

LMD Linear Actuator

NEMA 23 integrated 1.8° 2-phase stepper motor with external shaft

Product overview

Lexium MDrive® Linear Actuator products integrate a 1.8° 2-phase stepper motor, external shaft linear mechanicals and drive electronics to deliver long life, high accuracy and repeatability in compact, low cost packages. A graphical user interface is provided for quick and easy parameter setup.

LMD linears may include a fully programmable motion controller with on-board I/O, enabling stand-alone motion control without need of an external controller. Real time closed loop performance is available for enhanced performance and feedback. Products are available in IP20 and IP65 versions.

Closed loop products are equipped with 1000 line (4000 count/rev) encoders internal to the unit, requiring no extra space in an application. Encoders perform stall detection, position maintenance and find index mark, in addition to monitoring motor shaft position for real time closed loop feedback accomplished with hMTechnology.

Application areas

Lexium MDrive® Linear Actuator products are ideal for machine builders who want a robust motor with integrated electronics and linear mechanicals. Reduced system cabling can minimize problems due to electrical noise, while closed loop products deliver enhanced performance. Fewer individual system components also eliminate multiple potential failure points.



LDM-57 linear actuator: IP65 & IP20 versions
NEMA23 external shaft

Specifications

Input power	Voltage		+12...+60 VDC
	Current maximum (1)		3.5 A
Motor	Frame size	NEMA	23
		inches	2.3
		mm	57
Maximum thrust (2)	General purpose nut	stack size	single
		lbs	25
Repeatability	Maximum	kg	11
		lbs	5
		kg	2
Weight (without screw)	Step angle α	inch	0.005
		mm	0.127
Thermal	Operating temp non-condensing	oz/g	24.8 / 703
		°	1.8
Protection	Type	Heat sink maximum	85°C
		Motor maximum	100°C
		Temp warning	0...84°C, user selectable
		Earth grounding	via product chassis ground lug
Communication versions	Pulse/Direction	IP ratings	IP20, IP65
		Pulse/Direction	RS-422/485 serial interface, 4 operating modes
		Programmable Motion Control	RS-422/485 programmable with stored memory
		CANopen	CANopen with programmable controller
	Ethernet	EtherNetIP, Profinet, ModbusTCP	

(1) Actual power supply current will depend on voltage and load.

(2) Performance data for maximum force/load is based on a static load and will vary with a dynamic load.

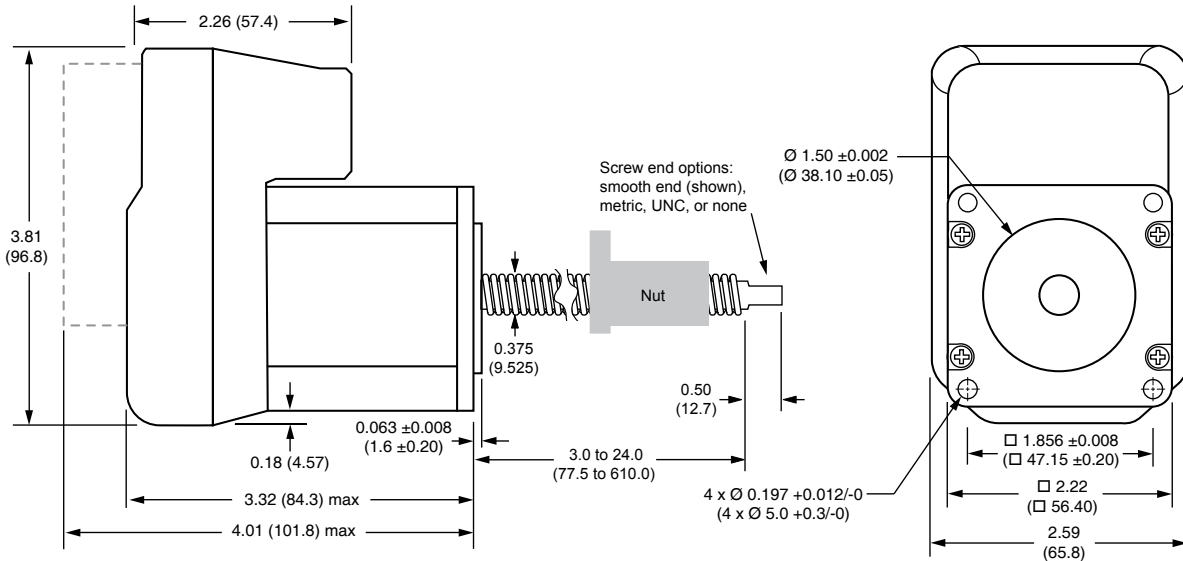
An optional Communication Converter is recommended with first orders.

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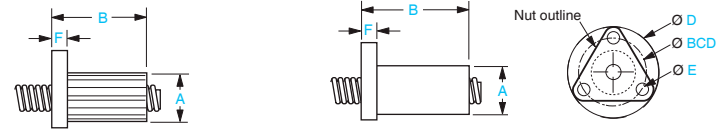
LMD•57 Linear – external shaft, NEMA size 23

Dimensions in inches (mm), unless specified



NOTE
Cantilevered loads
MUST BE supported.
Side loading is not
recommended.

Nut specifications



General purpose nut

For applications not requiring anti-backlash and wear compensation
Flange shape: round

Anti-backlash nut

Purpose: backlash free operation for high accuracy and low drag torque.
Flange shape: triangle

inches (mm)	A	B	D	E	F	BCD	drag torque
General purpose	0.71 (18.0)	1.50 (38.1)	1.5 (38.1)	0.20 (5.08)	0.20 (5.08)	1.125 (28.6)	free wheeling
Anti-backlash	0.82 (20.8)	1.875 (47.63)	1.5 (38.1)	0.20 (5.08)	0.20 (5.08)	1.125 (28.6)	1-to-3 oz-in / 0.7-2.1 Ncm

Lead screw specifications

Travel	Per revolution	Screw G	Screw A	Screw B	Screw D
		0.375" / 9.525 mm	0.20" / 5.08 mm	0.167" / 4.233 mm	0.0833" / 2.116 mm
	Per full step	0.001875" / 0.0476 mm	0.001" / 0.0254 mm	0.000835" / 0.0212 mm	0.0004165" / 0.0106 mm
Load limit*	External shaft nuts	General purpose	60 lbs / 27 kg		
		Anti-backlash	25 lbs / 11 kg		

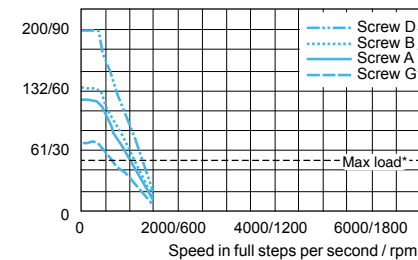
*Performance data for maximum force/load is based on a static load and will vary with a dynamic load.

Threaded end	Metric end:	UNC end:
	M6 x 1.0mm thread to within 0.03" / 0.76 mm of shoulder	1/4-20 UNC-2A thread to within 0.05" / 1.3 mm of shoulder
Smooth end	Ø 0.2362" ± 0.001 / Ø 6mm ± 0.003	
None	—	

Speed-force curves

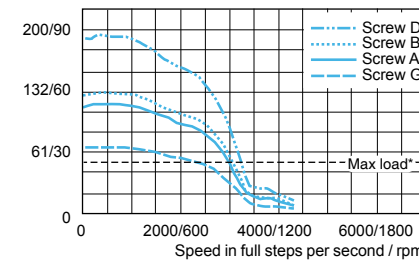
24 VDC

Force in lbs / kg



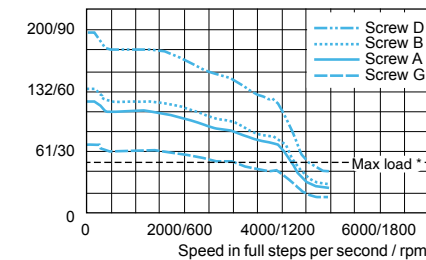
48 VDC

Force in lbs / kg



60 VDC

Force in lbs / kg



*Load limit is determined by selected nut. Performance data for maximum force/load is based on a static load and will vary with a dynamic load.

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Accessories



MD-CC404-000



MD-CC501-000



MD-CC405-000



MD-CC502-000



MD-CS600-000



MD-CS620-000



MD-CS630-000



MD-CS610-000



MD-CS640-000



MD-CS650-000



PLG-M12TP

MD-CS660-000

for IP20 products – pluggable connectors				comm types (1)			
description	length feet (m)	part number	P	M	A	E	
Communication converters							
USB-pluggable converter to set/program communication parameters in 32- or 64-bit							
Mates to DB9 connector	6.0 (1.8)	MD-CC404-000	•	•			
Mates to DB9 connector. Includes: CAN dongle, terminating resistor, and pre-wired mating cables	6.0 (1.8)	MD-CC501-000			•		

Replacement mating connector kits				comm types (1)			
description	length feet (m)	part number	P	M	A	E	
Includes one 2-pin power mate, and one set (2 pieces) 7-pin multifunction mates	—	CK-14	•				
Includes one 2-pin power mate, and one set (2 pieces) 7-pin multifunction mates	—	CK-15		•	•	•	

for IP65 products – M12 connectors				comm types (1)			
description	length feet (m)	part number	P	M	A	E	
Communication converters							
USB-pluggable converter to set/program communication parameters in 32- or 64-bit							
Mates to M12 5-pin female connector	6.0 (1.8)	MD-CC405-000	•	•			
Mates to M12 5-pin male connector. Includes: CAN dongle, terminating resistor, and pre-wired mating cables	6.0 (1.8)	MD-CC502-000			•		

Cordsets				comm types (1)			
Shielded cables pre-wired with straight M12 mating connectors							
description	length feet (m)	part number	P	M	A	E	
Communication cordset mates to 5-pin female connector	10.0 (3.0)	MD-CS600-000	•	•			
Power cordset mates to 4-pin male connector	10.0 (3.0)	MD-CS620-000	•	•	•	•	
I/O cordset mates to 12-pin female connector	10.0 (3.0)	MD-CS630-000	•				
I/O cordset mates to 12-pin male connector	10.0 (3.0)	MD-CS610-000		•	•	•	
Communication cordset mates to 4-pin female connector	6.5 (2.0)	MD-CS640-000				•	
Communication cordset mates to 5-pin male connector	10.0 (3.0)	MD-CS650-000					

Daisy chaining				comm types (1)			
Connect multiple units together in sequence with Y cable. Termination plug, sold separately, is required at end of run.							
description	length feet (m)	part number	P	M	A	E	
Y cable mates to M12 communication connector	0.3 (1.0)	MD-CS660-000			•		
M12 bus termination (resistor) plug	—	PLG-M12TP			•		

(1) Communication types:
 P = Pulse/Direction via RS-422/485 serial interface
 M = Programmable Motion Control via RS-422/485 serial interface
 A = CANopen interface
 E = EtherNet/IP, ModbusTCP, Profinet, MCode/TCP

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Part numbers

Example	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Product LMD = Lexium MDrive, with linear actuator external shaft	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Control type C = Closed loop / with hMT and encoder (1) O = Open loop / no hMT or encoder	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Communication type P = Pulse/Direction via RS-422/485 serial interface M = Programmable Motion Control via RS-422/485 serial interface A = CANopen interface E = EtherNet/IP, ModbusTCP, Profinet, MCode/TCP	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Flange size 57 = NEMA 23 / 57mm	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Motor length 1 = single stack	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Lead screw -LG = 0.375" / 9.525 mm -LA = 0.20" / 5.08 mm -LB = 0.167" / 4.233 mm -LD = 0.083" / 2.116 mm	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Shaft style 3 = external shaft	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Screw end finish M = metric U = UNC S = smooth Z = none	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Screw length (2) <i>lengths available in 0.1" increments</i> 030 = 03.0" / 76 mm minimum 240 = 24.0" / 610 mm maximum	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Nut G = general purpose A = anti-backlash	L M D C M 5 7 1 -LA 3 M 0 6 0 G T
Screw coating T = Teflon® Z = none	L M D C M 5 7 1 -LA 3 M 0 6 0 G T

(1) Closed loop control delivers encoder feedback and hMT enhanced motor performance.

(2) To calculate screw length: screw length = [desired stroke length] + [nut length] + [mounting surface plate thickness]

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Intelligent motion systems

