LIBERTY MDRIVE STEPPER MOTOR

LMD•A85 CANopen

c UL us LISTED CE RoHS REACH IP65

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 ...+70
	Current maximum(1)	Amp	4.0
Motor	Frame size	NEMA	34
		inches	3.4
		mm	85
	Performance level		Standard torque
	Holding torque	oz-in	336 ... 920
		N-cm	237 ... 650
	Length	stack sizes	1, 2 & 3
Thermal	Temperature Maximums	Power stage maximum	85°C (185°F)
		Motor maximum	100°C (212°F)
	Ambient Operating Conditions	Operating Temperature	-20° to 50°C (-4° to 122°F)
		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(6)
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
	Four signal inputs	Voltage range	+5 ... +24 VDC, TTL level compatible
		Protection	Over temp, short circuit, transient, over voltage, inductive clamp
	Two power outputs(3)	Current range	-100... +100 mA
		Voltage range	-24...+24 VDC
	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(4)		+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	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
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(5)		Profile position, homing mode, profile velocity, profile torque, cyclic synch position
	Input functions		General purpose, homing mode profiles
	Output functions		General purpose

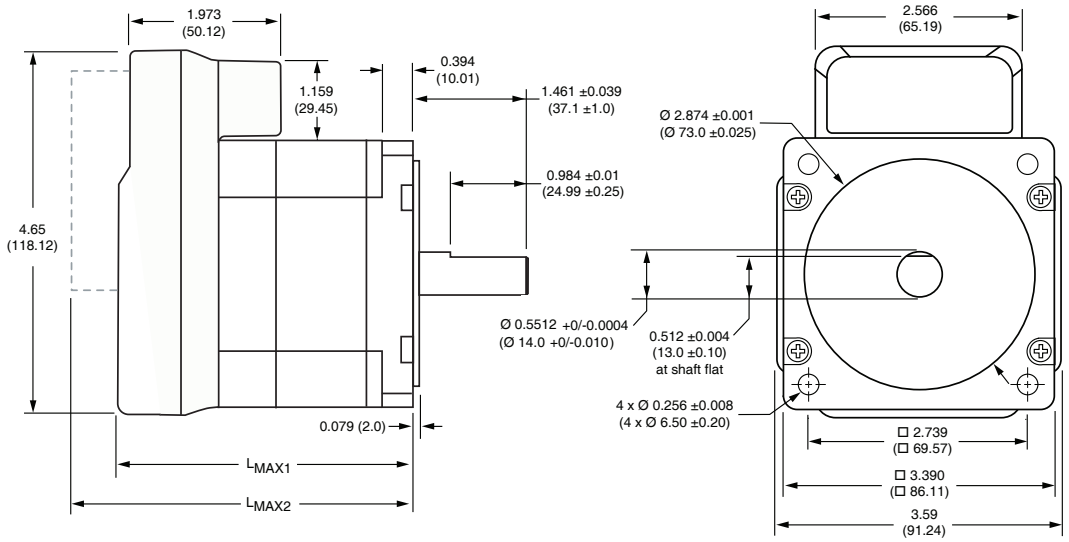
1 Actual power supply current will depend on voltage and load.
2 Not available on products with multi-turn absolute encoder.
3 Products with multi-turn absolute encoder have one power output.
4 When input voltage is removed, maintains power only to control and feedback circuits.
5 Profile torque is only available on products with an encoder.
6 Installation above 3280 ft (1000 m) may require derating output current and maximum ambient temperature.

LMD•A85 CANopen

Dimensions

LM•85 NEMA 34 Motor, IP20-rated

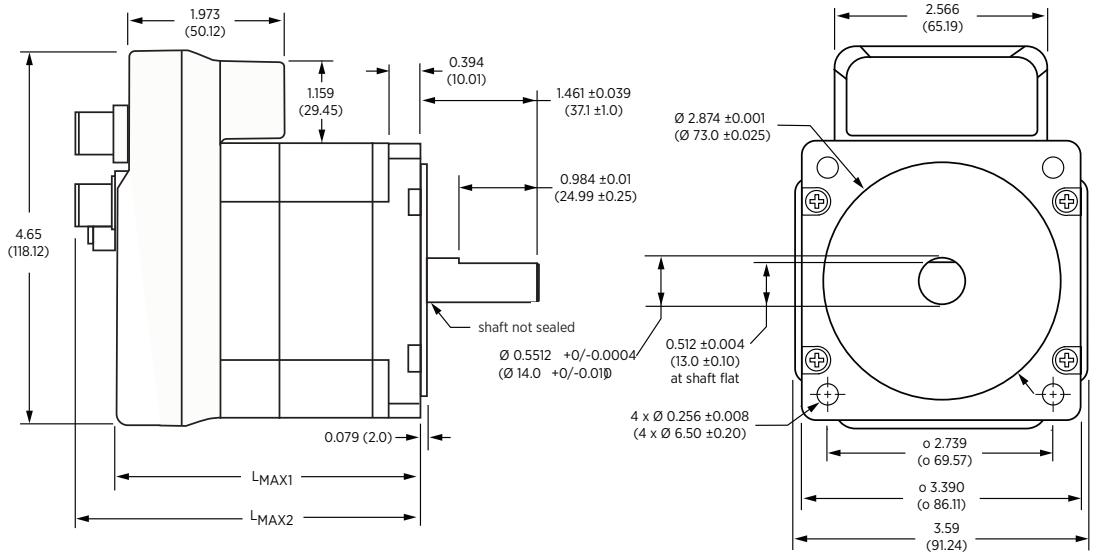
inches (mm)



Motor Stack Length	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)

LM•85•C NEMA 34 Motor, IP65-rated[1]

inches (mm)



Motor Stack Length	Lmax1	Lmax2
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 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/dloads/3dconfigurator/

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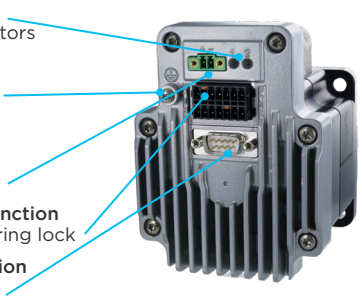
Motor Performance

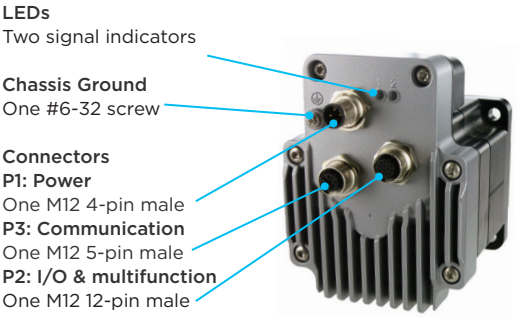
		LMD•85 Standard Torque		
Motor	Stack length	Single	Double	Triple
Holding torque	oz-in	336	480	920
	N-cm	237	339	650
Detent torque	oz-in	10.9	14.16	19.83
	N-cm	7.7	10.0	14.0
Rotor inertia	oz-in-sec^2	0.0127	0.0191	0.0382
	kg-cm^2	0.90	1.35	2.70
Radial load limit, center of shaft	lbs	65	65	65
	kg	29.4	29.4	29.4
Axial load limit @ 1500rpm (5000 full steps/sec)	lbs	20	20	20
	kg	9	9	9
Weight (motor+driver)	oz	4.45	5.65	9.0
	g	2.02	2.56	4.08

Connector & Indicator Layout

IP20-rated Models



IP65-rated Models



Part Number Breakdown

Example part number	**L M D C A 8 5 1 C**
Product **LMD** = Liberty MDrive with standard hybrid stepper motor	L M D C A 8 5 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 8 5 1 C
Communication type **A** = CANopen interface	L M D C A 8 5 1 C
Flange size **85** = NEMA 34 3.4" / 85mm	L M D C A 8 5 1 C
Motor length **1** = single stack **2** = double stack **3** = triple stack	L M D C A 8 5 1 C
Variation — omit from part number if unwanted **C** = M12 circular connectors and IP65 rating	L M D C A 8 5 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/

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