AKMH Stainless Steel Washdown Motor

Three-Phase AC Permanent Magnet Servo Motor

Catalog

KOLLMORGEN

A REGAL REXNORD BRAND

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 multi-axis motion controllers, Kollmorgen is one of the few companies in the world that 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 specific 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 Vision, Mission & Values, relentlessly developing products that offer precise control of torque, velocity and position accuracy in machines that rely on complex motion.

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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 focus their engineering manpower on the product design, 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, the 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 Regal Rexnord. A key driver in the growth of all Regal Rexnord segments is the Regal Rexnord 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 Stainless Steel Washdown Motors

Designed for Fast Cleaning and Increased Uptime. The AKMH stainless steel motor is designed to meet the standards for IP69K and EHEDG 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, more reliable machine performance and the increase of OEE for the entire manufacturing line.

Reduced Recall Risk. The Food Modernization Safety Act (FMSA) gives the US federal government the ability to shut down facilities, recall food products, and levy stiff fines to ensure public safety in regards to food 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. With 19 standard motor sizes, multiple standard windings, feedback options and vast Co-Engineering possibilities, the AKMH motor can be a great fit for diverse applications in industries such as food & beverage and pharmaceutical. Kollmorgen's AKMH environmental solutions help maintain the highest standard of machine cleanliness and increase OEE by reducing the risk of potentially devastating supplier/government recalls.

The Benefits of AKMH Motors

- » Increase your machine's Overall Equipment Effectiveness (OEE) with water and chemical resistant designs that maximize motor **reliability**
- » Reduce your machine's total cost of ownership with shortened cleaning times and improved **durability**
- » Enhance the value of your machine by **lowering** your customer's **risk of recall** through the superior hygienic design of AKMH

- » IP69K certification of motor and cable inside the washdown environment
- » Unique design technique to eliminate condensation inside the motor
- » 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 and connector mounting surface 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 criteria, promotes rapid cleaning and no harboring of pathogens
- » FDA Approved, food-grade bearing lube
- » FDA Approved, food-grade shaft seal
- » Cable designed to eliminate the need for conduit
- » Hygienic, IP69K shaft seal includes special shaft treatment for long life
- » No protective covers needed for washdown; no secondary cleaning disassembly required
- » FDA approved, food-grade tubing option for applications where the cable is in a food zone
- » Washdown cable(s) for increased reliability, faster cleaning, and fewer places to harbor pathogens
- » Hygienic marking method eliminates harboring of pathogens
- » Unique vented tube or connector design that equalizes pressure when temperature drops; e.g., during wash-down

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

- » 19 frame/stack length options
- » Windings designed for optimized machine performance
- » Cables designed for direct connection to Kollmorgen AKD2G, AKD, AKD-N, and Kollmorgen Essentials servo drives (plug & play)
- » 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
- » Face and flange mounts available in both IEC and NEMA standards
- » Brake option
- » Multi-turn absolute feedback option; single-turn absolute feedback standard
- » Additional feedback options available for retrofitting fielded motors with non-Kollmorgen drives
- » Single and dual cable options for use with non-Kollmorgen drives
- » UL/CE/RoHS/IP69K/BISSC/NSF/USDA/EAC certifications
- » Designed to EHEDG guidelines

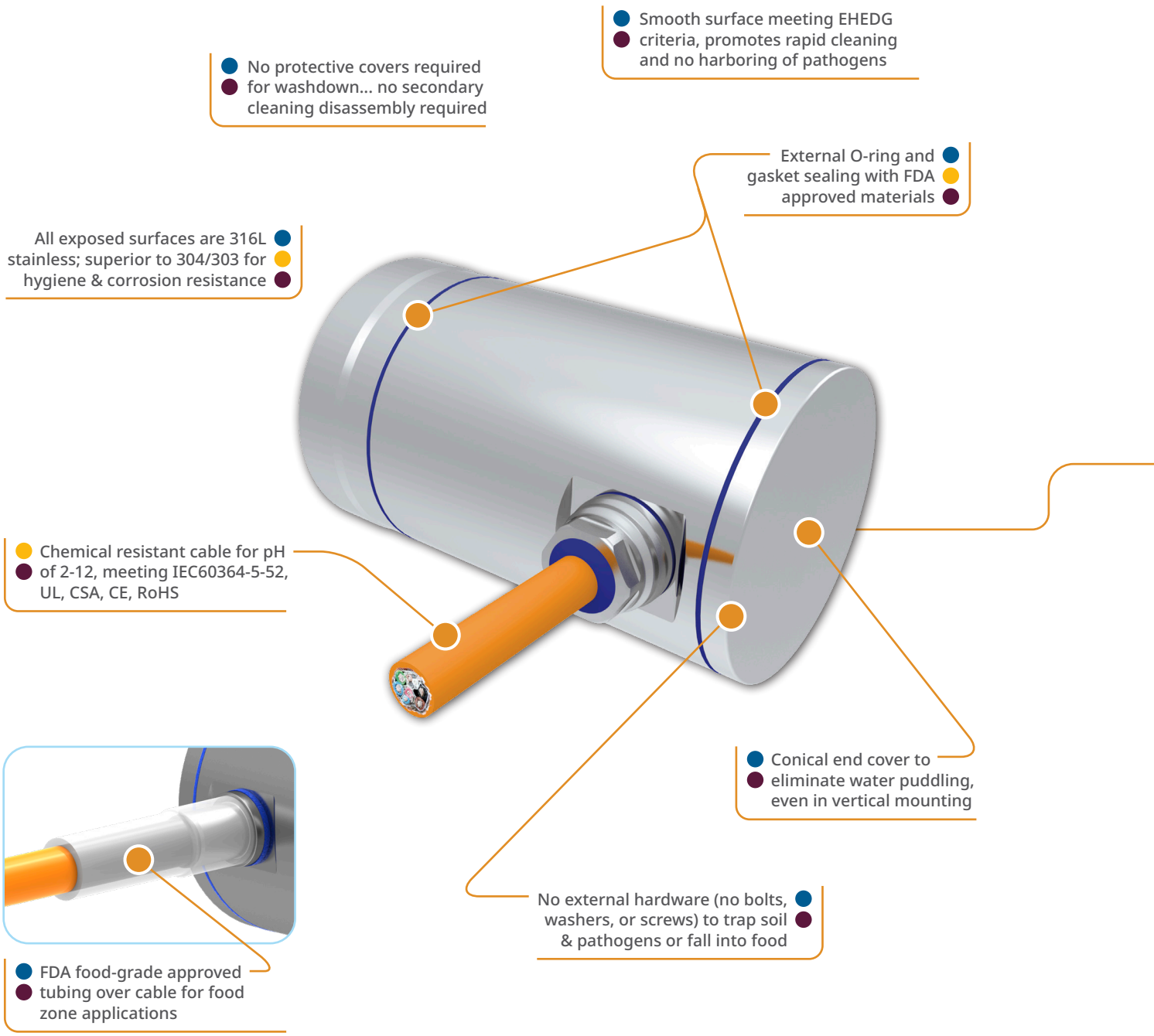
Specify only Kollmorgen AKMH systems to ensure:

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

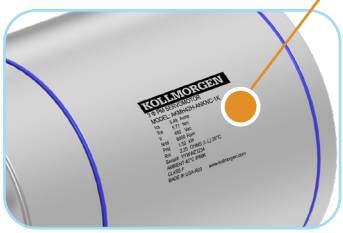
AKMH Design Features

The key benefits of AKMH hygienic design features:

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

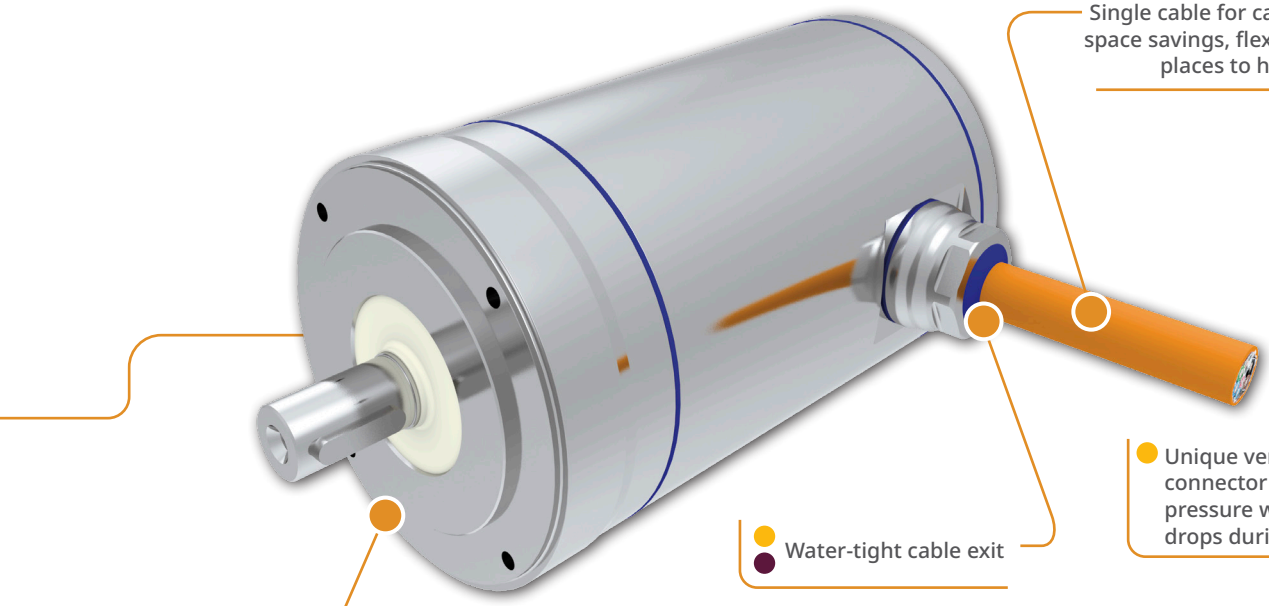


Hygienic marking method eliminates harboring of pathogens



Unique vented tube or connector design equalizes pressure in and outside the motor to prevent condensation inside the housing during changes of temperature

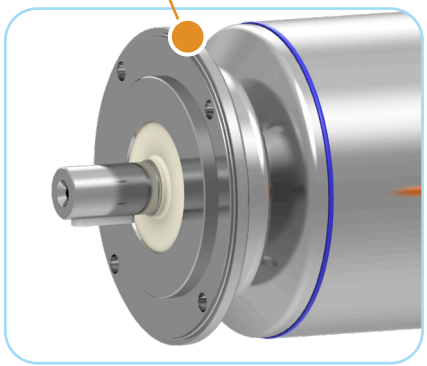
Single cable for cable cost savings, space savings, flexibility, and fewer places to harbor pathogens



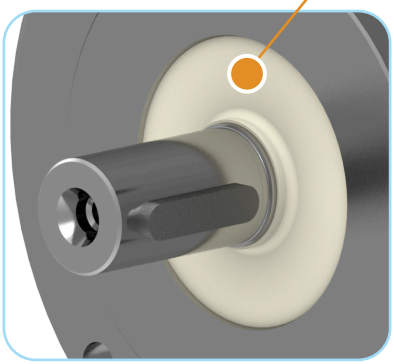
Unique vented tube or connector design that equalizes pressure when temperature drops during wash-down

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



AKMH Servo Motor Nomenclature

AKMH Brushless Servo Motor

AKMH 4 2 E A N K N CA 1 K

AKMH Series

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 Flange mounting NEMA
C Face mounting IEC
D Face mounting NEMA
E EIC face mount (Third-party)
G IEC Alternate flange mount (AKMH5 only)
H IEC Alternate face mount (AKMH5 only)
L NEMA 56 face mount (AKMH4 and 5 only)
M IEC Flange (Third-party)
P IEC Alternate flange mount (Third-party)
S Special

Shaft
C Closed keyway
K Open keyway
N Smooth shaft
S Special

Brake[2]
2 24 V holding brake
N Without brake
S Special

Connector/Cable Options
See following page

Feedback Device
See following page

Cable Length
1 to F 1 to 15 meters (1m increments)
0 No cable, connectors

O-ring Material[1]
K EPDM O-rings
V Viton O-rings

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.

Mount-Shaft Availability

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

1. While both EPDM and Viton materials are resistant to most chemicals commonly found in food & beverage processing, Viton O-ring is recommended for applications with fluids and solids such as fish oil, animal fat, peanut butter and peanut oil.
2. C- feedback is not available with brake.

Connector/Cable Options

Single Cable

K[1]	Cable gland w/ drive end connectors for AKD (Power is ferruled flying leads and feedback terminated into D-Sub)
T[1]	Tubing over cable w/ drive end connectors for AKD
E	Cable gland w/ drive d\end connectors for AKD2G
F	Tubing over cable w/ drive end connectors for AKD2G
V[2]	Vented connector
N[3]	AKD-N connector
W[2]	Tubing to vented connector
B[4]	Cable to vented Speedtec ready connector
G[4]	Tubing to vented Speedtec ready connector
R[5]	Third-party mating connectors
C	Flying Leads (third-party drive ready, no d-sub)

Dual Cables

V[2]	Vented connector
W[2]	Tubing to vented connector
B[4]	Cable to vented Speedtec ready connector
G[4]	Tubing to vented Speedtec ready connector
R[5]	Mating connectors for third-party drives
L	Flying leads (2 cable only)
M	Tubing w/ flying leads (2 cable only)

Right-angle Connectors

D	Single connector (size 3-6)
A	Dual connectors (size 4-6)

Straight Connectors

H	Dual connectors (size 2-3)
P	Single connector (size 2 only)

Notes:

1. Single cable for power and feedback when SFD3, SFD-M or HDSL is chosen. Not available with other feedback options.
2. The single cable is terminated in a vented connector if SFD, SFD3, SFD-M, or HDSL is chosen. If one of the other feedback devices is chosen then the power cable is terminated in a vented connector, while the feedback cable is terminated in a standard connector. Both options provide IP69K rated stainless steel connectors.
3. Single cable for power and feedback when SFD3, SFD-M or HDSL is chosen. Cable is terminated for direct connection to AKD-N with a nickel plated zinc connector. The connector is vented. Not available with other feedback options.
4. The single cable is terminated in a vented connector if SFD3, SFD-M or HDSL is chosen. If one of the other feedback devices is chosen then the power cable is terminated in a Vented connector, while the feedback cable is terminated in a standard connector. Both options provide IP67 rated nickel plated zinc connectors.
5. This connector option is available for only the RA, RB, RC, RD, RE, RF, RG, and RH feedback options. There will be a vented connector on the power cable and a standard connector on the feedback cable. Both connectors will be Nickel plated zinc and IP67 rated.

Feedback Device

C-	SFD2 (C- is not available with brake)
CA	Smart Feedback Device (SFD3)
CB	Smart Feedback Device Multi-turn (SFD-M)
GA	HIPERFACE SKS36 (ST) mapped for Servostar
GB	HIPERFACE SKM36 (MT) mapped for Servostar
GE	HIPERFACE DSL (ST)
GF	HIPERFACE DSL (MT)
GJ	HIPERFACE SKS36 (ST) mapped for AKD, mech. aligned to KM zero
GK	HIPERFACE SKM36 (MT) mapped for AKD, mech. aligned to KM zero
R-	Resolver
2-	2048 line encoder
LA	Inductive EnDat 2.1 Sine Encoder (ST)
LB	Inductive EnDat 2.1 Sine Encoder (MT)
DA	EnDat 2.1 Sine Encoder (ST)
DB	EnDat 2.1 Sine Encoder (MT)
RA*	HIPERFACE SRS50 (ST) 7-12V mapped for third-part drives (460V)
RB*	HIPERFACE SRM50 (MT) 7-12V mapped for third-part drives (460V)
RC*	HIPERFACE SRS50 (ST) 5V mapped for third-part drives (230V)
RD*	HIPERFACE SRM50 (MT) 5V mapped for third-part drives (230V)
RE	HIPERFACE DSL (ST) mapped for third-part drives, 480V
RF	HIPERFACE DSL (MT) mapped for third-part drives, 480V
RG	HIPERFACE DSL (ST) mapped for third-part drives, 240V
RH	HIPERFACE DSL (MT) mapped for third-part drives, 240V

Note: RA/RB/RC/RD are available as standard on AKMH size 4-6 only

Feedback and Connection Availability – AKMH(x) frame size (2-6)

Feedback Device	Cable Connection																
	E	F	K	T	L	M	V	W	D	P	A	H	R	C	B	G	N
C-, CA, CB, GE, GF	2-6	2-6	2-6	2-6			2-6	2-6	3-6	2					2-6	2-6	2-6
2-, R-					2-6	2-6	2-6	2-6			4-6	2-3			2-6	2-6	
DA, DB					2-6	2-6	2-6	2-6			4-6	2-3			2-6	2-6	
GA, GB					2-6	2-6	2-6	2-6			4-6	2-3			2-6	2-6	
GJ, GK					2-6	2-6	2-6	2-6			4-6	2-3			2-6	2-6	
LA, LB					2-6	2-6	2-6	2-6			4-6	2-3			2-6	2-6	
RA, RB, RC, RD							4-6	4-6			4-6		4-6				
RE, RF, RG, RH							2-6	2-6	3-6	2			2-6	2-6			

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 C	AKMH23 D	AKMH23 E	AKMH23 F	AKMH24 D	AKMH24 E	AKMH24 F
		Max Rated DC Bus Voltage	Max	Vbus	VDC	640	160	160	640	320	160	640	640	320	320	640	320	320
		Continuous Torque (Stall) for ΔT winding = 100 °C ①②④	Nom	T_{cs}	Nm	0.31	0.36	0.34	0.61	0.65	0.64	0.85	0.85	0.90	0.88	1.10	1.15	1.12
					lb-in	2.7	3.2	3.0	5.4	5.8	5.7	7.5	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	4.09	1.19	2.32	3.98	1.21	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	0.27	0.49	0.52	0.51	0.68	0.68	0.72	0.70	0.88	0.92	0.90
					lb-in	2.2	2.5	2.4	4.3	4.6	4.5	6.0	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	6000	8000	8000	8000	8000	8000	8000
		Peak Torque ①②④	Nom	T_p	Nm	1.43	1.46	1.47	2.65	2.70	2.72	3.71	3.75	3.79	3.87	4.65	4.66	4.69
					lb-in	12.7	12.9	13.0	23.5	23.9	28.9	32.8	33.2	33.5	33.7	41.2	41.2	41.5
		Peak Current ⑩	Nom	I_p	A_{rms}	6.32	12.4	19.5	5.56	10.9	19.3	5.6	8.76	11.1	17.2	8.84	11.2	15.6
Maximum Rated DC Bus Voltage	160 VDC	Rated Torque (speed) ①②④		T_{rtd}	Nm	160	0.26	0.23	0.63	0.61	0.47	0.86	0.87	0.86	0.78	1.10	1.10	1.04
					lb-in	0.34	2.3	2.0	5.58	5.40	4.16	7.61	7.70	7.61	6.90	9.74	9.74	9.20
		Rated Speed		N_{rtd}	rpm	3.0	7000	8000	1000	3500	7000	1000	1500	2500	4500	1500	2000	3000
		Rated Power (speed) ①②④		P_{rtd}	kW	4.09	0.19	0.19	0.07	0.22	0.34	0.09	0.14	0.23	0.37	0.17	0.23	0.33
					Hp	0.27	0.26	0.26	0.09	0.30	0.46	0.12	0.18	0.30	0.49	0.23	0.31	0.44
	320 VDC	Rated Torque (speed) ①②④		T_{rtd}	Nm	2.4	-	-	0.58	0.60	-	0.81	0.73	0.66	0.48	0.97	0.88	0.53
					lb-in	8000	-	-	5.13	5.31	-	7.17	6.46	5.84	4.25	8.58	7.79	4.69
		Rated Speed		N_{rtd}	rpm	1.47	-	-	3500	3500	-	2500	5000	6500	8000	4000	5500	8000
		Rated Power (speed) ①②④		P_{rtd}	kW	13.0	-	-	0.21	0.22	-	0.21	0.38	0.45	0.40	0.41	0.51	0.44
					Hp	19.5	-	-	0.28	0.29	-	0.28	0.51	0.60	0.54	0.54	0.68	0.60
	560 VDC	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.21	-	-	0.40	-	-	0.68	0.49	-	-	0.52	-	-
					lb-in	1.9	-	-	3.54	-	-	6.02	4.3	-	-	4.60	-	-
		Rated Speed		N_{rtd}	rpm	8000	-	-	8000	-	-	5500	8000	-	-	8000	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.18	-	-	0.34	-	-	0.39	0.41	-	-	0.44	-	-
					Hp	0.24	-	-	0.45	-	-	0.53	0.55	-	-	0.58	-	-
	640 VDC	Rated Torque (speed) ①②④		T_{rtd}	Nm	0.21	-	-	0.40	-	-	0.59	0.46	-	-	0.47	-	-
					lb-in	1.9	-	-	3.54	-	-	5.22	4.1	-	-	4.16	-	-
		Rated Speed		N_{rtd}	rpm	8000	-	-	8000	-	-	7000	8000	-	-	8000	-	-
		Rated Power (speed) ①②④		P_{rtd}	kW	0.18	-	-	0.34	-	-	0.43	0.39	-	-	0.39	-	-
					Hp	0.24	-	-	0.45	-	-	0.58	0.52	-	-	0.53	-	-

Notes:
① Motor winding temperature rise, ΔT=100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding 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.

AKMH2x Motor Parameters

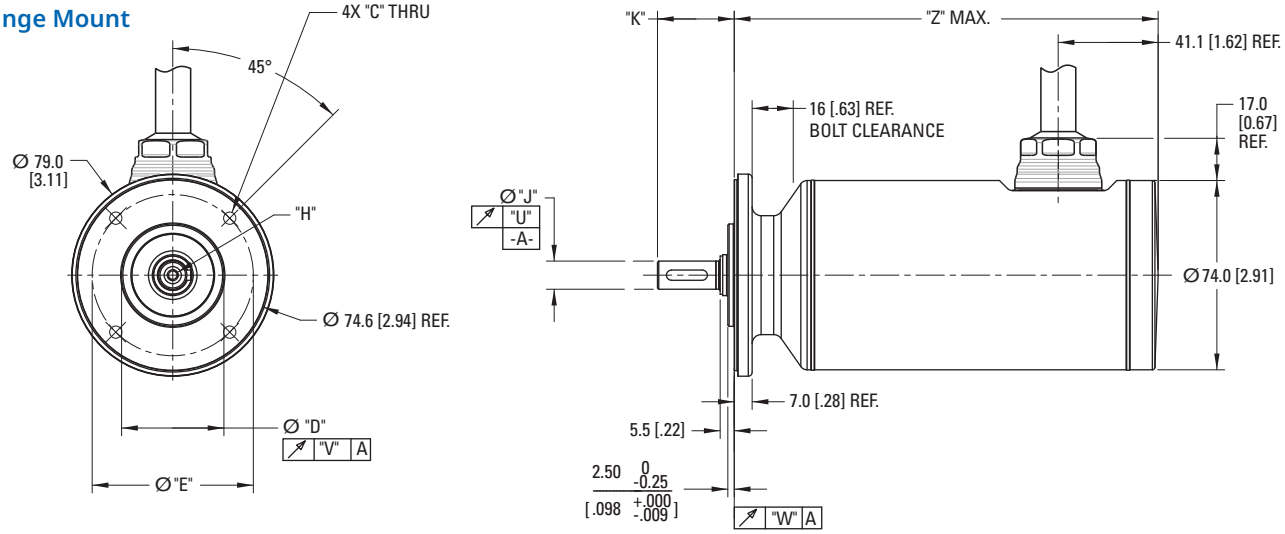
				AKMH21			AKMH22			AKMH23				AKMH24		
Parameters	**Tol**	**Symbol**	**Units**	**C**	**E**	**G**	**C**	**E**	**G**	**C**	**D**	**E**	**F**	**D**	**E**	**F**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	0.26	0.15	0.09	0.56	0.30	0.17	0.75	0.49	0.40	0.26	0.60	0.48	0.35
			$lb\text{-}in/A_{rms}$	2.3	1.4	0.8	4.9	2.7	1.5	6.7	4.3	3.6	2.3	5.3	4.3	3.1
Back EMF Constant ⑥	±10%	K_e	$V_{rms}/krpm$	19.5	10.2	6.6	39.0	20.4	11.7	51.8	33.8	27.0	17.6	40.8	32.4	23.4
Motor Constant ①	Nom	K_m	N-m/√W	0.06	0.07	0.06	0.10	0.11	0.11	0.13	0.13	0.14	0.14	0.16	0.17	0.16
			lb-in/√W	0.52	0.60	0.57	0.90	1.0	0.9	1.2	1.2	1.2	1.2	1.4	1.5	1.5
Resistance (line-line) ⑥⑦	±10%	R_m	ohm	13.0	3.44	1.46	20.0	5.24	1.79	21.3	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	40.7	17.3	11.1	4.68	18.7	11.8	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/krpm	0.005			0.005			0.005				0.005		
			lb-in/krpm	0.041			0.044			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 holding 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

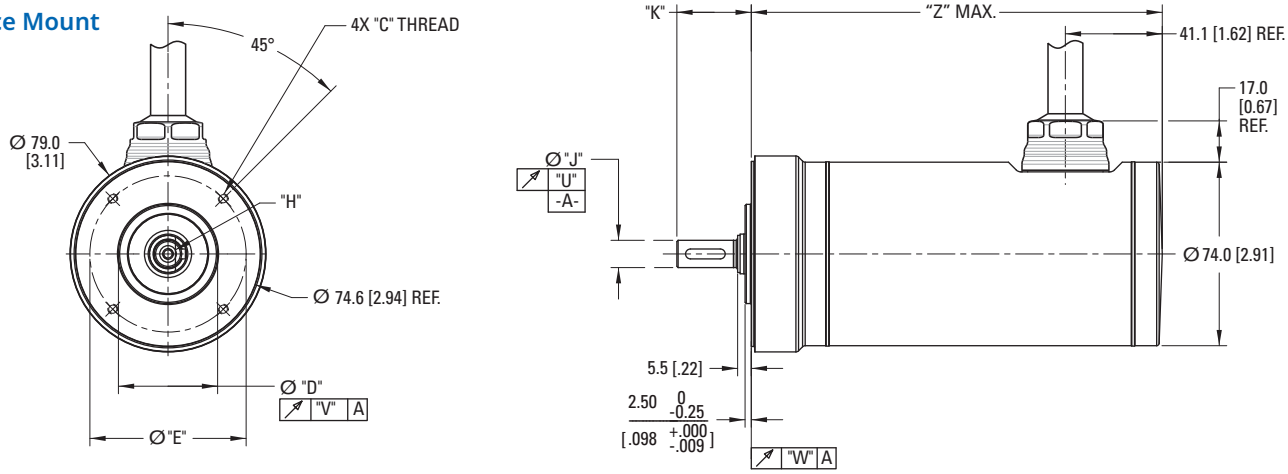
AKMH2x Outline Drawings

AKMH2x Frame

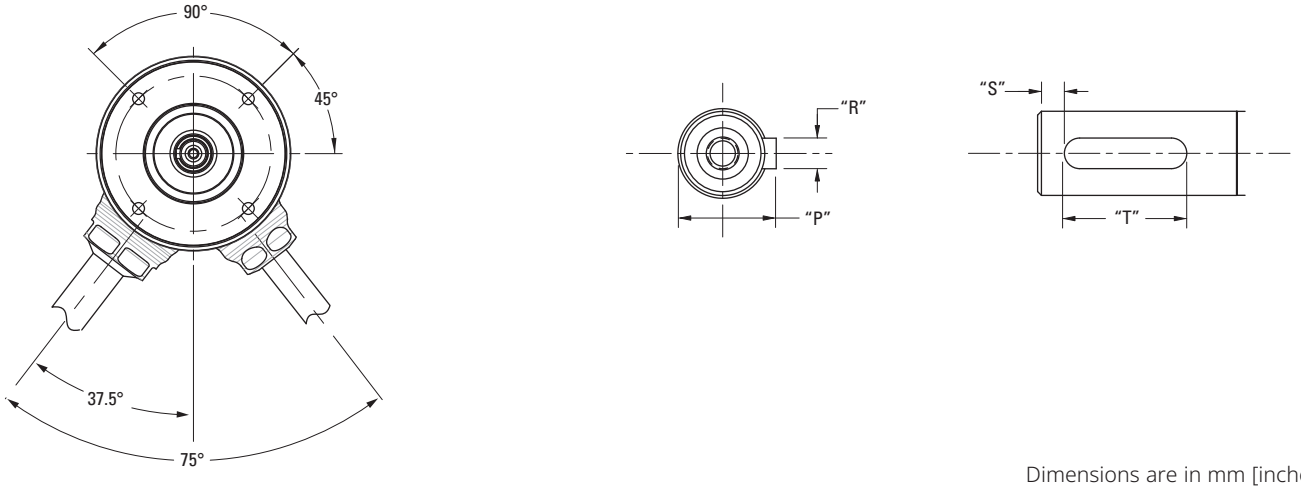
Flange Mount



Face Mount



Dual Cable Option for Third Party Drives



Dimensions are in mm [inches].

Outline drawings and dimensions for mounted connector options H- and P- can be found on page 30.

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

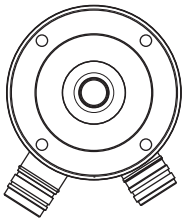
AKMH2x Dimension Data

	Flange/Shaft Configuration								
Code	Mount Type	Standard	Shaft	Hole Diameter "C"	Pilot Dia. "D"	Bolt Circle Dia. "E"	"H"	Shaft Dia. "J"	Shaft Length "K"
AC	Flange	Metric	Closed Keyway	4.80 [0.189]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [0.4331]	30.0 [1.18]
AN	Flange	Metric	Smooth	4.80 [0.189]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [0.4331]	30.0 [1.18]
BN	Flange	NEMA 23	Smooth	5.10 [0.201]	38.10 [1.50]	66.68 [2.625]	–	9.525 [0.3750]	31.8 [1.25]
CC	Face	Metric	Closed Keyway	M4 x 0.7 x 7.92 [0.312]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [0.4331]	30.0 [1.18]
CN	Face	Metric	Smooth	M4 x 0.7 x 7.92 [0.312]	40 [1.57]	63 [2.480]	D M4 DIN 332	11 [0.4331]	30.0 [1.18]
DN	Face	NEMA 23	Smooth	UNC 10-24 x 9.69 [0.382]	38.10 [1.50]	66.68 [2.625]	–	9.525 [0.3750]	31.8 [1.25]

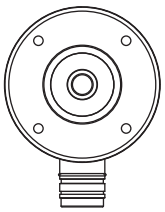
Code	Shaft Dia. w/ Key "P"	Key Width "R"	"S"	Key Length "T"	"U"	"V"	"W"
AC	12.5 [0.492]	4 [0.157]	3.50 [0.138]	16 [0.630]	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
AN	–	–	–	–	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
BN	–	–	–	–	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
CC	12.5 [0.492]	4 [0.157]	3.50 [0.138]	16 [0.630]	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
CN	–	–	–	–	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
DN	–	–	–	–	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]

	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 1: Dimensions are in mm [inches].
Note 2: Product designed in metric. English conversions provided for reference only.
Note 3: Please consult the Kollmorgen application team for the dimensions of AKMH2 with H- and P- connector options.



H- Connector



P- Connector

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	11.3	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	1.48	0.71	2.42	2.38	1.56
					lb-in	7.6	6.0	-	14.3	13.1	6.28	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	0.54	0.52	0.25	0.50	0.90
					Hp	0.30	0.57	-	0.34	0.73	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	-	-	13.1	6.28	-	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	-	-	12.5	1.95	-	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	-

Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding 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.

AKMH3x Motor Parameters

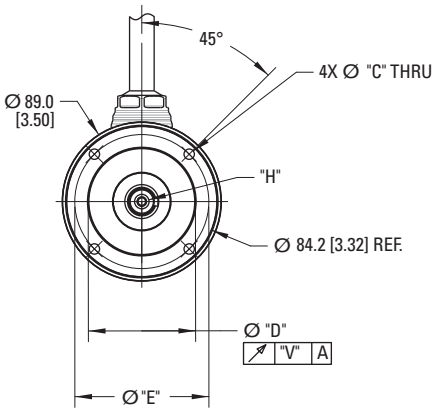
				AKMH31			AKMH32			AKMH33		
Parameters	Tol	Symbol	Units	C	E	H	C	E	H	C	E	H
Torque Constant ①	±10%	K_t	Nm/A_{rms}	0.76	0.38	0.20	1.32	0.69	0.38	1.83	1.09	0.53
			$lb\text{-}in/A_{rms}$	6.7	3.3	1.8	11.7	6.1	3.3	16.2	9.7	4.7
Back EMF Constant ⑥	±10%	K_e	$V_{rms}/krpm$	54.5	26.1	13.7	89.8	47.1	24.8	120.0	70.6	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	2.0	2.1	2.56	2.63	2.72
Resistance (line-line) ⑥	±10%	R_m	ohm	21.4	4.76	1.31	23.8	6.34	1.71	26.6	9.0	2.0
Inductance (line-line)		L	mH	37.6	8.6	2.37	46.5	12.8	3.55	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			0.34			0.40		
Viscous Damping ①		K_{dv}	Nm/krpm	0.004			0.007			0.010		
			lb-in/krpm	0.031			0.060			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		

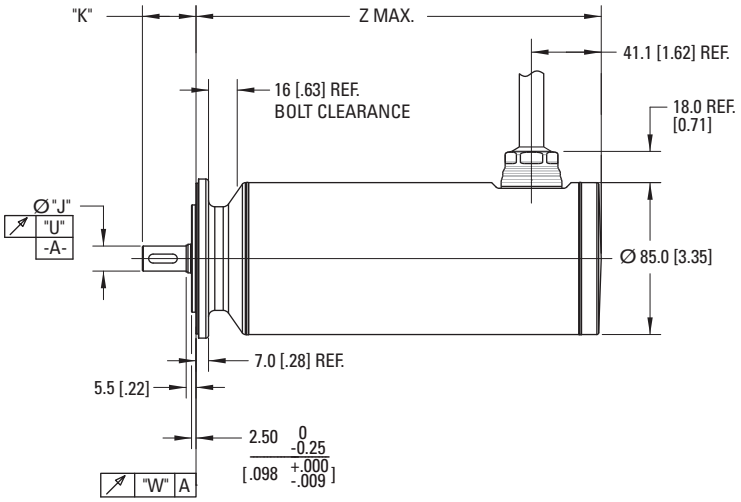
Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding brake if applicable for total inertia.
④ Motor with 115 °C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25 °C.
⑦ Resistance 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

AKMH3x Outline Drawings

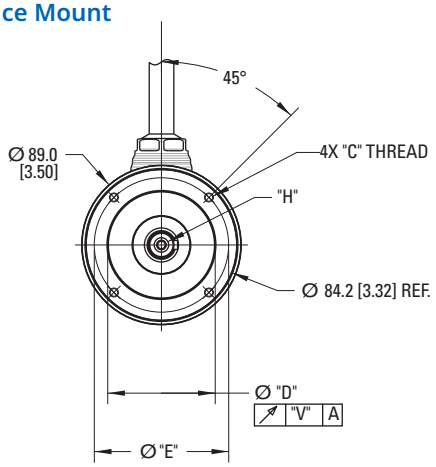
AKMH3x Frame

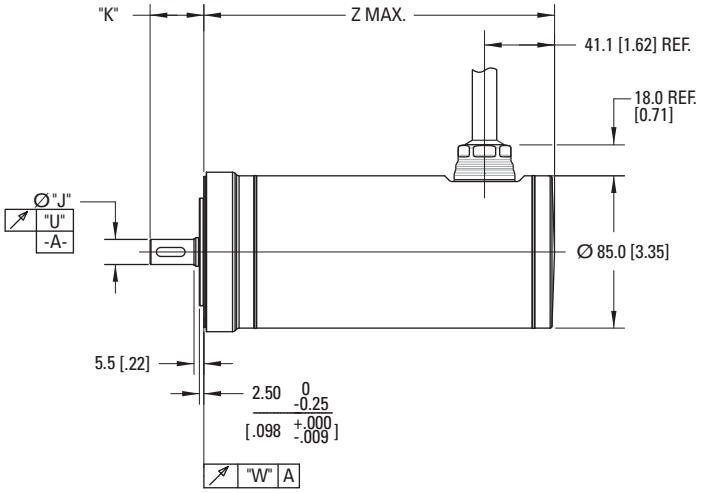
Flange Mount



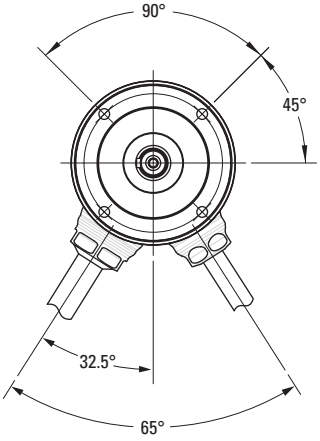


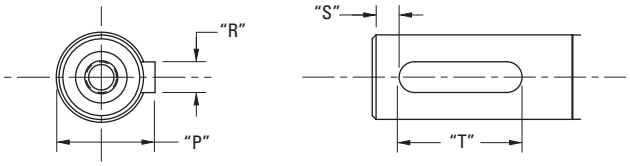
Face Mount





Dual Cable Option for Third Party Drives





Dimensions are in mm [inches].

Outline drawings and dimensions for mounted connector options D- and H- can be found on page 30.

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	Hole Diameter "C"	Pilot Dia. "D"	Bolt Circle Dia. "E"	"H"	Shaft Dia. "J"	Shaft Length "K"
AC	Flange	IEC 75	Closed Keyway	5.80 [0.228]	60 [2.362]	75 [2.953]	D M5 DIN 332	14 [0.5512]	30.0 [1.181]
AN	Flange	IEC 75	Smooth	5.80 [0.228]	60 [2.362]	75 [2.953]	D M5 DIN 332	14 [0.5512]	30.0 [1.181]
CC	Face	IEC 75	Closed Keyway	M5 x 0.8 x 10.0 [0.39]	60 [2.362]	75 [2.953]	D M5 DIN 332	14 [0.5512]	30.0 [1.181]
CN	Face	IEC 75	Smooth	M5 x 0.8 x 10.0 [0.39]	60 [2.362]	75 [2.953]	D M5 DIN 332	14 [0.5512]	30.0 [1.181]

Code	Shaft Dia. w/ Key "P"	Key Width "R"	"S"	Key Length "T"	"U"	"V"	"W"
AC	16 [0.630]	5 [0.197]	3.50 [0.0138]	16 [0.630]	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
AN	–	–	–	–	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
CC	16 [0.630]	5 [0.197]	3.50 [0.0138]	16 [0.630]	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]
CN	–	–	–	–	0.035 [0.0013]	0.080 [0.0031]	0.080 [0.0031]

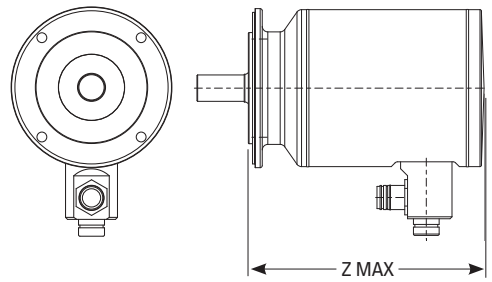
	Z MAX			
MODEL	SFD/Resolver/SFD3/ Comcoder W/O Brake	SFD/Resolver/SFD3/ Comcoder W/ Brake	Hiperface/EnDat/ Hiperface DSL W/O Brake	Hiperface/EnDat/ Hiperface DSL W/ Brake
AKMH31	166.5 [6.56]	198.02 [7.80]	182.5 [7.19]	214.0 [8.43]
AKMH32	197.5 [7.78]	229.0 [9.02]	213.5 [8.41]	245.0 [9.65]
AKMH33	228.5 [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.
Note 3: The Z MAX for the single right-angle D- connector version of AKMH3 is longer than for the integrated cable version. See below.

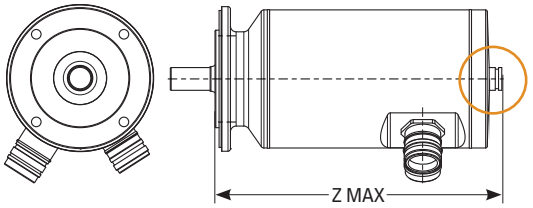
	Z MAX	
MODEL	D- Connector Option SFD3/Hiperface DSL W/O Brake	D- Connector Option SFD3/Hiperface DSL W/ Brake
AKMH31	217.5 [8.56]	249.0 [9.80]
AKMH32	248.5 [9.78]	280.0 [11.02]
AKMH33	279.5 [11.00]	311.0 [12.24]

Note 4: The Z MAX data for the dual straight H- connector option is the same as that for the integrated cable version. However, the vent on the back cover will add 11 mm [0.43 inch] to the total length of the motor.

D- Connector Option



H- Connector Option



AKMH4x Performance Data

AKMH4x Performance Data – Up to 640 VDC*

		Parameters	Tol	Sym	Units	AKMH41 C	AKMH41 E	AKMH41 H	AKMH42 C	AKMH42 E	AKMH42 H	AKMH42 J	AKMH43 E	AKMH43 H	AKMH43 L	AKMH44 E	AKMH44 H	AKMH44 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	3.18	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	28.1	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	2.69	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	2.54	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	22.5	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	6.02	6.14	6.23	11.0	11.2	11.5	11.5	16.0	16.1	16.0	20.3	20.2	20.2
					lb-in	53.3	54.3	55.1	97.1	98.9	101.4	101.9	141.2	142.7	142.0	179.2	178.9	179.1
		Peak Current ⑩	Nom	I_p	A_{rms}	5.84	11.4	22.4	5.60	11.0	24.00	33.6	11.0	21.6	44.8	11.6	22.4	40.4
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	-	3.03	2.40	1.27	4.25	3.94	0.45	5.29	4.72	1.83
					lb-in	15.3	14.5	11.4	-	26.8	21.2	11.2	37.6	34.9	3.98	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	-	0.63	1.13	0.80	0.67	1.24	0.26	0.55	1.24	0.96
					Hp	0.36	0.69	1.09	-	0.85	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	2.65	0.82	-	3.89	0.12	-	4.83	1.96	-
					lb-in	14.2	11.2	-	26.7	23.5	7.26	-	34.4	1.06	-	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	0.97	0.52	-	1.02	0.08	-	1.01	1.03	-
					Hp	0.68	1.06	-	0.64	1.30	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	2.48	0.46	-	3.65	0.82	-	4.56	1.27	-
					lb-in	13.8	10.8	-	26.0	21.9	4.07	-	32.3	7.26	-	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	1.04	0.29	-	1.15	0.47	-	1.19	0.66	-
					Hp	0.77	1.03	-	0.83	1.39	0.39	-	1.54	0.63	-	1.60	0.89	-

Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding 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.

AKMH4x Motor Parameters

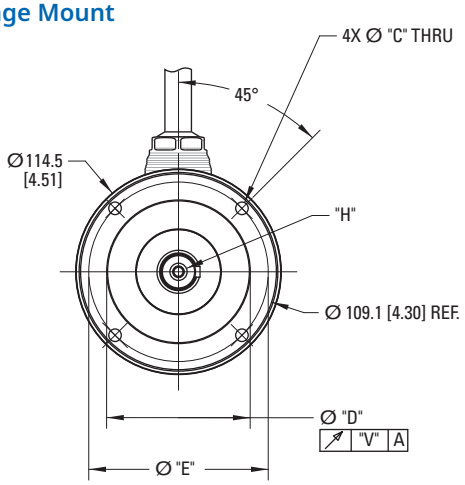
				AKMH41			AKMH42				AKMH43			AKMH44		
Parameters	**Tol**	**Sym**	**Units**	**C**	**E**	**H**	**C**	**E**	**H**	**J**	**E**	**H**	**L**	**E**	**H**	**K**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	1.25	0.66	0.35	2.28	1.21	0.57	0.42	1.71	0.89	0.41	2.04	1.05	0.59
			$lb\text{-}in/A_{rms}$	11.1	5.9	3.1	20.2	10.7	5.1	3.8	15.1	7.8	3.7	18.0	9.3	5.2
Back EMF Constant ⑥	±10%	K_e	$V_{rms}/krpm$	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	$N\text{-}m/\sqrt{W}$	0.22	0.22	0.23	0.36	0.36	0.36	0.38	0.47	0.50	0.44	0.57	0.57	0.57
			$lb\text{-}in/\sqrt{W}$	1.96	1.95	2.03	3.1	3.2	3.2	3.4	4.2	4.4	3.9	5.00	5.1	5.1
Resistance (line-line) ⑥	±10%	R_m	ohm	21.3	6.04	1.58	27.5	7.5	1.67	0.82	8.6	2.1	0.58	8.7	2.25	0.70
Inductance (line-line)		L	mH	66.1	18.4	5.00	97.4	26.8	6.00	3.10	32.6	8.8	2.01	34.0	9.1	2.79
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/krpm	0.009			0.014				0.019			0.024		
			lb-in/krpm	0.082			0.126				0.170			0.213		
Thermal Time Constant		TCT	minutes	40			51				63			74		
Thermal Resistance		$R_{thw\text{-}a}$	°C/W	1.05			0.87				0.80			0.72		
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		

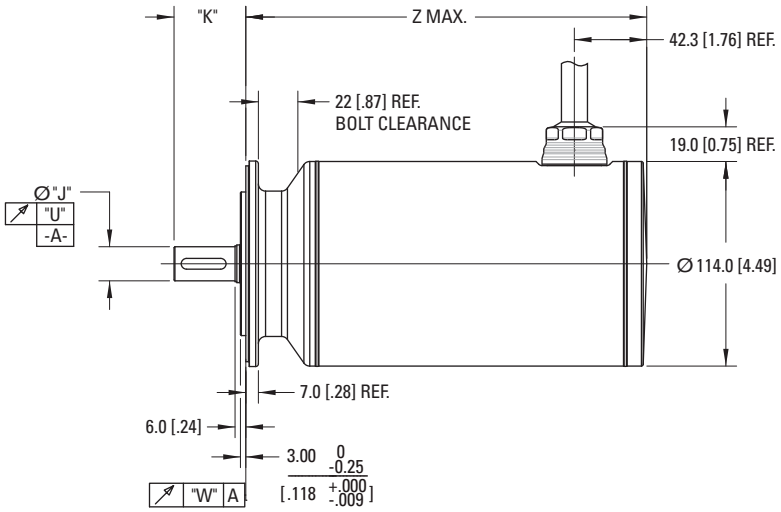
Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding brake if applicable for total inertia.
④ Motor with 115 °C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25 °C.
⑦ Resistance 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

AKMH4x Outline Drawings

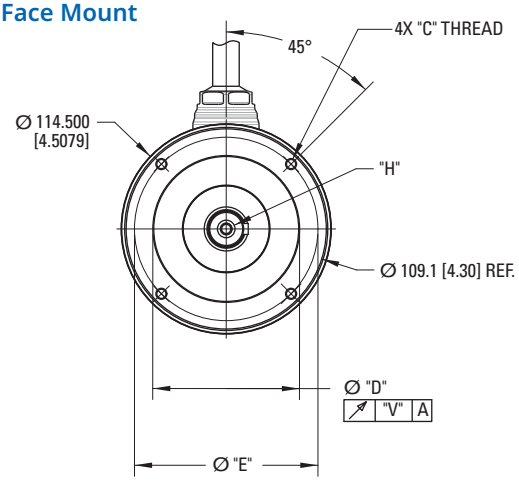
AKMH4x Frame

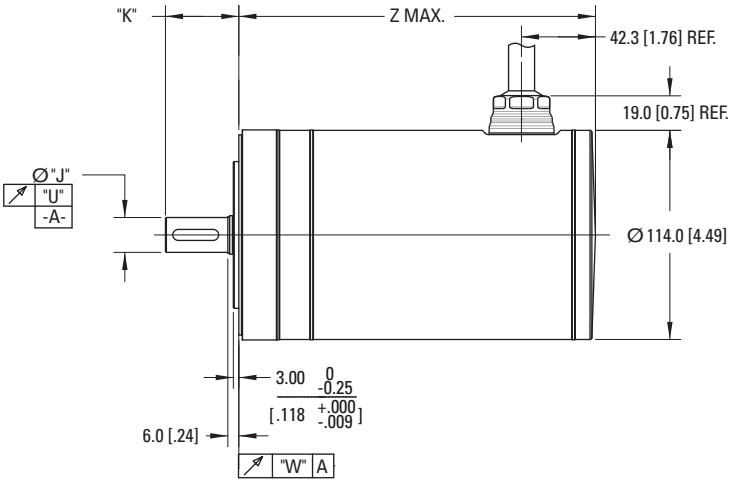
Flange Mount



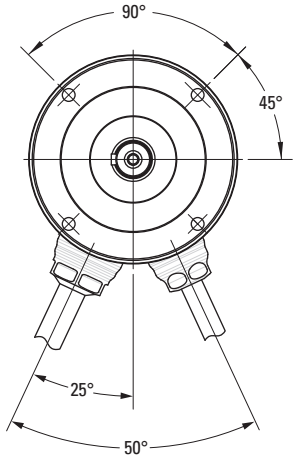


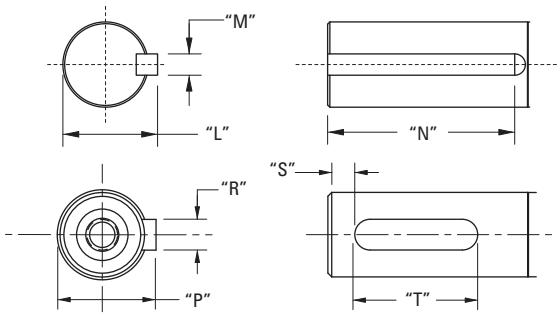
Face Mount





Dual Cable Option for Third Party Drives





Dimensions are in mm [inches].

Outline drawings and dimensions for mounted connector options A- and D- can be found on page 30.

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	Hole Diameter "C"	Pilot Dia. "D"	Bolt Circle dia. "E"	"H"	Shaft Dia. "J"	Shaft Length "K"	Shaft Dia. w/ Key "L"
AC	Flange	IEC 100	Closed Keyway	7 [0.276]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [0.7480]	40.0 [1.57]	–
AN	Flange	IEC 100	Smooth	7 [0.276]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [0.7480]	40.0 [1.57]	–
BK	Flange	NEMA 42	Open Keyway	6.91 [0.272]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [0.6250]	52.40 [2.06]	17.92 [0.706]
BN	Flange	NEMA 42	Smooth	6.91 [0.272]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [0.6250]	52.40 [2.06]	–
CC	Face	IEC 100	Closed Keyway	M6 x 1 x 12 [0.472]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [0.7480]	40.0 [1.57]	–
CN	Face	IEC 100	Smooth	M6 x 1 x 12 [0.472]	80 [3.1496]	100 [3.937]	D M6 DIN 332	19 [0.7480]	40.0 [1.57]	–
DK	Face	NEMA 42	Open Keyway	UNC 1/4 - 20 x 12.3 [0.484]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [0.6250]	52.40 [2.06]	17.92 [0.706]
DN	Face	NEMA 42	Smooth	UNC 1/4 - 20 x 12.3 [0.484]	73.025 [2.8750]	98.43 [3.875]	–	15.875 [0.6250]	52.40 [2.06]	–
EK	Face	NEMA 42	Open Keyway	M6 x 1 x 12 [0.472]	80 [3.1496]	100 [3.937]	D M5 DIN 332	16 [0.6299]	40.0 [1.57]	18.0 [0.709]
EN	Face	NEMA 42	Smooth	M6 x 1 x 12 [0.472]	80 [3.1496]	100 [3.937]	D M5 DIN 332	16 [0.6299]	40.0 [1.57]	–
LK	Face	NEMA 56	Open Keyway	UNC 3/8 - 16 x 19.1 [0.75]	114.30 [4.5000]	149.23 [5.875]	–	15.862 [0.6245]	50.8 [2.00]	17.89 [0.704]

Code	Key Width "M"	Key Length "N"	Shaft Dia. w/ Key "P"	Key Width "R"	"S"	Key Length "T"	"U"	"V"	"W"
AC	–	–	21.5 [0.846]	6 [0.236]	4.00 [1.57]	25 [0.984]	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
AN	–	–	–	–	–	–	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
BK	4.762 [0.1875]	34.93 [1.375]	–	–	–	–	0.051 [0.0020]	0.10 [0.004]	0.080 [0.0031]
BN	–	–	–	–	–	–	0.051 [0.0020]	0.10 [0.004]	0.080 [0.0031]
CC	–	–	21.5 [0.846]	6 [0.236]	4.00 [1.57]	25 [0.984]	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
CN	–	–	–	–	–	–	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
DK	4.762 [0.1875]	34.93 [1.375]	–	–	–	–	0.051 [0.0020]	0.10 [0.004]	0.080 [0.0031]
DN	–	–	–	–	–	–	0.051 [0.0020]	0.10 [0.004]	0.080 [0.0031]
EK	5.00 [0.197]	30.00 [1.181]	–	–	–	–	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
EN	–	–	–	–	–	–	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
LK	4.762 [0.1875]	34.93 [1.375]	–	–	–	–	0.051 [0.0020]	0.10 [0.004]	0.080 [0.0031]

	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.

AKMH5x Performance Data

AKMH5x Performance Data – Up to 640 VDC*

					AKMH51				AKMH52				AKMH53			AKMH54			
Parameters	Tol	Sym	Units	E	H	K	L	E	H	L	M	H	L	P	H	K	L	P
Max Rated DC Bus Voltage	Max	Vbus	VDC	640	640	320	320	640	640	640	320	640	640	320	640	320	560	320
Continuous Torque (Stall) for ΔT winding = 100 °C ①②④	Nom	T_{cs}	Nm	3.92	3.95	4.17	4.09	6.69	6.72	6.66	6.7	9.45	8.99	8.57	13.2	13.2	12.1	11.8
			lb-in	34.7	35.0	36.9	36.2	59.2	59.5	58.9	59.3	83.6	79.6	75.8	116.9	117.0	107.1	104.7
Continuous Current (Stall) for ΔT winding = 100 °C ①②④	Nom	I_{cs}	A_{rms}	2.61	5.68	8.87	11.05	2.68	5.17	9.87	11.2	5.92	10.1	16.1	5.30	8.99	11.3	16.7
Continuous Torque (Stall) for ΔT winding = 60 °C ②④	Nom	T_{cs}	Nm	3.14	3.16	3.34	3.27	5.35	5.38	5.33	5.36	7.56	7.19	6.86	10.6	10.6	9.68	9.46
			lb-in	27.8	28.0	29.5	29.0	47.4	47.6	47.2	47.4	66.9	63.6	60.7	93.5	93.6	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	6000	6000
Peak Torque ①②④	Nom	T_p	Nm	11.0	11.1	11.3	11.3	20.2	20.5	20.8	20.7	28.4	28.7	28.2	37.6	38.5	37.6	38.1
			lb-in	97.4	98.3	100.0	100.4	178.4	181.0	184.3	183.1	251.7	254.0	249.7	332.7	340.3	332.9	337.5
Peak Current ⑩	Nom	I_p	A_{rms}	8.25	18.0	28.2	35.7	8.97	17.7	34.8	39.3	19.8	35.4	57.3	16.5	29.1	37.5	58.8
Maximum Rated DC Bus Voltage: 160 VDC — Rated Torque (speed) ①②④		T_{rtd}	Nm	-	-	3.91	3.71	-	-	-	-	-	-	-	-	-	-	-
			lb-in	-	-	34.6	32.8	-	-	-	-	-	-	-	-	-	-	-
160 VDC — Rated Speed		N_{rtd}	rpm	-	-	2500	3000	-	-	-	-	-	-	-	-	-	-	-
160 VDC — Rated Power (speed) ①②④		P_{rtd}	kW	-	-	1.02	1.17	-	-	-	-	-	-	-	-	-	-	-
			Hp	-	-	1.37	1.56	-	-	-	-	-	-	-	-	-	-	-
320 VDC — Rated Torque (speed) ①②④		T_{rtd}	Nm	3.83	3.58	2.80	2.28	-	6.54	5.30	3.76	-	6.83	3.79	12.9	12.3	9.74	7.19
			lb-in	33.9	31.7	24.8	20.2	-	57.9	46.9	33.3	-	60.4	33.5	114.0	109.1	86.2	63.6
320 VDC — Rated Speed		N_{rtd}	rpm	1500	3000	5500	5500	-	1500	3500	4500	-	3000	3500	1000	1800	2500	3000
320 VDC — Rated Power (speed) ①②④		P_{rtd}	kW	0.60	1.12	1.61	1.31	-	1.03	1.94	1.77	-	2.15	1.39	1.35	2.32	2.55	2.26
			Hp	0.81	1.51	2.13	1.76	-	1.38	2.60	2.38	-	2.88	1.86	1.81	3.12	3.42	3.03
560 VDC — Rated Torque (speed) ①②④		T_{rtd}	Nm	3.58	2.30	-	-	6.41	5.22	2.46	-	6.95	3.62	-	11.5	7.49	6.76	-
			lb-in	31.7	20.4	-	-	56.7	46.2	21.8	-	61.5	32.0	-	101.3	66.3	59.8	-
560 VDC — Rated Speed		N_{rtd}	rpm	2500	5500	-	-	1500	3500	4500	-	3000	3500	-	2000	3500	3000	-
560 VDC — Rated Power (speed) ①②④		P_{rtd}	kW	0.94	1.32	-	-	1.01	1.91	1.16	-	2.18	1.33	-	2.40	2.75	2.12	-
			Hp	1.26	1.78	-	-	1.35	2.56	1.55	-	2.93	1.78	-	3.21	3.68	2.85	-
640 VDC — Rated Torque (speed) ①②④		T_{rtd}	Nm	3.44	2.14	-	-	6.22	4.54	1.27	-	5.99	2.29	-	11.26	6.69	-	-
			lb-in	30.4	18.9	-	-	55.0	40.2	11.2	-	53.0	20.3	-	99.7	59.1	-	-
640 VDC — Rated Speed		N_{rtd}	rpm	3000	5500	-	-	2000	4000	4500	-	3500	3500	-	2000	3500	-	-
640 VDC — Rated Power (speed) ①②④		P_{rtd}	kW	1.08	1.23	-	-	1.30	1.90	0.60	-	2.20	0.84	-	2.36	2.45	-	-
			Hp	1.45	1.65	-	-	1.75	2.55	0.80	-	2.94	1.13	-	3.16	3.28	-	-

Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding 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.

AKMH5x Motor Parameters

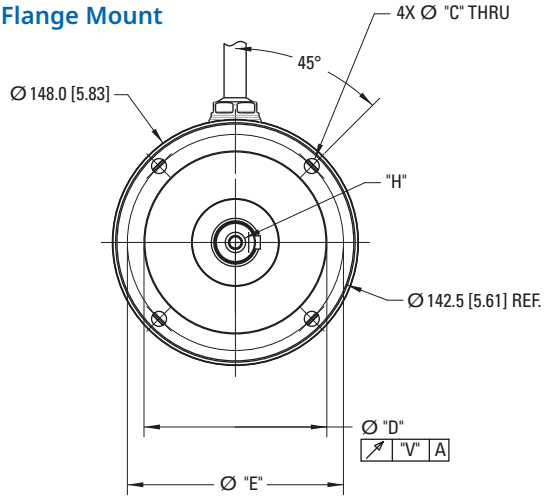
				AKMH51				AKMH52				AKMH53			AKMH54			
Parameters	**Tol**	**Sym**	**Units**	**E**	**H**	**K**	**L**	**E**	**H**	**L**	**M**	**H**	**L**	**P**	**H**	**K**	**L**	**P**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	1.53	0.71	0.48	0.38	2.53	1.32	0.68	0.61	1.62	0.90	0.54	2.52	1.49	1.08	0.72
			$lb\text{-}in/A_{rms}$	13.5	6.3	4.2	3.3	22.4	11.7	6.1	5.4	14.3	8.0	4.8	22.3	13.2	9.6	6.4
Back EMF Constant ⑥	±10%	K_e	$V_{rms}/krpm$	110.4	51.3	33.5	26.6	179.4	92.7	48.3	42.4	112.4	63.6	38.4	165.6	96.6	72.9	47.3
Motor Constant ①	Nom	K_m	N-m/√W	0.42	0.43	0.44	0.44	0.69	0.70	0.70	0.70	0.91	0.87	0.83	1.15	1.16	1.07	1.04
			lb-in/√W	3.68	3.76	3.86	3.89	6.1	6.2	6.2	6.2	8.0	7.7	7.4	10.1	10.3	9.4	9.2
Resistance (line-line) ⑥	±10%	R_m	ohm	9.0	1.85	0.80	0.49	9.0	2.37	0.63	0.51	2.1	0.71	0.28	3.2	1.09	0.69	0.32
Inductance (line-line)		L	mH	36.6	7.9	3.40	2.13	44.7	11.9	3.24	2.50	11.4	3.6	1.33	18.3	6.22	3.6	1.49
Inertia (includes Resolver feedback) ③	±10%	J_m	$kg\text{-}cm^2$	3.42				6.22				9.12			11.9			
			$lb\text{-}in\text{-}s^2$	3.0E-03				5.5E-03				8.1E-03			1.1E-02			
Optional Brake Inertia (additional)	±10%	J_m	$kg\text{-}cm^2$	0.173				0.173				0.173			0.173			
			$lb\text{-}in\text{-}s^2$	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/krpm	0.014				0.023				0.033			0.042			
			lb-in/krpm	0.120				0.205				0.291			0.376			
Thermal Time Constant		TCT	minutes	46				58				69			80			
Thermal Resistance		$R_{thw\text{-}a}$	°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			

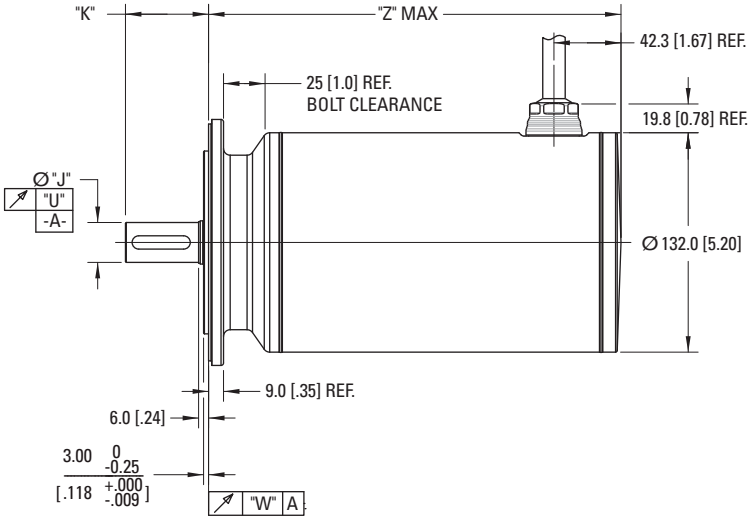
Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding brake if applicable for total inertia.
④ Motor with 115 °C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25 °C.
⑦ Resistance 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

AKMH5x Outline Drawings

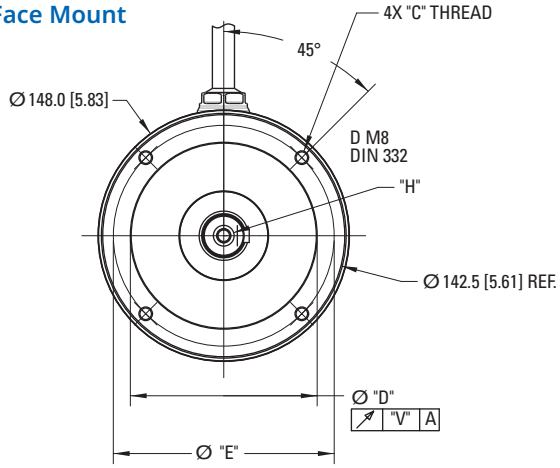
AKMH5x Frame

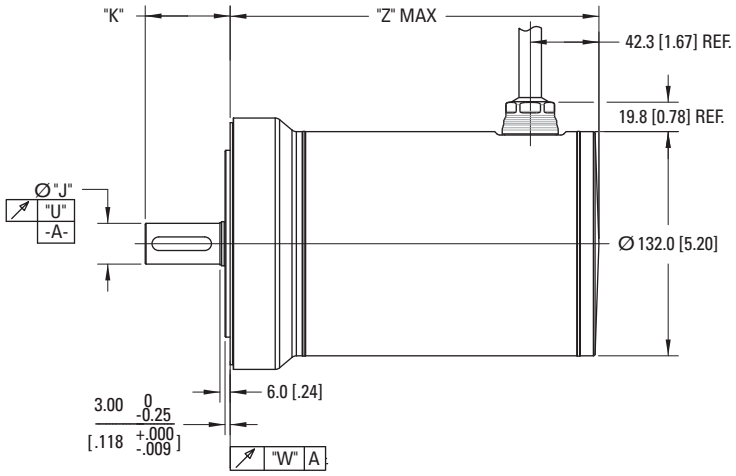
Flange Mount



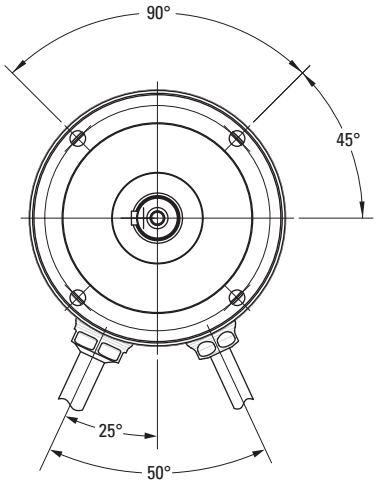


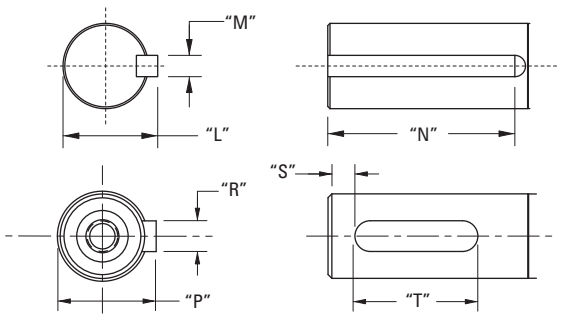
Face Mount





Dual Cable Option for Third Party Drives





Dimensions are in mm [inches].

Outline drawings and dimensions for mounted connector options A- and D- can be found on page 30.

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	Hole Diameter "C"	Pilot Dia. "D"	Bolt Circle Dia. "E"	"H"	Shaft Dia. "J"	Shaft Length "K"	Shaft Dia. w/ Key "L"
AC	Flange	IEC 130	Closed Keyway	9 [0.354]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [0.9449]	50.0 [1.97]	–
AN	Flange	IEC 130	Smooth	9 [0.354]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [0.9449]	50.0 [1.97]	–
BK	Flange	NEMA 42	Open Keyway	10.08 [0.397]	55.560 [2.1874]	125.73 [4.950]	–	19.05 [0.7500]	57.15 [2.250]	21.15 [0.833]
BN	Flange	NEMA 42	Smooth	10.08 [0.397]	55.560 [2.1874]	125.73 [4.950]	–	19.05 [0.7500]	57.15 [2.250]	–
CC	Face	IEC 130	Closed Keyway	M8 x 1.25 x 16.8 [0.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [0.9449]	50.0 [1.97]	–
CN	Face	IEC 130	Smooth	M8 x 1.25 x 16.8 [0.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24 [0.9449]	50.0 [1.97]	–
DK	Face	NEMA 42	Open Keyway	UNC 3/8 - 16 x 19.05 [0.750]	55.563 [2.1874]	125.73 [4.950]	–	19.05 [0.7500]	57.15 [2.250]	21.15 [0.833]
DN	Face	NEMA 42	Smooth	UNC 3/8 - 16 x 19.05 [0.750]	55.563 [2.1874]	125.73 [4.950]	–	19.05 [0.7500]	57.15 [2.250]	–
EK	Face	NEMA 42	Open Keyway	M8 x 1.25 x 16.8 [0.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24.00 [0.9449]	50.0 [1.97]	27.00 [1.063]
EN	Face	NEMA 42	Smooth	M8 x 1.25 x 16.8 [0.66]	110 [4.3307]	130 [5.118]	D M8 DIN 332	24.00 [0.9449]	50.0 [1.97]	–

Code	Key Width "M"	Keyway Length "N"	Shaft Dia. w/ Key "P"	Key Width "R"	"S"	Key Length "T"	"U"	"V"	"W"
AC	–	–	27 [1.063]	8 [0.3150]	4.00 [0.157]	35 [1.378]	0.040 [0.0015]	0.100 [0.0039]	0.100 [0.0039]
AN	–	–	–	–	–	–	0.040 [0.0015]	0.100 [0.0039]	0.100 [0.0039]
BK	4.762 [0.1875]	38.1 [1.500]	–	–	–	–	0.051 [0.0020]	0.100 [0.0039]	0.100 [0.0039]
BN	–	–	–	–	–	–	0.051 [0.0020]	0.100 [0.0039]	0.100 [0.0039]
CC	–	–	27 [1.063]	8 [0.3150]	4.00 [0.157]	35 [1.378]	0.040 [0.0015]	0.100 [0.0039]	0.100 [0.0039]
CN	–	–	–	–	–	–	0.040 [0.0015]	0.100 [0.0039]	0.100 [0.0039]
DK	4.762 [0.1875]	38.1 [1.500]	–	–	–	–	0.051 [0.0020]	0.100 [0.0039]	0.100 [0.0039]
DN	–	–	–	–	–	–	0.051 [0.0020]	0.100 [0.0039]	0.100 [0.0039]
EK	8.000 [0.3150]	36.00 [1.417]	–	–	–	–	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]
EN	–	–	–	–	–	–	0.040 [0.0015]	0.080 [0.0031]	0.080 [0.0031]

	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.

AKMH6x Performance Data

AKMH6x Performance Data – Up to 640 VDC*

		Parameters	Tol	Sym	Units	AKMH62 H	AKMH62 L	AKMH62 M	AKMH63 H	AKMH63 L	AKMH63 M	AKMH64 K	AKMH64 L	AKMH65 K	AKMH65 L	AKMH65 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	10.5	10.3	14.6	14.1	14.2	18.0	17.9	21.4	21.5	21.1
					lb-in	93.8	92.9	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	11.4	12.5	5.42	10.2	12.6	8.74	11.9	9.33	11.4	12.6
		Continuous Torque (Stall) for ΔT winding = 60 °C ②④	Nom	T_{cs}	Nm	8.48	8.40	8.24	11.7	11.3	11.4	14.4	14.3	17.1	17.2	16.9
					lb-in	75.0	74.3	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	27.3	27.8	27.8	38.5	39.0	39.4	48.7	49.2	58.2	58.7	58.7
					lb-in	241.3	245.6	246.1	341.0	345.3	348.3	431.2	435.2	514.6	519.8	519.3
		Peak Current ⑩	Nom	I_p	A_{rms}	16.2	36.0	40.2	16.8	33.3	41.4	27.6	38.4	29.4	36.6	40.8
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	10.1	8.62	7.82	-	12.5	12.5	17.3	16.6	20.7	20.0	19.6
					lb-in	89.7	76.3	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	2.26	2.46	-	2.61	2.61	1.82	2.60	2.16	3.14	3.09
					Hp	1.42	303	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	3.92	3.22	13.3	9.81	4.76	15.4	12.2	18.4	17.0	14.6
					lb-in	81.0	34.7	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	1.64	1.35	2.09	3.08	1.99	3.23	3.83	3.85	4.44	4.60
					Hp	2.57	2.20	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	3.06	2.07	12.6	7.64	3.04	14.2	9.29	17.0	14.7	13.8
					lb-in	80.3	27.1	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	1.28	0.87	2.64	2.80	1.27	3.71	3.40	4.45	4.61	4.33
					Hp	2.55	1.72	1.16	3.54	3.75	1.71	4.98	4.56	5.97	6.18	5.80

Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding 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.

AKMH6x Motor Parameters

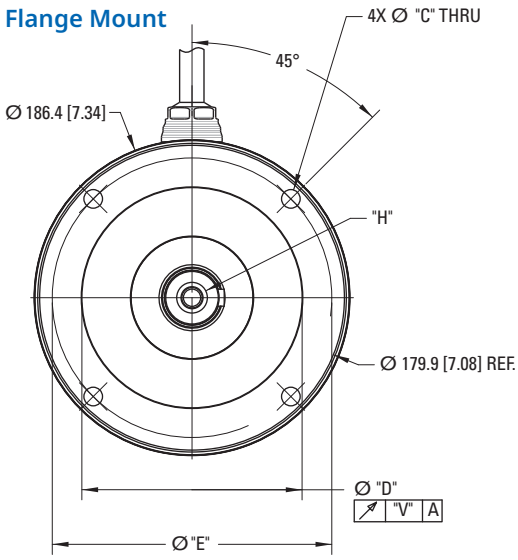
				AKMH62			AKMH63			AKMH64		AKMH65		
Parameters	**Tol**	**Sym**	**Units**	**H**	**L**	**M**	**H**	**L**	**M**	**K**	**L**	**K**	**L**	**M**
Torque Constant ①	±10%	K_t	Nm/A_{rms}	2.03	0.94	0.84	2.73	1.40	1.15	2.09	1.53	2.32	1.90	1.70
			$lb\text{-}in/A_{rms}$	18.0	8.3	7.4	24.2	12.4	10.1	18.5	13.5	20.5	16.8	15.0
Back EMF Constant ⑥	±10%	K_e	$V_{rms}/krpm$	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-m/√W	0.91	0.91	0.89	1.20	1.17	1.18	1.42	1.42	1.62	1.63	1.60
			lb-in/√W	8.05	8.05	7.89	10.6	10.3	10.4	12.6	12.6	14.3	14.4	14.2
Resistance (line-line) ⑥	±10%	R_m	ohm	3.3	0.71	0.59	3.5	0.96	0.63	1.4	0.77	1.4	0.91	0.75
Inductance (line-line)		L	mH	25.4	5.4	4.35	28.1	7.4	4.90	11.8	6.2	11.4	7.6	6.06
Inertia (includes Resolver feedback) ③	±10%	J_m	$kg\text{-}cm^2$	16.9			24.2			31.6		40.0		
			$lb\text{-}in\text{-}s^2$	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/krpm	0.037			0.046			0.054		0.063		
			lb-in/krpm	0.326			0.403			0.480		0.556		
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		

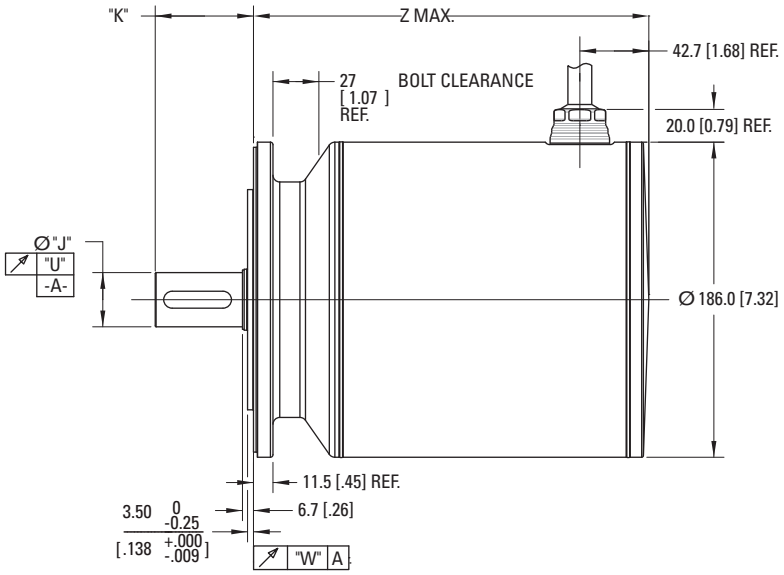
Notes:
① Motor winding temperature rise, ΔT = 100 °C, at 25 °C ambient.
② All data referenced to sinusoidal commutation.
③ Add holding brake if applicable for total inertia.
④ Motor with 115 °C rated feedback and standard heat sink.
⑤ May be limited at some values of Vbus.
⑥ Measured at 25 °C.
⑦ Resistance 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

AKMH6x Outline Drawings

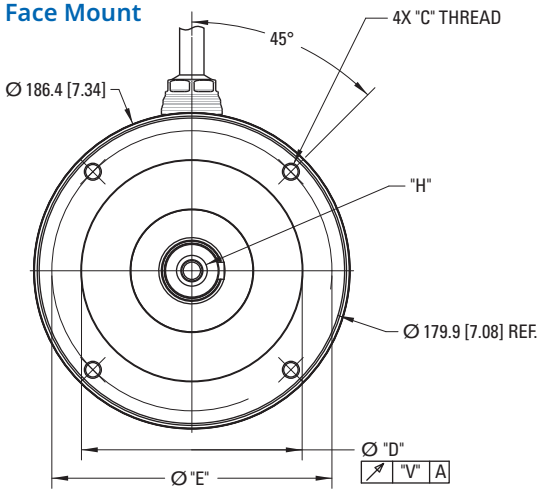
AKMH6x Frame

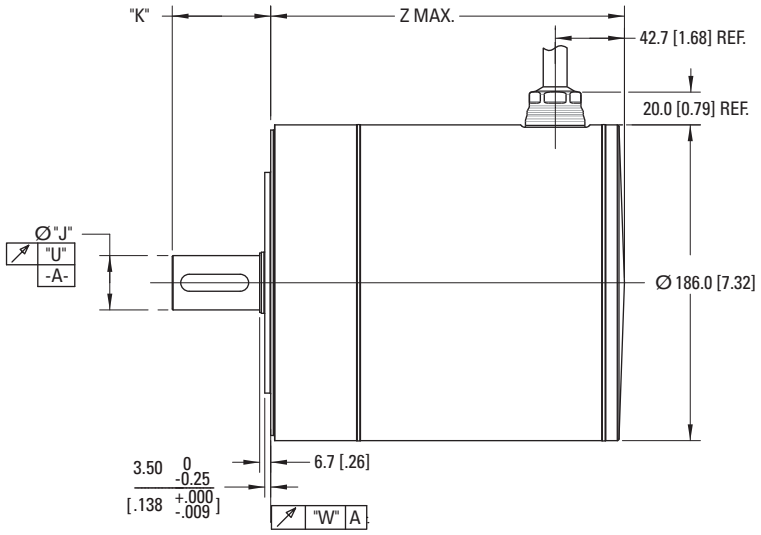
Flange Mount



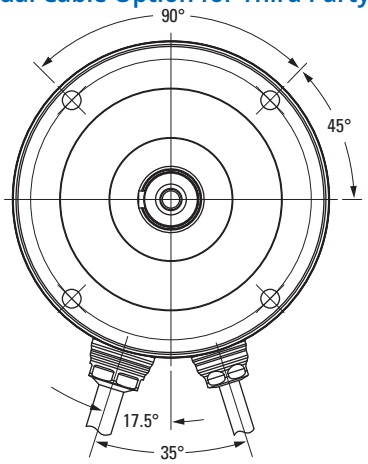


Face Mount

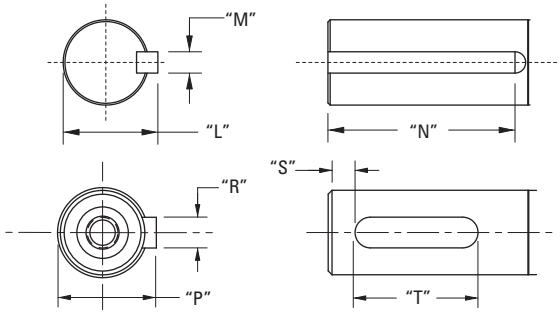




Dual Cable Option for Third Party Drives



Shaft-keyway dimensions



Dimensions are in mm [inches].

Outline drawings and dimensions for mounted connector options A- and D- can be found on page 30.

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	Hole Diameter "C"	Pilot Dia. "D"	Bolt Circle Dia. "E"	"H"	Shaft Dia. "J"	Shaft Length "K"	Shaft Dia. w/ Key "L"
AC	Flange	IEC 165	Closed Keyway	11.00 [0.433]	130 [5.1181]	165.00 [6.496]	D M12 DIN 332	32 [1.2598]	58 [2.28]	–
AN	Flange	IEC 165	Smooth	11.00 [0.433]	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 [0.80]	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 [0.80]	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 [0.750]	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 [0.750]	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 [0.803]	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 [0.803]	130 [5.1181]	165.00 [6.496]	D M10 DIN 332	28.000 [1.1024]	60.0 [2.36]	–

Mount Code	Key Width "M"	Keyway Length "N"	Shaft Dia. w/ Key "P"	Key Width "R"	"S"	Key Length "T"	"U"	"V"	"W"
AC	–	–	35 [1.378]	10 [0.3937]	5.00 [0.197]	40 [1.575]	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
AN	–	–	–	–	–	–	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
CC	–	–	35 [1.378]	10 [0.3937]	5.00 [0.197]	40 [1.575]	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
CN	–	–	–	–	–	–	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
DK	6.35 [0.2500]	38.10 [1.500]	–	–	–	–	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
DN	–	–	–	–	–	–	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
EK	8.00 [0.315]	45.00 [1.772]	–	–	–	–	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]
EN	–	–	–	–	–	–	0.050 [0.0019]	0.100 [0.0039]	0.100 [0.0039]

	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.

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 or Viton, 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 approximately 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.

AKMH Brake Option

Holding Brake

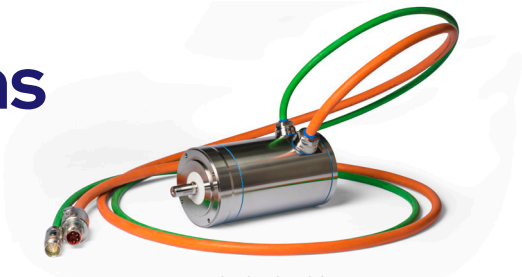
The holding brake is designed to provide motor shaft static holding torque with the brake coil de-energized. The brake must first be released (coil energized) prior to commanding motion as determined by its drop-out time. The optional brake is intended for stationary motor holding, or "parking," and is NOT intended for dynamic braking (i.e. Best Practice design with few exceptions for each axis of servo-controlled motion is achieved by a controlled Stop of the controlled motion in the shortest possible time, whether during normal machine operation or one defined as a stop-function.).

AKMH Motor Brake Specifications

Motor Family	Minimum Static Torque @120 °C		Power Consumption @24 V, 20 °C	Current @24 V, 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.

AKMH Feedback Options



AKMH servo motor with dual cable connection option

AKMH Feedback Options

Option	Description	Feedback Model	Notes	Cable Connection Option	Brake Possible	Device Resolution (Sin/Cos per Rev, Bits or Lines/Rev.)	Accuracy, Arc-min (+/-)
2-	Comcoder	EPC260	2048 LPR	Dual Cable L, M, V, W, A (AKMH4-6), H (AKMH2-3), B, G	Yes	2048 Lines	1
CA	SFD3, Smart Feedback Device	Size 15	Single-Turn	Single Cable E, F, K, T, V, W, D (AKMH3-6), B, G, N, P (AKMH2)	Yes	24-Bits	8
CB	SFD-M Smart Feedback Device, Multi-turn	Size 15	Multi-turn	Single Cable E, F, K, T, V, W, D (AKMH3-6), B, G, N, P (AKMH2)	Yes	24-Bits	1
DA	EnDat 2.1/01 Optical Sine Encoder	ECN1113	AKMH2-4 Single-Turn	Dual Cable L, M, V, W, A (AKMH4-6), H (AKMH2-3), B, G	Yes	512 Sin/Cos	1
		ECN1313	AKMH5-6 Single-Turn			2048 Sin/Cos	0.333
DB	EnDat 2.1/01 Optical Sine Encoder	EQN1125	AKMH2-4 Multi-Turn		Yes	512 Sin/Cos	1
		EQN1325	AKMH5-6 Multi-Turn,			2048 Sin/Cos	0.333
GA/GJ	HIPERFACE Encoder	SKS36	Single-Turn, Optical	Dual Cable L, M, V, W, A (AKMH4-6), H (AKMH2-3), B, G	Yes	128 Sin/Cos	1.33
GB/GK	HIPERFACE Encoder	SKM36	Multi-Turn, Optical		Yes	128 Sin/Cos	1.33
GE	HIPERFACE DSL Optical Encoder	EKS36	Single-Turn	Single Cable E, F, K, T, V, W, D (AKMH3-6), B, G, N, P (AKMH2)	Yes	18-Bits	1.33
GF	HIPERFACE DSL Optical Encoder	EKM36	Multi-Turn		Yes	18-Bits	1.33
LA	EnDat 2.1/01 Inductive Encoder	ECI1118 1164814-02	AKMH2-4 Single-Turn	Dual Cable L, M, V, W, A (AKMH4-6), H (AKMH2-3), B, G	Yes	16 Sin/Cos	3
		ECI1319 811811-02	AKMH5-6 Single-Turn			32 Sin/Cos	4.67
LB	EnDat 2.1/01 Inductive Encoder	EQI1130 1164815-52	AKMH2-4 Multi-Turn		Yes	16 Sin/Cos	3
		EQI1331 811814-08	AKMH5-6 Multi-Turn			32 Sin/Cos	4.67
R-	Resolver	Size 15	2 Poles	Dual Cable L, M, V, W, A (AKMH4-6), H (AKMH2-3), B, G	Yes	16-Bits	10
RA	HIPERFACE Encoder	SRS50-K21	AKMH4-6 Single-Turn, Optical, 7-12V, Programmed for Third Party Drives	Dual Cable V, W, A, R (all AKMH4-6 only)	Yes	1024 Sin/Cos	0.75
RB	HIPERFACE Encoder	SRM50-K21	AKMH4-6 Multi-Turn, Optical, 7-12V, Programmed for Third Party Drives		Yes	1024 Sin/Cos	0.75
RC	HIPERFACE Encoder	SRS50-S21	AKMH4-6 Single-Turn, Optical, 5V Programmed for Third Party Drives	Dual Cable V, W, A, R (all AKMH4-6 only)	Yes	1024 Sin/Cos	0.75
RD	HIPERFACE Encoder	SRM50-S21	AKMH4-6 Multi-Turn, Optical, 5V Programmed for Third Party Drives		Yes	1024 Sin/Cos	0.75
RE	HIPERFACE DSL Optical Encoder	EKS36	Single-Turn, Programmed for Third Party Drives	Single Cable V, W, D (AKMH3-6), R, C, P (AKMH2)	Yes	18-Bits	1.33
RF	HIPERFACE DSL Optical Encoder	EKM36	Multi-Turn, Programmed for Third Party Drives		Yes	18-Bits	1.33
RG	HIPERFACE DSL Optical Encoder	EKS36	Single-Turn, Programmed for Third Party Drives	Single Cable V, W, D (AKMH3-6), R, C, P (AKMH2)	Yes	18-Bits	1.33
RH	HIPERFACE DSL Optical Encoder	EKM36	Multi-Turn, Programmed for Third Party Drives		Yes	18-Bits	1.33

NOTE: Retrofitting a feedback is not possible. For a complete list of connector pinout information, please reference the AKMH Connector Pinout section.

AKMH Feedback Type Specifications

Absolute Digital Encoder Options

Kollmorgen Smart Feedback Device, Multi-turn (SFD-M) (CB)

The SFD-M Feedback uses a single motor cable, requiring just one cable between the drive and motor.

The feedback has both power and communication on a single wire pair, reducing overall wiring costs. SFD-M offers 24-bit absolute single-turn resolution, batteryless 16-bit (65,536) multi-turn absolute revolutions and an absolute angular accuracy of +/- 1 arc-min.

In addition, the device includes onboard memory for an electronic motor datasheet which enables device auto-recognition for faster setup and commissioning when paired with any Kollmorgen Essentials, AKD, or AKD2G drive.

Angle Measurement:

Single-Turn Resolution: 2^{24} = 16,777,216 counts per rev
Multi-Turn Absolute Range: 2^{16} = 65,536 absolute revolutions* (batteryless)
Accuracy: < +/- 1 arc-min typical 25 °C
< +/- 3 arc-min worst case
Electrical Noise: < 2^{-22} Rev rms at full bandwidth
Bandwidth: > 2 kHz at -3 dB
> 1 kHz at -45° phase lag
Max Continuous Speed: 10,000 RPM
Velocity Ripple: < 1% p-p (typical)
Velocity Noise: < 0.3 RPM rms at full bandwidth

Power Supply:

Input Voltage: 7 V - 12 V accepted (at motor terminals)
Input current maximum: 140 mA DC

Digital Communications:

Baud rate: 2.5 MBaud
Signaling: RS-485 differential using differential Manchester encoding
Update period: New position sample every 51.2 µs
Error detection: 5-bit CRC and running parity check

Environmental:

Feedback Operating Temperature: -40 to 120 °C
Humidity: 10% to 90% non-condensing
Vibration Resistance: 30g (294 m/s^2) @ 55-2000 Hz (EN60068-2-6)
Shock Resistance: 100g (981 m/s^2) @ 6 ms (EN60068-2-27)

* When paired with AKD, this is limited to 4096 absolute revolutions (12-bits)

Kollmorgen Smart Feedback Device, Gen 3 (SFD3) (CA)

Kollmorgen's proprietary SFD3 Feedback uses a single motor cable, requiring just one cable between the drive and motor. The feedback has both power and communication on a single wire pair, reducing overall wiring costs. In addition, the device includes onboard memory for an electronic motor datasheet.

Angle Measurement:

Resolution: 2^{24}= 16,777,216 counts per rev
Accuracy: < ± 0.75 arc-min electrical + sensor error
Size 15 sensor error: ± 8 arc-min net (AKMH2-4)
Size 21 sensor error: ± 9 arc-min net (AKMH5-6)
Electrical Noise: < 2^{-17} Rev rms at full bandwidth
Bandwidth: > 2000 Hz at -3 dB
> 1000 Hz at -45° phase lag
Max Continuous Speed: 20,000 RPM
Velocity Ripple: < 0.2% p-p electronics only
Size 15 sensor: < 2.0% p-p net (AKMH2-4)
Size 21 sensor: < 2.5% p-p net (AKMH5-6)
Velocity Noise: < 4 RPM rms at full bandwidth

Environmental:

Operating ambient: -20 to 120 °C
Humidity: 10% to 90% non-condensing
Storage temperature: -40 to 135 °C

Digital Communications:

Baud Rate: 2.5 MBaud
Signaling: RS-485 differential using differential Manchester encoding
Update Period: Once every 51.2 uSec new position sample
Error Detection: 5 bit CRC and running parity check

Power Supply:

Supply at Drive: 7 to 12 V
Supply at SFD in motor: 7 to 12 V
Nominal Supply Current: 65 mA at 10 V
Worst Case Supply: 110 mA at 10 V
Cable Resistance: Com+, Com- net < 10 Ohm net

AKMH Feedback Options

AKMH Feedback Type Specifications

Absolute Digital Encoder Options

Kollmorgen Smart Feedback Device (SFD) (C-)

The SFD Feedback communicates with the drive over a four-wire interface. Two wires supply up to +5V power at <150 mA and the second pair is an RS-485 digital communications link. The device includes EEPROM memory to save motor parameters.

Angle Measurement:

Resolution: 2^{24} = 16,777,216 counts per rev
Accuracy: < ± 0.75 arc-min electrical + sensor error
Size 15 sensor ± 8 arc-min net (AKMH2-4)
Size 21 sensor ± 9 arc-min net (AKMH5-6)
Electrical Noise: < 2^{-17} Rev rms at full bandwidth
Bandwidth: > 2000 Hz at -3 dB
> 1000 Hz at -45° phase lag
Max Continuous Speed: > 20,000 RPM
Velocity Ripple: < 0.2% p-p electronics only
Size 15 sensor < 2.0% p-p net (AKMH2-4)
Size 21 sensor < 2.5% p-p net (AKMH5-6)
Velocity Noise: < 4 RPM rms at full bandwidth

Environmental:

Feedback Operating Temperature: -20 to 120 °C
Humidity: 10% to 90% non-condensing
Storage temperature: -40 to 135 °C

Digital Communications:

Baud Rate: 2.5 MBaud
Signaling: RS-485 differential, 8 bit data with odd parity compatible with standard UARTs
Update Period: Once every 51.2 uSec new position sample
Error Detection: 5 bit CRC in addition to parity check
EEPROM Memory: Does a data dump when the unit powers up.

Power Supply:

Supply at Drive: 5.0 V ± 0.25 V (±5%)
Supply at SFD in motor: 4.25 V to 5.25 V
Nominal Supply Current: 120 mA
Worst Case Supply: 150 mA
Cable Resistance: +5V, Rtn: < 3.3 Ohm net

Resolver Options

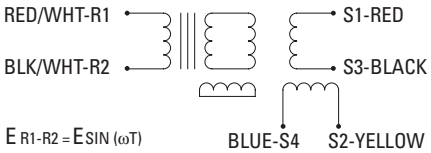
Resolver (R-)

Type		R- 1 Speed	
Frame Size		**AKMH2-4**	**AKMH5-8**
Input Voltage	V_{RMS}	8 (± 5%)	8 (± 5%)
	k Hz	8 (± 1%)	8 (± 1%)
Input Current Max.	mA	50	46
Transformation Ratio	N/A	0.5	0.5
Null Voltage	mV_{RMS}	30	30
Max. Error (pk-pk)	MINS.	20	18
Phase Shift	Degrees	0	0
Operating Temperature	°C	-55 to 155	-55 to 155
Rotor Inertia Max.	kg-cm²	0.046	0.497
Vibration and Shock Resistance		High Vibration and Shock Resistance Please contact Kollmorgen Customer Support	

Resolver Alignment

With positive DC current into phase W and out of phase V (U floats), the resolver is aligned. ie. Voltage S1-S3 set to null and voltage S2-S4 max in phase with reference (R1-R2).

Resolver Winding Configuration



$E_{R1-R2} = E_{SIN(\omega T)}$
$E_{S1-S3} = KE_{R1-R2\ SIN\theta}$
$E_{S2-S4} = KE_{R1-R2\ COS\theta}$

AKMH Feedback Type Specifications

Absolute Digital Encoder Options

HIPERFACE DSL (GE / GF) (3rd Party Drives: RE / RF, RG / RH)

Type		Single-Turn GE, RE/RG	Multi-Turn GF, RF/RH
Frame Size		AKMH2-6	AKMH2-6
Resolution per revolution	bits	18	18
Input Voltage	VDC	7 to 12	7 to 12
Current Consumption	mA MAX.	150	150
Feedback Operating Temperature	°C MIN./MAX.	-20/115	-20/115
Inertia	kg-cm²	0.0045	0.0045
Output Interface		SICK HIPERFACE DSL	
Manufacturer Product Type		EKS36-0KF0B0S01	EKM36-0KF0B0S01

HIPERFACE Absolute Sin/Cos Encoder (GA / GJ, GB / GK)

Type		Single-Turn "GA/GJ"	Multi-Turn "GB/GK"
Frame Size		AKMH2-6	AKMH2-6
Sin/Cos period per revolution	-	128	128
Input Voltage	VDC	7 to 12	7 to 12
Current Consumption	mA Typical	60	60
Feedback Operating Temperature	°C MIN./MAX.	-20/110	-20/110
Inertia	kg-cm²	0.0045	0.0045
Output Interface		SICK HIPERFACE Sin/Cos Encoder	
Manufacturer Product Type		SKS36	SKM36

*GA/GB Feedbacks are "mapped" for ServoStar (Sxxx) Series drives
**GJ/GK Feedbacks are "mapped" for AKD/AKD2G Series drives.

HIPERFACE Absolute Sine Encoder (3rd Party Drives: RA / RC, RB / RD)

Type		Single-Turn "RA"	Multi-Turn "RB"	Single-Turn "RC"	Multi-Turn "RD"
Frame Size		AKMH4-6 (460 VAC)		AKMH4-6 (230 VAC)	
Sin/Cos periods per revolution (Abs. Revs)	-	1024 (1)	1024 (4096)	1024 (1)	1024 (4096)
Input Voltage	VDC	7 to 12		5	
Current Consumption	mA Typical	80		80	
Feedback Operating Temperature	°C MIN./MAX.	-30/115		-30/115	
Inertia	kg-cm²	0.01		0.01	
Output Interface		SICK HIPERFACE			
Manufacturer Product Type		SRS50-K21	SRM50-K21	SRS50-S21	SRM50-S21

AKMH Feedback Options

AKMH Feedback Type Specifications

Absolute Sine Encoder Options

EnDat Optical (DA, DB)

Type		Single-Turn "DA"		Multi-Turn "DB"	
Frame Size		AKMH2-4	AKMH5-6	AKMH2-4	AKMH5-6
Cycles per Revolution (# of abs. revs.)	-	512 (1)	2048 (1)	512 (4096)	2048 (4096)
Input Voltage	VDC	3.6 to 14	3.6 to 14	3.6 to 14	3.6 to 14
Current Consumption	mA Typical	85 (no load)	85 (no load)	105 (no load)	105 (no load)
Feedback Operating Temperature	°C MIN./MAX.	-40/115	-40/115	-40/115	-40/115
Inertia	kg-cm^2	0.04	0.026	0.04	0.026
Output Interface		HEIDENHAIN EnDat 2.1/01			
Manufacturer Product Type		ECN1113	ECN1313	EQN1125	EQN1325

Encoder Alignment: With positive DC current into phase W and out of phase V (U floats) the encoder is aligned to ±1 electrical degree.

EnDat Inductive (LA/LB)

Type		Single-Turn "LA"		Multi-Turn "LB"	
Frame Size		AKMH2-3	AKMH4-6	AKMH2-3	AKMH4-6
Sin/Cos period per revolution	-	16	32	16	32
Input Voltage	VDC	4.75 to 10	4.75 to 10	4.75 to 10	4.75 to 10
Current Consumption	mA Typical, at 5V	85 (no load)	85 (no load)	100	102 (no load)
Feedback Operating Temperature	°C MIN./MAX.	-40/115	-20/115	-40/115	-20/115
Inertia	kg-cm^2	0.020	0.025	0.020	0.026
Output Interface - HEIDENHAIN		EnDat 2.1/01			
Vibration Resistance – EN 60068-2-6	g [m/s^2]	Stator ≤41 g [400 m/s^2] – Rotor ≤61 g [600 m/s^2] – 55 to 2000 Hz			
Shock Resistance – EN 60068-2-27	g [m/s^2]	≤100 g [981 m/s^2] – 6 ms			
Manufacturer Product Type		1164814-02	811811-02	1164815-52	811814-08

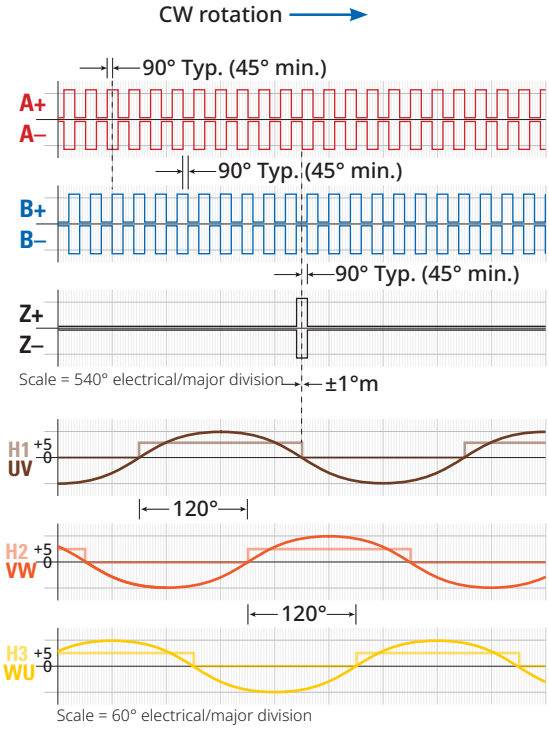
Encoder Alignment: With positive DC current into phase W and out of phase V (U floats) the encoder is aligned to ±3 electrical degrees.

AKMH Feedback Type Specifications

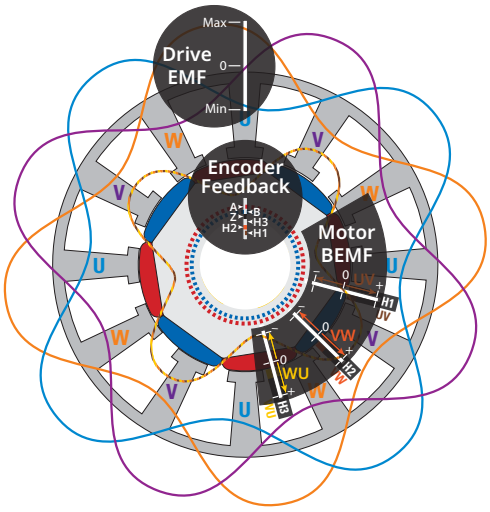
Commutating Encoder Option

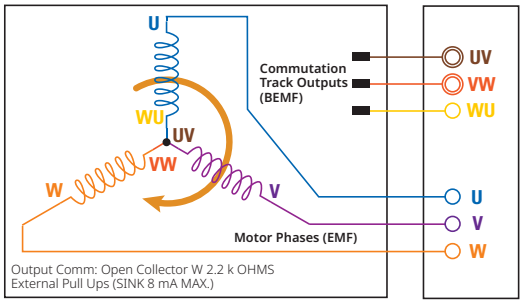
Commutating Encoder (2–)

Parameter	Units	2-
Frame Size		AKMH2-6
Input Voltage	VDC ±10%	5
Output Data	–	TTL Differential Line Driver (Sink/Source 20mA MAX.)
Line Count per revolution	–	2,048
Frequency Response	KHz	200
Max. Speed	RPM	12,000
Min. Edge Separation of Incremental Channel	°e MIN.	45
Index to U Comm Channel	–	±1°m Index Center to U Falling Edge
Index Pulse Width	–	Gated With B Low
Incremental Channel Accuracy	–	±1 Arc Min. Max. Edge to Edge
Max. Acceleration	Rad/s²	100,000
Feedback Operating Temperature	°C	-20 to 120
Storage Temperature	°C	-25 to 120



Max. Misalignment between rising edge of H1(V) & zero crossing of $U_V \leq 5°$ electrical.

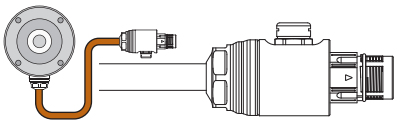
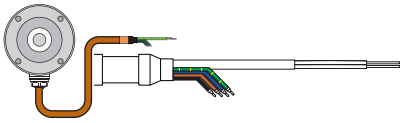
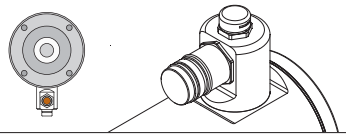
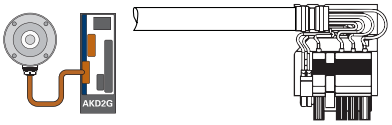
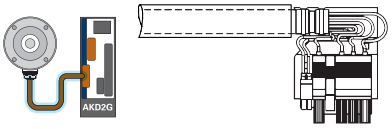
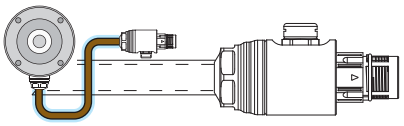
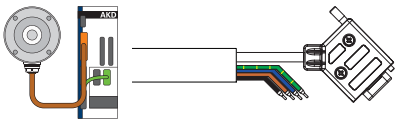
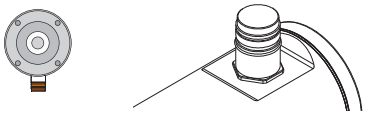
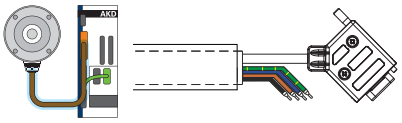
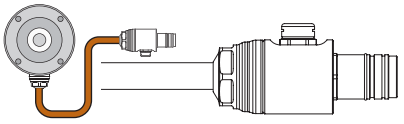
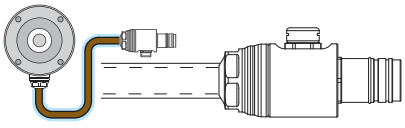




Integrated Cable and Connector Options

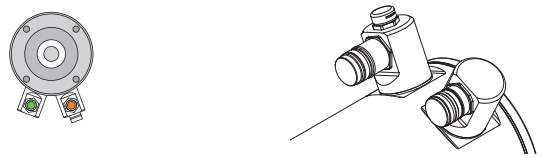
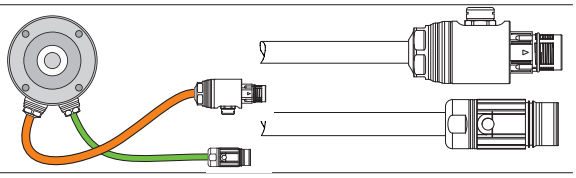
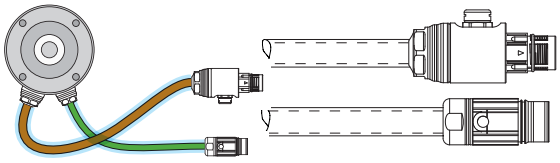
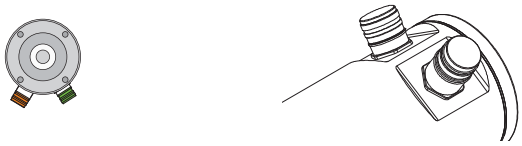
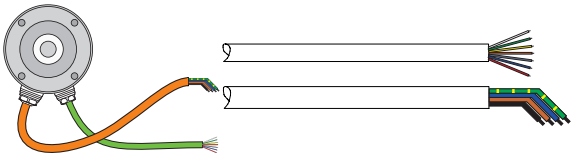
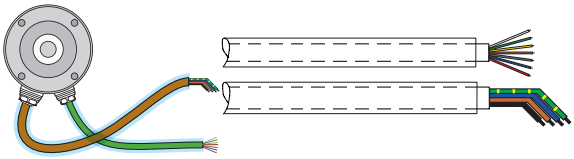
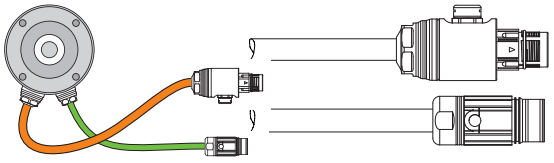
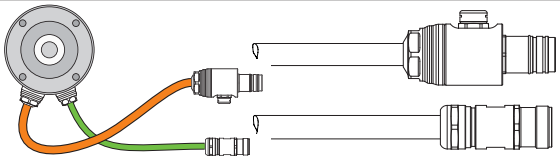
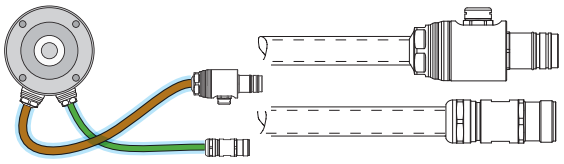
Single Integrated Cable and Connector Options – Feedback: CA, CB, GE, GF, RE, RF, RG, RH

The single hybrid cable combines power and feedback signals in one cable.

CODE	DESCRIPTION	CABLE CONNECTION
B, N, R	Single hybrid cable with non-stainless steel vented connector with air pressure compensation. Vented connector is non-hygienic. Protection class IP67. Code N is terminated for direct AKD-N connection. Code R is terminated for Third-party drives.	
C	Single hybrid cable prepared for third-party drives. Cable with flying power and feedback leads.	
D	Single motor mounted right angle IP69K connector	
E	Single hybrid cable with AKD2G connector.	
F	Single hybrid cable with AKD2G connector covered by food grade tubing.	
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 is preconfigured for AKD-B/P/T/M. Cable comes with flying power leads and mounted feedback connector. Power leads have assembled metal ferrules, ready for connection to the AKD (see AKD installation manual).	
P	Single motor mounted straight IP69K connector	
T	Single hybrid cable with AKD connector covered by food grade tubing. Cable is preconfigured for AKDB/P/T/M. Cable comes with flying power leads and mounted feedback connector. Power leads have assembled metal ferrules, ready for connection 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 Integrated Cable and Connector Options - Feedback: 2-, C-, R-, DA, DB, GA, GB, GG, GH, LA, LB, RA, RB, RC, RD

The dual cable option independently provides power and feedback signals, over separate cables.

CODE	DESCRIPTION	CABLE CONNECTION
A	Dual right angle motor mounted IP69K connectors	
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.	
H	Dual straight motor mounted IP69K connector	
L	Dual cable with flying leads. Power and feedback cables only available as flying leads without ferrules.	
M	Dual cable with flying leads covered by food grade tubing. Power and feedback cables only available as flying leads without ferrules.	
R	Dual cable with non-stainless steel vented connector with air pressure compensation for third-party drives. 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.	

Integrated Cable and Connector Options

AKMH Integrated Cable Material Specifications and Characteristics

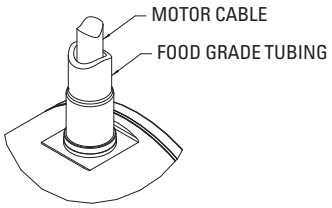
Specifications:

- 600 VAC + 105 °C rated, 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, meeting required standards of 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 jacket material
- Not food contact rated
- **Cable Diameters:**
  - 15.25 mm [0.60 in.] for Hybrid Cable or Power Cable 12 A and less motors (150 mm [6 in.] Bend radius)
  - 16.38 mm [0.65 in.] for Hybrid Cable or Power Cable above 12 A, but less than 20A (165 mm [6.5 in.] Bend radius)
  - 11.56 mm [0.46] for secondary feedback cable (115 mm [4.6 in.] Bend radius)
- Bend radius limited to 10X diameter static, no dynamic rating
- Exceeding the bend radius can potentially cause permanent damage to cable properties or premature failure
- 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:

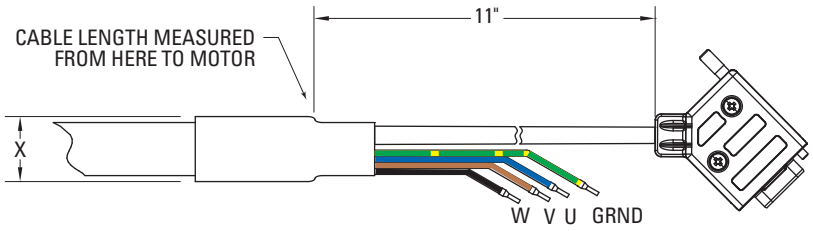
Optional food-grade tubing should be utilized where the motor cable is routed through a zone in which the cable could contact food. For standard offerings of food grade tubing consider Connector and Cable Options: F, G, T and W when using a single motor cable (i.e. hybrid motor and feedback cable) or Options: G, M and W when using dual cables. The food-grade tubing is FDA approved material certified by the NSF 51 standard.

Food Grade Tubing Option



Hybrid Cable

Wire Size Chart	
Current	**"X"**
Hybrid Cable or Power Cable UP TO 12 A	.700 in
Hybrid Cable or Power Cable 12 A 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)

AKMH Integrated Cable Specifications

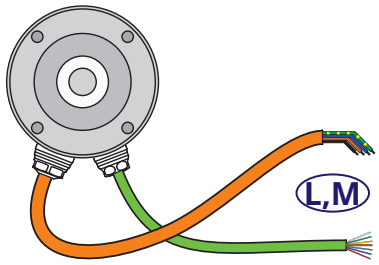
Code	Cable Type	Configuration		Current Rating Amps	Cross Section Dia. Ø mm	Minimum Bending Radius mm	Remarks
B, L, R, V	Power	(4xAWG14)		≤ 10	15.24	150	–
		(4xAWG12)		10-20	16.38	165	
	Feedback	(8x2xAWG24)		–	11.56	115	
B, C, N (AKD-N), R, V	Hybrid	(4xAWG14 +2xAWG18 +2xAWG22)	(Power +Brake +Feedback)	≤ 10	15.24	150	SFD3 / SFD-M / HDSL 4 power lines 2 brake lines 2 signal lines
		(4xAWG12 +2xAWG18 +2xAWG22)		10-20	16.38	165	
G, M, W	Power	(4xAWG14)		≤ 10	15.24	255	With silicone FDA tubing
		(4xAWG12)		10-20	16.38	255	
	Feedback	(8x2xAWG24)		–	11.56	255	
G, W	Single Tube Covered Hybrid with Connector	(4xAWG14 +2xAWG18 +2xAWG22)	(Power +Brake +Feedback)	≤ 10	15.24	150	SFD3 / SFD-M / HDSL 4 power lines 2 brake lines 2 signal lines With silicone FDA tubing
		(4xAWG12 +2xAWG18 +2xAWG22)		10-20	16.38	165	
E (AKD2G) K (AKD)	Hybrid with Connector/ Flying Leads	(4xAWG14 +2xAWG18 +2xAWG22)	(Power +Brake +Feedback)	≤ 10	15.24	150	SFD3 / SFD-M / HDSL 4 power lines 2 brake lines 2 signal lines
		(4xAWG12 +2xAWG18 +2xAWG22)		10-20	16.38	165	
F (AKD2G), T (AKD)	Single Tube Covered Hybrid with Connector/ Flying Leads	(4xAWG14 +2xAWG18 +2xAWG22)	(Power +Brake +Feedback)	≤ 10	15.24	255	SFD3 / SFD-M / HDSL 4 power lines 2 brake lines 2 signal lines With silicone FDA tubing
		(4xAWG12 +2xAWG18 +2xAWG22)		10-20	16.38	255	

Integrated Cable Flying Lead Wire Designations

Power Cable Leads

Power ± Brake

Wire Color	Function
Brown	Phase V
Blue	Phase U
Black	Phase W
Green/Yel	Ground
Red	Br+
Blue	Br-



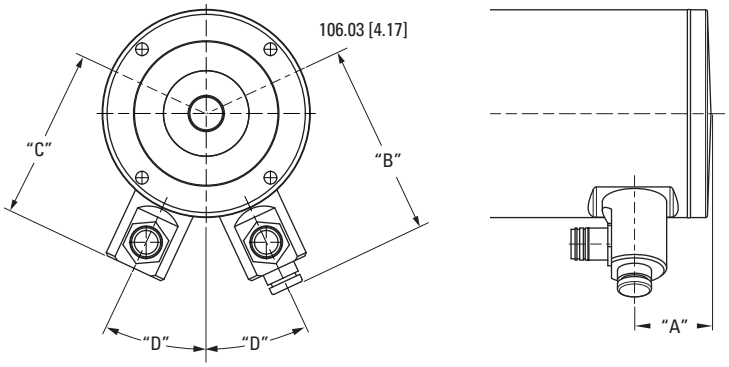
Feedback Cable Leads

Wire Color	Comcoder 2-	HIPERFACE HIPERFACE DSL GA, GB, GE, GF	EnDAT 2.1 DA, DB, LA, LB	Resolver R-
Pink	B+	COS+	A-	S3 SIN-
Gray	B-	COS-	A+	S1 SIN+
White	A+	SIN+	B-	R2 REF-
Brown	A-	SIN-	B+	R1 REF+
Green	Z+	DATA-	DATA-	S4 COS-
Yellow	Z-	DATA+	DATA+	S2 COS+
Blue	GND	GND	GND	–
Violet	TH+	TH+	TH+	TH+
Black	TH-	TH-	TH-	TH-
Red	Up	Up	Up	–
Wht/Grn	Hall U	–	Clock+	–
Wht/Yel	Hall V	–	–	–
Gray/Pink	Hall W	–	–	–
Brown/Grn	–	–	Clock-	–

Integrated Cable and Connector Options

AKMHxx Integrated Connector Options A-, D-, H-, P- Dimensions

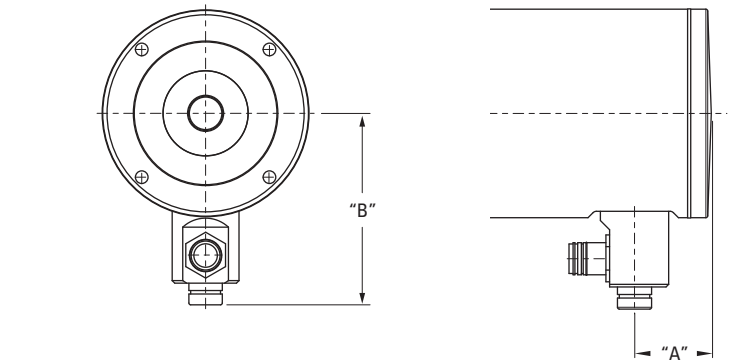
A- Connector



AKMHx	"A"	"B" Max.	"C" Max.	"D"
AKMH2	Contact Kollmorgen Customer Support for Co-Engineered Solutions			
AKMH3				
AKMH4	42.3 [1.67]	110.75 [4.36]	99.75 [3.93]	25 [0.98]
AKMH5	42.3 [1.67]	127.5 [5.02]	116.5 [4.59]	25 [0.98]
AKMH6	42.7 [1.68]	146.5 [5.77]	135.5 [5.33]	17.5 [0.69]

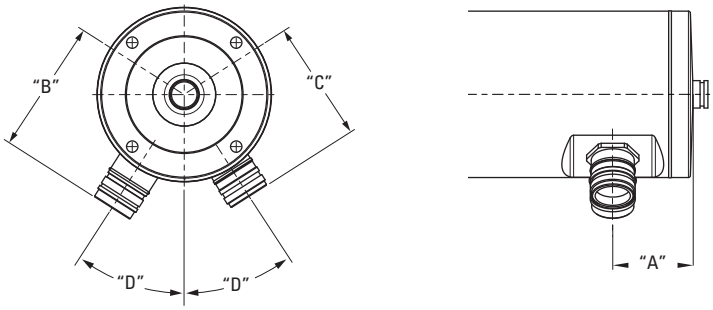
AKMH54H with D- Connector

D- Connector

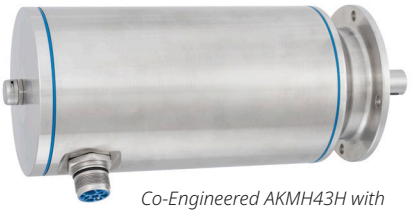


AKMHx	"A"	"B" Max.
AKMH2	Contact Kollmorgen Customer Support	
AKMH3	41.1 [1.62]	98.0 [3.86]
AKMH4	42.3 [1.67]	110.75 [4.36]
AKMH5	42.3 [1.67]	127.5 [5.02]
AKMH6	42.7 [1.68]	146.5 [5.77]

H- Connector

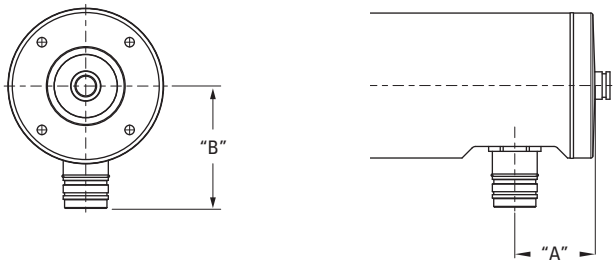


AKMHx	"A"	"B" Max.	"C" Max.	"D"
AKMH2	41.1 [1.62]	72.5 [2.85]	63.0 [2.48]	37.5 [1.48]
AKMH3	41.1 [1.62]	77.5 [3.05]	68.0 [2.68]	32.5 [1.28]
AKMH4	Contact Kollmorgen Customer Support for Co-Engineered Solutions			
AKMH5				
AKMH6				



Co-Engineered AKMH43H with P- Connector

P- Connector

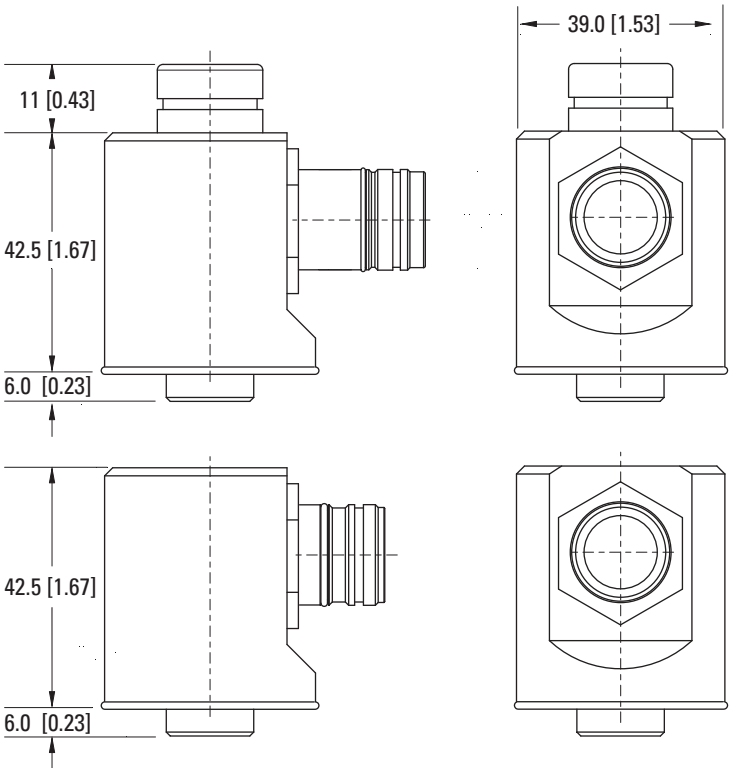


AKMHx	"A"	"B" Max.
AKMH2	41.1 [1.62]	72.5 [2.85]
AKMH3	Contact Kollmorgen Customer Support for Co-Engineered Solutions	
AKMH4		
AKMH5		
AKMH6		

Dimensions are in mm [inches].

AKMHxx Integrated Connectors A- and D- Detail

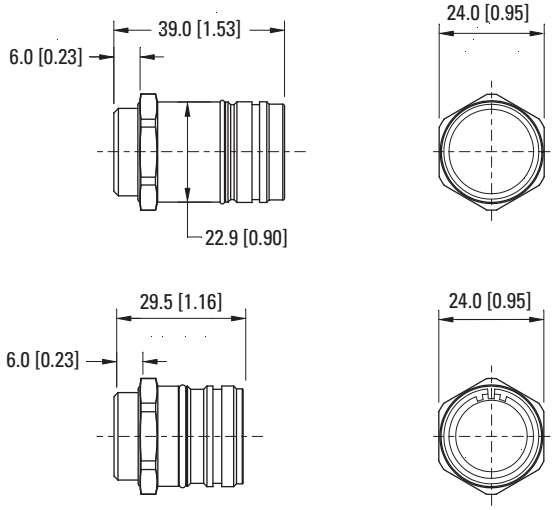
A-, D- Connector Detail

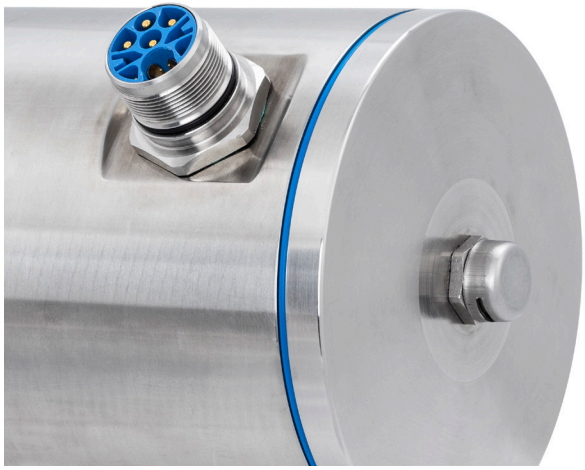


D- Connector

AKMHxx Integrated Connectors H- and P- Detail

H-, P- Connector Detail





P- Connector

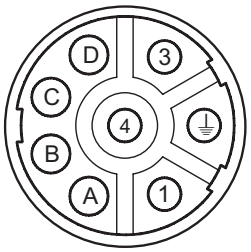
Dimensions are in mm [inches].

AKMH Connector Pinouts

Hybrid Cable Connector Pinouts

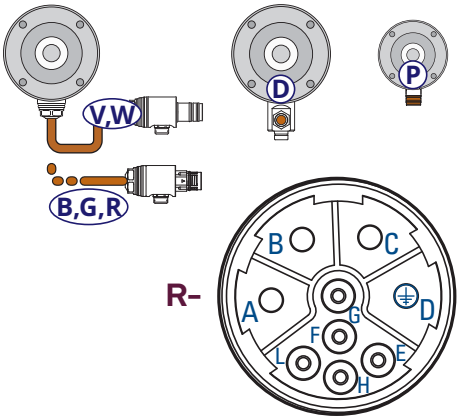
B-, D-, G-, P- (AKMH2 only), V-, W-

Combined Power & Feedback Pinout



Power + SFD-M / SFD3 / HDSL

Pin	Function
1	U
⏚	PE
3	W
4	V
A	Brake +
B	Brake –
C	SFD-M– / SFD3 – / HDSL –
D	SFD-M+ / SFD3 + / HDSL +



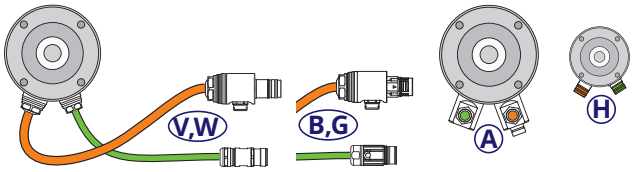
3rd Party Mating Hybrid Connector

Power ±Brake + HDSL

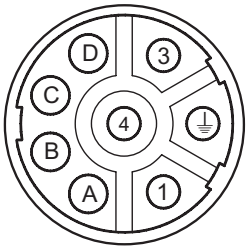
Pin	Function
A	Phase U
B	Phase V
C	Phase W
D	PE
E	N/C
F	Brake +
G	Brake –
H	HDSL–
L	HDSL+

Dual Cable Connector Pinouts

A-, B-, G-, H- (AKMH2-3 only), V-, W-

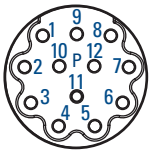


Power Connector Pinout



Power

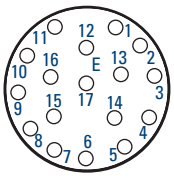
Pin	Function
1	U
⏚	PE
3	W
4	V
A	Brake +
B	Brake -
C	N/C
D	N/C



Resolver

Pin	Function
1	N/C
2	Thermal Sensor +
3	S4 COS –
4	S3 SIN –
5	R2 REF –
6	Thermal Sensor –
7	S2 COS +
8	S1 SIN +
9	R1 REF +
10	N/C
11	N/C
12	N/C

17-pin Feedback Connector Pinout



Commutating Encoder

Pin	Function
1	B
2	$\overline{B}$
3	A
4	$\overline{A}$
5	Z
6	$\overline{Z}$
7	GND
8	Thermal Sensor +
9	Thermal Sensor –
10	Vcc
11	N/C
12	N/C
13	N/C
14	N/C
15	U
16	V
17	W

EnDat/BiSS

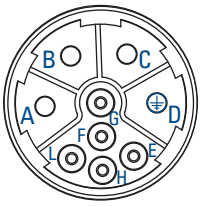
Pin	Function
1	B –
2	GND
3	A –
4	Vcc
5	Data
6	N/C
7	Thermal Sensor +
8	Clock
9	B +
10	Un Sense (Common)
11	A +
12	Up Sense (VCC)
13	$\overline{Data}$
14	Thermal Sensor –
15	$\overline{Clock}$
16	N/C
17	N/C

HIPERFACE Analog

Pin	Function
1	SIN +
2	GND
3	COS +
4	Vcc
5	Data
6	N/C
7	Thermal Sensor +
8	N/C
9	REF SIN
10	N/C
11	REF COS
12	N/C
13	$\overline{Data}$
14	Thermal Sensor –
15	N/C
16	N/C
17	N/C

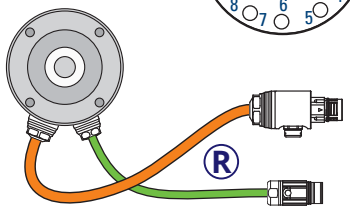
3rd Party Mating Dual Cable Connector Pinouts, R-

3rd Party Mating Connector Pinouts, R-

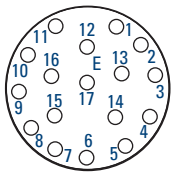


Power ±Brake

Pin	Function
A	Phase U
B	Phase V
C	Phase W
D	PE
E	N/C
F	Brake +
G	Brake –
H	N/C
L	N/C



HIPERFACE Analog



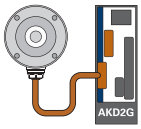
HIPERFACE Analog

Pin	Function
1	SIN +
2	SIN –
3	COS +
4	COS –
5	Data +
6	Data –
7	N/C
8	N/C

Pin	Function
9	N/C
10	N/C
11	Vcc
12	GND
13	Thermal Sensor +
14	Thermal Sensor –
15	N/C
16	N/C
17	N/C

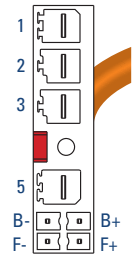
AKD2G Servo Drive Cable Pinouts

E-, F-



Power ± Brake + SFD-M/SFD3/HDSL

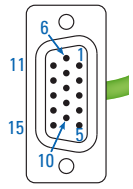
AKD2G X1/X2	Function
1	Phase U
2	Phase V
3	Phase W
Retention Latch, Shield Screw	
5	PE
B+	Brake +
B–	Brake –
F+	SFD-M/SFD3/HDSL+
F–	SFD-M/SFD3/HDSL–



AKD2G X1/X2 Connector

AKD2G X23 Legacy Feedback Connector

AKD2G X23 Connector

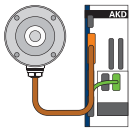


AKD X10 Connector

Pin	Signal
1	Hall U
2	Hall V / CLK+
3	Hall W / CLK-
4	SEN+
5	SEN-
6	COM+ / R1 Ref+ / Data+ / Zero+
7	COM- / R1 Ref- / Data- / Zero-
8	Th+
9	Th-
10	+5 V / 8-9 V
11	0 V
12	S1 SIN+ / A+
13	S3 SIN- / A-
14	S2 COS+ / B+
15	S4 COS- / B-

AKD Servo Drive Cable Pinouts

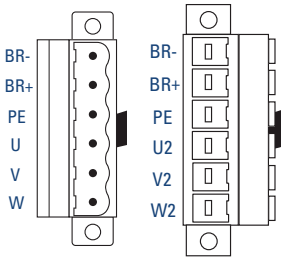
K-, T-



Power ± Brake

AKD X2	Function	AKM2G M23
BR–	Brake –	D
BR+	Brake +	A
PE	PE	⏚
U / U2	Phase U	U
V / V2	Phase V	V
W / W2	Phase W	W

AKD X2 Connector



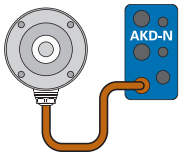
SFD-M / SFD3 / HDSL

AKD X10 Connector

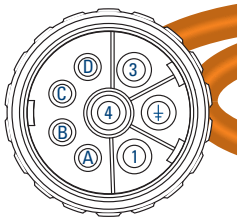
Pin	Signal
6	COM+ / Data+
7	COM- / Data-
10	+5 V / 8-9 V
11	0 V

AKD-N Servo Drive Cable Pinouts

N-



AKD-N X4 Connector

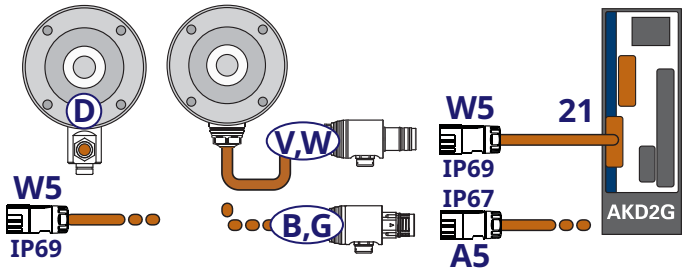


Power ±Brake + SFD-M / SFD3 / HDSL

AKD-N X4 Pin	Function
1	U
⏚	PE
3	W
4	V
A	Brake +
B	Brake –
C	COM –
D	COM +

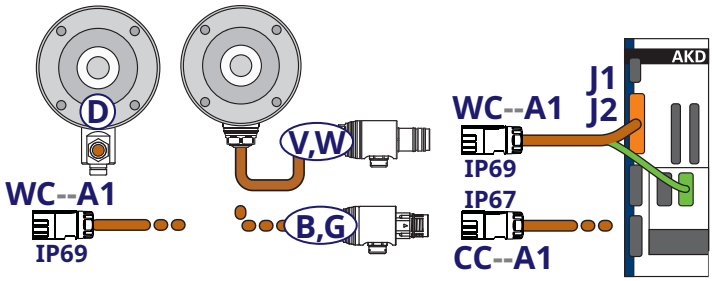
AKMH Cable Lookup Tables

Hybrid Single Cable Options



AKMH Motor to AKD2G Servo Drive

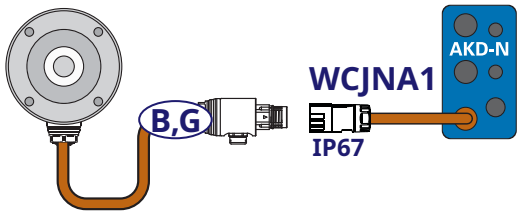
Voltage (VAC)	Drive	Motor Feedback	Motor Connector	Current Rating	Hybrid Cable
120-240	AKD2G-6V03S AKD2G-6V06S AKD2G-6V12S AKD2G-6V03D AKD2G-6V06D	SFD3 (CA) SFD-M (CB) HIPERFACE DSL (GE, GF)	Single Right Angle IP69K (**D**) Single Cable w/vented connector IP69K (**V**) Single Cable Covered by food grade tubing w/vented connector IP69K (**W**)	Arms < 15 A	H2-**21**-015-**W5**-00-XXXX00
240-480	AKD2G-7V03S AKD2G-7V06S AKD2G-7V12S AKD2G-7V03D AKD2G-7V06D				
120-240	AKD2G-6V03S AKD2G-6V06S AKD2G-6V12S AKD2G-6V03D AKD2G-6V06D	SFD3 (CA) SFD-M (CB) HIPERFACE DSL (GE, GF)	Single Cable w/vented Speedtec connector IP67 (**B**) Single Cable Covered by food grade tubing w/vented Speedtec connector IP67 (**G**)	Arms < 15 A	H2-**21**-015-**A5**-00-XXXX00
240-480	AKD2G-7V03S AKD2G-7V06S AKD2G-7V12S AKD2G-7V03D AKD2G-7V06D				



AKMH Motor to AKD Servo Drive

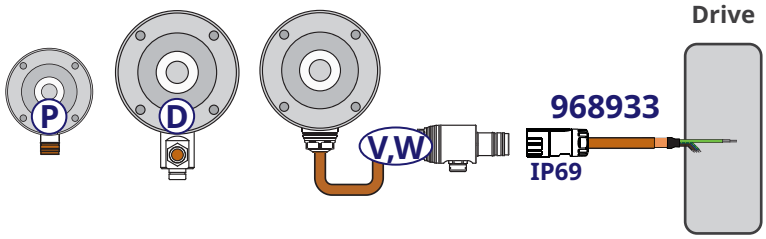
Voltage (VAC)	Drive	Motor Feedback	Motor Connector	Current Rating	Hybrid Cable
120-240	AKD-x00306 AKD-x00606	SFD3 (CA) SFD-M (CB) HIPERFACE DSL (GE, GF)	Single Right Angle IP69K (**D**) Single Cable w/vented connector IP69K (**V**) Single Cable Covered by food grade tubing w/vented connector IP69K (**W**)	Arms < 15 A	**WCJ1A1**-015-XXX-00
240-480	AKD-x00307 AKD-x00607 AKD-x01207				**WCJ2A1**-015-XXX-00
	AKD-X02407			Arms < 20 A	**WCJ2A1**-025-XXX-00
120-240	AKD-x00306	SFD3 (CA) SFD-M (CB) HIPERFACE DSL (GE, GF)	Single Cable w/vented Speedtec connector IP67 (**B**) Single Cable Covered by food grade tubing w/vented Speedtec connector IP67 (**G**)	Arms < 15 A	**CCJ1A1**-015-XXX-00
240-480	AKD-x00606 AKD-x00307 AKD-x00607				**CCJ2A1**-015-XXX-00
	AKD-x01207			Arms < 20 A	**CCJ2A1**-025-XXX-00

Hybrid Single Cable Options



AKMH Motor to AKD-N Servo Drive

Voltage (V_{AC})	Drive	Motor Feedback	Motor Connector	Current Rating (A)	Hybrid Cable
240-480	AKD-N00307 AKD-N00607 AKD-N01207	SFD3 (CA) SFD-M (CB) HIPERFACE DSL (GE, GF)	Single Cable w/vented connector IP67K (N)	Rms < 15	WCJNA1-015-XXX

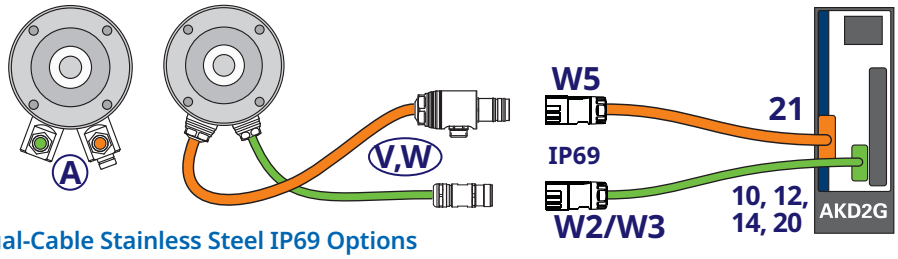


AKMH Motor to Select 3rd-party Servo Drives

Voltage (VAC)	Drive	Motor Feedback	Motor Connector	Current Rating	Hybrid Cable
120-480	Select 3rd-party Drives	RE- Single turn HIPERFACE DSL for select 480V Drives RF- Multi-turn HIPERFACE DSL for select 480V Drives RG- Single turn HIPERFACE DSL for select 240V Drives RH- Multi-turn HIPERFACE DSL for select 240V Drives	V- Cable mounted IP69K vented connector W- Cable mounted IP69K vented connector with food grade tubing P- Straight motor mounted IP69K connector D- Single motor mounted right angle IP69K connector	Arms < 20 A	968933-xx

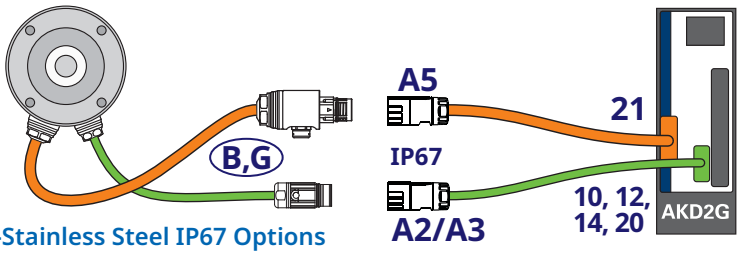
AKMH Cable Lookup Tables

Dual Cable Options



AKMH Motor to AKD2G Servo Drive Dual-Cable Stainless Steel IP69 Options

Motor Connector	Motor Feedback	Brake Option	Current Rating	Power Cable	Feedback Cable
A- IP69 Dual Right Angle connectors V- IP69 Stainless steel Speedtec vented connector W- IP69 Stainless steel Speedtec vented connector with food grade tubing	2- 2048 Line commutating encode	brake	Arms < 15 A	P2-**21**-015-**W5**-00-XXXX00	F1-**20**-FB4-**W3**-00-XXXX00
		no brake		P1-**21**-015-**W5**-00-XXXX00	
	DA- Single turn Endat optical encoder DB- Multi-turn Endat optical encoder LA- Single turn Endat inductive encoder LB- Multi-turn Endat inductive encoder	brake	Arms < 15 A	P2-**21**-015-**W5**-00-XXXX00	F1-**12**-FB4-**W3**-00-XXXX00
		no brake		P1-**21**-015-**W5**-00-XXXX00	
	GJ- Single turn absolute HIPERFACE encoder GK- Multi-turn absolute HIPERFACE encoder	brake	Arms < 15 A	P2-**21**-015-**W5**-00-XXXX00	F1-**14**-FB6-**W3**-00-XXXX00
		no brake		P1-**21**-015-**W5**-00-XXXX00	
	R- Resolver	brake	Arms < 15 A	P2-**21**-015-**W5**-00-XXXX00	F1-**10**-FB2-**W2**-00-XXXX00
		no brake		P1-**21**-015-**W5**-00-XXXX00	

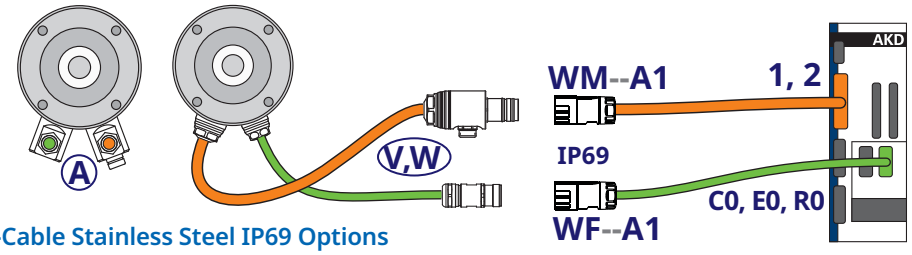


AKMH Motor to AKD2G Servo Drive Dual-Cable Non-Stainless Steel IP67 Options

Motor Feedback	Motor Connector	PUR / PVC Jacket	Brake Option	Current Rating	Power Cable	Feedback Cable
B- IP67 non-stainless steel Speedtec vented connector G- IP67 non-stainless steel Speedtec vented connector with food grade tubing	2- 2048 Line commutating encoder	PVC	brake	Arms < 15 A	P6-21-015-A5-00-XXXX00	F5-20-FB4-A3-00-XXXX00
			no brake		P5-21-015-A5-00-XXXX00	
		PUR	brake		P2-21-015-A5-00-XXXX00	F1-20-FB4-A3-00-XXXX00
			no brake		P1-21-015-A5-00-XXXX00	
	DA- Single turn Endat optical encoder DB- Multi-turn Endat optical encoder LA- Single turn Endat inductive encoder LB- Multi-turn Endat inductive encoder	PVC	brake	Arms < 15 A	P6-21-015-A5-00-XXXX00	F5-12-FB4-A3-00-XXXX00
			no brake		P5-21-015-A5-00-XXXX00	
		PUR	brake		P2-21-015-A5-00-XXXX00	F1-12-FB4-A3-00-XXXX00
			no brake		P1-21-015-A5-00-XXXX00	
	GJ- Single turn absolute HIPERFACE encoder GK- Multi-turn absolute HIPERFACE encoder	PVC	brake	Arms < 15 A	P6-21-015-A5-00-XXXX00	F5-14-FB6-A3-00-XXXX00
			no brake		P5-21-015-A5-00-XXXX00	
		PUR	brake		P2-21-015-A5-00-XXXX00	F1-14-FB6-A3-00-XXXX00
			no brake		P1-21-015-A5-00-XXXX00	
	R- Resolver	PVC	brake	Arms < 15 A	P6-21-015-A5-00-XXXX00	F5-10-FB2-A2-00-XXXX00
			no brake		P5-21-015-A5-00-XXXX00	
		PUR	brake		P2-21-015-A5-00-XXXX00	F1-10-FB2-A2-00-XXXX00
			no brake		P1-21-015-A5-00-XXXX00	

AKMH Cable Lookup Tables

Dual Cable Options

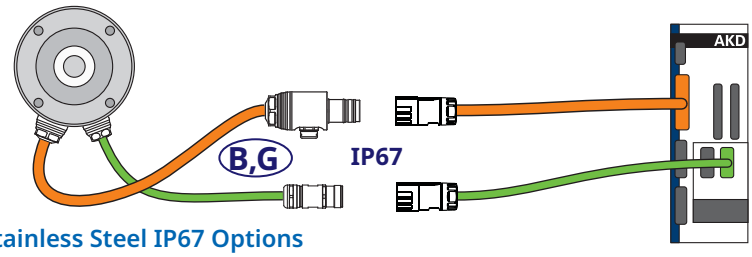


AKMH Motor to AKD Servo Drive Dual-Cable Stainless Steel IP69 Options

Voltage (VAC)	Motor Feedback	Motor Connector	Drive	Brake Option	Current Rating	Power Cable	Feedback Cable
120-240	2- 2048 line commutating encoder	A- Dual right angle motor connectors V-Dual cables fitted with IP69K stainless steel vented connector W- Dual cables fitted with IP69K stainless steel vented connector covered with food grade tubing	AKD-x00306	brake	Arms < 15 A	WM01A1-015-XXX-XX	WFC0A1-002-XXX-XX
			AKD-x00606	no brake		WM11A1-015-XXX-XX	
240-480			AKD-x00307	brake		WM02A1-015-XXX-XX	
			AKD-x00607				
			AKD-x01207	no brake		WM12A1-015-XXX-XX	
			AKD-X02407				
120-240	DA- Single turn Endat optical encoder DB- Multi-turn Endat optical encoder LA- Single turn Endat inductive encoder LB-multi turn Endat inductive encoder		AKD-x00306	brake	Arms < 15 A	WM01A1-015-XXX-XX	WFE0A1-002-XXX-XX
			AKD-x00606	no brake		WM11A1-015-XXX-XX	
240-180			AKD-x00307	brake		WM02A1-015-XXX-XX	
			AKD-x00607				
			AKD-x01207	no brake		WM12A1-015-XXX-XX	
			AKD-X02407				
120-240	R- Resolver		AKD-x00306	brake	Arms < 15 A	WM01A1-015-XXX-XX	WFR0A1-002-XXX-XX
			AKD-x00606	no brake		WM11A1-015-XXX-XX	
240-480			AKD-x00307	brake		WM02A1-015-XXX-XX	
			AKD-x00607				
			AKD-x01207	no brake		WM12A1-015-XXX-XX	
			AKD-X02407				

AKMH Cable Lookup Tables

Dual Cable Options

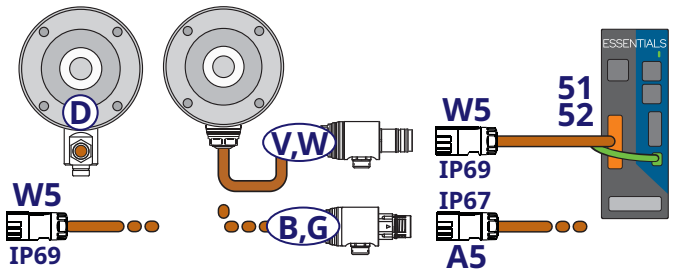


AKMH Motor to AKD Servo Drive Dual-Cable Non-Stainless Steel IP67 Options

Value Line or Flex Line Cable	Motor Feedback	Motor Connector	Brake Option	Current Rating	Power Cable	Feedback Cable
Flex Line	2- 2048 line commutating encoder	B- IP67 Speedtec Vented Connector G- IP67 Speedtec Vented Connector with Food Grade Tubing	Brake	<12 Arms	CP-507CDAN-XX-X	CF-CB7374N-XX-X
			No Brake		CP-507CCAN-XX-X	
			Brake	12-20 Arms	CP-507DDAN-XX-X	
			No Brake		CP-507DCAN-XX-X	
Flex Line	DA- Single turn Endat optical encoder DB- Multi-turn Endat optical encoder LA- Single turn Endat inductive encoder LB-multi turn Endat inductive encoder		Brake	<12 Arms	CP-507CDAN-XX-X	CF-SB7374N-XX-X
			No Brake		CP-507CCAN-XX-X	
			Brake	12-20 Arms	CP-507DDAN-XX-X	
			No Brake		CP-507DCAN-XX-X	
Value Line			Brake	<12 Arms	VP-508CFAN-XX	VF-SB4474N-XX
			No Brake		VP-508CEAN-XX	
			Brake	12-20 Arms	VP-508DFAN-XX	
			No Brake		VP-508DEAN-XX	
Flex Line	GJ- Single turn HIPERFACE encoder GK- multi-turn HIPERFACE encoder		Brake	<12 Arms	CP-507CDAN-XX-X	CFH0A1-002-XXX-XX
			No Brake		CP-507CCAN-XX-X	
			Brake	12-20 Arms	CP-507DDAN-XX-X	
			No Brake		CP-507DCAN-XX-X	
Flex Line	R- Resolver		Brake	<12 Arms	CP-507CDAN-XX-X	CF-RA2574N-XX-X
			No Brake		CP-507CCAN-XX-X	
			Brake	12-20 Arms	CP-507DDAN-XX-X	
			No Brake		CP-507DCAN-XX-X	
Value Line			Brake	<12 Arms	VP-508CFAN-XX	VF-RA2474N-XX
			No Brake		VP-508CEAN-XX	
			Brake	12-20 Arms	VP-508DFAN-XX	
			No Brake		VP-508CEAN-XX	

Kollmorgen Essentials Cable Options

Hybrid Cable Options



AKMH Motor to Kollmorgen Essentials Servo Drive

Voltage (VAC)	Drive	Motor Feedback	Motor Connector	Current Rating	Hybrid Cable
120-240	KED-6V03S	SFD3 (CA) SFD-M (CB)	Single Right Angle IP69K (**D**)	Arms < 15 A	H2-**51**-015-**W5**-00-XXXX00
	KED-6V06S				
	KED-6V12S		Single Cable w/vented connector IP69K (**V**)	Arms < 20 A	H2-**52**-025-**W5**-00-XXXX00
240-480	KED-7V03S			Arms < 15 A	H2-**52**-015-**W5**-00-XXXX00
	KED-7V06S		Single Cable Covered by food grade tubing w/vented connector IP69K (**W**)		
	KED-7V12S			Arms < 20 A	H2-**52**-025-**W5**-00-XXXX00
120-240	KED-6V03S	SFD3 (CA) SFD-M (CB)	Single Cable w/vented Speedtec connector IP67 (**B**)	Arms < 15 A	H2-**51**-015-**A5**-00-XXXX00
	KED-6V06S				
	KED-6V12S			Arms < 20 A	H2-**52**-025-**A5**-00-XXXX00
240-480	KED-7V03S		Single Cable Covered by food grade tubing w/vented Speedtec connector IP67 (**G**)	Arms < 15 A	H2-**52**-015-**A5**-00-XXXX00
	KED-7V06S				
	KED-7V12S			Arms < 20 A	H2-**52**-025-**A5**-00-XXXX00

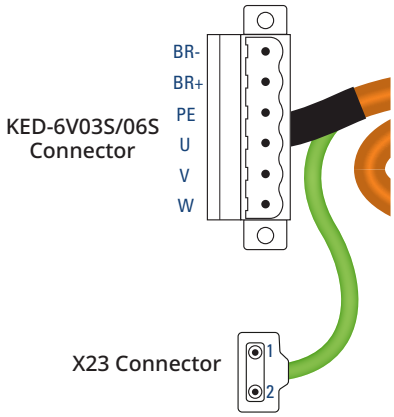
Kollmorgen Essentials Servo Drive Cable Pinouts

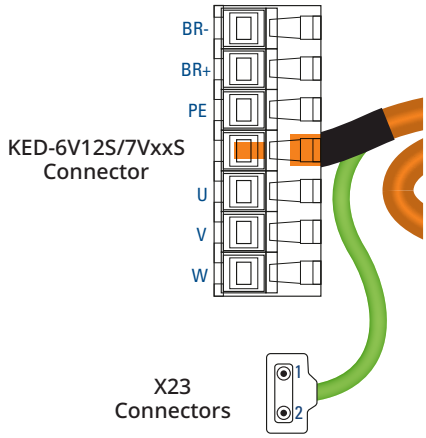
Power ± Brake

KED X1	Function
BR-	Brake +
BR+	Brake –
PE	PE
U	Phase U
V	Phase V
W	Phase W

SFD-M/SFD3

KED X23	Function
F-	SFD-M/SFD3
F-	SFD-M/SFD3





AKMH Technical Guide

I. General Technical Data

Ambient Temperature: 0...+25 °C for site altitude up to 1000 m amsl (at rated values). It is vital to consult our applications department for ambient temperatures above 40 °C and/or any enclosed environment.

Power De-rating:
(currents and torques)

1% / °C in range 40 °C...50 °C up to 1000 m amsl for site altitude above 1000 m amsl and 40 °C

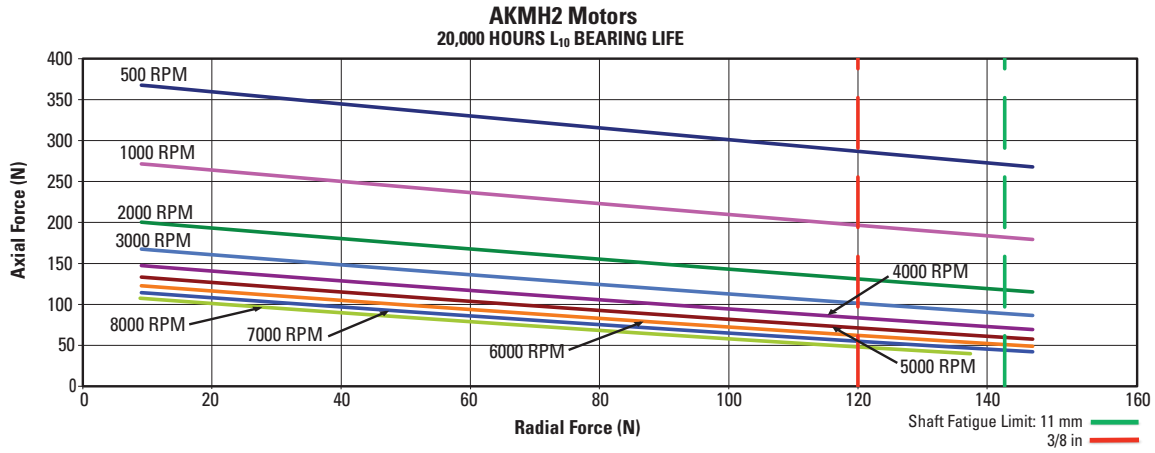
- 6% up to 2000 m amsl
- 17% up to 3000 m amsl
- 30% up to 4000 m amsl
- 55% up to 5000 m amsl

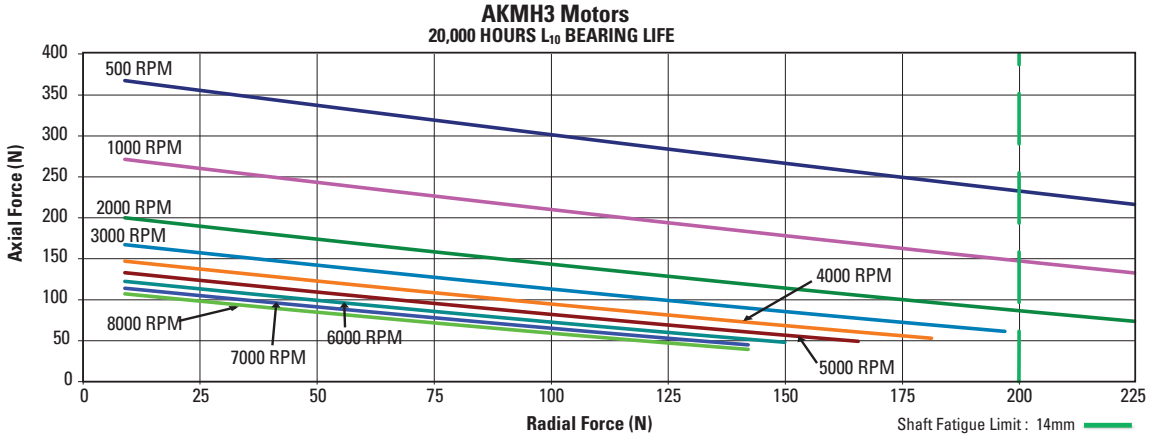
For site altitudes above 1000 m amsl, no de-rating with temperature reduction of 10 °C / 1000 m

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

Ball-bearing Life: ≥ 20,000 operating hours

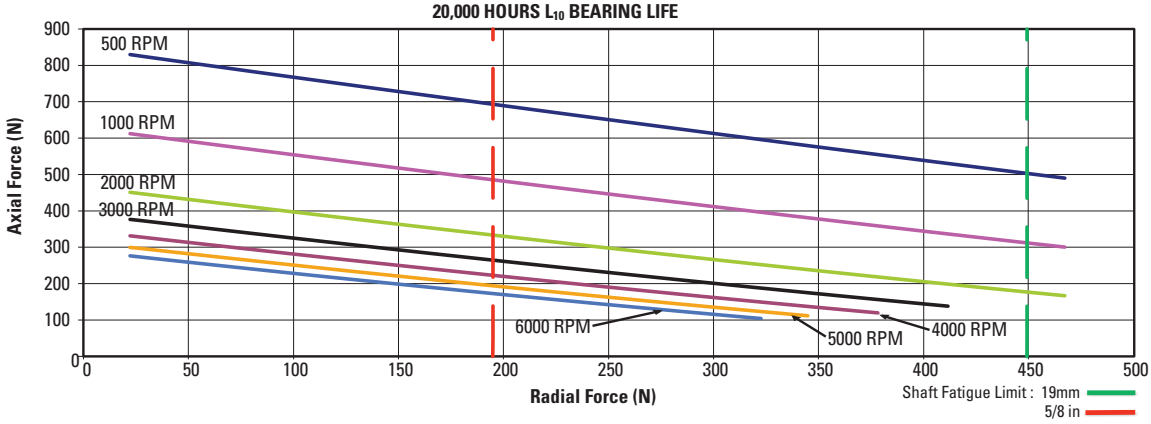
II. L10 Bearing Fatigue





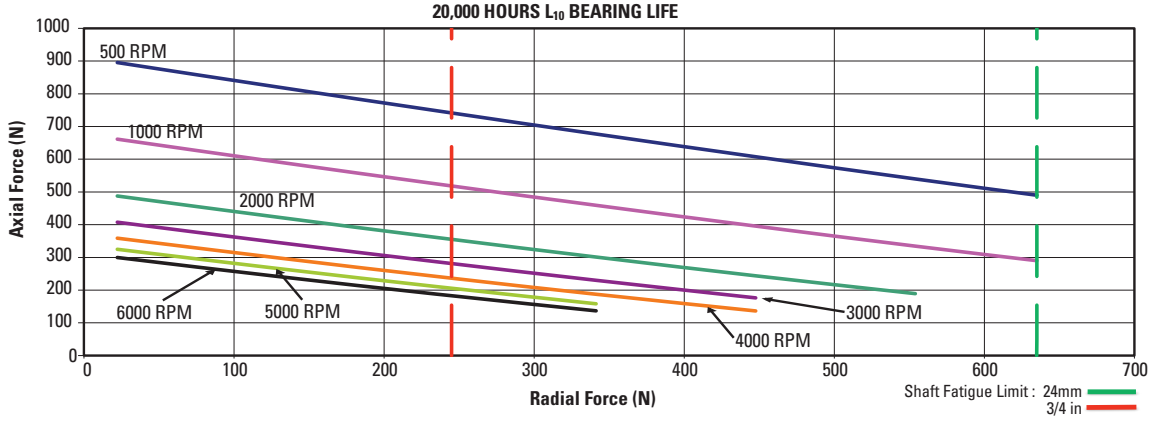
AKMH4 Motors

20,000 HOURS L_{10} BEARING LIFE



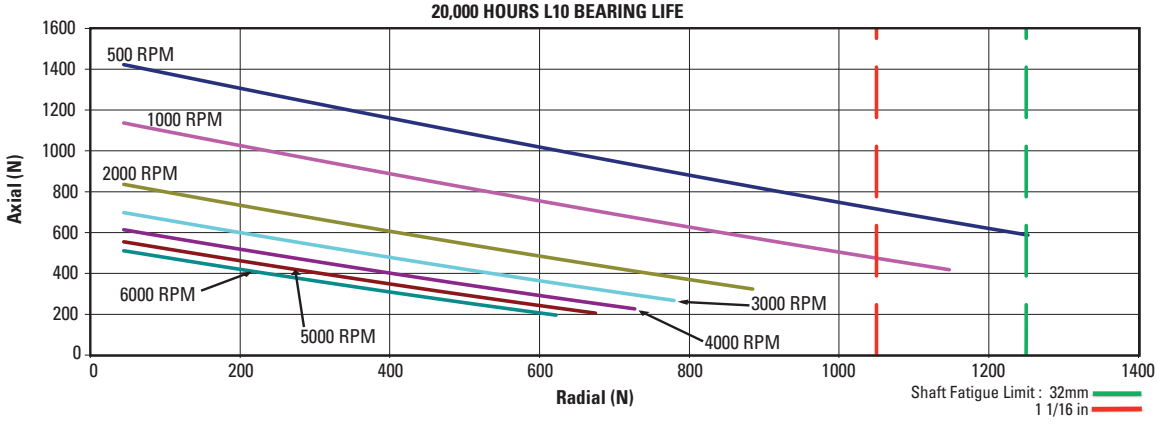
AKMH5 Motors

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:

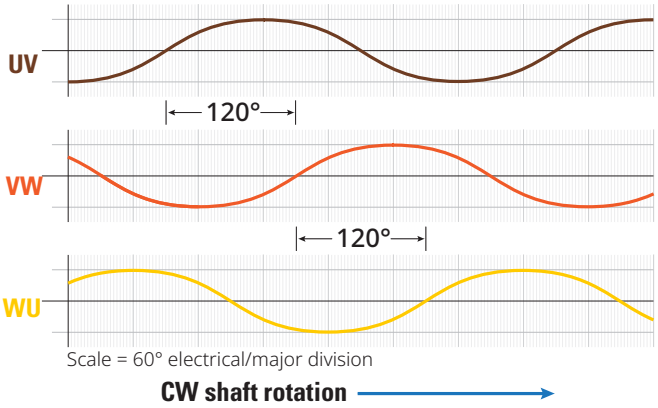
1. Motors are operated with peak torque of the longest stack length of the frame size.
2. Constant radial load on the end of the shaft for the smallest OD and longest standard shaft extension; excluding AKMH4X-CC which is rated at 240 N maximum radial force.
3. Infinite life with 99% reliability.
4. Safety factor = 2.

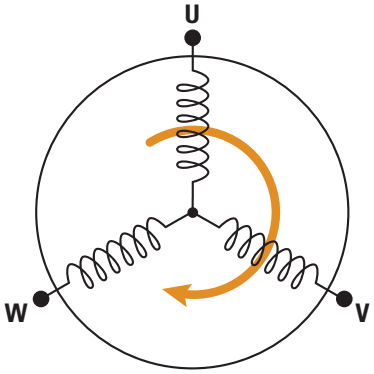
IV. Servo Motor Phasing Diagram

When the motor is rotated clockwise (CW) as viewed from front shaft end, the following BEMF voltage waveforms result:

» Voltage phase-UV leads Voltage phase-VW by 120-degrees
» Voltage phase-VW leads Voltage phase-WU by 120-degrees
» Voltage phase-WU leads Voltage phase-UV by 120-degrees

BEMF Waveforms





V. Protection Class

Shaft Seal	Flange Sealing	Protection Class
EPDM (K) or Viton (V)	O-Ring	IP69K

Protection class IP69K has been created for high pressure and high temperature cleaning according to DIN 40050-9. Code "6" (Dust tight. No ingress of dust.) defines the protection against solids. Code "9K" (Protected against close-range high pressure, high temperature spray downs.) defines the protection against liquids.

IP69K protection class is for static use only. This rating 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

AKMH motors are insulation class F according to IEC 60085 (UL1446 class F).

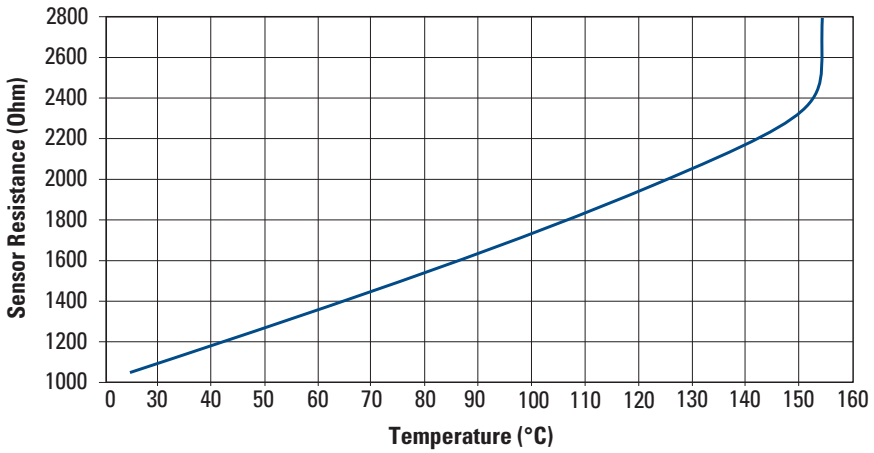
VII. Surface

The AKMH motor housing is made from 316L or 1.4404 stainless steel with surface roughness < 0.8 µm pursuant to EHEDG requirements.

IIX. Protective Device

AKMH motors are fitted with an electrically isolated temperature sensor (rated temperature 155 °C ± 5%) and integrate into the motor temperature monitoring system (e.g. Kollmorgen's AKD). The standard motor option is equipped with a KTY83-110 equivalent thermal sensor and serially connected PTC thermistor, with a threshold limit setting of 2500 Ohms.

The standard sensor option is defined by following diagram:



Please note, these protection devices are for monitoring and protecting the motor during normal operation and when attempting to maximize operation—they should not be expected to provide protection against a short or other overload event.

IX. Vibration Class

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

AKMH motors are designed and manufactured to meet vibration class A (EN 60034-14). Hence, a defined speed range of 600 to 3600 rpm, with a frame size between 56 and 132 mm, means the permitted vibration is 1.6 mm/s.

AKMH Co-Engineered 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 to different degrees to suit your specific needs – without significant sacrifice of lead time or cost. 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 engineering team has decades of experience in motor design, 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 AKMA 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 50 years of experience in the AKM2G, AKM, AKM Washdown, AKM Washdown Food, AKMA anodized 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 Food Grade	AKMA	AKMH
Housing Material & Coating	Square-frame A380 Aluminum polyester powder coating; matte black	Square-frame A380 Aluminum 2K epoxy paint; gray	Square-frame A380 Aluminum 2K epoxy FDA-compliant paint; white	Round-frame 6082 Aluminum Anodized; satin gray	Round-frame 1.4404/316 Stainless steel; Surface roughness < 0.8 µm per EHEDG requirement
Mounting Style	Flange	Flange	Flange	Flange	Flange or Face
Ingress Protection (IP)	IP65 (static); w/shaft seal	IP67 (static)	IP67 (static)	IP69K (static)	IP69K (static)
IP Rating Definition	6 = Dust-tight				
	5 = Water jets (7 is possible w/ straight conn.)	7 = Immersion up to 1m, for 30 min.		9K = High-pressure/High-temp	
Shaft Seal	1 = Teflon shaft seal	0W = includes Teflon shaft seal	0F = includes IP67 Food-Grade PTFE shaft seal	IP69K Food-Grade PTFE shaft seal	IP69K Food-Grade PTFE shaft seal
Typical Connectors	Nickel-plated TE/ Intercontect Connectors	SS Hummel Connectors (unpainted)	SS Hummel Connectors (unpainted)	IP69K SS Motor-mounted Hummel Connectors	IP69K integrated motor cable; optional IP69K SS Motor-mounted Hummel Connectors
Application Examples	• General factory automation where exposure to contaminants (i.e. fluids, oil, dust) is possible	• Food and beverage • Packaging (i.e. transport axes with no direct contact to food) • General factory automation (i.e. similar applications to AKM with added protection and longevity)	• Food and beverage • Packaging • Cutting • Packing and filling where direct contact to food is possible (motor positioned laterally or below food)	• Food and beverage (i.e. meat slicing, proportioning, dispensing applications where direct contact to food is likely) • Pharmaceutical production • Medical laboratories • Radar stations • Harsh outdoor applications	• Food and beverage (including food contact and splash zones) • Packaging • Machine applications requiring heavy sanitization or exlusive use of stainless components (i.e. use of highly acidic, caustic chemicals) • Pharmaceutical production • Medical laboratories
Relative Price	$	$+	$++	$$	$$$

Kollmorgen Servo Drive Solutions

AKD Product Family

Kollmorgen offers an extensive range of servo drives, designed to provide precise control, optimum torque and a rich feature set to complement our wide range of rotary servo motors and linear positioning systems. The AKD product family of servo drives offer the broadest connectivity with the most advanced control technology, simplified commissioning and compact packaging available in the global marketplace.

AKD Product Family

Parameter	AKD2G	AKD	AKD BASIC	AKD PDMM	AKD-N/AKD-C
Base I/O	12 digital 2 analog	11 digital 2 analog	11 digital 2 analog	17 digital 2 analog	5 digital
Expansion I/O[1]	8 digital 2 analog *Drive size is the same	No	20 digital 2 analog *adds 30 mm to the drive width for drives up to 12A	Up to 1000+ remote I/O via EtherCAT	No
Safe I/O	2 digital inputs for Safey option 1 4 digital inputs for SafeMotion options	No	No	No	No
SafeMotion[2]	Yes	STO only	STO only	STO only	STO only
Optimized for single cable[3]	Yes	No	No	No	Yes
Continuous current limit[4]	24A	48A	48A	48A	12A
Connectivity[5]	Analog, EtherCAT, CANopen, Profinet IRT, Ethernet/IP, TCP/IP, Modbus/TCP	Analog, EtherCAT, CANopen, Profinet RT, Ethernet/IP, TCP/IP, Modbus/TCP	Analog	EtherCAT, CANopen, Profinet RT, Ethernet/IP, TCP/IP, Modbus/TCP	EtherCAT
Axis Configuration	single or dual	single	single	single	single
Drive-resident controller	No	No	No	Yes	No
Programmability	parameterized, 2 axes control loops, actlon table	parameterized	parameterized, BASIC programmable	parameterized, IEC 61131-3 via PLCopen or Pipe Network	parameterized
Graphical Display	160x128-pixel display	2 digit LED	2 digit LED	3 digit LED	Status LED
Removeable Memory[6]	Yes	No	Yes	Yes	No
System Architecture	Centralized	Centralized	Centralized	Centralized	Decentralized
IP Rating	IP20	IP20	IP20	IP20	IP67 (AKD-N)

Notes:
1: Add EtherCAT multi-axis master, PCMM, to the AKD drive family to enable remote I/O expansion via EtherCAT. PCMM controller functionality is built into the PDMM
2: SafeMotion includes FSoE, STO, SS1, SS2, SOS, SDB, SBC/SBT, SLS, SSR, SSM, SDI, SAR, SLA, SLI, SLP, SCA up to SIL3 / PLe
3: Single cable optimized means one single cable for power & motor feedback with 1 connector at motor end and 1 connector at drive end
4: Higher power variants under development in some models. Consult factory for availability.
5: Consult factory on connectivity options for AKD2G.
6: Optional integrated SD card for easy backup and drive cloning

Kollmorgen Essentials® Drive: Plug In. Power Up. Perform.

The Kollmorgen Essentials Drive delivers unmatched flexibility and speed for modern machine builders. With universal connectivity—including EtherCAT, PROFINET, and EtherNet/IP—in a single drive, it seamlessly integrates with Kollmorgen Automation Suite and most Industrial Ethernet controllers.

Built-in synchronization capabilities via EtherCAT, CIP Sync and PROFINET IRT ensure precise, coordinated motion across multi-axis systems, ideal for packaging and material handling applications.

Designed for rapid deployment, the drive supports simplified installation and maintenance with single-cable feedback via SFD-M, DC bus sharing for energy efficiency as well as reduced wiring complexity and commissioning in under 20 minutes using our intuitive Express Setup layout and Quick Tune functionality within our industry-best Workbench software.

Essentials Means Unparalleled Connectivity

Kollmorgen Essentials Drive

Kollmorgen's Essentials Drive includes all of the performance described previously, and is optimized to interface to a single-connector motor with Kollmorgen's Smart Feedback Device options (SFD-M or SFD3)

Multi-Protocol Support

No need to find the correct communication protocol option for your machine! All Essentials drives support multiple communication protocols out of the box. Just select between EtherNet/IP CIP Sync, EtherCAT or PROFINET IRT during setup.

Super-fast setup

Get your application up and running in 20 minutes or less with Kollmorgen's Express Setup layout within WorkBench, a simple, graphical configuration tool for PC that supports you throughout the entire commissioning process.

Versatile I/O

Each Kollmorgen Essentials Drive offers two fast digital inputs with <1 µs reaction time, which can also be utilized for a secondary, incremental feedback solution. Two standard digital inputs and outputs are also built-in.

STO

Safety is always essential!

All Essentials drives come equipped with the certified safety function Safe Torque Off (STO), up to SIL 2 / PL d.

3-6 Amp
100-240 VAC

12 Amp
100-240 VAC
3-6 Amp
240-480 VAC

12 Amp
240-480 VAC

100-240 VAC 1-3φ	Continuous Current	Peak Current	Typical Shaft Power	Height	Width	Depth	Depth w/ cable bend radius
	(Arms)	(Arms)	(kW)	mm (in)	mm (in)	mm (in)	mm (in)
KED-SPM-6V03 -A100-0000-A	3	9	0.625	172 (6.77)	60 (2.36)	165 (6.50)	225 (8.86)
KED-SPM-6V06 -A100-0000-A	6	18	1.25				
KED-SPM-6V12 -A100-0000-A	12	30	2.5	200 (7.87)	70 (2.75)	202 (7.95)	262 (10.31)

240-480 VAC 3φ	Continuous Current	Peak Current	Typical Shaft Power	Height	Width	Depth	Depth w/ cable bend radius
	(Arms)	(Arms)	(kW)	mm (in)	mm (in)	mm (in)	mm (in)
KED-SPM-7V03 -A100-0000-A	3	9	1.5	200 (7.87)	70 (2.75)	202 (7.95)	262 (10.31)
KED-SPM-7V06 -A100-0000-A	6	18	2.5				
KED-SPM-7V12 -A100-0000-A	12	30	5	220 (8.66)			

Notes

0.125 inch divisions

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- Kollmorgen Essentials Cable
- Kollmorgen Essentials Drive
- Kollmorgen Essentials Motor
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- AKD2G
- AKD PDMM
- AKM
- AKMA
- AKME
- AKMH
- BLM
- Cartridge DDR
- DDL
- DDR
- GoldLine
- Kollmorgen Automation Suite
- KAS
- Kollmorgen Visualization Builder
- KVB
- MKD
- Motioneering
- P8000
- PCMM
- PCMM2G
- PowerMax
- SafeMotion Monitor
- Servostar
- SMM
- TBM
- TBM2G
- WorkBench

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- EtherCAT: Beckhoff Automation GmbH.
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  - If SpeedTec is used as a lubricant, it belongs to Liqui-Moly GmbH.
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- Teflon: The Chemours Company FC, LLC.
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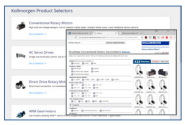

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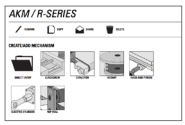

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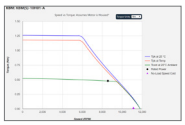

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