

**ElectroCraft's new RPX40** is a highly dynamic and controllable very small frame metric motor.

With an advanced 14-pole encapsulated core, this compact DC motor offers high torque density at a very affordable price. The RPX40 is available in 12V, 24V and 48V versions and like all ElectroCraft motors is fully customizable. This versatile motor is highly energy efficient and ideal for embedded applications.

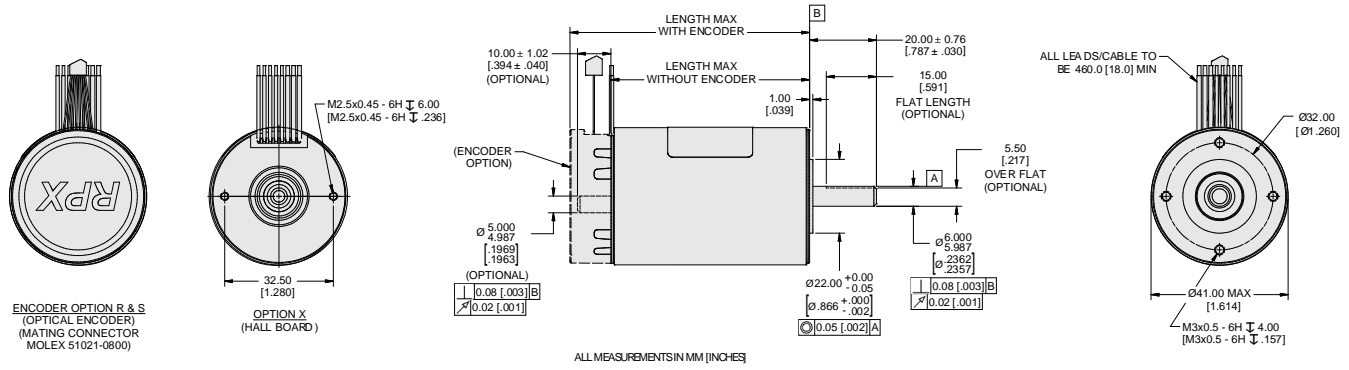
All versions of the RPX40 include hall sensor feedback and can be configured with an optional encoder (differential, optical encoder with up to 2048 lines)

**Features:**

- High torque density delivers class- leading torque from compact frame size.
- 14 pole motor; high torque at low speeds.
- High load capacity.
- Low heat generation
- Up to IP65

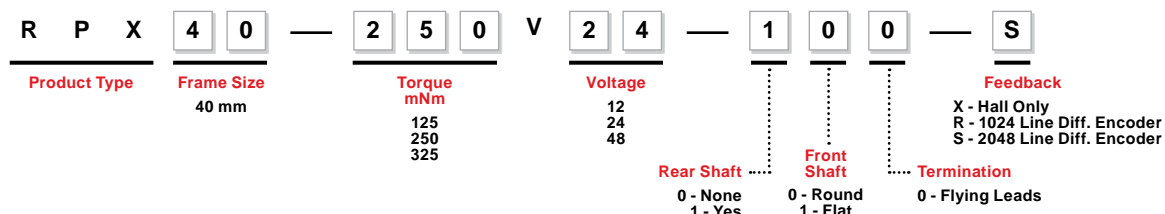


RPX40 BRUSHLESS DC MOTOR			
<b>Size:</b>	40 mm (1.575 in) diameter		
<b>Peak Torque:</b>	991 mNm (140 oz.in)		
<b>Continuous Stall Torque:</b>	<b>RPX40-125</b>	<b>RPX40-250</b>	<b>RPX40-325</b>
	125 mNm (18.8 oz.in)	250 mNm (36.1 oz.in)	325 mNm (46.8 oz.in)
<b>Speed:</b>	to 6,000 RPM		



MODEL	MAX LENGTH NO ENCODER	MAX LENGTH WITH ENCODER
RPX40-125	30 [1.18]	42 [1.65]
RPX40-250	40 [1.58]	52 [2.05]
RPX40-325	60 [2.36]	72 [2.84]

**RPX Model Number**



# RPX40

ElectroCraft RapidPower™ Xtreme Brushless DC Servo Motor

High torque density. Excellent torque per frame size performance.



## Applications:

### Medical Science

#### Automated Equipment

- Fluid Pumps
- Air / Ventilation Pumps
- Blood Transfusers
- Diagnostic and Imaging Systems

#### Surgical Robots and Robotic Assistants

- Traction Motors for Mobile Systems
- Arm/Gripper Positioning and Force Control

### Lab Automation Equipment

- Dispensing Systems
- Sample Handling Systems
- Analysis Systems
- Centrifuges

### Robotics

- Traction Motors for Mobile Applications
- Steering Systems for Mobile Applications
- Arm/Gripper Positioning and Force Control

### Industrial Automation

- Industrial Machinery
- Material Handling and Conveyor Equipment
- Automated Guided Vehicles (AGVs)
- Sorting and Packing Systems
- Dispensing Machines

### Electronics / Semiconductor Manufacturing

- Wafer Handling and Processing Systems
- Assembly, Test and Packaging Systems

### Transportation

#### Automotive & Commercial Vehicles

- Power Seats
- Fan & Pump Motors
- Emission Control Systems
- Drive by Wire and Driver Assist Systems
- Autonomous Vehicle Camera & Sensor Controls

#### Aerospace

- Flight Control Systems
- Commercial UAV Flight Motors
- Pumps / Actuators

#### Marine & Shipbuilding

- Gyro Stabilization Systems
- Steering Pumps

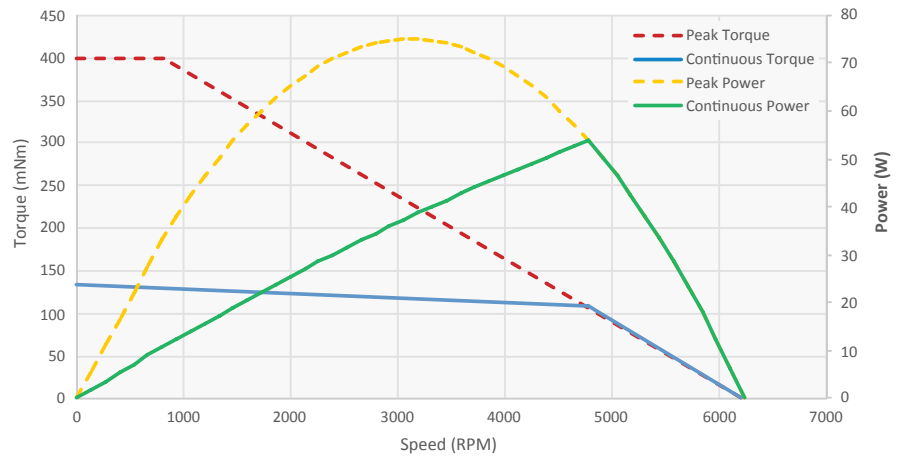
### Military/Defense

- Military Robots
- Mobile Radar and Communication Systems
- Flight Control Systems
- Military UAV Flight Motors
- Guidance Systems

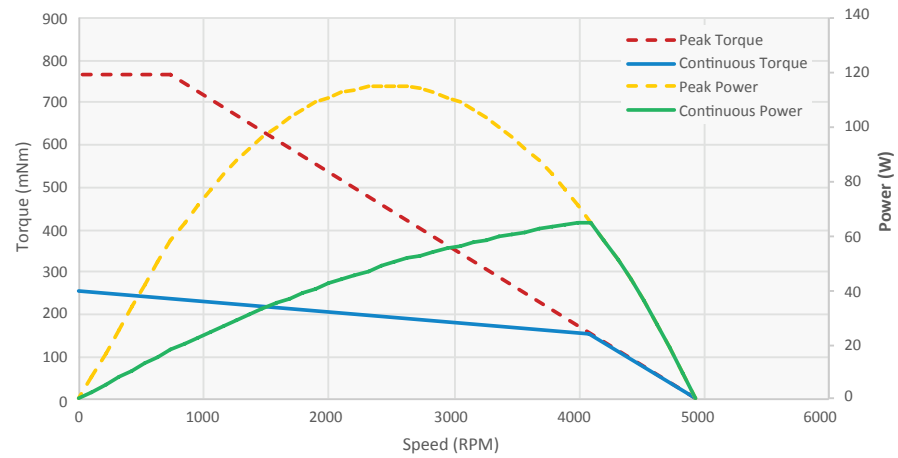
### Agriculture

- Automated Planting Equipment
- Automated Harvesting Equipment
- Farm Machinery Control Systems
- Agricultural Robots

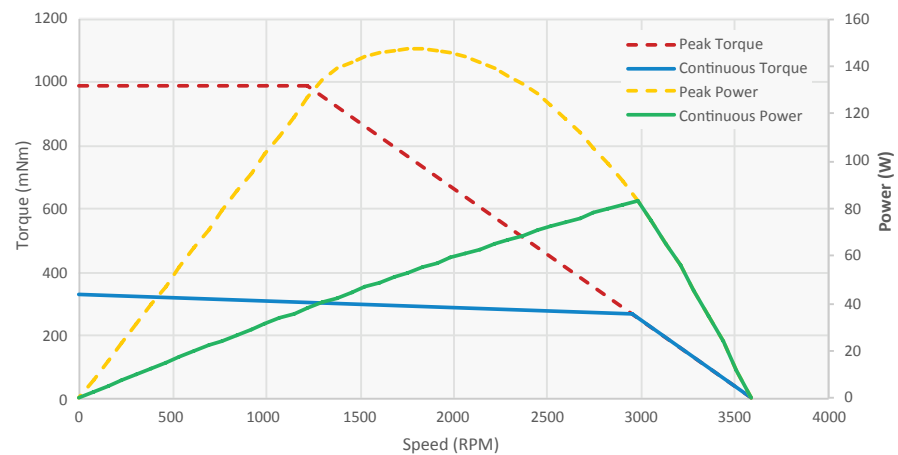
## RPX40-125 Performance



## RPX40-250 Performance



## RPX40-325 Performance



Ambient operation temperature range for all the RPX models is -40 to 110C (hall sensor version)



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# RPX40

ElectroCraft RapidPower™ Xtreme Brushless DC Servo Motor

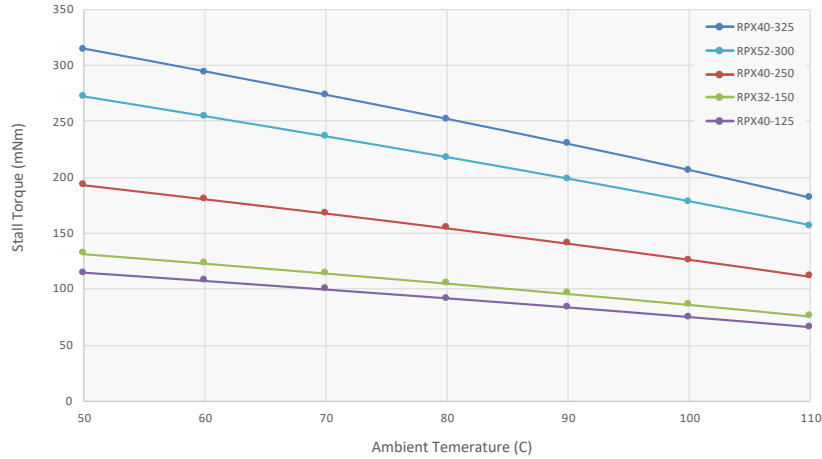
High torque density. Excellent torque per frame size performance.



RPX40

RAPIDPOWER™ XTREME BRUSHLESS DC SERVO MOTOR

## RPX Series Stall Torque at Elevated Ambient Temperatures



## RPX40 Mechanical / Winding Data

Specifications	Stack Size and Winding Models								
	RPX40-125V12	RPX40-125V24	RPX40-125V48	RPX40-250V12	RPX40-250V24	RPX40-250V48	RPX40-325V12	RPX40-325V24	RPX40-325V48
Design Voltage (VDC)	12	24	48	12	24	48	12	24	48
No load speed (RPM)	6,000			5,000			3,600		
Peak Torque (oz-in)	56.4			108.1			140.0		
Peak Torque (mNm)	398.0			763.0			991.0		
Peak Current (Amps)	19.7	9.8	4.9	33.3	16.7	8.3	31.0	15.5	7.7
Continuous Stall Torque* (oz-in)	17.7			35.4			46.0		
Continuous Stall Torque* (mNm)	125.0			250.0			325.0		
Continuous Stall Current (Amps)	6.6	3.3	1.6	10.9	5.5	2.7	10.2	5.1	2.6
Continuous Rated Torque* (oz-in)	15.3			22.0			38.2		
Continuous Rated Torque* (mNm)	108.0			155.0			270.0		
Continuous Rated Current (Amps)	5.7	2.8	1.4	6.8	3.4	1.7	8.5	4.2	2.1
Continuous Rated Speed (RPM)	4,775			4,075			2,950		
Voltage Constant (V / kRPM)	2.0	4.0	8.0	2.4	4.8	9.6	3.3	6.7	13.3
Torque Constant (oz-in / Amp)	2.7	5.4	10.8	3.2	6.5	13.0	4.5	9.0	18.0
Torque Constant (mNm / Amp)	19.1	38.1	76.3	22.9	45.8	91.5	31.8	63.6	127.1
Resistance (Ohms)	0.4	1.5	5.8	0.3	1.1	4.5	0.2	0.7	2.7
Inductance (mH)	0.043	0.170	0.680	0.028	0.125	0.501	0.031	0.125	0.500
Motor Constant (oz-in / √ Watt)	4.5			7.7			9.8		
Motor Constant (mNm / √ Watt)	31.6			54.2			69.2		
Electrical Constant (msec)	0.33			0.40			0.45		
Mechanical Constant (msec)	1.11			0.51			0.19		
Thermal Time Constant (sec)	430.0			455.0			480.0		
Rotor Inertia (oz-in <sup>2</sup> )	0.0383			0.0820			0.1640		
Rotor Inertia (g-cm <sup>2</sup> )	7.0			15.0			30.0		
Thermal Resistance (C / Watt)	4.77			4.02			3.69		
Axial Load (N) 5mm from face	7.0			7.0			7.0		
Radial Load (N) 5mm from face	30.0			30.0			30.0		
Weight (oz)	5.6			8.5			13.1		
Weight (g)	160.00			240.00			370.00		
Length (inch)	1.2			1.6			2.4		
Length (mm)	30.0			40.0			60.0		
Number of Poles	14.0			14.0			14.0		
Notes	*Continuous rating based on a 25°C ambient temperature, winding temperature rise of 125°C. Mounted on a 150 X 150 X 6 mm aluminum heat sink.								



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