




MT-RH-20-100-B
Setup Software



MYACTUATOR MT-RH-20-100-B Setup Software Instruction Manual

[Home](#) » [MYACTUATOR](#) » MYACTUATOR MT-RH-20-100-B Setup Software Instruction Manual 

Contents

- [1 MYACTUATOR MT-RH-20-100-B Setup Software](#)
- [2 Preparation](#)
- [3 Basic Parameters](#)
- [4 Advanced Parameters Interface](#)
- [5 Motor Running Interface](#)
- [6 Common Problems and Solutions](#)
- [7 Documents / Resources](#)
 - [7.1 References](#)
- [8 Related Posts](#)



MYACTUATOR MT-RH-20-100-B Setup Software



Preparation

Before starting the setup software, the following needs to be done

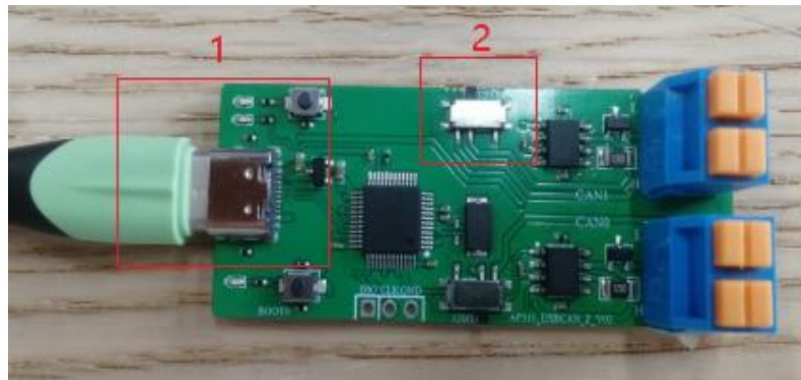
1. Connection of hardware devices;
2. The configuration of the operating environment of the setup software.

Hardware Connection

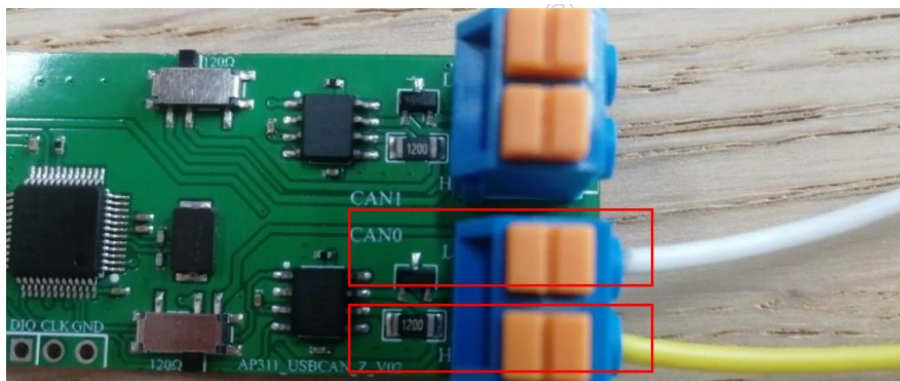
Hardware devices list

- Windows PC 1
- Type-C cable 1pc
- CAN-USB conversion device 1set
- Motor ≥ 1 set
- DC power supply 24V/48V

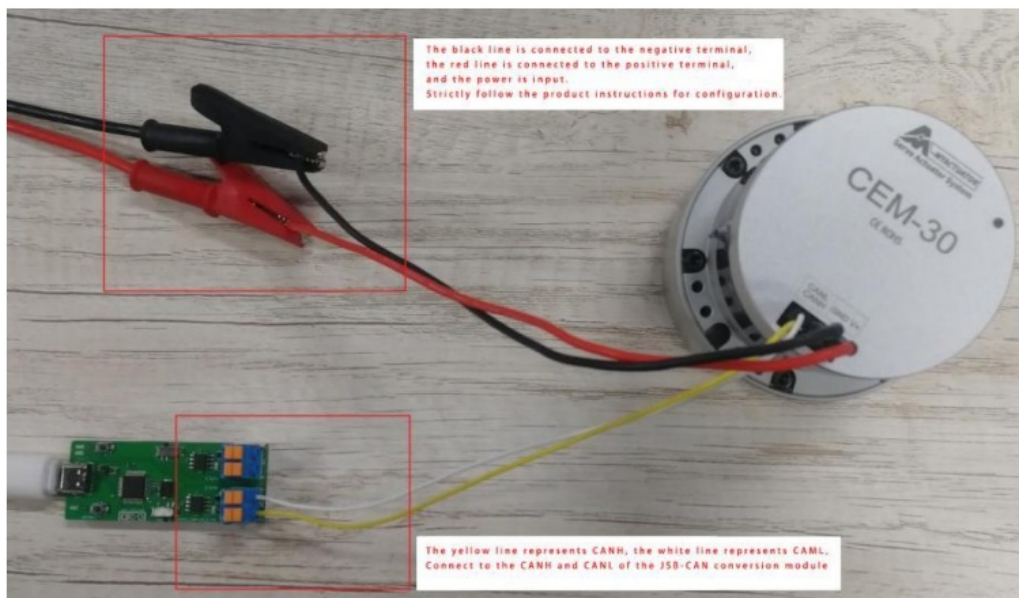
After the hardware device is ready, connect the CAN-USB conversion device and Type-C cable, the connection is shown in position 1, Figure 1-1; position 2 is the matching resistance, turn it to the left and keep it on.



Please note that the appearance of the CAN-USB conversion device is different after upgrading, keep the matching resistance connected when using it and the connection method of the communication cable will not change. Setup software uses the CAN0 channel, to connect the CANH line and CANL line of the motor to the H and L of the CAN0 channel in turn. As shown in Figure 1-2, the CANH line is yellow and the CANL line is white in this example. The color of the CAN line may be different for different models of motors, so please follow the actual situation. In addition, multiple motors can be connected to the CAN bus as long as you make sure that the motor IDs are not the same.



With the DC power supply turned off, connect the motor to the DC power supply, and the black wire of the motor connected to the negative terminal and the red wire connected to the positive terminal.



Running Environment

When you use the setup software for the first time, please install the necessary running environment drivers and common Microsoft runtime libraries in the same directory of the setup software, as shown in Figure 1-4, download link: Downloads | MyActuator. Running the program after the installation is completed, otherwise, a pop-up window will report an error, indicating that a file is missing.

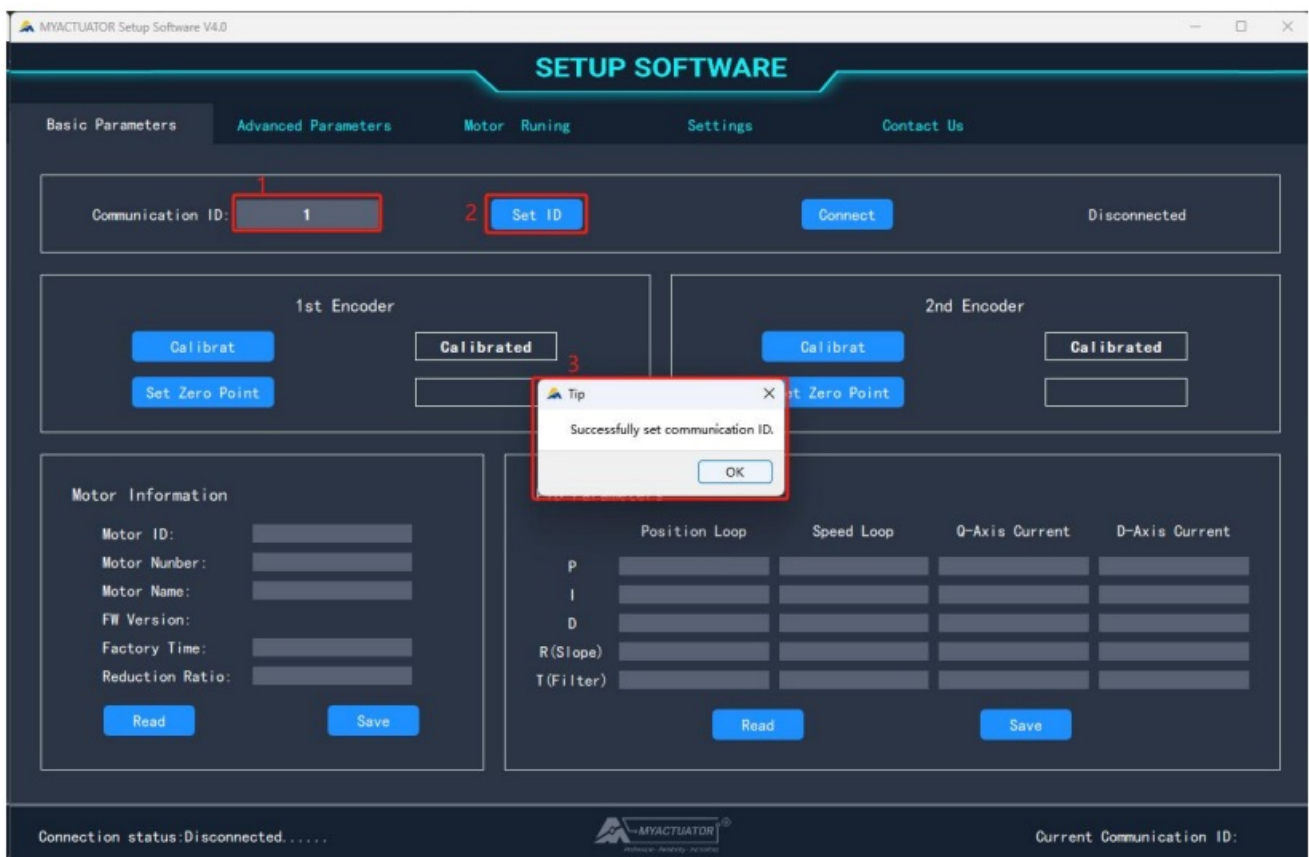


Basic Parameters

The basic parameters interface includes communication connections, encoder calibration, motor information and PID adjust parameters. In addition, the communication connection status and current communication ID are instantly displayed at the bottom of the screen.

Communication Connection

After the hardware is correctly connected, turn on the power switch and the setup software, enter the specified communication ID, click the “Set Communication ID” button, and a pop-up window prompts “Successfully set communication ID”. If the communication ID is empty, clicking the “Set communication ID” button will not take effect.



Click on the “Connect” button to connect successfully, then this button can not be used, and display “Connected”, display encoder calibration, the current position, motor information, and the current communication ID.

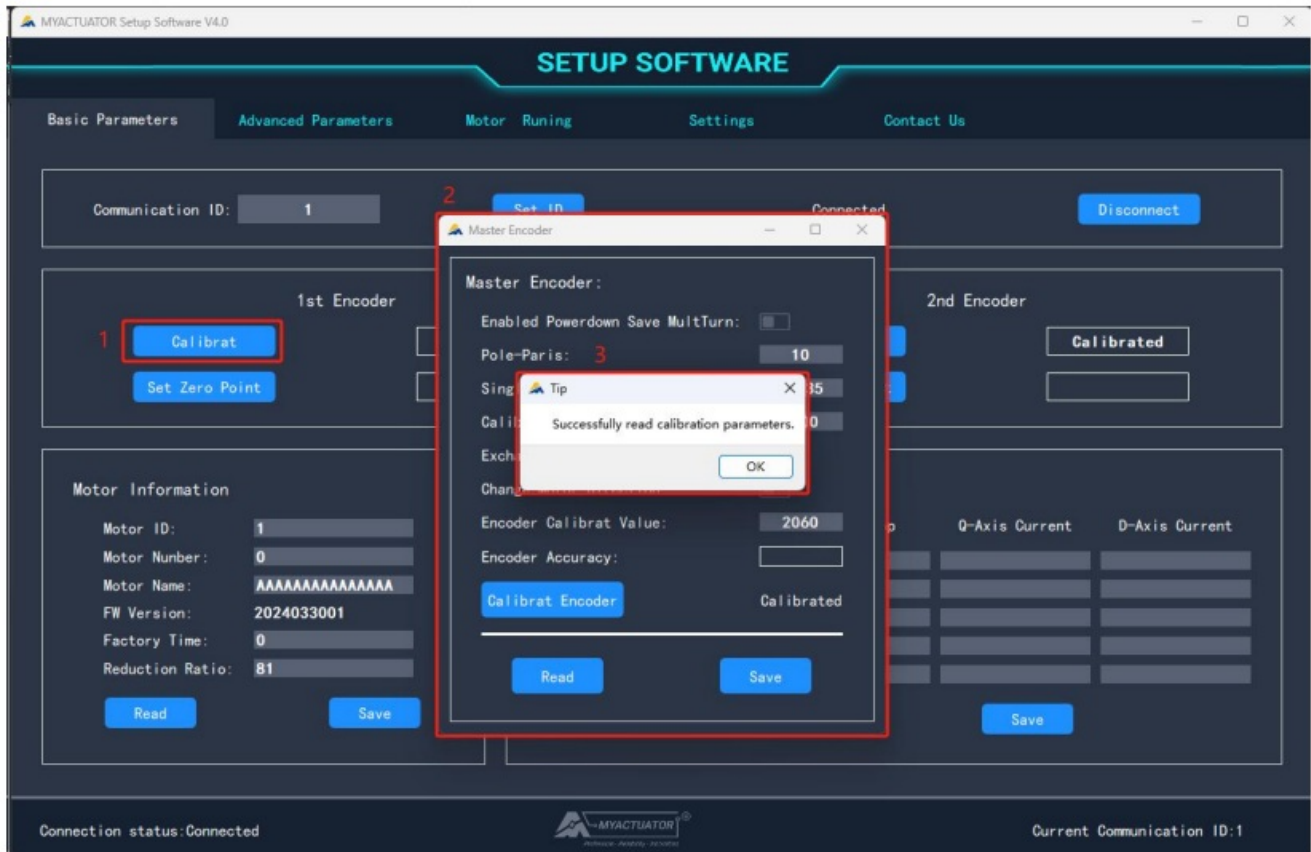


Click on the “Disconnect” button, operate the setup software to close the CAN-USB conversion device, then display “Disconnected”, and the connection status changes to “Not connected...”, and the current communication ID is cleared.

Encoder Calibration

Click the “Encoder Calibration” button of the first encoder to bring up the main encoder interface, read the encoder

parameters, and a pop-up window prompts “Successfully read calibration parameters.”



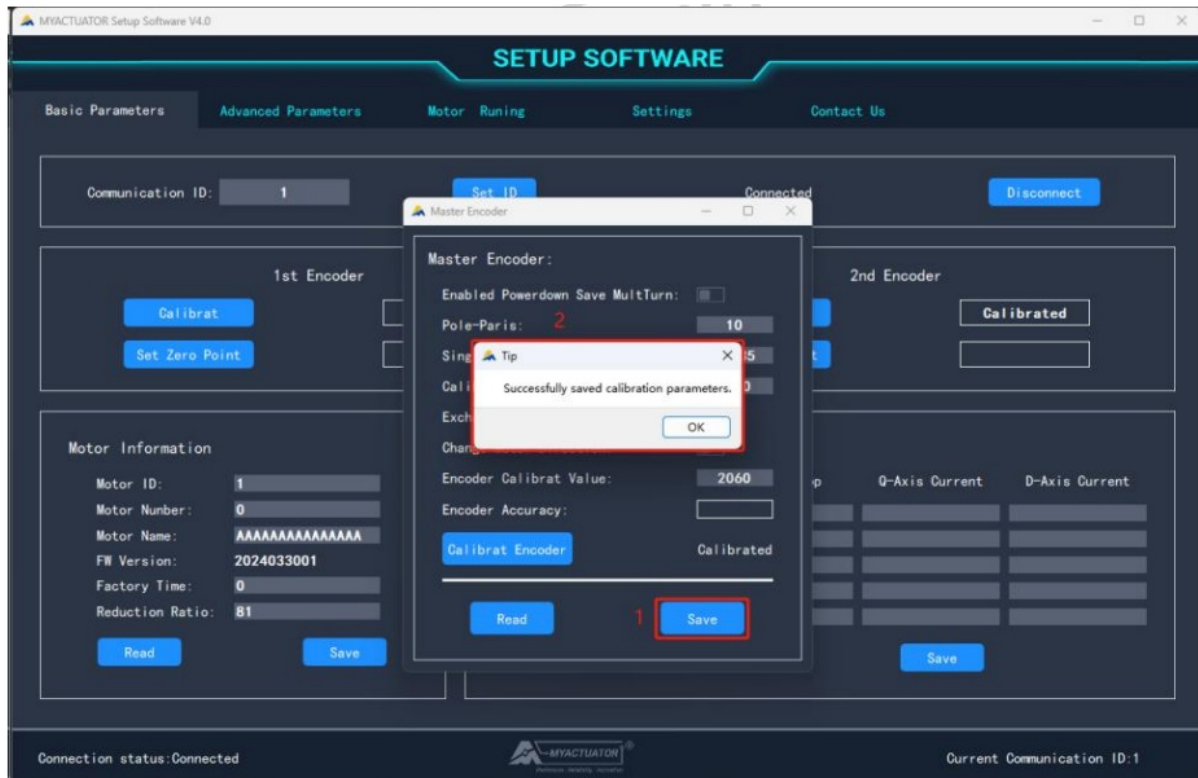
Explanation of encoder parameters

Parameters	Explanation	Range
Power off to save multi-turn values	When switched on, power down to saves multi-turn values	0,1
Pole pair	Number of pole pairs of a motor	2~40
Number of motor encoder lines (PPR)	Increased encoder value after 1 revolution of motor operation	0~262144
Encoder calibration current (A)	Motor torque current during calibration	0~Rated current
Motor exchange phase sequence	Automatic calibration according to encoder direction and motor wiring direction	0,1
Change motor direction	When switching on, change the direction of motor operation	0,1
Encoder zero point	Zero bias of electrical angle	0~PPR
Encoder accuracy	Assess the accuracy of calibration results	<1000

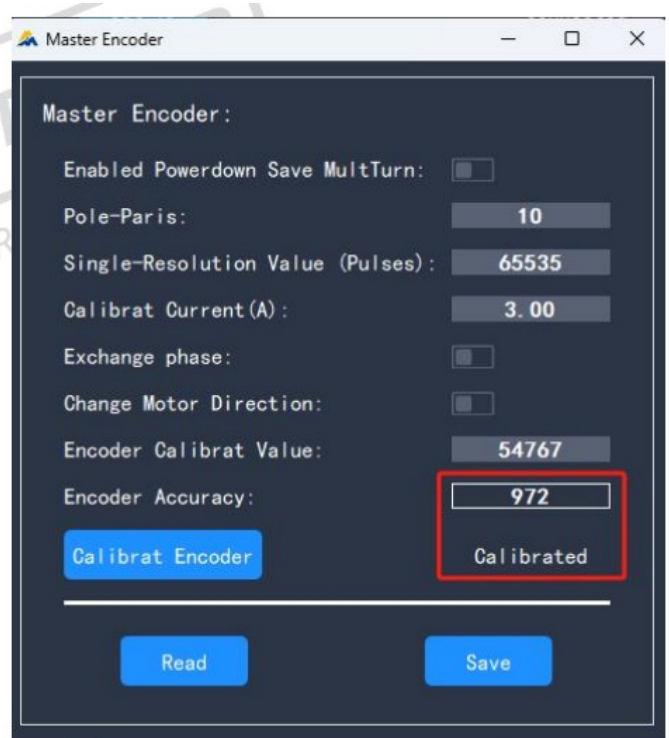
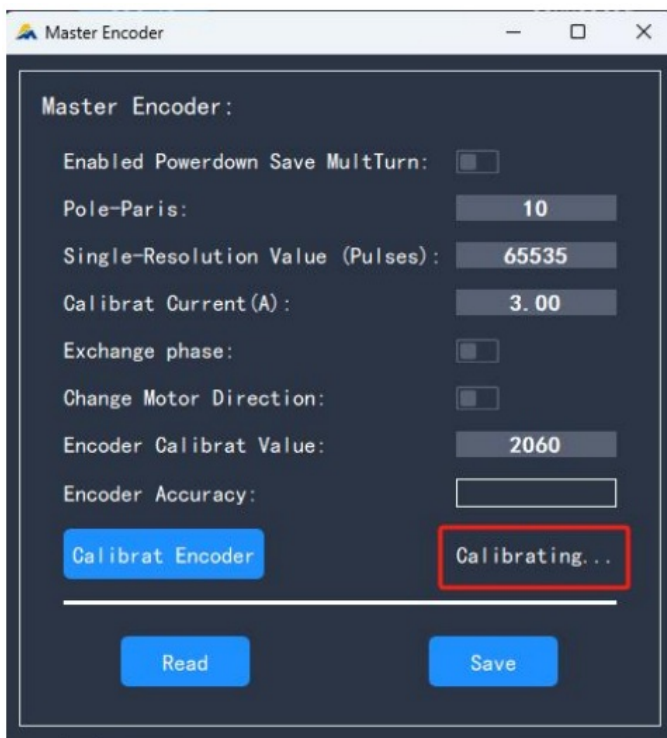
The criteria for determining the accuracy of the encoder

Encoder Accuracy	970~1000	0~970	<0
Calibration Results	Success	Failure	Failure

Adjust the encoder parameters to ensure that the value is correct, click on the “Save” button to save all parameters to the motor program, and the pop-up window prompts “Successfully saved calibration parameters.”



Prevent operational errors, as long as there is no value for any one parameter, click the “Save” button, and the setup software will not perform any operation. Further, click on the “Zero Calibration” button, and you can control the motor calibration.

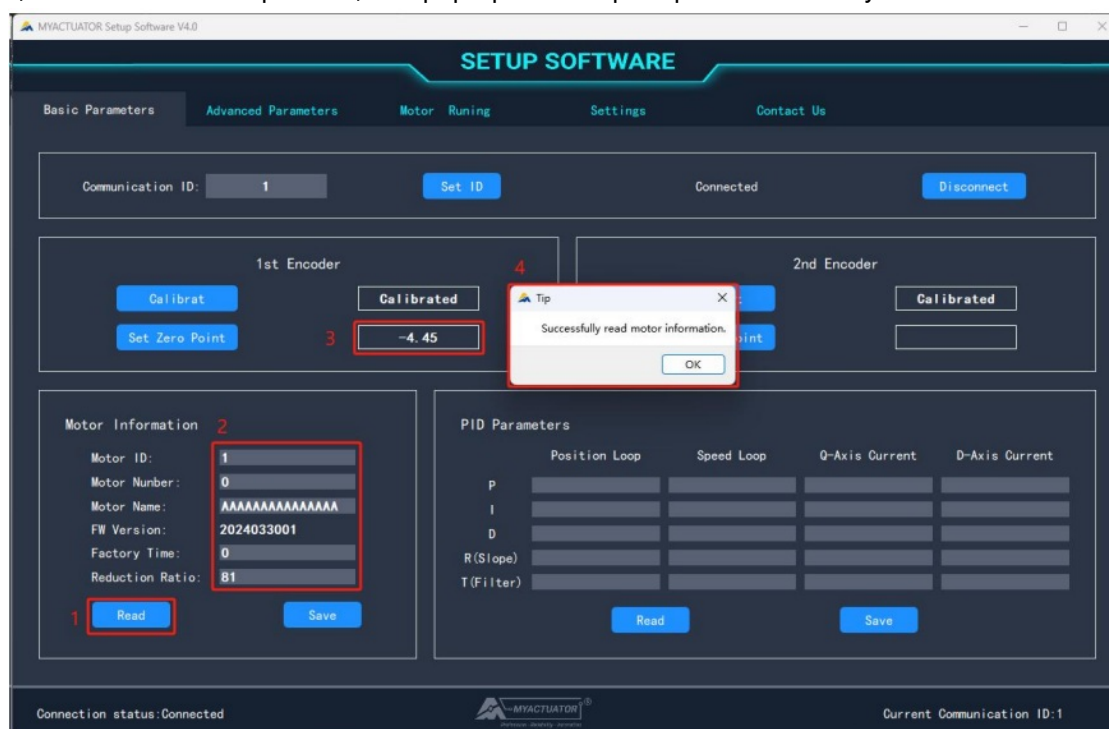


After calibration, re-read all data in the “Master Encoder” interface and display the calibration result. If the calibration is unsuccessful, the resolution is shown in Table 2-3. In addition, some motors will automatically open the “Exchange phase” option after calibration, which is a normal phenomenon.

Results	Solutions
Failure	Check that the number of pole pairs, the number of encoder lines and the encoder calibration current and re-calibrate them.
Unavailability	Re-calibrate

Motor Information

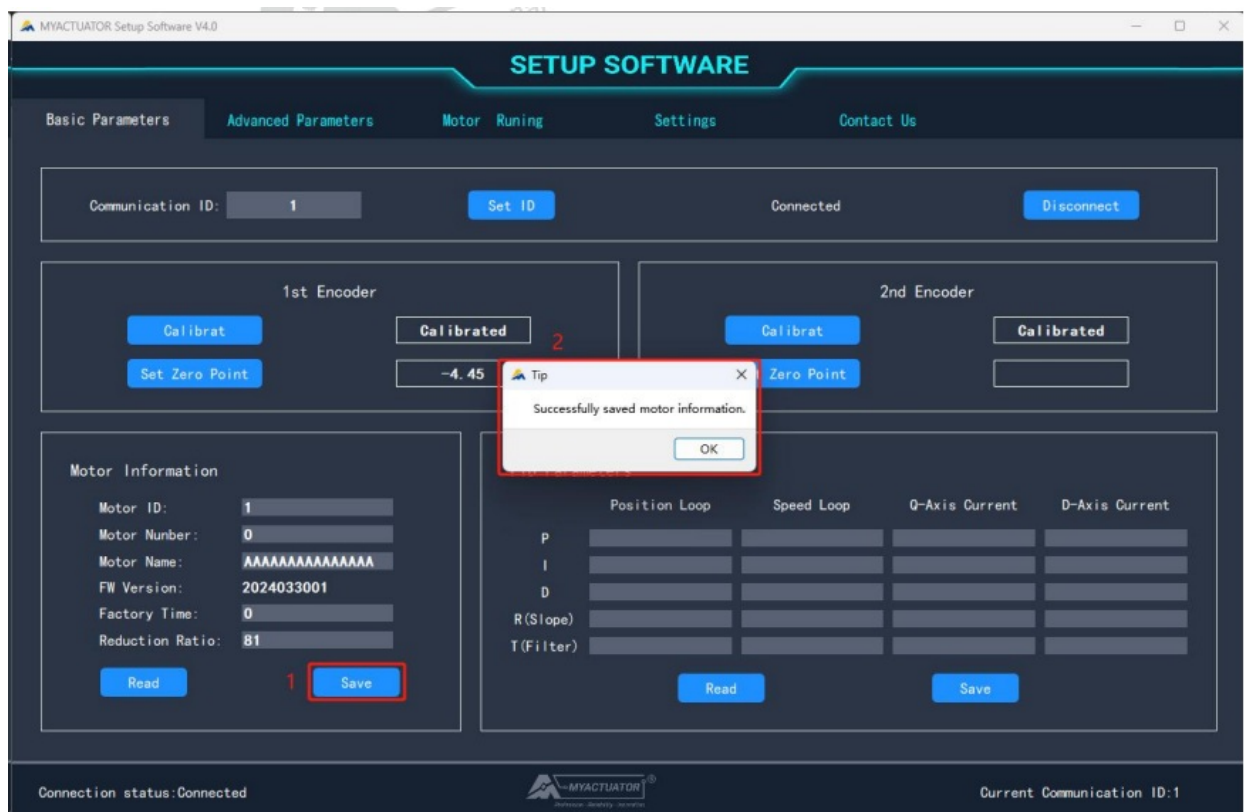
Click the “Read” button of the motor information, the setup software will read the parameters in the motor information, refresh the current position, and pop-up window prompts “Successfully read motor information.”



Explanation of motor information parameters

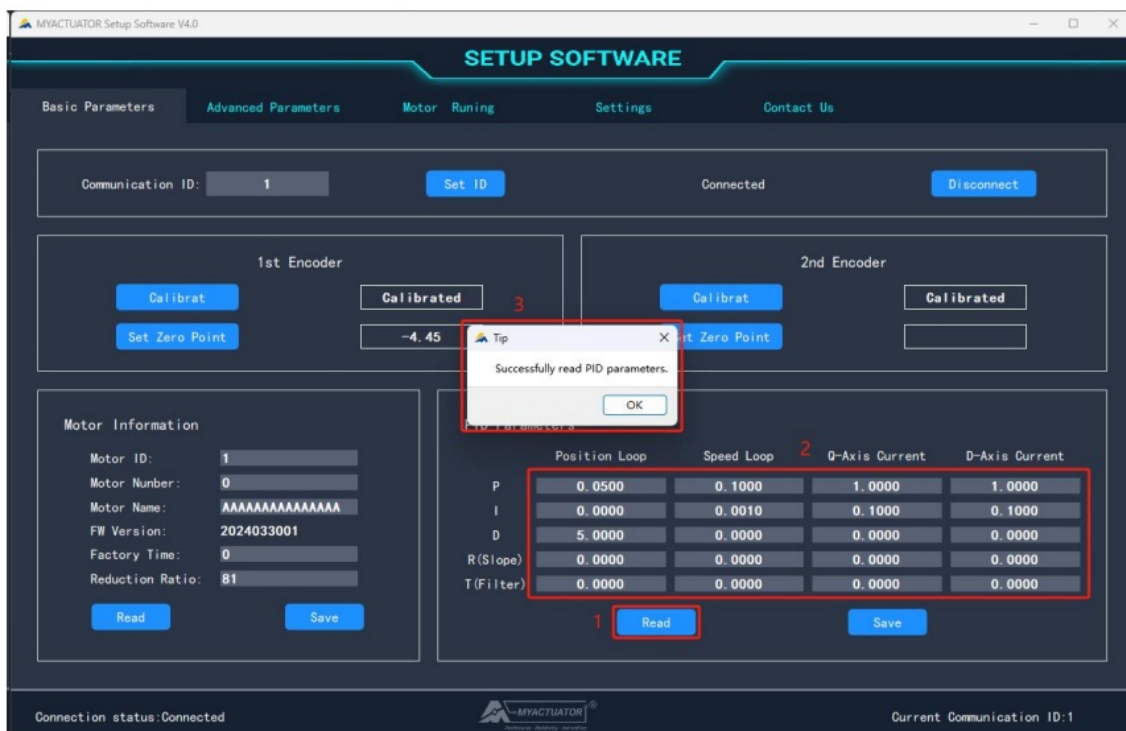
Parameters	Explanation	Range
Motor ID	Addressing the motor's identity on the CAN bus	0~32
Motor code	Distinguishing motors	NULL
Motor name	Motor model	NULL
Firmware version	Date of firmware version	NULL
Factory date	Factory date and it cannot be modified	NULL
Reduction ratio	Motor's reduction ratio	1~121

Except for the firmware version in the motor information, other parameters can be modified and saved. Click the “Save” button to save all parameters to the motor program, and a pop-up window prompts “Successfully saved motor information.”, as shown in Figure 2-7. To prevent operation errors, as long as there is no value for any parameter, click the “Save” button, and the setup software will not carry out any operation.

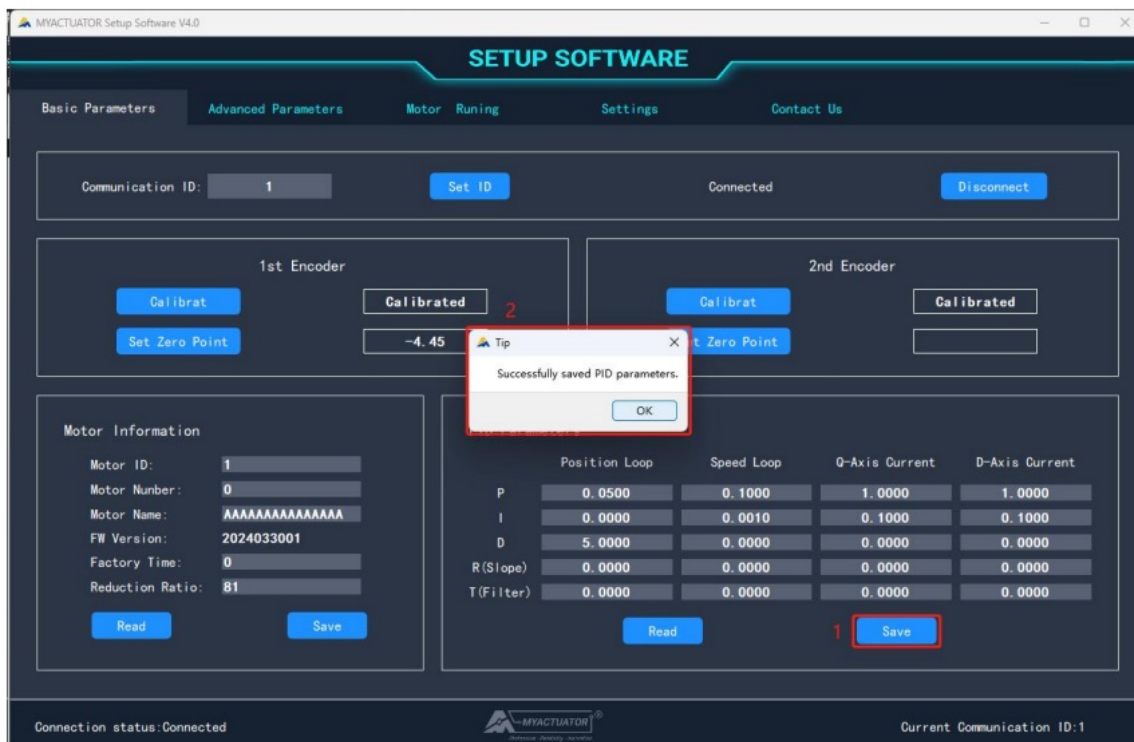


PID Parameter Adjustment

Click on the “Read” button of the PID parameter to set the software to read the PID parameters, and at the same time, a pop-up window prompts “Successfully read PID parameters ” as shown in Figure 2-8 professions



Click the “Save” button of PID parameter, it saves all PID parameters to the motor program, and the pop-up window prompts “Successfully saved PID parameters.”, as shown in Figure 2-9. To prevent operational errors, as long as there is no value for any parameter, the setup software will not perform any operation when clicking the “Save” button.

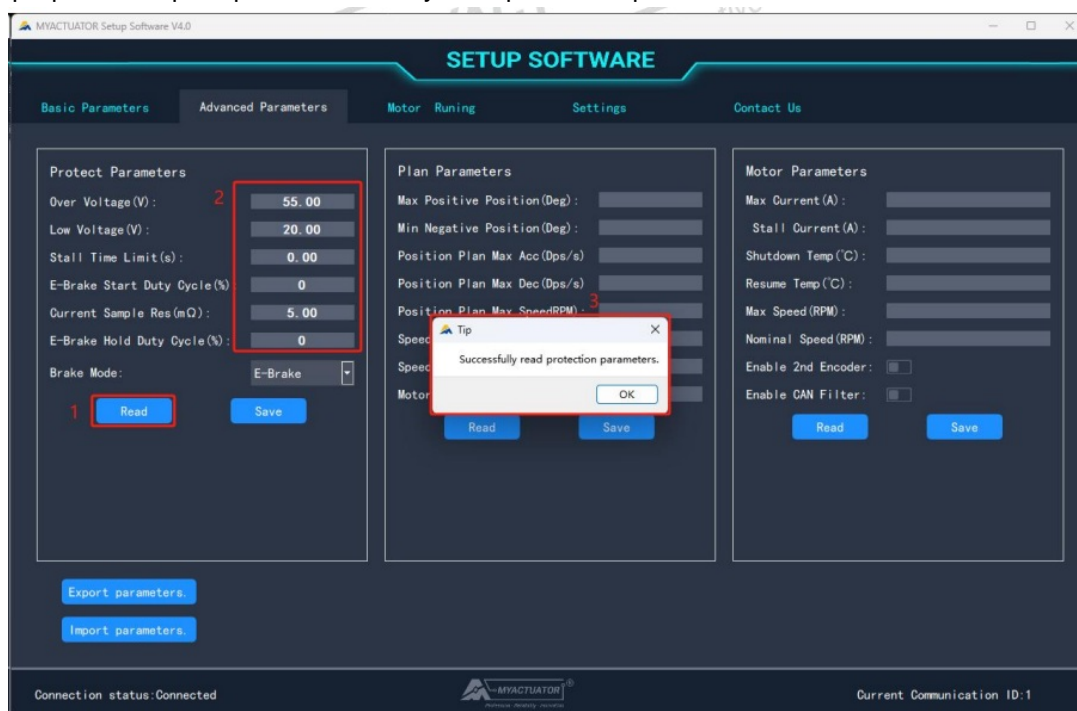


Advanced Parameters Interface

The Advanced parameters interface displays protection parameters, planning parameters, motor parameters, export parameters, and import parameters.

Protection Parameters

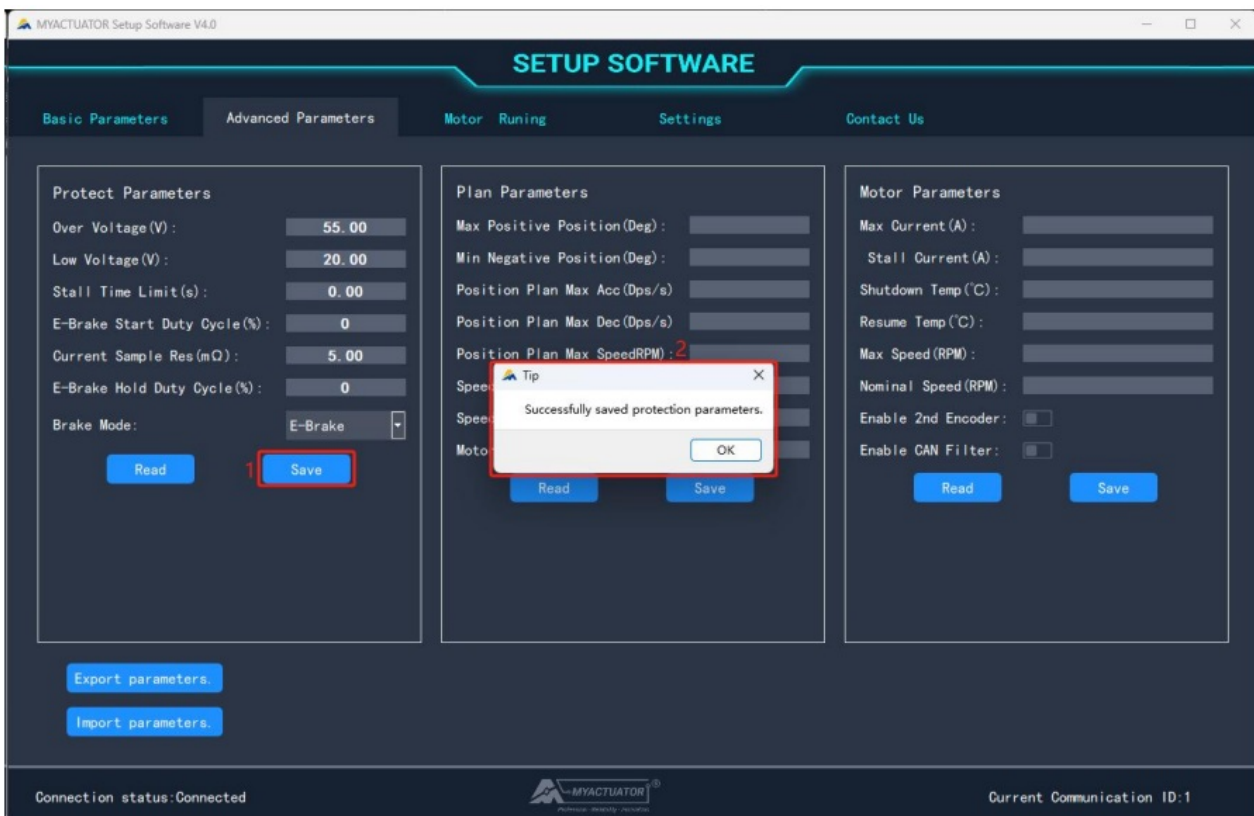
Click on the protection parameters of the “Read” button, and the setup software reads the protection parameters, while the pop-up window prompts “Successfully read protection parameters.”



The explanation of protection parameters.

Parameters	Unit	Explanation	Range
Over-voltage protection voltage	V	If the operating voltage exceeds this parameter, the motor stops and an error is reported: over-voltage	0~60
Low-voltage protection voltage	V	If the operating voltage is lower than this parameter, the motor stops and an error is reported: low-voltage	0~60
Time limit of blocking turns	s	If the blocking time exceeds this parameter, the motor stops and an error is reported: motor blocking	0~600
Duty cycle for braking	%	Duty cycle of the holding brake circuit when the holding brake is activated	0~100
Current sampling resistors	mΩ	Resistor resistance value when sampling three-phase current by the main control	Base on the situation
Holding brake maintenance	%	Duty cycle of the holding circuit when holding brake is maintained	0~100
Duty Cycle for Brake Function Selection	—	Selection of braking function: holding brake or braking resistor	NULL

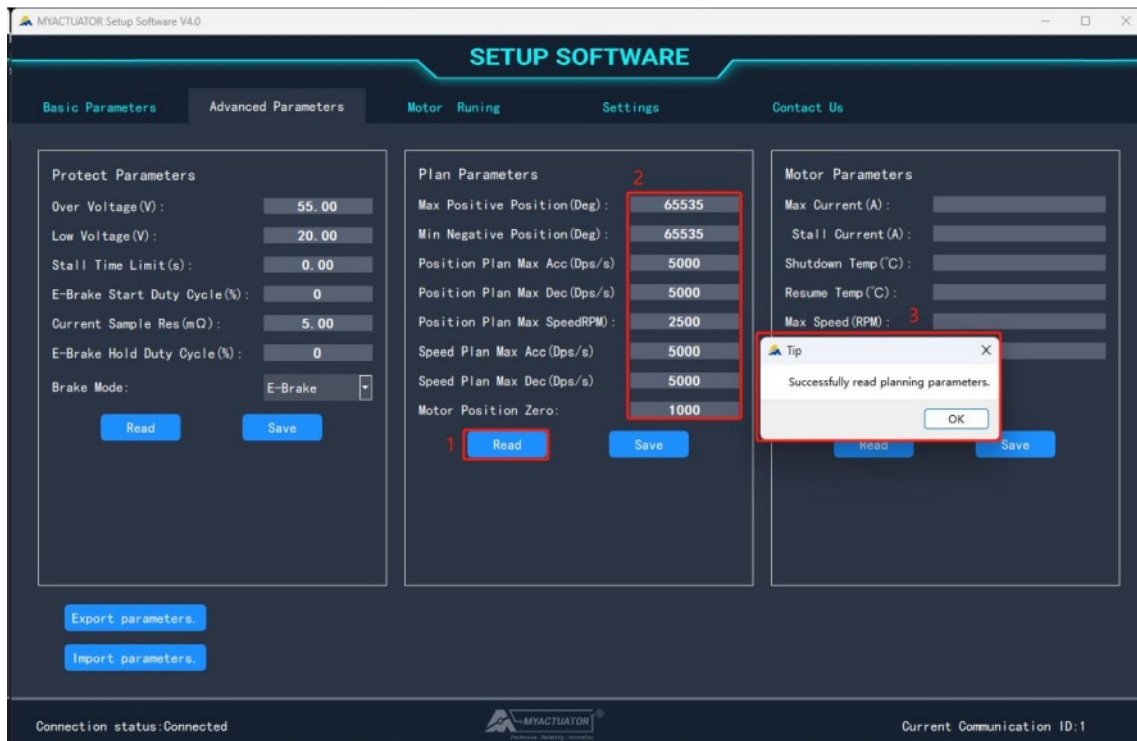
Click the “Save” button of the protection parameters, it can save all protection parameters to the motor, and at the same time, a pop-up window prompts “Successfully saved protection parameter.”



To prevent operation errors, as long as there is no value for any parameter, click the “Save” button, and the setup software will not carry out any operation.

Planning Parameters

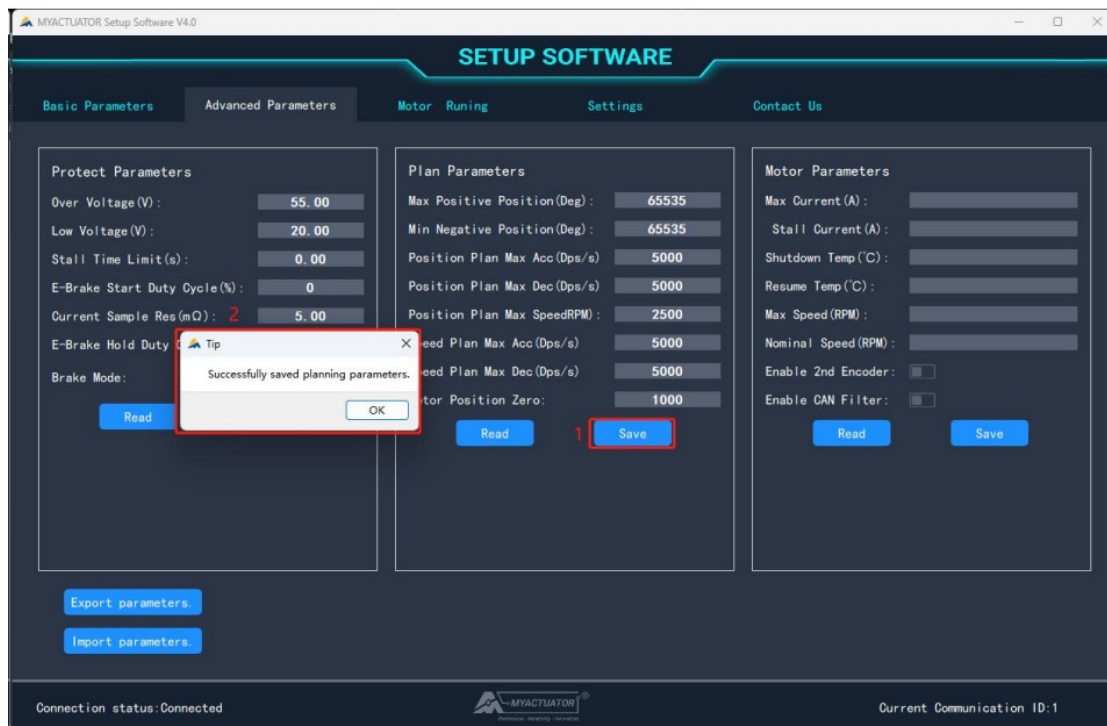
Click the “Read” button of the planning parameters, the setup software will read the planning parameters, and a pop-up window prompts “Successfully read planning parameters.”



The explanation of planning parameters.

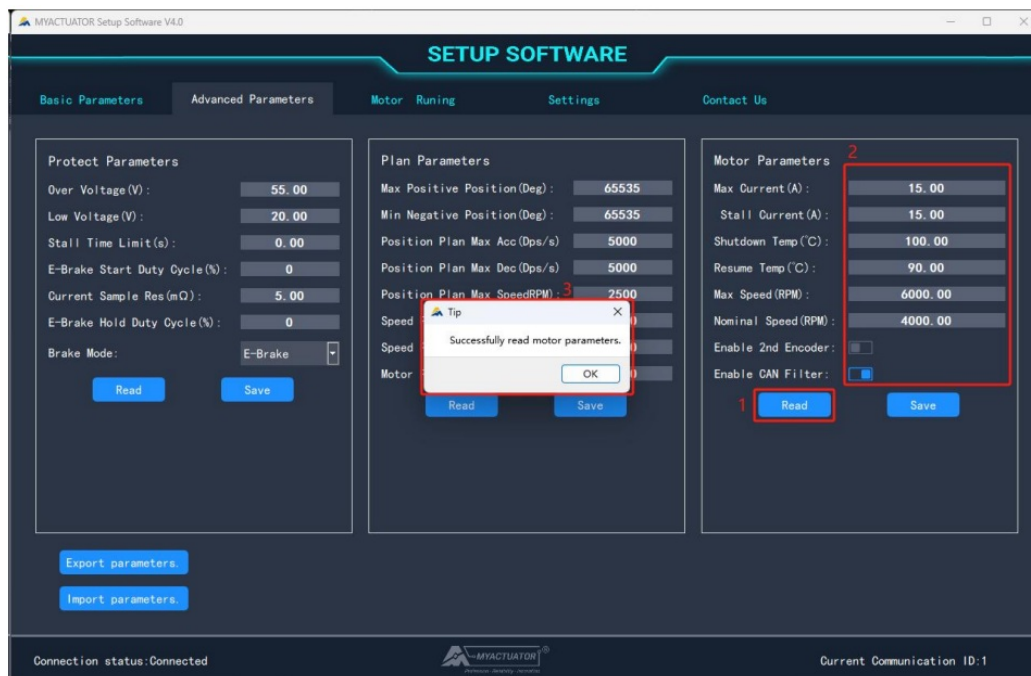
Parameter	Explanation	Range
Max. positive angle(Deg)	Maximum positive angle of motor running	0~65535
Min. negative angle(Deg)	Minimum negative angle of motor	0~65535
Max.acceleration for position	Maximum acceleration for position mode	0~60000
Max.deceleration for position	Maximum deceleration for position mode	0~60000
Max.speed for location	Maximum speed for position mode	0~Rated
Max.acceleration for velocity	Maximum acceleration for speed mode	0~60000
Max.deceleration for speed	Maximum deceleration for speed mode	0~60000
Motor position zero(Pulse)	Select an encoder value to mark as motor	0~PPR

Click on the “Save” button of the planning parameters, it can save all planning parameters to the motor, and at the same time, a pop-up window prompts “Successfully saved planning parameters.”



Motor Parameters

Click the “Read” button of the motor parameter, and use the setup software to read the motor parameter, at the same time, the pop-up window prompts “Read motor parameter successfully.”

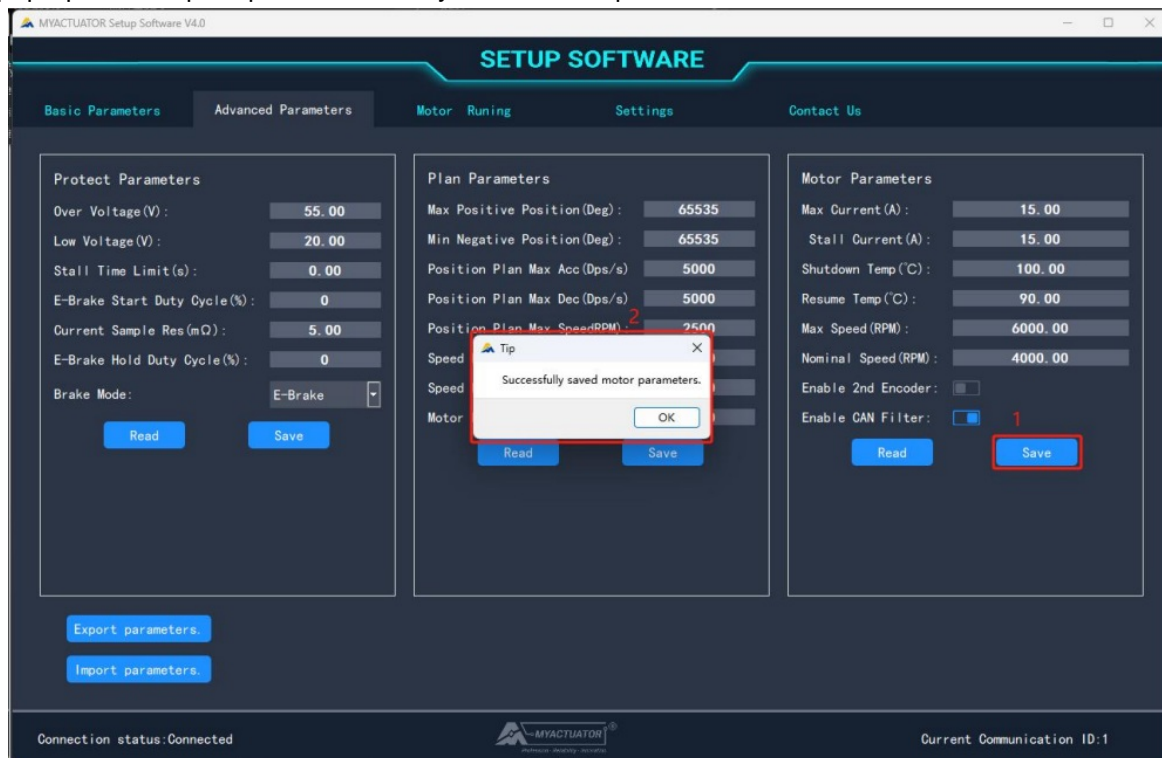


The explanation of motor parameters.

Parameter	Unit	Explanation	Range
Max phase current limit	A	The motor stops when the phase current exceeds this parameter and an error is reported: phase current over-current.	Base on the situation
Blocking current limit	A	When the torque current exceeds this parameter, the motor still cannot rotate, and the blocking time exceeds the time limit, then the motor stops and an error is reported: the motor is blocked.	Base on the situation
Over-temperature protection temperature	°C	The motor stops when the temperature exceeds this parameter and an error is reported: over temperature.	0~100

Over-temperature recovery temperature	°C	Cancels the over-temperature error when the temperature falls below this parameter.	0~100
Max speed	RPM	Max speed of motor running in current mode	0~6000
Rated speed	RPM	Motor speed at rated power	Base on the situation
Enabling second encoder	—	Whether to switch on the second encoder.	0、1
CAN filter enable	—	Whether to enable the CAN filter.	0、1

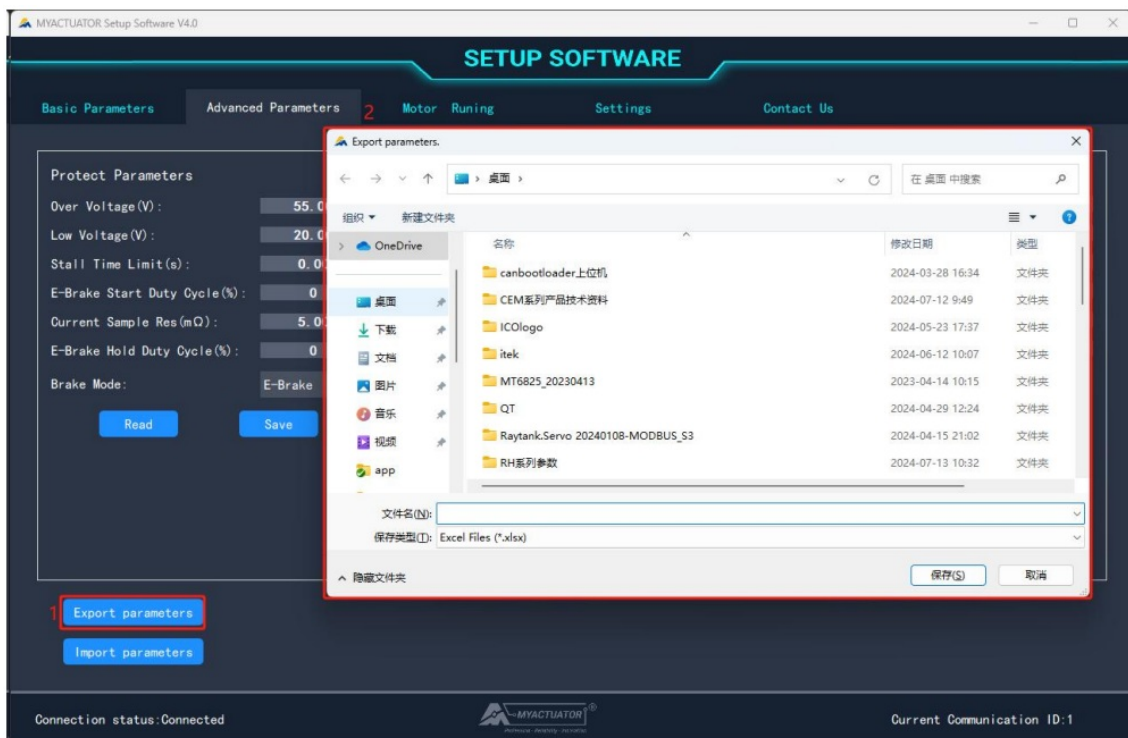
Click the “Save” button of the motor parameters, it can save all motor parameters to the motor, and at the same time, a pop-up window prompts “Successfully saved motor parameters.”



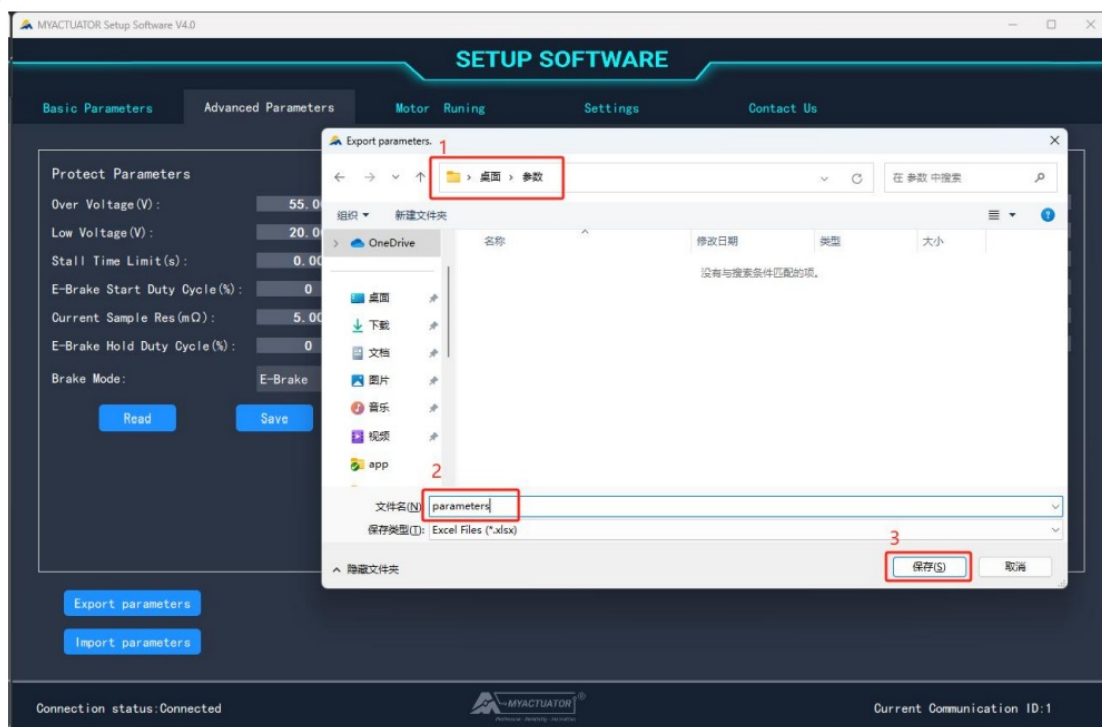
To prevent operational errors, the setup software does not perform any operation when the “Save” button is clicked as long as there is no value for any of the motor parameters.

Export Parameters

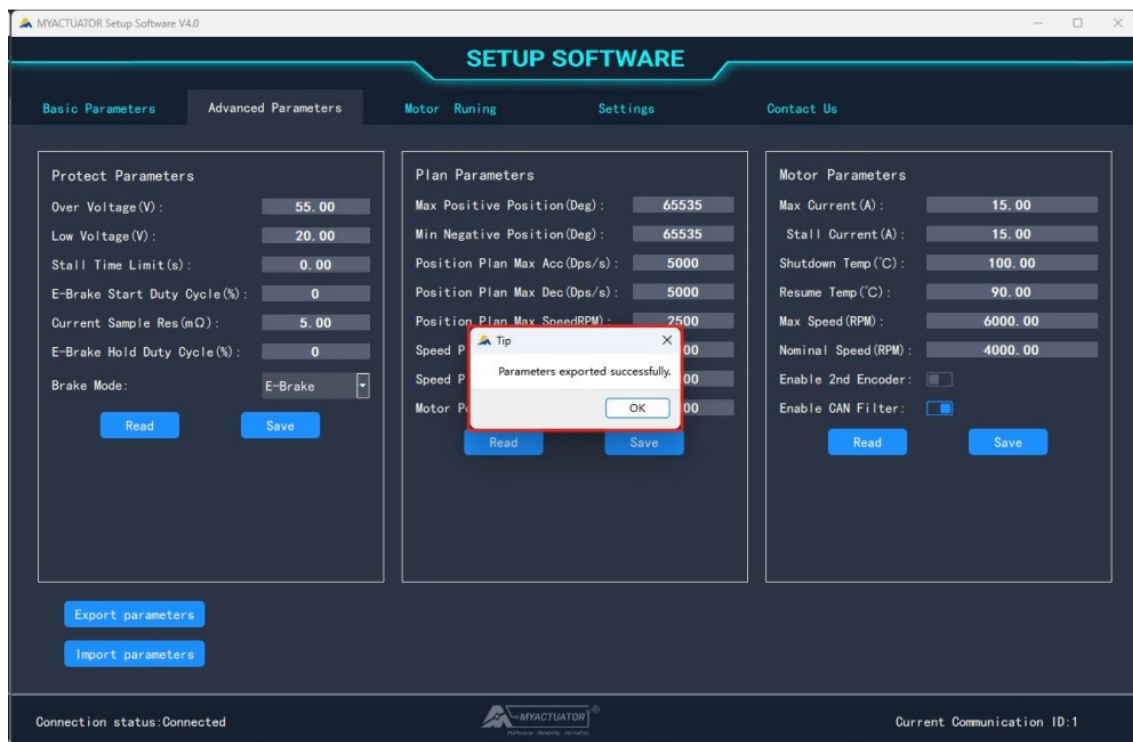
Click the “Export Parameters to XLSX File” button in the Advanced Parameters to bring up the export parameters dialogue box, the default path is the Windows desktop.



Specify a path, enter a filename, and click save.



The software will read all parameters in the motor, in the specified path to the specified file name to create an xlsx file, write all parameters to this file, and pop-up window prompts "Parameters exported successfully."



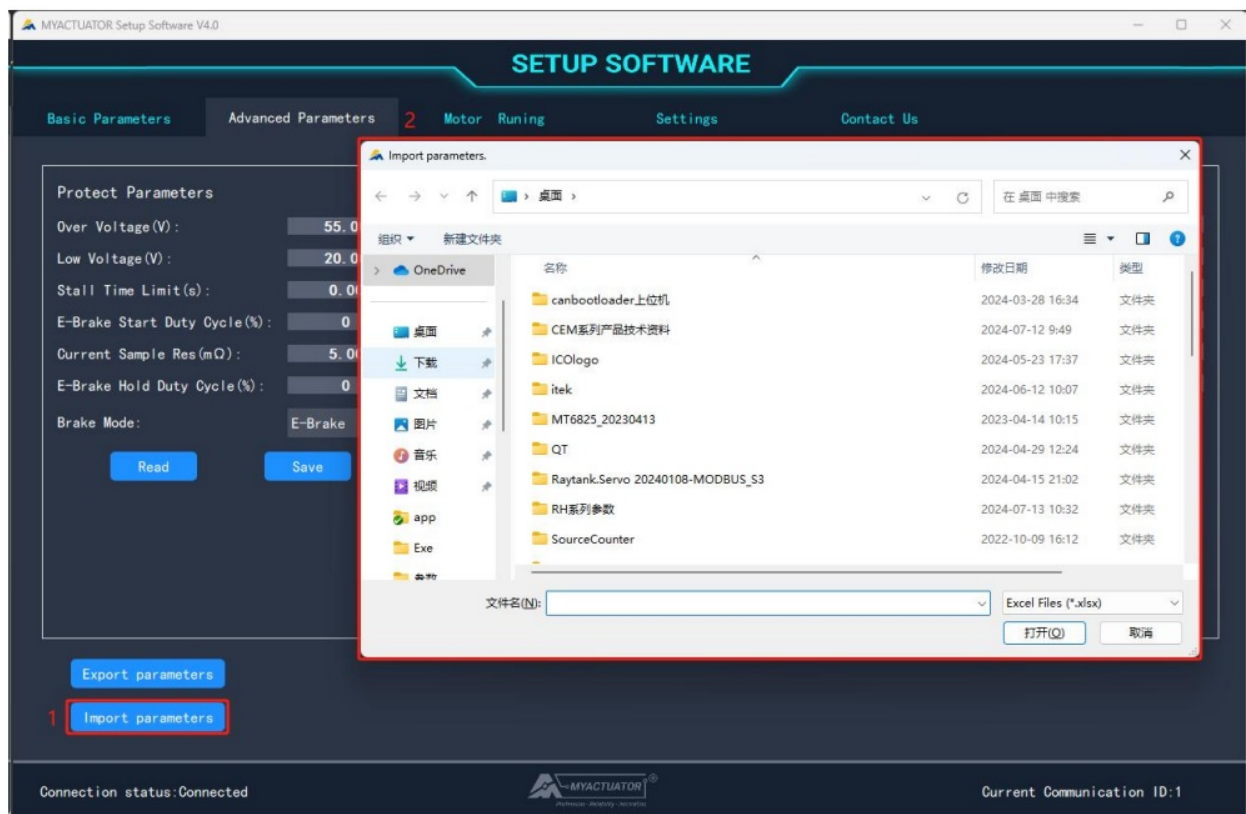
After exporting the parameters successfully, you can find the xxx file storing the parameters in the specified path and open it to see all parameters.

Parameter	Value
1. Motor ID	1
2. Motor Number	0
3. Motor Name	AAAAAAAAAAAA
4. Factory Time	0
5. Reduction Ratio	81
6. Position Loop KP	0.050000001
7. Position Loop KI	0
8. Position Loop KD	5
9. Position Loop R(Slope)	0
10. Position Loop T(Filter)	0
11. Speed Loop KP	0.100000001
12. Speed Loop KI	0.001
13. Speed Loop KD	0
14. Speed Loop R(Slope)	0
15. Speed Loop T(Filter)	0
16. Q-Axis Current KP	1
17. Q-Axis Current KI	0.100000001
18. Q-Axis Current KD	0
19. Q-Axis Current R(Slope)	0
20. Q-Axis Current T(Filter)	0
21. D-Axis Current KP	1
22. D-Axis Current KI	0.100000001
23. D-Axis Current KD	0
24. D-Axis Current R(Slope)	0
25. D-Axis Current T(Filter)	0
26. Enabled Powerdown Save MultiTurn	FALSE
27. Pole-Pairs	10
28. Single-Resolution Value (Pulses)	65535
29. Calibrat Current(A)	3
30. Exchange phase	FALSE
31. Change Motor Direction	FALSE
32. Encoder Calibrat Value	2000
33. Over Voltage(V)	55
34. Low Voltage(V)	20
35. Stall Time Limit(s)	5

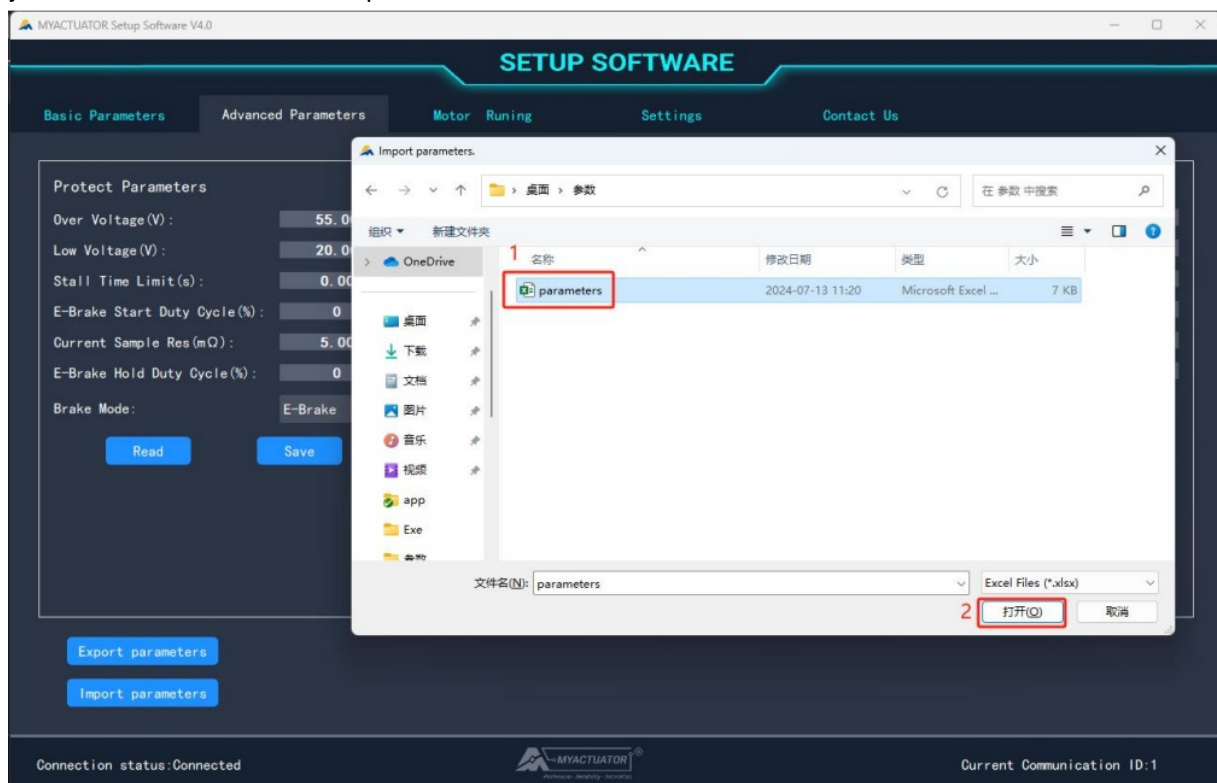
It is not recommended to modify the contents of the xls file, which may cause errors in the import parameters.

Import parameters

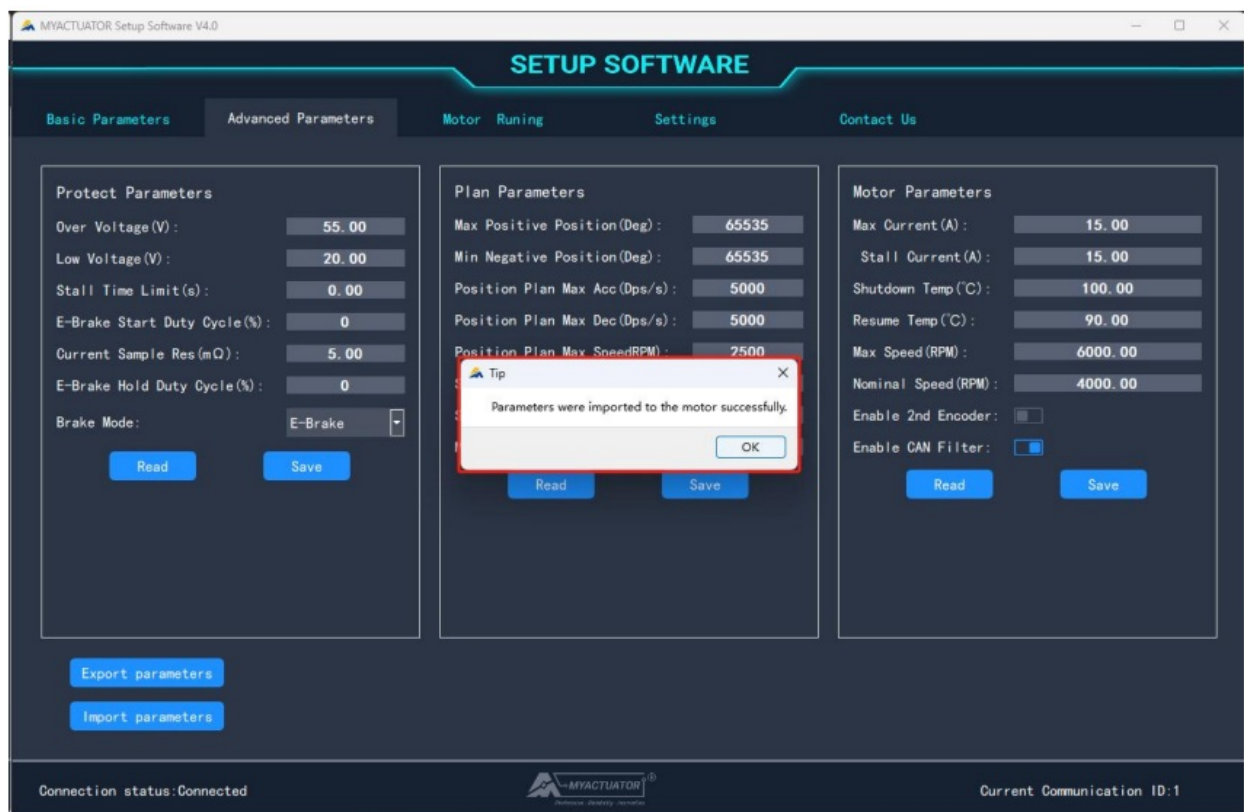
Click the advanced parameters in the "Import parameters" button, pop-up import parameters dialogue box, the default path to the Windows system desktop.



Specify a destination file and click Open.

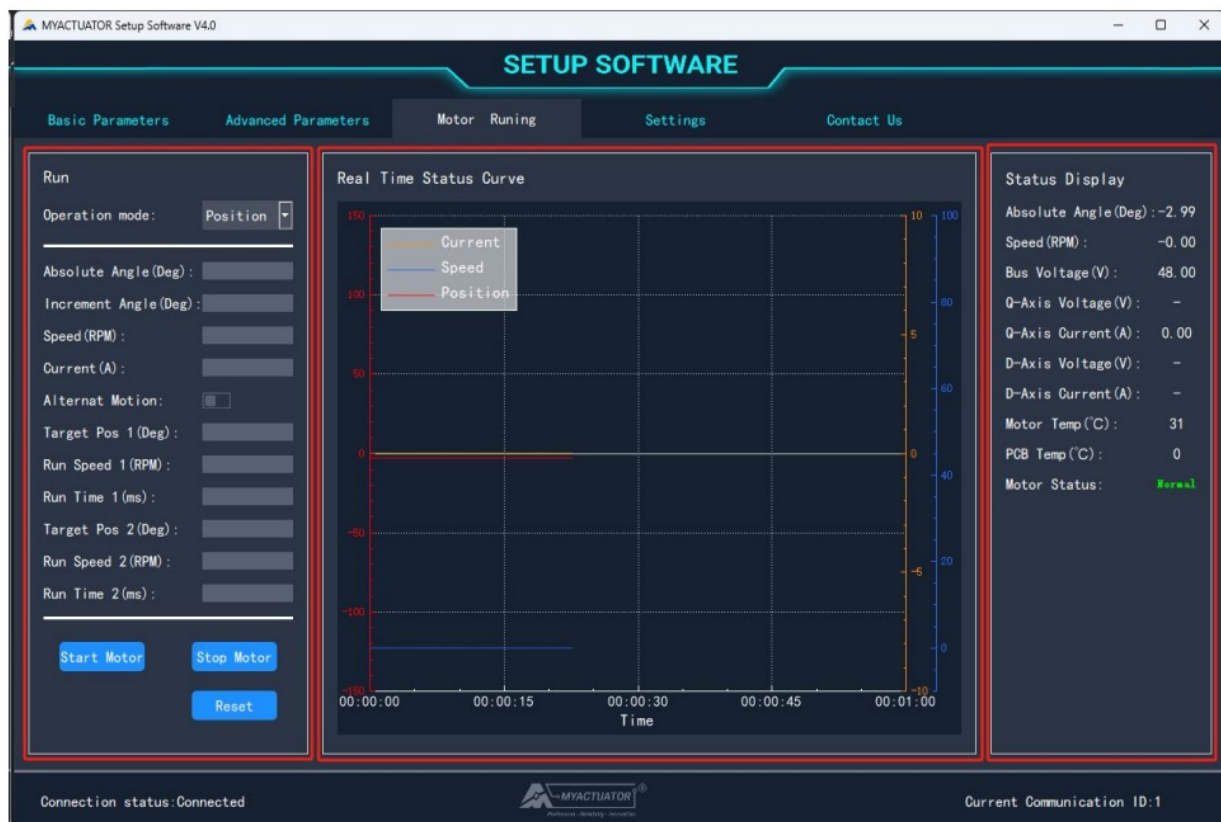


The setup software will read all parameters in the file, write all parameters to the motor, and pop-up window prompt "Parameters were imported to the motor successfully."



Motor Running Interface

The motor running interface is divided into three parts, the running part, the real-time status curve part, and the status display part.

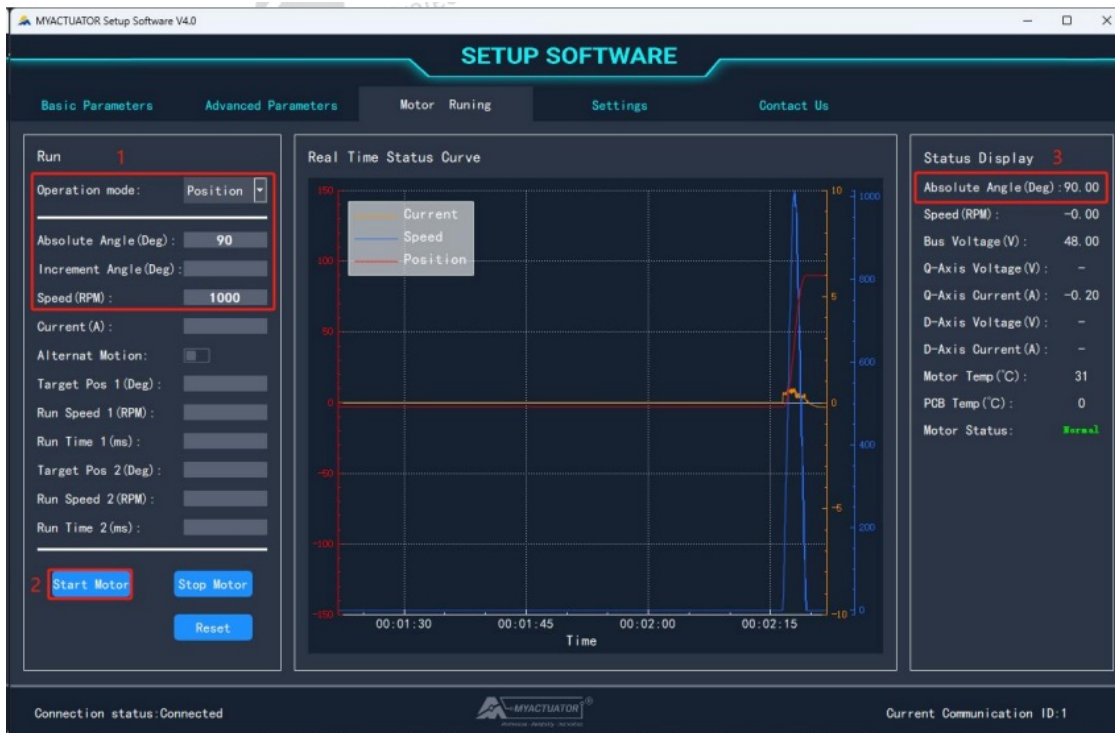


The motor can be controlled to run in a certain mode. Click the “Stop Motor” button to stop the motor. In addition, when switching to the basic parameter screen and advanced parameter screen, the control motor is stopped to prevent accidents. Click the “Reset button to restart the motor master controller. The real-time status curve part collects data in real-time and draws dynamic line graphs, so you can view the curve changes within one minute, and the specific meaning of the line.

Curve Colour	Orange	Blue	Red
Meaning	Current (A)	Speed (RPM)	Position (Deg)

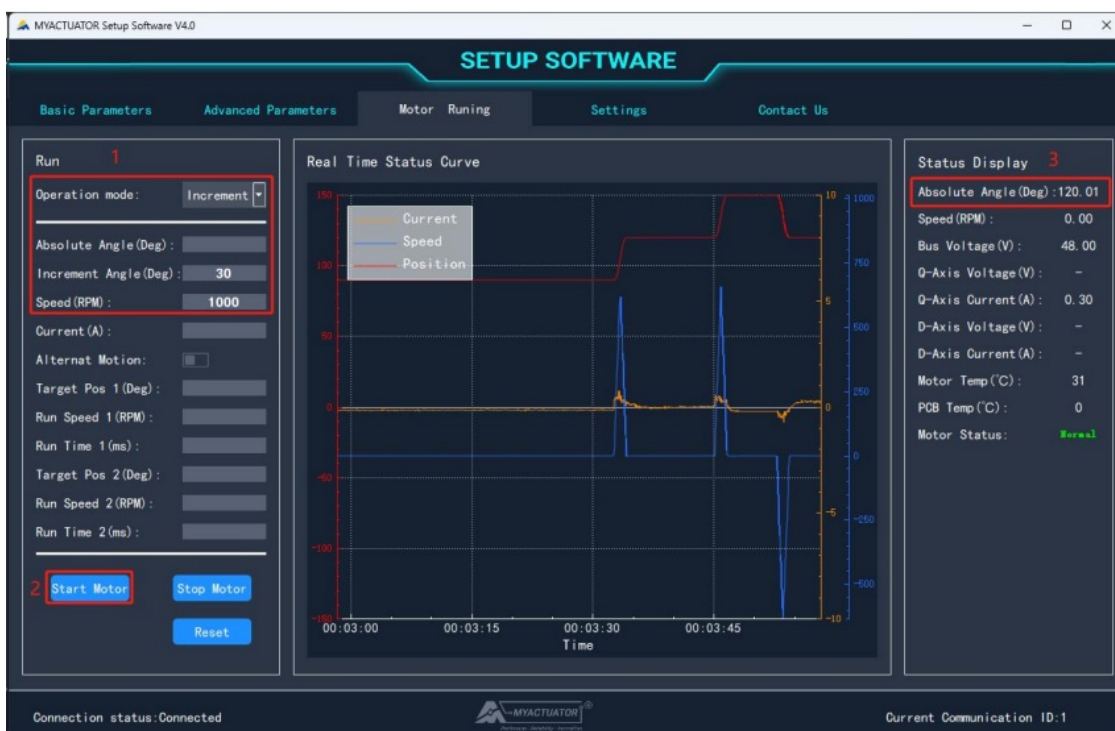
Position Mode

Select the position mode as the working mode, enter the position and speed, and click the “Start Motor” button, you can control the motor to run at the specified speed to the specified position and hold, as shown in Figure 4-2. If any item of position and speed is empty, the setup software will not perform any operation.



Incremental Mode

Select the working mode as incremental mode, enter the incremental angle and speed, and click the “Start Motor” button, you can control the motor to the current position as the starting point to run the specified incremental angle, as shown in Figure 4-3. If any of the incremental angles and speeds are empty, the setup software will not perform any operation.



Speed Mode

Select the speed mode as working mode, input the speed, and click the “Start Motor” button, you can control the motor to run at the specified speed, as shown in Figure 4-4. If the speed is empty, the setup software will not perform any operation.



Current Mode

Select the current mode as working mode, input the current, and click the “Start Motor” button, you can control the motor to run at the specified current, as shown in Figure 4-5. If the current is empty, the setup software will not perform any operation.



Alternate Motion

Mode Turn on the “Alternate Motion” switch, enter the target position 1, running speed 1, running time 1, target position 2, running speed 2, running time 2, and click on the “Start Motor” button, you can control the motor to run at running speed 1 to the target position 1, then the motor will run at running speed 2 to the target position 2, the cycle is repeated, as shown in Figure 4-6. If any of the data is empty, click the “Start Motor” button, the setup software will not perform any operation.



The following three points about the running time are explained :

1. Regardless of whether the target position is reached or not, as soon as the runtime is exceeded, the motor will immediately proceed to the next stage of motion.
2. When the target position is reached, if the running time is not exhausted, the motor will enter the waiting state, and after exhausting the running time the motor will enter the next stage of movement.
3. After switching on the "Alternate motion" switch, even if an operating mode is selected and the required data is entered, clicking on the "Start motor" button the setup software will prioritize running the motor in alternate motion mode.

Motor Status

The status bar displays the current motor status real-timeime.

Status	Significance
Normal	The motor is operating normally
Hardware over-current	The motor current exceeds the limit value
Motor stalled	The motor current exceeds the stall current and lasts longer than the stall time
Under-voltage	The operating voltage is lower than the under-voltage protection voltage
Over-voltage	The operating voltage exceeds the over-voltage protection voltage
Phase current over-current	The phase current of the motor exceeds the limit value
Power overrun	The motor power exceeds the limit value
Calibration parameters are incorrectly written	Calibration parameters are incorrectly written
Speeding	The motor speed exceeds the limit value
On-board device overheated	The temperature of the on-board device of the motor exceeds the limit value
Motor overheated	The motor temperature exceeds the over-temperature protection temperature
Stall time limit	When the stalled rotor time exceeds this parameter, the motor stops and the error is reported: Motor stalled
Encoder calibration error	Encoder calibration error
Without receiving motor message	The host computer communicates with the motor, but the host computer does not receive the required message

Set Up the Interface

In the setting interface, you can choose the language: Chinese or English and the setup software will automatically obtain the local language of the current Windows system when it starts, if it is Chinese, it will be displayed in Chinese, and if it is not Chinese, it will be displayed in English.

Upgrade the Firmware

Before upgrading the firmware, you need to make the following preparations:

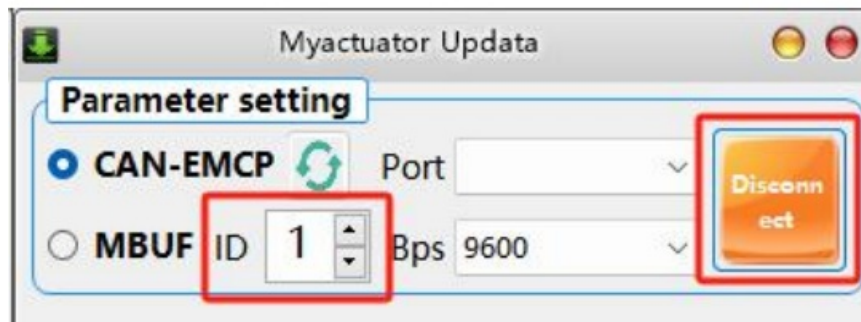
1. The connection of hardware device;
2. The configuration of the operating environment of the setup software, and the specific operation process are the same as that of using the setup software, see the first part of the manual: Preparation.

The process of writing the upgrade firmware to the motor is described separately depending on whether the motor has an operating program. The judging method is: when the hardware connection is correct, turn on the power

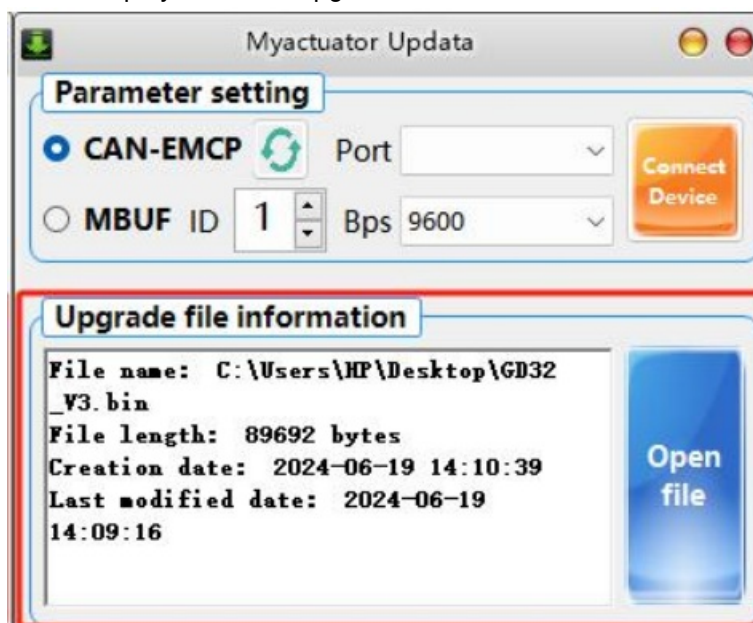
switch, and the green light flashing of the motor indicates that there is no operating program; otherwise, there is an operating program.

Motor without Operating Program

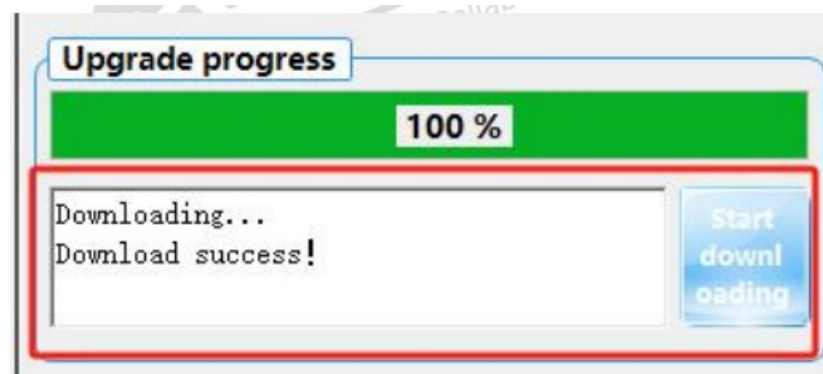
Turn off the power switch, open the update setup software, and enter the motor ID, you don't need to set the port and baud rate, directly click the "Connect Device" button to connect the CAN-USB conversion device, and then the button changes to the "Disconnect".



Click the "Open file" button to select the required bin file in the file dialogue box, if it opens successfully, the basic information of the bin file will be displayed in the "Upgrade file information" module.

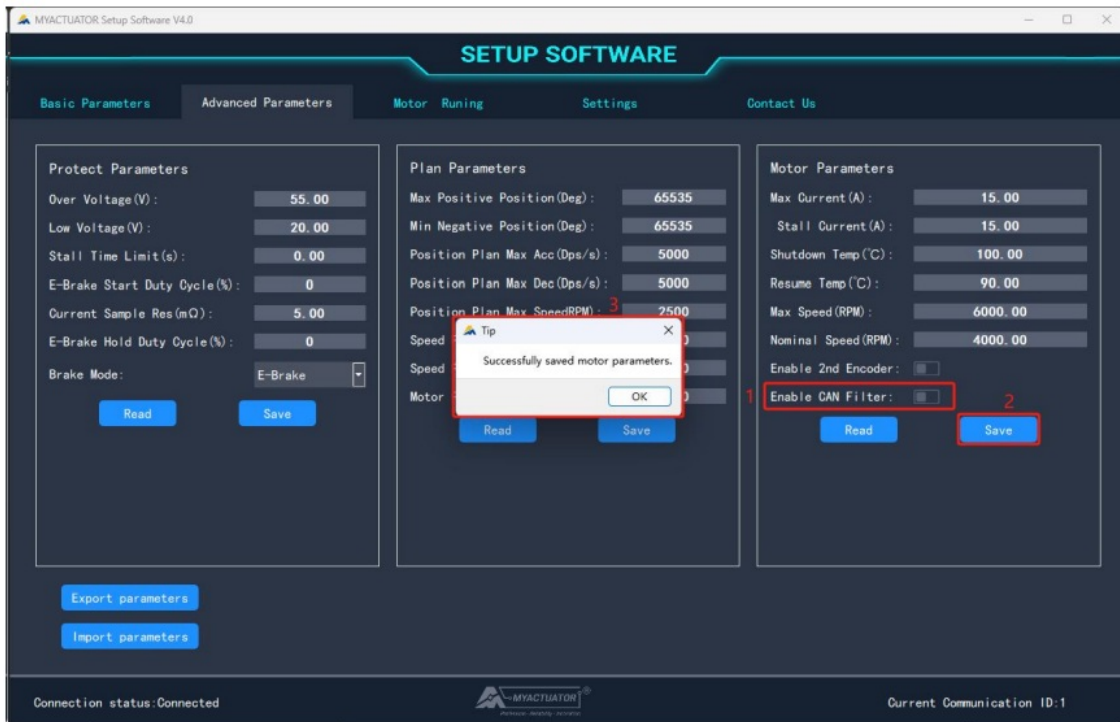


Click the "Update" button, for motors with the operating program, the setup software can directly write the upgrade firmware into the motor without re-powering. After successful download, as shown in Figure 6-3, you can directly close the update software.

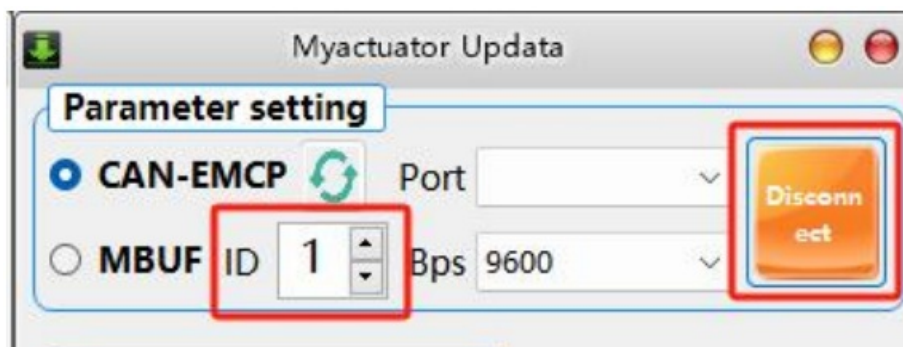


Motor with Operating Program

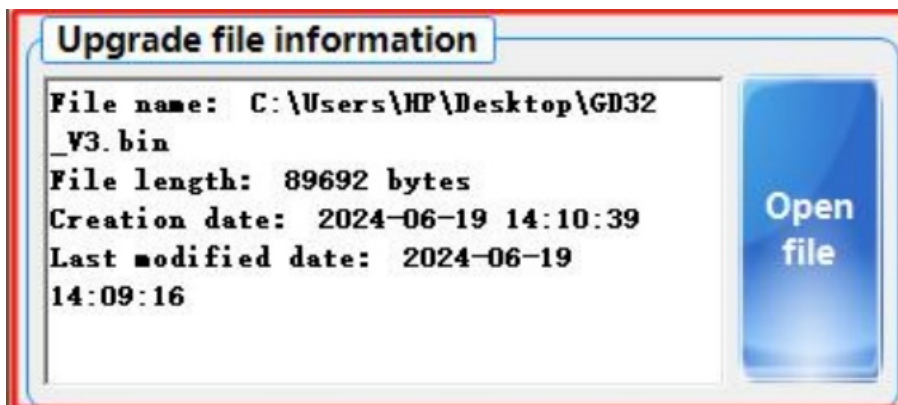
Open the setup software, enter the advanced settings, read motor parameters, and turn off the CAN filter.



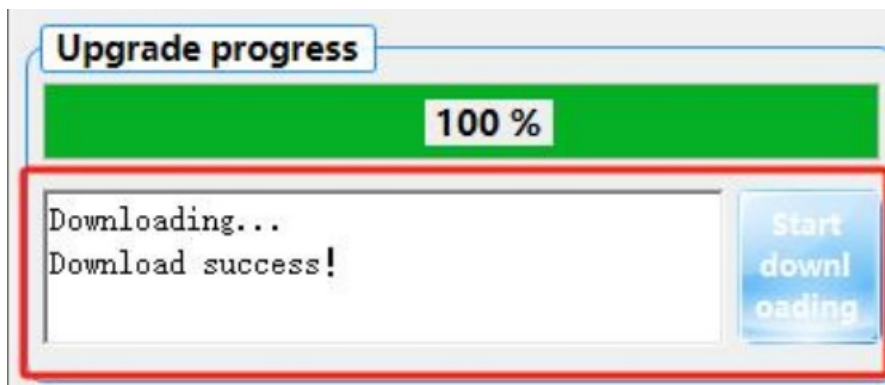
Close the setup software, open the update software, and input the motor ID, do not need the port and baud rate, directly click on the “Connect Device” button, you change the CAN-USB conversion device, and the button cchange to “Disconnect”.



Click the “Open file” button, select the bin file required for upgrading the firmware in the file dialogue box, and click “Open”. If you open it successfully, the basic information of the bin file will be displayed in the “Upgrade file information” module.



Click the “Update” button, for motors with an operating program, update setup software can directly write the upgrade firmware into the motor without re-powering, as shown in Figure 6-7. After successful download, you can directly close the Update setup software.



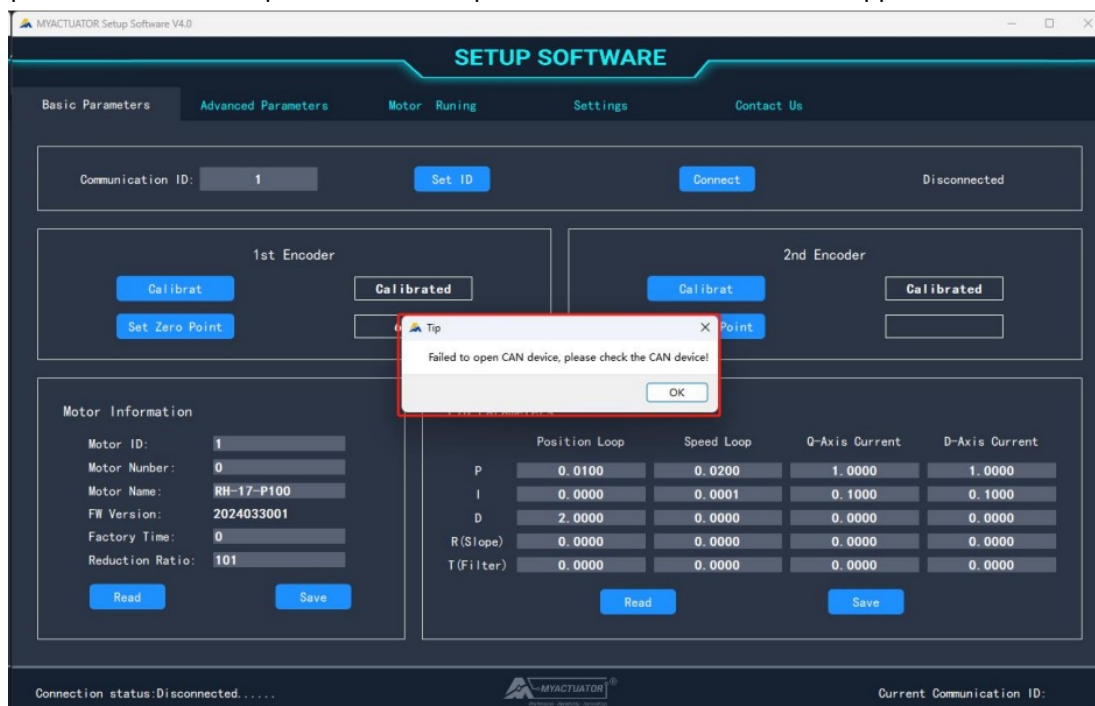
Common Problems and Solutions

This subsection provides solutions to common problems during the use of software and firmware upgrades. If you still can't solve the problem, please contact us.

Common Problems and Solutions for Using Setup Software

Failure to Open CAN Device

If the pop-up window "Failed to open CAN device, please check the CAN device!" appears.

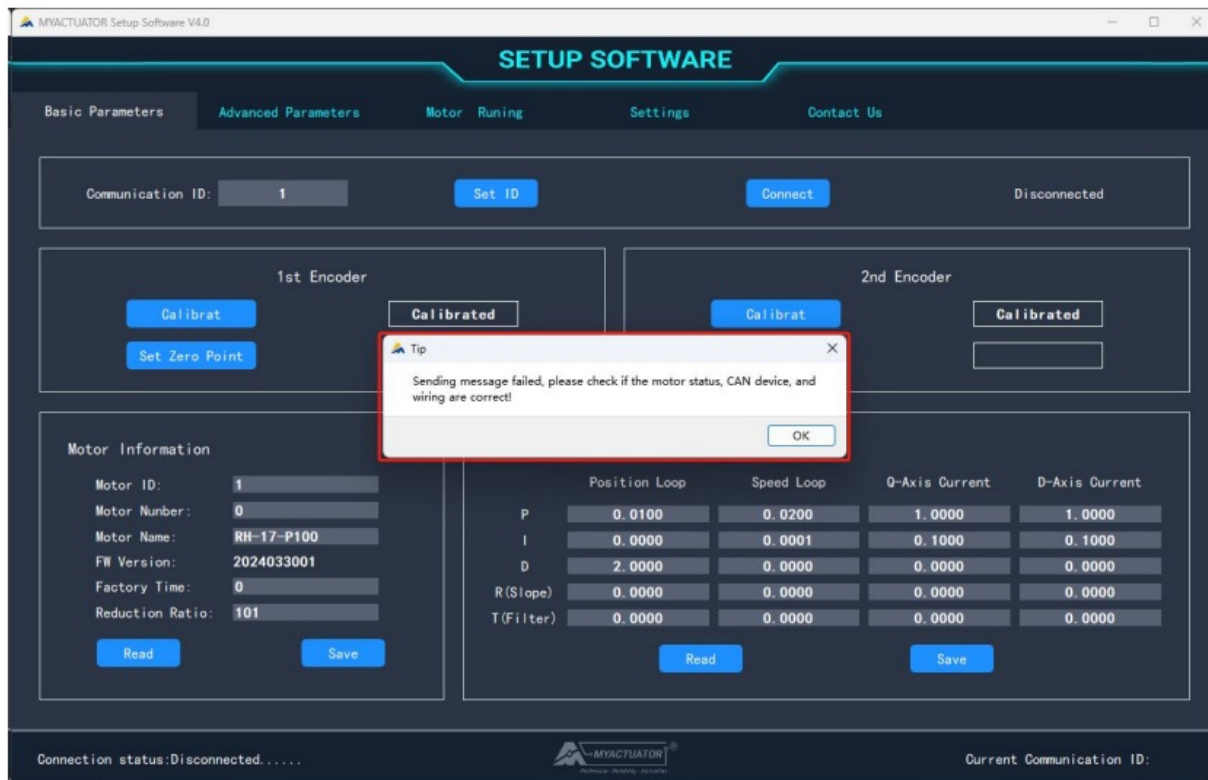


Troubleshooting the failure to open the CAN device.

Situation	Methods of handling
Other software occupancy	Close the software that may be occupied and reconnect it.
Unconnected	Check the connection between the conversion device and computer.
Faulty connection	Observe the green light of the conversion device'CAN1 channel, if it doesn't light up, reconnect the hardware.

Failure to Send Data

If the pop-up window “Sending message failed, please check if the motor status, CAN device, and wiring are correct!” appears.

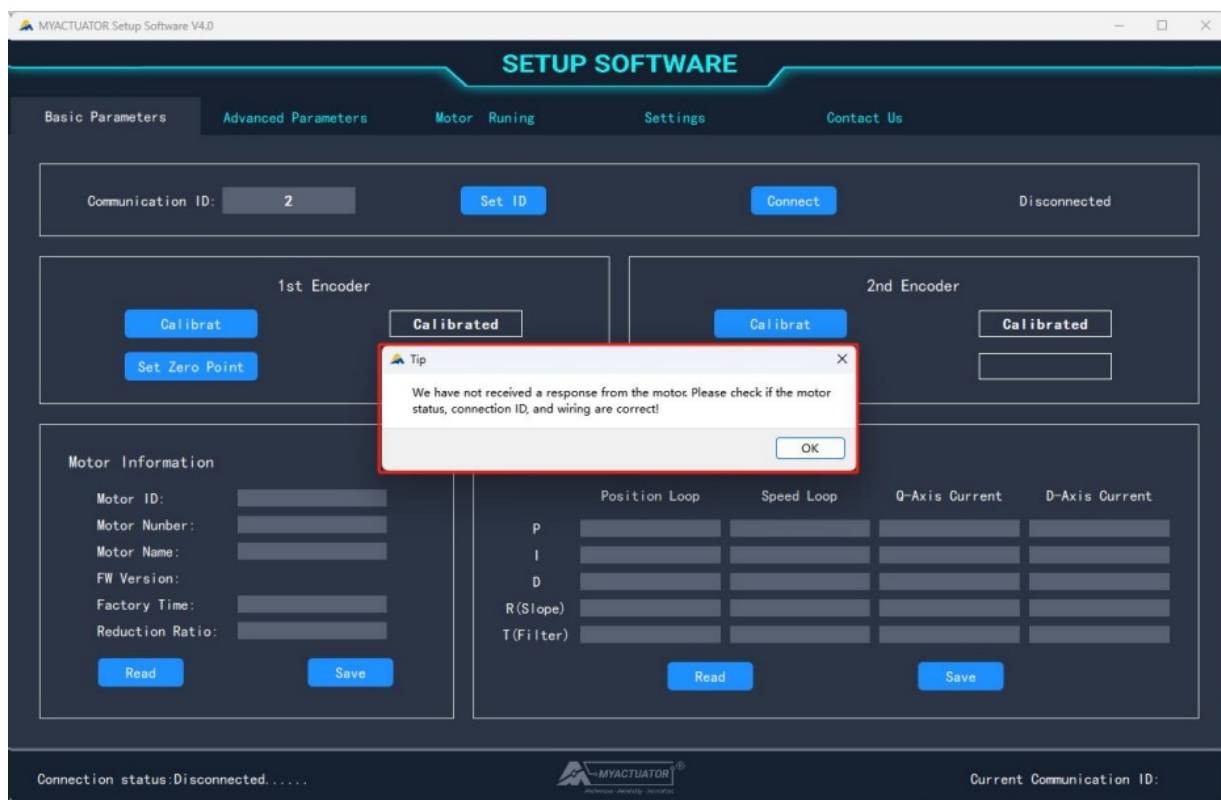


Troubleshooting the failure to send data

Situation	Methods of Handling
No power /Under voltage	Check the power supply, whether the motor indicator is normal, and whether the DC power supply voltage is correct.
Wrong motor CAN lines connection	Check whether the CAN line is connected to the CAN0 channel, and whether the CANH line and CANL line are connected to the H and L of the CAN0 channel in turn.

No Response Received from Motor

If the pop-up window “We have not received a response from the motor. Please see if the motor status, connection ID, and wiring are correct!” appears.

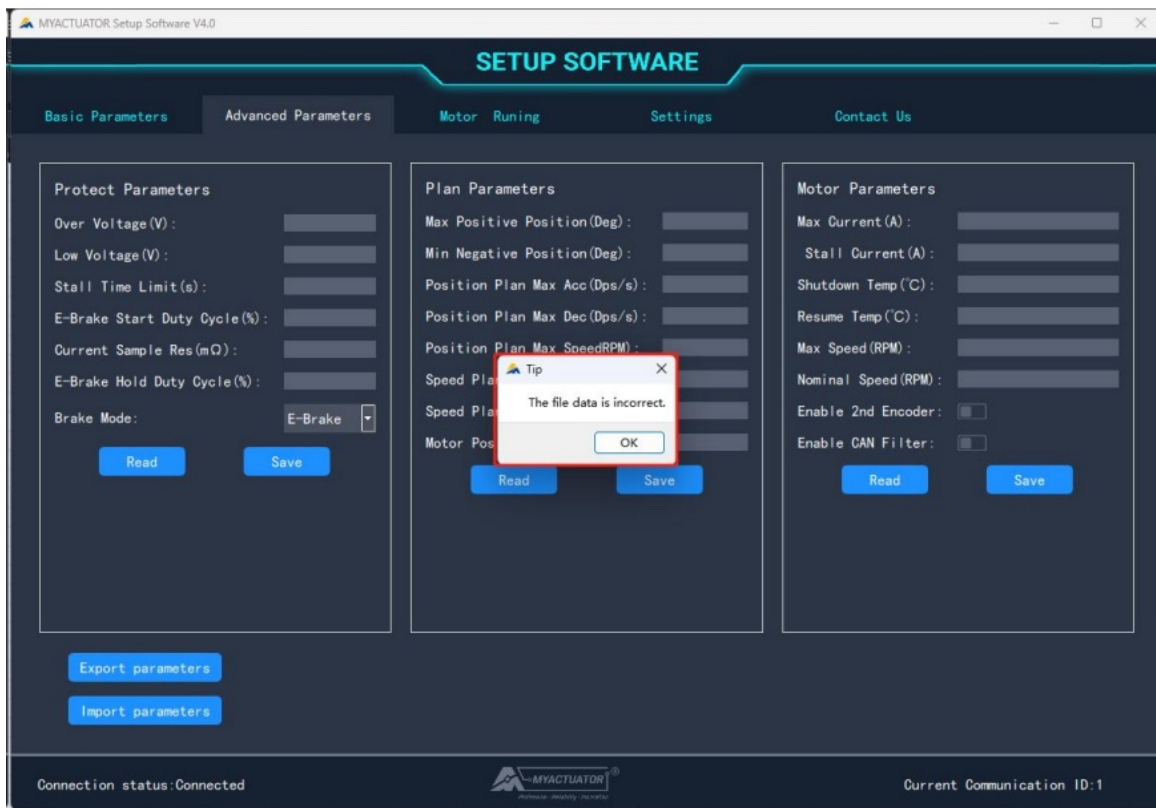


Troubleshooting the failure to respond received from the motor.

Situation	Methods of Handling
The motor that matches the set communication ID could not be found on the CAN bus	Check if the communication ID is correct
Problems with connection	Check hardware device connections

Incorrect File Data

When importing parameters, if the pop-up window "The file data is incorrect."

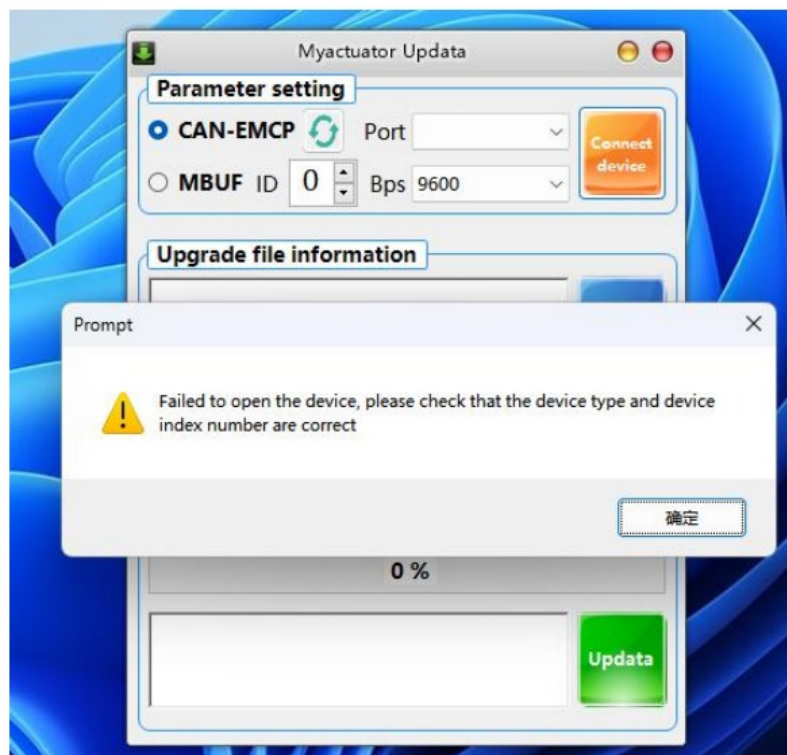


Replace a properly formatted motor parameter file with complete data.

Common Problems and Solutions for Firmware Upgrades

Failure to Open CAN Device

If the pop-up window “Failed to open the device, please check that the device type and device index number are correct” appears.



Troubleshooting the failure to open the CAN device.

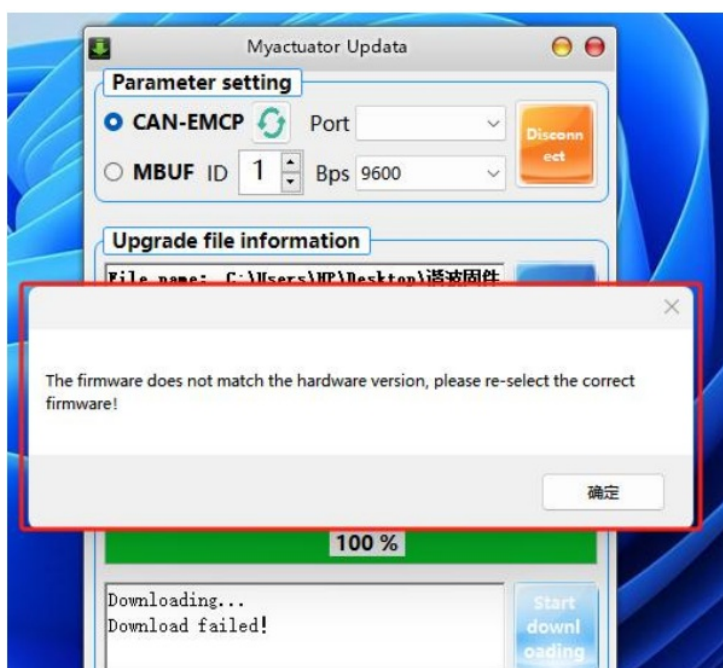
Situation	Methods of Handling
Other software occupancy	Close the software that may be occupying it and reconnect
Unconnected	Check the connection between conversion device and computer
Faulty connection	Observe the green light of the conversion device'CAN1 channel, if it doesn't light up, reconnect the hardware

Power Failure during Firmware Upgrades


If there is a sudden power failure during the firmware upgrade process, the progress bar will stop. Recharging the motor, when the green light of the motor is blinking, follow the method that writing the upgrade firmware to the motor with no operating program to perform the firmware upgrade.

Firmware Selection Error

If the wrong firmware is selected and written to the motor, a pop-up window "The firmware does not match the hardware version, please re-select the correct firmware!", this means the firmware is wrong please replace the correct firmware.



Documents / Resources

	MYACTUATOR MT-RH-20-100-B Setup Software [pdf] Instruction Manual MT-RH-20-100-B Setup Software, MT-RH-20-100-B, Setup Software, Software
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References

- [User Manual](#)

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