

AKM3x Performance Data – Up to 640 Vdc

				AKM31		
Parameters	Tol	Symbol	Units	C	E	H
Max Rated DC Bus Voltage	Max	Vbus	Vdc	640	320	160
Continuous Torque (Stall) for ΔT winding = 100°C ①②⑦⑧⑨	Nom	Tcs	Nm	1.15	1.20	1.23
			lb-in	10.2	10.6	10.8
Continuous Current (Stall) for ΔT winding = 100°C ①②⑦⑧⑨	Nom	Ics	A _{rms}	1.37	2.99	5.85
Continuous Torque (Stall) for ΔT winding = 60°C ②	Nom	Tcs	Nm	0.92	0.96	0.98
			lb-in	8.1	8.5	8.7
Max Mechanical Speed ⑤	Nom	N _{max}	rpm	8000	8000	8000
Peak Torque ①②	Nom	Tp	Nm	3.88	4.00	4.06
			lb-in	34.3	35.4	35.9
Peak Current	Nom	Ip	A _{rms}	5.5	12.0	23.4
75 Vdc		Trtd	Nm	-	1.19	1.20
			lb-in	-	10.5	10.6
		Nrtd	rpm	-	750	2000
		Prtd	kW	-	0.09	0.25
			Hp	-	0.13	0.34
160 Vdc		Trtd	Nm	-	1.17	0.97
			lb-in	-	10.3	8.6
		Nrtd	rpm	-	2500	6000
		Prtd	kW	-	0.31	0.61
			Hp	-	0.41	0.82
320 Vdc		Trtd	Nm	1.12	0.95	-
			lb-in	9.9	8.4	-
		Nrtd	rpm	2500	6000	-
		Prtd	kW	0.29	0.60	-
			Hp	0.39	0.80	-
560 Vdc		Trtd	Nm	1.00	-	-
			lb-in	8.9	-	-
		Nrtd	rpm	5000	-	-
		Prtd	kW	0.52	-	-
			Hp	0.70	-	-
640 Vdc		Trtd	Nm	0.91	-	-
			lb-in	8.1	-	-
		Nrtd	rpm	6000	-	-
		Prtd	kW	0.57	-	-
			Hp	0.77	-	-

See following page for notes.

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Parameters	Tol	Symbol	Units	C	E	H
Torque Constant ①	±10%	K_t	Nm/A _{rms}	0.85	0.41	0.21
			lb-in/A _{rms}	7.5	3.6	1.9
Back EMF Constant ⑥	±10%	K_e	V/krpm	54.5	26.1	13.7
Motor Constant	Nom	K_m	N-m/√W	0.150	0.154	0.151
			lb-in/√W	1.33	1.36	1.34
Resistance (line-line) ⑥	±10%	R_m	ohm	21.4	4.74	1.29
Inductance (line-line)		L	mH	37.5	8.6	2.4
Inertia (includes Resolver feedback) ③	±10%	J_m	kg-cm ²	0.33		
			lb-in-s ²	2.9E-04		
Optional Brake Inertia (additional)	±10%	J_m	kg-cm ²	0.012		
			lb-in-s ²	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°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°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.