



LMAC Drive

E-RME series (EtherCAT type)

Quick Start Guide

V 1.0

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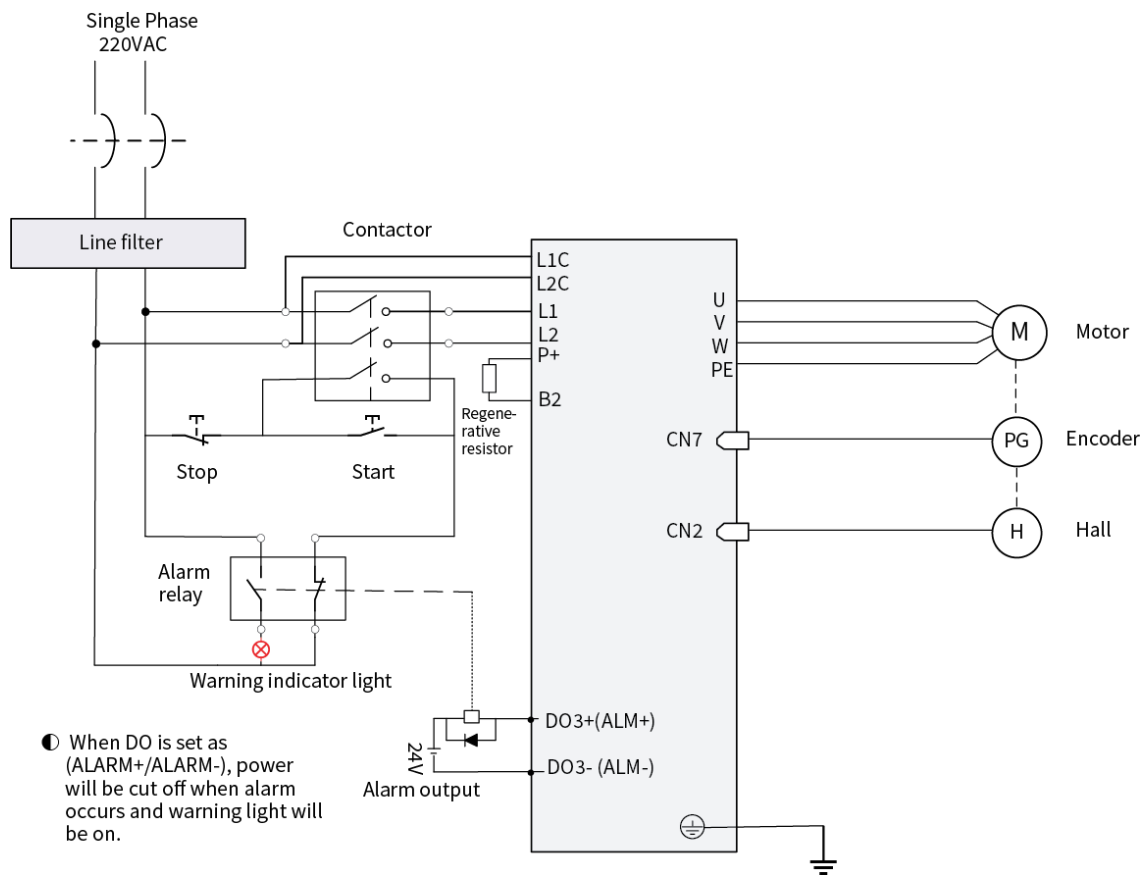
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Version Update Record

Version	Update date	Update content
V1.0	2025-02	First release

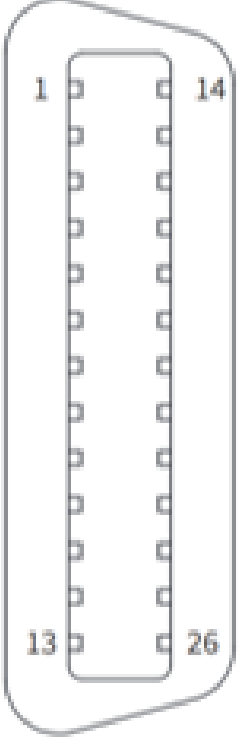
Chapter 1. Wiring

Main Circuit Wiring Diagram



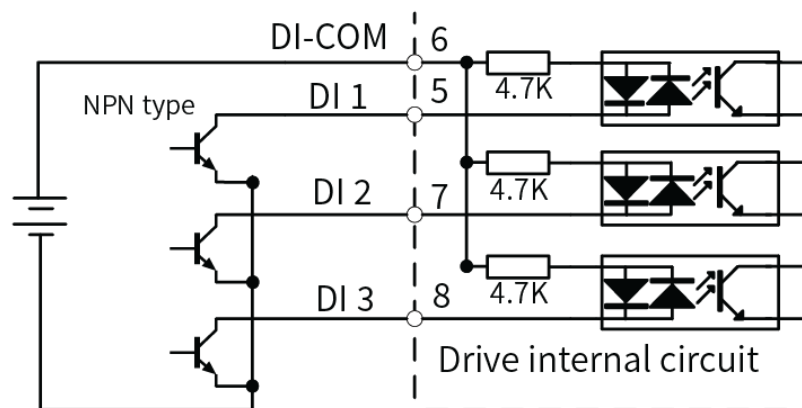
Control Signal Connector - CN1 Pin Assignment

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

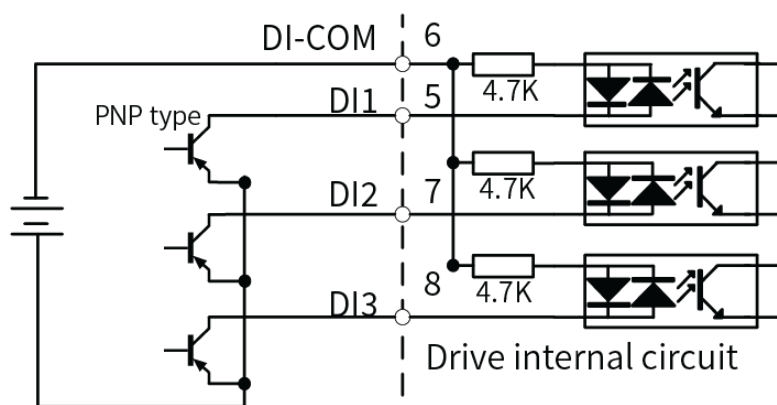
Port	Diagram (soldering side of the connector)	Pin	Label	Signal	Description (default function)
CN1		6	DI-COM	Input	Common digital input
		5	DI1	-	Digital input 1
		7	DI2	POT	Positive limit switch
		8	DI3	NOT	Negative limit switch
		9	DI4	HOME-SWITCH	Homing switch
		10	DI5	-	Digital input 5
		11	DI6	-	Digital input 6
		12	DI7	-	Digital input 7
		13	DI8	-	Digital input 8
		1	DO1+	BRK-OFF+	External brake released signal
		2	DO1-	BRK-OFF-	
		25	DO2+	S-RDY+	Servo ready signal output
		26	DO2-	S-RDY-	
		3	DO3+	ALM+	Alarm output
		4	DO3-	ALM-	
		17	A+	Differential output	Phase A frequency divider output
		18	A-	Differential output	
		20	B+	Differential output	Phase B frequency divider output
		19	B-	Differential output	
		21	Z+	Differential output	Phase Z frequency divider output
		22	Z-	Differential output	
		16	GND	Signal ground	Signal ground
		14	AI1 -	Analog input 1-	Analog input 1
		15	AI1+	Analog input 1+	
		23	AI2+	Analog input 2+	Analog input 2
		24	AI2-	Analog input 2-	
		Frame	-	FG	Ground

1. General digital input connection

NPN connection:

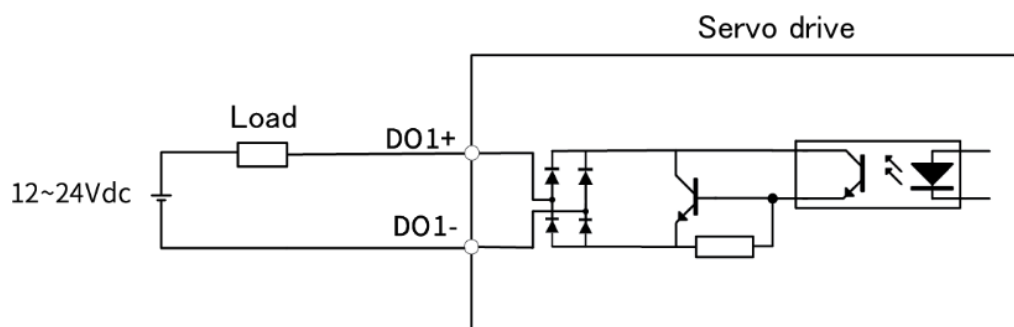


PNP connection:



2. General digital output circuit

NPN configuration

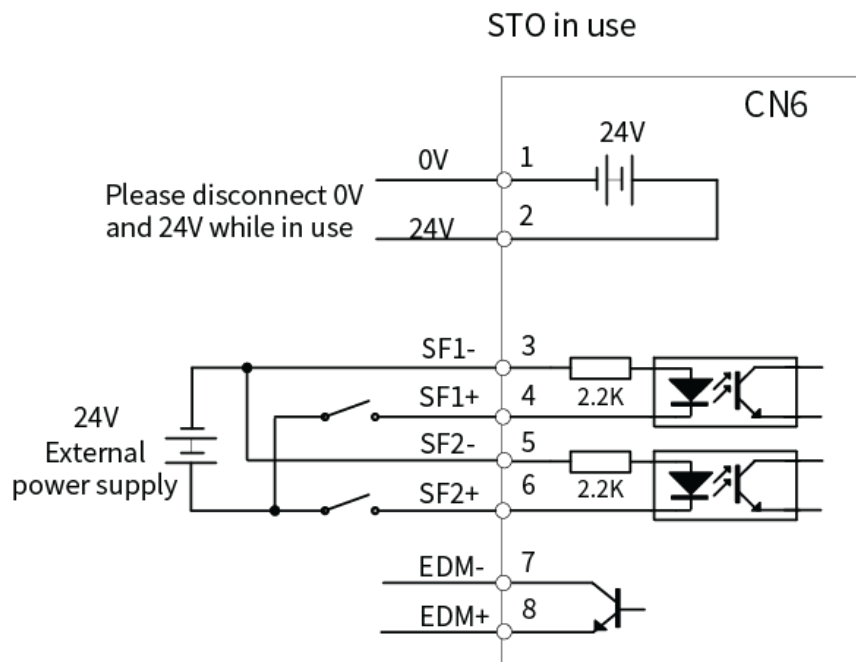


Note: For PNP wiring, please contact the Misumi Tech Support team.

3. 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:



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

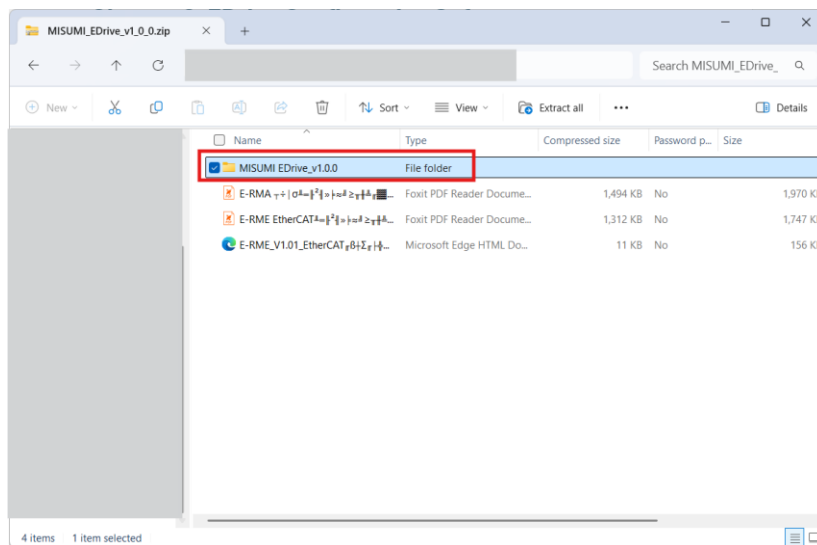
Download EDrive Configuration Software.

Download link:

https://www.misumi.com.cn/linked/archive/me/MISUMI_EDrive_v1_0_0.zip

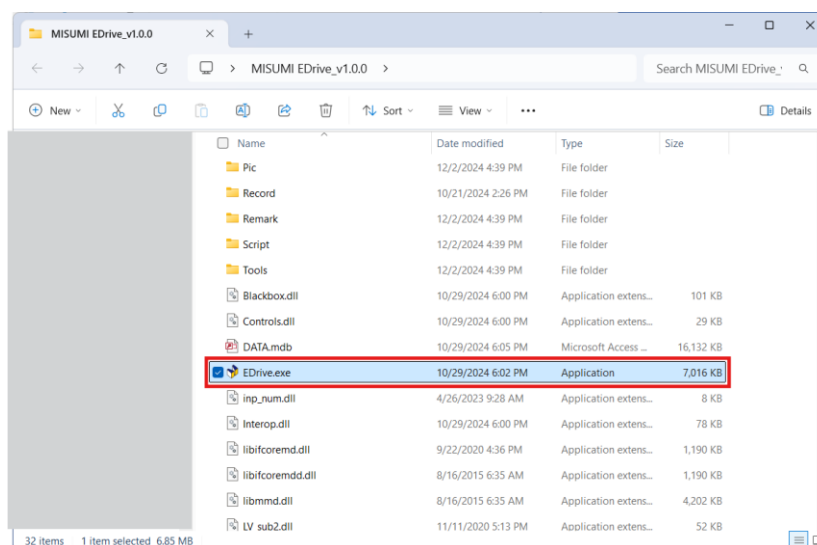
Installation

Just unzip or pull the 'MISUMI EDrive_v1.0.0' folder to the desktop.

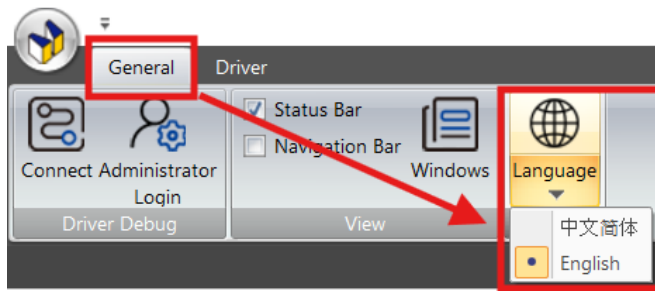


Open Software

Double click 'EDrive.exe' to open the software.



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

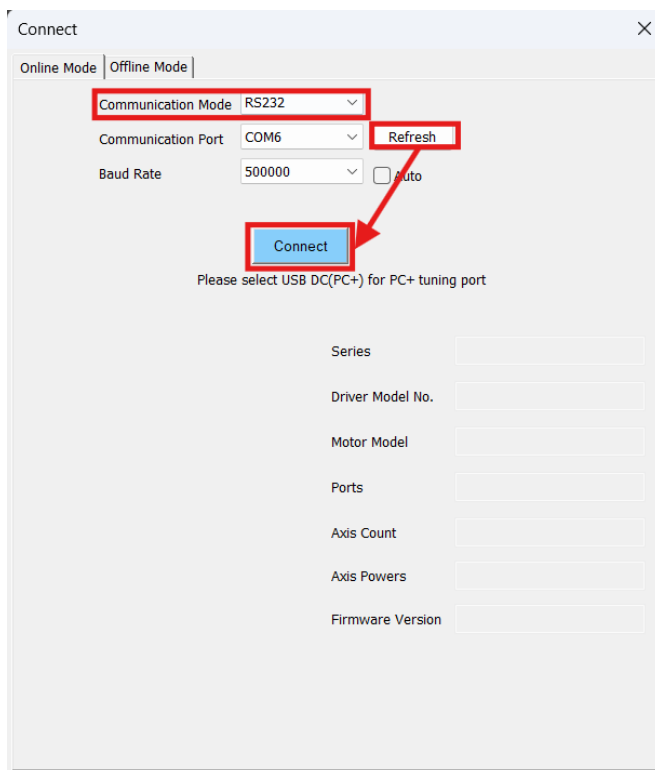


Connect to PC

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

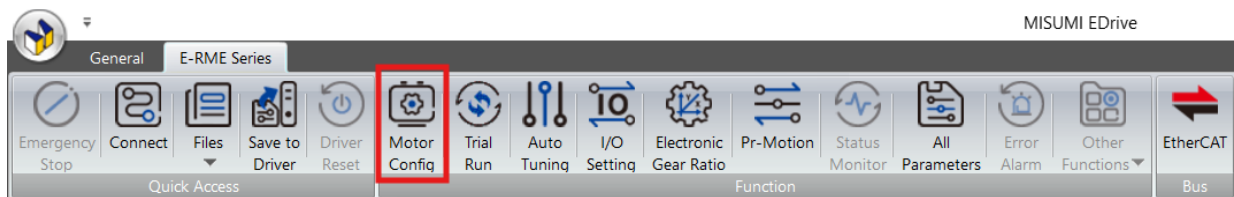


Open EDrive software and start connection. 'Communication Mode' please choose 'RS232', then click 'Refresh', then click 'Connect'.

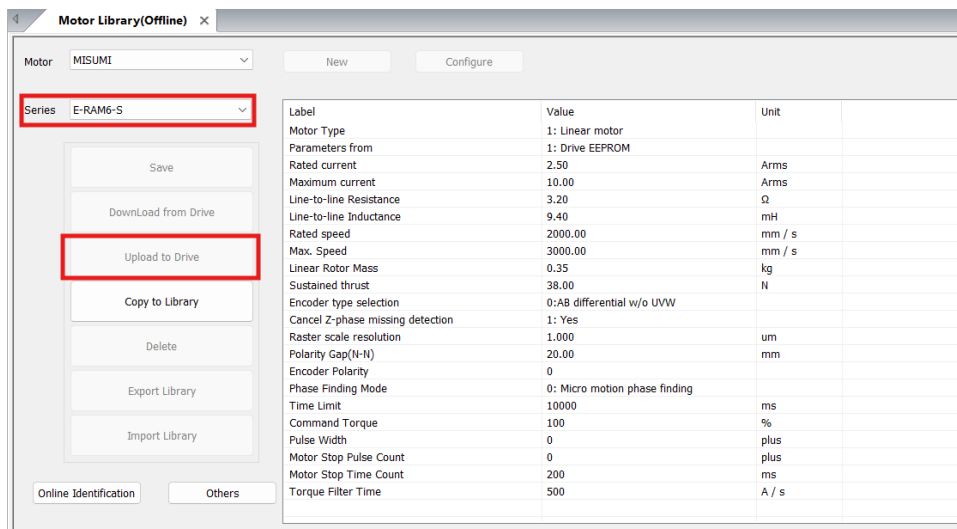


Motor Configuration

After connection, click 'Motor Config'.



Choose LMAC module under 'Series'. Then click 'Upload to Drive'.

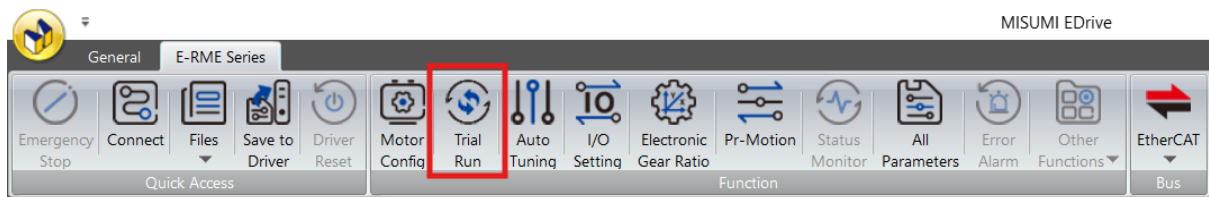


Note: The LMAC module can be identified through the markings on the side of the module slider.

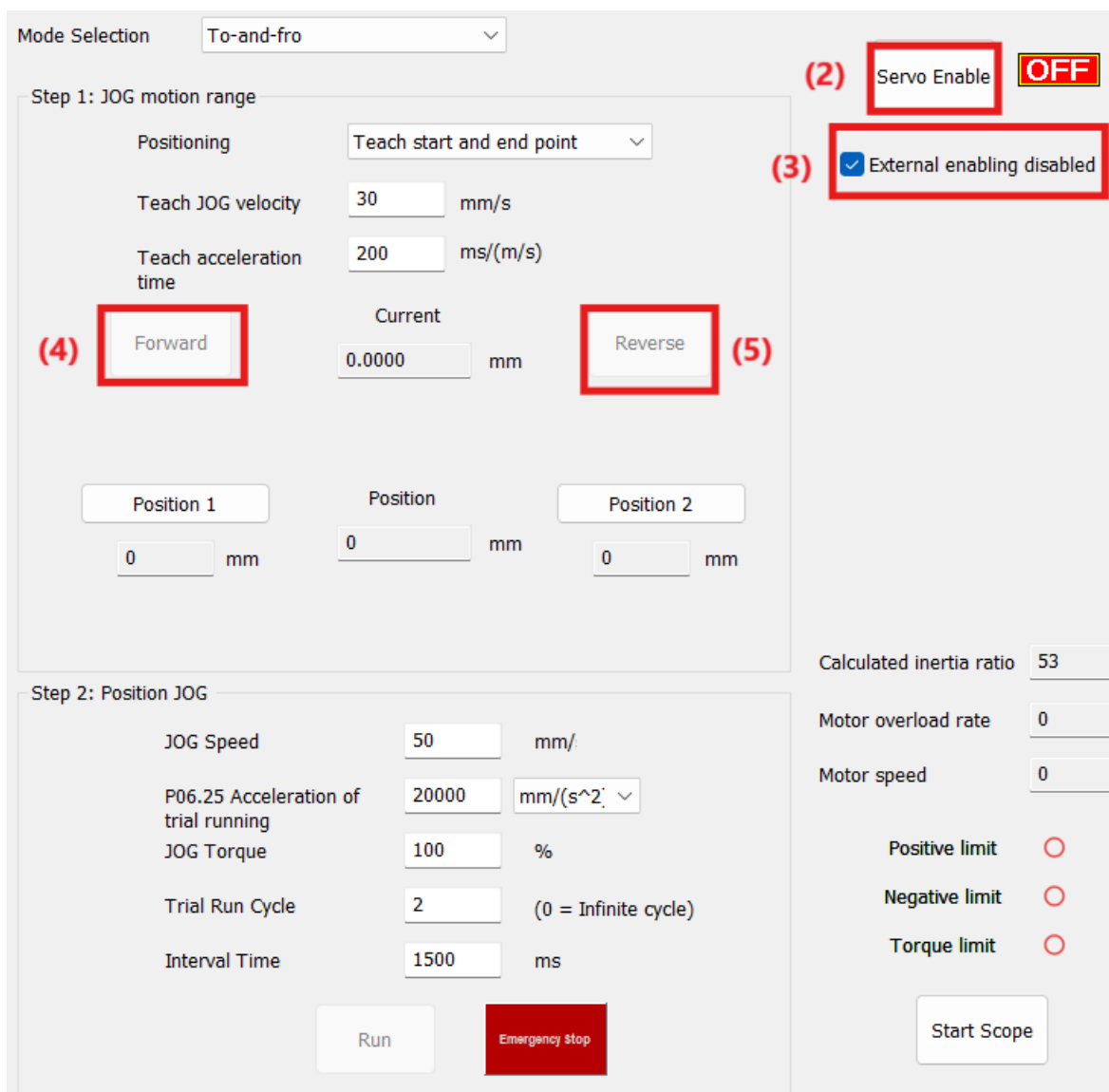


Trial Run

Click 'Trial Run'.

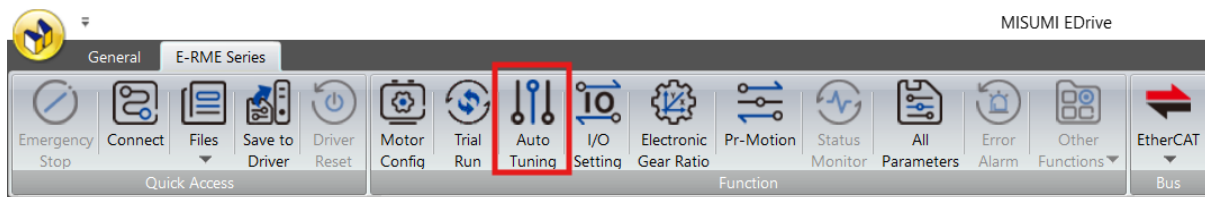


Click 'Servo Enable', if drive already connected to Servo ON output signal, please tick check box 'External enable disable', then click 'Forward' or 'Reverse', to move the motor.



Auto Tuning

Click 'Auto Tuning'.



Click '下一步'.

Note: Other parameters are not necessary, suggest not to change.

The image shows the 'Auto Tuning' configuration window. At the top, there's a progress bar with four steps: 'Tuning settings' (active), 'Range of motion', 'Tuning operation', and 'Tuning result'. Below this, there are several sections: 'Select axis' with a dropdown menu set to 'Axis1'; 'Tuning response' with three radio buttons: 'High response [suitable for applications with high mechanical stiffness]', 'Medium response [suitable for applications with medium mechanical stiffness]' (selected), and 'Low response [suitable for applications with low mechanical stiffness]'; 'Tuning mode' with two radio buttons: 'Positioning mode' (selected) and 'Track Mode'; and 'Target in position range' with 'Unit selection' (radio buttons for 'Encoder unit' (selected), 'Command uni', and '0.0001rev') and 'In position range' (a text box with '20' and a 'Pluse' button). At the bottom right, there's a 'Next' button highlighted with a red rectangle and labeled '(2)' in red text.

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

Click 'Forward'. After motor reaches starting position, click 'Position 1'. Then click 'Reverse'. After motor reaches ending position, click 'Position 2'. (Note: Please always make sure motor is in between of starting position and ending position) Click '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)

(4)

Forward

Current
0.0020 mm

Reverse

(6)

Position 1

(5)

Position
102.8560 mm

Position 2

(7)

102.856 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

Click 'Done', and follow the instruction to save parameters.

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

Tuning result | Manual fine adjustment | Para comparison

Tuning result : Success, Used time 96 s.

Performance evaluation

In position range(Pluse)	20
Arrival counts	54
Arrival time(ms)	24
Overshoot	17
Jitter counts	1
Maximum current(%)	66
Maximum velocity(mm/s)	398

Emergency Stop

Export parameter file

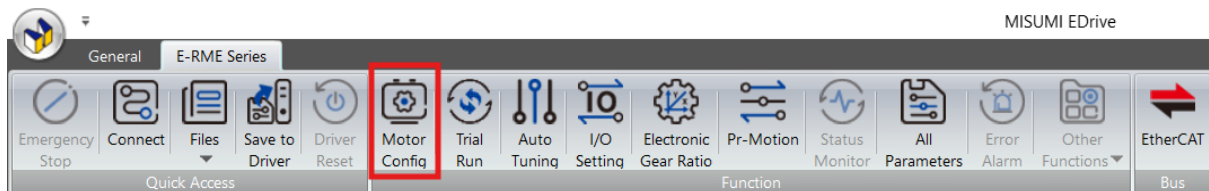
Back to Step 1

(9) Done

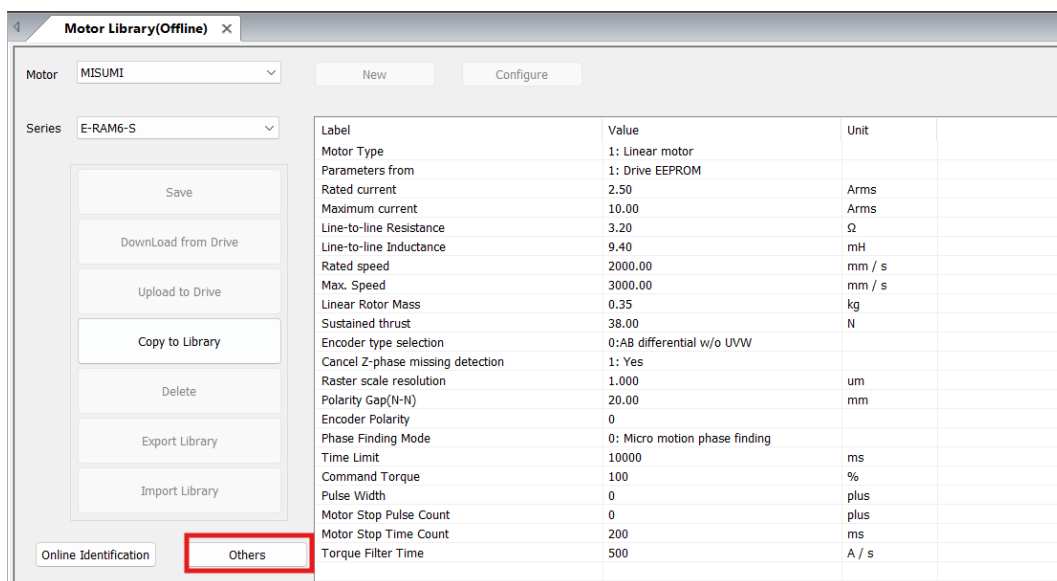
Change Motion Direction

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

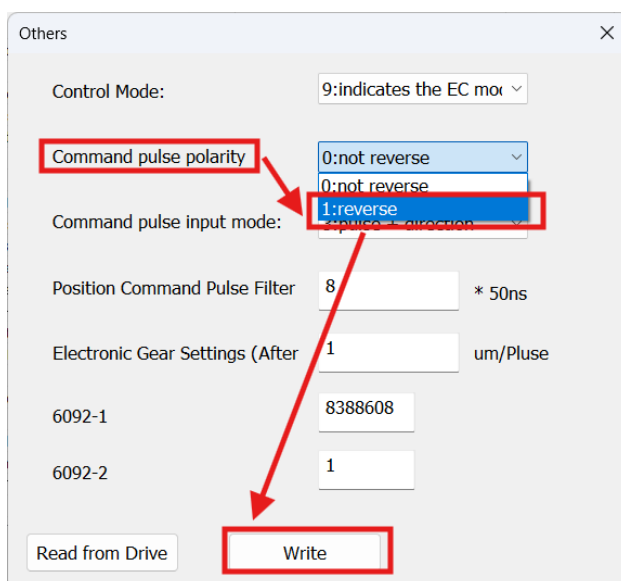
Click 'Motor Config'.



Click 'Others'.



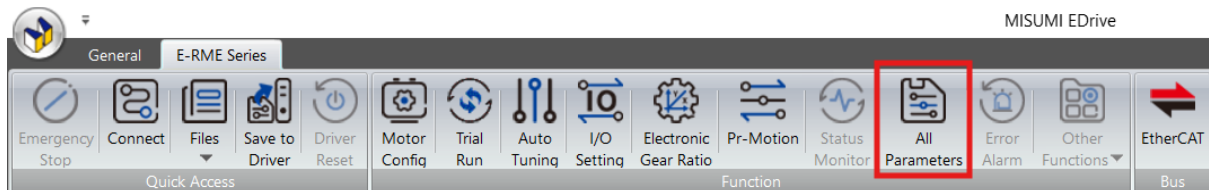
Change to '1: reverse' under 'Command pulse polarity', then click 'Write' and follow the instruction to save parameters.



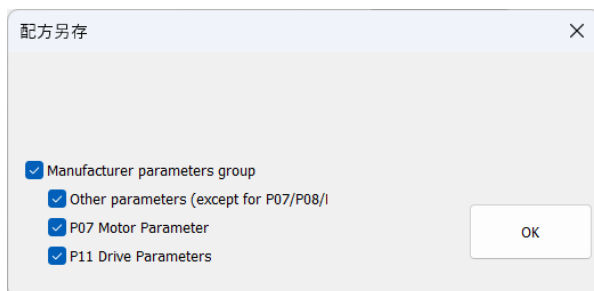
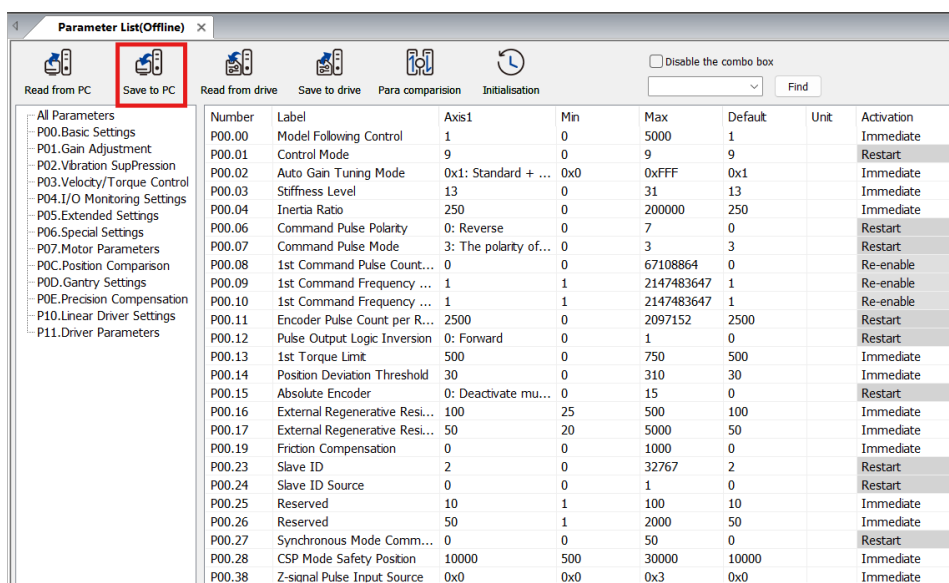
Parameter Backup and Download

Please refer to following steps to backup parameters.

Click 'All Parameters'.

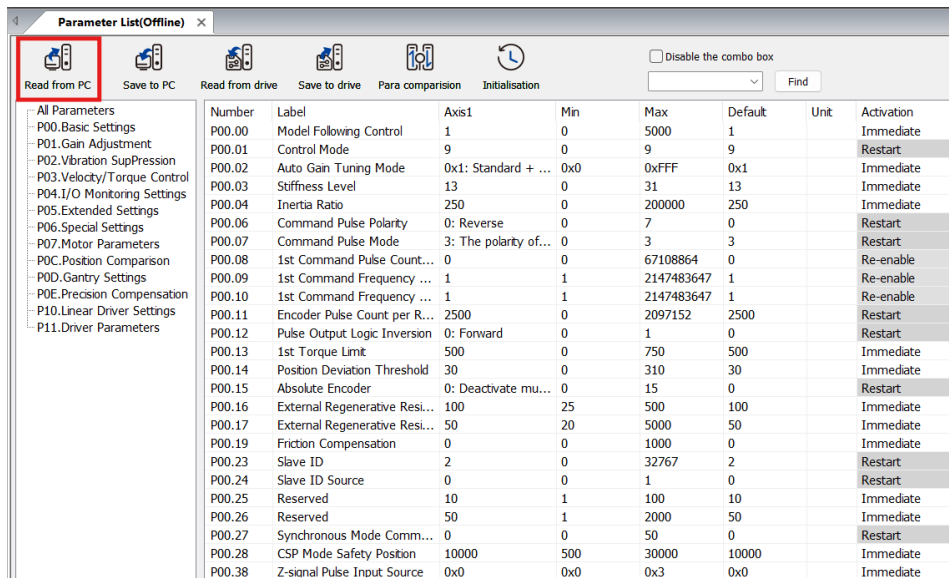


Click 'Save to PC' and follow the instruction to finish saving.



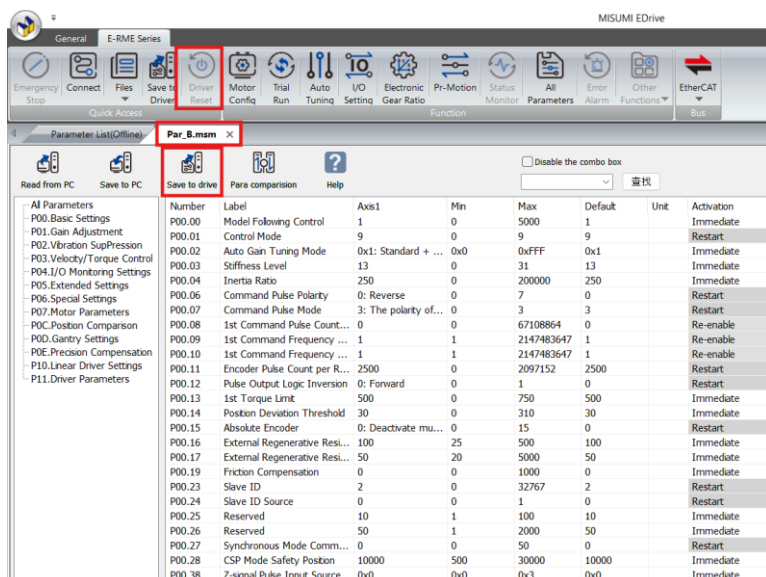
When download parameters, click 'Read from PC'.

E-RME series (EtherCAT type) Quick Start Guide



Number	Label	Axis1	Min	Max	Default	Unit	Activation
P00.00	Model Following Control	1	0	5000	1		Immediate
P00.01	Control Mode	9	0	9	9		Restart
P00.02	Auto Gain Tuning Mode	0x1: Standard + ...	0x0	0xFF	0x1		Immediate
P00.03	Stiffness Level	13	0	31	13		Immediate
P00.04	Inertia Ratio	250	0	200000	250		Immediate
P00.06	Command Pulse Polarity	0: Reverse	0	7	0		Restart
P00.07	Command Pulse Mode	3: The polarity of...	0	3	3		Restart
P00.08	1st Command Pulse Count...	0	0	67108864	0		Re-enable
P00.09	1st Command Frequency ...	1	1	2147483647	1		Re-enable
P00.10	1st Command Frequency ...	1	1	2147483647	1		Re-enable
P00.11	Encoder Pulse Count per R...	2500	0	2097152	2500		Restart
P00.12	Pulse Output Logic Inversion	0: Forward	0	1	0		Restart
P00.13	1st Torque Limit	500	0	750	500		Immediate
P00.14	Position Deviation Threshold	30	0	310	30		Immediate
P00.15	Absolute Encoder	0: Deactivate mu...	0	15	0		Restart
P00.16	External Regenerative Resi...	100	25	500	100		Immediate
P00.17	External Regenerative Resi...	50	20	5000	50		Immediate
P00.19	Friction Compensation	0	0	1000	0		Immediate
P00.23	Slave ID	2	0	32767	2		Restart
P00.24	Slave ID Source	0	0	1	0		Restart
P00.25	Reserved	10	1	100	10		Immediate
P00.26	Reserved	50	1	2000	50		Immediate
P00.27	Synchronous Mode Comm...	0	0	50	0		Restart
P00.28	CSP Mode Safety Position	10000	500	30000	10000		Immediate
P00.38	Z-signal Pulse Input Source	0x0	0x0	0x3	0x0		Immediate

Choose the parameter file you saved, and it will be shown in a new tab. Click 'Save to drive', then click 'Drive Reset'. Follow the instruction to finish saving.



Number	Label	Axis1	Min	Max	Default	Unit	Activation
P00.00	Model Following Control	1	0	5000	1		Immediate
P00.01	Control Mode	9	0	9	9		Restart
P00.02	Auto Gain Tuning Mode	0x1: Standard + ...	0x0	0xFF	0x1		Immediate
P00.03	Stiffness Level	13	0	31	13		Immediate
P00.04	Inertia Ratio	250	0	200000	250		Immediate
P00.06	Command Pulse Polarity	0: Reverse	0	7	0		Restart
P00.07	Command Pulse Mode	3: The polarity of...	0	3	3		Restart
P00.08	1st Command Pulse Count...	0	0	67108864	0		Re-enable
P00.09	1st Command Frequency ...	1	1	2147483647	1		Re-enable
P00.10	1st Command Frequency ...	1	1	2147483647	1		Re-enable
P00.11	Encoder Pulse Count per R...	2500	0	2097152	2500		Restart
P00.12	Pulse Output Logic Inversion	0: Forward	0	1	0		Restart
P00.13	1st Torque Limit	500	0	750	500		Immediate
P00.14	Position Deviation Threshold	30	0	310	30		Immediate
P00.15	Absolute Encoder	0: Deactivate mu...	0	15	0		Restart
P00.16	External Regenerative Resi...	100	25	500	100		Immediate
P00.17	External Regenerative Resi...	50	20	5000	50		Immediate
P00.19	Friction Compensation	0	0	1000	0		Immediate
P00.23	Slave ID	2	0	32767	2		Restart
P00.24	Slave ID Source	0	0	1	0		Restart
P00.25	Reserved	10	1	100	10		Immediate
P00.26	Reserved	50	1	2000	50		Immediate
P00.27	Synchronous Mode Comm...	0	0	50	0		Restart
P00.28	CSP Mode Safety Position	10000	500	30000	10000		Immediate
P00.38	Z-signal Pulse Input Source	0x0	0x0	0x3	0x0		Immediate

Controller Axis Configuration Precautions

1. XML file mapping

EtherCAT ESI file is contained in the EDrive software zip file.

(1) E-RME_V1.01_EtherCAT_ESI file

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Name	Date modified	Type	Size
Today			
MISUMI EDrive_v1.0.0	1/14/2025 4:02 PM	File folder	
A long time ago			
E-RMA_T ÷ σ¹=1² » ≈# ≥_T #_#B_ver...	11/15/2024 6:10 PM	Foxit PDF Reader ...	1,970 KB
E-RME EtherCAT¹=1² » ≈# ≥_T #_#B_...	11/15/2024 2:30 PM	Foxit PDF Reader ...	1,747 KB
E-RME_V1.01_EtherCAT_ESL.xml	10/11/2024 2:57 PM	Microsoft Edge HT...	156 KB

ESI file predefined PDO

RPDO1: Position control mode related PDOs

RPDO2: Velocity control mode related PDOs

RPDO3: Torque control mode related PDOs

RPDO4: Homing mode related PDOs

TPDO1: Controller feedback message related PDOs

Example: If use positioning control mode, click RPDO1 and TPDO1, then can achieve positioning control.

Note: Controller's axis control logic must be **Linear Control**.

2. 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 circle: 20,000 (counts)

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

3. 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 circle: 20 (mm)

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

Note: Misumi LMAC electrical cycle length is 20 mm = 20,000 μ m.