HCFA

HCServoWorks User Manual

目录

Chapter 1 Introduction

1.1 Software Operating Requirements

CPU： A 32-bit (x86) or 64-bit (x64) processor with a clock speed of 1 GHz or higher
RAM： 1 GB
Available Hard Disk Space： Minimum 500 MB
Display: Minimum resolution of 1280 x 800 pixels
OS: Windows 10 (32-bit or 64-bit version) or later

1.2 Software Interface

1.2.1 Window Title

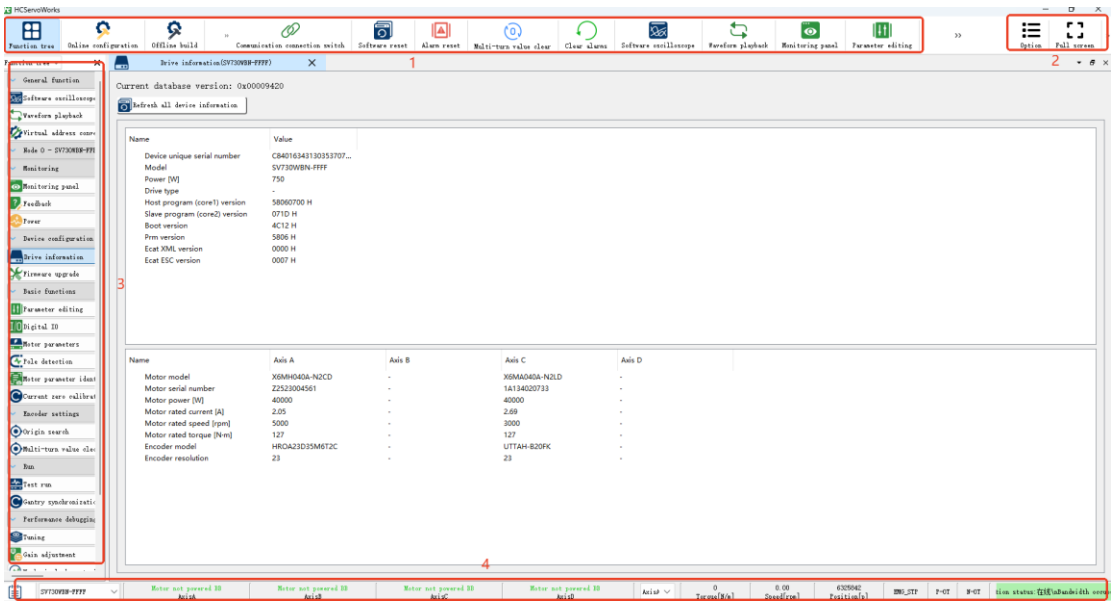


Figure1-1

In Figure 1-1

1) **Quick Access Toolbar:** Includes Online Configuration, Offline Build, Close Project, Communication Connection Swich, Software Reset, Alarm Reset, Multi-turn Value Clear, Software oscilloscope,Clear alarms, Waveform Playback, Monitoring Panel, Parameter Editing, Jog Operation, and Tuning.
2) **Auxiliary Menu Bar:** Includes Options, Full Screen.
3) **Function Navigation Bar:** Includes Parameter Editing, Monitoring Panel, Oscilloscope, Jog Operation, Tuning, Drive Information, Motor Parameters, and more.
4) **Status Bar:** Displays model switching, status of each servo axis, and the connection

status between HCServoWorks and the servo drives, among other information.

1.2.2 Basic Operations of the Auxiliary Menu Bar

1) Options Function

In the General Settings, you can customize the theme, icons, interaction behavior,display preferences, and shortcut commands.

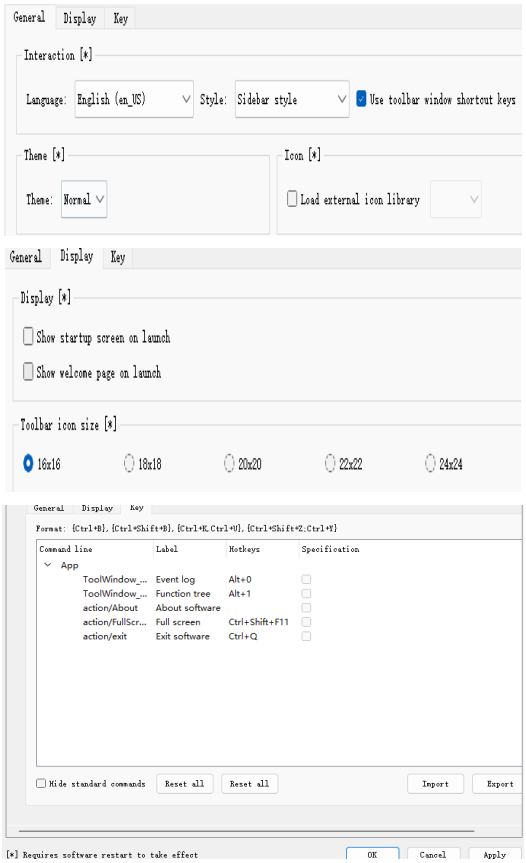


Figure1-2

In the Event log settings, you can adjust the font style, font size, and the maximum number of displayed lines.

Figure1-3

In the Debug Settings, you can enable or disable automatic project building and automatic reading of Pn parameters.

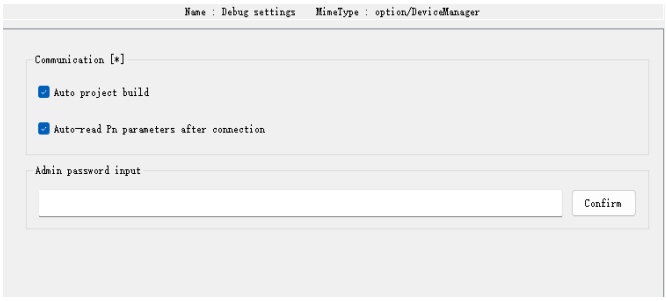


Figure1-4

2） Full Screen Function: Allows the software window to be displayed in full-screen mode.

Figure1-5

3） About Software Function: Allows you to view the current version of HCServoWorks.

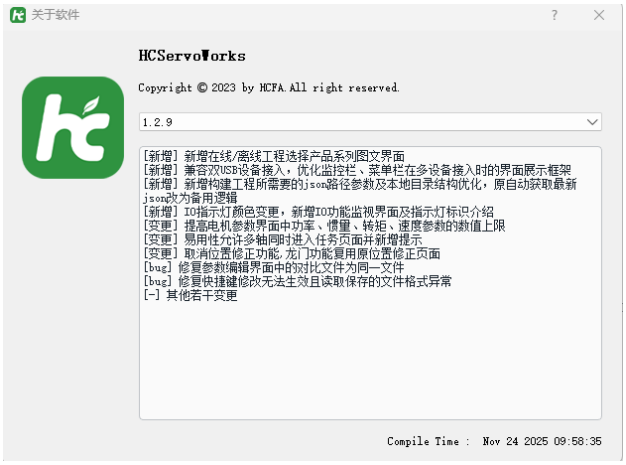


Figure1-6

1.3 Quick Access Toolbar

After successfully establishing a connection between HCServoWorks and the servo drive, you can select basic functions from the menu bar to navigate to the corresponding interface or execute the associated operations.

Figure1-7

1.4 Basic Functions

The main functions of HCServoWorks include:

1) Configuring the servo drive, such as parameter setup

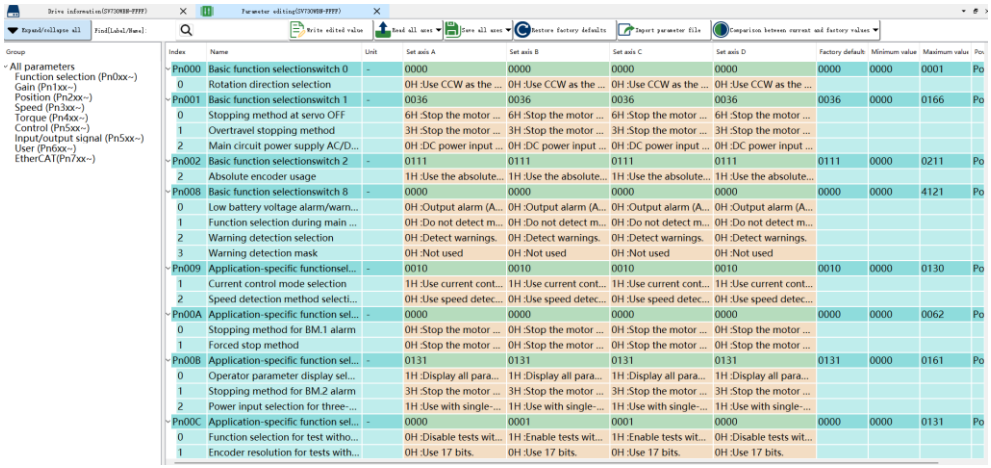


Figure1-8

2) Status monitoring

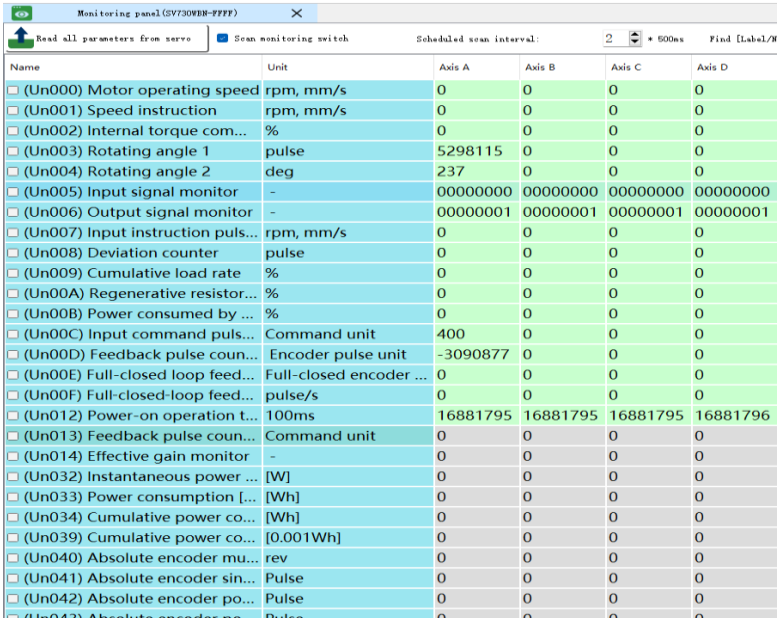


Figure1-9

3) Jog operation

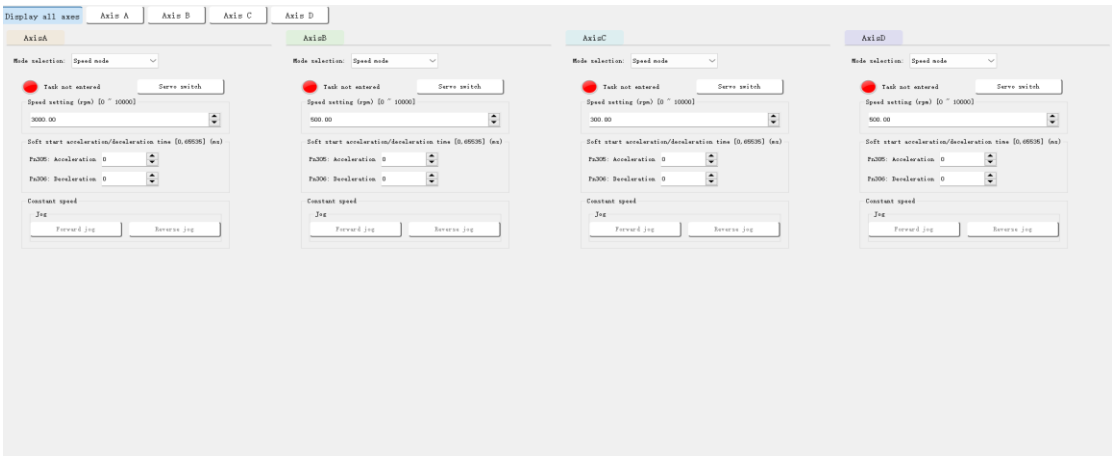


Figure1-10

4) Fault management

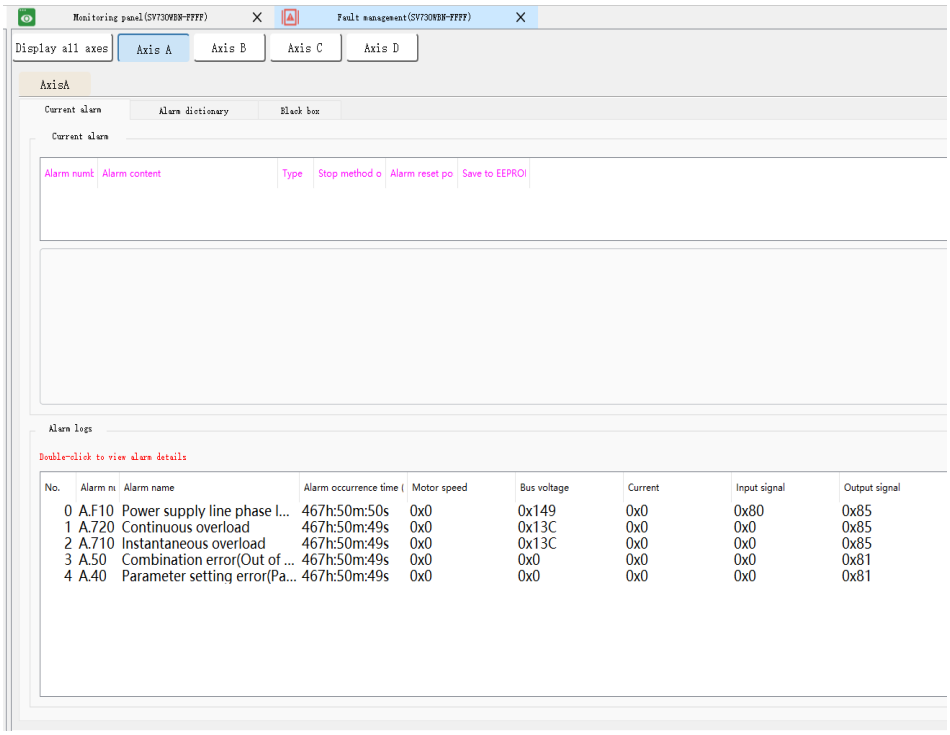


Figure1-11

5) Oscilloscope

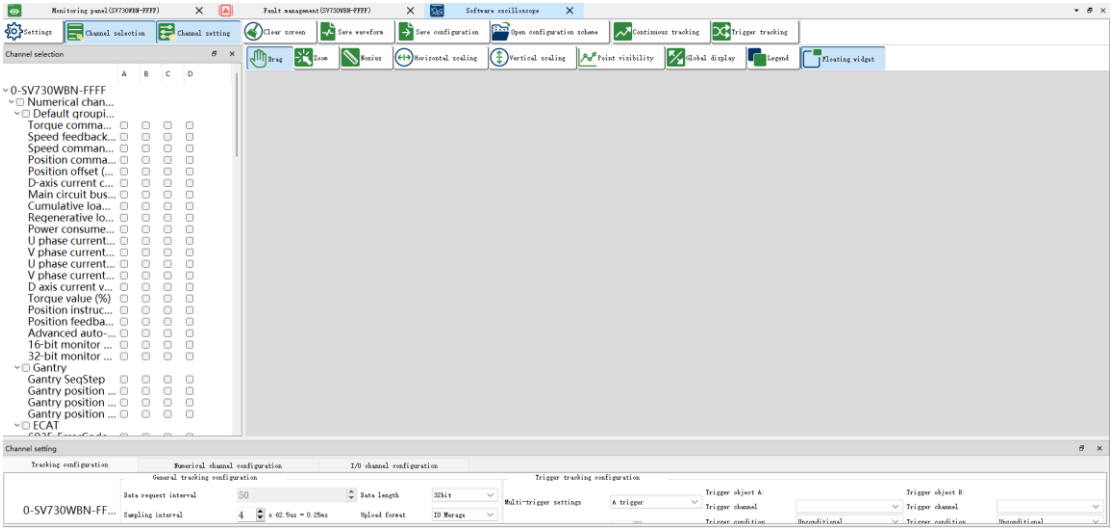


Figure1-12

Chapter 2 Servo Configuration

2.1 Connecting to the Servo Drive

2.1.1 Online Build

After connecting the PC to the servo drive's USB Type-C port via a USB cable, the system automatically detects the COM port. If the correct port is identified, the connection is established automatically.
After closing the project, if you need to reconnect, click Online Build in the upper-left corner of the interface. Once the device information is confirmed, click Build Project to complete the servo connection.

Figure2-1

2.1.2 Offline Build

Click Offline Build in the upper-left corner, select the number of axes (e.g., 4), manually add a node under ECAT, and then click Build Project to complete the offline build.

Figure2-2

2.2 Servo and Motor Information Verification

2.2.1 Servo Drive Information Verification

1) In the Drive Information interface located in the left navigation panel, as shown in the figure below, the following details of the currently connected servo drive are displayed:

Specific servo drive model
Firmware version
Connected motor model
Encoder information

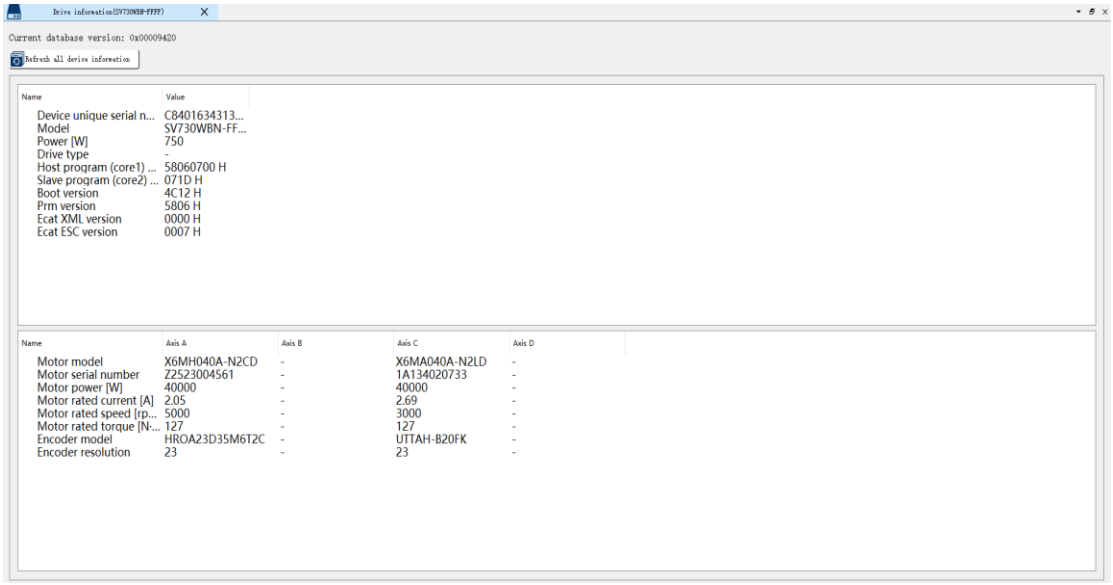


Figure2-3

2.2.2 Motor Information Verification

1) In the left navigation panel, click Motor Parameters to open the page shown in the figure. Select the corresponding axis and choose Read from Servo.

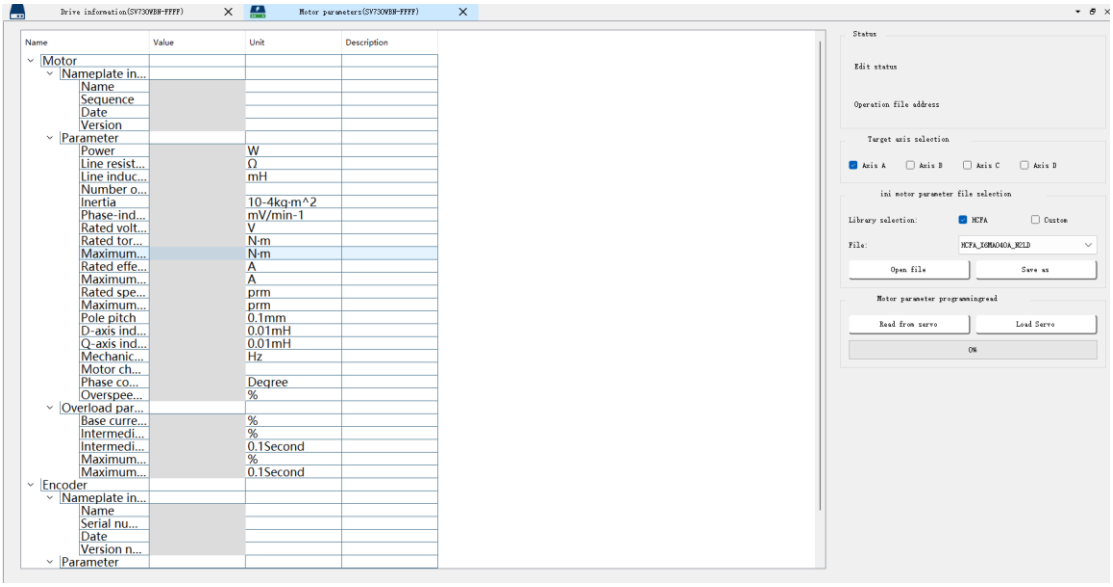


Figure2-4

2) After a successful read, the following dialog will appear. Click OK to confirm. The displayed parameters include current, speed, inertia, number of pole pairs, encoder resolution, and more.

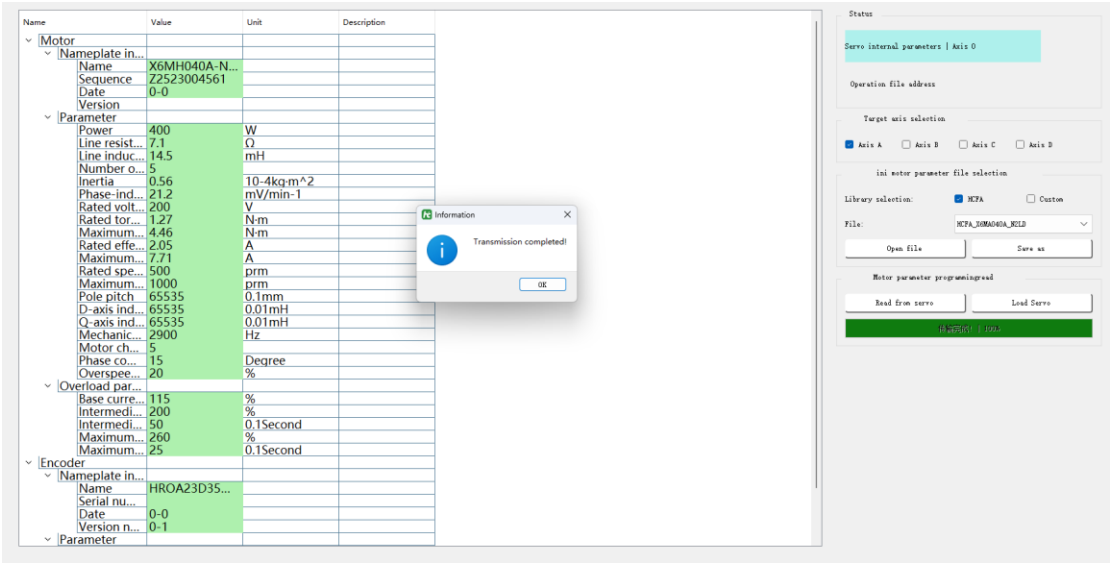


Figure2-5

2.3 Parameter Editing

1) Click the Parameter Editing button in either the left navigation panel or the top menu bar to open the main parameter editing interface, as shown in Figure 2-6.

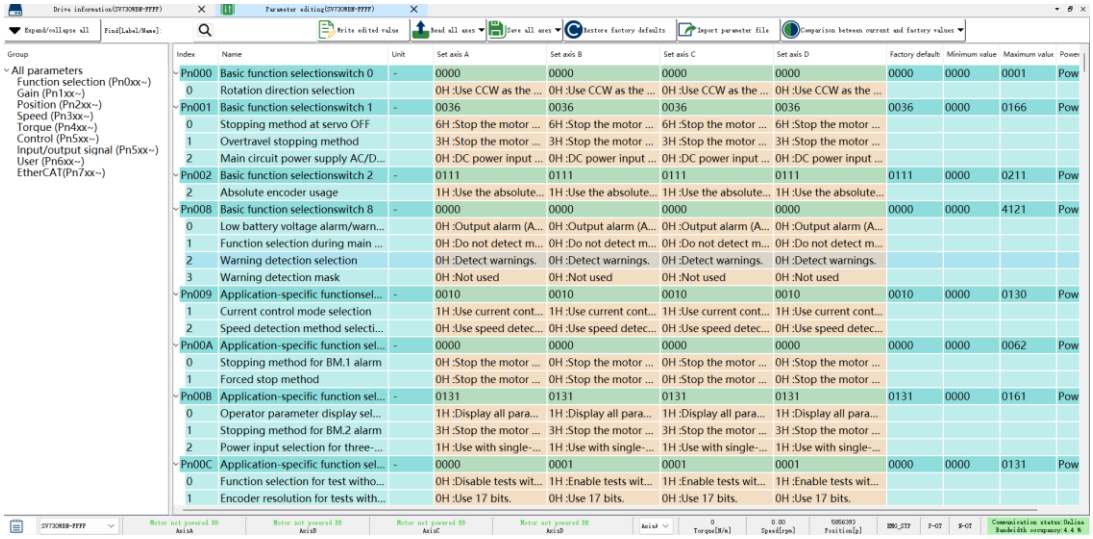
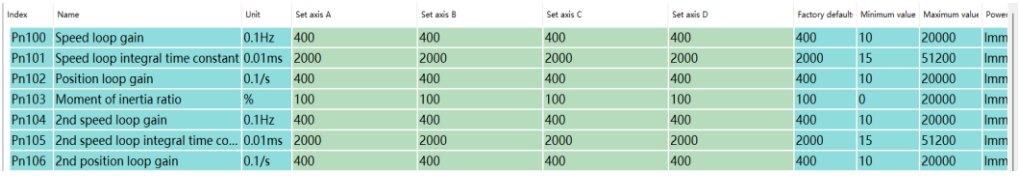


Figure2-6

2) To modify parameter Pn100, refer to Figure 2-7 for its minimum value, maximum value, factory default value, and activation method, then adjust the parameter accordingly.



Index	Name	Unit	Set axis A	Set axis B	Set axis C	Set axis D	Factory default	Minimum value	Maximum value	Power
Pn100	Speed loop gain	0.1Hz	400	400	400	400	400	10	20000	Imm
Pn101	Speed loop integral time constant	0.01ms	2000	2000	2000	2000	2000	15	51200	Imm
Pn102	Position loop gain	0.1/s	400	400	400	400	400	10	20000	Imm
Pn103	Moment of inertia ratio	%	100	100	100	100	100	0	20000	Imm
Pn104	2nd speed loop gain	0.1Hz	400	400	400	400	400	10	20000	Imm
Pn105	2nd speed loop integral time co...	0.01ms	2000	2000	2000	2000	2000	15	51200	Imm
Pn106	2nd position loop gain	0.1/s	400	400	400	400	400	10	20000	Imm

Figure2-7

3) After modification, press the Enter key on your keyboard; the background of the corresponding field will turn blue, as illustrated for Axis A in Figure 2-8.

Pn100	Speed loop gain	0.1Hz	200	400	400	400	400	10	20000	Imm

Figure2-8

4) At this point, click the Write Edited Values button in the Quick Access Toolbar. A dialog box as shown in Figure 2-9 will appear, indicating that the modified parameters have been successfully written to the drive. Click OK to close the write progress window.

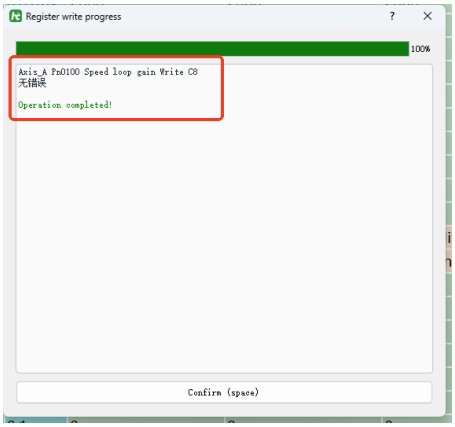


Figure2-9

5) If you need to modify another parameter, such as Pn000, note that this parameter requires a power cycle or a software reset to take effect. Consequently, alarm 941 will appear in the lower-left corner as shown in Figure 2-10. Additionally, the Power Cycle

Required column will indicate whether the parameter requires a power-off/power-on cycle to become effective.

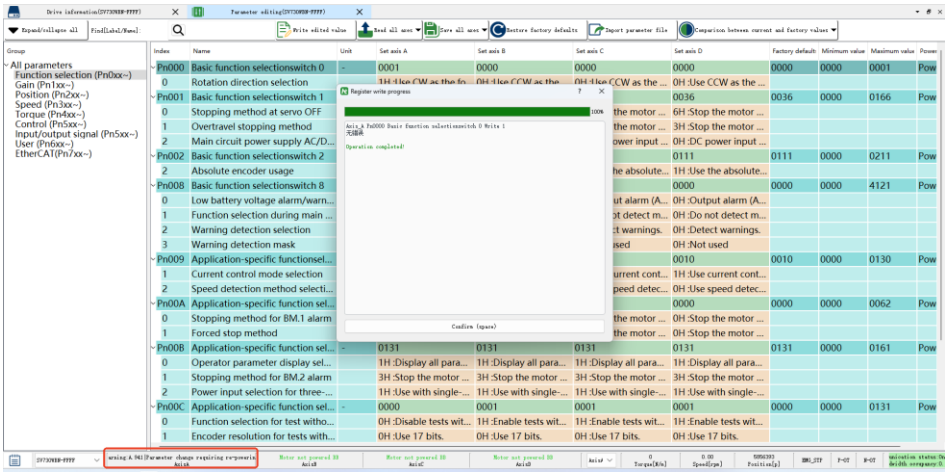


Figure2-10

6) After servo alarm 941 appears, a power cycle or software reset is required for the modified parameters to take effect. In this case, perform a software reset as described in Section 2.8.

7) Click the Save All Axes button in the parameter interface toolbar to save the current HCServoWorks parameters to your local drive.

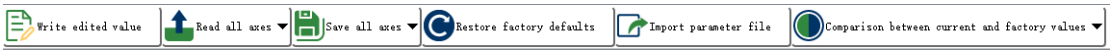


Figure 2-11

In the pop-up dialog box, specify the save location and file name as shown in Figure 2-12, then click the Save button.

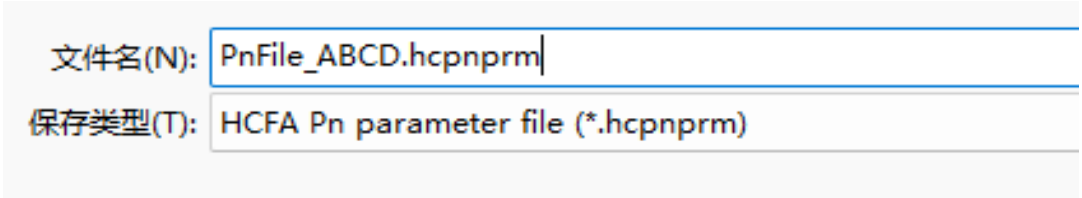


Figure 2-12

8) After successful saving, a dialog box as shown in Figure 2-13 will appear.

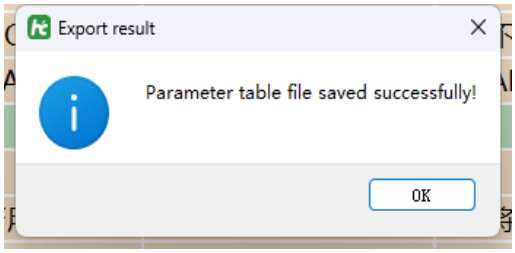


Figure 2-13

9) Click the Compare Current Values – Factory Defaults button in the Parameter Editing interface. A dialog will then appear prompting you to select the axis for comparison. After clicking OK, the comparison page shown in Figure 2-14 will be displayed.

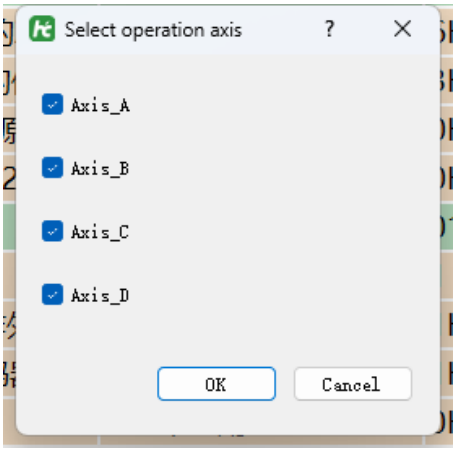


Figure2-14

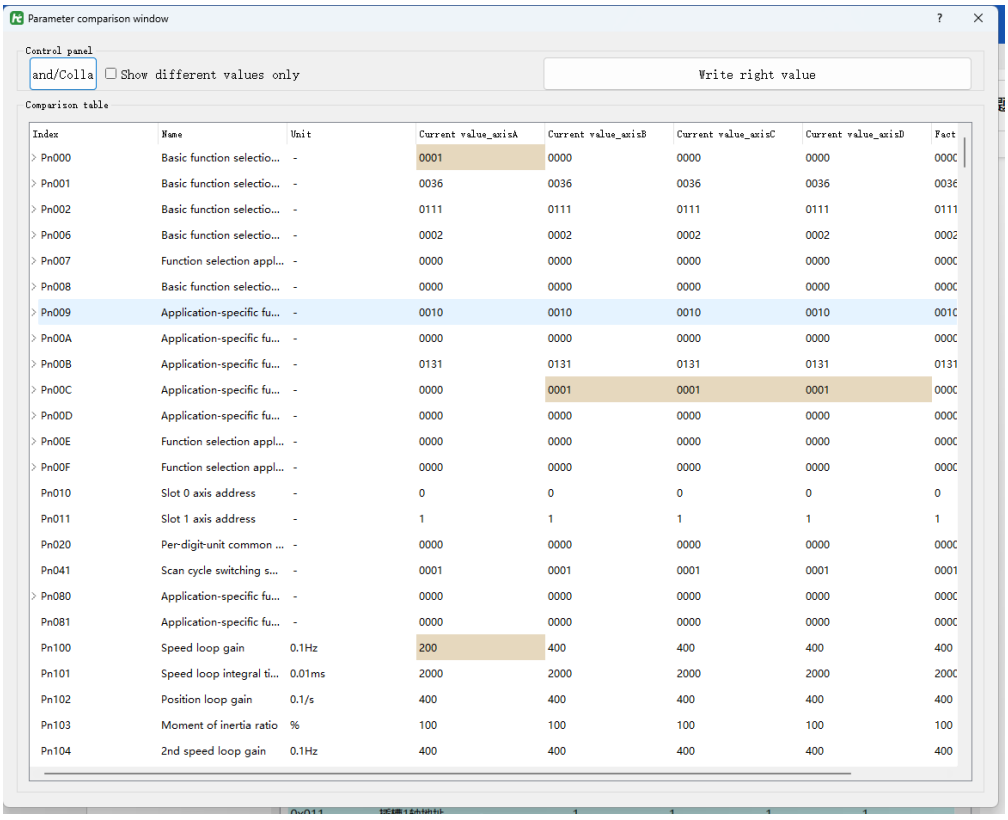


Figure2-15

10) Click the Restore Factory Defaults button to reset the parameters of the selected axis group on the current servo drive to their original factory settings. A sequence of confirmation dialogs, as shown in Figures 2-16, 2-17, and 2-18, will appear one after another.

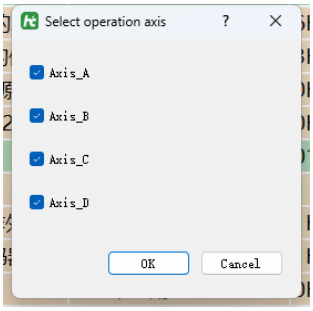


Figure2-16

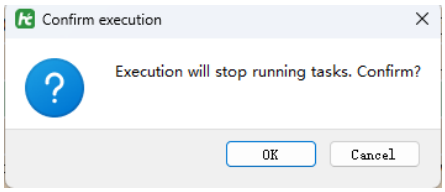


Figure2-17

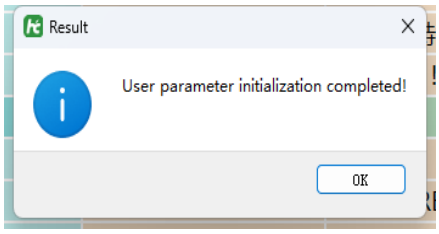


Figure2-18

11) Click the Import Parameter File button in the parameter interface to open the dialog shown in Figure 2-19. Select the desired parameter file by specifying its location and filename, then click Open to load it.

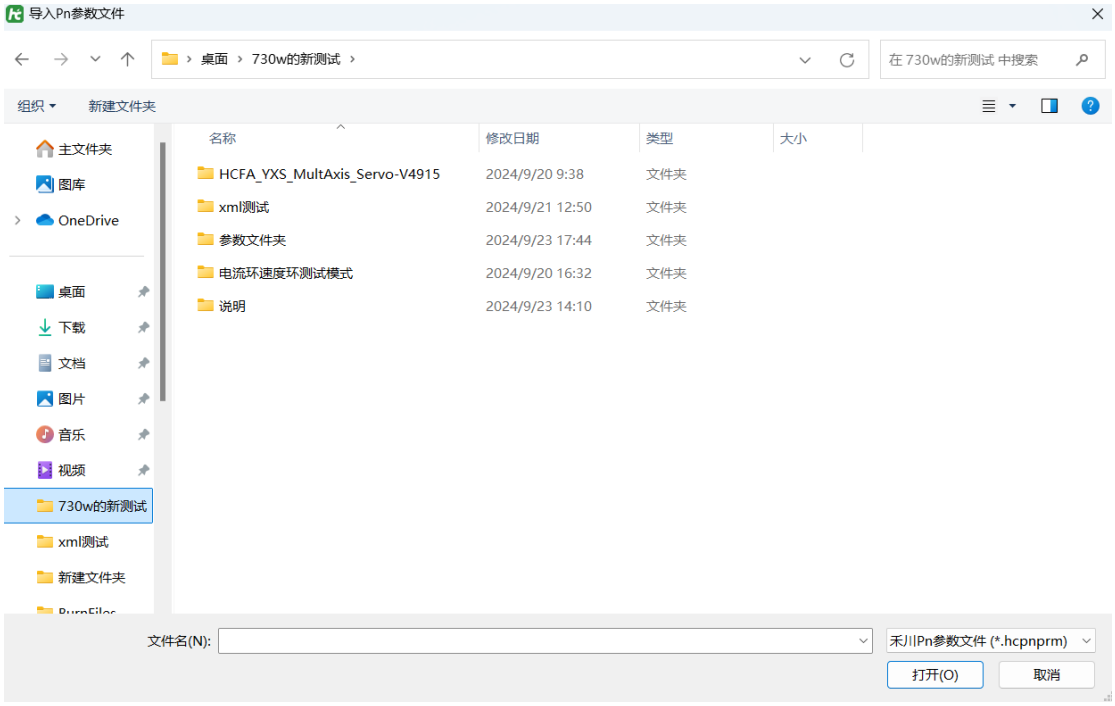


Figure2-19

12) Click the icon next to the Compare Current Values – Factory Defaults button and select the File Comparison option. This will open the Import Left Value dialog as shown in Figure 2-21. After confirming and opening the first file, the Import Right Value dialog (Figure 2-22) will appear. Once both files are loaded, the parameter comparison view shown in Figure 2-23 will be displayed.

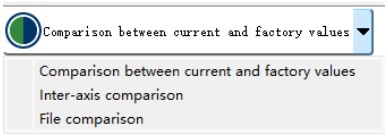


Figure2-20

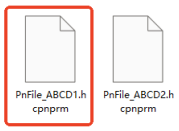


Figure2-21

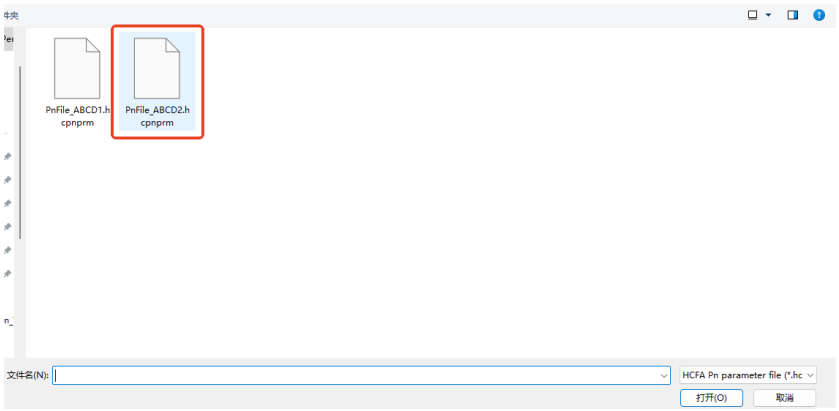


Figure2-22

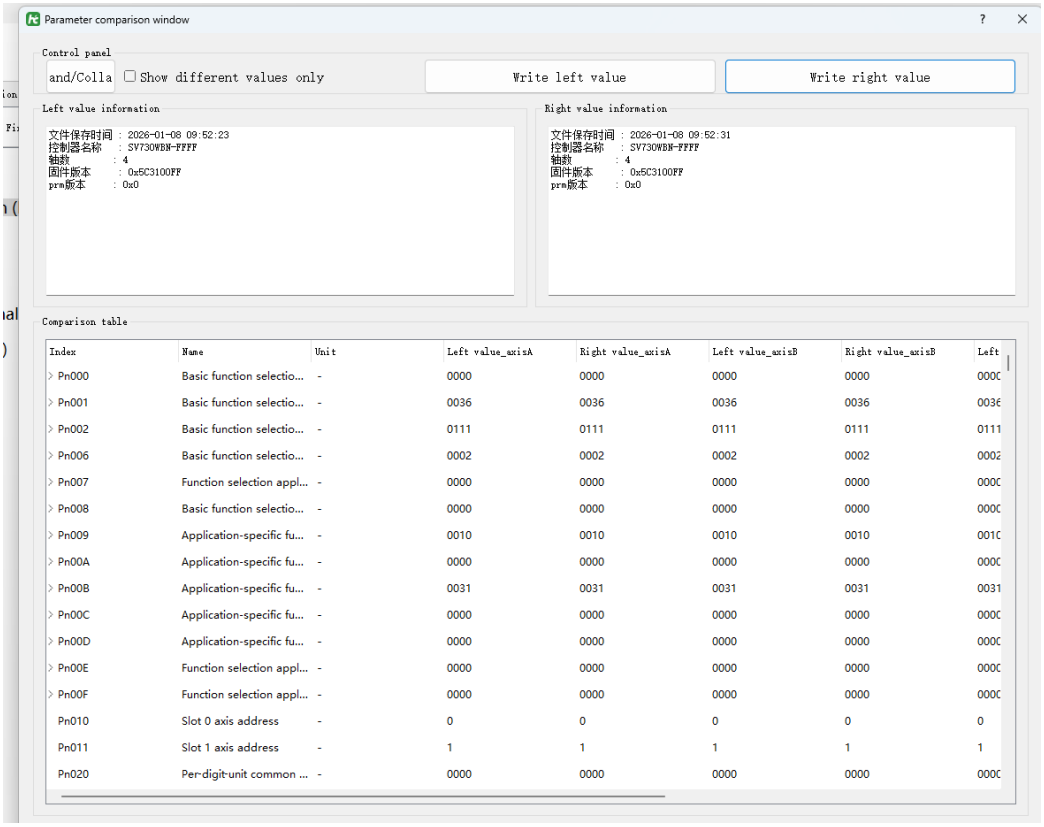


Figure2-23

2.4 Encoder Configuration

2.4.1 Encoder Multi-turn Value Clearing Interface

Figure 2-24 shows the Encoder Multi-turn Value Clearing interface.

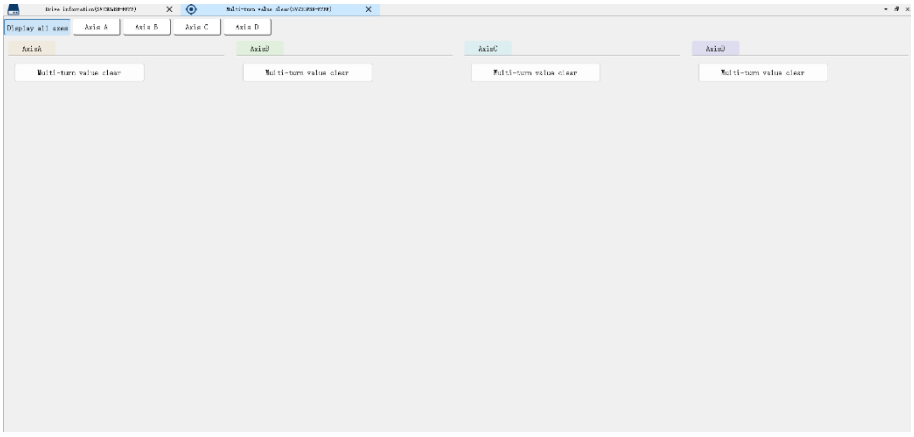


Figure 2-24

Click the Clear Encoder Multi-turn Value button for the target axis. A success confirmation dialog, as shown in Figure 2-25, will appear. The cleared multi-turn value will take effect after a power cycle or a software reset.

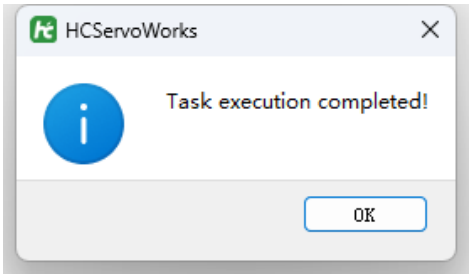


Figure 2-25

2.4.2 Homing (Origin Search)

Click the Homing (Origin Search) button in the left navigation panel to enter the homing interface shown in Figure 2-26 (initial state).

Figure 2-26

Click Start Task to enter the interface shown in Figure 2-27. Then click Servo Enable to proceed to the screen in Figure 2-28, where you can perform either a positive or negative homing operation as required. After the homing task is completed, click Stop Task, as shown in Figure 2-29, to return to the initial state.

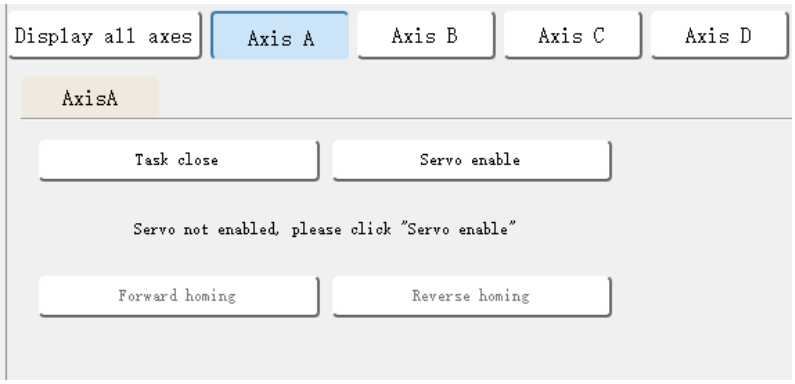


Figure 2-27

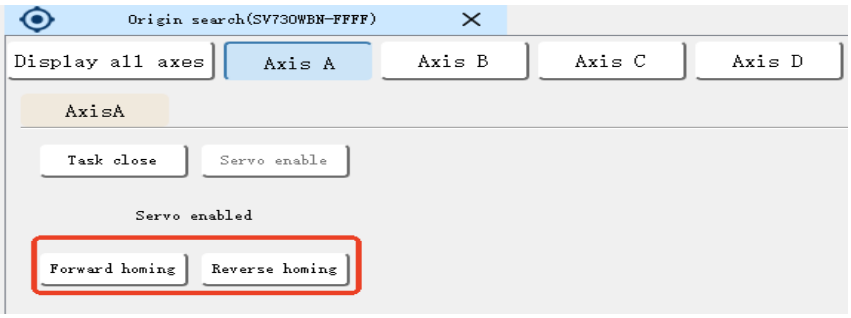


Figure 2-28

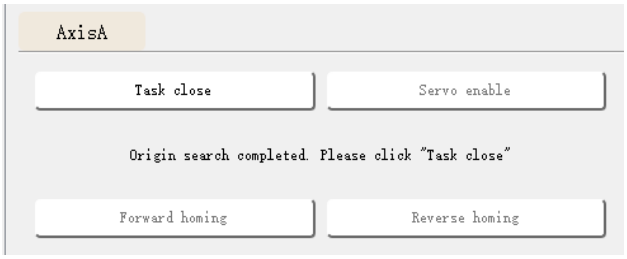


Figure 2-29

2.5 Offset Adjustment

2.5.1 Current Zero Adjustment

Click the Current Zero Adjustment button in the left navigation panel to enter the current zero adjustment interface.

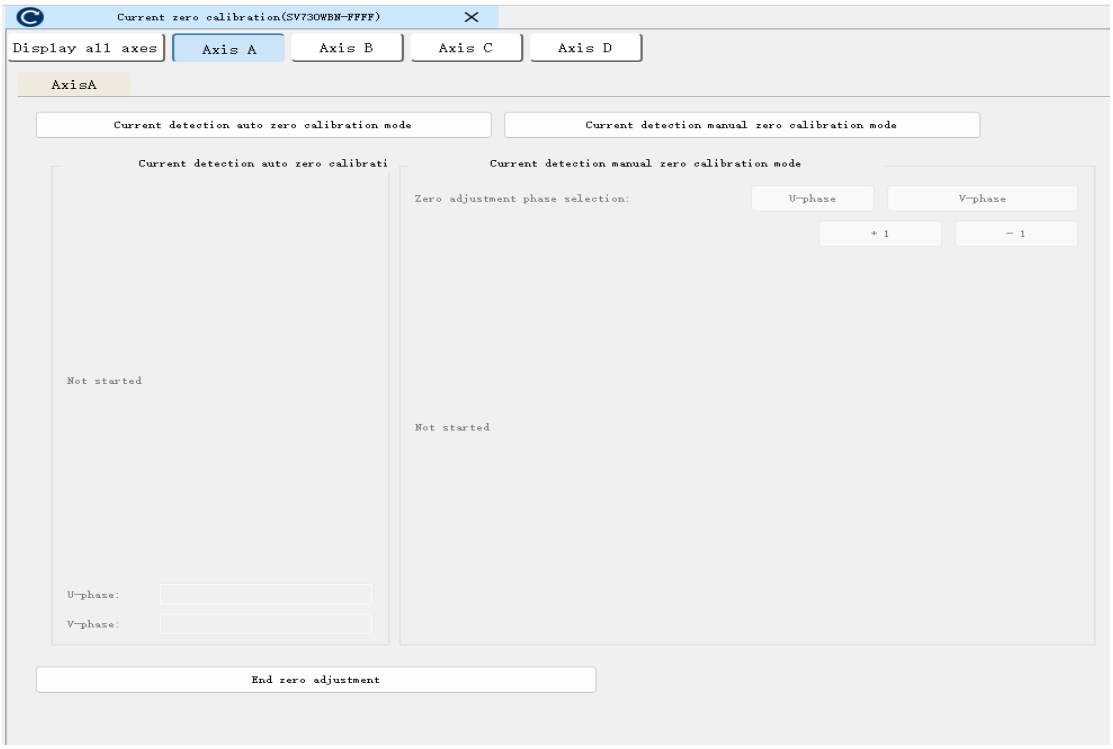


Figure2-30

Select either Auto Zero Adjustment (Figure 2-31) or Manual Zero Adjustment (Figure 2-32) based on your requirements.

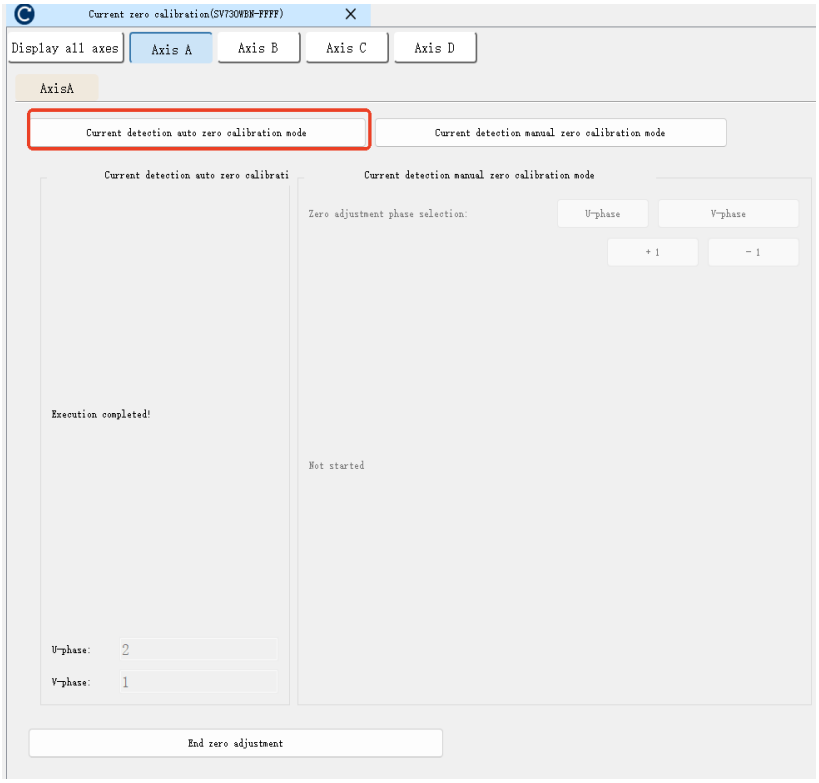


Figure2-31

Under the Manual Zero Adjustment tab, you can adjust the current feedback signal offset using the Adjust +1 and Adjust –1 buttons.

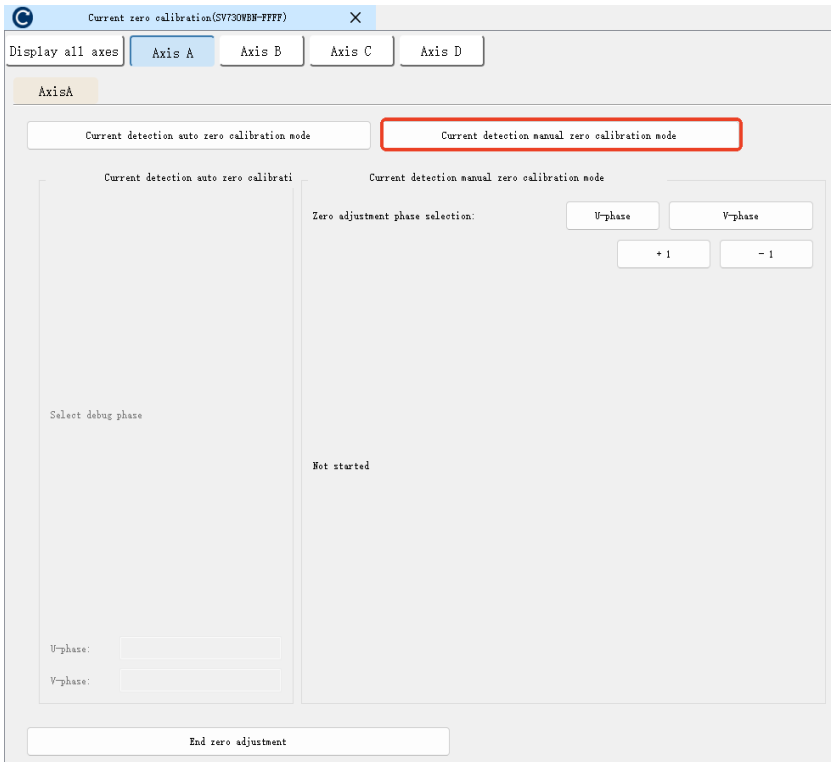


Figure2-32

Upon completion of the zero adjustment, a pop-up dialog will display the current status values of the U and V phases, as shown in Figure 2-33.

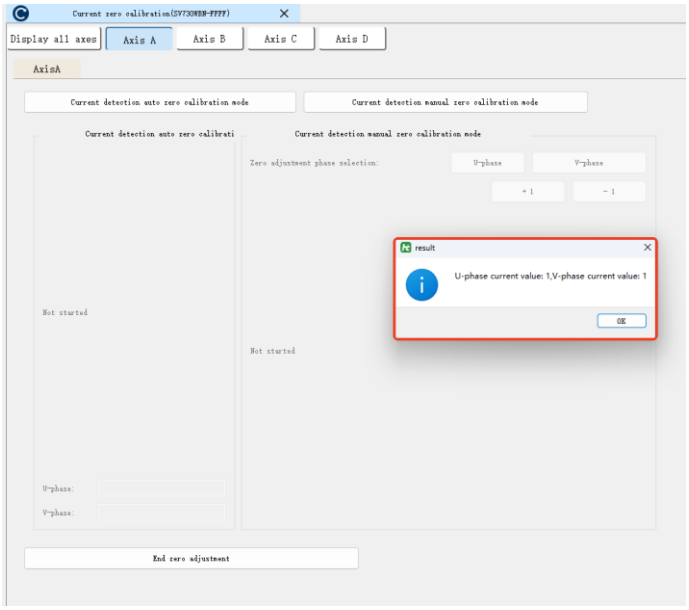


Figure 2-33

2.5.2 Motor Parameter Identification

Click the Motor Parameter Identification button to enter the motor parameter identification interface, as shown in Figure 2-34.

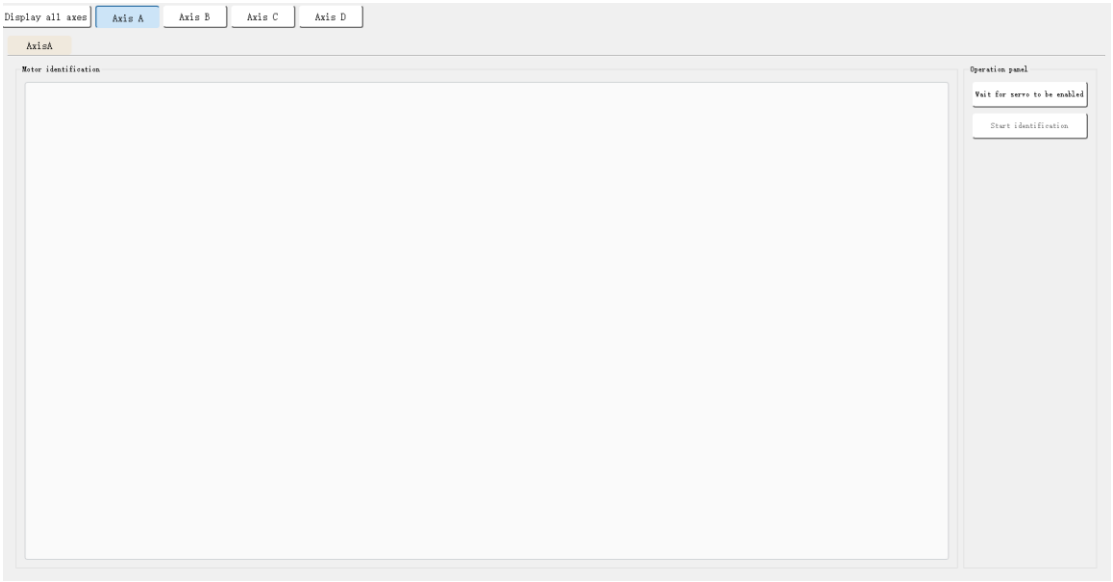


Figure 2-34

Click the Servo Enable button, then click Start Identification. Once the identification process is complete, the resulting parameter information will be displayed in the designated box, as shown in Figure 2-35.

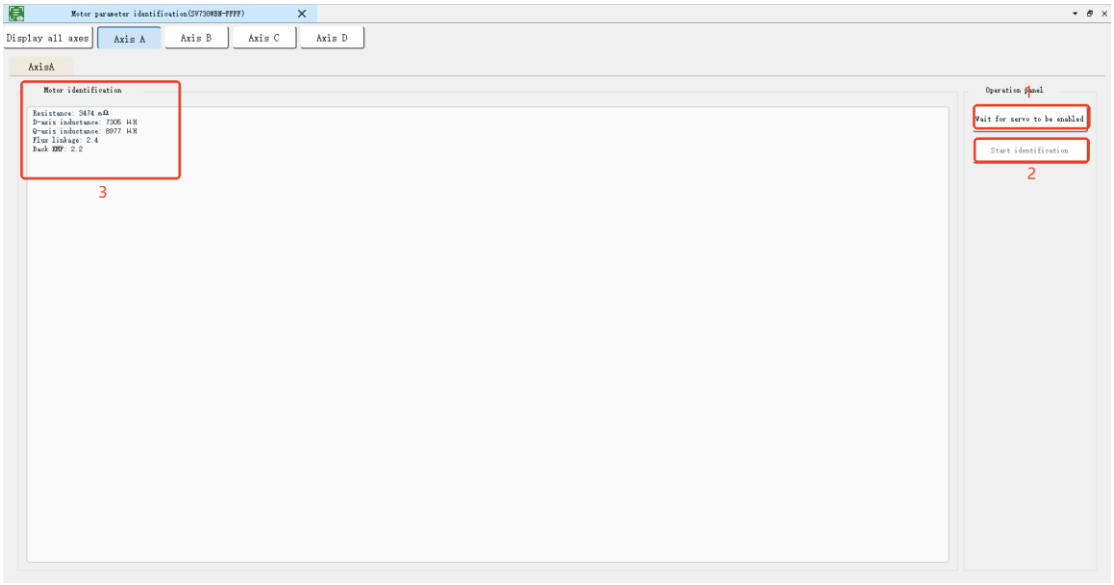


Figure 2-35

2.6 Magnetic Pole Detection

Click the Magnetic Pole Detection option in the left navigation panel to enter the magnetic pole detection interface, as shown in Figure 2-36.

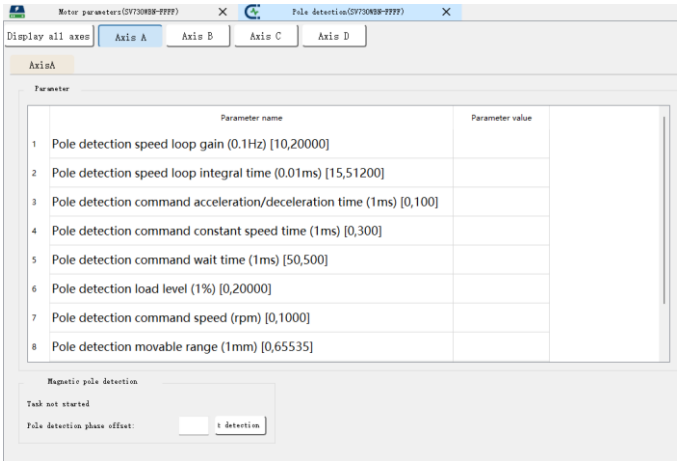


Figure 2-36

Click the Start Detection Task button to initiate magnetic pole detection, as shown in Figure 2-37.

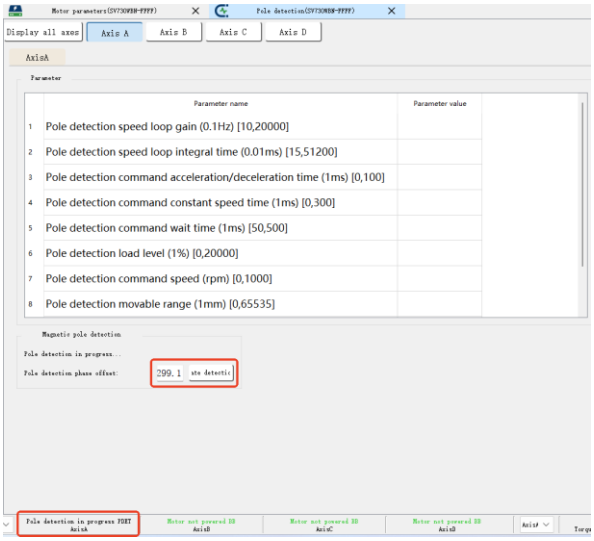


Figure 2-37

After the magnetic pole detection is completed, a result dialog box will pop up, as shown in Figure 2-38.

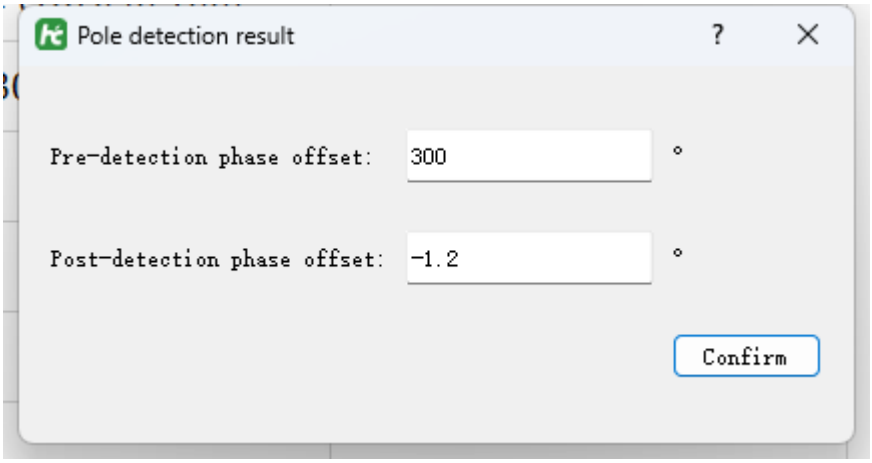


Figure 2-38

Pop-up Dialog Upon Completion of Magnetic Pole Detection

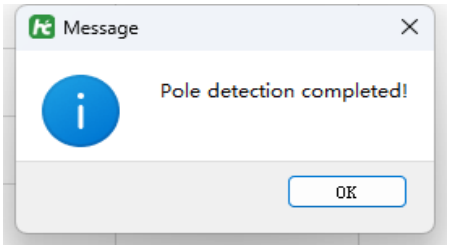


Figure 2-39

2.7 Software Reset

The Software Reset function, accessible from either the left navigation panel or the top menu bar, allows HCServoWorks to trigger a reset and restart of the servo drive.

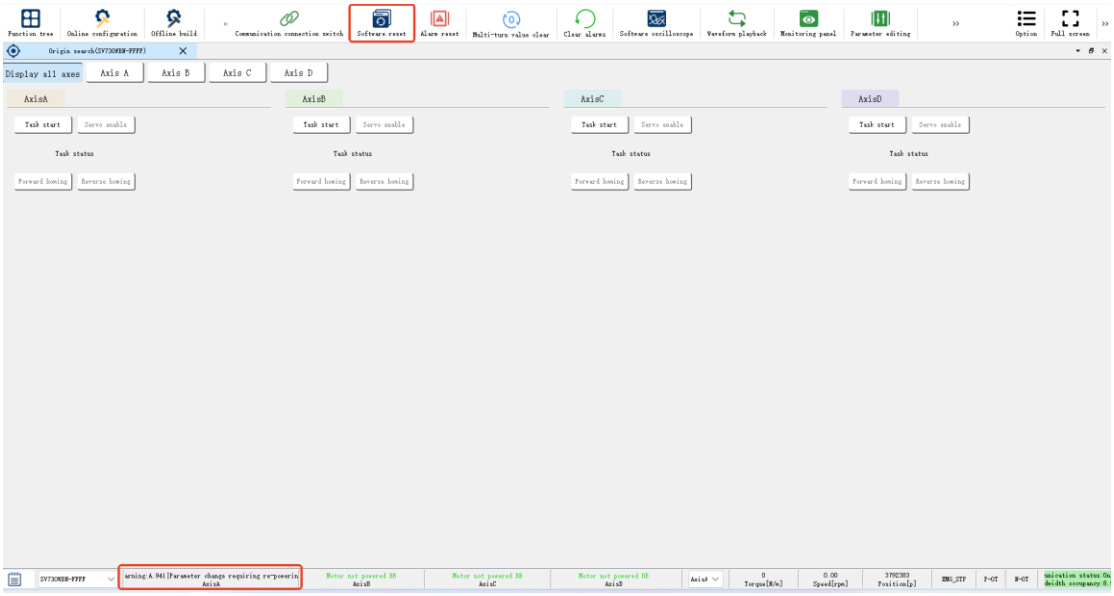


Figure 2-40

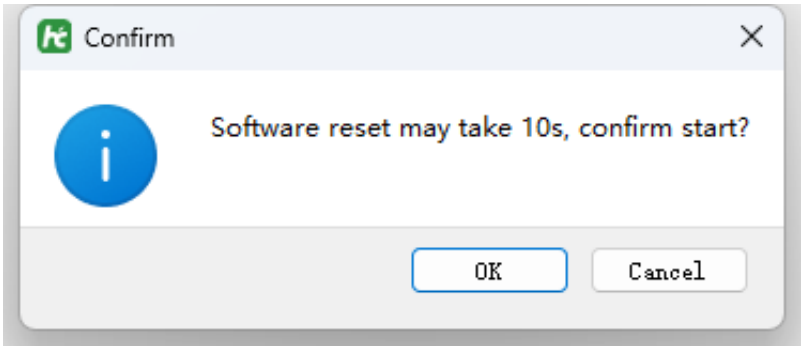


Figure 2-41

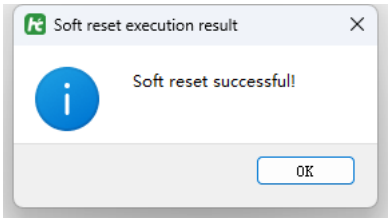


Figure 2-42

Chapter 3 Jog Operation

3.1 Jog Operation (Velocity Mode)

Click the Jog Operation button in the left navigation panel or the Jog Operation button in the Quick Access Toolbar to open the interface shown in Figure 3-1.

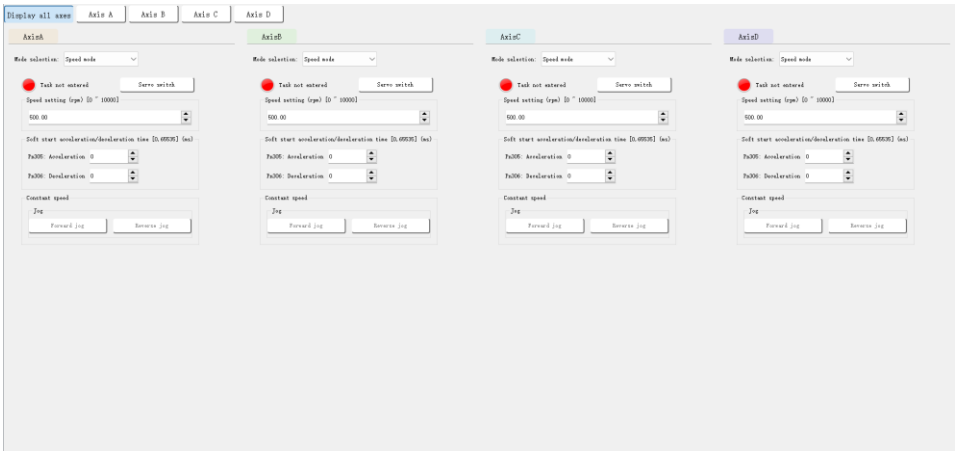


Figure3-1

The default mode is Velocity Mode. You can switch to the desired operation mode—Torque Mode, Velocity Mode, or Position Mode—as shown in Figure 3-2.

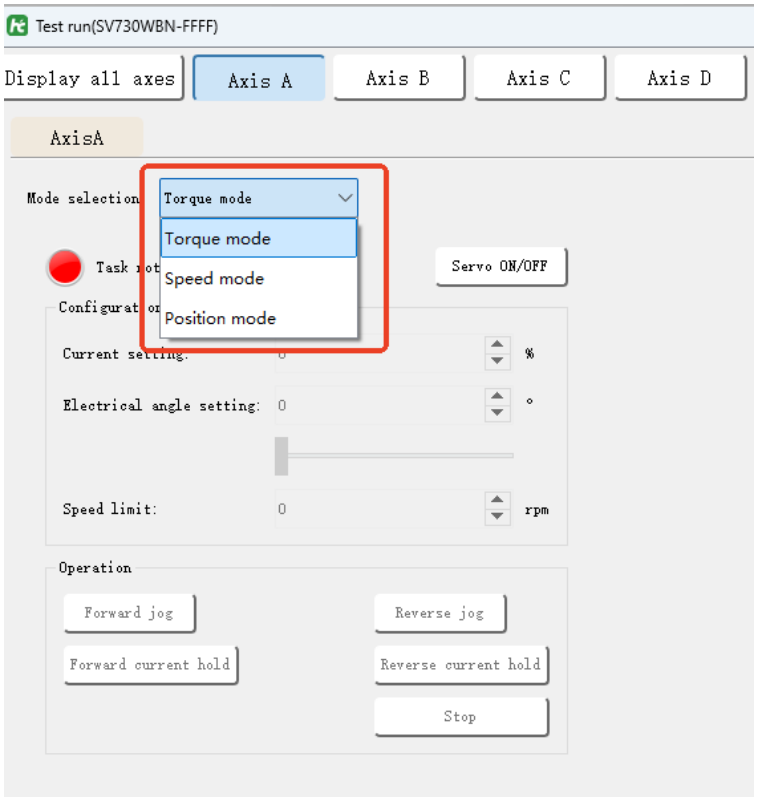


Figure3-2

In the Servo ON/OFF section, click the Servo OFF button on the right. The circle on the left

will then indicate the servo enable status, and clicking the status bar will display "Motor Powered – RUN," as shown in Figure 3-3.

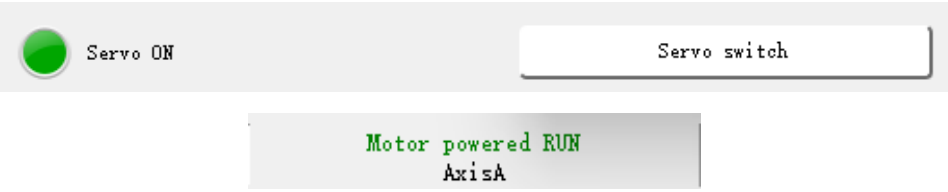


Figure 3-3

Then, click the Forward or Reverse button below—the motor will run at the preset JOG speed in the selected direction. Releasing the button stops the motor immediately.

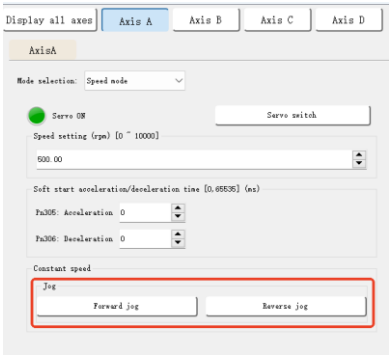


Figure 3-4

3.2 Torque Mode

Select Torque Mode; the interface will appear as shown in Figure 3-5.

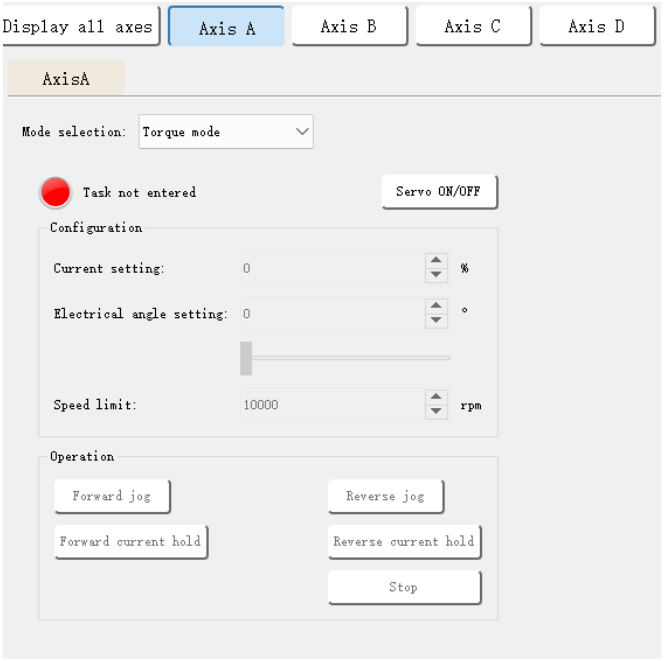


Figure 3-5

After entering the corresponding parameters, click the Servo OFF button to enable the servo. Then, based on your requirements, select either Forward Jog or Reverse Jog, or choose Forward Current Hold or Reverse Current Hold.

3.3 Position Mode

Select Position Mode; the interface will appear as shown in Figure 3-6.

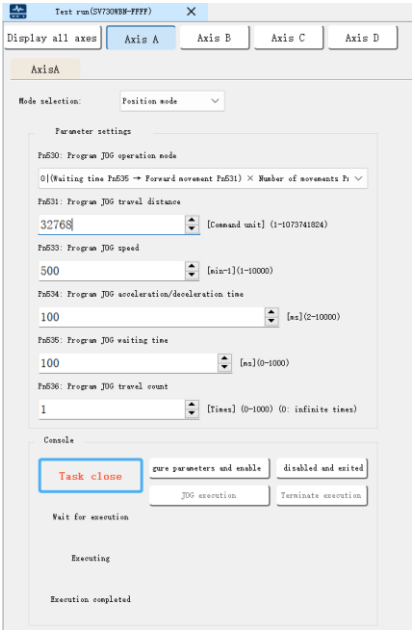


Figure 3-6

Select the desired Programmed Jog operation mode, configure the appropriate Programmed Jog parameters, and enable the servo as shown in Figure 3-7.

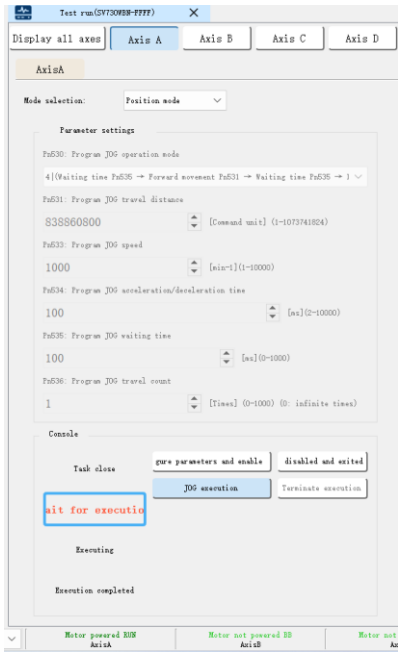


Figure 3-7

Click Execute Jog to transition the status from Waiting to Executing, as shown in Figure 3-8.

Click Stop Execution to transition from Executing to Completed (parameters cannot be

modified during these two stages), as illustrated in Figure 3-9.

Finally, click Servo Disable and exit the task to return to the initial state, as shown in Figure 3-10.

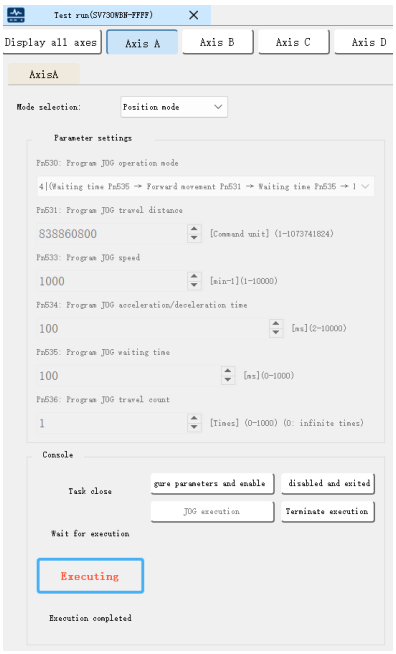


Figure 3-8

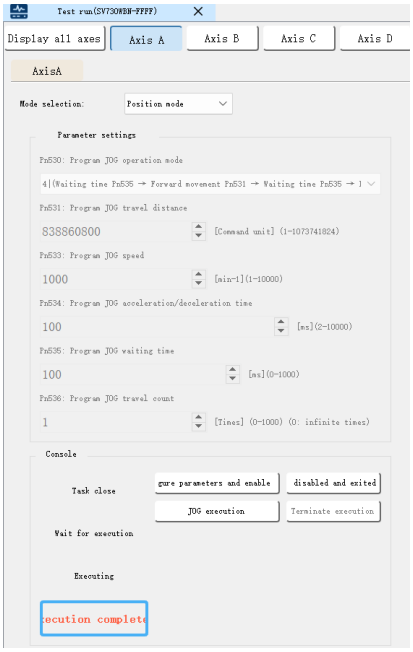


Figure 3-9

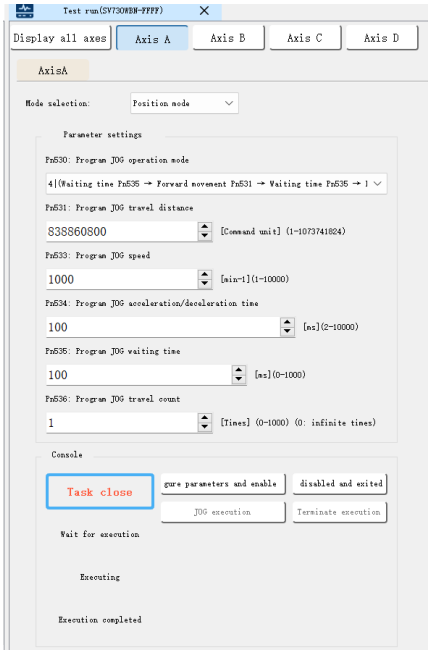

Test run(SV730BM-PTPT)
Display all axes
Axis A
Axis B
Axis C
Axis D
AxisA
Mode selection:
Position mode
Parameter settings
Pn530: Program JOG operation mode
4|(Waiting time Pn535 → Forward movement Pn531 → Waiting time Pn535 → I
Pn531: Program JOG travel distance
838860800
[Command unit] (1-1073741824)
Pn533: Program JOG speed
1000
[min-1](1-10000)
Pn534: Program JOG acceleration/deceleration time
100
[ms](2-10000)
Pn535: Program JOG waiting time
100
[ms](0-1000)
Pn536: Program JOG travel count
1
[Times] (0-1000) (0: infinite times)
Console
Task close
gure parameters and enable
disabled and exited
JOG execution
Terminate execution
Wait for execution
Executing
Execution completed

Figure 3-10

Chapter 4 Monitoring

4.1 Status Bar

1) As shown in Figure 4-1, HWBB indicates the Base Block status.

Figure 4-1

2) As shown in Figures 4-2 and 4-3, the rightmost section of the status bar indicates the serial communication connection status.

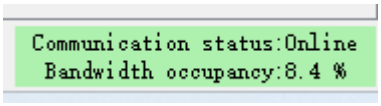


Figure 4-2

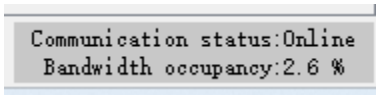


Figure 4-3

3) Figures 4-4, 4-5, and 4-6 indicate the Forward Inhibit and Reverse Inhibit statuses, showing whether motion in the positive or negative direction is prohibited.

Figure 4-4

Figure 4-5

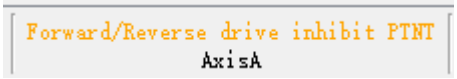


Figure 4-6

4) Figures 4-7 and 4-8 show the servo drive in the Disabled and Enabled states, respectively.

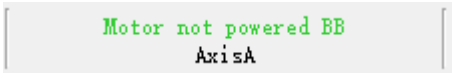


Figure 4-7

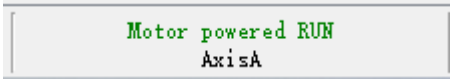


Figure 4-8

5) As shown in Figure 4-10, this field displays the servo drive's current alarm or warning status.

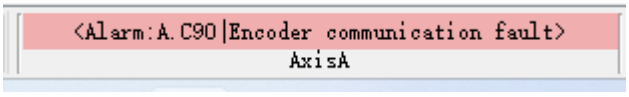


Figure 4-10

6) As shown in Figure 4-11, from left to right:

- Torque displays the current motor torque,
- Spd shows the current motor speed,
- Pos indicates the current feedback pulse count (UN00D).

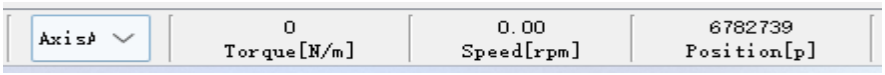


Figure 4-11

7) As shown in Figure 4-12, this indicates that the servo drive is currently in the Magnetic Pole Detection state.

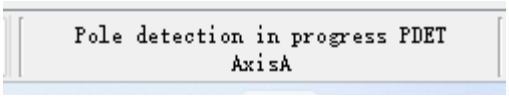


Figure 4-12

8) As shown in Figure 4-13, this indicates that the servo drive is currently in Quick Stop mode.

Figure 4-13

4.2 Monitoring Panel

Figure 4-14 shows the Monitoring Panel. The check box next to each item indicates whether monitoring is enabled for that parameter.

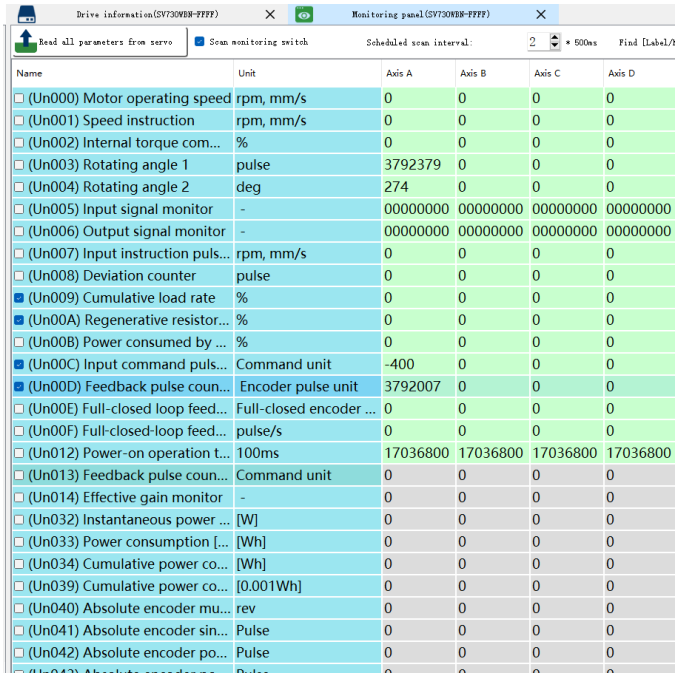


Figure 4-14

4.3 Oscilloscope

Figure 4-15 shows the main Oscilloscope interface.

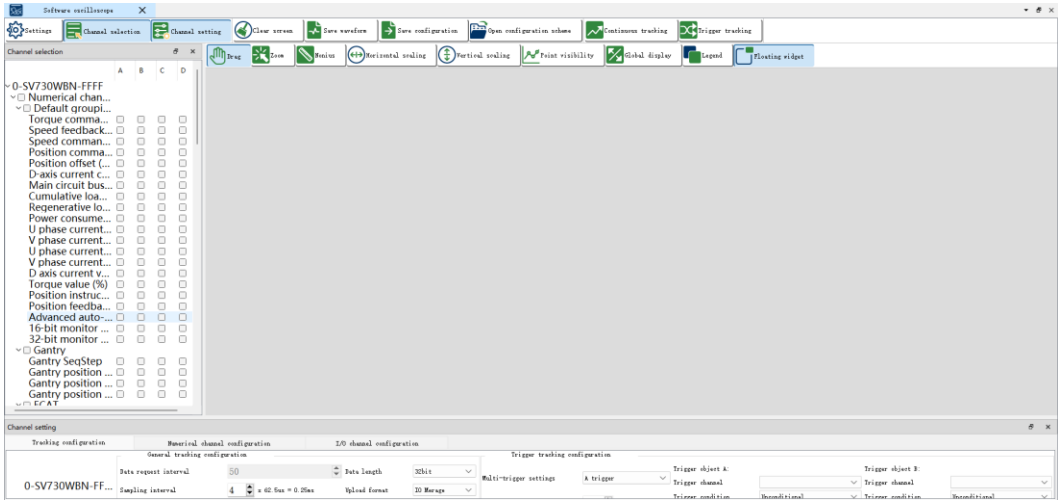


Figure 4-15

The oscilloscope provides functions including normal sampling, continuous sampling, waveform data comparison, waveform scaling adjustment, gain parameter configuration, sampling condition setup, and waveform saving and offline viewing.

4.3.1 Normal Sampling

Taking JOG operation from 0 to 3000 rpm as an example, capture the waveform of the feedback speed when it exceeds 200 rpm.

1) Set the sampling conditions.For example, configure the data channels as follows:

   Channel 1: Torque Command
   Channel 2: Motor Speed
   Channel 3: Velocity Command
   Channel 4: Position Command Velocity

   Set the trigger source to Trigger A, with the trigger channel set to Channel 2 (Motor Speed), trigger type to rising edge, and trigger condition to exceeding 200 rpm. Set the pre-trigger time to 20%, then click the OK button to save the settings.

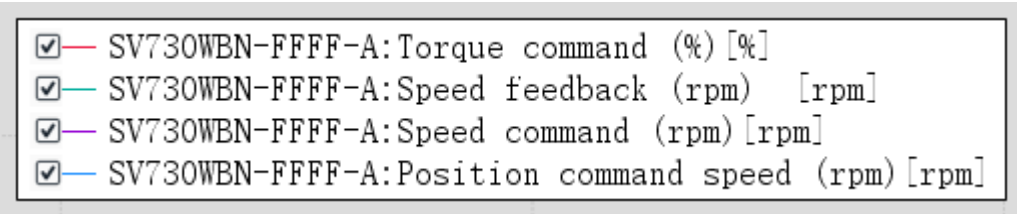


Figure 4-16

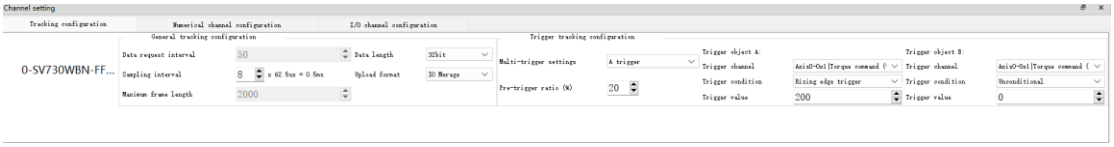


Figure 4-17

2) Click the Trigger Trace button; the oscilloscope panel will display "Pre-triggering".

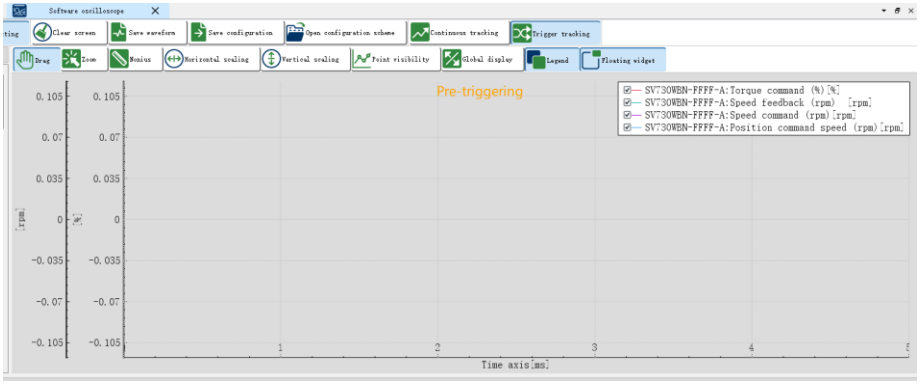


Figure 4-18

3) Click the Velocity Mode button in the lower-left corner, set the speed command to 3000 rpm, then click the Servo ON/OFF button at the top. Once the motor is enabled, hold down the Forward Jog button.

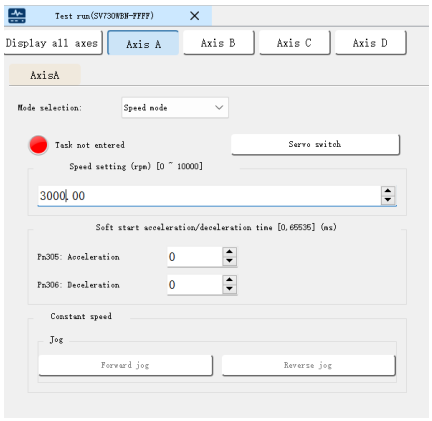


Figure 4-19

4) The oscilloscope interface will display "Trigger Condition Met".

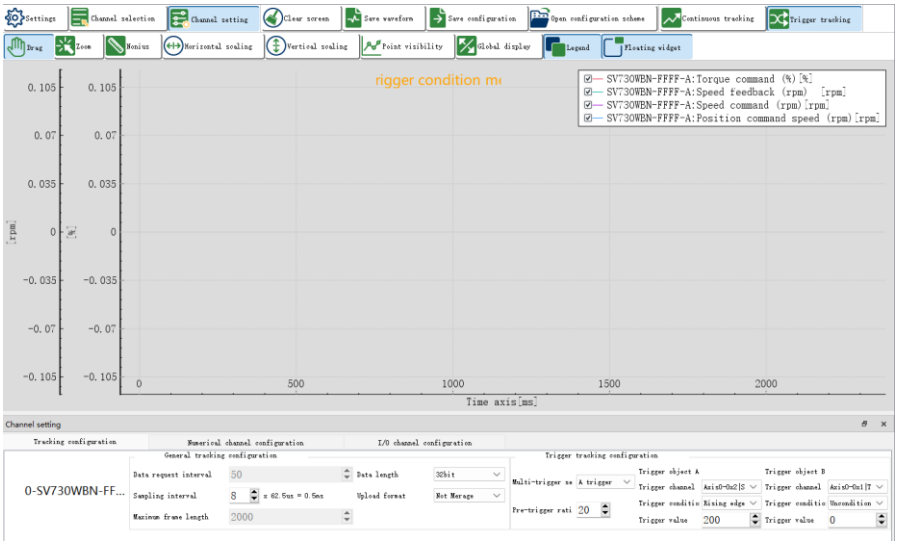


Figure 4-20

5) After waveform acquisition is complete, the oscilloscope will display "Trace Complete".

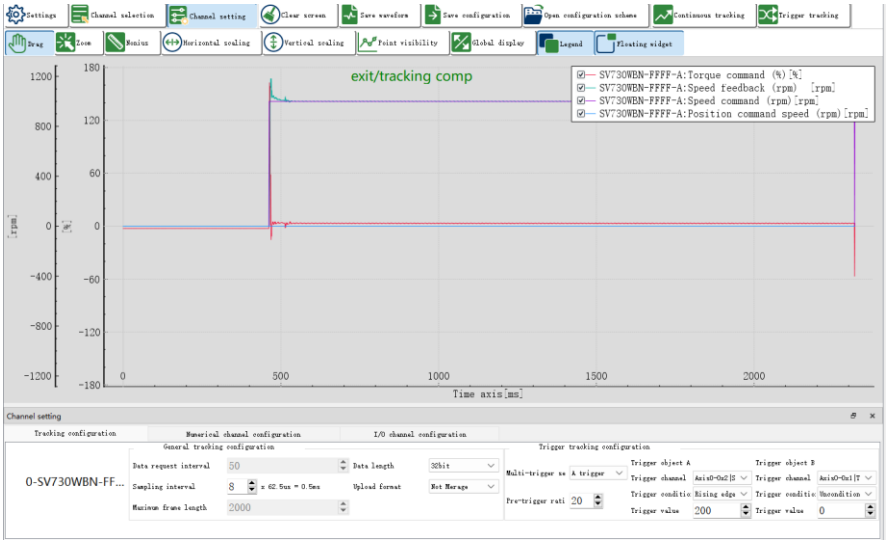


Figure 4-21

4.3.2 Continuous Sampling

Taking the capture of command velocity and feedback velocity waveforms via the oscilloscope as an example, under the following Programmed Jog conditions:

Jog distance: 20,000,000 counts
Running speed: 500 rpm
Acceleration/deceleration time: 100 ms
Dwell time: 100 ms
Operation sequence: forward run followed by reverse run

1) Configure the Programmed Jog parameters and start the operation. For detailed settings, refer to Section 3.3.

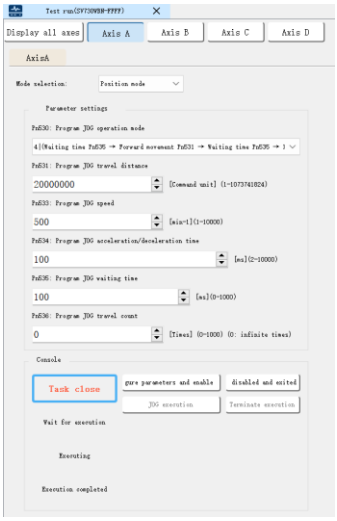


Figure 4-22

2) Set the continuous sampling conditions: configure the data channels as follows

Channel 1: Torque Command
Channel 2: Motor Speed
Channel 3: Velocity Command
Channel 4: Position Command Velocity

Then click the OK button to save the settings.

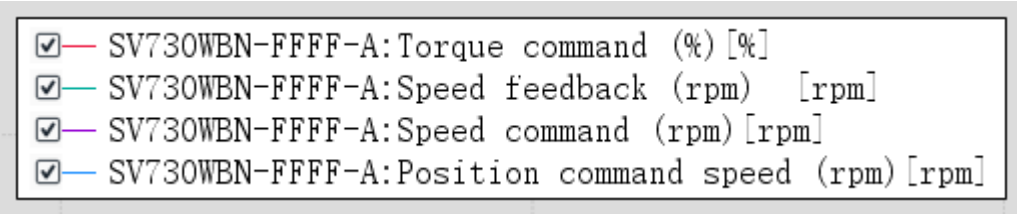


Figure 4-23

3) Click Configure Parameters below and enable the servo. Once the motor is enabled, click the JOG Execute button to start motor operation.

Figure 4-24

4) Click the Continuous Trace button; the oscilloscope will then continuously acquire data.

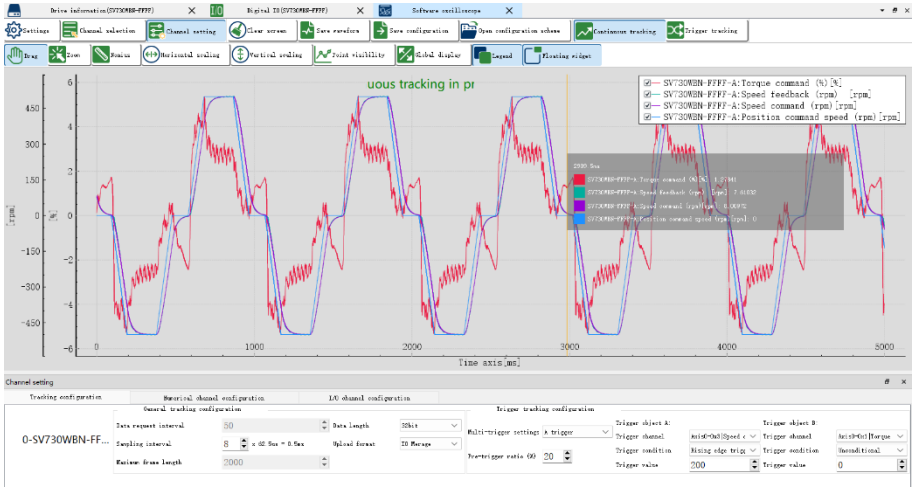


Figure 4-25

The oscilloscope will continuously acquire waveforms until the Continuous Trace button is clicked again.

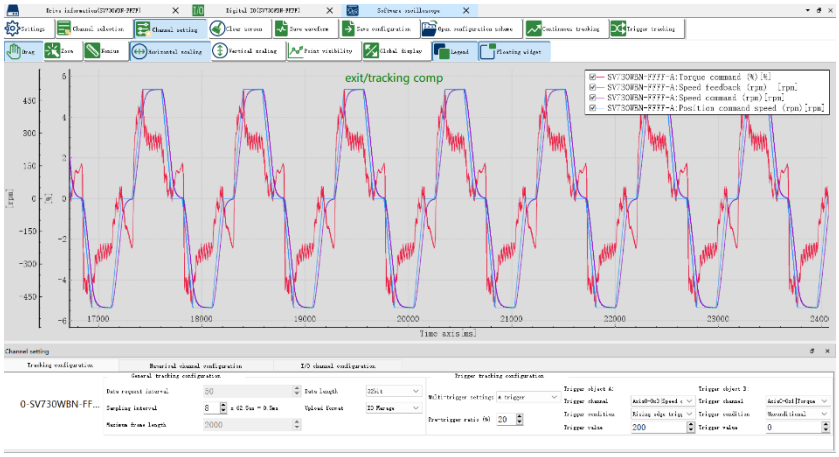


Figure 4-26

4.3.3 Other Functions

1) Waveform Saving: After waveform acquisition is complete, click the Save Waveform button in the lower-right corner.

Figure 4-27

In the pop-up window, select the desired file format for saving.

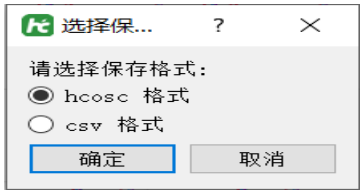


Figure 4-28

In the pop-up window, specify the save path and enter a file name.

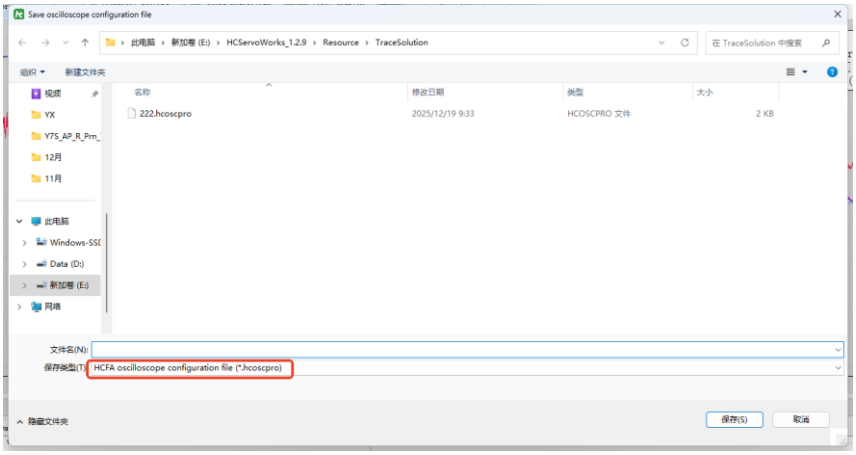


Figure 4-29

After successful saving, a confirmation dialog will appear. You can then navigate to the specified path to locate the saved waveform file.

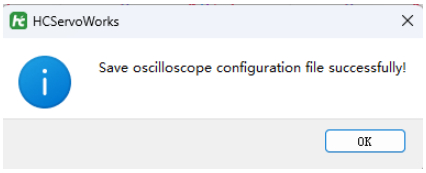


Figure 4-30

2) View Offline Waveform

In the Waveform Playback section, click the Open Oscilloscope Data File button. In the pop-up window, locate the desired offline waveform file and click Open.

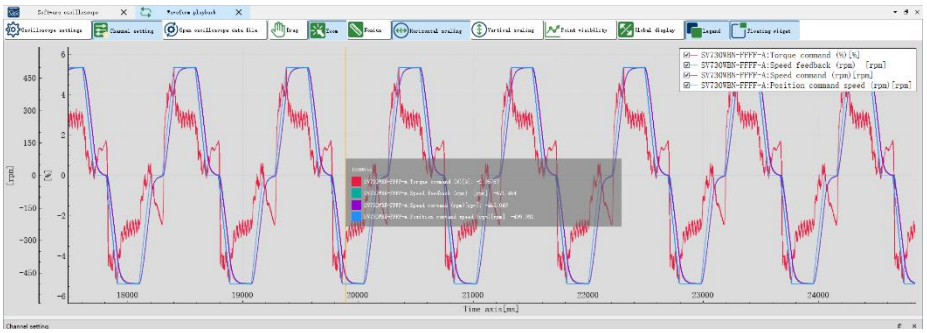


Figure 4-31

3) Waveform Zoom

To zoom both the X-axis and Y-axis simultaneously, use the mouse scroll wheel while the Horizontal Zoom and Vertical Zoom options are enabled.

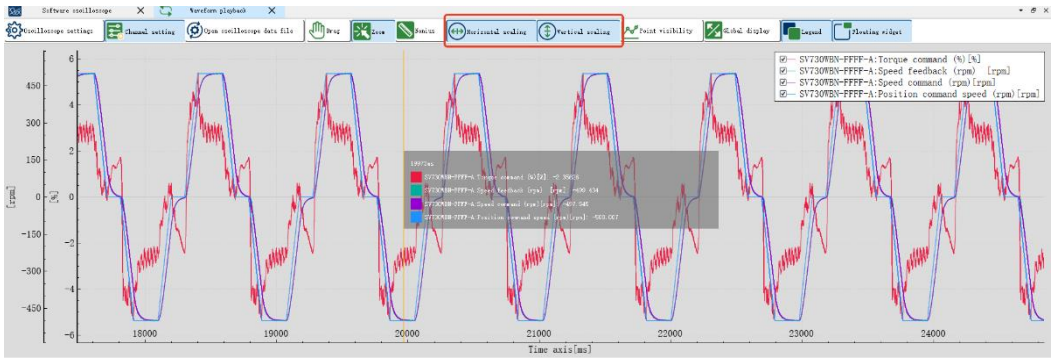


Figure 4-32

To restore a zoomed waveform to its initial scale, click the Full View button.

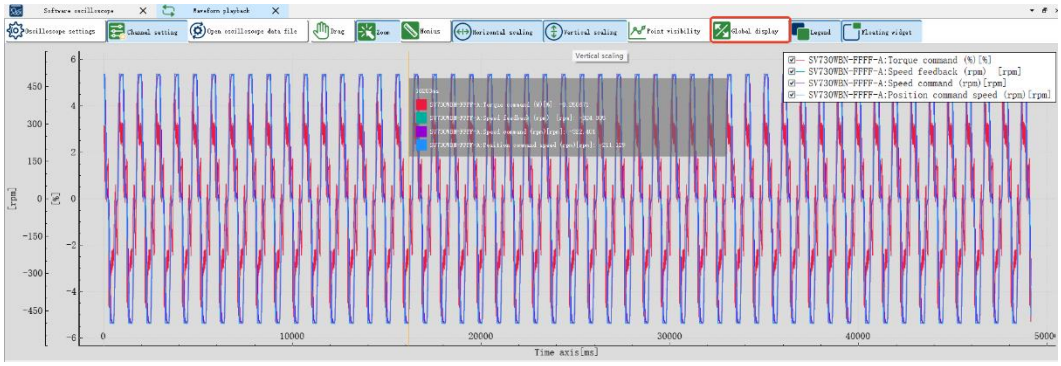


Figure 4-33

You can perform a zoom-by-region by holding down the Region Select key and dragging a selection box with the left mouse button.

Figure 4-34

4) Cursor Function

Click the Cursor button to display two vertical cursors (green and purple) on the oscilloscope waveform.

Left-click to reposition the green cursor (Cursor A).

Right-click to reposition the purple cursor (Cursor B).

In the data comparison panel below, you can clearly view:

Maximum and minimum values for each channel,

The instantaneous values at Cursor A and Cursor B for the selected channel, along with their difference,

The timestamps of Cursor A and Cursor B, and the time interval between them

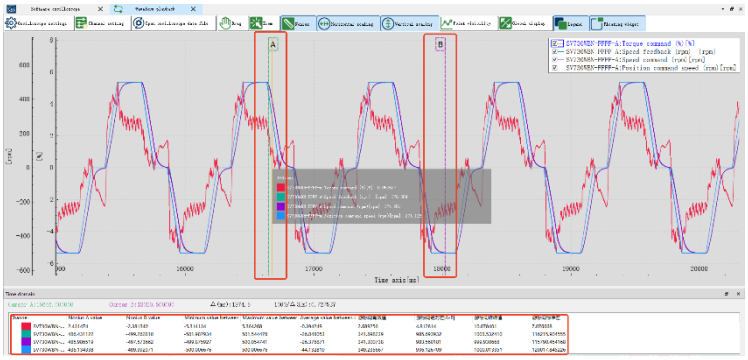


Figure 4-35

5) Channel Display Function

Click the Legend button next to the channel display; a legend showing the currently active channels will appear in the upper-right corner of the oscilloscope interface.

Mark channels you wish to display with ☑.

Mark channels you wish to hide with ☐.

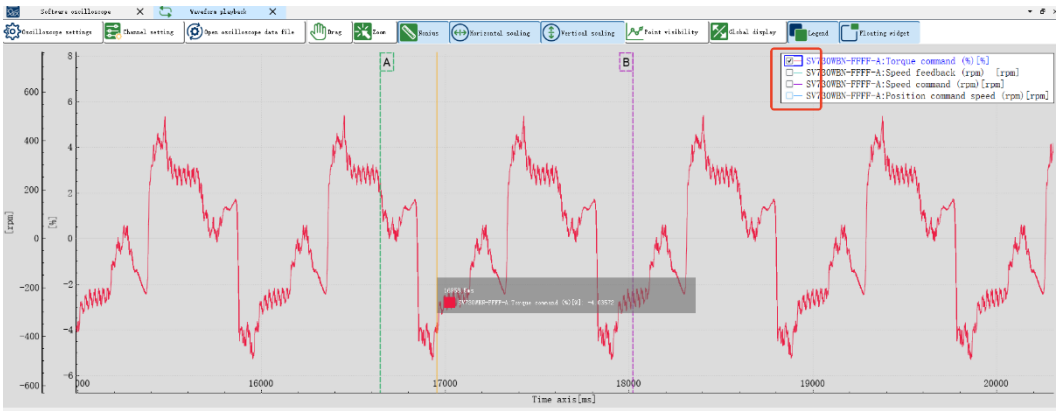


Figure 4-36

4.4 Power Monitoring

Click the Power button in the left navigation panel to view the current servo's DC bus voltage monitoring, overvoltage/undervoltage alarm thresholds, and braking (discharge) voltage, as shown in Figure 4-39.

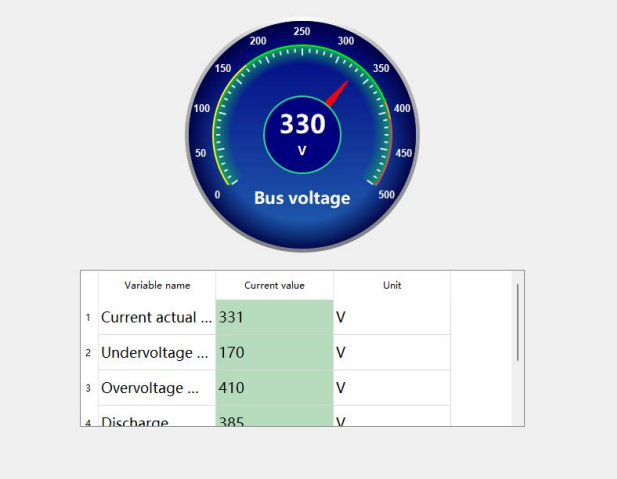


Figure 4-39

4.5 Encoder Feedback Monitoring

Click the Feedback button in the left navigation panel to view the primary encoder information.

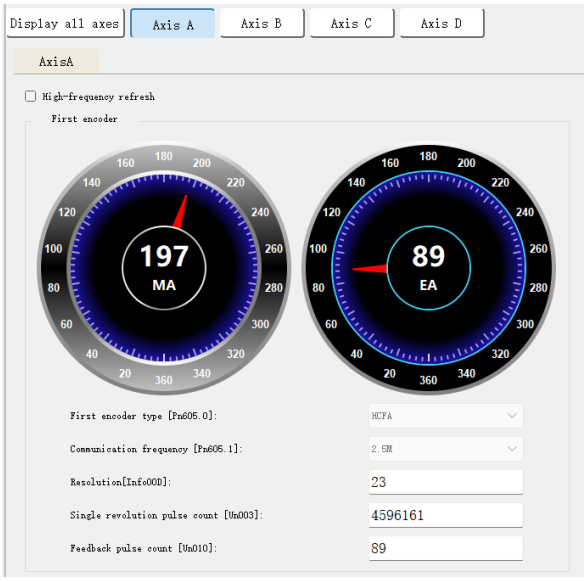


Figure 4-40

4.6 Digital I/O Usage

4.6.1 Digital I/O Wiring Method

When using the input function, connect 24 V to COM+, and wire the input signals to DI1 through DI21.

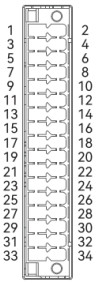
When using the output function:

Connect Pin 18 to 24 V,

Connect COM− to 24 V GND,

Connect the output pins DO1 to DO8 to one terminal of a relay coil or resistor, and connect the other terminal to 24 V.

The probe function can only be assigned to pins 13, 14, 20, 21, 25, 26, 31, and 32. The I/O interface layout is shown in Figure 4-41.



No	信号名	IO	No	信号名	IO
1	COM-	P	2	COM+	P
3	DO8	O	4	DO7	O
5	DO6	O	6	DO5	O
7	DO4	O	8	DO3	O
9	DO2	O	10	DO1	O
11	DI21	I	12	DI20	I
13	DI19	I	14	DI18	I
15	DI17	I	16	DI16	I
17	COM-	P	18	24V	—
19	DI15	I	20	DI14	I
21	DI13	I	22	DI12	I
23	DI11	I	24	DI10	I
25	DI9	I	26	DI8	I
27	DI7	I	28	DI6	I
29	COM+	P	30	DI5	I
31	DI4	I	32	DI3	I
33	DI2	I	34	DI1	I

Figure 4-41

4.6.2 Input Function Configuration in HCServoWorks

Complete the wiring as described in Section 4.6.1. In the HCServoWorks, click the Digital I/O button in the left function navigation panel to open the Digital I/O interface. Then, assign the desired axis and signal.

For example:

Set the target axis to Axis A,

Assign the signal to /POT (Positive Limit).

Once configured, Axis A will activate the Positive-side Drive Inhibit (P-OT) function. The detailed procedure is illustrated in Figure 4-42.

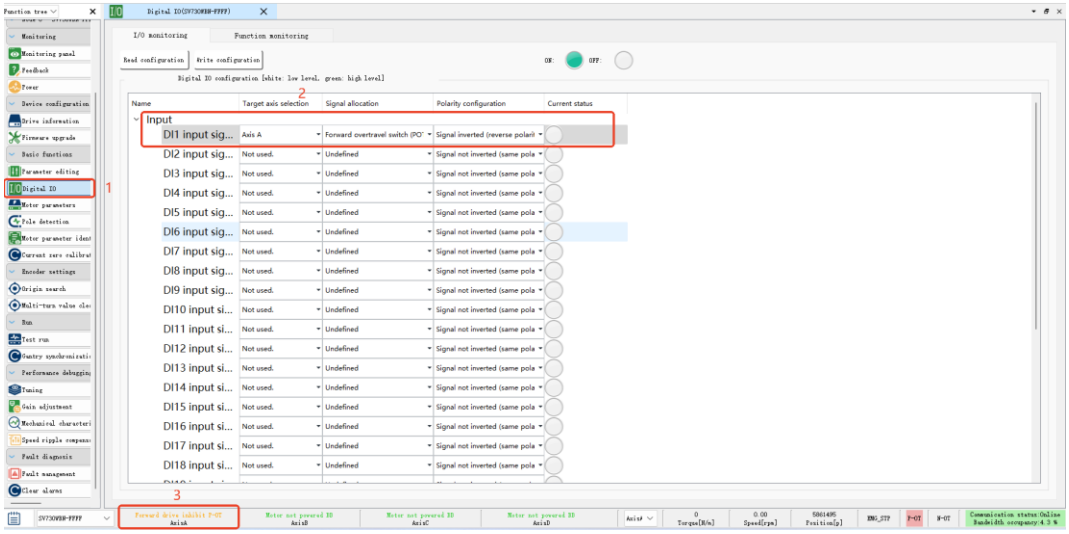


Figure 4-42

4.6.3 Output Function Configuration in the HCServoWorks

Complete the wiring as described in Section 4.6.1. In the host PC software, click the Digital I/O button in the left function navigation panel to access the Digital I/O interface, then configure the axis and signal assignment accordingly.

For example:

Disconnect the encoder cable from Axis D, which will trigger alarm C90 (Encoder Communication Error).

In the Digital I/O interface, select Axis D and assign the output signal to ALM (Alarm Signal).

Once the alarm is detected, the corresponding relay will energize. The detailed configuration steps are shown in Figure 4-43.

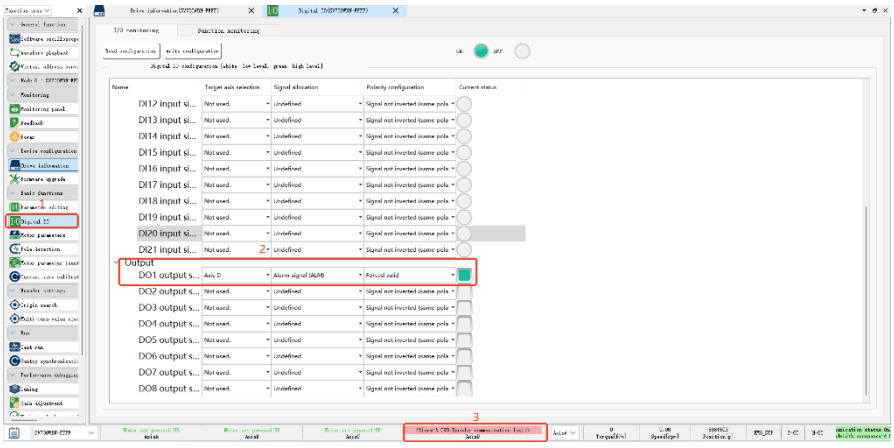


Figure 4-43

Chapter 5 Performance Tuning

5.1 Tuning

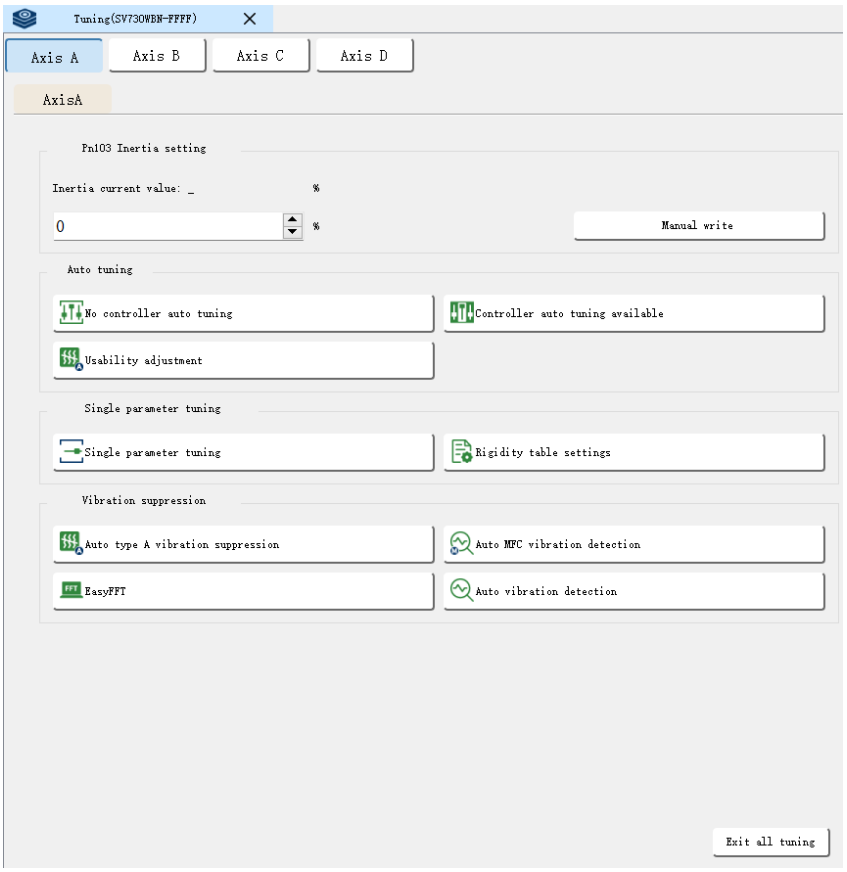


Figure 5-1

5.1.1 Auto Tuning

5.1.1.1 Controllerless Auto Tuning

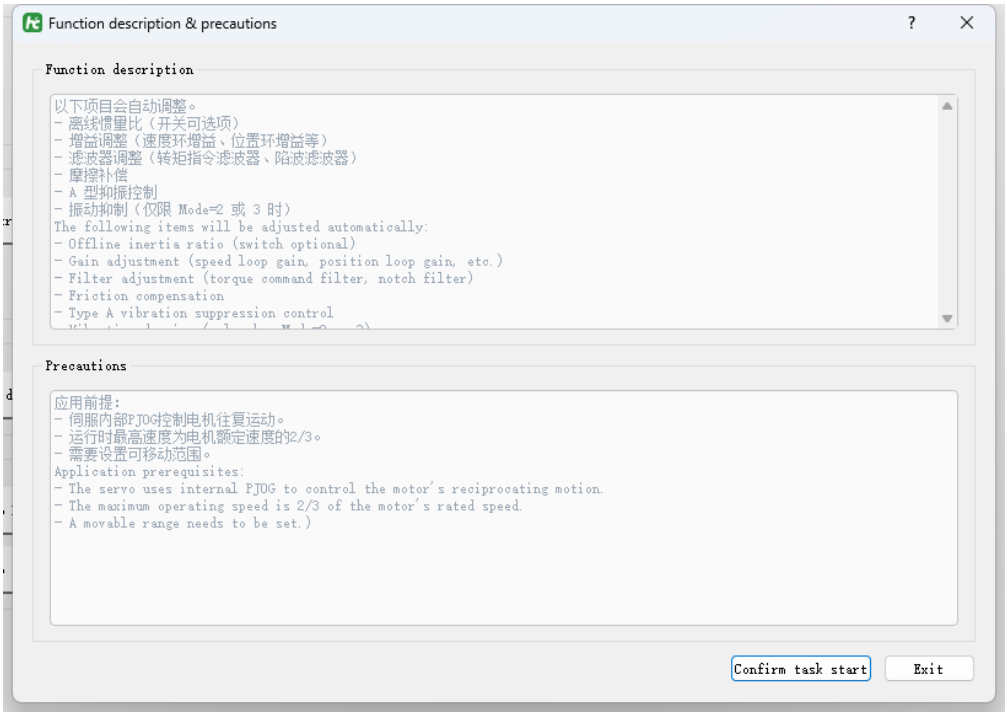


Figure 5-2

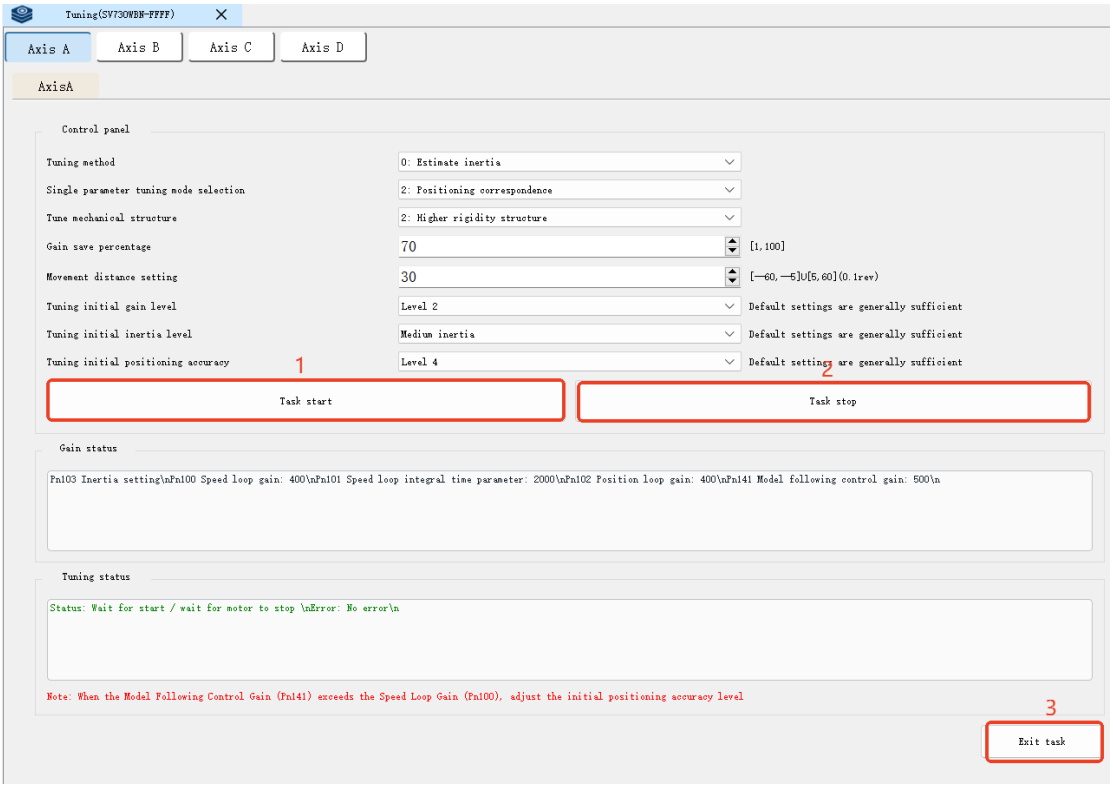


Figure 5-3

5.1.1.2 Controller-Based Auto Tuning

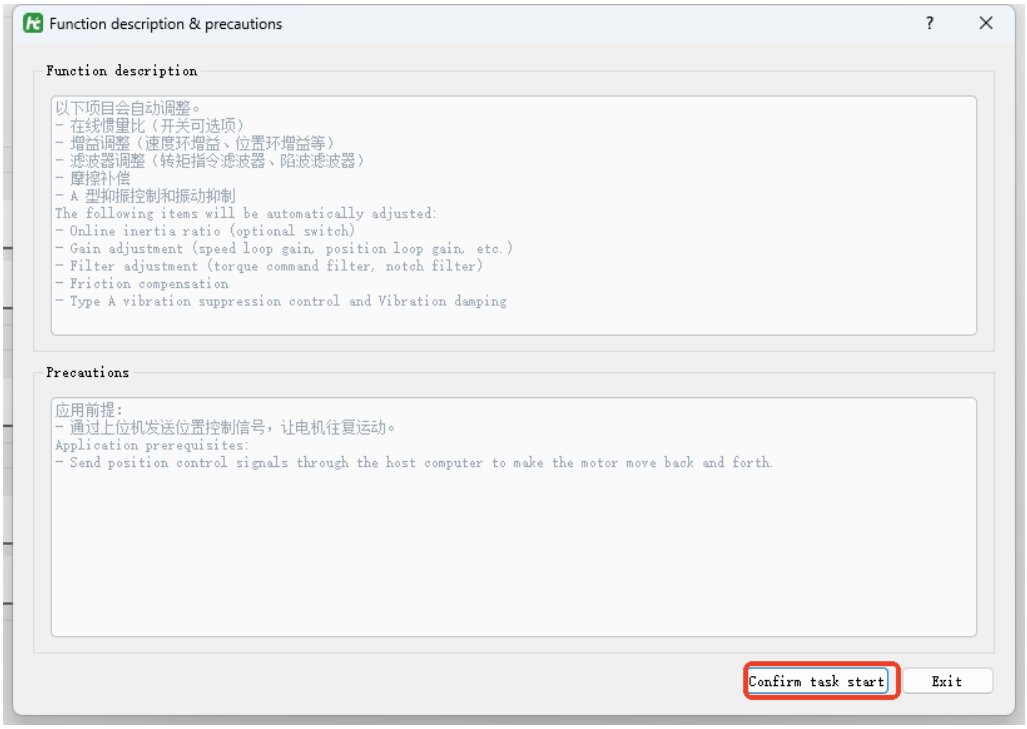


Figure 5-4

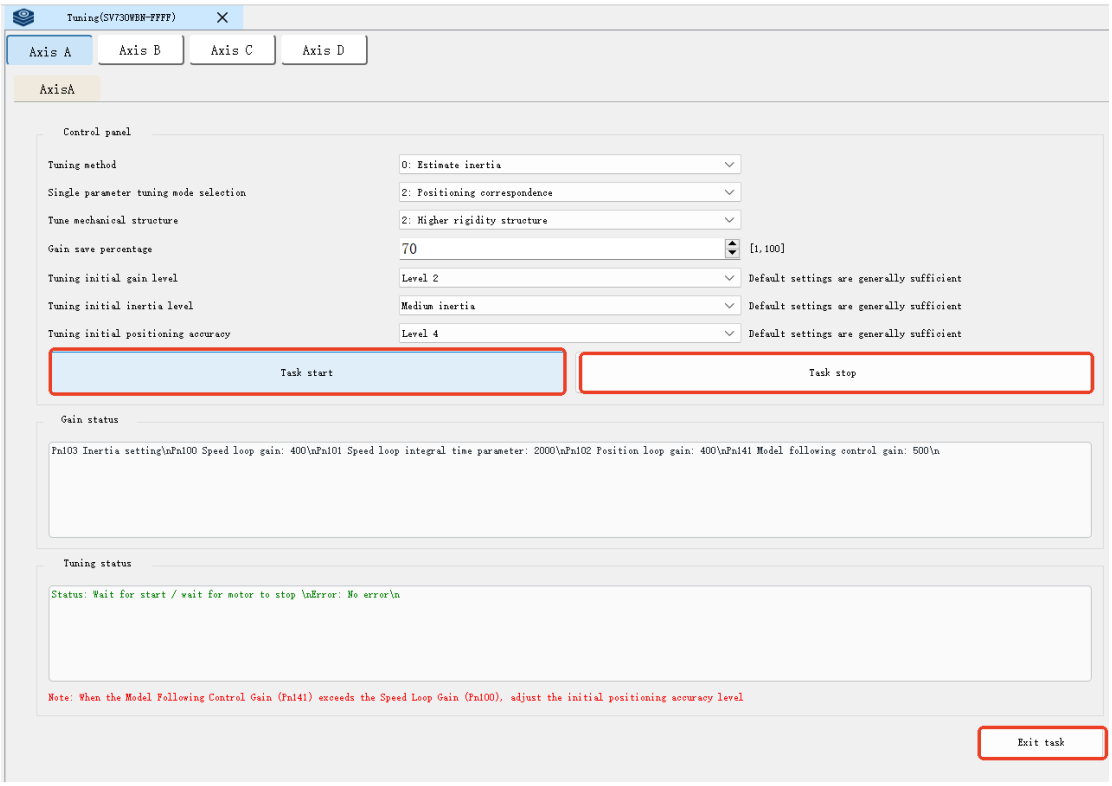


Figure 5-5

5.1.1.3 Usability Adjustment

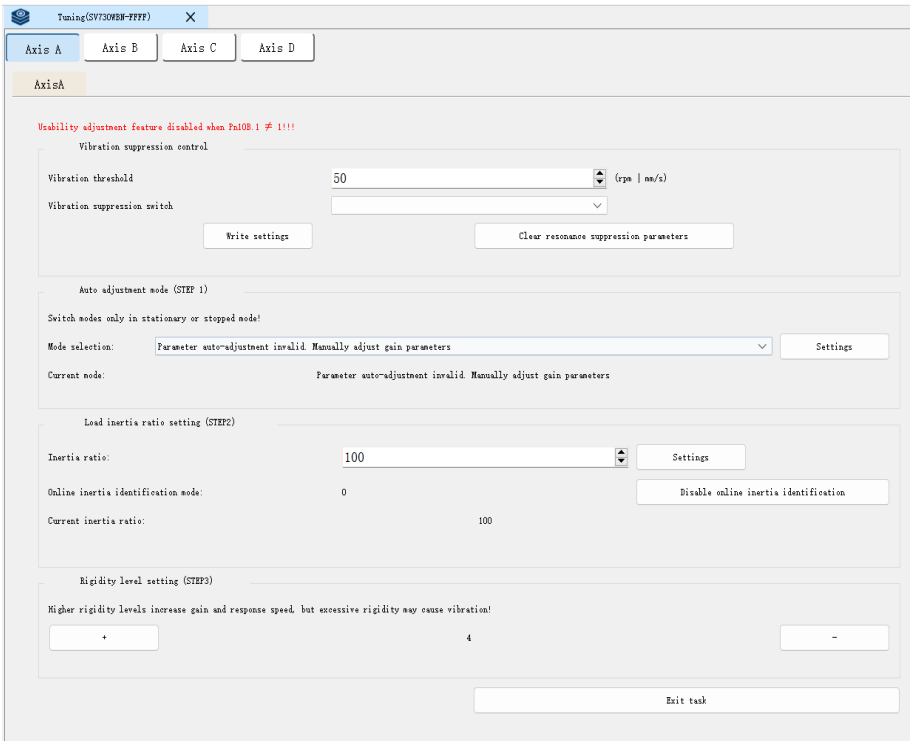


Figure 5-6

5.1.2 Single-Parameter Tuning

5.1.2.1 Single-Parameter Tuning

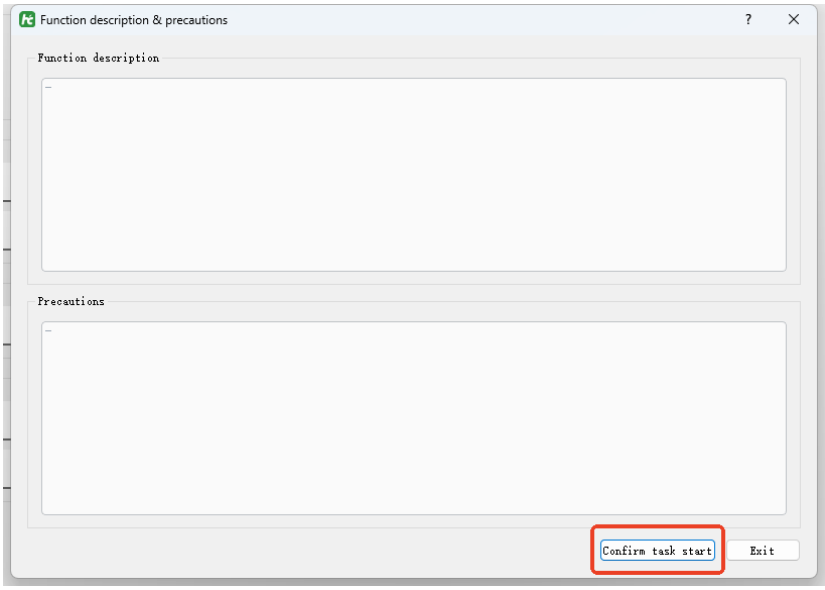


Figure 5-7

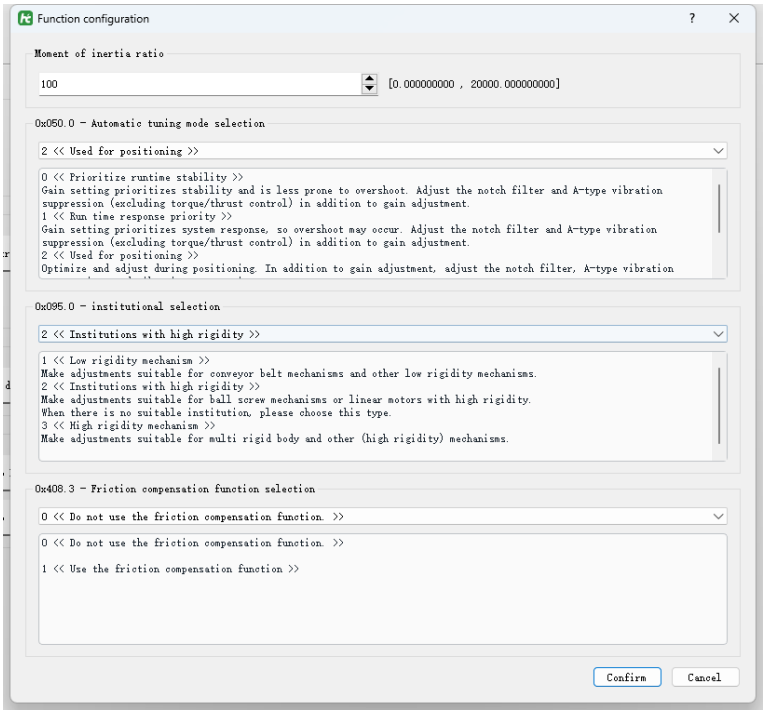


Figure 5-8

5.1.2.1 Stiffness Table Configuration

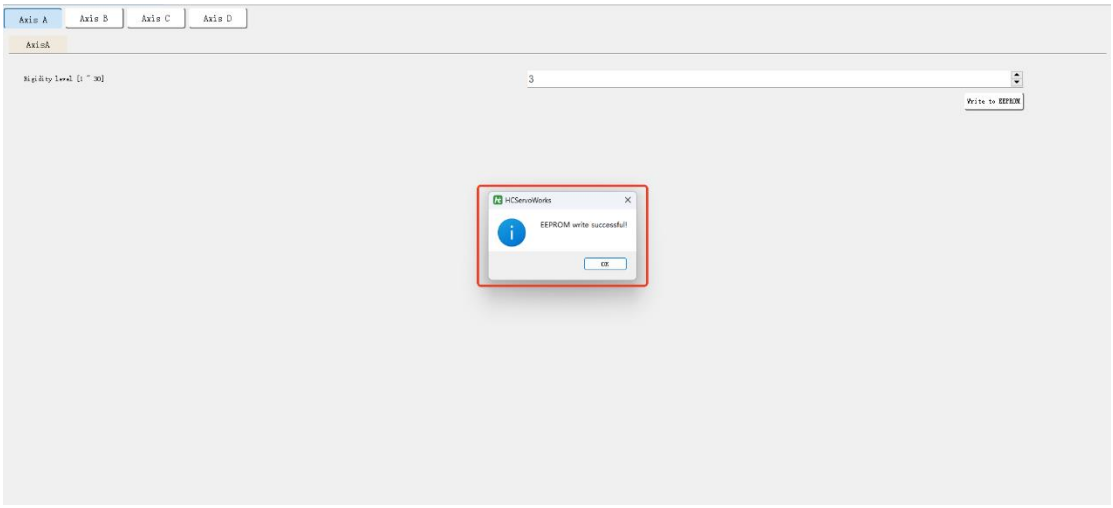


Figure 5-9

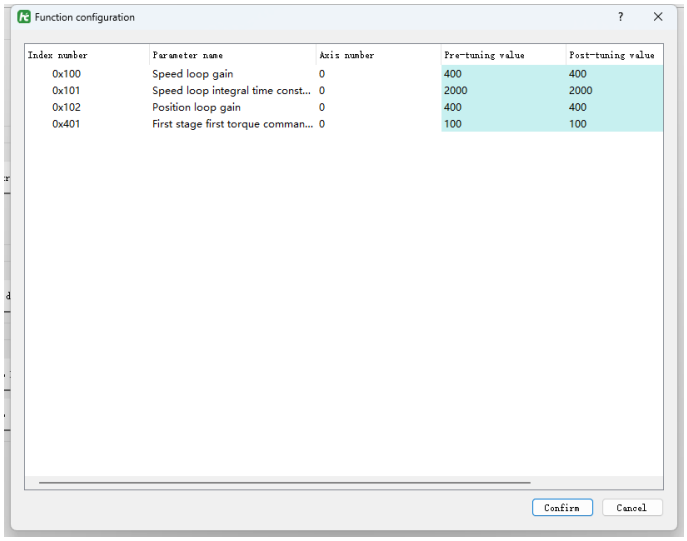


Figure 5-10

5.1.3 Vibration Suppression

5.1.3.1 Auto Type-A Vibration Suppression

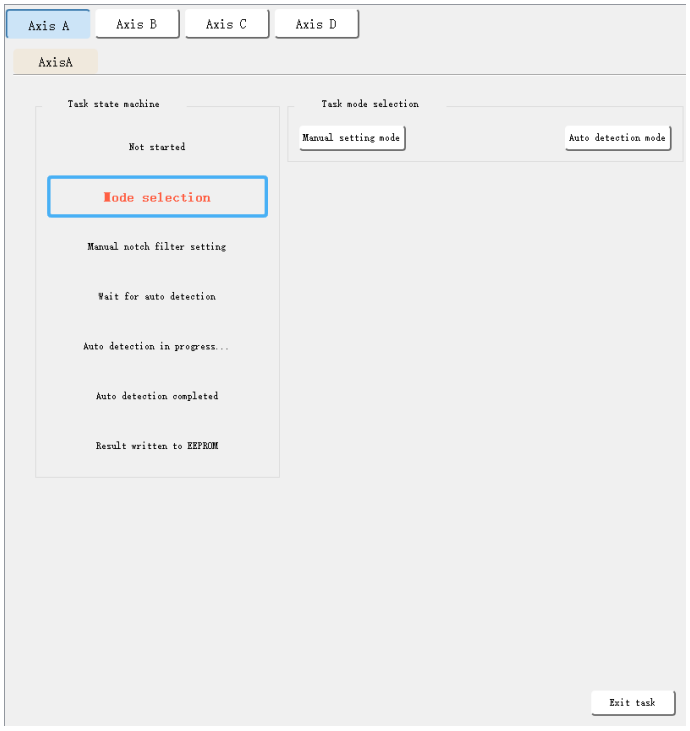


Figure 5-11

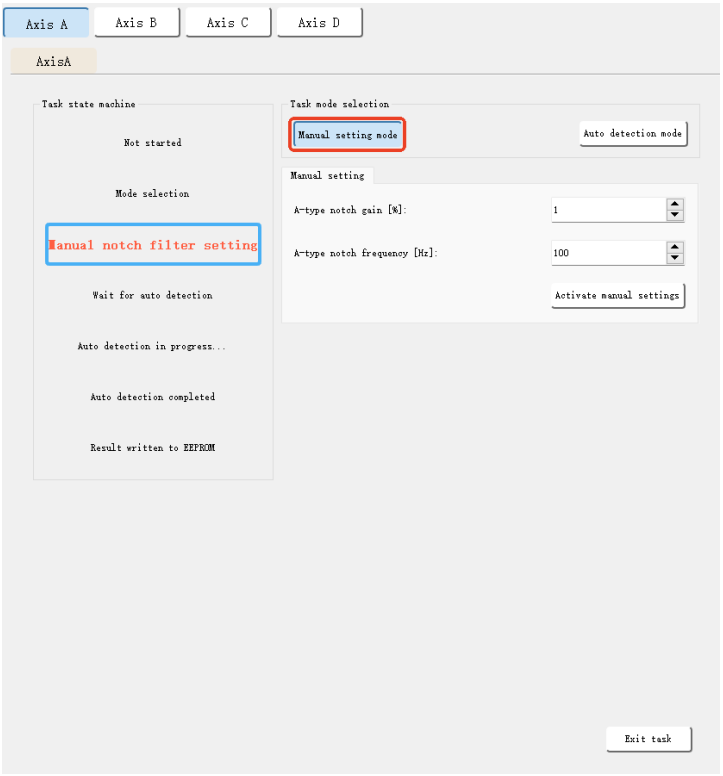


Figure 5-12

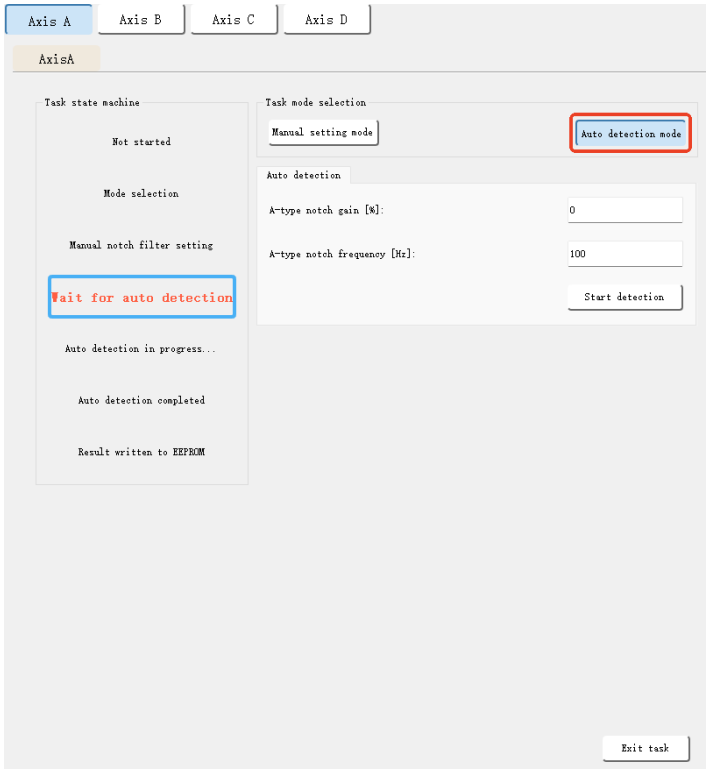


Figure 5-13

5.1.3.2 Auto MFC Vibration Detection

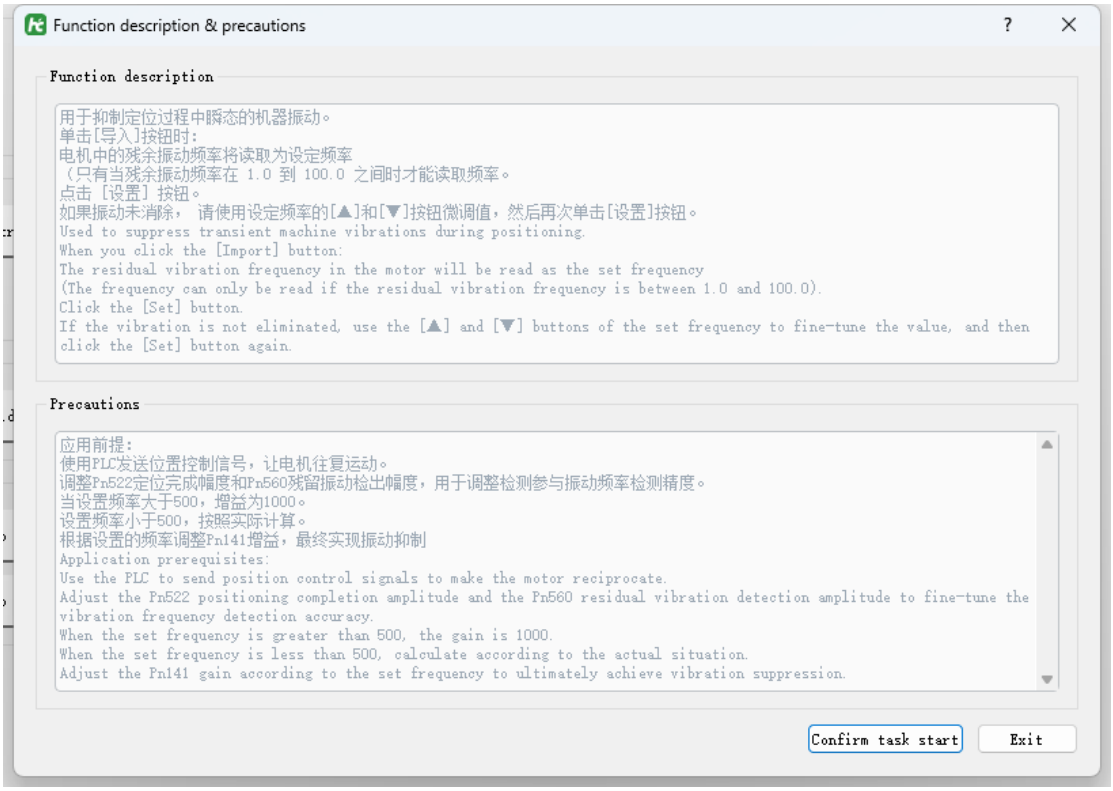


Figure 5-14

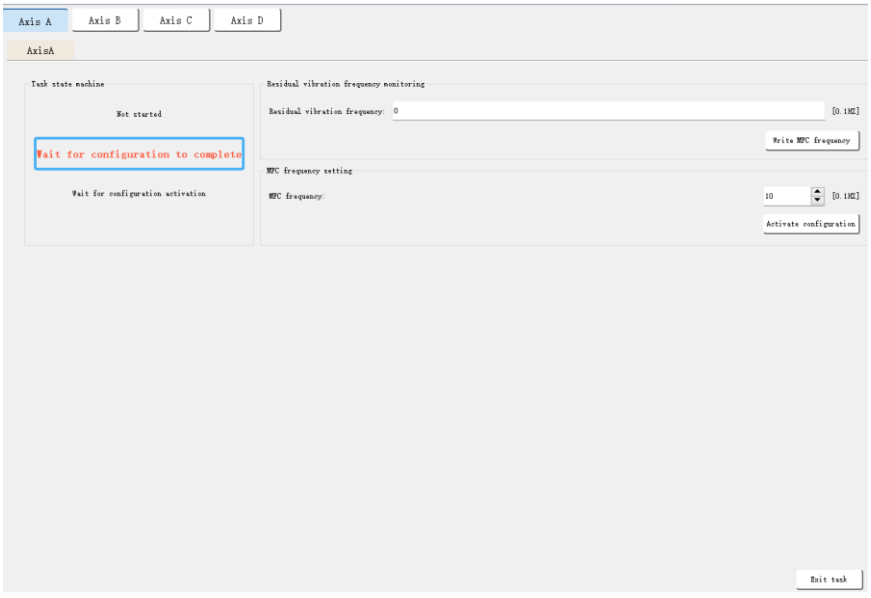


Figure 5-15

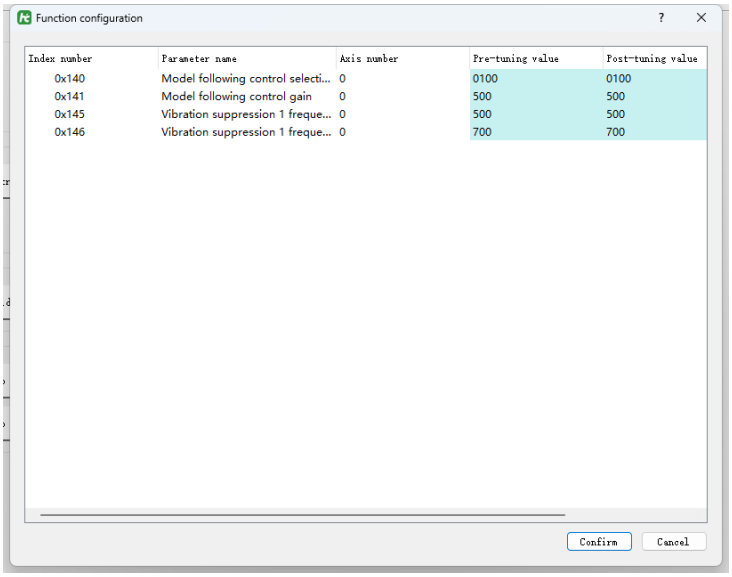


Figure5-16

5.1.3.3 EasyFFT

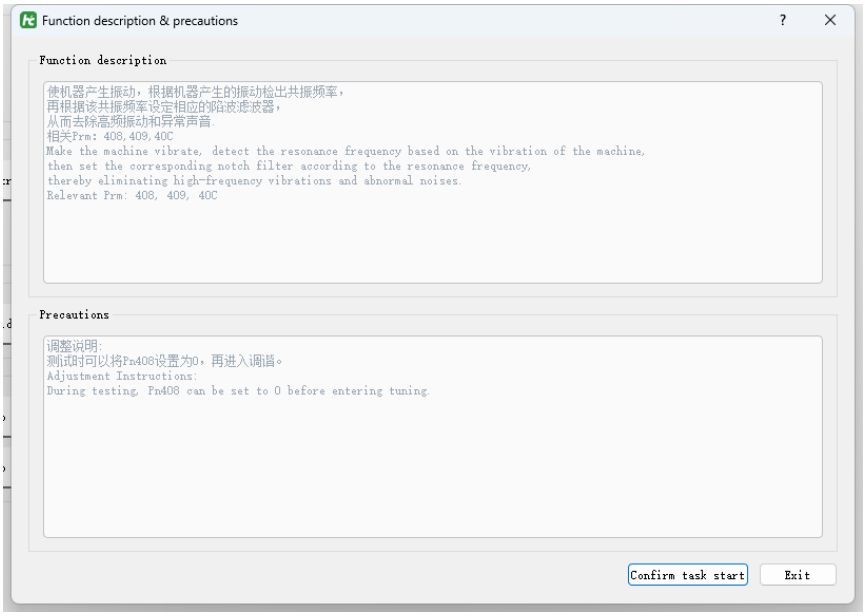


Figure5-17

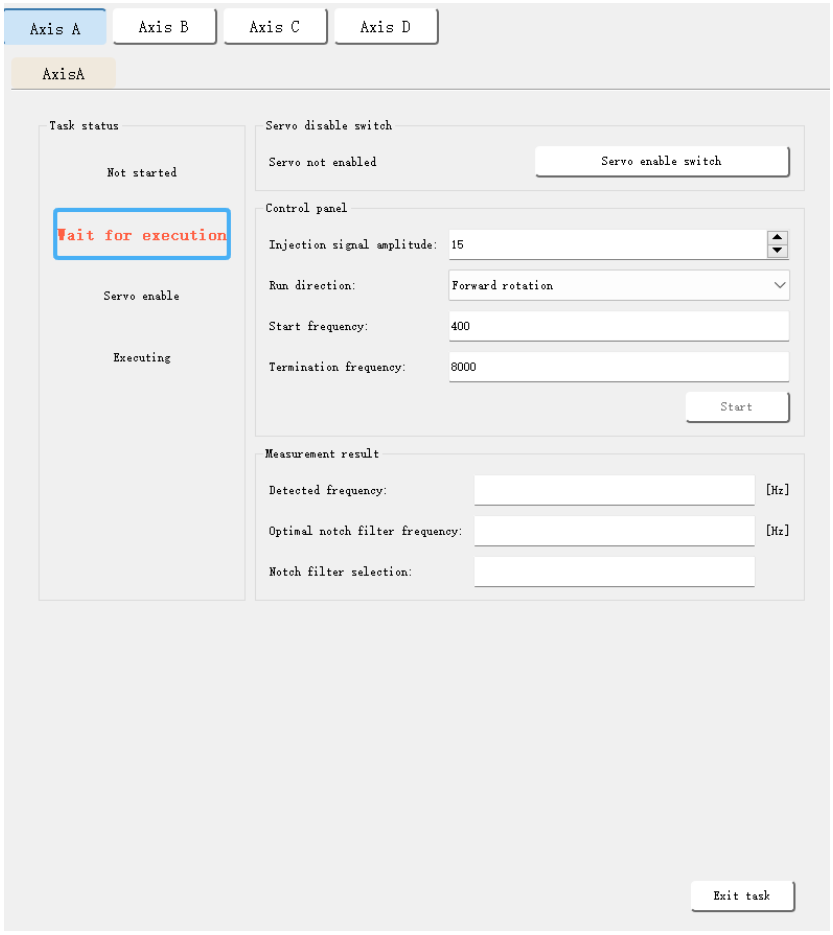


Figure 5-18

5.1.3.4 Auto Vibration Detection

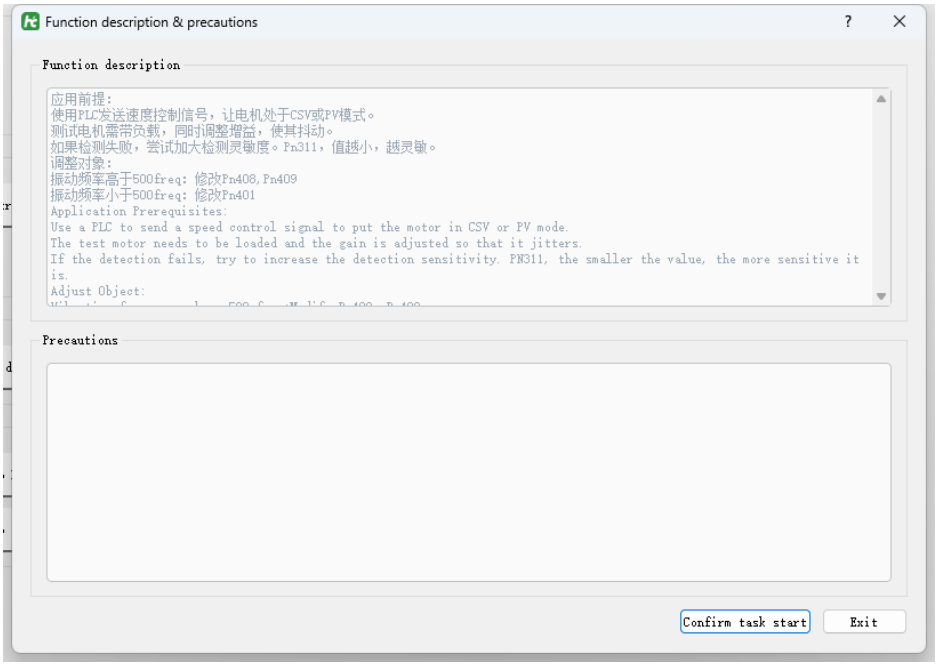


Figure 5-19

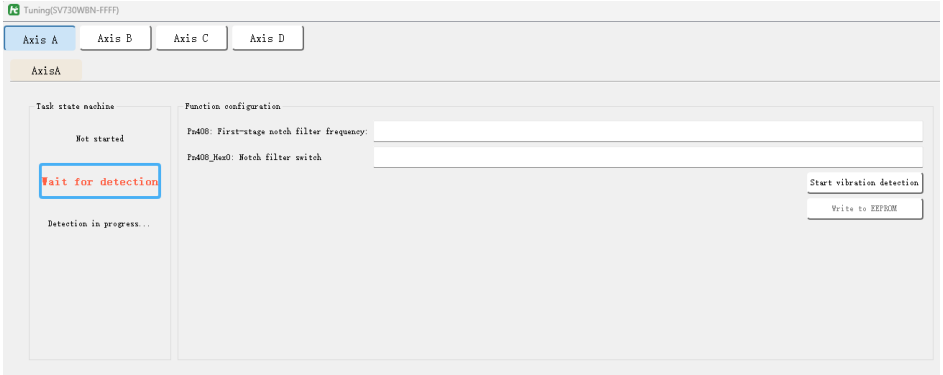


Figure 5-20

5.2 Gain Adjustment

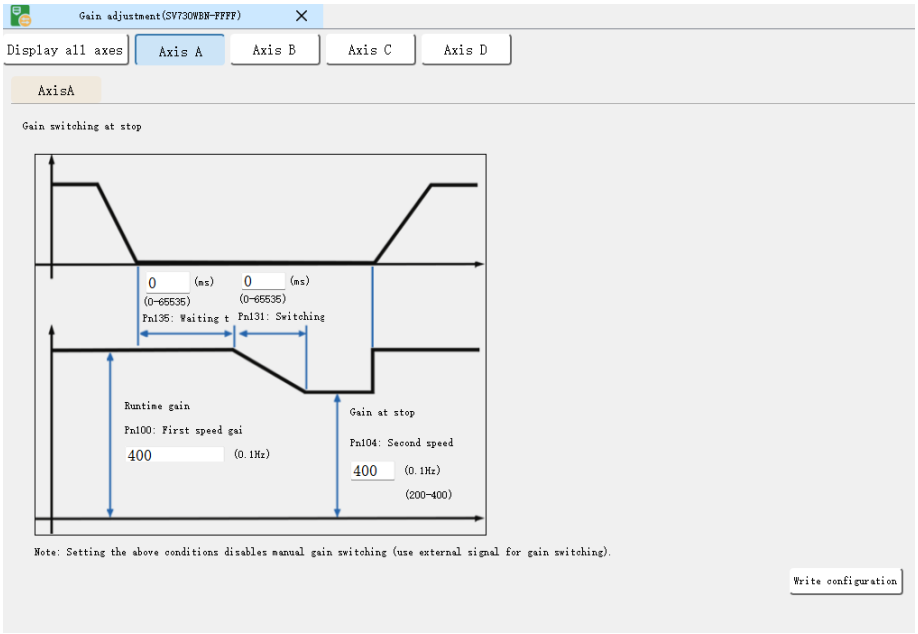


Figure 5-21

Chapter 6 Troubleshooting

6.1 Current Alarms

Click the Fault Management button in the left navigation panel to display the current alarm details, possible causes, and recommended troubleshooting actions.

Figure 6-1

6.2 Historical Alarms

In the Alarm Log, you can view the most recent 10 alarm records for the current servo drive.

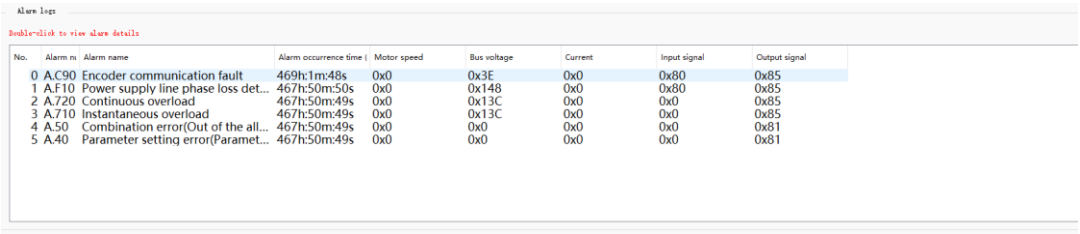


Figure 6-2

6.3 Black Box

Click the Fault Management button in the left navigation panel, then select the Black Box tab.

In the Black Box interface:

Enable the Black Box function.

Under Latch Mode, specify how many parameter samples to capture before and after an alarm (e.g., “five samples before and after”).

Select a Trigger Method:

Any Alarm Trigger, or

Specific Alarm Trigger — if selected, choose the specific alarm code to trigger data capture.

Click Apply Configuration to activate the settings.

Click Read Black Box Data to retrieve the recorded parameters.

The captured data is uploaded via the background for root cause analysis and troubleshooting.

Example:

Axis A triggers alarm C90 (Encoder Communication Error).

Enable Black Box.

Set latch mode to “Five samples before and after alarm.”

Set trigger method to “Specific Alarm Trigger.”

Select trigger alarm code: A.C90 – Encoder Communication Error.

Click Apply Configuration, then click Read Black Box Data.

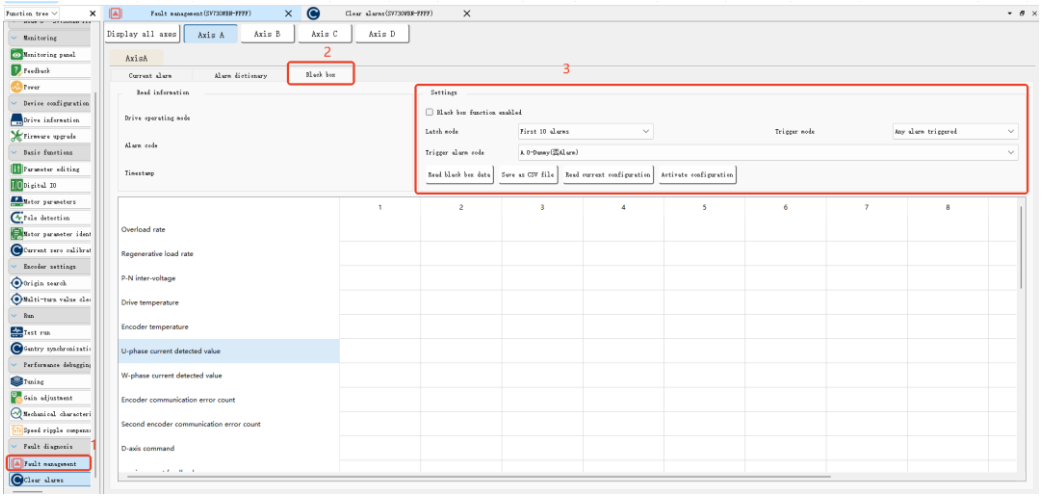


Figure 6-3

6.4 Clear Alarms

There are two methods to clear alarms:

1) Click the Alarm Reset option in the top quick-access toolbar. Once the underlying alarm condition has been resolved, this will clear certain alarms.

Figure 6-4

2) The second method is to click the Clear Alarms button in the left function navigation panel, and then click the Clear Alarms button again in the dialog or interface that appears.

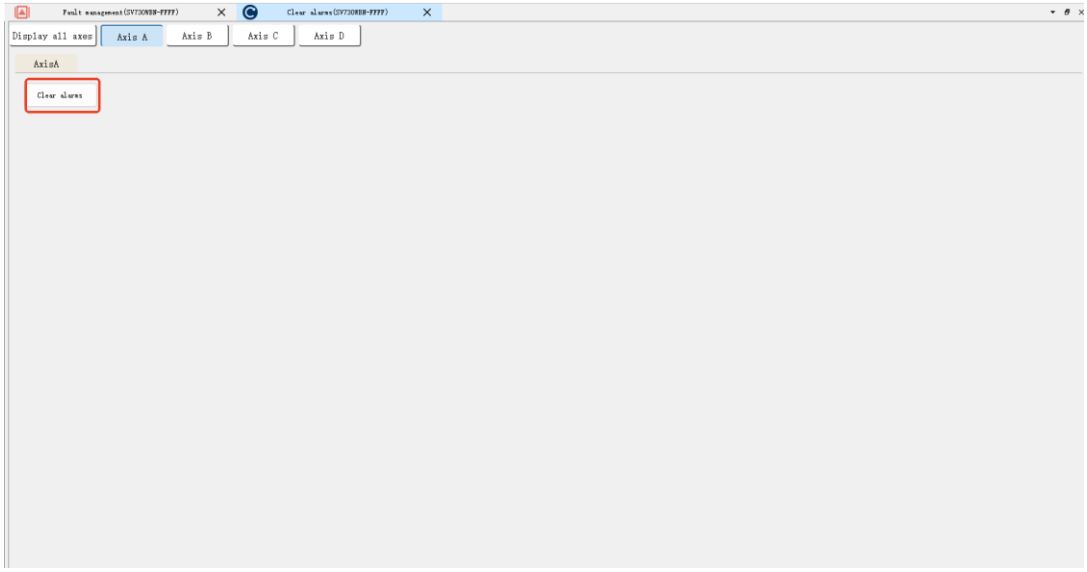

Display all axes
Axis A
Axis B
Axis C
Axis D
AxisA
Clear alarms

Figure 6-5