

Cyclmotion motion control system

Software description

Software version number: B-2024-04-06-001

Cyclmotion Intelligent Technology Co., Ltd.

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Amend Record

[illegible]

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一. Overview

Cyclmotion motion control system includes control software and control cards. The products are currently divided into three axes (basic model), three axes (with RTCP), four axes (basic model), four axes (with RTCP), and six axes (with RTCP), the software is the same.

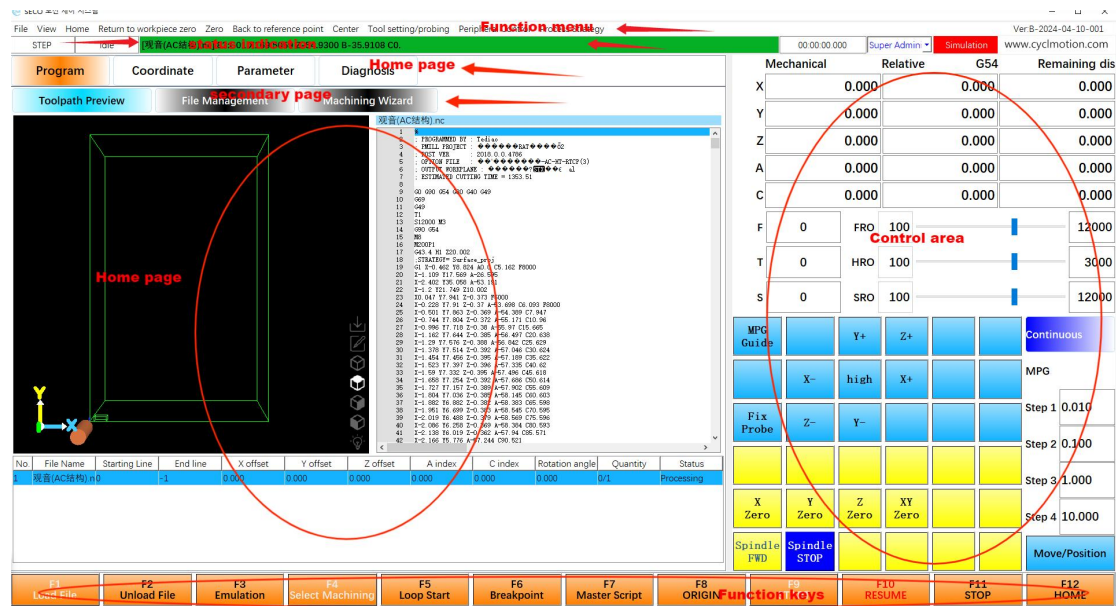
This article mainly introduces the instructions for using the control software.

1.Features

- .Cyclmotion motion control system is a control system with RTCP function and has the following main features:。
- .It adopts configuration design to support users' in-depth configuration customization, rapid secondary development of the interface, and automatic deployment of functional components (all source codes are in the /env directory);
- .Supports 18 types of machine tool structures ranging from three-axis to six-axis, including double turntable, single-turn single pendulum, double pendulum head, etc.;
- .Supports RTCP (G43.4) and fixed-axis machining (G68.2) functions;
- .Supports 3D dynamic machining simulation, tool path and G code bidirectional positioning;
- .Support MODBUS bus IO expansion;
- .Support servo spindle, rigid tapping;
- .Supports custom function shortcut keys, and the universal input port can be configured as a shortcut function key;
- .Supports multiple processing strategies such as array processing, single-stage processing, cycle processing, breakpoint processing, and nearest point processing.
- .Supports axis mapping;

2.Introduction to interface layout

- .Function menu: the top, which is a fixed area and does not change with the main menu page.;
- .Status indication area: displays status and alarm information;
- .Main page: including 4 pages of program, coordinate system, parameters, and diagnosis. There are several secondary pages under each page. The corresponding function keys also change, and the function keys can be customized.;
- .Control area: It is a fixed area and does not change with the main page. The control function keys can be customized.
- .Function keys: Follow the changes of the main page. Different function keys can be defined on different main pages.



The window size can be adjusted by dragging between the main page and the control page.

二. Function menu introduction

It includes 10 items including files, views, mechanical zero return, workpiece zero return, workpiece zero return, reference point return, centering, tool setting/probing, peripheral control, and machining strategies. Each function menu pulls down to select each submenu function, as shown in the table below.

The axis-related functions in the table will change according to the change of coordinate display axis configuration. For example, if the five-axis system is selected for the machine tool structure, A/B/C axes can be configured in the coordinate display in the control area, and the function menu will also add corresponding functions.

"v" will be displayed in front of the selected function.

These functions can be defined in the function keys.

Document	View		Mechanical zero return	Workpiece return to zero
Processing G code	Side view		X axis returns to mechanical zero	X axis returns to workpiece zero
Uninstall G-code	Front view		Y axis returns to mechanical zero	Y axis returns to workpiece zero
Quit	House view		Z axis returns to mechanical zero	Z axis returns to workpiece zero
	Oblique view		All axes return to mechanical zero	XY axis returns to workpiece zero
	Entity file...		Mechanical coordinate clearing	XYZ axis returns to workpiece zero
	Workpiece model center axis			X-axis
		X-axis		Y-axis
		Y-axis		Z-axis
		Z-axis		
	Show turntable			
	Display soft limit frame			
	Show workpiece frame			
	Turntable transparent			
	The knife shaft is transparent			
	Automatically adjust view port			
	Show tool path			
	Clear tool path			
	Know the tool path before starting a new process			
	Rendering mode			
		External light source		
		Internal light source		
		No rendering		

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Some functions are explained below.

1. Load G code

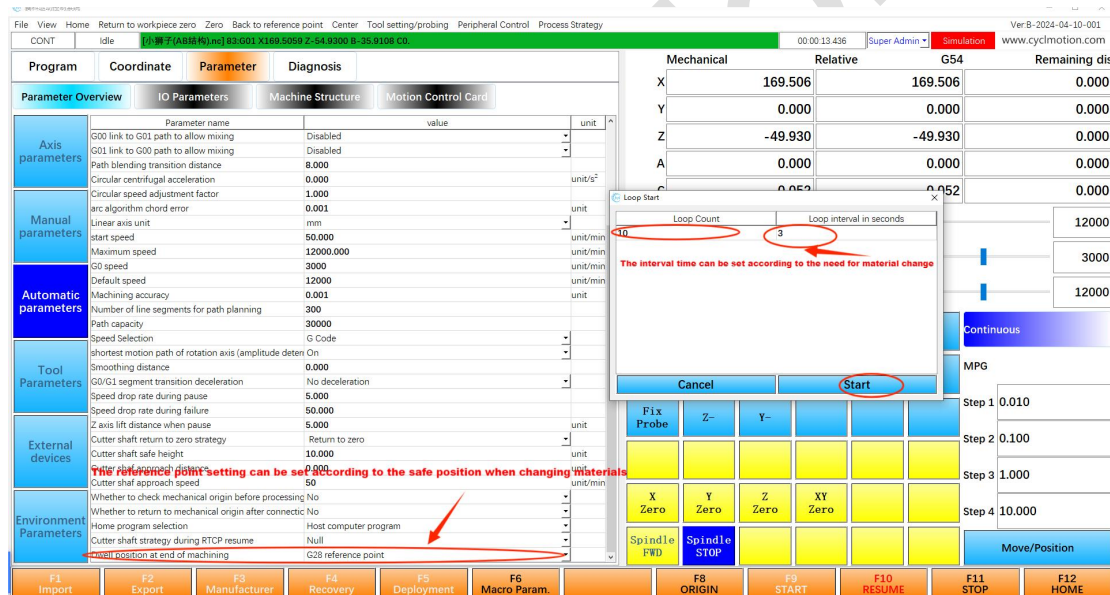
Load G code. This function can only load a single file. For details on loading multiple files, see the function in file management.

2. Cycle processing

Click Processing Strategy - Cycle Processing, and a dialog box will pop up. You can edit the number of cycles and cycle interval time. After completion, press Start to start processing.

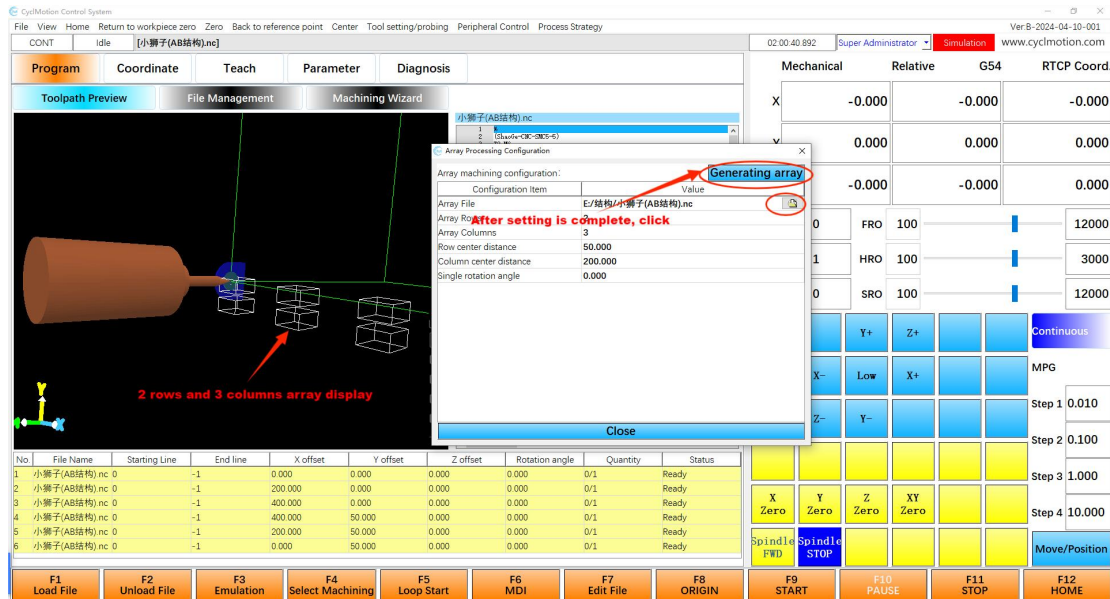
Small application examples:

Combined with the parameters - automatic parameters - the dwell position at the end of processing, and setting it as a suitable reference point, the material changing function during processing can be realized.



3. Array processing

Click Machining Strategy - Array Processing to pop up the configuration dialog box. After loading the array file and setting the parameters, click Array Generation. When the display workpiece frame is turned on, the array shape will be displayed in the simulation tool path.

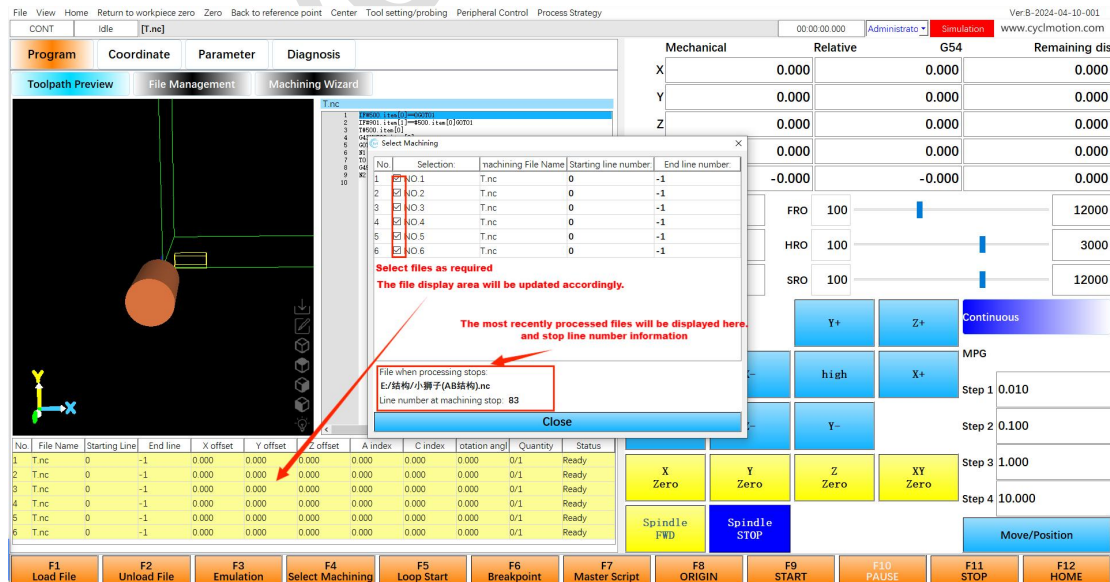


4. Choose processing

Click Processing Strategy—Select Processing, and a dialog box will pop up. You can select the required files in the current file list as needed.

You can set the starting line number and ending line number for each file to perform breakpoint processing or area processing.

The bottom of the dialog box will display the file name of the latest processing and the line number when the processing stopped, which can facilitate breakpoint processing.



5. Peripheral control

In parameters—IOparameters—IOAfter configuring the output port in the output configuration, Optional after restarting.

三. Status Bar

Instruct separately:

1. Control mode (automatic/continuous/inching/manual)

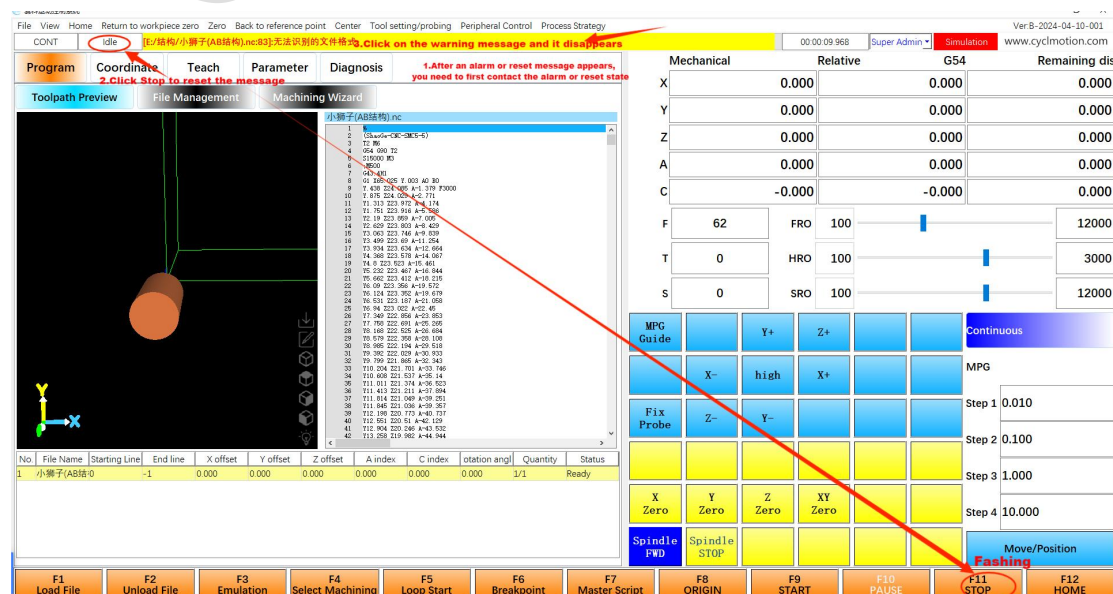
- When online processing, it will be automatically locked in "automatic" mode;
- Continuous/inch/manual, select control through control area.
- Continuous: Press and hold the movement direction key to continue movement.
- Inching: moving according to a given step distance.
- Handwheel: controlled by handwheel. Host control is invalid.

Note: When online,

- When the handwheel axis is selected off, the handwheel control is invalid and can only be switched between continuous/inch operation and is controlled by the host.
- When the handwheel axis is switched from off to other gears, or between other gears, it automatically switches to the handwheel state and is controlled by the handwheel.
- When the handwheel axis selection is not off, continuous / handwheel / inching can be switched.

2. Idle/reset/device busy:

- When not processing, it shows idle, when processing, it shows the device is busy;
- It will flash when a reset occurs. After the reset state is released, press the function key "Stop" or "Reset" to eliminate the flashing;



3. Processing files/alarm information:

- The processing file is displayed in the normal state, and the alarm information is displayed in the event of an alarm.;
- When an alarm occurs during processing, double-click this area to automatically locate the fault line.

4. Processing time: refers to the processing time of a single file, and does not count when paused.**5. Administrator rights:**

- Login/Administrator/Super Administrator, click to switch.
- Administrators and super administrators can set passwords.
- Administrator rights: Visible and configured axis parameters in Parameters—Parameter Overview;
- Super administrator authority: the highest authority, which can configure parameters, control areas and function keys.

6. Simulation/online

- After the connection is successful, "Online" is displayed in green, otherwise "Simulation" is displayed in red.;
- When multiple hosts are connected to the same control card, the first one successfully connected is the master machine, and the rest are monitoring machines. "Monitoring" will be displayed here.。

四. Main page introduction

The main page includes 4 pages: program, coordinate system, parameters and diagnosis.

1. Program

Divided into three secondary pages: tool path preview, file management, and processing wizard. The current page is blue background.

At the bottom of the program page, you can right-click to customize related function keys, as shown below. Blue indicates that the function key has been defined, black indicates that it has not been defined, and the current function key is marked with √.

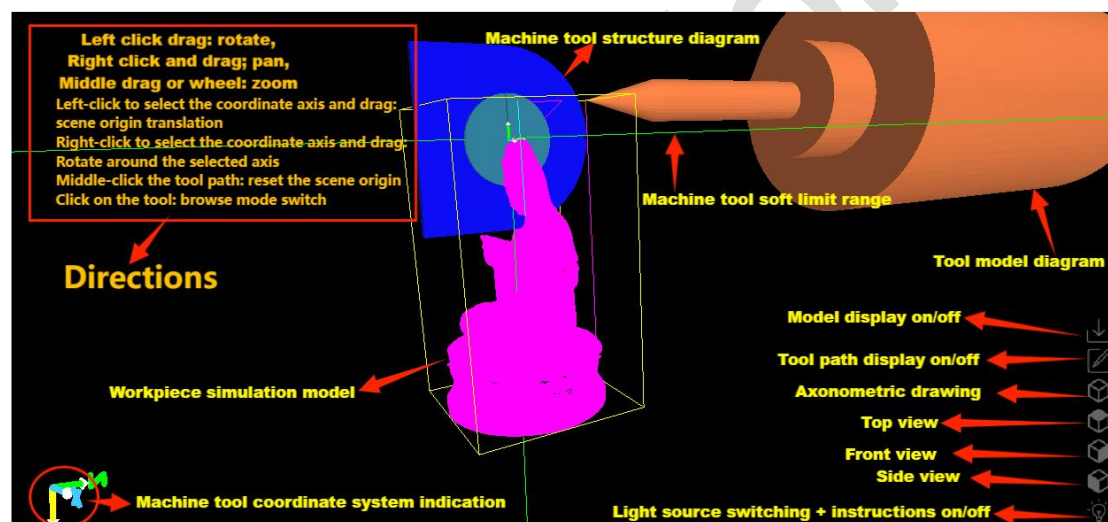
The font color of the function key is white to indicate that this status is unavailable, and black to indicate that it is available.

- Middle-click drag or wheel: zoom.
- Click the tool: the tool turns red and the tool tip point is placed in the center of the display. Click again to cancel. Unable to pan at this time.
- Middle-click the tool path: set the rotation center, but it can only be selected on the workpiece or tool path. If there is no workpiece or tool path yet, you can simulate it first.

Operation on the body coordinate system:

- Left-click to select the coordinate axis and drag: translate along the selected axis.
- Right-click to select the coordinate axis and drag: Rotate around the selected axis.

The meaning of the icons on the right side of the simulation area is shown in the figure below.



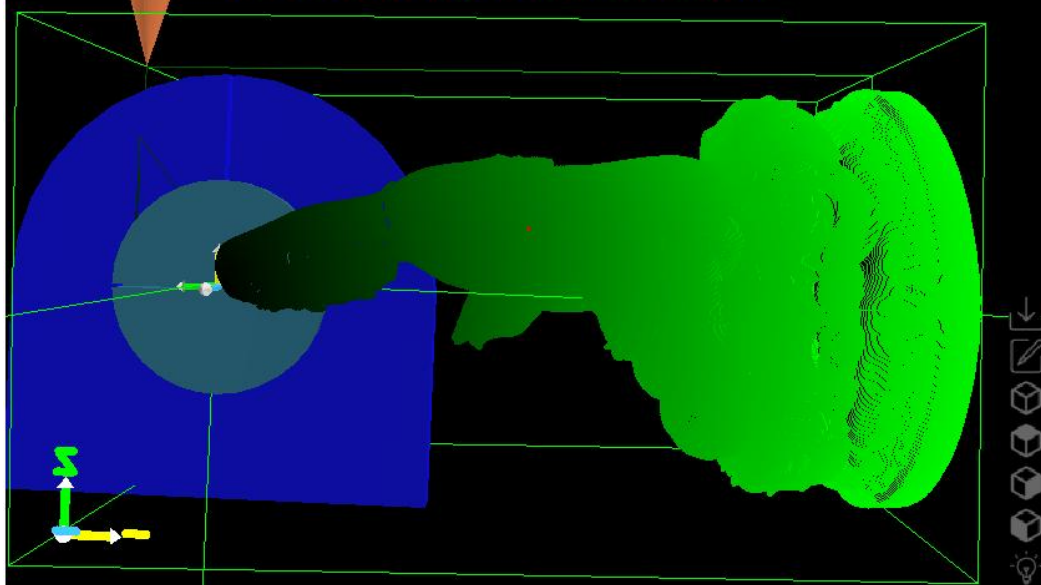
When the mouse stays on the simulated tool path, the current tool path turns red, and the G code line number and code content are displayed. At the same time, the G code display area is tracked in real time.

Select the tool path and right-click, a drop-down menu will appear. You can pick the starting line or the ending line and automatically add it to the starting line or ending line in the file area below.。

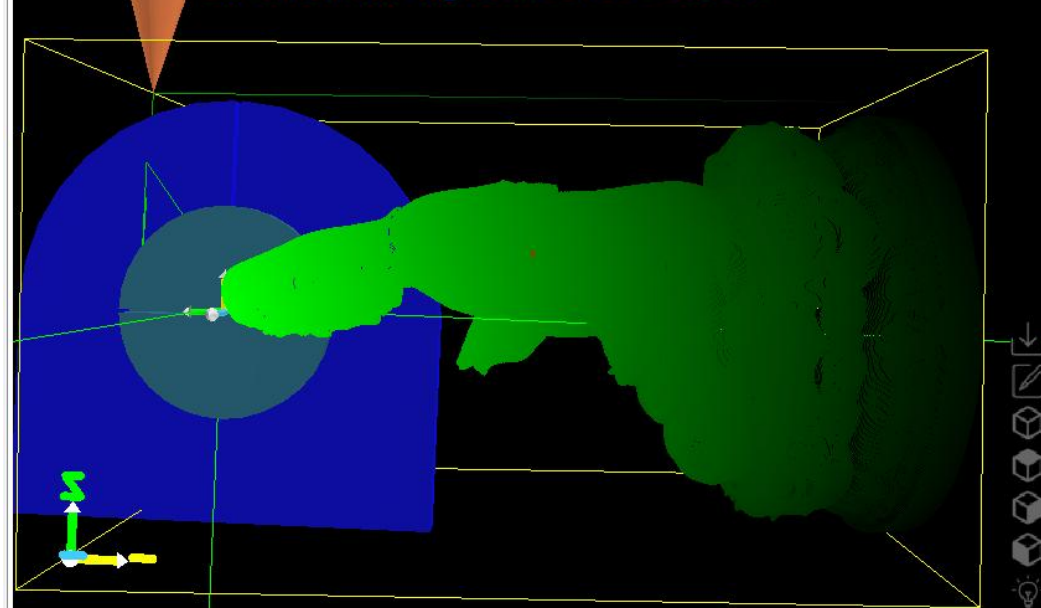
Example of light source switching effect:

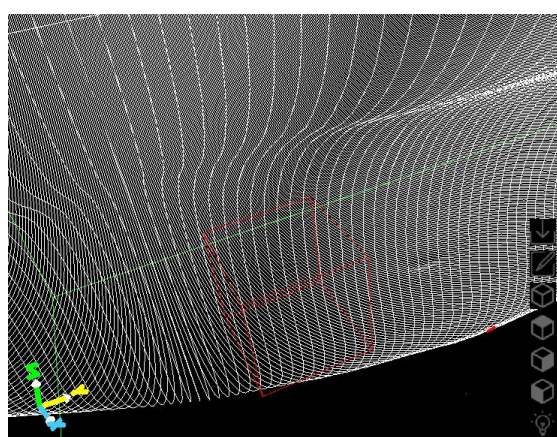
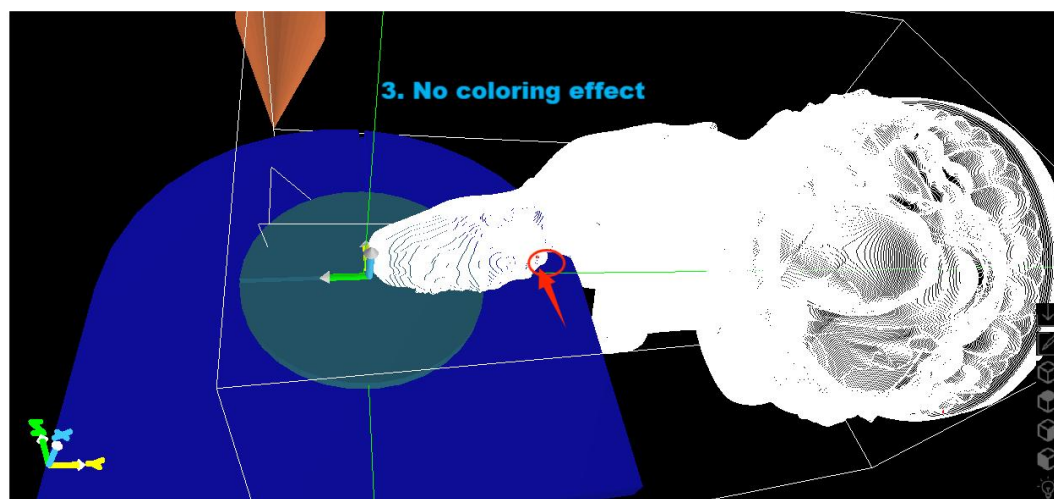
选取工件1:观音(AC结构).nc 280743: X42.673 Y-17.417 A-90.627 C247.111

1.External light source effect



2. Internal light source effect





右键菜单选项:

- 确定G代码过滤器
- 抽取起始行
- 抽取终止行
- 抽取行范围
- 终止行定位

坐标列表 (部分):

```

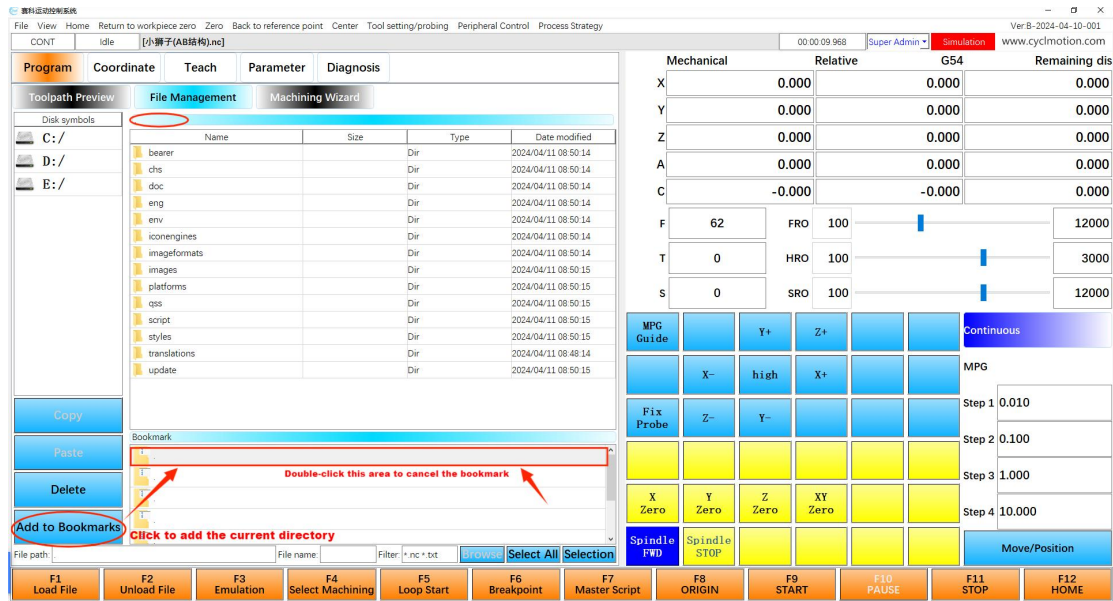
43874 X=0.525 Y4.358 Z=50.92 A=65.33 C170.572
43875 X=0.457 Y4.607 Z=51.038 A=65.375 C170.723
43876 X=0.433 Y4.726 Z=51.093 A=65.383 C170.748
43877 X=0.929 Y4.652 Z=51.075 A=65.327 C173.687
43878 X=0.491 Y4.737 Z=51.113 A=67.161 C175.971
43879 X=0.091 Y4.677 Z=51.082 A=67.957 C177.924
43880 X=0.556 Y4.622 Z=51.043 A=69.005 C180.217
43881 X=0.074 Y4.586 Z=51.0 A=70.29 C182.671
43882 X=0.923 Y4.558 Z=50.941 A=71.968 C185.328
43883 X=0.834 Y4.53 Z=50.872 A=73.706 C187.544
43884 X=0.721 Y4.508 Z=50.806 A=75.289 C189.09
43885 X=0.661 Y4.51 Z=50.754 A=76.586 C189.975
43886 X=0.608 Y4.528 Z=50.712 A=77.69 C190.338
43887 X=0.428 Y4.557 Z=50.679 A=78.558 C190.225
43888 X=0.459 Y4.591 Z=50.652 A=79.181 C189.63
43889 X=0.256 Y4.614 Z=50.634 A=79.481 C188.81
43890 X=0.117 Y4.655 Z=50.62 A=79.641 C187.497
43891 X=0.267 Y4.74 Z=50.611 A=79.681 C185.766
43892 X=0.297 Y4.837 A=79.58 C184.693
43893 X=0.213 Y4.931 Z=50.615 A=79.472 C184.194
43894 X=0.124 Y5.02 Z=50.618 A=79.302 C184.174
43895 X=0.084 Y5.114 Z=50.619 A=79.064 C184.681
43896 X=0.553 Y5.166 Z=50.621 A=78.93 C185.118
43897 X=0.785 Y5.178 Z=50.619 A=78.857 C185.385
43898 X=0.952 Y5.067 Z=50.594 A=78.807 C185.504
43899 X=1.14 Y5.03 Z=50.583 A=78.754 C185.501
43900 X=0.572 Y5.13 Z=50.589 A=78.589 C186.506
43901 X=0.759 Y5.186 Z=50.597 A=78.517 C186.338
43902 X=0.77 Y5.149 Z=50.539 A=78.514 C186.949
43903 X=0.903 Y4.63 Z=50.481 A=78.486 C186.982
43904 X=1.171 Y4.339 Z=50.413 A=78.401 C187.382
43905 X=1.485 Y4.334 Z=50.4 A=78.278 C187.983
43906 X=1.835 Y4.637 Z=50.448 A=78.119 C188.797
43907 X=1.041 Y4.945 Z=50.503 A=78.011 C189.37
43908 X=1.198 Y4.607 Z=50.426 A=77.968 C189.603
43909 X=1.421 Y4.448 Z=50.382 A=77.884 C190.065
43910 X=1.625 Y4.48 Z=50.379 A=77.794 C190.58
43911 X=1.911 Y4.781 Z=50.427 A=77.644 C191.444
43912 X=2.198 Y5.173 Z=50.487 A=77.477 C192.462
43913 X=2.493 Y5.372 Z=50.521 A=77.321 C193.445
43914 X=2.261 Y5.689 Z=50.544 A=76.931 C196.074
43915 X=2.71 Y5.85 Z=50.548 A=76.714 C197.698

```

No.	文件名	起始行	结束行	X偏移	Y偏移	Z偏移	A分度	B分度	C分度	旋转角度	加工数量	加工状态
1	观音(AC结构).nc	0	-1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1/1	正在加工

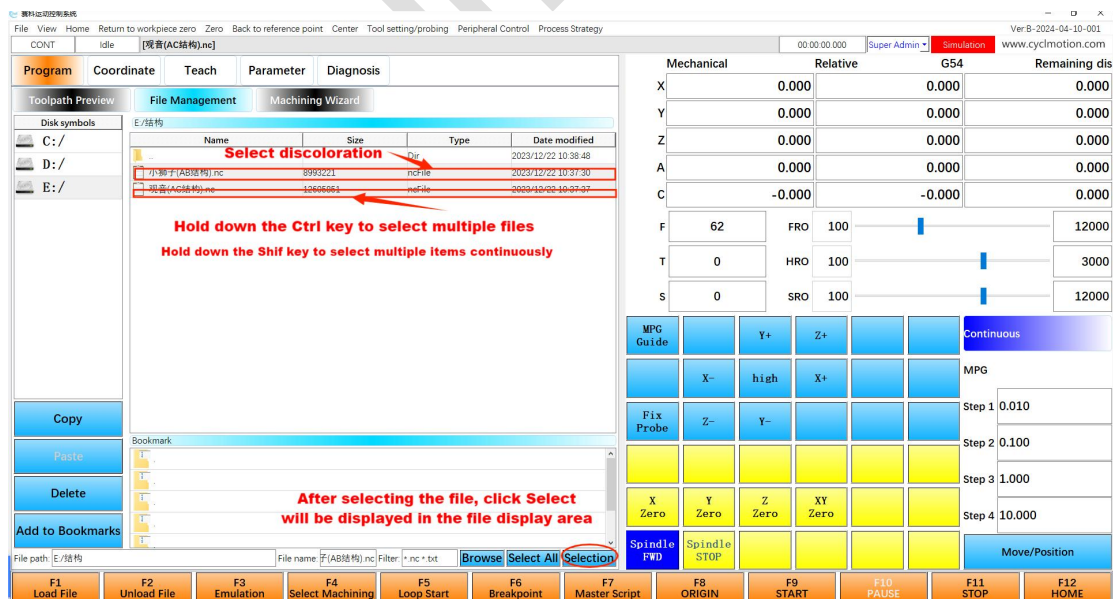
2) File management

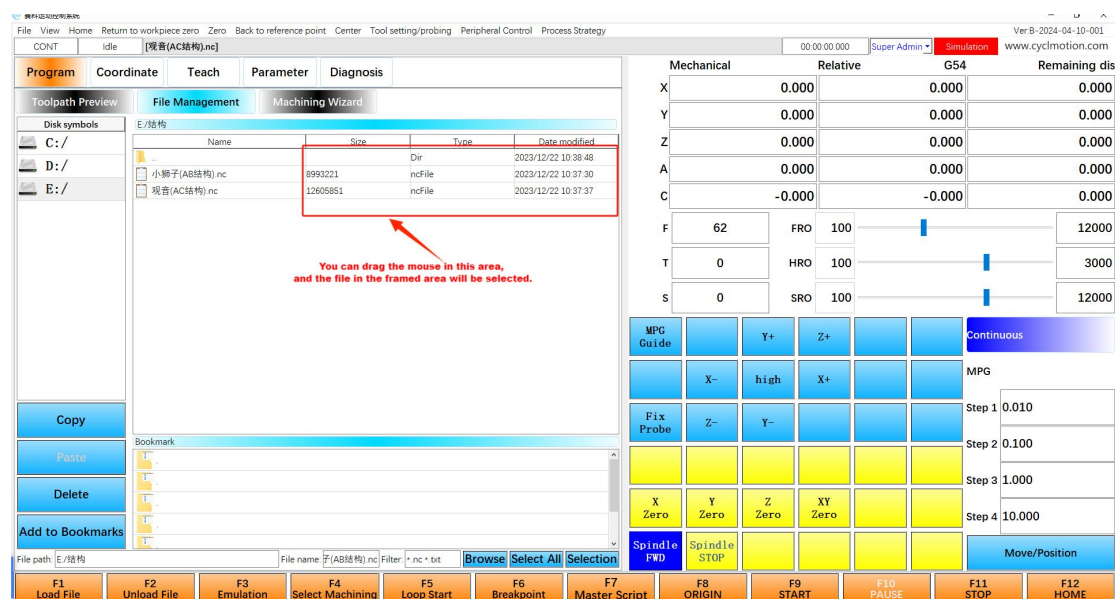
You can add the current file directory to bookmarks and double-click the bookmark to cancel.



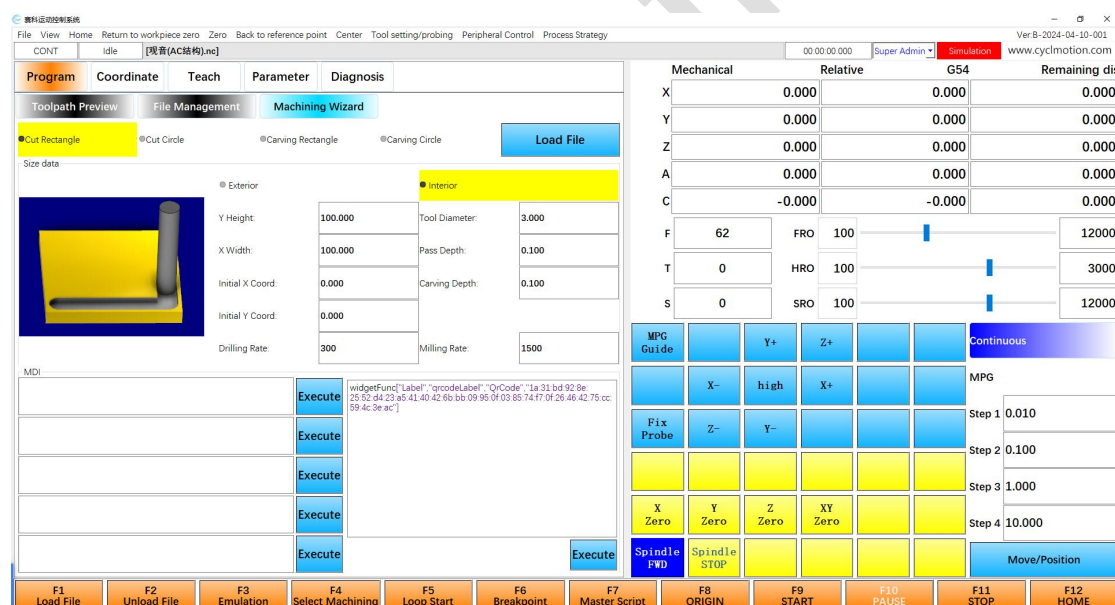
Multiple files can be selected:

- Hold down Ctrl to select multiple items individually;
- Hold down Shift to select multiple items continuously;
- Drag the mouse in the specified area in the diagram, and the file in the framed area will be selected;
- Click Select All to select all files in the current directory.





3) Processing Wizard



Currently, we have provided square-cut frames, circular-cut frames, rectangular milled bottoms, and circular milled bottoms, all with animated instructions.

After setting the parameters, click to load the file.

Commands can be entered and executed in MDI. Single-line input is available on the left and multi-line input is available on the right.

2. Coordinate System

At the bottom of the coordinate system page, you can right-click to customize related function keys, as shown below. Blue indicates that the function key has been defined, black indicates that it has not been defined, and the current function key is marked with ✓

The font color of the function key is white to indicate that this status is

unavailable, and black to indicate that it is available.



1) Workpiece coordinates

- G54-G59 coordinate offset can be set;
- The common offset of each axis can be set, click to edit or adjust using the arrow keys below;
- Click to adjust the step distance, you can choose the step distance 0.01, 0.1, 1.

FileViewHomeReturn to workpiece zeroZeroBack to reference pointCenterTool setting/probingPeripheral ControlProcess Strategy

CONT

Idle

[观音(AC结构).nc]

Program

Coordinate

Teach

Parameter

Diagnosis

workpiece coordinates

Access

Center Point Measurement

Current workpiece coordinate setting

G54

A-axis center position setting

Common bias

step:0.1

X:

0.000

X:

0.000

X-bias:

0.000

Y:

0.000

Y:

0.000

Y-bias:

0.000

Z:

0.000

Z:

0.000

Z-bias:

0.000

A:

0.000

A:

0.000

A-bias:

0.000

C:

0.000

C:

0.000

C-bias:

0.000

G54

G55

G56

G57

G58

G59

X:

0.000

X:

0.000

X:

0.000

X:

0.000

X:

0.000

X:

0.000

Y:

0.000

Y:

0.000

Y:

0.000

Y:

0.000

Y:

0.000

Y:

0.000

Z:

0.000

Z:

0.000

Z:

0.000

Z:

0.000

Z:

0.000

Z:

0.000

A:

0.000

A:

0.000

A:

0.000

A:

0.000

A:

0.000

A:

0.000

C:

0.000

C:

0.000

C:

0.000

C:

0.000

C:

0.000

C:

0.000

2) Access

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc]

Program Coordinate Teach Parameter Diagnosis

workpiece coordinates Access Center Point Measurement

Workpiece origin 0:	X:0.000 Y:0.000 Z:0.000 A:0.000 C:0.000	Save	Load	Clear
Workpiece Home 1:	X:0.000 Y:0.000 Z:0.000 A:0.000 C:0.000	Save	Load	Clear
Workpiece origin 2:	X:0.000 Y:0.000 Z:0.000 A:0.000 C:0.000	Save	Load	Clear
Workpiece origin 3:		Save	Load	Clear
Workpiece origin 4:		Save	Load	Clear
Workpiece origin 5:		Save	Load	Clear
Workpiece origin 6:		Save	Load	Clear
Workpiece origin 7:		Save	Load	Clear
Workpiece origin 8:		Save	Load	Clear
Workpiece origin 9:		Save	Load	Clear

Click the Save button to save the current workpiece coordinate system origin.
Click the Load button to load the saved workpiece origin into the current workpiece coordinate system origin.

3) Center point measurement

Including two-point centering, three-point centering of a circle, and three-coordinate centering of a sphere.

a) Two point centering:

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc]

Program Coordinate Teach Parameter Diagnosis

workpiece coordinates Access Center Point Measurement

☒ The origin of the current workpiece is positioned to the auxiliary point

Two point centering Three-point circle centering Sphere centering

AXIS	Record 1		Record 2		Center(Auxiliary Points)
X-axis	0.000		0.000		0.000
Y-axis	0.000		0.000		0.000
Z-axis	0.000		0.000		0.000

Click separately to record the first coordinate Click separately to record the second coordinate Click to calculate median

b) Three points determine the center of the circle:

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc]

Program **Coordinate** Teach Parameter Diagnosis

workpiece coordinates Access **Center Point Measurement**

☒ The origin of the current workpiece is positioned to the auxiliary point

Two point centering **Three-point circle centering** Sphere centering

Point	X-axis	Y-axis	Z-axis
the first point	0.000	0.000	0.000
the second point	0.000	0.000	0.000
the third point	0.000	0.000	0.000
Auxiliary Points	0.000	0.000	0.000

Click separately to record the coordinates of three points

Click to calculate the coordinates of the center of the circle

c) Three coordinates to determine the center of the sphere:

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc]

Program **Coordinate** Teach Parameter Diagnosis

workpiece coordinates Access **Center Point Measurement**

☒ The origin of the current workpiece is positioned to the auxiliary point

Two point centering Three-point circle centering **Sphere centering**

Number of points: **5** Set the number of measurement points Sphere radius: 0.000

No.	X-axis	Y-axis	Z-axis
Recording point	0	0	0
Recording point	0	0	0
Recording point	0	0	0
Recording point	0	0	0
Recording point	0	0	0
Auxiliary Points	0.000	0.000	0.000

Click here to record the coordinates of each point separately

Click to calculate the coordinates of the center of the sphere

3. Parameter

Including 3 sub-pages: parameter overview, IO parameters, and motion control card. For detailed instructions, please refer to the 《Parameter Description File》.

At the bottom of the parameter page, you can right-click to customize the relevant function keys, as shown below.

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc] 00:00:00.000 Super Admin Simulation www.cyclmotion.com

Program Coordinate Teach Parameter Diagnosis

Parameter Overview IO Parameters Machine Structure Motion Control Card

Axis parameters

Manual parameters

Automatic parameters

Tool Parameters

External devices

Environment Parameters

Function Key Configuration Menu

- Empty
- Import
- Export
- Manufacturer
- Recovery
- Deployment
- Macro Param.
- Text Export
- Text Import
- Origin
- START
- PAUSE/RESUME
- STOP
- HOME
- E-Stop
- CLOSE

F1 Import F2 Export F3 Manufacturer F4 Recovery F5 Deployment F6 Macro Param. F8 ORIGIN F9 START F10 PAUSE F11 STOP F12 HOME

1) Parameter overview

There is a lot of content, divided into several parts: axis parameters, manual parameters, automatic parameters, tool parameters, external equipment, and environmental parameters. Each part has sub-items.

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc]

Program Coordinate Teach Parameter Diagnosis

Parameter Overview IO Parameters Machine Structure Motion Control Card

Axis parameters

Manual parameters

Automatic parameters

Tool Parameters

External devices

Environment Parameters

Drive parameters

Parameter name	X-axis	Y-axis	Z-axis	A-axis	C-axis
numerator: Number of pulses per turn	1000	1000	1000	1000	1000
denominator: Lead screw per turn	1	1	1	1	1
gearbox reduction ratio (Input end)	1	1	1	1	1
gearbox reduction ratio (Output end)	1	1	1	1	1
Drive mode	pulse/direction	pulse/direction	pulse/direction	pulse/direction	pulse/direction
Dir signal level	Low	Low	Low	Low	Low
Pulse signal level	Low	Low	Low	Low	Low
Motion direction(two-pulse mode)	negative	negative	negative	negative	negative
Direction-pulse time interval(ns)	7000	7000	7000	7000	7000
Failure stop mode	deceleration stc	deceleration stc	deceleration stc	deceleration stc	deceleration stc
Soft limit stop mode	deceleration stc	deceleration stc	deceleration stc	deceleration stc	deceleration stc
Hard limit stop mode	deceleration stc	deceleration stc	deceleration stc	deceleration stc	deceleration stc

Physical axis mapping parameters

Software limit parameters

Backlash parameters

Internal encoder parameters

Home parameters

Reference point parameters

2) IO parameter

Including IO input configuration and IO output configuration.

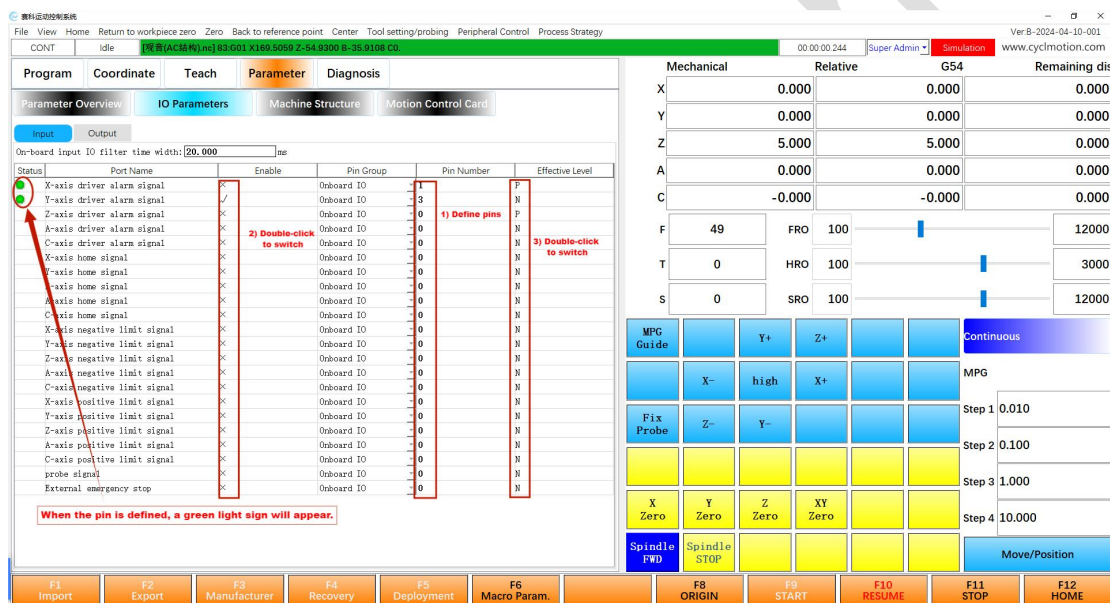
Here is the port number configured based on the fixed input/output signal.

The difference from the hidden function - IO function customization is that the latter uses the port number as a guide to define the input/output signal.

a) IOEnter configuration

After defining the pin number:

- There is a green light sign in the status bar on the left;
- Double-click the enable bar to switch enable (✓) or disable (x);
- Double-click the effective level to switch N or P.
- The pin group can be switched after MODBUS is configured.



b) IO output configuration

After defining the pin number:

- There is a green or red light sign in the status bar on the left, and the status can be switched by double-clicking the mouse.;
- The status of the enable column changes to enabled (✓);
- Double-click the effective level to switch N or P;
- When the system fails, the level can be optionally ignored, N, and P.;
- The relevant M codes are M instructions corresponding to the output signals, as follows, see for details 《M command description》。
 - M3/M4/M5: Spindle forward/Spindle reverse/Spindle stop
 - M8/M9: Coolant on/coolant off
 - M10/M11: Lubricant on / Lubricant off
- The pin group can be switched after MODBUS is configured.

赛科运动控制系统

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [观音(AC结构).nc] 83:G01 X169.5059 Z-54.9300 B-35.9108 C0.

Program Coordinate Teach **Parameter** Diagnosis

Parameter Overview **IO Parameters** Machine Structure Motion Control Card

Input Output

Status	Port Name	Enable	Pin Group	Pin Number	Effective Level	Failure Levels	Related M code
	Spindle forward	✓	Onboard IO	3	P	N	M3/M4/M5
	Spindle reverse	✓	Onboard IO	4	N	Ignore	M3/M4/M5
	Cooling	✓	Onboard IO	5	N	P	M3/M9
	Lubrication	✓	Onboard IO	6	P	Ignore	M10/M11
	Ready indicator (yellow)	×	Onboard IO	0	P	Ignore	
	Run indicator (green)	×	Onboard IO	0	P	Ignore	
	Alarm indicator (red)	×	Onboard IO	0	P	Ignore	
	X-axis servo enable SON	×	Onboard IO	0	P	Ignore	
	Y-axis servo enable SON	×	Onboard IO	0	P	Ignore	
	Z-axis servo enable SON	×	Onboard IO	0	P	Ignore	
	axis servo enable SON	×	Onboard IO	0	N	Ignore	
	C-axis servo enable SON	×	Onboard IO	0	N	Ignore	
	Press roll 1	×	Onboard IO	0	N	Ignore	
	Press roll 2	×	Onboard IO	0	N	Ignore	
	Press roll 3	×	Onboard IO	0	N	Ignore	
	Press roll 4	×	Onboard IO	0	N	Ignore	
	Press roll 5	×	Onboard IO	0	N	Ignore	
	Press roll 6	×	Onboard IO	0	N	Ignore	
	Press roll 7	×	Onboard IO	0	N	Ignore	
	Press roll 8	×	Onboard IO	0	N	Ignore	

4) Defined lighting, double-click to switch status

Defined pin numbers automatically become used

Default is template IO
If MODBUS is defined, it can be switched

1) Click Edit to define pins

2) Double-click to switch

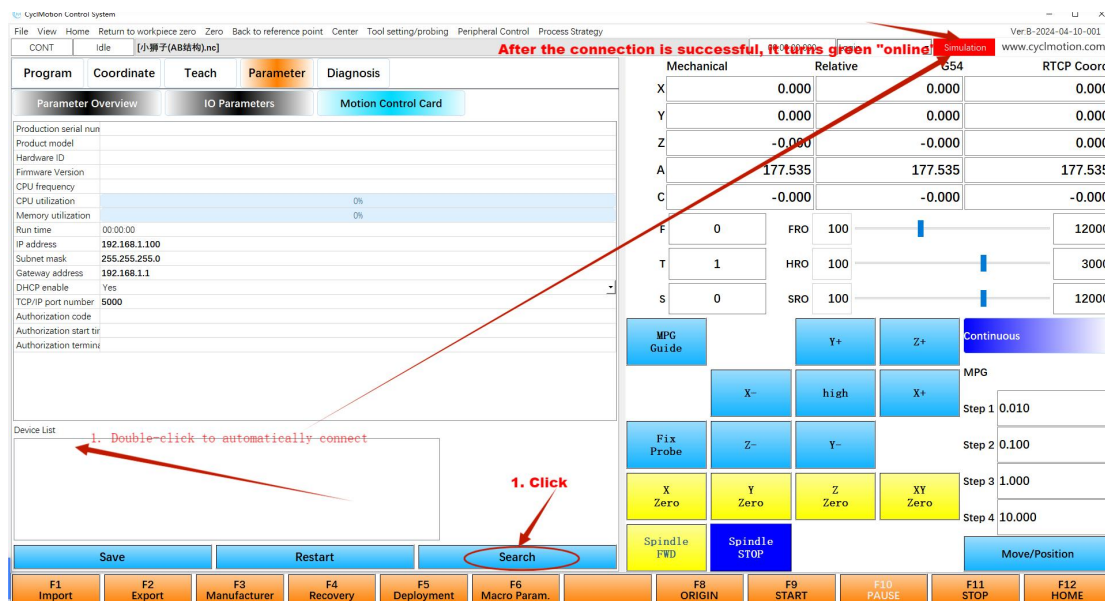
3) optional

3) Motion control card

When online, click Search Devices and existing devices will be listed in the device list. Double-click the device you want to connect to connect.

When the connection to the control card is successful, a successful connection prompt box will pop up and a green "online" will be displayed in the status bar.

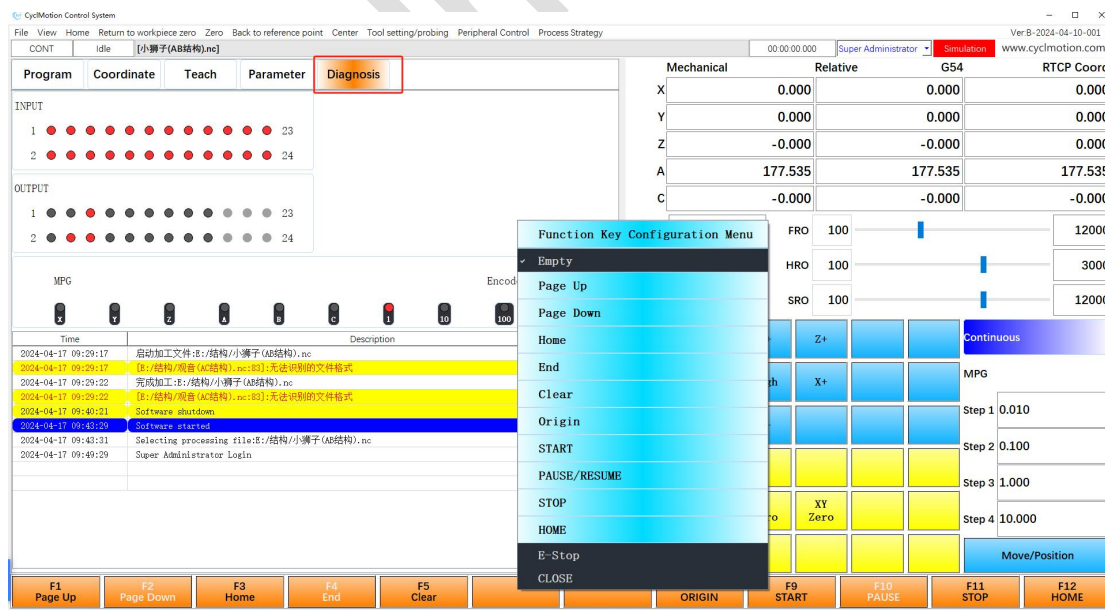
If there are more than 2 hosts connected to the same set of control cards, the first one connected is the main control machine, and the others are monitoring machines. They only have monitoring rights and no control rights. Monitoring opportunities display "Monitoring" (red) to the right of "Online" (green).



4. Diagnosis

At the bottom of the diagnostic page, you can right-click to customize related function keys, as shown below.

All system logs will be recorded here and can be deleted with super administrator privileges.



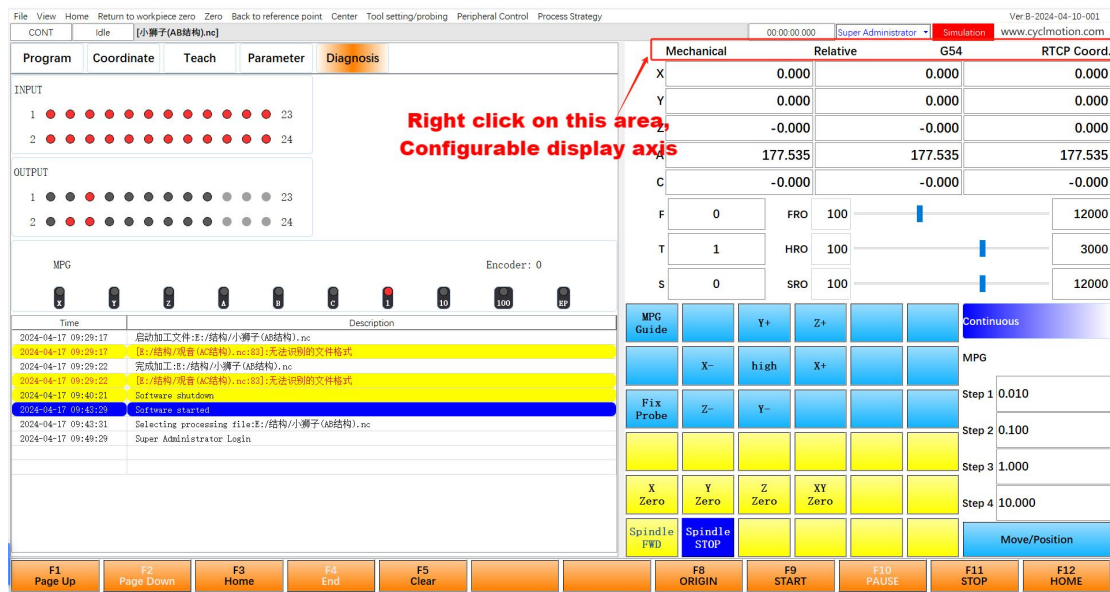
五. Control Area

1. Coordinate display axis configuration

Right-click the mechanical coordinate title bar (picture area) to select the coordinate display axis. The selectable axes match the machine tool structure, that is,

for the four-axis-4th (A), only XYZA can be selected.

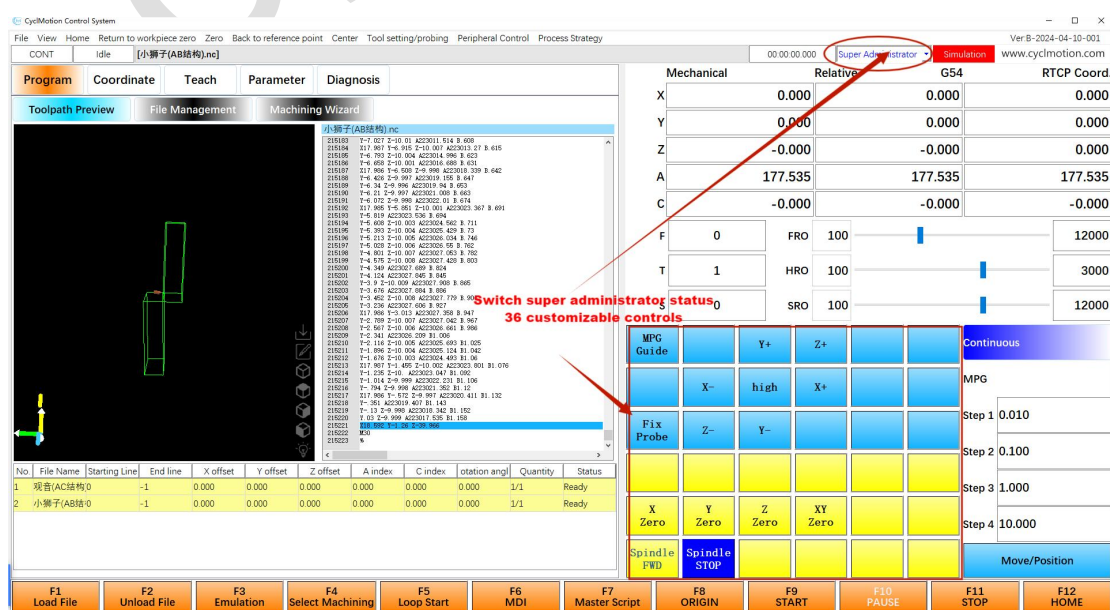
After configuration, the function menu and function key customization and axis-related functions will be updated accordingly.

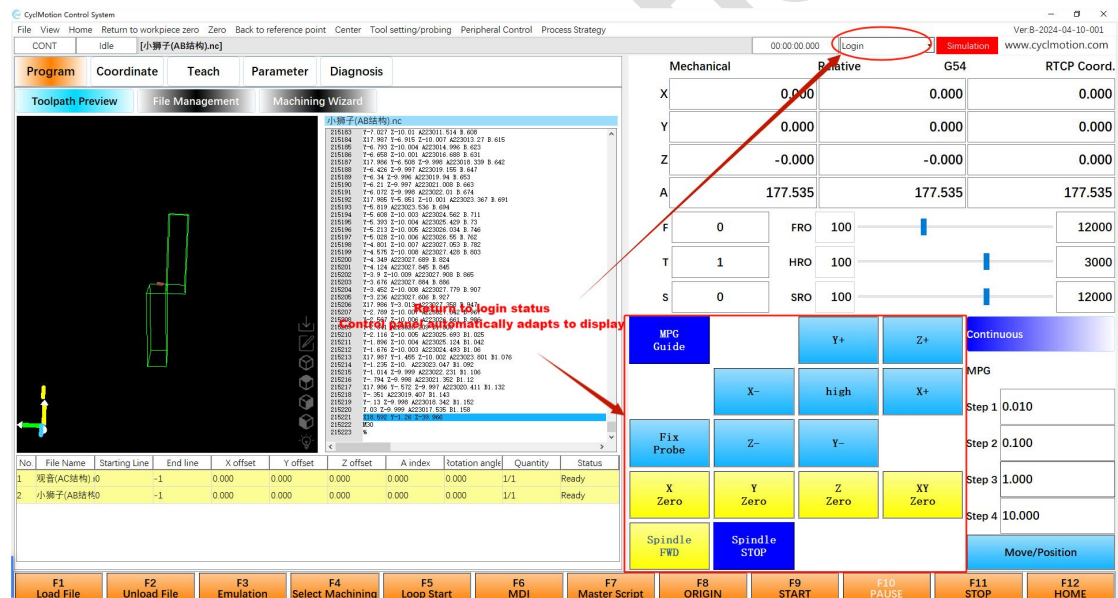
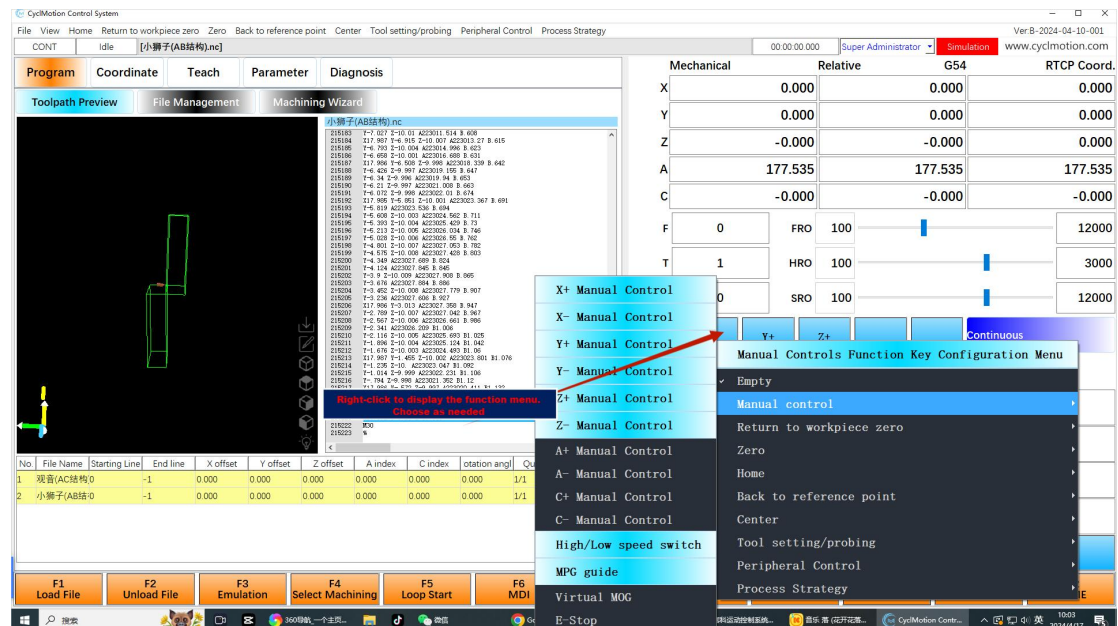


2. Control customization

The functions and positions of controls in the control area can be customized, and up to 36 controls can be displayed:

- 1) Switch to super administrator;
- 2) Right click on each control to select the function;
- 3) Return to login status.





3. Hand wheel guidance

Only valid when online.

Click to switch to handwheel guidance. When selected, it has a dark blue background and enters handwheel guidance mode.

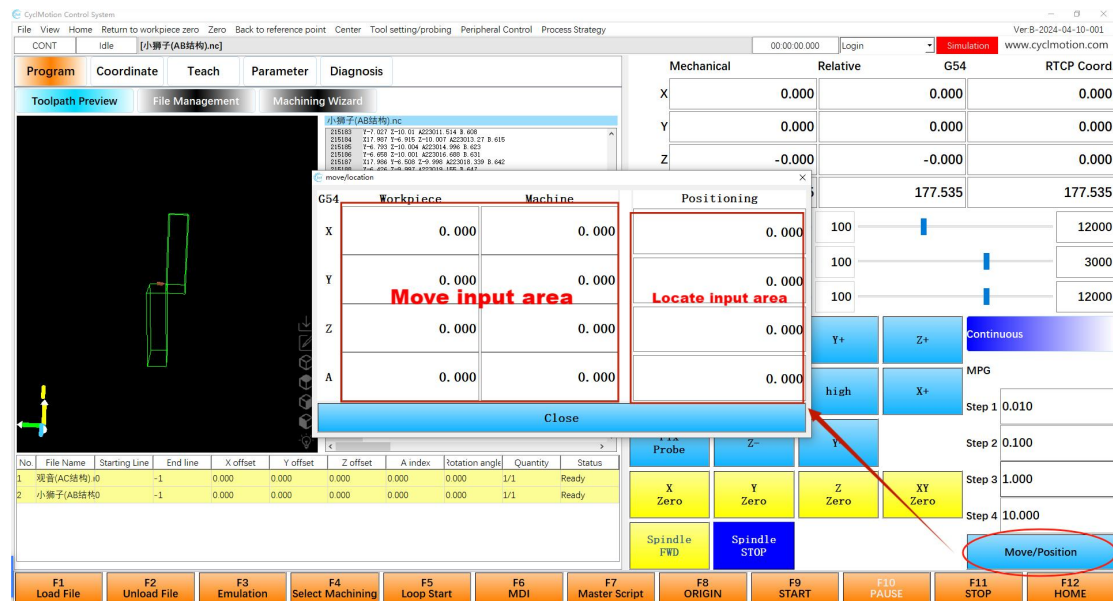
4. Mobile Positioning

The input coordinate values are all absolute coordinate values.

- Click Move/Position and a dialog box will pop up. When editing coordinates, you need to press Enter after entering the value.
- Move: Enter in the workpiece coordinates, that is, move to the specified workpiece coordinate position; enter in the machine coordinates, that is, move

to the specified machine coordinate position.

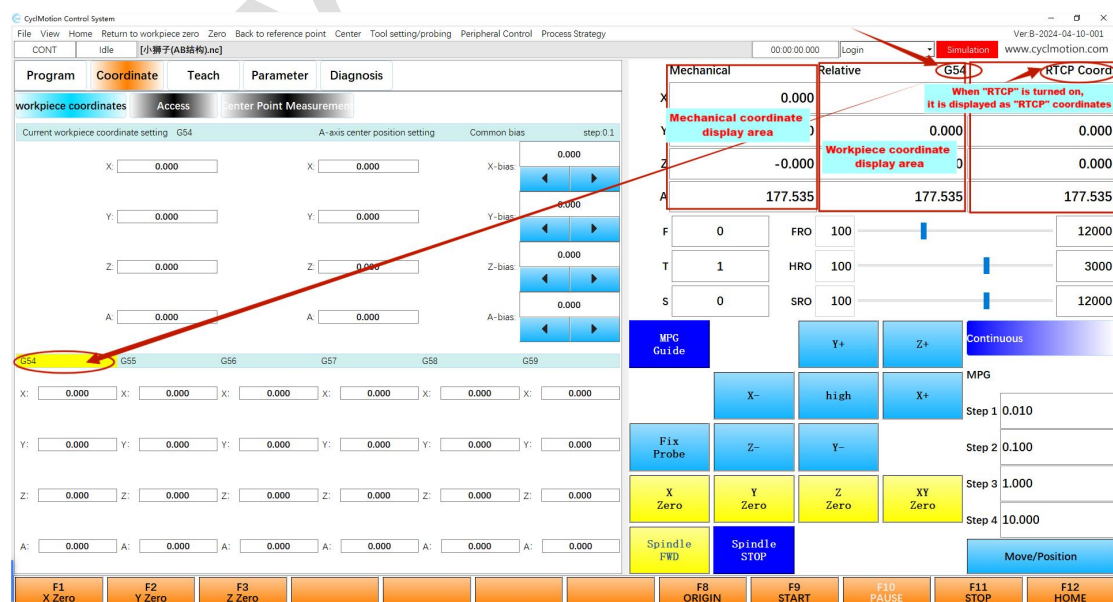
- c) Positioning: After the coordinates are input, the workpiece coordinates will be updated to the position.



5. Other Instructions

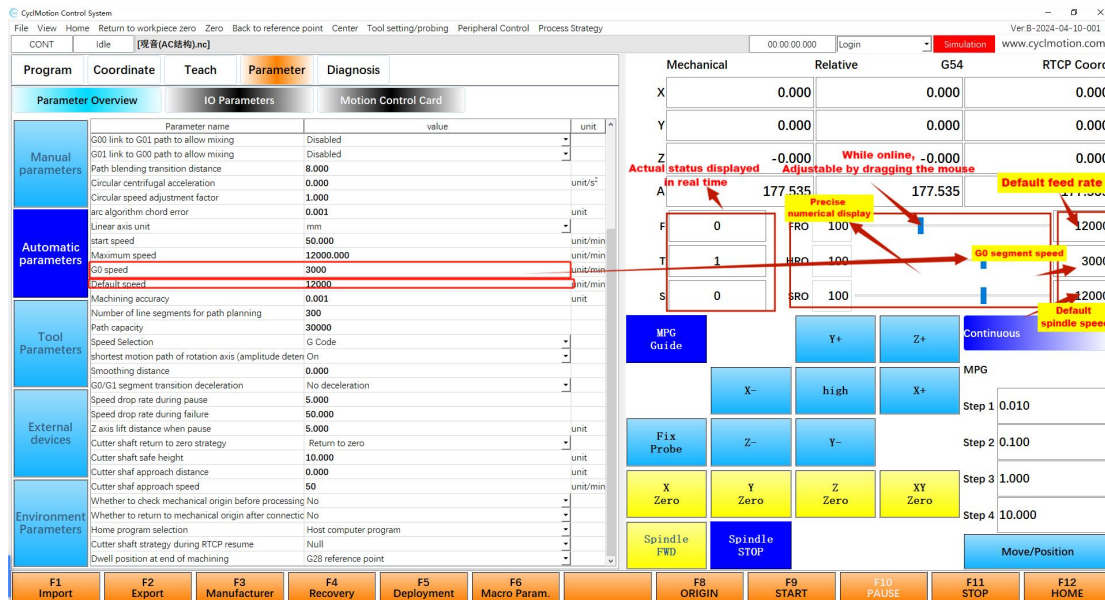
The coordinates display the current mechanical coordinates, workpiece coordinates, and remaining distance. The remaining distance is only displayed when the RTCP function is not turned on. It refers to the distance between the current point and the target point in each G code.

- When RTCP is turned on, "Remaining Distance" will become "RTCP Coordinates".

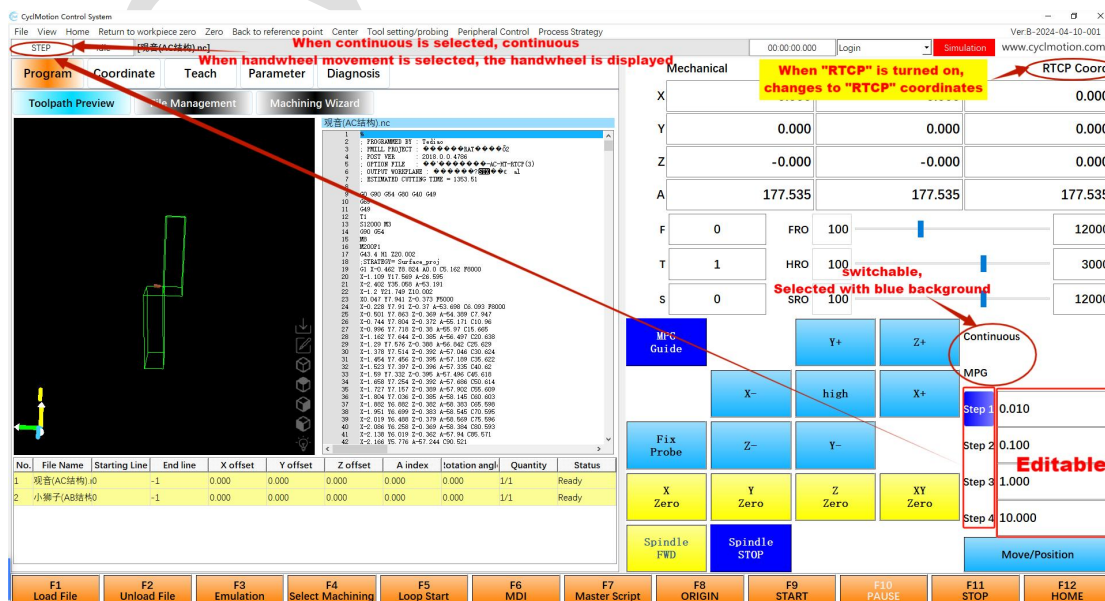


- The feed rate, manual control rate, and spindle rate can be changed by dragging the adjustment bar with the mouse while online, and the values will change accordingly;

- Displayed on the right side of the real-time speed is the default feed rate, which can be set in Parameters - Parameter Overview - Automatic Parameters;
- The speed in the second line on the right is the G0 segment speed, which can be set in Parameters—Parameter Overview—Automatic Parameters.;
- The speed in the third line on the right is the default spindle speed, which is set in Parameters—Parameter Overview—External Devices—Spindle;



- Continuous, handwheel movement, and inching can be switched. The selected one has a blue background, and "continuous", "handwheel" or "inching" is displayed in the status bar.
- There are 4 inching steps available, and the step length of each step can be edited. After editing, press Enter or click elsewhere, and the focus will move to the place where you just edited.



六. Hidden functions

For all hidden functions, press the key combination once to open it and press it again to hide it.

1. Ctrl+Alt+1: Machine tool structure

The machine tool structure subpage appears under the parameter page. In super administrator mode, the machine tool structure and related parameters can be configured.

1) Choose the appropriate machine tool structure type.

Choose according to the actual machine tool structure. If it is a three-axis machine tool, you can choose arbitrarily.

2) Set machine parameters.

Set according to the actual parameters of the machine tool, so that the simulation display corresponds to the actual machine tool.

Calibration methods are provided below for reference.

The machine tool model can be replaced with your own machine tool structure stl file.

CyclMotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle [观音(AC结构).nc]

Program Coordinate Teach **Parameter** Diagnosis

Parameter Overview IO Parameters **Machine Structure** Motion Control Card

4-axis machining: 4th-axis (A) rotate around X-axis

- [0] 4-axis: 4th-axis (A) rotate around X-axis
- [1] 4-axis: 4th-axis (A) swings around X-axis
- [2] 4-axis: 4th-axis (B) rotate around Y-axis
- [3] 4-axis: 4th-axis (B) swings around Y-axis
- [4] 4-axis: 4th-axis (A) rotate around Y-axis
- [5] 4-axis: 4th-axis (A) swings around Y-axis
- [6] 5-axis: Single turntable (B) single swing head (A)
- [7] 5-axis: Single turntable (A) single swing head (B)
- [8] 5-axis: Single turntable (C) single swing head (A)
- [9] 5-axis: Single turntable (C) single swing head (B)
- [10] 5-axis: AB double swing head
- [11] 5-axis: BA double swing head
- [12] 5-axis: CA double swing head
- [13] 5-axis: CB double swing head
- [14] 5-axis: AC dual turntable
- [15] 5-axis: BC dual turntable
- [16] 5-axis: AB dual turntable
- [17] 5-axis: BA dual turntable
- [18] 6-axis: Gimbal structure

Origin Bias	X	Y	Z	A	B	C
Machine coordinate:	0.000	0.000	0.000	0.000	0.000	0.000
4th-axis origin	0.000	0.000	0.000	0.000	0.000	0.000
Tool offset	0.000	0.000	0.000	0.000	0.000	0.000

Fixed tool setting

[4-axis machining: 4th-axis (A) rotate around X-axis] Coordinate system construction flow:

STEP1 Set 4th-axis zero: After axis is rotated to zero, input 0 in [machine coordinates] of A axis;

STEP2 Set the tool offset. Z-axis tool offset can be measured by [fixing probing];

STEP3 Set 4th-axis origin. Move tool tip to the center line of 4th-axis and dbclick [4th-axis origin] to set;

STEP4 Set G54-G59. For example, G54. Tool tip move to workpiece origin. Then dbclick [G54 origin] to set;

Different structures have corresponding descriptions

Fixed tool setting pop-up window:

Parameter setting window

Fixing probing parameter set

Parameter number	Parameter name	value	description	unit
0	Measuring location	G30F3 reference point	Reference points can be set in Reference Point Parameters	col
1	Safety height	-0.500	Machine coordinate system	unit
2	Probing speed	100.000		unit/min
3	Back off distance	3.000		unit
4	Probing times	3		
5	probing speed decay ratio	0.800	For each additional probing, the probing speed is reduced by th	

Click to edit

Operating Instructions:
 1. Tool sensor is mounted in fixed position on machine, HOME is required before probing;
 2. Check the z-axis probe signal;
 3. Enter this page and set the relevant parameters correctly;
 4. Press [OK] to start fixed probing. The process is as follows:
 4.1 rise Z-axis to safe height;
 4.2 first move XY-axis, then move Z-axis to probing position;
 4.3 downward at probing feedrate, when probe signal checked, Z-axis stop motion;
 4.4 Write Z-axis mach coordinates to Z-axis tool offset;
 4.5 then Z-axis back and fixed probing is finished.
 Note:
 1. When the position of tool sensor on machine changes, please perform fixed probing!.

OK Cancel

2. Ctrl +Alt+0: IO Function customization

The IO function customization subpage appears under the parameter page for IO port customization. Including input IO and output IO two sub-pages.

The port number column is divided into green and red. Green means connected and red means disconnected.

1) EnterIO

- Click the port description (i.e. port name) to edit, and you can customize the port name;
- Button configuration is only useful when the input port is configured as a button, otherwise it is ignored. Optional normally open, normally closed, edge.
- Signal strategy optional:
 - NO
 - Warning only: Alarm when the policy status is not met;
 - Warning reset: Warn and reset when the policy status is not met.;
 - Warning and suspension: Warn and suspend when the policy status is not met;
 - Execute code: Execute the code file in the right column when the policy status is not met;
- The policy status can be switched on or off;
- Duration editable;
- Click the code file to open it for editing, but you need to configure the external text editor first in Parameters - Parameter Overview - Environment Parameters - External Text Editor.

Cyclmotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle

Program Coordinate Teach **Parameter** Diagnosis

Parameter Overview IO Parameters **IO customization** Machine Structure Motion Control Card

Input IO Output IO **Only takes effect when the position is a button**

Port number	Port Description	Related M code	Key Configuration	Signaling Policy	Strategy Status	Duration ms	Code file
Port1	X	M500 wait turn on/	Normally open	Alarm only	Disconnect	0	input/in1.nc
Port2	Y	M502 wait turn on/	Normally close	Alarm reset	Connecting	0	input/in2.nc
Port3	IN3	M504 wait turn on/	Edge	Alarm pause	Connecting	0	input/in3.nc
Port4	IN4	M506 wait turn on/	Normally open	Execute Code	Connecting	0	input/in4.nc
Port5	IN5	M508 wait turn on/	Normally open	None	Connecting	0	input/in5.nc
Port6	IN6	M510 wait turn on/	Normally open	None	Connecting	0	input/in6.nc
Port7	IN7	M512 wait turn on/	Normally open	None	Connecting	0	input/in7.nc
Port8	IN8	M514 wait turn on/	Normally open	None	Connecting	0	input/in8.nc
Port9	IN9	M516 wait turn on/	Normally open	None	Connecting	0	input/in9.nc
Port10	IN10	M518 wait turn on/	Normally open	None	Connecting	0	input/in10.nc
Port11	IN11	M520 wait turn on/	Normally open	None	Connecting	0	input/in11.nc
Port12	IN12	M522 wait turn on/	Normally open	None	Connecting	0	input/in12.nc
Port13	IN13	M524 wait turn on/	Normally open	None	Connecting	0	input/in13.nc
Port14	IN14	M526 wait turn on/	Normally open	None	Connecting	0	input/in14.nc
Port15	IN15	M528 wait turn on/	Normally open	None	Connecting	0	input/in15.nc
Port16	IN16	M530 wait turn on/	Normally open	None	Connecting	0	input/in16.nc
Port17	IN17	M532 wait turn on/	Normally open	None	Connecting	0	input/in17.nc
Port18	IN18	M534 wait turn on/	Normally open	None	Connecting	0	input/in18.nc
Port19	IN19	M536 wait turn on/	Normally open	None	Connecting	0	input/in19.nc
Port20	IN20	M538 wait turn on/	Normally open	None	Connecting	0	input/in20.nc
Port21	IN21	M540 wait turn on/	Normally open	None	Connecting	0	input/in21.nc
Port22	IN22	M542 wait turn on/	Normally open	None	Connecting	0	input/in22.nc
Port23	IN23	M544 wait turn on/	Normally open	None	Connecting	0	input/in23.nc
Port24	IN24	M546 wait turn on/	Normally open	None	Connecting	0	input/in24.nc

Green is connected, Red is disconnected

Name is editable

Double-click to edit (prerequisite is to configure an external text editor)

2) Out put IO

- Click the port description (i.e. port name) to edit, and you can customize the port name;
- There are 3 control strategies available: unlimited, only M code control allowed during operation, and no control allowed when the spindle is turned on;
- Mouse control is disabled by default. If you choose to enable it, you can directly control the port status by clicking the port number bar area with the mouse.;
- Status when a fault occurs: maintain, disconnect, and connect optional.

CyclMotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle X

Program Coordinate Teach **Parameter** Diagnosis

Parameter Overview IO Parameters **IO customization** Machine Structure Motion Control Card

Input IO Output IO

If you choose to enable mouse control, click the port number bar area with the mouse. Can directly control port status

Port number	Port Description	Related M code	Control Strategy	Mouse control	Status in case of failure
Port1	OUT1	M550 on/M551 off	Only M-code control all	Enable	Disconnect
Port2	OUT2	M552 on/M553 off	Control not allowed whe	Disable	Connecting
Port3	xxx	M554 on/M555 off	Unlimited	Disable	Hold
Port4	OUT4	M556 on/M557 off	Unlimited	Disable	Hold
Port5	OUT5	M558 on/M559 off	Unlimited	Disable	Hold
Port6	OUT6	M560 on/M561 off	Unlimited	Disable	Hold
Port7	OUT7	M562 on/M563 off	Unlimited	Disable	Hold
Port8	OUT8	M564 on/M565 off	Unlimited	Disable	Hold
Port9	OUT9	M566 on/M567 off	Unlimited	Disable	Hold
Port10	OUT10	M568 on/M569 off	Unlimited	Disable	Hold
Port11	OUT11	M570 on/M571 off	Unlimited	Disable	Hold
Port12	OUT12	M572 on/M573 off	Unlimited	Disable	Hold
Port13	OUT13	M574 on/M575 off	Unlimited	Disable	Hold
Port14	OUT14	M576 on/M577 off	Unlimited	Disable	Hold
Port15	OUT15	M578 on/M579 off	Unlimited	Disable	Hold
Port16	OUT16	M580 on/M581 off	Unlimited	Disable	Hold
Port17	OUT17	M582 on/M583 off	Unlimited	Disable	Hold
Port18	OUT18	M584 on/M585 off	Unlimited	Disable	Hold

Name is editable

Green is connected
Red is disconnected

3. Ctrl +Alt+9: Teach

A teaching page appears in the main page bar to realize parameterized programming.

1) Instructions

- Choose different instructions and set parameters according to your needs;
- Click Generate Line of Code, and the instruction line will be generated on the Tutorial-Program subpage.;
- After all command lines are completed, click Load Code and it will be loaded in the G code display area of the main page.。

Note: Function keys at the bottom of the teaching-program page:

- Previous item/next item, previous page/next page, insert, delete, copy, and paste are operations performed on the command line of the current program.。
- New, open, and save are operations on the current program.。
- New will prompt you to save the current program, otherwise it will be cleared.。

- d) The saving path can be defined arbitrarily. If the saving is successful, a prompt box "File has been saved" will appear.。

Notice:

- When there are multiple lines of code, if the speed is set previously, subsequent programs will follow the speed specified most recently.。
- If the entire speed remains unchanged, there is no need to set it here. It will move according to the default moving feed speed (in the parameters);

CyclMotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle X

Program Coordinate Teach Parameter Diagnosis **Step 1: Select the command**

Program Recipe

No. Program body

1 G91G01X30

2

3

4

5

6

7

8

9

10

Step 4: After all instructions are completed, click to load the code

Previous Item Next item Previous Page Next Page

Insert Delete Copy Paste

New Open Save Load Code

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Linear Motion Parameter Setting

Parameter Name	Parameter value	Data Source
Programming Mode	relative position	
<input checked="" type="checkbox"/> Select X-axis Programming	30.000	Value
<input type="checkbox"/> Select Y-axis Programming	0.000	Value
<input type="checkbox"/> Select Z-axis Programming	0.000	Value
<input type="checkbox"/> Select A-axis Programming	0.000	Value
<input type="checkbox"/> Select Speed	500	Value
<input type="checkbox"/> Select Program line number	1	

Step 2: Configure parameters

Step 3: Click

Generate code line

2) Recipe parameter application

There are two types of data sources, directly specifying values or indexing with recipe parameters. Recipe parameters can be set on the recipe parameter table page.。

The recipe parameter function is equivalent to introducing variables into the instruction. Flexible use of the recipe function can increase the versatility of the program and reduce the amount of program changes.。

- The number of parameters can be edited. If you change the number, the number

in the list below will change accordingly. You can click "Previous Page" below , "Next page" to turn the page to view.

- The parameter name can be customized. After the name is changed, the command page options will also be changed accordingly to facilitate identification.
- Parameter value can be edited by clicking on it.
- Each set of parameter values can be saved as a recipe, and different recipes can be loaded into different plans. Save path can be customized.

Take the linear motion command as an example, see the figure below.

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle X

Program Coordinate Teach Parameter Diagnosis

3) Enter the recipe parameter table page and define the parameter name

Program Recipe

Recipe sheet parameters number: 20

The number of parameters can be set

No.	Parameter Name	Parameter value
1	Parameter1	0.000
2	depth	5.000
3	Parameter1	0.000
4	Parameter4	0.000
5	Parameter5	0.000
6	Parameter6	0.000
7	Parameter7	0.000
8	Parameter8	0.000
9	Parameter9	0.000
10	Parameter10	0.000

Name is editable Click to edit

The parameter table set for each group can be saved
Load it when needed
Save path can be customized

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Linear Motion Parameter Setting

	Parameter Name	Parameter value	Data Source
Programming Mode	Absolute position		
<input checked="" type="checkbox"/> Select X-axis Programming	Parameter1		Recipe Parameter
<input checked="" type="checkbox"/> Select Y-axis Programming	-0.333		Value
<input checked="" type="checkbox"/> Select Z-axis Programming	0.000		Value
<input checked="" type="checkbox"/> Select A-axis Programming	0.000		Value
<input checked="" type="checkbox"/> Select Speed	500		Value
<input type="checkbox"/> Select Program line number	1		

2) Select parameters

1) Select the recipe parameter index item

Previous Page Load recipe Copy

Next Page Save recipe Paste

Generate code line

CyclMotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle X

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	G90G01X20
2	G90G01X2Y-0.333Z0A0F500
3	G90G01X2Y-0.333Z0A0F500
4	
5	
6	
7	
8	
9	
10	

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Linear Motion Parameter Setting

Parameter Name	Parameter value	Data Source
Programming Mode	Absolute position	
<input checked="" type="checkbox"/> Select X-axis Programming	Parameter1	Recipe Parameter
<input checked="" type="checkbox"/> Select Y-axis Programming	-0.333	Value
<input checked="" type="checkbox"/> Select Z-axis Programming	0.000	Value
<input checked="" type="checkbox"/> Select A-axis Programming	0.000	Value
<input checked="" type="checkbox"/> Select Speed	500	Value
<input type="checkbox"/> Select Program line number	1	

According to the speed defined in the parameter, move linearly to the (20, depth, 50) workpiece coordinate position, and the depth is based on the value defined by the depth in the parameter table.

If you need to change the speed and depth, you only need to change the corresponding values in the recipe parameter table.

Previous Item Next item Previous Page Next Page

Insert Delete Copy Paste

New Open Save Load Code

Generate code line

3) Instructions introduction

When the display is incomplete, you can drag to the right to adjust the size of the main page.

a) Linear motion command

- Move straight to the specified position at the specified speed;
- When the data source selects a value, you can enter it directly, or you can click the icon on the right to grab the current position. The same below;
- Can move 4 axes at the same time. The same below;
- Modes can be selected: workpiece absolute position, relative position, mechanical absolute position;
- Axes 1-4 here correspond to the XYZA axis respectively. The same below;
- The program line number only needs to be set when conditional jump is required. After selection, Nxx (xx is the line number) will be added before this instruction. The same below;

CyclMotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle X

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No. Program body

1 G90G01X20

2 G90G01X2Y-0.333Z0A0F500

3 G90G01X2Y-0.333Z0A0F500

4 G90G01X20Y0Z50A0F#1550.item[1]

5 G90G01X20Y30Z50A0F500

6

7

10

Move straight line at 500 speed to Workpiece coordinates (20, 30, 50)

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Linear Motion Parameter Setting

Parameter Name	Parameter value	Data Source
Programming Mode	Absolute position	
<input checked="" type="checkbox"/> Select X-axis Programming	20.000	Value
<input checked="" type="checkbox"/> Select Y-axis Programming	30.000	Value
<input checked="" type="checkbox"/> Select Z-axis Programming	50.000	Value
<input checked="" type="checkbox"/> Select A-axis Programming	0.000	Value
<input checked="" type="checkbox"/> Select Speed	500	Value
<input type="checkbox"/> Select Program line number	1	

Click to grab the current location coordinates

After completing the input, click

Generate code line

Previous Item Next item Previous Page Next Page

Insert Delete Copy Paste

New Open Save Load Code

b) Arc motion command

- Draw an arc at the specified speed and move to the specified position;
- Can specify whether it is a convex arc or a concave arc.

CyclMotion Control System

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

STEP Idle X

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	G90G01X20
2	G90G17G02X50Y100R10
3	G90G17G03X50Y100R10
4	G90G17G03X50Y100R10
5	G90G17G03X50Y100Z-30A-1R10F500
6	
7	
8	
9	
10	

Move on the XY plane at a speed of 500 in an arc with a radius of 10 to the position of (50, 100, -30, -1)

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Circular motion parameter setting

Parameter Name	Parameter value	Data Source
Programming Mode	Absolute Position	
Arc Shape	Convex	
Arc Plane	X-Y plane	
<input checked="" type="checkbox"/> Select X-axis Program pos	50.000	
<input checked="" type="checkbox"/> Select Y-axis program pos	100.000	
<input checked="" type="checkbox"/> Select Z-axis Program pos	-30.000	
<input checked="" type="checkbox"/> Select A-axis Program pos	-1.000	
Arc radius	10.000	
<input checked="" type="checkbox"/> Select Speed	500	Value
<input type="checkbox"/> Select Program line number	1	

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Insert Delete Copy Paste

New Open Save Load Code

Generate code line

c) Detection command

- Detect signals in the direction of the selected axis at a specified speed;
- The detection distance can be edited by clicking on it. If you need unlimited detection, you can enter a large enough distance.;
- When the detection signal source is a numerical value, you can pull down to select the input signal IN1-24, which corresponds to the input port number. The name can be changed in the hidden function-IO function customization;
- Stop mode when a signal is detected, including immediate stop and deceleration stop;

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CONT Idle

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	G91G31X100P1L0Q1K1F50
2	
3	
4	
5	
6	
7	
8	
9	
10	

In the X-axis direction, detect 100mm at a speed of 50, and stop immediately after receiving the signal that the IN1 input port is connected.

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New Open Save Load Code

Linear Motion Circular Motion **Probe**

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Probe Parameter Settings

Parameter Name	Parameter value	Data Source
Probe Axis Selection	X-axis	
Probe distance	100.000	
Probe source	IN1	Value
Probe signal active level	On	
Stop mode when signal is	Immediate stop	
Probe speed	50	Value
Select Program line number	1	

Generate code line

d) Set coordinate system command

- Change the current workpiece coordinates;

SECO 모션 제어 시스템

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	G90G92X100Y20Z50
2	
3	
4	
5	
6	
7	
8	
9	
10	

Set the current coordinates to 100, 20, 50

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New Open Save Load Code

Linear Motion Circular Motion **Probe**

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Setting Coordinate Parameter Settings

Parameter Name	Parameter value	Data Source
Select X-axis Workpiece Coord.	100.000	
Select Y-axis Workpiece Coord.	20.000	
Select Z-axis Workpiece Coord.	50.000	
Select A-axis Workpiece Coord.	0.000	
Select Program line number	1	

Generate code line

e) IOOutput integration instructions

- The output signal source pull-down selectable output port number, the name can be changed in the hidden function-IO function customization;
- Tip: You can select a recipe as the data source of the output signal source, and define the signal name in the recipe parameters for easy identification. In this way, when the port is replaced, only the parameter values need to be changed, and no instructions need to be modified.

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	M51X1Y1P2000000
2	
3	
4	
5	
6	
7	
8	
9	
10	

The output port OUT1 is connected with a delay of 2 seconds.

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New Open Save Load Code

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

IO Output Parameter Setting

Parameter Name	Parameter value	Data Source
Output signal source	OUT1	Value
Output level	Connect	
Delay time after output (s)	2.000	Value
<input type="checkbox"/> Select Program line number	1	

Generate code line

f) IO Enter integration instructions

- If the judgment time is 0, it means waiting forever. If it is set to 5, it will wait for 5 seconds and then follow the timeout processing policy.;
- The filtering time width is generally 20 by default.;
- Timeout processing strategy can optionally continue running or stop running.;

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	M61X2Y0P0E20000Q1
2	
3	
4	
5	
6	
7	
8	
9	
10	

Waiting forever, input port IN2 turn-on signal

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Linear Motion Circular Motion Probe

Set coordinate IO Output **IO Input**

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

IO Input Parameter Setting

Parameter Name	Parameter value	Data Source
Input Signal Source	IN2	Value
Desired Level	On	
Discriminate time limit (s)	0.000	Value
Filter time width (ms)	20.000	Value
Timeout policy	Stop running	

☐ Select Program line number 1

Generate code line

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	M61X2Y0P5000000E20000Q1
2	
3	
4	
5	
6	
7	
8	
9	
10	

Wait for the turn-on signal of input port IN2 within 5 seconds, If it is not received for more than 5 seconds, it will stop running.

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New Open Save Load Code

Linear Motion Circular Motion Probe

Set coordinate IO Output **IO Input**

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

IO Input Parameter Setting

Parameter Name	Parameter value	Data Source
Input Signal Source	IN2	Value
Desired Level	On	
Discriminate time limit (s)	5.000	Value
Filter time width (ms)	20.000	Value
Timeout policy	Stop running	

☐ Select Program line number 1

Generate code line

g) Delay command

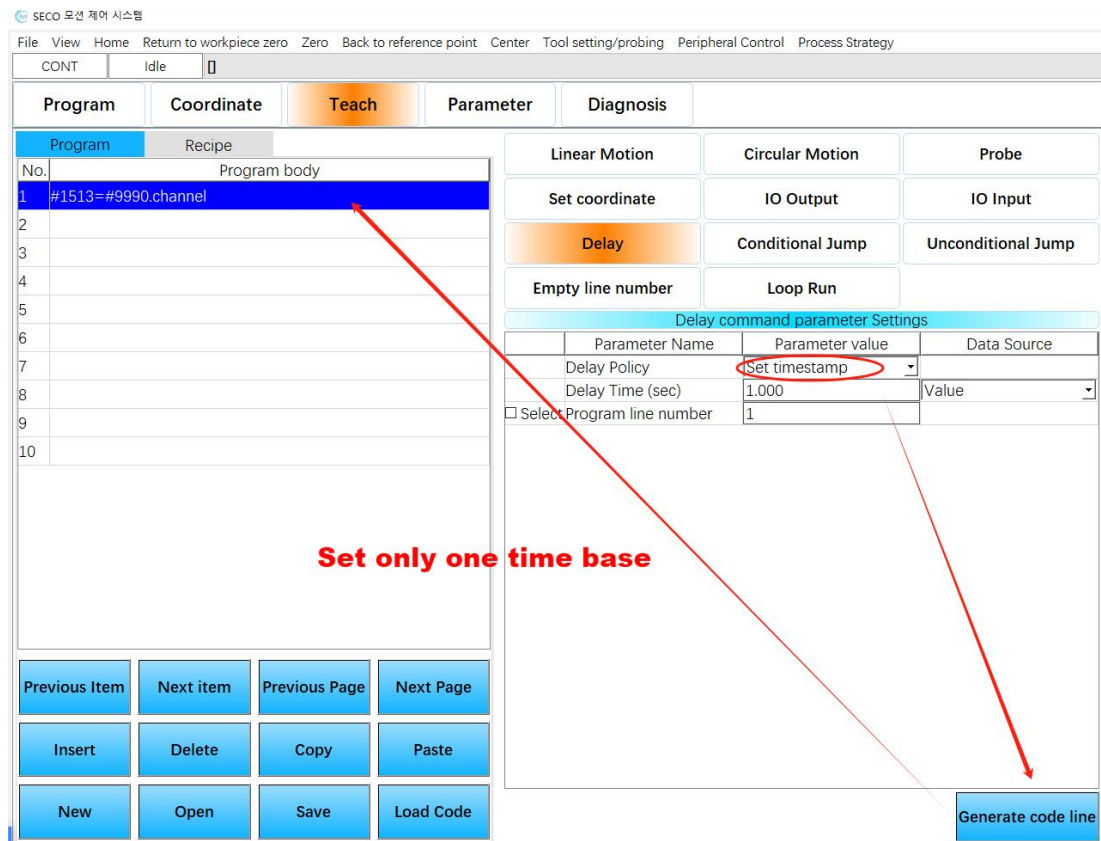
Generate delay instructions.

Delay strategy optional:

- Single line delay: Start timing with this instruction line, delay for the set

time, and continue to execute the next instruction.;

- Set timestamp: use this command line time as the reference point and use it with paragraph delay. The pause time setting is ignored under this policy;
- Paragraph delay: The delay time is the time from "set timestamp".



h) conditional jump instruction

- When the condition is met, jump to the specified line; when the condition is not met, execute the following instructions sequentially.

File View Home Return to workpiece zero Zero Back to reference point Center Tool setting/probing Peripheral Control Process Strategy

CONT Idle [小狮子(AB结构).nc]

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	IF#1022.item[2]==1GOTO2
2	
3	
4	
5	
6	When the input port IN3 is equal to 1, jump to N2
7	
8	
9	N2
10	Jump to N2 when the condition is met

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New Open Save Load Code

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

Empty line number Loop Run

Conditional Jump Parameter Setting

Parameter Name	Parameter value	Data Source
Conditional left expression (input IO source when val	IN3	Value
Conditional Operator	equal	
Conditional right expression	1	Value
Jump line number	2	
<input type="checkbox"/> Select Program line number	1	

Generate code line

- i) Unconditional jump instruction
- Generate GOTO instructions。

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CONT Idle [小狮子(AB结构).nc]

Program Coordinate Teach Parameter Diagnosis

Program Recipe

No.	Program body
1	GOTO3
2	
3	
4	
5	
6	
7	
8	N2
9	N3
10	

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New Open Save Load Code

Linear Motion Circular Motion Probe

Set coordinate IO Output IO Input

Delay Conditional Jump Unconditional Jump

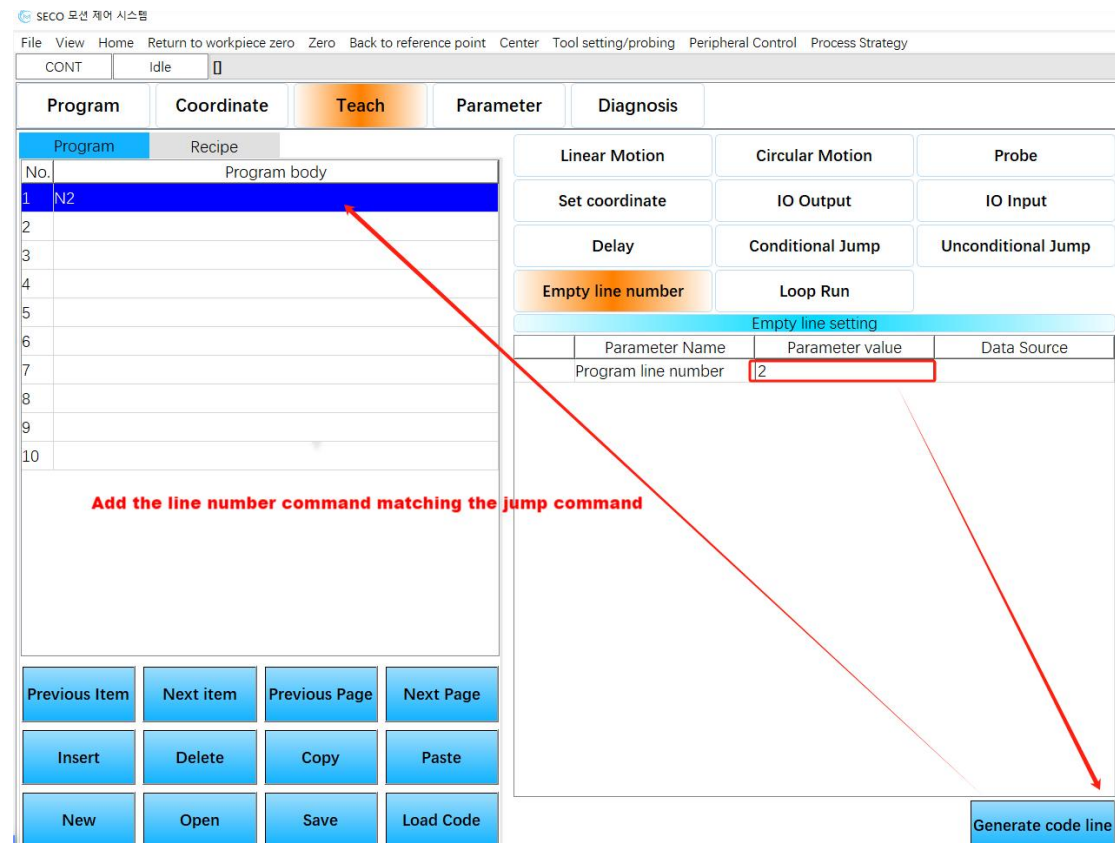
Empty line number Loop Run

Unconditional jump parameter settings

Parameter Name	Parameter value	Data Source
Jump line number	3	
<input type="checkbox"/> Select Program line number	1	

Generate code line

- j) Blank line number
- Generate jump line number instruction Nxx (xx is the jump line number)。



k) Loop operation instructions

- There is no setting content. Click directly to generate the code line to complete adding the loop operation instruction.;
- Note that this instruction can only be used at the end, and only loops all instructions before this one.;
- Click the "Cycle Start" function key on the home page, or select the function menu "Processing Strategy" - Cycle Processing, and you can configure the number of cycles;

The screenshot shows the CNC control software interface with the 'Teach' mode selected. The 'Program' tab is active, and the 'Program body' table contains the following G-code instructions:

No.	Program body
1	G90G92X100Y20Z50
2	M51X1Y1P2000000
3	M61X2Y0P5000000E20000Q1
4	G90G17G02X0Y0R10
5	
6	Execute the above instructions in a loop
7	
8	M47
9	
10	

A red box highlights the first four lines of code, and a red arrow points from this box to the 'Execute the above instructions in a loop' button. Another red arrow points from the 'Generate code line' button to the 'Loop Run' button. The 'Loop Run' button is highlighted in orange. The 'Parameter' tab is also visible, showing 'Loop Run Parameter Setting'.