Liberty MDrive 57mm Rotary Stepper Motor

CANopen NEMA 23 integrated 1.8° 2-phase stepper motor & control electronics

c UL us LISTED CE RoHS REACH **IP20/IP65**

PRODUCT OVERVIEW

Robust Liberty MDrive (LMD) CANopen products integrate 1.8° 2-phase stepper motors with I/O, motion controller, drive electronics, and encoder delivering 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 more of the motor's full torque range.

Multi-turn absolute encoders may benefit users by retaining position information when powered down. This can eliminate homing routines and reduce setup time at system startup.

CANopen products support CiA 301 and 402 Device Profile for Drives and Motion Control. Direct configuration via either an included GUI or Layer Setting Services (LSS) simplifies interface to CANopen networks.

Especially well suited for industrial applications, products include an IP65 rated version with circular M12 connectors. A high torque motor (LMH•57) is also available, increasing torque up to 50%.

Liberty 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.

FEATURES AND BENEFITS

- Compact NEMA 23 1.8° 2-phase stepper motor integrated with control electronics, including programmable motion controller
- Standard Torque or Premium High Torque options
- Two (2) connection options available: Pluggable terminal and M12 circular. Pluggable model is IP20 rated, M12 circular connector model is IP20 or IP65 rated with proper motor shaft sealing
- Available in 1, 2, or 3 stack lengths
- CANopen CAN Bus 2.0b Active
- CiA 301 CANopen application layer and communication profile
- CiA 402 CANopen device profile for drives and motion control
- User interface available for download, providing quick & easy commissioning
- Multi-turn absolute or incremental magnetic encoder options
- Operating temperature of -20 to 50 °C (-4 ... 122 °F)
- Nominal operating voltage: 24/48 VDC Maximum Current: 3.5A
- Nominal operating voltage: 24/48 VDC Maximum Current: 2.0A
- User selectable Temperature Warning (Range: 0° - 84° C (32° - 183.2° F))
- 4 year conditional warranty

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

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

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 at https://novantaims.com/resources/part-number-builders/

Novanta IMS

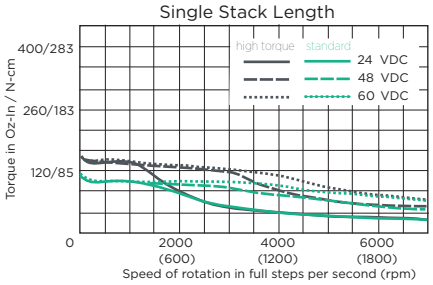
LMDA•57 CANopen

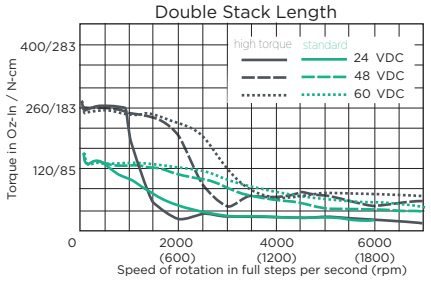
Motor Performance

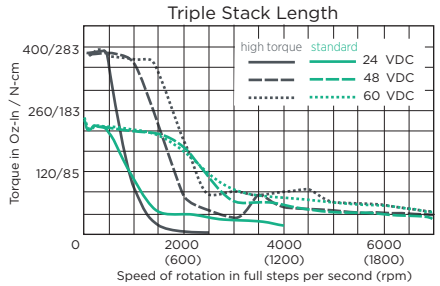
		LMD•57 Standard Torque			LMH•57 High Torque		
Motor	Stack length	Single	Double	Triple	Single	Double	Triple
Holding torque	oz-in	103	159	242	152	264	416
	N-cm	73	112	171	107	186	294
Detent torque	oz-in	3.9	5.6	9.7	8.5	14.2	21.2
	N-cm	2.7	3.9	6.9	6.0	10	15
Rotor inertia	oz-in-sec^2	0.0025	0.0037	0.0065	0.0019	0.0030	0.0065
	kg-cm^2	0.18	0.26	0.46	0.14	0.22	0.46
Radial load limit, center of shaft	lbs	15	15	15	15	15	15
	kg	6.8	6.8	6.8	6.8	6.8	6.8
Axial load limit @ 1500rpm (5000 full steps/sec)	lbs	20	20	20	20	20	20
	kg	9	9	9	9	9	9
Weight (motor+driver)	oz	26.4	31.2	44.0	26.4	31.2	44.0
	g	748	885	1247	748	885	1247

LM•57 NEMA 23 Speed Torque

Test conditions: 100% current with damper simulating load







Accessories

	Description	Length feet (m)	Part Number
	Communication Converter USB-pluggable CANopen converter to set/program communication parameters in 32- or 64-bit Windows®. 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 female connector	6.0 (1.8)	MD-CC502-000
	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
	Daisy Chaining Products (IP65) Connect multiple CAN units together in sequence with Y cable. The 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

	Description	Length feet (m)	Part Number
	Straight Configuration Cordsets (IP65) Shielded cables pre-wired with straight M12 mating connectors		
	I/O cordset w/ leads, mates to 12-pin male connector	10.0 (3.0)	MD-CS610-000
	Power cordset w/ leads, mates to 4-pin male connector	10.0 (3.0)	MD-CS620-000
	Communication cordset w/ leads, mates to 5-pin male connector	10.0 (3.0)	MD-CS650-000
	Right Angle Configuration Cordsets (IP65) Shielded cables pre-wired with right angled M12 mating connectors		
	I/O cordset w/ leads, mates to 12-pin male connector	10.0 (3.0)	MD-CS611-000
	Power cordset w/ leads, mates to 4-pin male connector	10.0 (3.0)	MD-CS621-000
	Replacement Mating Connector Kit (IP20) Kits for pluggable products		
	Includes one 2-pin power mate, and two 7-pin multifunction mates	—	CK-15
	Cable Accessory Kit (IP65) Kits for M12 products		
	Includes two M12 screw plugs and one sealing cap	—	CK-16