

TruCount™ Absolute Encoder Homing Setup for Integrated StepSERVO™ Motor



Description

This application note is intended for StepSERVO™ motor with TruCount™ absolute multi-turn encoder. The TruCount™ series encoder allows the motor to track the motor shaft position even when power is off. TruCount™ encoder does not need an external battery for encoder position tracking while the motor is power off.

This application note includes the following configurations:

Home position setup

Position limit setup

Setup home position and position limits with SCL commands

Other configurations

Homing Position Setup

For StepSERVO™ motor with TruCount™ encoder, home position setup is only needed when the system physical mechanics are changed. This can be setup via Step-Servo Quick Tuner software.

Step 1

After install the motor onto your mechanical system, connect your motor to Step-Servo Quick Tuner software. (for more details, please check the product hardware manual or quick setup guide)

The screenshot shows the Step-Servo Quick Tuner V3.0.20.0113 software interface. The main window is divided into several sections:

- 1. Motor Config:** Motor Model: TXM24X3B-R, Continuous: 6.00 A, Peak Current: 7.50 A. Includes a checkbox for "Reverse motor rotating direction".
- 2. Control Mode:** SCL/Q (Stream Command/Stan) selected. Includes a checkbox for "Modbus".
- 3. Control Mode Settings:** Node ID: 0. Transmit Delay: 2 ms. Data Format: Decimal selected. Includes a checkbox for "Auto Execute Q Program at Power Up".
- 4. I/O (X = Input, Y = Output):** Digital Input & Output: X1, X2, X3. X1: General Purpose, FI, Y1: General Purpose. X2: General Purpose, FI. X3: Not used(Servo On when power-up), FI. Input Noise Filter(X1/X2): 0.310 us(Pulse Width) = 1613 KHz@50% duty cycle.
- Command History & Response:** A list of commands and responses, including \$0S10{01\$, \$0JA100{B3\$, \$0JL100{A8\$, \$0CJ{42\$, and \$0SKD{ED\$. Includes "Clear" and "Script" buttons.
- Monitor:** A table showing real-time data:

I/O	Status	Alarm	Param	Register
DC Bus Voltage			24.3 V	
Drive Temperature			46.9°C	
Actual Current			0.26 A	
Actual Speed			0.000 rps	
Pulse Counter			0 steps	C
Command Position			300769 steps	
Encoder Position			300769 counts	C
Position Error			0 counts	
Software CCW Limit			0 steps	
Software CW Limit			0 steps	

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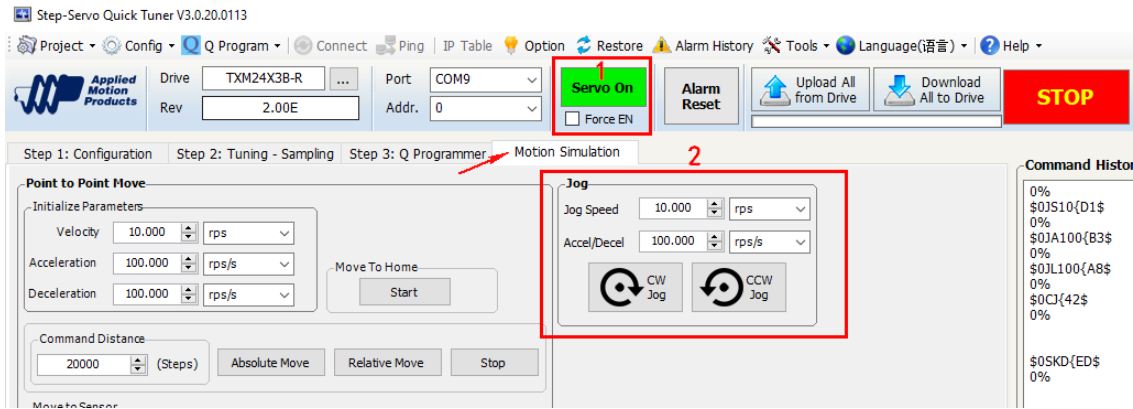
Step 2

Option 1

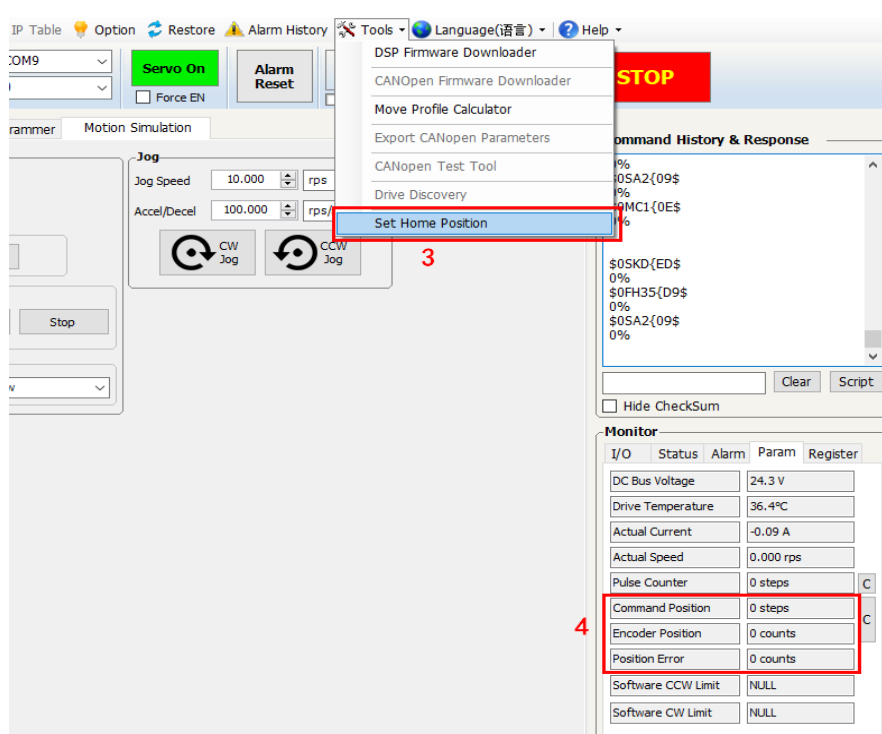
1. Physically move your axis to its home position, see step 3.

Option 2

1. Enable your StepSERVO™ motor.
2. Move your axis to desired home position by using the Jog function in Motion Simulation tab.



3. Click on “Tools ---> Set Home Position”
4. Check on “Monitor ---> Param” to ensure Encoder Position is “0”



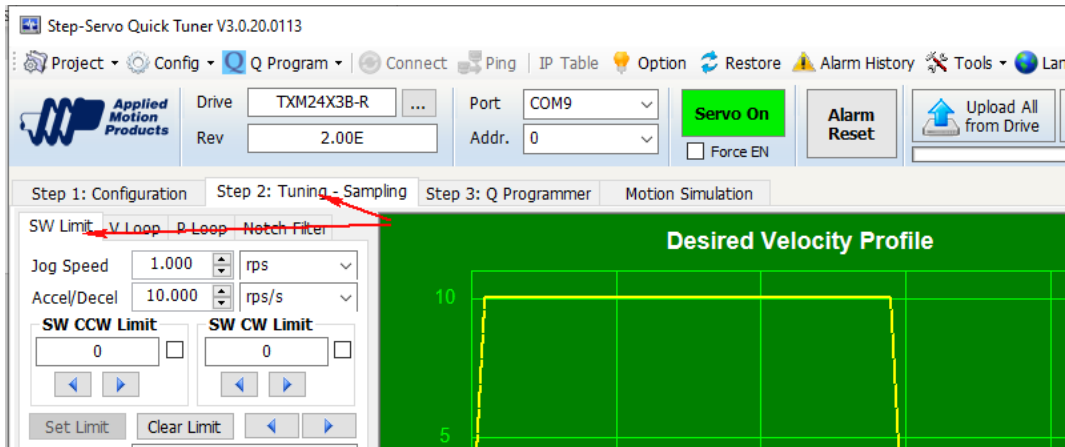
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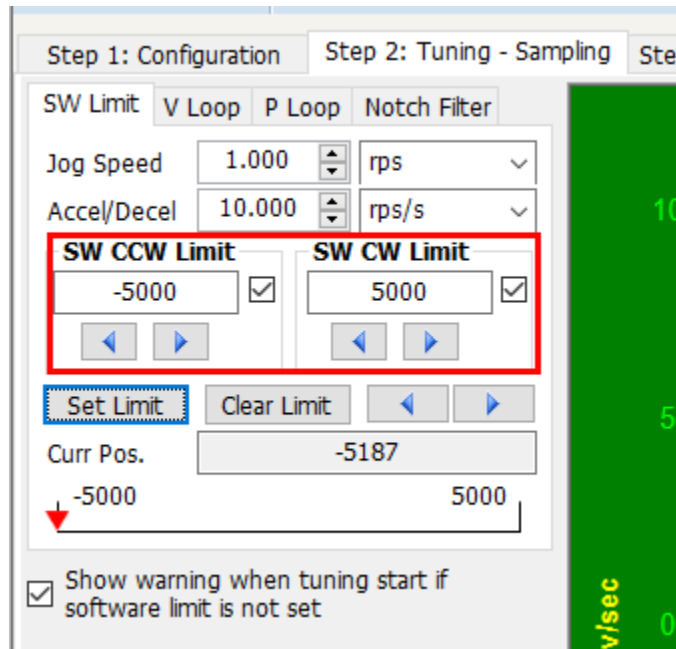
Position Limit Setup

For StepSERVO™ Motor with TruConut™ encoder, the software position limits can be saved permanently in the drives' non-volatile memory for use as end of travel limits.

1. Go to “Step 2: Tuning – Sampling” ----> SW Limit



2. For each position limit direction (CW/CCW), use the Jog button to move the axis to the desired safety limit position.



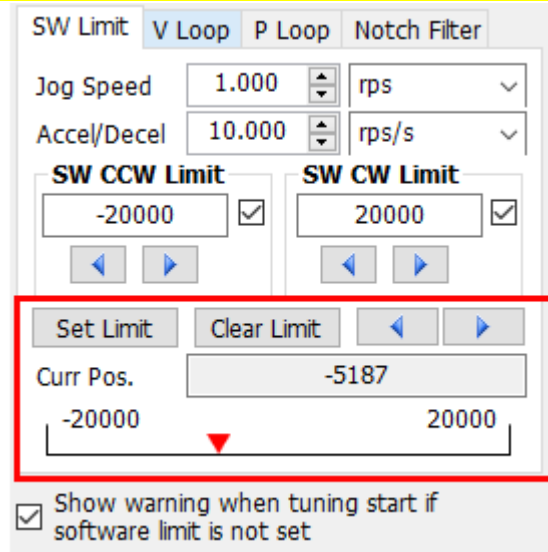
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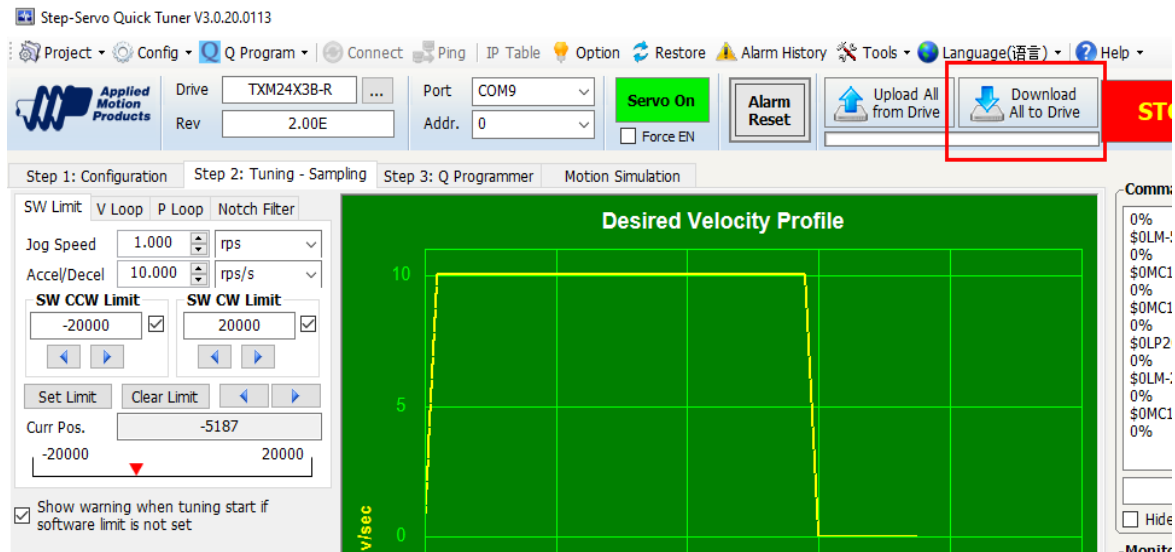
3. Click on “Set Limit” to confirm

Warning:

The software position limit is now set temporarily until motor’s next power cycle.
To position limit permanently in non-volatile memory, please see “Step 4”.



4. Click “Download all to Drive” to save software position limit to the drive’s non-volatile memory.



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Setup home position and position limits with SCL commands

Setup home position

For permanent use

Command	Drive Response	Notes
EPO	%	(Step 1) Reset internal encoder position counter
SPO	%	(Step 2) Reset internal set position counter
SA	%	Save setting to non-volatile memory

Note: Non-volatile memory of the StepSERVO™ drive is limit to 10,000 write cycle.

For temporary use

Command	Drive Response	Notes
EPO	%	(Step 1) Reset internal encoder position counter
SPO	%	(Step 2) Reset internal set position counter

Warning: This setting will not be saved after next power cycle

Check current home position value

Command	Drive Response	Notes
EP	EP=0	Current encoder position is 0 (Home)
SP	SP=0	Current set position is 0 (Home)

Setup Position Limit

For permanent use

Command	Drive Response	Notes
LP10000	%	Set software CW limit value to 10000 counts.
LM200	%	Set software CCW limit value to 200 counts.
SA	%	Save setting to non-volatile memory

Note: Non-volatile memory of the StepSERVO™ drive is limit to 10,000 write cycle.

For temporary use

Command	Drive Response	Notes
LP10000	%	Set software CW limit value to 10000 counts.
LM200	%	Set software CCW limit value to 200 counts.

Warning: This setting will not be saved after next power cycle

Check current position limit value

Command	Drive Response	Notes
LP	LP = 10000	Current software CW limit value to 10000 counts.
LM	LM = 200	Current software CCW limit value to 200 counts.

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Other Configurations

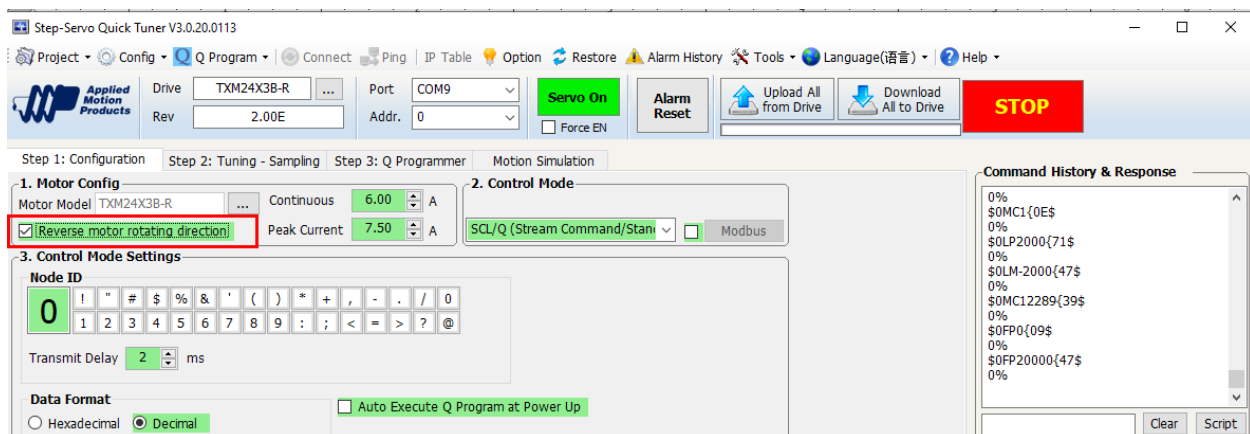
Reverse Motor rotating direction

This setting can be configured via “Step 1: configuration” tab. Click Download all to Drive to save the setting.

Warning: Reverse motor rotational direction will affect encoder counting direction.

Power cycle of is required after changing motor rotational direction.

Please reset your home position and software position limit after power cycle.



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Electronic Gearing

This setting can be configured via “Step 1: configuration” tab. Click Download all to Drive to save the setting.

Warning: Changing the Electronic Gearing (EG) of the motor will change the counts per revolution (SP)

Power cycle of is required after changing Electronic Gearing.

Please reset your home position and software position limit after power cycle.

A screenshot of a software configuration window for a motor. The window is divided into several sections: 1. Motor Config: Motor Model (TSM23X3B-IP), Continuous mode, 5.00 A, Reverse motor rotating direction (unchecked), Peak Current 7.50 A. 2. Control Mode: SCL/Q (Stream Command/Stan) selected, Modbus (unchecked). 3. Control Mode Settings: Data Format (Decimal selected), Auto Execute Q Program at Power Up (unchecked). A red box highlights a warning message: "Power recycle is required after electronic gearing change". Position Fault Limit (20000 Counts(20000 Steps) selected), Electronic Gearing (20000 Steps/Rev). 4. I/O (X = Input, Y = Output): Digital Input & Output, Analog Input.