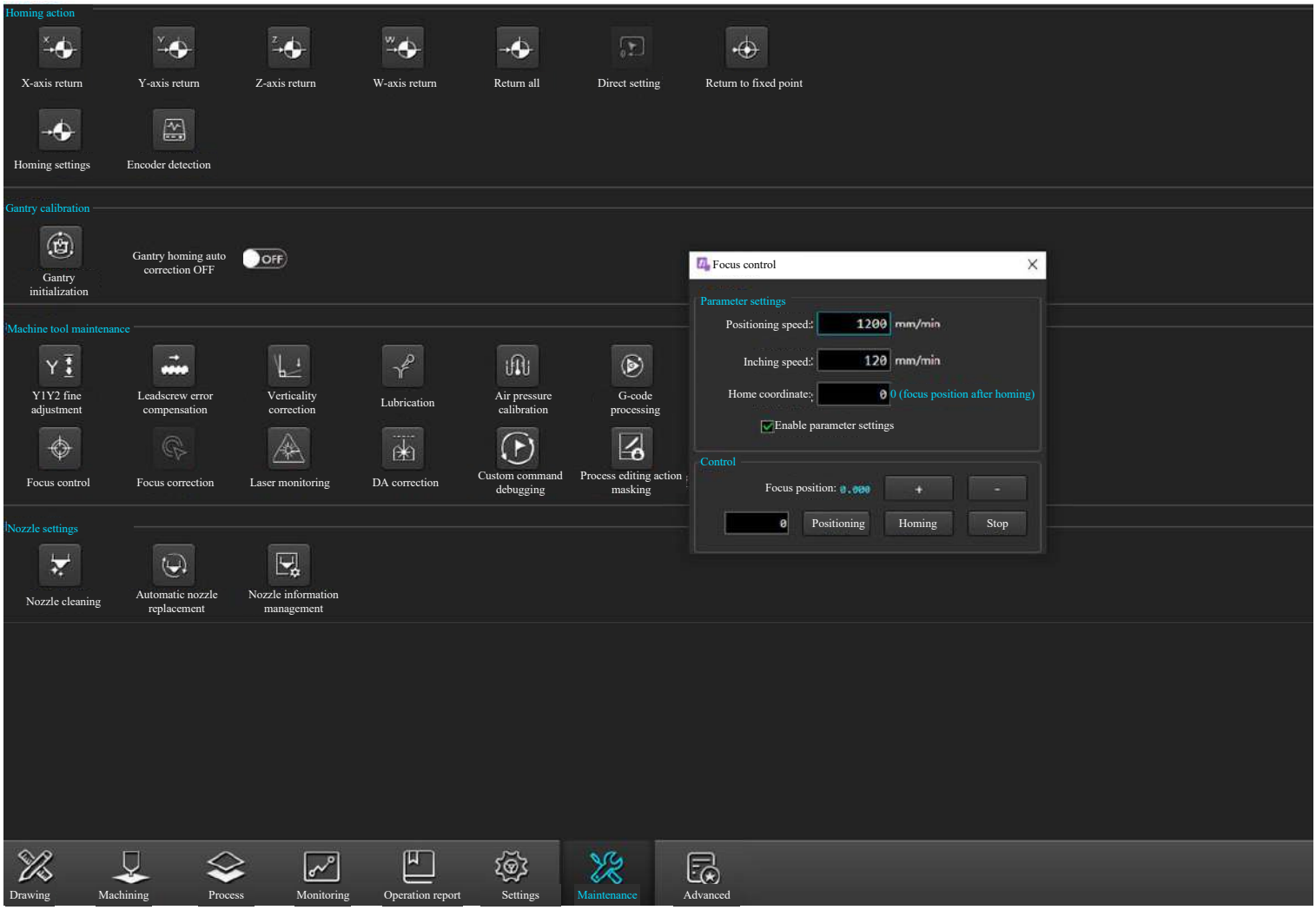
Collimation 100/focus 200:
Use Z-phase signal: No;
Coarse positioning direction: 1;
Coarse positioning speed: 600mm/min;
Fine positioning speed: 60mm/min;
Coarse positioning direction: 1;
Retraction distance: 30;
Retraction speed: 200mm/min;

4.5.5 Focus Control Configuration



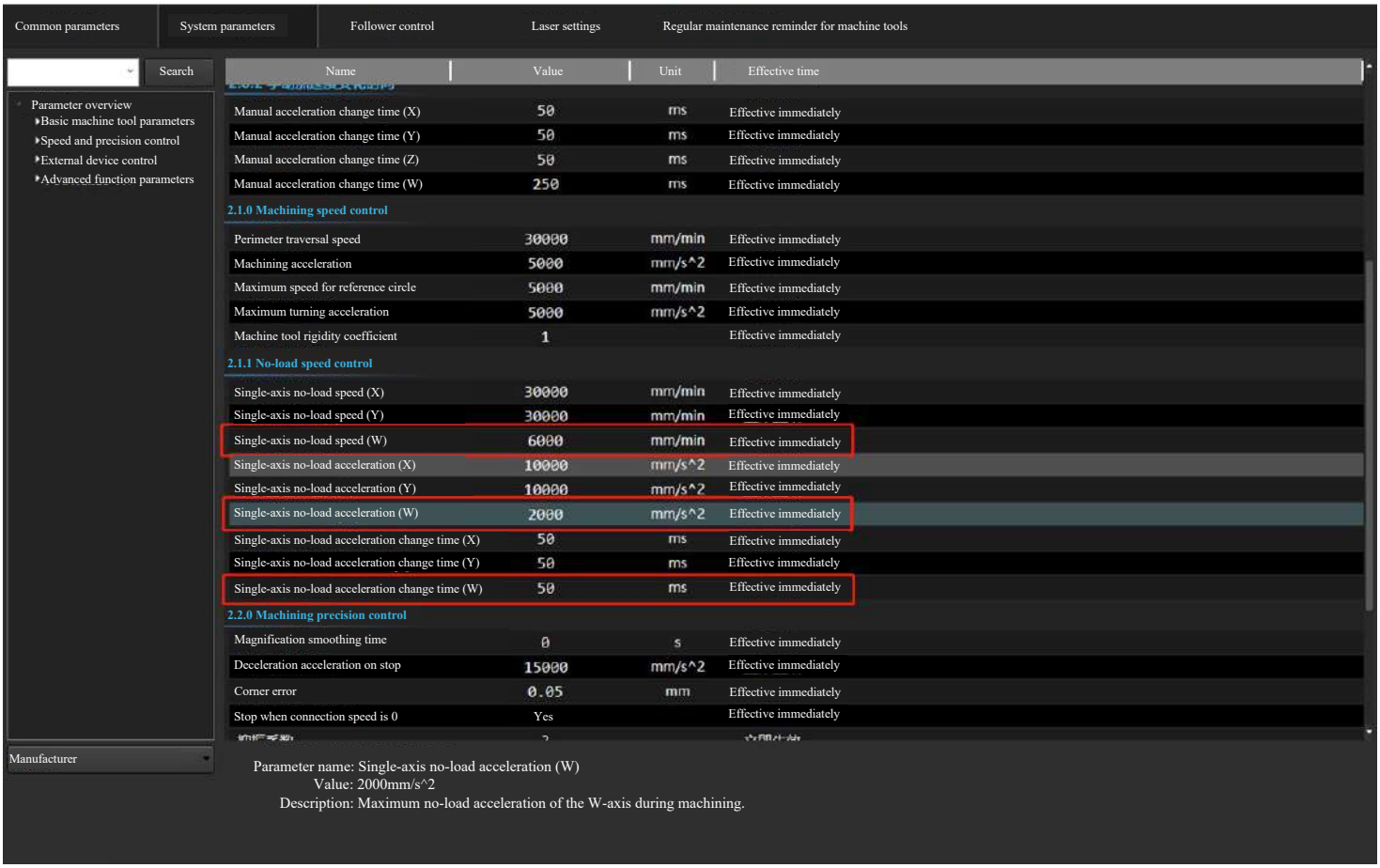
Focus control enabled: Yes;
Focus control mode: Axis port control;

4.5.6 Focus Control Configuration



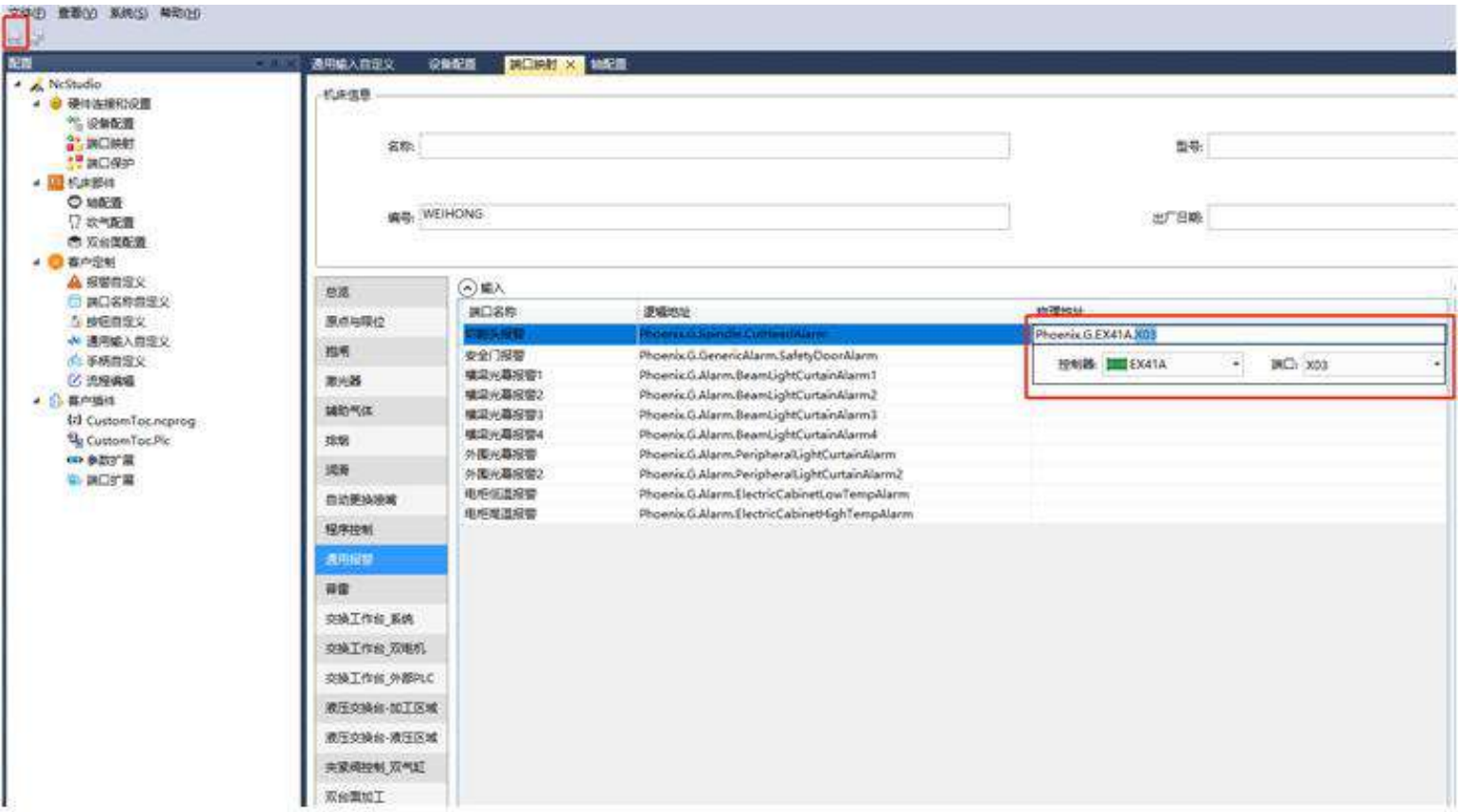
Positioning speed: 1200mm/min;
Inching speed: 120mm/min;
Home coordinate: 0;
Parameter setting enabled: Checked;

4.5.7 W-Axis No-load Speed Setting



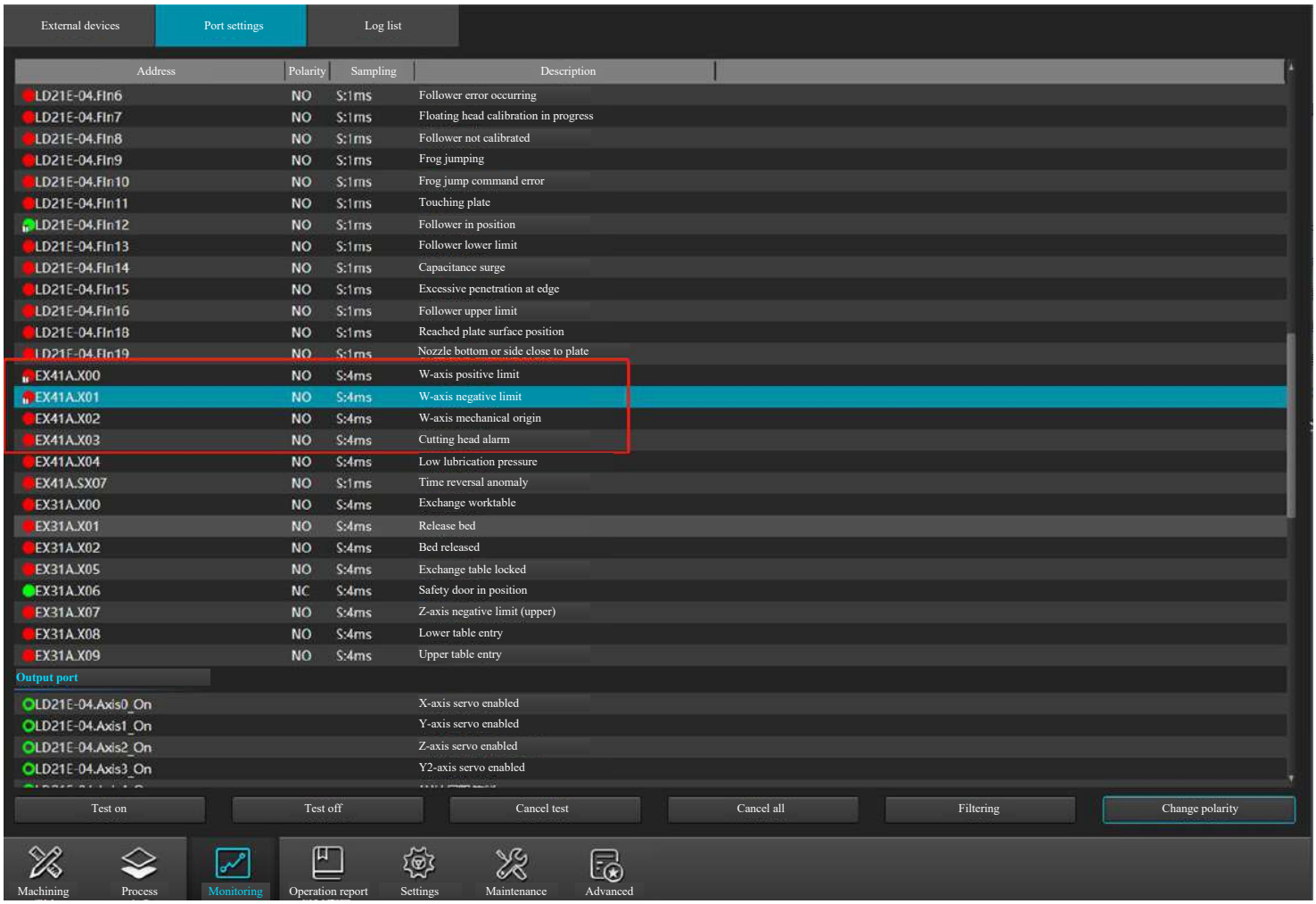
Single axis no-load speed (W): 6000mm/min;
Single axis no-load acceleration (W): 2000mm/s^2;
Single axis no-load acceleration time (W): 50ms;

4.5.8 W-Axis Alarm Signal Association



General alarm column, select the cutting head alarm, associate the address. Select the controller, for example EX41A, choose port X03, IO is customized to whichever port and connected to the corresponding input port.

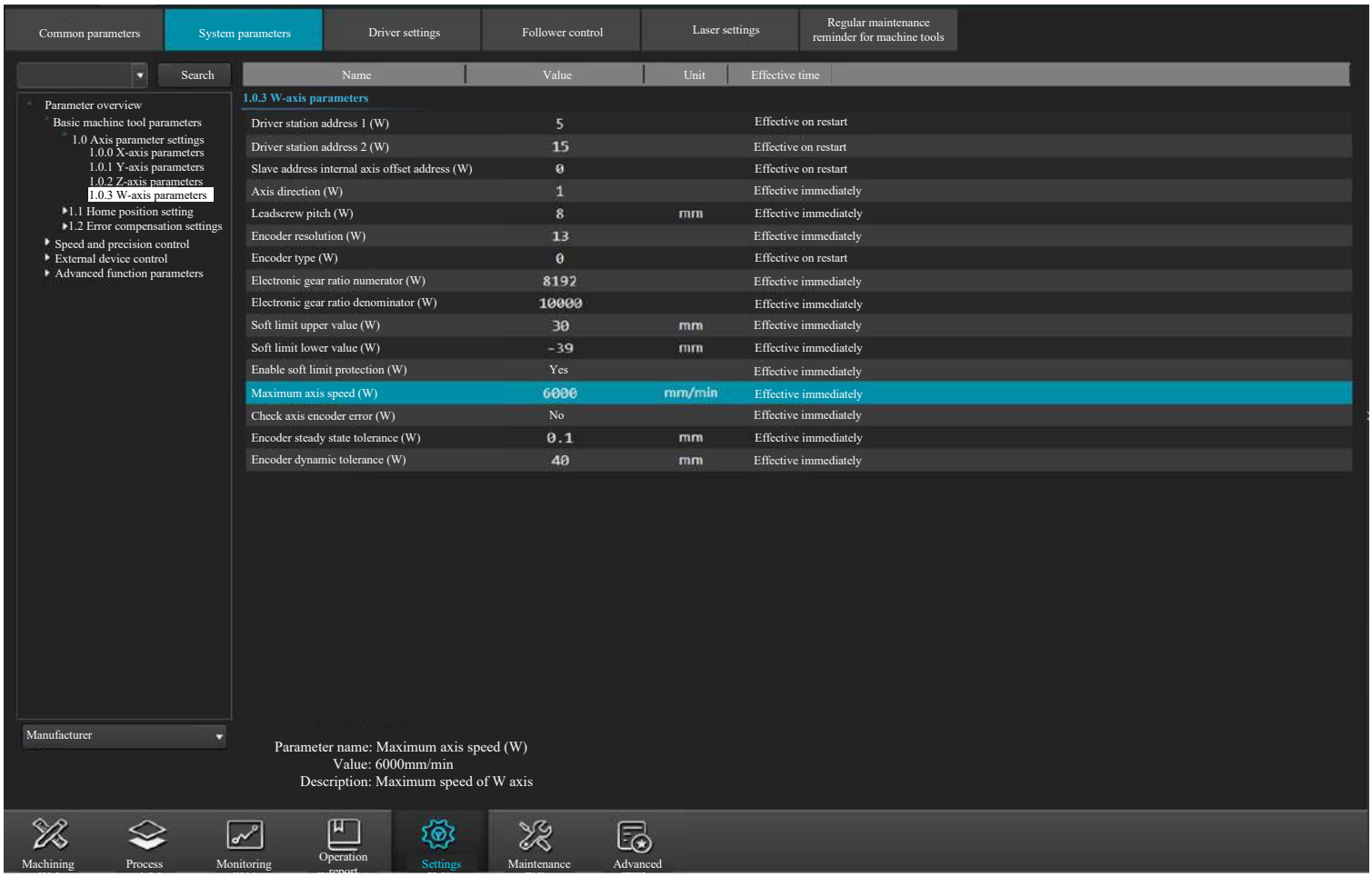
4.5.9 W-Axis Alarm Signal Association



EX41A.X00	NO (Normally Open)	W-Axis Positive Limit
EX41A.X01	NO (Normally Open)	W-Axis Negative Limit
EX41A.X03	NO (Normally Open)	Cutting Head Alarm

4.6 LS6000M Bus System Configuration

4.6.1 W-Axis Parameter Configuration



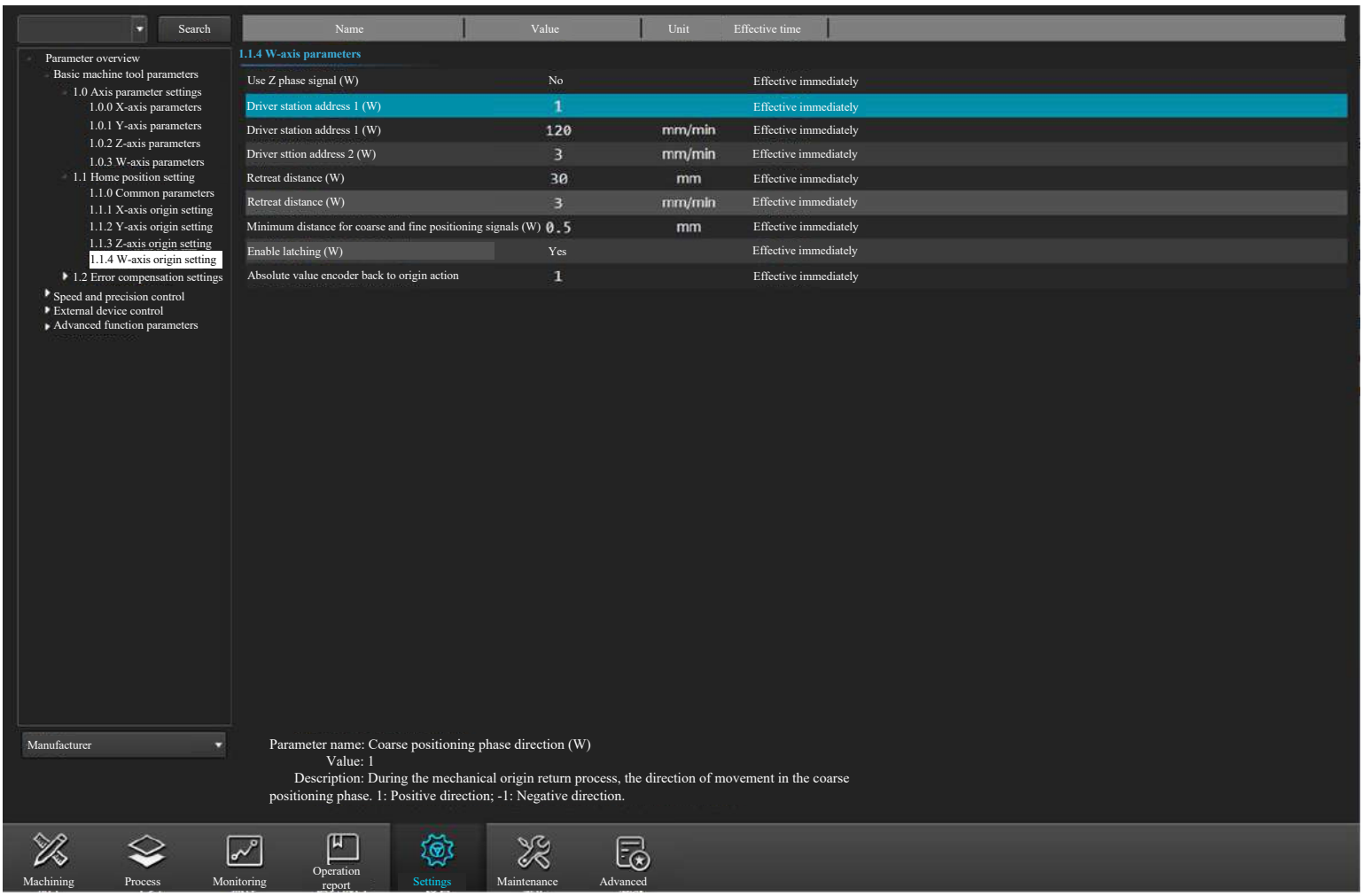
Collimation 100/focus 150:

Driver slave address 1 (W): 5;
Driver slave address 2 (W): 15;
Axis direction: 1;
Lead screw pitch: 4.5;
Encoder bits: 13;
Encoder type: 0;
Electronic gear ratio numerator (W): 8192;
Electronic gear ratio denominator (W): 10,000;;
Upper soft limit value (W): 15;
Lower soft limit value (W): -15;
Soft limit protection enabled (W): Yes;
Maximum axis speed (W): 6000mm/min;

Collimation 100/focus 200:

Driver slave address 1 (W): 5;
Driver slave address 2 (W): 15;
Axis direction: 1;
Lead screw pitch: 9;
Encoder bits: 13;
Encoder type: 0;
Electronic gear ratio numerator (W): 8192;
Electronic gear ratio denominator (W): 10,000;
Upper soft limit (W): 30;
Lower soft limit (W): -35;
Soft limit protection enabled (W): Yes;
Maximum axis speed (W): 6000mm/min;

4.6.3 W-Axis Parameter Configuration



4.6.4 GM08B Weihong Platform Configuration

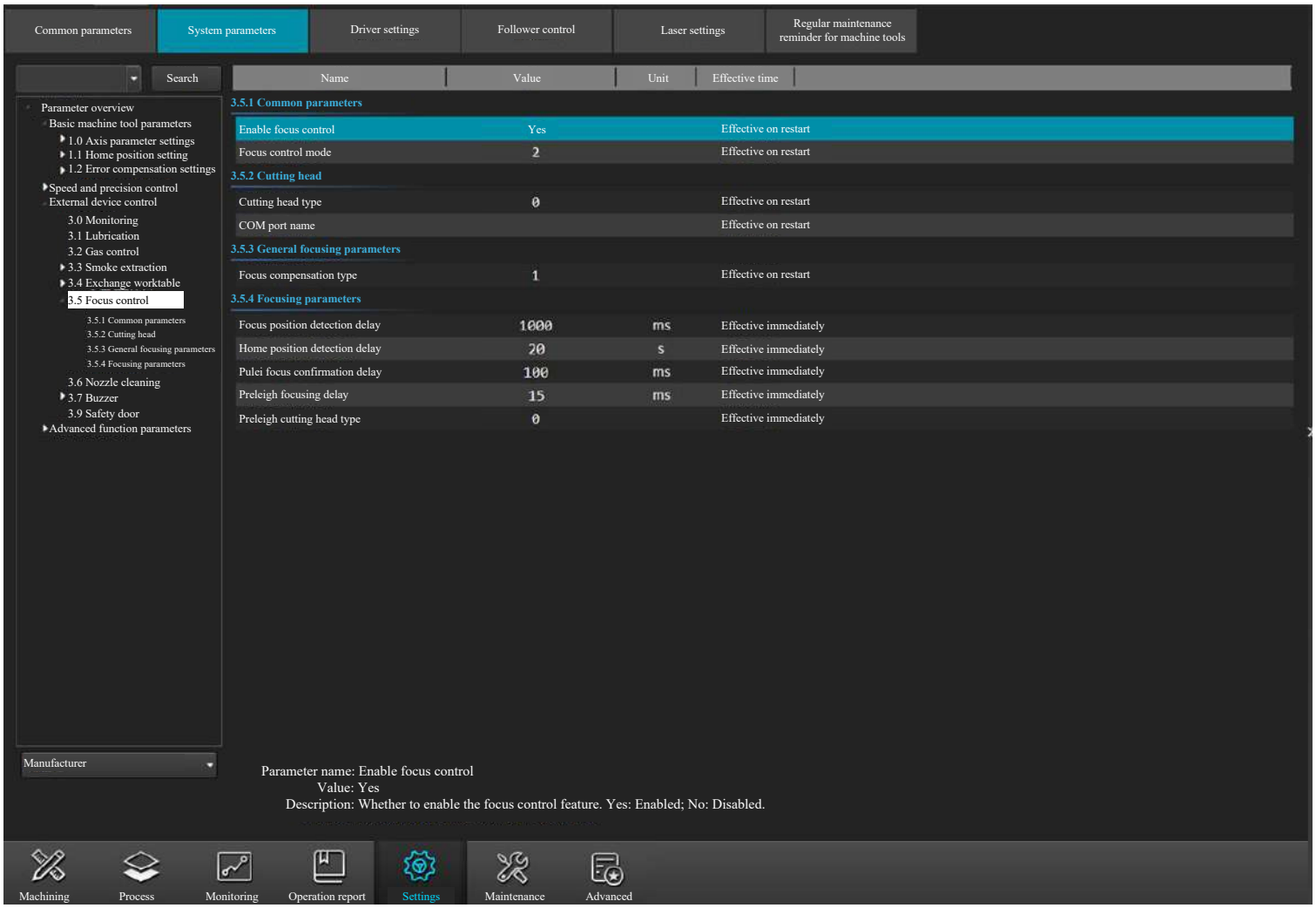
Collimation 100/focus 150:

Use Z-phase signal: No;
Coarse positioning direction: 1;
Coarse positioning speed: 600mm/min;
Fine positioning speed: 60mm/min;
Coarse positioning direction: 1;
Retraction distance: 15;
Retraction speed: 200mm/min;

Collimation 100/focus 200:

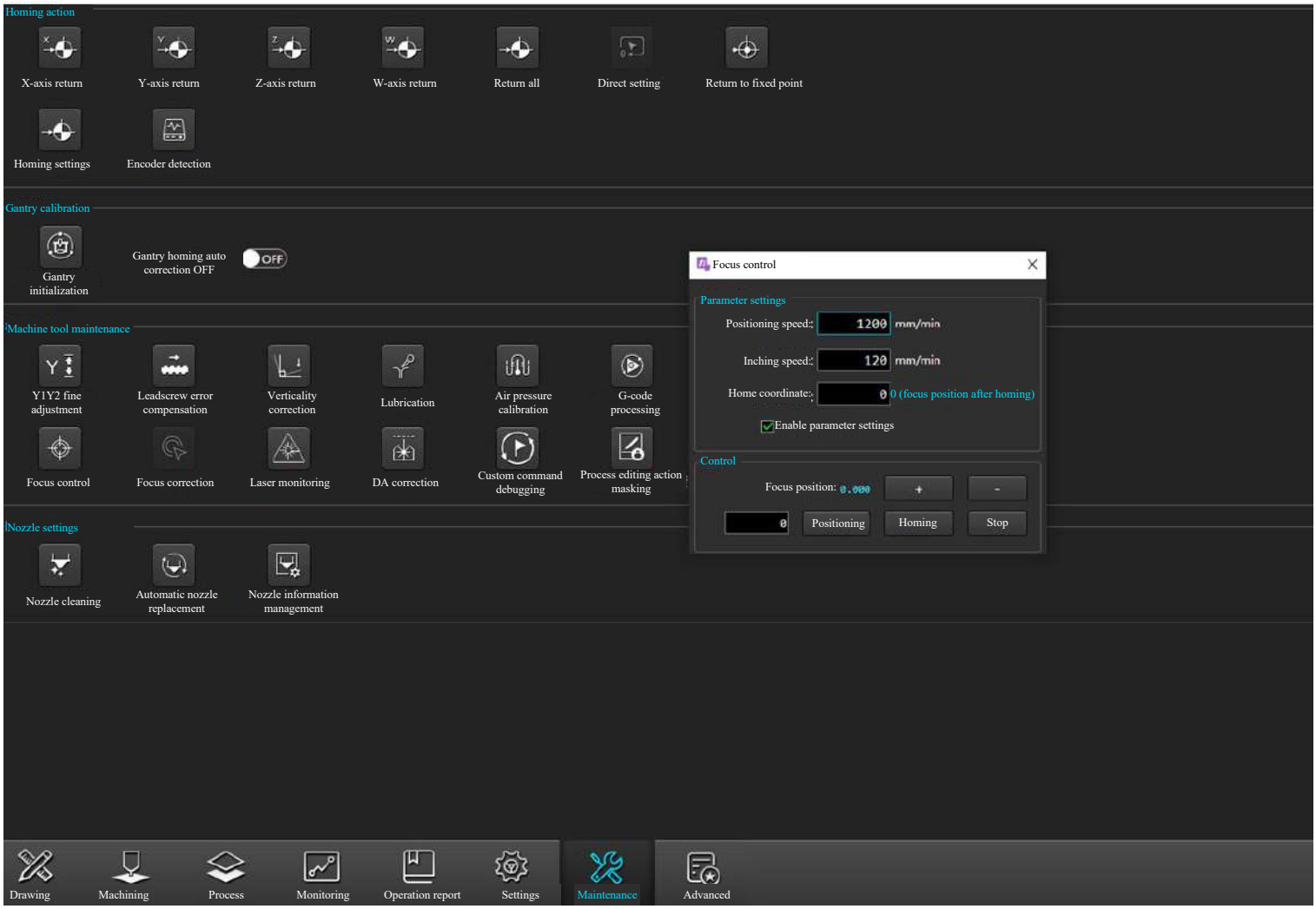
Use Z-phase signal: No;
Coarse positioning direction: 1;
Coarse positioning speed: 600mm/min;
Fine positioning speed: 60mm/min;
Coarse positioning direction: 1;
Retraction distance: 30;
Retraction speed: 200mm/min;

4.6.5 Focus Control Configuration



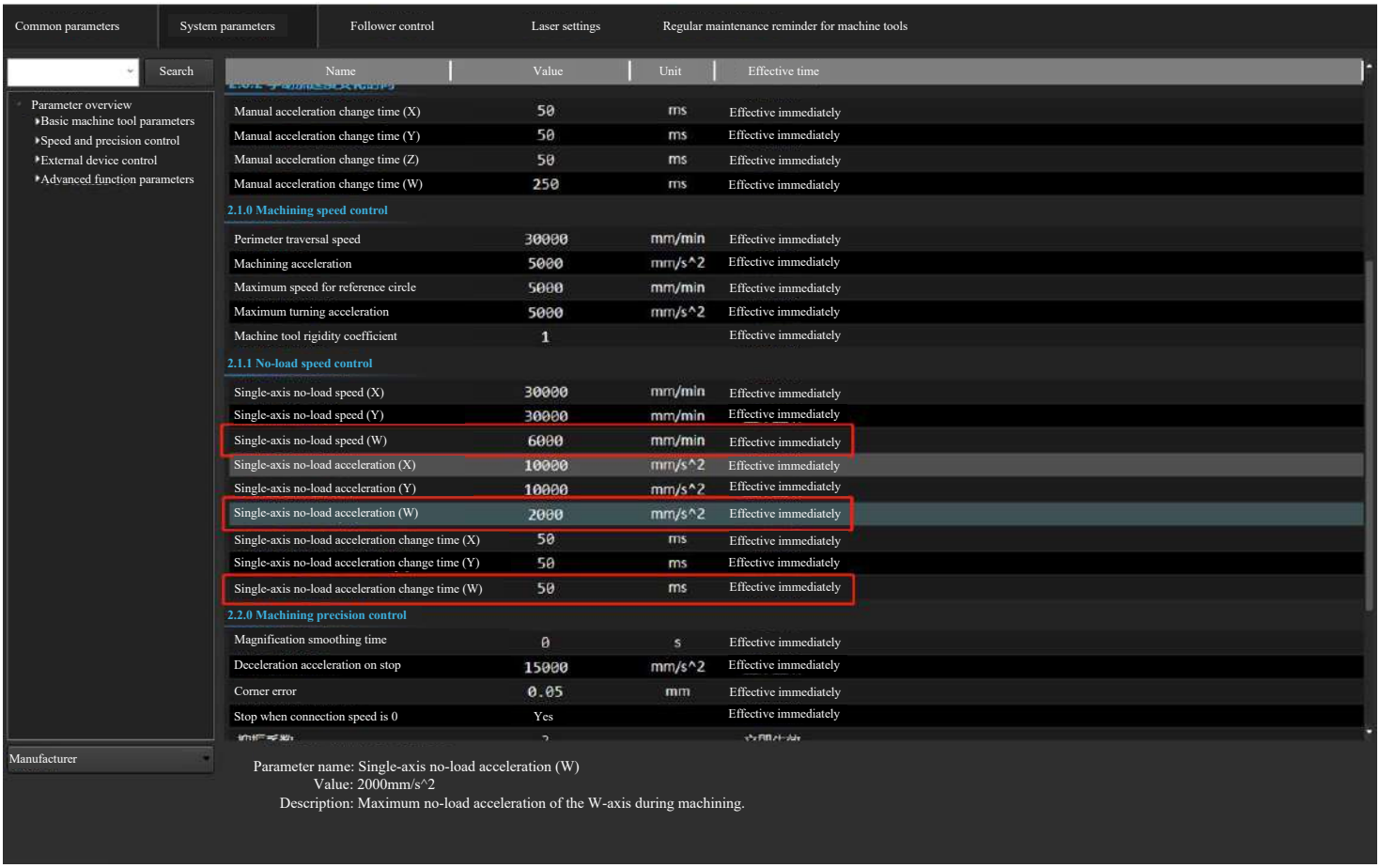
Focus control enabled: Yes;
Focus control mode: EtherCAT Bus

4.6.6 Focus Control Configuration



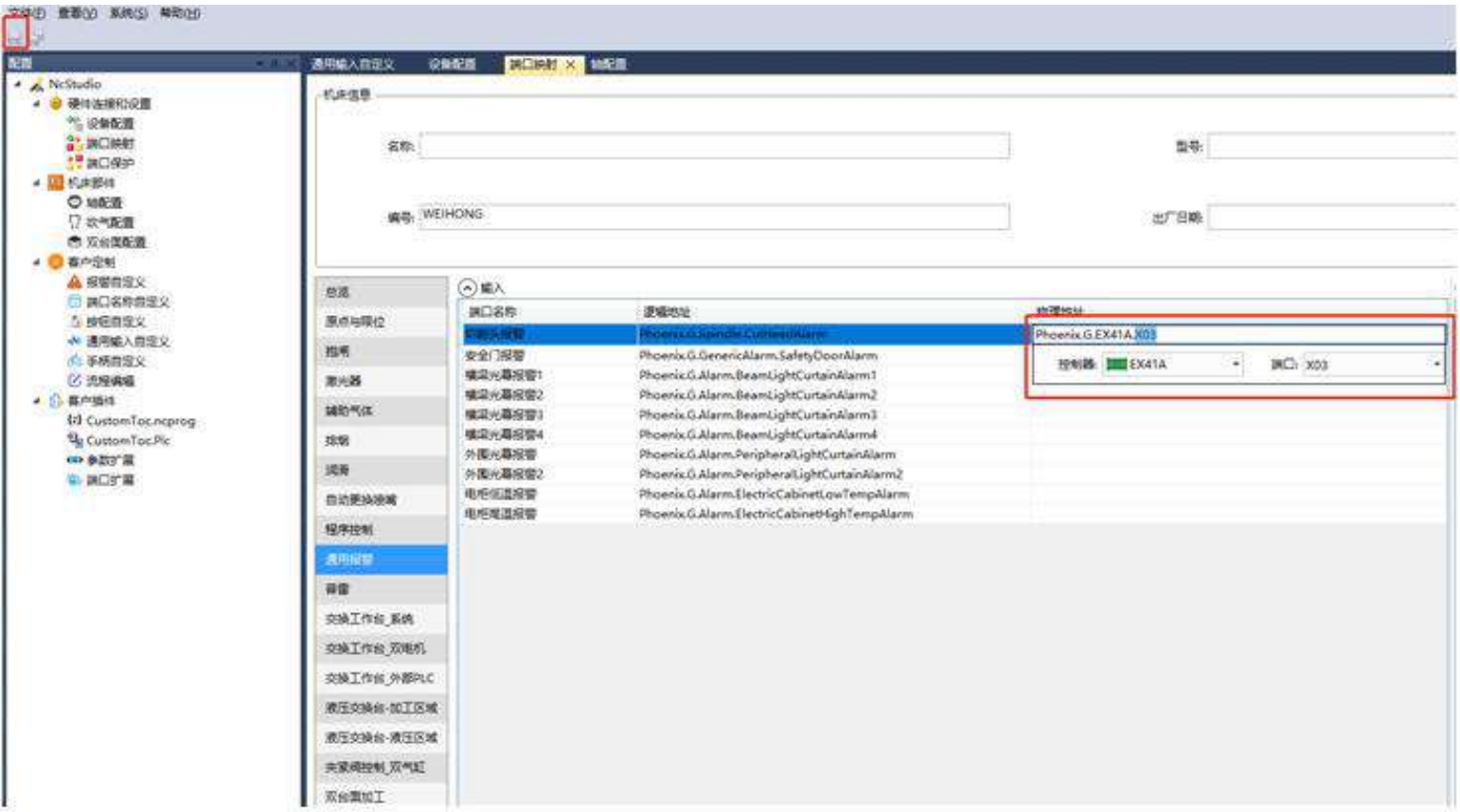
Positioning speed: 1200mm/min;
Inching Speed: 120mm/min;
Home coordinate: 0;
Parameter setting enabled: Checked;

4.6.7 W-Axis No-load Speed Setting



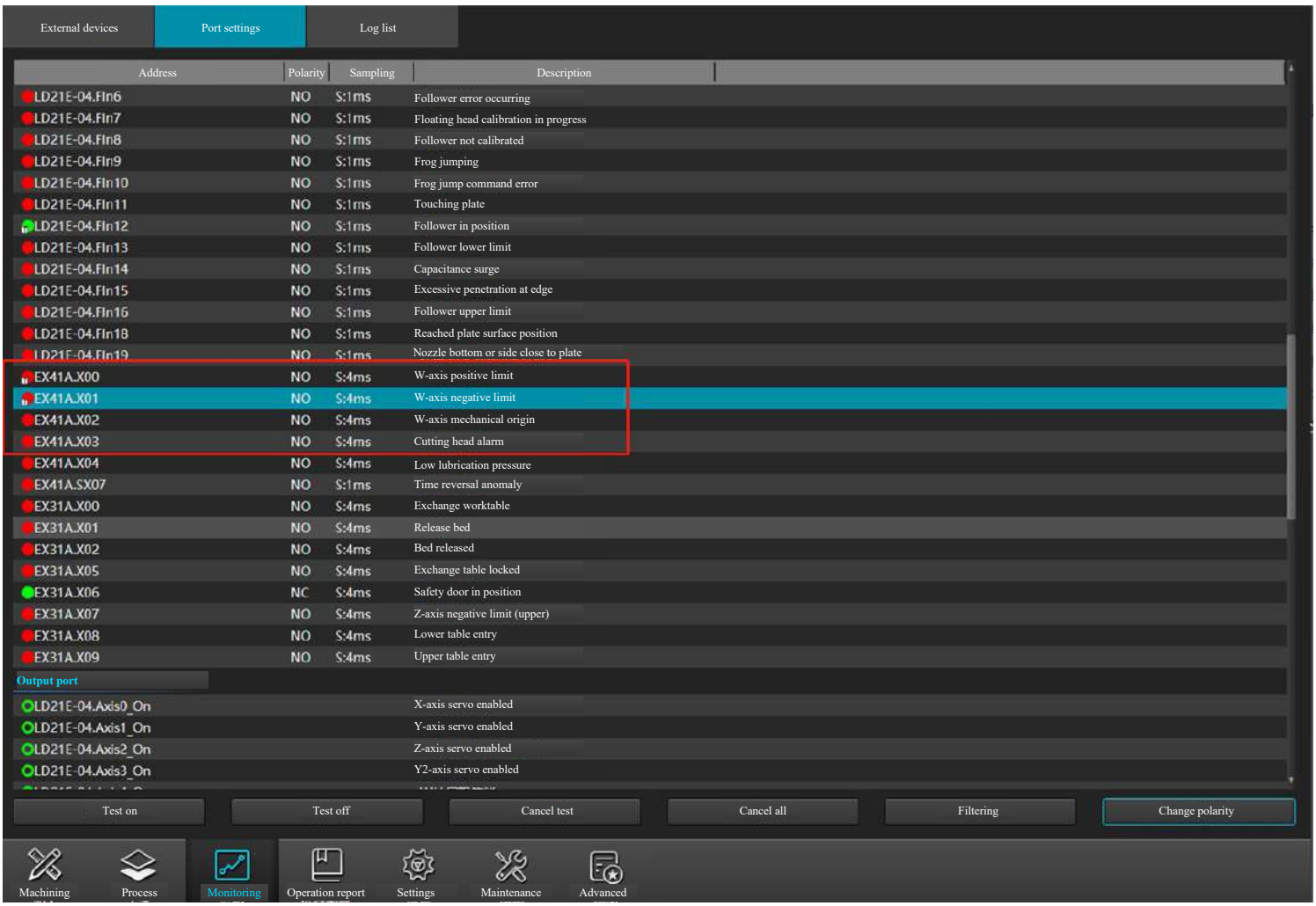
Single axis no-load speed (W): 6000mm/min;
Single axis no-load acceleration (W): 2000mm/s^2;
Single axis no-load acceleration time (W): 50ms;

4.6.8 W-Axis Alarm Signal Association



General alarm column, select the cutting head alarm, associate the address. Select the controller, for example EX41A, choose port X03, IO is customized to whichever port and connected to the corresponding input port.

4.6.9 W-Axis Alarm Signal Association



EX41A.X00	NO (Normally Open)	W-Axis Positive Limit
EX41A.X01	NO (Normally Open)	W-Axis Negative Limit
EX41A.X03	NO (Normally Open)	Cutting Head Alarm

4.7 Focus Adjustment Instructions

① The laser beam must be kept in the center of the nozzle to achieve good joint-cutting effect. When it deviates from the center of the nozzle, it needs to be adjusted through the beam centering module, as shown in Figure 2.2 below.

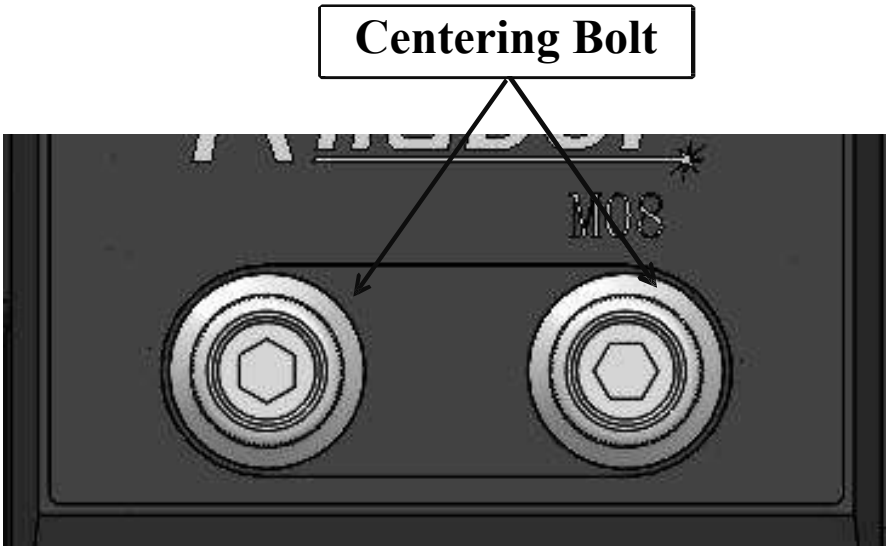


Figure 2.2

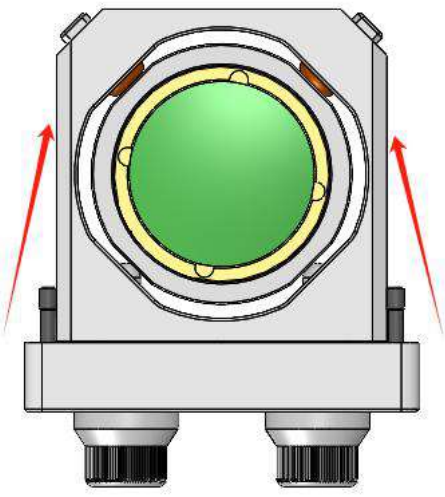


Figure 2.3

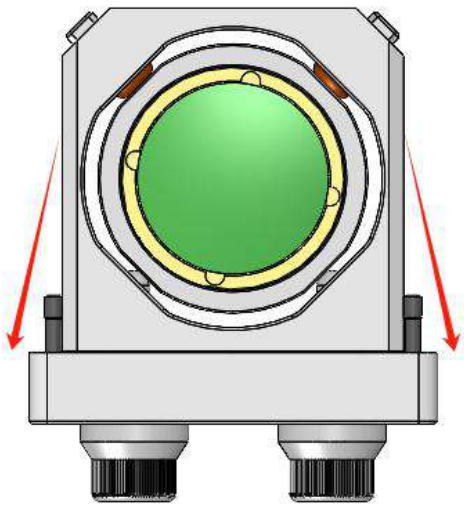


Figure 2.4

Note: When the centering bolt rotates clockwise, the center direction of the lens is shown in Figure 2.3. When the centering bolt rotated counterclockwise, the center direction of the lens is shown in Figure 2.4.

4.8 Mobile APP Operation Instructions

4.8.1 Mobile APP Software Installation.

① After installation, the icon appears as shown in Figure 2.5; continue by clicking 'Install', and the icon after installation is shown in Figure 2.6. This APP currently only supports installation on Android devices.

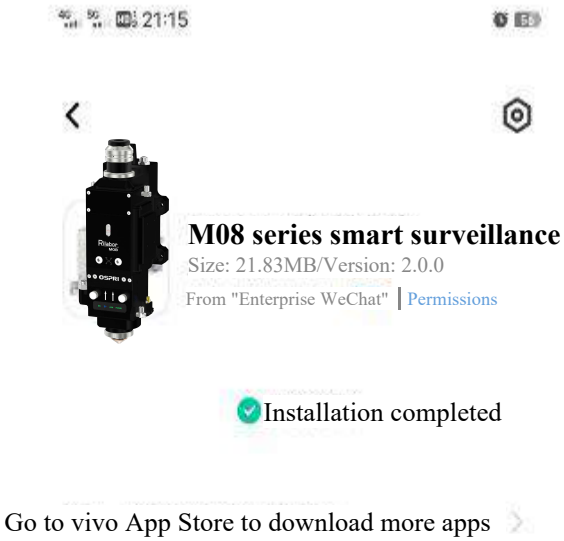
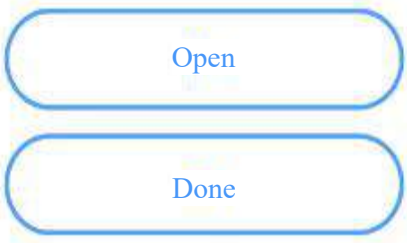


Figure 2.5

Figure 2.6

Icon is displayed after installation



4.8.2 APP Software Connection.

Figure 2.7

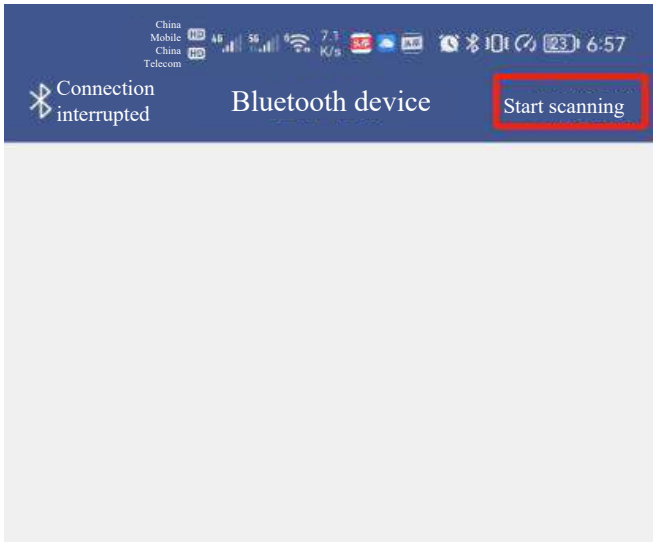


Figure 2.8

① Click the Bluetooth icon to open the Bluetooth connection interface, as shown in Figure 2.7.

② Start scanning; if nothing is displayed, click it for another more times, as shown in Figure 2.8.

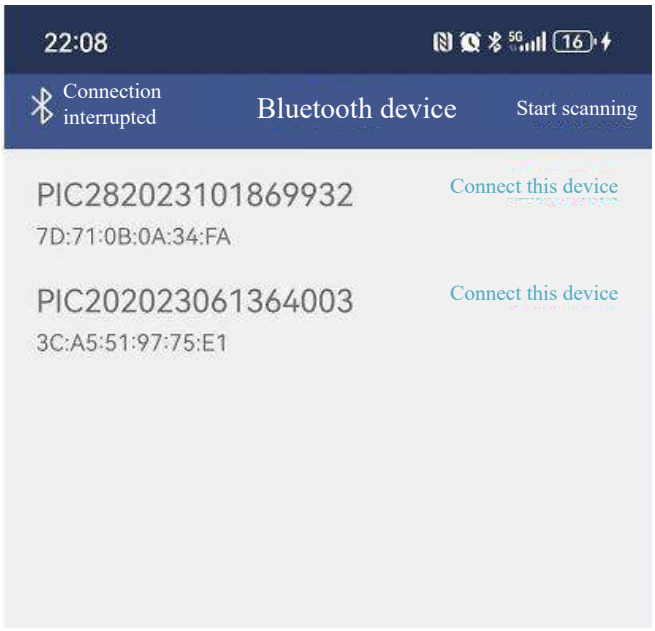


Figure 2.9

③ After the device is scanned, select the device to connect and click the [Connect Device] button, and then the mobile phone can communicate with the device in real time, as shown in Figure 2.9.

4.8.3 Software Introduction.

① After running the GM08B APP, the progress bar color on the main interface will change according to
the actual temperature value monitored, as shown in Figure 3.0.
Green: The lens temperature is monitored to be normal and the software can be used normally.
Yellow: The lens temperature is too high, and attention should be paid to check if the lens is contaminated.
Red: The lens temperature is too high and the software cannot continue to be used. The machine must be stopped for checking.

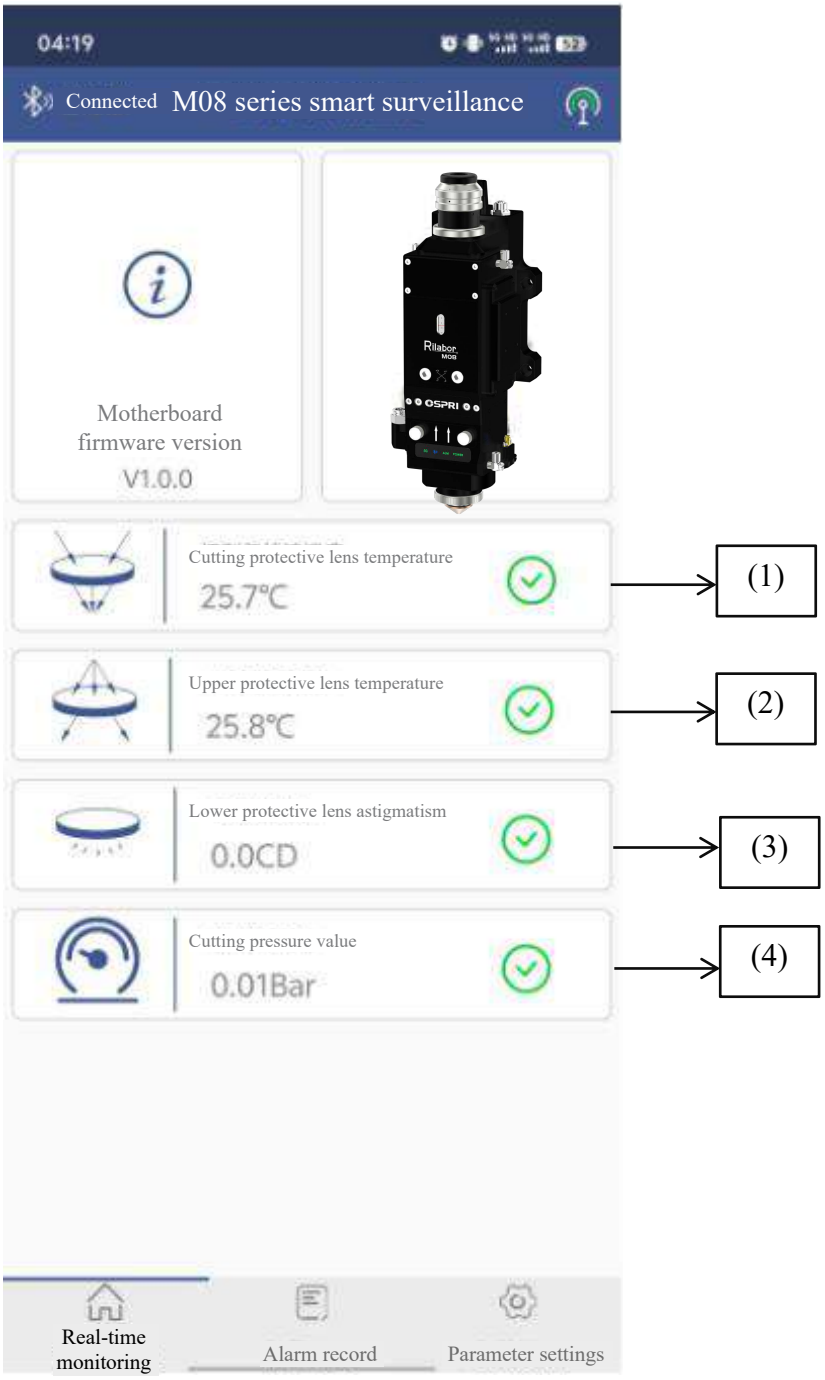


Figure 3.0

4.8.3 Software Introduction.

Description of Bluetooth APP Functions:

(1) Cutting protective lens temperature: If the cutting protective lens shows yellow or red, check if it is contaminated.

(2) Upper protective lens temperature: If the upper protective lens shows yellow or red, check if it is contaminated.

(3) Lower protective lens astigmatism: Monitor the astigmatism value of the lower protective lens. If it shows yellow or red, first check if the cutting protective lens is contaminated, then check the focus protective lens for contamination.

(4) Cutting air pressure: Real-time monitoring of cutting air pressure, feedback to the system for a closed-loop air path control.

4.8.4 Temperature Parameter Setting and Modification of Equipment Name.

① This APP has temperature setting function. You can set different temperature thresholds according to actual situation . Click "Parameter Setting" and input the password "85225225" to enter the temperature settings interface, as shown in Figure. 3.1.

② The software can also monitor the real-time dimensions of the electronic scale, internal temperature and humidity of the cavity, cutting gas pressure, and detect any leaks in the cutting gas.

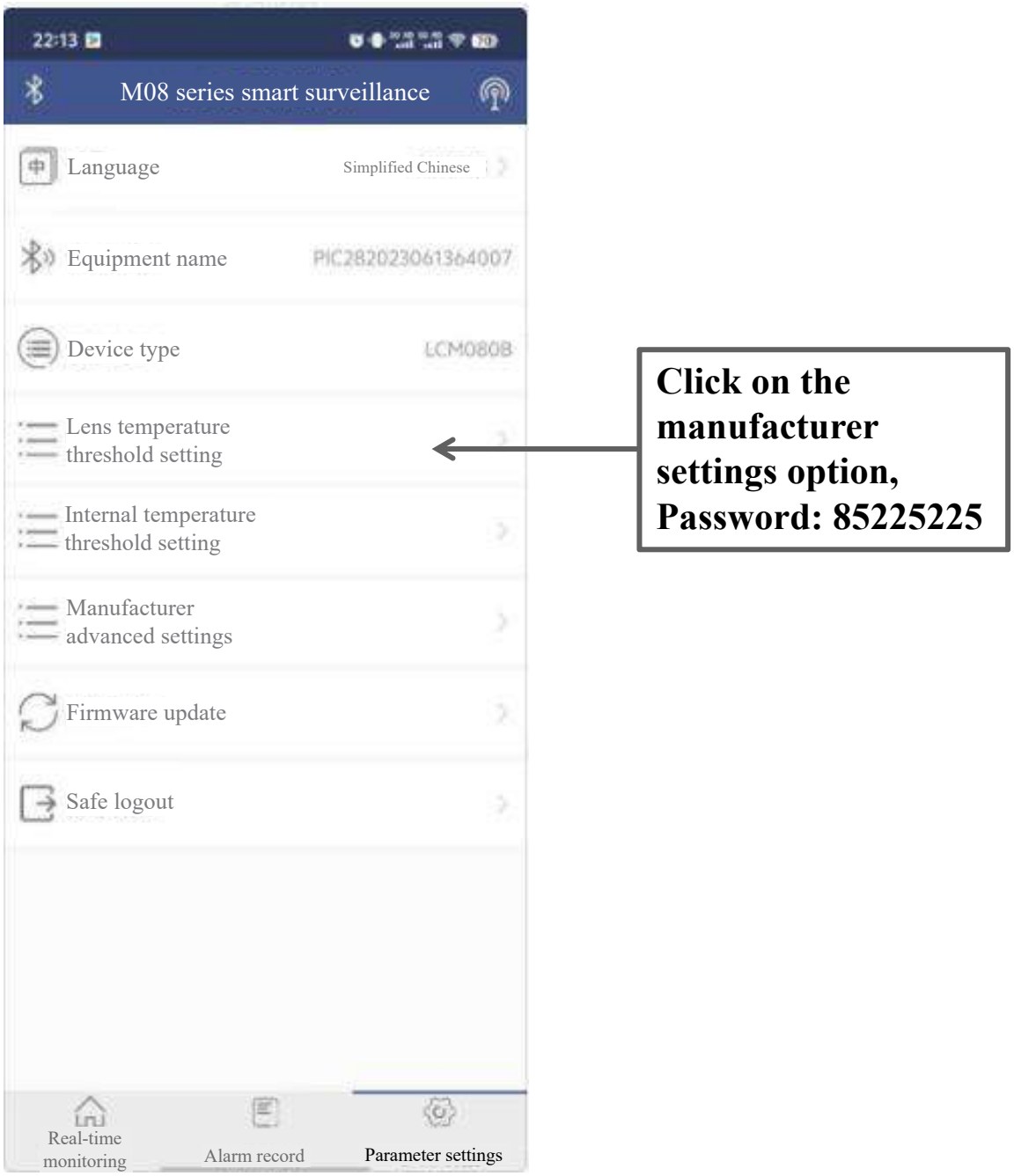


Figure 3.1

② Enter temperature setting interface to set the temperature according to the actual conditions. The forewarning value must be lower than the alarm value.

After settings, click "Confirm". This window also allows for setting of the cutting head encoding; when the Bluetooth mode is disconnected, it automatically switches to the 5G model state, as shown in Figure 3.2:

Figure 3.2

Chapter 5 Product Maintenance

5.1 Maintenance of Protective Lens

In case poor cutting performance occurs while cutting protective lens is normal, but burning points on the ceramic piece, the collimation protective lens or focus protective lens possibly is polluted or damaged. In this condition, please pull out the protective lens cartridge to check the lens. Before checking, use a clean cloth dampened with alcohol to wipe the exterior clean.

5.1.1 Disassembly and Assembly of Collimation Protective Lens, as shown in Figures 3.3 and 3.4.

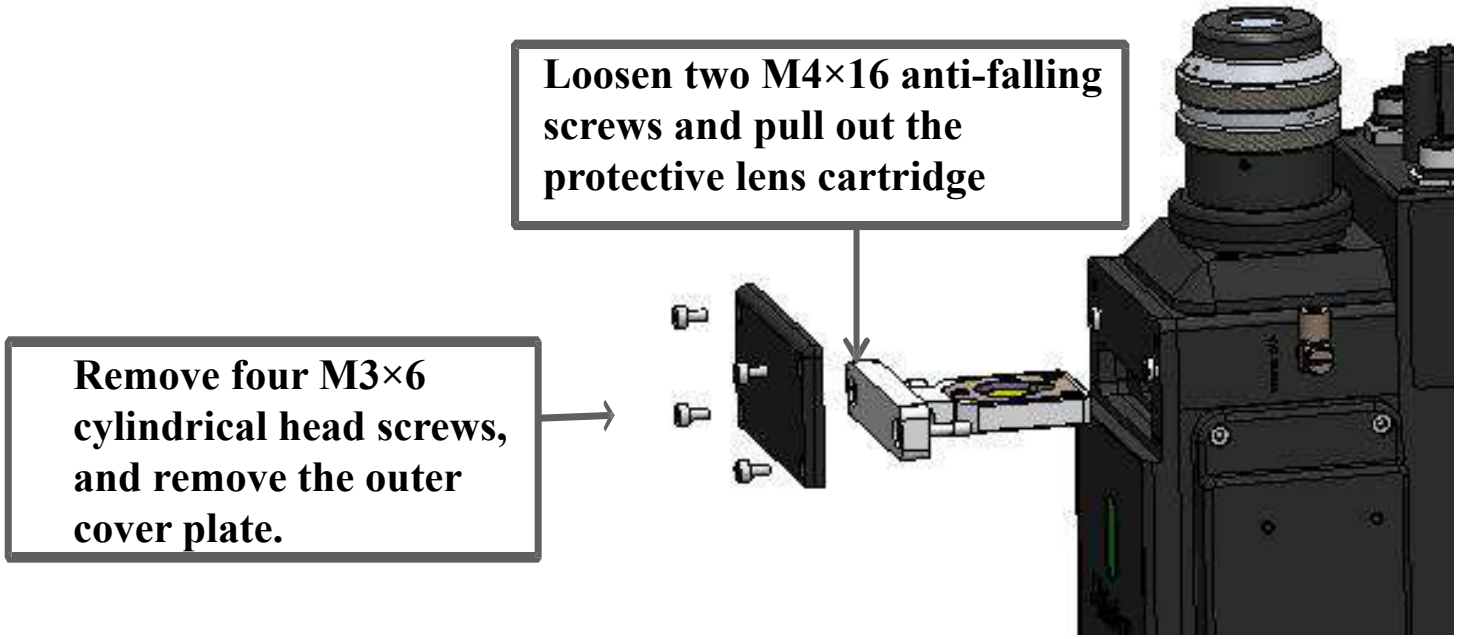


Figure 3.3

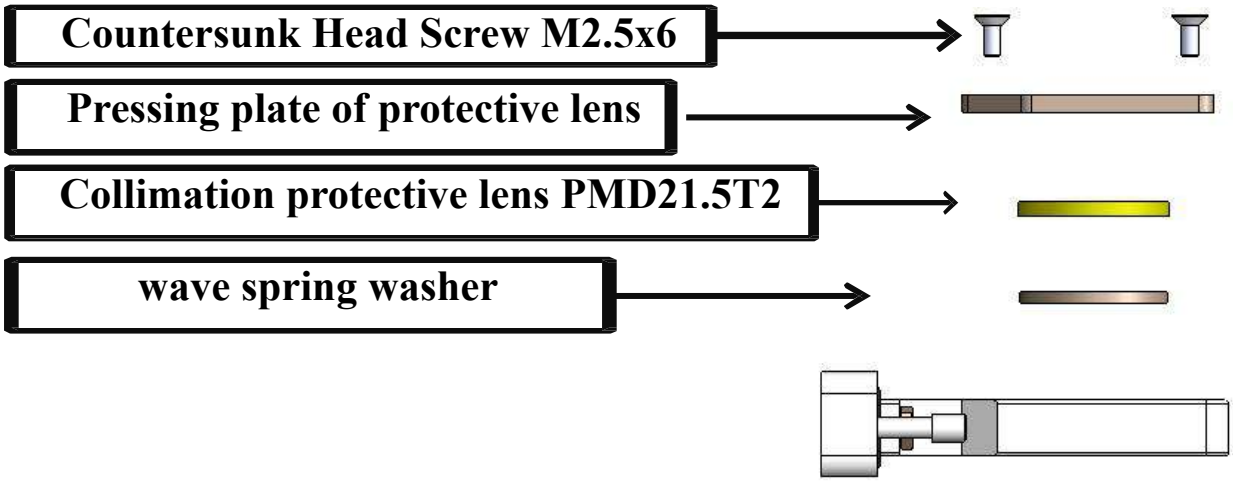


Figure 3.4

5.1.2 Disassembly of Focus Protective Lens

Loosen the two M4×16 hexagon socket anti-falling screws, pull out the protective lens cartridge, and replace the protective lens (PMD34T5), as shown in Figures 3.5 and 3.6 below.

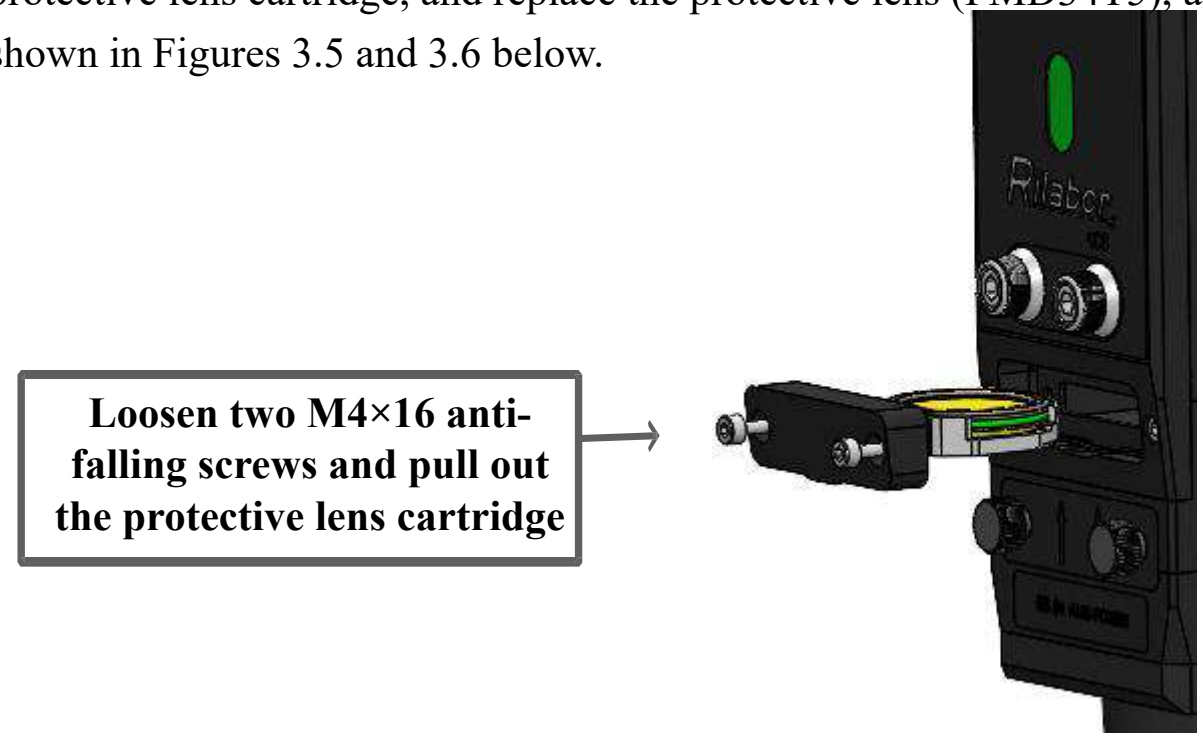


Figure 3.5

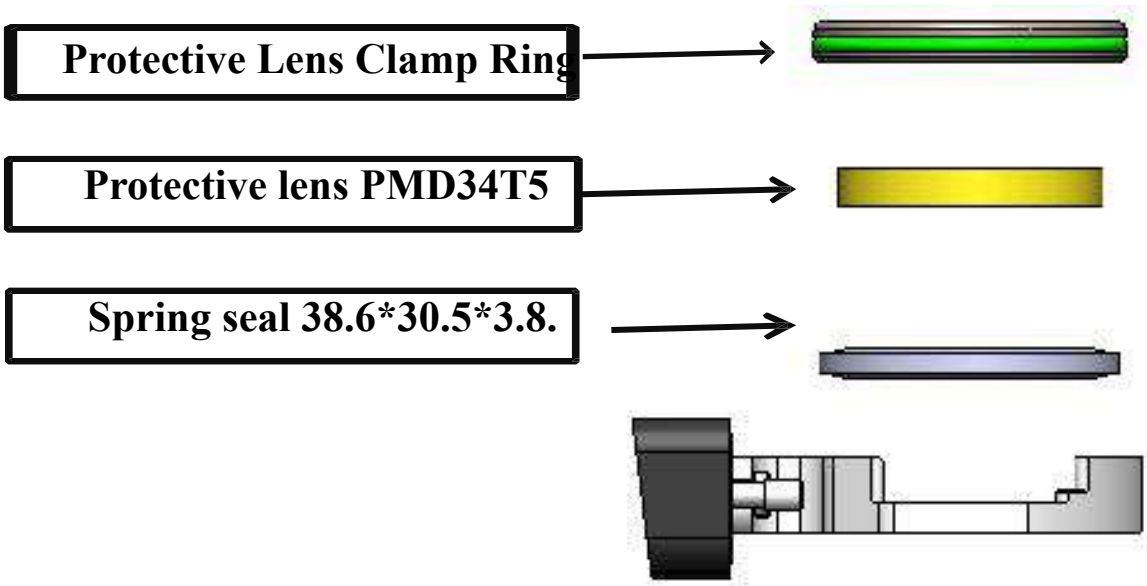


Figure 3.6

5.2 Maintenance of Collimation Lens

5.2.1 Disassembly and Assembly of Collimation Lens

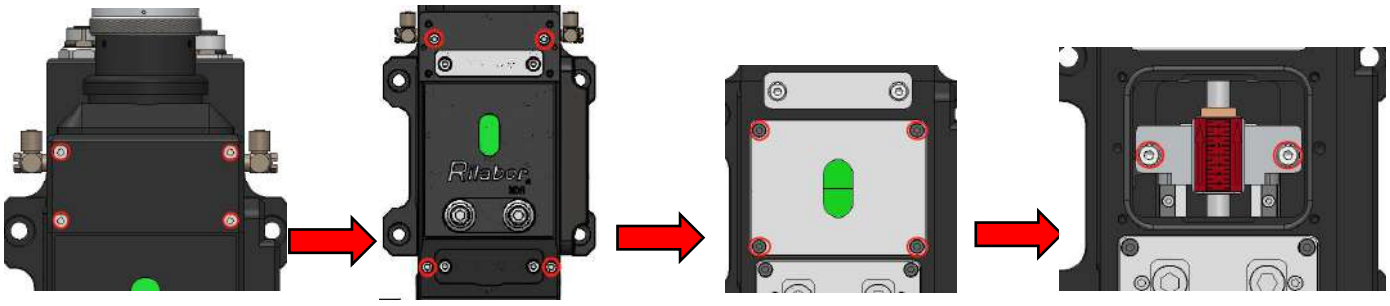


Figure 3.7 Figure 3.8 Figure 3.9 Figure 4.0

Sequentially remove the screws as shown in Figures 3.7, 3.8, 3.9, and 4.0: four M3X6 screws, then four M4X8 screws, loosen four M3X12 anti-falling screws, loosen two M4X16 anti-falling screws, pull out the collimation lens cartridge for maintenance, and be careful about the orientation of the collimation lens cartridge during installation to avoid reversing it.

5.2.2 Cleaning of Collimation Lens

Figure 4.1

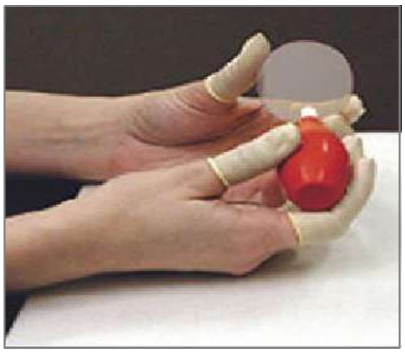


Figure 4.2

① Tools: Dust-free wiping swabs, isopropyl alcohol, dry and pure compressed air.

② Spray isopropyl alcohol onto the dust-free wiping swabs.

③ Gently pinch the side edge of the lens with the left thumb and index finger, and hold the wiping swabs with right hand to gently wipe both sides of the lens in a single direction from bottom to top or from left to right, as shown in Figure 4.1.

④ After wiping, blow the lens surface again with filled dry and pure compressed air to ensure that the cleaned lens surface is free of any foreign matter, as shown in Figure 4.2.

⑤ The cleaned collimation lens must be installed into the collimation lens base and inserted into the cutting head as soon as possible.

5.3 Maintenance and Replacement of Focus Lens

5.3.1 Disassembly of Focus Lens

As shown in Figure 4.3, use an Allen wrench to sequentially remove four M3X6 screws, then four M4X8 screws, loosen four M3X12 anti-falling screws, and after removing the focus lens holder, take out the focus lens.

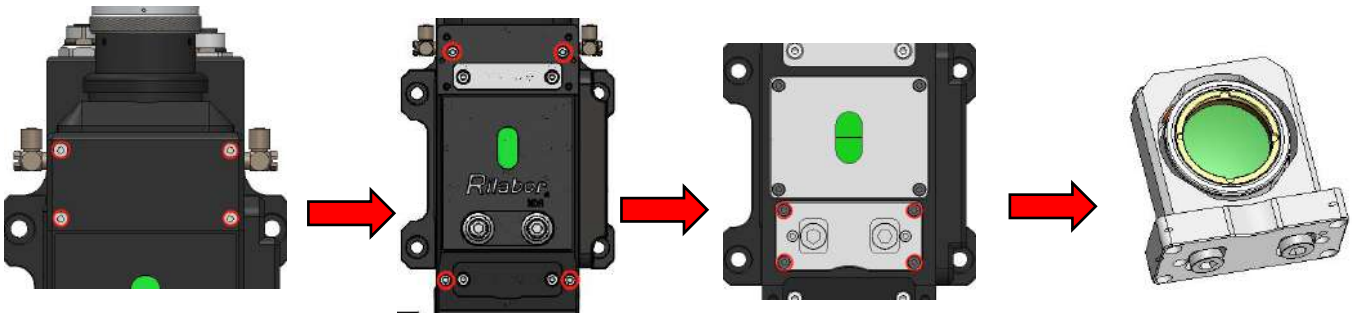


Figure 4.3

5.3.2 Cleaning of Focus Lens

Figure 4.4

Figure 4.5

① Tools: Dust-free wiping swabs, isopropyl alcohol, dry and pure compressed air.
② Spray isopropyl alcohol onto the dust-free wiping swabs.
③ Gently pinch the side edge of the lens with the left thumb and index finger, and hold the wiping swabs with right hand to gently wipe both sides of the lens in a single direction from bottom to top or from left to right, as shown in Figure 4.4.
④ After wiping, blow the lens surface again with filled dry and pure compressed air to ensure that there are not foreign matters on the lens surface, as shown in Figure. 4.5.
⑤ The cleaned focus lens must be installed into the focus lens base and inserted into the cutting head as soon as possible.

5.4 Maintenance of Cutting Protective Lens

When the protective lens has impurities or foreign matters, they will absorb laser and heat up, resulting in damage to protective lens. Therefore, it is recommended to clean the protective lens once a week. Besides, the protective lens is a wearing part and should be replaced in time if damaged.

5.4.1 Disassembly of Protective Lens

Loosen the thumb screws, hold the screws with both hands, slowly pull out the protective lens base, and move it to a clean and dust-free environment, as shown in Figure 4.6 below. The detailed diagram of replacing lens is shown in Figure 4.7.

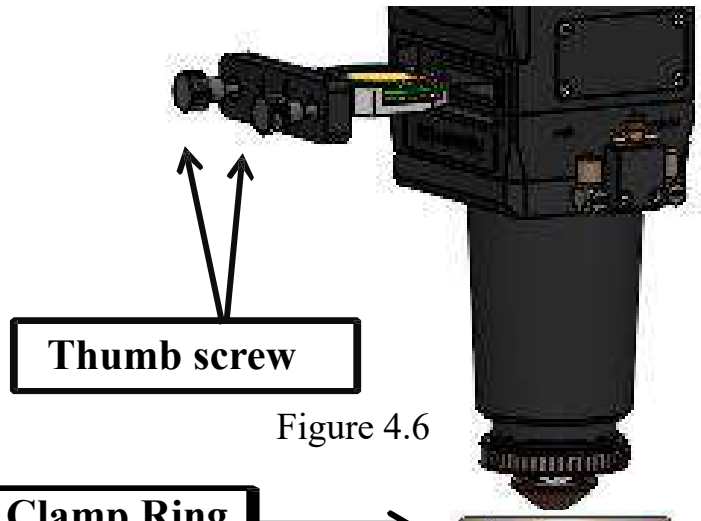


Figure 4.6

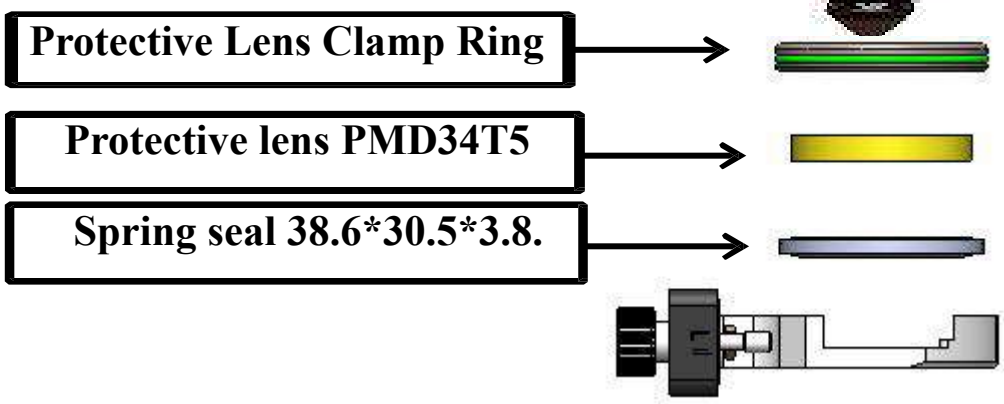


Figure 4.7

Assembly sequence as shown in Figure 4.7.

5.4.2 Cleaning of Protective Lens

Figure 4.8

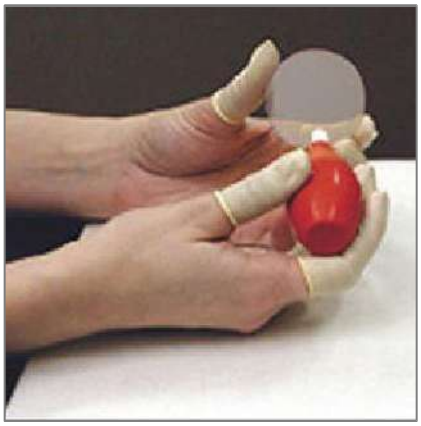


Figure 4.9

① Tools: Dust-free wiping swabs, isopropyl alcohol, dry and pure compressed air.

② Spray isopropyl alcohol onto the dust-free wiping swabs.

③ Gently pinch the side edge of the lens with the left thumb and index finger, and hold the wiping swabs with right hand to gently wipe both sides of the lens in a single direction from bottom to top or from left to right, as shown in Figure 4.8.

④ After wiping, blow the lens surface again with filled dry and pure compressed air to ensure that the cleaned lens surface is free of any foreign matter, as shown in Figure 4.9.

⑤ The cleansed lens must be installed into the cutting head's body as soon as possible or stored in other clean and sealed container.

Attention: When cleaning and replacing the protective lens, avoid the grease on hands or dust in the environment from contaminating the protective lens. In principle, the focus lens, collimation lens and cutting lens are forbidden to be disassembled. If lenses may be contaminated, users can first test the lenses with trial case lens, or contact with our technical staff if necessary.

5.5 Maintenance of Sensory Parts

Ceramic body is a wearing part but can be replaced after being damaged. The ceramic body should be aligned with the two locating pins of the body in the installation process. Otherwise, the ceramic body cannot be properly installed in place, thus causing operating failure of the sensor component. When locking the ceramic, tighten it with the locking nut. The different degree of tightness on locking nuts would directly affect the operating parameters of the sensor parts.

The laser nozzle is the sensitive element of the sensing component and is connected to the body through the thread. It is a wearing part. After it has worked for a period of time, it is necessary to remove the bonded slag and replace it in time when the burning loss is serious.

After assembling the ceramics, tighten the locking nut and expose the ceramic evenly about 2-3mm.

The following cautions should be taken in use:

①Dry and clean auxiliary gas should be used when cutting. If there is water, oil and other impurities in the gas, mutations may occur at working clearance, and even cause work disorder of the sensor. It is suggested to use high purity oxygen and configure the gas dryer, oil-water separator and other devices.

②The sensor after being defaced should be cleaned with clean and dry cotton cloths, etc. Do not use liquid to clean the cutting head and ceramic, and then connect and assemble it properly after cleaning.

③The ceramic body can be replaced after being damaged. After ceramic body is replaced, an initialization of electrical system together with the amplifier should be conducted through a reset operation.

④The shape and size of the cutting nozzle would directly affect the characteristics of the sensor. Therefore, specified cutting nozzle must be used.

5.5.1 Replacement of Nozzle and Ceramic Body

① Remove the nozzle counterclockwise, as shown in Figure 5.0.

② Unscrew the ceramic clamp ring counterclockwise, as shown in Figure 5.0.

③ Remove the ceramic body vertically downward, as shown in Figure 5.0.

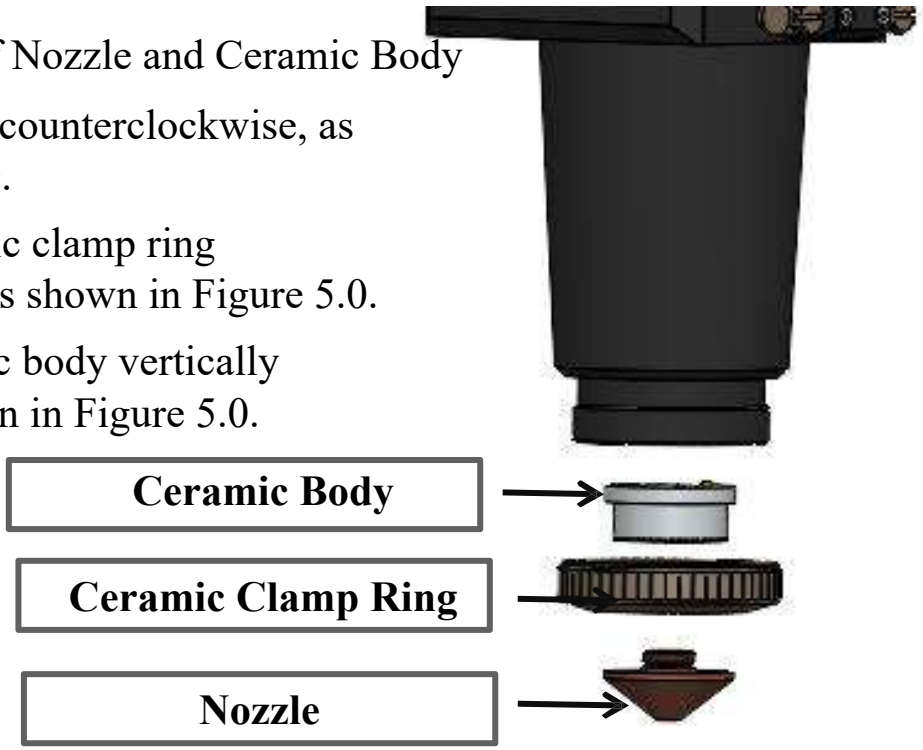


Figure 5.0

5.5.2 Cleaning of Ceramic Ring

① Take out the ceramic and clean it with anhydrous alcohol or isopropyl alcohol, as shown in Figure 5.1.

② Spray isopropyl alcohol onto the dust-free swab, remove the ceramic ring and clean it with the swab, as shown in Figure 5.2.

③ After wiping, blow the ceramic ring with filled dry and pure compressed air to clean it and ensure that the ceramic surface is clean and dry without moisture before installation, as shown in Figure 5.3.

Figures 5.1

Figure 5.2

Figure 5.3

Note: Cleanliness of ceramic surface is directly related to the operating performance of the following system. It is necessary to clean the dirt timely on the ceramic surface in order to ensure the working performance of the system.

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