

Liberty MDrive 42mm with eCylinder

NEMA 17 integrated 1.8° 2-phase stepper motor, control electronics, & captive shaft electric cylinder



PRODUCT OVERVIEW

The Liberty MDrive (LMD) 42 mm products with eCylinder integrate a 1.8° 2-phase stepper motor, drive electronics, and inline mounted captive shaft electric cylinder. Linear motion is produced by a coated, stainless steel acme screw / PEEK-blend nut system coupled directly to the motor's driving shaft. These compact products offer many distinct benefits including competitive price, high accuracy and repeatability. They may also provide a cleaner, quieter alternative to pneumatics.

Some LMD products include a fully programmable motion controller with on-board I/O, enabling stand-alone motion control without need of an external controller. Real time closed loop performance is available for enhanced performance and feedback.

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.

Liberty MDrives with eCylinder are ideal for machine builders who want a robust motor with integrated electronics and linear mechanicals. Reduced system cabling can minimize problems due to electrical noise, while closed loop products deliver enhanced performance. Fewer individual system components also eliminate multiple potential failure points.

FEATURES AND BENEFITS

- Quiet, clean and compact
- Integrated motor, drive electronics, and captive shaft electric cylinder to directly convert rotary motion to linear motion.
- Two (2) connection options available: Pluggable terminals and M12 circular. Pluggable and M12 models are IP20 rated
- Able to replace pneumatics in some applications.
- 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)
- User selectable Temperature Warning (Range: 0° - 84° C (32° - 183.2° F))
- Nominal operating voltage: 24/48 VDC
Maximum Current: 2.0A
- Stroke length of 2.0 to 18.0 inches (51 to 457 mm)
- Four (4) versions available: Pulse & Direction, Programmable Motion Control, CANopen, and Ethernet
- 1 year conditional warranty



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

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



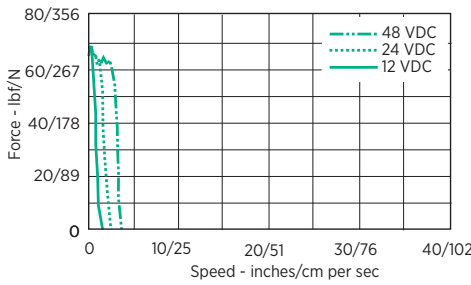
To select from the available features and build the LMD integrated stepper motor to fit your needs, use the Novanta IMS part number builder, available online at <https://novantaims.com/resources/part-number-builders/>

LMDx•42 with eCylinder

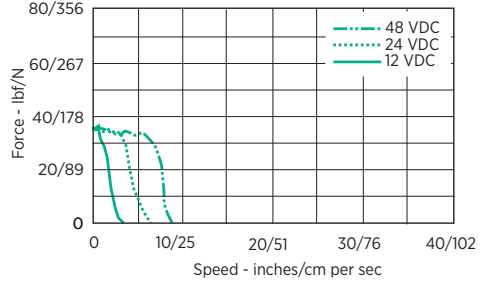
Speed-Force Curves

Screw	A	B	C	D
Lead				
inches	0.100	0.250	0.500	1.000
mm	2.54	6.35	12.7	25.4
Diameter				
inches	0.25	0.25	0.25	0.25
mm	6.35	6.35	6.35	6.35
Travel per rev				
inches	0.100	0.250	0.500	1.000
mm	2.54	6.35	12.7	25.4
Travel per full step				
inches	0.0005	0.00125	0.0025	0.0050
mm	0.0127	0.03175	0.0635	0.127

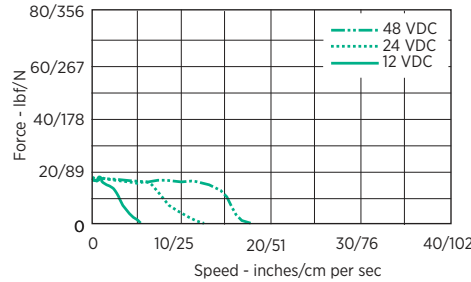
SCREW A - 0.100" rev



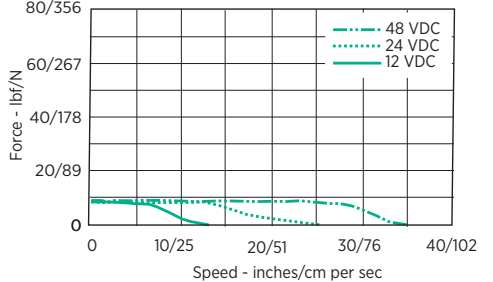
SCREW B - 0.250" rev



SCREW C - 0.500" rev



SCREW D - 1.000" rev



Accessories

for pluggable connector products

Description	Length feet (m)	Part Number	Comm Types ¹			
			P	M	A	E
Communication converters						
USB-pluggable converter to set/program communication parameters in 32- or 64-bit Windows®						
Mates to DB9 connector. Includes: RS-485 converter and pre-wired mating cable	6.0 (1.8)	MD-CC404-000	•	•		
Mates to DB9 connector. Includes: CAN dongle, terminating resistor, and pre-wired mating cables	6.0 (1.8)	MD-CC501-000			•	
Replacement mating connector kits						
Includes one 2-pin power mate, and two 7-pin multifunction mates (Pulse & Direction products)	—	CK-14	•			
Includes one 2-pin power mate, and two 7-pin multifunction mates (Motion Control, CANopen, & Ethernet Pluggable Products)	—	CK-15		•	•	•

for M12 circular connector products

Description	Length feet (m)	Part Number	Comm Types ¹			
			P	M	A	E
Communication Converter						
USB-pluggable converter to set/program communication parameters in 32- or 64-bit Windows®						
Mates to M12 5-pin female connector. Includes: RS-485 converter and pre-wired mating connector	6.0 (1.8)	MD-CC405-000	•	•		
Mates to M12 5-pin male connector. Includes: CAN dongle, terminating resistor, and pre-wired mating cables	6.0 (1.8)	MD-CC502-000			•	
Straight Configuration Cordsets						
Shielded cables pre-wired with straight M12 mating connectors						
Communication cordset w/ leads, mates to 5-pin female connector	10.0 (3.0)	MD-CS600-000	•	•		
Power cordset w/ leads, mates to 4-pin male connector	10.0 (3.0)	MD-CS620-000	•	•	•	•
I/O cordset w/ leads, mates to 12-pin female connector	10.0 (3.0)	MD-CS630-000	•			
I/O cordset w/ leads, mates to 12-pin male connector	10.0 (3.0)	MD-CS610-000		•	•	•
Communication cordset w/ leads, mates to 4-pin female connector	6.5 (2.0)	MD-CS640-000				•
Communication cordset w/ leads, mates to 5-pin male connector	10.0 (3.0)	MD-CS650-000				•
Right Angle Configuration Cordsets						
Shielded cables pre-wired with right angle 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	•	•	•	•
Communication cordset w/ leads, mates to 4-pin female connector	6.5 (2.0)	MD-CS641-000				•
Daisy Chaining						
Connect multiple 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			•	
Cable Accessory Kit						
Includes two M12 screw plugs and one sealing cap	—	CK-16	•	•	•	•

for all product with an Absolute Encoder

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				

¹ Communication types:

P = Pulse/Direction via RS-422/485 serial interface

M = Programmable Motion Control via RS-422/485 serial interface

A = CANopen interface

E = EtherNet/IP, Modbus/TCP, Profinet, MCode/TCP