



LMAC Drive

E-RMA series (Pulse type)

Quick Start Guide

V 1.1

Version Update Record

Version	Update date	Update content
V1.0	2025-02	First release
V1.1	2025-11	Added EDrive installation wizard user guide Added instructions for importing parameters for absolute type LMAC

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Chapter 1. Wiring

1.1 Main Circuit Wiring Diagram

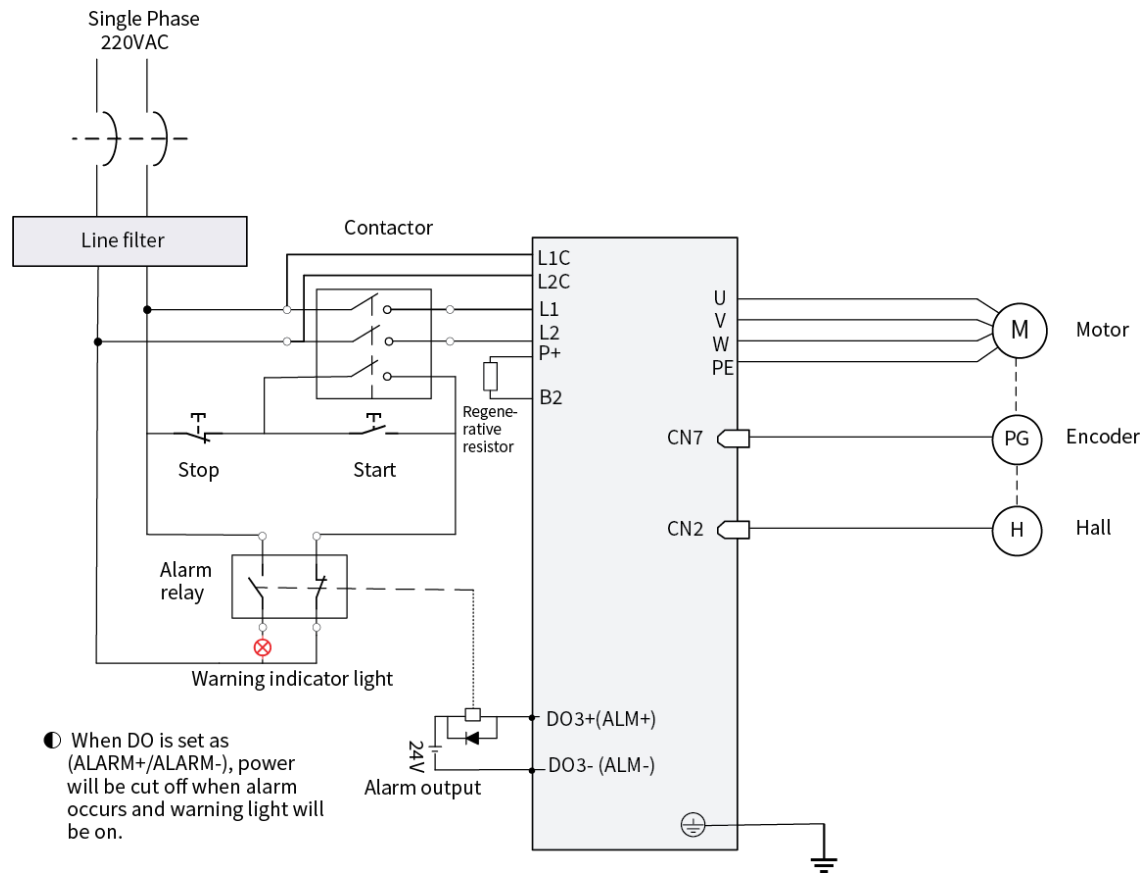
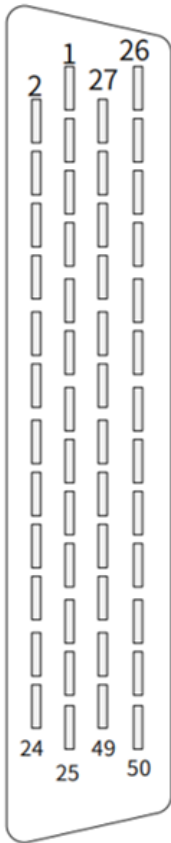


Figure 1-1 Main Circuit Wiring Diagram

1.2 Control Signal Connector - CN1 Pin Assignment

To ensure I/O signal to not be affected by electromagnetic interference, a shielded twisted pair cable is recommended for this application.

Port	Diagram (soldering side of the connector)	Pin	Label	Signal	Description (default function)
CN1		1	PUL+24	Pulse input	Low-frequency pulse train direction signal: PUL+ and PUL-: 5V differential input (500KHz) DIR+ and DIR-: 5V differential input (500KHz) PUL+24 and PUL-: 24V single end (200KHz) DIR+24 and DIR-: 24V single end (200KHz)
		3	PUL+	Pulse input	
		4	PUL-	Pulse input	
		2	DIR+24	Direction input	
		5	DIR+	Direction input	
		6	DIR-	Direction input	
		44	PULSH+	High frequency pulse input	4MHz High-frequency pulse train, 5V differential input
		45	PULSH-	High frequency pulse input	
		46	SIGNH+	High frequency direction input	4MHz High-frequency pulse train, 5V differential input
		47	SIGNH-	High frequency direction input	
		13	GND	GND	Ground
		7	DI-COM	Input	Common digital input
		8	DI1	NOT	Positive limit switch
		9	DI2	POT	Negative limit switch
		26	DI3	Null	-
		27	DI4	GAIN	Gain switching
		28	DI5	DIV1	Command multiplier switching
		29	DI6	SRV-ON	Servo on
		30	DI7	CL	Set deviation counter to zero
		31	DI8	A-CLR	Clear alarm(s)
		32	DI9	C-MODE	Control mode switching
		33	DI10	INH	Signal inhibit
		11	DO1+	BRK-OFF+	Release external brake
		10	DO1-	BRK-OFF-	
		35	DO2+	SRDY+	Servo ready signal output
		34	DO2-	SRDY-	
		37	DO3+	ALM+	Alarm output
		36	DO3-	ALM-	
		39	DO4+	INP1+	Position reached feedback signal
		38	DO4-	INP1-	
		41	DOCOM	Output	Common digital output (Max. current:50mA, Max. voltage 30V)
		12	DO5	ZSP	Velocity zero
		40	DO6	TLC	Limited torque
		14	Analog input 1	AI1	Velocity/Velocity limit(0 ~ ±10 V)
		15	GND	GND	Analog ground
		16	Analog input 2	AI2	-
		17	GND	GND	Analog ground
		18	Analog input 3	AI3	Torque/Torque limit in clockwise direction (0 ~ +10 V)
		42	AO1	IM	Analog output signal monitoring 1 (Configurable)

	43	AO2	SP	Analog output signal monitoring 1 (Configurable)
	21	A+	Differential output	Phase A frequency divider output
	22	A-	Differential output	
	48	B+	Differential output	Phase B frequency divider output
	49	B-	Differential output	
	23	Z+	Differential output	Phase Z frequency divider output
	24	Z-	Differential output	
	25	GND	GND	Internal ground
	19	OCZ	Channel Z output	Channel Z output (Open collector)
	20	GND	GND	Internal ground
	50	FG Shield ground	FG	-
	FG	-	FG	Frame ground

Table 1-1 E-RMA IO signal pin assignment

1. Single-end pulse input

Max allowed frequency: 200kHz

Required input voltage: 12~24V

NPN connection:

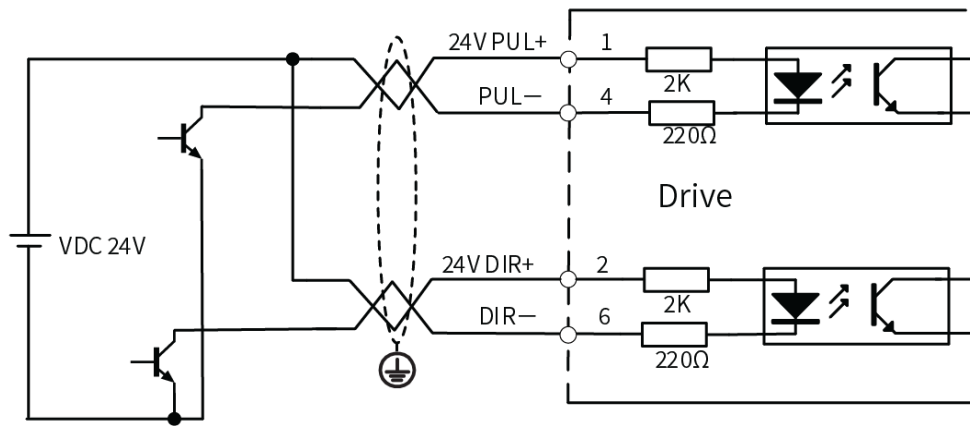


Figure 1-2 E-RMA single-end pulse input NPN wiring diagram

PNP connection:

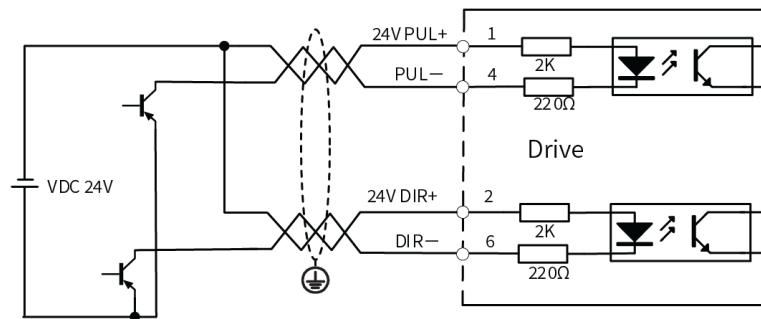


Figure 1-3 E-RMA single-end pulse input PNP wiring diagram

2. 5V differential pulse input (low speed)

Max allowed frequency: 500kHz

Required input voltage: $\pm 5V$

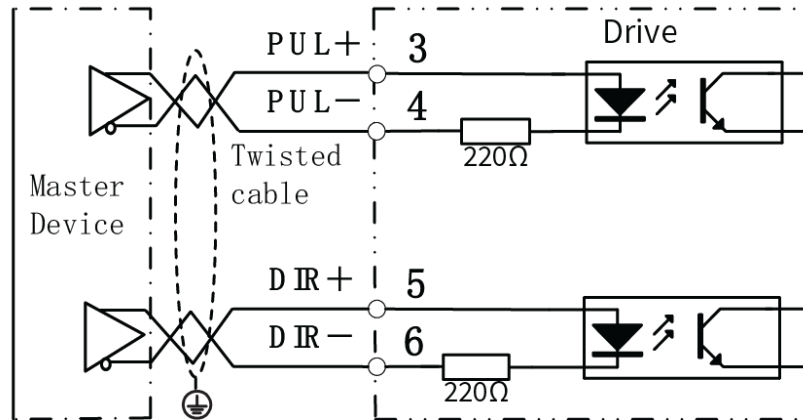


Figure 1-4 E-RMA differential pulse input (low speed) wiring diagram

3. 5V differential pulse input (high speed)

Max allowed frequency: 4MHz

Required input voltage: $\pm 5V$

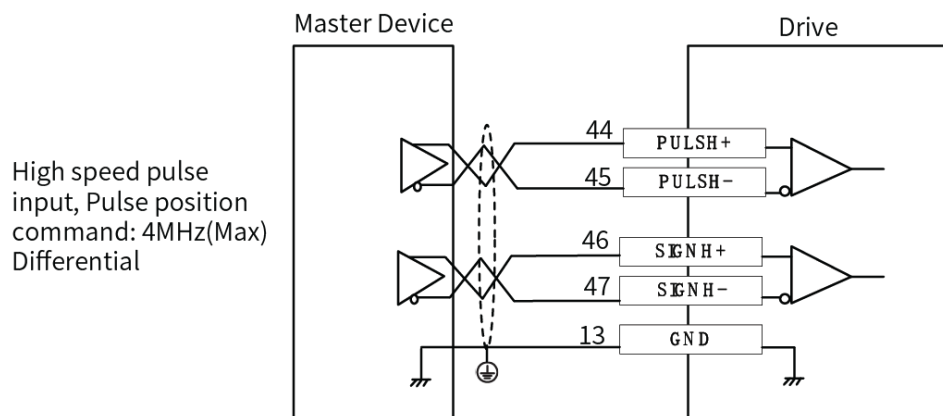


Figure 1-5 E-RMA differential pulse input (high speed) wiring diagram

4. General digital input connection

NPN connection:

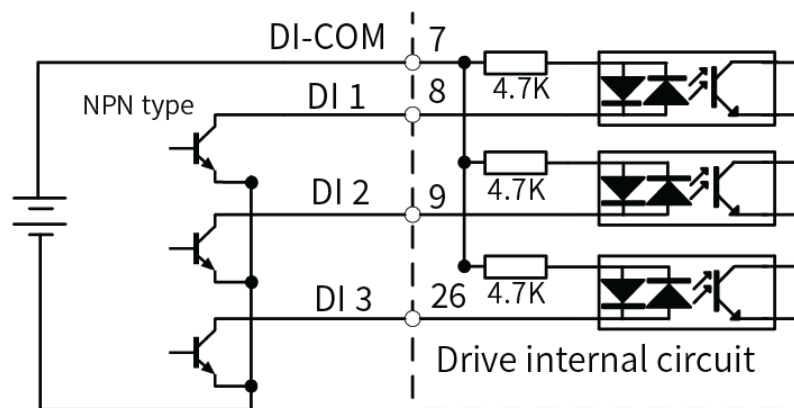


Figure 1-6 E-RMA digital input NPN wiring diagram

PNP connection:

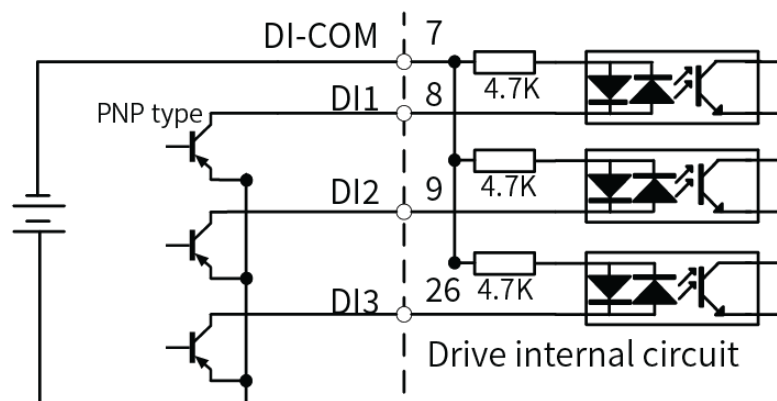


Figure 1-7 E-RMA digital input PNP wiring diagram

5. General digital output circuit

NPN configuration

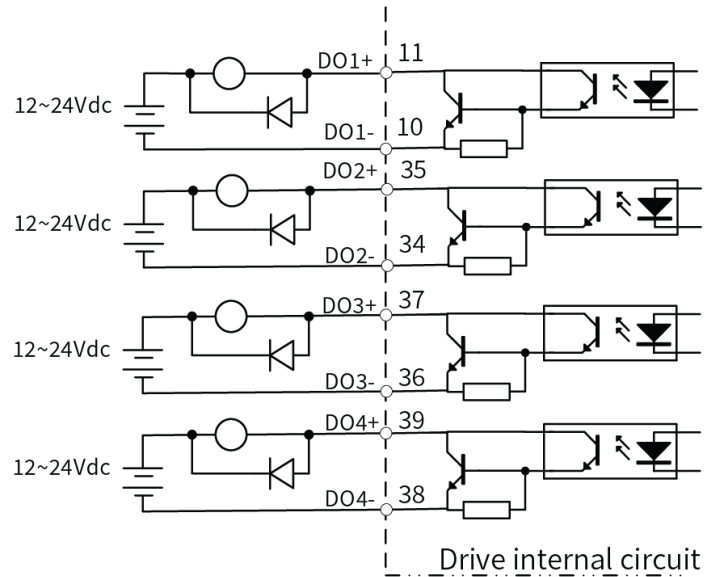


Figure 1-8 E-RMA digital output NPN wiring diagram

Note: For PNP wiring, please contact the Misumi Tech Support team.

6. Drive frequency divider 5V output

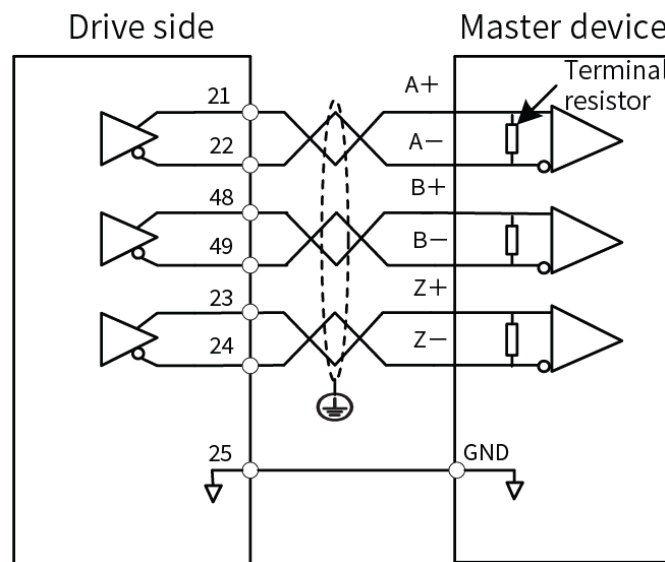


Figure 1-9 E-RMA frequency divider output wiring diagram

7. STO wiring diagram

STO (Safe Torque Off) function: Cut off motor current supply physically (through mechanical means). The drive comes with an STO terminal pre-installed with short-circuit wiring. If the STO function is not used, do not remove the STO terminal.

STO wiring diagram when in use:

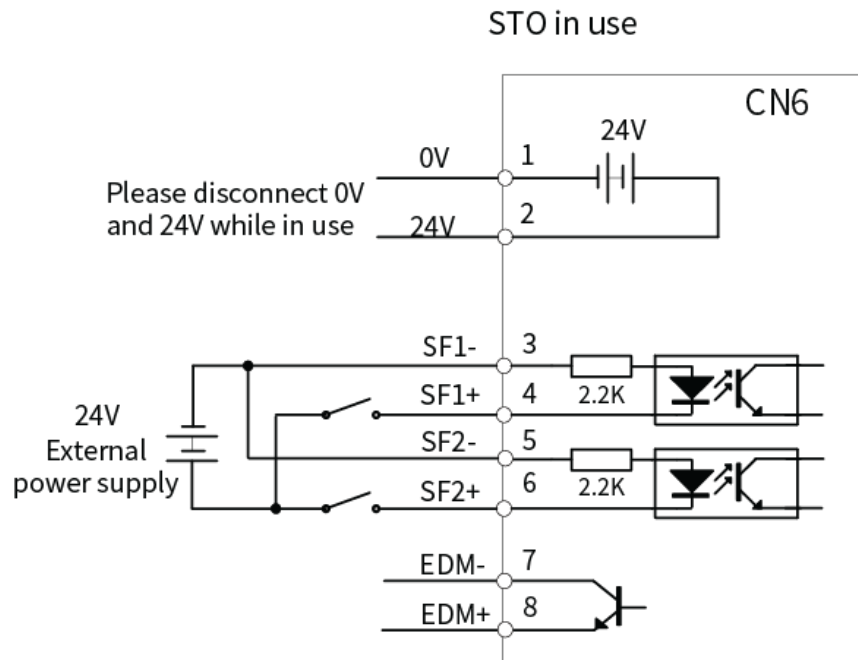


Figure 1-10 E-RMA STO wiring diagram

Chapter 2. Precautions Before Operation

The drive and linear motor must be reliably grounded. The PE terminal of the drive must be securely connected to the equipment ground.

Ensure all wiring is correct before powering on.

An emergency stop circuit must be integrated to ensure the power supply immediately stops in case of a fault.

After a drive fault alarm, verify that the issue has been resolved before restarting, and ensure the SRV-ON signal is inactive.

Do not touch the drive within at least 5 minutes after power is turned off to prevent electric shock.

If the drive panel is unresponsive after powering on, check whether the input voltage is within the rated range and ensure there are no phase losses.

Chapter 3. EDrive Configuration Software

3.1 Download EDrive Configuration Software.

Download link:

https://th.misumi-ec.com/en/linked/material/mech/MSM1/CAD/2D/10311108889/EDriver_v1.2.0_alpha.zip

3.2 Installation

Just unzip and pull the ‘MISUMI EDrive’ folder to the desktop.

☐ Name	Date modified	Type	Size
▼ Today			
 EDriver_v1.2.1_alpha_20251030.zip	11/27/2025 8:54 AM	Compressed (zipp...	81,255 KB
 E-RME_V1.01_EtherCAT_ESI file.xml	11/27/2025 8:54 AM	Microsoft Edge HT...	156 KB
☒  EDriver_v1.2.1_alpha_20251030	11/27/2025 8:55 AM	File folder	
 MISUMI LMAC Driver Quick Start Guide	11/27/2025 8:54 AM	File folder	
 MISUMI LMAC Driver User Manual	11/27/2025 8:54 AM	File folder	

Figure 3-1 EDrive configuration software folder

3.3 Open Software

Double click ‘EDrive.exe’ to open the software.

☐ Name	Date modified	Type	Size
▼ Today			
 Driver	11/27/2025 8:54 AM	File folder	
 DriverDefaultPara	11/27/2025 8:54 AM	File folder	
 Help	11/27/2025 8:54 AM	File folder	
 Init	11/27/2025 8:54 AM	File folder	
 Motors	11/27/2025 8:54 AM	File folder	
 Pic	11/27/2025 8:55 AM	File folder	
 Remark	11/27/2025 8:55 AM	File folder	
 Script	11/27/2025 8:55 AM	File folder	
 Tools	11/27/2025 8:55 AM	File folder	
 DATA.mdb	11/27/2025 8:54 AM	Microsoft Access ...	28,588 KB
☒  EDrive.exe	11/27/2025 8:54 AM	Application	8,437 KB
 inp_num.dll	11/27/2025 8:54 AM	Application extens...	8 KB
 Interop.dll	11/27/2025 8:54 AM	Application extens...	78 KB
 libifcoremdd.dll	11/27/2025 8:54 AM	Application extens...	1,190 KB
 libifcoremdd.dll	11/27/2025 8:54 AM	Application extens...	1,190 KB
 libmmd.dll	11/27/2025 8:54 AM	Application extens...	4,202 KB
 LV_sub2.dll	11/27/2025 8:54 AM	Application extens...	52 KB
 OscilloScope.dll	11/27/2025 8:54 AM	Application extens...	417 KB
 ParameterConfigInfo.mdb	11/27/2025 8:54 AM	Microsoft Access ...	3,308 KB

Figure 3-2 EDrive configuration software launch icon

After software opened, go to 'General' and change language to 'English'.

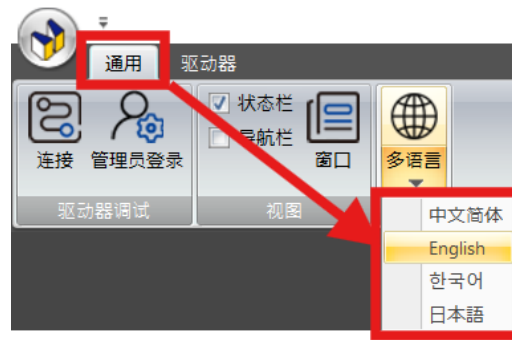


Figure 3-3 EDrive configuration software change language

3.4 Connect to PC

Please use cable with one side USB type-A and the other side USB type-C.



Figure 3-4 TYPE-C configuration cable

Open EDrive software and start connection. 'Communication Mode' please choose 'RS232', then click 'Refresh', then click 'Connect'.

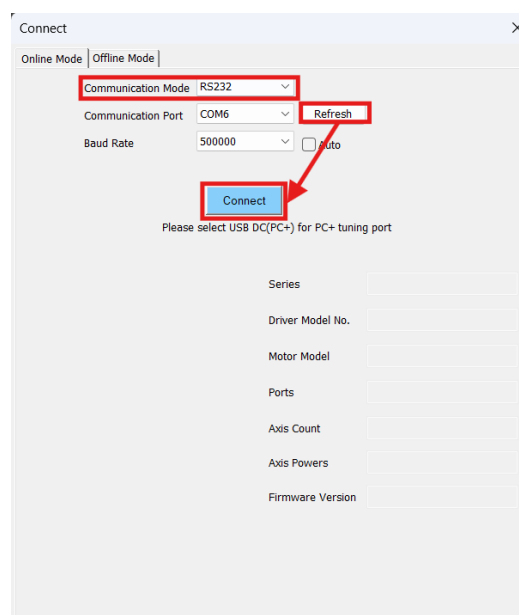


Figure 3-5 EDrive software Connection window illustration

3.5 Installation Wizard

Note: If you need to configure the motor parameters yourself, please skip to page 22: 'Motor Configuration'.

Click (1) Installation Wizard

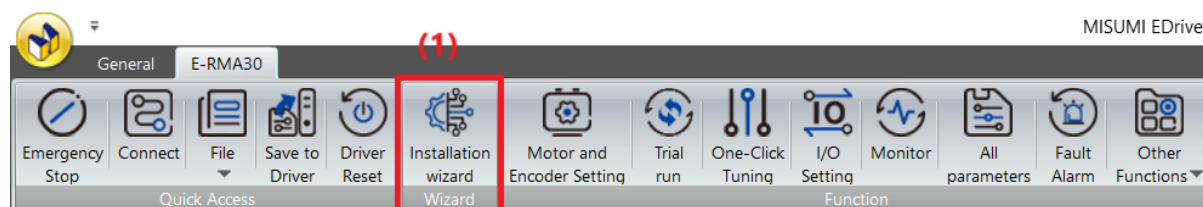


Figure 3-6 Installation Wizard step guide - 1

Please read the prompts on the page carefully and confirm your personal safety and electrical safety before clicking (2) to start debugging.

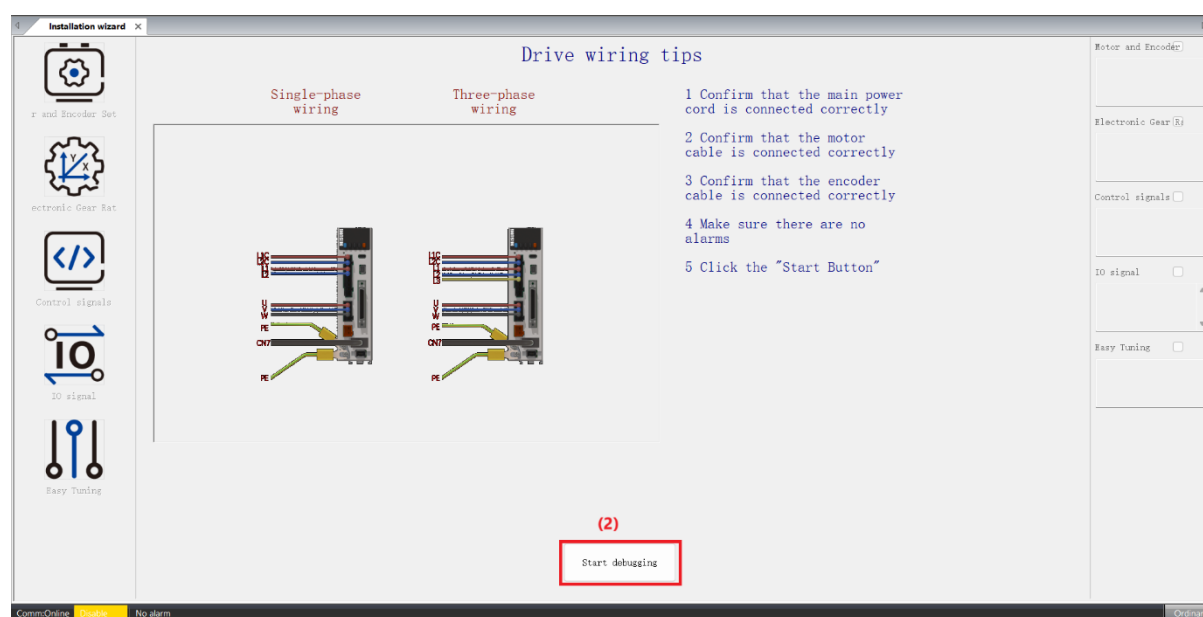


Figure 3-7 Installation Wizard step guide - 2

Click (4) 'Next', software will ask you to select LMAC model under (3). Then click (4) 'Next' again.

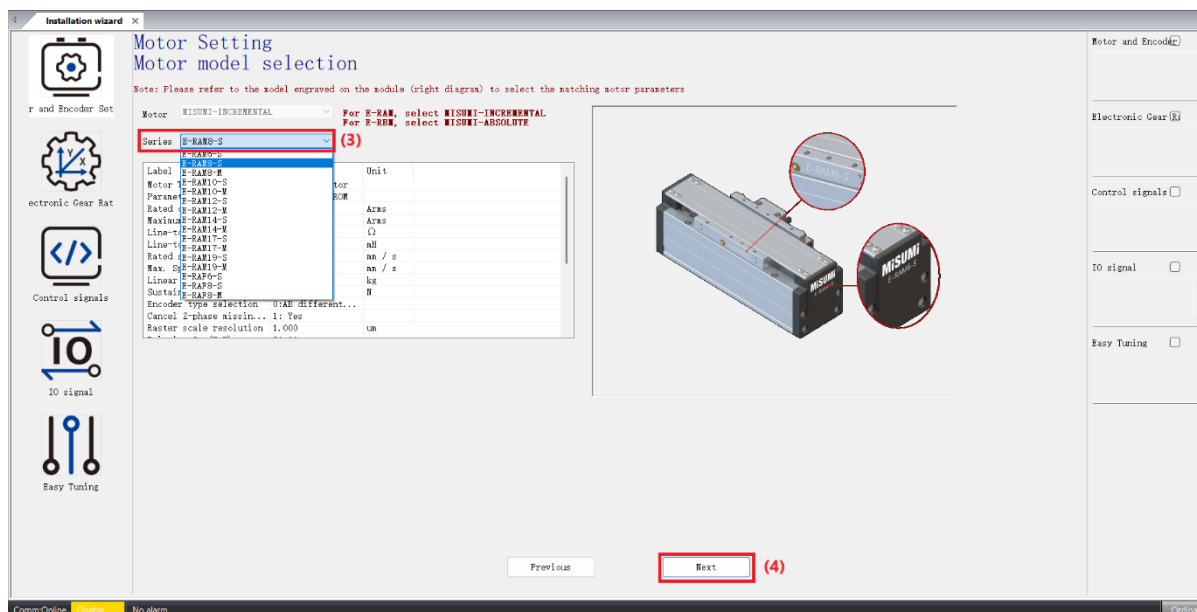


Figure 3-8 Installation Wizard step guide – 3

Note: The model number of LMAC can be identified by the engraving on the side of the module slide and the label on the end face.



Figure 3-9 Installation Wizard step guide – 4

Click (5) 'Download Setting' then click (6) 'Yes'.

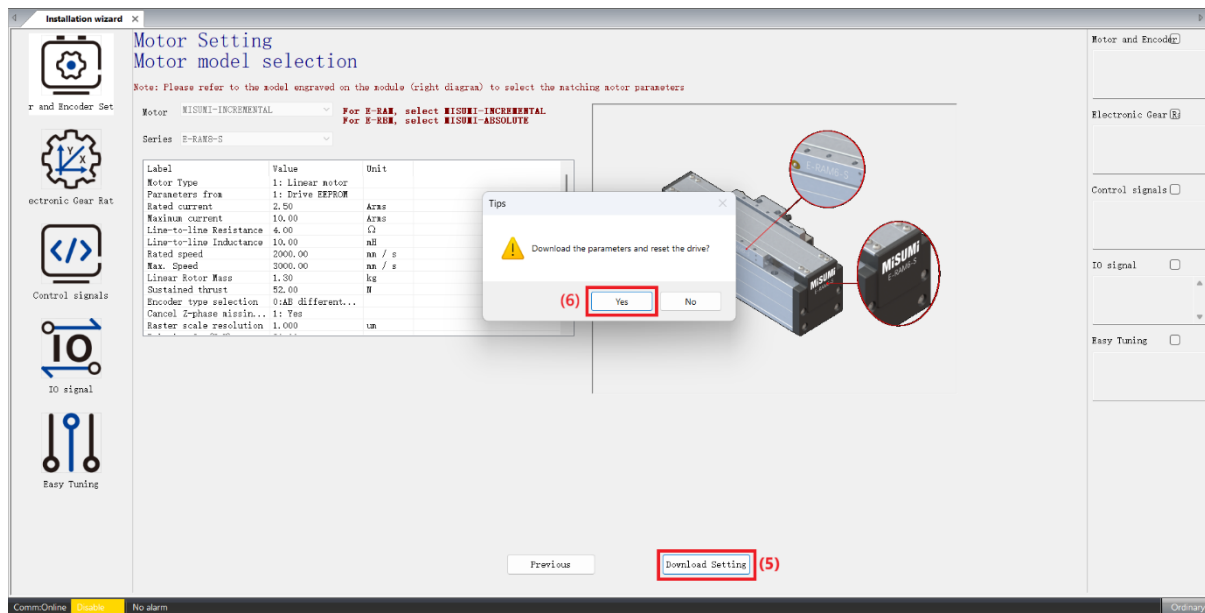


Figure 3-10 Installation Wizard step guide – 5

The default is 1 pulse to move 1μm. If no changes are needed, please click (7) 'Download Setting'.

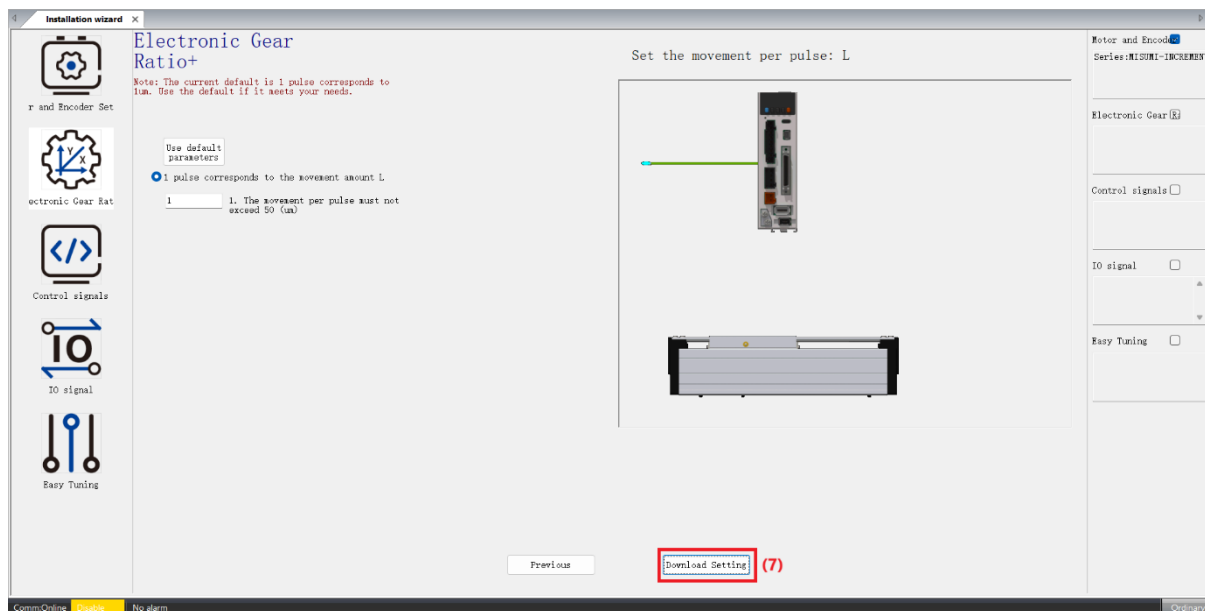


Figure 3-11 Installation Wizard step guide – 6

Check pulse train wiring in (8) then click (9) 'Next'.

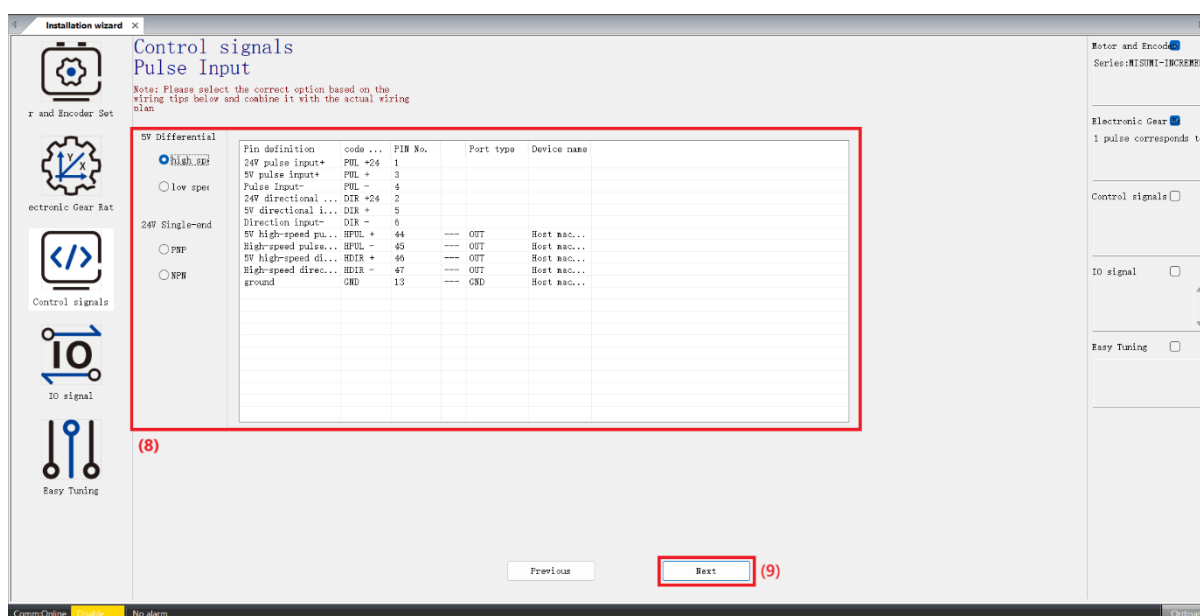


Figure 3-12 Installation Wizard step guide – 7

Check pulse train signal in (10) then click (11) 'Download Setting'.

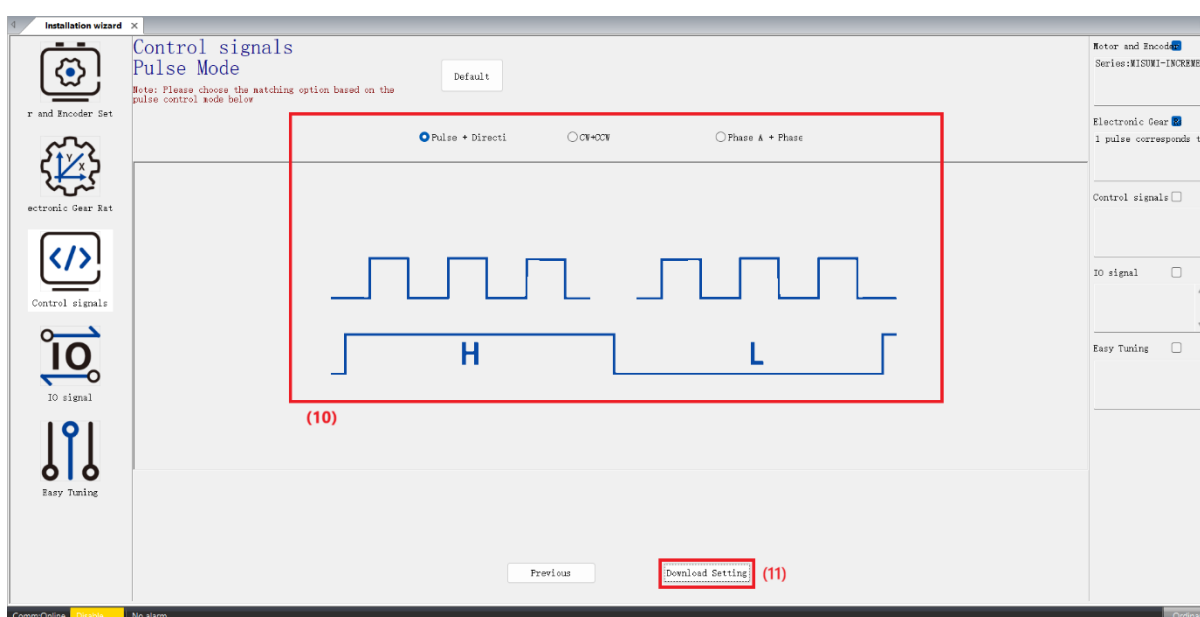


Figure 3-13 Installation Wizard step guide – 8

Check Digital Input functions setting and polarity in (12) then click (13) 'Next'.

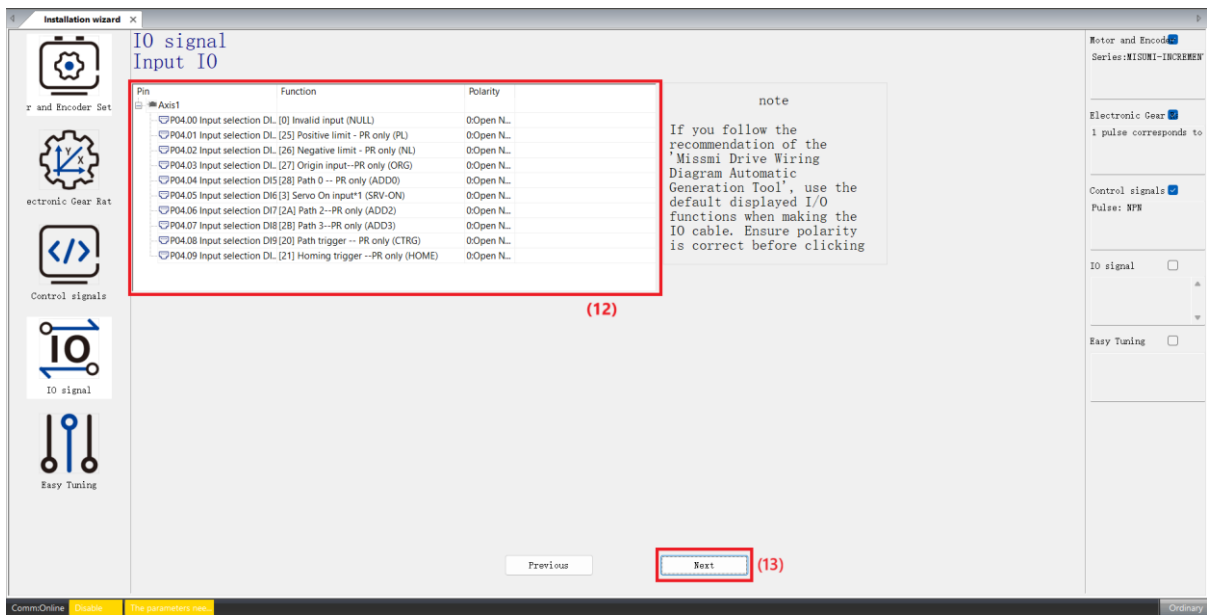


Figure 3-14 Installation Wizard step guide – 9

Check Digital Output functions setting and polarity in (14) then click (15) 'Download Setting'.

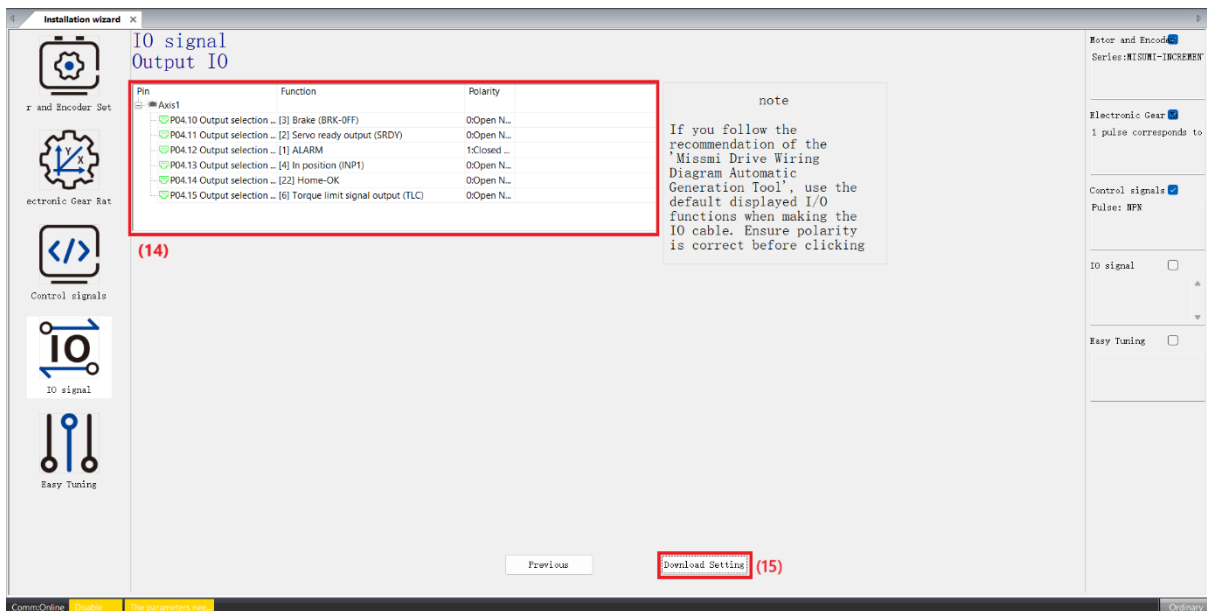


Figure 3-15 Installation Wizard step guide – 10

Click (16) 'Servo Enable', click (17) 'Forward' or (18) 'Reverse' to run the module and confirm the direction of motion. Click (19) 'Next'.

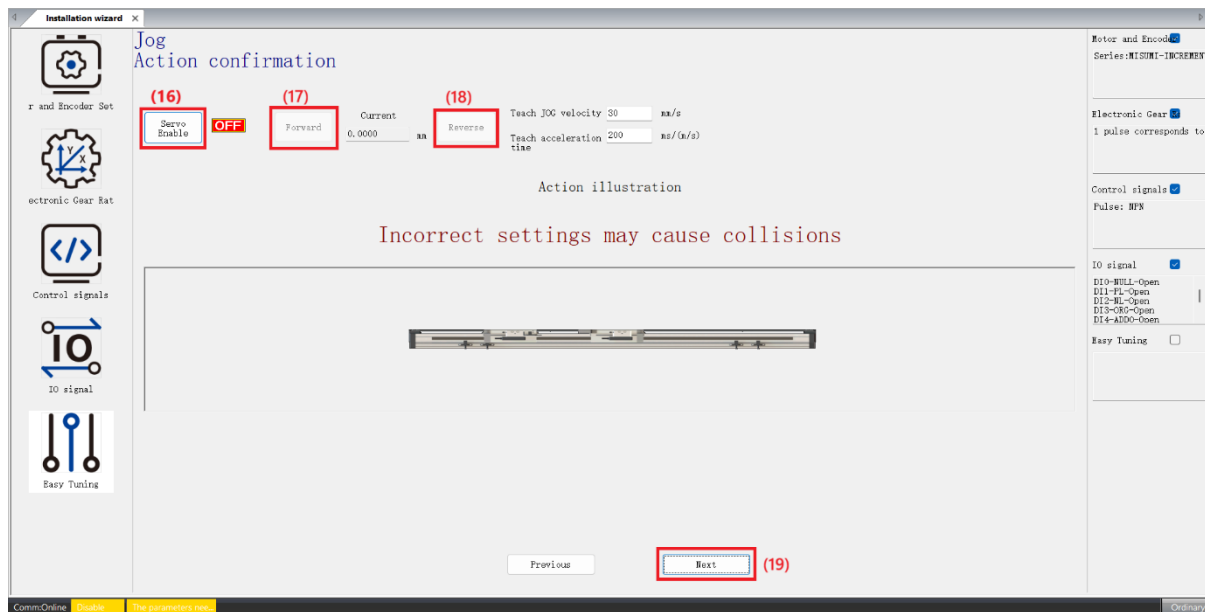


Figure 3-16 Installation Wizard step guide – 11

Click (20) 'Forward' or (21) 'Reverse' to run the module, click (22) Set Start Point, click (23) Set End Point

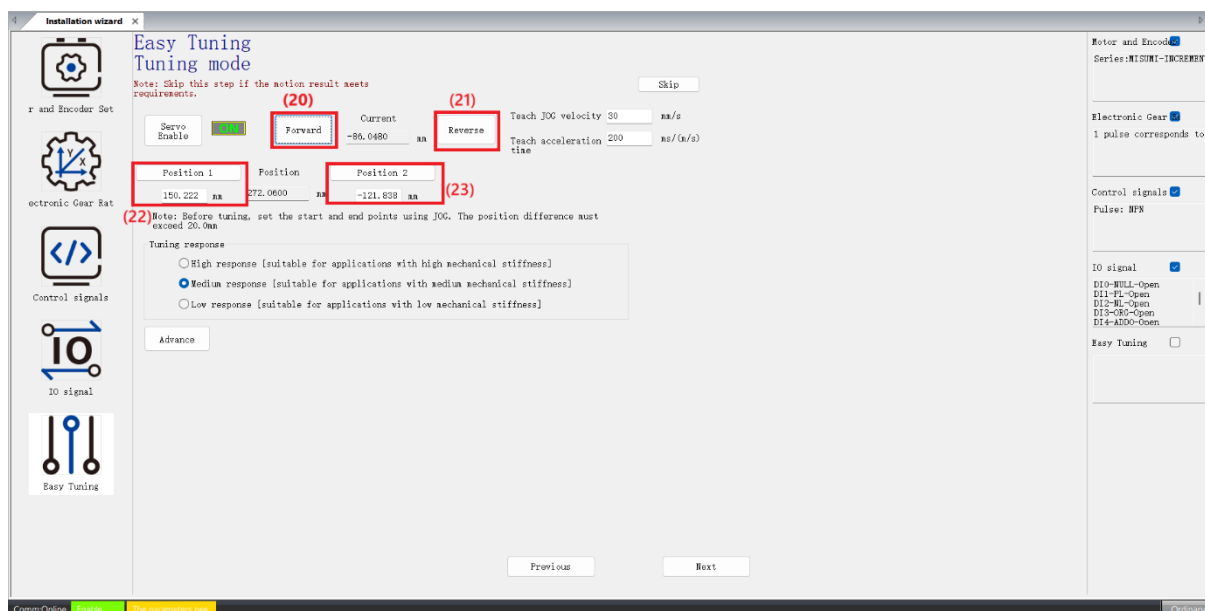


Figure 3-17 Installation Wizard step guide – 12

Click (24) to open more settings for the auto tuning, like (25) tuning speed limit. Click (26) 'OK' if changed setting. Then click (27) 'Next' to start auto tuning.

Note: The motor will start moving after tuning begins. Please wait for the tuning progress bar to finish reading and do not perform any operations during this time.

If no load has been installed yet, you can skip the tuning operation by clicking (28) 'Skip'.

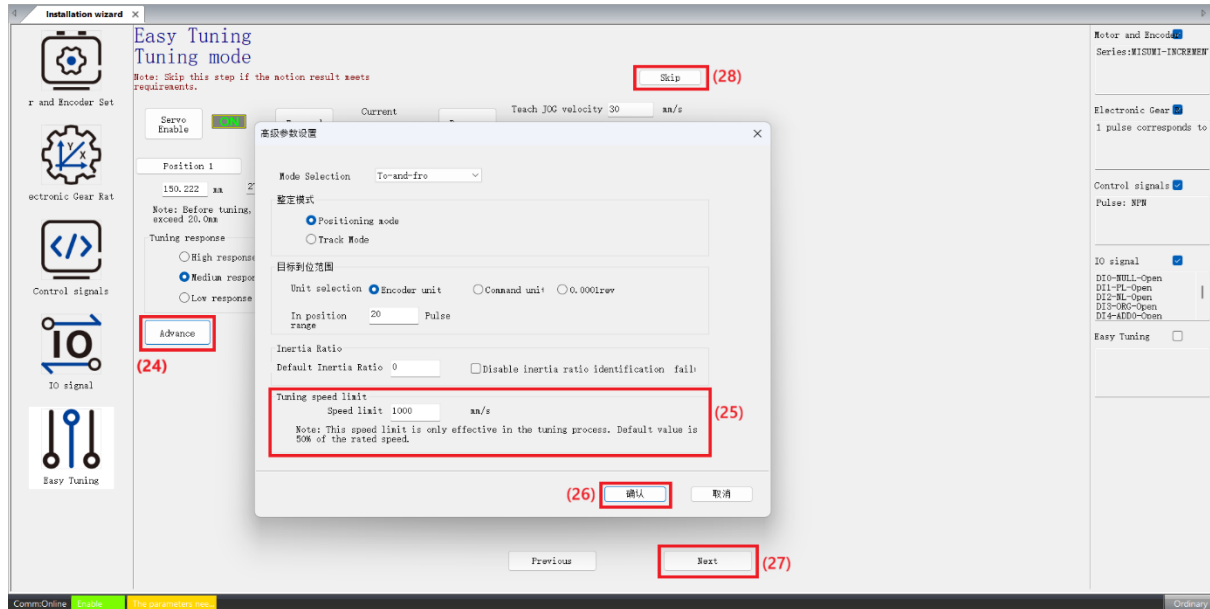


Figure 3-18 Installation Wizard step guide – 13

Click (29) 'Download Setting'.

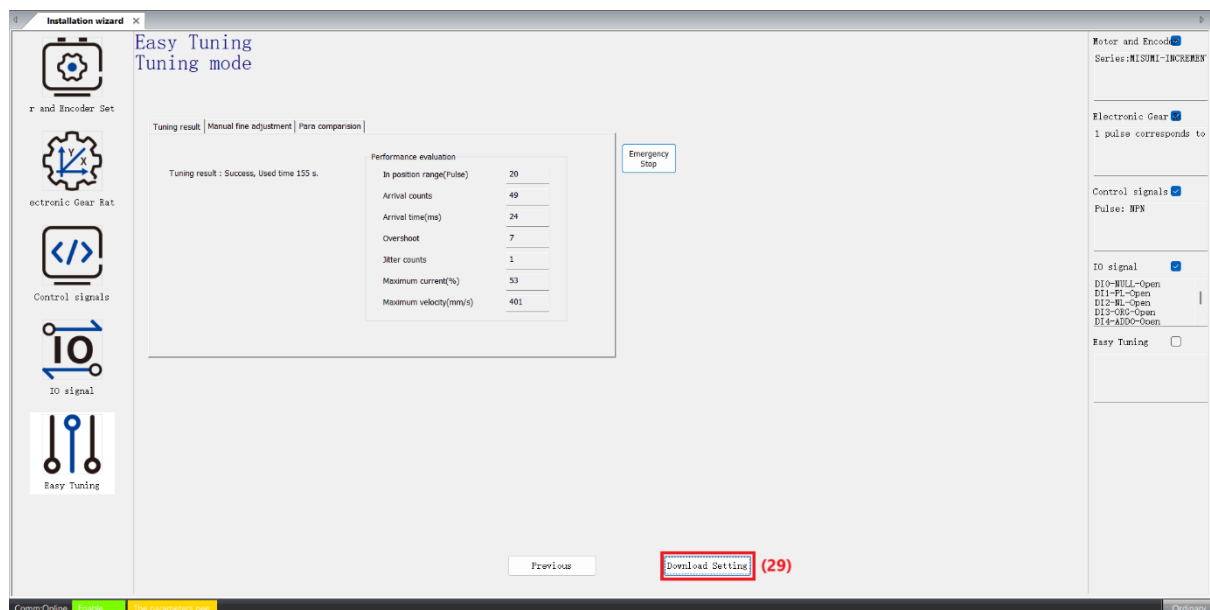


Figure 3-19 Installation Wizard step guide – 14

Click (30) 'Debugging completed'.

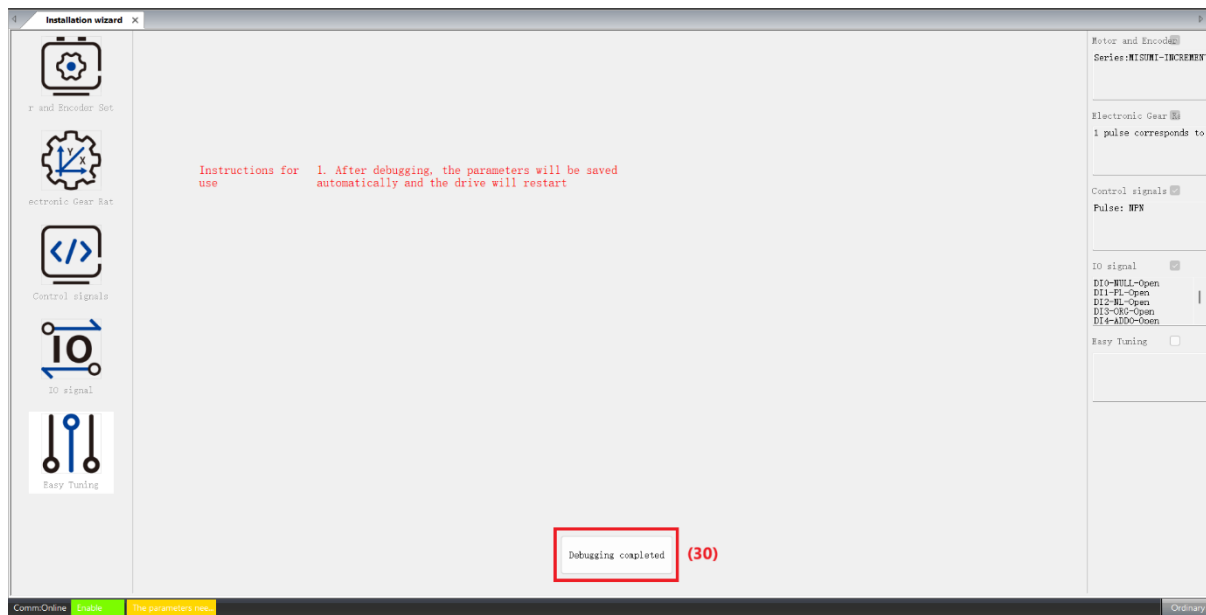


Figure 3-20 Installation Wizard step guide – 15

3.6 Motor Configuration

Note: If you have already configured the motor using the Installation Wizard, you can skip this step.

Click (1) 'Motor and Encoder Setting'.

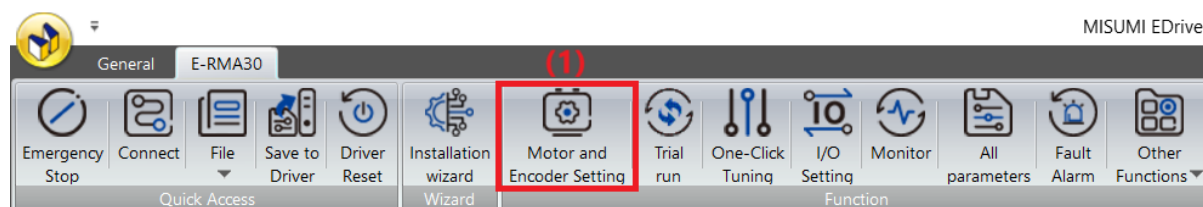


Figure 3-21 Motor configuration step guide – 1

If it is incremental encoder, select MISUMI-INCREMENTAL in (2), select the LMAC model in (3), click (4) to write to the driver, and click 'OK' according to the prompt to complete the motor configuration.

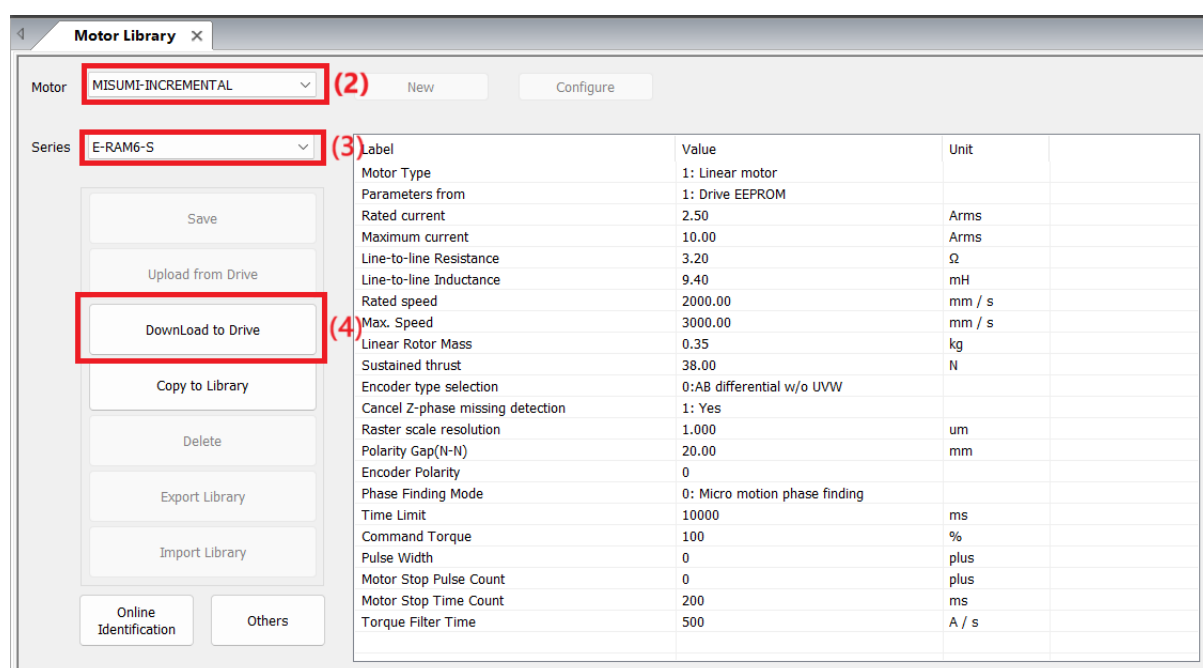


Figure 3-22 Motor configuration step guide – 2

If it is absolute encoder, select MISUMI-ABSOLUTE in (2), select the LMAC model in (3), click (4) to write to the driver, and click 'OK' according to the prompt to complete the motor configuration.

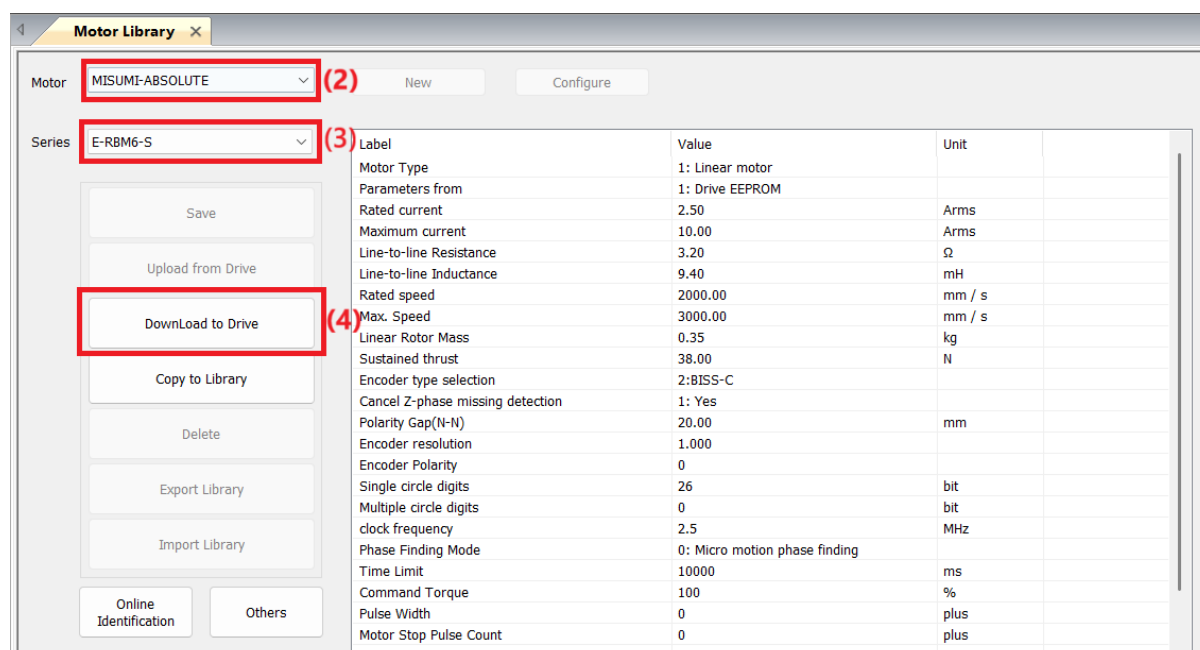


Figure 3-23 Motor configuration step guide – 3

Note: The model number of LMAC can be identified by the engraving on the side of the module slide and the label on the end face.



Figure 3-24 Motor configuration step guide – 4

3.7 Trial Run

Click (1) 'Trial Run'.

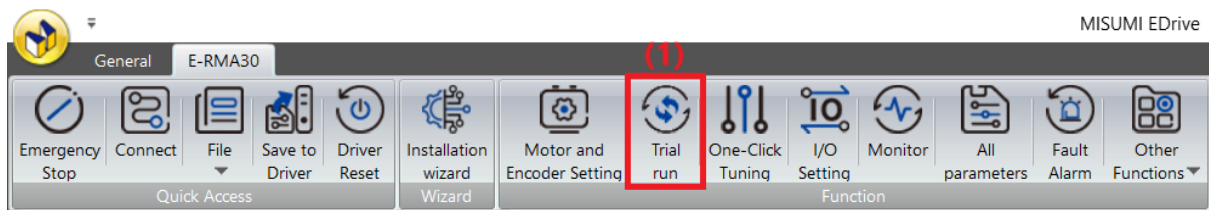


Figure 3-25 Motor trial run step guide – 1

Click (2) 'Servo Enable', if drive already connected to Servo ON output signal, please tick check box (3) 'External enable disable', then click (4) 'Forward' or (5) 'Reverse', to move the motor.

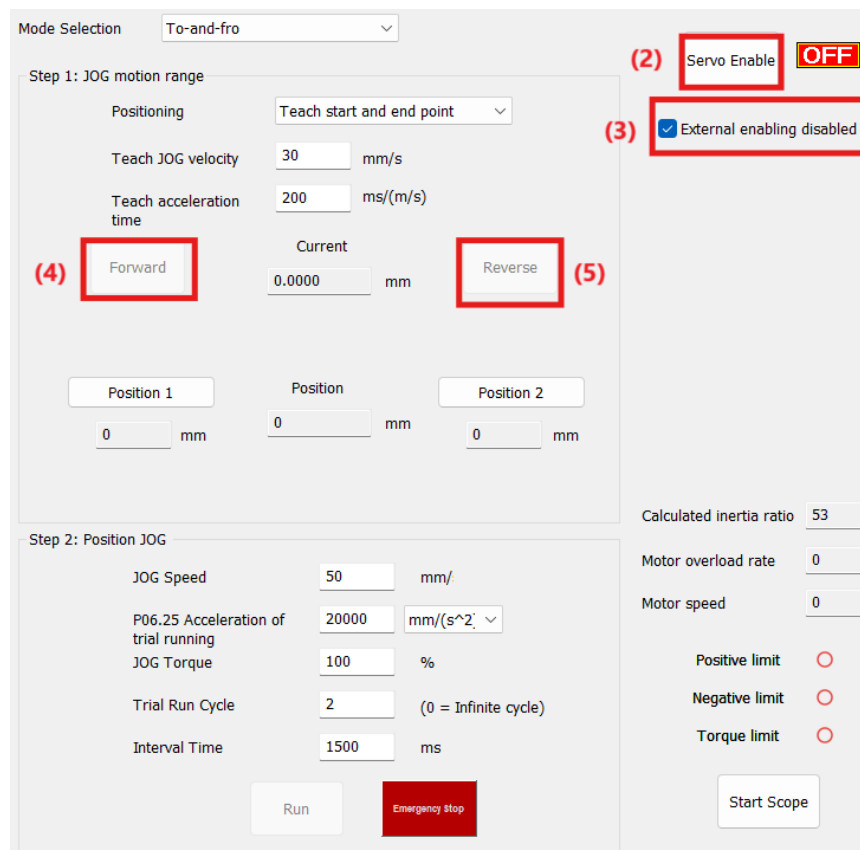


Figure 3-26 Motor trial run step guide – 2

3.8 Auto Tuning

Note: If you have already completed the auto-tuning process using the Installation Wizard, you can skip this step.

Click (1) 'One-Click Tuning'.

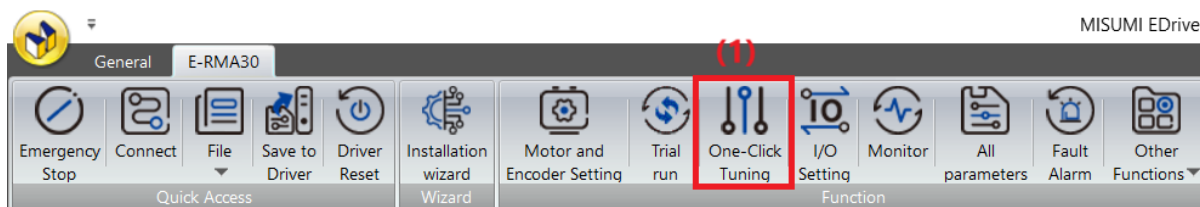
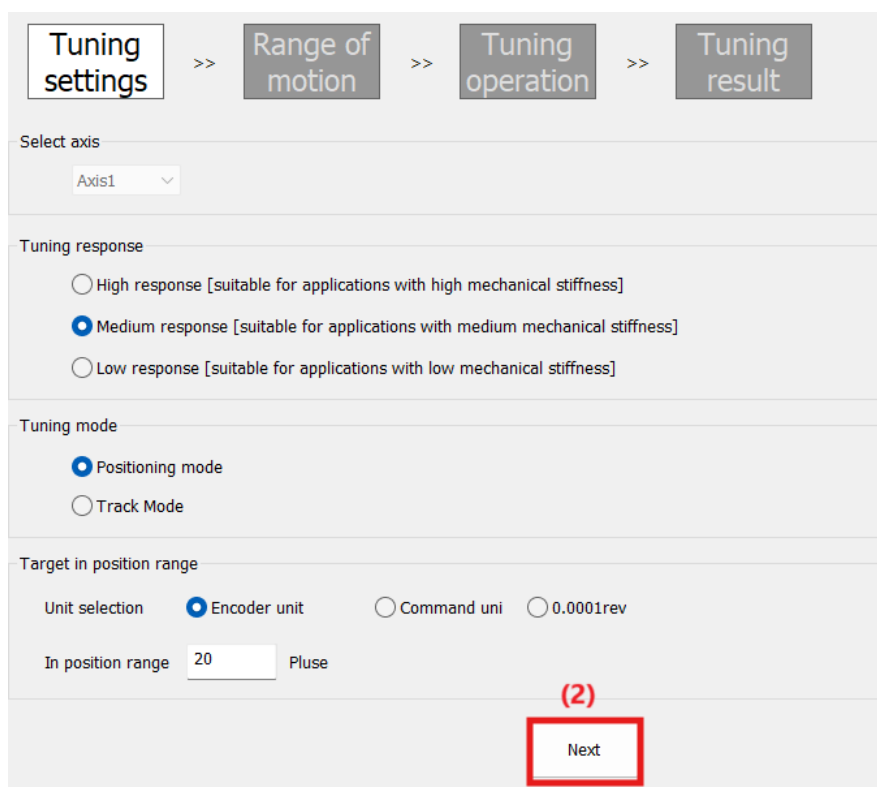


Figure 3-27 Motor auto tuning step guide – 1

Click (2) 'Next'.

Note: Suggest not to change other parameters if not necessary.



Tuning settings >> Range of motion >> Tuning operation >> Tuning result

Select axis
Axis1

Tuning response
☐ High response [suitable for applications with high mechanical stiffness]
☒ Medium response [suitable for applications with medium mechanical stiffness]
☐ Low response [suitable for applications with low mechanical stiffness]

Tuning mode
☒ Positioning mode
☐ Track Mode

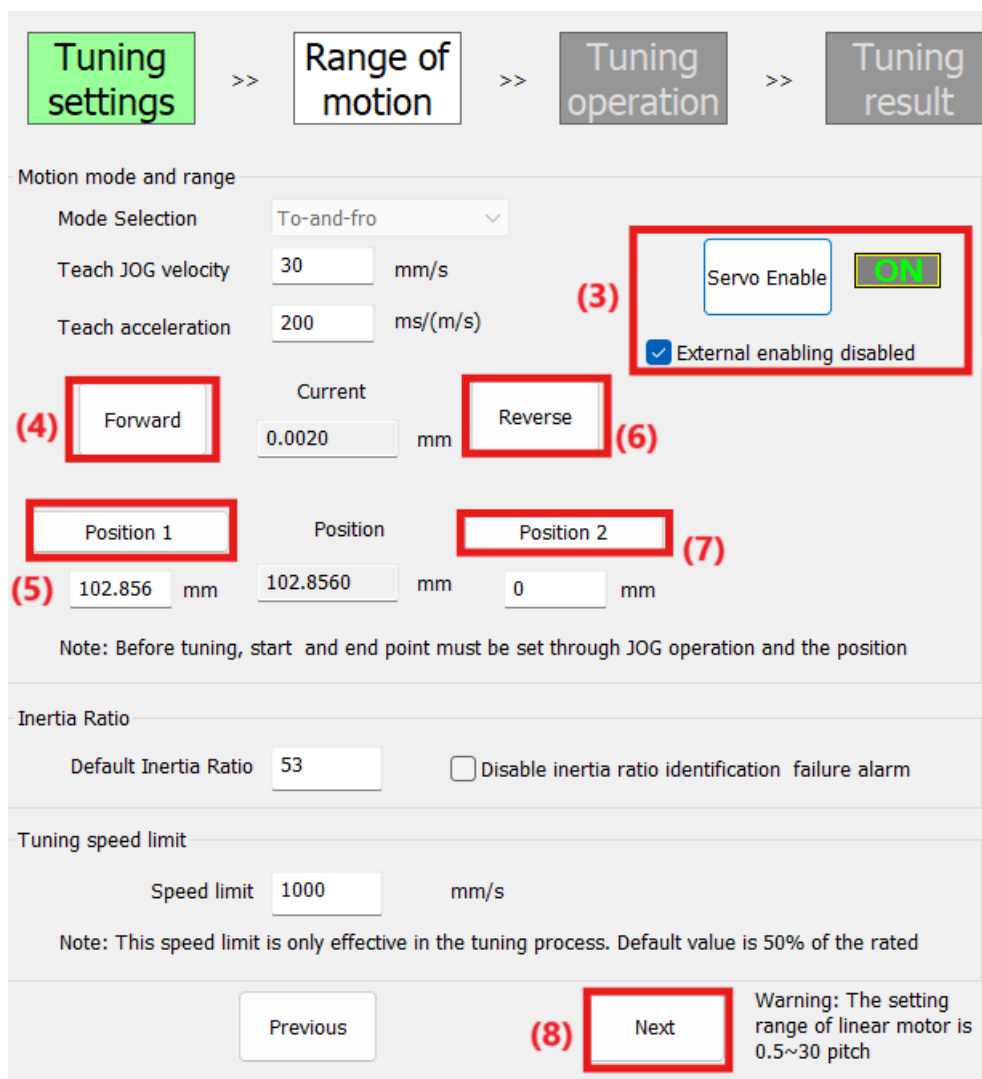
Target in position range
Unit selection ☒ Encoder unit ☐ Command uni ☐ 0.0001rev
In position range 20 Pluse

(2)
Next

Figure 3-28 Motor auto tuning step guide – 2

Click (3) 'Servo Enable'. (Note: If drive already connected Servo ON output signal, please tick check box 'External enabling disabled')

Click (4) 'Forward'. After motor reaches starting position, click (5) 'Position 1'. Then click (6) 'Reverse'. After motor reaches ending position, click (7) 'Position 2'. (Note: Please always make sure motor is in between of starting position and ending position) Click (8) 'Next', and follow the instruction to finish Auto Tuning.



Tuning settings >> Range of motion >> Tuning operation >> Tuning result

Motion mode and range

Mode Selection: To-and-fro

Teach JOG velocity: 30 mm/s

Teach acceleration: 200 ms/(m/s)

(3) Servo Enable **ON**

☒ External enabling disabled

(4) Forward (6) Reverse

(5) Position 1 (7) Position 2

102.856 mm 102.8560 mm 0 mm

Note: Before tuning, start and end point must be set through JOG operation and the position

Inertia Ratio

Default Inertia Ratio: 53 ☐ Disable inertia ratio identification failure alarm

Tuning speed limit

Speed limit: 1000 mm/s

Note: This speed limit is only effective in the tuning process. Default value is 50% of the rated

Previous (8) Next

Warning: The setting range of linear motor is 0.5~30 pitch

Figure 3-29 Motor auto tuning step guide – 3

Click (9) 'Done' and follow the instruction to save parameters.

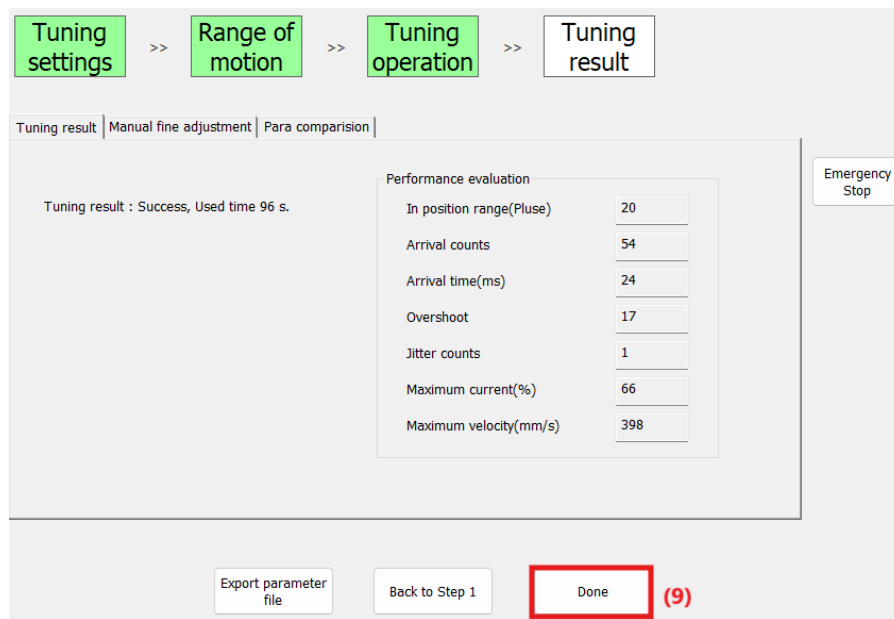


Figure 3-30 Motor auto tuning step guide – 4

3.9 Change Pulse Train Signal (Default setting 5V differential)

Note: If you have already completed the pulse train signal settings through the Installation Wizard, you can skip this step.

E-RMA drive support 3 types of pulse train signal. The default setting is 24V single-end pulse signal (200kHz) or low speed $\pm 5V$ differential pulse signal (500kHz). If want to change to high speed $\pm 5V$ differential pulse signal (4MHz), please refer to following steps.

Click (1) 'All Parameters'.

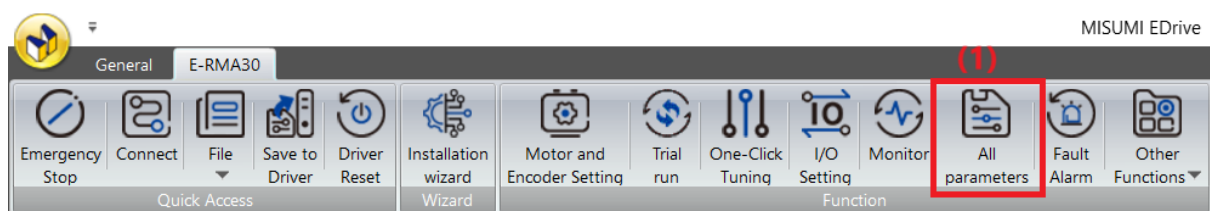


Figure 3-31 Change pulse train signal step guide – 1

Find (2) 'P00.05' and change the value to '1'. Click (3) 'Save to drive', then click (4) 'Drive Reset'. Follow the instruction to finish saving.

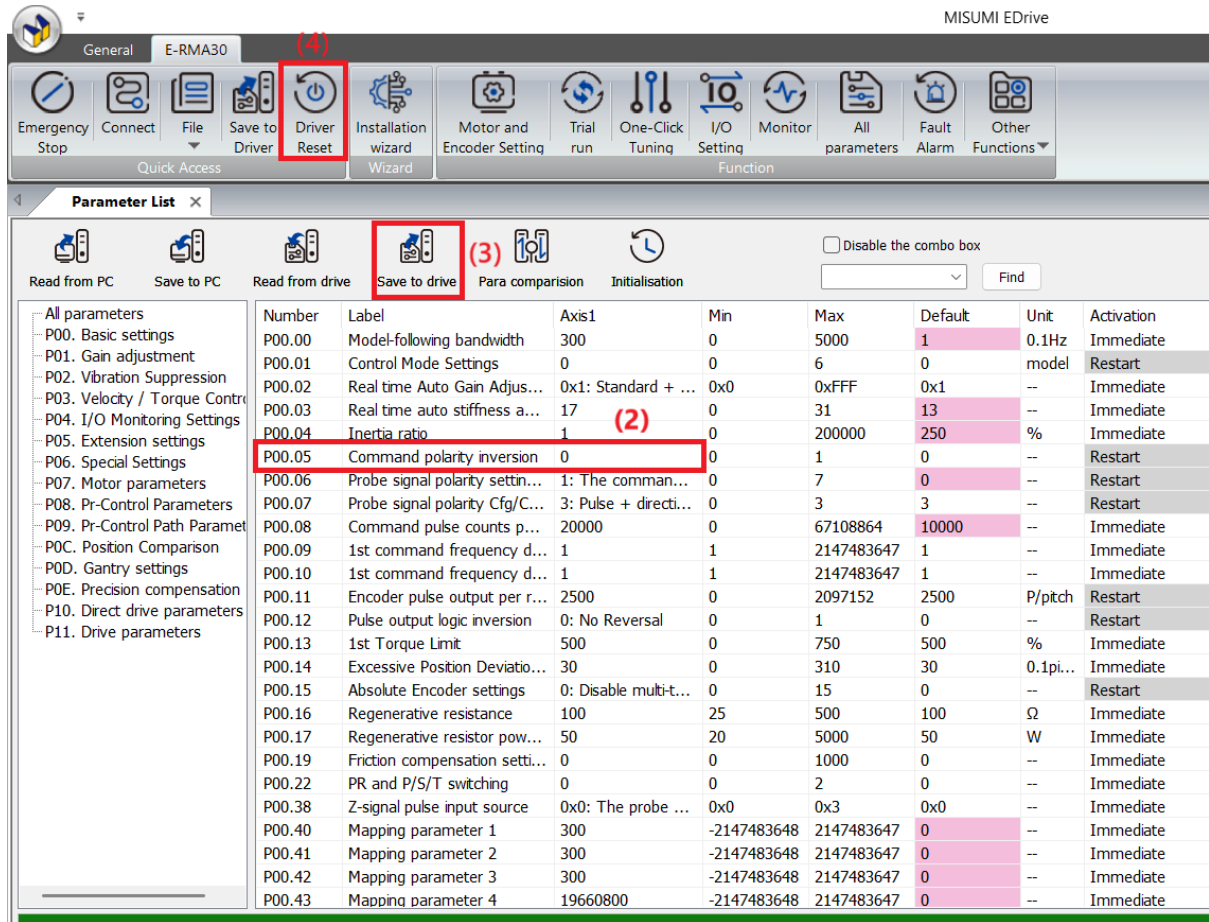


Figure 3-32 Change pulse train signal step guide – 2

3.10 Change Motion Direction

If controller pulse train is positive direction, but motor moves to negative direction, direction change is needed. Please refer to following steps.

Click (1) 'Motor and Encoder Setting'.

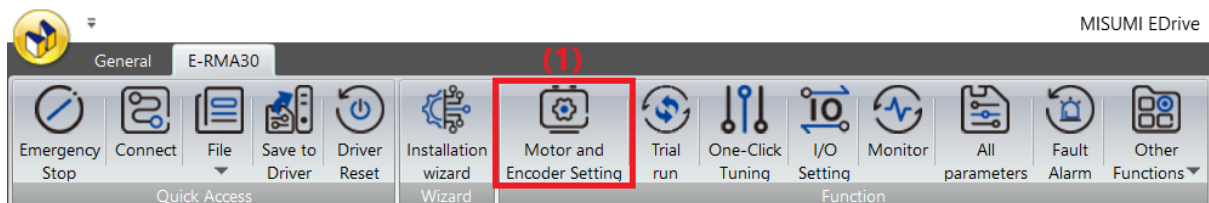


Figure 3-33 Change motion direction step guide – 1

Click (2) 'Others'.

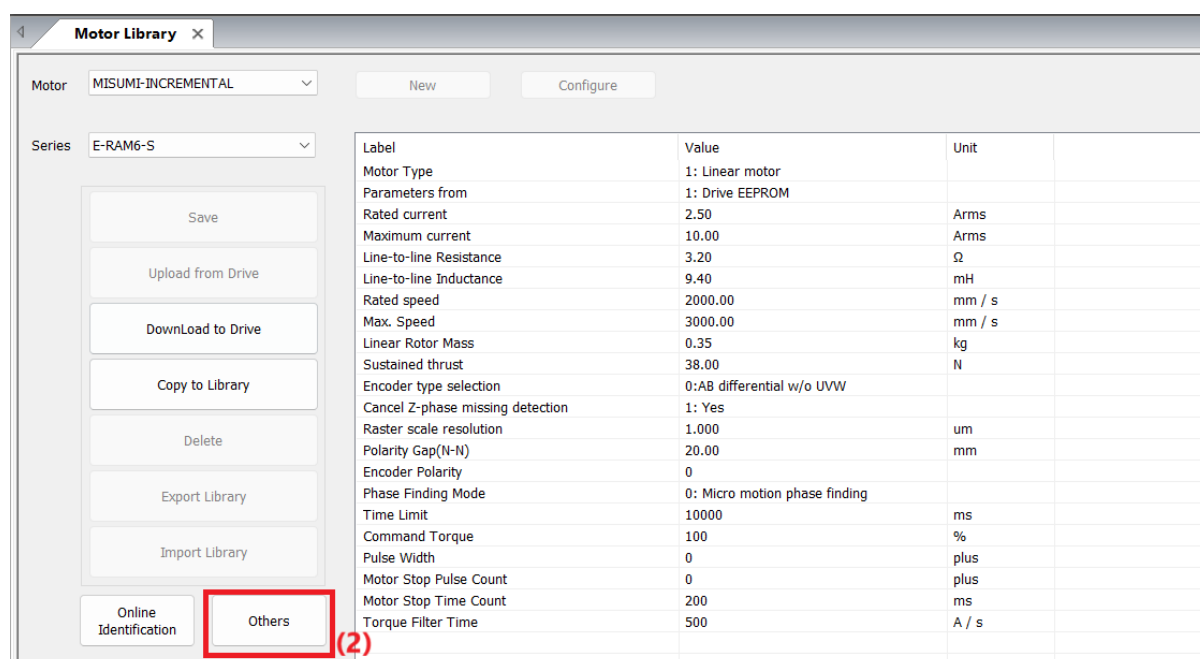


Figure 3-34 Change motion direction step guide – 2

Change the value of (3) 'Command pulse polarity', then click (4) 'Write' and follow the instruction to save parameters.

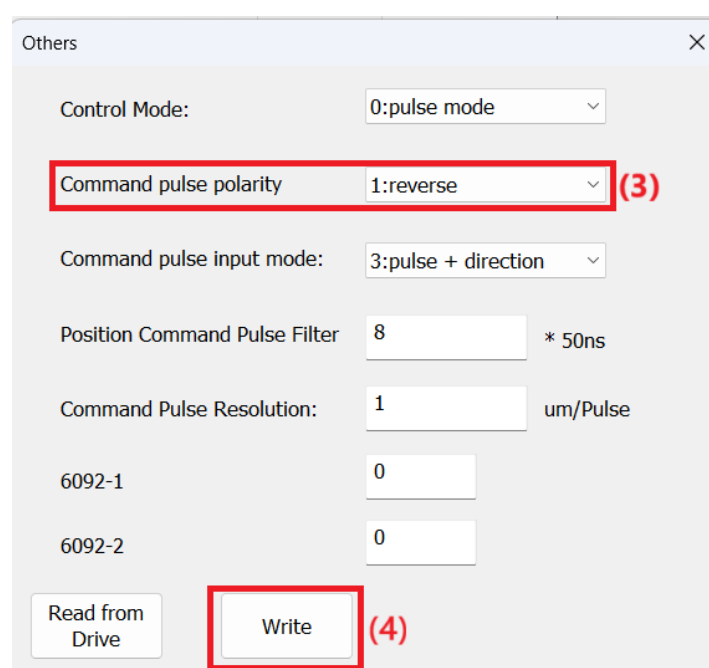


Figure 3-35 Change motion direction step guide – 3

3.11 Change Gear Ratio

Note: If you have already completed the electronic gear ratio setting through the Installation Wizard, you can skip this step.

Misumi LMAC electrical cycle length is 20 mm = 20,000 um.

The default setting of drive is **1 pulse equal to 0.001mm**. If controller's pulse frequency is not high enough, and causes the speed cannot meet the requirement, please refer to Click (1) 'Motor and Encoder Setting'.

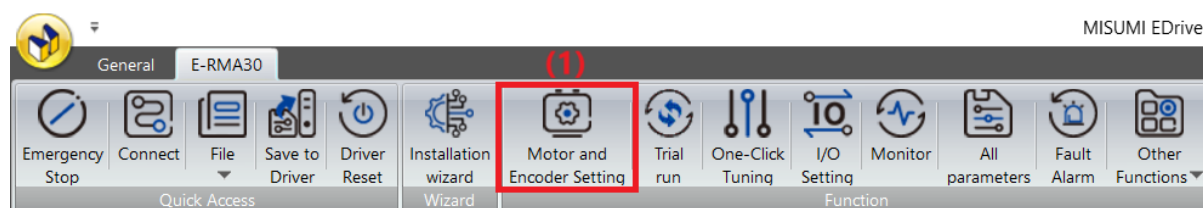


Figure 3-36 Change gear ratio step guide – 1

Click (2) 'Others'.

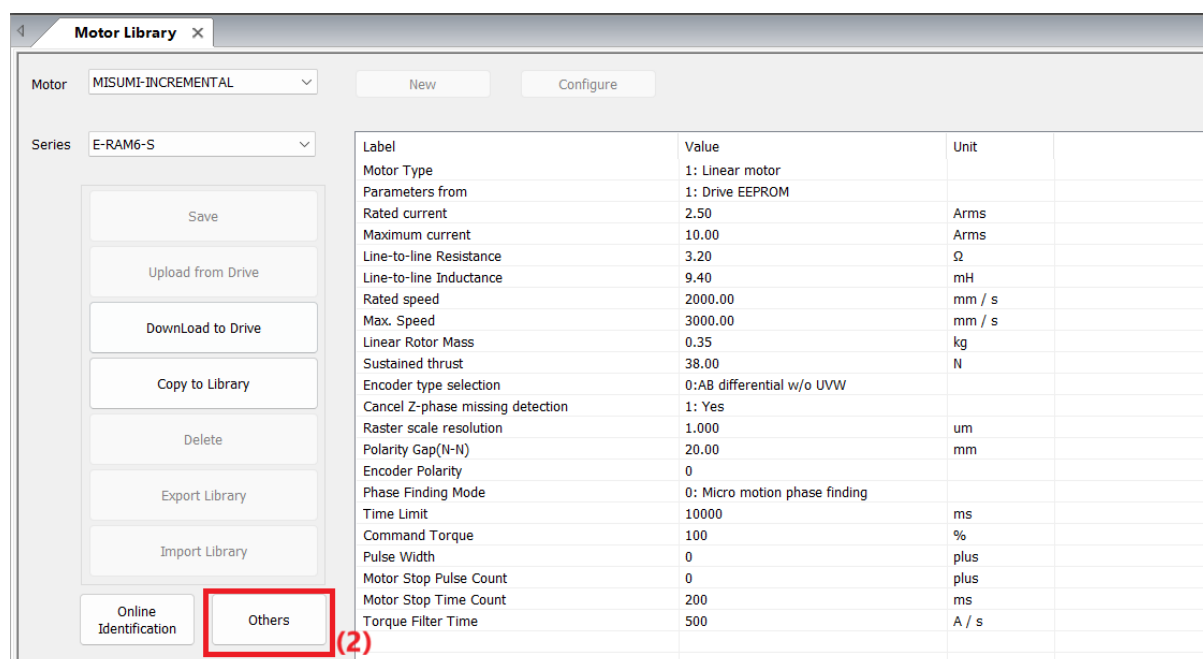


Figure 3-37 Change gear ratio step guide – 2

Change the value of (3) 'Command Pulse Resolution', then click (4) 'Write' and follow the instruction to save parameters.

Example: Default setting is 1 pulse = 0.001mm. If want to change to 1 pulse = 0.01mm, please change the value of 'Command Pulse Resolution' to 10.

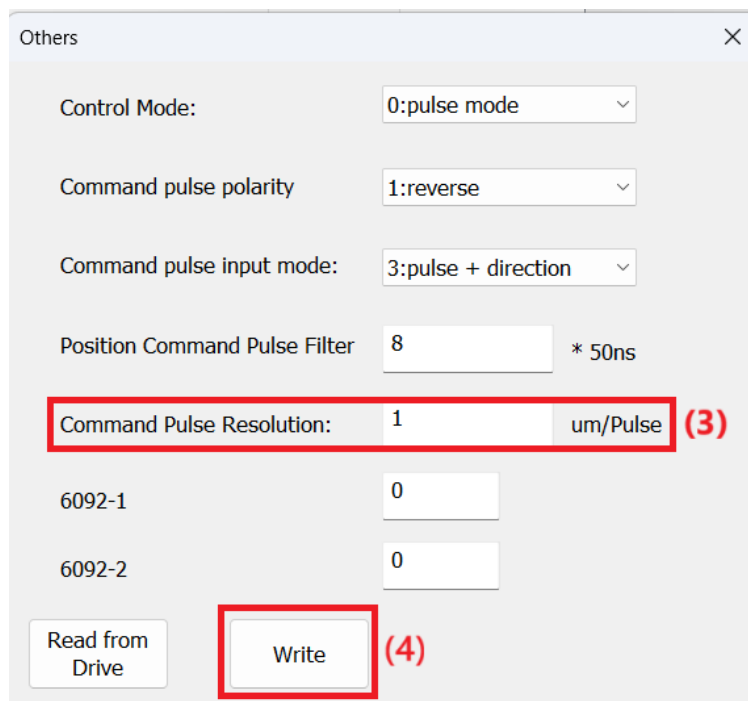


Figure 3-38 Change gear ratio step guide – 3

3.12 Parameter Backup and Download

Please refer to following steps to backup parameters.

Click (1) 'All Parameters'.

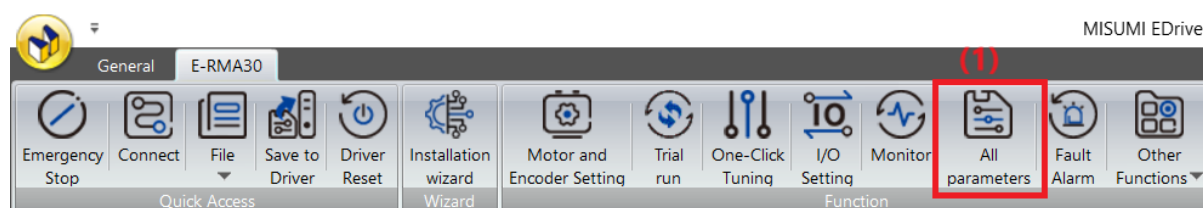


Figure 3-39 Parameter backup and download step guide – 1

Click (2) 'Save to PC' and follow the instruction to finish saving.

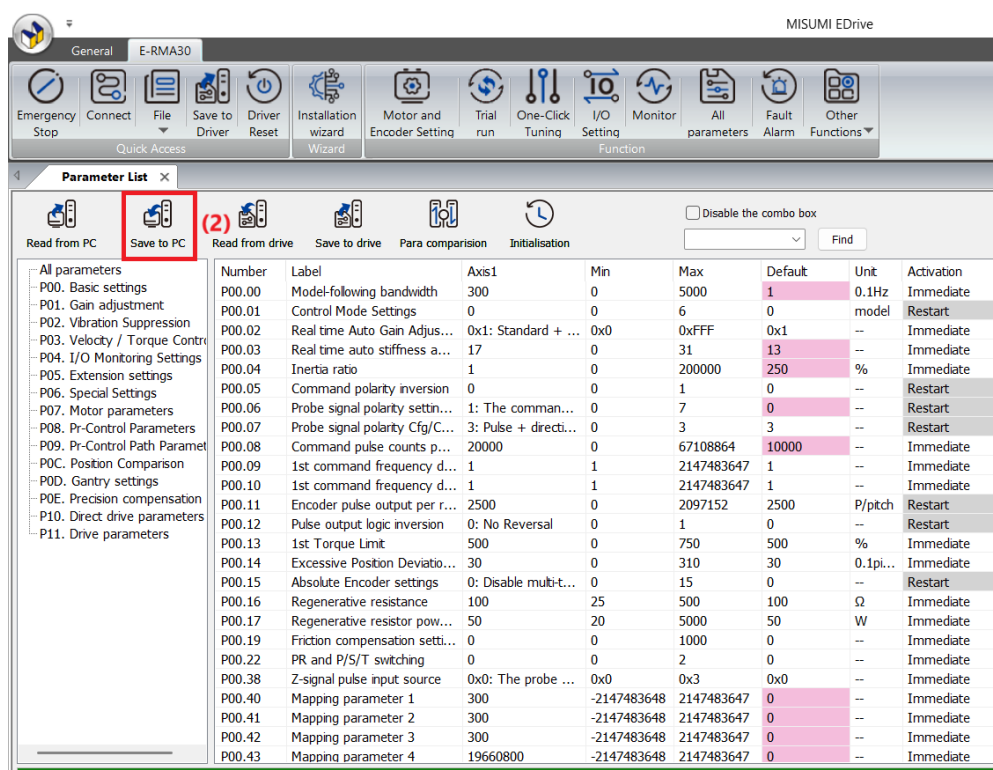


Figure 3-40 Parameter backup and download step guide – 2

When download parameters, click (3) 'Read from PC'.

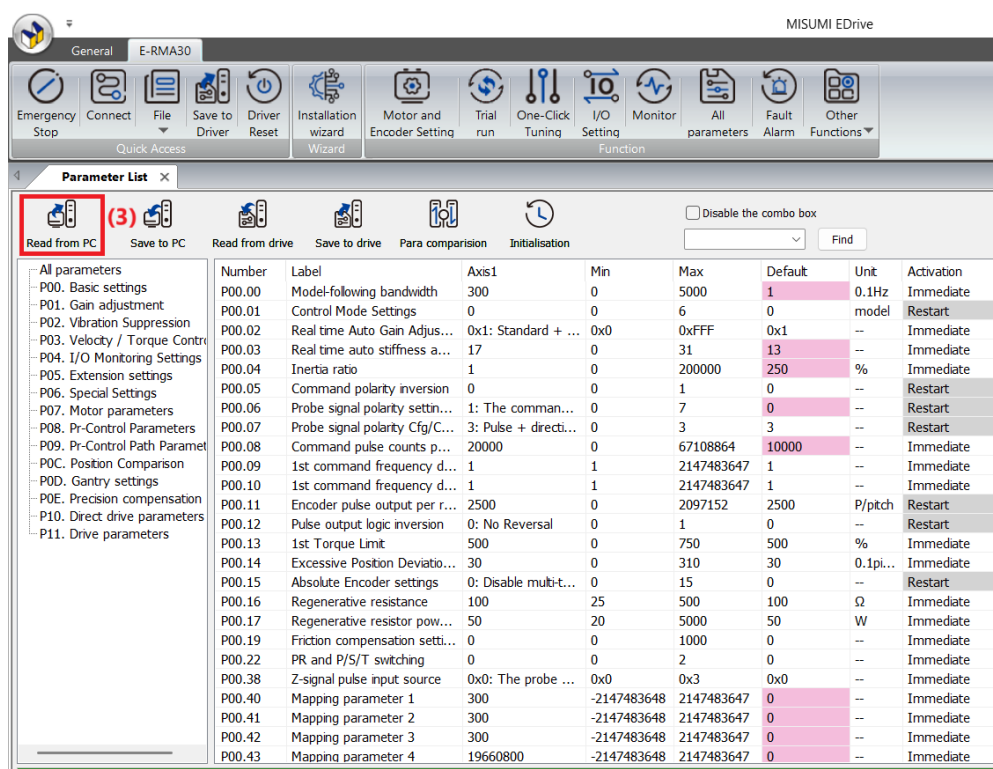


Figure 3-41 Parameter backup and download step guide – 3

Choose the parameter file you saved, and it will be shown in a new tab (4). Click (5) ‘Save to drive’, then click (6) ‘Drive Reset’. Follow the instruction to finish saving.

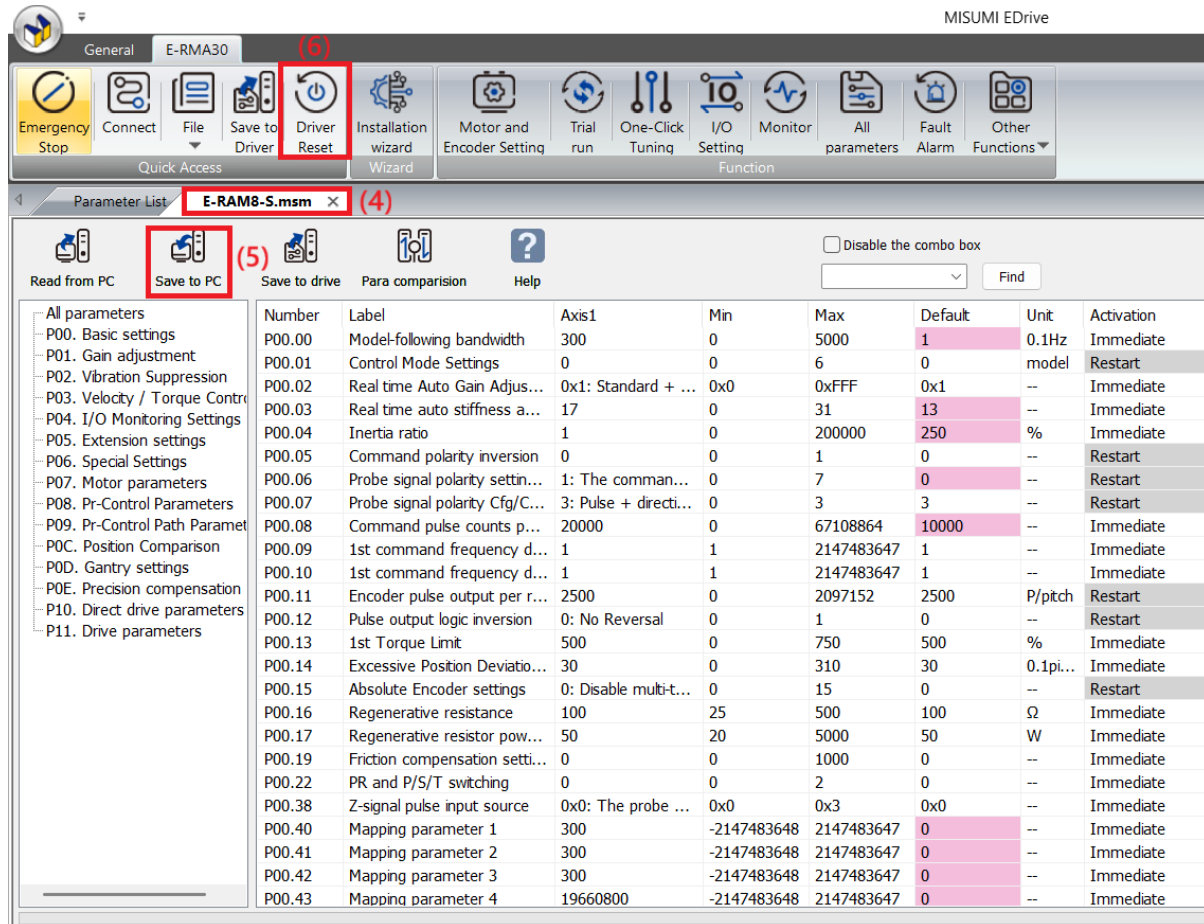


Figure 3-42 Parameter backup and download step guide – 4

3.13 Controller Axis Configuration Precautions

1. When controller uses pulse unit.

Recommend configuration: Pulse number = Encoder count number. Then LMAC
electrical cycle length: 20,000 pulses, the amount of movement of the worktable in
a pole pair distance: 20,000 (pulses)

Example: Controller sends 1,000 pulses, and motor moves 1,000 μm = 1 mm.

2. When controller use mm unit.

Recommend configuration: Pulse number = Encoder count number. Then LMAC
electrical cycle length: 20,000 pulses, the amount of movement of the worktable in
a pole pair distance: 20 (mm)

Example: Motor moves 1 mm = 1,000 μm, and controller needs to send 1,000 pulses.

Note: This setting takes effect when the electronic gear ratio of the drive side is 1:1.