

# LIBERTY MD<sub>DRIVE</sub> STEPPER MOTOR

## LMD•P42 Pulse & Direction



### Specifications

Communication	Protocol type	RS-422/485 serial interface with 4 operating modes: pulse/direction, speed, torque, and velocity control	
Input power	Voltage	VDC	
	Current maximum <sup>(1)</sup>	Amp	
Motor	Frame size	NEMA	
		inches	
		mm	
	Performance level	Standard torque	
	Holding torque	oz-in	44 ... 88
		N-cm	31 ... 62
Length	stack sizes	1, 2 & 3	
Thermal	Temperature Maximums	Power stage maximum	
		Motor maximum	
	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 <sup>(5)</sup>	
Protection	Type	Temperature warning	
		IP rating	
		Earth grounding	
Hardware I/O, sourcing or sinking	One analog input <sup>(2)</sup>	Resolution	
		Voltage range	
	Three signal inputs	Voltage range	
		Protection	
	One high-speed signal output	Current open collector/emitter	
		Voltage open collector	
		Voltage open emitter	
Aux. logic input	Voltage range <sup>(3)</sup>	+12... +24 VDC	
Encoder options	Multi-turn absolute	Position update/retention	
	Incremental magnetic	Line count	
Motion	Microstep resolution	Number of settings	
		Steps per revolution	
	Counters	Type	
	Velocity	Edge rate maximum	
		Range	
	Accel/Decel	Resolution	
		Range	
	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 <sup>(4)</sup>		Profile position, homing mode, profile velocity, profile torque, cyclic synch position	
Input functions		General purpose, homing mode profiles	
Output functions		General purpose	

<sup>1</sup> Actual power supply current will depend on voltage and load.

<sup>2</sup> Not available on products with multi-turn absolute encoder.

<sup>3</sup> When input voltage is removed, maintains power only to control and feedback circuits.

<sup>4</sup> Profile torque is only available on products with an encoder.

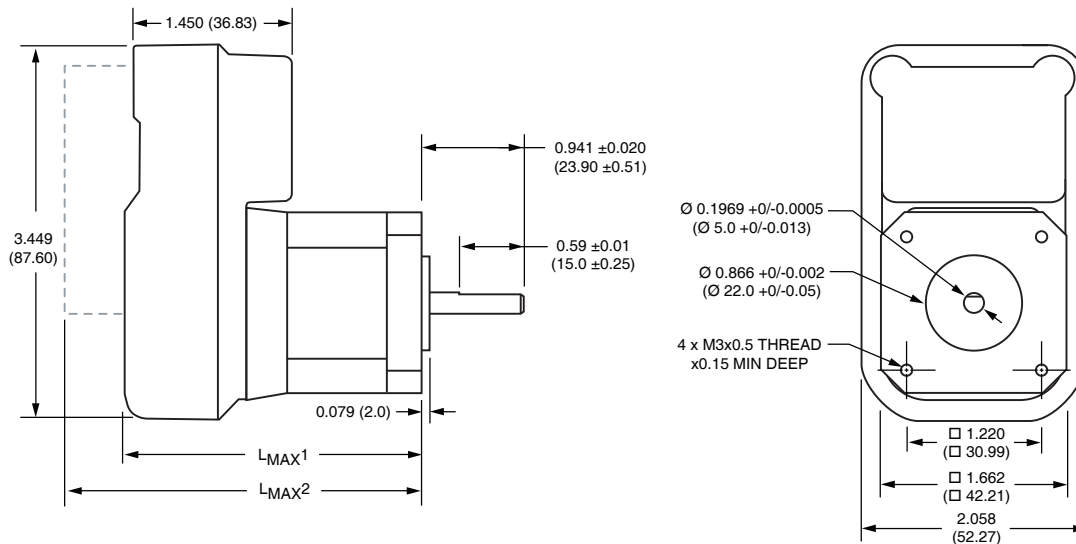
<sup>5</sup> Installation above 3280 ft (1000 m) may require derating output current and maximum ambient temperature.

# LMD•P42 Pulse & Direction

## Dimensions

### LM•42 NEMA 17 Motor, IP20-rated

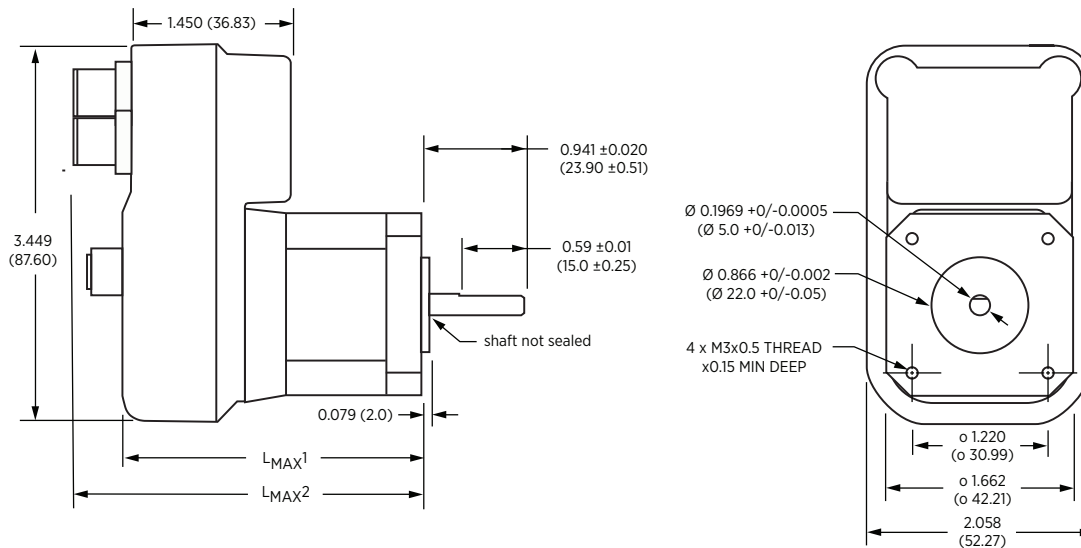
inches (mm)



Motor Stack Length	Lmax1	Lmax2
Single	2.48 (63.0)	3.22 (81.8)
Double	2.71 (69.0)	3.46 (88.0)
Triple	3.04 (77.3)	3.78 (96.0)

### LM•42•C NEMA 17 Motor, IP65-rated<sup>(1)</sup>

inches (mm)



Motor Stack Length	Lmax1	Lmax2
Single	2.78 (70.7)	3.39 (86.0)
Double	2.98 (75.7)	3.58 (91.0)
Triple	3.33 (84.7)	3.94 (100.0)

<sup>1</sup> 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/downloads/3dconfigurator/>



# LMD•P42 Pulse & Direction

## Motor Performance

Motor	Stack length	LMD•42 Standard Torque		
		Single	Double	Triple
Holding torque	oz-in	44	58	88
	N-cm	31	41	62
Detent torque	oz-in	1.7	2.1	3.5
	N-cm	1.2	1.5	2.5
Rotor inertia	oz-in-sec <sup>2</sup>	0.0005	0.0008	0.0012
	kg-cm <sup>2</sup>	0.038	0.057	0.082
Radial load limit, center of shaft	lbs	8.5	8.5	8.5
	kg	3.8	3.8	3.8
Axial load limit @ 1500rpm (5000 full steps/sec)	lbs	10	10	10
	kg	4.5	4.5	4.5
Weight (motor+driver)	oz	13.6	16.0	18.4
	g	385	454	522

## Connector & Indicator Layout

### IP20-rated Models

#### LEDs

Two signal indicators

#### Chassis Ground

One #6-32 screw

#### Connectors

##### P1: Power

One 2-pin screw lock

##### P2: I/O & Multifunction

Two keyed 7-pin spring lock

##### P3: Communication

One DB9 male



### IP65-rated Models

#### Connector

##### P1: Power

One M12 4-pin male

#### Chassis Ground

One #6-32 screw

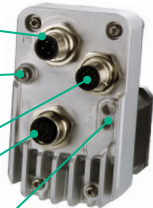
#### Connectors

##### P2: I/O & multifunction

One M12 12-pin male

##### P3: Communication

One M12 5-pin male



#### LEDs

Two signal indicators

## Part Number Breakdown

Example part number	L	M	D	C	A	4	2	1	C
<b>Product</b> LMD = Lexium MDrive with standard hybrid stepper motor	L	M	D	C	A	4	2	1	C
<b>Control type</b> C = Closed loop / with hMT and incremental magnetic encoder <sup>1</sup> A = Closed loop / with hMT and multi-turn absolute encoder <sup>1</sup> O = Open loop / no hMT or encoder	L	M	D	C	A	4	2	1	C
<b>Communication type</b> A = CANopen interface	L	M	D	C	A	4	2	1	C
<b>Flange size</b> 42 = NEMA 42 1.7" / 42mm	L	M	D	C	A	4	2	1	C
<b>Motor length</b> 1 = single stack 2 = double stack 3 = triple stack	L	M	D	C	A	4	2	1	C
<b>Variation</b> — omit from part number if unwanted C = M12 circular connectors and IP65 rating	L	M	D	C	A	4	2	1	C

<sup>1</sup> 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/downloads/>