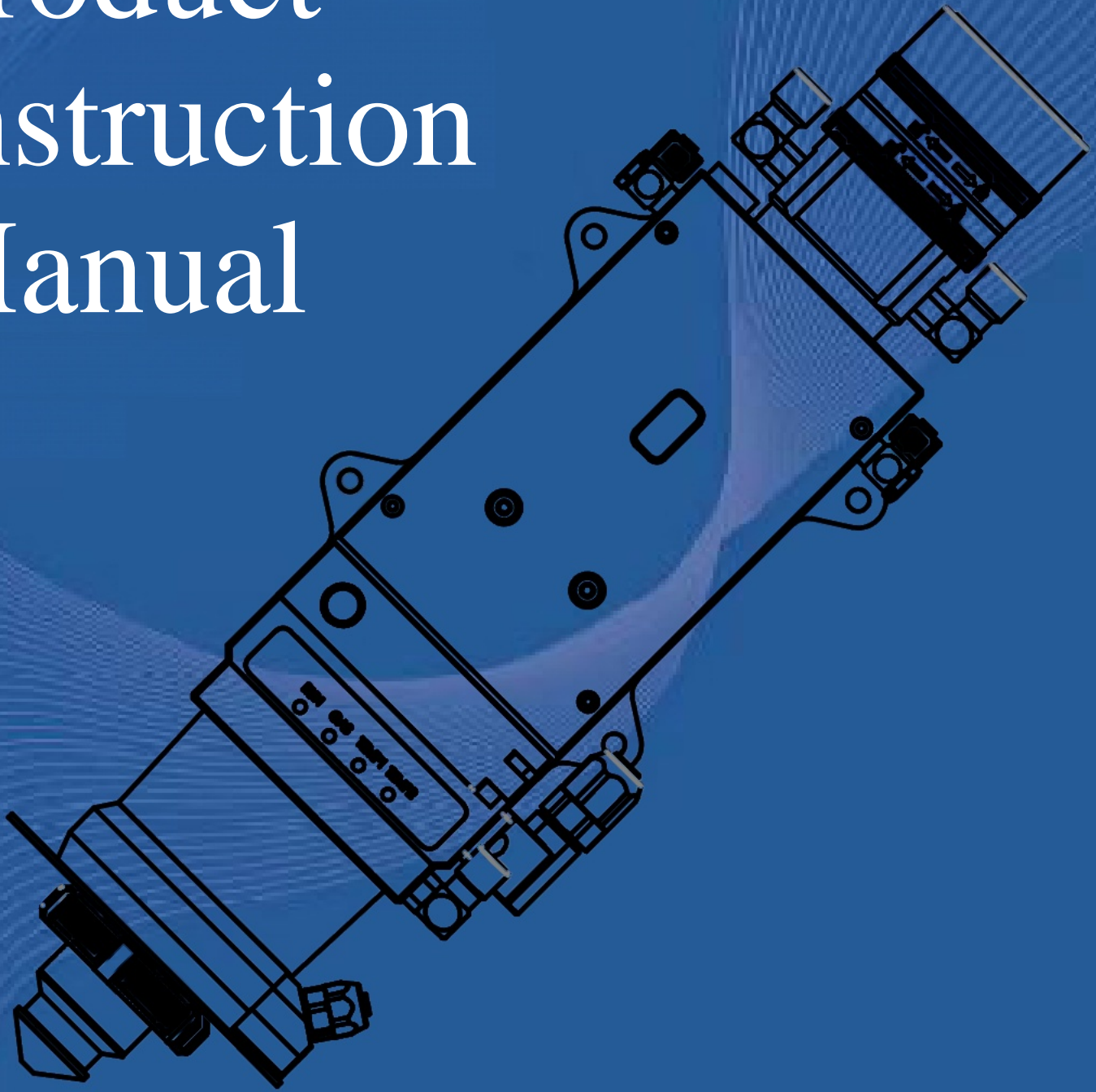


Consultation Hotline:  
400 - 836 - 8816

# Product Instruction Manual



NC152

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



Shenzhen Worthing Technology Co., Ltd.  
[www.wsxlaser.com](http://www.wsxlaser.com)



## Change Log of the Instruction Manual

Serial Number	Modification Time	Version



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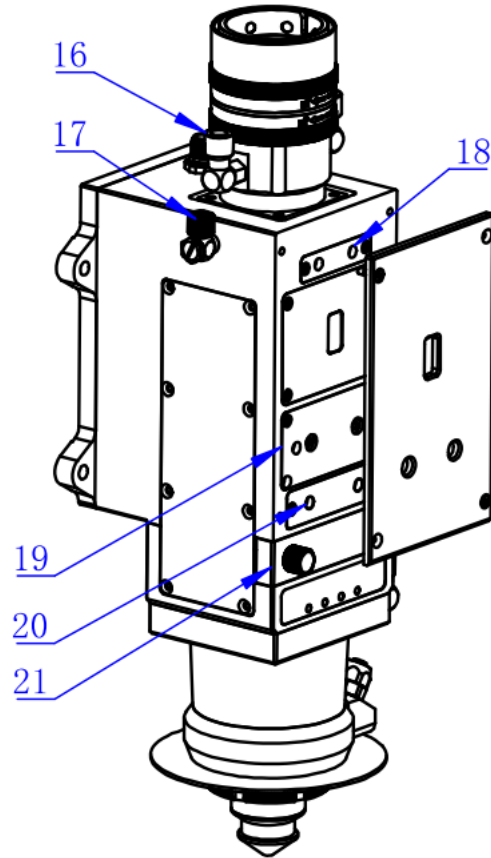
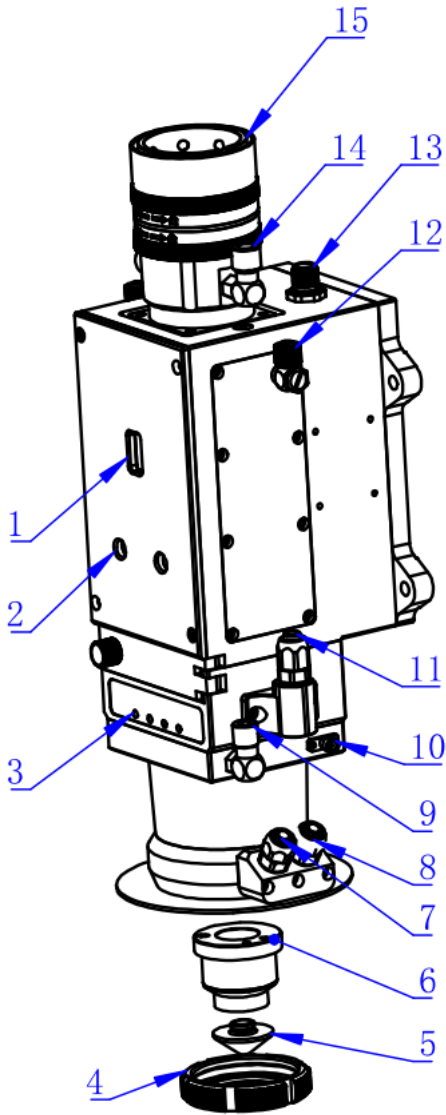
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# 1. Product Description

## 1.1 Product View



- 1.Focus scale observation window
- 2.Focusing mirror center adjustment (X/Y)
- 3.Monitoring indicator light
- 4.Locking ring
- 5.Nozzle
- 6.Ceramic ring
- 7.Sensor cooling water interface (OUT)
- 8.Sensor cooling water interface (IN)
- 9.Cooling gas interface
- 10.Follow - up signal interface
- 11.Cutting gas interface
- 12.Cutting head cooling water interface (OUT)
- 13.Drive control cable aviation plug interface
- 14.Fiber connector cooling water interface (IN)
- 15. Fiber interface

- 16.Fiber connector cooling water interface (OUT)
- 17.Cutting head cooling water interface (IN)
- 18.Collimating protective mirror drawer
- 19.Focusing mirror drawer
- 20.Middle protective mirror drawer
- 21.Lower protective mirror drawer

**Note:**

To avoid damage during storage and transportation, the following points should be noted :



- 1.The cutting head should be stored within the allowable temperature and humidity range.
- 2. Reasonable measures should be taken by the staff to prevent the cutting head from being vibrated or impacted.
- 3. The cutting head should not be stored 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	NC152
Applicable power	15kw
Laser wavelength	1070±30nm
Fiber interface types	Q+, QD, LOE3.0/3.1, LOE3.2, QD - F, etc.
Collimating protective Lens	D25.4x4
Collimating focal length	D37x100mm
Focusing focal length	D37x200mm
Middle protective mirror	D34x5
Lower protective mirror	D34x5
Focus adjustment range	±38mm
Centering adjustment range	±1.5mm
Cutting gas interface	12 (optional 10), maximum 2.5MPa
Cooling gas interface	6, maximum 0.6MPa
Cooling water interface	8, maximum 0.5MPa
Operating temperature	3 ~+55
Storage temperature	-20 ~+55
Weight	Approximately 5.5kg (LOE3.2 interface)

## 2. Cutting Head Installation

### 2.1 Preparation Work

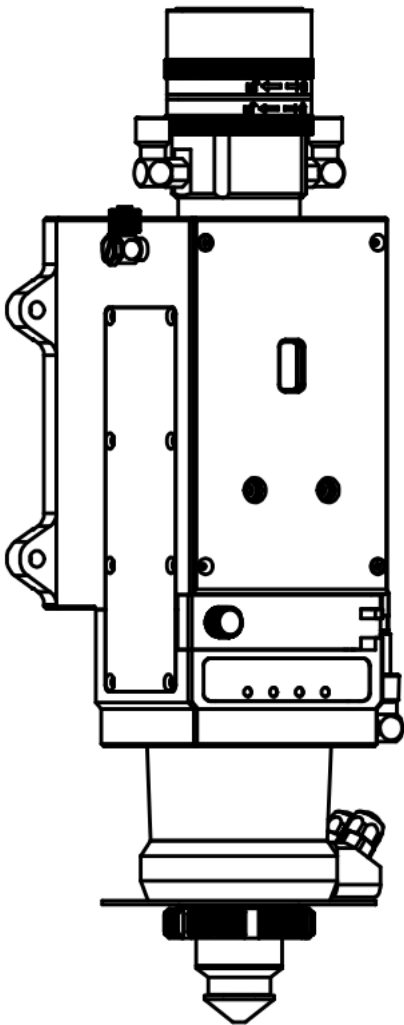
To prevent dust or dirt from entering the cutting head, the following methods can be referred to for the installation of the cutting head:

Before operation, the following conditions are required:

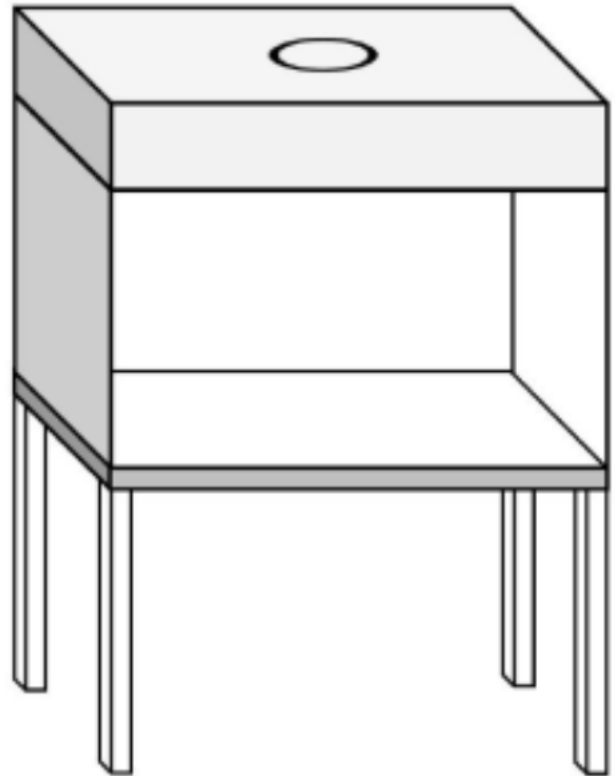
A. Cutting head

B. Clean workbench (Clean workbench type: vertical purification; Cleanliness class: ISO5, Class 100; Average wind speed:  $\geq 0.4\text{m/s}$ )

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

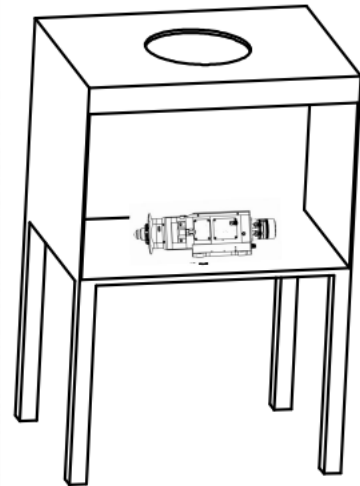


Clean workbench

## 2.2 Specific Operation Process

Prepare a clean workbench and start it to work.

The clean workbench type is vertical purification, the cleanliness class is ISO5, Class 100, and the average wind speed is  $\geq 0.4\text{m/s}$ .



### Preparation:

- A. Check that the equipment is clean and qualified (use a dust particle counter to check the cleanliness), and ensure that the FFU purification unit is within the validity period (measure the average wind speed in the working area. When the wind speed cannot reach  $0.3\text{m/s}$ , the FFU purification unit must be replaced).
- B. Check whether each switch is operating normally and whether the fan is operating normally.
- C. Unnecessary items are strictly prohibited from being placed in the clean working area to ensure that the clean air flow is not disturbed.
- D. For a newly installed or long - unused clean workbench, please clean it with a dust - free cloth soaked in absolute ethanol before use.

### Startup and Use:

- A. Connect the power supply, and pull the glass sliding door of the clean workbench to the lowest position (leaving a gap of about 10cm).
- B. Start the fan, and it is recommended to purify the clean area in advance for about 20 minutes.
- C. After normal operation, start the lighting power supply of the clean workbench.

### Special Instructions:

- A. Only trained professional personnel can operate.
- B. If the operators do not follow the safety work regulations, it may cause danger to personnel or property.
- C. To ensure the normal operation of the laser device in the working environment and the safety of the operators, the relevant operating specification instructions must be followed and implemented.



## 2.3 Wipe the Fiber Connector of the Cutting Head

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

## 2.4 Check the Fiber End Face of the Laser

Remove the protective cap of the laser fiber, use a high-intensity flashlight to irradiate the fiber end face to check if it is contaminated. If it is clean, the fiber can be directly inserted; if it is dirty, clean it with a cotton swab soaked in absolute ethanol or IPA.

## 2.5 Remove the Protective Film/Protective Cap

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

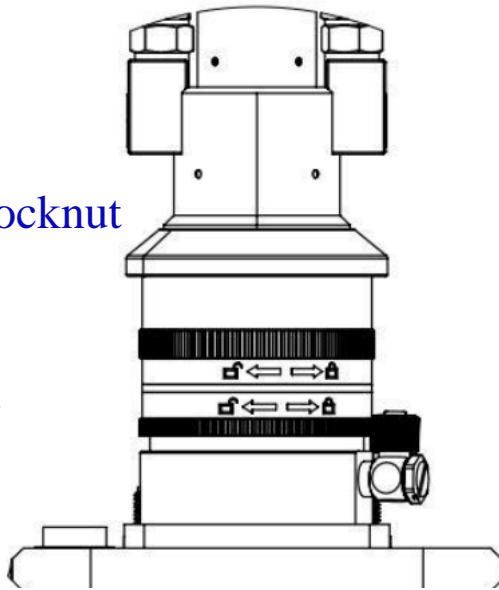
## 2.6 Fiber Interface Connection (Q+)

- Note:
- ▶It is required to insert and remove the fiber on a clean workbench.
  - ▶Before inserting the fiber, check whether the fiber end face and the Q+ fiber interface assembly are contaminated. If there is contamination, clean them with a cotton swab dipped in IPA or absolute ethanol.
  - ▶Insert and remove the fiber horizontally.
  - ▶After inserting the fiber, wrap the gap between the fiber head and the cutting head interface with white tape.

**B**

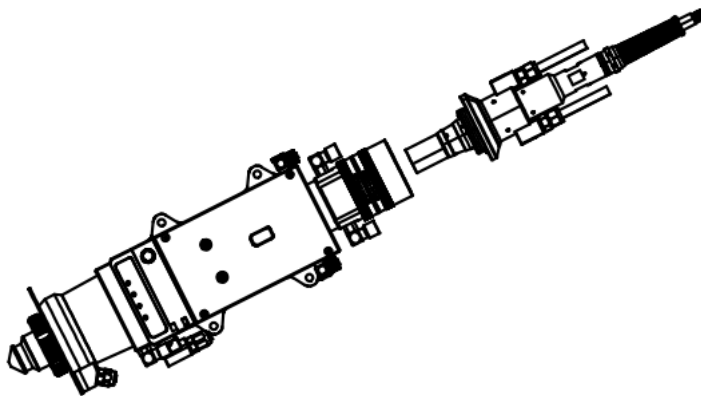
Unscrew the locknut clockwise.

Locking Nuts



The bending radius shall not be less than 200mm.

Lock it counter-clockwise.

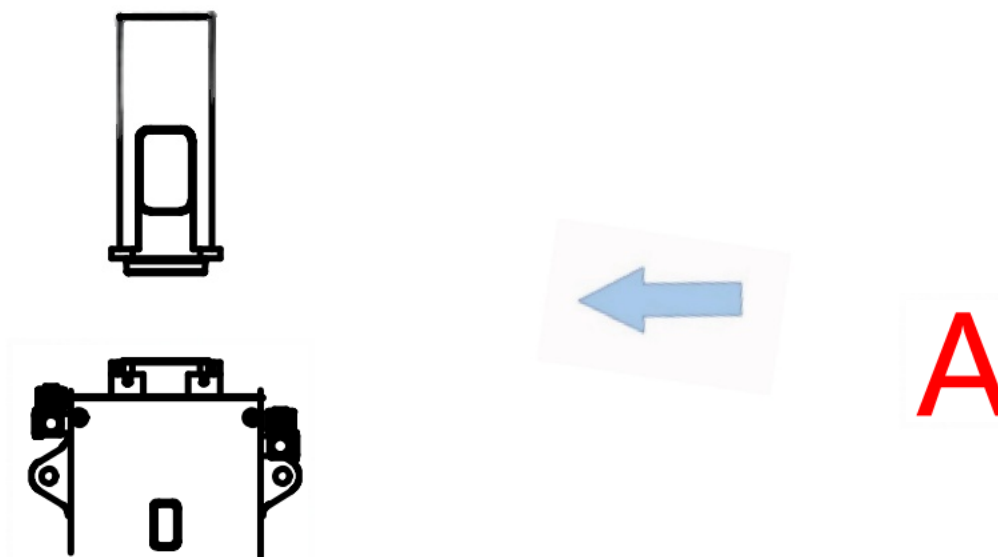
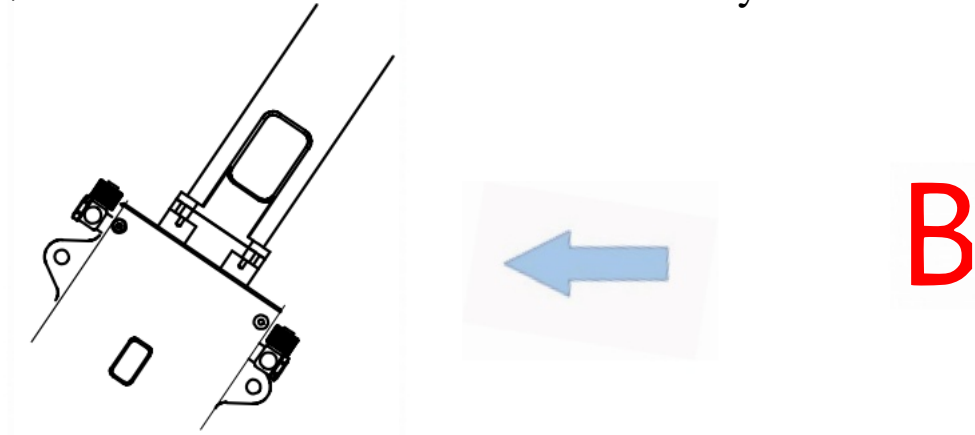


**A**

- 1.Remove the protective film/protective cover from the fiber socket.
- 2.Insert the aligned fiber plug into the unlocked fiber socket (the sealing cap at the lowest position), and make sure that the pin of the fiber rod is aligned with the slot of the Q+ fiber connector.
- 3.Rotate the locking ring of the Q+ fiber connector counter - clockwise to lock the fiber rod.
- 4.At the same time, tighten the locknut counter - clockwise to prevent the fiber rod from loosening.
- 5.Wrap 3 - 4 layers of masking tape at the connection between the fiber and the interface to strengthen the sealing.

## 2.7 Installation Instructions for LOE3.2 Fiber Interface

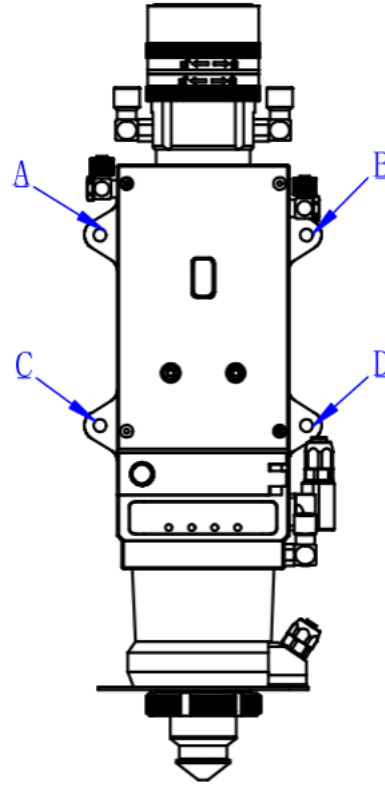
- Note:
- ▶ It is required to insert and remove the fiber on a clean workbench.
  - ▶ Before inserting the fiber, check whether the fiber end face and the LOE interface are contaminated. If there is contamination, clean them with a cotton swab dipped in IPA or absolute ethanol.
  - ▶ Insert and remove the fiber horizontally.



1. Remove the protective film/protective cover from the fiber socket.
2. Install the fiber plug on the fiber interface (refer to Figure B for details). Note: Before installation, the slot of the fiber plug must be aligned with the positioning pin of the socket (refer to Figure A for details).
3. Lock and fix it with a screw and a spring washer (refer to Figure B for details)

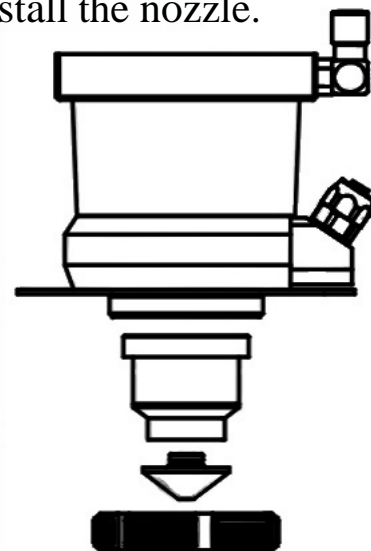
## 2.8 Install the Cutting Head on the Z-axis of the Cutting Machine

Install the cutting head on the back plate of the machine tool Z-axis through four screws A, B, C, and D. When fixing the cutting head to the machine tool, make sure that the cutting head is locked and there is no shaking.



## 2.9 Install the Ceramic Ring and Nozzle

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

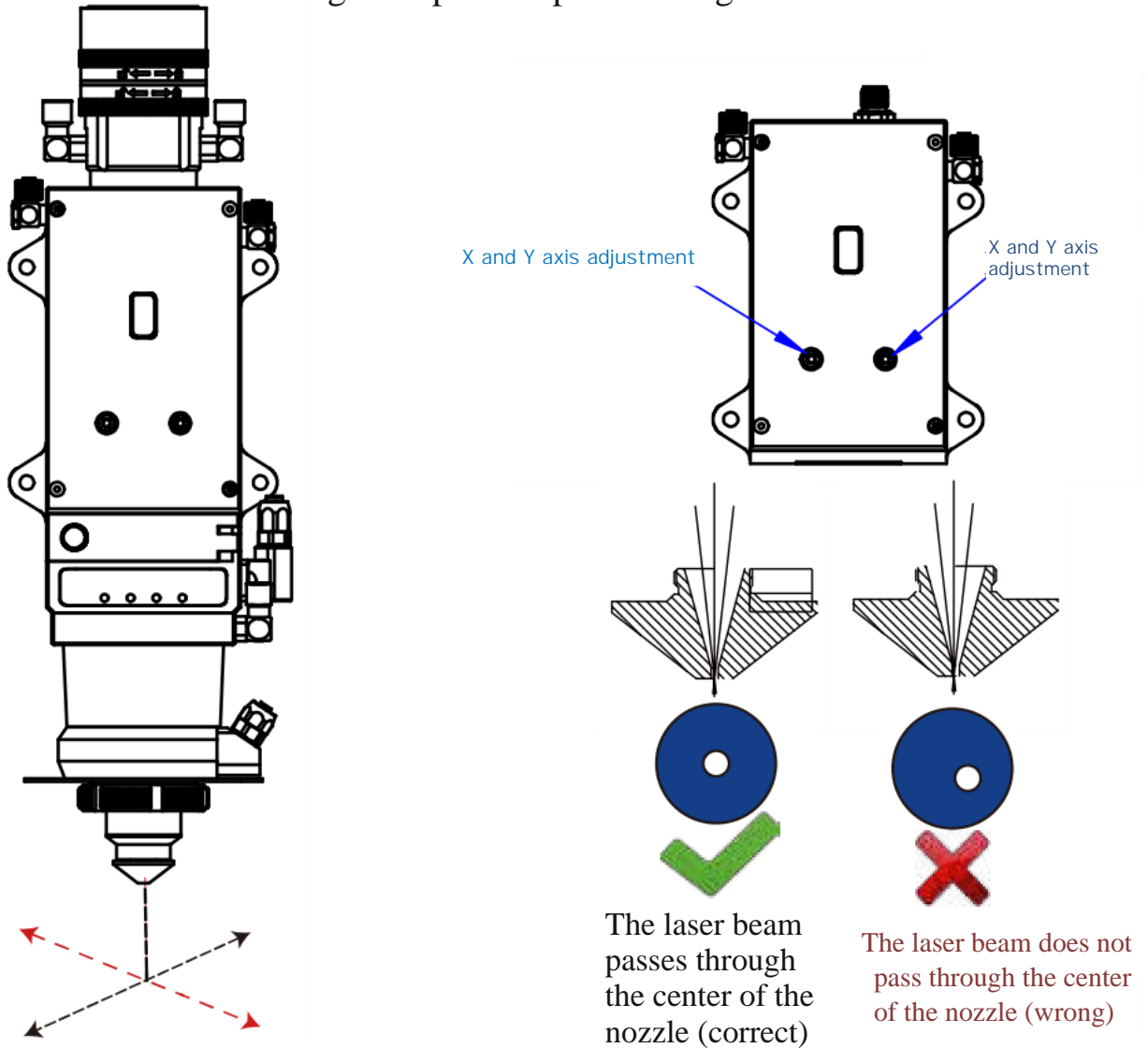


Tighten the nozzle on the ceramic ring by hand, and use a wrench to tighten the ceramic locking ring.

## 3. Usage and Maintenance of the Cutting Head

### 3.1 Coaxial Adjustment

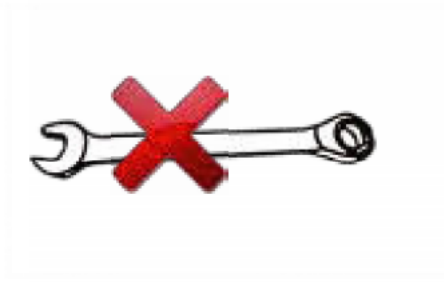
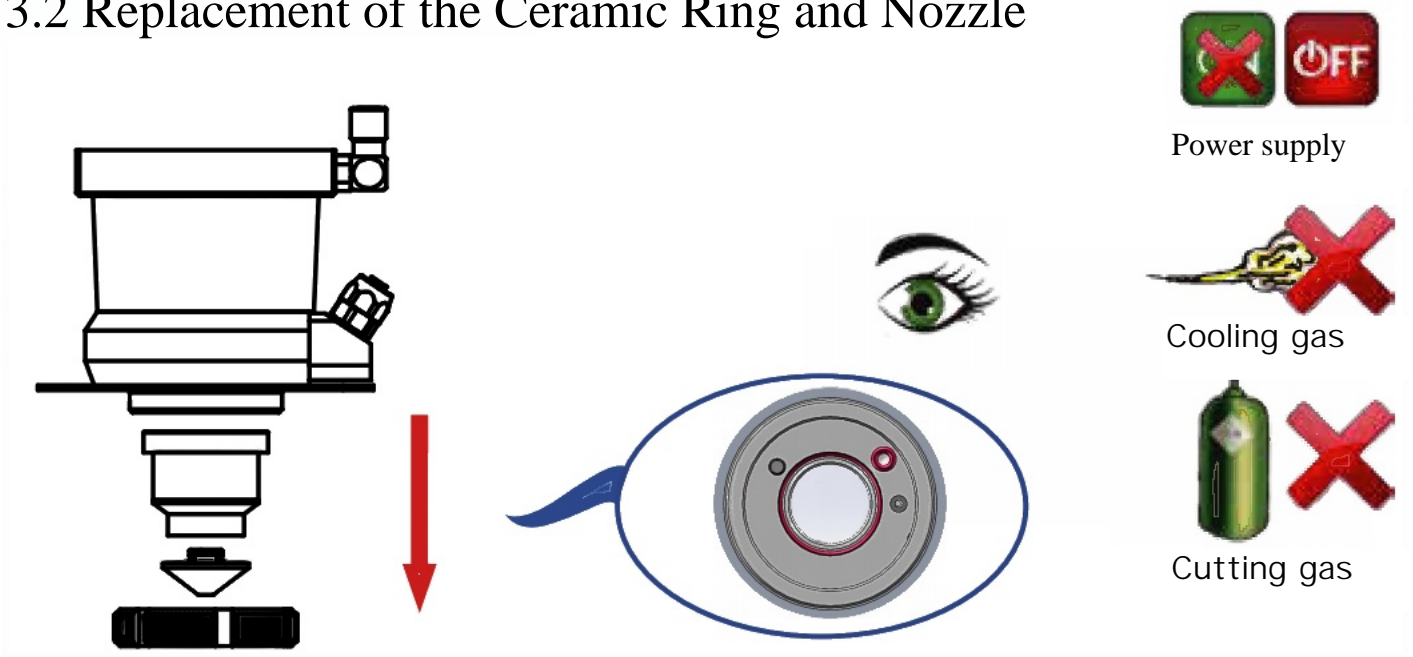
1. Use an Allen wrench to adjust the X/Y horizontal adjustment screws of 1 and 2 so that the laser beam passes through the center of the nozzle.
2. When the laser beam passes through the center of the nozzle, the cutting effect is the best.
3. If the laser beam does not pass through the center of the nozzle, it may lead to phenomena such as no light output and poor cutting effect.



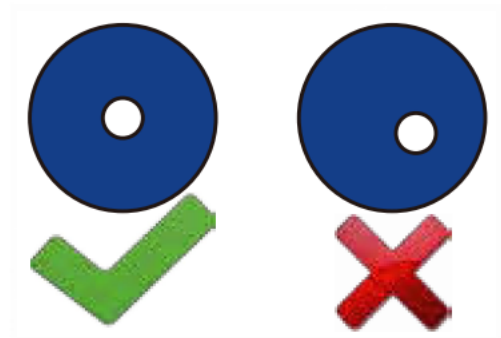
Method for detecting whether the laser beam passes through the center of the nozzle:

1. Stick transparent tape on the nozzle opening (it is best to use a new or non - deformed nozzle).
2. Adjust the laser power to about 50W (for example, for a 500W laser, adjust the spot - firing power to 10%).
3. Emit light for 1 - 2 seconds and then remove the transparent tape.
4. Face the transparent tape towards the illumination source and observe whether the circular mark of the nozzle printed on the tape is concentric with the burning point where the laser penetrates the tape.
5. If they are concentric, the debugging result is qualified; if not, continue to debug until it is qualified.

### 3.2 Replacement of the Ceramic Ring and Nozzle

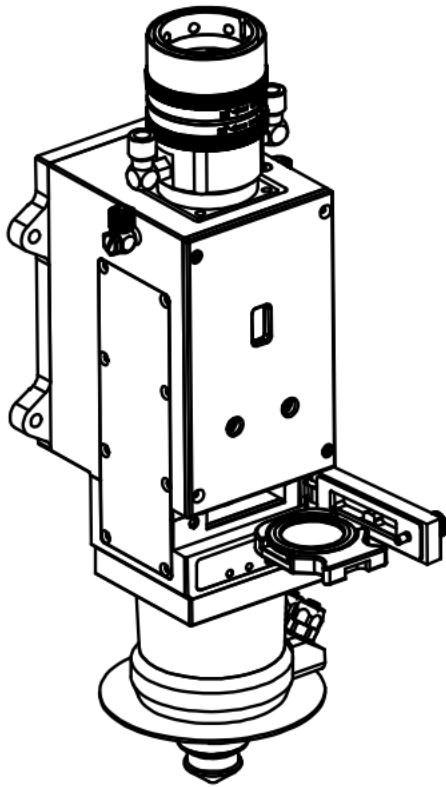


Please choose the WSX brand



Alignment center

### 3.3 Replacement of the Lower Protective Lens



Disassembly method:  
Loosen the locking stud  
and then take out the  
drawer.



Power supply

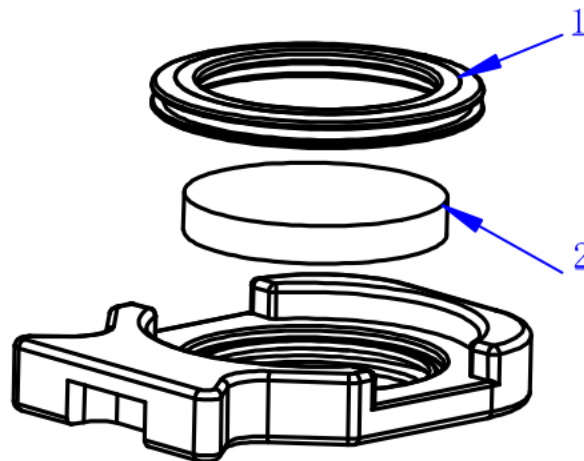


Cooling gas



Cutting gas

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

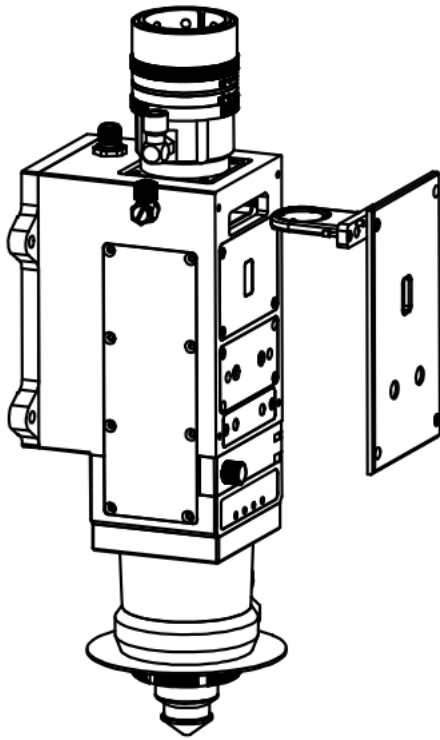


1. Pressure cap 2. Protective lens (D34x5)



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

### 3.4 Replacement of the Collimating Protective Lens



Be careful of dropping



Power supply



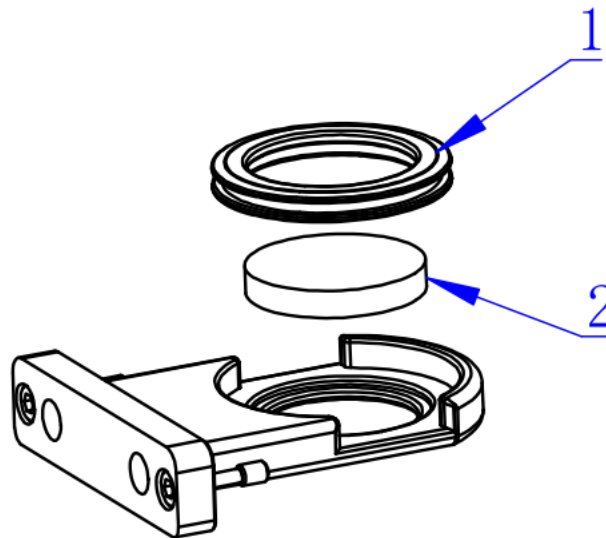
Cooling gas



Cutting gas

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

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

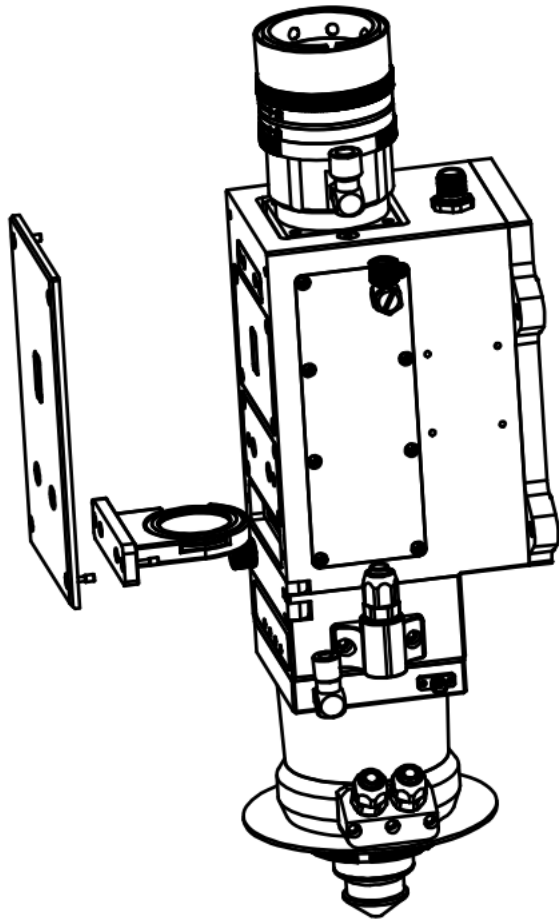


1. Pressure cap 2. Protective lens (D25.4x4)



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 will be damaged.

### 3.5 Replacement of the Middle Protective Lens



Power supply

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

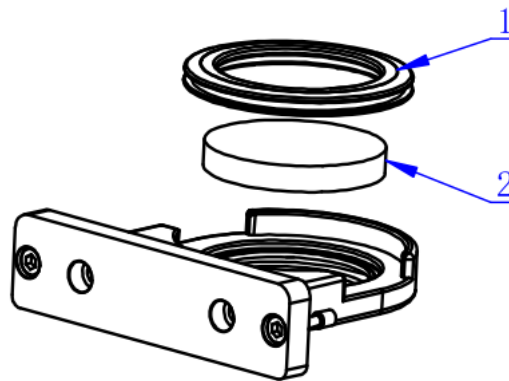


Cooling gas



Cutting gas

Disassembly method: Remove the cover plate, then loosen the anti - detachment screws on the dust cover, and pull out the drawer - type protective mirror horizontally.

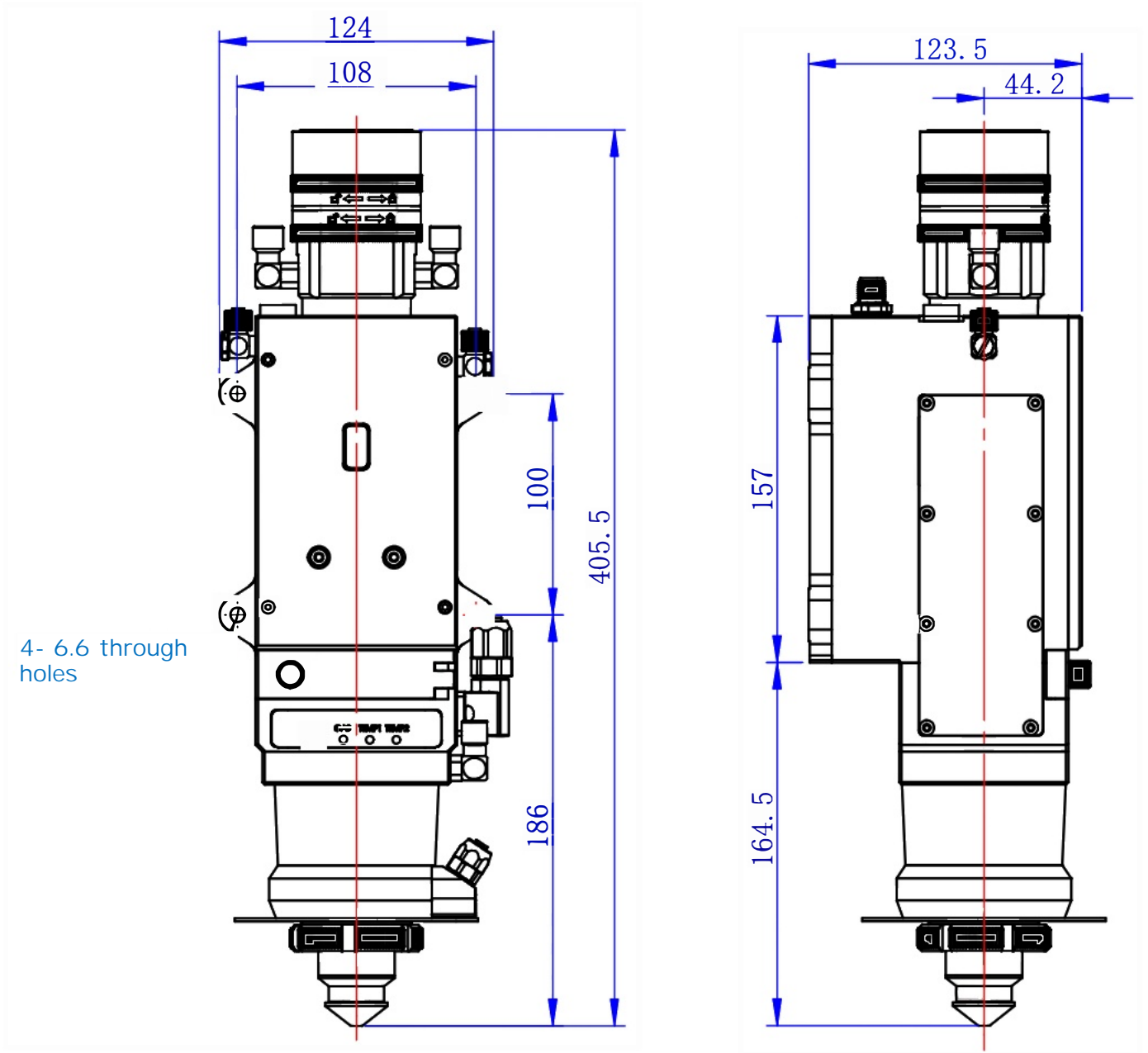


1. Pressure cap 2. Protective lens (D34x5)



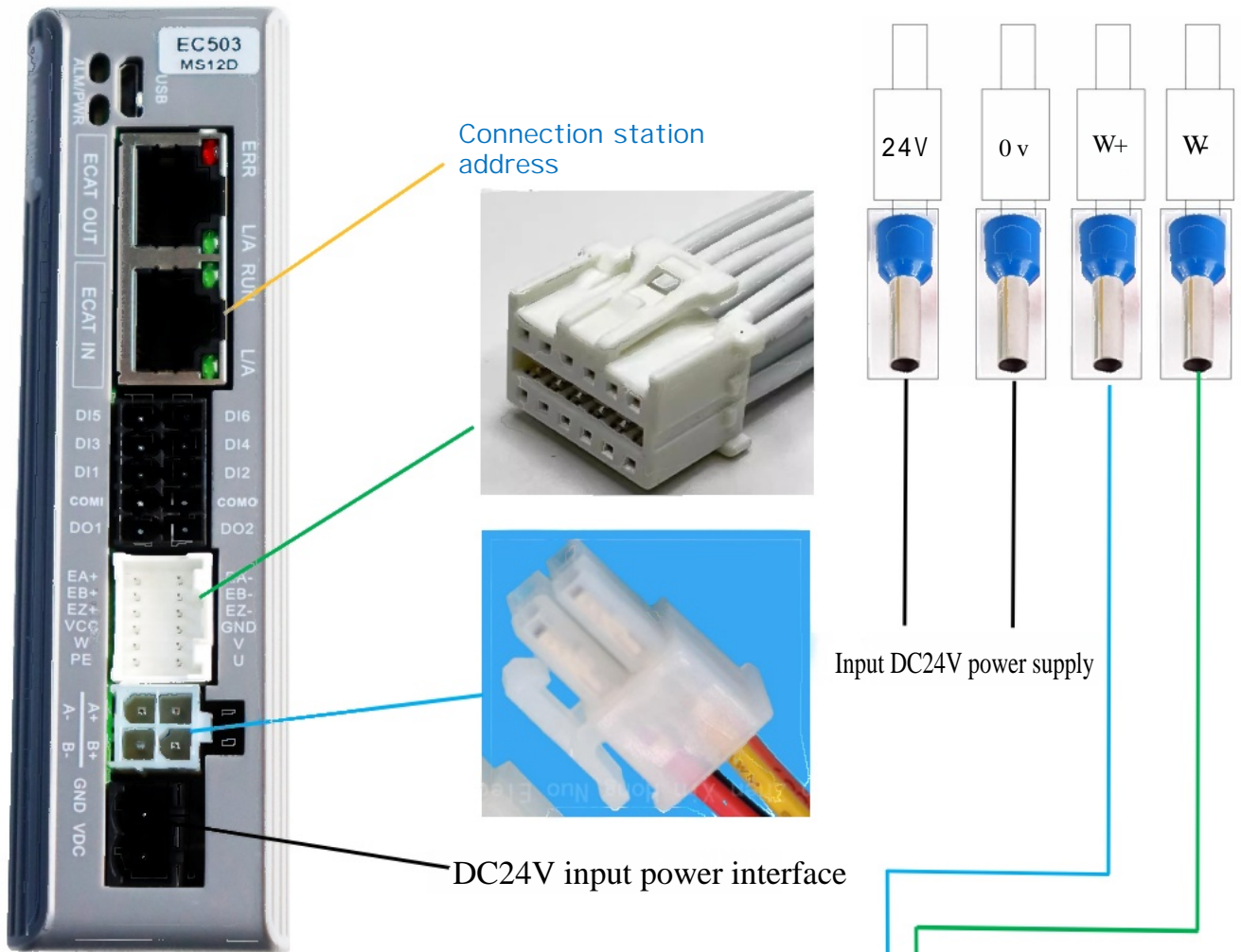
Disassembly method: Pull the pressure cap 1 vertically upwards, and then pull the lens upwards as indicated by the arrow. Do not use tools such as wrenches or pliers, otherwise the parts will be damaged.

#### 4. Installation Dimensions of the Cutting Head (Q + Fiber Optic Interface)

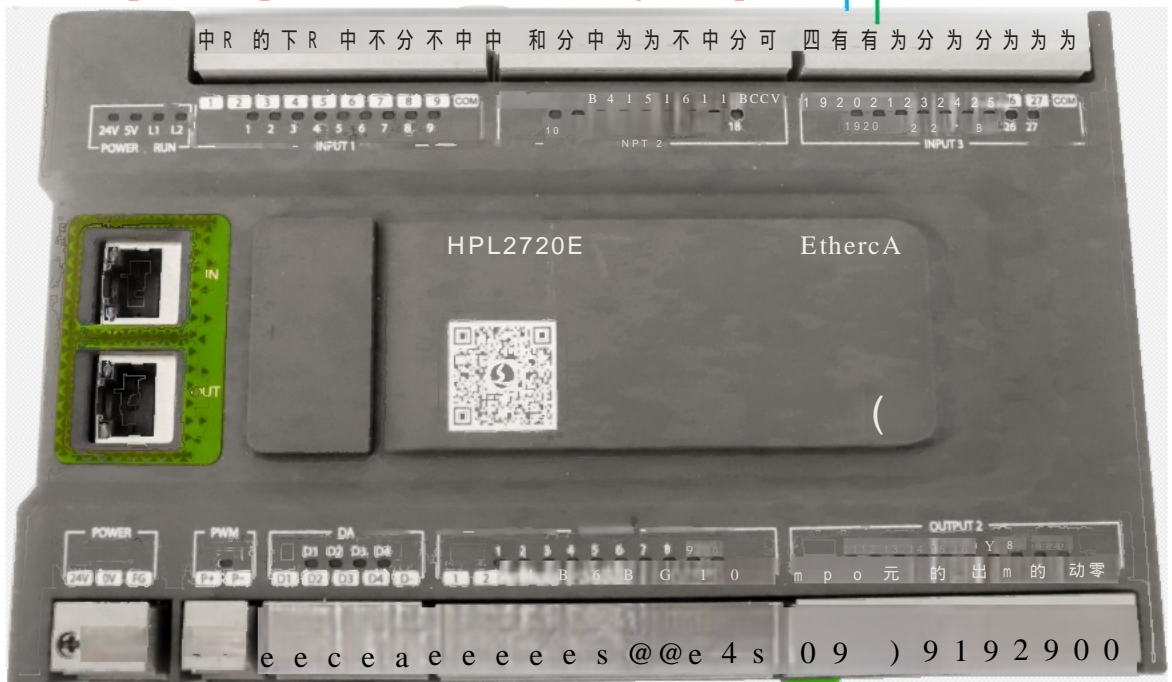


# 5. Electrical Wiring Instructions

## 5.1 Wiring Diagram of BERCUT Bus System

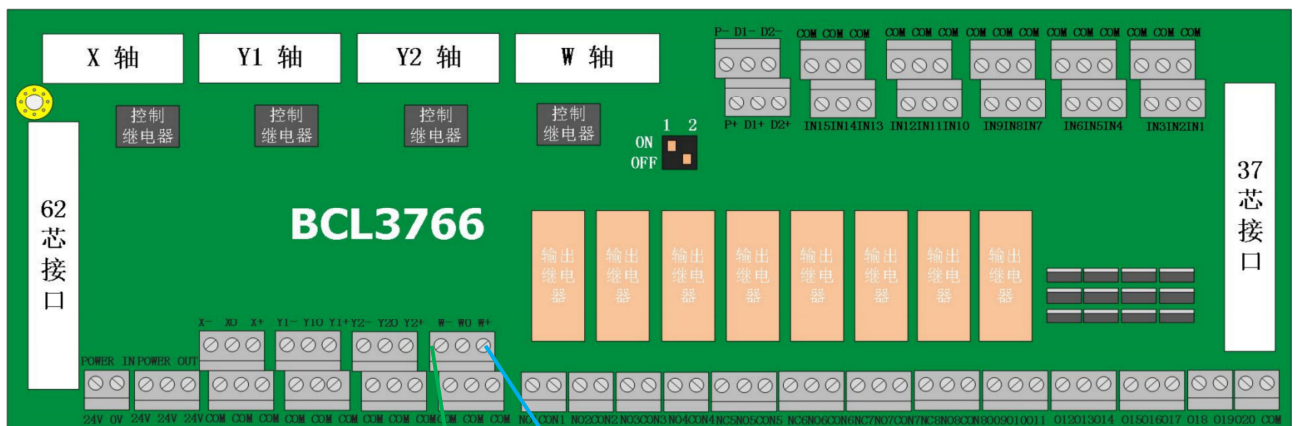
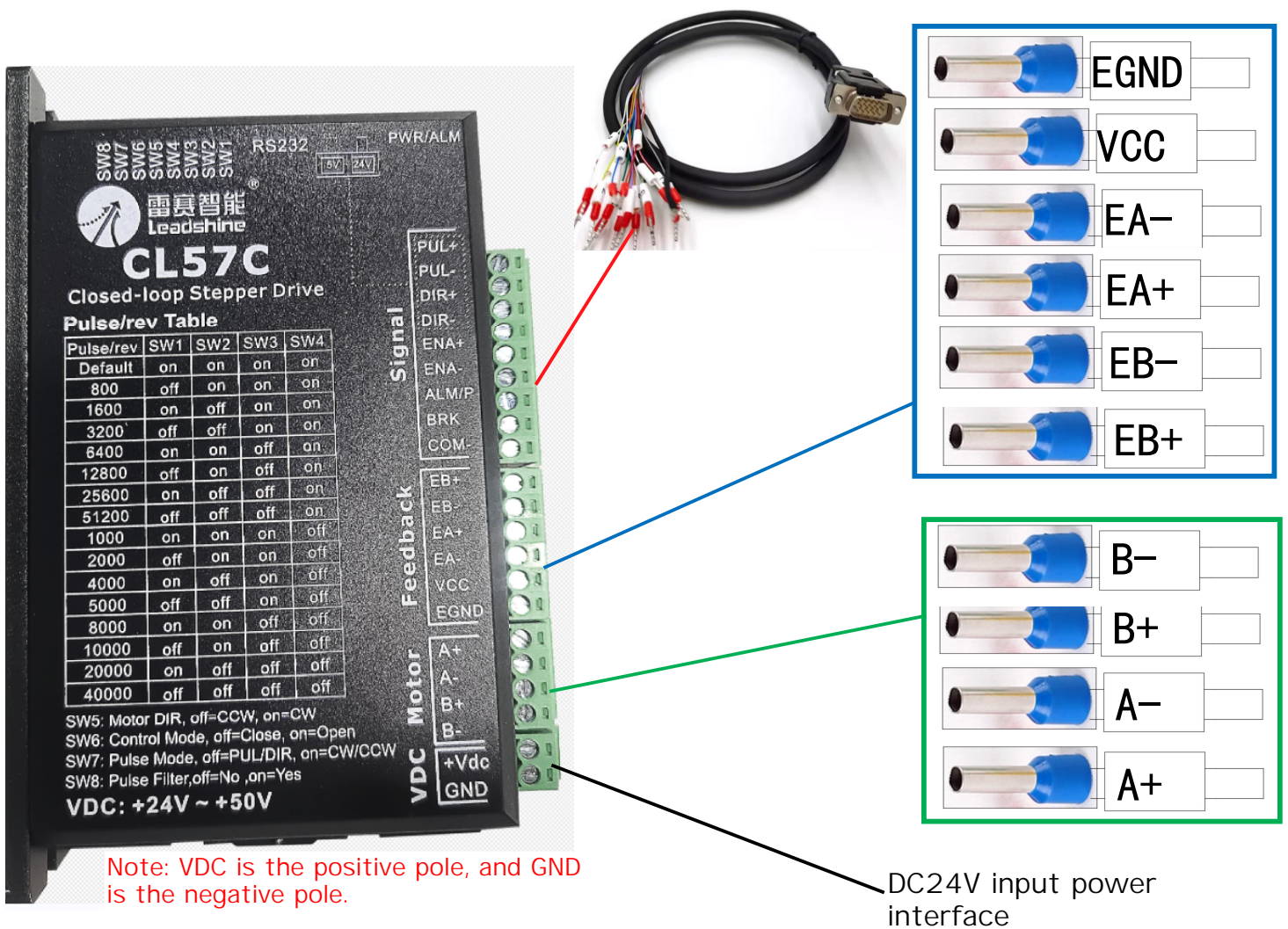


Note: VDC is the positive pole, and GND is the negative pole.



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

## 5.2 Wiring Diagram of BERCUT Pulse System



Input

DC24V power supply

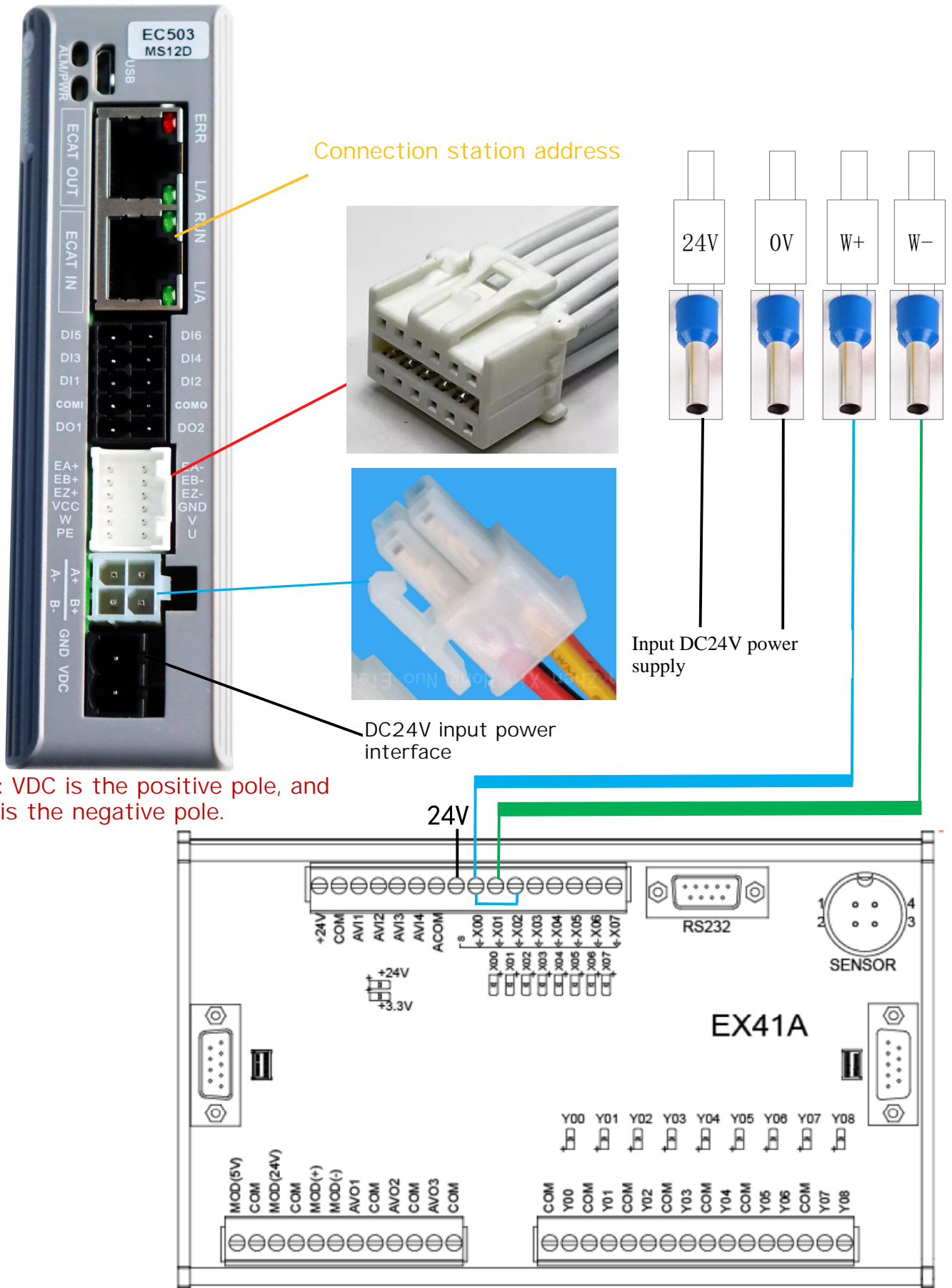
24V  
0V

W+

W-

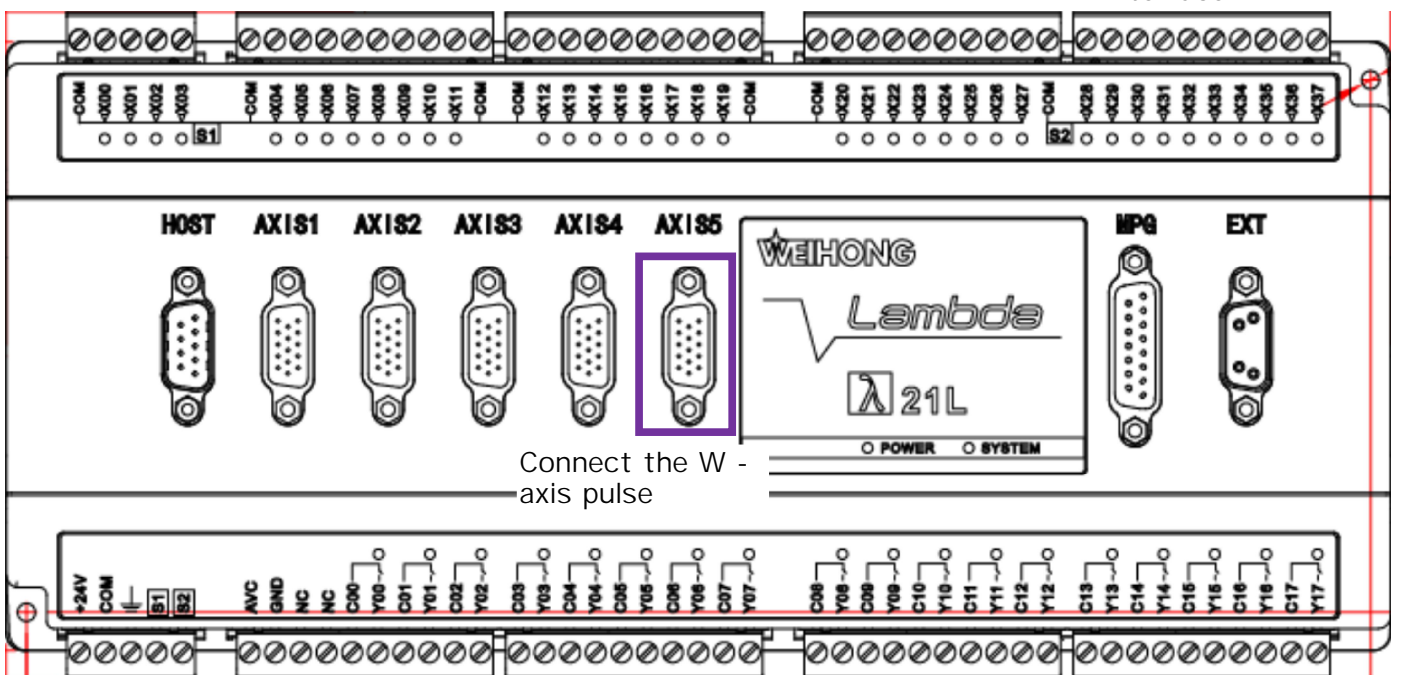
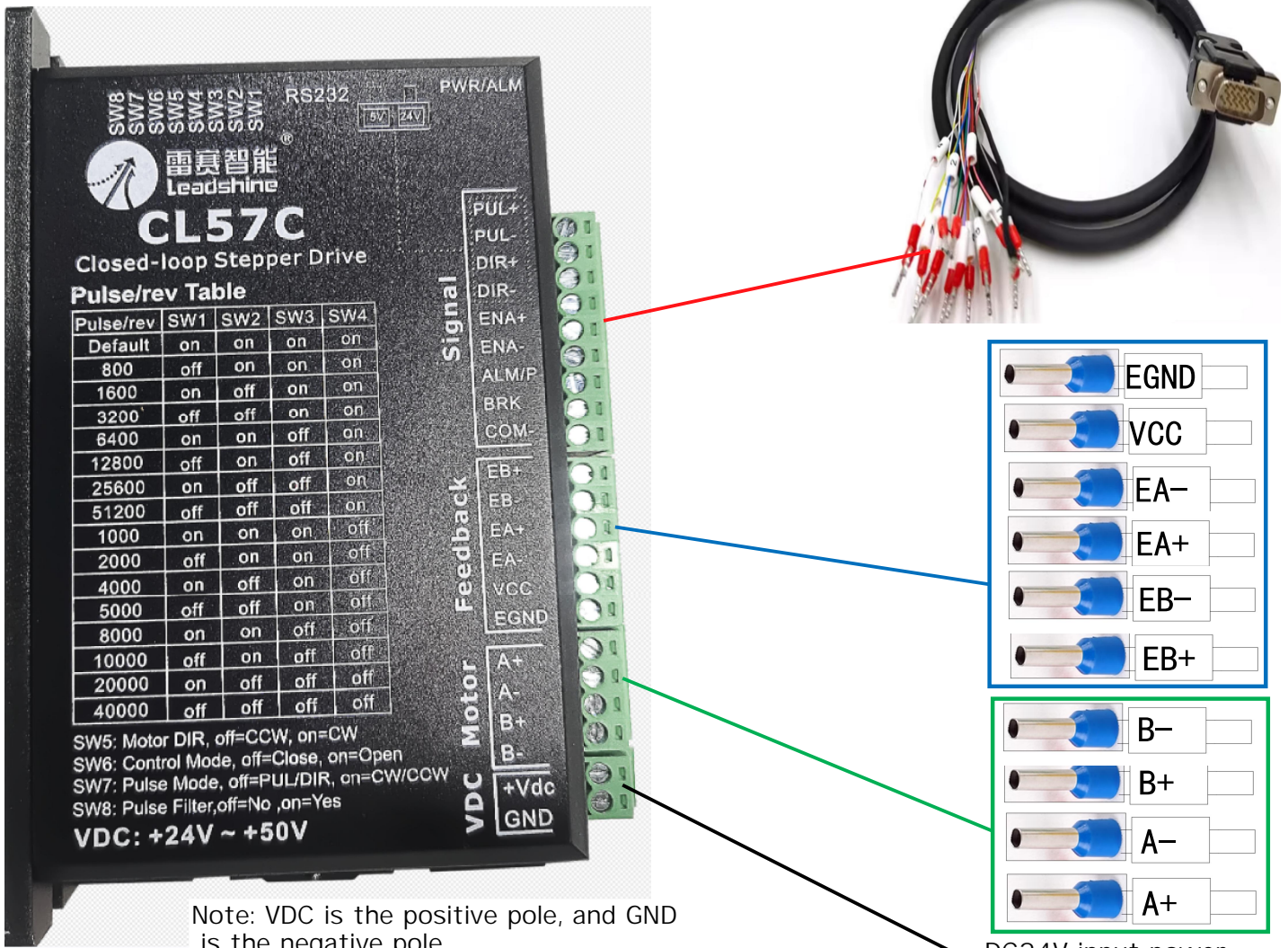
When arranging the electrical cabinet, separate the weak and strong electrical circuits, keep away from high-power and strongly interfering devices, and ensure good grounding of the equipment.

## 5.3 Wiring Diagram of WEIHONG Bus System



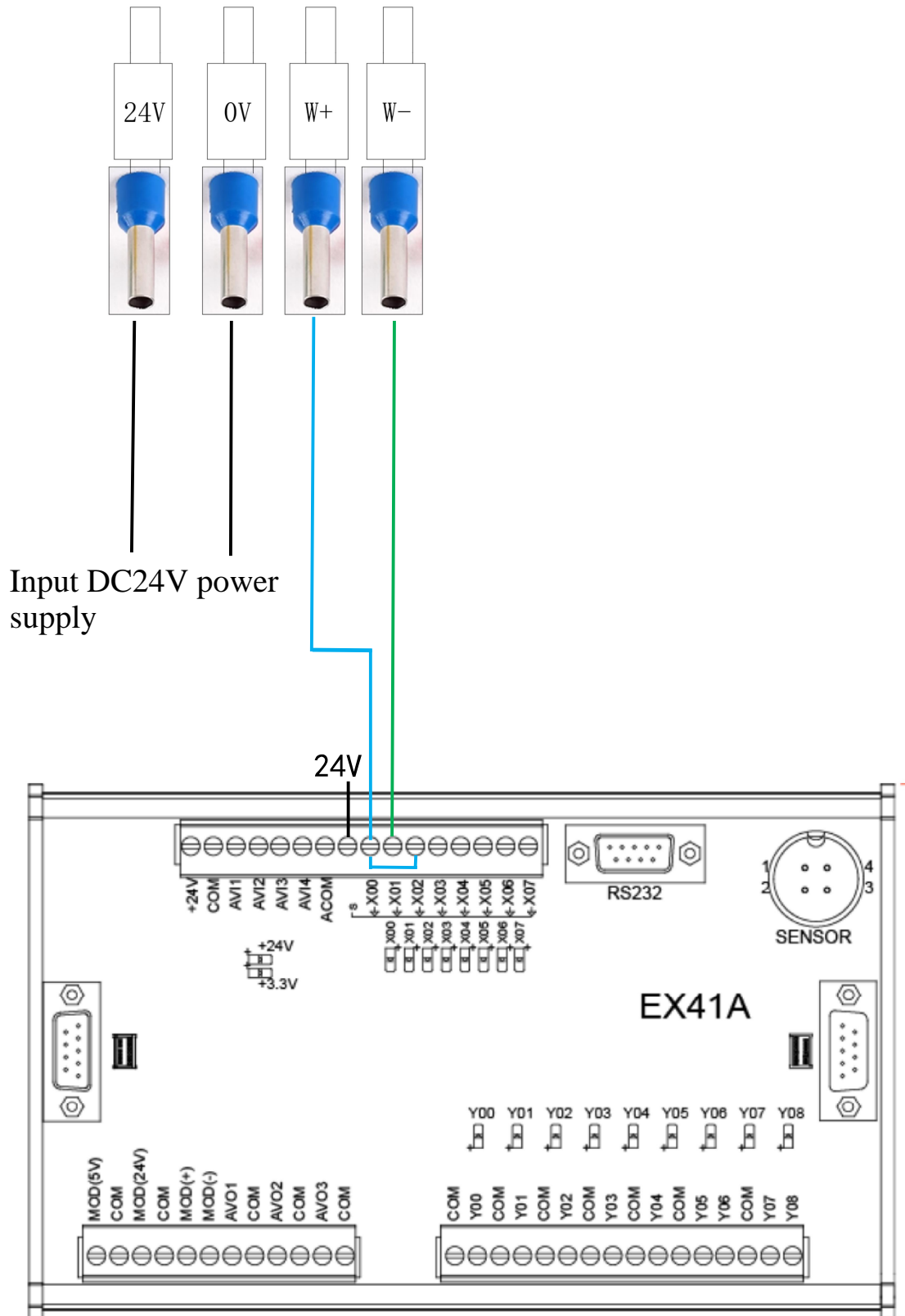
When arranging the electrical cabinet, separate the weak and strong electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

## 5.4 Wiring Diagram 1 of WEIHONG Pulse System



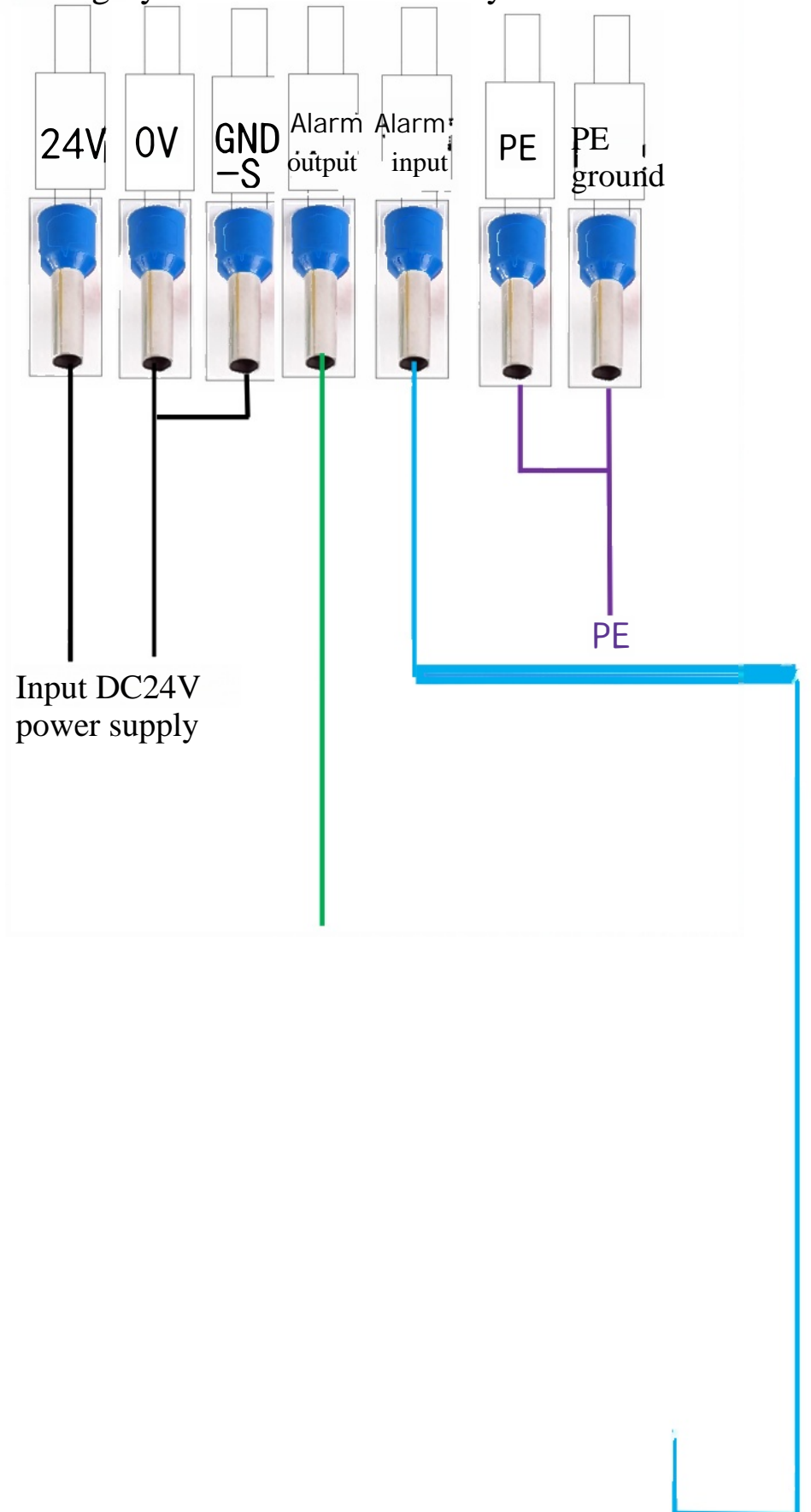
When arranging the electrical cabinet, separate the weak and strong electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

## 5.5 Wiring Diagram 2 of WEIHONG Pulse System



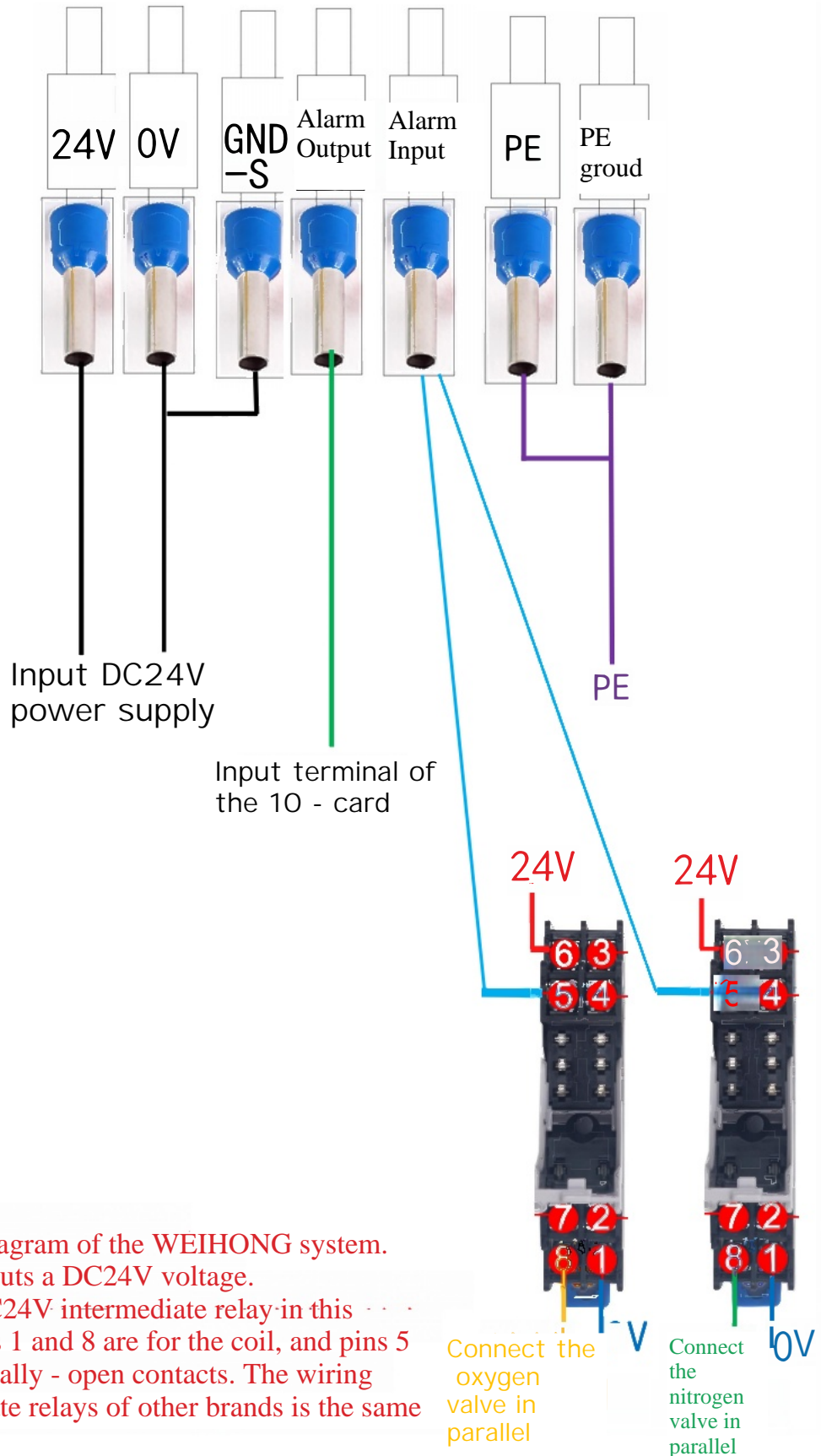
When arranging the electrical cabinet, separate the weak and strong electrical circuits, keep away from high - power and strongly interfering devices, and ensure good grounding of the equipment.

## 5.6 Wiring Diagram of Monitoring System with BERCUT System



Note: The fault alarm outputs a DC24V voltage.

## 5.7 Wiring Diagram of Monitoring System with WEIHONG System



## 5.8 USB485 Wiring Diagram



Note: If the wiring terminal is not used, disassemble and keep it.

# 6. System Parameter Configuration Instructions

## 6.1 Parameter Configuration of BOCHU Pulse System

**焦点控制**

- 启用焦点控制
- 第四轴电机  
  Precitec  
  HighYAG  
  Procutter-Zoom  
  BCL4516E/BCL4508E [无]
- 焦点调节最大范围: 从  到
- 复位后焦点位置:
- 脉冲当量: 每运动  对应  个脉冲
- 回原点粗定位速度:       回原点方向:  正向    负向
- 回原点精定位速度:
- 回原点回退距离:
- 点动速度:
- 定位速度:
- 加速度:
- 伺服报警逻辑:
- 负限位逻辑:
- 正限位逻辑:

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

## BOCHU Pulse System Alarm Settings

**报警配置**

- 急停按钮:   常开    常闭
- 检修开关:   常开    常闭
- 检修模式最大速度:  毫米/秒
- 检修模式最大功率:  W
- 龙门同步允许的最大偏差:  毫米
- 双驱轴位置偏差过大报警
  - 允许偏差:  毫米
  - 持续时间:  毫秒
  - 最大偏差:  毫米
- 强制使用所有报警需要手动清除
- 调高器报警需确认后才能允许轴运动
- 机床运动时在标题栏显示警告信息:
 

机床运行时，严禁将手和身体的任何部位伸进机床！
- 自定义输入报警:
  - 单输入口报警   单输入口警告   4位编码报警
  - 单输入口报警

报警描述	端口号	电平检测	滤波时间
切割头报警	0	<input type="radio"/> 常开 <input checked="" type="radio"/> 常闭	0

- 不允许加工
- 不允许出光
- 不允许跟随
- 不允许回原点
- 不允许运动
- 不允许X点动
- 不允许Y点动

选择报警项

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

Operation Process: Click "Alarm" > "Single Input Port Alarm" > "Add" > Enter the alarm description > Select the corresponding port > Select high or low level > Save

## 6.2 Parameter Configuration of BOCHU Bus System

The screenshot shows the 'Parameter Configuration' interface for the BOCHU Bus System. The 'Servo Parameters' section is highlighted with a yellow border. A callout box points to this area with the text: "Do not modify the parameters in the yellow area."

**基本参数 (Basic Parameters):**

- 焦点调节范围: -38 mm
- 到: 38 mm
- 复位后焦点位置: 0 mm
- 点动速度: 20 mm/s
- 定位速度: 100 mm/s
- 加速度: 1000 mm/s<sup>2</sup>

**电机参数 (Motor Parameters):**

- 轴号: 5
- 丝杆行程: 8 mm
- 单圈脉冲数: 10000
- 负限位: A17
- 正限位: A18
- 控制模式: 位置控制模式
- 减速比: 1
- 电机方向: CCW
- 负限位逻辑: 常闭
- 正限位逻辑: 常闭

**伺服参数 (Servo Parameters):**

- 电机惯量: 0.49 kg/cm<sup>2</sup>
- 惯量比: 100 %
- 额定力矩: 1.27 N·m

**位置环参数 (Position Loop Parameters):**

- P比例增益: 40 1/s
- 位置环积分Ti: 0 ms
- 位置环微分Td: 0 ms
- 速度前馈Vff: 100 %
- 速度前馈补偿Offset: 0 %

**速度环参数 (Velocity Loop Parameters):**

- 速度环增益Kv: 40 1/s
- 速度环积分Ti: 20 ms
- 速度环微分Td: 0 ms
- 加速度前馈Vff: 0 %
- 加速度前馈补偿Offset: 0 %

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

## BERCUT Bus System Alarm Settings

The screenshot shows the 'Alarm Settings' interface for the BERCUT Bus System. The 'Alarm' icon in the top menu is highlighted with a red box. A callout box points to the 'Add' button in the 'Single Input Port Alarm' section with the text: "Note: Set the alarm port according to the on - site wiring IO ports."

**自定义输入报警 (Custom Input Alarm):**

- 外部急停输入: 0 常开 常闭
- 内部急停输出: 0 常开 常闭
- 检修开关: 0 常开 常闭
- 检修模式最大速度: 200 mm/s
- 检修模式最大功率: 1000 W

**单输入口报警 (Single Input Port Alarm):**

- 单输入口报警: 单输入口警告 4位编码报警
- 添加 删除

报警描述	端口号	电平检测	滤波时间
切割头温度报 A10		常开 常闭	1 ms

**报警设置 (Alarm Settings):**

- 不允许加工
- 不允许出光
- 不允许跟随
- 不允许回原点
- 不允许XY运动
- 不允许X点动
- 不允许Y点动
- 不允许XYZ运动

调高器报警需确认后才能允许轴运动

Operation Process: Click "Alarm" > "Single Input Port Alarm" > "Add" > Enter the alarm description > Select the corresponding port > Select high or low level > Save

## 6.3 Parameter Configuration of BOCHU System

比例阀类型 默认比例阀

**辅助气体**

空气	<span style="border: 1px solid #ccc; padding: 2px;">A8</span>				
氧气	<span style="border: 1px solid #ccc; padding: 2px;">0</span>				
氮气	<span style="border: 1px solid #ccc; padding: 2px;">0</span>				
侧吹气	<span style="border: 1px solid #ccc; padding: 2px;">0</span>				
高压空气	<span style="border: 1px solid #ccc; padding: 2px;">0</span>				
高压氧气	<span style="border: 1px solid #ccc; padding: 2px;">0</span>				
高压氮气	<span style="border: 1px solid #ccc; padding: 2px;">0</span>				

**比例阀控制**

DA		最大气压(bar)			
<span style="border: 1px solid #ccc; padding: 2px;">不使用</span>		10	Bar		
<span style="border: 1px solid #ccc; padding: 2px;">不使用</span>		10	Bar		
<span style="border: 1px solid #ccc; padding: 2px;">不使用</span>		10	Bar		
<span style="border: 1px solid #ccc; padding: 2px;">不使用</span>		10	Bar		

低压总阀 0

**总阀** A20

高压总阀 0

If the above parameters are set to 0, it means the solenoid valve control is not applicable. Different gases can use the same proportional valve, that is, they are controlled by the same DA signal.

比例阀DA电压范围  0-5V  0-10V  启用比例阀电源控制

**报警检测**

Configure as needed. You can configure all or none of them. If an alarm occurs for any gas path, this path cannot be used, but it will not affect other gas paths.

空气报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>	低压报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>	报警延时检查 <span style="border: 1px solid #ccc; padding: 2px;">0</span> ms
氧气报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>	高压报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>	气体报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>
氮气报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>		
高压空气报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>		
高压氧气报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>		
高压氮气报警 <span style="border: 1px solid #ccc; padding: 2px;">0</span> <span style="border: 1px solid #ccc; padding: 2px;">常开</span>		

**Notes:**

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

## 6.4 Parameter Configuration of WEIHONG Pulse System

名称	值	单位	生效时间
编码器方向(W)	1		立即生效
轴方向(W)	1		立即生效
脉冲当量(W)	0.0008	mm/p	立即生效
每圈指令脉冲数(W)	10000		立即生效
每圈反馈脉冲数(W)	10000		立即生效
软限位上限值(W)	38	mm	立即生效
软限位下限值(W)	-38	mm	立即生效
启用软限位保护(W)	是		立即生效
轴最大速度(W)	9000	mm/min	立即生效

参数名称: 软限位下限值(W)  
值: -38mm  
描述: 软限位下限。

Operation Process: Click “Manufacturer” > Enter the password: NcStudio > Enter to modify the parameters of the W - axis.

名称	值	单位	生效时间
使用Z相信号(W)	否		立即生效
粗定位阶段方向(W)	1		立即生效
粗定位阶段速度(W)	600	mm/min	立即生效
精定位阶段速度(W)	60	mm/min	立即生效
回退距离(W)	38	mm	立即生效
回退速度(W)	200	mm/min	立即生效
粗精定位信号最小距离(W)	1	mm	立即生效

参数名称: 粗定位阶段方向(W)  
值: 1  
描述: 回机械原点过程中, 粗定位阶段的运动方向。1: 正方向; -1: 负方向。

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

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

## 6.5 Parameter Configuration of WEIHONG Bus System

名称	值	单位	生效时间
<b>1.0.3 W轴参数</b>			
驱动器站地址1(W)	5		重启生效
驱动器站地址2(W)	15		重启生效
从站地址内轴偏移地址(W)	0		重启生效
轴方向(W)	1		立即生效
丝杠螺距(W)	8	mm	立即生效
编码器位数(W)	13		立即生效
编码器类型(W)	0		重启生效
电子齿轮比分子(W)	1		立即生效
电子齿轮比分母(W)	1		立即生效
软限位上限值(W)	38	mm	立即生效
软限位下限值(W)	-38	mm	立即生效
启用软限位保护(W)	是		立即生效
轴最大速度(W)	20000	mm/min	立即生效

参数名称: 驱动器站地址1(W)  
值: 5  
描述: W轴从站地址。

Operation Process: Settings > System Parameters > 1.0 Axis Parameter Settings > 1.03 W - axis Parameters

名称	值	单位	生效时间
<b>1.1.4 W轴原点设置</b>			
粗定位阶段速度(Z)	1800	mm/min	立即生效
回退距离(Z)	2	mm	立即生效
回退速度(Z)	200	mm/min	立即生效
绝对值编码器回原点动作(Z)	0		立即生效
<b>1.1.4 W轴原点设置</b>			
使用Z相信号(W)	否		立即生效
粗定位阶段方向(W)	1		立即生效
粗定位阶段速度(W)	600	mm/min	立即生效
精定位阶段速度(W)	60	mm/min	立即生效
回退距离(W)	38	mm	立即生效
回退速度(W)	200	mm/min	立即生效
粗精定位信号最小距离(W)	0.5	mm	立即生效
启用锁存(W)	是		立即生效
绝对值编码器回原点动作(W)	1		立即生效

参数名称: 加工前回机械原点  
值: 否  
描述: 加工前是否需要回机械原点。是: 需要; 否: 不需要。

Operation Process: Settings > System Parameters > 1.1 Home Return Settings > 1.14 W - axis Origin Settings

## 6.6 Focus Control Options of WEIHONG Bus System

The screenshot shows the 'System Parameters' (系统参数) configuration screen. The left sidebar lists various parameter categories, with '3.5 焦点控制' (Focus Control) selected and highlighted in a red box. The main area displays a list of parameters, with '3.5.1 通用参数' (General Parameters) and '3.5.2 切割头' (Cutting Head) sections highlighted in a red box. The 'Settings' (设置) icon in the bottom navigation bar is also highlighted in a red box.

名称	值	单位	生效时间
<b>3.5.1 通用参数</b>			
启用焦点控制	是		重启生效
焦点控制方式	0		重启生效
<b>3.5.2 切割头</b>			
切割头类型	0		重启生效
COM口名称			重启生效
<b>3.5.3 通用调焦参数</b>			
焦点补偿类型	1		重启生效
<b>3.5.4 调焦参数</b>			
焦点到位检测延时	1000	ms	立即生效
回原点到位检测延时	20	s	立即生效
普雷焦点确认延时	100	ms	立即生效
普雷调焦延时	15	ms	立即生效
普雷切割头类型	0		重启生效

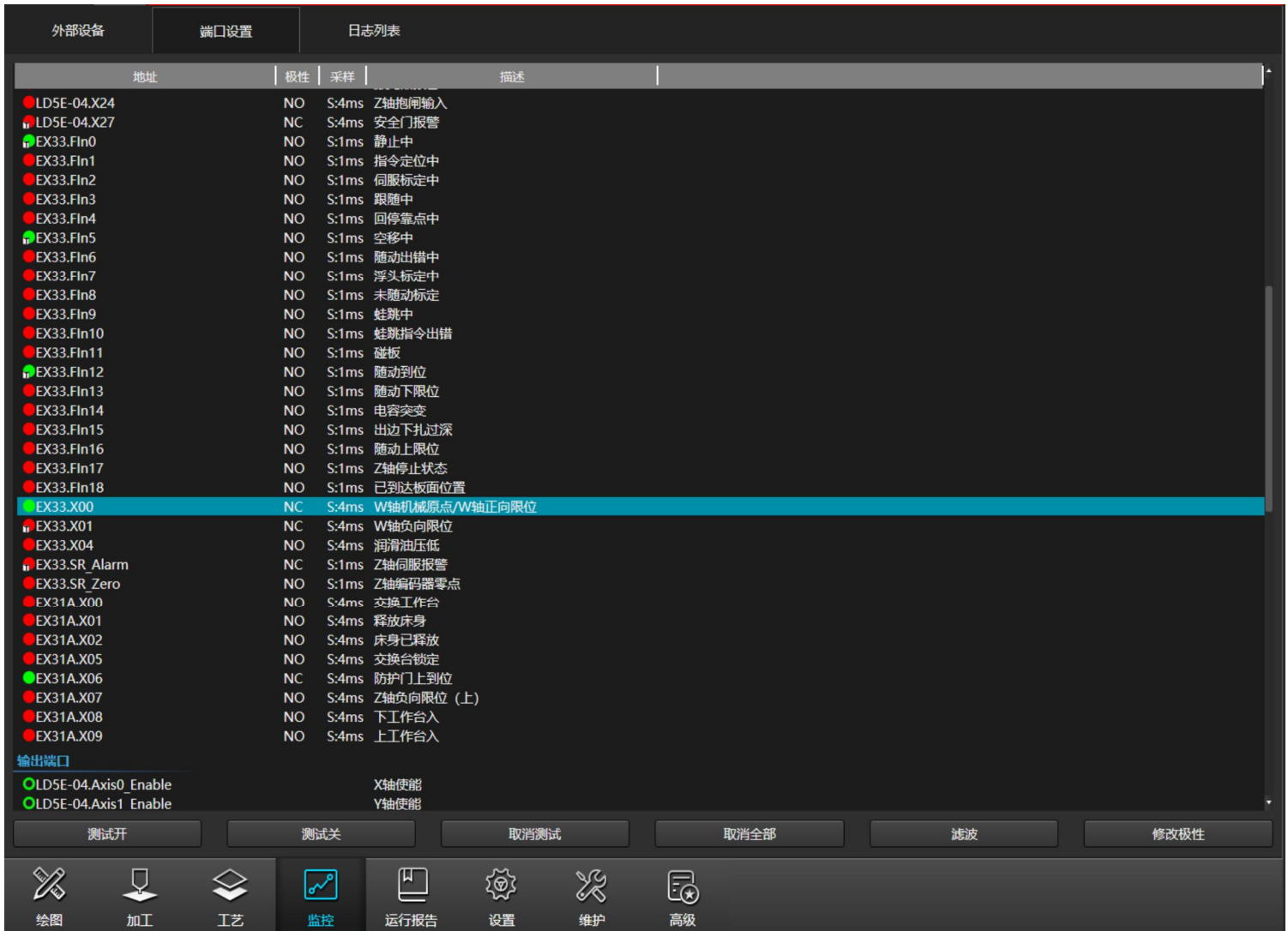
Operation Process: Settings > System Parameters > 3.5 Focus Control > Modify according to the content within the red frame.

The screenshot shows the 'Driver Settings' (驱动器设置) configuration screen. The 'W轴' (W-axis) dropdown menu is highlighted in a red box. The 'Settings' (设置) icon in the bottom navigation bar is also highlighted in a red box.

参数号	参数名称	参数值	单位	生效时间	取值范围
2000-00	峰值电流	15	0.1A	立即生效	0~80
2001-00	细分数	8192	Pulse	断电重启生效	200~51200
2010-01	滤波时间	100	0.1ms	立即生效	0~512
2012-00	上电锁轴电流上升	1	100m	立即生效	1~60
2013-00	电流环上电自整定	1	-	立即生效	0~1
2019-01	到位脉冲补偿	1	-	立即生效	0~1
2019-02	失能到位模式	0	-	立即生效	0~1
201a-01	上电锁轴电流百分	100	%	立即生效	0~100
201a-02	开环保持电流百分	50	%	立即生效	0~100
201a-03	闭环保持电流百分	50	%	立即生效	0~100
201b-00	上电锁轴持续时间	200	ms	立即生效	0~1500
201c-00	停车最长时间	1000	ms	立即生效	100~10000
201d-00	零速阈值	10	0.1r/s	立即生效	0~500
2024-00	模式选择	2	0.1r/s	立即生效	0~10
2025-01	开切闭环速度阈值	18	0.1r/s	立即生效	0~200
2025-02	开切闭环延时	12	ms	立即生效	0~32767
2025-03	闭切开环速度阈值	5	0.1r/s	立即生效	0~200
2025-04	闭切开环延时	250	ms	立即生效	0~32767

Operation Process: Settings > Driver Settings > Select the W - axis > Sub - division Number > Change to: 8192 > Save > Power off the driver.

## 6.7 Polarity Modification of WEIHONG System (Applicable to both bus and pulse systems)



地址	极性	采样	描述
LD5E-04.X24	NO	S:4ms	Z轴抱闸输入
LD5E-04.X27	NC	S:4ms	安全门报警
EX33.FIn0	NO	S:1ms	静止中
EX33.FIn1	NO	S:1ms	指令定位中
EX33.FIn2	NO	S:1ms	伺服标定中
EX33.FIn3	NO	S:1ms	跟随中
EX33.FIn4	NO	S:1ms	回停靠点中
EX33.FIn5	NO	S:1ms	空移中
EX33.FIn6	NO	S:1ms	随动出错中
EX33.FIn7	NO	S:1ms	浮头标定中
EX33.FIn8	NO	S:1ms	未随动标定
EX33.FIn9	NO	S:1ms	蛙跳中
EX33.FIn10	NO	S:1ms	蛙跳指令出错
EX33.FIn11	NO	S:1ms	碰板
EX33.FIn12	NO	S:1ms	随动到位
EX33.FIn13	NO	S:1ms	随动下限位
EX33.FIn14	NO	S:1ms	电容突变
EX33.FIn15	NO	S:1ms	出边下扎过深
EX33.FIn16	NO	S:1ms	随动上限位
EX33.FIn17	NO	S:1ms	Z轴停止状态
EX33.FIn18	NO	S:1ms	已到达板面位置
EX33.X00	NC	S:4ms	W轴机械原点/W轴正向限位
EX33.X01	NC	S:4ms	W轴负向限位
EX33.X04	NO	S:4ms	润滑油压低
EX33.SR_Alarm	NC	S:1ms	Z轴伺服报警
EX33.SR_Zero	NO	S:1ms	Z轴编码器零点
EX31A.X00	NO	S:4ms	交换工作台
EX31A.X01	NO	S:4ms	释放床身
EX31A.X02	NO	S:4ms	床身已释放
EX31A.X05	NO	S:4ms	交换台锁定
EX31A.X06	NC	S:4ms	防护门上到位
EX31A.X07	NO	S:4ms	Z轴负向限位 (上)
EX31A.X08	NO	S:4ms	下工作台入
EX31A.X09	NO	S:4ms	上工作台入

输出端口

- LD5E-04.Axis0\_Enable X轴使能
- LD5E-04.Axis1\_Enable Y轴使能

测试开    测试关    取消测试    取消全部    滤波    修改极性

绘图    加工    工艺    **监控**    运行报告    设置    维护    高级

Operation Process: Click “ Monitoring ” > “ Port Settings ” > Check if the polarities are consistent. If not, modify the polarity.

## 7. USB485 Driver Installation Process

### 7.1 Installation Process 1



设置

主页

查找设置

系统

- 屏幕
- 声音
- 通知和操作
- 专注助手
- 电源和睡眠
- 存储
- 平板电脑
- 多任务处理
- 投影到此电脑
- 体验共享
- 剪贴板
- 远程桌面
- 关于

### 关于

系统正在监控并保护你的电脑。

[在 Windows 安全中心中查看详细信息](#)

### 设备规格

设备名称	66L86JRVNXCX408
处理器	Intel(R) Core(TM) i5-10400 CPU @ 2.90GHz 2.90 GHz
机带 RAM	16.0 GB (15.8 GB 可用)
设备 ID	99A52342-C00D-4DA6-B1C5-2108DD30AF91
产品 ID	00330-80000-00000-AA748
系统类型	64 位操作系统, 基于 x64 的处理器
笔和触控	没有可用于此显示器的笔或触控输入

复制

重命名这台电脑

### Windows 规格

版本	Windows 10 专业版
版本号	21H2
安装日期	2022/8/23
操作系统内部版本	19044.2604
体验	Windows Feature Experience Pack 120.2212.4190.0

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Operation Process: Click “ Computer Properties ” > “ System Type ” > “ Version ” > Install the serial port driver. Select the file corresponding to the computer for installation.

## 7.2 Installation Process 2

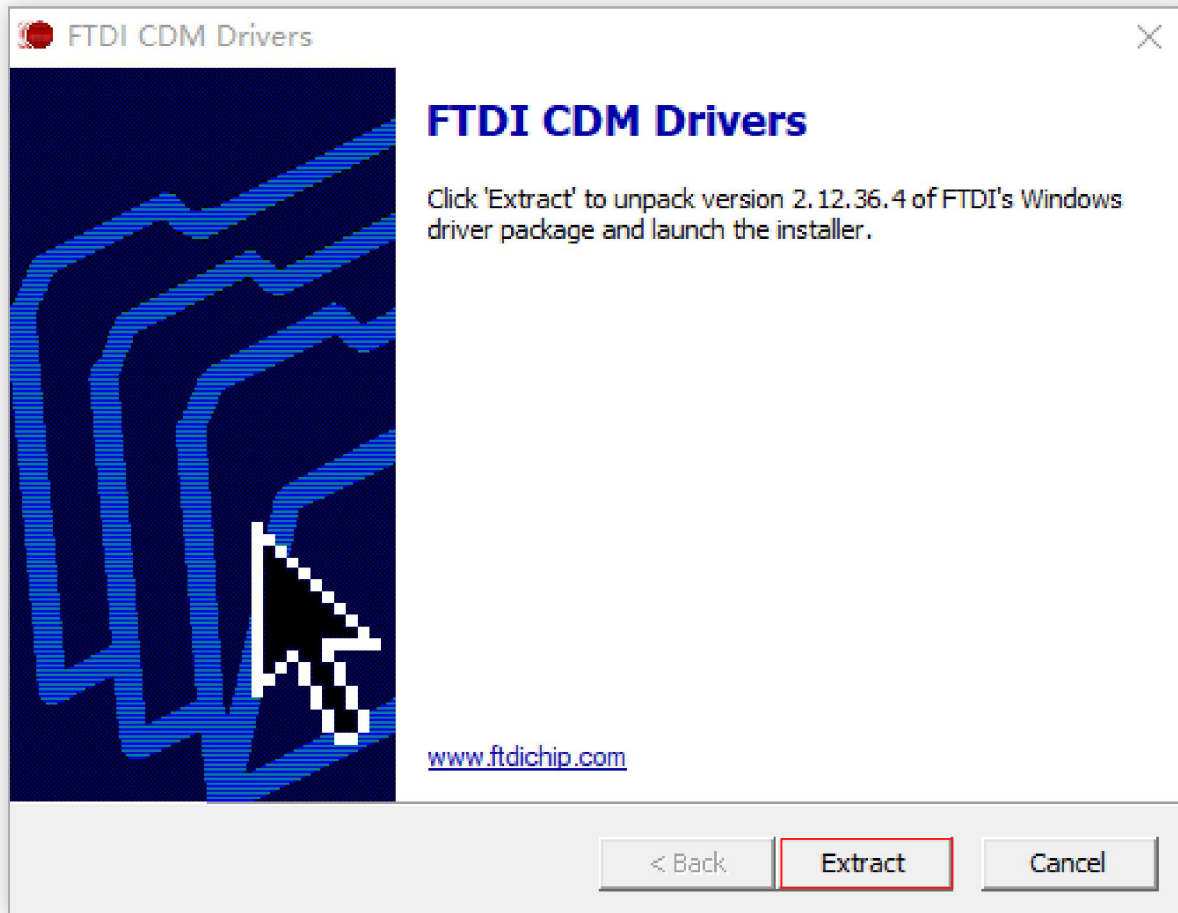
名称	修改日期	类型	大小
Android (Java D2XX)	2022/10/20 9:12	文件夹	
CDMUninstaller_v1.4-卸载工具	2022/10/20 9:13	文件夹	
Linux	2022/10/20 9:15	文件夹	
Windows	2022/10/20 9:15	文件夹	

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



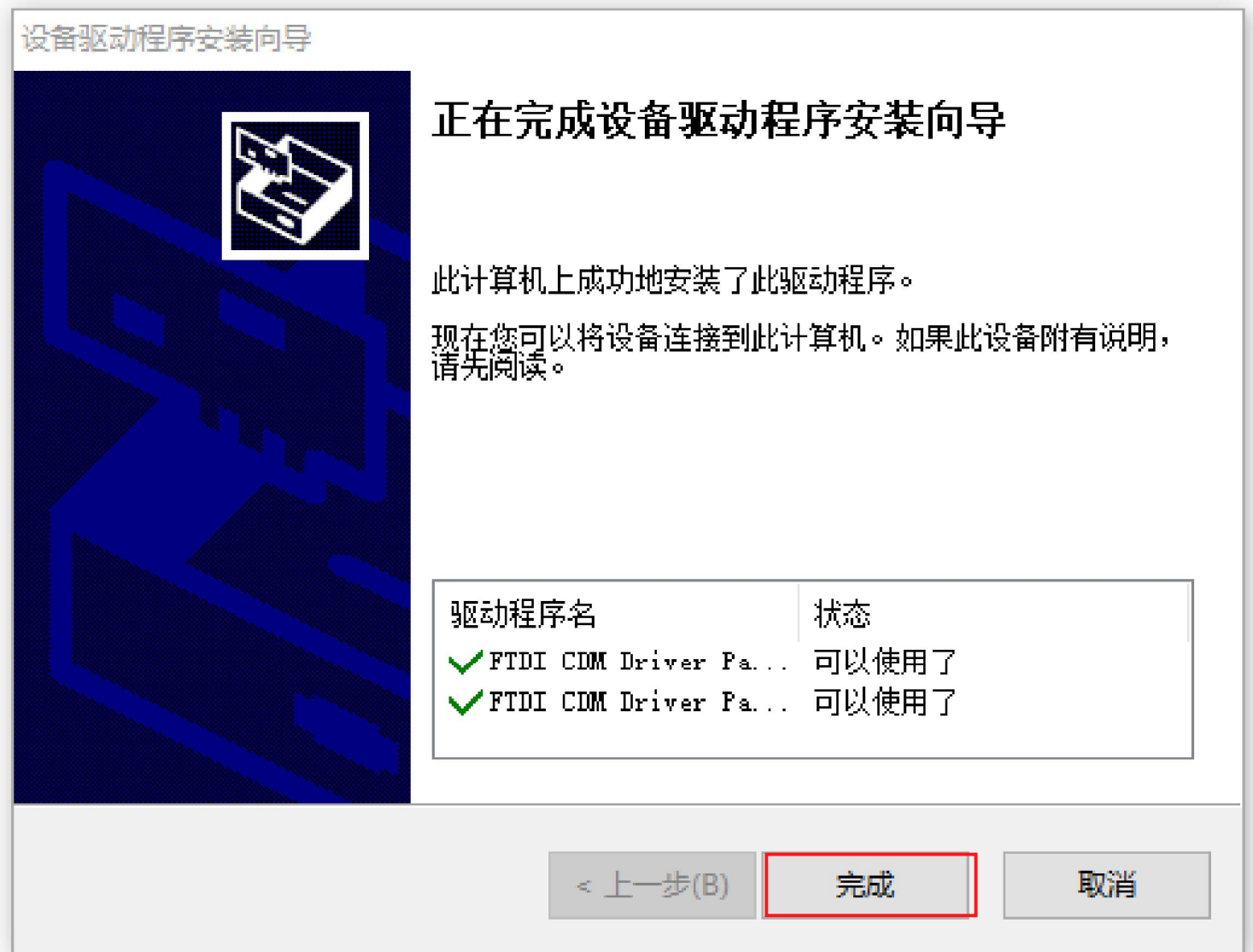
Operation Process: Open the driver file of the serial port cable FT231XS chip > Windows > Windows 8/10/11 > CDM212364\_Setup > Extract

## 7.3 Installation Process 3



Operation Process: Click “Next” > “I accept this agreement” > “Next”

## 7.4 Installation Process 4







Operation Process: Click “ Finish ”

Notes:

- 1.Click “ Computer Properties ” > “ Device Manager ” > Check if there is an exclamation mark next to the port. No exclamation mark indicates successful installation.
- 2.The driver installation package can be downloaded from the official website of UGREEN.

## 8. Monitoring Usage Instructions

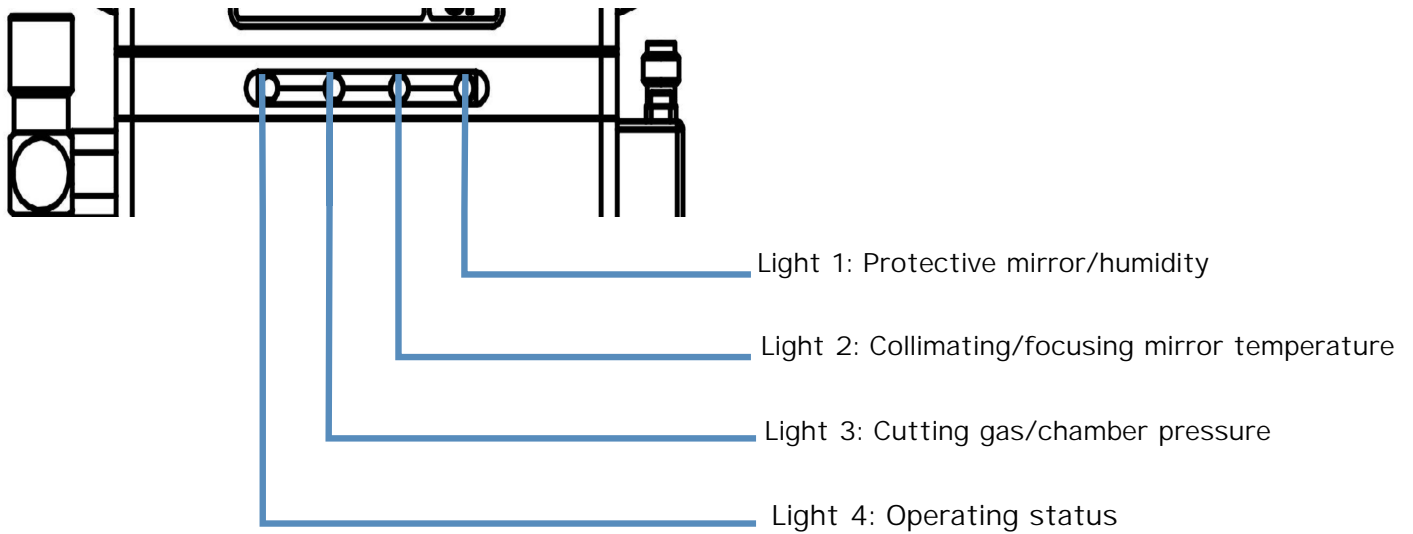
### 8.1 Monitoring Software Installation Process

 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 Cutting Head Status Indicator Lights



WSX monitoring software

串口号:    开机启动

监控 电机 日志

传感器名称	实时值	提醒阈值	报警阈值	操作
准直镜	28.1 °C	40.0	45.0	<input type="button" value="阈值设置"/>
准直镜腔体	31.6 °C			
聚焦镜	29.3 °C	40.0	45.0	<input type="button" value="阈值设置"/>
聚焦镜腔体	29.1 °C			
保护镜	29.6 °C	40.0	50.0	<input type="button" value="阈值设置"/>
保护镜腔体	29.5 °C			
保护镜温升	0.1 °C	5.0	8.0	<input type="button" value="阈值设置"/>
切割气压	0.01 Bar		0.3	<input type="button" value="阈值设置"/>
腔压	0.01 Bar		2.0	<input type="button" value="阈值设置"/>
湿度	36.54 %		65.0	<input type="button" value="阈值设置"/>

固件版本: A024811A 00000000 软件版本: V2.1.0

Operation Process: Select the corresponding serial port number > Start monitoring > If the connection is successful, 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 values of the early - warning value and the alarm value do not need to be modified.



Operation Process: Log

# 9. Drive Fault Code Query

## 9.1 Alarm Codes of Pulse - type Drives

ALM Blinking Times	Name	Solutions
1	Over - current Protection	<ol style="list-style-type: none"> <li>1. Check the connection between the motor winding and the driver. Restart the driver. If there is no alarm, check if there are any abnormalities in the motor and the motor power cable.</li> <li>2. Disconnect the motor winding cable from the driver. Restart the driver. If the driver still alarms, the driver is damaged.</li> </ol>
2	Over - voltage Protection	<ol style="list-style-type: none"> <li>1. Restart the driver.</li> <li>2. If the alarm still exists after restarting the driver, check if the power supply voltage is too high.</li> </ol>
3	Operational Amplifier Error	<ol style="list-style-type: none"> <li>1. Restart the driver.</li> <li>2. If the alarm still exists after restarting the driver, there is a hardware fault in the driver.</li> </ol>
4	Axis Lock Error	Check if the motor power cable is broken.
5	Storage Error	Use the RS232 debugging port to connect to the upper - computer and restore the driver to the factory settings. If the alarm still exists after restoring the factory settings, there is a hardware fault in the driver.
6	Motor Parameter Self - tuning Error	<ol style="list-style-type: none"> <li>1. Restart the driver.</li> <li>2. If the alarm still exists after restarting the driver, switch the DIP switch SW6 to the on state.</li> </ol>
7	Excessive Tracking Error	<ol style="list-style-type: none"> <li>1. Check if the “Motor Resolution” in the parameter list is set correctly.</li> <li>2. Check the wiring between the motor and the driver to see if the phase sequence is wrong. (The motor A +/A - and B +/B - must correspond to the driver’s A +/A - and B +/B -).</li> <li>3. Check if the encoder cable is broken.</li> <li>4. Appropriately increase the acceleration time.</li> <li>5. Check if the motor is stuck.</li> </ol>
Motor Rotation Direction Error	Incorrect motor direction setting	Wrong setting of the DIP switch SW5 state.
Motor Not Rotating	No pulse signal	Check if the pulse signal cable is connected correctly.
Motor Rotating in Only One Direction	Incorrect pulse mode selection	Check if the SW7 pulse mode is set correctly.
	No direction signal	Check if the direction signal cable is connected correctly.



Green Light Not Lit	Not powered on	Check if the driver power supply is connected correctly.
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## 9.2 Alarm Codes of Bus - type Drives

ALM Blinking Times	Name	Solutions
1	Over - current Protection	<ol style="list-style-type: none"> <li>1. Ensure that the driver output cable is not short - circuited; ensure that the motor is not damaged.</li> <li>2. Adjust the wiring sequence of the motor.</li> <li>3. Replace the driver with a new one.</li> </ol>
2	Over - voltage Protection	<ol style="list-style-type: none"> <li>1. Reduce the power supply voltage on the VDC/GND terminals.</li> <li>2. Reduce the acceleration and deceleration.</li> </ol>
3	Excessive Increment of Command Pulse	Check if the parameter subdivision is correct.
4	Axis Lock Error	<ol style="list-style-type: none"> <li>4. Ensure that the wiring of the motor output terminals A +, A -, B +, B - is correct.</li> <li>5. Ensure that the motor cable is not broken.</li> <li>6. Ensure that the encoder power supply voltage is normal; ensure that the encoder cable is intact and the encoder ground is in good contact.</li> </ol>
6	Self - tuning Error	Check if there is any jamming in the motor screw structure.
7	Position Deviation	<ol style="list-style-type: none"> <li>1. Restart the driver.</li> <li>2. If the alarm still exists after restarting the driver, check if the motor power cable is short - circuited.</li> <li>3. Pull out the motor power cable and restart the driver. If the alarm still exists, the driver is damaged.</li> </ol>
8	Encoder Cable Disconnection Detection	Ensure that the encoder cable is correctly connected, and there is no false soldering, misalignment, or short - circuit at the joints.
10	Emergency Stop Alarm	Ensure that the input signal wiring is correct.
11	Positive and Negative Limit Alarm	Check if the output of the positive and negative limit signals at the input end is 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 - station homing mode is used.
13	Stalling Alarm	Check if there is any jamming in the motor screw structure.



14	Zero - pulling Error Alarm	<p>4. The encoder resolution of the motor is incorrect, resulting in the motor not being able to run.</p> <p>5. The motor power cable is connected incorrectly.</p> <p>6. The motor output is insufficient. Appropriately increase the driver current.</p> <p>7. If increasing the current still does not work, check if there is any jamming in the mechanical structure and if the motor is undersized.</p>
15	Current Overload Alarm	<p>Increase the driver output peak current value Pr4.22 or set bit6 of 0x2056 to 0 to shield the alarm.</p>
Constantly Lit	Hardware Interrupt Protection	<p>Confirm the network connection and the master - station ESM conversion sequence.</p>



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