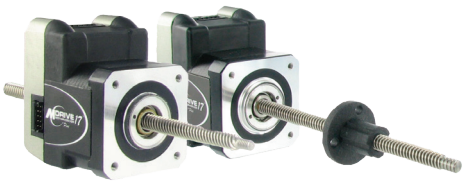
MDrive® Plus/Plus² MLI•17

NEMA 17 (42mm) CANopen Linear Actuator with integrated 1.8° 2-phase stepper motor & control electronics

CE RoHS REACH IP20



PRODUCT OVERVIEW

MDrive Plus/Plus² CANopen products integrate 1.8° 2-phase stepper motor, motion controller, drive electronics and optional encoder. Products support CiA DS301 and DSP402 Device Profile for Drives and Motion Control.

Firmware is provided for setup and testing MDrive Plus CANopen products. CANopen Tester software and communication dongle (MD-CC500-000) are also available.

MDrive Plus/Plus² products deliver reliable performance for new and existing motion control applications. Satisfying the requirements for a wide range of machine builders.

Simplify your machine design and reduce cabinet size by replacing multiple components with a single compact integrated motor. Fewer individual system components eliminates multiple potential failure points, and lowers risk of electrical noise by eliminating cabling between motor and drive.

These compact, powerful and cost effective motion control solutions deliver exceptional smoothness and performance that can reduce system cost, design and assembly time for a large range of 2-phase stepper motor applications.

FEATURES AND BENEFITS

- Compact integrated microstepping drive, motion controller and NEMA 17 1.8° 2-phase stepper motor
- Non-captive and external shaft style available
- Advanced current control with automatic current reduction for exceptional performance and smoothness
- Single supply: +12 to +48 VDC
- 20 microstep resolutions up to 51,200 steps per rev, including: Degrees, Metric, & Arc Minutes
- Auxiliary logic power supply input
- IP20 protection rating
- 0 to 5 MHz step clock rate selectable in 0.59 Hz increments
- Up to eight I/O lines and one 10-bit selectable analog input
- Programmable motor run / hold current
- Available options include:
  - Encoder
  - Multiple motor stack lengths
  - Long life linear actuators
  - Rear control knob for manual positioning
- Single motor stack length
- Lead screw lengths from 3.0″ to 18.0″ (77.5 to 455.0 mm) available in 0.1″ (2.5mm) increments
- Lead screws with optional threaded or smooth screw ends and Teflon coating available
- Graphical user interface provided for quick and easy configuration and programming via optional MD-CC500-000 comm converter

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/3d-product-models/

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/

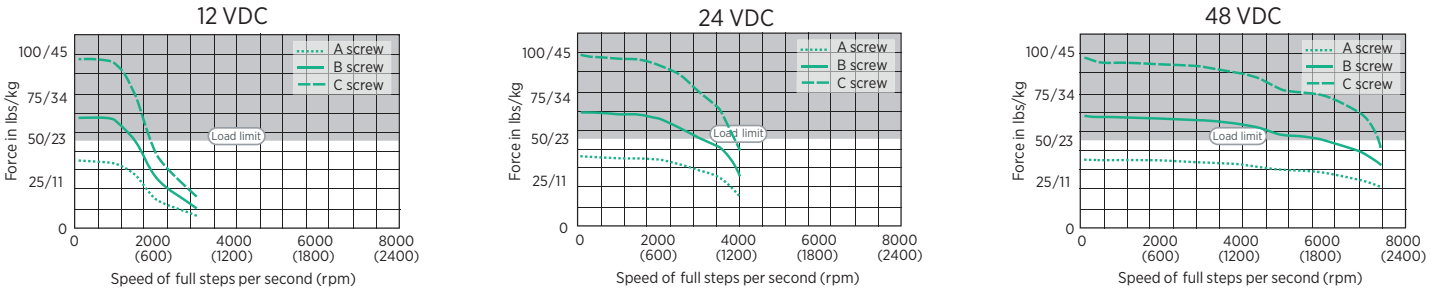
MDrive Plus/Plus^2 MLI•17 CANopen

Motor Performance

			MDrive 17
Motor		Stack length	Single
Holding torque		oz-in	29
		N-cm	20
Rotor inertia		oz-in-sec^2	0.0005
		kg-cm^2	0.034
Weight without screw		oz	9.6
		g	272.2
Maximum screw misalignment		″	±1
Maximum thrust[1]	Non-captive shaft	lbs	50
		kg	22
	External shaft with general purpose nut	lbs	25
		kg	11
	External shaft with anti-backlash nut	lbs	5
		kg	2
Maximum repeatability	General purpose	inch	0.005
		mm	0.127
	Anti-backlash[2]	inch	0.0005
		mm	0.0127

1 Performance data for maximum force/load is based on a static load and will vary with a dynamic load.
2 Only applicable for External shaft linear actuator with anti-backlash nut.

Motor Speed Force



Test conditions: maximum force/load is based on a static load. This will vary with a dynamic load.
Load limits: non-captive shaft — 50lbs/22kg
external shaft — determined by selected nut

Screws[1]

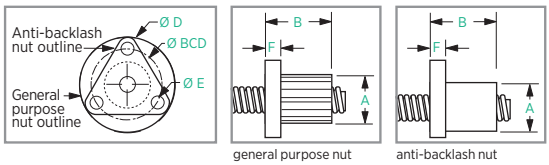
Screw lengths[2]	minimum	inches	3.0	
		mm	77.5	
	maximum	inches	18.0	
		mm	455.0	
Load Limits[3]	non-captive shaft	lbs	50	
		kg	22	
	external shaft w/ general purpose nut	lbs	25	
		kg	11	
	external shaft w/ anti-backlash nut	lbs	5	
		kg	2	
End Options	threaded	metric	M4 x 0.7 mm thread to within 0.03” / 0.76 mm of shoulder	
		UNC	#8-32 UNC-2A thread to within 0.03” / 0.76 mm of shoulder	
	smooth	inches	Ø 0.1967 ±0.001	
		mm	Ø 5 ±0.003	
	none	—	—	
Lead/Pitch		Travel	Per Rev	Per Full Step
	screw A	inches	0.250	0.00125
		mm	6.350	0.0317
	screw B	inches	0.125	0.00063
		mm	3.175	0.0158
	screw C	inches	0.063	0.00031
		mm	1.588	0.0079

1 Stainless steel rolled screws are corrosion resistant and non-magnetic, with Teflon coating available.
2 Standard 0.1” / 2.5mm screw length increments are available.
3 Performance data for maximum force/load is based on a static load and will vary with a dynamic load

Nuts[1]

			General Purpose Nuts	Anti-backlash Nuts
Dimensions	A	inches	0.50	0.50
		mm	12.7	12.7
	B	inches (max)	0.75	0.9
		mm (max)	19.1	22.86
	D	inches	1.0	1.0
		mm	25.4	25.4
	E	inches	0.14	0.14
		mm	3.6	3.6
	F	inches	0.15	0.18
		mm	3.81	4.57
	BCD	inches	0.75	0.75
		mm	19.1	19.1
Load limit		lbs	25	5
		kg	11	2
Drag torque			free wheeling	< 1.0 oz-in < 0.7 N-cm

1 External shaft MDrive Linear Actuators employ a nut which moves axially along the threaded shaft as the screw rotates. Two nut styles are available: general purpose and anti-backlash. While anti-backlash nuts provide higher accuracy and low drag torque, general purpose nuts are rated for higher load limits.



Accessories

Description	Length feet (m)	Part Number
Communication Converter Electrically isolated, in-line converter pre-wired with mating connector to conveniently set/program communication parameters for a single MDrive Plus via a PC's USB port.		
Interface cable for all CANopen products. Requires mating connector adapter for DB9 connector. Requires power supply, not supplied.	12.0 (3.6)	MD-CC500-000
Prototype Development Cables Speed test/development with pre-wired mating connector with other cable end open.		
Mates to 16-pin locking wire crimp connector for I/O, power, and remote encoder option	10.0 (3.0)	PD16-1417-FL3
Mating Connector Kit Connectors for the assembly of cables. (Cable material not included). Sold in lots of 5. Manufacturer's crimp tool recommended for crimp connectors		
16-pin locking wire crimp connector for I/O, power, and remotes encoder option	—	CK-10
Drive Protection Module Limits surge current and voltage to a safe level when DC input power to the MDrive Plus is switched on and off		
For all MLI•17 CANopen products	—	DPM75