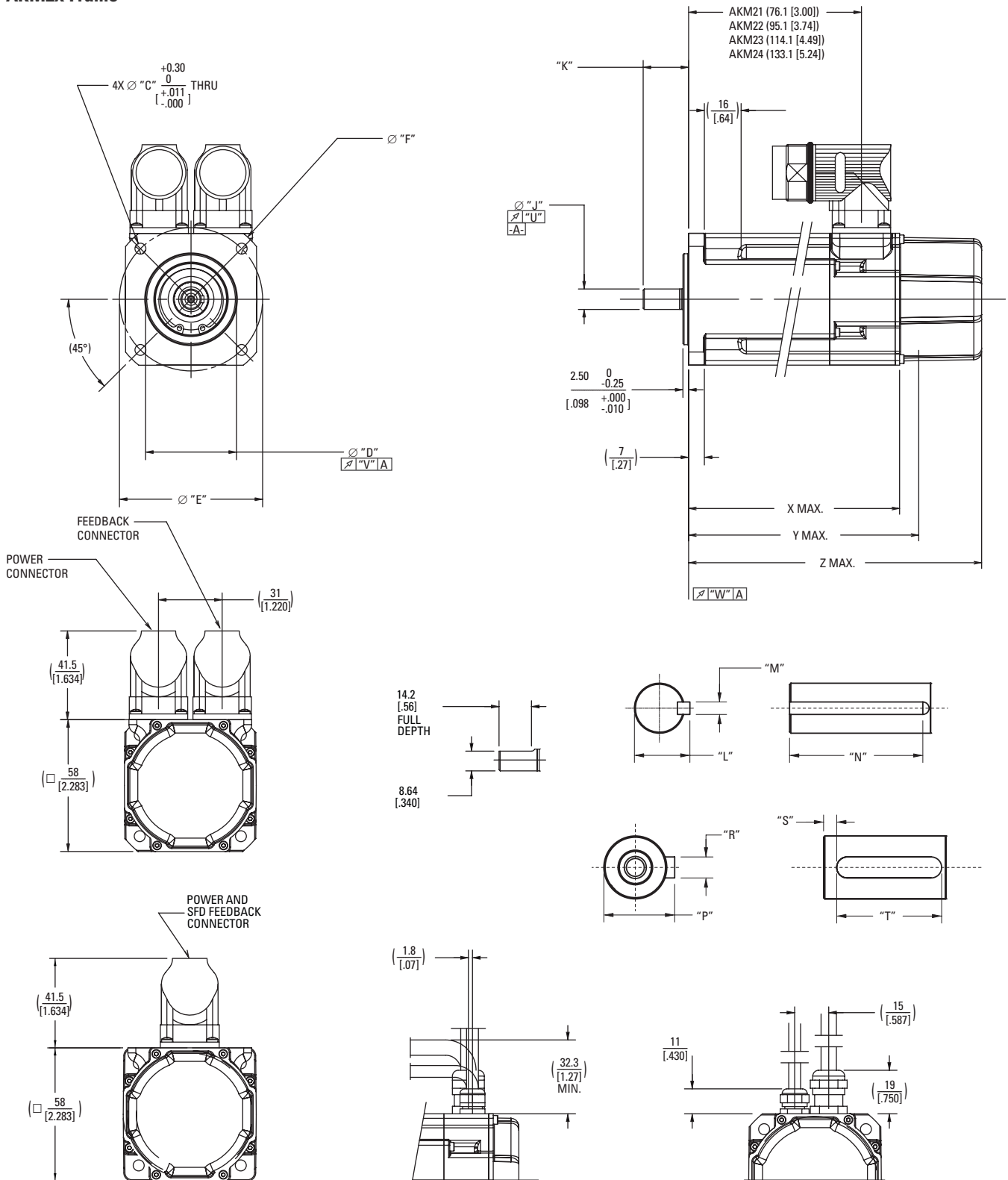


AKM2x Outline Drawings

AKM2x Frame



AKM2x Dimension Data

AKM2x Dimension Data

Mounting Code	"C"	"D"	"E"	"F"	"H"	"J"	"K"	"L"
AC	4.80 [.189]	$40^{+0.011}_{-0.005}$ [1.5748 $^{+0.0004}_{-0.0002}$] j6	63 [2.480]	74 [2.913]	D M3 DIN 332	$9^{+0.010}_{+0.001}$ [.3543 $^{+0.0004}_{+0.0000}$] k6	20.0 [.79]	-
AN	4.80 [.189]	$40^{+0.011}_{-0.005}$ [1.5748 $^{+0.0004}_{-0.0002}$] j6	63 [2.480]	74 [2.913]	D M3 DIN 332	$9^{+0.010}_{+0.001}$ [.3543 $^{+0.0004}_{+0.0000}$] k6	20.0 [.79]	-
BN	5.10 [.201]	$38.10^0_{-0.05}$ [1.500 $^{+0.000}_{-0.002}$] j6	66.68 [2.625]	-	-	$9.525^0_{-0.013}$ [.3750 $^{+0.0000}_{-0.0005}$] k6	31.75 ± 0.79 [1.250 ± 0.031]	-
CK	5.80 [.228]	$50^0_{-0.016}$ [1.9685 $^{+0.0000}_{-0.0006}$] h6	70 [2.756]	-	-	$14^0_{-0.011}$ [.5512 $^{+0.0000}_{-0.0004}$] h6	30.0 [1.181]	$16^0_{-0.13}$ [.630 $^{+0.000}_{-0.005}$]
DC	5.80 [.228]	$40^{+0.011}_{-0.005}$ [1.5748 $^{+0.0004}_{-0.0002}$] j6	65 [2.559]	-	D M3 DIN 332	$9^{+0.010}_{+0.001}$ [.3543 $^{+0.0004}_{+0.0000}$] k6	20.0 [.79]	-
DN	5.80 [.228]	$40^{+0.011}_{-0.005}$ [1.5748 $^{+0.0004}_{-0.0002}$] j6	65 [2.559]	-	D M3 DIN 332	$9^{+0.010}_{+0.001}$ [.3543 $^{+0.0004}_{+0.0000}$] k6	20.0 [.79]	-
EN & EF	5.10 [.201]	$38.10^0_{-0.05}$ [1.500 $^{+0.000}_{-0.002}$] j6	66.68 [2.625]	-	-	$9.525^0_{-0.013}$ [.3750 $^{+0.0000}_{-0.0005}$] k6	20.57 ± 0.25 [0.810 ± 0.010]	-

Mounting Code	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"V"	"W"
AC	-	-	$10.2^0_{-0.13}$ [.402 $^{+0.000}_{-0.005}$]	$3^0_{-0.025}$ [.1181 $^{+0.0000}_{-0.0010}$]	300 [.118]	$12^0_{-0.20}$ [.472 $^{+0.000}_{-0.008}$]	0.030 [.0011]	0.060 [.0023]	0.060 [.0023]
AN	-	-	-	-	-	-	0.030 [.0011]	0.060 [.0023]	0.060 [.0023]
BN	-	-	-	-	-	-	0.051 [.0020]	0.10 [.004]	0.10 [.004]
CK	$5^0_{-0.03}$ [.197 $^{+0.000}_{-0.001}$] N9	$20^0_{-0.02}$ [.787 $^{+0.000}_{-0.008}$]	-	-	-	-	0.035 [0.0013]	0.080 [0.0031]	0.080 [.0031]
DC	-	-	$10.2^0_{-0.13}$ [.402 $^{+0.000}_{-0.005}$]	$3^0_{-0.025}$ [.1181 $^{+0.0000}_{-0.0010}$]	300 [.118]	$12^0_{-0.20}$ [.472 $^{+0.000}_{-0.008}$]	0.030 [.0011]	0.060 [.0023]	0.060 [.0023]
DN	-	-	-	-	-	-	0.030 [.0011]	0.060 [.0023]	0.060 [.0023]
EN & EF	-	-	-	-	-	-	0.051 [.0020]	0.10 [.004]	0.10 [.004]

MODEL	(X MAX) ("C" Connector Option W/ Resolver)	Y MAX	Z MAX (W/ BRAKE)
AKM21	86.2 [3.39]	95.4 [3.76]	129.5 [5.10]
AKM22	105.2 [4.14]	114.4 [4.50]	148.5 [5.85]
AKM23	124.2 [4.89]	133.4 [5.25]	167.5 [6.59]
AKM24	143.2 [5.64]	152.4 [6.00]	186.5 [7.34]

Note: Dimensions are in mm [inches]. Product designed in metric. English conversions provided for reference only.

AKM2x Performance Data

AKM2x Performance Data – Up to 640 Vdc

Parameters	Tol	Symbol	Units	AKM21			AKM22			AKM23			AKM24		
				C	E	G	C	E	G	D	E	F	D	E	F
Max Rated DC Bus Voltage	Max	V _{bus}	Vdc	320	160	75	640	320	160	640	320	320	640	320	320
Continuous Torque (Stall) for ΔT winding = 100°C ①②⑦⑧⑨	Nom	T _{cs}	Nm	0.48	0.50	0.50	0.84	0.87	0.88	1.16	1.16	1.18	1.41	1.40	1.42
			lb-in	4.2	4.4	4.4	7.4	7.7	7.8	10.3	10.3	10.4	12.5	12.4	12.6
Continuous Current (Stall) for ΔT winding = 100°C ①②⑦⑧⑨	Nom	I _{cs}	A _{rms}	1.58	3.11	4.87	1.39	2.73	4.82	2.19	2.78	4.31	2.21	2.79	3.89
Continuous Torque (Stall) for ΔT winding = 60°C ②	Nom	T _{cs}	Nm	0.38	0.40	0.40	0.67	0.70	0.70	0.92	0.93	0.94	1.13	1.12	1.14
			lb-in	3.4	3.5	3.5	5.9	6.2	6.2	8.2	8.23	8.4	10.0	9.91	10.1
Max Mechanical Speed ⑤	Nom	N _{max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
Peak Torque ①②	Nom	T _p	Nm	1.47	1.49	1.51	2.73	2.76	2.79	3.84	3.86	3.88	4.76	4.79	4.82
			lb-in	13.0	13.2	13.4	24.2	24.4	24.7	34.0	34.2	34.3	42.1	42.4	42.7
Peak Current	Nom	I _p	A _{rms}	6.3	12.4	19.5	5.6	10.9	19.3	8.8	11.1	17.2	8.8	11.2	15.6
Rated Torque (speed) ①②⑦⑧⑨⑩		T _{rtd}	Nm	-	0.48	0.46	-	0.85	0.83	-	-	1.15	-	-	1.39
			lb-in	-	4.2	4.1	-	7.5	7.4	-	-	10.2	-	-	12.3
Rated Speed		N _{rtd}	rpm	-	2000	4000	-	1000	2500	-	-	1500	-	-	1000
Rated Power (speed) ①②⑦⑧⑨		P _{rtd}	kW	-	0.10	0.19	-	0.09	0.22	-	-	0.18	-	-	0.15
			Hp	-	0.13	0.26	-	0.12	0.29	-	-	0.24	-	-	0.20
Rated Torque (speed) ①②⑦⑧⑨⑩		T _{rtd}	Nm	0.46	0.41	-	0.83	0.81	0.74	1.12	1.1	1.07	1.36	1.34	1.33
			lb-in	4.0	3.7	-	7.3	7.1	6.5	9.9	9.7	9.5	12.0	11.9	11.8
Rated Speed		N _{rtd}	rpm	2500	7000	-	1000	3500	7000	1500	2500	4500	1500	2000	3000
Rated Power (speed) ①②⑦⑧⑨		P _{rtd}	kW	0.12	0.30	-	0.09	0.30	0.54	0.18	0.29	0.50	0.21	0.28	0.42
			Hp	0.16	0.41	-	0.12	0.40	0.72	0.24	0.39	0.68	0.29	0.38	0.56
Rated Torque (speed) ①②⑦⑧⑨⑩		T _{rtd}	Nm	0.39	-	-	0.78	0.70	-	1.03	0.98	0.94	1.29	1.24	1.12
			lb-in	3.4	-	-	6.9	6.2	-	9.1	8.7	8.3	11.4	11.0	9.9
Rated Speed		N _{rtd}	rpm	8000	-	-	3500	8000	-	5000	6500	8000	4000	5500	8000
Rated Power (speed) ①②⑦⑧⑨		P _{rtd}	kW	0.32	-	-	0.29	0.59	-	0.54	0.67	0.79	0.54	0.71	0.94
			Hp	0.43	-	-	0.38	0.79	-	0.72	0.89	1.06	0.72	0.96	1.26
Rated Torque (speed) ①②⑦⑧⑨⑩		T _{rtd}	Nm	-	-	-	0.68	-	-	0.92	-	-	1.11	-	-
			lb-in	-	-	-	6.0	-	-	8.1	-	-	9.8	-	-
Rated Speed		N _{rtd}	rpm	-	-	-	8000	-	-	8000	-	-	8000	-	-
Rated Power (speed) ①②⑦⑧⑨		P _{rtd}	kW	-	-	-	0.57	-	-	0.77	-	-	0.93	-	-
			Hp	-	-	-	0.76	-	-	1.03	-	-	1.25	-	-
Rated Torque (speed) ①②⑦⑧⑨⑩		T _{rtd}	Nm	-	-	-	0.68	-	-	0.92	-	-	1.11	-	-
			lb-in	-	-	-	6.0	-	-	8.1	-	-	9.8	-	-
Rated Speed		N _{rtd}	rpm	-	-	-	8000	-	-	8000	-	-	8000	-	-
Rated Power (speed) ①②⑦⑧⑨		P _{rtd}	kW	-	-	-	0.57	-	-	0.77	-	-	0.93	-	-
			Hp	-	-	-	0.76	-	-	1.03	-	-	1.25	-	-

See following page for notes.

AKM2x Performance Data – Up to 640 Vdc (Continued)

Parameters	Tol	Symbol	Units	AKM21			AKM22			AKM23			AKM24		
				C	E	G	C	E	G	D	E	F	D	E	F
Torque Constant ①	±10%	K_t	Nm/A _{RMS}	0.30	0.16	0.10	0.61	0.32	0.18	0.52	0.42	0.27	0.63	0.50	0.36
			lb-in/A _{RMS}	2.7	1.4	0.9	5.4	2.8	1.6	4.6	3.7	2.4	5.6	4.4	3.2
Back EMF Constant ⑥	±10%	K_e	V/k _r rpm	19.5	10.2	6.6	39	20.4	11.7	33.8	27.0	17.6	40.8	32.5	23.4
Motor Constant	Nom	K_m	N-m/√W	0.0679	0.0706	0.0680	0.111	0.114	0.110	0.143	0.147	0.144	0.171	0.175	0.171
			lb-in/√W	0.601	0.625	0.602	0.986	1.01	0.98	1.27	1.30	1.28	1.52	1.55	1.52
Resistance (line-line) ⑥	±10%	R_m	ohm	13	3.42	1.44	19.98	5.22	1.77	8.77	5.44	2.34	9.02	5.44	2.94
Inductance (line-line)		L	mH	19	5.2	2.18	35.5	9.7	3.19	17.3	11.1	4.68	18.7	11.8	6.16
Inertia (includes Resolver feedback) ③	±10%	J_m	kg-cm ²	0.11			0.16			0.22			0.27		
			lb-in-s ²	9.5E-05			1.4E-04			1.9E-04			2.4E-04		
Optional Brake Inertia (additional)	±10%	J_m	kg-cm ²	0.012			0.012			0.012			0.012		
			lb-in-s ²	1.1E-05			1.1E-05			1.1E-05			1.1E-05		
Weight		W	kg	0.82			1.1			1.38			1.66		
			lb	1.8			2.4			3.0			3.7		
Static Friction ①⑩		T_f	Nm	0.002			0.005			0.007			0.01		
			lb-in	0.02			0.04			0.06			0.09		
Viscous Damping ①		K_{dv}	Nm/k _r rpm	0.0046			0.0055			0.0065			0.0074		
			lb-in/k _r rpm	0.04			0.05			0.06			0.07		
Thermal Time Constant		TCT	minutes	8			9			1.			11		
Thermal Resistance		R_{thw-a}	°C/W	1.43			1.19			1.10			1.07		
Pole Pairs				3			3			3			3		
Heat Sink 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, $\Delta T=100^\circ\text{C}$, 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:
 AKM21 = 0.00 AKM22 = 0.01 Nm AKM23 = 0.02 Nm AKM24 = 0.05 Nm
 ⑧ For non-resolver feedback options: no continuous torque reduction.
 ⑨ Motors with non-resolver feedback and brake option, reduce continuous torque by:
 AKM21 = 0.00 AKM22 = 0.02 Nm AKM23 = 0.05 Nm AKM24 = 0.12 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.