

Lexium MDrive®

Rethinking motion control automation



Compact all-in-one integrated motors simplify machine building

UL[®] LISTED CE RoHS REACH IP65

Schneider Electric Motion

Schneider
Electric™



Simplifying
machine
building

Lexium MDrive®

Integrated motors deliver measurable savings while reducing machine complexity and size for a wide range of motion applications.

Reliability

Lexium MDrive (LMD) integrated motors simplify system design by replacing multiple components with one compact product. These complete rotary and linear motion systems integrate stepper motor, driver, controller, and internal encoder with closed loop performance. Wiring is reduced, simplifying the EMC concept in new and existing applications. While fewer parts increases system reliability, reducing the number of potential failure points.

A multi-turn absolute encoder is also available at an extremely competitive price. Internal to the product so there is no increase in size, absolute encoders detect and store position information even when powered down. This can eliminate homing routines and reduce setup time at system startup.

Efficiency

If you need to get your machine to market faster, Lexium MDrive products can help by speeding design time and simplifying assembly. Sourcing and validating components from multiple vendors becomes a thing of the past. And with user-friendly software provided at no extra charge, your system can be up and running quickly.

Compact design

Integrated motors form a single compact unit for measurable space savings that can reduce the size of your machine footprint. From factory floor to laboratory bench, these compact motion products deliver big performance at a low total installed cost.

MDrive® integrated motors can simplify your motion control design challenges without requiring you be a mechatronics expert.



Integrated motors benefit many industries including:

- Medical
- Pharmaceutical
- Life sciences
- Lab automation
- Imaging
- Printing
- Packaging
- Material handling
- Labeling
- Electronics manufacture



4 year

Lexium MDrive quality assurance is backed by up to 4 years warranty. Compared to 12 months, typical industry coverage.

Product offer

Certifications and Sustainability



REACH

EtherNet/IP™
conformance tested

IP65

Product compliance is independently validated to meet the most recent quality, environmental and performance standards.

In addition, an internal quality staff conducts rigorous ongoing testing and inspection to ensure conformance.

For machine builders who want to reduce machine size, cost and complexity, Lexium MDrive (LMD) integrated motors can deliver exceptional performance and value in many motion applications. The compact, all-in-one design of robust LMD products can reduce system design time, cabinet size, machine wiring and potential failure points.

Integrated motor anatomy

The compact size of Lexium MDrive products demonstrates advanced engineering in combining multiple components and features all in one unit.

These may include:

- rotary stepper motor – hybrid or high torque
- linear stepper motor – hybrid or high torque
- microstepping drive
- internal encoder for closed loop performance
- absolute encoder to retain position information
- motion controller
- IP65 rated against moisture and dust
- isolated communication and I/O
- network protocol interfaces
- LED status indicators

Connectors

Locking connectors provide separate interface ports for communications, I/O, and power. Choose from one of two standard connector styles:

Pluggable connectors

Conveniently grouped for ease of use. Pluggable connectors use color-coded mates which are keyed against wrong-plugging.

M12 IP65-rated circular connectors

Standardized M12 connectors provide a robust interface in demanding environments. IP65 rated against moisture and dust.

Custom products

Custom Lexium MDrive products are available for volume OEM opportunities from software to hardware. Based in the U.S. with a Flex Center dedicated to custom solutions, our in-house engineering team has extensive experience and welcomes your inquiries about specific requirements.

Networking

For ease of implementation and consistent system interface, a range of standardized communication protocols are supported. Automation libraries are also available with networking add-on instructions.

Serial Interface, RS-422/485

- CANopen
- Programmable Motion Control
- Pulse/Direction

EthernetTCP/IP

- EtherNet/IP
- Profinet
- ModbusTCP

Accessories

From prototype to production, interfacing LMD products is simplified with off-the-shelf accessories including communication converters, cordsets, cables, mating connectors and more.

From left to right:
LMD with pluggable connectors, LMD with circular connectors, various LMD interface accessories.



hMT closed loop performance

Delivering enhanced motor performance and optimizing total cost of ownership for a wide range of applications.

Enhanced performance

Lexium MDrive integrated motors are reliable, cost effective and compact. System builders may also find a variety of application needs resolved with hMT enhanced performance features, including:

- closed loop feedback
- motors delivering up to twice as much torque
- variable current control saving energy and reducing heat
- torque control

Hybrid Motion Technology/hMT

hMT is a proprietary hardware-based system that monitors motor shaft position in sub-microsecond increments preventing loss of synchronization. This precise motor control is beneficial in a wide range of applications from packaging, labeling and assembly to life sciences, automated test and measurement.

Stepper vs. servo motor

System designers no longer have to choose: stepper vs. servo motor. High performance Lexium MDrive products combine the best of both motor technologies, while delivering unique capabilities and enhancements over both.



Variable Current Control, available on hMT systems, draws only the current needed to make a move. With applications working more efficiently, systems can reduce energy use, generate less heat, and lower operating costs.

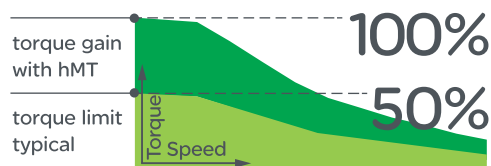


Performance benefits of hMT include:

- closed loop performance
- stiffness at standstill
- no tuning required
- torque mode
- variable current
- lower energy use
- reduced motor heating
- real time control
- no synchronization loss
- smooth motion
- high torque at starting and at low speed
- cost effective

50%

Derating stepper motors 50%, typical in preventing stalling, is eliminated as hMT maintains functional motor control.





For the best fit and function in each application, a range of product configurations is offered. To ensure optimum performance in your system, pre- and post-sale expert technical support is available without charge. From application engineering to field service, we are committed to your success.

Part numbers



LMD rotary products

		Part Number example	L M D C M 5 7 1 _
Product	LM = Lexium MDrive		L M D C M 5 7 1 _
Motor	D = hybrid stepper, 1.8° H = high torque stepper, 1.8° (1)		L M D C M 5 7 1 _
Control type	C = Closed loop / with hMT and encoder (2) A = Closed loop / with hMT and multi-turn absolute encoder (2) (3) O = Open loop / no hMT or encoder		L M D C M 5 7 1 _
Communication type	P = Pulse/Direction via RS-422/485 serial interface (3) M = Programmable Motion Control via RS-422/485 serial interface A = CANopen interface E = Single Port EtherNet/IP, ModbusTCP, Profinet, MCode/TCP D = Dual Port EtherNet/IP, ModbusTCP, Profinet, MCode/TCP (4)		L M D C M 5 7 1 _
Flange size	42 = NEMA 17 1.7 inch 42mm 57 = NEMA 23 2.3 inch 57mm 85 = NEMA 34 3.4 inch 85mm		L M D C M 5 7 1 _
Motor length	1 = single stack 2 = double stack 3 = triple stack		L M D C M 5 7 1 _
Variation	only include for M12 IP65 products, otherwise omit from part # C = IP65 with M12 circular connectors		L M D C M 5 7 1 C

(1) High torque motor is a NEMA23 standard; NEMA34 custom; NEMA17 unavailable.

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

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

(4) Dual Port configuration is only available for NEMA 23 and NEMA 34 products with M12 circular connectors.

LMD linear products

		Base Number ex.	L M D C M 5 7 1 P + linear designator
Product	LMD = Lexium MDrive		L M D C M 5 7 1 P
Control type	C = Closed loop / with hMT and encoder (1) A = Closed loop / with hMT and multi-turn absolute encoder (1) (2) O = Open loop / no hMT or encoder		L M D C M 5 7 1 P
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 = Single Port EtherNet/IP, ModbusTCP, Profinet, MCode/TCP D = Dual Port EtherNet/IP, ModbusTCP, Profinet, MCode/TCP (3)		L M D C M 5 7 1 P
Flange size	42 = NEMA 17 1.7 inch 42mm 57 = NEMA 23 2.3 inch 57mm		L M D C M 5 7 1 P
Motor length	1 = single stack		L M D C M 5 7 1 P
Connector style	P = pluggable connectors, IP20 rating C = M12 circular connectors, IP20 rating		L M D C M 5 7 1 P
Linear style	use the appropriate linear section below to complete the part number -L = external shaft linear actuator -C = electric cylinder		

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

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

(3) Dual Port configuration is only available for NEMA 23 products with M12 circular connectors.

LMD linear products continued

External Shaft Linear Actuator (-L)

		Part Number ex.	L	M	D	C	M	5	7	1	P	-L	A	3	M	0	6	0	G	T
Linear style	-L = external shaft linear actuator		L	M	D	C	M	5	7	1	P	-L	A	3	M	0	6	0	G	T
Screw lead	size 42/NEMA17 A = 0.25" / 6.35 mm B = 0.125" / 3.175 mm C = 0.063" / 1.588 mm	size 57/NEMA23 G = 0.375" / 9.525 mm A = 0.20" / 5.08 mm B = 0.167" / 4.233 mm D = 0.083" / 2.116 mm	L	M	D	C	M	5	7	1	P	-L	A	3	M	0	6	0	G	T
Shaft style	3 = external shaft		L	M	D	C	M	5	7	1	P	-L	A	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	P	-L	A	3	M	0	6	0	G	T
Screw length 0.1" increments	030 = 03.0" / 76 mm minimum 180 = 18.0" / 457 mm maximum (for size 42/NEMA17) 240 = 24.0" / 610 mm maximum (for size 57/NEMA23)		L	M	D	C	M	5	7	1	P	-L	A	3	M	0	6	0	G	T
Nut	G = general purpose A = anti-backlash		L	M	D	C	M	5	7	1	P	-L	A	3	M	0	6	0	G	T
Screw coating	T = Teflon® Z = none		L	M	D	C	M	5	7	1	P	-L	A	3	M	0	6	0	G	T

Electric Cylinder (-C)

		Part Number ex.	L	M	D	C	M	5	7	1	P	-C	S	A	0	6	0	M	N	N
Linear style	-C = captive shaft 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 0.1" increments	020 = 02.0" / 51 mm minimum 180 = 18.0" / 457 mm maximum (for size 42/NEMA17) 240 = 24.0" / 610 mm maximum (for size 57/NEMA23)		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.

Accessories

Absolute Encoder products

Back-up 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

IP20 products

	length feet (m)	part number	comm types (1)		
			M	A	E
Communication converter. Mates to DB9 connector	6.0 (1.8)	MD-CC404-000	•		
Communication converter. Includes CAN dongle and resistor	6.0 (1.8)	MD-CC501-000		•	
Replacement mating connector kits	—	CK-15	•	•	•

IP65 products

	length feet (m)	part number	comm types (1)		
			M	A	E
Communication converter. Mates to 5-pin female connector	6.0 (1.8)	MD-CC405-000	•		
Communication converter. Includes CAN dongle and resistor	6.0 (1.8)	MD-CC502-000		•	

Cordsets

	length feet (m)	part number	comm types (1)		
			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 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 - CANopen products					
Y cable	0.3 (1.0)	MD-CS660-000		•	
M12 bus termination (resistor) plug	—	PLG-M12TP			
Daisy chaining - Dual Port Ethernet products					
Interconnect cables	1.6 (0.5)	MD-CS670-005			•
	3.3 (1.0)	MD-CS670-010			
	10.0 (3.0)	MD-CS670-030			

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

Lexium MDrive

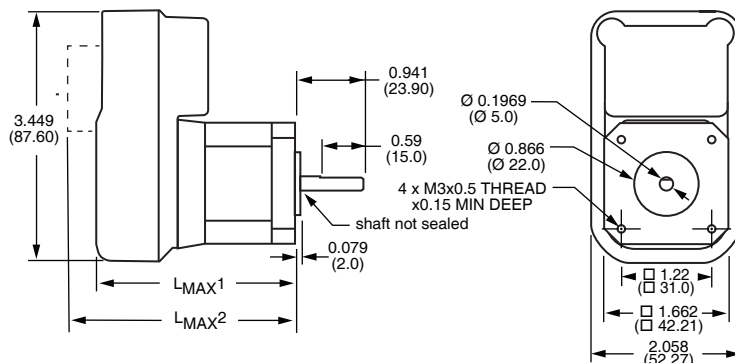
Dimensions

LM•42• NEMA17 motor

inches (mm)

Motor stack length	IP20-rated products, pluggable connectors	
	Lmax1	Lmax2
Single	3.17 (80.5)	3.91 (99.3)
Double	3.52 (89.4)	4.26 (108.2)
Triple	4.38 (111.3)	5.13 (130.3)

Motor stack length	IP65-rated products, circular connectors	
	Lmax1	Lmax2
Single	3.22 (81.8)	3.91 (99.3)
Double	3.63 (92.3)	4.26 (108.2)
Triple	4.50 (114.3)	5.13 (130.3)



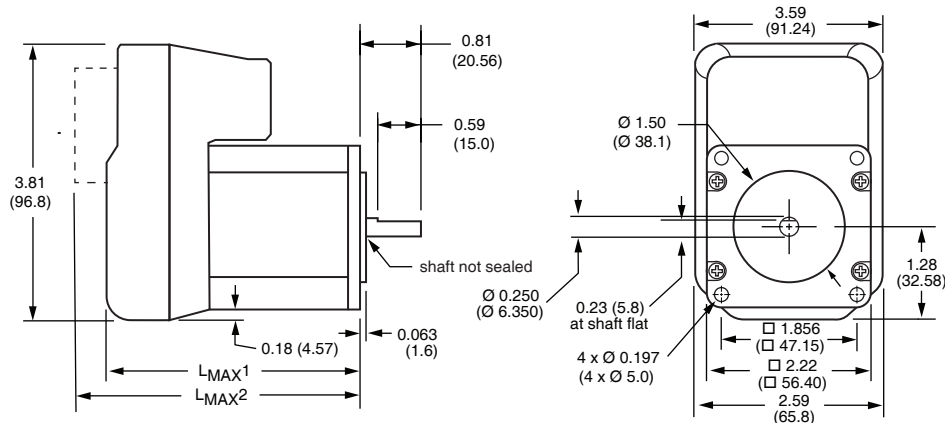
LM•57• NEMA23 motor

inches (mm)

Motor stack length	IP20-rated products, pluggable connectors	
	Lmax1	Lmax2 ¹
Single	3.17 (80.5)	3.91 (99.3)
Double	3.52 (89.4)	4.26 (108.2)
Triple	4.38 (111.3)	5.13 (130.3)

1 High torque motors add 0.10" (2.5mm) to overall length.

Motor stack length	IP65-rated products, circular connectors	
	Lmax1	Lmax2 ¹²
Single	3.22 (81.8)	3.91 (99.3)
Double	3.63 (92.3)	4.26 (108.2)
Triple	4.50 (114.3)	5.13 (130.3)



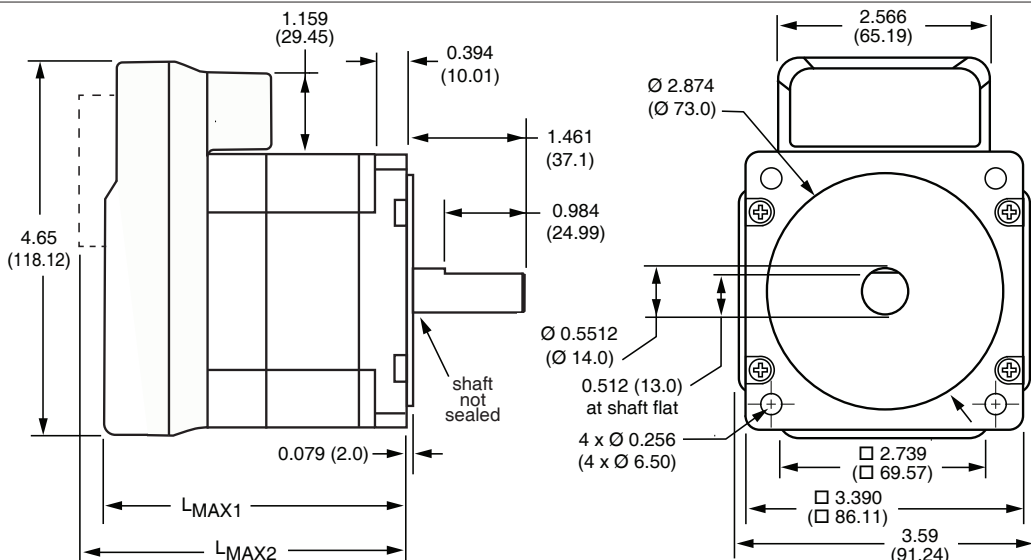
LMD•85• NEMA34 motor

inches (mm)

Motor stack length	IP20-rated products, pluggable connectors	
	Lmax1	Lmax2
Single	3.79 (96.2)	4.55 (115.7)
Double	4.33 (110.0)	5.07 (128.8)
Triple	5.90 (149.9)	6.65 (168.9)

Motor stack length	IP65-rated products, circular connectors	
	Lmax1	Lmax2 ¹
Single	4.04 (102.7)	4.65 (118.2)
Double	4.57 (116.2)	5.18 (131.7)
Triple	6.14 (156.1)	6.75 (171.5)

1 Ethernet Dual Port products add 0.27" (6.9mm) to overall length.



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