ElectroCraft® powering innovation™

RPX52

ElectroCraft RapidPower™ Xtreme Brushless DC Servo Motor

High torque density. Excellent torque per frame size performance.

ElectroCraft's new RPX52 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 RPX52 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.

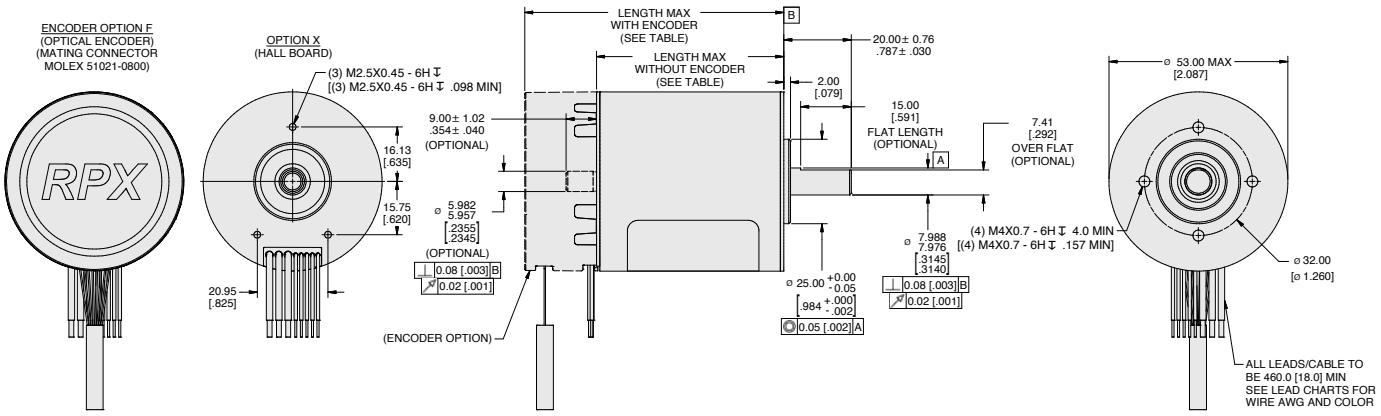
All versions of the RPX52 include hall sensor feedback and can be configured with an optional encoder (differential, optical encoder with up to 5000 lines)

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

RPX52 BRUSHLESS DC MOTOR			
Size:	52mm (2.047 in) max diameter		
Peak Torque:	3150 mNm (445 oz.in)		
Continuous Stall Torque:	**RPX52-300**	**RPX52-600**	**RPX52-750**
	300mNm (42.5 oz.in)	600mNm (85.0 oz.in)	750mNm (106.2 oz.in)
Speed:	up to 5500 rpm		

ALL MEASUREMENTS ARE IN MM [INCHES]



MODEL	MAX LENGTH NO ENCODER	MAX LENGTH WITH ENCODER
RPX52-300	44.0 [1.73]	65.5 [2.58]
RPX52-600	56.0 [2.20]	77.5 [3.05]
RPX52-750	68.0 [2.68]	89.5 [3.52]

RPX Model Number

R	P	X	5	2	—	7	5	0	V	2	4	—	1	0	0	—	F

Product Type

Frame Size
52 mm

Torque mNm
300
600
750

Voltage
12
24
48

Rear Shaft *
0 - None
1 - Round

Front Shaft
0 - Round
1 - Flat

Termination
0 - Flying Leads

Feedback
X - Hall Only
F - 5000 Line Diff. Encoder

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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

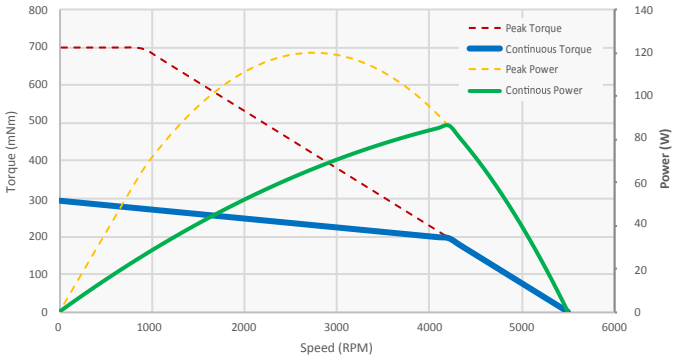
Aerospace
- Flight Control Systems
- Commercial UAV Flight Motors
- Pumps / Actuators

Marine & Shipbuilding
- Gyro Stabilization Systems
- Steering Pumps

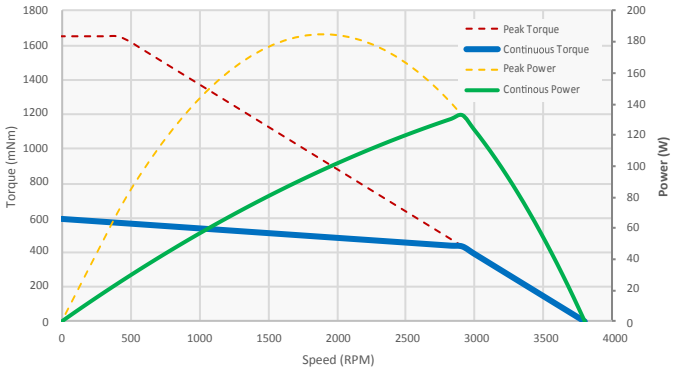
Military/Defense
- Military Robots
- Mobile Radar and Communication Systems
- Flight Control Systems
- Military UAV Flight Motors
- Guidance Systems

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

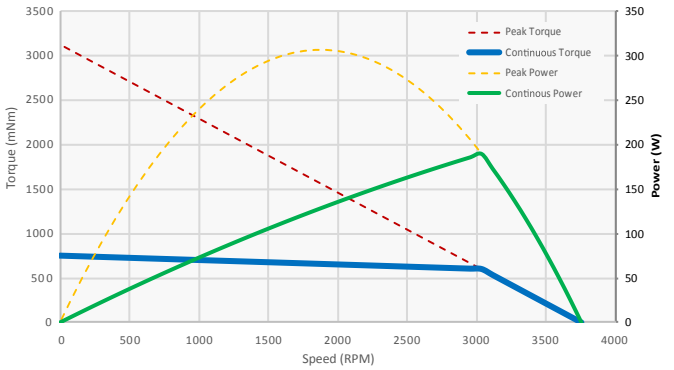
RPX52-300 Performance



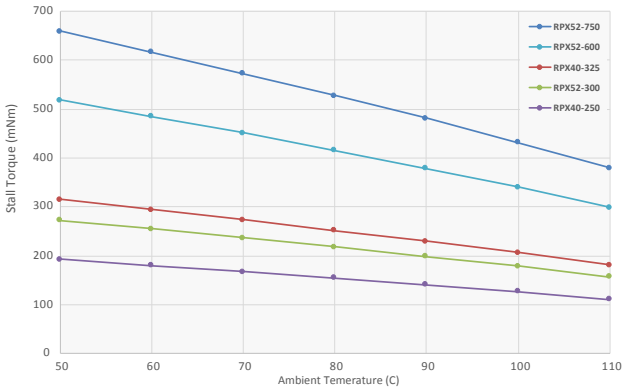
RPX52-600 Performance



RPX52-750 Performance



RPX Series Stall Torque at Elevated Ambient Temperatures



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

Your Genius. Our Drive.

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RPX52 Mechanical / Winding Data

	Stack Size and Winding Models							
Specifications	RPX52-300V12	RPX52-300V24	RPX52-300V48	RPX52-600V12	RPX52-600V24	RPX52-600V48	RPX52-750V24	RPX52-750V48
Design Voltage (VDC)	12	24	48	12	24	48	24	48
No load speed (RPM)	5,500			3,800			3,750	
Peak Torque (oz-in)	99.2			233.7			446.2	
Peak Torque (mNm)	700.0			1,650.0			3,150.0	
Peak Current (Amps)	36.8	17.4	8.6	56.3	26.5	12.9	55.8	28.6
Continuous Stall Torque* (oz-in)	42.5			85.0			106.2	
Continuous Stall Torque* (mNm)	300.0			600.0			750.0	
Continuous Stall Current (Amps)	20.0	10.0	5.0	24.0	12.0	6.0	14.1	7.1
Continuous Rated Torque* (oz-in)	28.3			62.3			85.0	
Continuous Rated Torque* (mNm)	200.0			440.0			600.0	
Continuous Rated Current (Amps)	13.7	6.8	3.5	18.4	9.1	4.6	11.4	5.8
Continuous Rated Speed (RPM)	3,400			2,000			2,500	
Voltage Constant (V / kRPM)	2.4	4.4	8.7	3.2	6.3	12.6	6.6	13.2
Torque Constant (oz-in / Amp)	2.7	5.7	11.6	4.2	8.8	18.1	8.9	17.9
Torque Constant (mNm / Amp)	19.0	40.2	81.7	29.3	62.3	127.8	62.7	126.1
Resistance (Ohms)	0.15	0 46	1.74	0.14	0.34	1.26	0.26	0.95
Inductance (mH)	0.09	0 37	1.40	0.10	0.33	1.28	0.25	0.98
Motor Constant (oz-in / ° Watt)	6.9	8.4	8.8	11.1	15.1	16.1	17.4	18.4
Motor Constant (mNm / ° Watt)	49.1	59.3	61.9	78.3	106.8	113.9	122.5	129.7
Electrical Constant (msec)	0.60	0.80	0.80	0.71	0.97	1.02	0.95	1.04
Mechanical Constant (msec)	2.41	1.91	1.79	1.61	0.93	0.84	0.93	0.84
Thermal Time Constant (sec)	1,200.0			1,240.0			620.0	
Rotor Inertia (oz-in^2)	0.3390			0.5631			0.7709	
Rotor Inertia (g-cm^2)	62.0			103.0			141.0	
Thermal Resistance (C / Watt)	2.79			2.32			2.30	
Axial Load (N) 5mm from face	35.0			35.0			35.0	
Radial Load (N) 5mm from face	110.0			110.0			110.0	
Weight (oz)	12.7			18.3			23.2	
Weight (g)	360.00			520.00			657.00	
Length (inch)	1.7			2.2			2.7	
Length (mm)	44.0			56.0			68.0	
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 152.4 X 152.4 X 6.4 mm aluminum heat sink.							

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