

STEP MOTOR
START-UP GUIDE



This guide is intended to help users get started with Lin Engineering’s step motors. For more complete information please visit www.linengineering.com

PLEASE READ BEFORE USING

Only qualified personnel should handle this product. Before you start please ensure that there is a suitable DC power supply. A current limited lab supply is recommended for first time users to guard against the possibility of miswire.

DISCLAIMER

The information provided in this document is believed to be reliable. However, no responsibility is assumed for any possible inaccuracies or omissions. Specifications are subject to change without notice.

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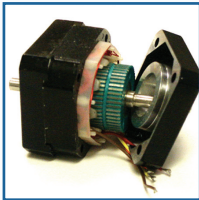
OPERATION AND USAGE TIPS

Failure to comply within these recommendations may lead to possible motor damage and will void all warranty terms.

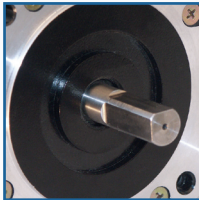
Specifications	Nema size	8	11	14	14	17	17	17	23	23	23	34	34	34	
	Motor Family	208	211	3509 3609 3709 3809	3518	416 417 4109	4209	4018 4118 4218 4418 4518	5704	5609 5709	5618 5718	8609 8709	8618	8718	
Step Size Angle		1.8°	1.8°	0.9°	1.8°	0.9°	0.9°	1.8°	0.45°	0.9°	1.8°	0.9°	1.8°	1.8°	
Radial Play (inches)	0.001" max @ 1 lbs load														
End Play (inches)	0.003" max @ 2 lbs load														
Shaft Run Out	0.002" TIR														
Concentricity of Mounting Pilot to Shaft	0.003" TIR														
Perpendicularity of Shaft to Mounting Face	0.003" TIR														
Max. Radial Load at Dimension “ K” from mounting face (lbs)	4.5	5.0	6					15			24		39		
Dimension “K”	0.5”			0.62”					0.55”			0.8”		0.9”	
Max Axial Load (lbs)	0.45	2.25	6					13			22		25		
Maximum Case Temperature (°C)	60°C		80°C maximum*												
Ambient Temperature (°C)	-20° to 50° C*														
Storage Temperature (°C)	-20° to 100° C*														
Humidity Range (%)	85% or less, non-condensing														
Magnet Wire Insulation	Class B 130° C**														
Insulation Resistance	100MΩ at 500 VDC														
Dielectric Strength	500 VAC for 1 minute											900 VAC for 1 minute			

* Special temp motors available upon request | ** Class F 155° C available upon request

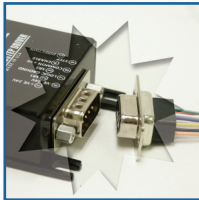
OPERATION & USAGE TIPS



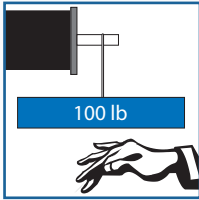
Do not disassemble motors; a significant reduction in motor performance will occur.



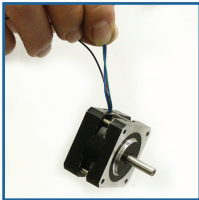
Do not machine shafts; this will have a negative effect on shaft run out and perpendicularity.



Do not disconnect motor from drive while in operation.



Do not use holding torque/detent torque of motor as a fail safe brake.



Do not hold motor by lead wires.

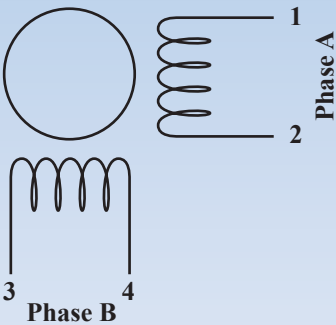
FAILURE TO COMPLY WITH THESE RECOMMENDATIONS WILL VOID ALL WARRANTY TERMS

MORE INFORMATION AVAILABLE AT WWW.LINENGINEERING.COM

LEAD WIRE COLOR CODE

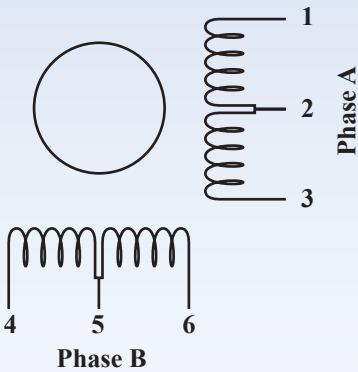
4 LEAD WIRES

	1	2	3	4
Color Code 1	Red	Blue	Green	Black
Color Code 2	Brown	Orange	Red	Yellow
Color Code 3	Red	Red White Stripe	Green	Green White Stripe
Bipolar Driver	A	\bar{A}	B	\bar{B}



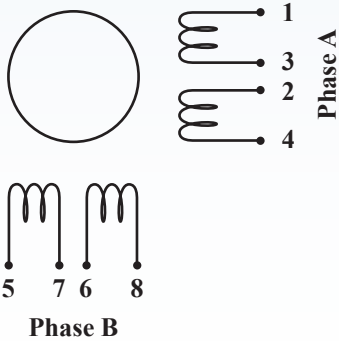
6 LEAD WIRES

	1	2	3	4	5	6
Color Code 1	Red	White	Blue	Green	Yellow	Black
Color Code 2	Brown	Black	Orange	Red	White	Yellow
Color Code 3	Red	Black	Red White Stripe	Green	White	Green White Stripe
Bipolar Drive Half Coil Connection	A	\bar{A}	A	B	\bar{B}	B
Bipolar Drive Series Connection	A		\bar{A}	B		\bar{B}
Unipolar Drive	A	A/C Comm	C	B	B/D Comm	D



8 LEAD WIRES

	1	2	3	4	5	6	7	8
Color Code 1	Blue White Stripe	Red White Stripe	Blue	Red	Green White Stripe	Black White Stripe	Green	Black
Color Code 2	Red	Yellow White Stripe	Red White Stripe	Yellow	Orange	Black White Stripe	Orange White Stripe	Black
Color Code 3	Red	Black White Stripe	Red White Stripe	Black	Green	Yellow White Stripe	Green White Stripe	Yellow
Bipolar Drive Parallel Connection	A		\bar{A}		B		\bar{B}	
Bipolar Drive Series Connection	A			\bar{A}	B			\bar{B}
Unipolar Drive	A	A/C Comm		C	B	B/D Comm		D






CABLES & CONNECTORS

Lin Engineering step motors are available with either 2-coil Bipolar, or 4-coil Unipolar windings. Bipolar motors have 4 leads, while unipolar motors have 6 leads. Additionally, some motors are designed with 8 leads, so they may be connected in a variety of ways.

CONNECTION INSTRUCTIONS

By following a series of easy steps, the below charts can be used to properly connect your motor to your drive. Determine how many lead wires your motor has 4, 6, or 8 wires. Locate the proper box below. Next, examine the color code of the lead wires on your motor; find the row of colors that match your wires, this is your “Color Code”. You will have either Code 1, Code 2, or Code 3. For example, if you have 4 wires and the wires are Red, Blue, Green, and Black, your Color Code is 1. Next. Connect the proper color to the appropriate terminal on your drive. If you have a Bipolar drive, the terminal on your drive will be labeled A, \bar{A} , B, \bar{B} .

For example, if using the above 4 wire motor with Color Code 1, the Red wire would be connected to A, Blue connected to \bar{A} , Green connected to B, and Black connected to \bar{B} . If you have a Unipolar drive, the terminal will be labeled A, B, C, D and A/C Common, B/D Common (or Comm.)

- Notes:**
-  Indicates that the particular wire is not connected to the drive.
 -  Indicates that two particular wires are connected to each other, but not the driver.
 -  Indicates that two particular wires are connected to each other, and then connected to the indicated terminal on the drive. In this example, two wires are connected together, then both wired to terminal A on the drive.