ElectroCraft® powering innovation™

RPX40

ElectroCraft RapidPower™ Xtreme Brushless DC Servo Motor

High torque density. Excellent torque per frame size performance.

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

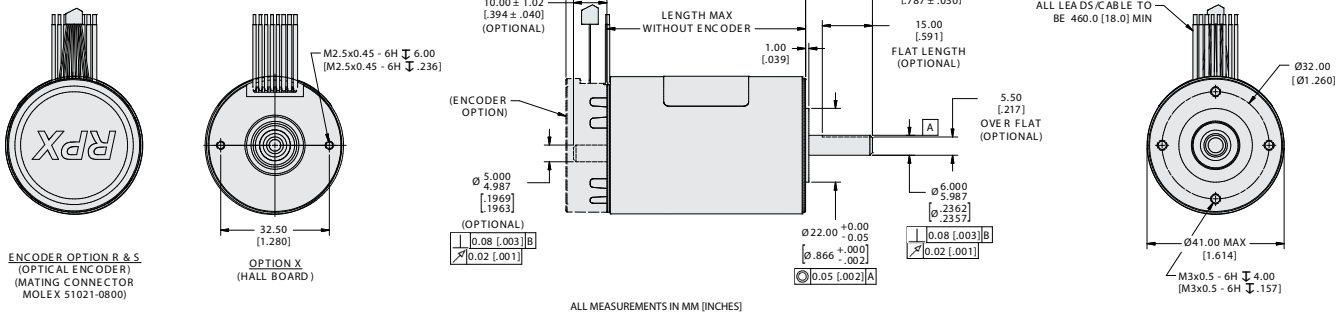
With an advanced 14-pole encapsulated core, this compact DC motor offers high torque density at a very affordable price. The RPX40 is available in 12V, 24V and 48V versions and like all ElectroCraft motors is fully customizable. This versatile motor is highly energy efficient and ideal for embedded applications.

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



ALL MEASUREMENTS IN MM [INCHES]

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

R P X | **4 0** | — | **2 5 0** | **V** | **2 4** | — | **1** | **0** | **0** | — | **S**

- **Product Type**
- **Frame Size** — 40 mm
- **Torque mNm** — 125, 250, 325
- **Voltage** — 12, 24, 48
- **Rear Shaft** — 0 - None, 1 - Yes
- **Front Shaft** — 0 - Round, 1 - Flat
- **Termination** — 0 - Flying Leads
- **Feedback** — X - Hall Only, R - 1024 Line Diff. Encoder, S - 2048 Line Diff. Encoder

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RAPIDPOWER™ XTREME BRUSHLESS DC SERVO MOTOR

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 Sytsems
- 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

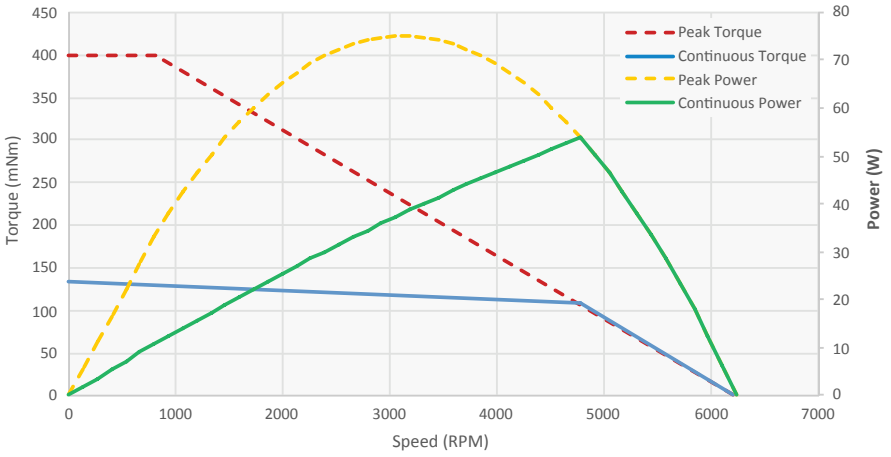
Aerospace
- Flight Control Systems
- Commercial UAV Flight Motors
- Pumps / Actuators

Marine & Shipbuilding
- Gyro Stabilization Systems
- Steering Pumps

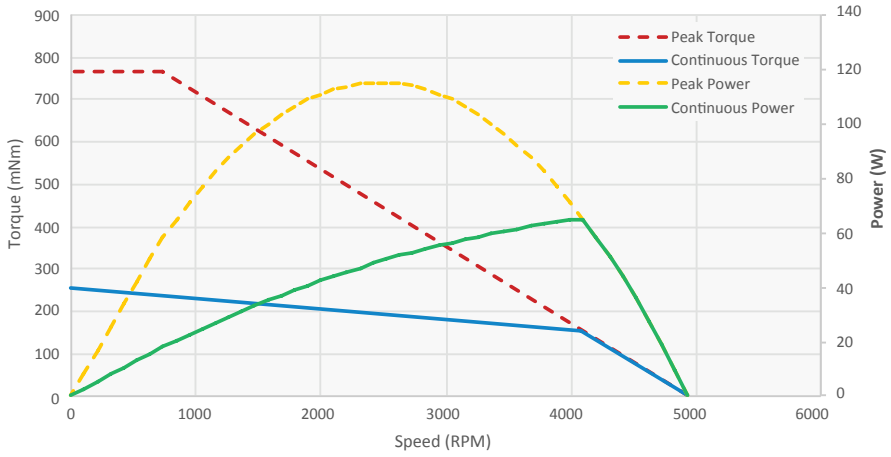
Military/Defense
- Military Robots
- Mobile Radar and Communication Systems
- Flight Control Systems
- Military UAV Flight Motors
- Guidance Systems

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

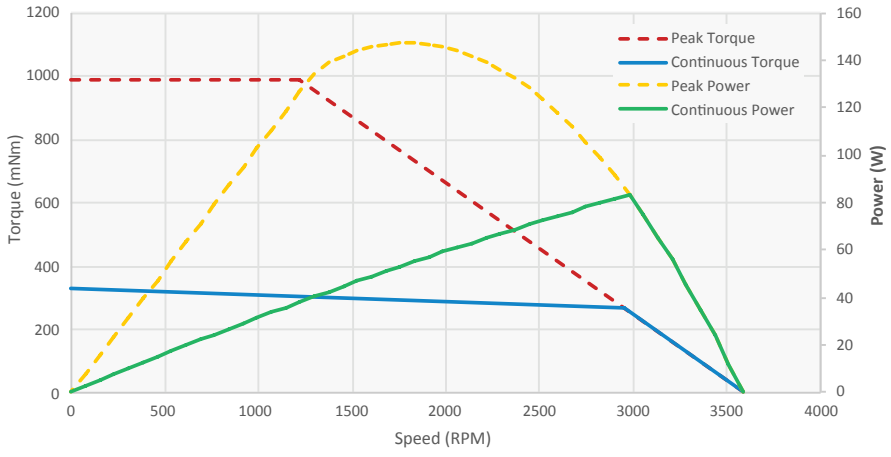
RPX40-125 Performance



RPX40-250 Performance



RPX40-325 Performance



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

Your Genius. Our Drive.

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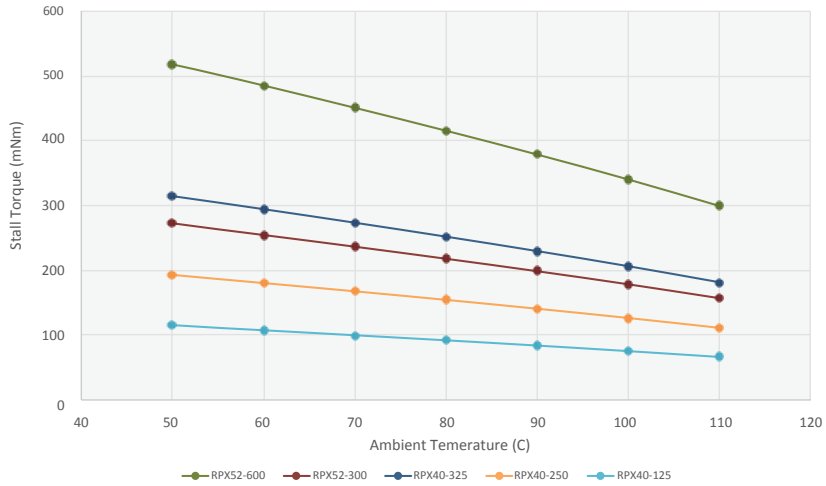
RPX Series Stall Torque at elevated Ambient Temperatures



RPX40 Mechanical / Winding Data

	Stack Size and Winding Models								
Specifications	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	160	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 (Ncm)	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)	42.5	170.0	680.2	27.8	125.4	501.4	31.2	124.9	499.7
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^2)	0.0383			0.0820			0.1640		
Rotor Inertia (g-cm^2)	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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