

### AKM3x Performance Data – Up to 640 Vdc

				AKM31	
Parameters	Tol	Symbol	Units	E	
Max Rated DC Bus Voltage	Max	Vbus	Vdc	320	
Continuous Torque (Stall) for $\Delta T$ winding = 100°C ①②⑦⑧⑨	Nom	$T_{cs}$	Nm	1.20	
			lb-in	10.6	
Continuous Current (Stall) for $\Delta T$ winding = 100°C ①②⑦⑧⑨	Nom	$I_{cs}$	$A_{rms}$	2.99	
Continuous Torque (Stall) for $\Delta T$ winding = 60°C ②	Nom	$T_{cs}$	Nm	0.96	
			lb-in	8.5	
Max Mechanical Speed ⑤	Nom	$N_{max}$	rpm	8000	
Peak Torque ①②	Nom	$T_p$	Nm	4.00	
			lb-in	35.4	
Peak Current	Nom	$I_p$	$A_{rms}$	12.0	
75 Vdc Rated Torque (speed) ①②⑦⑧⑨⑩		$T_{rtd}$	Nm	1.19	
			lb-in	10.5	
Rated Speed		$N_{rtd}$	rpm	750	
Rated Power (speed) ①②⑦⑧⑨		$P_{rtd}$	kW	0.09	
			Hp	0.13	
160 Vdc Rated Torque (speed) ①②⑦⑧⑨⑩		$T_{rtd}$	Nm	1.17	
			lb-in	10.3	
Rated Speed		$N_{rtd}$	rpm	2500	
Rated Power (speed) ①②⑦⑧⑨		$P_{rtd}$	kW	0.31	
			Hp	0.41	
320 Vdc Rated Torque (speed) ①②⑦⑧⑨⑩		$T_{rtd}$	Nm	0.95	
			lb-in	8.4	
Rated Speed		$N_{rtd}$	rpm	6000	
Rated Power (speed) ①②⑦⑧⑨		$P_{rtd}$	kW	0.60	
			Hp	0.80	
560 Vdc Rated Torque (speed) ①②⑦⑧⑨⑩		$T_{rtd}$	Nm	-	
			lb-in	-	
Rated Speed		$N_{rtd}$	rpm	-	
Rated Power (speed) ①②⑦⑧⑨		$P_{rtd}$	kW	-	
			Hp	-	
640 Vdc Rated Torque (speed) ①②⑦⑧⑨⑩		$T_{rtd}$	Nm	-	
			lb-in	-	
Rated Speed		$N_{rtd}$	rpm	-	
Rated Power (speed) ①②⑦⑧⑨		$P_{rtd}$	kW	-	
			Hp	-	

See following page for notes.

				AKM31	
Parameters	Tol	Symbol	Units		E
Torque Constant ①	±10%	$K_t$	Nm/A <sub>rms</sub>		0.41
			lb-in/A <sub>rms</sub>		3.6
Back EMF Constant ⑥	±10%	$K_e$	V/krpm		26.1
Motor Constant	Nom	$K_m$	N-m/√W		0.154
			lb-in/√W		1.36
Resistance (line-line) ⑥	±10%	$R_m$	ohm		4.74
Inductance (line-line)		$L$	mH		8.6
Inertia (includes Resolver feedback) ③	±10%	$J_m$	kg-cm <sup>2</sup>		0.33
			lb-in-s <sup>2</sup>		2.9E-04
Optional Brake Inertia (additional)	±10%	$J_m$	kg-cm <sup>2</sup>		0.012
			lb-in-s <sup>2</sup>		1.1E-05
Weight		$W$	kg		1.55
			lb		3.4
Static Friction ①⑩		$T_f$	Nm		0.014
			lb-in		0.12
Viscous Damping ①		$K_{dv}$	Nm/krpm		0.002
			lb-in/krpm		0.02
Thermal Time Constant		TCT	minutes		14
Thermal Resistance		$R_{thw-a}$	°C/W		1.11
Pole Pairs					4
Heat Sink Size					10"x10"x1/4" Aluminum Plate

**Notes:**

- ① Motor winding temperature rise,  $\Delta T=100^\circ\text{C}$ , at  $40^\circ\text{C}$  ambient.
- ② All data referenced to sinusoidal commutation.
- ③ Add parking brake if applicable for total inertia.
- ④ Motor with standard heat sink.
- ⑤ May be limited at some values of  $V_{bus}$ .
- ⑥ Measured at  $25^\circ\text{C}$ .
- ⑦ Brake motor option reduces continuous torque ratings by:  
AKM31 = 0.0 Nm   AKM32 = 0.05 Nm   AKM33 = 0.1 Nm
- ⑧ For non-resolver feedback options: no continuous torque reduction.
- ⑨ Motors with non-resolver feedback and brake option, reduce continuous torque by:  
AKM31 = 0.0 Nm   AKM32 = 0.1 Nm   AKM33 = 0.2 Nm
- ⑩ For motors with optional shaft seal, reduce torque shown by 0.047 Nm (0.41 lb-in), and increase  $T_f$  by the same amount.

Additional Notes: See system data beginning on page 14 for typical torque/speed performance.

Additional windings can be found through our online Motioneering sizing and selection software tool. See page 73 for more information.