

# MDrive® Plus MDM•14

NEMA 14 (35mm) Step & Direction  
integrated 1.8° 2-phase stepper motor &  
control electronics



## PRODUCT OVERVIEW

The MDrive 14 Plus half/full step features a 1.8° 2-phase stepper motor with on-board control electronics. Step & direction signals of a master controller, e.g. a motion controller, or A/B signals of an encoder are converted directly into motion.

Settings for MDrive Plus step&direction input products may be changed on-the-fly or downloaded and stored in nonvolatile memory using the IMS SPI Motor Interface software. This eliminates the need for external switches or resistors. Parameters are changed via an SPI port.

The MDrive Plus with step & direction input is ideal for machine builders who want an optimized motor with on-board electronics. The integrated electronics reduces the potential for problems due to electrical noise by eliminating the cable between motor and drive.

Fewer individual system components also eliminates multiple potential failure points.

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

## FEATURES AND BENEFITS

- Cost effective & compact integrated microstepping drive and NEMA 14 1.8° 2-phase stepper motor
- 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
- Optically isolated Universal inputs accept +5 to +24 VDC signals, sourcing or sinking
- Optically isolated Differential inputs accept +5 VDC signals
- IP20 protection rating
- Configurable options include:
  - Motor run/hold current
  - Motor direction via direction input
  - Microstep resolution
  - Clock type (step & direction, quadrature, step up/down, clockwise & counterclockwise)
  - Programmable digital filtering
- Available options include:
  - Encoder
  - Multiple motor stack lengths
  - Long life linear actuators
  - Rear control knob for manual positioning
- Single & triple motor stack lengths available
- Setup parameters may be switched on-the-fly
- Graphical user interface provided for quick and easy parameter setup



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/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/>

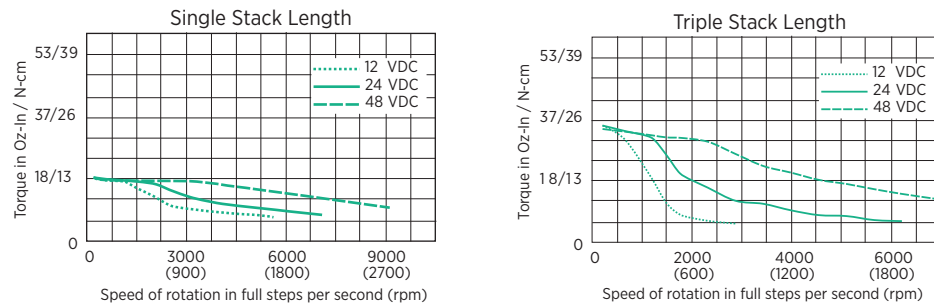
# MDrive Plus MDM•14 Step & Direction

## Motor Performance

		MDrive 14	
Motor	Stack length	Single	Triple
Holding torque	oz-in	18	36
	N-cm	13	25
Detent torque	oz-in	2.0	4.4
	N-cm	1.4	3.1
Rotor inertia	oz-in-sec <sup>2</sup>	0.000198	0.000801
	kg-cm <sup>2</sup>	0.014	0.0566
Weight (motor+driver)	oz	5.29	12.8
	g	150	380

## Motor Speed Torque

Test conditions: 100% current with damper simulating load.



## Accessories

Description	Length feet (m)	Part Number
<b>Communication Converter</b> Electrically isolated, in-line converter pre-wired with mating connector to conveniently set/program communication parameters for a single MDrivePlus via a PC's USB port.		
Mates to 12-pin locking wire crimp connector	12.0 (3.6)	MD-CC305-001
<b>Prototype Development Cables</b> Speed test/development with pre-wired mating connector with other cable end open.		
Mates to 12-pin locking wire crimp connector for I/O, communication & power	10.0 (3.0)	PD12B-1434-FL3
<b>Encoder Cables</b> Pre-wired mating connector with other cable end open.		
For external single-end optical encoder with non-locking connector	1.0 (0.3)	ES-CABLE-2
For external differential optical encoder with locking connector	6.0 (1.8)	ED-CABLE-6
<b>Mating Connector Kit</b> Connectors for the assembly of cables. (Cable material not included). Sold in lots of 5. Manufacturer's crimp tool recommended for crimp connectors		
12-pin locking wire crimp connector for I/O, communication, and power	—	CK-08
<b>Drive Protection Module</b> Limits surge current and voltage to a safe level when DC input power to the MDrive Plus is switched on and off		
For all MDrive 14 step & direction input products	—	DPM75
<b>Quick Start Kit</b> For rapid design verification, all-inclusive QuickStart Kits includes prototype development cables and communication converter for MDrivePlus initial functional setup and system testing.		
For all MDrive 14 step & direction input products, add a "K" to the beginning of the part number when ordering		