



## **Automation Direct's QuickStart Guide for EM-S Series ProTuner Software**

Almost all EM542S and EM556S stepper drive applications can be configured with the onboard DIP switches. See the AutomationDirect [Leadshine Stepper Drives QuickStart Guide](#) and the Leadshine [EM542S/EM556S User Manuals](#) to get your drive up and running quickly. If your application needs different settings than the DIP switches offer (different PPR, other current settings for your motor, special tuning, etc.) you may need to use the [ProTuner for EM-S Series](#) software.

To use the software, download and install [ProTuner for EM-S Series](#) from AutomationDirect.Com. The software can be found on the Support page on our website or linked from the [EM542S](#) or [EM556S](#) Item Pages. The software does not have an installation package. Simply copy the folder to your hard drive and run the file [EM-S Series ProTuner.exe](#). The ProTuner software from Leadshine is applicable to many different drives offered by the manufacturer.

The only drives sold by AutomationDirect that are applicable to this software are the EM542S and EM556S stepper drives. The software features below are the only functions that AutomationDirect recommends using with our stepper drives.

### **CONNECT TO THE DRIVE**

The following sequence is required to properly connect to the drive. If your PC does not successfully connect to the drive, repeat this sequence in the correct order.

- 1) Ensure power to the stepper drive is OFF.
- 2) Ensure that [ProTuner for EM-S Series](#) is NOT running.
- 3) Install a USB to RS232 comm adapter on your PC ([USB-RS232](#) from AutomationDirect works well). You can skip this step if your PC has a built-in RS-232 port.
- 4) Open Device Manager and make sure the USB adapter has no errors/warnings. Verify which COM port the adapter is assigned to (needed in step 8).
- 5) Connect cable 1.4.4-0409505-B3 to the USB adapter and to the DM-805-AI drive.  
**Do not connect/disconnect the serial cable with power connected to the drive.**
- 6) Power up the stepper drive. Ensure the green LED is ON (no drive faults).
- 7) Start the [ProTuner for EM-S Series](#) software.
- 8) Choose the correct COM Port from step 4. The baud rate is fixed at 38400. The Drive address should always be 1. Click [Connect](#) to establish connection to the drive.



Once connected to the drive, several icons appear. They are also available in the pull-down menu. The only option that AutomationDirect recommends using is the Parameter Management screen.

### Parameter Management Screen

The Parameter screen allows the user to upload and download entire configurations to/from the drive. Save to disk, Read from disk, and Compare (online values to saved values) are also available.

For the EM542S and EM556S drives, all parameters that can be read or adjusted with Pro Tuner can be seen in the “All Parameters” group.

ParameterName	Value	Range	Default	Unit	Remark
Peak Current	2150	1~32767	1000	mA	Please refer to manual
Pulse/Rev	1600	200~51200	200	--	Said motor running a pulse number needed, dial for all the ON in the subdivis
Holding Time	400	100~10000	500	ms	Unit: ms
Holding Current	50	0~100	50	%	Percentage between current and peak current,after motor enter standby.
Enable level	1	0~1	1	--	0-High level enable;1-Low level enable
Choosing locking motor shaft in disable	1	0~1	0	--	0- No response pulse,motor unlock;1-No response pulse,motor lock.After re
Fault output level	0	0~1	0	--	0-Optocoupler conduction when fault,low resistance;1--optocoupler cut-off v
Pulse filter enable	0	0~1	0	--	0-Disable(macrostep effective);1-Enable(Fir filter time effective)
Filter time	1600	0~51200	1000	us	Setup the filter time
Current loop PI auto-tuning enable	1	0~1	1	--	0-Disable;1-Enable
Current loop kp	1210	200~32767	1000	--	In the self-tuning is enabled, the read-only does not enable, the user may rev
Current loop ki	164	0~32767	200	--	In the self-tuning is enabled, the read-only does not enable, the user may rev
In position port function selection	2	0~32767	0	--	--
Pulse input mode	0	0~1	0	--	0-Pulse+Direction;1-Cw/CCW
Pulse active edge	0	0~1	0	--	0-Rising edge; 1-Falling edge
Motor running direction	0	0~1	0	--	0-Motor run direction invariant;1-Motor run direction negation
In position port output resistance state ...	1	0~1	0	--	0-Output high resistance when appear fault;1-Output low resistance when e
Fault detection selection(bit operation)	3	0~65535	65535	--	Please consult technical data
Delay of releasing brake	100	0~32767	100	--	Usually keep this default value.
Reserved parameters	100	0~32767	0	--	--

Progress:  100

To write to a parameter: click on the parameter's row, then single click the highlighted row. The "Value" range will turn to an entry field. Type in the new value and press Enter. The new value will be sent to the drive. Pulse/Rev (pulses per revolution) and Peak Current (motor phase current) must have their hardware DIP switches set to "Default" for the software to be able to modify the settings. Note that the "Default" current settings for the EM542S (SW1, SW2, SW3 = ON) are slightly different than the "Default" current setting for EM556S (SW1, SW2, SW3 = OFF).

EM542S									
Microstep Drive									
Pulse/rev Table					Current Table(Peak=RMSX1.4)				
Pul/r	SW5	SW6	SW7	SW8	Peak	RMS	SW1	SW2	SW3
Default	on	on	on	on	Default	on	on	on	on
400	off	on	on	on	1.5A	1.1A	off	on	on
800	on	off	on	on	1.9A	1.4A	on	off	on
1600	off	off	on	on	2.4A	1.7A	off	off	on
3200	on	on	off	on	2.8A	2.0A	on	on	off
6400	off	on	off	on	3.3A	2.4A	off	on	off
12800	on	off	off	on	3.8A	2.7A	on	off	off
25600	off	off	off	on	4.2A	3.0A	off	off	off
1000	on	on	on	off	SW4: Idle Current, on=90%, off=50%				
2000	off	on	on	off					
4000	on	off	on	off	Smoothing Filter Table				
5000	off	off	on	off	Smoothing Time	SW9	SW10		
8000	on	on	off	off	Disable	on	on		
10000	off	on	off	off	6ms	off	on		
20000	on	off	off	off	12ms	on	off		
25000	off	off	off	off	25ms	off	off		

EM556S									
Microstep Drive									
Pulse/rev Table					Current Table(Peak=RMSX1.4)				
Pul/r	SW5	SW6	SW7	SW8	Peak	RMS	SW1	SW2	SW3
Default	on	on	on	on	Default	off	off	off	off
400	off	on	on	on	2.1A	1.5A	on	off	off
800	on	off	on	on	2.7A	1.9A	off	on	off
1600	off	off	on	on	3.2A	2.3A	on	on	off
3200	on	on	off	on	3.8A	2.7A	off	off	on
6400	off	on	off	on	4.3A	3.1A	on	off	on
12800	on	off	off	on	4.9A	3.5A	off	on	on
25600	off	off	off	on	5.6A	4.0A	on	on	on
1000	on	on	on	off	SW4: Idle Current, on=90%, off=50%				
2000	off	on	on	off					
4000	on	off	on	off	Smoothing Filter Table				
5000	off	off	on	off	Smoothing Time	SW9	SW10		
8000	on	on	off	off	Disable	on	on		
10000	off	on	off	off	6ms	off	on		
20000	on	off	off	off	12ms	on	off		
25000	off	off	off	off	25ms	off	off		

NOTE: For any parameter to be saved to the non-volatile memory of the drive the "Save" button must be pressed.



Parameter summary

Read/Write parameters:

- Peak Current**
- Pulse/Rev**
- Holding Time**
- Holding Current**
- Enable level**
- Motor running direction**
- Dela of releasing brake**

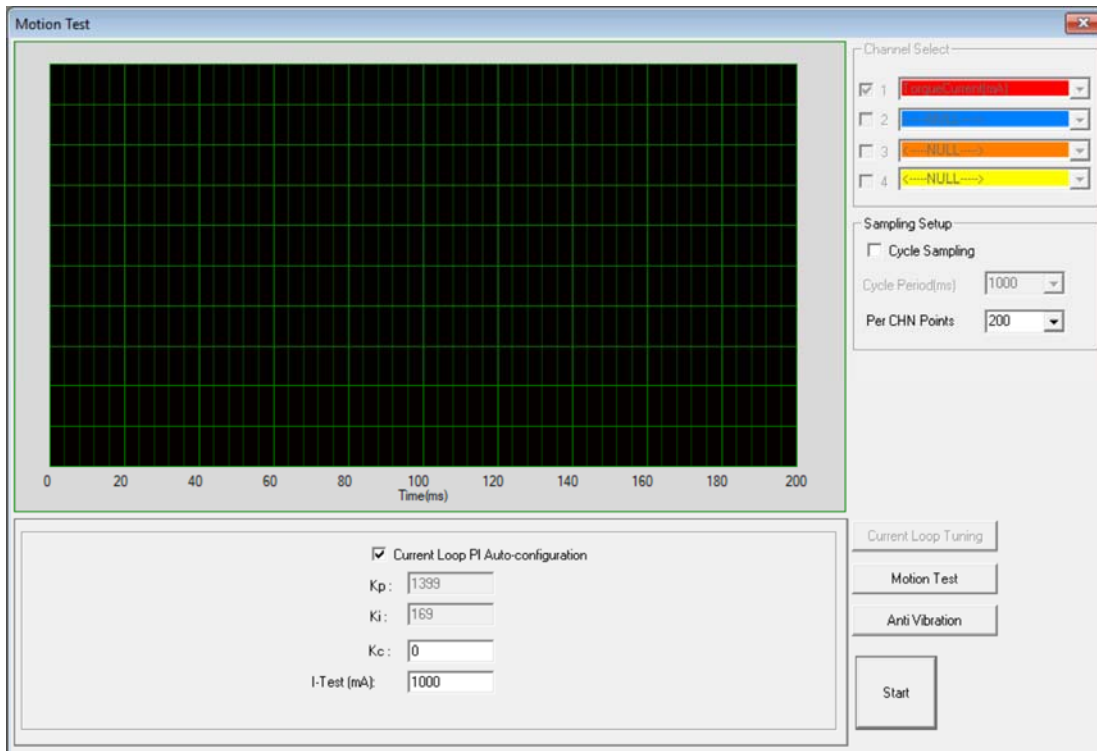
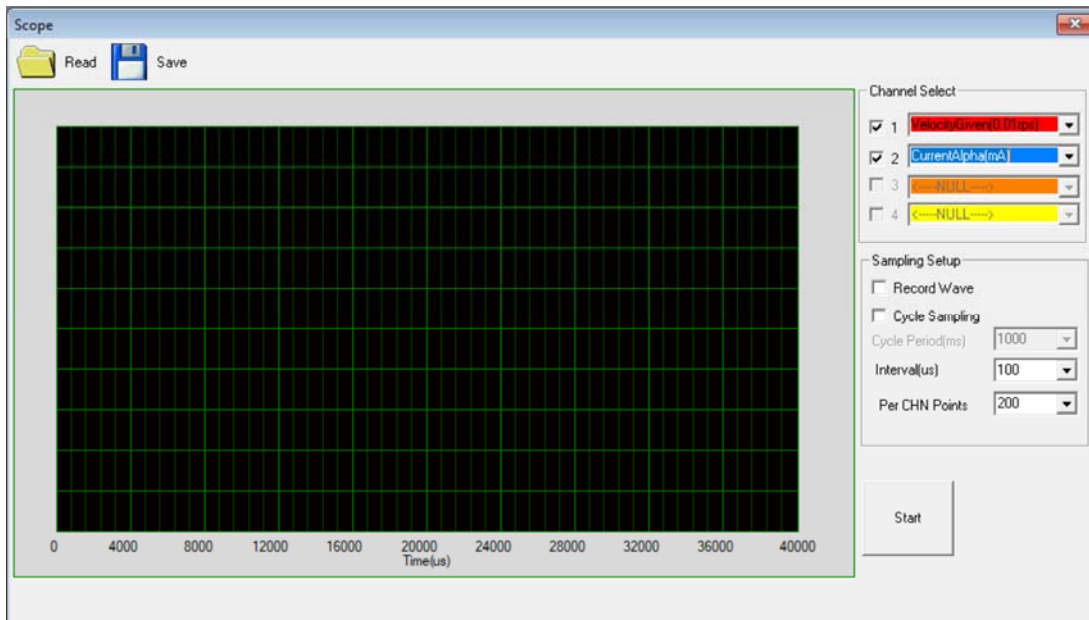
Read only:

- Choosing locking motor shaft in disable** reads DIP SW15 and is a read only parameter
- Fault output level** reads the status of DIP SW12.
- Filter time** and **Pulse Filter Enable** reads the status of DIP SW9 and SW10.
- Current Loop PI auto-tuning enable** reads the status of DIP SW11.
- Current loop kp**, and **Current loop ki**.
- Pulse input mode** reads the status of DIP SW14.
- Pulse Active edge** reads the status of DIP SW13.

The following parameters are not applicable to drives that Automation Direct sells:

- In position port function selection**
- In position port output resistance state**
- Fault detection selection**
- Reserved parameters**

The **Scope**, **Motion Test**, and **Debug** widows are not applicable to the drives Automation Direct sells.



The screenshot shows a 'Tools' window with a 'Communication' section and five test configurations. The 'Communication' section includes dropdown menus for Port (COM1), Baudrate (38400), Databit (8), Stopbit (1), and Parity (None), along with a 'State: Close' label and an 'Open' button. Each test configuration (Test 1 to Test 5) has a 'NO.' field set to '01', a 'Read' radio button selected, and a 'Write' radio button unselected. Each test also has input fields for 'Address', 'Return HEX', 'DEC', and 'BIN', and a 'Send' button.

The below window is for the PC to the drive communication timeout.

The screenshot shows an 'Environment Setup' window with a 'Receive Timeout(ms)' label and a text input field containing the value '100'. A 'Save' button is located at the bottom of the window.