

Lexium MDrive[®] with eCylinder

NEMA 23 integrated 1.8° 2-phase stepper motor, control electronics, and captive shaft electric cylinder

Product overview

Lexium MDrive[®] (LMD) products with eCylinder integrate a 1.8° 2-phase stepper motor, drive electronics, and inline mounted captive shaft electric cylinder. Linear motion is produced by a coated, stainless steel acme screw / PEEK-blend nut system coupled directly to the motor's driving shaft. These compact products offer many distinct benefits including competitive price, high accuracy and repeatability. They may also provide a cleaner, quieter alternative to pneumatics.

Some LMD products 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.

hMT closed loop performance is available in products with either a multi-turn absolute encoder or incremental magnetic encoder. Closed loop performance maintains functional motor control to prevent loss of synchronization, offers variable current control, torque control, and use of the motor's full torque range without derating.

Multi-turn absolute encoders may benefit users by detecting and storing position information, even when powered down. This can eliminate homing routines and reduce setup time at system startup.

Application areas

Lexium MDrive[®] with eCylinder 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.



Quiet, clean and compact, these LMD products integrate motor, drive electronics, and captive shaft electric cylinder to directly convert rotary motion to linear motion. Products deliver distinct benefits, including replacing pneumatics in some applications.

Specifications

Input power	Voltage		+12 ... +60 VDC
	Current maximum (1)		3.5 A
Motor	Frame size	NEMA	23
		inches	2.3
		mm	57
	Length	stack size	single
Maximum thrust (2)	PEEK-blend nut	lbs	250
		kg	113
Stroke length	Min/Max	inch	2.0/24.0
		mm	51/610
Backlash	Maximum	inch	0.002
		mm	0.05
Accuracy	Maximum	±inches per inch	0.0003
		±mm per cm	0.002
Axial end play	Maximum	inches @ lbs	0.002 @ 2
		mm @ kg	0.05 @ 0.9
Weight (without screw)		oz/g	24.8 / 703
Step angle α		°	1.8
Thermal	Operating temp non-condensing	Heat sink maximum	85°C
		Motor maximum	100°C
Protection	Type	Temp warning	0 ... 84°C, user selectable
		Earth grounding	via product chassis ground lug
		IP rating	IP20
Communication versions	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.

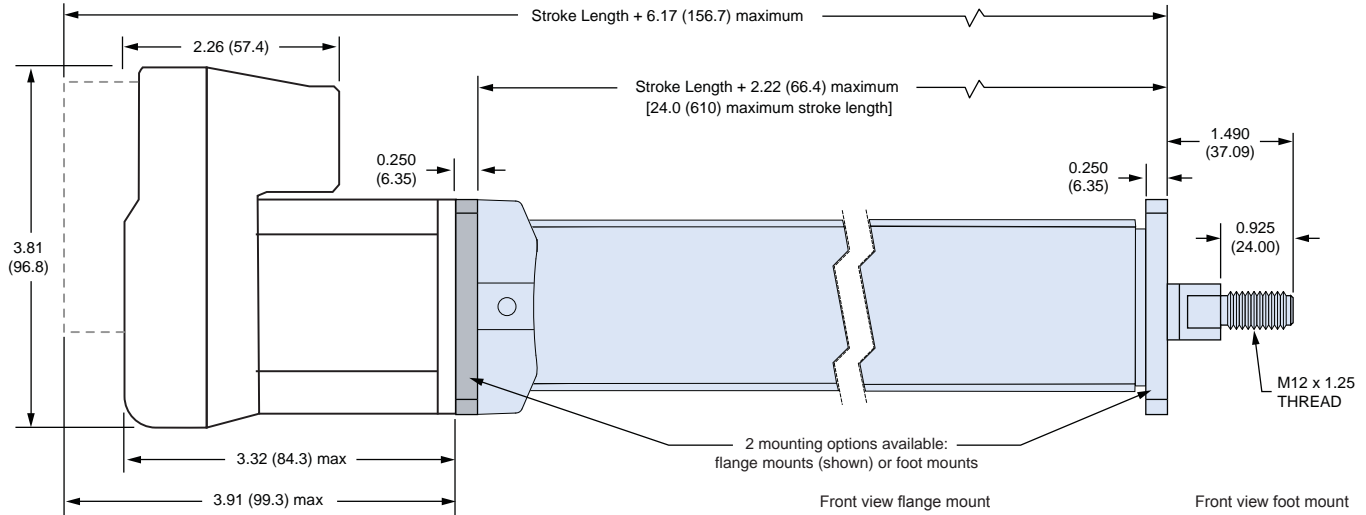
An optional Communication Converter is recommended with first orders.

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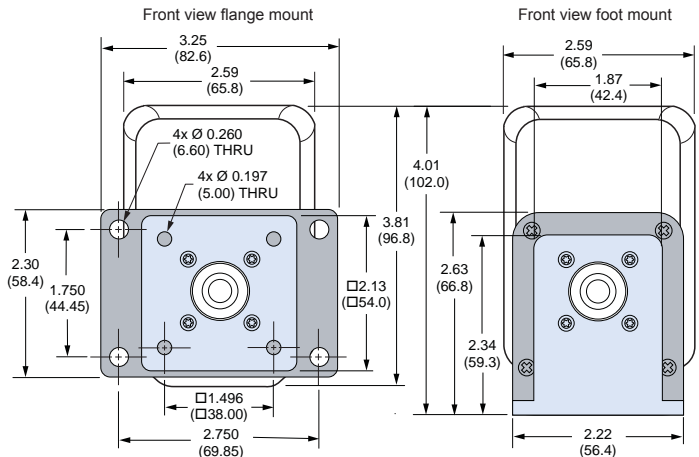
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LMD•57 with eCylinder – NEMA size 23

Dimensions in inches (mm)

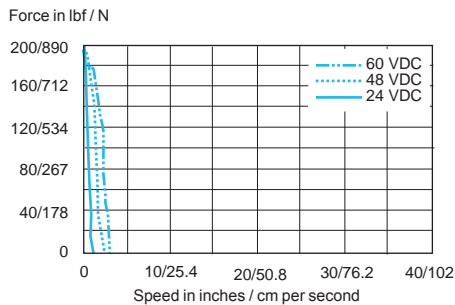


Screw	Diameter		Screw A	Screw B	Screw C	Screw D
			inches	0.375	0.375	0.375
Travel	Per rev	inches	0.100	0.250	0.500	1.000
		mm	2.54	6.35	12.7	25.4
	Per full step	inches	0.00125	0.0013	0.0025	0.0050
		mm	0.03175	0.03302	0.0635	0.127

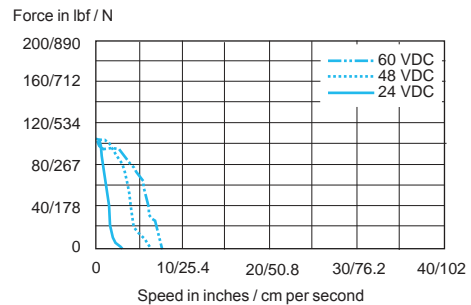


Speed-force curves

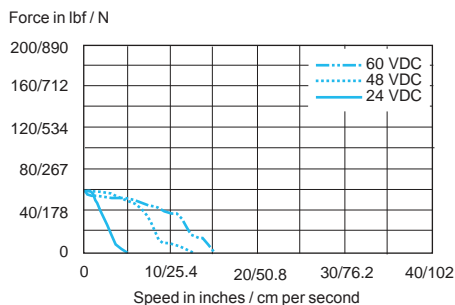
Screw A
0.100" lead



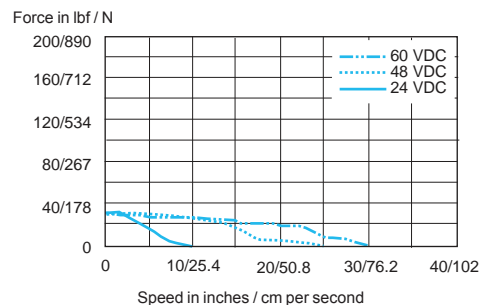
Screw B
0.250" lead



Screw C
0.500" lead



Screw D
1.000" lead



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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



MD-CS660-000



ICP0531

for pluggable connector products			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						
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 M12 circular connector products			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 Shielded cables pre-wired with straight M12 mating connectors						
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 Connect multiple units together in sequence with Y cable. Termination plug, sold separately, is required at end of run.						
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

for all products with Absolute Encoder		
description	length feet (m)	part number
Back-up battery pack Extend stored position data up to 5-years for 1 to 6 LMD units		
Battery pack, DIN-rail mount. Uses 3 AA batteries, not provided	—	ICP0531
LMD mating cable(s) with crimp connector to flying lead end	3.3 (1.0)	PD02-0531-FL1
PLC mating cable with crimp connector to flying lead end	3.3 (1.0)	PD04-0531-FL1

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LMD-57 NEMA 23 with eCylinder pictured with foot mounts (L) and flange mounts (R)

pluggable connectors

LEDs

two signal indicators

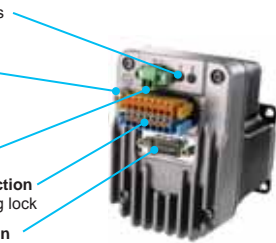
Chassis ground
one #6-32 screw

Connectors

P1: Power
2-pin screw lock

P2: I/O & multifunction
2 keyed 7-pin spring lock

P3: Communication
DB9 male or RJ45



M12 circular connectors

LEDs

two signal indicators

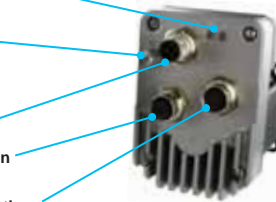
Chassis ground
one #6-32 screw

Connectors

P1: Power
M12 4-pin male

P3: Communication
M12 5-pin female

P2: I/O & multifunction
M12 12-pin male



Part numbers

Example	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Product LMD = Lexium MDrive	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Control type C = Closed loop / with hMT (1) A = Absolute Encoder and closed loop / with hMT (1) (2) O = Open loop / no hMT or encoder	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Communication type P = Pulse/Direction via RS-422/485 serial interface (2) 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 P - C S A 0 6 0 M N N
Flange size 57 = NEMA 23 / 57mm	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Motor length 1 = single stack	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Connector style P = Pluggable connectors, IP20 rating C = M12 circular connectors, IP20 rating	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Linear style -C = electric cylinder	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Nut S = PEEK-blend	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Screw lead A = 0.100" / 2.54 mm B = 0.250" / 6.35 mm C = 0.500" / 12.7 mm D = 1.000" / 25.4 mm	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Stroke length available in 0.1" increments 020 = 02.0" / 51 mm minimum 240 = 24.0" / 610 mm maximum	L M D C M 5 7 1 P - C S A 0 6 0 M N N
Mounts M = flange mounts F = foot mounts	L M D C M 5 7 1 P - C S A 0 6 0 M N N

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

(2) Pulse/Direction products are not available with Absolute Encoder.

Options

Customization

Options are available for customizing LMD eCylinder products to your specific application needs. These include:

- positioning sensors
- mounting hardware
- cylinder ends
- ball screw configuration
- screw sizes

FlexCenter

Our FlexCenter is dedicated to finding custom solutions. To begin a discussion of your special application needs, please complete the custom product inquiry form at <https://motion.schneider-electric.com/contacts/>

Schneider Electric Motion USA
370 North Main Street
Marlborough, CT 06447
Phone: (860) 295-6102
Fax: (860) 295-6107
www.motion.schneider-electric.com

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