



### AKM4x - Up to 640 VDC

See system data beginning on page 8 for typical torque/speed performance.

PARAMETER	ToI	SYMBOL	UNITS	AKM41			AKM42				AKM43			AKM44		
				C	E	H	C	E	G	J	E	G	K	E	G	J
Max Rated DC Bus Voltage	Max	V <sub>bus</sub>	V <sub>dc</sub>	640	640	320	640	640	640	320	640	640	320	640	640	640
Continuous Torque (Stall) for ΔT winding = 100°C ①②⑦⑧⑨	Nom	T <sub>cs</sub>	N-m lb-in	1.95 17.3	2.02 17.9	2.06 18.2	3.35 29.6	3.42 30.3	3.53 31.2	3.56 31.5	4.70 41.6	4.80 42.5	4.90 43.4	5.76 51.0	5.88 52.0	6.00 53.1
Continuous Current (Stall) for ΔT winding = 100°C ①②⑦⑧⑨	Nom	I <sub>cs</sub>	A <sub>rms</sub>	1.46	2.85	5.60	1.40	2.74	4.80	8.40	2.76	4.87	9.60	2.9	5.0	8.8
Continuous Torque (Stall) for ΔT winding = 60°C ②	Nom	T <sub>cs</sub>	N-m lb-in	1.56 13.8	1.62 14.3	1.65 14.6	2.68 23.7	2.74 24.2	2.82 25.0	2.85 25.2	3.76 33.3	3.84 34.0	3.92 34.7	4.61 40.8	4.70 41.6	4.80 42.5
Max Mechanical Speed ⑤	Nom	N <sub>max</sub>	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Peak Torque ①②	Nom	T <sub>p</sub>	N-m lb-in	6.12 54.2	6.28 55.6	6.36 56.3	11.1 98.8	11.3 99.7	11.5 102	11.6 103	15.9 141	16.1 142	16.3 144	19.9 176	20.2 179	20.4 181
Peak Current	Nom	I <sub>p</sub>	A <sub>rms</sub>	5.8	11.4	22.4	5.61	11.0	19.2	33.7	11.0	19.5	38.3	11.4	20.0	35.2
75VDC	Rated Torque (speed) ①②⑦⑧⑨	T <sub>rtd</sub>	N-m lb-in	-	-	1.99 17.6	-	-	-	-	-	-	-	-	-	-
	Rated Speed	N <sub>rtd</sub>	rpm	-	-	1000	-	-	-	-	-	-	-	-	-	-
	Rated Power (speed) ①②⑦⑧⑨	P <sub>rtd</sub>	kW Hp	-	-	0.21 0.28	-	-	-	-	-	-	-	-	-	-
160VDC	Rated Torque (speed) ①②⑦⑧⑨	T <sub>rtd</sub>	N-m lb-in	-	1.94 17.2	1.86 16.5	-	-	-	3.03 26.8	-	-	4.08 36.1	-	-	-
	Rated Speed	N <sub>rtd</sub>	rpm	-	1200	3000	-	-	-	3000	-	-	2500	-	-	-
	Rated Power (speed) ①②⑦⑧⑨	P <sub>rtd</sub>	kW Hp	-	0.24 0.33	0.58 0.78	-	-	-	0.95 1.28	-	-	1.07 1.43	-	-	-
320VDC	Rated Torque (speed) ①②⑦⑧⑨	T <sub>rtd</sub>	N-m lb-in	1.88 16.6	1.82 16.1	1.62 14.3	-	3.12 27.6	2.90 25.7	2.38 21.1	4.24 37.5	4.00 35.4	2.62 23.2	5.22 46.2	4.90 43.4	3.84 34.0
	Rated Speed	N <sub>rtd</sub>	rpm	1200	3000	6000	-	1800	3500	6000	1500	2500	6000	1200	2000	4000
	Rated Power (speed) ①②⑦⑧⑨	P <sub>rtd</sub>	kW Hp	0.24 0.32	0.57 0.77	1.02 1.36	-	0.59 0.79	1.06 1.42	1.50 2.00	0.67 0.89	1.05 1.40	1.65 2.21	0.66 0.88	1.03 1.38	1.61 2.16
560VDC	Rated Torque (speed) ①②⑦⑧⑨	T <sub>rtd</sub>	N-m lb-in	1.77 15.7	1.58 14.0	-	3.10 27.4	2.81 24.9	2.35 20.8	-	3.92 34.7	3.01 26.6	-	4.80 42.5	3.76 33.3	2.75 24.3
	Rated Speed	N <sub>rtd</sub>	rpm	3000	6000	-	1500	3500	6000	-	2500	5000	-	2000	4000	6000
	Rated Power (speed) ①②⑦⑧⑨	P <sub>rtd</sub>	kW Hp	0.56 0.75	0.99 1.33	-	0.49 0.65	1.03 1.38	1.48 1.98	-	1.03 1.38	1.58 2.11	-	1.01 1.35	1.57 2.11	1.73 2.32
640VDC	Rated Torque (speed) ①②⑦⑧⑨	T <sub>rtd</sub>	N-m lb-in	1.74 15.4	1.58 14.0	-	3.02 26.7	2.72 24.1	2.35 20.8	-	3.76 33.3	2.57 22.7	-	4.56 40.4	3.19 28.2	2.75 24.3
	Rated Speed	N <sub>rtd</sub>	rpm	3500	6000	-	2000	4000	6000	-	3000	6000	-	2500	5000	6000
	Rated Power (speed) ①②⑦⑧⑨	P <sub>rtd</sub>	kW Hp	0.64 0.85	0.99 1.33	-	0.63 0.85	1.14 1.53	1.48 1.98	-	1.18 1.58	1.61 2.16	-	1.19 1.60	1.67 2.24	1.73 2.32
Torque Constant ①	±10%	K <sub>t</sub>	N-m/A <sub>rms</sub> lb-in/A <sub>rms</sub>	1.34 11.9	0.71 6.3	0.37 3.3	2.40 21.2	1.26 11.2	0.74 6.5	0.43 3.8	1.72 15.2	0.99 8.8	0.52 4.6	2.04 18.1	1.19 10.5	0.69 6.1
Back EMF constant ⑥	±10%	K <sub>e</sub>	V/k <sub>r</sub> rpm	86.3	45.6	23.7	154	80.9	47.5	27.5	111	63.9	33.2	132	76.6	44.2
Resistance (line-line) ⑧	±10%	R <sub>m</sub>		21.7	5.7	1.51	27.52	7.22	2.38	0.80	8.04	2.61	0.70	8.08	2.65	0.88
Inductance (line-line)		L	mH	66.1	18.4	5.0	97.4	26.8	9.2	3.1	32.6	10.8	2.9	33.9	11.5	3.8
Inertia (includes Resolver feedback) ③		J <sub>m</sub>	kg-cm <sup>2</sup> lb-in-s <sup>2</sup>		0.81 7.2E-04			1.5 1.3E-03			2.1 1.8E-03			2.7 2.4E-03		
Optional Brake Inertia (additional)		J <sub>m</sub>	kg-cm <sup>2</sup> lb-in-s <sup>2</sup>		0.068 6.0E-05			0.068 6.0E-05			0.068 6.0E-05			0.068 6.0E-05		
Weight		W	kg lb		2.44 5.4			3.39 7.5			4.35 9.6			5.3 11.7		
Static Friction ④⑨		T <sub>f</sub>	N-m lb-in		0.014 0.12			0.026 0.23			0.038 0.34			0.05 0.44		
Viscous Damping ⑩		K <sub>dv</sub>	N-m/k <sub>r</sub> rpm lb-in/k <sub>r</sub> rpm		0.009 0.08			0.013 0.12			0.017 0.15			0.021 0.19		
Thermal Time Constant		TCT	minutes		13			17			20			24		
Thermal Resistance		R <sub>thw-a</sub>	°C/W		1.04			0.89			0.78			.71		
Pole Pairs					5			5			5			5		
Heatsink Size				10"x10"x1/4" Aluminum Plate			10"x10"x1/4" Aluminum Plate				10"x10"x1/4" Aluminum Plate			10"x10"x1/4" Aluminum Plate		

Notes:

1. Motor winding temperature rise, ΔT=100°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 heatsink.
5. May be limited at some values of V<sub>bus</sub>.
6. Measured at 25°C.

7. Brake motor option reduces continuous torque ratings by 0.12 N-m.

8. Commutating encoder/SFD options reduces continuous ratings by:

AKM41 = 0.1 N-m  
AKM43 = 0.2 N-m  
AKM42 = 0.1 N-m  
AKM44 = 0.3 N-m

9. Brake plus commutating encoder/SFD motor option reduces continuous torque ratings by:

AKM41 = 0.22 N-m  
AKM43 = 0.55 N-m  
AKM42 = 0.36 N-m  
AKM44 = 0.76 N-m

10. For motors with optional shaft seal, reduce torque shown by 0.071 N-m (0.63lb-in), and increase T<sub>f</sub> by the same amount.

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