

LIBERTY MD_{DRIVE} STEPPER MOTOR

LMD•A42 CANopen



Specifications

Communication	Protocol type		CANopen CiA 301, CiA 402, CAN bus 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	
N-cm			31 ... 62
Thermal	Length	stack sizes	1, 2 & 3
		Temperature Maximums	
	Power stage maximum		85°C (185°F)
	Motor maximum		100°C (212°F)
	Ambient Operating Conditions	Operating Temperature	
Temperature Variation		0.5°C/min (0.9°F/min)	
Humidity		5% to 95% (non-condensing)	
Storage & Transport	Temperature		-25° to 70°C (-13° to 158°F)
	Temperature Variation		-25° to 30°C (-13° to 86°F)
	Humidity		0.5°C (32.9°F) min
Altitude	Installation Altitude		Up to 3280 ft (1000 m) above sea level ⁽⁵⁾
Protection	Type	Temperature warning	0...84°C, user selectable
		IP rating	IP20, IP65
		Earth grounding	Via product chassis ground lug
Hardware 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	Up to 30 days on internal power; 5 years with optional battery pack
		Incremental magnetic	Line count
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	1.5 x 10 ⁹ steps per second ²
		Resolution	90.9 steps per second ²
Software	Setup parameters		Storable to nonvolatile memory
	Transmit PDOs		Four (4) dynamically mappable
	Receive PDOs		Four (4) dynamically mappable
	Manufacturer specific objects		I/O configuration, run/hold current
	Modes of operation ⁽⁴⁾		Profile position, homing mode, profile velocity, profile torque, cyclic synch position
	Input functions		General purpose, homing mode profiles
	Output functions		General purpose

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 Profile torque is only available on products with an encoder.

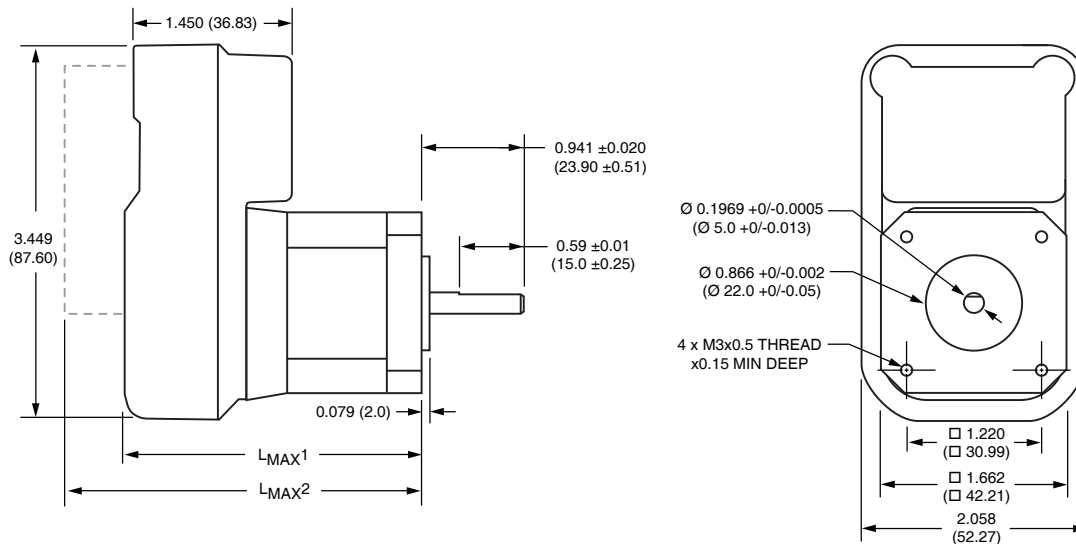
⁵ Installation above 3280 ft (1000 m) may require derating output current and maximum ambient temperature.

LMD•A42 CANopen

Dimensions

LM•42 NEMA 17 Motor, IP20-rated

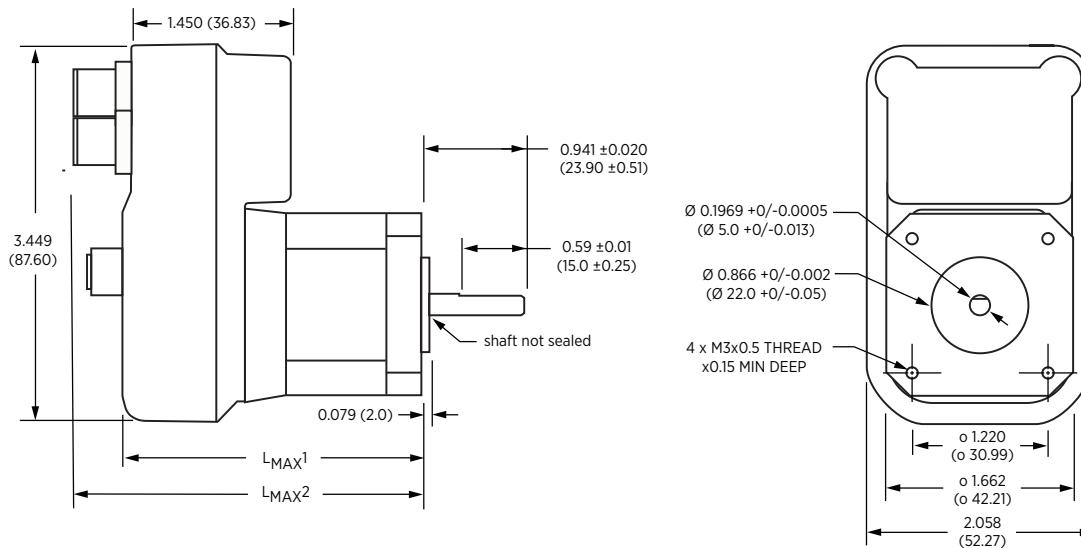
inches (mm)



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)

LM•42•C NEMA 17 Motor, IP65-rated⁽¹⁾

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)

¹ Motor shaft is not sealed. To meet an IP65 rating, ensure that the shaft end of the motor is properly sealed.

Three-dimensional depictions of this product are available for download from <https://novantaims.com/downloads/3dconfigurator/>



LMD•A42 CANopen

Motor Performance

Motor	Stack length	LMD•42 Standard Torque		
		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

Connector & Indicator Layout

IP20-rated Models

LEDs

Two signal indicators

Chassis Ground

One #6-32 screw

Connectors

P1: Power

One 2-pin screw lock

P2: I/O & Multifunction

Two keyed 7-pin spring lock

P3: Communication

One DB9 male



IP65-rated Models

Connector

P1: Power

One M12 4-pin male

Chassis Ground

One #6-32 screw

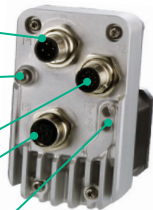
Connectors

P2: I/O & multifunction

One M12 12-pin male

P3: Communication

One M12 5-pin male



LEDs

Two signal indicators

Part Number Breakdown

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 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	A	4	2	1	C
Communication type A = CANopen interface	L	M	D	C	A	4	2	1	C
Flange size 42 = NEMA 42 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.



To select from the available features and build the LMD integrated stepper motor to fit your needs, use the Novanta IMS part number builder, available online from <https://novantaims.com/resources/part-number-builders/>

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Additional setup, quick reference information, and supporting documents are available for download from the Novanta IMS download website <https://novantaims.com/downloads/>