c UL us LISTED CE RoHS REACH **IP65**

Lexium MDrive®

LMD•M42 programmable Motion Control

Product overview

Robust Lexium MDrive® Motion Control products integrate 1.8° 2-phase stepper motors with control electronics. Included are on-board programmable motion controller for stand-alone operation, and optional hMT closed loop performance.

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.

Product parameterization, programming and monitoring is through user-friendly software with an RS-422/485 serial interface. Settings can be downloaded and stored in non-volitile memory.

Application areas

Especially well suited for industrial applications, products include an IP65 rated version with circular M12 connectors.

Compact Lexium MDrive products can reduce machine complexity, size and cost in many stepper and servo motor applications. Their high degree of integration can increase system reliability by reducing the number of individual components, eliminating multiple potential failure points.

LMD•M42 Lexium MDrive Motion Control products: integrated NEMA17 motor and controls, IP65 & IP20-rated

Features overview

General	NEMA17 1.8° 2-phase stepper motor integrated with robust control electronics, including programmable motion controller
	Advanced current control for exceptional performance and smoothness
Input power	+12 to +48 VDC single supply
Communication	RS-422/485 serial interface
	62 software addresses for multi-drop communications
	Graphical user interface provided for quick and easy parameter setup
Encoder options	Multi-turn absolute or incremental magnetic
Motion	20 microstep resolutions up to 51,200 steps per rev including: Degrees, Metric, Arc Minutes
	336 user program labels / 11,120 bytes flash memory
	0 to 2.56 MHz step clock rate selectable in 0.59 Hz increments
I/O, sourcing or sinking	+5 to +24 VDC signal inputs
	12-bit analog input (1)
	5.5mA high-speed signal output
Protection	Temperature warning
	IP20, IP65 ratings
Warranty	4 year, conditional

(1) Not available on products with multi-turn absolute encoder.

Lexium MDrive

LMD•M42 programmable Motion Control

Specifications

Communication	Protocol type		RS-422/485
Input power	Voltage	VDC	+12 ... +48
	Current maximum (1)	Amp	2.0
Motor	Frame size	NEMA	17
		inches	1.7
		mm	42
	Performance level		standard torque
	Holding torque	oz-in	44...88
		N-cm	31 ... 62
	Length	stack sizes	1, 2 & 3
Thermal	Operating temp non-condensing	Heat sink maximum	85°C
		Motor maximum	100°C
Protection	Type	Temp warning	0...84°C, user selectable
		IP rating	IP20, IP65
		Earth grounding	via product chassis ground lug
I/O sourcing or sinking	One analog input (2)	Resolution	12 bit
		Voltage range	0 ... +5 VDC, 0 ... +10 VDC, 0 ... 20 mA, 4 ... 20 mA
	Three signal inputs	Voltage range	+5 ... +24 VDC, TTL level compatible
		Protection	over temp, short circuit, transient, over voltage, inductive clamp
	One high-speed signal output	Current open collector/emitter	5.5 mA
		Voltage open collector	+60 VDC
		Voltage open emitter	+7 VDC
Aux. logic input	Voltage range (3)		+12 ... +24 VDC
Encoder options	Multi-turn absolute	Position update / retention	30 days on internal power; 5 years with optional battery pack
	Incremental magnetic	Line count	1000 lines / 4000 edges per rev
Motion	Microstep resolution	Number of settings	20
		Steps per revolution	200, 400, 800, 1000, 1600, 2000, 3200, 5000, 6400, 10000, 12800, 20000, 25000, 25600, 40000, 50000, 51200, 36000 (0.01 deg/µstep), 21600 (1 arc minute/µstep), 25400 (0.001mm/µstep)
	Counters	Type	position, encoder / 32 bit
		Edge rate maximum	5 MHz
	Velocity	Range	+/– 2,560,000
		Resolution	0.5961 steps per second
	Accel / Decel	Range	1.1 x 10^9 steps per second^2
		Resolution	90.9 steps per second^2
		Types	linear, triangle s-curve, sinusoidal s-curve
Software	Program storage	Type/size	flash / 11,120
	User registers	Number/resolution	4 / 32-bit
	Floating point registers	Number/precision	8 / double
	Math functions	Arithmetic	+, -, x, ÷, >, <, =, >=, <=
		Logic	AND, OR, XOR, NOT
		Trigonometric	ABS, COS, ACOS, LOG2, LOG10, PI, SIN, ASIN, SQRT, TAN, ATAN
	Branch functions		Branch & call
	I/O functions	Inputs	Home, limit plus, limit minus, go, stop, pause, jog plus, jog minus, general purpose, capture
		Outputs	Moving, error, velocity change,, moving position, trip, attention. general purpose
	Trip functions		Trip on input, trip on position, trip on time, trip capture, trip on relative position, trip on main power loss
	Party-mode addresses		62
	Encoder functions (4)		stall detection, position maintenance, find index, hMT

(1) Actual power supply current will depend on voltage and load.
(2) Not available on products with multi-turn absolute encoder.
(3) When input voltage is removed, maintains power only to control and feedback circuits.
(4) Closed-loop models with encoder only.

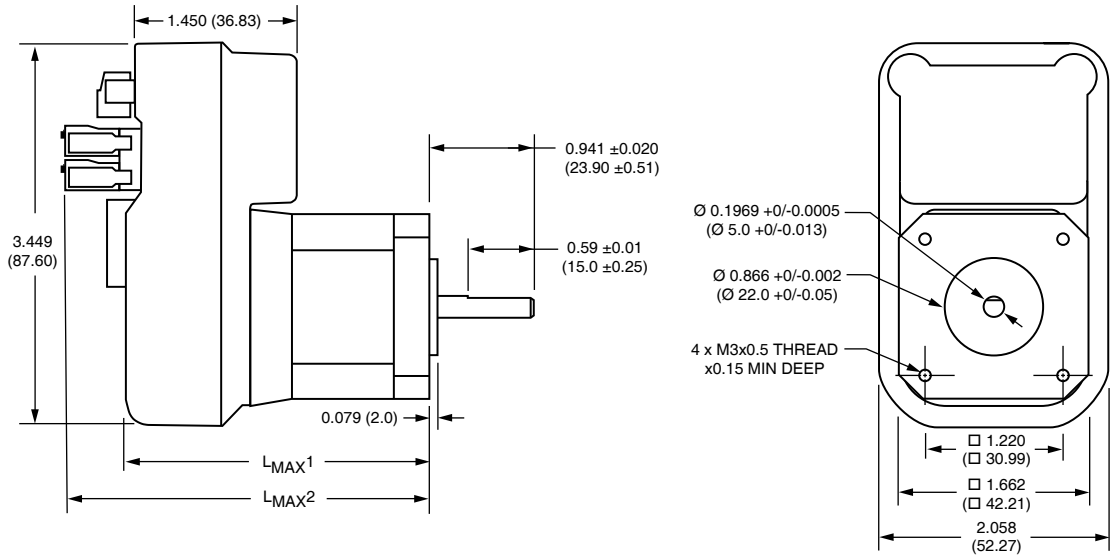
An optional Communication Converter is recommended to facilitate prototyping.

See User Manual for complete details: motion.schneider-electric.com/manuals

Dimensions

LMD•42 NEMA17 motor, IP20-rated

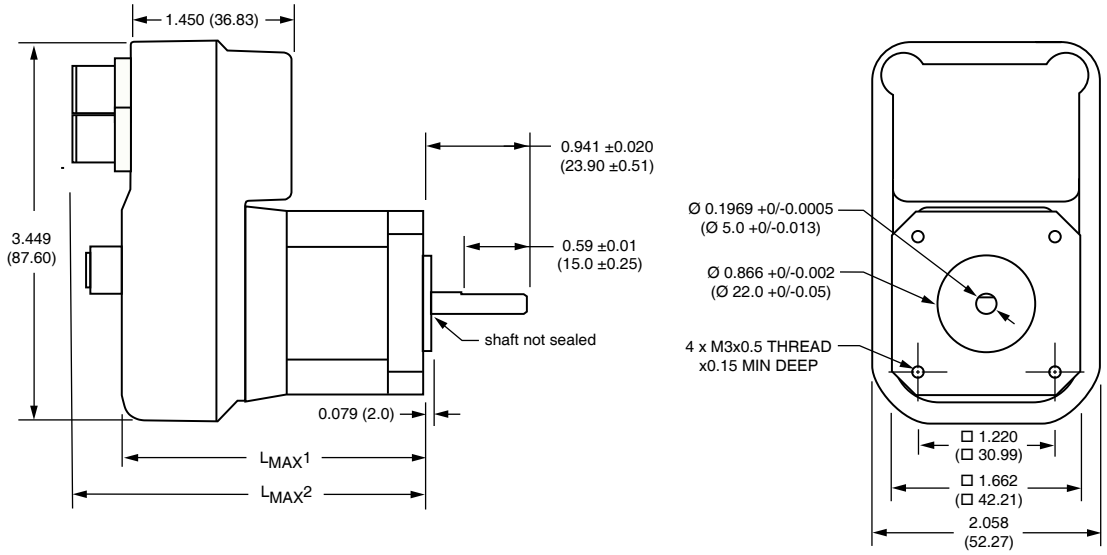
inches (mm)



Motor stack length	Lmax1	Lmax2
Single	2.48 (63.0)	3.22 (81.8)
Double	2.71 (69.0)	3.46 (88.0)
Triple	3.04 (77.3)	3.78 (96.0)

LMD•42•C NEMA17 motor, IP65-rated

inches (mm)

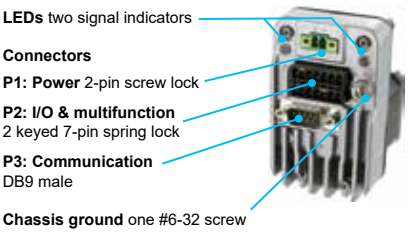


Motor stack length	Lmax1	Lmax2
Single	2.78 (70.7)	3.39 (86.0)
Double	2.98 (75.7)	3.58 (91.0)
Triple	3.33 (84.7)	3.94 (100.0)

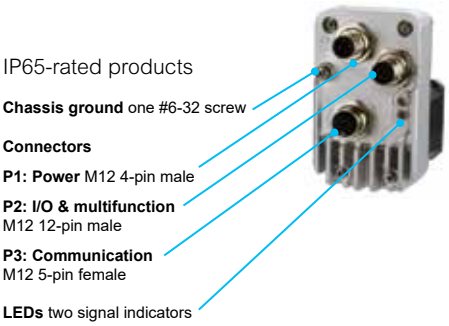
Lexium MDrive

LMD•M42 programmable Motion Control

IP20-rated products



IP65-rated products



Part numbers

example part number	L	M	D	C	M	4	2	1	C
Product LMD = Lexium MDrive with standard hybrid stepper motor	L	M	D	C	M	4	2	1	C
Control type C = Closed loop / with hMT and incremental magnetic encoder (1) A = Closed loop / with hMT and multi-turn absolute encoder (1) O = Open loop / no hMT or encoder	L	M	D	C	M	4	2	1	C
Communication type M = programmable Motion Control via RS-422/485 serial interface	L	M	D	C	M	4	2	1	C
Flange size 42 = NEMA 17 1.7" / 42mm	L	M	D	C	M	4	2	1	C
Motor length 1 = single stack 2 = double stack 3 = triple stack	L	M	D	C	M	4	2	1	C
Variation — omit from part number if unwanted C = M12 circular connectors and IP65 rating	L	M	D	C	M	4	2	1	C

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

Accessories


MD-CC404-000


MD-CC405-000


MD-CS600-000


MD-CS620-000


MD-CS610-000


ICP0531

description	length feet (m)	part number
Communication converter 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 M12 5-pin female connector	6.0 (1.8)	MD-CC405-000
IP65 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 male connector	10.0 (3.0)	MD-CS610-000
Back-up battery pack for Absolute Encoder models Extend stored position data up to 5-years for 1 to 6 LMDs with absolute encoder		
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
Replacement mating connector kit Kits are for IP20 products. They include one 2-pin power mate, and one set (2 pieces) 7-pin multifunction mates	—	CK-15

Lexium MDrive

LMD•M42 programmable Motion Control

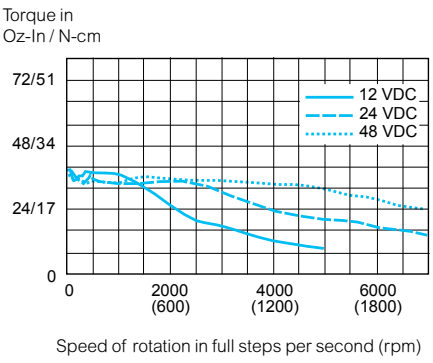
Motor performance

LMD•42 NEMA 17 motor specifications

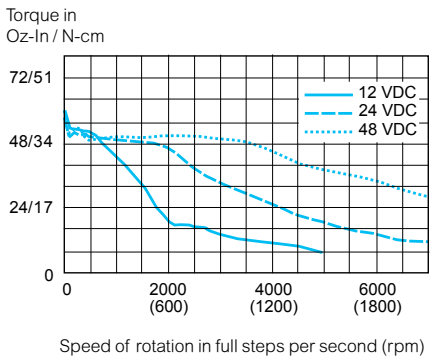
Motor	Stack length	Single	Double	Triple
Holding torque	oz-in	44	58	88
	N-cm	31	41	62
Detent torque	oz-in	1.7	2.1	3.5
	N-cm	1.2	1.5	2.5
Rotor inertia	oz-in-sec^2	0.0005	0.0008	0.0012
	kg-cm^2	0.038	0.057	0.082
Radial load limit, center of shaft	lbs	8.5	8.5	8.5
	kg	3.8	3.8	3.8
Axial load limit @ 1500rpm (5000 full steps/sec)	lbs	10	10	10
	kg	4.5	4.5	4.5
Weight (motor+driver)	oz	13.6	16.0	18.4
	g	385	454	522

LMD•42 NEMA 17 speed torque (1)

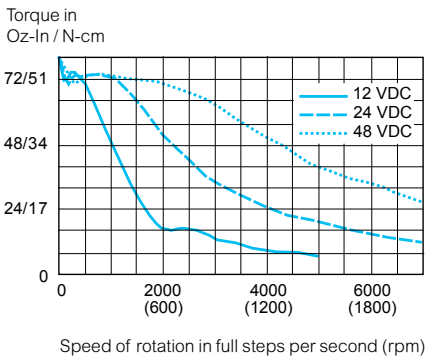
Single stack length



Double stack length



Triple stack length



(1) Test conditions: 100% current with damper simulating load.

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

Intelligent motion systems | Schneider Electric