

MiSUMi

Linear motor actuator

E-RAM Series

PE25 Driver User Manual

Ver1.0

Thank you for purchasing our linear motor actuator.

This user manual is a supplement to the manufacturer's catalog, and its purpose is to provide users with more detailed and convenient usage instructions. We have attempted to ensure the accuracy and completeness of the content. Nevertheless, we recommend that users use the manufacturer's catalog as a guide.

Please take the time to read this manual carefully before use. Please keep it well so that you can view it whenever necessary.

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List

One. Driver Overview	5
1.1 Manufacturer Information	5
1.2 Safety precautions	5
2. final	6
2.1 Main circuit.....	6
2.2 Control circuit	6
□ I/O port definition.....	6
□ I/O wiring diagram	8
3. Debugging.....	9
3.1 Software download and installation.....	9
□ software download.....	9
□ Software installation	10
3.2 Communication between computer and driver	11
□ final.....	11
□ communication.....	11
3.3 Importing motor parameters	12
□ Download parameter pack.....	13
□ Importing parameter packs	13
3.4 Adaptive Debugging	19
□ Preliminaries	19
□ Start debugging	19
3.5 Commissioning	21
□ Preliminaries	21
□ Start of test run.....	23
□ Settlement time analysis.....	24
□ Parameter Debugging.....	26
□ Check debugging results	27
□ Save parameters	28

3.6 Control	29
<input type="checkbox"/> Electronic gear ratio settings.....	29
<input type="checkbox"/> I/O settings	32
<input type="checkbox"/> Top computer matching.....	33
3.7 Parameter backup & parameter recovery	33
<input type="checkbox"/> Parameter backup	33
<input type="checkbox"/> Parameter recovery	34

1. Driver Overview

1.1 Manufacturer Information

Driver Manufacturer: Panasonic

Manufacturer's official website: <https://device.panasonic.cn/>

The manufacturer model number table is as follows.

Misumi model number	Panasonic model number
PE25	MBDLN25BL

1.2 Safety precautions

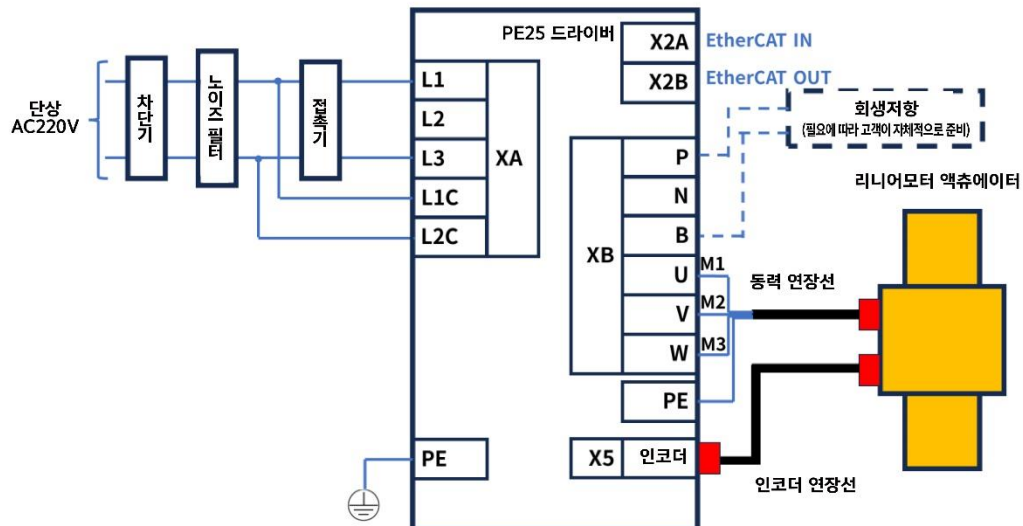
Before installation, please be sure to download and read all relevant materials from the manufacturer's website carefully, and use and operate the product exactly as required to ensure safety and accuracy.

Please use caution as improper handling may result in injury and/or equipment damage.

2. final

2.1 Main circuit

Driver rated input current 2.4A, maximum current 7.3A



2.2 Control circuit

● I/O port definition

input signal

designation	mark	Pin No.	detail	input/output signal interface
General-purpose input COM	SI-COM	6	<ul style="list-style-type: none"> + or – pole connecting external direct current power (12~24V) Use a power source of 12V±5% to 24V±5%. It must be insulated from the primary power source. Do not connect to the same power source. Primary power: power for motor brake 	-
General input 1	SI 1	5	<ul style="list-style-type: none"> Assign functions through parameters. For further details, please refer to “Technical Data – Basic Function Specifications – SX-DSV03022”. Please note that there are restrictions on function allocation. Example) External lock input EXT1 can only be assigned SI5, EXT2 can be assigned SI6, EXT3 can only be assigned to SI7. 	i-1
General input 2	SI 2	7		
General purpose input 3	SI 3	8		
General purpose input 4	SI 4	9		
General-purpose input 5	SI 5	10		
General-purpose input 6	SI 6	11		
General purpose input 7	SI 7	12		
General purpose input 8	SI 8	13		

output signal

designation	mark	Pin No.	detail	input/output signal interface
General purpose output 1	SO1+	One	<ul style="list-style-type: none"> Assign functions through parameters. For further details, please refer to “Technical Data – Basic Function Specifications”. 	o-1
	SO1-	2		
General-purpose output 2	SO2+	25		
	SO2-	26		
General purpose output 3	SO3+	3		
	SO3-	4		

Encoder output signal/position comparison output signal

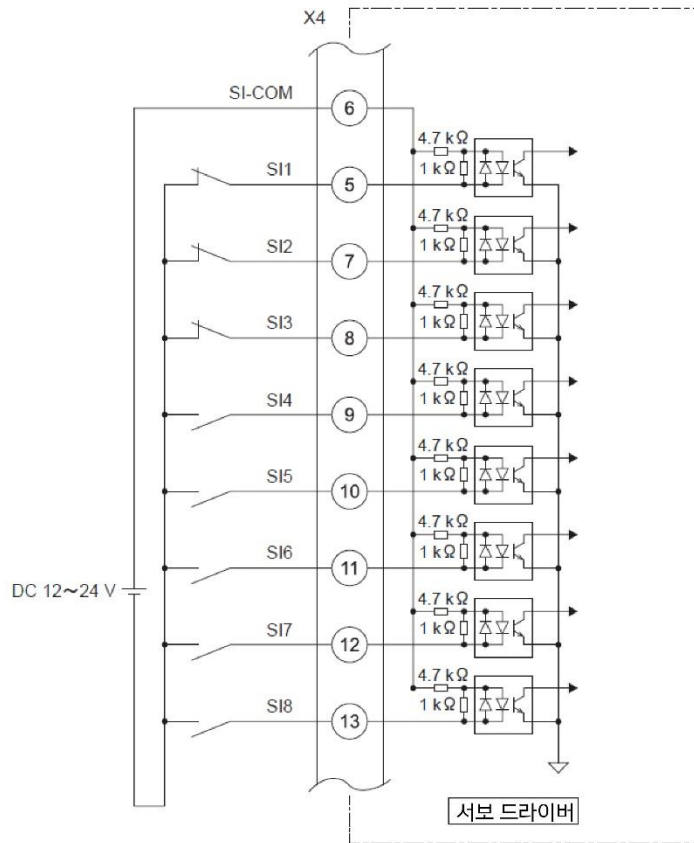
designation	mark	Pin No.	detail	input/output signal interface
A-phase output/ Position comparison output 1	OA+/OCMP1+	17	<ul style="list-style-type: none"> Encoder signal or feedback displacement sensor signal (A, B phase) after differential output division processing. (RS422 equivalent) Dividing ratio can be set through parameters The ground of the line driver of the output circuit is connected to signal ground (GND) and is non-insulated. The maximum output frequency is 4 Mpps (after 4 times the frequency). Can be used as position comparison output depending on parameter settings. For further details, please refer to “Technical Data – Basic Function Specifications -”. This differential signal can be received through a line receiver (AM26C32 or equivalent), and connect a terminating resistor (approximately 330Ω) between the inputs of the line receiver. Wire with shielded twisted pair wire. Use the shielded wire by connecting it to the connector case. 	o-1
	OA-/OCMP1-	18		
B phase output/ Position comparison output 2	OB+/OCMP2+	20		
	OB-/OCMP2-	19		
Position comparison output 3	OCMP3+	21		
	OCMP3-	22		
signal ground	GND	16	<ul style="list-style-type: none"> signal ground Be sure to use this terminal by connecting it to the ground of the line receiver. 	

etc

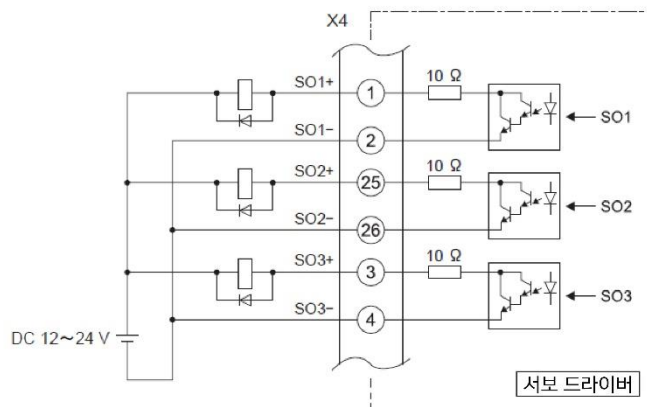
designation	mark	Pin No.	detail	input/output signal interface
expected	-	14 15 23 24	<ul style="list-style-type: none"> Do not make any connections. 	-
case ground	F.G.	case	<ul style="list-style-type: none"> It is used by connecting the inside of the servo driver and the ground terminal. 	-

● I/O wiring diagram

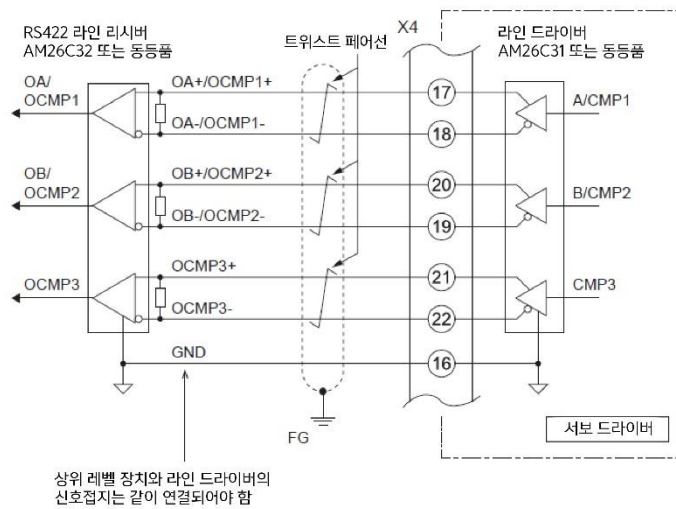
Control input



Control output



Feedback output signal/position comparison output signal



3. Debugging

3.1 Software download and installation

● software download



Download the software pack from the MISUMI website.


The software pack includes <PANATERM> and <MotorAuto>.

<input type="checkbox"/> 이름	수정한 날짜	유형	크기
MotorAutoSetupVer2.0.0.0	2024-05-09 오후 3:46	파일 폴더	
PANATERM	2024-04-17 오전 9:12	파일 폴더	
E-RAM시리즈_파나소닉파라미터	2024-05-09 오후 2:15	Microsoft Excel ...	11KB

● Software installation

a. Install <PANATERM>


 PANATERM Open ,  setup.exe Double-click and start the PANATERM installer.


Once installation is complete  PANATERM ver.6.0 Double-click to open the software and it's ready to use.

! Just select 'Yes' to all notifications that appear during installation.

! When you first open the software, file organization will proceed automatically, so please be patient.

b. Install <Adaptive Debugging Software>

 MotorAutoSetupVer2.0.0.0 Open ,

 MotorAutoSetup FOR A6.exe Double-click and open the software to start using it right away.

! Precautions before use

·Check whether the computer and driver are communicating. (If PANATERM can communicate normally, the connection is considered normal)

·Ensures that the driver is in a ready state without alarms and external activation.

·Close PANATERM.

·This software cannot be left alone on the desktop and must be opened within a folder.

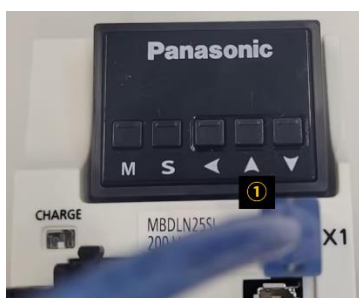
3.2 Communication between computer and driver

● final

① Connect the computer and the driver with a communication cable, then turn on the driver.

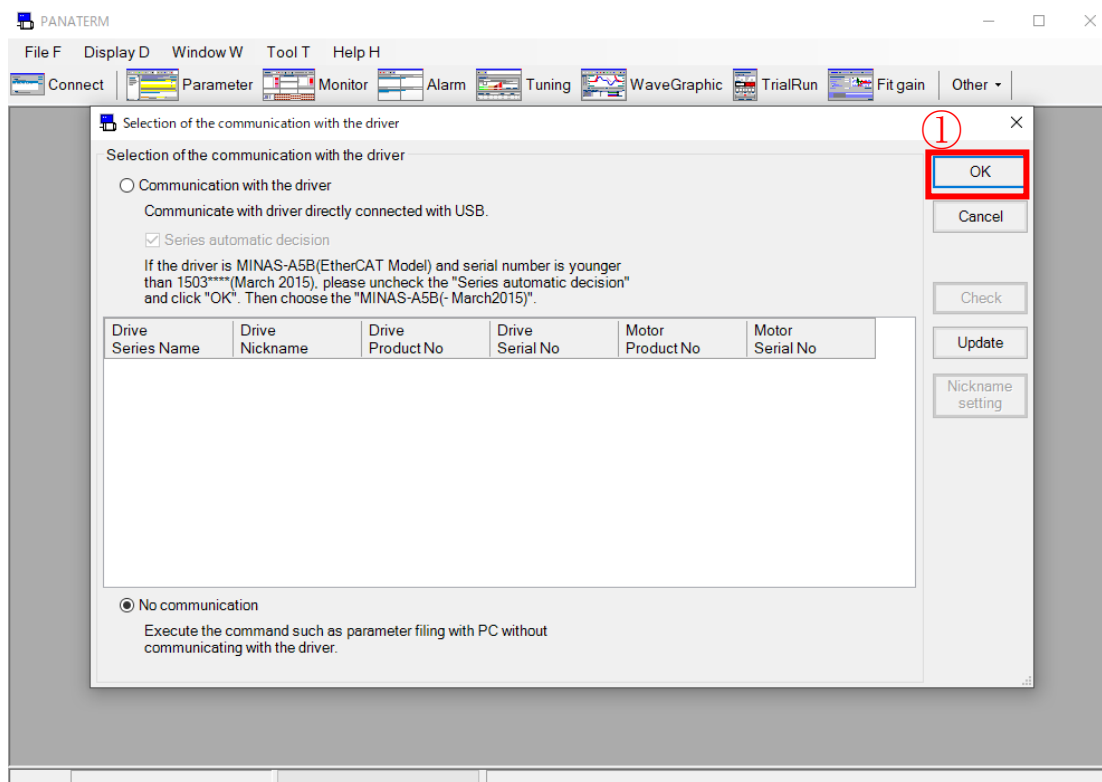
! Before turning on the power, be sure to check that all wiring is correct.

! Communication cables can be purchased from MISUMI, and the model number is USB-AM-MBM-2.

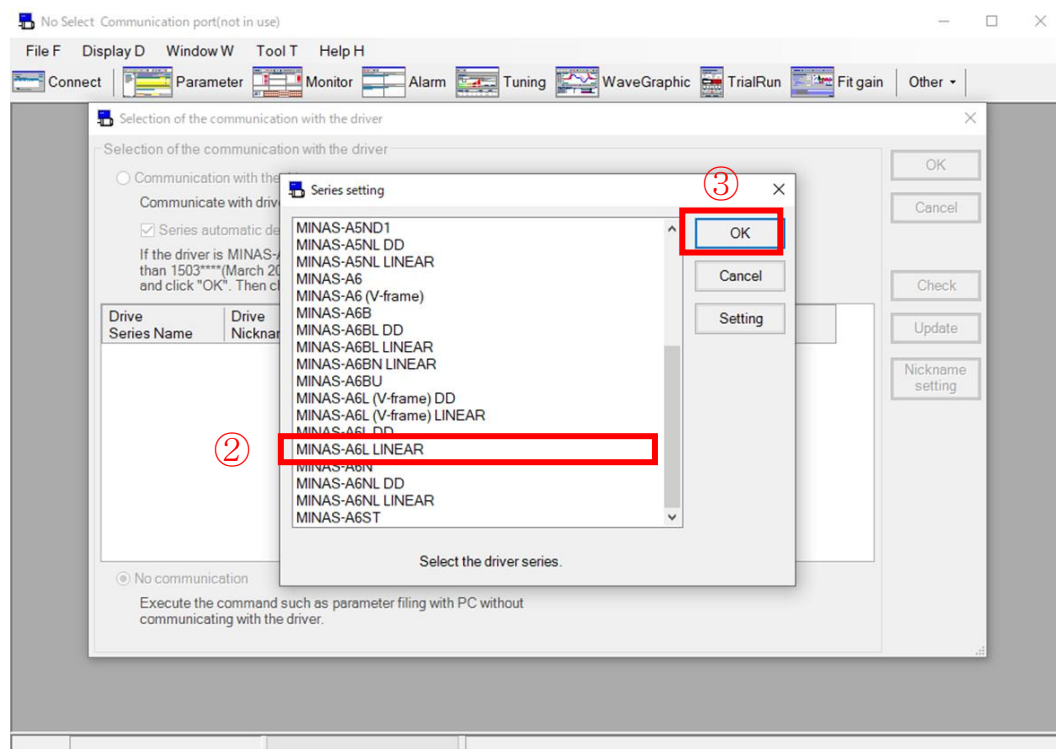


● communication

Open PANATERM and click ①<OK>.

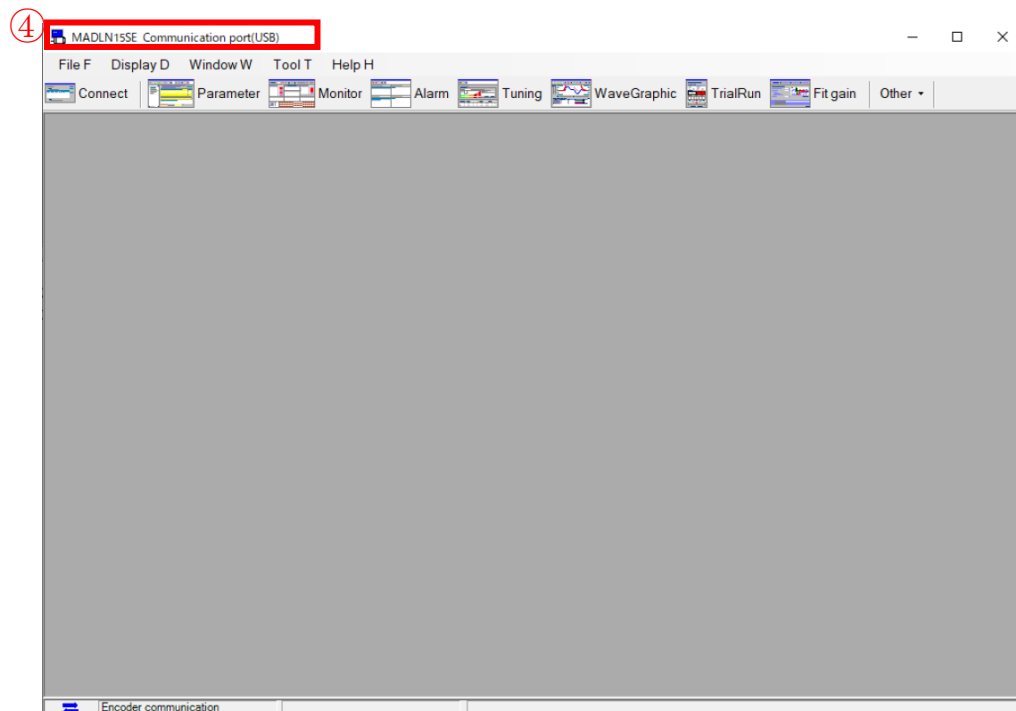


Select ②<MINAS-A6BL LINEAR>, and click ③<OK>.



If communication is successful, <Driver model number> is displayed in ④.

! If communication is not possible, reconnect the communication cable, reboot the computer, turn the driver power back on, and replace the communication cable.



3.3 Importing motor parameters























● Download parameter pack

You can download the parameter pack from the following address or request it from a MISUMI customer service representative.

Download address: https://www.misumi.com.cn/guide/doc/Motor_Data.zip

Select the parameter pack according to the model number of the actuator you purchased.

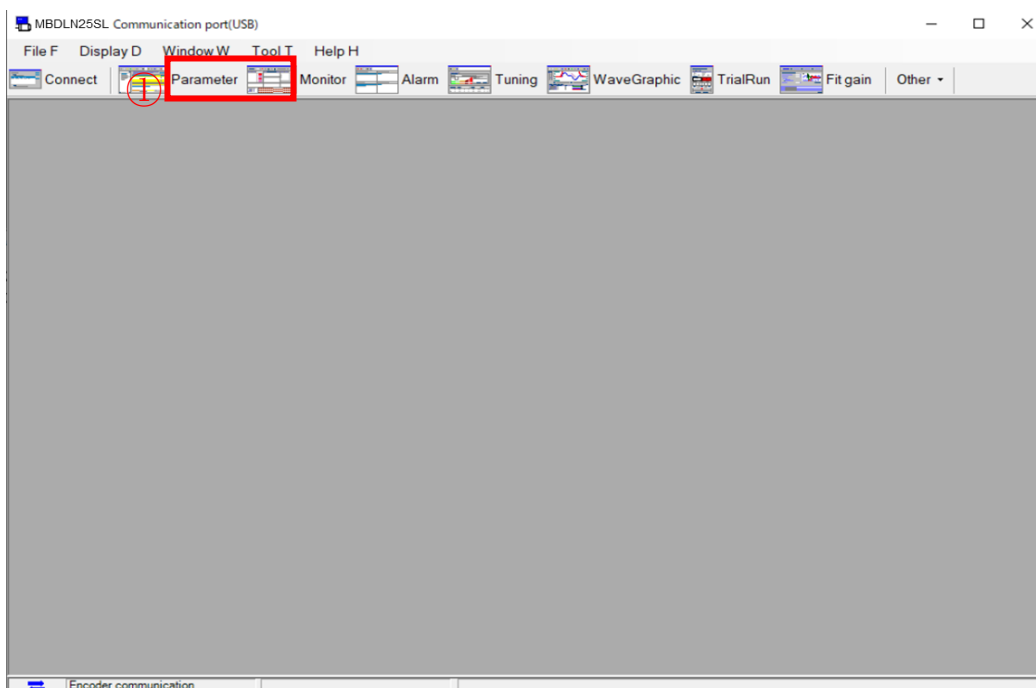
Example) If the model number of the linear motor actuator is E-RAM6-S-280-PE25-C3, the corresponding parameter pack is E-RAM6-S-PE25.

 E-RAM6-S	 E-RAM6-S-DA30.ssv
 E-RAM8-M	 E-RAM6-S-DE30.ssv
 E-RAM8-S	 E-RAM6-S-EA45.ssv
 E-RAM10-M	 E-RAM6-S-EE45.ssv
 E-RAM10-S	 E-RAM6-S-PA25.prm5
 E-RAM12-M	 E-RAM6-S-PE25.prm5
 E-RAM12-S	 서보트로닉스 DE드라이버용 EtherCA...
 E-RAM14-M	 서보트로닉스 EE드라이버용 EtherCAT...
 E-RAM14-S	 파나소닉 PE드라이버용 EtherCAT_ESI
 E-RAM17-M	
 E-RAM17-S	
 E-RAM19-M	
 E-RAM19-S	

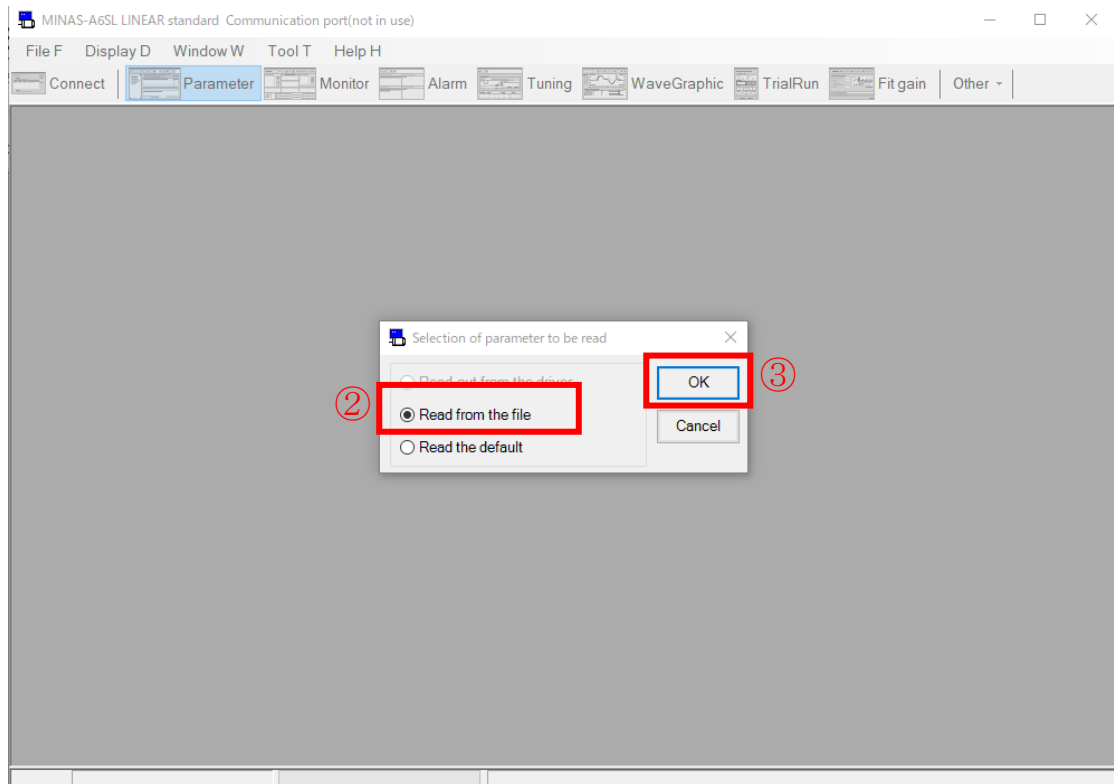
● Importing parameter packs

Operate in the following order:

- ① Click <Parameters>.

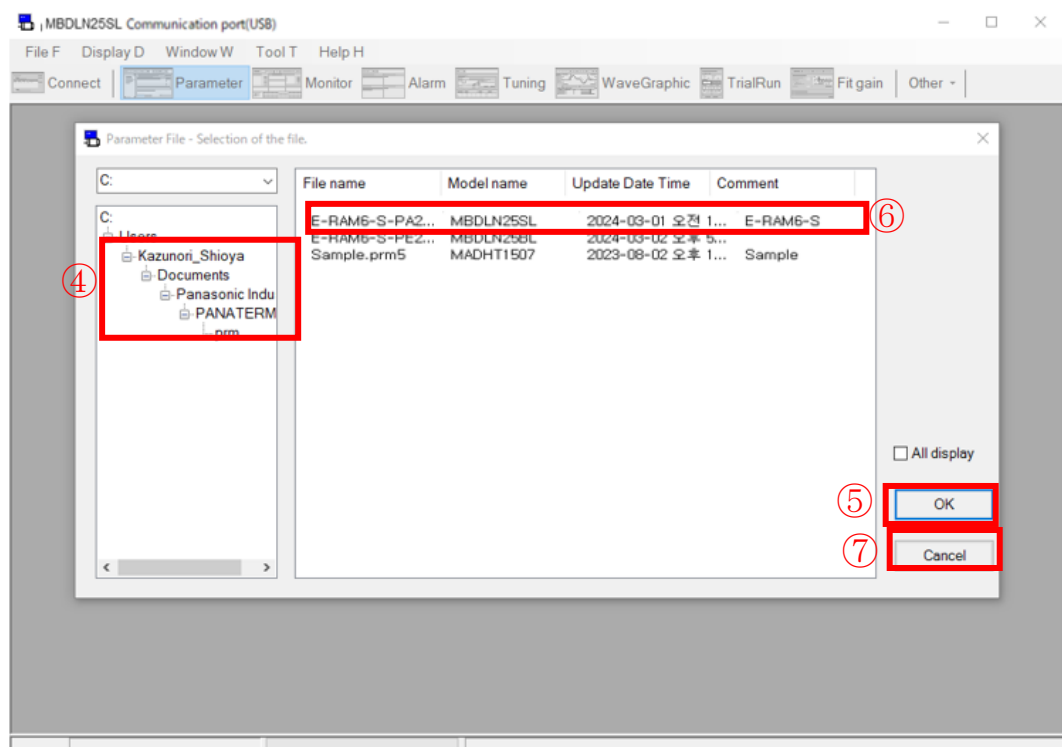


②Select <Read from file>, and click ③<OK>.

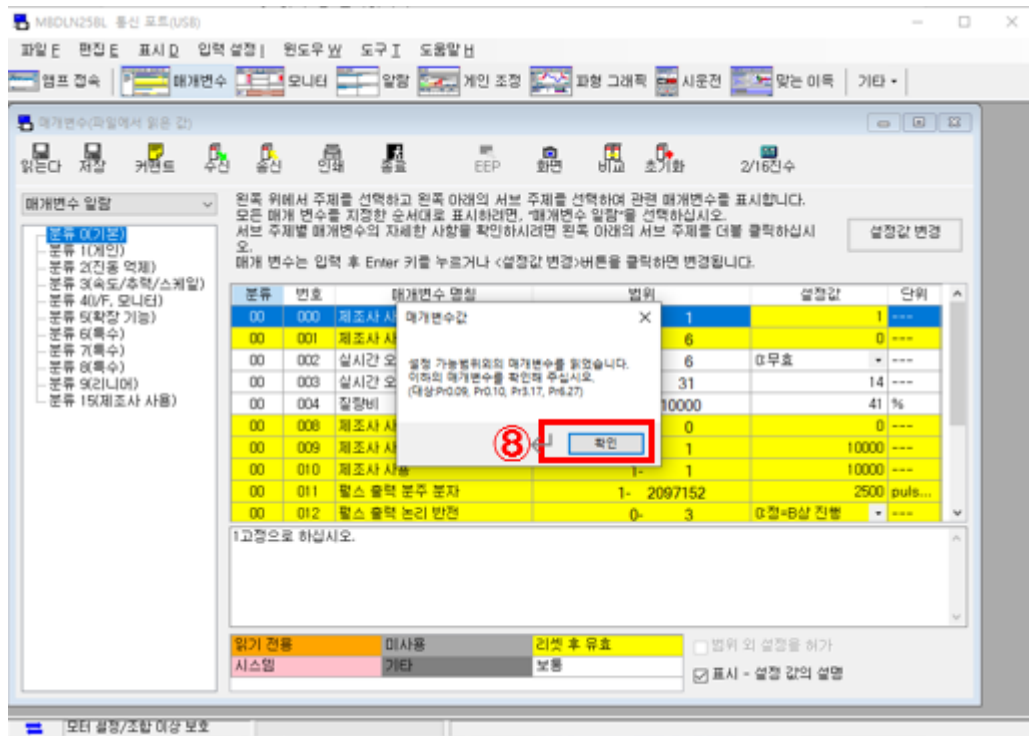


④Select the address where <Parameter Pack> is saved, and check ⑤<Show All>.

Select ⑥<Parameter Pack> to import, and click ⑦<OK>.



⑧Click <Confirm>.



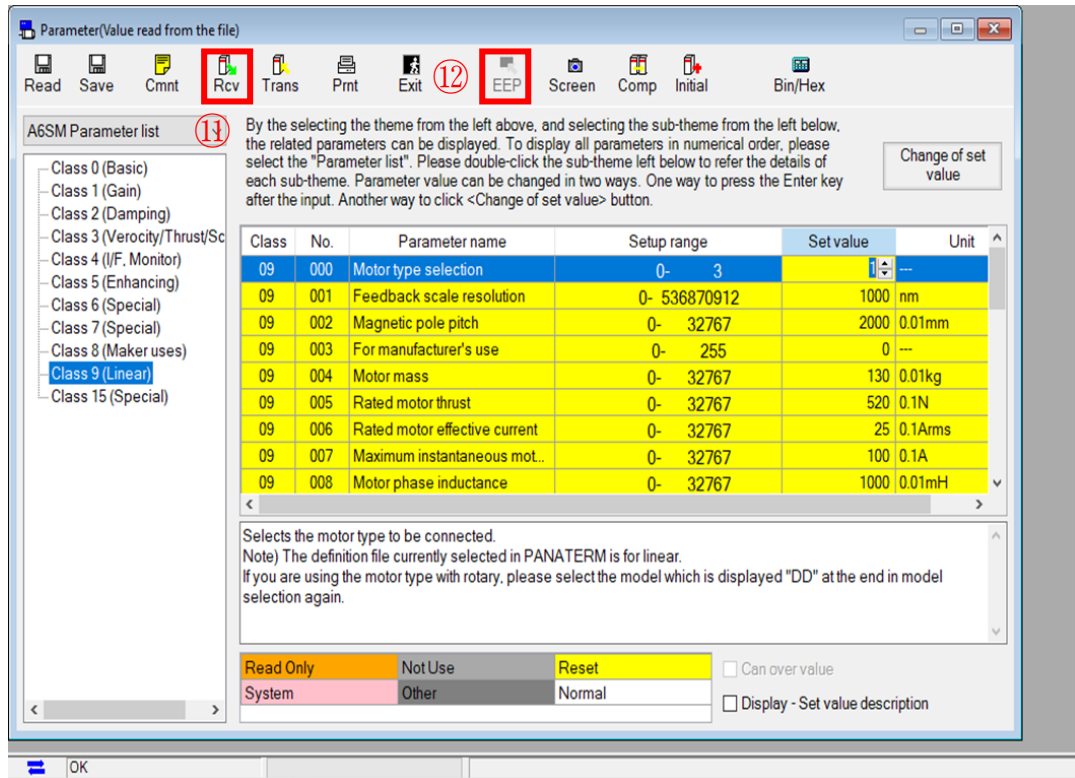
Click ⑨<Classification 9 (Linear)> and check whether ⑩<Setting Value> is correct.

! E-RAM시리즈_파나소닉파라미터 You must check based on , and pay special attention to whether the units match. If they do not match, please convert to the same units.

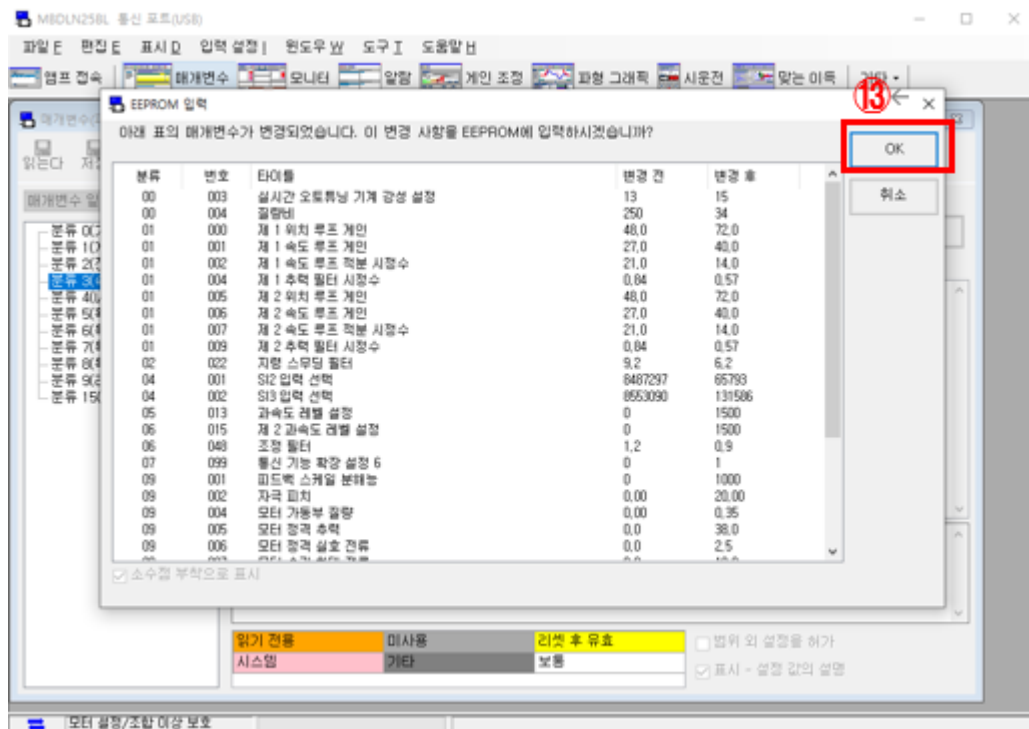
E-RAM6-S			
09	000	-	1
09	001	mm	1000
09	002	mm	20
09	004	kg	0.35
09	005	N	38
09	006	Arms	2.5
09	007	A	10
09	008	mH	9.4
09	009	Ω	3.2
09	010	mm/s	1500
09	020	-	2
09	022	ms	200
09	023	%	80

Class	No.	Parameter name	Setup range	Setting Value	Unit
09	000	Motor type selection	0- 3	1	
09	001	Feedback scale resolution	0- 536870912	1000	nm
09	002	Magnetic pole pitch	0- 32767	2000	0.01mm
09	003	For manufacturer's use	0- 255	0	
09	004	Motor mass	0- 32767	130	0.01kg
09	005	Rated motor thrust	0- 32767	520	0.1N
09	006	Rated motor effective current	0- 32767	25	0.1Arms
09	007	Maximum instantaneous mot.	0- 32767	100	0.1A
09	008	Motor phase inductance	0- 32767	1000	0.01mH

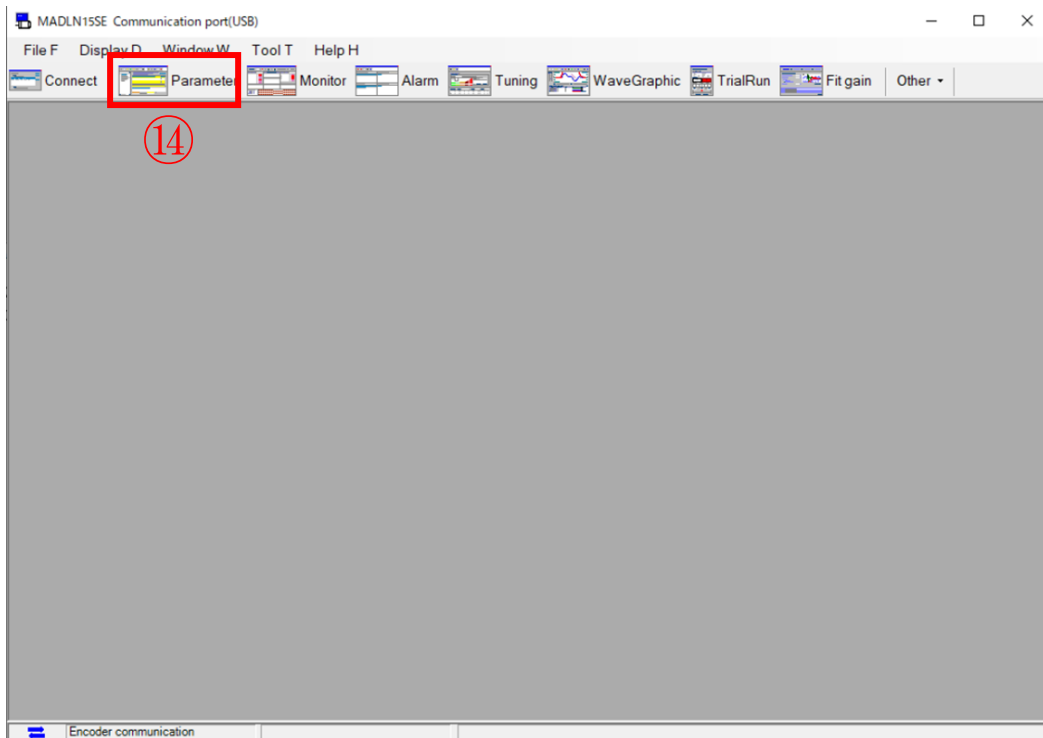
Click ⑪<Send>, then click ⑫<EEP>.



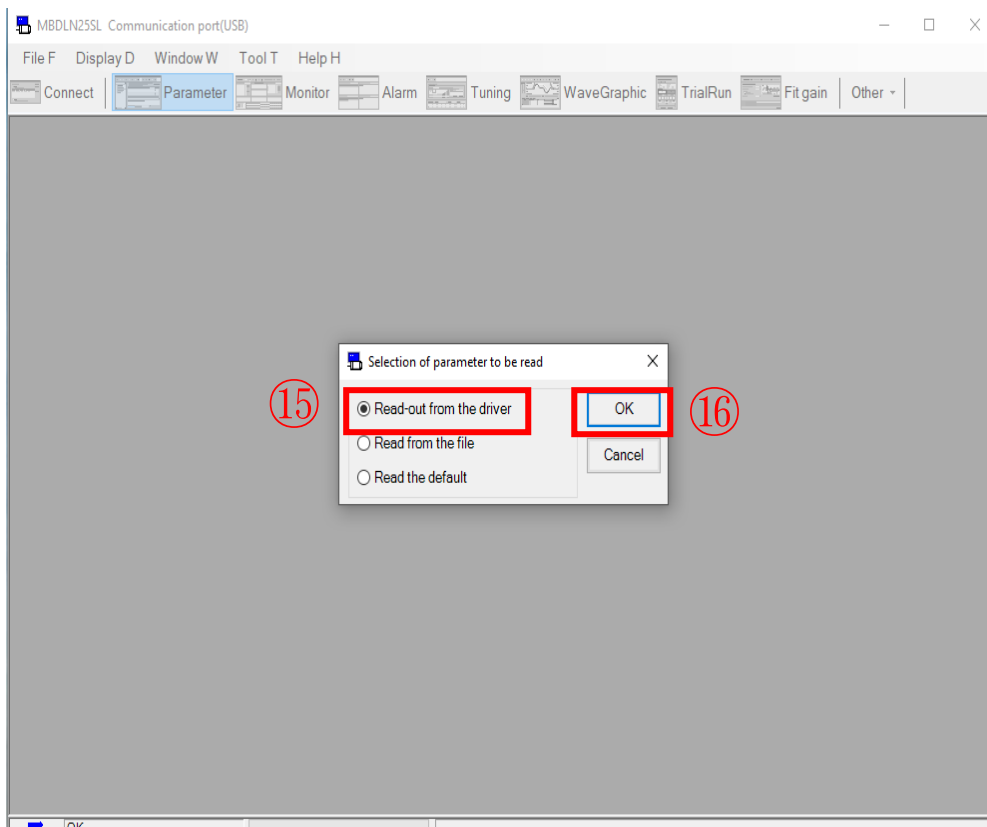
⑬Click <OK>.



Turn off the driver, then turn it back on after 5 seconds and click ⑭<Parameters>.

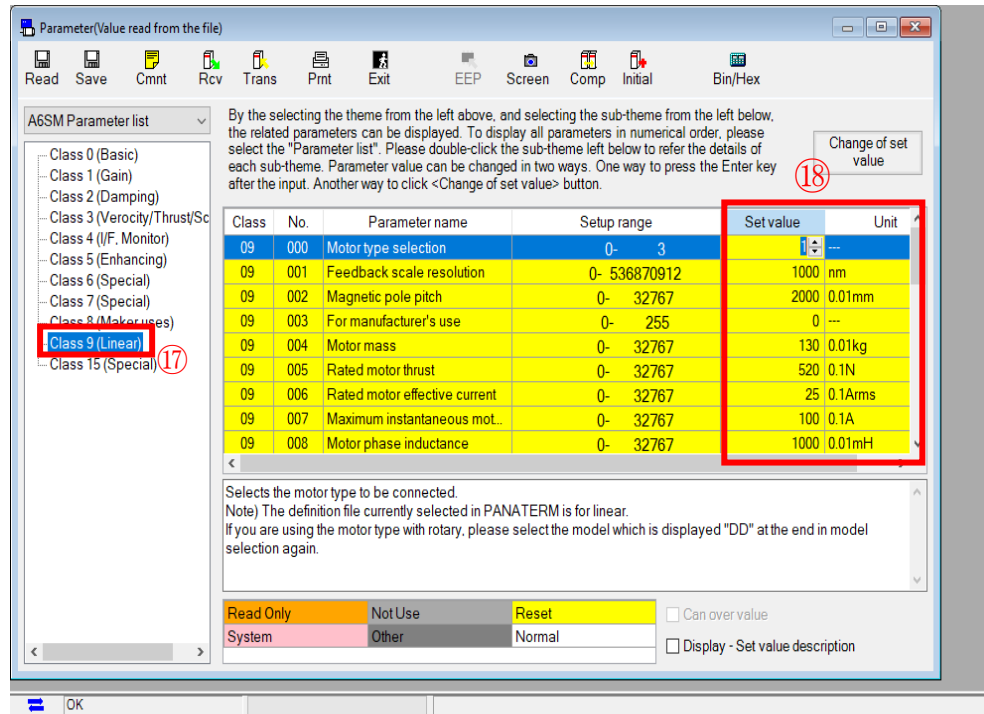


Select ⑮<Read from driver>, and click ⑯<OK>.



⑰Click <Category 9 (Linear)>.

⑱Check whether <setting value> is written to the driver.



3.4 Adaptive Debugging

● Preliminaries

First turn off the driver, slide the actuator's slider to the middle position, then turn it on.



● Start debugging

software MotorAutoSetup FOR A6.exe Open .

① Check if the <motor parameters> are correct (especially Pr9.01 and Pr9.02).

Click ②<Write>, and click ③<Next>.

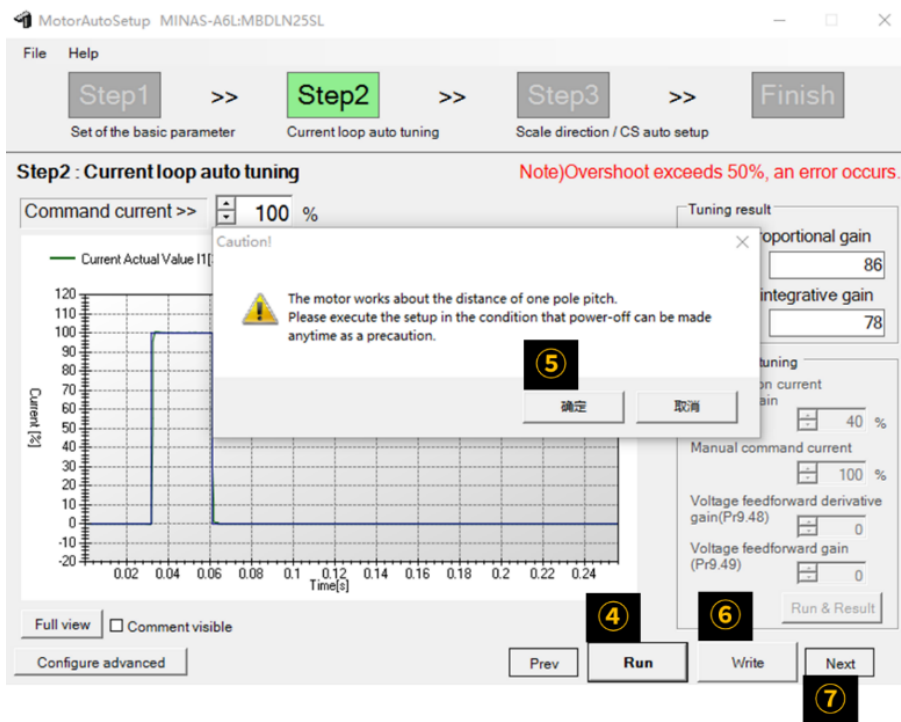
! For precautions, refer to <3.1 Software Download and Installation>, and be sure to close PANATERM first.

! E-RAM시리즈_파나소닉파라미터 Please check if the imported parameters are correct based on .

! If there are parameter changes, click ②<Write>, then turn off the driver and turn it on again.

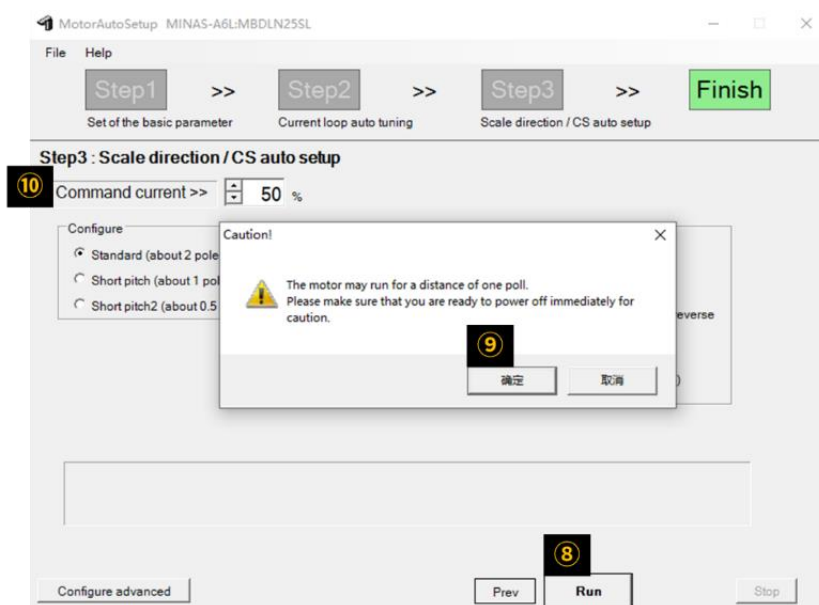
When you click ④<Run> and ⑤<Confirm>, the actuator will run slightly for a while and then stop.

Click ⑥<Write>, and click ⑦<Next>.

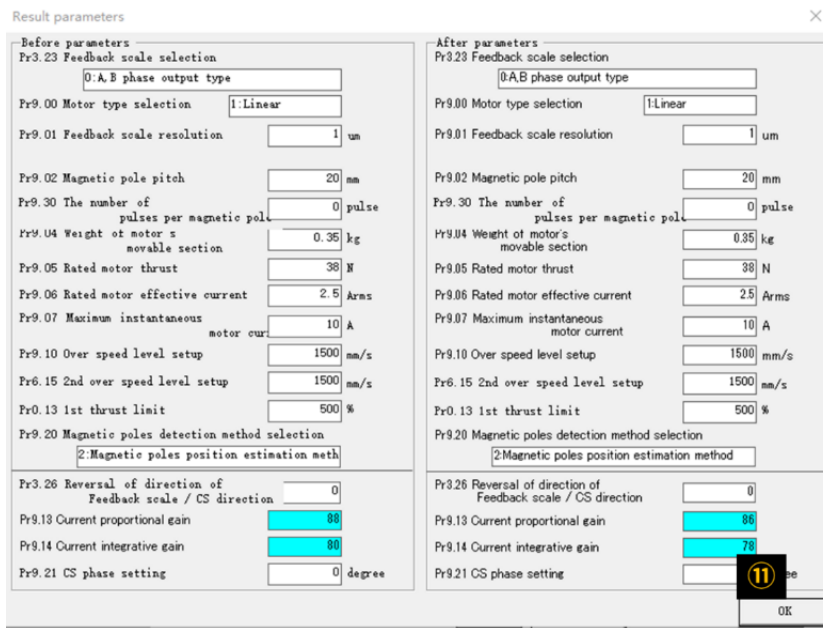


If you click ⑧<Run> and ⑨<Confirm>, the actuator will run slightly for a moment and then stop.

! When an alarm occurs, ⑩<Command current> can be increased appropriately.



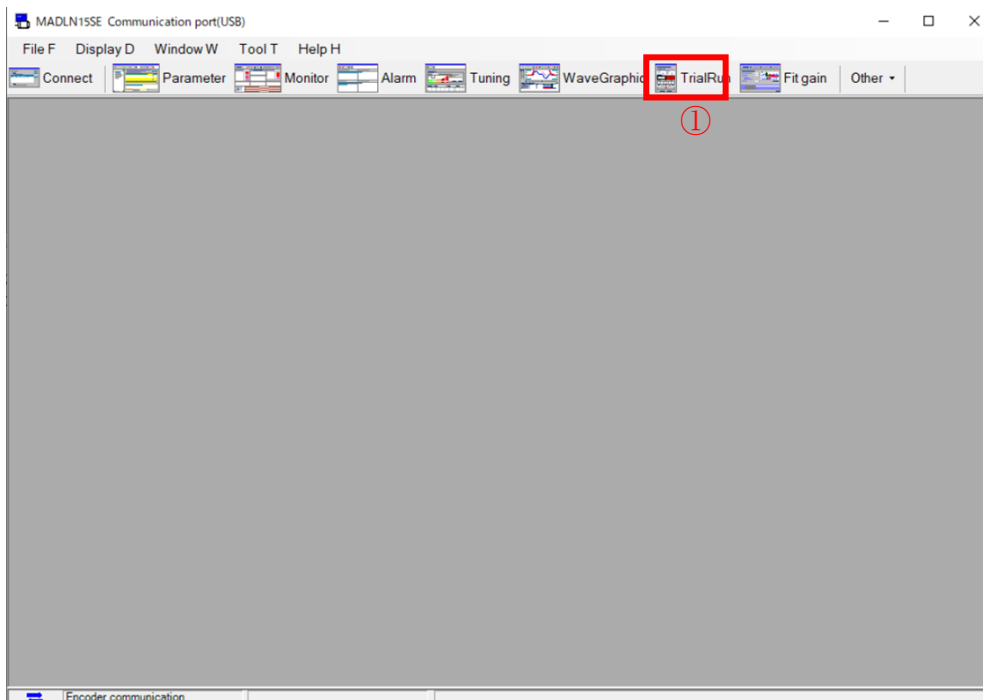
⑪Click <OK>, then turn off the driver and turn it on again to close this software.



3.5 Commissioning

● Preliminaries



- ① Click <Trial Run>.



Click ②<Turn off servo activation (Esc key)>, and set ③<JOG speed> and <JOG

acceleration/deceleration time>.

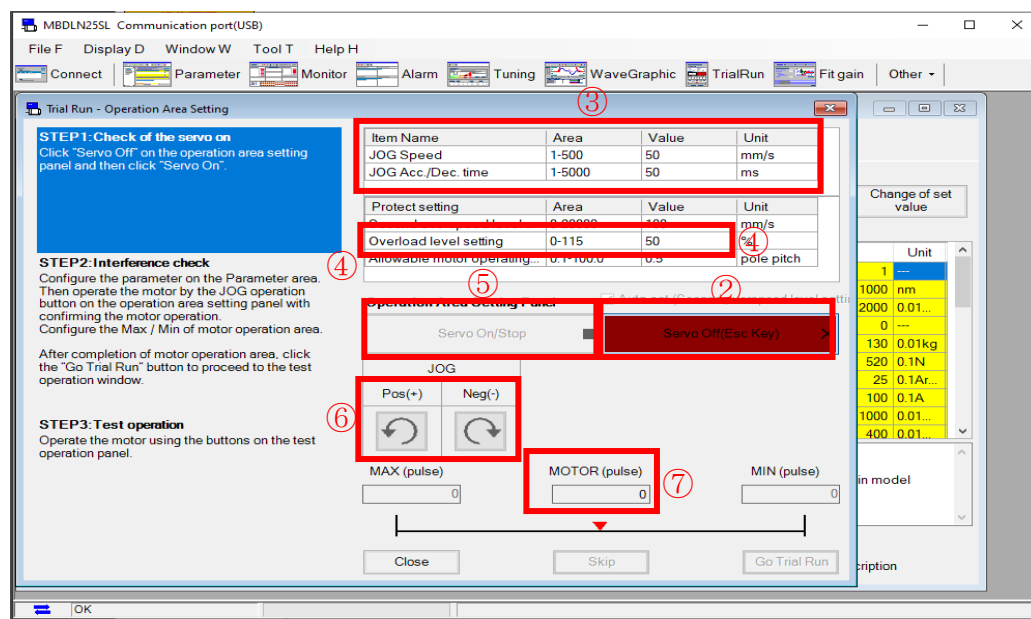
④Set <Overload Class Setting> to 115, confirm safety, and then click ⑤<Turn Servo Activation On/Off>.

⑥In <JOG>  or  When you click , the actuator operates.

⑦Observe <MOTOR(pulse)> to determine the positive and negative directions of the actuator.

! If a 24.0 alarm occurs, please check the electronic gear ratio.

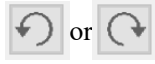
! It is normal for the actuator to emit an electromagnetic sound (tsk tsk) after activation.



● Start of test run

① Set <movement amount>, <waiting time>, <speed>, and <acceleration/deceleration time>.

② Check <Continuous JOG> or <Continuous STEP>.



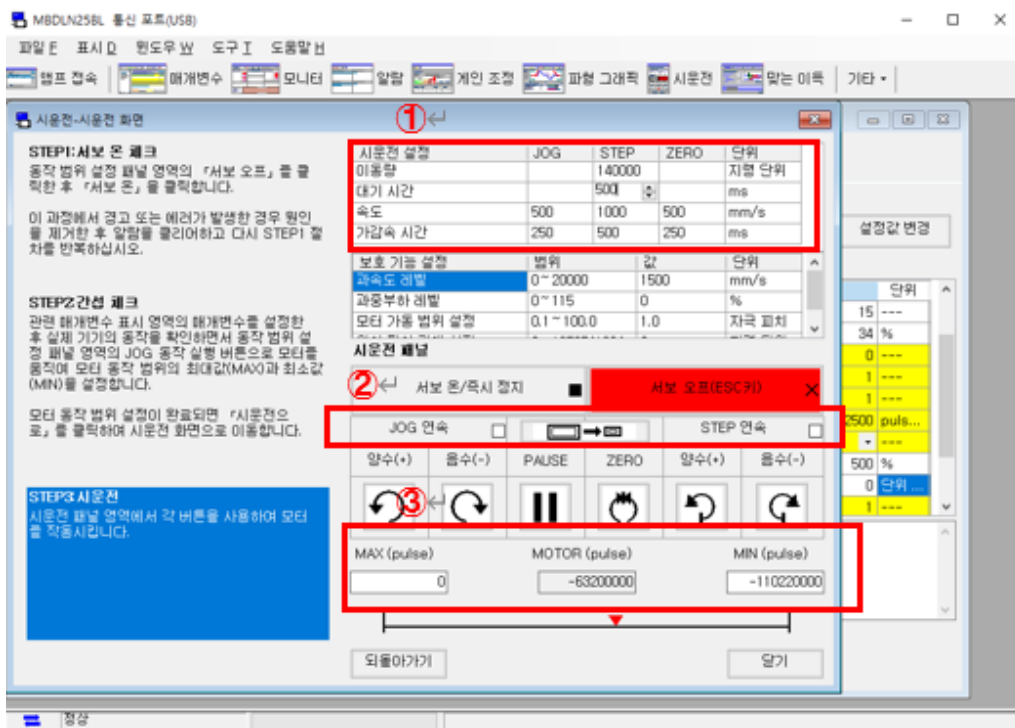
Click to make the actuator continuous JOG or continuous STEP.

! The movement amount is 1STEP=0.001mm, and please set within the range

①<MAX(pulse)>~<MIN(pulse)>.

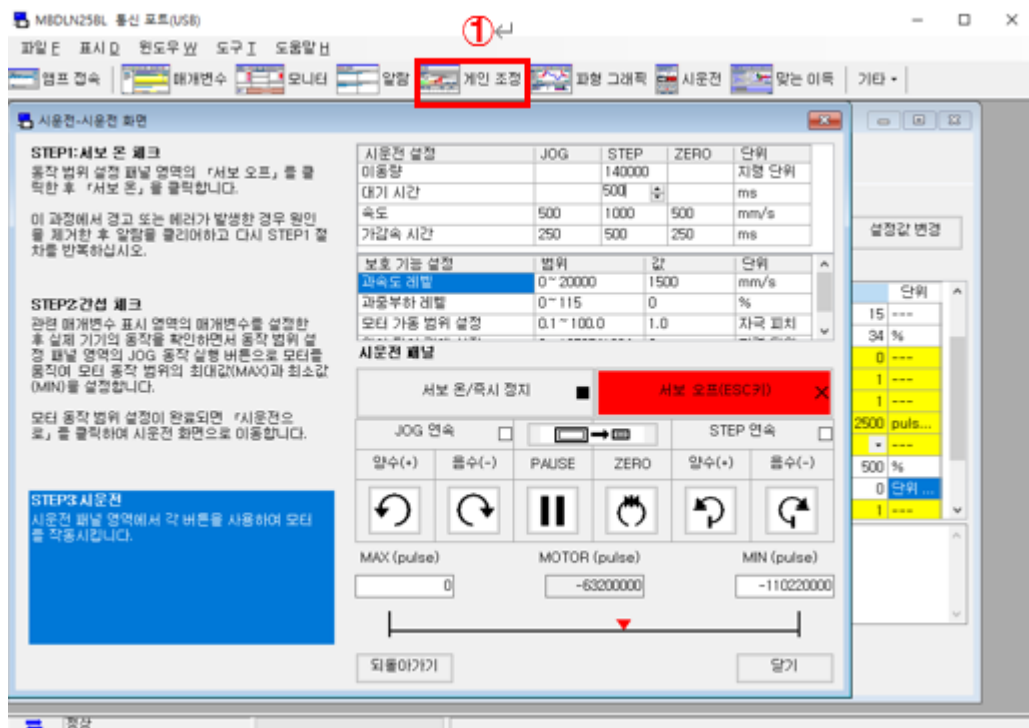
! Continuous JOG means running once, and continuous STEP means running repeatedly.

! After completing the test run, click ②<Turn off servo activation (Esc key)> to turn off activation.

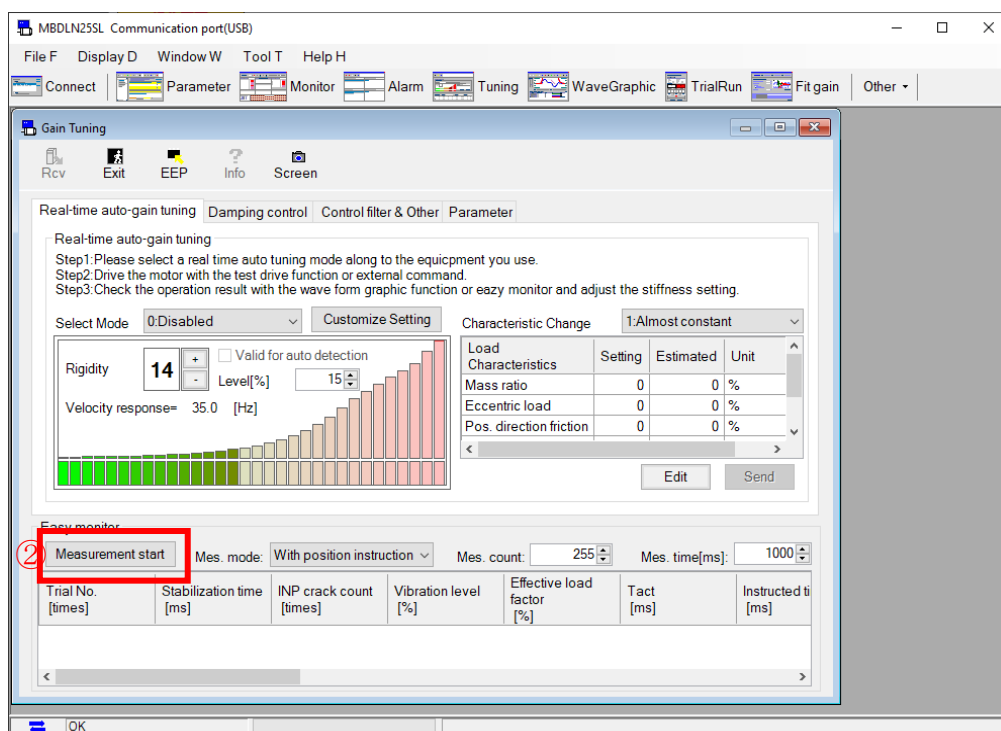


● Settlement time analysis

- ① Click <Gain Adjustment>.



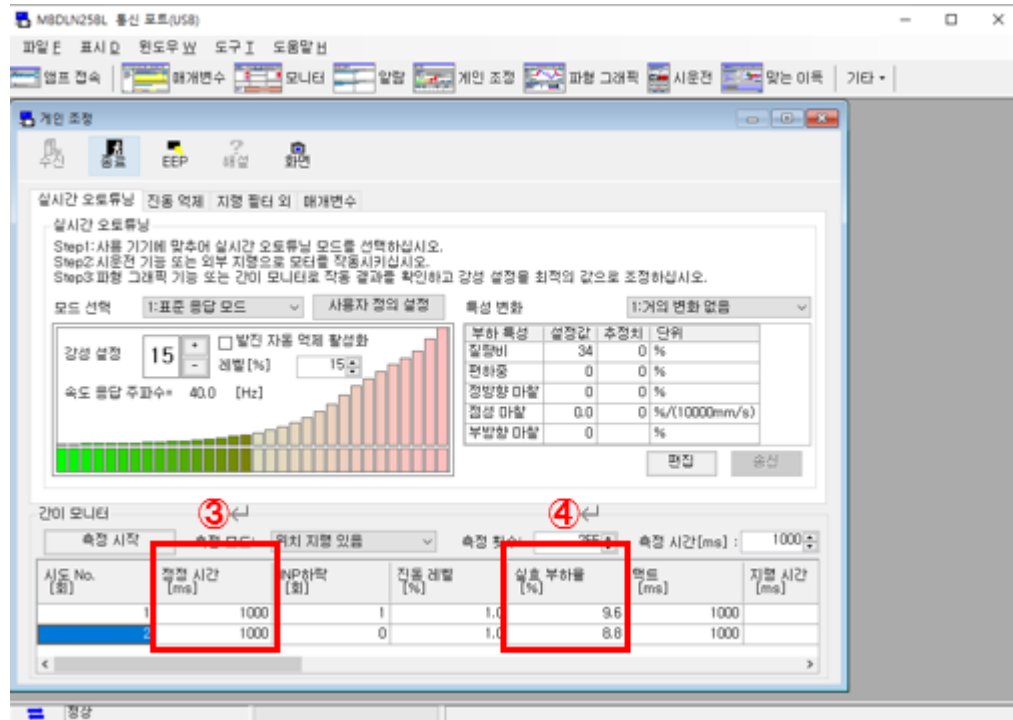
- ② Click <Start measurement>.



The actuator can be operated through an external PLC command or driver test run command, and check ③<settling time>.

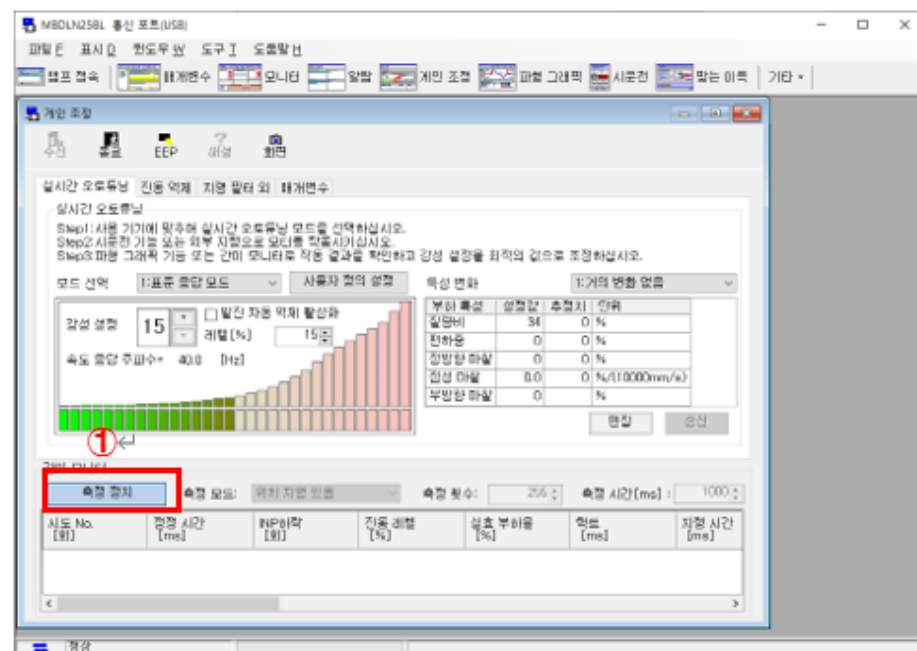
! Excessive settling time indicates poor responsiveness.

! ④<Effective load factor> cannot exceed 100.



● Parameter Debugging

① Click <Stop measurement>.

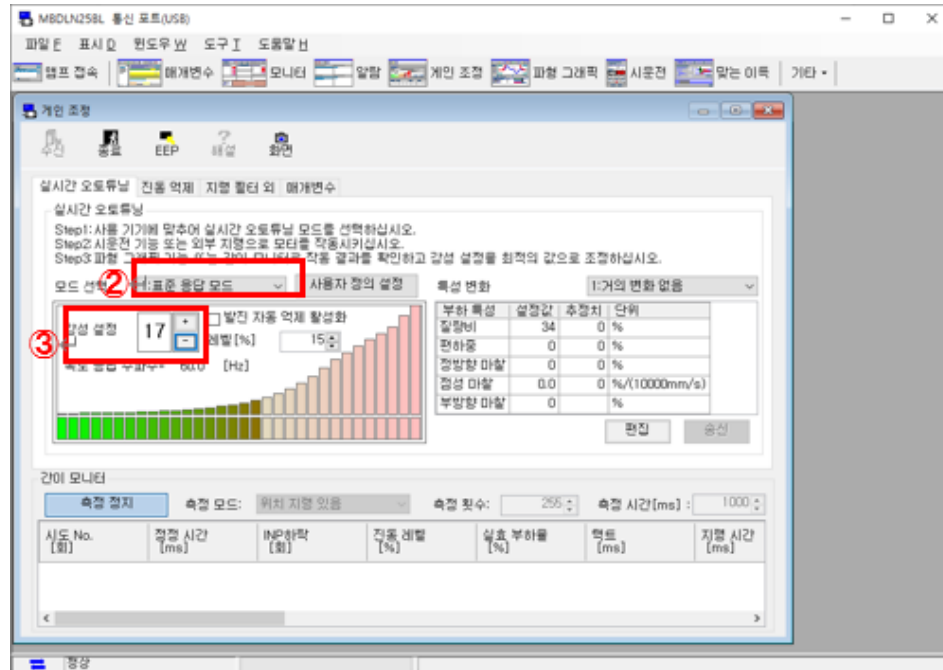


For the mode, select ②<1: Standard response mode> and set ③<rigidity setting>.

After debugging is complete, change the mode to ②<0: Invalid>.

! Increasing it may provide more responsiveness, but may cause noise or vibration in the actuator.

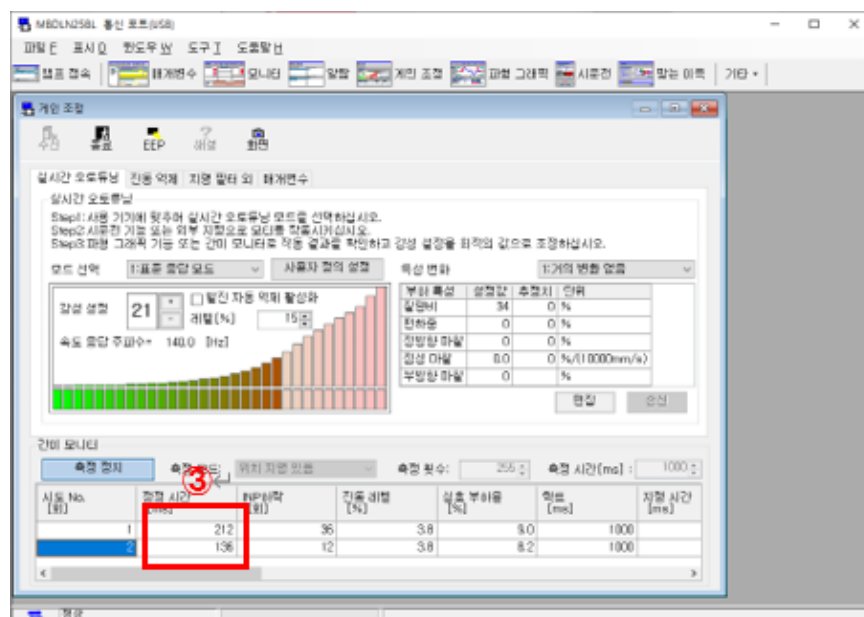
! Lowering it can suppress vibration and noise.



● Check debugging results

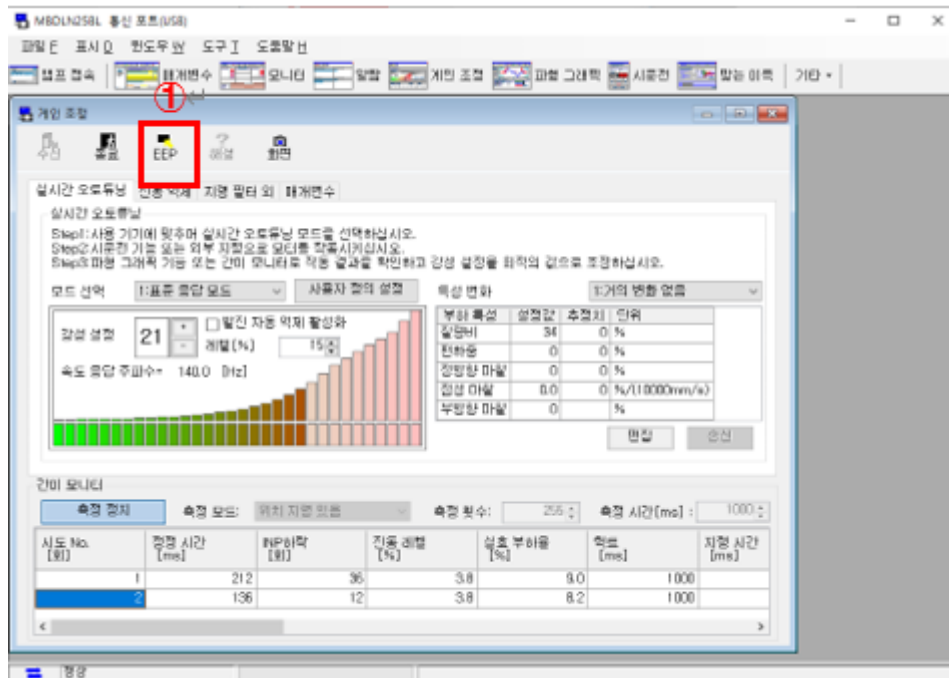
Perform the measurement again, run the actuator, and observe the settling time.

! After increasing rigidity, the settling time was shortened from the initial 1000ms to 136ms.

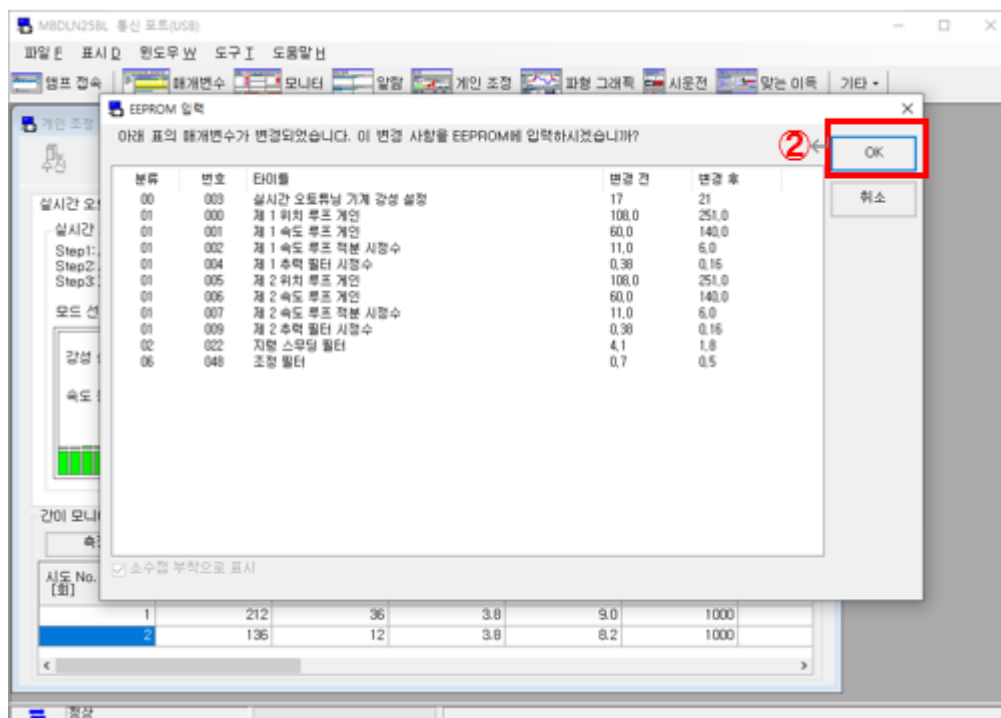


● Save parameters

1 Click <EEP>.



2 Click <OK>.



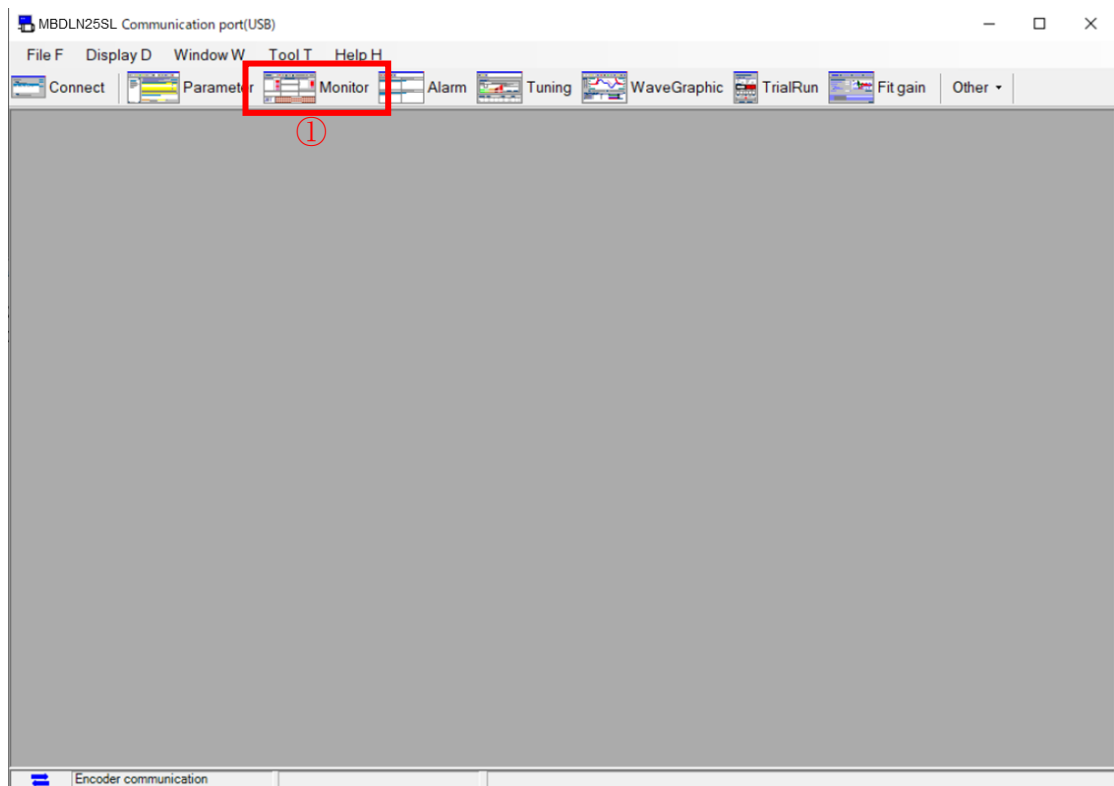
3.6 Control

● Electronic gear ratio settings

! The gear ratio must be 1:1 to operate normally; otherwise, the <24.0 position deviation excessive protection> alarm sounds.

Here's how to check:

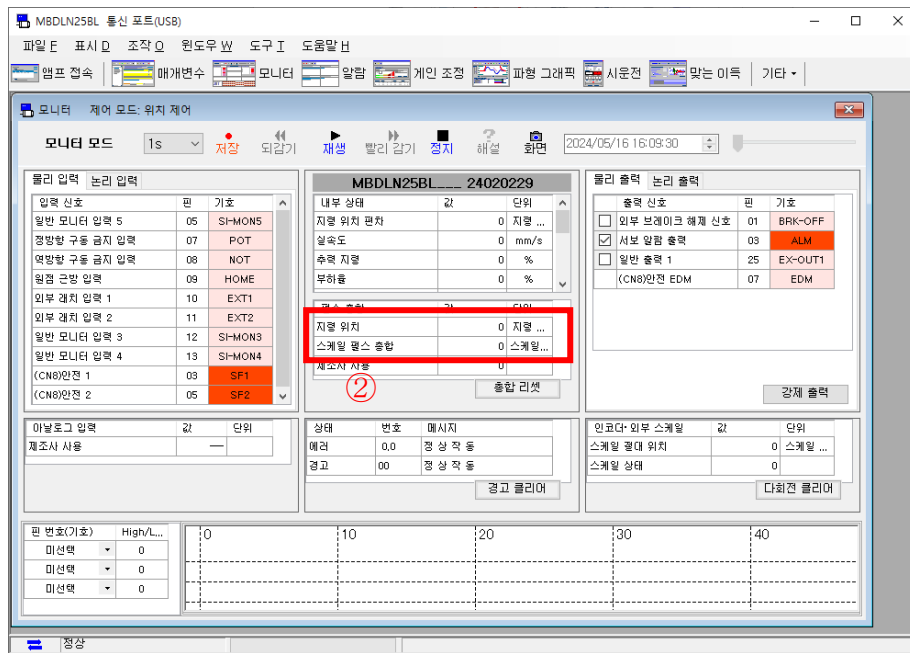
- ① Click <Monitor>.



- ② Check if <command position> and <sum of scale pulses> are the same.

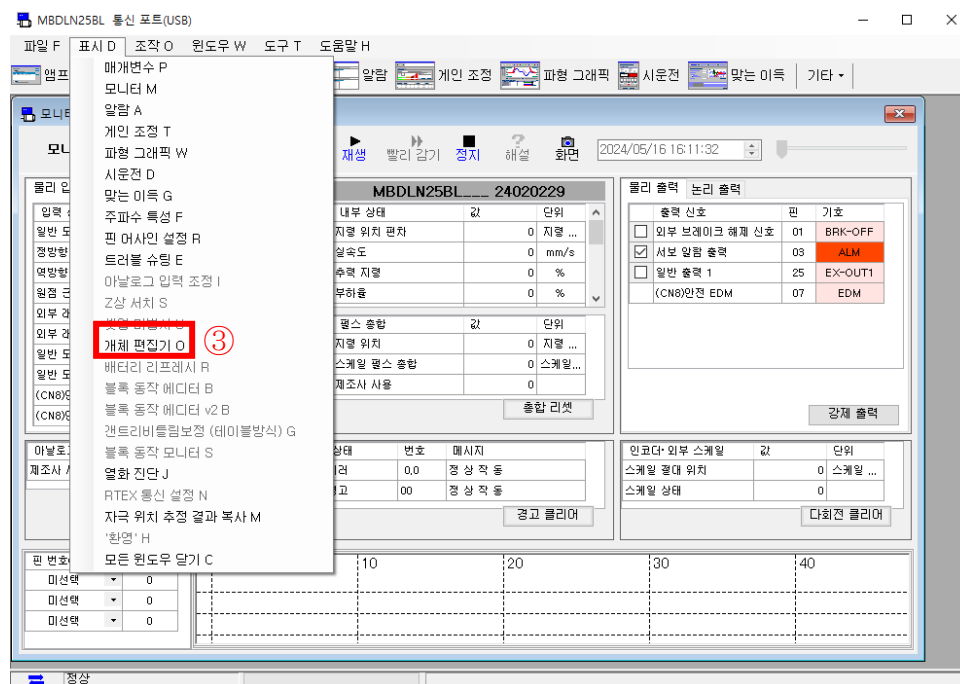
In other words, OK appears when <command position>=<scale pulse sum>.

Indicates NG when <command position>≠<scale pulse sum>.

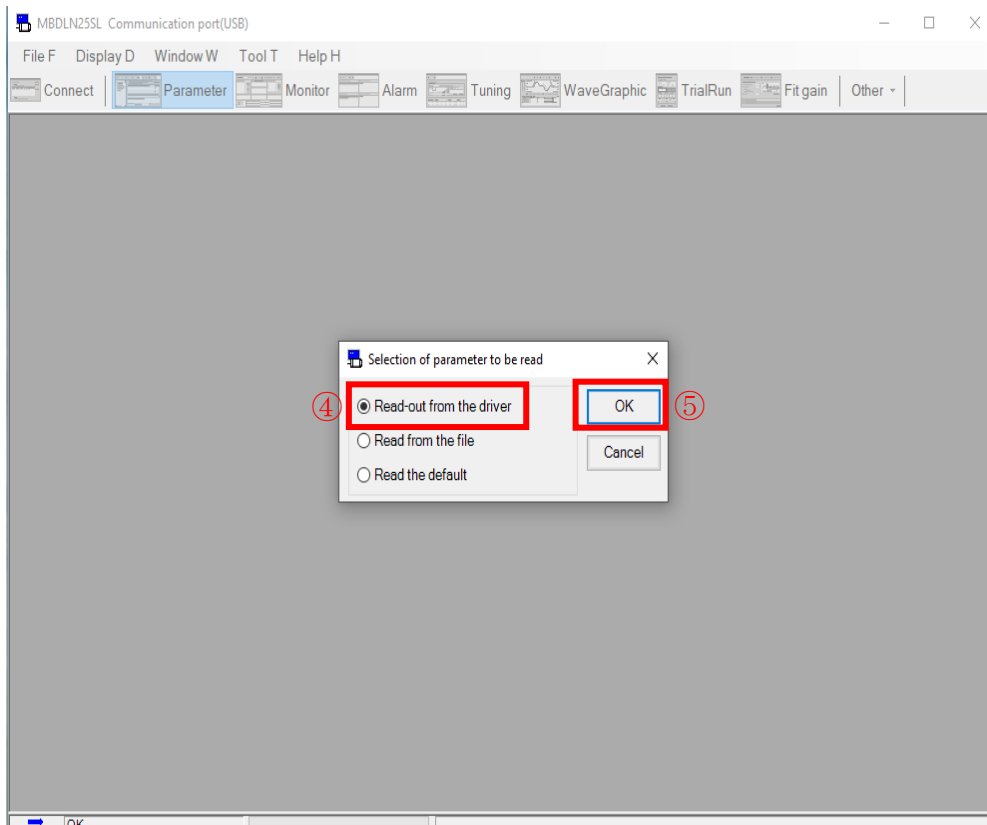


! If <command position> ≠ <scale pulse sum>, the correction method is as follows.

③ Click <Object Editor>.



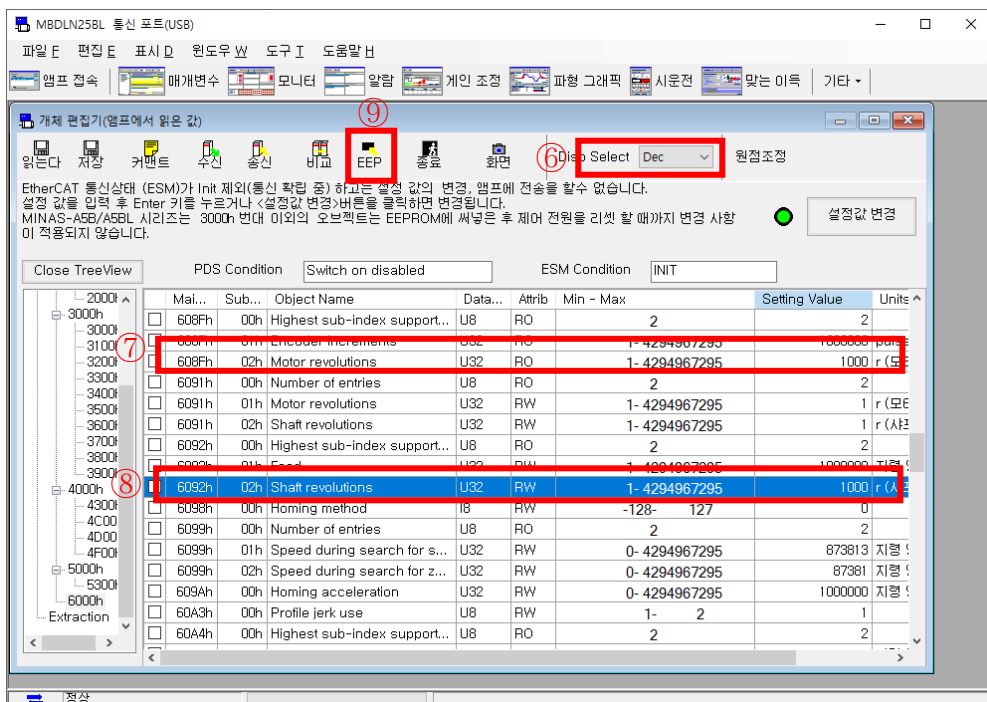
④ Select <Read from driver>, and click ⑤<OK>.



Change Disp Select to ⑥<Dec>, and check that Setting Value of ⑦608Fh-02h is 1000.

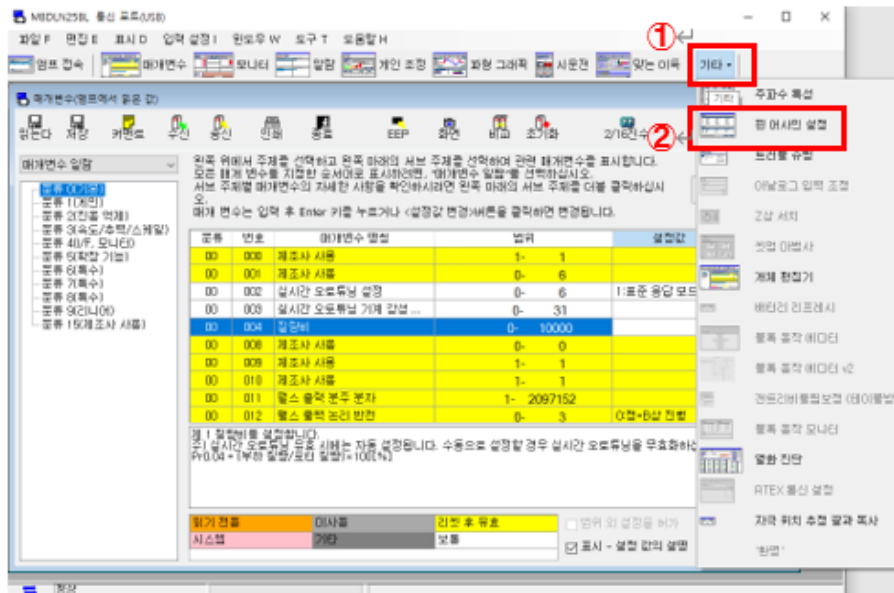
! If it is not 1000, go back to <3.3 Importing Motor Parameters> and re-enter the correct motor parameters.

⑧Change the Setting Value of 6092h-02h to 1000, click ⑨<EEP>, and close this dialog box.



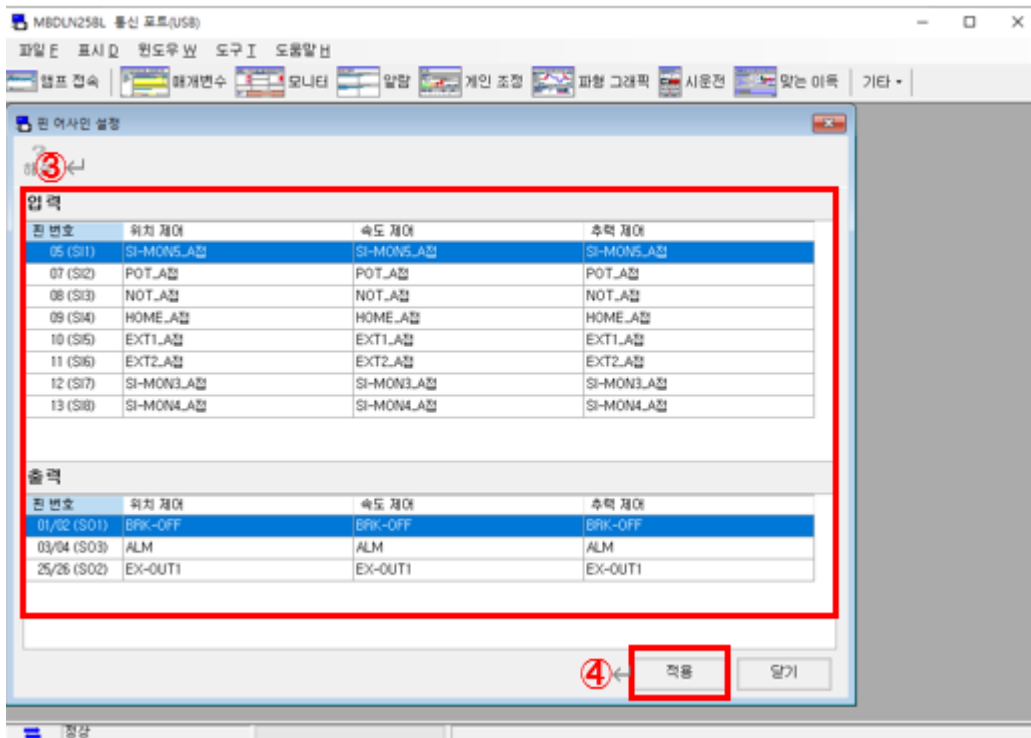
● I/O settings

- ① Click <Other>, and click ②<Pin Definition Settings>.



- ③ Set <input> and <output>, and click ④<Apply>.

! The polarity of the output cannot be modified.

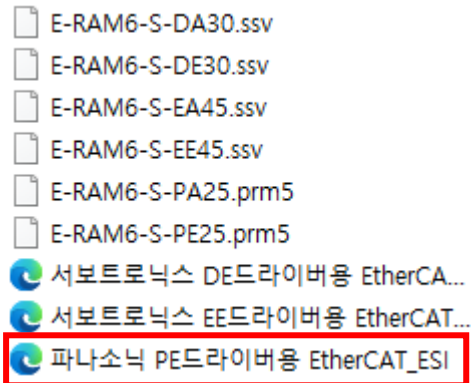


● Top computer matching

Please download and use the file matching the parent computer from the following address.

Download link: https://www.misumi.com.cn/guide/doc/Motor_Data.zip

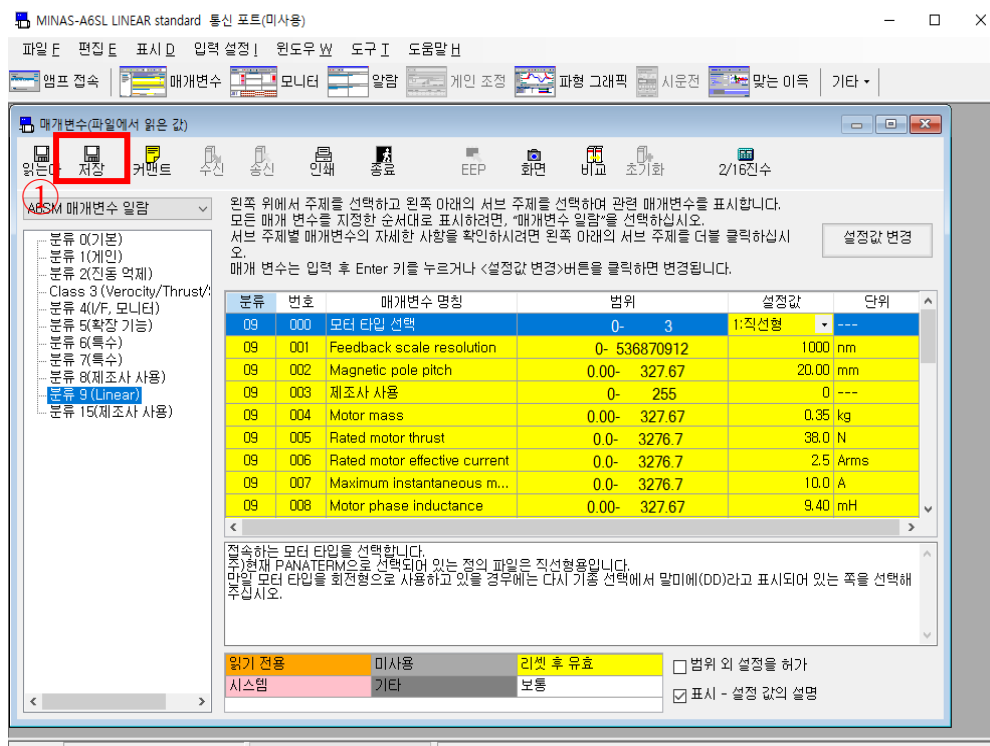
Select the adaptive file according to the model number of the actuator you purchased.



3.7Parameter backup & parameter recovery

● Parameter backup

- ① Click <Save> and enter the file name as instructed.



● **Parameter recovery**

For recovery methods, please refer to <3.3 Parameter Pack Importing>.

The differences are as follows:

1. The parameter pack changes to the saved parameter pack.