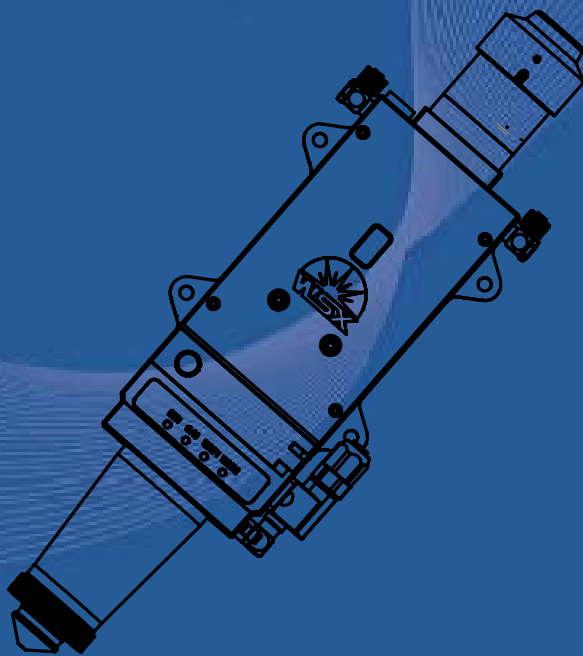


PRODUCT INSTRUCTION MANUAL



NC65

Fiber Automatic Focusing Cutting Head
(External Drive) V1.0



Instruction Change History

Serial Number	Modification Time	Version



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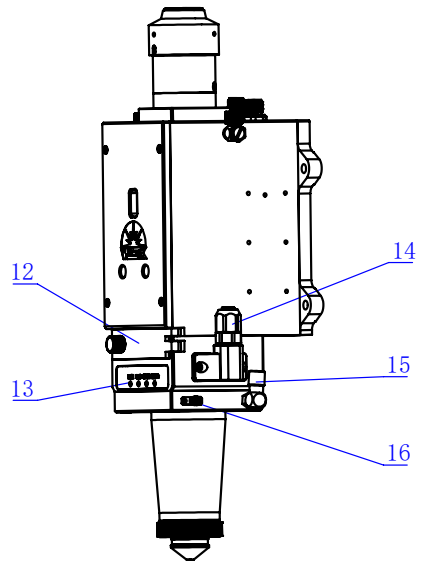
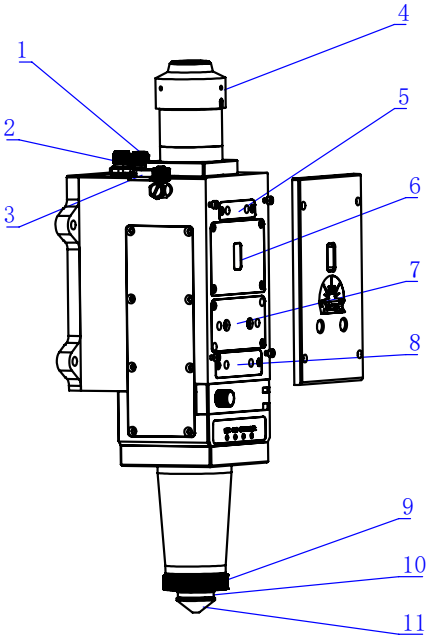


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1. Product Description

1.1 Product View

- | | |
|--------------------------------|----------------------------------|
| 1. 8P aviation socket | 2. 12P aviation socket |
| 3. 9P aviation socket | 4. Fiber optic interface |
| 5. Collimating protective lens | 6. Collimating focusing window |
| 7. Focus centering adjustment | 8. Middle protective lens |
| 9. Ceramic ring | 10. Locking ring |
| 11. Nozzle | 12. Lower protective lens |
| 13. Indicator light | 14. Cutting gas interface |
| 15. Side blowing interface | 16. Follow - up signal interface |



Attention :

To avoid damage during storage and transportation, the following precautions should be taken:

1. The cutting head should be stored within the allowable temperature and humidity ranges.
2. The staff should adopt reasonable measures to prevent the cutting head from being vibrated or impacted.
3. Do not store the cutting head in or near a magnetic field (such as a permanent magnet or a strong alternating field).





1.2 Technical Parameters

Basic Parameters	
Cutting head model	NC65
Applicable power	8KW
Laser wavelength	1070±30nm
Fiber interface type	QBH/G5/QD,etc.
Collimating focal length	D37×100mm
Focusing focal length	D37×150mm/D37×200mm
Focus adjustment range	±21 (100 : 150) /±38mm (100 : 200)
Centering adjustment range	±1.5mm
Cutting gas interface	10 (10 optional), maximum 2.5 MPa
Cooling gas interface	6, maximum 0.6 MPa
Cooling water interface	8, maximum 0.5 MPa
Operating temperature	3°C - +55°C
Storage temperature	-20°C - +55°C
Weight	Approximately 5.4 kg (QBH interface)

2. Installation of the Cutting Head

2.1 Preparation

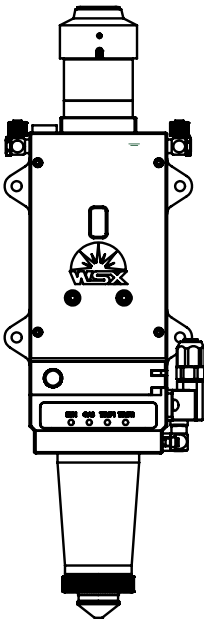
To prevent dust or dirt from entering the cutting head, you can refer to the following methods for installing the cutting head:

Before operation, the following conditions need to be met:

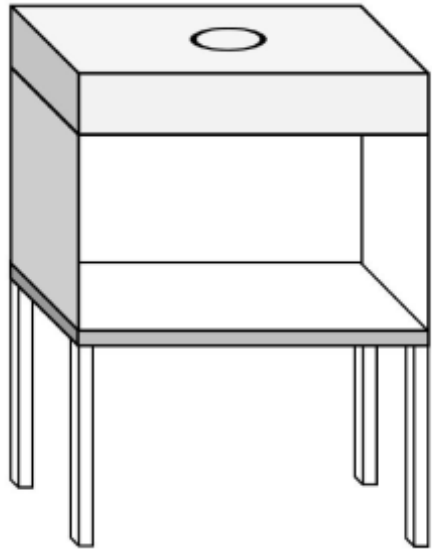
A. Cutting head

B. Clean workbench (For the clean workbench: Type: Vertical purification; Cleanliness level: ISO 5 class, Class 100; Average wind speed: ≥ 0.4 m/s)

C. Cleaning kit: High - intensity flashlight, absolute ethanol (or IPA), dust - free purification cotton swabs, dust - free cloth, compressed air dust removal canister (or air blower).



Cutting head



Clean workbench

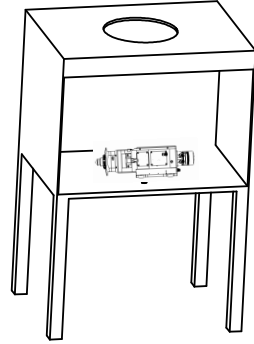
2.2 Specific Operation Procedures

Installing the Fiber Optic Interface

1. Preparing the Clean Workbench

Get the clean workbench ready and start it up.

The clean workbench should be of vertical purification type, with a cleanliness level of ISO Class 5 (equivalent to Class 100), and an average air velocity of ≥ 0.4 m/s.



Pre - checks:

- A. Confirm that the workbench meets the cleanliness requirements by using a dust particle counter. Also, verify that the FFU (Fan Filter Unit) is within its service life. Measure the average air velocity in the working area; if it drops below 0.3 m/s, the FFU must be replaced.
- B. Check that all switches are functioning correctly and that the fan operates normally.
- C. Keep the clean working area free of unnecessary items to prevent interference with the clean air flow.
- D. For newly installed or long - idle workbenches, clean the interior with a lint - free cloth dampened with absolute ethanol before use.

Startup Procedure:

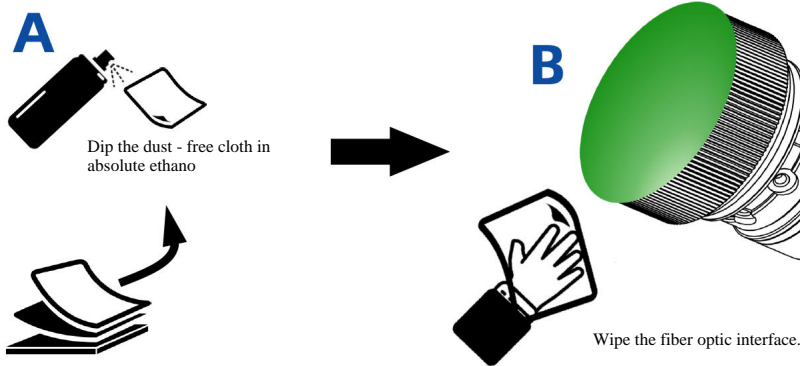
- A. Plug in the power. Slide the glass door of the workbench down to leave a gap of approximately 10 cm.
- B. Turn on the fan and let it run for about 20 minutes to pre - purify the workspace.
- C. Once the workbench is operating properly, switch on the lighting.

Special Warnings

- A. **Only trained professionals should perform the installation.**
- B. **Failure to follow safety procedures can endanger personnel and cause property damage.**
- C. **To ensure the proper operation of the laser system and the safety of the operators, strictly adhere to all relevant operating guidelines.**

2.3 Cleaning and Wiping the Fiber Optic Connector of the Cutting Head

Wipe the fiber optic interface of the cutting head with a dust - free cloth soaked in absolute ethanol.



2.4 Inspecting the Fiber End - Face of the Laser

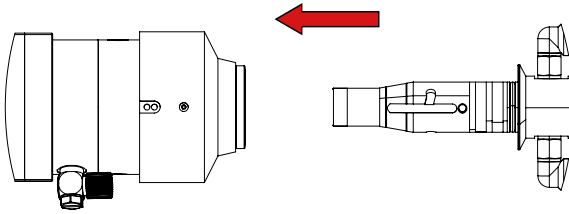
Remove the protective cap of the laser fiber. Use a high - intensity flashlight to check if the fiber end - face is contaminated. If it is clean, you can directly insert the fiber. If it is dirty, clean it with a cotton swab dipped in absolute ethanol or IPA.

2.5 Removing the Protective Film/Cap

Remove the special protective cap/plug from the fiber optic interface on the cutting head.

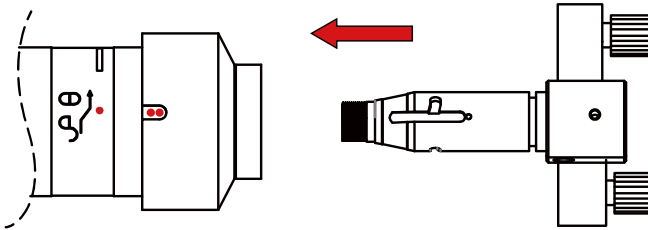
2.6 Connecting the Fiber Optic Interface

- (1) First, place the fiber rod and the fiber connector in a horizontal position.
- (2) Clean the fiber rod and the fiber connector with a dust - free cloth and absolute ethanol.



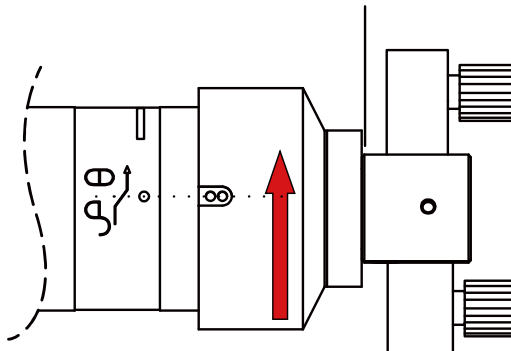
Make sure the red dots are in a straight line.

- (3) Gently insert the fiber rod into the fiber connector.



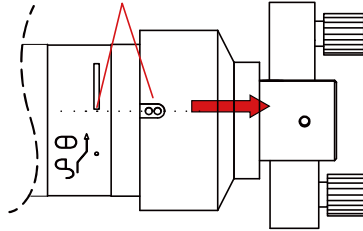
- (4) After inserting the fiber rod all the way in, rotate the red mark on the rotating sleeve in the direction of the arrow until it is within the white marking line.

First, align them.



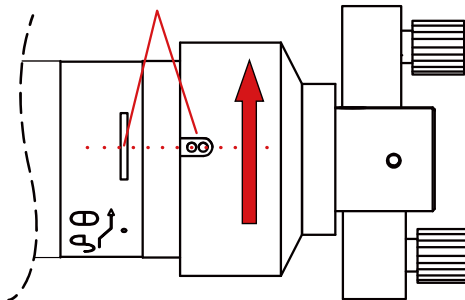
(5) Then, pull up the rotating sleeve in the direction shown in the illustration.

First, align it and then pull it up.



(6) Gently rotate the rotating sleeve again in the direction shown in the illustration with moderate force. Usually, you can feel it is locked (you can use your thumb and index finger to twist).

It can be aligned with or exceed the middle position, but stop twisting once it is in place.



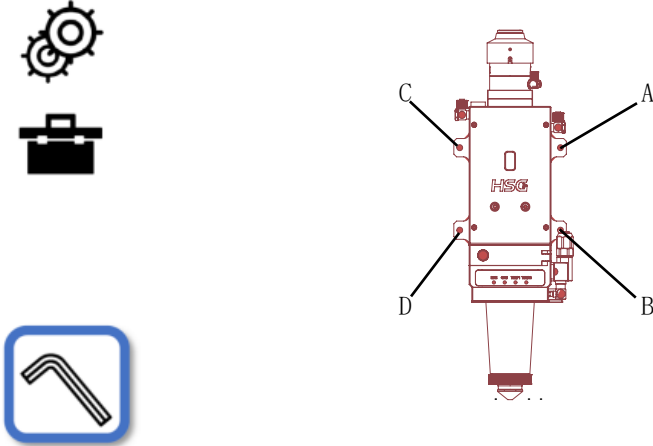
Attention! Do not twist forcefully, as it may damage the precision mechanism!



To prevent dust or dirt from accidentally entering the fiber optic connector, first clean the fiber rod. Place the laser head in a horizontal position before inserting the fiber plug.

2.7 Install the cutting head on the Z - axis of the cutting machine

Install the cutting head onto the backplate of the machine tool's Z - axis using four screws labeled A, B, C, and D. When fixing the cutting head to the machine, make sure it is tightly locked without any wobbling.

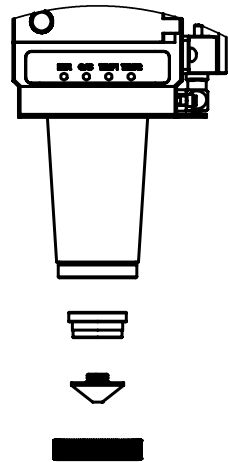


2.8 Install the ceramic ring and nozzle

Install the ceramic ring and lock it firmly, then install the nozzle.



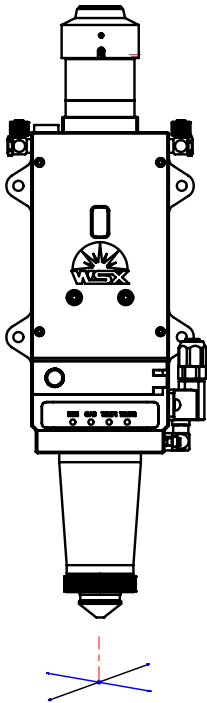
Tighten the nozzle on the ceramic ring by hand, and use a wrench to tighten the ceramic locking ring.



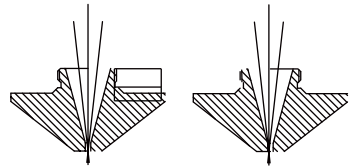
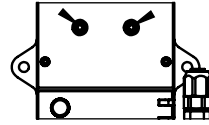
3. Usage and maintenance of the cutting head

3.1 Coaxial adjustment

1. Use an Allen wrench to adjust the X/Y horizontal adjustment screws labeled 1 and 2 so that the laser beam passes through the center of the nozzle.
2. When the laser beam passes through the center of the nozzle, the cutting effect is the best.
3. If the laser beam does not pass through the center of the nozzle, it may cause problems such as abnormal light output and poor cutting results.



X, Y center adjustment X, Y center adjustment



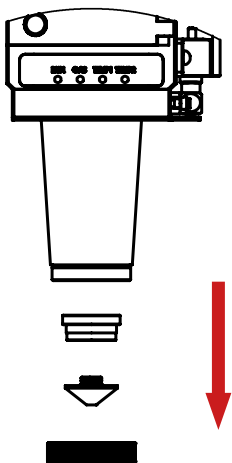
Correct: The laser beam passes through the center of the nozzle.

Incorrect: The laser beam does not pass through the center of the nozzle.

Method for detecting whether the laser beam passes through the center of the nozzle:

1. Stick transparent tape on the nozzle opening (it is best to use a new or non - deformed nozzle).
2. Adjust the power of the laser to about 50W (for example, for a 500W laser, adjust the spot - firing power to 10%).
3. Emit the laser for 1 - 2 seconds and then remove the transparent tape.
4. Hold the transparent tape up to a light source and observe whether the circular mark of the nozzle on the tape is concentric with the burn point made by the laser passing through the tape.
5. If they are concentric, the adjustment result is qualified; if not, continue the adjustment until it is qualified.

3.2 Replacement of the ceramic ring and nozzle



Power supply



Cooling gas

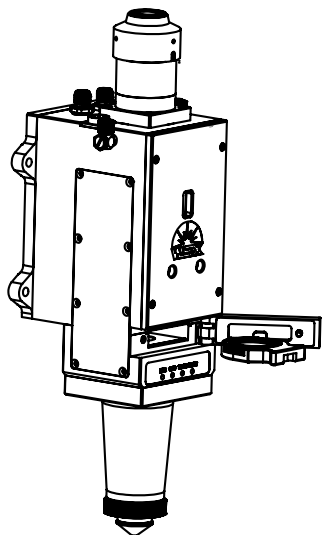


Cutting gas



Center alignment

3.3 Replacement of the lower protective lens



Disassembly method: Loosen the locking stud and then remove the drawer.



Power supply

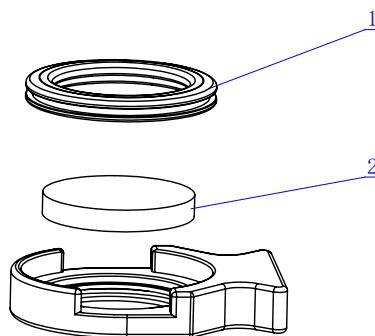


Cooling gas



Cutting gas

Dust - prevention note: Wear dust - proof gloves and finger cots when disassembling and assembling the lens, and the operation should be carried out in a clean environment. (When replacing the lens on - site, you can use masking tape to seal the window to prevent dust from entering and causing contamination.)



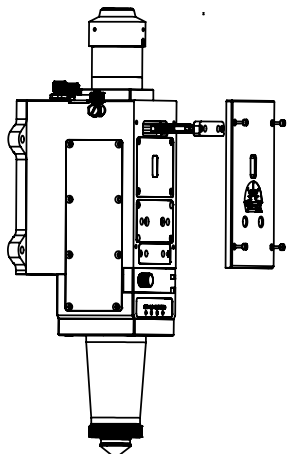
1. Pressure cap 2. Protective lens (D34X5)



Disassembly method: Pull the pressure cap upwards as indicated by the arrow. Do not use tools such as wrenches or pliers, otherwise the parts may be damaged.

3.4 Replacement of the collimating protective lens

Caution for dropping



Power supply



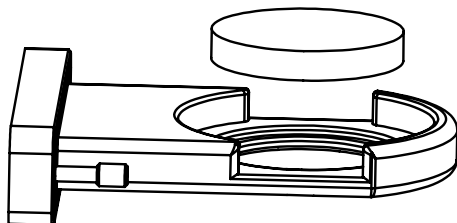
Cooling gas



Cutting gas

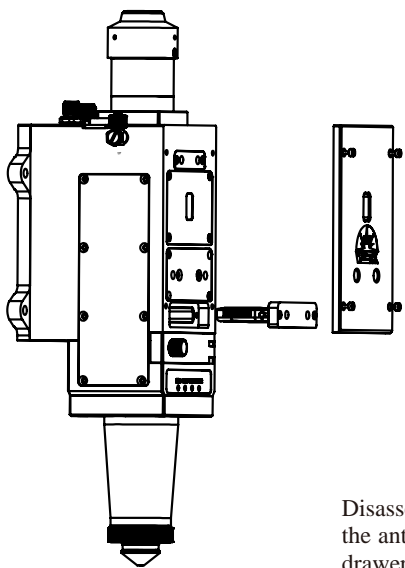
Disassembly method: Remove the cover plate, slide out the drawer horizontally, and then take out the pressure cap.

Dust - prevention note: Wear dust - proof gloves and finger cots when disassembling and assembling the lens, and the operation should be carried out in a clean environment. (When replacing the lens on - site, you can use masking tape to seal the window to prevent dust from entering and causing contamination.)



Disassembly method: Pull out the pressure cap 1 and take out the protective lens 2. Do not use tools such as wrenches or pliers, otherwise the parts may be damaged.

3.5 Replacement of the middle protective lens



The operation should be carried out on a dust - free workbench.



Power supply

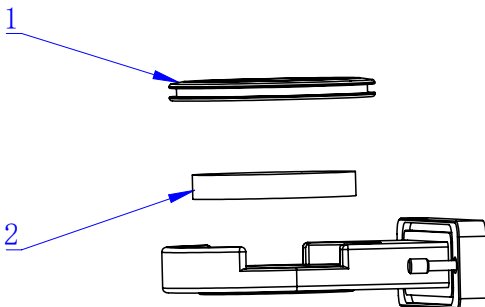


Cooling gas



Cutting gas

Disassembly method: Remove the cover plate, then loosen the anti - drop screws on the dust cover, and slide out the drawer with the protective lens horizontally.



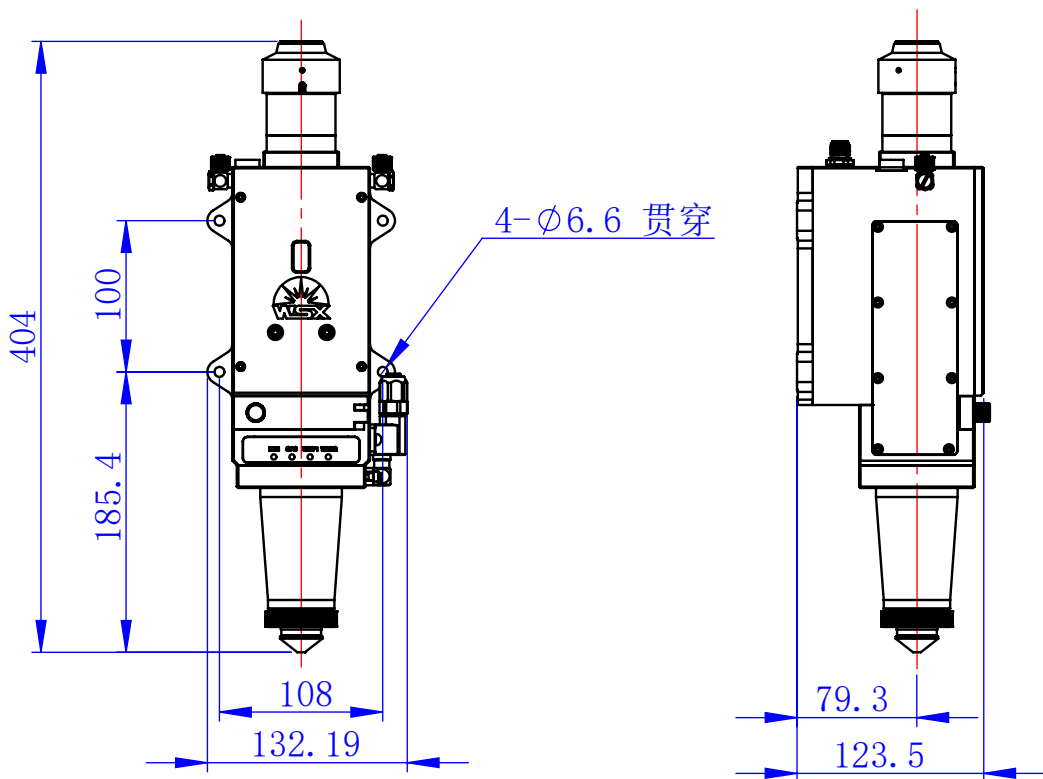
1. Pressure cap 2. Protective lens (D34x5)



Disassembly method: Pull the pressure cap 1 vertically upwards, and then pull the lens upwards as indicated by the arrow. Do not use tools such as wrenches or pliers, otherwise the parts may be damaged.

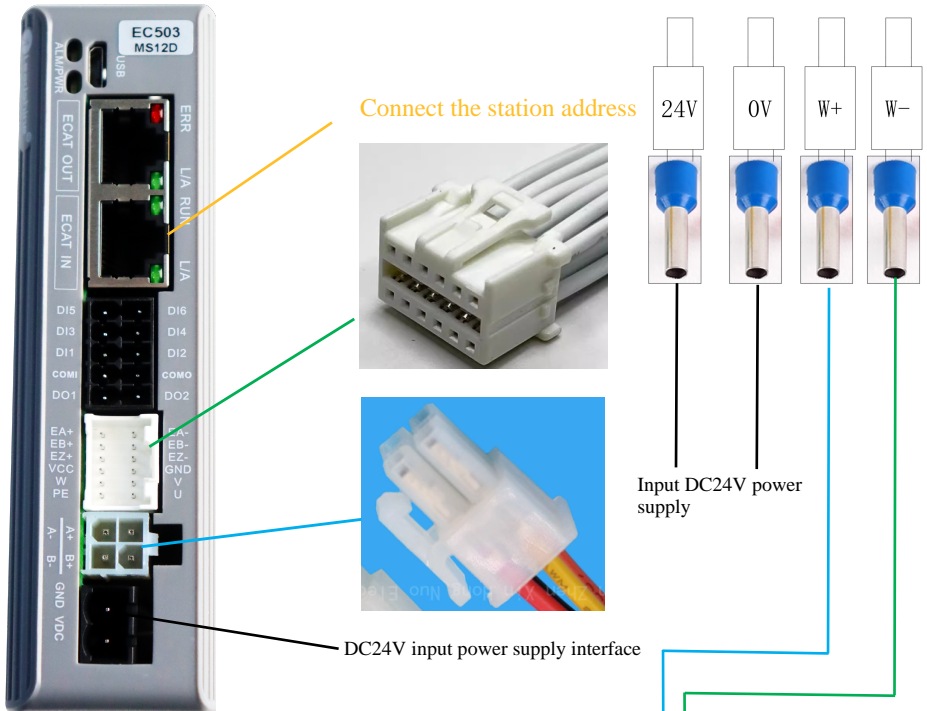
4. Installation dimensions of the cutting head

The following dimensions are for the installation of NC65(F100xF200).

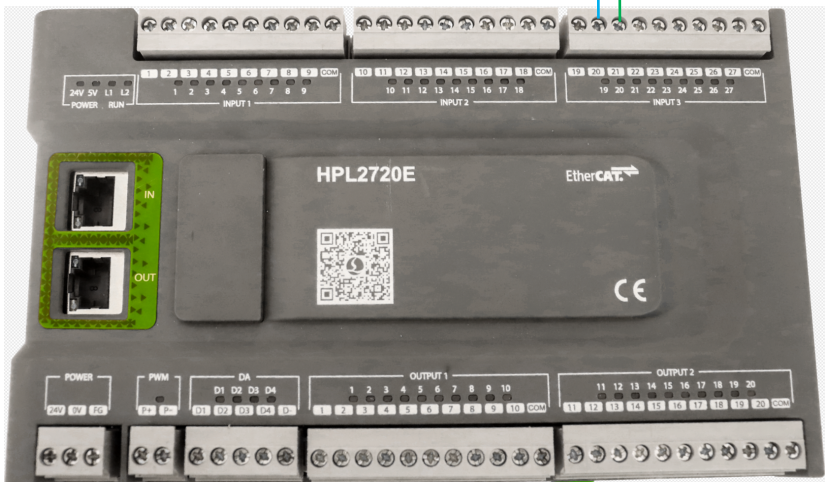


5. Electrical wiring instructions

5.1 Wiring diagram of the BOCHU bus system

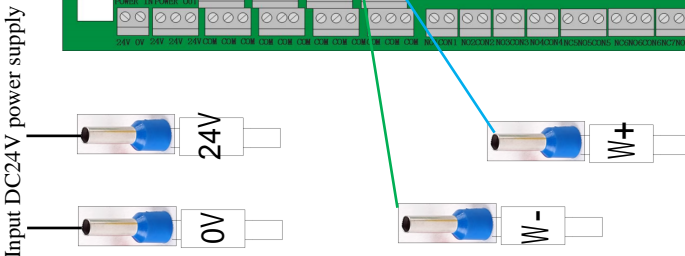
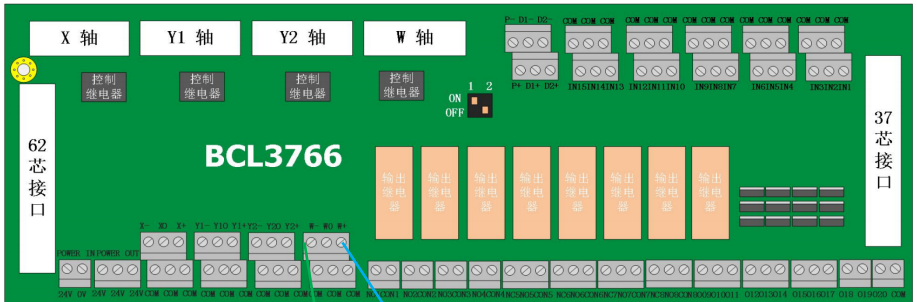
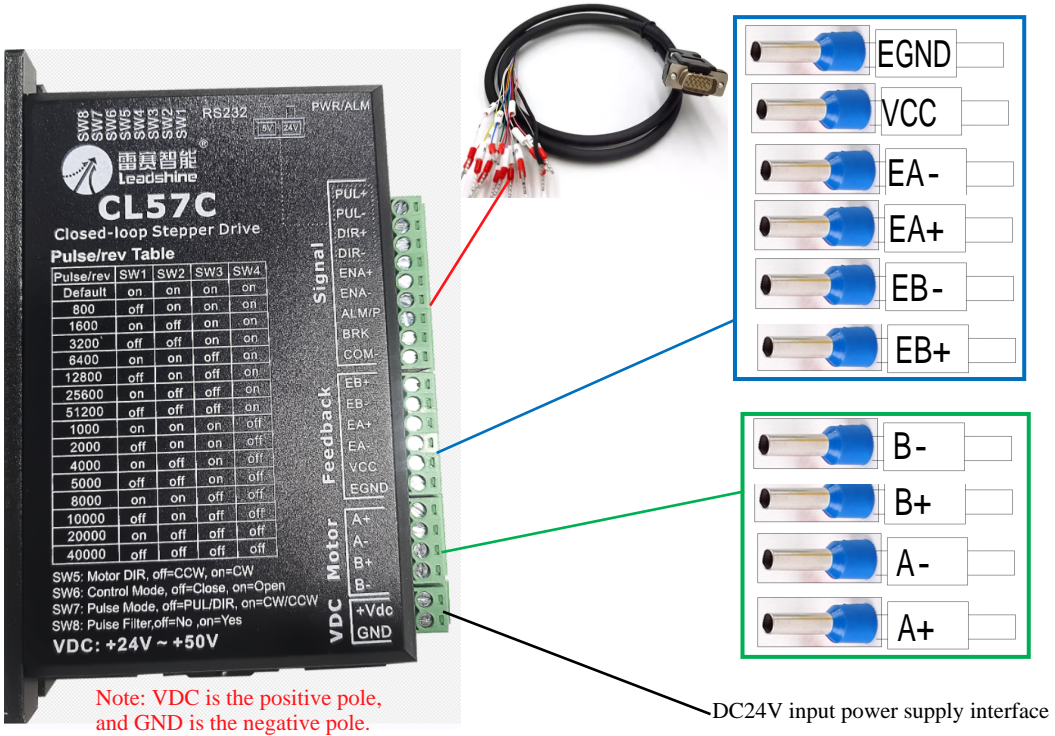


Note: VDC is the positive pole, and GND is the negative pole.



When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high-power and strongly interfering devices, and ensure good grounding of the equipment.

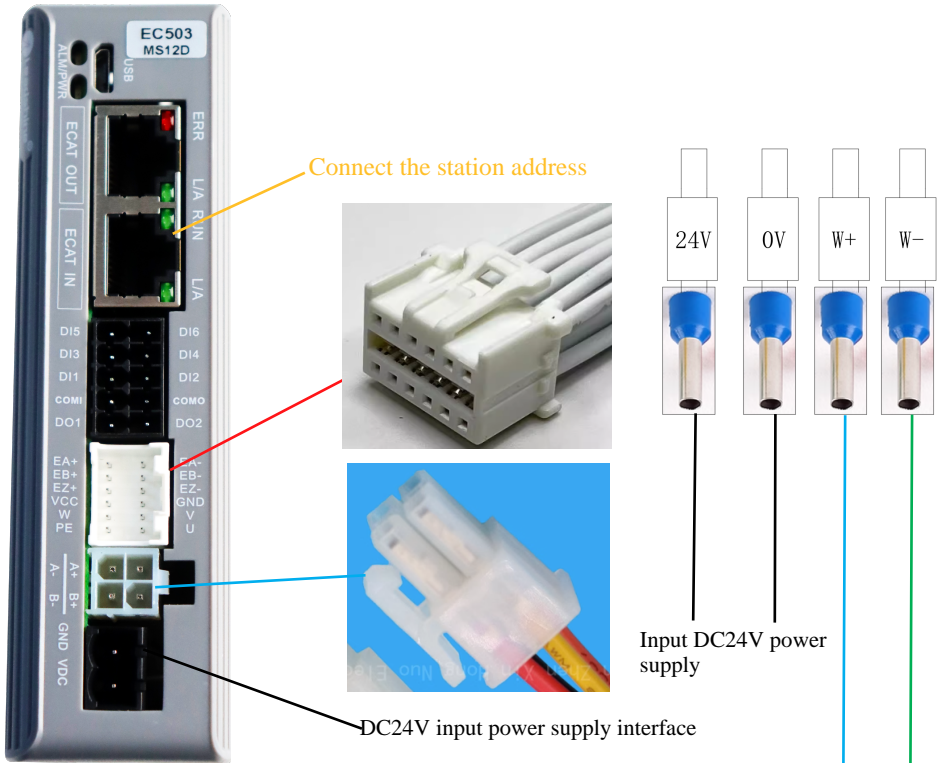
5.2 Wiring diagram of the BOCHU pulse system



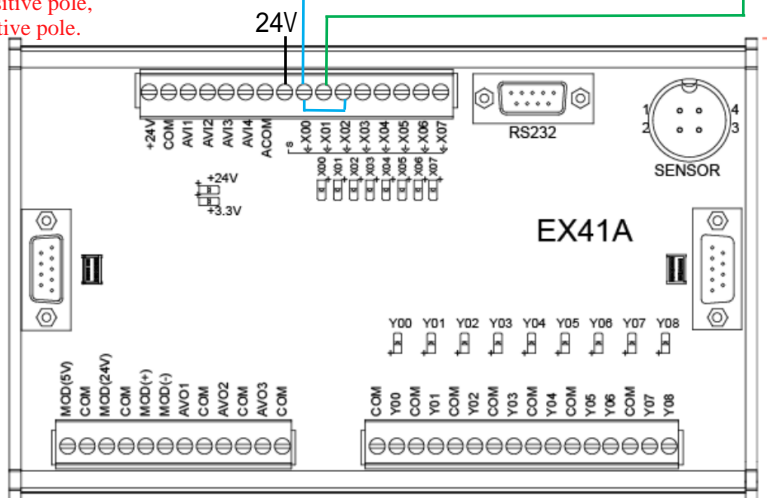
When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high-power and strongly interfering devices, and ensure good grounding of the equipment.



5.3 Wiring diagram of the WEIHONG bus system

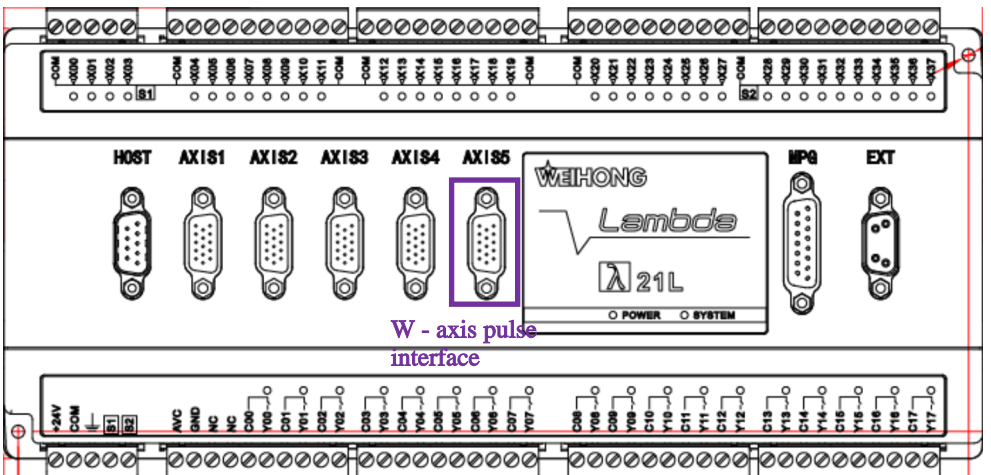
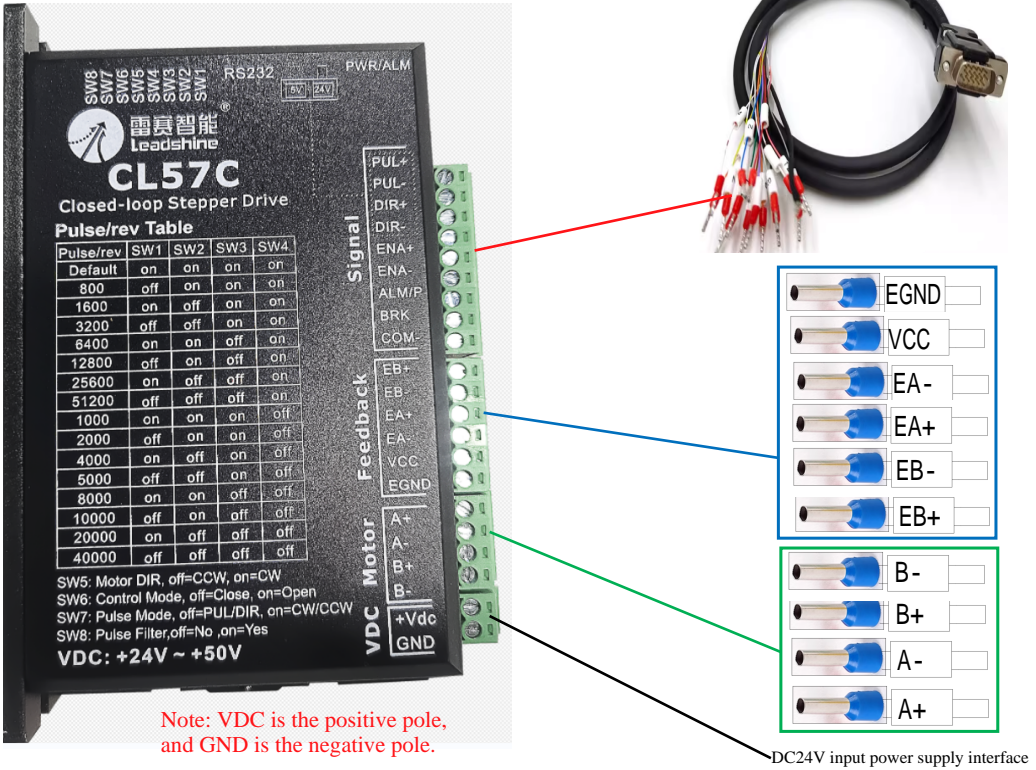


Note: VDC is the positive pole, and GND is the negative pole.



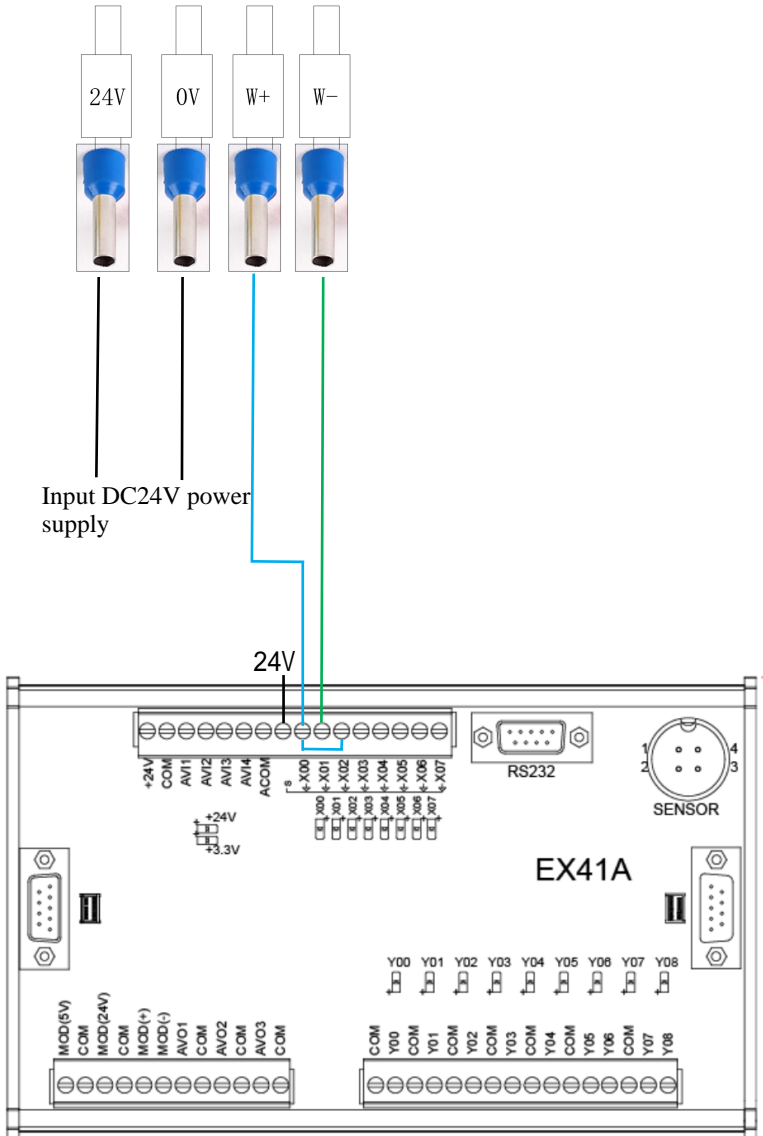
When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high-power and strongly interfering devices, and ensure good grounding of the equipment.

5.4 Wiring diagram 1 of the WEIHONG pulse system



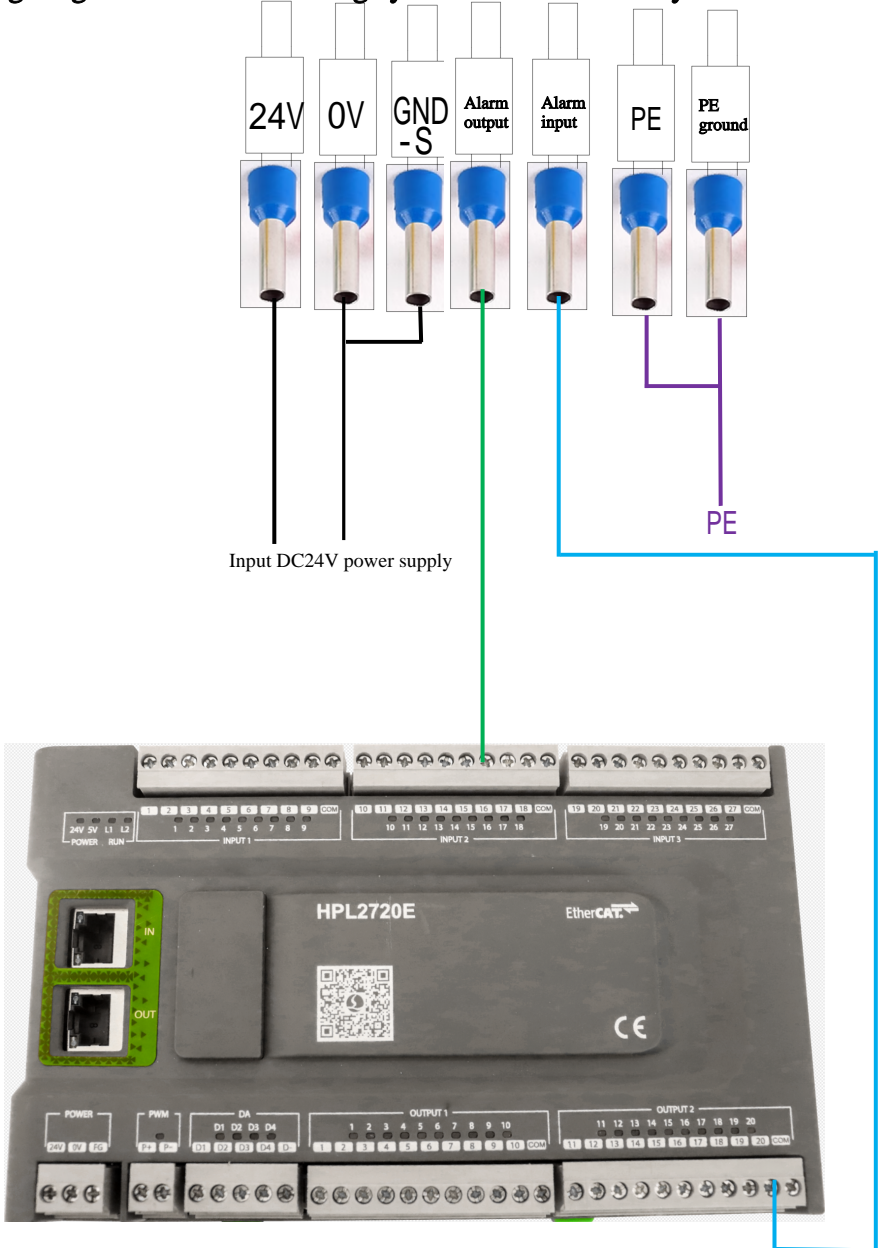
When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

5.5 Wiring diagram 2 of the WEIHONG pulse system



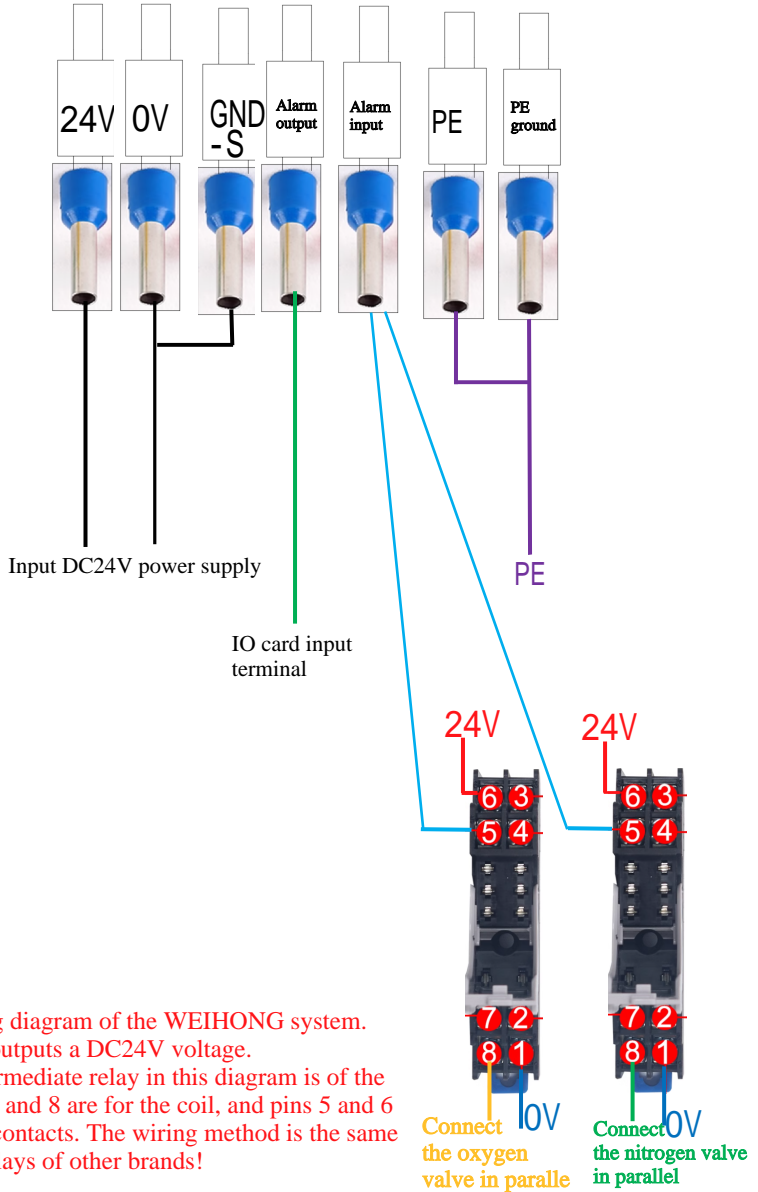
When arranging the electrical cabinet, separate the strong and weak electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

5.6 Wiring diagram of the monitoring system with BOCHU system



Note: The fault alarm outputs a DC24V voltage.

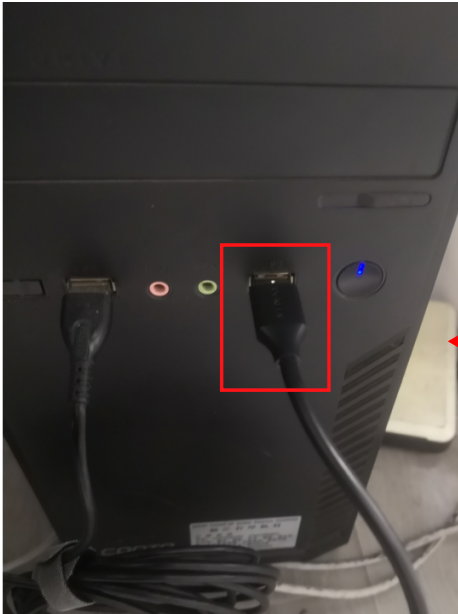
5.7 Wiring diagram of the monitoring system with WEIHONG system



Note:

1. This is the wiring diagram of the WEIHONG system.
2. The fault alarm outputs a DC24V voltage.
3. The DC24V intermediate relay in this diagram is of the IDEC brand. Pins 1 and 8 are for the coil, and pins 5 and 6 are normally open contacts. The wiring method is the same for intermediate relays of other brands!

5.8 USB485 wiring diagram



Note: If the wiring terminals are not used, disassemble and keep them.



6. System parameter configuration instructions

6.1 Parameter configuration of the BOCHU pulse system

Machine Config Tool(BMC1604)

Focus Control

Enable

The fourth axis Precitec Hig BCL4516E [1 connection]

Focus Range: From to

Focus position at org:

Pulse Rate: Move pulse

High Speed: Org Dir: Pos Neg

Low Speed: zero signal: [Limit]

Rollback distance:

Jog speed:

Locate Speed:

acceleration:

Servo Alarm Logic:

Negative Limit Logic:

Positive Limit Logic:

Note: The focal positions of lasers from different brands may vary. Therefore, the retraction distance should be adjusted according to the actual zero - focus on site.

Alarm settings for the BOCHU pulse system

Alarms

Emergency: NO NC

Remove alarms manually Force remove alarms manually

Display warning message when machine is running

It is strictly prohibited to put your hands or any part of your body into the machine tool during its operation.

Custom input alarm:

Alarm description	Port	Level Test	Time Filter
cutting err	0	<input checked="" type="radio"/> NO <input type="radio"/> NC	0

No Working
 No Lasering
 No Following
 No Returning ORG
 No Moving
 No X Jogging
 No Y Jogging

Select the alarm item.

Note: Set the alarm port according to the on - site wiring IO ports.

Operation process: Click “ Alarms” > “ One Inpurt Alarm” > “ Add” > Enter the alarm description > Select Port > Select high or low level > Save.



6.2 Parameter configuration of the BOCHU bus system

Do not modify the parameters in the yellow area.

Note: The focal positions of lasers from different brands may vary. Therefore, the retraction distance should be adjusted according to the actual zero - focus on site.

Alarm settings for the BOCHU bus system

Note: Set the alarm port according to the on - site wiring IO ports.

Operation process: Click “ Alarm ” > “ Alarm input ” > “ Add ” > Enter the Alarm description > Select the Port No. > Select the Level detection > Save.

6.3 Parameter configuration of the BOCHU system

The screenshot displays the parameter configuration interface for the BOCHU system. The top navigation bar includes icons for Bus scan, Axes configuration, Return ORG, Laser, Cutting head, Gas, Alarm, Palet Changer, General input, General output, IO list, Water cooler, WMS, Maintenance, Advanced config, and Save.

Gas Configuration:

- Valve type: Default
- Proportional valve settings:

DA	Max pressure
Disable	10 Bar
Disable	10 Bar
Disable	10 Bar
Disable	10 Bar
- Low pressure: 0
- High pressure: 0
- Master valve: A5 (highlighted in red)

Feedback pressure:

Feedback pressureAD	Voltage range(V)	Pressure range(Bar)	Pressure alarm error (%)	Pressure alarm error (%)	
Air	Disable	0 ~ 10	0 ~ 10	30	50
O2	Disable	0 ~ 10	0 ~ 10	30	50
N2	Disable	0 ~ 10	0 ~ 10	30	50

Filtering time: 300 ms

Alarm detect:

Users can set the signal port as needed. The alarm in one gas channel doesn't affect other gas channels.

Air alarm	0	NO	Low pressure	0	NO	Alarm delayed...	0	ms
O2 alarm	0	NO	High pressure	0	NO	Gas alarm	0	NO
N2 alarm	0	NO						
Air(H) alarm	0	NO						
O2(H) alarm	0	NO						
N2(H) alarm	0	NO						

DA range:

- 0-5V
- 0-10V
- Control valve power supply

1. Set the port of the main gas pressure valve, which is used for gas pressure detection.
2. The setting operation processes of the BERCEL pulse system and the bus system are the same.

6.4 Parameter configuration of the WEIHONG pulse system

CommonParam	System Parameters	Drive Setting	Follow	Laser Device Setting	Machine Maintenance Regular Reminder
Search					
Name					
Value					
Unit					
Effective					
1.0.3 W-axis					
Encoder Direction(W)					
1					
Immediately					
Axis Direction(W)					
1					
Immediately					
Pulse Equivalent(W)					
0.0008					
mm/p					
Immediately					
Command Pulse Count Per Rev.					
10000					
Immediately					
Feedback Pulse Count Per Rev.					
10000					
Immediately					
Upper Limit of Soft Limit (W)					
38					
mm					
Immediately					
Lower Limit of Soft Limit (W)					
-38					
mm					
Immediately					
Enable Soft Limit Protection (W)					
Yes					
Immediately					
Max Speed of Axis (W)					
9000					
mm/min					
Immediately					
Manufacturer					
Name: Encoder Direction(W)					
Value: 1					
Desc.: W-axis relations between the directions of handwheel turning and axis motion. -1: Opposite direction. 1: Same direction.					

Operation process: Click “Manufacturer” > Password: NcStudio > Enter and modify the parameters of the W - axis.

Common Param	System Parameter	Drive Setting	Follow-up Control	Laser Device Setting	Machine Maintenance Regular Reminder
GOTO					
Name					
Value					
Unit					
Effective					
1.1.4 OriginSetting(W)					
Use Z Phase Signal(W)					
No					
Immediately					
Coarse Positioning Direction(W)					
1					
Immediately					
REF Switch Positioning Speed(W)					
600					
mm/min					
Immediately					
Fine Positioning Speed(W)					
60					
mm/min					
Immediately					
Retract Distance(W)					
38					
mm					
Immediately					
Retract Speed(W)					
200					
mm/min					
Immediately					
Min Distance between Coarse and					
0.5					
mm					
Immediately					
Enable latch(W)					
Yes					
Immediately					
Absolute Encoder Back Home(W)					
1					
Immediately					
Manufacturer					
Name: Use Z Phase Signal(W)					
Value: No					
Description: Whether to use the Z phase signal. Yes: Z phase signal is used in the homing fine positioning stage; No: Machine origin signal is used in the homing fine positioning stage;					

Note: The focal positions of lasers from different brands may vary. Therefore, the retraction distance should be adjusted according to the actual zero - focus on site.

Operation process: Modify the origin parameters of the W - axis.



6.5 Parameter configuration of the WEIHONG bus system

The screenshot shows the 'System Parameter' tab in the software interface. The left sidebar lists the navigation tree, with '1.0.3 W-axis' selected. The main area displays a table of parameters for the 1.0.3 W-axis.

Name	Value	Unit	Effective
Drive station address 1(W)	5		After Restart
Drive station address 2(W)	15		After Restart
Offset address within drive station	0		After Restart
Axis Direction(W)	1		Immediately
Screw Pitch(W)	8	mm	Immediately
Encode Digit(W)	13		Immediately
Encoder type(W)	0		After Restart
Numerator of Electronic Gear Rati	1		Immediately
Denominator of Electronic Gear R	1		Immediately
Focus upper limit	38	mm	Immediately
Focus lower limit	-38	mm	Immediately
Enable Soft Limit Protection (W)	Yes		Immediately
Max Speed of Axis (W)	20000	mm/min	Immediately
Detect Encoder Error(W)	No		Immediately
Encoder Static Error(W)	0.1	mm	Immediately
Encoder Dynamic Tolerance(W)	40	mm	Immediately

Below the table, the 'Manufacturer' dropdown is set to 'Manufacturer'. The details for 'Drive station address 1(W)' are shown: Value: 5, Description: Slave Station Address(W).

Note: Click “ Manufacturer ” , enter the password: NcStudio > Enter.

Operation process: Set > System Parameter > 1.0 Axis Param > 1.03 W - axis parameter settings.

The screenshot shows the 'System Parameter' tab in the software interface. The left sidebar lists the navigation tree, with '1.1.4 OriginSetting(W)' selected. The main area displays a table of parameters for the 1.1.4 Origin Setting.

Name	Value	Unit	Effective
Use Z Phase Signal(W)	No		Immediately
Course Positioning Direction(W)	1		Immediately
RBF Switch Positioning Speed(W)	600	mm/min	Immediately
Fine Positioning Speed(W)	60	mm/min	Immediately
Retract Distance(W)	38	mm	Immediately
Retract Speed(W)	200	mm/min	Immediately
Min Distance between Coarse and	0.5	mm	Immediately
Enable latch(W)	Yes		Immediately
Absolute Encoder Back Home(W)	1		Immediately

Below the table, the 'Manufacturer' dropdown is set to 'Manufacturer'. The details for 'Use Z Phase Signal(W)' are shown: Value: No, Description: Whether to use the Z phase signal. Yes: Z phase signal is used in the homing fine positioning stage; No: Machine origin signal is used in the homing fine positioning stage.

Operation process: Set > System Parameter > 1.1 Homing > 1.14 Origin Setting(W)

6.6 Focus control options for the WEIHONG bus system

The screenshot shows the 'System Parameter' window with the following structure:

- Common Param
- System Parameter**
 - 3.5.1 General Parameters
 - Enable focus control: Yes, After Restart
 - Focus Control Type: 0, After Restart
 - 3.5.2 Cutters
 - Cutting head type: 0, After Restart
 - 3.5.3 General Focus Control Parameters
 - Focus compensation type: 1, After Restart
 - 3.5.4 Focus Control Parameters
 - Precitec Focus Reached Check Del: 1000, ms, Immediately
 - Focus Go Home Confirm Delay: 100, ms, Immediately
 - Precitec Go Home Check Delay: 20, s, Immediately
 - Precitec Focus Confirm Delay: 100, ms, Immediately
 - Precitec focus adjustment delay: 15, ms, Immediately
- Drive Setting
- Follow-up Control
- Laser Device Setting
- Machine Maintenance Regular Reminder

Manufacturer: Name: Enable focus control
Value: Yes
Description: Whether to enable focus control.

Bottom toolbar icons: Machining, Tech, monitoring, Report, **Set**, Maintain, Advanced.

Operation process: Set > System Parameter > 3.5 Focus Control > Modify according to the content within the red frame.

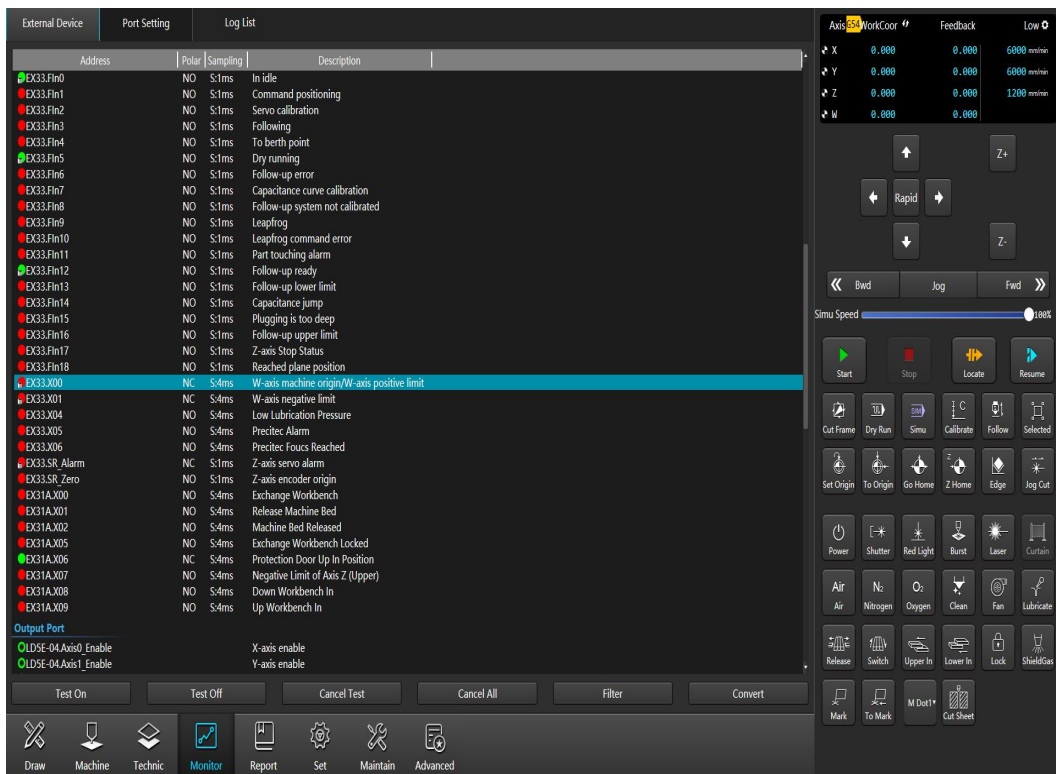
The screenshot shows the 'Drive Setting' window with the following table:

No.	Param Name	Param Value	Unit	Effective	Ra
2000-00	Peak current	25	0.1A	Immediately	0
2001-00	Subdivision	8192	Pulse	After Power	200
2010-01	Filter time	100	0.1ms	Immediately	0
2012-00	Power-on axis lock current increase duration	1	100ms	Immediately	1
2013-00	Current loop power-on auto-tuning	1	-	Immediately	0
2019-01	In-place pulse compensation	1	-	Immediately	0
2019-02	Disablement in-place mode	0	-	Immediately	0
201a-01	Power-on axis lock current percentage	100	%	Immediately	0
201a-02	Open loop holding current percentage	50	%	Immediately	0
201a-03	Closed loop holding current percentage	50	%	Immediately	0
201b-00	Power-on axis lock duration	200	ms	Immediately	0
201c-00	Maximum parking duration	1000	ms	Immediately	100
201d-00	Zero-speed threshold	10	0.1r/s	Immediately	0
2024-00	Mode selection	2	0.1r/s	Immediately	0
2025-01	Open-to-closed loop switching speed thresho	18	0.1r/s	Immediately	0
2025-02	Open-to-closed loop switching delay	12	ms	Immediately	0
2025-03	Closed-to-open loop switching speed thresho	5	0.1r/s	Immediately	0
2025-04	Closed-to-open loop switching delay	250	ms	Immediately	0
2025-05	Closed-to-open loop switching feedback spee	50	0.1r/s	Immediately	0
2029-00	Encoder resolution	8000	Pulse	After Power	200
2030-00	Position out-of-tolerance value	4000	Pulse	Immediately	0
2032-00	In-place pulse number	4	Pulse	Immediately	0
2033-00	In-place position error debouncing delay	3	ms	Immediately	0
2047-00	Overvoltage threshold	90	V	Immediately	0
2051-00	Motor movement direction	0	-	Immediately	0
2056-00	Fault detection	65535	-	Immediately	0
2073-00	Automatic operation upon power-on	0	-	Immediately	0

Bottom toolbar icons: Machine, Technic, Monitor, Report, **Set**, Maintain, Advanced.

Operation process: Set > Driver setting > Select the W - axis > Subdivision > Change to: 8192 > Save > Power off the driver.

6.7 Polarity modification of the WEIHONG system (applicable to both bus and pulse systems)



The screenshot displays the WEIHONG control software interface. The main window is divided into several sections:

- External Device / Port Setting / Log List:** A table showing the status of various external devices and their descriptions. The table has columns for Address, Polar, Sampling, and Description. The row for EX33.X00 is highlighted in blue, indicating it is selected.
- Axis WorkCoord:** A panel showing the current coordinates for the X, Y, Z, and W axes. The X-axis is highlighted in yellow. The feedback values are 0.000 for all axes, and the maximum speeds are 6000 mm/min for X, Y, and Z, and 1200 mm/min for W.
- Control Panel:** A grid of buttons for various machine functions, including Start, Stop, Locate, Resume, Cut Frame, Dry Run, Simu, Calibrate, Follow, Selected, Set Origin, To Origin, Go Home, Z Home, Edge, Jog Cut, Power, Shutter, Red Light, Burst, Laser, Curtain, Air, N2, O2, Clean, Fan, Lubricate, Release, Switch, Upper In, Lower In, Lock, ShieldGas, Mark, To Mark, M Dot1, and Cut Sheet.
- Bottom Bar:** A navigation bar with icons for Draw, Machine, Technic, Monitor (selected), Report, Set, Maintain, and Advanced.

Address	Polar	Sampling	Description
EX33.Fin0	NO	S1ms	In title
EX33.Fin1	NO	S1ms	Command positioning
EX33.Fin2	NO	S1ms	Servo calibration
EX33.Fin3	NO	S1ms	Following
EX33.Fin4	NO	S1ms	To berth point
EX33.Fin6	NO	S1ms	Dry running
EX33.Fin7	NO	S1ms	Follow-up error
EX33.Fin8	NO	S1ms	Capacitance curve calibration
EX33.Fin9	NO	S1ms	Follow-up system not calibrated
EX33.Fin10	NO	S1ms	Leapfrog
EX33.Fin11	NO	S1ms	Leapfrog command error
EX33.Fin12	NO	S1ms	Part touching alarm
EX33.Fin13	NO	S1ms	Follow-up ready
EX33.Fin14	NO	S1ms	Follow-up lower limit
EX33.Fin15	NO	S1ms	Capacitance jump
EX33.Fin16	NO	S1ms	Plugging is too deep
EX33.Fin17	NO	S1ms	Follow-up upper limit
EX33.Fin18	NO	S1ms	Z-axis Stop Status
EX33.X00	NC	S4ms	W-axis machine origin/W-axis positive limit
EX33.X01	NC	S4ms	W-axis negative limit
EX33.X04	NO	S4ms	Low Lubrication Pressure
EX33.X05	NO	S4ms	Precitex Alarm
EX33.X06	NO	S4ms	Precitex Focus Reached
EX33.SR_Alarm	NC	S1ms	Z-axis servo alarm
EX33.SR_Zero	NO	S1ms	Z-axis encoder origin
EX31A.X00	NO	S4ms	Exchange Workbench
EX31A.X01	NO	S4ms	Release Machine Bed
EX31A.X02	NO	S4ms	Machine Bed Released
EX31A.X05	NO	S4ms	Exchange Workbench Locked
EX31A.X06	NC	S4ms	Protection Door Up In Position
EX31A.X07	NO	S4ms	Negative Limit of Axis Z (Upper)
EX31A.X08	NO	S4ms	Down Workbench In
EX31A.X09	NO	S4ms	Up Workbench In

Output Port:

- OLDSE-04.Axis0_Enable: X-axis enable
- OLDSE-04.Axis1_Enable: Y-axis enable

Buttons: Test On, Test Off, Cancel Test, Cancel All, Filter, Convert

Bottom Bar: Draw, Machine, Technic, **Monitor**, Report, Set, Maintain, Advanced

Operation process: Click “ Monitor” > “ Port setting” > Check if the polarities are consistent. If not, modify the polarities.



7. Installation process of the USB485 driver

7.1 Installation process 1

About

66L86JRVRCX408
System Product Name Rename this PC

Device Specifications Copy ^

Device Name	66L86JRVRCX408
Processor	Intel(R) Core(TM) i5-10400 CPU @ 2.90GHz 2.90 GHz
Installed RAM	16.0 GB (15.8 GB usable)
Graphics Card	NVIDIA GeForce GTX 1050 Ti (4 GB), Intel(R) UHD Graphics 630 (128 MB)
Storage	224 GB SSD KINGSTON SA400M8240G, 932 GB HDD WDC WD10EZEX-22MFC A0
Device ID	99A52342-C00D-4DA6-B1C5-2108DD30AF91
Product ID	00330-80000-00000-AA748
System Type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

Frequently asked questions

How does having 16 GB or more of RAM impact my PC's performance? Can I run modern applications smoothly with this RAM capacity? ^

Is my GPU sufficient for high end gaming and video experience? How can having a dedicated GPU enhance my experience and productivity? ^

Am I running the latest version of the Windows OS? What is the latest Windows version? ^

Windows Specifications Copy ^

Edition	Windows 10 Pro
Version	2009
Installed on	23/08/2022
OS Build	19045.5854

[Read the Microsoft Services Agreement that applies to our services](#)

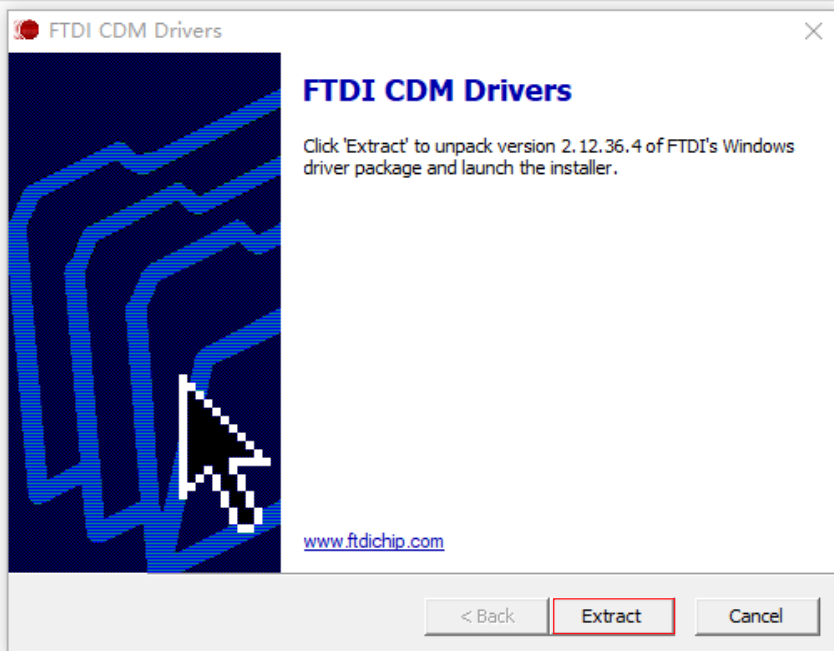
Operation process: Click “ Computer properties” > “ System Type” > “ Version” > Install the serial port driver and select the file corresponding to your computer for installation.

7.2 Installation process 2

名称	修改日期	类型	大小
Android (Java D2XX)	2022/10/20 9:12	文件夹	
CDMUninstaller_v1.4-卸载工具	2022/10/20 9:13	文件夹	
Linux	2022/10/20 9:15	文件夹	
Windows	2022/10/20 9:15	文件夹	

名称	修改日期	类型	大小
ARM64 Windows 10、Windows 11及Mac M1 VM中的Windows	2022/10/20 9:15	文件夹	
Windows 7	2022/10/20 9:15	文件夹	
Windows 8 10 11、Server 08R2 2012R2	2022/10/20 9:15	文件夹	
Windows CE	2022/10/20 9:15	文件夹	
Windows RT	2022/10/20 9:15	文件夹	
Windows XP	2022/10/20 9:15	文件夹	

名称	修改日期	类型	大小
CDM212364_Setup	2022/7/22 16:48	应用程序	2,212 KB



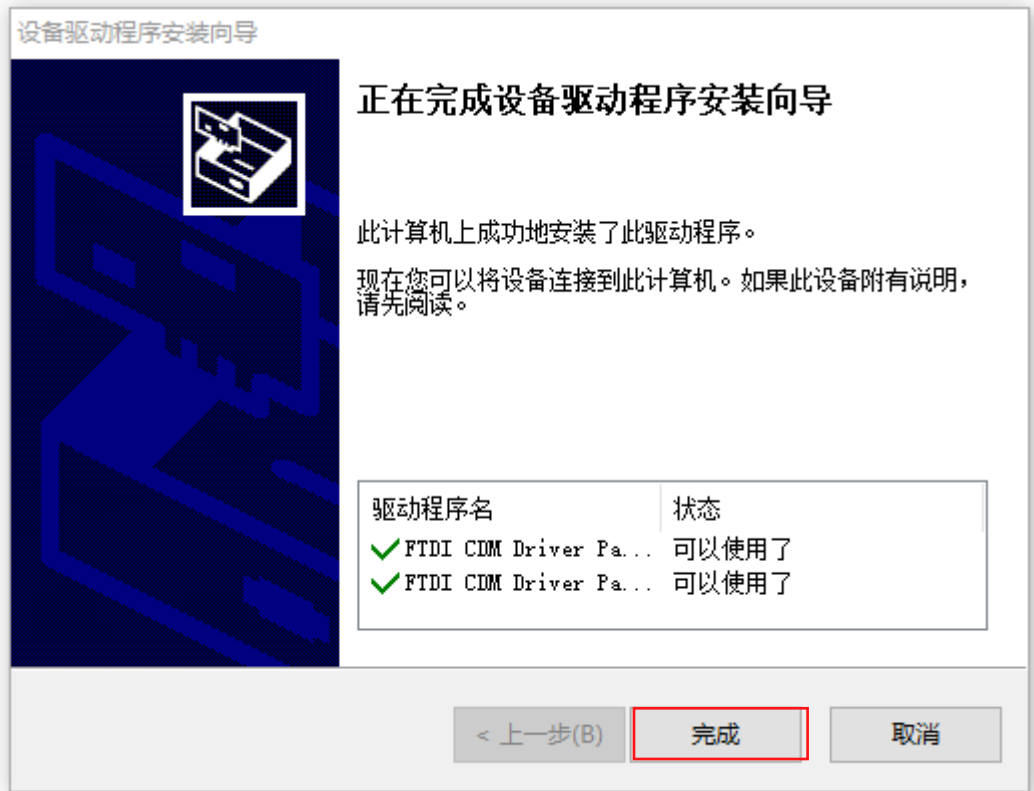
Operation process: Open the driver file of the serial cable FT231XS chip > Windows > Windows 8, 10, 11 > CDM212364_Setup > Extract.

7.3 Installation process 3



Operation process: Click “Next” > “I accept this agreement” > “Next”.

7.4 Installation process 4



Operation process: Click “ Finish” .





Click “ Computer properties” > “ Device Manager” > Check if there is an exclamation mark next to the port. If there is no exclamation mark, it means the installation is successful.

The driver installation package can be downloaded from the official website of UGREEN.



8. Instructions for using the monitoring system

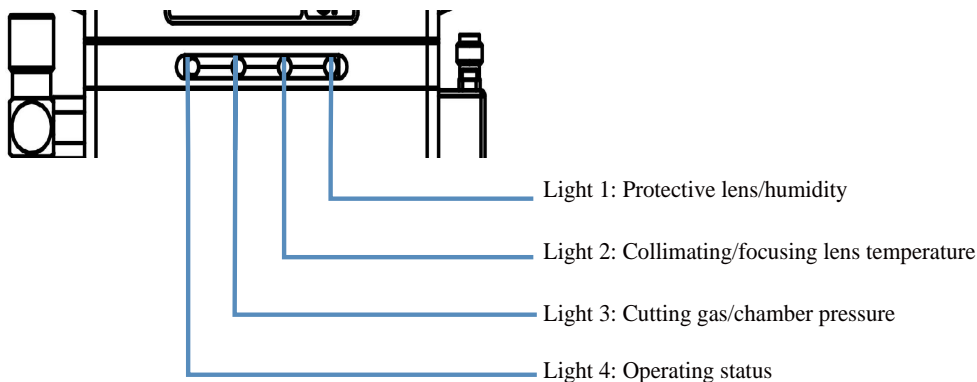
8.1 Installation process of the monitoring software

 System.Windows.Interactivity.dll	2024/3/27 9:39	应用程序扩展	55 KB
 WSX.Language.dll	2024/8/10 14:34	应用程序扩展	67 KB
 WSXMonitor	2024/8/10 14:33	应用程序	607 KB
 WSXMonitor.exe.config	2024/8/17 8:43	CONFIG 文件	2 KB



Operation process: Open the monitoring file > WSXMonitor > Enter the monitoring interface.

8.2 Explanation of the status indicator lights of the cutting head



WSX Monitor

Channel: COM8 > Disconnect Auto start

Monitor Stray li... Log

Sensor	Real time value	Warning value	Alarm value	Operation
Collimating lens	27.3 °C	40.0	45.0	Set threshold
Collimating lens cavity	26.4 °C			
Focus lens	27.1 °C	40.0	45.0	Set threshold
Focus lens cavity	25.8 °C			
Focus rise	1.3 °C	5.0	8.0	Set threshold
Protective lens	28.0 °C	40.0	45.0	Set threshold
Protective lens cavity	26.1 °C			
Protective rise	1.9 °C	5.0	8.0	Set threshold
Cutting pressure	0.01 Bar		0.5	Set threshold
Cavity pressure	0.01 Bar		2.0	Set threshold
Humidity	53.97 %		80.0	Set threshold

Firmware: A325511B Software: V3.8.0

Operation process: Select the corresponding serial port number > Start monitoring > After a successful connection, the temperature will be displayed on the interface.



8.3 Monitoring parameter settings



Operation process: Threshold settings > Enter the password (666666) > Confirm



8.4 Monitoring parameter settings



Operation process: Modify the temperature parameters > Set

Note: The default warning and alarm values do not need to be modified.



Operation process: Log



9. Query of drive fault codes

9.1 Alarm codes of the pulse - type drive

ALM Flashing Times	Name	Solutions
1	Over - current protection	<ol style="list-style-type: none">1. Check the connection between the motor winding and the drive, then restart the drive. If there is no alarm, check whether there are any abnormalities in the motor and the motor power cable.2. Disconnect the motor winding cable from the drive and restart the drive. If the drive still gives an alarm, the drive is damaged.
2	Over - voltage protection	<ol style="list-style-type: none">1. Restart the drive.2. If the alarm still exists after restarting the drive, check if the power supply voltage is too high.
3	Operational amplifier error	<ol style="list-style-type: none">1. Restart the drive.2. If the alarm still exists after restarting the drive, there is a hardware fault in the drive.
4	Axis locking error	Check if the motor power cable is broken.
5	Storage error	Connect the drive to the host computer using the RS232 debugging port and restore the drive to the factory settings. If the alarm still exists after restoring to the factory settings, there is a hardware fault in the drive.
6	Motor parameter self - tuning error	<ol style="list-style-type: none">1. Restart the drive.2. If the alarm still exists after restarting the drive, switch the DIP switch SW6 to the “ on” state.
7	Excessive tracking error	<ol style="list-style-type: none">1. Check if the “ Motor resolution” in the parameter list is set correctly.2. Check the wiring between the motor and the drive to see if the phase sequence is wrong (whether the corresponding pins of motor A+/A-, encoder A+/A-, B+/B- are connected correctly).3. Check if the encoder cable is broken.4. Appropriately increase the acceleration time.5. Check if the motor is stalled.
Motor rotation direction error	Incorrect motor direction setting	The state of DIP switch SW5 is set incorrectly.
Motor not rotating	No pulse signal	Check if the connection of the pulse signal cable is correct.
The motor only rotates in one direction	1. Incorrect pulse mode selection	1. Check if the pulse mode of SW7 is set correctly.
	2. No direction signal	2. Check if the connection of the direction signal cable is correct.
The green light is not on	Power is not supplied	Check if the power supply of the drive is correctly connected.

9.2 Alarm codes of the bus-type drive

ALM Flashing Times	Name	Solutions
1	Overcurrent protection	<ol style="list-style-type: none"> 1. Ensure that the drive output lines are not short-circuited and the motor is not damaged. 2. Adjust the wiring sequence of the motor. 3. Replace the drive with a new one.
2	Overvoltage protection	<ol style="list-style-type: none"> 1. Reduce the power supply voltage at the VDC/GND terminals. 2. Decrease the acceleration and deceleration.
3	Excessive command pulse increment	Check if the parameter subdivision is correct.
4	Axis locking error	<ol style="list-style-type: none"> 1. Ensure that the wiring of the motor output terminals A+, A-, B+, and B- is correct. 2. Ensure that the motor cables are not broken. 3. Ensure that the encoder power supply voltage is normal, the encoder cables are intact, and the encoder ground connection is good.
6	Self-tuning error	Check if there is any jamming in the motor screw structure.
7	Position out-of-tolerance	<ol style="list-style-type: none"> 1. Restart the drive. 2. If the alarm still exists after restarting the drive, check if the motor power lines are short-circuited. 3. Pull out the motor power lines and restart the drive. If the alarm still exists, the drive is damaged.
8	Encoder disconnection detection	Ensure that the encoder cables are correctly connected, and there is no false soldering, misalignment, or short-circuit at the connection points.
10	Emergency stop alarm	Ensure that the input signal wiring is correct.
11	Positive and negative limit alarm	Check if the positive and negative limit signal outputs of the input terminals are normal and if the hardware is damaged.
12	Command overspeed fault	Check if the fault occurs after the homing is completed; check if the slave homing mode is used.
13	Stalling alarm	Check if there is any jamming in the motor screw structure.
14	Zero-pulling error alarm	<ol style="list-style-type: none"> 1. The encoder resolution of the motor is incorrect, causing the motor to fail to run. 2. The motor power lines are connected incorrectly. 3. The motor output is insufficient. Appropriately increase the drive current. 4. If increasing the current still doesn't work, check if there is jamming in the mechanical structure and if the motor is undersized.
15	Current overload alarm	Increase the drive output peak current value Pr4.22 or set bit 6 of 0x2056 to 0 to disable the alarm.
Constantly lit	Hardware interrupt protection	Confirm the network connection and the master station ESM conversion sequence.



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