

Lexium MDrive®

LMD•A42 CANopen

Product overview

Robust Lexium MDrive® CANopen products integrate 1.8° 2-phase stepper motors with I/O, motion controller, drive electronics, and encoder delivering hMT closed loop performance.

CANopen products support CiA DS301 and DSP402 Device Profile for Drives and Motion Control. Direct configuration via layer setting services simplifies interface to CANopen networks.

Products may include an encoder, which is internal to the unit so no extra space is required. Encoders perform stall detection, position maintenance and find index mark, in addition to monitoring motor shaft position for real time closed loop feedback.

Application areas

Especially well suited for industrial applications,

products include an IP65 rated version with circular M12 connectors.

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•A42 Lexium MDrive CANopen products: integrated NEMA17 motor and controls, IP65 & IP20-rated

General features

Robust control electronics, including motion controller, integrated with NEMA17 1.8° 2-phase stepper motor	
Advanced current control for exceptional performance and smoothness	
CANopen interface – CiA DS301, DSP402, 2.0B active	
+12 to +48 VDC single supply	
20 microstep resolutions up to 51,200 steps per rev including: Degrees, Metric, Arc Minutes	
Protection	0...84°C temperature warning, user selectable
	IP20, IP65 ratings
I/O, sourcing or sinking	+5 to +24 VDC signal inputs
	12-bit analog input
	5.5mA high-speed signal output
Encoder	1000 lines / 4000 edges per rev
	internal magnetic
0 to 2.56 MHz step clock rate selectable in 0.59 Hz increments	
Graphical user interface provided for quick and easy parameter setup	
4 year warranty	

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Specifications

Communication	Protocol type		CANopen CiA DS301, DSP402, 2.0B active
	Baud rate		10... 1000 kbps
	ID		11 and/or 29 bit
	Isolation		galvanic
	Features		node guarding, heartbeat, SDOs, PDOs (variable mapping)
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
	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	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 (2)		+12... +24 VDC
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)
	Encoder	Line count	1000 lines / 4000 edges per rev
		Style	internal, magnetic
	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	1.5 x 10 ⁹ steps per second ²
		Resolution	90.9 steps per second ²
Software	Setup parameters		storable to nonvolatile memory
	Transmit PDOs		3 dynamically mappable
	Receive PDOs		3 dynamically mappable
	Manufacturer specific objects		I/O configuration, run/hold current
	Modes of operation		profile position, homing mode, profile velocity
	Input functions		general purpose, homing mode profiles
	Output functions		general purpose

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

(2) When input voltage is removed, maintains power only to control and feedback circuits.

An optional Communication Converter is recommended to facilitate prototyping.



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

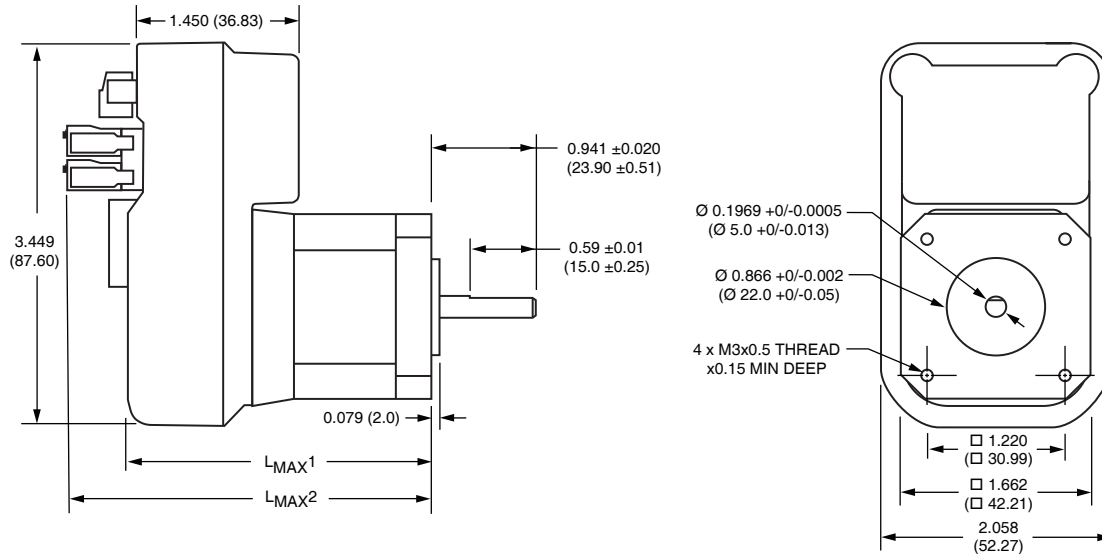
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Dimensions

LMD•42 NEMA17 motor, IP20-rated

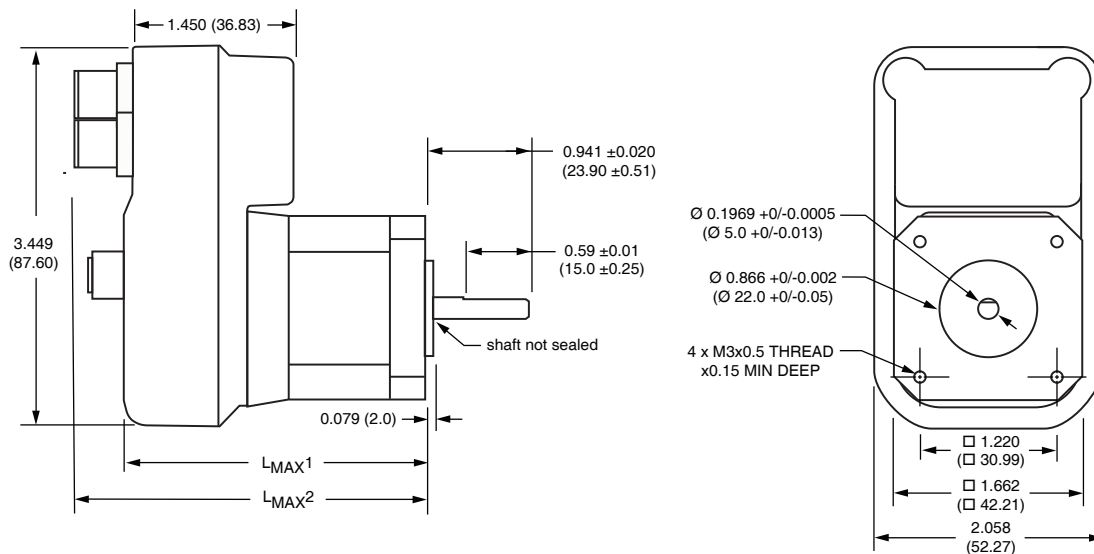
inches (mm)



Motor stack length	L _{max1}	L _{max2}
Single	2.40 (61.0)	3.22 (81.8)
Double	2.64 (67.0)	3.46 (88.0)
Triple	2.96 (75.3)	3.78 (96.0)

LMD•42•C NEMA17 motor, IP65-rated

inches (mm)

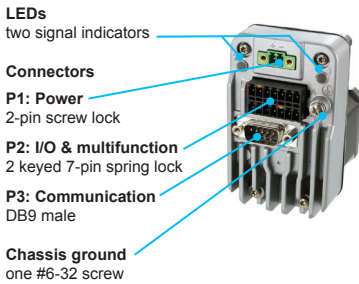


Motor stack length	L _{max1}	L _{max2}
Single	2.78 (70.7)	3.39 (86.0)
Double	2.98 (75.7)	3.58 (91.0)
Triple	3.33 (84.7)	3.94 (100.0)

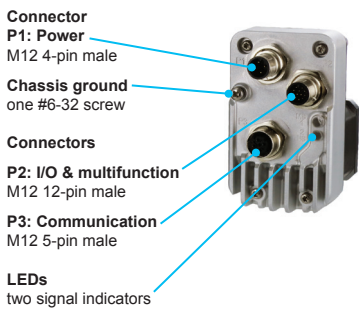
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IP20-rated products



IP65-rated products



MD-CC501-000



MD-CC502-000



MD-CS660-000



MD-CS650-000



MD-CS620-000



MD-CS610-000

Part numbers

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

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

Accessories

description	length feet (m)	part number
Communication converter USB-pluggable CANopen converter to set/program communication parameters in 32- or 64-bit. Includes: CAN dongle, terminating resistor, and pre-wired mating cables		
Mates to DB9 connector	6.0 (1.8)	MD-CC501-000
Mates to M12 5-pin male connector.	6.0 (1.8)	MD-CC502-000

Daisy chaining IP65 products

Connect multiple CAN 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

IP65 cordsets

Shielded cables pre-wired with straight M12 mating connectors

Communication cordset mates to 5-pin male connector	10.0 (3.0)	MD-CS650-000
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-CS630-000

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
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MDrive Plus

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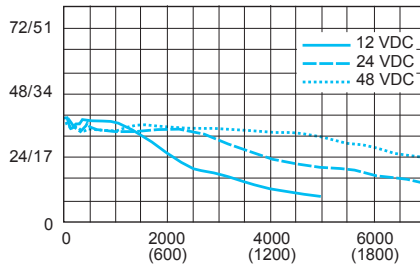
Motor performance

LMD•42 NEMA 17 motor specifications	Motor	Stack length	Single	Double	Triple
	Holding torque	oz-in		44	58
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

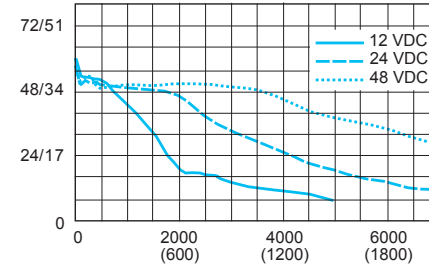
Torque in
Oz-In / N-cm



Speed of rotation in full steps per second (rpm)

Double stack length

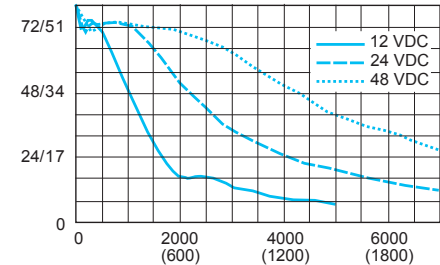
Torque in
Oz-In / N-cm



Speed of rotation in full steps per second (rpm)

Triple stack length

Torque in
Oz-In / N-cm



Speed of rotation in full steps per second (rpm)

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