

ElectroCraft RapidPower[™] Xtreme Brushless DC Servo Motors

Product Datasheets for

RPX22

RPX32

RPX40

RPX52





About ElectroCraft

ElectroCraft, Inc. is a global provider of dependable, application-engineered fractional-horsepower motor and motion products. ElectroCraft custom manufacturing services cover the following products: AC motors, PMDC motors, brushless DC motors, stepper motors, servo motors, gearboxes, gearmotors, linear actuators, drives, servo drives, integrated motor drives.

Our products are found in thousands of different applications within industrial, commercial, and consumer product markets. While ElectroCraft provides a wide array of standard products with many configurable options, we have built our brand on custom OEM solutions that meet the precise performance, cost and quality our customers require.

For OEM customers who are unsatisfied with having to design around inflexible off-the-shelf products, our technical knowledge and customizable product families provide for a design experience which results in motor and motion systems that provide superior reliability and performance at the lowest possible cost. To learn more, visit www.electrocraft.com

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(844) 338-8114

ElectroCraft's new RPX22 is a highly dynamic and controllable very small frame metric motor. With an advanced 8-pole encapsulated core, this compact DC motor offers high torque density at a very affordable price. The RPX22 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.

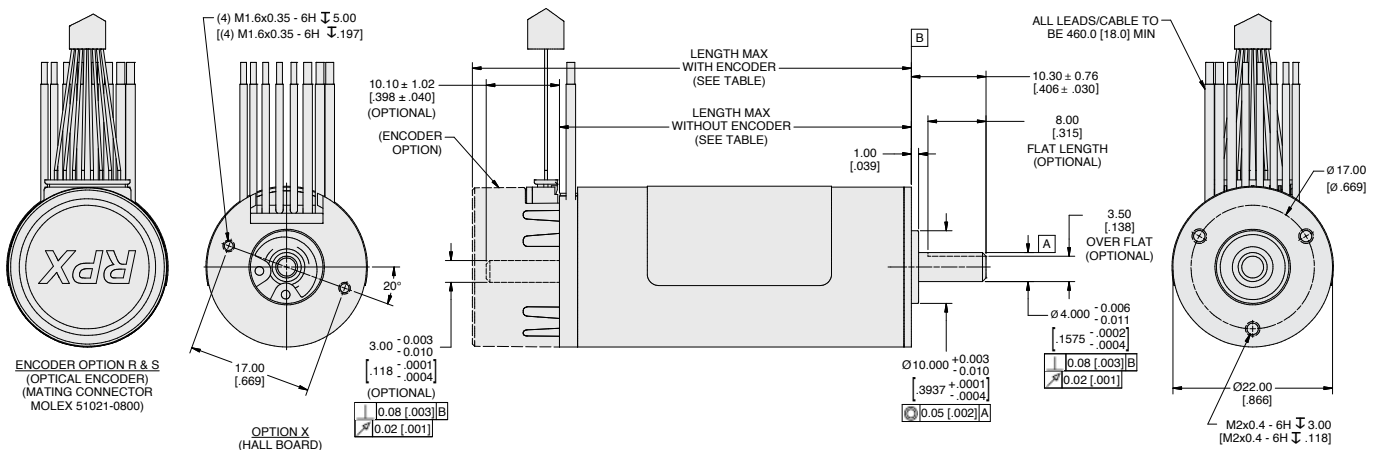
All versions of the RPX22 include hall sensor feedback and can be configured with an optional encoder (differential, optical encoder with up to 2048 lines)

Features:

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



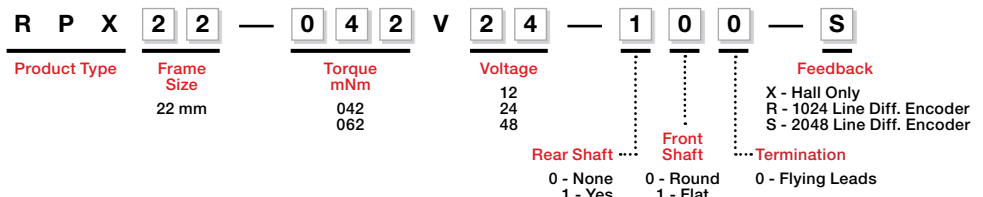
RPX22 BRUSHLESS DC MOTOR		
Size:	22 mm (0.86 in) diameter	
Peak Torque:	178.0 mNm (25.2 oz.in)	
Continuous Stall Torque:	RPX22-042	RPX22-062
	42 mNm (6 oz.in)	62 mNm (9 oz.in)
Speed:	up to 15,000 RPM	



ALL MEASUREMENTS ARE IN MM [INCHES]

MODEL	MAX LENGTH NO ENCODER	MAX LENGTH WITH ENCODER
RPX22-042	49 [1.92]	61 [2.40]
RPX22-062	69 [2.72]	81 [3.19]

RPX Model Number



RPX22

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

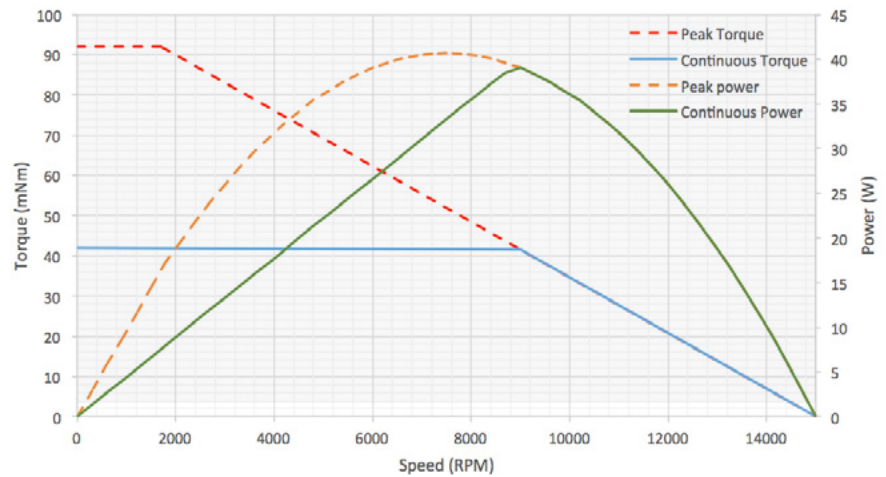
Military/Defense

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

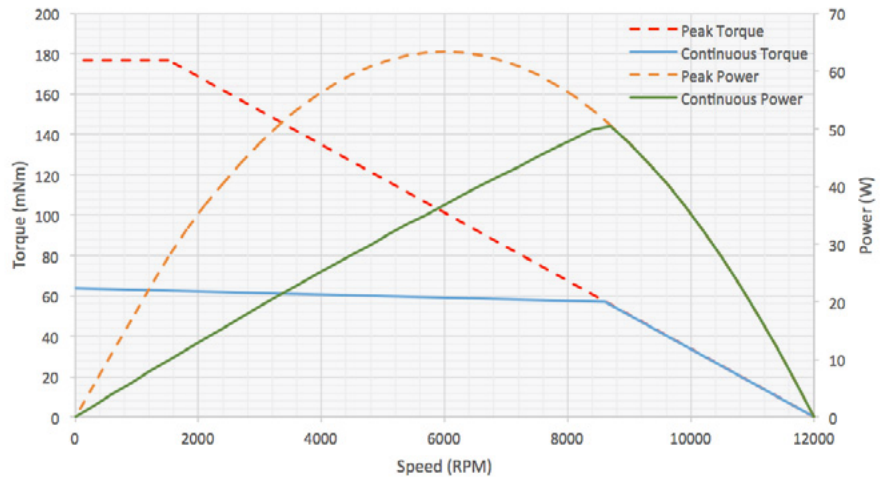
Agriculture

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

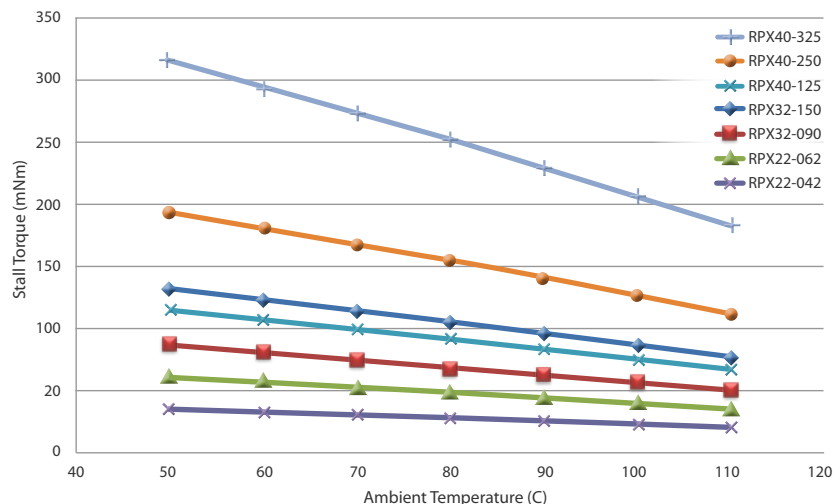
RPX22-042 Performance



RPX22-062 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)



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Electrical Ratings/Winding Data

Parameter	Symbol	Units	RPX22-042			RPX22-062		
			V12	V24	V48	V12	V24	V48
Rated Speed	—	rpm	8900			8600		
No-Load Speed	—	rpm	15000			12000		
Continuous Stall Torque*	Tc	mNm (oz.in)	42 (6.0)			62 (9.0)		
Peak Torque	Tp	mNm (oz.in)	93 (13.2)			178 (25.2)		
Motor Constant	Km	nMn/√Watt (oz.in/√Watt)	9.89 (1.4)			15.5 (2.2)		
Elec. Time Constant	te	msec	0.37			0.39		
Mech. Time Constant	tm	msec	1.23			1.17		
Thermal Time Constant	Tth	sec	281			280		
Rotor Inertia	J	g-cm ²	1.2			2.4		
Thermal Resistance With Heat Sink	Rth	C/Watt	5.6			4.32		
Max Axial Load	—	N	4 (5mm from face)					
Max Radial Load	—	N	12 (5mm from face)					
Weight	W	g (oz)	72 (2.52)			108 (3.78)		
Motor Length	L	mm (in)	58 (2.3)			78 (3.1)		
Number of Poles	—	—	8			8		
			V12	V24	V48	V12	V24	V48
Design Voltage	V	volts DC	12	24	48	12	24	48
Cont. Stall Current	Ic	amperes	5.2	2.5	1.2	7.2	3.6	1.9
Peak Current	Ip	amperes	12.0	6.0	3.0	18.0	9.0	4.8
Operating Temperature	—	C	-40 to 150					
Voltage Constant ± 10%	Ke	V/rad/sec (V/KRPM)	0.008 (0.8)	0.015 (1.6)	0.032 (3.3)	0.010 (1.0)	0.019 (2.0)	0.038 (4.0)
Torque Constant ±10%	Kt	mNm/amp (oz.in/amp)	8.2 (1.2)	15.6 (2.2)	31.9 (4.5)	9.6 (1.4)	19.9 (2.8)	38.3 (5.4)
Resistance ±10%	Rm	Ohms	0.56	2.39	9.72	0.38	1.53	5.63
Inductance ±30%	Ln	mH	0.288	0.900	3.600	0.179	0.600	2.300

*Continuous rating based on a 25°C ambient temperature, winding temperature rise of 100°C. Mounted on a 150 X 150 X 6 mm aluminum heat sink.



RPX32

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

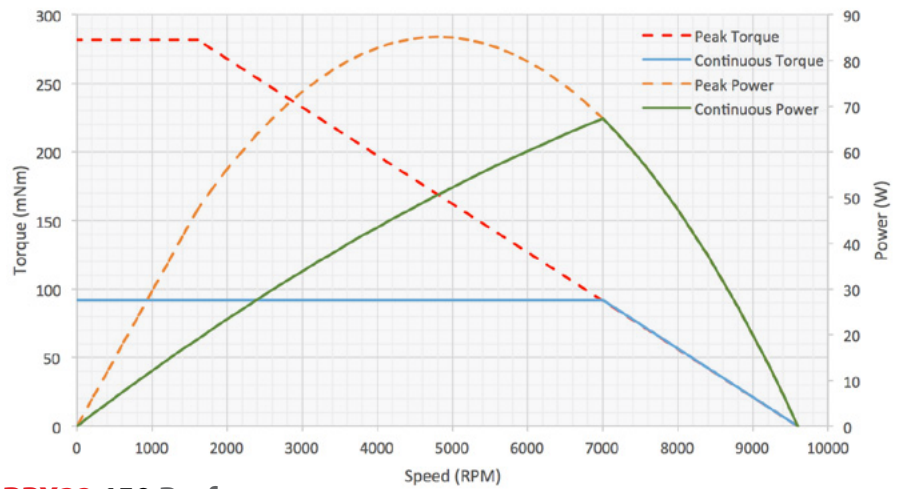
Military/Defense

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

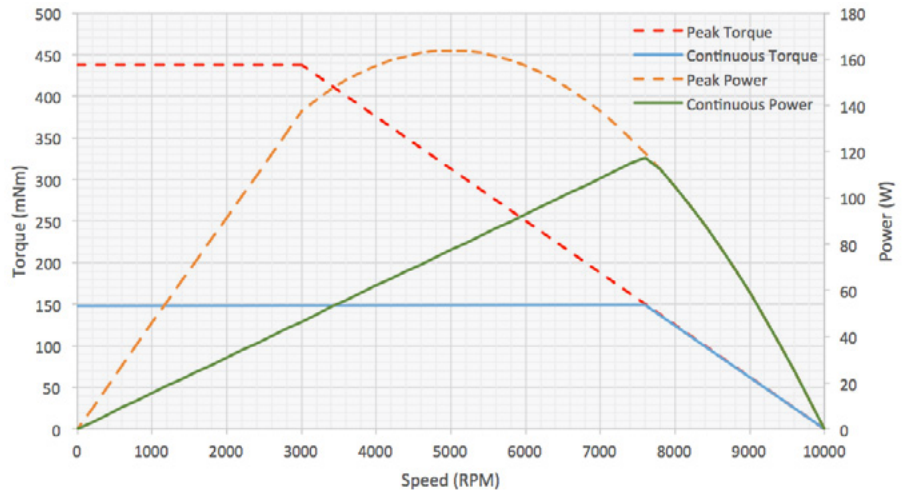
Agriculture

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

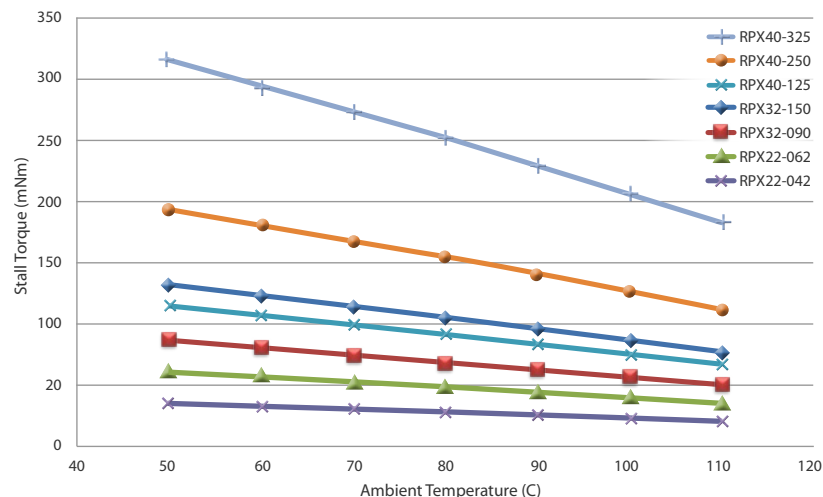
RPX32-090 Performance



RPX32-150 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)



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Electrical Ratings/Winding Data

Parameter	Symbol	Units	RPX32-090			RPX32-150		
Rated Speed	—	rpm	7000			7600		
No-Load Speed	—	rpm	9600			10000		
Continuous Stall Torque*	Tc	mNm (oz.in)	90 (13.0)			150 (21.0)		
Peak Torque	Tp	mNm (oz.in)	282 (40)			438 (62)		
Motor Constant	Km	nMn/√Watt (oz.in/√Watt)	24.0 (3.4)			35.3 (5.0)		
Elec. Time Constant	te	msec	0.60			0.62		
Mech. Time Constant	tm	msec	1.35			1.15		
Thermal Time Constant	Tth	sec	413			480		
Rotor Inertia	J	g-cm ²	8			11.1		
Thermal Resistance With Heat Sink	Rth	C/Watt	5.2			4.1		
Max Axial Load	—	N	10 (5mm from face)					
Max Radial Load	—	N	40 (5mm from face)					
Weight	W	g (oz)	150 (5.25)			260 (9.10)		
Motor Length	L	mm (in)	53 (2.1)			73 (2.9)		
Number of Poles	—	—	8			8		
			V12	V24	V48	V12	V24	V48
Design Voltage	V	volts DC	12	24	48	12	24	48
Cont. Stall Current	Ic	amperes	8.6	4.0	2.0	12.0	6.5	3.5
Peak Current	Ip	amperes	18.0	12.0	8.0	30.0	20.0	11.0
Operating Temperature	—	C	-40 to 150					
Voltage Constant ± 10%	Ke	V/rad/sec (V/KRPM)	0.015 (1.3)	0.023 (2.5)	0.048 (5.0)	0.016 (1.2)	0.022 (2.3)	0.045 (4.7)
Torque Constant ±10%	Kt	mNm/amp (oz.in/amp)	12.2 (1.7)	23.5 (3.3)	47.9 (6.8)	11.5 (1.6)	22.0 (3.1)	45.0 (6.3)
Resistance ±10%	Rm	Ohms	0.22	0.96	3.68	0.11	0.48	1.67
Inductance ±30%	Ln	mH	0.193	0.600	2.300	0.126	0.300	1.000

*Continuous rating based on a 25°C ambient temperature, winding temperature rise of 100°C. Mounted on a 150 X 150 X 6 mm aluminum heat sink.



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

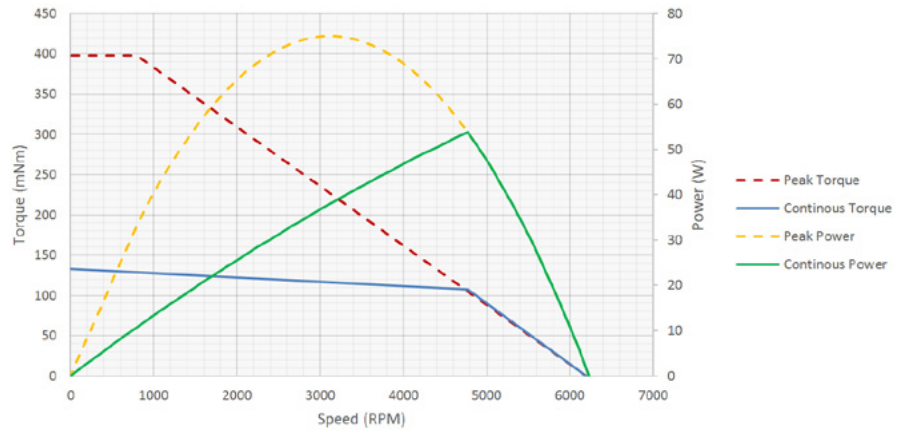
Military/Defense

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

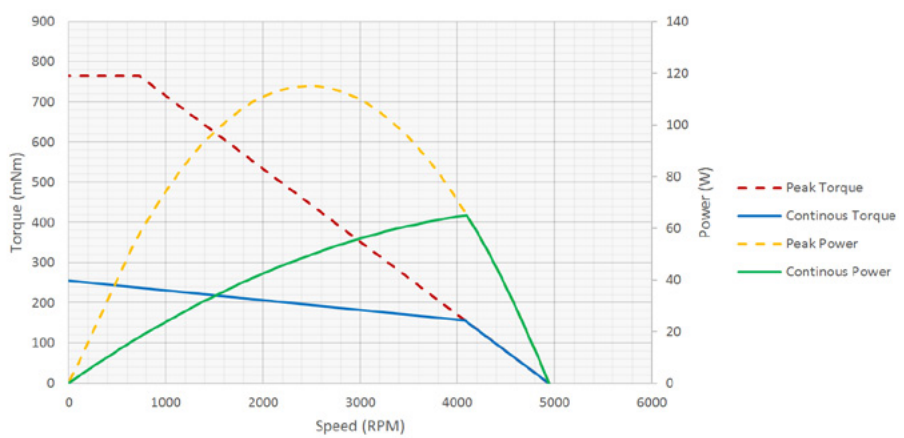
Agriculture

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

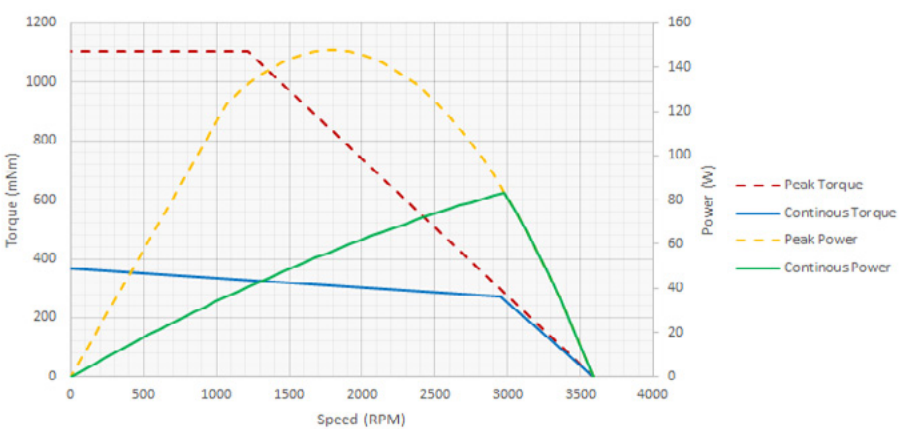
RPX40-125 Performance



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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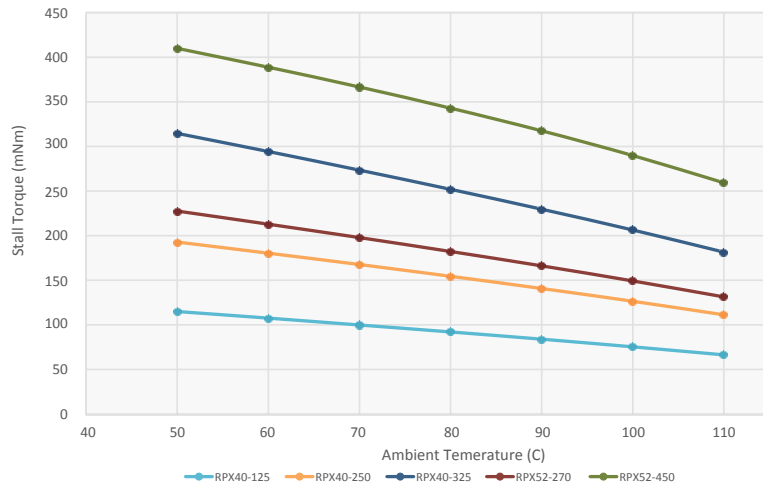
RPX40

ElectroCraft RapidPower™ Xtreme Brushless DC Servo Motor

High torque density. Excellent torque per frame size performance.



RPX Series Stall Torque at elevated Ambient Temperatures



Electrical Ratings

Parameter	Symbol	Units	RPX40-125	RPX40-250	RPX40-325
Rated Speed	—	rpm	4775	4075	2950
No-Load Speed	—	rpm	6230	4930	3590
Continuous Stall Torque*	T _c	mNm (oz.in)	125 (18.8)	250 (36.1)	325 (46.8)
Peak Torque	T _p	mNm (oz.in)	398 (56)	765 (108)	991 (140)
Motor Constant	K _m	nMn/√Watt (oz.in/√Watt)	31.6 (4.5)	54.2 (7.7)	69.2 (9.8)
Elec. Time Constant	t _e	msec	0.33	0.40	0.45
Mech. Time Constant	t _m	msec	1.11	0.51	0.19
Thermal Time Constant	T _{th}	sec	430	455	480
Rotor Inertia	J	g-cm ²	7	15	30
Thermal Resistance With Heat Sink	R _{th}	C/Watt	4.77	4.02	3.69
Max Axial Load	—	N	7 (5mm from face)		
Max Radial Load	—	N	30 (5mm from face)		
Weight	W	g (oz)	160 (5.60)	240 (8.40)	370 (12.95)
Motor Length	L	mm (in)	29.4 (1.2)	39.4 (1.6)	59.4 (2.3)
Number of Poles	—	—	14	14	14

*Continuous rating based on a 25°C ambient temperature, winding temperature rise of 100°C. Mounted on a 150 X 150 X 6 mm aluminum heat sink.



Winding Data

Parameter	Symbol	Units	RPX40-125			RPX40-250			RPX40-325		
			V12	V24	V48	V12	V24	V48	V12	V24	V48
Design Voltage	V	volts DC	12	24	48	12	24	48	12	24	48
Cont. Stall Current	Ic	amperes	6.6	3.3	1.6	10.9	5.5	2.7	10.3	5.2	2.6
Peak Current	Ip	amperes	19.7	9.8	4.9	32.8	16.4	8.2	31.0	15.5	7.7
Operating Temperature	—	C	-40 to 150								
Voltage Constant ± 10%	Ke	V/rad/sec (V/KRPM)	0.019 (2.0)	0.038 (4.0)	0.076 (8.0)	0.023 (2.4)	0.046 (4.8)	0.092 (9.6)	0.029 (3.0)	0.057 (6.0)	0.114 (12.0)
Torque Constant ±10%	Kt	mNm/amp (oz.in/amp)	19.1 (2.7)	38.1 (5.4)	76.3 (10.8)	22.9 (3.2)	45.8 (6.5)	91.5 (13.0)	31.5 (4.5)	63.9 (9.0)	126.8 (18.0)
Resistance ±10%	Rm	Ohms	0.36	1.45	5.83	0.37	0.81	2.30	0.17	0.68	2.74
Inductance ±30%	Ln	mH	0.118	0.474	1.890	0.074	0.341	1.360	0.077	0.309	1.230



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

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- Autonomous Vehicle Camera & Sensor Controls

Aerospace

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

Marine & Shipbuilding

- Gyro Stabilization Systems
- Steering Pumps

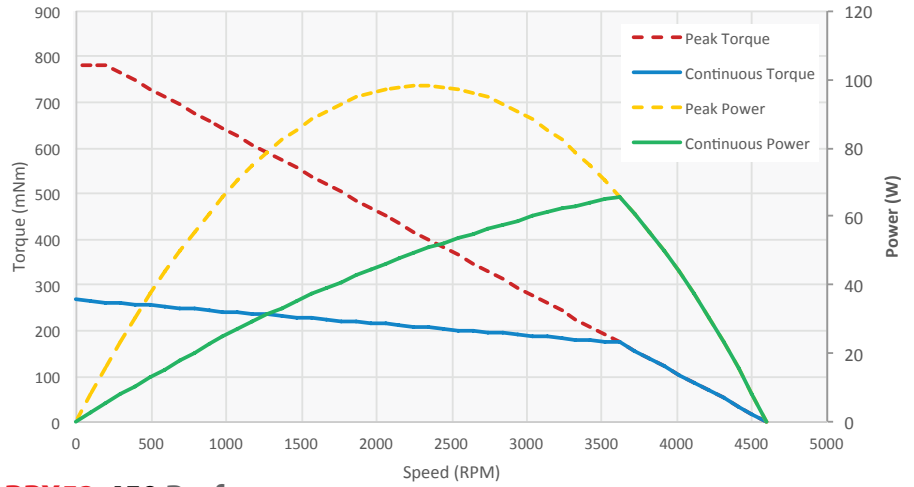
Military/Defense

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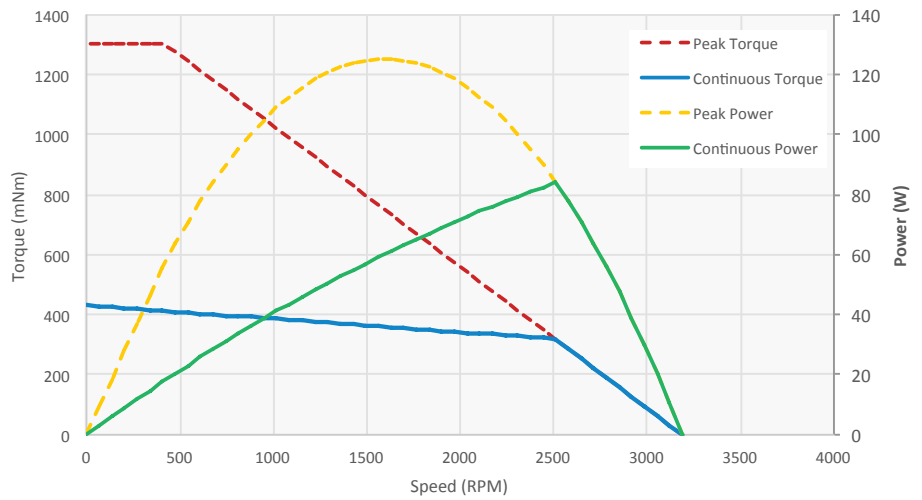
Agriculture

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

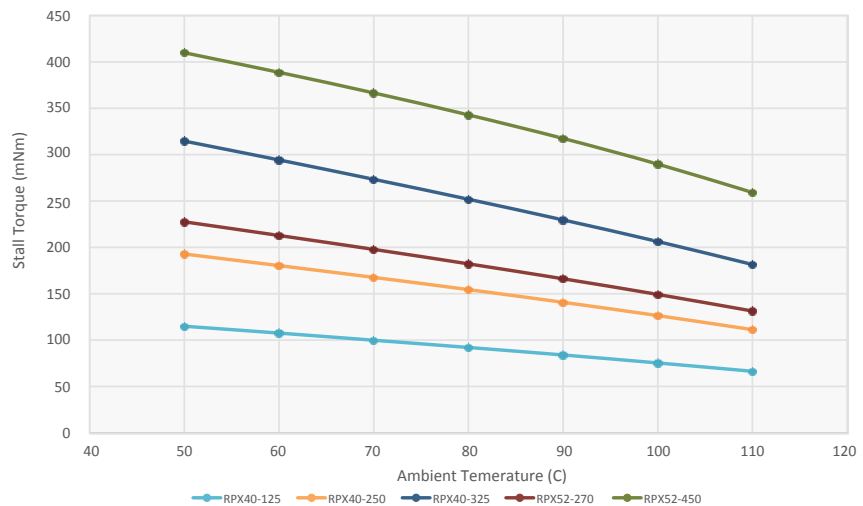
RPX52-270 Performance



RPX52-450 Performance



RPX Series Stall Torque at elevated Ambient Temperatures



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Electrical Ratings/Winding Data

Parameter	Symbol	Units	RPX52-270			RPX52-450		
			270V12	270V24	270V48	450V12	450V24	450V48
Rated Speed	—	rpm	3600			2500		
No-Load Speed	—	rpm	4600			3200		
Continuous Stall Torque*	Tc	mNm (oz.in)	270 (38.0)			450 (63.7)		
Peak Torque	Tp	mNm (oz.in)	780 (110)			1300 (184)		
Motor Constant	Km	nMn/√Watt (oz.in/√Watt)	49.0 (7.0)			90.0 (12.7)		
Elec. Time Constant	te	msec	0.55			0.85		
Mech. Time Constant	tm	msec	2.20			1.10		
Thermal Time Constant	Tth	sec	580			620		
Rotor Inertia	J	g-cm ²	66			108		
Thermal Resistance With Heat Sink	Rth	C/Watt	3.7			3.2		
Max Axial Load	—	N	35 (5mm from face)					
Max Radial Load	—	N	110 (5mm from face)					
Weight	W	g (oz)	350 (12.40)			540 (19.10)		
Motor Length	L	mm (in)	45 (1.8)			57 (2.3)		
Number of Poles	—	—	14			14		
			270V12	270V24	270V48	450V12	450V24	450V48
Design Voltage	V	volts DC	12	24	48	12	24	48
Cont. Stall Current	Ic	amperes	10.9	5.4	2.7	11.8	5.9	3.0
Peak Current	Ip	amperes	32.7	16.3	8.2	35.5	17.8	8.9
Operating Temperature	—	C	-40 to 150					
Voltage Constant ± 10%	Ke	V/rad/sec (V/KRPM)	0.025 (2.6)	0.049 (5.1)	0.095 (10.0)	0.034 (3.6)	0.070 (7.3)	0.139 (14.6)
Torque Constant ±10%	Kt	mNm/amp (oz.in/amp)	24.8 (3.5)	49.4 (7.0)	76.3 (10.8)	38.0 (5.2)	73.0 (10.3)	144.0 (20.4)
Resistance ±10%	Rm	Ohms	0.20	0.80	3.30	0.16	0.53	2.30
Inductance ±30%	Ln	mH	0.110	0.440	1.800	0.130	0.450	1.360

*Continuous rating based on a 25°C ambient temperature, winding temperature rise of 100°C. Mounted on a 150 X 150 X 6 mm aluminum heat sink.



Major Product Lines



Steppers



Brushless DC



PMDC



Drives



Cable / Harness Solutions



Linear Actuators



AC Motors



Integrated Motor Drives



Mobility Gearmotors



AC Synchronous



Tin Can Steppers



PMAC Synchronous



Stepper Gear Motors



Rotary Actuators

Global Locations

