AKMH™ Stainless Steel Washdown Motor Selection Guide

with AKD® Servo Drive Systems

KOLLMORGEN®

Because Motion Matters™

Kollmorgen: Your partner. In Motion.

Every solution comes from a real understanding of the challenges facing machine designers and users.

Innovators consistently rate Kollmorgen as one of their best motion systems manufacturing partners. Whether you are looking for classic servo motors, direct-drive servo motors, stepper motors, drives & amplifiers, gearing, actuation, or CNC & multi-axis motion controllers, Kollmorgen is one of the few companies in the world who actually designs and manufactures all of these products.

Our customers are leaders in many industries such as Aerospace & Defense, Printing, Packaging & Converting, Food & Beverage Processing, Medical Imaging, In Vitro Diagnostics & Laboratory Automation, Pharmaceutical Manufacturing, Material Forming and Cutting, Oil & Gas, and Robotics. Kollmorgen is also a leader in Warehouse Automation, including complete AGV systems, software, awareness and autonomy.

Our Automation Solutions can be found on Mars and in space, ships and submarines, O&G drilling and metrology, surgical robots and laser eye surgery, even inside artificial hearts. These are just a few applications that demand high-performance and high-quality while satisfying their specific needs.

Because motion matters, it's our focus: Motion can distinctly differentiate a machine and deliver a marketplace advantage by increasing its performance and dramatically improving overall equipment effectiveness (OEE).

High-performance motion can make your customer's machine more reliable and energy-efficient, enhance accuracy and improve operator safety. Motion also represents endless possibilities for innovation.

We've always understood this potential, and thus have kept motion at our core and in our Vison, Mission & Values, relentlessly developing products that offer precise control of torque, velocity and position accuracy in machines that rely on complex motion.

KOLLMORGEN®

Because Motion Matters™

Removing the Barriers of Design, Sourcing, and Time

At Kollmorgen, we know that OEM engineers can achieve a lot more when obstacles aren't in the way. So, we clear obstacles in three important ways:

Integrating Standard and Custom Products

The optimal solution is often not clear-cut. Our application expertise allows us to modify standard products or develop totally custom solutions across our whole product portfolio so that designs can take flight.

Providing Motion Solutions, Not Just Components

As companies reduce their supplier base and have less engineering manpower, they need a total system supplier with a wide range of integrated solutions. Kollmorgen offers complete solutions as well as motion subsystems that combine programming software, engineering services and best-in-class motion components.

Global Footprint

With direct sales, engineering support, manufacturing facilities, and distributors spanning the Americas, Europe, Middle East, and Asia, we're close to OEMs worldwide. Our proximity helps speed delivery and lend support where and when they're needed.

Financial and Operational Stability

Kollmorgen is part of Fortive. A key driver in the growth of all Fortive divisions is the Fortive Business System, which relies on the principle of "kaizen" – or continuous improvement. Using world-class tools, cross-disciplinary teams of exceptional people evaluate processes and develop plans that result in superior performance.

Kollmorgen: Your partner. In Motion.

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AKMH™ Washdown Motors

Designed for Fast Cleaning and Increased Uptime. The AKMH stainless steel motor is designed to meet the standards for IP69K, EHEDG, and 3A and is built with FDA approved, food-grade materials. The careful elimination of flat surfaces, cracks, and crevices prevents the build-up of foreign material and bacteria. The AKMH housing and cable can endure daily wash downs with high pressure, high temperature, and caustic chemicals. The robust design means that guards and covers are not required to protect the motor from harsh cleaning regimens. These AKMH features constitute quicker cleaning, keeping your machine running, and increasing the OEE of your manufacturing line.

Reduced Recall Risk. The Food Modernization Safety Act (FMSA) gives the US federal government the ability to shutdown facilities, recall food products, and levy stiff fines to ensure public safety in regards to food product manufacturing. The AKMH is designed to meet the toughest hygienic requirements in the industry in order to reduce the possibility of food borne illnesses and costly recalls.

Bottom Line. The AKMH comes in 19 standard motor sizes, with multiple standard windings for each to fit the many motor applications found in food, beverage, and pharmaceutical industries. Kollmorgen's AKMH helps maintain the highest standard of machine cleanliness, increases OEE, and reduces the possibility of devastating recalls.

The Benefits of AKMH™ Motors

- Increase your machine's Overall Equipment Effectiveness (OEE) through superior wash-down design **Durability**
- Reduce your machine's cost of ownership due to **reduced cleaning time** and increased reliability
- Enhance the value of your machine by **lowering** your customer's **risk of recall**… due to the superior hygienic design of the AKMH

- IP69K certification for motor and cable
- Unique design technique to eliminate condensation
- FDA Approved, food-grade O-ring seals
- All exposed surfaces are 316L or DIN 1.4404 Stainless Steel, superior to 303/304 for corrosion resistance
- Round design with no nooks or crannies
- Sloped rear cover to eliminate puddling, even in vertical mounting
- No external hardware (no bolts, washers, or screws) to trap soil or pathogens or fall into food
- Smooth surface meeting EHEDG & 3A criteria, promotes rapid cleaning and no harboring of pathogens
- FDA Approved, food-grade bearing lube
- FDA Approved, food-grade shaft seal
- Cable designed to elminate the need for conduit
- No protective covers needed for washdown; no secondary cleaning disassembly required
- FDA approved, food-grade tubing option for applications where the cable is in the food zone
- Washdown cable(s) for increased reliability, faster cleaning, and fewer places to harbor pathogens
- Hygienic marking method eliminates harboring of pathogens
- Hygienic, IP69K shaft seal, that includes special shaft treatment for long life

- **Highly configurable** motor selection means an optimal fit for your machine and less time finding mechanical components
- Innovative design features to **reduce the cost and time** associated with installation
- Industry leading configurability for **optimized performance**

- 19 frame/stack length combinations
- Windings designed to optimize the performance of your machine
- Cables designed for direct connection to the AKD drive family (plug & play)
- Face and flange mounts available in both IEC and NEMA standards
- Cables designed to meet NFPA 79 without the need for additional thermal overload protection
- Standard configurable cable lengths to 15 meters; no intermediate junction boxes needed
- Brake option
- Multi-turn absolute feedback option, single-turn absolute feedback standard
- Additional feedback options available for retrofitting fielded motors with non-Kollmorgen drives
- Dual cable option for use with non-Kollmorgen drives
- UL/CE/RoHS/IP69K/BISSC/NSF/USDA/EAC certifications
- EHEDG certification pending

Specify only Kollmorgen AKMH systems to ensure:

- Reduced risk of food recall
- Reduced cleaning time, higher OEE
- Highest reliability and durability

AKMH™ Design Features

The key benefits of AKMH clean design features:

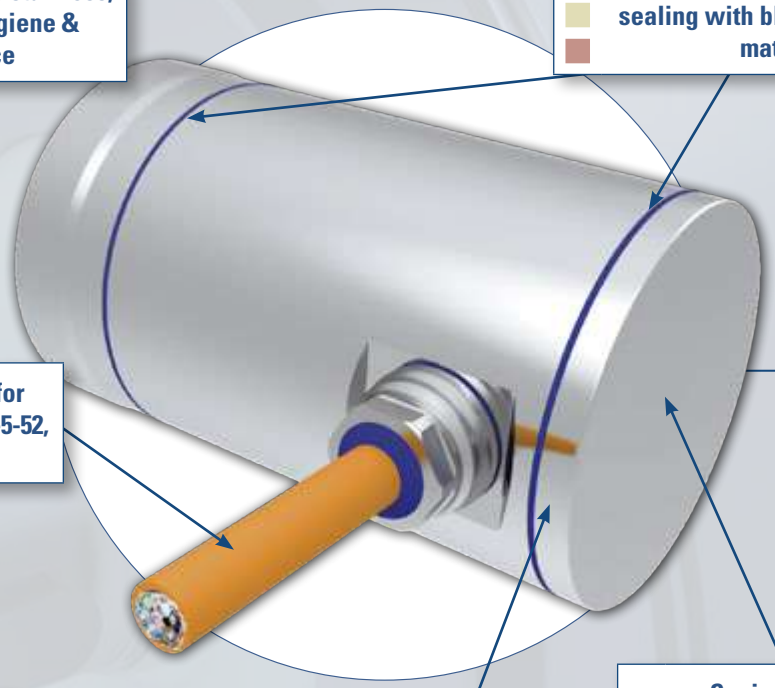
- Reduces risk of food recall
- Increases reliability in wash-down application
- Reduces cleaning time: higher OEE

No protective covers required for washdown... no secondary cleaning disassembly required

Smooth surface meeting EHEDG & 3A criteria, promotes rapid cleaning and no harboring of pathogens

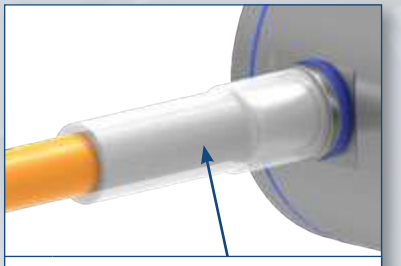
All exposed surfaces are 316 stainless, superior to 304/303 for hygiene & corrosion resistance

External O-ring and gasket sealing with blue FDA approved materials



Chemical resistant cable for pH of 2-12, meeting IEC60364-5-52, UL, CSA, CE, RoHS

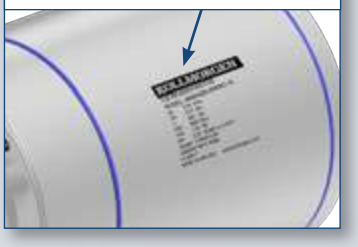
Conical end cover to eliminate water puddling, even in vertical mounting



FDA food-grade approved tubing over cable for food zone applications

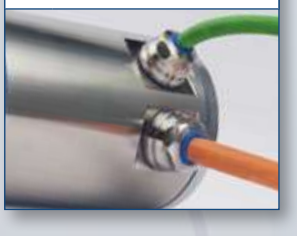
No external hardware (no bolts, washers, or screws) to trap soil & pathogens or fall into food

Hygienic marking method eliminates harboring of pathogens

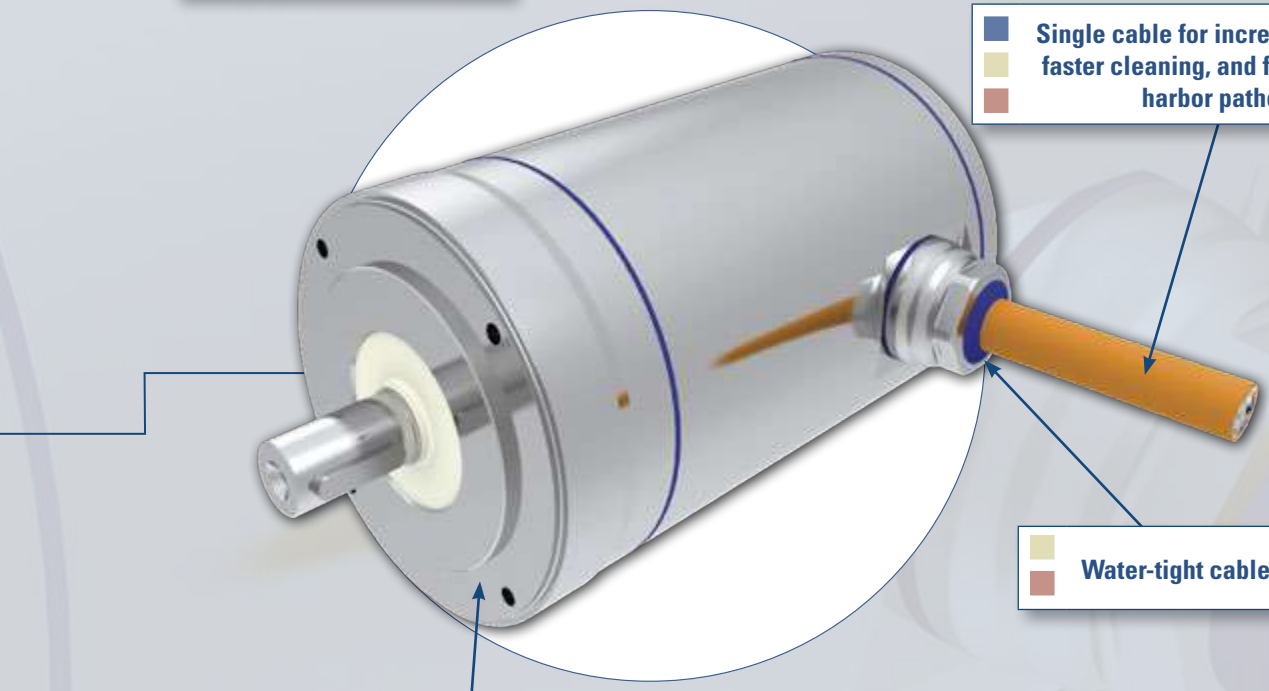


Unique design technique to eliminate condensation

Dual cable option for use with 3rd party drives

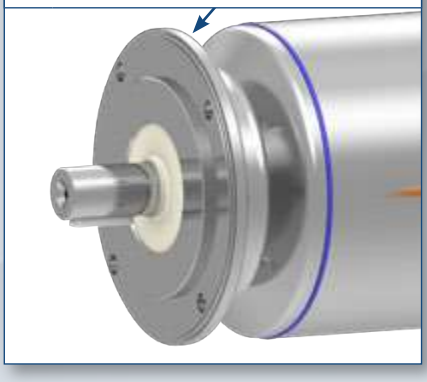


Single cable for increased reliability, faster cleaning, and fewer places to harbor pathogens

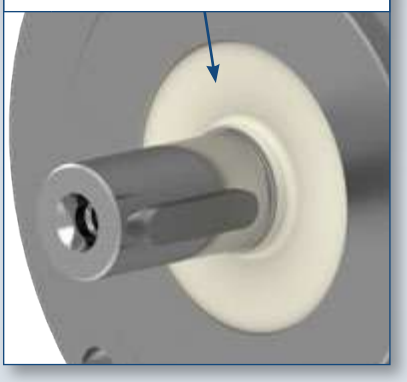


Water-tight cable exit

Face Mount for most hygienic design, Flange Mount option for easy mounting



Hygienic, IP69K shaft seal, special shaft treatment for long life



AKMH2x Performance Data

AKMH2x Performance Data – Up to 640 Vdc*

		Parameters	Tol	Symbol	Units	AKMH21 C	AKMH21 E	AKMH21 G	AKMH22 C	AKMH22 E	AKMH22 G	AKMH23 D	AKMH23 E	AKMH23 F	AKMH24 D	AKMH24 E	AKMH24 F
		Max Rated DC Bus Voltage	Max	Vbus	Vdc	640	160	75	640	320	160	640	320	320	640	320	320
		Continuous Torque (Stall) for ΔT winding = 100°C ①②④	Nom	T_{cs}	Nm	0.31	0.36	0.37	0.61	0.65	0.64	0.85	0.90	0.88	1.10	1.15	1.12
					lb-in	2.7	3.2	3.3	5.4	5.8	5.7	7.5	8.0	7.8	9.7	10.2	9.9
		Continuous Current (Stall) for ΔT winding = 100°C ①②④	Nom	I_{cs}	A_{rms}	1.37	2.67	4.10	1.19	2.32	3.98	1.88	2.39	3.63	1.96	2.52	3.42
		Continuous Torque (Stall) for ΔT winding = 60°C ②④	Nom	T_{cs}	Nm	0.25	0.29	0.30	0.49	0.52	0.51	0.68	0.72	0.70	0.88	0.92	0.90
					lb-in	2.2	2.5	2.6	4.3	4.6	4.5	6.0	6.4	6.2	7.8	8.1	7.9
		Max Mechanical Speed ⑤	Nom	N_{max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
		Peak Torque ①②④	Nom	T_p	Nm	1.76	1.81	1.83	3.16	3.23	3.27	4.37	4.43	4.46	5.35	5.36	5.39
					lb-in	15.6	16.0	16.2	28.0	28.6	28.9	38.7	39.2	39.5	47.3	47.4	47.7
		Peak Current ⑩	Nom	I_p	A_{rms}	6.32	12.44	19.48	5.56	10.92	19.28	8.76	11.12	17.24	8.84	11.16	15.56
Maximum Rated DC Bus Voltage	160 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.33	0.26	-	0.63	0.61	0.47	0.87	0.86	0.78	1.10	1.10	1.04
					lb-in	2.9	2.3	-	5.6	5.4	4.2	7.7	7.6	6.9	9.7	9.7	9.2
		Rated Speed		N_{rtd}	rpm	2500	7000	-	1000	3500	7000	1500	2500	4500	1500	2000	3000
		Rated Power (speed) ①②④		P_{rtd}	kW	0.09	0.19	-	0.07	0.22	0.34	0.14	0.23	0.37	0.17	0.23	0.33
					Hp	0.12	0.26	-	0.09	0.30	0.46	0.18	0.30	0.49	0.23	0.31	0.44
	320 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.22	-	-	0.58	0.60	-	0.73	0.66	0.48	0.97	0.88	0.53
					lb-in	1.9	-	-	5.1	5.3	-	6.5	5.8	4.2	8.6	7.8	4.7
		Rated Speed		N_{rtd}	rpm	8000	-	-	3500	3500	-	5000	6500	8000	4000	5500	8000
		Rated Power (speed) ①②④		P_{rtd}	kW	0.18	-	-	0.21	0.22	-	0.38	0.45	0.40	0.41	0.51	0.44
					Hp	0.25	-	-	0.28	0.29	-	0.51	0.60	0.54	0.54	0.68	0.60
	560 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.21	-	-	0.41	-	-	0.49	-	-	0.52	-	-
					lb-in	1.9	-	-	3.6	-	-	4.3	-	-	4.6	-	-
		Rated Speed		N_{rtd}	rpm	8000	-	-	8000	-	-	8000	-	-	8000	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.18	-	-	0.34	-	-	0.41	-	-	0.44	-	-
					Hp	0.24	-	-	0.46	-	-	0.55	-	-	0.58	-	-
	640 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.21	-	-	0.40	-	-	0.46	-	-	0.47	-	-
					lb-in	1.9	-	-	3.5	-	-	4.1	-	-	4.2	-	-
		Rated Speed		N_{rtd}	rpm	8000	-	-	8000	-	-	8000	-	-	8000	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.18	-	-	0.34	-	-	0.39	-	-	0.39	-	-
					Hp	0.24	-	-	0.45	-	-	0.52	-	-	0.53	-	-

See following page for notes.

AKMH2x Performance Data – Up to 640 Vdc (Continued)*

				AKMH21			AKMH22			AKMH23			AKMH24		
Parameters	**Tol**	**Symbol**	**Units**	**C**	**E**	**G**	**C**	**E**	**G**	**D**	**E**	**F**	**D**	**E**	**F**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	0.26	0.15	0.10	0.56	0.30	0.17	0.49	0.40	0.26	0.60	0.48	0.35
			$lb\text{-}in/A_{rms}$	2.3	1.4	0.9	4.9	2.7	1.5	4.3	3.6	2.3	5.3	4.3	3.1
Back EMF Constant ⑥	±10%	K_e	V/k_{rpm}	19.5	10.2	6.6	39.0	20.4	11.7	33.8	27	17.6	40.8	32.4	23.4
Motor Constant ①	Nom	K_m	N-m/√W	0.06	0.07	0.07	0.10	0.11	0.11	0.13	0.14	0.14	0.16	0.17	0.16
			lb-in/√W	0.52	0.60	0.61	0.90	0.96	0.94	1.18	1.24	1.22	1.43	1.50	1.46
Resistance (line-line) ⑥⑦	±10%	R_m	ohm	13.0	3.44	1.46	20.0	5.24	1.79	8.79	5.46	2.36	9.04	5.46	2.96
Inductance (line-line)		L	mH	19.0	5.2	2.18	35.5	9.7	3.19	17.29	11.07	4.68	18.72	11.81	6.16
Inertia (includes Resolver feedback) ③	±10%	J_m	$kg\text{-}cm^2$	0.11			0.16			0.22			0.27		
			$lb\text{-}in\text{-}s^2$	9.5E-05			1.4E-04			1.9E-04			2.4E-04		
Optional Brake Inertia (additional)	±10%	J_m	$kg\text{-}cm^2$	0.012			0.012			0.012			0.012		
			$lb\text{-}in\text{-}s^2$	1.1E-05			1.1E-05			1.1E-05			1.1E-05		
Weight ⑧⑨		W	kg	3.6			4.1			4.6			5.1		
			lb	7.9			9.0			10.1			11.2		
Static Friction ①		T_f	Nm	0.048			0.055			0.062			0.069		
			lb-in	0.42			0.49			0.55			0.61		
Viscous Damping ①		K_{dv}	Nm/k_{rpm}	0.005			0.005			0.005			0.006		
			$lb\text{-}in/k_{rpm}$	0.041			0.043			0.046			0.049		
Thermal Time Constant		TCT	minutes	29			32			34			37		
Thermal Resistance		$R_{thw\text{-}a}$	°C/W	1.96			1.69			1.53			1.37		
Pole Pairs				3			3			3			3		
Heat Sink Size				10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate		

Notes:
① Motor winding temperature rise, ΔT=100°C, at 25°C ambient.
② All data referenced to sinusoidal commutation.
③ Add parking brake if applicable for total inertia.
④ Motor with 115°C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25°C.
⑦ Resistance is measured with 1 meter of cable.
⑧ Face mount adds 0.4 kg [0.88 lbs]
⑨ Brake options adds 0.5 kg [1.1 lbs] and reduces continuous torque by 10% and rated torque by 27%
⑩ Derived from Cont. Current (Stall, ΔT wdg. = 100°C) of equivalent AKM

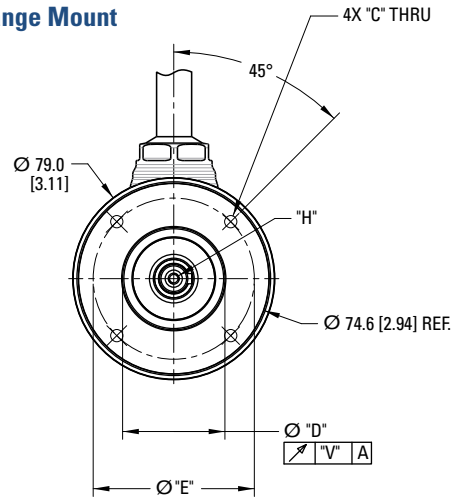
* Motor performance across the entire speed range varies depending on selection of feedback device and holding brake. Use the Performance Curve Generator on the Kollmorgen AKMH Product Page (http://www.kollmorgen.com/en-us/products/motors/servo/akmh-series/stainless-steel-akmh-series/) to generate specific rated speed/torque curves for a given configuration.

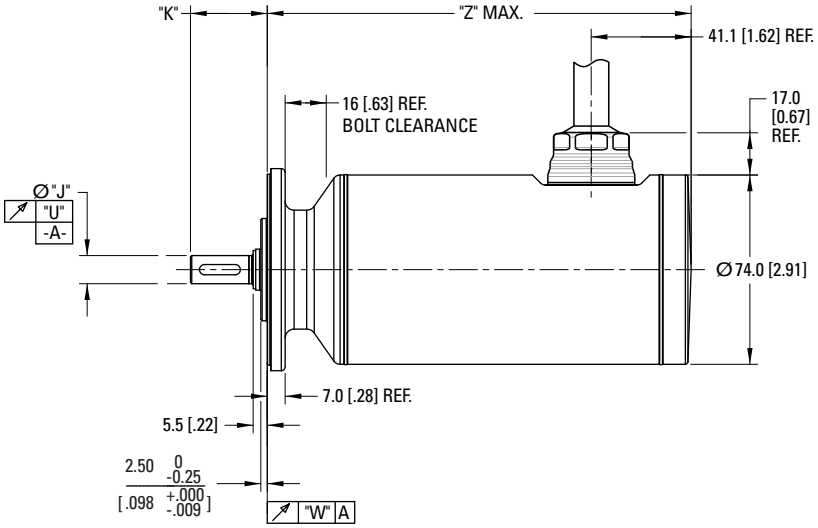
*Complete AKMH series model nomenclature can be found on page 44.

AKMH2x Outline Drawings

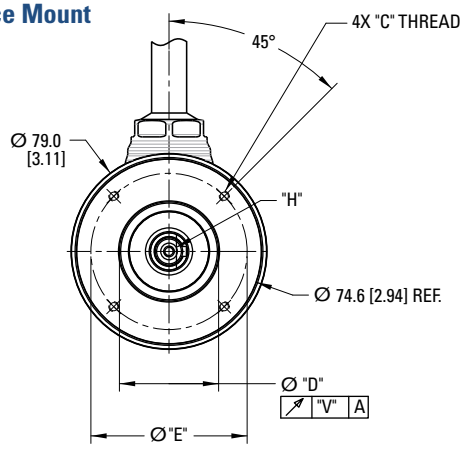
AKMH2x Frame

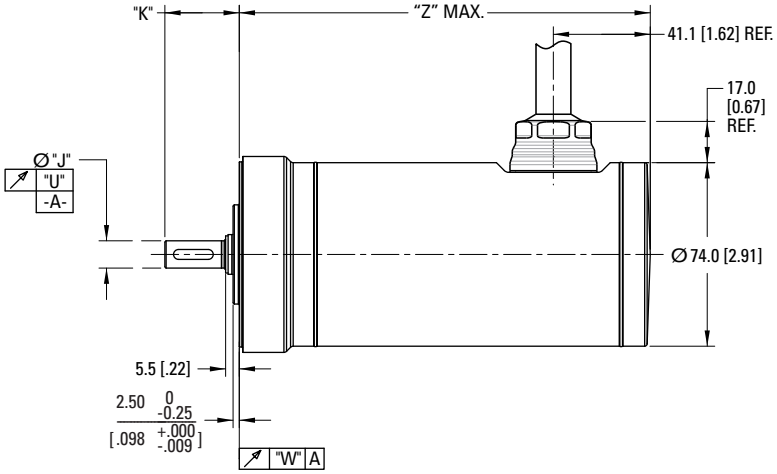
Flange Mount



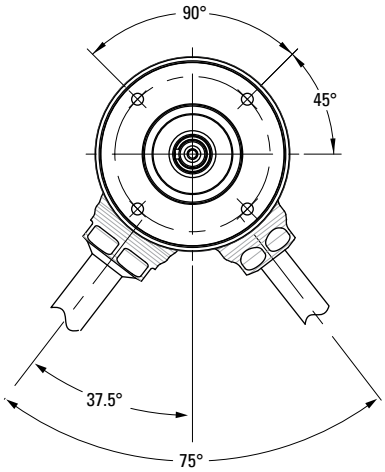


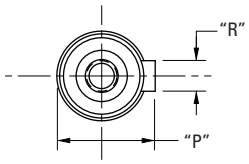
Face Mount

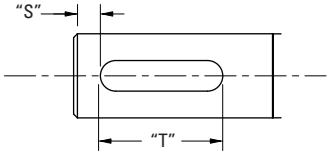




Dual Cable Option for Third Party Drives







Dimensions are in mm [inches].

AKMH2x Dimension Data

AKMH 2 2 C – AN K N CA 1 K*
Motor Series | Frame Size | Stack Length | Winding | Mount/Shaft | Connection | Brake | Feedback | Cable Length | Seal

AKMH2x Dimension Data

Flange/Shaft Configuration									
Code	**Mount Type**	**Standard**	**Shaft**	**"C"**	**"D"**	**"E"**	**"H"**	**"J"**	**"K"**
AC	Flange	Metric	Closed Keyway	4.80 [.189]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [.4331]	30.0 [1.18]
AN	Flange	Metric	Smooth	4.80 [.189]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [.4331]	30.0 [1.18]
BN	Flange	NEMA 23	Smooth	5.10 [.201]	38.10 [1.50]	66.68 [2.625]	–	9.525 [.3750]	31.8 [1.25]
CC	Face	Metric	Closed Keyway	M4 x 0.7 x 7.92 [.312]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [.4331]	30.0 [1.18]
CN	Face	Metric	Smooth	M4 x 0.7 x 7.92 [.312]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [.4331]	30.0 [1.18]
DN	Face	NEMA 23	Smooth	UNC 10-24 x 9.69 [.382]	38.10 [1.50]	66.68 [2.625]	–	9.525 [.3750]	31.8 [1.25]

Code	**"P"**	**"R"**	**"S"**	**"T"**	**"U"**	**"V"**	**"W"**
AC	12.5 [.492]	4 [.157]	3.50 [.138]	16 [.630]	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
AN	–	–	–	–	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
BN	–	–	–	–	0.035 [.0013]	0.080 [.0031]]	0.080 [.0031]]
CC	12.5 [.492]	4 [.157]	3.50 [.138]	16 [.630]	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
CN	–	–	–	–	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
DN	–	–	–	–	0.035 [.0013]	0.080 [.0031]]	0.080 [.0031]]

	Z MAX			
MODEL	**SFD/Resolver/ SFD3/Comcoder W/O Brake**	**SFD/Resolver/ SFD3/Comcoder W/ Brake**	**Hiperface/EnDat/ Hiperface DSL W/O Brake**	**Hiperface/EnDat/ Hiperface DSL W/ Brake**
AKMH21	167.2 [6.58]	201.2 [7.92]	180.2 [7.09]	214.2 [8.43]
AKMH22	186.2 [7.33]	220.2 [8.67]	199.2 [7.84]	233.2 [9.18]
AKMH23	205.2 [8.08]	239.2 [9.42]	218.2 [8.59]	252.2 [9.93]
AKMH24	224.2 [8.83]	258.2 [10.17]	237.2 [9.34]	271.2 [10.68]

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

*Complete AKMH series model nomenclature can be found on page 44.

AKMH3x Performance Data

AKMH3x Performance Data – Up to 640 Vdc*

		Parameters	Tol	Symbol	Units	AKMH31 C	AKMH31 E	AKMH31 H	AKMH32 C	AKMH32 E	AKMH32 H	AKMH33 C	AKMH33 E	AKMH33 H
		Max Rated DC Bus Voltage	Max	Vbus	Vdc	640	320	160	640	640	320	640	640	320
		Continuous Torque (Stall) for ΔT winding = 100°C ①②④	Nom	T_{cs}	Nm	0.91	0.96	0.99	1.68	1.69	1.77	2.46	2.51	2.6
					lb-in	8.1	8.5	8.8	14.9	15.0	15.7	21.8	22.2	23.0
		Continuous Current (Stall) for ΔT winding = 100°C ①②④	Nom	I_{cs}	A_{rms}	1.24	2.64	5.04	1.3	2.49	4.81	1.37	2.34	5.00
		Continuous Torque (Stall) for ΔT winding = 60°C ②④	Nom	T_{cs}	Nm	0.73	0.77	0.79	1.34	1.35	1.42	1.97	2.01	2.08
					lb-in	6.4	6.8	7.0	11.9	12.0	12.5	17.4	17.8	18.4
		Max Mechanical Speed ⑤	Nom	N_{max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000
		Peak Torque ①②④	Nom	T_p	Nm	3.76	3.88	3.95	6.92	7.06	7.21	9.94	10.19	10.43
					lb-in	33.3	34.3	35.0	61.2	62.5	63.8	88.0	90.2	92.3
		Peak Current ⑩	Nom	I_p	A_{rms}	5.48	12.0	23.4	5.76	11.28	22.00	5.88	10.32	22.48
Maximum Rated DC Bus Voltage	160 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	-	0.91	0.71	-	-	1.61	-	-	2.41
					lb-in	-	8.1	6.3	-	-	14.2	-	-	21.3
		Rated Speed		N_{rtd}	rpm	-	2500	6000	-	-	3000	-	-	2500
		Rated Power (speed) ①②④		P_{rtd}	kW	-	0.24	0.45	-	-	0.51	-	-	0.63
					Hp	-	0.32	0.60	-	-	0.68	-	-	0.85
	320 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.86	0.68	-	1.62	1.53	0.71	2.42	2.38	1.56
					lb-in	7.6	6.0	-	14.34	13.5	6.3	21.4	21.1	13.8
		Rated Speed		N_{rtd}	rpm	2500	6000	-	1500	3500	7000	1000	2000	5500
		Rated Power (speed) ①②④		P_{rtd}	kW	0.23	0.43	-	0.25	0.56	0.52	0.25	0.50	0.90
					Hp	0.30	0.57	-	0.34	0.75	0.70	0.34	0.67	1.20
	560 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.72	-	-	1.47	0.71	-	2.29	1.85	-
					lb-in	6.4	-	-	13.01	6.3	-	20.3	16.4	-
		Rated Speed		N_{rtd}	rpm	5000	-	-	3000	7000	-	2000	4500	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.38	-	-	0.46	0.52	-	0.48	0.87	-
					Hp	0.51	-	-	0.62	0.70	-	0.64	1.17	-
	640 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.65	-	-	1.41	0.22	-	2.22	1.68	-
					lb-in	5.8	-	-	12.48	1.9	-	19.6	14.9	-
		Rated Speed		N_{rtd}	rpm	6000	-	-	3500	8000	-	2500	5000	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.41	-	-	0.52	0.18	-	0.58	0.88	-
					Hp	0.55	-	-	0.69	0.25	-	0.78	1.18	-

See following page for notes.

AKMH3x Performance Data – Up to 640 Vdc (Continued)*

				AKMH31			AKMH32			AKMH33		
Parameters	**Tol**	**Symbol**	**Units**	**C**	**E**	**H**	**C**	**E**	**H**	**C**	**E**	**H**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	0.76	0.38	0.20	1.32	0.69	0.38	1.83	1.09	0.53
			$lb\text{-}in/A_{rms}$	6.7	3.3	1.8	11.7	6.1	3.3	16.2	9.7	4.7
Back EMF Constant ⑥	±10%	K_e	V/k_{rpm}	54.5	26.1	13.7	89.8	47.1	24.8	120.0	70.6	33.4
Motor Constant ①	Nom	K_m	$N\text{-}m/\sqrt{W}$	0.13	0.14	0.14	0.22	0.23	0.23	0.29	0.30	0.31
			$lb\text{-}in/\sqrt{W}$	1.19	1.25	1.28	2.0	1.99	2.08	2.56	2.63	2.72
Resistance (line-line) ⑥	±10%	R_m	ohm	21.4	4.76	1.31	23.8	6.3	1.7	26.6	9.0	2.0
Inductance (line-line)		L	mH	37.6	8.6	2.37	46.5	12.8	3.6	53.6	18.5	4.1
Inertia (includes Resolver feedback) ③	±10%	J_m	$kg\text{-}cm^2$	0.33			0.59			0.85		
			$lb\text{-}in\text{-}s^2$	2.9E-04			5.2E-04			7.5E-04		
Optional Brake Inertia (additional)	±10%	J_m	$kg\text{-}cm^2$	0.012			0.012			0.012		
			$lb\text{-}in\text{-}s^2$	1.1E-05			1.1E-05			1.1E-05		
Weight ⑧⑨		W	kg	4.1			5.0			5.9		
			lb	9.0			11.0			13.0		
Static Friction ①		T_f	Nm	0.033			0.039			0.045		
			lb-in	0.29			0.35			0.40		
Viscous Damping ①		K_{dv}	Nm/k_{rpm}	0.004			0.007			0.010		
			$lb\text{-}in/k_{rpm}$	0.031			0.059			0.089		
Thermal Time Constant		TCT	minutes	24			32			40		
Thermal Resistance		$R_{thw\text{-}a}$	°C/W	1.41			1.18			0.96		
Pole Pairs				4			4			4		
Heat Sink Size				10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate		

Notes:
① Motor winding temperature rise, ΔT=100°C, at 25°C ambient.
② All data referenced to sinusoidal commutation.
③ Add parking brake if applicable for total inertia.
④ Motor with 115°C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25°C.
⑦ Resistance is measured with 1 meter of cable.
⑧ Face mount adds 0.4 kg [0.88 lbs]
⑨ Brake options adds 0.7 kg [1.54 lbs]and reduces continuous torque by 6% and rated torque by 25%
⑩ Derived from Cont. Current (Stall, ΔT wdg. = 100°C) of equivalent AKM

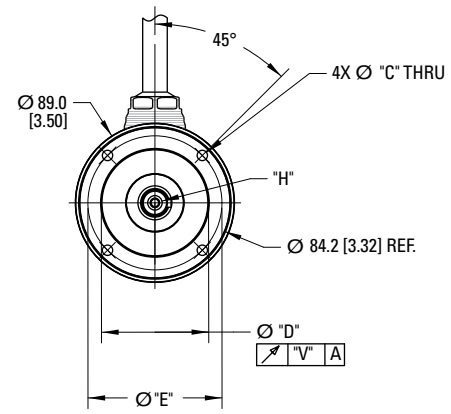
* Motor performance across the entire speed range varies depending on selection of feedback device and holding brake. Use the Performance Curve Generator on the Kollmorgen AKMH Product Page (http://www.kollmorgen.com/en-us/products/motors/servo/akmh-series/stainless-steel-akmh-series/) to generate specific rated speed/torque curves for a given configuration.

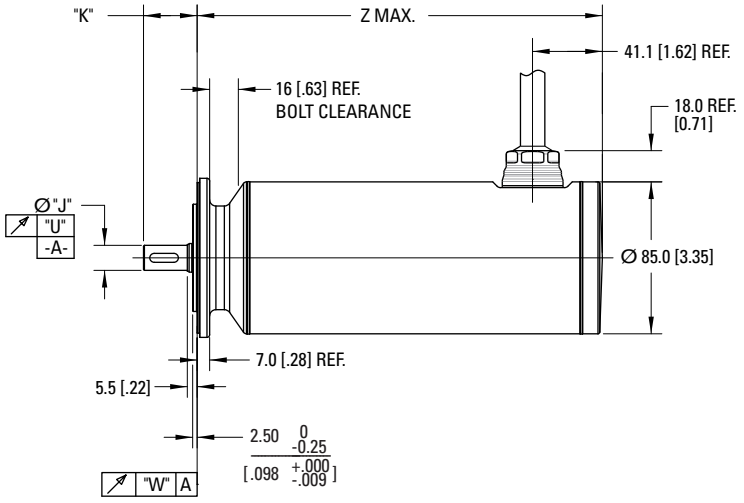
*Complete AKMH series model nomenclature can be found on page 44.

AKMH3x Outline Drawings

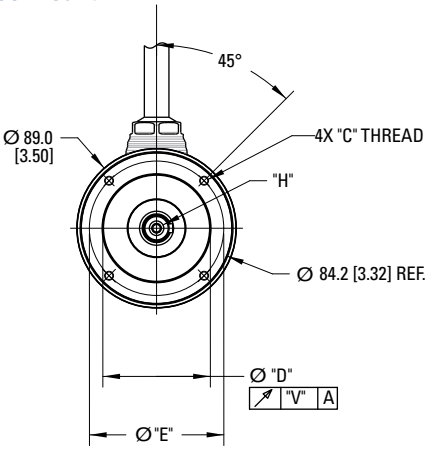
AKMH3x Frame

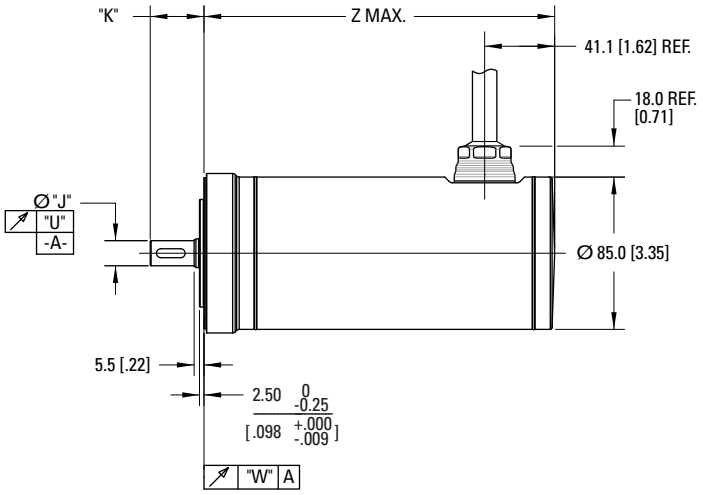
Flange Mount



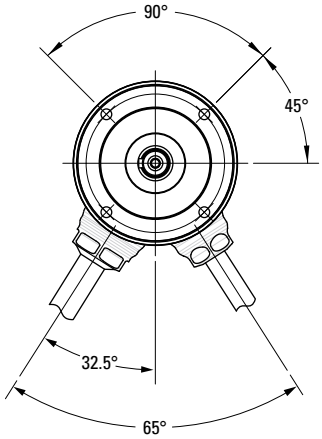


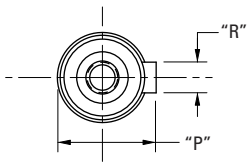
Face Mount

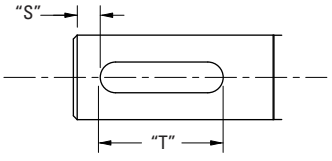




Dual Cable Option for Third Party Drives







Dimensions are in mm [inches].

AKMH3x Dimension Data

AKMH 3 2 C – AN K N CA 1 K*
Motor Series | Frame Size | Stack Length | Winding | Mount/Shaft | Connection | Brake | Feedback | Cable Length | Seal

AKMH3x Dimension Data

Flange/Shaft Configuration								
Code	**Mount Type**	**Standard**	**Shaft**	**"C"**	**"E"**	**"H"**	**"J"**	**"K"**
AC	Flange	IEC 75	Closed Keyway	5.80 [.228]	75 [2.953]	D M5 DIN 332	14 [.5512]	30.0 [1.181]
AN	Flange	IEC 75	Smooth	5.80 [.228]	75 [2.953]	D M5 DIN 332	14 [.5512]	30.0 [1.181]
CC	Face	IEC 75	Closed Keyway	M5 x 0.8 x 10.0 [.39]	75 [2.953]	D M5 DIN 332	14 [.5512]	30.0 [1.181]
CN	Face	IEC 75	Smooth	M5 x 0.8 x 10.0 [.39]	75 [2.953]	D M5 DIN 332	14 [.5512]	30.0 [1.181]

Code	"P"	"R"	"S"	"T"	"U"	"V"	"W"
AC	16 [.630]	5 [.197]	3.50 [0.0138]	16 [.630]	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
AN	–	–	–	–	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
CC	16 [.630]	5 [.197]	3.50 [0.0138]	16 [.630]	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]
CN	–	–	–	–	0.035 [.0013]	0.080 [.0031]	0.080 [.0031]

	Z MAX			
MODEL	**SFD/Resolver/SFD3/ Comcoder W/O Brake**	**SFD/Resolver/SFD3/ Comcoder W/ Brake**	**Hiperface/EnDat/ Hiperface DSL W/O Brake**	**Hiperface/EnDat/ Hiperface DSL W/ Brake**
AKMH31	166.5 [6.56]	198.02 [7.80]	182.5 [7.19]	214.0 [8.43]
AKMH32	197.5 [7.78]	229.0 [9.02]	213.5 [8.41]	245.0 [9.65]
AKMH33	228.5 [9.00]	260.0 [10.24]	244.5 [9.63]	276.0 [10.87]

Note 1: Dimensions are in mm [inches].
Note 2: Product designed in metric. English conversions provided for reference only.

*Complete AKMH series model nomenclature can be found on page 44.

AKMH4x Performance Data

AKMH4x Perfomance Data – Up to 640 Vdc*

					AKMH41			AKMH42				AKMH43			AKMH44		
	Parameters	Tol	Sym	Units	C	E	H	C	E	H	J	E	H	L	E	H	K
	Max Rated DC Bus Voltage	Max	Vbus	Vdc	640	640	320	640	640	640	320	640	640	320	640	640	320
	Continuous Torque (Stall) for ΔT winding = 100°C ①②④	Nom	T_{cs}	Nm	1.77	1.75	1.83	3.15	3.12	3.15	3.37	4.38	4.55	4.02	5.41	5.4	5.42
				lb-in	15.7	15.5	16.2	27.9	27.6	27.9	29.8	38.8	40.3	35.6	47.9	47.8	48.0
	Continuous Current (Stall) for ΔT winding = 100°C ①②④	Nom	I_{cs}	A_{rms}	1.46	2.73	5.34	1.41	2.64	5.64	8.11	2.61	5.22	9.92	2.70	5.23	9.41
	Continuous Torque (Stall) for ΔT winding = 60°C ②④	Nom	T_{cs}	Nm	1.42	1.40	1.46	2.52	2.50	2.52	2.70	3.50	3.64	3.22	4.33	4.32	4.34
				lb-in	12.5	12.4	13.0	22.3	22.1	22.3	23.9	31.0	32.2	28.5	38.3	38.2	38.4
	Max Mechanical Speed ⑤	Nom	N_{max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
	Peak Torque ①②④	Nom	T_p	Nm	5.75	5.84	5.92	10.62	10.79	11.04	11.08	15.50	15.65	15.58	19.77	19.73	19.75
				lb-in	50.9	51.7	52.4	94.0	95.5	97.7	98.1	137.2	138.5	137.9	175.0	174.6	174.8
	Peak Current ⑩	Nom	I_p	A_{rms}	5.84	11.4	22.4	5.60	10.96	24.00	33.60	11.04	21.60	44.80	11.60	22.40	40.40
Maximum Rated DC Bus Voltage	160 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	-	1.77	1.71	-	-	3.15	3.02	-	-	3.48	-	-	4.96
					lb-in	-	15.7	15.1	-	-	27.9	26.7	-	-	30.8	-	-	43.9
		Rated Speed		N_{rtd}	rpm	-	1500	3000	-	-	2000	3000	-	-	3000	-	-	2000
		Rated Power (speed) ①②④		P_{rtd}	kW	-	0.28	0.54	-	-	0.66	0.95	-	-	1.09	-	-	1.04
					Hp	-	0.37	0.72	-	-	0.88	1.27	-	-	1.47	-	-	1.39
	320 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	1.73	1.64	1.29	-	2.97	2.40	1.27	4.25	3.94	0.45	5.29	4.72	1.83
					lb-in	15.3	14.5	11.4	-	26.3	21.2	11.2	37.6	34.9	4.0	46.8	41.8	16.2
		Rated Speed		N_{rtd}	rpm	1500	3000	6000	-	2000	4500	6000	1500	3000	5500	1000	2500	5000
		Rated Power (speed) ①②④		P_{rtd}	kW	0.27	0.52	0.81	-	0.62	1.13	0.80	0.67	1.24	0.26	0.55	1.24	0.96
					Hp	0.36	0.69	1.09	-	0.83	1.52	1.07	0.89	1.66	0.35	0.74	1.66	1.28
	560 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	1.61	1.26	-	3.02	2.60	0.82	-	3.89	0.12	-	4.83	1.96	-
					lb-in	14.2	11.2	-	26.7	23.0	7.3	-	34.4	1.1	-	42.7	17.3	-
		Rated Speed		N_{rtd}	rpm	3000	6000	-	1500	3500	6000	-	2500	6000	-	2000	5000	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.51	0.79	-	0.47	0.95	0.52	-	1.02	0.08	-	1.01	1.03	-
					Hp	0.68	1.06	-	0.64	1.28	0.69	-	1.37	0.10	-	1.36	1.38	-
	640 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	1.56	1.22	-	2.94	2.43	0.46	-	3.65	0.82	-	4.56	1.27	-
					lb-in	13.8	10.8	-	26.0	21.5	4.1	-	32.3	7.3	-	40.4	11.2	-
		Rated Speed		N_{rtd}	rpm	3500	6000	-	2000	4000	6000	-	3000	5500	-	2500	5000	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.57	0.77	-	0.62	1.02	0.29	-	1.15	0.47	-	1.19	0.66	-
					Hp	0.77	1.03	-	0.83	1.36	0.39	-	1.54	0.63	-	1.60	0.89	-

See following page for notes.

AKMH4x Performance Data – Up to 640 Vdc (Continued)*

				AKMH41			AKMH42				AKMH43			AKMH44		
Parameters	**Tol**	**Sym**	**Units**	**C**	**E**	**H**	**C**	**E**	**H**	**J**	**E**	**H**	**L**	**E**	**H**	**K**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	1.25	0.66	0.35	2.28	1.21	0.57	0.42	1.71	0.89	0.41	2.04	1.05	0.59
			$lb\text{-}in/A_{rms}$	11.1	5.9	3.1	20.2	10.7	5.0	3.8	15.1	7.8	3.7	18.0	9.3	5.2
Back EMF Constant ⑥	±10%	K_e	V/k_{rpm}	86.3	45.6	23.7	154.3	80.9	38.3	27.5	110.8	57.4	27.5	131.6	68.0	37.8
Motor Constant	Nom	K_m	N-m/√W	0.22	0.22	0.23	0.36	0.35	0.36	0.38	0.47	0.50	0.44	0.57	0.57	0.57
			lb-in/√W	1.96	1.95	2.03	3.14	3.12	3.19	3.38	4.20	4.40	3.92	5.00	5.06	5.06
Resistance (line-line) ⑥	±10%	R_m	ohm	21.3	6.04	1.58	27.5	7.8	1.7	0.8	8.6	2.1	0.6	8.7	2.3	0.7
Inductance (line-line)		L	mH	66.1	18.4	5.00	97.4	26.9	6.0	3.1	32.6	8.8	2.0	34.0	9.1	2.8
Inertia (includes Resolver feedback) ③	±10%	J_m	$kg\text{-}cm^2$	0.81			1.45				2.09			2.73		
			$lb\text{-}in\text{-}s^2$	7.2E-04			1.3E-03				1.8E-03			2.4E-03		
Optional Brake Inertia (additional)	±10%	J_m	$kg\text{-}cm^2$	0.068			0.068				0.068			0.068		
			$lb\text{-}in\text{-}s^2$	6.0E-05			6.0E-05				6.0E-05			6.0E-05		
Weight ⑧⑨		W	kg	6.1			7.4				8.8			10.2		
			lb	13.4			16.3				19.4			22.5		
Static Friction ①		T_f	Nm	0.057			0.068				0.080			0.091		
			lb-in	0.50			0.60				0.71			0.81		
Viscous Damping ①		K_{dv}	Nm/k_{rpm}	0.009			0.014				0.019			0.024		
			$lb\text{-}in/k_{rpm}$	0.080			0.124				0.168			0.212		
Thermal Time Constant		TCT	minutes	40			51				63			74		
Thermal Resistance		$R_{thw\text{-}a}$	°C/W	1.05			0.87				0.80			0.73		
Pole Pairs				5			5				5			5		
Heat Sink Size				10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate				10"x10"x0.25" Aluminum Plate			10"x10"x0.25" Aluminum Plate		

Notes:
① Motor winding temperature rise, ΔT=100°C, at 25°C ambient.
② All data referenced to sinusoidal commutation.
③ Add parking brake if applicable for total inertia.
④ Motor with 115°C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25°C.
⑦ Resistance is measured with 1 meter of cable.
⑧ Face mount adds 0.8 kg [1.76 lbs]
⑨ Brake options adds 1.14 kg [2.51 lbs] and reduces continuous torque by 9% and rated torque by 30%
⑩ Derived from Cont. Current (Stall, ΔT wdg. = 100°C) of equivalent AKM

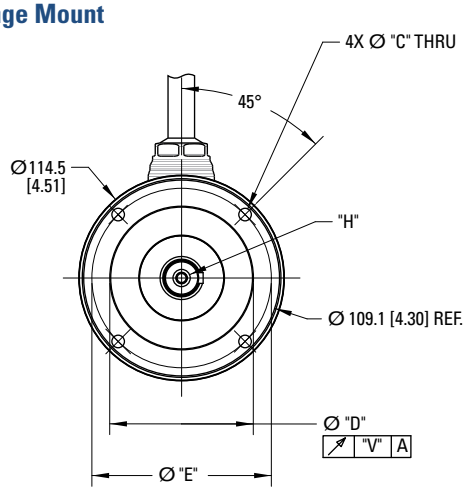
* Motor performance across the entire speed range varies depending on selection of feedback device and holding brake. Use the Performance Curve Generator on the Kollmorgen AKMH Product Page (http://www.kollmorgen.com/en-us/products/motors/servo/akmh-series/stainless-steel-akmh-series/) to generate specific rated speed/torque curves for a given configuration.

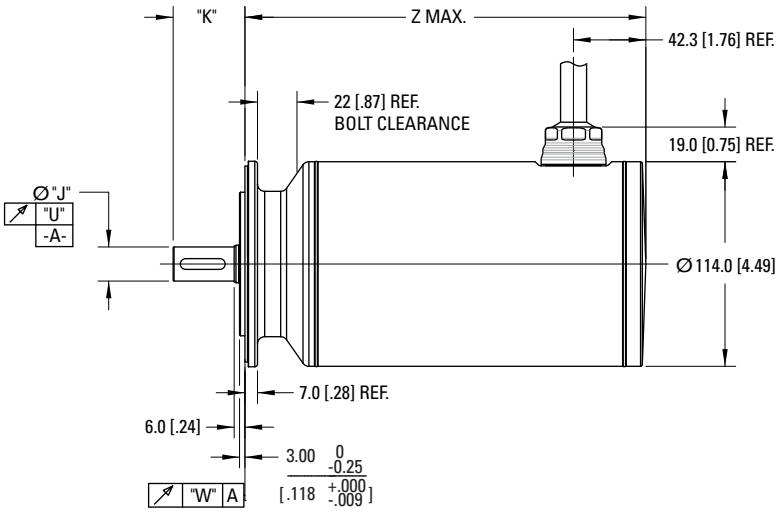
*Complete AKMH series model nomenclature can be found on page 44.

AKMH4x Outline Drawings

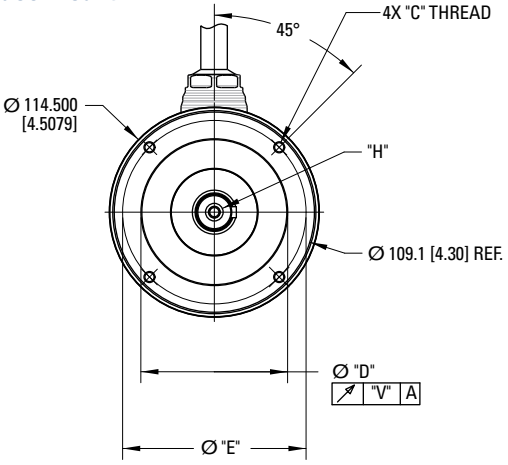
AKMH4x Frame

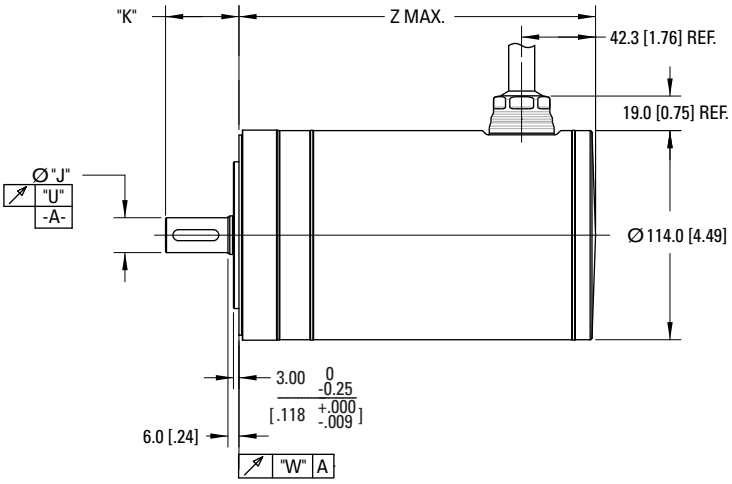
Flange Mount



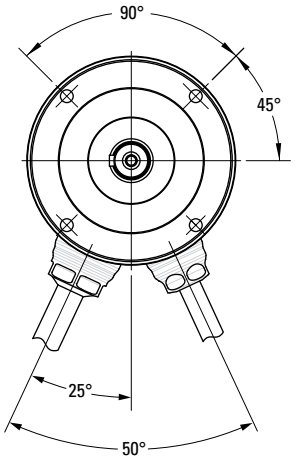


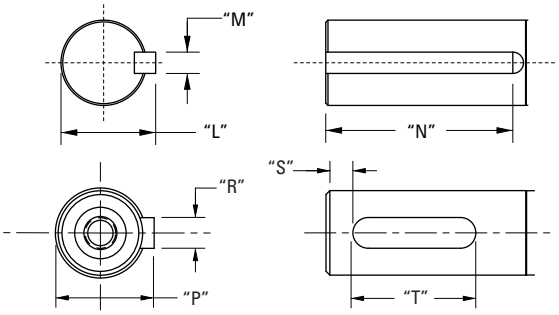
Face Mount





Dual Cable Option for Third Party Drives





Dimensions are in mm [inches].

AKMH4x Dimension Data

AKMH 4 2 C – AN K N CA 1 K*
Motor Series | Frame Size | Stack Length | Winding | Mount/Shaft | Connection | Brake | Feedback | Cable Length | Seal

AKMH4x Dimension Data

Flange/Shaft Configuration										
Code	Mount Type	Standard	Shaft	"C"	"D"	"E"	"H"	"J"	"K"	"L"
AC	Flange	IEC 100	Closed Keyway	7 [.276]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [.7480]	40.0 [1.57]	–
AN	Flange	IEC 100	Smooth	7 [.276]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [.7480]	40.0 [1.57]	–
BK	Flange	NEMA 42	Open Keyway	6.91 [.272]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [.6250]	52.40 [2.06]	17.92 [.706]
BN	Flange	NEMA 42	Smooth	6.91 [.272]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [.6250]	52.40 [2.06]	–
CC	Face	IEC 100	Closed Keyway	M6 x 1 x 12 [.472]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [.7480]	40.0 [1.57]	–
CN	Face	IEC 100	Smooth	M6 x 1 x 12 [.472]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [.7480]	40.0 [1.57]	–
DK	Face	NEMA 42	Open Keyway	UNC 1/4 - 20 x 12.3 [.484]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [.6250]	52.40 [2.06]	17.92 [.706]
DN	Face	NEMA 42	Smooth	UNC 1/4 - 20 x 12.3 [.484]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [.6250]	52.40 [2.06]	–
EK	Face	NEMA 42	Open Keyway	M6 x 1 x 12 [.472]	80 [3.1496]	100 [3.937]	D M5 DIN 332	16 [.6299]	40.0 [1.57]	18.0 [.709]
EN	Face	NEMA 42	Smooth	M6 x 1 x 12 [.472]	80 [3.1496]	100 [3.937]	D M5 DIN 332	16 [.6299]	40.0 [1.57]	–
LK	Face	NEMA 56	Open Keyway	UNC 3/8 - 16 x 19.1 [.75]	114.30 [4.5000]	149.23 [5.875]	–	15.862 [.6245]	50.8 [2.00]	17.89 [.704]

Code	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"V"	"W"
AC	–	–	21.5 [.846]	6 [.236]	4.00 [1.57]	25 [.984]	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
AN	–	–	–	–	–	–	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
BK	4.762 [.1875]	34.93 [1.375]	–	–	–	–	0.051 [.0020]	0.10 [.004]	0.080 [.0031]
BN	–	–	–	–	–	–	0.051 [.0020]	0.10 [.004]	0.080 [.0031]
CC	–	–	21.5 [.846]	6 [.236]	4.00 [1.57]	25 [.984]	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
CN	–	–	–	–	–	–	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
DK	4.762 [.1875]	34.93 [1.375]	–	–	–	–	0.051 [.0020]	0.10 [.004]	0.080 [.0031]
DN	–	–	–	–	–	–	0.051 [.0020]	0.10 [.004]	0.080 [.0031]
EK	5.00 [.197]	30.00 [1.181]	–	–	–	–	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
EN	–	–	–	–	–	–	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
LK	4.762 [.1875]	34.93 [1.375]	–	–	–	–	0.051 [.0020]	0.10 [.004]	0.080 [.0031]

	Z MAX			
MODEL	SFD/Resolver/SFD3/Comcoder W/O Brake	SFD/Resolver/SFD3/Comcoder W/ Brake	Hiperface/EnDat/Hiperface DSL W/O Brake	Hiperface/EnDat/Hiperface DSL W/ Brake
AKMH41	166.7 [6.56]	201.0 [7.91]	182.7 [7.19]	217.0 [8.54]
AKMH42	195.7 [7.70]	230.0 [9.06]	211.7 [8.33]	246.0 [9.69]
AKMH43	224.7 [8.85]	259.0 [10.20]	240.7 [9.48]	275.0 [10.83]
AKMH44	253.7 [9.99]	288.0 [11.34]	269.7 [10.62]	304.0 [11.97]

Note 1: Dimensions are in mm [inches].
Note 2: Product designed in metric. English conversions provided for reference only.

*Complete AKMH series model nomenclature can be found on page 44.

AKMH5x Performance Data

AKMH5x Performance Data – Up to 640 Vdc*

					AKMH51			AKMH52				AKMH53			AKMH54		
	Parameters	Tol	Sym	Units	E	H	L	E	H	L	M	H	L	P	H	L	P
	Max Rated DC Bus Voltage	Max	Vbus	Vdc	640	640	320	640	640	640	320	640	640	320	640	560	320
	Continuous Torque (Stall) for ΔT winding = 100°C ①②④	Nom	T_{cs}	Nm	3.92	3.8	3.89	6.69	6.72	6.66	6.7	9.45	8.99	8.3	13.21	12.1	11.83
				lb-in	34.7	33.6	34.4	59.2	59.5	58.9	59.3	83.6	79.6	73.5	116.9	107.1	104.7
	Continuous Current (Stall) for ΔT winding = 100°C ①②④	Nom	I_{cs}	A_{rms}	2.61	5.45	10.58	2.68	5.17	9.87	11.15	5.92	10.09	15.66	5.30	11.29	16.58
	Continuous Torque (Stall) for ΔT winding = 60°C ②④	Nom	T_{cs}	Nm	3.14	3.04	3.11	5.35	5.38	5.33	5.36	7.56	7.19	6.64	10.57	9.68	9.46
				lb-in	27.8	26.9	27.5	47.4	47.6	47.2	47.4	66.9	63.6	58.8	93.5	85.7	83.8
	Max Mechanical Speed ⑤	Nom	N_{max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
	Peak Torque ①②④	Nom	T_p	Nm	10.09	10.17	10.33	18.79	19.01	19.30	19.20	26.74	26.95	26.56	35.62	35.65	36.08
				lb-in	89.3	90.0	91.4	166.3	168.2	170.8	169.9	236.6	238.5	235.1	315.2	315.5	319.3
	Peak Current ⑩	Nom	I_p	A_{rms}	8.25	18.00	35.70	8.97	17.70	34.80	39.30	19.80	35.40	57.30	16.50	37.50	58.80
Maximum Rated DC Bus Voltage	160 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	-	-	3.54	-	-	-	-	-	-	-	-	-	-
					lb-in	-	-	31.3	-	-	-	-	-	-	-	-	-	-
		Rated Speed		N_{rtd}	rpm	-	-	3000	-	-	-	-	-	-	-	-	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	-	-	1.11	-	-	-	-	-	-	-	-	-	-
					Hp	-	-	1.49	-	-	-	-	-	-	-	-	-	-
	320 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	3.83	3.44	2.16	-	6.54	5.30	3.76	-	6.83	3.66	12.88	9.74	7.19
					lb-in	33.9	30.4	19.1	-	57.9	46.9	33.3	-	60.4	32.4	114.0	86.2	63.6
		Rated Speed		N_{rtd}	rpm	1500	3000	5500	-	1500	3500	4500	-	3000	3500	1000	2500	3000
		Rated Power (speed) ①②④		P_{rtd}	kW	0.60	1.08	1.24	-	1.03	1.94	1.77	-	2.15	1.34	1.35	2.55	2.26
					Hp	0.81	1.45	1.67	-	1.38	2.60	2.38	-	2.88	1.80	1.81	3.42	3.03
	560 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	3.58	2.20	-	6.41	5.22	2.46	-	6.95	3.62	-	11.45	6.76	-
					lb-in	31.7	19.5	-	56.7	46.2	21.8	-	61.5	32.0	-	101.3	59.8	-
		Rated Speed		N_{rtd}	rpm	2500	5500	-	1500	3500	4500	-	3000	3500	-	2000	3000	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.94	1.27	-	1.01	1.91	1.16	-	2.18	1.33	-	2.40	2.12	-
					Hp	1.26	1.70	-	1.35	2.56	1.55	-	2.93	1.78	-	3.21	2.85	-
	640 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	3.44	2.05	-	6.22	4.54	1.27	-	5.99	2.29	-	11.26	-	-
					lb-in	30.4	18.1	-	55.0	40.2	11.2	-	53.0	20.3	-	99.7	-	-
		Rated Speed		N_{rtd}	rpm	3000	5500	-	2000	4000	4500	-	3500	3500	-	2000	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	1.08	1.18	-	1.30	1.90	0.60	-	2.20	0.84	-	2.36	-	-
					Hp	1.45	1.58	-	1.75	2.55	0.80	-	2.94	1.13	-	3.16	-	-

See following page for notes.

AKMH5x Performance Data – Up to 640 Vdc (Continued)*

				AKMH51			AKMH52				AKMH53			AKMH54		
Parameters	**Tol**	**Sym**	**Units**	**E**	**H**	**L**	**E**	**H**	**L**	**M**	**H**	**L**	**P**	**H**	**L**	**P**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	1.53	0.71	0.37	2.53	1.32	0.68	0.61	1.62	0.90	0.54	2.52	1.08	0.72
			lb-in/A_{rms}	13.5	6.3	3.3	22.4	11.7	6.1	5.4	14.3	8.0	4.8	22.3	9.6	6.4
Back EMF Constant ⑥	±10%	K_e	V/k_{rpm}	110.0	51.3	26.6	179.4	92.7	48.3	42.4	112.0	63.6	38.4	165.6	72.9	47.3
Motor Constant ①	Nom	K_m	N-m/√W	0.42	0.41	0.42	0.69	0.70	0.70	0.70	0.91	0.87	0.80	1.15	1.07	1.04
			lb-in/√W	3.68	3.64	3.68	6.11	6.19	6.23	6.17	8.02	7.74	7.09	10.14	9.43	9.22
Resistance (line-line) ⑥	±10%	R_m	ohm	9.0	2.0	0.5	9.0	2.4	0.6	0.5	2.1	0.7	0.3	3.2	0.7	0.3
Inductance (line-line)		L	mH	36.6	7.9	2.1	44.7	11.9	3.2	2.5	11.4	3.6	1.3	18.3	3.6	1.5
Inertia (includes Resolver feedback) ③	±10%	J_m	kg-cm²	3.42			6.22				9.12			11.90		
			lb-in-s²	3.0E-03			5.5E-03				8.1E-03			1.1E-02		
Optional Brake Inertia (additional)	±10%	J_m	kg-cm²	0.173			0.173				0.173			0.173		
			lb-in-s²	1.5E-04			1.5E-04				1.5E-04			1.5E-04		
Weight ⑧⑨		W	kg	8.9			11.1				13.4			15.7		
			lb	19.6			24.5				29.5			34.6		
Static Friction ①		T_f	Nm	0.073			0.096				0.119			0.142		
			lb-in	0.65			0.85				1.05			1.26		
Viscous Damping ①		K_{dv}	Nm/k_{rpm}	0.014			0.023				0.033			0.042		
			lb-in/k_{rpm}	0.124			0.204				0.292			0.372		
Thermal Time Constant		TCT	minutes	46			58				69			80		
Thermal Resistance		R_{thw-a}	°C/W	0.77			0.73				0.62			0.51		
Pole Pairs				5			5				5			5		
Heat Sink Size				12"x12"x0.5" Aluminum Plate			12"x12"x0.5" Aluminum Plate				12"x12"x0.5" Aluminum Plate			12"x12"x0.5" Aluminum Plate		

Notes:
① Motor winding temperature rise, ΔT=100°C, at 25°C ambient.
② All data referenced to sinusoidal commutation.
③ Add parking brake if applicable for total inertia.
④ Motor with 115°C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25°C.
⑦ Resistance is measured with 1 meter of cable.
⑧ Face mount adds 1.5 kg [3.31 lbs]
⑨ Brake options adds 1.8 kg [3.97 lbs] and reduces continuous torque by 9% and rated torque by 45%
⑩ Derived from Cont. Current (Stall, ΔT wdg. = 100°C) of equivalent AKM

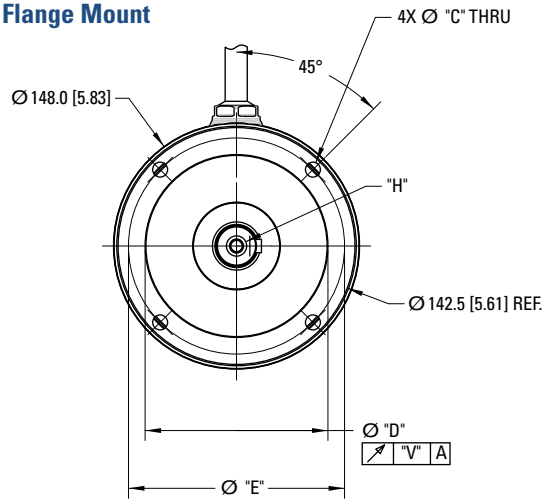
* Motor performance across the entire speed range varies depending on selection of feedback device and holding brake. Use the Performance Curve Generator on the Kollmorgen AKMH Product Page (http://www.kollmorgen.com/en-us/products/motors/servo/akmh-series/stainless-steel-akmh-series/) to generate specific rated speed/torque curves for a given configuration.

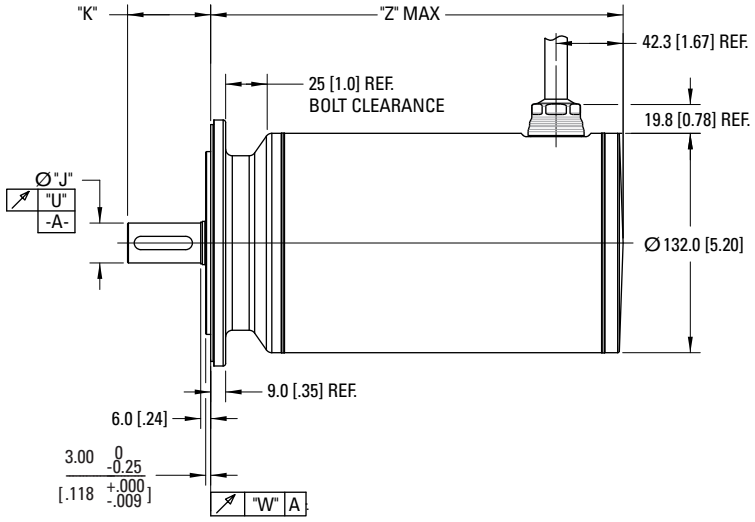
*Complete AKMH series model nomenclature can be found on page 44.

AKMH5x Outline Drawings

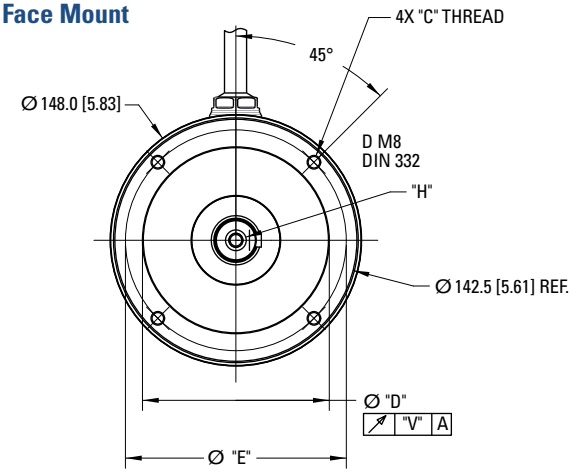
AKMH5x Frame

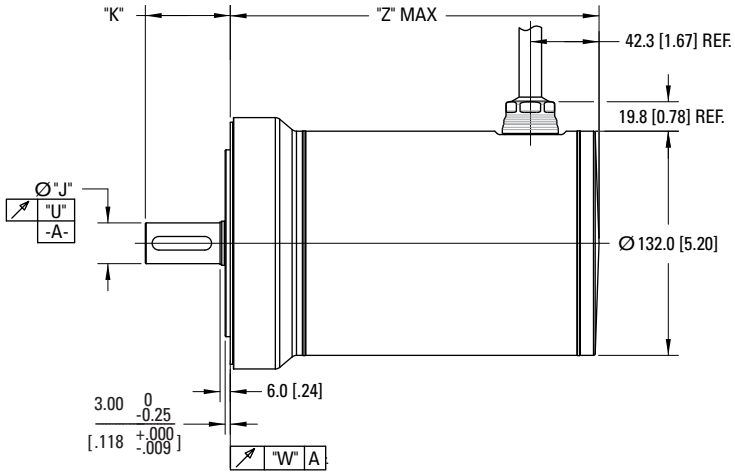
Flange Mount



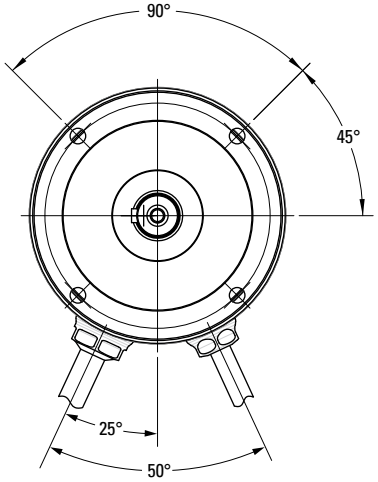


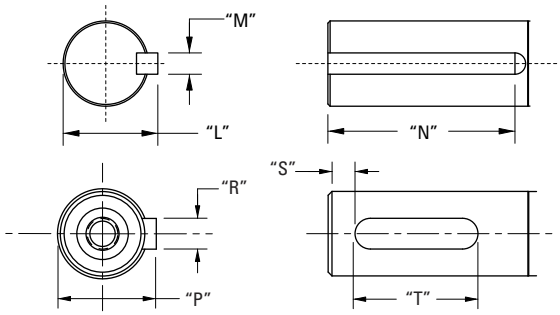
Face Mount





Dual Cable Option for Third Party Drives





Dimensions are in mm [inches].

AKMH5x Dimension Data

AKMH 5 2 E – AN K N CA 1 K*
Motor Series | Frame Size | Stack Length | Winding | Mount/Shaft | Connection | Brake | Feedback | Cable Length | Seal

AKMH5x Dimension Data

Flange/Shaft Configuration										
Code	Mount Type	Standard	Shaft	"C"	"D"	"E"	"H"	"J"	"K"	"L"
AC	Flange	IEC 130	Closed Keyway	9 [.354]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [.9449]	50.0 [1.97]	–
AN	Flange	IEC 130	Smooth	9 [.354]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [.9449]	50.0 [1.97]	–
BK	Flange	NEMA 42	Open Keyway	10.08 [.397]	55.560 [2.1874]	125.73 [4.950]	–	19.05 [.7500]	57.15 [2.250]	21.15 [.833]
BN	Flange	NEMA 42	Smooth	10.08 [.397]	55.560 [2.1874]	125.73 [4.950]	–	19.05 [.7500]	57.15 [2.250]	–
CC	Face	IEC 130	Closed Keyway	M8 x 1.25 x 16.8 [.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [.9449]	50.0 [1.97]	–
CN	Face	IEC 130	Smooth	M8 x 1.25 x 16.8 [.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [.9449]	50.0 [1.97]	–
DK	Face	NEMA 42	Open Keyway	UNC 3/8 - 16 x 19.05 [.750]	55.563 [2.187]4	125.73 [4.950]	–	19.05 [.7500]	57.15 [2.250]	21.15 [.833]
DN	Face	NEMA 42	Smooth	UNC 3/8 - 16 x 19.05 [.750]	55.563 [2.1874]	125.73 [4.950]	–	19.05 [.7500]	57.15 [2.250]	–
EK	Face	NEMA 42	Open Keyway	M8 x 1.25 x 16.8 [.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24.00 [.9449]	50.0 [1.97]	27.00 [1.063]
EN	Face	NEMA 42	Smooth	M8 x 1.25 x 16.8 [.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24.00 [.9449]	50.0 [1.97]	–

Mounting Code	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"V"	"W"
AC	–	–	27 [1.063]	8 [.3150]	4.00 [.157]	35 [1.378]	0.040 [.0015]	0.100 [.0039]	0.100 [.0039]
AN	–	–	–	–	–	–	0.040 [.0015]	0.100 [.0039]	0.100 [.0039]
BK	4.762 [.1875]	38.1 [1.500]	–	–	–	–	0.051 [.0020]	0.100 [.0039]	0.100 [.0039]
BN	–	–	–	–	–	–	0.051 [.0020]	0.100 [.0039]	0.100 [.0039]
CC	–	–	27 [1.063]	8 [.3150]	4.00 [.157]	35 [1.378]	0.040 [.0015]	0.100 [.0039]	0.100 [.0039]
CN	–	–	–	–	–	–	0.040 [.0015]	0.100 [.0039]	0.100 [.0039]
DK	4.762 [.1875]	38.1 [1.500]	–	–	–	–	0.051 [.0020]	0.100 [.0039]	0.100 [.0039]
DN	–	–	–	–	–	–	0.051 [.0020]	0.100 [.0039]	0.100 [.0039]
EK	8.000 [.3150]	36.00 [1.417]	–	–	–	–	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]
EN	–	–	–	–	–	–	0.040 [.0015]	0.080 [.0031]	0.080 [.0031]

	Z MAX			
MODEL	SFD/Resolver/SFD3/ Comcoder W/O Brake	SFD/Resolver/SFD3/ Comcoder W/ Brake	Hiperface/EnDat/ Hiperface DSL W/O Brake	Hiperface/EnDat/ Hiperface DSL W/ Brake
AKMH51	187.4 [7.38]	229.4 [9.03]	198.4 [7.81]	240.4 [9.46]
AKMH52	218.4 8.60]]	260.4 [10.25]	229.4 [9.03]	271.4 [10.69]
AKMH53	249.4 [9.82]	291.4 [11.47]	260.4 [10.25]	302.4 [11.91]
AKMH54	280.4 [11.04]	322.4 [12.69]	291.4 [11.47]	333.4 [13.13]

Note 1: Dimensions are in mm [inches].
Note 2: Product designed in metric. English conversions provided for reference only.

*Complete AKMH series model nomenclature can be found on page 44.

AKMH6x Performance Data

AKMH6x Performance Data – Up to 640 Vdc*

						AKMH62			AKMH63			AKMH64		AKMH65		
	Parameters	Tol	Sym	Units	H	L	M	H	L	M	K	L	K	L	M
	Max Rated DC Bus Voltage	Max	Vbus	Vdc	640	640	640	640	640	640	640	640	640	640	640
	Continuous Torque (Stall) for ΔT winding = 100°C ①②④	Nom	T_{cs}	Nm	10.6	10.1	10.3	14.6	14.1	14.2	18.0	17.9	21.4	21.5	21.1
				lb-in	93.8	89.4	91.2	129.2	124.8	125.7	159.3	158.4	189.4	190.3	186.7
	Continuous Current (Stall) for ΔT winding = 100°C ①②④	Nom	I_{cs}	A_{rms}	5.32	11.05	12.53	5.42	10.23	12.59	8.74	11.87	9.33	11.44	12.57
	Continuous Torque (Stall) for ΔT winding = 60°C ②④	Nom	T_{cs}	Nm	8.48	8.08	8.24	11.68	11.28	11.36	14.40	14.32	17.12	17.20	16.88
				lb-in	75.0	71.5	72.9	103.4	99.8	100.5	127.4	126.7	151.5	152.2	149.4
	Max Mechanical Speed ⑤	Nom	N_{max}	rpm	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
	Peak Torque ①②④	Nom	T_p	Nm	32.24	33.03	33.13	44.73	45.29	46.02	55.79	56.46	65.87	66.72	66.63
				lb-in	285.3	292.3	293.2	395.9	400.8	407.3	493.7	499.7	582.9	590.5	589.7
	Peak Current ⑩	Nom	I_p	A_{rms}	16.20	36.00	40.20	16.80	33.30	41.40	27.60	38.40	29.40	36.60	40.80
Maximum Rated DC Bus Voltage	160 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	-	-	-	-	-	-	-	-	-	-	-
					lb-in	-	-	-	-	-	-	-	-	-	-	-
		Rated Speed		N_{rtd}	rpm	-	-	-	-	-	-	-	-	-	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	-	-	-	-	-	-	-	-	-	-	-
					Hp	-	-	-	-	-	-	-	-	-	-	-
	320 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	10.14	8.33	7.82	-	12.47	12.47	17.34	16.57	20.65	20.01	19.64
					lb-in	89.7	73.7	69.2	-	110.4	110.4	153.5	146.6	182.8	177.1	173.8
		Rated Speed		N_{rtd}	rpm	1000	2500	3000	-	2000	2000	1000	1500	1000	1500	1500
		Rated Power (speed) ①②④		P_{rtd}	kW	1.06	2.18	2.46	-	2.61	2.61	1.82	2.60	2.16	3.14	3.09
					Hp	1.42	2.92	3.29	-	3.50	3.50	2.43	3.49	2.90	4.21	4.14
	560 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	9.15	3.77	3.22	13.30	9.81	4.76	15.40	12.19	18.40	16.97	14.63
					lb-in	81.0	33.4	28.5	117.7	86.8	42.1	136.3	107.9	162.8	150.2	129.5
		Rated Speed		N_{rtd}	rpm	2000	4000	4000	1500	3000	4000	2000	3000	2000	2500	3000
		Rated Power (speed) ①②④		P_{rtd}	kW	1.92	1.58	1.35	2.09	3.08	1.99	3.23	3.83	3.85	4.44	4.60
					Hp	2.57	2.12	1.81	2.80	4.13	2.67	4.32	5.13	5.17	5.96	6.16
	640 Vdc	Rated Torque (speed) ①②④		T_{rtd}	Nm	9.07	2.94	2.07	12.61	7.64	3.04	14.19	9.29	17.00	14.68	13.78
					lb-in	80.3	26.0	18.3	111.6	67.6	26.9	125.6	82.2	150.5	129.9	122.0
		Rated Speed		N_{rtd}	rpm	2000	4000	4000	2000	3500	4000	2500	3500	2500	3000	3000
		Rated Power (speed) ①②④		P_{rtd}	kW	1.90	1.23	0.87	2.64	2.80	1.27	3.71	3.40	4.45	4.61	4.33
					Hp	2.55	1.65	1.16	3.54	3.75	1.71	4.98	4.56	5.97	6.18	5.80

See following page for notes.

AKMH6x Performance Data – Up to 640 Vdc (Continued)*

				AKMH62			AKMH63			AKMH64		AKMH65		
Parameters	**Tol**	**Sym**	**Units**	**H**	**L**	**M**	**H**	**L**	**M**	**K**	**L**	**K**	**L**	**M**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	2.03	0.93	0.84	2.73	1.40	1.15	2.09	1.53	2.32	1.90	1.70
			$lb\text{-}in/A_{rms}$	18.0	8.3	7.4	24.2	12.4	10.1	18.5	13.5	20.5	16.8	15.0
Back EMF Constant ⑥	±10%	K_e	V/k_{rpm}	142.1	65.5	58.8	191.5	98.2	79.9	146.5	106.6	163.7	133.2	119.3
Motor Constant ①	Nom	K_m	$N\text{-}m/\sqrt{W}$	0.91	0.87	0.89	1.20	1.17	1.18	1.42	1.42	1.62	1.63	1.60
			$lb\text{-}in/\sqrt{W}$	8.05	7.73	7.89	10.64	10.32	10.43	12.61	12.58	14.32	14.40	14.17
Resistance (line-line) ⑥	±10%	R_m	ohm	3.3	0.8	0.6	3.5	1.0	0.6	1.4	0.8	1.4	0.9	0.8
Inductance (line-line)		L	mH	25.4	5.4	4.4	28.1	7.4	4.9	11.8	6.2	11.4	7.6	6.1
Inertia (includes Resolver feedback) ③	±10%	J_m	$kg\text{-}cm^2$	16.90			24.20			31.60		40.00		
			$lb\text{-}in\text{-}s^2$	1.5E-02			2.1E-02			2.8E-02		3.5E-02		
Optional Brake Inertia (additional)	±10%	J_m	$kg\text{-}cm^2$	0.610			0.610			0.610		0.610		
			$lb\text{-}in\text{-}s^2$	5.4E-04			5.4E-04			5.4E-04		5.4E-04		
Weight ⑧⑨		W	kg	19.6			23.1			26.7		30.2		
			lb	43.2			50.9			58.9		66.6		
Static Friction ①		T_f	Nm	0.204			0.218			0.232		0.246		
			lb-in	1.81			1.93			2.05		2.18		
Viscous Damping ①		K_{dv}	Nm/k_{rpm}	0.037			0.046			0.054		0.063		
			$lb\text{-}in/k_{rpm}$	0.327			0.407			0.478		0.558		
Thermal Time Constant		TCT	minutes	58			62			75		88		
Thermal Resistance		$R_{thw\text{-}a}$	°C/W	0.50			0.46			0.43		0.39		
Pole Pairs				5			5			5		5		
Heat Sink Size				18"x18"x0.5" Aluminum Plate			18"x18"x0.5" Aluminum Plate			18"x18"x0.5" Aluminum Plate		18"x18"x0.5" Aluminum Plate		

Notes:
① Motor winding temperature rise, ΔT=100°C, at 25°C ambient.
② All data referenced to sinusoidal commutation.
③ Add parking brake if applicable for total inertia.
④ Motor with 115°C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25°C.
⑦ Resistance is measured with 1 meter of cable.
⑧ Face mount adds 2.5 kg [5.51 lbs]
⑨ Brake options adds 3.4 kg [7.5 lbs] and reduces continuous torque by 6% and rated torque by 37%
⑩ Derived from Cont. Current (Stall, ΔT wdg. = 100°C) of equivalent AKM

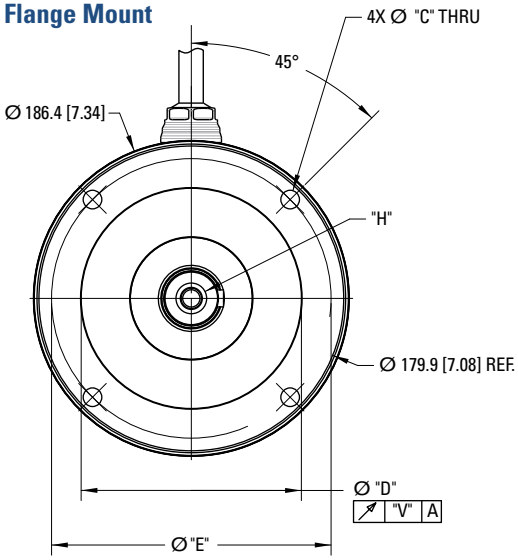
* Motor performance across the entire speed range varies depending on selection of feedback device and holding brake. Use the Performance Curve Generator on the Kollmorgen AKMH Product Page (http://www.kollmorgen.com/en-us/products/motors/servo/akmh-series/stainless-steel-akmh-series/) to generate specific rated speed/torque curves for a given configuration.

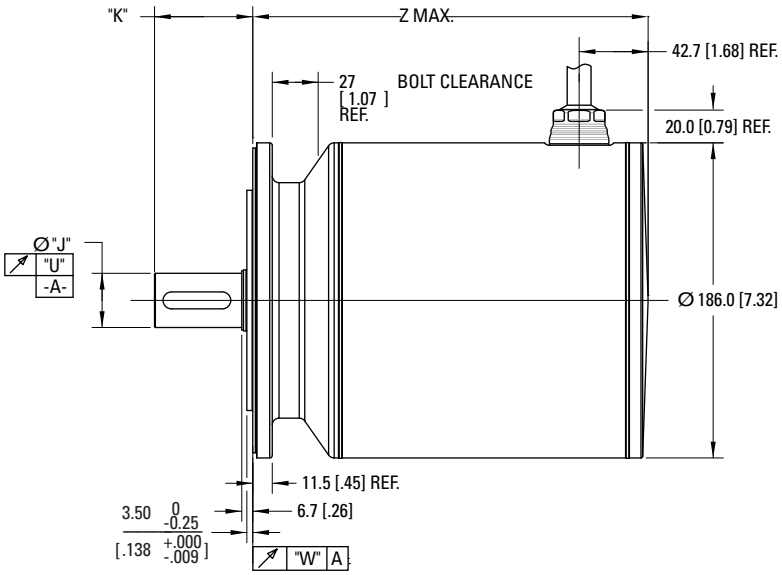
*Complete AKMH series model nomenclature can be found on page 44.

AKMH6x Outline Drawings

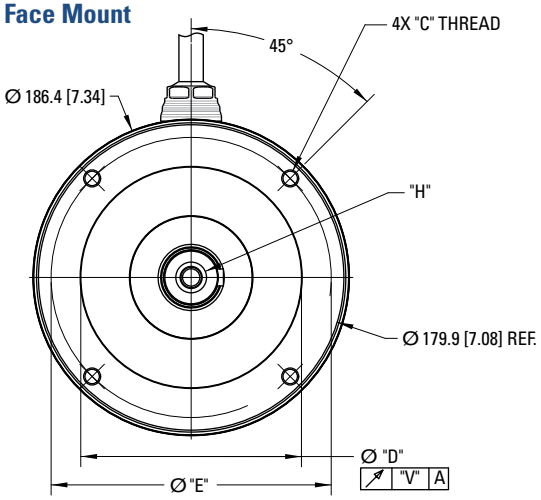
AKMH6x Frame

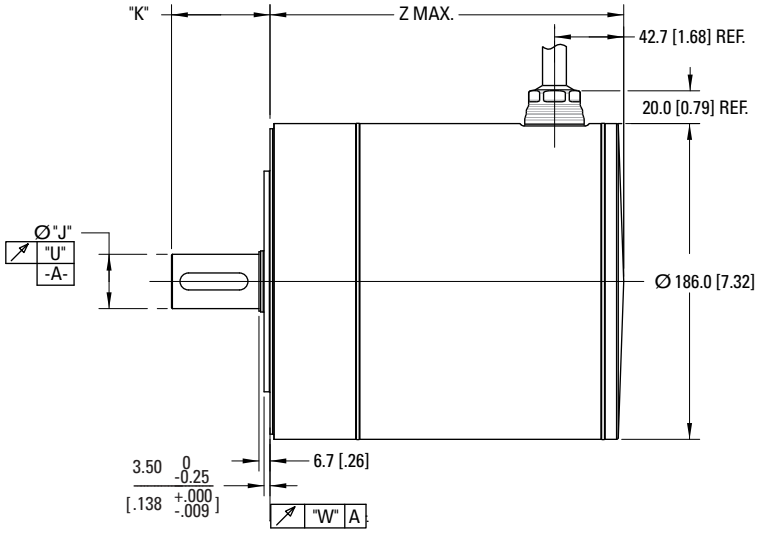
Flange Mount



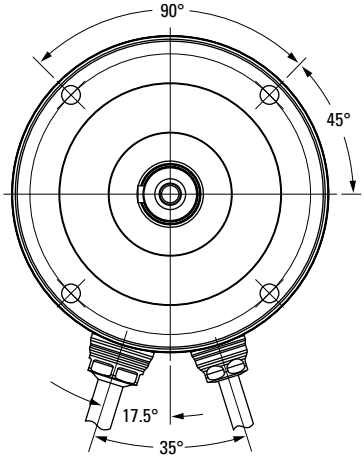


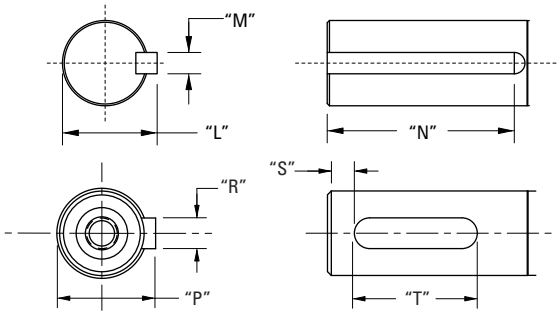
Face Mount





Dual Cable Option for Third Party Drives





Dimensions are in mm [inches].

AKMH6x Dimension Data

AKMH 6 2 H – AN K N CA 1 K*
Motor Series | Frame Size | Stack Length | Winding | Mount/Shaft | Connection | Brake | Feedback | Cable Length | Seal

AKMH6x Dimension Data

Flange/Shaft Configuration										
Mount Code	Mount Type	Standard	Shaft	"C"	"D"	"E"	"H"	"J"	"K"	"L"
AC	Flange	IEC 165	Closed Keyway	11.00 [.433]	130 [5.1181]	165.00 [6.496]	D M12 DIN 332	32 [1.2598]	58 [2.28]	–
AN	Flange	IEC 165	Smooth	11.00 [.433]	130 [5.1181]	165.00 [6.496]	D M12 DIN 332	32 [1.2598]	58 [2.28]	–
CC	Face	IEC 165	Closed Keyway	M10 x 1.5 x 20.4 [.80]	130 [5.1181]	165.00 [6.496]	D M12 DIN 332	32 [1.2598]	58 [2.28]	–
CN	Face	IEC 165	Smooth	M10 x 1.5 x 20.4 [.80]	130 [5.1181]	165.00 [6.496]	D M12 DIN 332	32 [1.2598]	58 [2.28]	–
DK	Face	NEMA 56	Open Keyway	UNC 3/8 - 16 x 19.05 [.750]	114.3 [4.5000]	149.23 [5.875]	–	28.580 [1.1250]	69.9 [2.75]	31.39 [1.236]
DN	Face	NEMA 56	Smooth	UNC 3/8 - 16 x 19.05 [.750]	114.3 [4.5000]	149.23 [5.875]	–	28.580 [1.1250]	69.9 [2.75]	–
EK	Face	NEMA 56	Open Keyway	M10 x 1.5 x 20.4 [.803]	130 [5.1181]	165.00 [6.496]	D M10 DIN 332	28.000 [1.1024]	60.0 [2.36]	31.000 [1.2205]
EN	Face	NEMA 56	Smooth	M10 x 1.5 x 20.4 [.803]	130 [5.1181]	165.00 [6.496]	D M10 DIN 332	28.000 [1.1024]	60.0 [2.36]	–

Mount Code	"M"	"N"	"P"	"R"	"S"	"T"	"U"	"V"	"W"
AC	–	–	35 [1.378]	10 [.3937]	5.00 [.197]	40 [1.575]	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
AN	–	–	–	–	–	–	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
CC	–	–	35 [1.378]	10 [.3937]	5.00 [.197]	40 [1.575]	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
CN	–	–	–	–	–	–	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
DK	6.35 [.2500]	38.10 [1.500]	–	–	–	–	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
DN	–	–	–	–	–	–	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
EK	8.00 [0.315]	45.00 [1.772]	–	–	–	–	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]
EN	–	–	–	–	–	–	0.050 [.0019]	0.100 [.0039]	0.100 [.0039]

	Z MAX			
MODEL	SFD/Resolver/SFD3/ Comcoder W/O Brake	SFD/Resolver/SFD3/ Comcoder W/ Brake	Hiperface/EnDat/ Hiperface DSL W/O Brake	Hiperface/EnDat/ Hiperface DSL W/ Brake
AKMH62	209.9 [8.26]	265.5 [10.10]	220.9 [8.70]	267.5 [10.53]
AKMH63	234.9 [9.25]	281.5 [11.08]	245.9 [9.68]	292.5 [11.52]
AKMH64	259.9 [10.23]	306.5 [12.07]	270.9 [10.67]	317.5 [12.50]
AKMH65	284.9 [11.22]	331.5 [13.05]	295.9 [11.65]	342.5 [13.48]

Note 1: Dimensions are in mm [inches].
Note 2: Product designed in metric. English conversions provided for reference only.

*Complete AKMH series model nomenclature can be found on page 44.

AKMH™ Technical Guide

I. General Technical Data

Ambient Temperature: 0...+40°C for site altitude up to 1000m amsl (at rated values). It is vital to consult our applications department for ambient temperatures above 40°C and encapsulated mounting of the motors.

Power De-rating: (currents and torques) 1% / K in range 40°C...50°C up to 1000m amsl for site altitude above 1000m amsl and 40°C

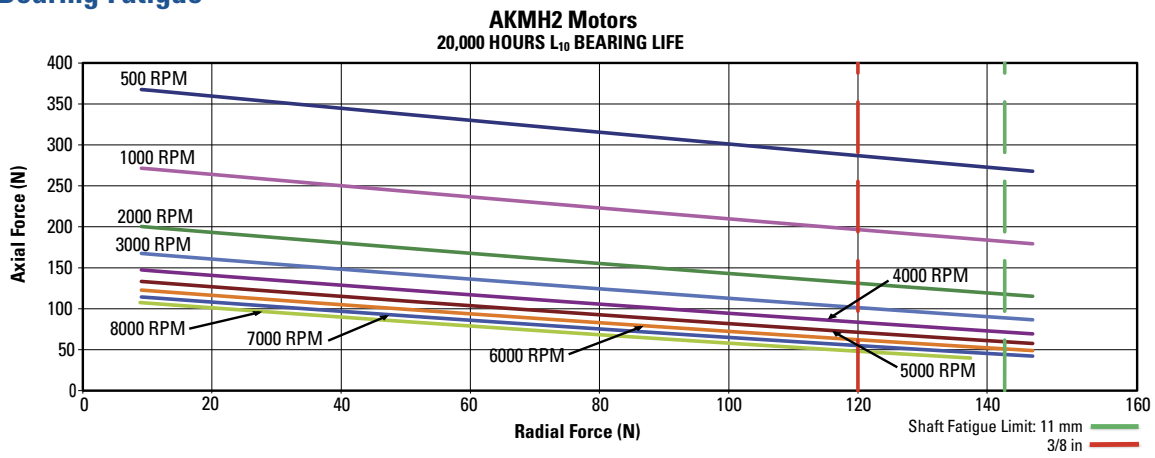
- 6% up to 2000m amsl
- 17% up to 3000m amsl
- 30% up to 4000m amsl
- 55% up to 5000m amsl

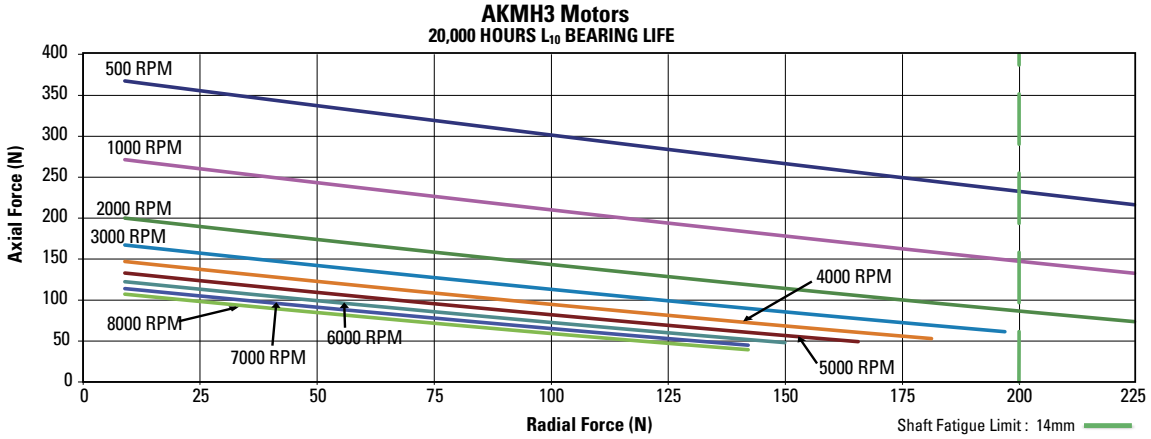
No de-rating for site altitudes above 1000m amsl with temperature reduction of 10K / 1000m

Motor Temperature: If application requires de-rating due to lower motor surface temperature, please contact our applications department.

Ball-bearing Life: ≥ 20,000 operating hours

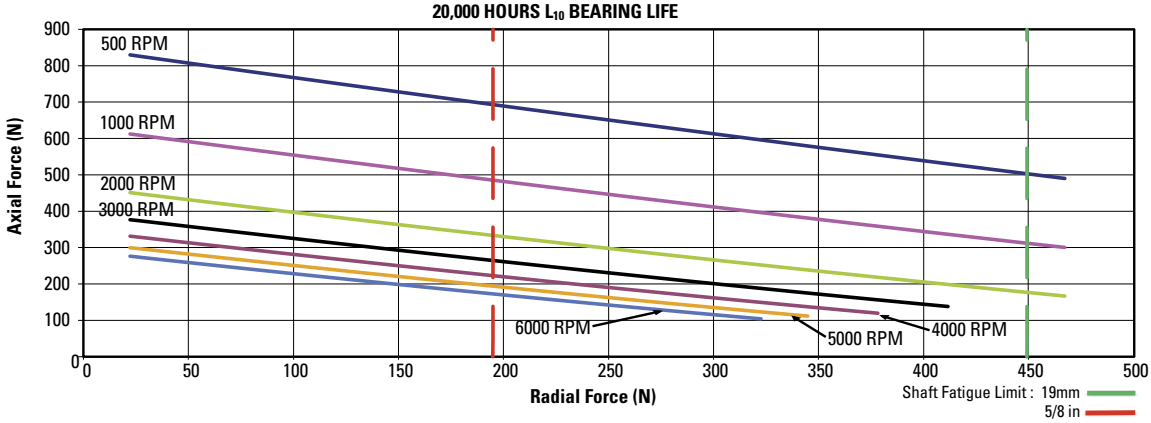
II. L10 Bearing Fatigue





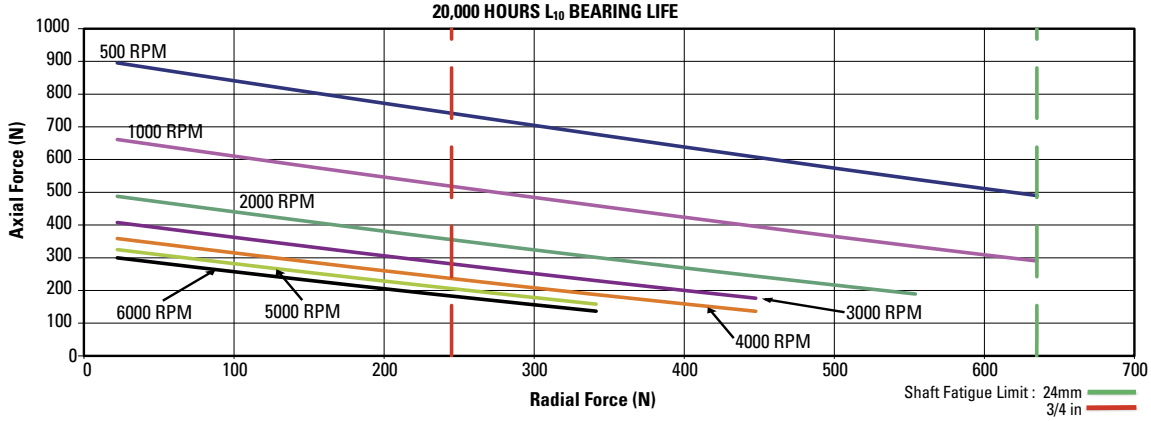
AKMH4 Motors

20,000 HOURS L_{10} BEARING LIFE



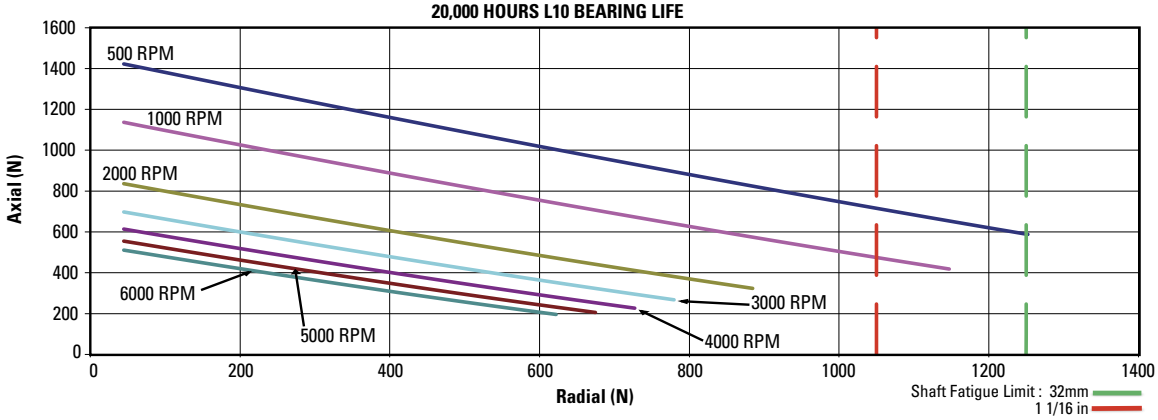
AKMH5 Motors

20,000 HOURS L_{10} BEARING LIFE



AKMH6 Motors

20,000 HOURS L10 BEARING LIFE



AKMH™ Technical Guide

III. Shaft Loading

Motor	Max. Radial Force (N)	Max. Axial Force(N)
AKMH2xy-A / C	140	600
AKMH2xy-B / D	120	
AKMH3xy-A / C	200	600
AKMH4xy-A / C	450	1400
AKMH4xy-B / D	195	
AKMH5xy-A / C / G / H	635	1740
AKMH5xy-B / D	245	
AKMH6xy-A / C	1250	2200
AKMH6xy-D	1050	

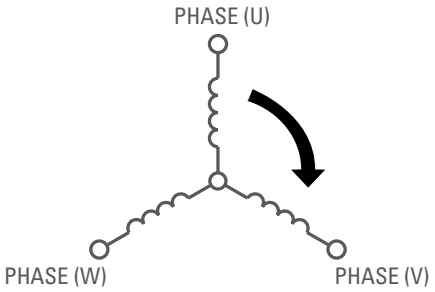
The maximum radial load ratings reflect the following assumptions:

1. Motors are operated with peak torque of the longest member of the frame size.
2. Fully reversed load applied to the end of the smallest diameter standard mounting shaft extension. Excluding AKMH4X-CC which is rated at 240 N max. radial force.
3. Infinite life with 99% reliability.
4. Safety factor = 2.

IV. Phasing Diagram - All Motors

When motor is rotated CW (viewed from drive shaft end), these waveforms result:

- Voltage U , leads V , leads W.
- Voltage U-W leads Voltage V-W by 60° electrical.



Motor Winding Configuration

V. Protection Class

Shaft Seal	Flange Sealing	Protection Class
K	O-Ring	IP69K

Protection class IP69K has been created for high pressure and high temperature cleaning according to DIN 40050-9. Code "6" defines the resistancy against dust, code "9" defines the resistancy against short distance high pressure liquid.

IP69K protection class is for status use only. This ratings does not account for water present while the shaft is rotating. For applications that require sealing during rotation, please contact Kollmorgen Customer Support.

VI. Insulation Material

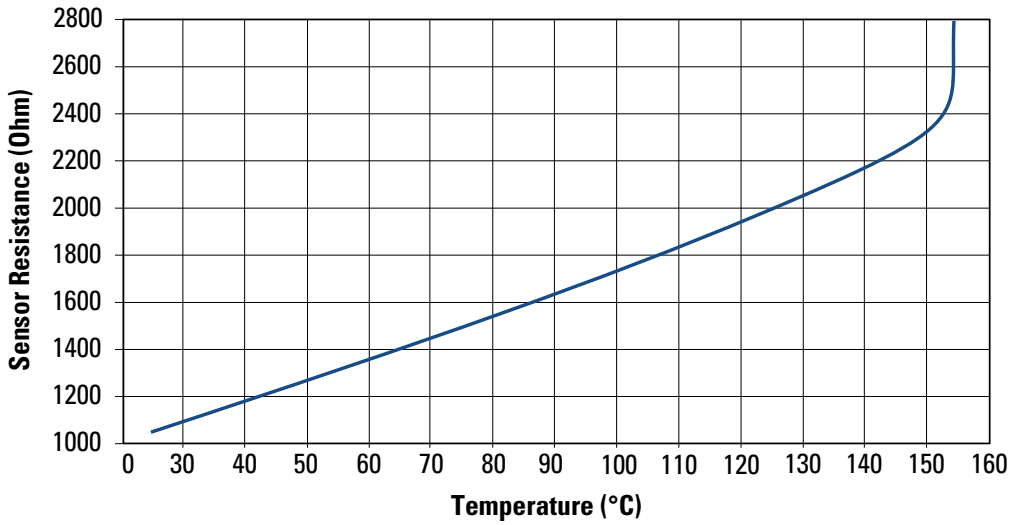
The motors come up to insulation material class F according to IEC 60085 (UL1446 class F).

VII. Surface

AKMH motor housing is made from 316L or 1.4404 stainless steel. Surface roughness is less than 0.8 µm according to EHEDG requirements.

IIX. Protective Device

The standard version of each motor is fitted with an electrically isolated temperature sensor (rated temperature 155°C ± 5%). The sensor does not provide any protection against short, heavy overloading. The sensor is integrated into the monitoring system of the AKD. Motor is equipped with thermal sensor, which contains KTY83-110 and PTC serially connected. Setup of threshold limit in the drive to 2500 Ohms. Sensor is defined by following diagram:



IX. Vibration Class

Velocity [rpm]	Max. Rel. Vibration Displacement [µm]	Max. Run-out [µm]
<= 1800	90	23
> 1800	65	16

The motors are made to vibration class A according to EN 60034-14. For a speed range of 600 rpm to 3600 rpm and a frame size between 56 mm and 132 mm, this means that the actual value of the permitted vibration severity is 1.6 mm/s.

AKMH™ Hygienic Design Guide

I. Hygienic Design

The Food and Drug Administration (FDA) is an agency of the United States Department of Health and Human Services. The FDA is responsible for protecting and promoting public health through the regulation and supervision of food safety, vaccines, biopharmaceuticals, blood transfusions, medical devices and other products.

The "European Hygienic Engineering and Design Group" (EHEDG) is a European-based non-government organization devoted to the advancement of hygienic design and food engineering. European legislation requires that handling, preparation, processing, packaging, etc. of food is done hygienically, with hygienic machinery in hygienic premises (the food hygiene directive, the machine directive and the food contact materials directive).

Certifications:	UL, CE, RoHs, BISSC, NSF, USDA, FDA, EAC, designed to EHEDG guidelines, according to DIN EN ISO 14159 and DIN EN 1672-2
Surface:	Stainless steel 316L/1.4404, roughness < 0.8 µm
Immunity:	Against tested industrial cleaning agent, corrosion-proof
Degree of Protection:	IP69K
Mounting Screw*:	Stainless steel 316L/1.4404, sealant FDA 21 CFR 175.300
O-Ring:	EPDM, FDA 21 CFR 177.2600
Shaft:	Stainless steel 316L/1.4404
Rotary Shaft Seal:	Mineral filled PTFE, single lip, mineral: FDA 21 CFR 175.300, PTFE: FDA 21 CFR 177.1500
Shaft Center Screw*:	Stainless steel 1.4404, sealant FDA 21 CFR 175.300
Bearing Grease:	Food-grade as per FDA 21 CFR 178.3570
Cable Gland:	Stainless steel 1.4404, Silicone seal FDA 21 CFR 177.2600
Cable Tube:	Silicone FDA 21 CFR 177.2600
Name Plate:	Laser marked in housing
Size:	AKMH2 to AKMH6

*optional, included in the mounting kit

II. Tested properties with respect to cleaning agents

The testing lab of ECOLAB Deutschland GmbH tested the resistance of the external surfaces to the following industrial cleaning agents:

- P3-topactive DES
- P3-topax 12
- P3-topax 56
- P3-topax 66
- P3-topax 990

In the process, the surfaces were immersed in the respective cleaning agent at 21°C temperature for 28 days. This corresponds to approx. 2,500 cleaning cycles with 15-minute contact each with the cleaning agent or 1,500 cleaning cycles with cleaning and subsequent disinfection. Due to the possible relaxation after each treatment in practice the chemical attack would be even lower.

Kollmorgen can only give a guarantee for the motor's lifecycle if the tested cleansing agents are used. Contact Kollmorgen Customer Support for information on motor use with alternative cleaning agents.

Brake Option

Holding Brake

The holding brake is designed to provide static holding torque to the motor shaft with the brake coil de-energized. The brake must first be released (coil energized) prior to commanding motor rotation as determined by its drop-out time. The brake is intended for holding or "parking" of a stationary motor. It is not intended for dynamic braking. There should be absolutely no motion of the rotor when power is removed from the brake coil.

AKMH Motor Brake Specifications

Motor Family	Minimum Static Torque @120°C		Power Consumption @24V, 20°C	Current @24V, 20°C	Inertia		Closing Time (engage)	Opening Time (release)	Backlash	
									Maximum	Typical
	Nm	lb-in	Watts ±7%	ADC	kg-cm^2	lb-in-sec^2	msec	msec	deg.	deg.
AKMH2	1.42	12.6	8.4	0.35	0.011	0.97E-05	36	35	1.01	0.46
AKMH3	2.5	22.1	10.1	0.42	0.011	0.97E-05	20	50	1.01	0.46
AKMH4	5.3	46.9	12.8	0.53	0.068	6.02E-05	30	75	0.81	0.37
AKMH5	14.5	128	19.5	0.82	0.173	1.53E-04	30	115	0.71	0.31
AKMH6	25	221	25.7	1.07	0.605	5.35E-04	40	155	0.51	0.24

Note 1: Operating Voltage: 24 Vdc ± 10%.
Note 2: Maximum backlash is calculated using worst-case tolerancing, and typical backlash is calculated using statistical tolerancing.

Cable Options

Cable Material Specifications and Characteristics

Specifications:

- 600V+ 125°C, Multi-conductor shielded composite cable
- Four motor power, two brake with shield, two communication conductors with shield plus overall shield
- Motor Power conductors are 14 or 12 AWG, to meet with standards NFPA79 (Electrical standard for Industrial machinery), EN-60204-1 (Safety of Machinery-Electrical equipment of Machines), IEC 60364-5-52 (Wiring Systems) without the use of additional motor overload protection as required by motor rating
- Communication channel, 110 ohm(± 10) nominal impedance, high speed digital communication device
- Agency classifications: UL, CSA, CE, RoHS*
- IP69K Wash-down Rated TPE (Thermo Plastic Elastomer) Jacket material
- Not Food Contact rated
- Bend radius limited to 10X diameter static, no dynamic rating

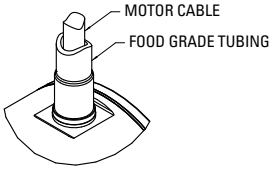
Cable Diameters:

- 0.595" for Hybrid Cable or Power Cable 12A and less motors (6" Bend radius)
  0.65" for Hybrid Cable or Power Cable above 12A, but less than 20A (6.5" Bend radius)
  0.46" for secondary feedback cable (4.6" Bend radius)
- Exceeding the bend radius can potentially permanently damage the equalization capability of the cable
- Color to RAL 2003 standard
- Chemical resistance to most acids and bases within the PH range of 2 to 12
- Not UV resistant

Tubing Specifications:

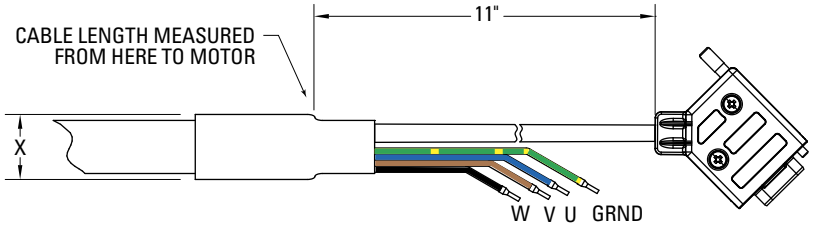
The food-grade tubing option covers the single motor cable to provide an option for applications where the cable needs to be routed through a zone in which it could come in contact with food. This tubing is constructed from FDA approved material and is certified to the NSF 51 standard.

Food Grade Tubing Option



Hybrid Cable

Wire Size Chart	
Current	**"X"**
Hybrid Cable or Power Cable UP TO 12A	.700 in
Hybrid Cable or Power Cable 12A AND UP	.750 in
Secondary Feedback Cable	.600 in
Food Grade Tubing	1.0 in



Connector housing can be unscrewed and removed in order to pass cable through bulkhead.

*(RoHS compliant materials to EU Directive 2002/95/EC)

Feedback Options

Option	Description	Feedback Model	Notes	Single Cable Connection Option	Dual Cable Connection Option	Brake Possible	Device Resolution, counts/rev	Accuracy, Arc-in (+/-)
2-	Comcoder	EPC260	2048 PPR	-	B, G, L, M, V, W	Yes	2048	2.64
CA	SFD3, Smart Feedback Device	Size 15	Single-Turn	B, G, K, T, V, W	-	Yes	16,777,216	9
DA	EnDat Absolute Encoder	ECN1113	AKMH2-4 Single-Turn, Optical	-	B, G, L, M, V, W	Yes	512	1
		ECN1313	AKMH5-6 Single-Turn, Optical				2048	0.333
DB	EnDat Absolute Encoder	ECN1125	AKMH5-6 Single-Turn, Optical	-	B, G, L, M, V, W	Yes	2048	0.333
		ECN1325	AKMH2-4 Single-Turn, Optical				512	1
GA	HIPERFACE Encoder	SKS36	Single-Turn, Optical	-	B, G, L, M, V, W	Yes	128	1.333
GB	HIPERFACE Encoder	SKM36	Multi-Turn, Optical	-	B, G, L, M, V, W	Yes	128	1.333
GE	HIPERFACE DSL Absolute Encoder	EKS36	Single-Turn, Optical	B, G, L, M, V, W	-	Yes	262,144	0.6
GF	HIPERFACE DSL Absolute Encoder	EKM36	Multi-Turn, Optical	B, G, L, M, V, W	-	Yes	262,144	0.6
LA	EnDat Absolute Encoder	ECI1118	AKMH2-4 Single-Turn, Inductive	-	B, G, L, M, V, W	Yes	16	8
		ECI1319	AKMH5-6 Single-Turn, Inductive				32	4.66
LB	EnDat Absolute Encoder	EQI1130	AKMH2-4 Multi-Turn, Inductive	-	B, G, L, M, V, W	Yes	16	8
		EQI1331	AKMH5-6 Multi-Turn, Inductive				32	4.66
R-	Resolver	Size 15	2 Poles	-	B, G, L, M, V, W	Yes	1	8
RA	HIPERFACE Encoder	SRS50-S21	AKMH4-6 Single-Turn, Optical, 5V, Programmed for Third Party Drives	-	L, R	Yes	1024	0.75
RB	HIPERFACE Encoder	SRM50-S21	AKMH4-6 Multi-Turn, Optical, 5V, Programmed for Third Party Drives	-	L, R	Yes	1024	0.75
RC	HIPERFACE Encoder	SRS50-K21	AKMH4-6 Single-Turn, Optical, 7-12V Programmed for Third Party Drives	-	L, R	Yes	1024	0.75
RD	HIPERFACE Encoder	SRM50-K21	AKMH4-6 Multi-Turn, Optical, 7-12V Programmed for Third Party Drives	-	L, R	Yes	1024	0.75
RE	HIPERFACE DSL Absolute Encoder	EKS36	Multi-Turn, Optical, Programmed for Third Party Drives	B, G, V, W, C	-	Yes	262,144	0.6
RF	HIPERFACE DSL Absolute Encoder	EKM36	Multi-Turn, Optical, Programmed for Third Party Drives	B, G, V, W, C	-	Yes	262,144	0.6
RG	HIPERFACE DSL Absolute Encoder	EKS36	Multi-Turn, Optical, Programmed for Third Party Drives	B, G, V, W, C	-	Yes	262,144	0.6
RH	HIPERFACE DSL Absolute Encoder	EKM36	Multi-Turn, Optical, Programmed for Third Party Drives	B, G, V, W, C	-	Yes	262,144	0.6

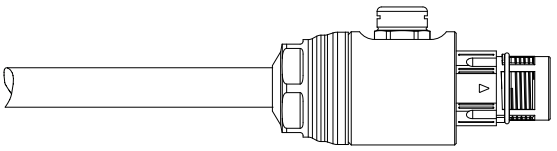
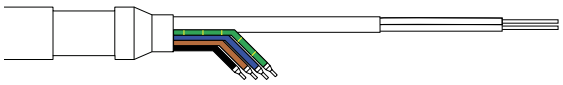
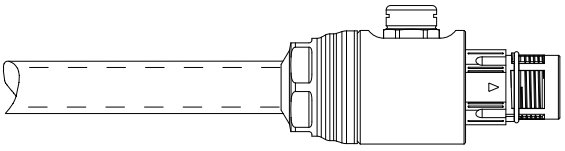
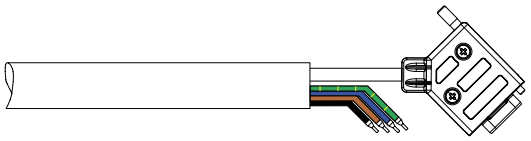
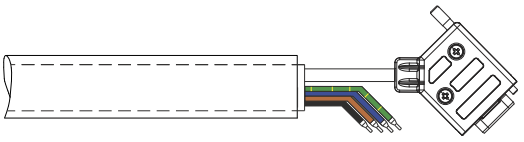
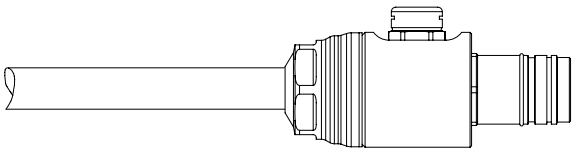
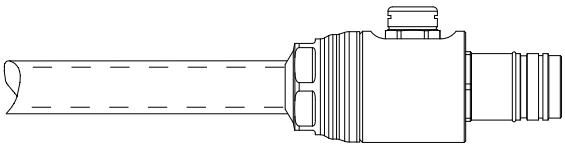
NOTE: Retrofitting a feedback is not possible. For a complete list of connector pinout information, please reference the *Kollmorgen AKMH Installation Manual*, Section 3.

AKMH servo motor with dual cable connection option

Cable Options

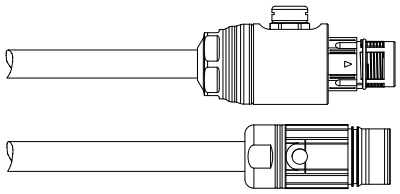
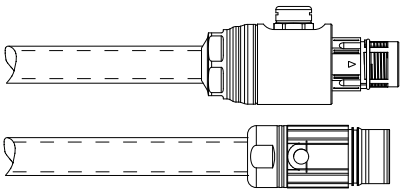
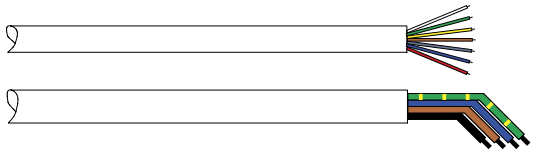
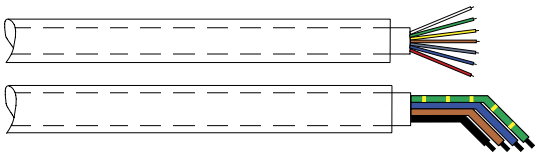
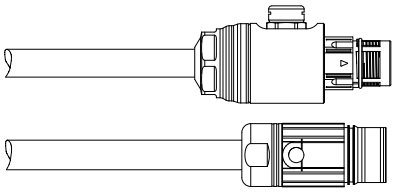
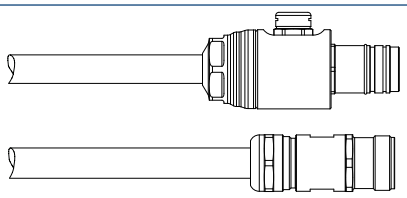
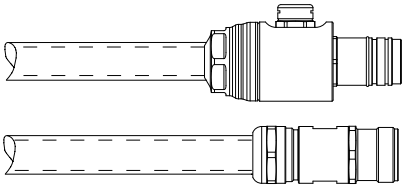
Single Cable Options Feedback: C-, CA, GE, GF, RE, RF, RG, RH

The single hybrid cable combines power and feedback signals in one cable and is connected inside the motor.

CODE	DESCRIPTION	CABLE CONNECTION
B	Single hybrid cable with non-stainless steel vented connector with air pressure compensation. Vented connector is non-hygienic. Protection class IP67.	
C	Single hybrid cable prepared for third-party drives. Cable with flying power and feedback leads.	
G	Single hybrid cable with non-stainless steel vented connector with air pressure compensation covered by food grade tubing. Vented connector is non-hygienic. Protection class IP67.	
K	Single hybrid cable with AKD connector. Cable pre-prepared for AKD-B/P/T/M. Cable with flying power leads and feedback with mounted connector. Power leads has assembled metal ferrules and are prepared for connecting to the AKD (see AKD installation manual).	
T	Single hybrid cable with AKD connector covered by food grade tubing. Cable pre-prepared for AKDB/P/T/M. Cable with flying power leads and feedback with mounted connector. Power leads has assembled metal ferrules and are prepared for connecting to the AKD (see AKD installation manual).	
V	Single hybrid cable with stainless steel vented connector with air pressure compensation. Vented connector is non-hygienic. Protection class IP69K.	
W	Single hybrid cable with stainless steel vented connector with air pressure compensation covered by food grade tubing. Vented connector is non-hygienic. Protection class IP69K.	

Dual Cable Options Feedback: 2-, R-, DA, DB, GA, GB, GG, GH, LA, LB, RA, RB, RC, RD

The dual cables lead power and feedback signals separately and are connected inside the motor.

CODE	DESCRIPTION	CABLE CONNECTION
B	Dual cable with non-stainless steel vented connector with air pressure compensation. Vented connector is non-hygienic. Protection class for both connectors IP67.	
G	Dual cable with non-stainless steel vented connector with air pressure compensation covered by food grade tubing. Vented connector is non-hygienic. Protection class for both connectors IP67.	
L	Dual cable with flying leads. Power cable and feedback cables only with flying leads without ferrules.	
M	Dual cable with flying leads covered by food grade tubing. Power cable and feedback cables only with flying leads without ferrules.	
R	Dual cable with non-stainless steel vented connector with air pressure compensation. Vented connector is non-hygienic. Protection class for both connectors IP67.	
V	Dual cable with stainless steel vented connector with air pressure compensation. Vented connector is non-hygienic. Protection class for both connectors IP69K.	
W	Dual cable with stainless steel vented connector with air pressure compensation covered by food grade tubing. Vented connector is non-hygienic. Protection class for both connectors IP69K.	

AKD® Servo Drive

Our AKD series is a complete range of Ethernet-based servo drives that are fast, feature-rich, flexible and integrate quickly and easily into any application. AKD ensures plug-and-play commissioning for instant, seamless access to everything in your machine. And, no matter what your application demands, AKD offers industry-leading servo performance, communication options, and power levels, all in a smaller footprint.

This robust, technologically advanced family of drives delivers optimized performance when paired with our best-in-class components, producing higher quality results at greater speeds and more uptime. With Kollmorgen servo components, we can help you increase your machine's overall equipment effectiveness (OEE) by 50%.

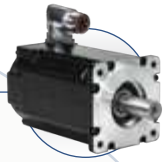
The Benefits of AKD Servo Drive

• Optimized Performance in Seconds	• Auto-tuning is one of the best and fastest in the industry • Automatically adjusts all gains, including observers • Immediate and adaptive response to dynamic loads • Precise control of all motor types • Compensation for stiff and compliant transmission and couplings
• Greater Throughput and Accuracy	• Up to 27-bit-resolution feedback yields unmatched precision and excellent repeatability • Very fast settling times result from a powerful dual processor system that executes industry-leading and patent pending servo algorithms with high resolution • Advanced servo techniques such as high-order observer and bi-quad filters yield industry-leading machine performance • Highest bandwidth torque-and-velocity loops. Fastest digital current loop in the market
• Easy-to-use Graphical User Interface (GUI) for Faster Commissioning and Troubleshooting	• Six-channel real-time software oscilloscope commissions and diagnoses quickly • Multi-function Bode Plot allows users to quickly evaluate performance • Auto-complete of programmable commands saves looking up parameter names • One-click capture and sharing of program plots and parameter settings allow you to send machine performance data instantly • Widest range of programming options in the industry
• Flexible and Scalable to Meet any Application	• 3 to 48 Arms continuous current; 9 to 96 Arms peak • Very high power density enables an extremely small package • True plug-and-play with all standard Kollmorgen servo motors and actuators • Supports a variety of single and multi-turn feedback devices—Smart Feedback Device (SFD), EnDat2.2, 01, BiSS, analog Sine/Cos encoder, incremental encoder, HIPERFACE®, and resolver • Tightly integrated Ethernet motion buses without the need to add large hardware: EtherCAT®, SynqNet®, Modbus® TCP, EtherNet/IP™, PROFINET® RT, SERCOS® III, and CANopen® • Scalable programmability from base torque-and-velocity through multi-axis master

AKD® Servo Drive

The AKD servo drive delivers cutting-edge technology and performance with one of the most compact footprints in the industry. These feature-rich drives provide a solution for nearly any application, from basic torque-and-velocity applications, to indexing, to multi-axis programmable motion with embedded Kollmorgen Automation Suite™. The versatile AKD sets the standard for power density and performance.

AKMH™ Hygienic Stainless Steel Motors



AKM® 2G Servo Motors

Frameless Brushless Direct Drive Motors

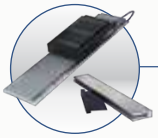
AKD®-N Decentralized Servo Drive

Control of motors with AKD® PDMM programmable multi-axis master

Cartridge DDR® Motors

AKD® Servo Drive

Housed DDR® Motors



Direct Drive Linear Motors

Linear Actuators

Multi-Axis Precision Tables

Best-in-Class Components

AKD works seamlessly with Kollmorgen motors and actuators–well-known for quality, reliability, and performance.

Industry-leading power density

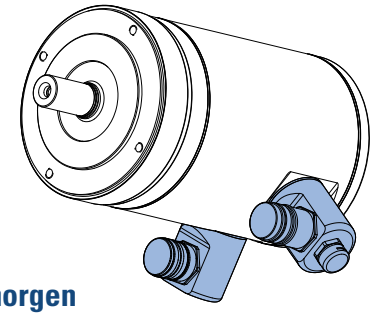
General Specifications

120 / 240 Vac 1 & 3 Phase (85 -265 V)	Continuous Current (Arms)	Peak Current (Arms)	Drive Continuous Output Power Capacity (Watts)	Internal Regen (Watts)	(Ohms)	Height mm (in)	Width mm (in)	Depth mm (in)	Depth with Cable Bend Radius mm (in)
AKD-x00306	3	9	1100	0	0	168 (6.61)	59 (2.32)	156 (6.14)	184 (7.24)
AKD-x00606	6	18	2000	0	0	168 (6.61)	59 (2.32)	156 (6.14)	184 (7.24)
AKD-x01206	12	30	4000	100	15	196 (7.72)	78 (3.07)	187 (7.36)	215 (8.46)
AKD-x02406	24	48	8000	200	8	247 (9.72)	100 (3.94)	228 (8.98)	265 (10.43)

240/480 Vac 3 Phase (187-528 V)	Continuous Current (Arms)	Peak Current (Arms)	Drive Continuous Output Power Capacity (Watts)	Internal Regen (Watts)	(Ohms)	Height mm (in)	Width mm (in)	Depth mm (in)	Depth with Cable Bend Radius mm (in)
AKD-x00307	3	9	2000	100	33	256 (10.08)	70 (2.76)	185 (7.28)	221 (8.70)
AKD-x00607	6	18	4000	100	33	256 (10.08)	70 (2.76)	185 (7.28)	221 (8.70)
AKD-x01207	12	30	8000	100	33	256 (10.08)	70 (2.76)	185 (7.28)	221 (8.70)
AKD-x02407	24	48	16,000	200	23	306 (12.01)	105 (4.13)	228 (8.98)	264 (10.39)
AKD-x04807	48	96	35,000	–	–	385 (15.16)	185 (7.28)	225 (8.86)	260 (10.23)

Note: For complete AKD model nomenclature, refer to page 45.

AKMH™ CoEngineered Solutions



With modified and custom AKMH solutions, you can rely on decades of Kollmorgen expertise to solve your motion challenges and help your machine stand out from the crowd.

Modified Standard

Because our application expertise runs deep and our product portfolio is so broad, we can take any standard product and modify it a lot or a little to suit many needs – in a very rapid time frame. This approach ensures quality, performance and reliability by leveraging our proven track record.

Kollmorgen application engineers have a great deal of experience helping OEM engineers achieve their objectives: Typical motor modifications include: shaft, housing, winding, feedback type, mounting and connectors.

Project Management

We follow a structured development process from initial concept to volume production. This enables us to provide a complete solution from design to implementation.

Our skilled engineering team is assigned to each project and ensures a high quality product designed and delivered on time, successfully taking the prototype to full production.

- Dedicated Resources & Equipment
- Real Time Customer Collaboration
- Validation of Performance, Cost & Manufacturability Before Volume Production

Customer Visibility Throughout the Entire Process

A communicative and proactive approach keeps you updated and aware of what is required throughout, what it will cost, and what to expect for design testing.

This not only puts you in charge of approving any modifications before installation, but ensures the product is up and running quickly, with minimal development time and maximum value.

Engineering Excellence

What really sets us apart is our engineering expertise. With over 50 years of successfully designing custom motors, we are able to quickly assess, design and implement a solution that meets your needs.

Our engineers have an average tenure of 20 years, which means they have designed solutions for almost every unique and challenging situation. Their insightfulness and expertise will guide you through the development and implementation of an optimized motor solution.

We rely on the most advanced simulation tools to deliver the best products, designed to withstand the most unique and challenging environments.

Why You Should Partner with Kollmorgen

- Experienced application engineers help define a customer's needs and identify the optimal Kollmorgen products and technologies
- Products optimized or developed by cross-functional teams to meet customer needs
- Rapid prototyping
- Smooth transition from prototype designs to sustainable and cost effective manufacturing
- Industry-proven quality, performance, and delivery
- Proven technology building blocks mitigate risks of customization

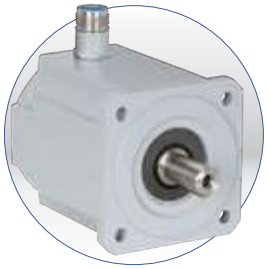
Contact Kollmorgen Customer Support today to discuss our design capabilities for a modified and co-engineered AKMH solution to meet your specific needs.

Universal Drive Solutions for Food, Beverage, and Pharmaceutical Industries

Motors from Kollmorgen provide the perfect mix of performance and hygiene

The Kollmorgen modular system includes a wide range of motors with carefully graduated performance data, a variety of connection options, and feedback devices. With more than 500,000 standard motor designs, you will definitely find a suitable motor to meet your requirements. Meeting the strict legal regulations and the customers' requests for innovative yet cost-effective drive solutions always poses a challenge to the mechanical engineer. Drive solutions from Kollmorgen provide the perfect mix of hygiene and performance data for applications in normal and difficult operating environments, as well as for hygienic drives. Kollmorgen has invested more than 70 years of experience in the AKM, AKM Washdown, AKM Washdown Food and AKMH stainless steel motor ranges that prove themselves on a daily basis in the testing conditions of the food, beverage, and pharmaceutical industries.

AKM®



AKM Washdown

AKM Washdown Food

AKMH™

	AKM	AKM Washdown	AKM Washdown Food	AKMH
Area of application	Dry area	Wet area	Wet area	Wet area, hygienic
Suitable for high-pressure and high-temperature cleaning		Limited	Limited	X
Round stainless steel housing				X
Stainless Steel Shaft	X	X	X	X
FDA-compliant, coating suitable for use with food products			X	Stainless Steel Housing
Needle Printed Nameplate		X	X	
Laser cut rating plate				X
EHEDG/3A-compliant				X
FDA-compliant bearing grease and rotary shaft seal			X	X
Protection class	IP65	IP67	IP67	IP69K
Certifications	CE, UR, cUR, RoHS, GOST-R	CE, UR, cUR, RoHS, GOST-R	"CE, UR, cUR, RoHS, GOST-R, FDA non-migration"	CE, UR, RoHS, EHEDG, NSF/ ANSI169, FDA, 3A, USDA
Frame Sizes	1 - 8	2 - 6	2 - 6	2 - 6
Continuous Stall Torque (Nm)	0.19 - 180	0.48 - 24.5	0.48 - 24.5	0.4 - 22
Feedback options	SFD3, Comcoder, BiSS, EnDAT, Hiperface, resolver	SFD3, Comcoder, BiSS, EnDAT, Hiperface, resolver	SFD3, Comcoder, BiSS, EnDAT, Hiperface, resolver	SFD3, Comcoder, EnDAT, Hiperface, resolver
Optional Holding Brake	X	X	X	X
Optional single cable connection	X	X	X	Standard
Relative Price	$	$+	$++	$$

Model Nomenclature

AKMH™ Brushless Servo Motor

AKMH 4 2 E – AN K N CA 1 K

AKMH Series
AKMH Hygienic Stainless Steel Washdown Motor

Motor Frame Size
2, 3, 4, 5, 6

Rotor Stack Length
1, 2, 3, 4, 5

Winding Type
A, B, C, D, etc.
S = Special

Mount
A = Flange mounting IEC
B, E = Flange mounting NEMA
C = Face mounting IEC
D = Face mounting NEMA
L = NEMA 56 face mount

Shaft
C = Closed keyway
K = Open keyway
N = Smooth shaft

Seal
K = IP69K shaft seal

Cable Length
1 to F (1 to 15 meters)

Brake[1]
2 = 24 V DC holding brake
N = No brake
S = Special

Feedback Device[1][2]
2- = Comcoder 2048 incr./rev
C- = SFD2
CA = Smart Feedback Device (SFD3)
DA = EnDAT 2.1 single-turn, optical
DB = EnDAT 2.1 multi-turn, optical
GA = Hiperface SKS36 single-turn
GB = Hiperface SKM36 multi-turn
GE = Hiperface DSL encoder single-turn
GF = Hiperface DSL encoder multi-turn
LA = EnDAT 2.1 single-turn, inductive
LB = EnDAT 2.1 multi-turn, inductive
R = Resolver
RA = Single-turn absolute HIPERFACE SRS50-S21 encoder
RB = Multi-turn absolute HIPERFACE SRM-S21 encoder)
RC = single-turn absolute HIPERFACE SRS50-K21 encoder
RD = multi-turn absolute HIPERFACE SRM50-K21 encoder
RE = HIPERFACE DSL Absolute Encoder
RF = HIPERFACE DSL Absolute Encoder
RG = HIPERFACE DSL Absolute Encoder
RH = HIPERFACE DSL Absolute Encoder

Mount-Shaft Availability

Base Model	Mount-Shaft									
	AC	AN	BK	BN	CC	CN	DK	DN	EK	EN	LK
AKMH2x	•	•		•	•	•		•			
AKMH3x	•	•		•	•						
AKMH4x	•	•	•	•	•	•	•	•	•	•	•
AKMH5x	•	•	•	•	•	•	•	•	•	•	
AKMH6x	•	•			•	•	•	•	•	•	

Note: LK mount requires 2 weeks additional lead time for the first product order.
Note: Ex mounts are only available if Rx feedback devices are selected.

Cable Connection
B = Cable with IP67 SpeedTec connector
C = Cable for connection to third-party drives
G = Cable with IP67 SpeedTec connector in silicone tube
K = Pre-assembled cable for connection to AKD
L = Dual-cable version with open cable ends
M = Dual-cable version with open cable ends in silicone tube
R = Dual cable with IP67 non-stainless steel, non-hygienic, vented connector with air pressure compensation
T = Pre-assembled cable in silicone tube for connection to AKD
V = Cable with IP69 SpeedTec connector
W = Cable with IP69 SpeedTec connector in silicone tube

Feedback and Connection Availability

Feedback Device	Cable Connection									
	K	T	B	G	V	W	L	M	R	C
C-, CA	•	•	•	•	•	•				
GE, GF	•	•	•	•	•	•				
2-, R-			•	•	•	•	•	•		
DA, DB			•	•	•	•	•	•		
GA, GB			•	•	•	•	•	•		
LA, LB			•	•	•	•	•	•		
RA, RB							•		•	
RC, RD							•		•	
RE, RF, RG, RH			•	•	•	•			•	•

[1] C- feedback is not available with brake.
[2] Rx feedback device options are mapped for connection to third-party servo drives

AKD® Servo Drive

AKD – B 003 06 – NB AN – 0000

AKD Series

Version

B = Base drive
C = Central power supply for AKD-N (Requires CB Extention)
N = Decentralized drive (Requires DB, DF, or DS Extention)
P = Position indexer (motion tasking)
T = AKD BASIC Language Programmable drive (Requires IC or NB Extention)
M = Multi-axis Master Drive (Requires MC Extension option, and EC Connectivity option)

Current Rating

003 = 3 Amp
006 = 6 Amp
010 = 10kW (for AKD-C, this field refers to power.)
012 = 12 Amp
024 = 24 Amp
048 = 48 Amp

Voltage

06 = 120/240 Vac 1Ø/3Ø (24 Amp Drive: 240 Vac 3Ø only)
07 = 240/480 Vac 3Ø (Version C: 07 = 400/480 Vac 3Ø I Version N: 07 = 560/680 Vdc)

Extension

CB = without extention (AKD-C version only)
DB = hybrid motor cable (AKD-N version only)
DF = additional EtherCAT® port + feedback connector (AKD-N version only)
DS = local STO + feedback connector (AKD-N version only)
IC = Expanded I/O version and SD card slot (AKD-T version only)
NB = Without extensions

Connectivity*

	Drive Version Availability
AN = Analog command	B, P, T
CN = CANopen®	P
EC = EtherCAT®	C, M, N, P
EI = EtherNet/IP™	P
PN - PROFINET®	P
SQ = SynqNet®	B

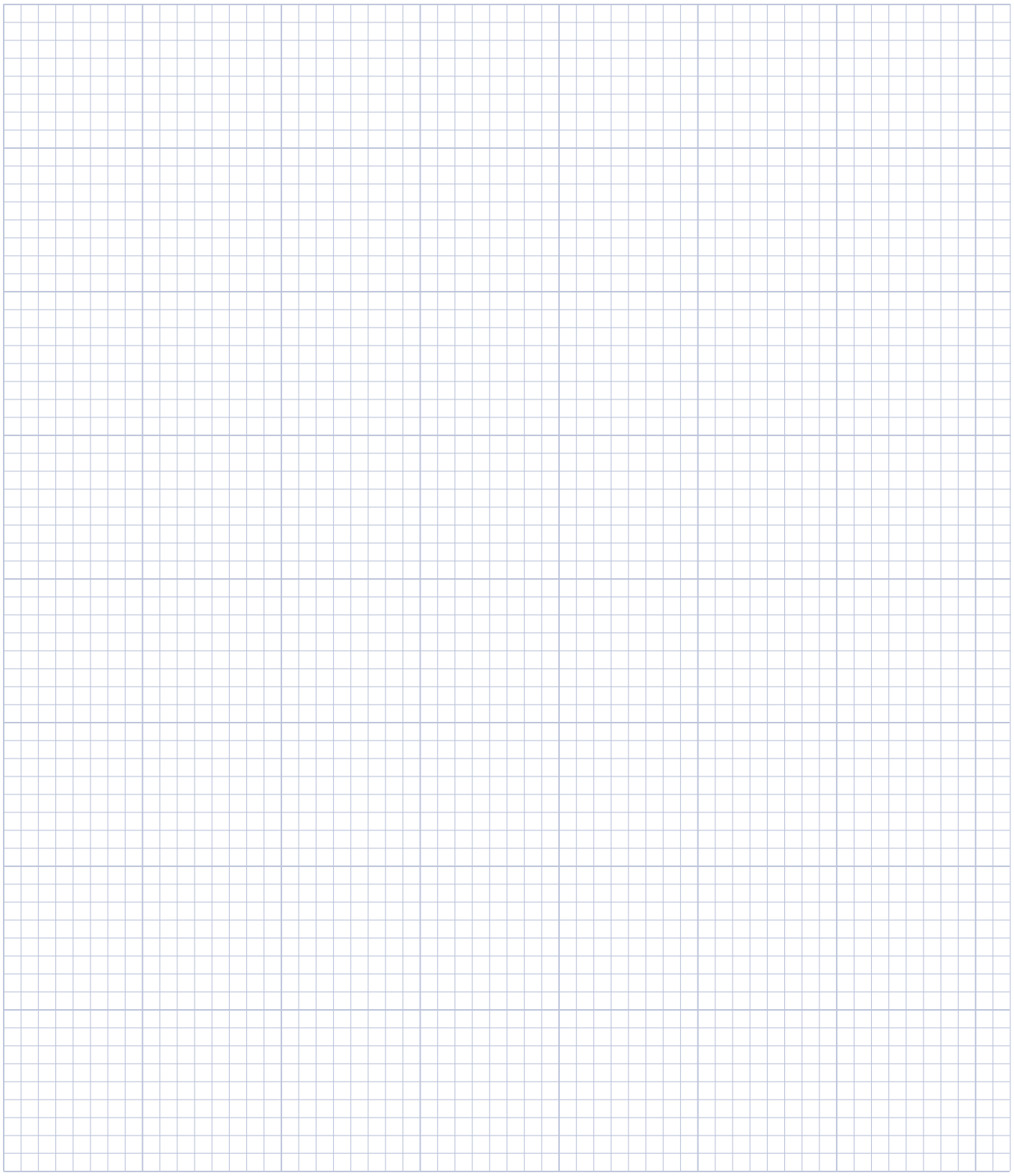
*Motion Tasking is included as a free upgrade with CN, EC, EI and PN

Variants

0000 = Standard

Note: Options shown in blue text are considered standard.

Notes



MOTIONEERING® Online

MOTIONEERING® Online – Kollmorgen has revamped, modernized and put online one of the most respected applications sizing programs of the last 20 years. You now can access this application sizing and selection tool wherever you have access to the internet. MOTIONEERING Online is just a start of a series of releases that will empower you to optimize solutions for your toughest applications. Sizing frameless motors and drive systems has never been easier. Using a mechanism project concept for collecting and saving multiple axes of load information, MOTIONEERING® Online can automatically calculate application results and compare against a catalog of systems - recommending the most optimized set of Kollmorgen system solutions available.

Versatile units-of-measure selection options for mechanism and motion profile data-entry, with the ability to convert data into other available units, makes this a convenient international tool. A user-friendly Help file teaches program functions and algorithms used to provide results.

Mechanism Projects

- Direct drive entry, lead screw, conveyor
- Rack and pinion, nip rolls
- Direct Drive Rotary
- Electric Cylinder
- Direct data entry

Solution Set Search Screen

- Color-coded indication of system's ability to meet application requirements
- Review system components specifications
- Save, print, or create a pdf application report
- Evaluate system performance curve with application points

MOTIONEERING® Online Features:

- Inertia Calculator - lets you build up inertia based on odd shapes by additive or subtractive methods
- Custom Motion Profile - easy to add entire segments or copy segments to repeat
- Environmental Factor - takes into account your ambient temperature
- Project by Project Units - You can tailor your units on a project by project basis, or use the global units settings

MOTIONEERING Online Supported Browsers

- IE, Chrome, Firefox, Safari

www.kollmorgen.com/motioneering

About Kollmorgen

Since its founding in 1916, Kollmorgen's innovative solutions have brought big ideas to life, kept the world safer, and improved peoples' lives. Today, its world-class knowledge of motion systems and components, industry-leading quality, and deep expertise in linking and integrating standard and custom products continually delivers breakthrough motion solutions that are unmatched in performance, reliability, and ease-of-use. This gives machine builders around the world an irrefutable marketplace advantage and provides their customers with ultimate peace-of-mind.

For assistance with your application needs in North America, contact us at: 540-633-3545, support@kollmorgen.com or visit www.kollmorgen.com for a global contact list.

KOLLMORGEN®

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