Allied Motion

Technology Overview

Quantum Gen II Brushless Servo Motors





Quantum Gen II NEMA 23 brushless servo motor

Quantum Gen II Brushless Servo Motor Technology

Allied Motion's Quantum Gen II technology for housed brushless servo motors employs unique interlocking stator pole segments (item 1 above) made of lower loss laminations to achieve higher torque density than motors of traditional design.

Stator windings in Gen II Quantum motors are machine wound increasing their copper slot fill, which together with the use of neodymium rare-earth magnets on the rotor, maximizes torque production for an all-around higher performance, and more costeffective servo motor.

The rotor (item 2) in Quantum Gen II technology motors is designed with shaped rare-earth neodymium magnet segments that minimizes cogging torque from a non-skewed rotor assembly.

Advantages of Quantum Gen II Brushless Servo Motors

Allied Motion's Quantum Gen II brushless servo motors offer significant benefits for many servo applications:

- Higher torque density than other equivalent-size motors
- Segmented design and machine winding enables higher copper fill (slot fill) and minimal end turns boosting performance
- Non-skewed, non-cogging stator assembly for smoother speed and better bi-directional operation
- Rare-earth magnets provide maximum motor torque densities
- Lower loss lamination material for higher efficiency

Quantum Gen II Brushless Servo Motor Applications

Below are a few application types that benefit from the advantages of Quantum Gen II brushless servo motors:

- Medical surgical robots
- Machine tool axis drives
- High speed packaging machines
- Semiconductor fabrication, assembly and test systems
- Automated pharmaceutical dispensing systems
- Precision adhesive and liquid gasket dispensing systems
- High speed assembly robots
- Converting and printing systems

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	Size [mm (in)]	Stall Torque [Nm (oz-in)]	No-Load Speed [RPM]	Rated Power [W]	Winding Voltage [VDC]	Inertia [kg-m² (oz-in-s²)]	Options
XT017	NEMA 17: 41.7 (1.64) square body; 6.35 (0.25) shaft diameter	0.08 - 0.3 (11.5 - 43.5)	5300 - 29000	Up to 211	24, 40, 130	1.0E-7 - 4.1E-6 (1.4E-4 - 5.8E-4)	 Encoder or resolver feedback, or Hall only Sealed versions up to IP65 for operation in harsh environments Custom winding options to provide higher operating ranges of speed and voltage (up to 300 VDC)
XT023	NEMA 23: 58.4 (2.3) square body; 9.53 (0.375) shaft diameter	0.36 - 1.28 (51 - 182)	2270 - 10200	Up to 528	24, 40, 130	7.6E-6 - 3.0E-5 (1.0E-3 - 4.3E-3)	 Encoder or resolver feedback, or Hall only Sealed versions up to IP65 for operation in harsh environments Custom winding options to provide higher operating ranges of speed and voltage (up to 300 VDC)
XT034	NEMA 34: 86.9 (3.42) square body; 12.7 (0.5) shaft diameter	0.81 - 3.03 (115 - 429)	1240 - 8000	Up to 1072	24, 40, 130	5.2E-5 - 2.1E-4 (7.4E-3 - 3.0E-2)	 Encoder or resolver feedback, or Hall only Sealed versions up to IP65 for operation in harsh environments Custom winding options to provide higher operating ranges of speed and voltage (up to 300 VDC)



Note: Blue-shaded area indicates optimum operational area for the motor

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