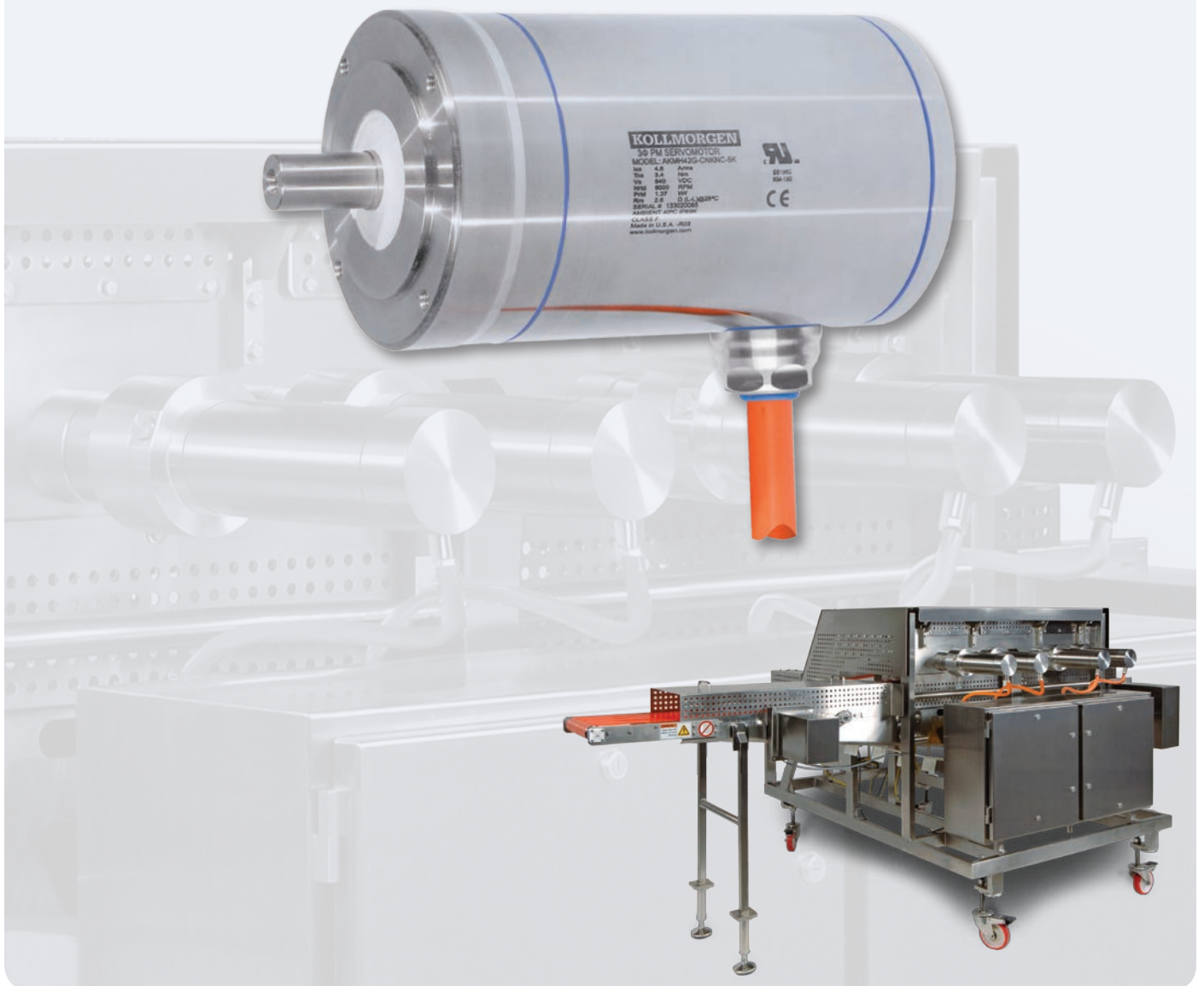


Kollmorgen AKMH™ Hygienic Stainless Steel Servomotor



KOLLMORGEN®

Because Motion Matters™

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

The ever-escalating demands of the marketplace mean increased pressure on machine designers and users at every turn. Time constraints. Demands for better performance. Having to think about the next-generation machine even before the current one is built. While expectations are enormous, budgets are not. Kollmorgen's innovative motion solutions and broad range of quality products help engineers not only overcome these challenges but also build truly differentiated machines.

Because motion matters, it's our focus. Motion can distinctly differentiate a machine and deliver a marketplace advantage by improving its performance. This translates to overall increased efficiency on the factory floor. Perfectly deployed machine motion can make your customer's machine more reliable and 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, relentlessly developing products that offer precision control of speed, accuracy and position in machines that rely on complex motion.

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 knock them down in three important ways:

Integrating Standard and Custom Products

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

Providing Motion Solutions, Not Just Components

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

Global Footprint

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

Financial and Operational Stability

Kollmorgen is part of Danaher Corporation. A key driver in the growth of all Danaher divisions is the Danaher 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.

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AKMH™

Hygienic Stainless Steel Servomotor

Kollmorgen has designed custom motors for challenging environments for over 70 years. The most notable were the motors used in Jason Jr., the ROV that was used to explore the Titanic.

The culmination of these experiences has been leveraged in the AKMH series of motors. Designed for food contact and splash zones, the AKMH reduces cleaning time and maintenance, thus directly contributing to higher overall OEE for machines.

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

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

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

AKMH™ Hygienic Stainless Steel Servomotors – The Advantages:

Increase of the overall equipment effectiveness (OEE)

Faster and environmentally-friendly cleaning	<ul style="list-style-type: none"> • Open, hygienic machine design without protective casings • Considerable reduction in the amount of cleaning agents used; less waste water
No machine failures caused by cleaning or corrosion	<ul style="list-style-type: none"> • Protection class IP69K for the motor housing, cable screw connection, and shaft seal • Designed for regular high-pressure and high-temperature cleaning • Cable and sealing elements are resistant to standard cleaning agents • No corrosion inside the motor: pressure compensation via the cable prevents moisture in the motor
Lower operating costs	<ul style="list-style-type: none"> • Increased machine availability thanks to faster cleaning • Faster cleaning reduces the amount of cleaning agents and energy used • High energy-efficiency thanks to highly efficient motor/servo amplifier combination
Higher capacity	<ul style="list-style-type: none"> • Fast and precise drives in conjunction with AKD servo amplifiers • Process monitoring and optimization using Kollmorgen software tools

Reduced risk of recall campaigns

Hygiene-optimized housing design	<ul style="list-style-type: none"> • Housing made of 1.4404 stainless steel with smooth surface to prevent the adhesion of germs • If installed vertically, liquids drained by means of curved cover • No formation of a dirt trap; motor housing does not have corners or external assembly elements • No paint removed from the rating plate thanks to laser engraving
Use of approved hygienic components	<ul style="list-style-type: none"> • Bearing lubrication and shaft seal are FDA approved • Adherence to the guidelines set out by the European Hygienic Engineering & Design Group (EHEDG) and 3A Sanitary Certificate
Hygienic connection technology	<ul style="list-style-type: none"> • FDA-approved cable option with silicone tube coating suitable for use with food products • Minimal cable work thanks to single cable technology with cable channels • Easy cleaning prevents the formation of dirt traps in the cables

Shorter development times and design freedom

Optimum design of the drive	<ul style="list-style-type: none"> • Large selection of standard motors in practical, graduated performance classes • 19 sizes, flange and shaft dimensions in accordance with IEC and NEMA • Continuous torques of up to 22 Nm, peak torques of up to 92 Nm • Speeds of up to 8000 rpm • Digital SFD3 and Hiperface DSL feedback devices • Braking and cable options
Simple startup and parameterization	<ul style="list-style-type: none"> • Plug-and-play connection with pre-assembled, connectable cables; no screw connections • Simple machine structure thanks to single cable and decentralized connection technology • Digital rating plate for fast startup • Software tools for parameterization and drive monitoring
Low energy consumption	<ul style="list-style-type: none"> • High efficiency thanks to permanent magnet technology • 20% lower level of derating thanks to special motor design
Kollmorgen development support	<ul style="list-style-type: none"> • Extensive advice provided by the Kollmorgen Support Team
Co-engineering	<ul style="list-style-type: none"> • Development of special drive solutions in cooperation with the customer or as part of a customer order

AKMH Design Features

The key benefits of AKMH clean design features:

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

■ No protective covers required for washdown – no secondary cleaning disassembly required

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

■ All exposed surfaces are 1.4404 stainless steel which is superior to 1.4301/1.4305 for hygiene & corrosion resistance

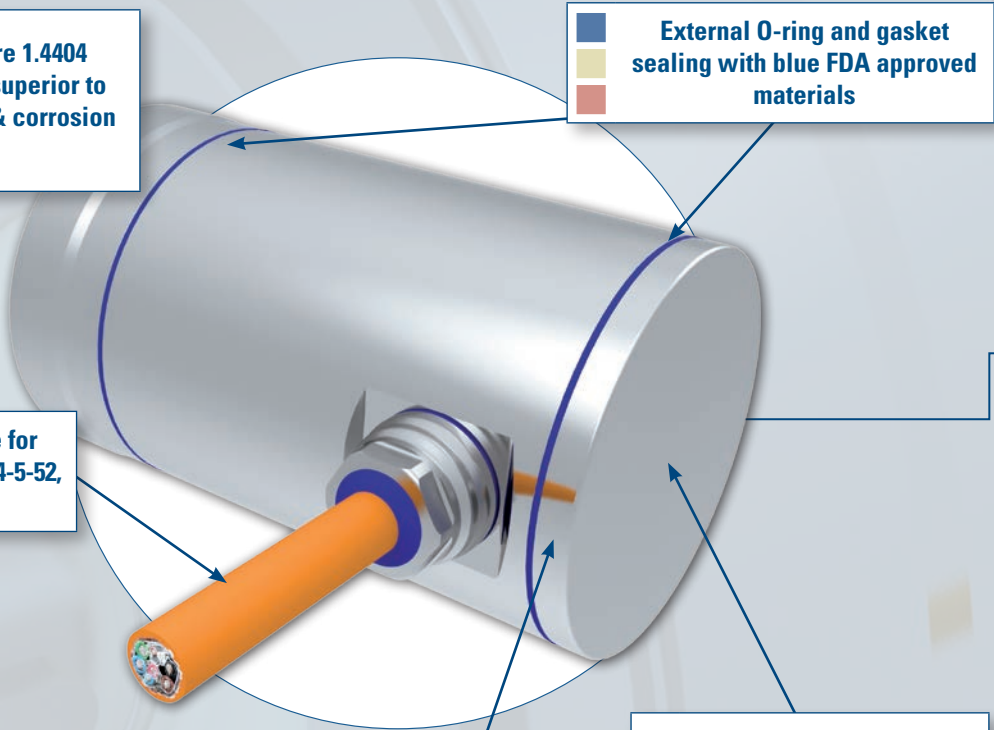
■ External O-ring and gasket sealing with blue FDA approved materials

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

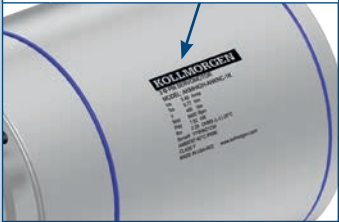
■ Conical end cover to eliminate water puddling, even in vertical mounting

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

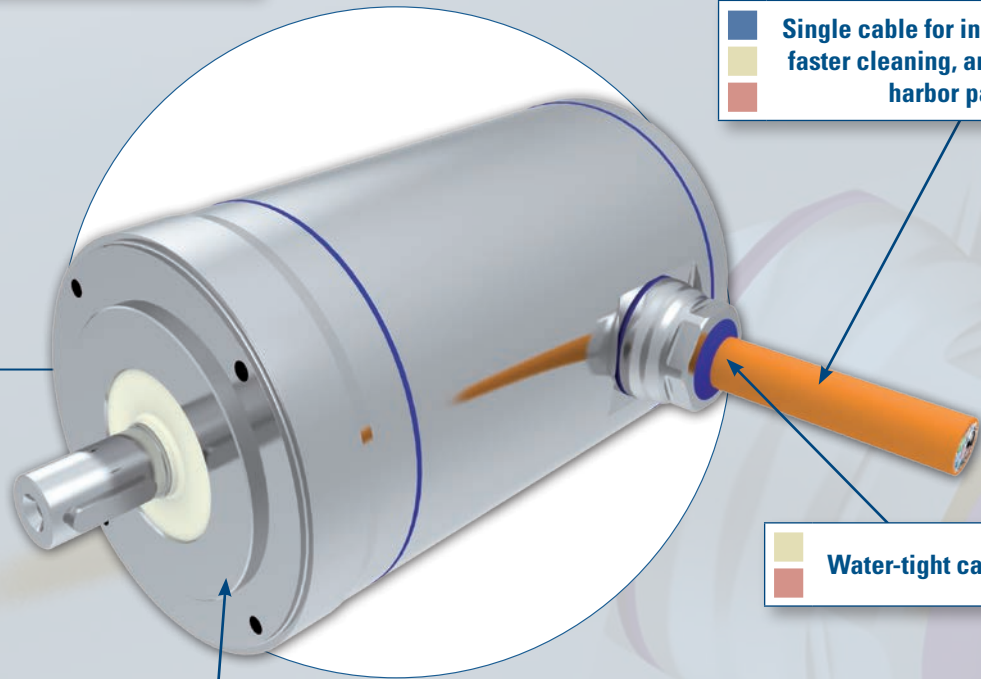
■ FDA food grade approved tubing over cable



Hygienic marking method eliminates harboring of pathogens



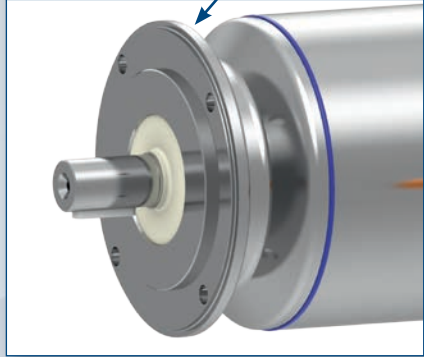
Unique design technique to eliminate condensation



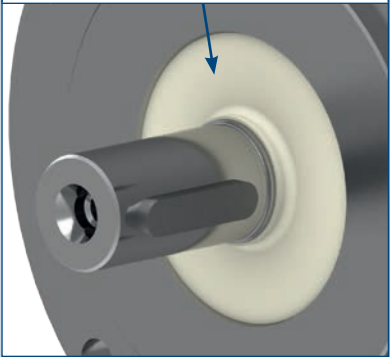
Single cable for increased reliability, faster cleaning, and fewer places to harbor pathogens

Water-tight cable exit

Face Mount or Flange Mount option for easy mounting



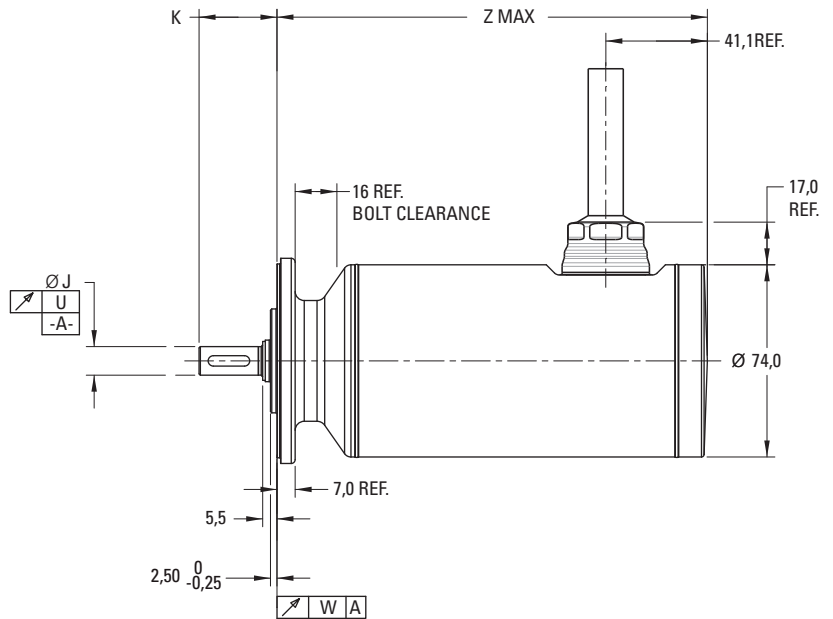
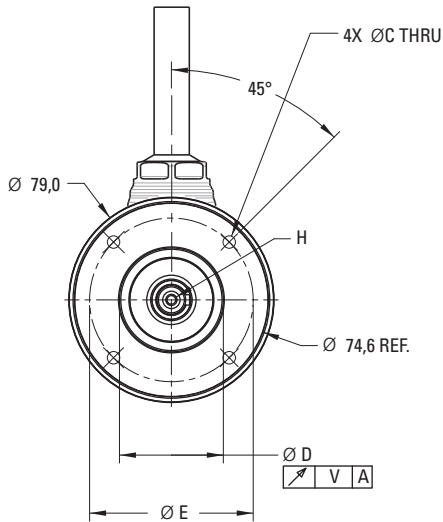
Hygienic, IP69K shaft seal, special shaft treatment for long life



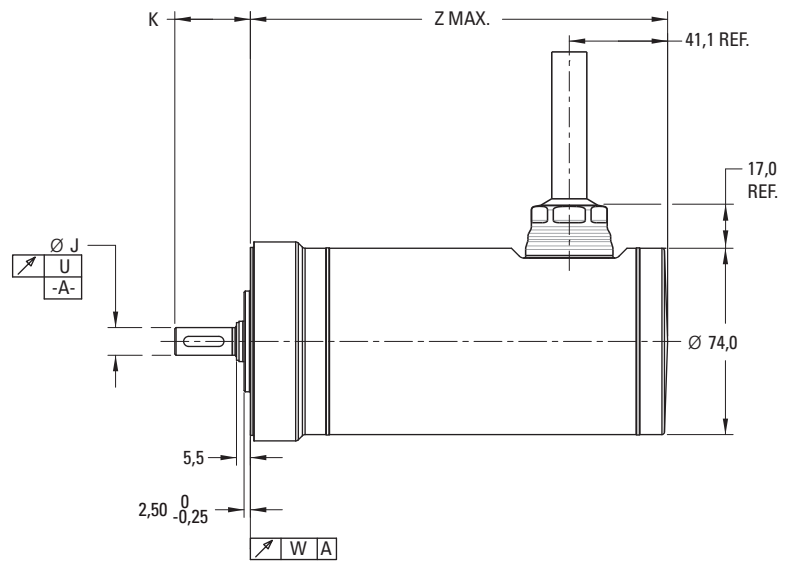
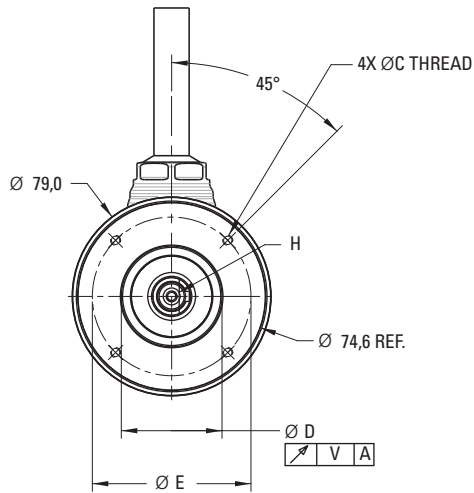
AKMH2x Outline Drawings

AKMH2x Frame (All Dimensions in mm)

Flange Mount

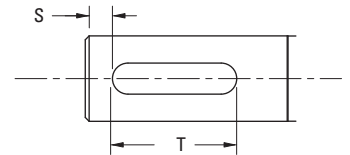
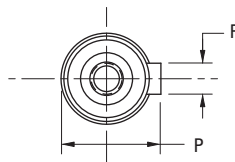


Face Mount



Flange/Shaft Configuration AKMH2x

Code	Mount Type	Standard	Shaft
AC	Flange	IEC	Closed Keyway
AN	Flange	IEC	Smooth
BN	Flange	NEMA	Smooth
CC	Face	IEC	Closed Keyway
CN	Face	IEC	Smooth
DN	Face	NEMA	Smooth



AKMH2x Dimension Data

AKMH2x Dimension Data (mm)

Mounting Code	C	D	E	H	J	K
AC	4,80	40 ^{+0,011} _{-0,005} j6	63	D M4 DIN 332	11 ^{+0,012} _{+0,001} k6	30,0
AN	4,80	40 ^{+0,011} _{-0,005} j6	63	D M4 DIN 332	11 ^{+0,012} _{+0,001} k6	30,0
BN	5,10	38,10 ⁺⁰ _{-0,05}	66,68	–	9,524 ⁺⁰ _{-0,013}	31,8
CC	M4 x 0,7 x 8,0	40 ^{+0,011} _{-0,005} j6	63	D M4 DIN 332	11 ^{+0,012} _{+0,001} k6	30,0
CN	M4 x 0,7 x 8,0	40 ^{+0,011} _{-0,005}	63	D M4 DIN 332	11 ^{+0,012} _{+0,001} k6	30,0
DN	UNC 10-24 x 8,0	38,1 ⁺⁰ _{-0,050} j6	66,68	–	9,524 ⁺⁰ _{-0,013}	31,8

Mounting Code	P	R	S	T	U	V	W
AC	12,5 ⁰ _{-0,13}	4 ⁰ _{-0,030}	3,50	16 ⁰ _{-0,20}	0,035	0,080	0,080
AN	–	–	–	–	0,035	0,080	0,080
BN	–	–	–	–	0,051	0,10	0,10
CC	12,5 ⁰ _{-0,13}	4 ⁺⁰ _{-0,030}	3,50	16 ⁰ _{-0,20}	0,035	0,080	0,080
CN	–	–	–	–	0,035	0,080	0,080
DN	–	–	–	–	0,051	0,10	0,10

Model	Z max			
	Digital Resolver SFD3 without Brake	Digital Resolver SFD3 with Brake	Hiperface DSL without Brake	Hiperface DSL with Brake
AKMH21	167,2	201,2	180,2	214,2
AKMH22	186,2	220,2	199,2	233,2
AKMH23	205,2	239,2	218,2	252,2
AKMH24	224,2	258,2	237,2	271,2

AKMH2x Performance Data

AKMH2x Performance Data – Up to 640 V DC

Parameters	Tol	Symbol	Units	AKMH21			AKMH22			AKMH23			AKMH24		
				C	E	G	C	E	G	D	E	F	D	E	F
Max Rated DC Bus Voltage	Max.	V _{bus}	V DC	640	160	75	640	320	160	640	320	320	640	320	320
Continuous Torque (Stall) for ΔT winding = 100K ①②④	Nom.	T _{cs}	Nm	0,317	0,329	0,335	0,633	0,654	0,661	0,897	0,904	0,917	1,12	1,12	1,13
Continuous Current (Stall) for ΔT winding = 100K ①②④	Nom.	I _{cs}	A _{rms}	1,31	2,56	4,04	1,18	2,33	4,09	1,88	2,36	3,67	1,90	2,39	3,34
Continuous Torque (Stall) for ΔT winding = 60K ②	Nom.	T _{cs}	Nm	0,254	0,263	0,268	0,506	0,523	0,529	0,718	0,723	0,734	0,892	0,893	0,902
Max Mechanical Speed ⑤	Nom.	N _{max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
Peak Torque ①②④	Nom.	T _p	Nm	1,57	1,59	1,60	3,03	3,07	3,09	4,35	4,37	4,41	5,50	5,51	5,53
Peak Current	Nom.	I _p	A _{rms}	7,9	15,6	24,4	7,0	13,7	24,1	11,0	13,9	21,6	11,1	14,0	19,5
75 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	0,324	0,318	-	0,647	0,632	-	-	0,900	-	-	1,12
	Rated Speed	N _{rtd}	rpm	-	2000	4000	-	1000	2500	-	-	1500	-	-	1000
	Rated Power (speed) ①②④	P _{rtd}	kW	-	0,068	0,13	-	0,07	0,17	-	-	0,14	-	-	0,12
160 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,311	0,28	-	0,627	0,601	0,473	0,881	0,865	0,806	1,11	1,10	1,09
	Rated Speed	N _{rtd}	rpm	2500	7000	-	1000	3500	7000	1500	2500	4500	1500	2000	3000
	Rated Power (speed) ①②④	P _{rtd}	kW	0,08	0,21	-	0,07	0,22	0,35	0,14	0,23	0,38	0,17	0,23	0,34
320 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,255	-	-	0,583	0,41	-	0,765	0,688	0,593	1,04	0,98	0,839
	Rated Speed	N _{rtd}	rpm	8000	-	-	3500	8000	-	5000	6500	8000	4000	5500	8000
	Rated Power (speed) ①②④	P _{rtd}	kW	0,21	-	-	0,21	0,35	-	0,40	0,47	0,50	0,44	0,57	0,70
560 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,255	-	-	0,400	-	-	0,58	-	-	0,83	-	-
	Rated Speed	N _{rtd}	rpm	8000	-	-	8000	-	-	8000	-	-	8000	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	0,21	-	-	0,34	-	-	0,49	-	-	0,70	-	-
640 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,255	-	-	0,400	-	-	0,58	-	-	0,83	-	-
	Rated Speed	N _{rtd}	rpm	8000	-	-	8000	-	-	8000	-	-	8000	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	0,21	-	-	0,34	-	-	0,49	-	-	0,70	-	-

Notes:

- ① Motor winding temperature rise $\Delta T=100K$, at 40°C ambient.
- ② All data referenced to sinusoidal commutation.
- ④ Motor with standard heat sink
- ⑤ May be limited at some values of V_{bus}.

AKMH2x Performance Data – Up to 640 V DC (Continued)

Parameters	Tol	Symbol	Units	AKMH21			AKMH22			AKMH23			AKMH24		
				C	E	G	C	E	G	D	E	F	D	E	F
Torque Constant ①	±10 %	K_t	Nm/A	0,30	0,16	0,10	0,61	0,32	0,18	0,52	0,42	0,27	0,63	0,50	0,36
Back EMF Constant ⑥	±10 %	K_e	V/min ⁻¹	19,5	10,2	6,6	39	20,4	11,7	33,8	27,0	17,6	40,8	32,4	23,4
Motor Constant	Nom.	K_m	Nm/√W	0,069	0,070	0,070	0,11	0,11	0,11	0,14	0,15	0,15	0,17	0,18	0,17
Resistance (line-line) ⑥⑦	±10 %	R_m	Ohm	13	3,44	1,46	20,00	5,24	1,79	8,79	5,46	2,36	9,04	5,46	2,96
Inductance (line-line)		L	mH	19	5,2	2,18	35,5	9,7	3,19	17,3	11,1	4,68	18,7	11,8	6,16
Inertia (includes Resolver feedback) ③	±10 %	J_m	kg · cm ²	0,107			0,161			0,216			0,27		
Optional Brake Inertia (additional)	±10 %	J_m	kg · cm ²	0,012			0,012			0,012			0,012		
Weight ⑧⑨		B	kg	3,6			4,1			4,6			5,1		
Static Friction ①		T_f	Nm	0,0810			0,084			0,086			0,089		
Viscous Damping ①		K_{dv}	Nm/1000min ⁻¹	0,0046			0,0055			0,0065			0,0074		
Thermal Time Constant		TCT	min	29,0			32			34			37		
Thermal Resistance		R_{thw-a}	K/W	2,12			1,73			1,6			1,55		
Pole Pairs				3			3			3			3		
Heat Sink Size			cm	25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate		

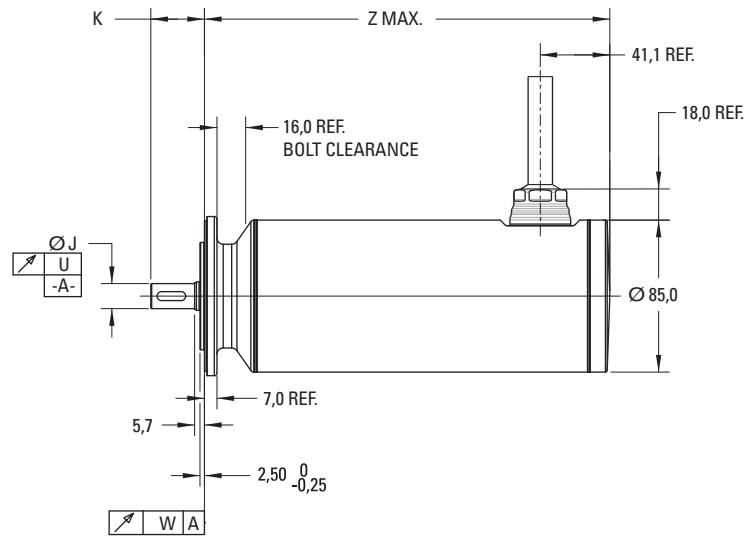
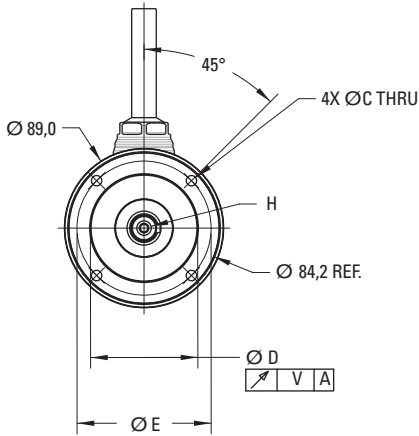
Notes:

- ① Motor winding temperature rise, $\Delta T=100$ K, at 40°C ambient.
 ③ Add parking brake if applicable for total inertia.
 ⑥ Measured at 25°C.
 ⑦ Resistance is measured with 1 meter of cable.
 ⑧ Face mount adds 0.4 kg
 ⑨ Brake options adds 0.5 kg

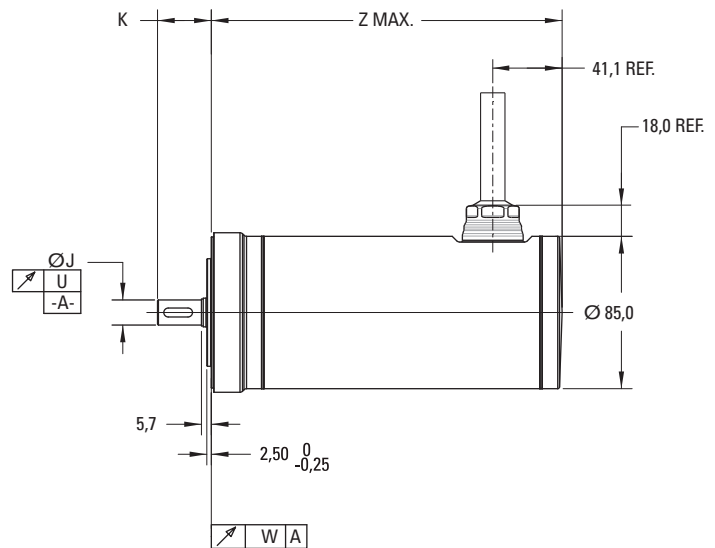
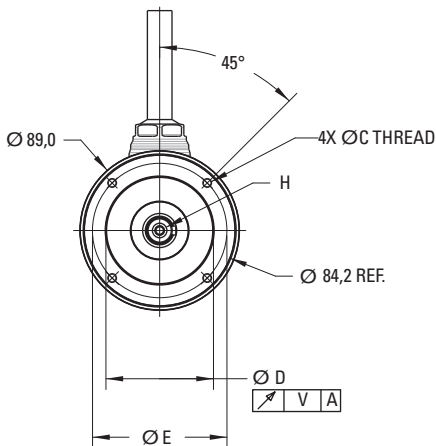
AKMH3x Outline Drawings

AKMH3x Frame (All Dimensions in mm)

Flange Mount

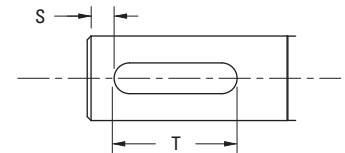
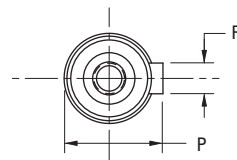


Face Mount



Flange/Shaft Configuration AKMH3x

Code	Mount Type	Standard	Shaft
AC	Flange	IEC	Closed Keyway
AN	Flange	IEC	Smooth
CC	Face	IEC	Closed Keyway
CN	Face	IEC	Smooth



AKMH3x Dimension Data

AKMH3x Dimension Data (mm)

Code	C	D	E	H	J	K	P
AC	5,80	60 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	75	D M5 DIN 332	14 $\begin{smallmatrix} +0,012 \\ +0,001 \end{smallmatrix}$ k6	30,0	16 $\begin{smallmatrix} 0 \\ -0,13 \end{smallmatrix}$
AN	5,80	60 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	75	D M5 DIN 332	14 $\begin{smallmatrix} +0,012 \\ +0,001 \end{smallmatrix}$ k6	30,0	–
CC	M5 x 0,8 x 10,0	60 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	75	D M5 DIN 332	14 $\begin{smallmatrix} +0,012 \\ +0,001 \end{smallmatrix}$ k6	30,0	16 $\begin{smallmatrix} 0 \\ -0,13 \end{smallmatrix}$
CN	M5 x 0,8 x 10,0	60 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	75	D M5 DIN 332	14 $\begin{smallmatrix} +0,012 \\ +0,001 \end{smallmatrix}$ k6	30,0	–

Code	R	S	T	U	V	W
AC	5 $\begin{smallmatrix} 0 \\ -0,03 \end{smallmatrix}$ N9	3,50	16 $\begin{smallmatrix} 0 \\ -0,20 \end{smallmatrix}$	0,035	0,080	0,080
AN	–	–	–	0,035	0,080	0,080
CC	5 $\begin{smallmatrix} 0 \\ -0,03 \end{smallmatrix}$ N9	3,50	16 $\begin{smallmatrix} 0 \\ -0,20 \end{smallmatrix}$	0,035	0,080	0,080
CN	–	–	–	0,035	0,080	0,080

Model	Z max			
	Digital Resolver SFD3 without Brake	Digital Resolver SFD3 with Brake	Hiperface DSL without Brake	Hiperface DSL with Brake
AKMH31	166,5	198,0	182,5	214,0
AKMH32	197,5	229,0	213,5	245,0
AKMH33	228,5	260,0	244,5	276,0

AKMH3x Performance Data

AKMH3x Performance Data – Up to 640 V DC

Parameters	Tol	Symbol	Units	AKMH31			AKMH32			AKMH33		
				C	E	H	C	E	H	C	E	H
Max Rated DC Bus Voltage	Max.	V _{bus}	V DC	640	560	160	640	640	320	640	640	560
Continuous Torque (Stall) for ΔT winding = 100K ①②④	Nom.	T _{CS}	Nm	1,00	1,04	1,08	1,72	1,77	1,82	2,25	2,32	2,38
Continuous Current (Stall) for ΔT winding = 100K ①②④	Nom.	I _{CS}	A _{RMS}	1,29	2,76	5,51	1,30	2,56	4,98	1,27	2,20	4,80
Continuous Torque (Stall) for ΔT winding = 60K ②	Nom.	T _{CS}	Nm	0,80	0,83	0,86	1,38	1,42	1,46	1,80	1,86	1,90
Max Mechanical Speed ⑤	Nom.	N _{max}	rpm	8000	8000	8000	8000	8000	8000	8000	8000	8000
Peak Torque ①②④	Nom.	T _p	Nm	4,41	4,52	4,59	8,10	8,24	8,39	11,5	11,7	11,9
Peak Current	Nom.	I _p	A _{RMS}	6,90	15,0	29,3	7,2	14,1	27,5	7,4	12,9	28,1
75 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	1,03	1,04	-	-	1,78	-	-	2,35
	Rated Speed	N _{rtd}	rpm	-	750	2000	-	-	1200	-	-	800
	Rated Power (speed) ①②④	P _{rtd}	kW	-	0,08	0,22	-	-	0,22	-	-	0,20
160 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	0,96	0,88	-	-	1,66	-	-	2,20
	Rated Speed	N _{rtd}	rpm	-	2500	6000	-	-	3000	-	-	2500
	Rated Power (speed) ①②④	P _{rtd}	kW	-	0,25	0,55	-	-	0,52	-	-	0,58
320 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,95	0,86	-	1,66	1,57	1,13	2,22	2,20	1,64
	Rated Speed	N _{rtd}	rpm	2500	6000	-	1500	3500	7000	1000	2000	5500
	Rated Power (speed) ①②④	P _{rtd}	kW	0,25	0,54	-	0,26	0,57	0,83	0,23	0,46	0,94
560 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,86	0,74	-	1,57	1,10	-	2,14	1,82	0,88
	Rated Speed	N _{rtd}	rpm	5000	8000	-	3000	7000	-	2000	4500	8000
	Rated Power (speed) ①②④	P _{rtd}	kW	0,45	0,62	-	0,49	0,81	-	0,45	0,86	0,74
640 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	0,82	-	-	1,52	0,92	-	2,09	1,72	-
	Rated Speed	N _{rtd}	rpm	6000	-	-	3500	8000	-	2500	5000	-
	Rated Power (speed) ①②④	P _{rtd}	kW	0,51	-	-	0,56	0,77	-	0,55	0,90	-

Notes:

- ① Motor winding temperature rise $\Delta T=100K$, at 40°C ambient.
- ② All data referenced to sinusoidal commutation.
- ④ Motor with standard heat sink
- ⑤ May be limited at some values of V_{bus}.

AKMH3x Performance Data – Up to 640 V DC (Continued)

Parameters	Tol	Symbol	Units	AKMH31			AKMH32			AKMH33		
				C	E	H	C	E	H	C	E	H
Torque Constant ①	±10 %	K_t	Nm/A	0,85	0,41	0,21	1,40	0,73	0,39	1,86	1,10	0,52
Back EMF Constant ⑥	±10 %	K_e	V · min ⁻¹	54,5	26,1	13,7	89,8	47,1	24,8	120	70,6	33,4
Motor Constant	Nom.	K_m	N · m/√W	0,15	0,15	0,15	0,23	0,24	0,24	0,29	0,30	0,30
Resistance (line-line) ⑥⑦	±10 %	R_m	Ohm	21,4	4,76	1,31	23,8	6,32	1,71	26,6	9,03	1,98
Inductance (line-line)		L	mH	37,5	8,6	2,4	46,5	12,8	3,53	53,6	18,5	4,1
Inertia (includes Resolver feedback) ③	±10 %	J_m	kg · cm ²	0,33			0,59			0,85		
Optional Brake Inertia (additional)	±10 %	J_m	kg · cm ²	0,012			0,012			0,012		
Weight ⑧⑨		G	kg	4,1			5,0			5,9		
Static Friction ①		T_f	Nm	0,093			0,099			0,105		
Viscous Damping ①		K_{dv}	Nm/1000min ⁻¹	0,002			0,003			0,004		
Thermal Time Constant		TCT	min	24			32			40		
Thermal Resistance		R_{thw-a}	K/W	1,4			1,26			1,19		
Pole Pairs				4			4			4		
Heat Sink Size			cm	25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate		

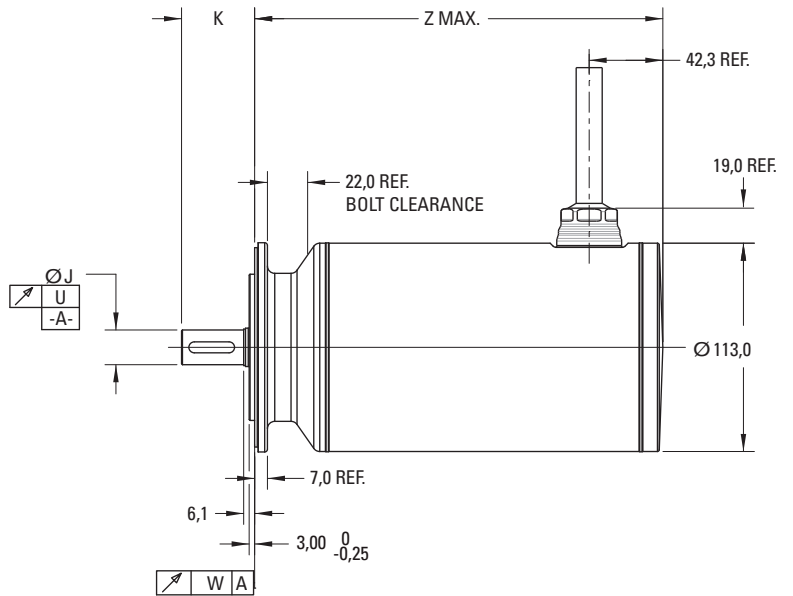
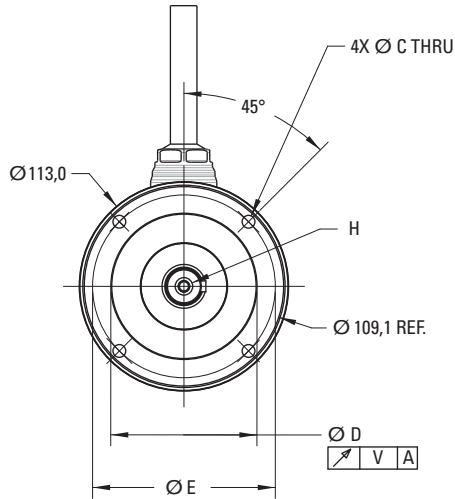
Notes:

- ① Motor winding temperature rise, $\Delta T=100\text{K}$, at 40°C ambient.
 ③ Add parking brake if applicable for total inertia.
 ⑥ Measured at 25°C .
 ⑦ Resistance is measured with 1 meter of cable.
 ⑧ Face mount adds 0.4 kg
 ⑨ Brake options adds 0.7 kg

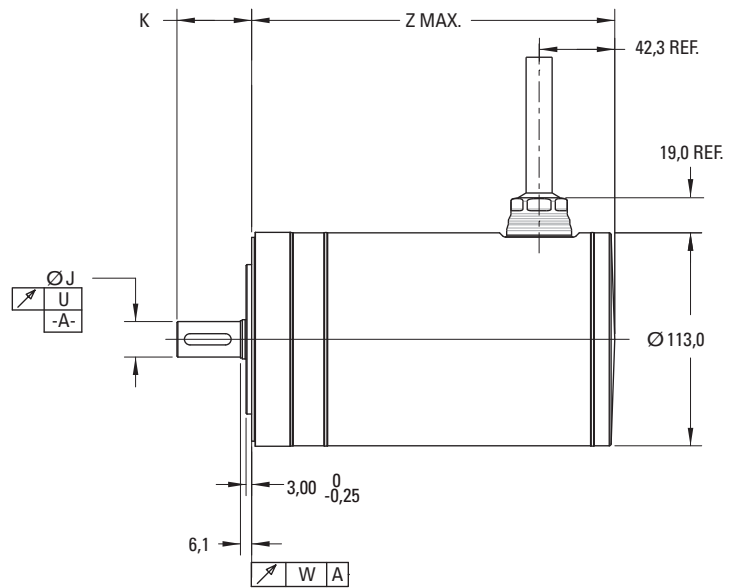
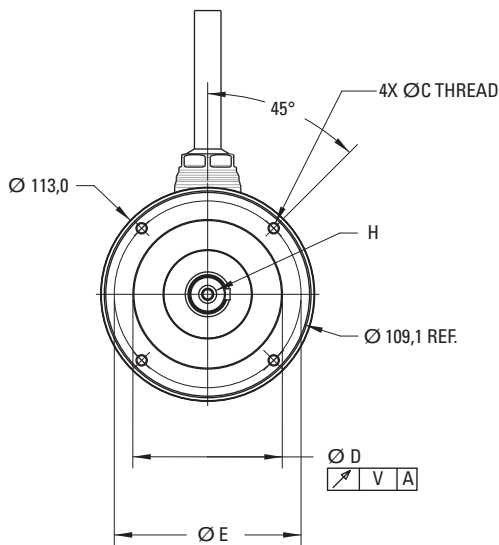
AKMH4x Outline Drawings

AKMH4x Frame (All Dimensions in mm)

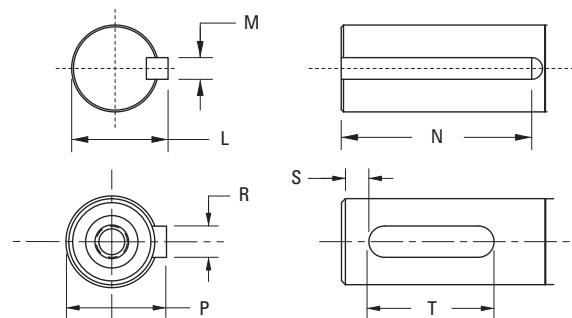
Flange Mount



Face Mount



Flange/Shaft Configuration AKMH4x			
Code	Mount Type	Standard	Shaft
AC	Flange	IEC	Closed Keyway
AN	Flange	IEC	Smooth
BK	Flange	NEMA	Open Keyway
BN	Flange	NEMA	Smooth
CC	Face	IEC	Closed Keyway
CN	Face	IEC	Smooth
DK	Face	NEMA	Open Keyway
DN	Face	NEMA	Smooth



AKMH4x Dimension Data

AKMH4x Dimension Data (mm)

Code	C	D	E	H	J	K	L
AC	7,0	80 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	100	D M6 DIN 332	19 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	40,0	–
AN	7,0	80 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	100	D M6 DIN 332	19 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	40,0	–
BK	6,91	73,025 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$	98,43	–	15,875 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	52,40	17,92 $\begin{smallmatrix} 0 \\ -0,43 \end{smallmatrix}$
BN	6,91	73,025 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$	98,43	–	15,875 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	52,40	–
CC	M6 x 1 x 12	80 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	100	D M6 DIN 332	19 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	40,0	–
CN	M6 x 1 x 12	80 $\begin{smallmatrix} +0,012 \\ -0,007 \end{smallmatrix}$ j6	100	D M6 DIN 332	19 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	40,0	–
DK	UNC 1/4 - 20 x 12,3	73,025 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$	98,43	–	15,875 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	52,40	17,92 $\begin{smallmatrix} 0 \\ -0,43 \end{smallmatrix}$
DN	UNC 1/4 - 20 x 12,3	73 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$ j6	98,43	–	15,875 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	52,40	–

Code	M	N	P	R	S	T	U	V	W
AC	–	–	21,5 $\begin{smallmatrix} 0 \\ -0,13 \end{smallmatrix}$	6 $\begin{smallmatrix} 0 \\ -0,03 \end{smallmatrix}$ N9	4,00	25 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,040	0,080	0,080
AN	–	–	–	–	–	–	0,040	0,080	0,080
BK	4,762 $\begin{smallmatrix} 0 \\ -0,050 \end{smallmatrix}$	34,93 ± 0,25	–	–	–	–	0,051	0,10	0,10
BN	–	–	–	–	–	–	0,051	0,10	0,10
CC	–	–	21,5 $\begin{smallmatrix} 0 \\ -0,13 \end{smallmatrix}$	6 $\begin{smallmatrix} 0 \\ -0,03 \end{smallmatrix}$ N9	4,00	25 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,040	0,080	0,080
CN	–	–	–	–	–	–	0,040	0,080	0,080
DK	4,762 $\begin{smallmatrix} 0 \\ -0,050 \end{smallmatrix}$	34,93 ± 0,25	–	–	–	–	0,051	0,10	0,10
DN	–	–	–	–	–	–	0,051	0,10	0,10

Model	Z max			
	Digital Resolver SFD3 without Brake	Digital Resolver SFD3 with Brake	Hiperface DSL without Brake	Hiperface DSL with Brake
AKMH41	166,7	201,0	182,7	217,0
AKMH42	195,7	230,0	211,7	246,0
AKMH43	224,7	259,0	240,7	275,0
AKMH44	253,7	288,0	269,7	304,0

AKMH4x Performance Data

AKMH4x Performance Data – Up to 640 V DC

Parameters	Tol	Symbol	Units	AKMH41			AKMH42				AKMH43			AKMH44		
				C	E	H	C	E	H	J	E	H	L	E	H	K
Max Rated DC Bus Voltage	Max.	V _{bus}	V DC	640	640	640	640	640	640	320	640	640	320	640	640	560
Continuous Torque (Stall) for ΔT winding = 100K ①②④	Nom.	T _{CS}	Nm	1,85	1,90	1,94	3,19	3,27	3,40	3,43	4,56	4,68	4,59	5,64	5,77	5,76
Continuous Current (Stall) for ΔT winding = 100K ①②④	Nom.	I _{CS}	A _{rms}	1,54	2,89	5,82	1,42	2,77	6,10	8,56	2,79	5,52	11,4	2,89	5,68	10,2
Continuous Torque (Stall) for ΔT winding = 60K ②	Nom.	T _{CS}	Nm	1,48	1,52	1,55	2,55	2,62	2,72	2,74	3,65	3,74	3,67	4,52	4,62	4,61
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	6,82	6,95	7,00	12,6	12,8	13,1	13,1	18,3	18,7	18,4	23,5	23,5	23,5
Peak Current	Nom.	I _p	A _{rms}	7,3	14,3	28,0	7,00	13,7	30,0	42,0	13,7	27,2	55,8	14,5	28,1	50,5
75 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	-	1,89	-	-	-	-	-	-	-	-	-	-
	Rated Speed	N _{rtd}	rpm	-	-	1000	-	-	-	-	-	-	-	-	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	-	-	0,20	-	-	-	-	-	-	-	-	-	-
160 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	1,85	1,77	-	-	3,09	2,94	-	-	3,69	-	-	4,83
	Rated Speed	N _{rtd}	rpm	-	1200	3000	-	-	2000	3000	-	-	3000	-	-	2000
	Rated Power (speed) ①②④	P _{rtd}	kW	-	0,23	0,56	-	-	0,65	0,92	-	-	1,16	-	-	1,01
320 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	1,78	1,74	1,47	-	2,99	2,63	2,23	4,15	3,77	2,39	5,13	4,59	3,1
	Rated Speed	N _{rtd}	rpm	1200	3000	6000	-	1800	4500	6000	1500	3000	6000	1200	2500	5000
	Rated Power (speed) ①②④	P _{rtd}	kW	0,22	0,55	0,92	-	0,56	1,24	1,40	0,65	1,18	1,50	0,64	1,20	1,62
560 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	1,68	1,44	-	2,98	2,72	2,21	-	3,83	2,44	-	4,76	3,13	2,55
	Rated Speed	N _{rtd}	rpm	3000	6000	-	1500	3500	6000	-	2500	6000	-	2000	5000	6000
	Rated Power (speed) ①②④	P _{rtd}	kW	0,53	0,90	-	0,47	1,00	1,39	-	1,00	1,53	-	1,00	1,64	1,60
640 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	1,65	1,44	-	2,91	2,62	2,21	-	3,68	2,44	-	4,52	2,58	-
	Rated Speed	N _{rtd}	rpm	3500	6000	-	2000	4000	6000	-	3000	6000	-	2500	6000	-
	Rated Power (speed) ①②④	P _{rtd}	kW	0,60	0,90	-	0,61	1,10	1,39	-	1,16	1,53	-	1,18	1,62	-

Notes:

- ① Motor winding temperature rise ΔT=100K, at 40°C ambient.
- ② All data referenced to sinusoidal commutation.
- ④ Motor with standard heat sink.
- ⑤ May be limited at some values of V_{bus}.

AKMH4x Performance Data – Up to 640 V DC (Continued)

Parameters	Tol	Symbol	Units	AKMH41			AKMH42				AKMH43			AKMH44		
				C	E	H	C	E	H	J	E	H	L	E	H	K
Torque Constant ①	±10 %	K_t	Nm/A	1,34	0,71	0,37	2,4	1,26	0,59	0,43	1,72	0,89	0,42	2,04	1,06	0,59
Back EMF Constant ⑥	±10 %	K_e	V/min ⁻¹	86,3	45,6	23,7	154	80,9	38,3	27,5	111	57,4	27,5	132	68	37,8
Motor Constant	Nom.	K_M	Nm/√W	0,24	0,24	0,24	0,37	0,37	0,38	0,39	0,48	0,50	0,46	0,57	0,58	0,58
Resistance (line-line) ⑥⑦	±10 %	R_m	Ohm	21,3	6,04	1,58	27,5	7,80	1,67	0,82	8,63	2,12	0,572	8,66	2,25	0,697
Inductance (line-line)		L	mH	66,1	18,4	5,0	97,4	26,8	6,0	3,10	32,6	8,8	2,0	33,9	9,1	2,8
Inertia (includes Resolver feedback) ③	±10 %	J_m	kg·cm ²	0,81			1,45				2,09			2,73		
Optional Brake Inertia (additional)	±10 %	J_m	kg·cm ²	0,068			0,068				0,068			0,068		
Weight ⑧⑨		G	kg	6,1			7,4				8,8			10,2		
Static Friction ①		T_f	Nm	0,214			0,23				0,238			0,25		
Viscous Damping ①		K_{dv}	Nm/1000min ⁻¹	0,009			0,013				0,017			0,021		
Thermal Time Constant		TCT	min	40			51				63			74		
Thermal Resistance		R_{thw-a}	K/W	0,988			0,93				0,80			0,72		
Pole Pairs				5			5				5			5		
Heat Sink Size			cm	25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate				25,4 x 25,4 x 0,635 Aluminium Plate			25,4 x 25,4 x 0,635 Aluminium Plate		

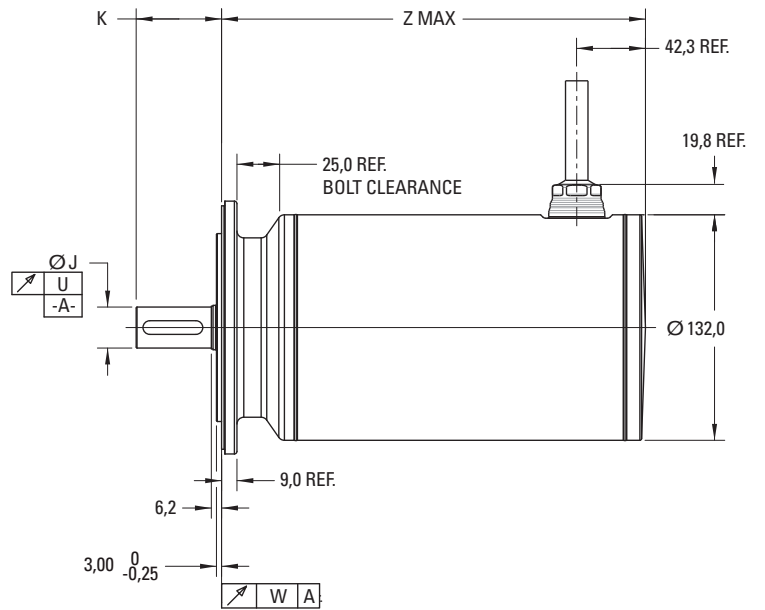
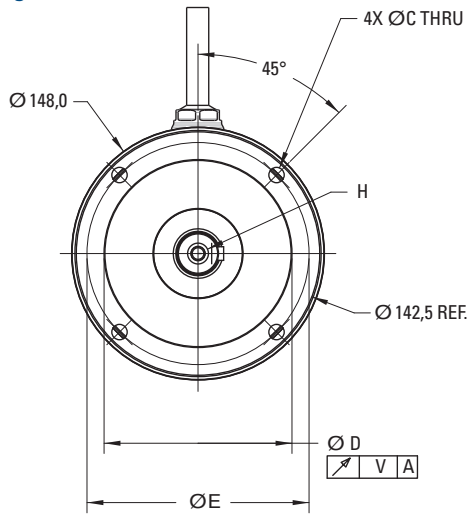
Notes:

- ① Motor winding temperature rise, $\Delta T=100$ K, at 40°C ambient.
 ③ Add parking brake if applicable for total inertia.
 ⑥ Measured at 25°C.
 ⑦ Resistance is measured with 1 meter of cable.
 ⑧ Face mount adds 0.8 kg
 ⑨ Brake options adds 1,14 kg

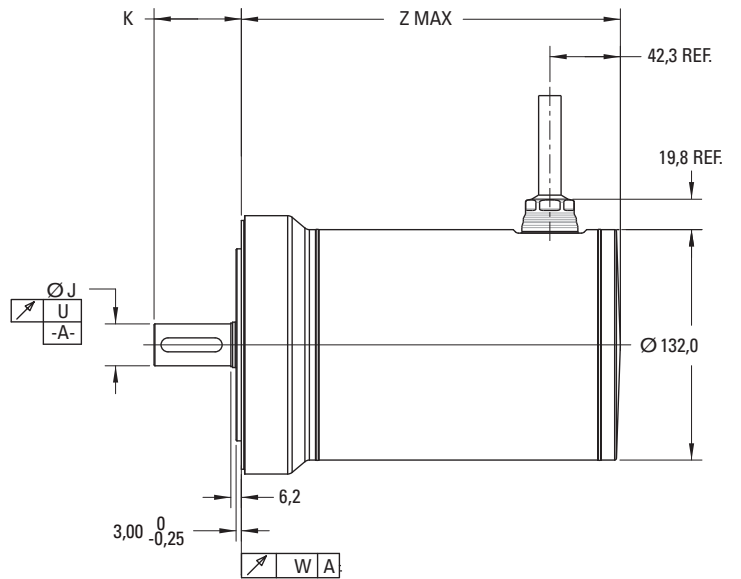
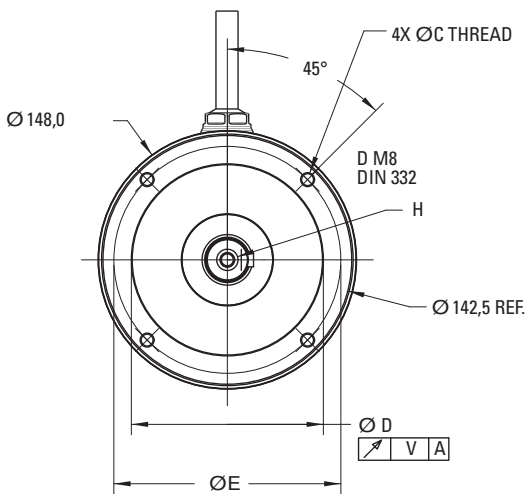
AKMH5x Outline Drawings

AKMH5x Frame (All Dimensions in mm)

Flange Mount

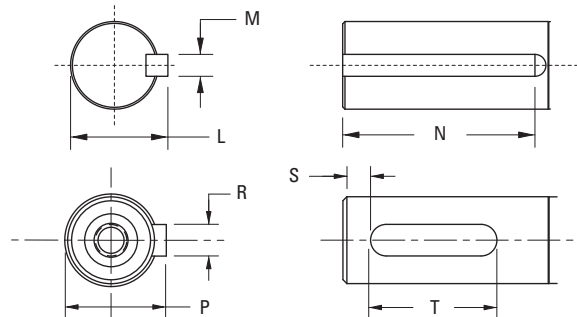


Face Mount



Flange/Shaft Configuration AKMH5x

Code	Mount Type	Standard	Shaft
AC	Flange	IEC	Closed Keyway
AN	Flange	IEC	Smooth
BK	Flange	NEMA	Open Keyway
BN	Flange	NEMA	Smooth
CC	Face	IEC	Closed Keyway
CN	Face	IEC	Smooth
DK	Face	NEMA	Open Keyway
DN	Face	NEMA	Smooth
GC	Flange	IEC	Closed Keyway
GN	Flange	IEC	Smooth
HC	Face	IEC	Closed Keyway
HN	Face	IEC	Smooth



AKMH5x Dimension Data

AKMH5x Dimension Data (mm)

Code	„C”	„D”	„E”	„H”	„J”	„K”	„L”
AC	9	110 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	130	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ -0,002 \end{smallmatrix}$ k6	50,0	–
AN	9	110 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	130	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ -0,002 \end{smallmatrix}$ k6	50,0	–
BK	8,33	55,560 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$	125,73	–	19,05 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	57,15	21,15 $\begin{smallmatrix} 0 \\ -0,43 \end{smallmatrix}$
BN	8,33	55,560 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$ j6	125,73	–	19,05 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$ k6	57,15	–
CC	M8 x 1,25 x 16,0	110 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	130	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	50,0	–
CN	M8 x 1,25 x 16,0	110 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	130	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	50,0	–
DK	UNC 3/8 - 16 x 19,05	55,563 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$	125,73	–	19,05 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	57,15	21,15 $\begin{smallmatrix} 0 \\ -0,43 \end{smallmatrix}$
DN	UNC 3/8 - 16 x 19,05	55,563 $\begin{smallmatrix} 0 \\ -0,051 \end{smallmatrix}$ j6	125,73	–	19,05 $\begin{smallmatrix} 0 \\ -0,013 \end{smallmatrix}$	57,15	–
GC	9	95 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	115	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	50,0	–
GN	9	95 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	115	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	50,0	–
HC	M8 x 1,25 x 16,0	95 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	115	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	50,0	–
HN	M8 x 1,25 x 16,0	95 $\begin{smallmatrix} +0,013 \\ -0,009 \end{smallmatrix}$ j6	115	D M8 DIN 332	24 $\begin{smallmatrix} +0,015 \\ +0,002 \end{smallmatrix}$ k6	50,0	–

Code	„M”	„N”	„P”	„R”	„S”	„T”	„U”	„V”	„W”
AC	–	–	27 $\begin{smallmatrix} 0 \\ -0,29 \end{smallmatrix}$	8 $\begin{smallmatrix} 0 \\ -0,036 \end{smallmatrix}$ N9	4,00	36 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,040	0,100	0,100
AN	–	–	–	–	–	–	0,040	0,100	0,100
BK	4,762 $\begin{smallmatrix} 0 \\ -0,050 \end{smallmatrix}$	38,1 ± 0,25	–	–	–	–	0,051	0,100	0,100
BN	–	–	–	–	–	–	0,051	0,100	0,100
CC	–	–	27 $\begin{smallmatrix} 0 \\ -0,29 \end{smallmatrix}$	8 $\begin{smallmatrix} 0 \\ -0,036 \end{smallmatrix}$ N9	4,00	36 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,040	0,100	0,100
CN	–	–	–	–	–	–	0,040	0,100	0,100
DK	4,762 $\begin{smallmatrix} 0 \\ -0,050 \end{smallmatrix}$	38,1 ± 0,25	–	–	–	–	0,051	0,100	0,100
DN	–	–	–	–	–	–	0,051	0,100	0,080
GC	–	–	27 $\begin{smallmatrix} 0 \\ -0,29 \end{smallmatrix}$	8 $\begin{smallmatrix} 0 \\ -0,036 \end{smallmatrix}$ N9	4,00	36 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,040	0,080	0,080
GN	–	–	–	–	–	–	0,040	0,080	0,080
HC	–	–	27 $\begin{smallmatrix} 0 \\ -0,29 \end{smallmatrix}$	8 $\begin{smallmatrix} 0 \\ -0,036 \end{smallmatrix}$ N9	4,00	36 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,040	0,080	0,080
HN	–	–	–	–	–	–	0,040	0,080	0,080

Model	Z max			
	Digital Resolver SFD3 without Brake	Digital Resolver SFD3 with Brake	Hiperface DSL without Brake	Hiperface DSL with Brake
AKMH51	187,4	229,4	198,4	240,4
AKMH52	218,4	260,4	229,4	271,4
AKMH53	249,4	291,4	260,4	302,4
AKMH54	280,4	322,4	291,4	333,4

AKMH5x Performance Data

AKMH5x Performance Data – Up to 640 V DC

Parameters	Tol	Symbol	Units	AKMH51			AKMH52				AKMH53			AKMH54		
				E	H	L	E	H	L	M	H	L	P	H	L	P
Max Rated DC Bus Voltage	Max.	V _{bus}	V DC	640	640	320	640	640	640	320	640	640	320	640	640	320
Continuous Torque (Stall) for ΔT winding = 100K ①②④	Nom.	T _{CS}	Nm	3,3	3,39	3,47	6,15	6,29	6,45	6,39	8,60	8,68	8,49	10,5	10,4	10,6
Continuous Current (Stall) for ΔT winding = 100 K ①②④	Nom.	I _{CS}	A _{rms}	2,28	5,02	10,0	2,43	4,81	9,5	10,7	5,29	9,43	15,2	4,35	9,82	15,3
Continuous Torque (Stall) for ΔT winding = 60 K ②	Nom.	T _{CS}	Nm	2,64	2,71	2,78	4,92	5,03	5,16	5,11	6,88	6,94	6,79	8,40	8,34	8,50
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	15,0	15,0	15,2	28,9	29,1	29,5	29,4	41,8	42,0	41,7	53,3	53,3	53,9
Peak Current	Nom.	I _p	A _{rms}	13,8	30,0	59,5	15,0	29,5	58,0	65,5	33,0	59,0	95,5	27,5	62,5	98,0
75 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rated Speed	N _{rtd}	rpm	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	-	-	-	-	-	-	-	-	-	-	-	-	-
160 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	-	2,82	-	-	-	-	-	-	-	-	-	-
	Rated Speed	N _{rtd}	rpm	-	-	3000	-	-	-	-	-	-	-	-	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	-	-	0,89	-	-	-	-	-	-	-	-	-	-
320 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	3,11	2,75	1,45	-	5,32	3,53	1,18	-	4,09	2,09	9,31	5,13	2,52
	Rated Speed	N _{rtd}	rpm	1200	3000	5500	-	1800	3500	4500	-	3000	3500	1000	2500	3000
	Rated Power (speed) ①②④	P _{rtd}	kW	0,39	0,86	0,84	-	1,00	1,29	0,556	-	1,28	0,77	3,00	1,34	0,79
560 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	2,83	1,41	-	5,39	3,44	1,19	-	4,06	2,14	-	7,62	2,47	-
	Rated Speed	N _{rtd}	rpm	2500	5500	-	1500	3500	4500	-	3000	3500	-	1800	3000	-
	Rated Power (speed) ①②④	P _{rtd}	kW	0,74	0,81	-	0,85	1,26	0,56	-	1,28	0,78	-	1,44	0,78	-
640 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	2,68	1,41	-	5,08	2,44	1,19	-	2,12	2,14	-	7,09	-	-
	Rated Speed	N _{rtd}	rpm	3000	5500	-	2000	4000	4500	-	3500	3500	-	2000	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	0,84	0,81	-	1,06	1,02	0,561	-	0,78	0,78	-	1,48	-	-

Notes:

- ① Motor winding temperature rise ΔT=100 K, at 40°C ambient.
- ② All data referenced to sinusoidal commutation.
- ④ Motor with standard heat sink.
- ⑤ May be limited at some values of V_{bus}

AKMH5x Performance Data – Up to 640 V DC (Continued)

Parameters	Tol	Symbol	Units	AKMH51			AKMH52				AKMH53			AKMH54		
				E	H	L	E	H	L	M	H	L	P	H	L	P
Torque Constant ①	±10 %	K_t	Nm/A	1,72	0,800	0,410	2,79	1,44	0,75	0,66	1,75	0,99	0,60	2,57	1,13	0,74
Back EMF Constant ⑥	±10 %	K_e	V/min ⁻¹	110	51,3	26,6	179	92,7	48,3	42,4	112	63,9	38,4	166	72,9	47,3
Motor Constant	Nom.	K_m	Nm/√W	0,47	0,46	0,44	0,76	0,76	0,77	0,76	0,98	0,96	0,90	1,17	1,13	1,07
Resistance (line-line) ⑥⑦	±10 %	R_m	Ohm	9,0	2,0	0,58	8,98	2,37	0,627	0,507	2,12	0,707	0,297	3,2	0,667	0,317
Inductance (line-line)		L	mH	36,6	7,9	2,1	44,7	11,9	3,24	2,50	11,4	3,64	1,30	18,3	3,50	1,50
Inertia (includes Resolver feedback) ③	±10 %	J_m	kg · cm ²	3,42			6,22				9,12			11,92		
Optional Brake Inertia (additional)	±10 %	J_m	kg · cm ²	0,173			0,173				0,173			0,173		
Weight ⑧⑨		G	kg	8,9			11,1				13,4			15,7		
Static Friction ①		T_f	Nm	0,622			0,64				0,658			0,677		
Viscous Damping ①		K_{dv}	Nm/1000min ⁻¹	0,033			0,042				0,052			0,061		
Thermal Time Constant		TCT	min	46			58				69			80		
Thermal Resistance		R_{thw-a}	K/W	1			0,91				0,86			0,82		
Pole Pairs				5			5				5			5		
Heat Sink Size			cm	30,48 x 30,48 x 1,27 Aluminium Plate			30,48 x 30,48 x 1,27 Aluminium Plate				30,48 x 30,48 x 1,27 Aluminium Plate			30,48 x 30,48 x 1,27 Aluminium Plate		

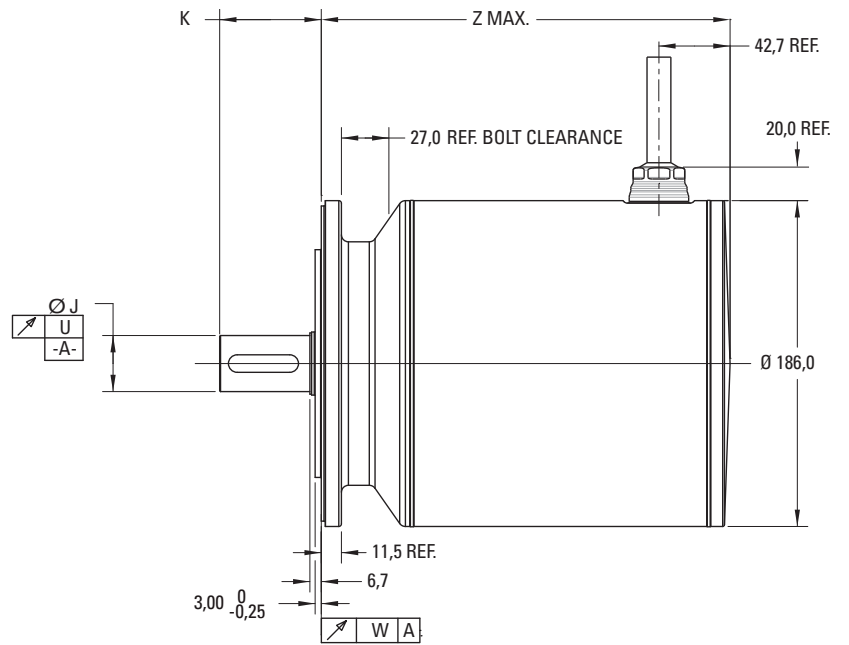
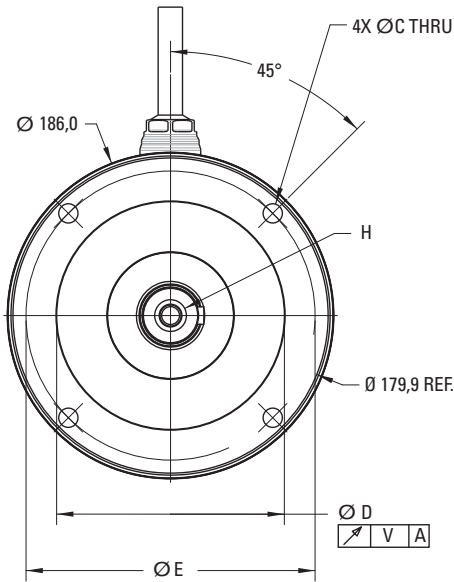
Notes:

- ① Motor winding temperature rise, $\Delta T=100$ K, at 40°C ambient.
 ③ Add parking brake if applicable for total inertia.
 ⑥ Measured at 25°C.
 ⑦ Resistance is measured with 1 meter of cable.
 ⑧ Face mount adds 1,5 kg
 ⑨ Brake options adds 1,8 kg

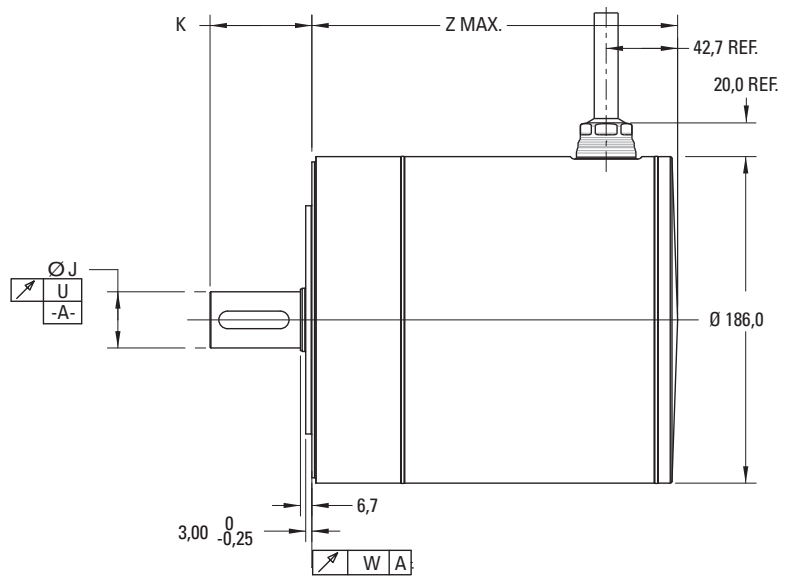
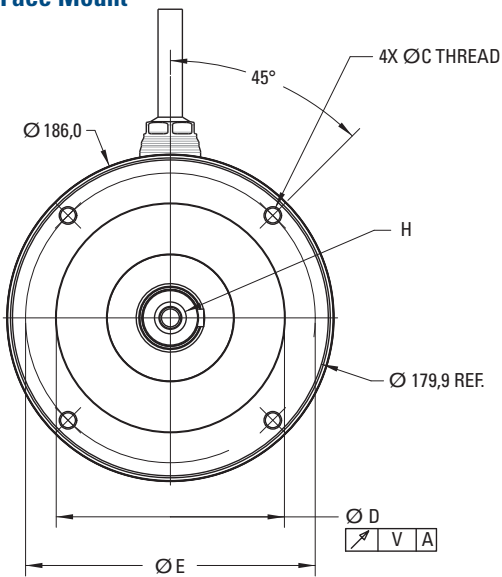
AKMH6x Outline Drawings

AKMH6x Frame (All Dimensions in mm)

Flange Mount

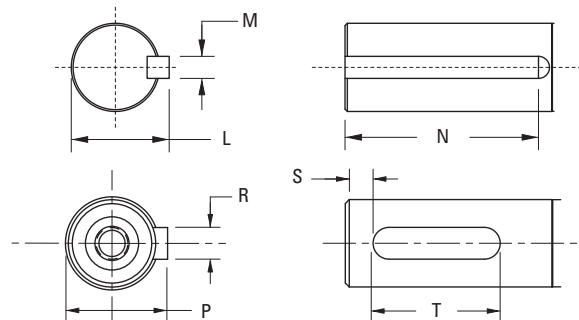


Face Mount



Flange/Shaft Configuration AKMH6x

Code	Mount Type	Standard	Shaft
AC	Flange	IEC	Closed Keyway
AN	Flange	IEC	Smooth
CC	Front	IEC	Closed Keyway
CN	Front	IEC	Smooth
DK	Front	NEMA	Open Keyway
DN	Front	NEMA	Smooth



AKMH6x Dimension Data

AKMH6x Dimension Data (mm)

Code	C	D	E	H	J	K	L
AC	11,00	130 $\begin{smallmatrix} +0,014 \\ -0,011 \end{smallmatrix}$ j6	165,00	D M12 DIN 332	32 $\begin{smallmatrix} +0,018 \\ +0,002 \end{smallmatrix}$ k6	58	–
AN	11,00	130 $\begin{smallmatrix} +0,014 \\ -0,011 \end{smallmatrix}$ j6	165,00	D M12 DIN 332	32 $\begin{smallmatrix} +0,018 \\ +0,002 \end{smallmatrix}$ k6	58	–
CC	M10 x 1,5 x 20,0	130 $\begin{smallmatrix} +0,014 \\ -0,011 \end{smallmatrix}$ j6	165,00	D M12 DIN 332	32 $\begin{smallmatrix} +0,018 \\ +0,002 \end{smallmatrix}$ k6	58	–
CN	M10 x 1,5 x 20,0	130 $\begin{smallmatrix} +0,014 \\ -0,011 \end{smallmatrix}$ j6	165,00	D M12 DIN 332	32 $\begin{smallmatrix} +0,018 \\ +0,002 \end{smallmatrix}$ k6	58	–
DK	UNC 3/8 - 16 x 19,05	114,3 $\begin{smallmatrix} 0 \\ -0,076 \end{smallmatrix}$	149,23	–	28,580 $\begin{smallmatrix} +0 \\ -0,013 \end{smallmatrix}$	69,9	31,39 $\begin{smallmatrix} 0 \\ -0,43 \end{smallmatrix}$
DN	UNC 3/8 - 16 x 19,05	114,3 $\begin{smallmatrix} 0 \\ -0,076 \end{smallmatrix}$	149,23	–	28,580 $\begin{smallmatrix} +0 \\ -0,013 \end{smallmatrix}$	69,9	–

Code	M	N	P	R	S	T	U	V	W
AC	–	–	35 $\begin{smallmatrix} 0 \\ -0,29 \end{smallmatrix}$	10 $\begin{smallmatrix} 0 \\ -0,036 \end{smallmatrix}$ N9	5,00	40 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,050	0,100	0,100
AN	–	–	–	–	–	–	0,050	0,100	0,100
CC	–	–	35 $\begin{smallmatrix} 0 \\ -0,29 \end{smallmatrix}$	10 $\begin{smallmatrix} 0 \\ -0,036 \end{smallmatrix}$ N9	5,00	40 $\begin{smallmatrix} 0 \\ -0,30 \end{smallmatrix}$	0,050	0,100	0,100
CN	–	–	–	–	–	–	0,050	0,100	0,100
DK	6,35 $\begin{smallmatrix} 0 \\ -0,050 \end{smallmatrix}$	38,10 ± 0,25	–	–	–	–	0,050	0,100	0,100
DN	–	–	–	–	–	–	0,050	0,100	0,100

Model	Z max			
	Digital Resolver SFD3 without Brake	Digital Resolver SFD3 with Brake	Hiperface DSL without Brake	Hiperface DSL with Brake
AKMH62	209,9	256,5	220,9	267,5
AKMH63	234,9	281,5	245,9	292,5
AKMH64	259,9	306,5	270,9	317,5
AKMH65	284,9	331,5	295,9	342,5

AKMH6x Performance Data

AKMH6x Performance Data – Up to 640 V DC

Parameters	Tol	Symbol	Units	AKMH62			AKMH63			AKMH64		AKMH65		
				H	L	M	H	L	M	K	L	K	L	M
Max Rated DC Bus Voltage	Max.	V _{bus}	V DC	640	640	640	640	640	640	640	640	640	640	640
Continuous Torque (Stall) for ΔT winding = 100K ①②④	Nom.	T _{CS}	Nm	10,6	10,8	10,9	14,6	14,8	15,0	18,7	19,0	21,9	22,2	22,2
Continuous Current (Stall) for ΔT winding = 100K ①②④	Nom.	I _{CS}	A _{RMS}	5,3	11,7	13,1	5,2	10,6	13,0	8,7	12,1	9,1	11,3	12,6
Continuous Torque (Stall) for ΔT winding = 60K ②	Nom.	T _{CS}	Nm	8,48	8,64	8,72	11,7	11,8	12,0	15,0	15,2	17,5	17,8	17,8
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	39,8	40,1	40,2	57,9	58,4	58,8	75,1	75,6	91,4	92,0	92,0
Peak Current	Nom.	I _p	A _{RMS}	27,1	60,0	67,0	28,0	55,4	69,0	46,0	64,0	49,0	61,0	68,0
75 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	-	-	-	-	-	-	-	-	-	-
	Rated Speed	N _{rtd}	rpm	-	-	-	-	-	-	-	-	-	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	-	-	-	-	-	-	-	-	-	-	-
160 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	-	-	-	-	-	-	-	-	-	-	-
	Rated Speed	N _{rtd}	rpm	-	-	-	-	-	-	-	-	-	-	-
	Rated Power (speed) ①②④	P _{rtd}	kW	-	-	-	-	-	-	-	-	-	-	-
320 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	10,5	9,61	9,10	-	13,4	13,3	17,1	16,8	20,2	19,7	19,4
	Rated Speed	N _{rtd}	rpm	1000	2500	3000	-	1800	2000	1200	1500	1000	1300	1500
	Rated Power (speed) ①②④	P _{rtd}	kW	1,10	2,52	2,86	-	2,53	2,79	2,15	2,64	2,12	2,68	3,44
560 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	9,93	4,95	3,33	13,6	11,1	7,90	15,6	12,5	17,7	16,0	15,1
	Rated Speed	N _{rtd}	rpm	1800	5000	5500	1500	3000	4000	2000	3000	2000	2500	2700
	Rated Power (speed) ①②④	P _{rtd}	kW	1,87	2,59	1,92	2,14	3,49	3,31	3,27	3,93	3,71	4,19	4,27
640 V DC	Rated Torque (speed) ①②④	T _{rtd}	Nm	9,86	3,31	3,33	13,2	9,60	5,70	14,2	10,0	17,1	14,5	13,5
	Rated Speed	N _{rtd}	rpm	2000	5500	5500	1800	3500	4500	2500	3500	2500	2800	3000
	Rated Power (speed) ①②④	P _{rtd}	kW	2,07	1,91	1,92	2,49	3,52	2,69	3,72	3,67	3,94	4,25	5,69

Notes:

- ① Motor winding temperature rise $\Delta T=100K$, at 40°C ambient.
- ② All data referenced to sinusoidal commutation.
- ④ Motor with standard heat sink.
- ⑤ May be limited at some values of V_{bus}

AKMH6x Performance Data – Up to 640 V DC (Continued)

Parameter	Tol	Symbol	Einheit	AKMH62			AKMH63			AKMH64		AKMH65		
				H	L	M	H	L	M	K	L	K	L	M
Torque Constant ①	±10 %	K_t	Nm/A	2,20	1,00	0,91	3,00	1,5	1,24	2,28	1,66	2,54	2,1	1,85
Back EMF Constant ⑥	±10 %	K_e	V/min ⁻¹	142	65,5	58,8	195	98,2	79,9	147	107	164	133	119
Motor Constant	Nom.	K_m	Nm/√W	0,99	0,95	0,97	1,3	1,3	1,3	1,6	1,5	1,8	1,8	1,7
Resistance (line-line) ⑥⑦	±10 %	R_m	Ohm	3,32	0,757	0,587	3,45	0,957	0,627	1,43	0,767	1,37	0,92	0,747
Inductance (line-line)		L	mH	25,4	5,40	4,40	28,1	7,40	4,90	11,8	6,2	11,4	7,6	6,1
Inertia (includes Resolver feedback) ③	±10 %	J_m	kg · cm ²	16,9			24,2			31,6		40		
Optional Brake Inertia (additional)	±10 %	J_m	kg · cm ²	0,61			0,61			0,61		0,61		
Weight ⑧⑨		G	kg	19,6			23,1			26,7		30,2		
Static Friction ①		T_f	Nm	1,05			1,1			1,15		1,2		
Viscous Damping ①		K_{dv}	Nm/1000min ⁻¹	0,04			0,06			0,08		0,1		
Thermal Time Constant		TCT	min	58			62			75		88		
Thermal Resistance		R_{thw-a}	K/W	0,58			0,55			0,53		0,52		
Pole Pairs				5			5			5		5		
Heat Sink Size			cm	45,72 x 45,72 x 1,27 Aluminium Plate			45,72 x 45,72 x 1,27 Aluminium Plate			45,72 x 45,72 x 1,27 Aluminium Plate		45,72 x 45,72 x 1,27 Aluminium Plate		

Notes:

① Motor winding temperature rise, $\Delta T=100$ K, at 40°C ambient.

③ Add parking brake if applicable for total inertia.

⑥ Measured at 25°C.

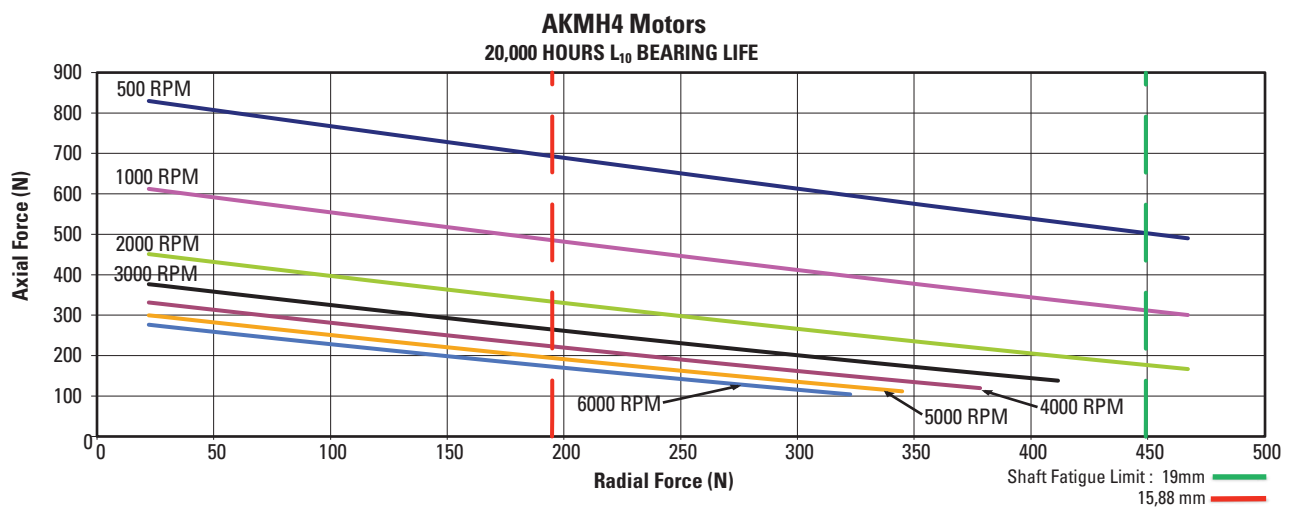
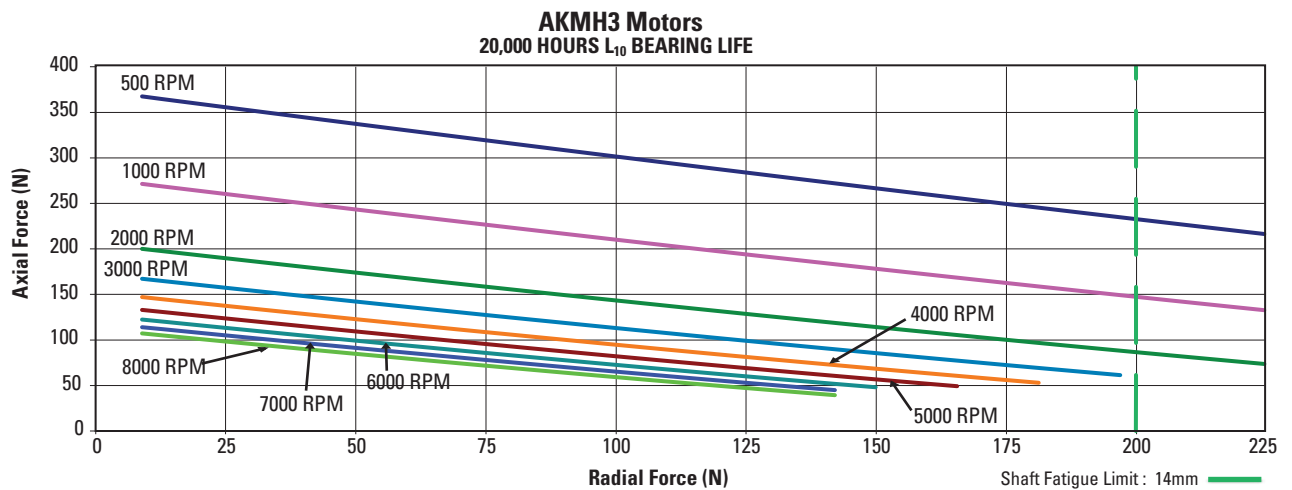
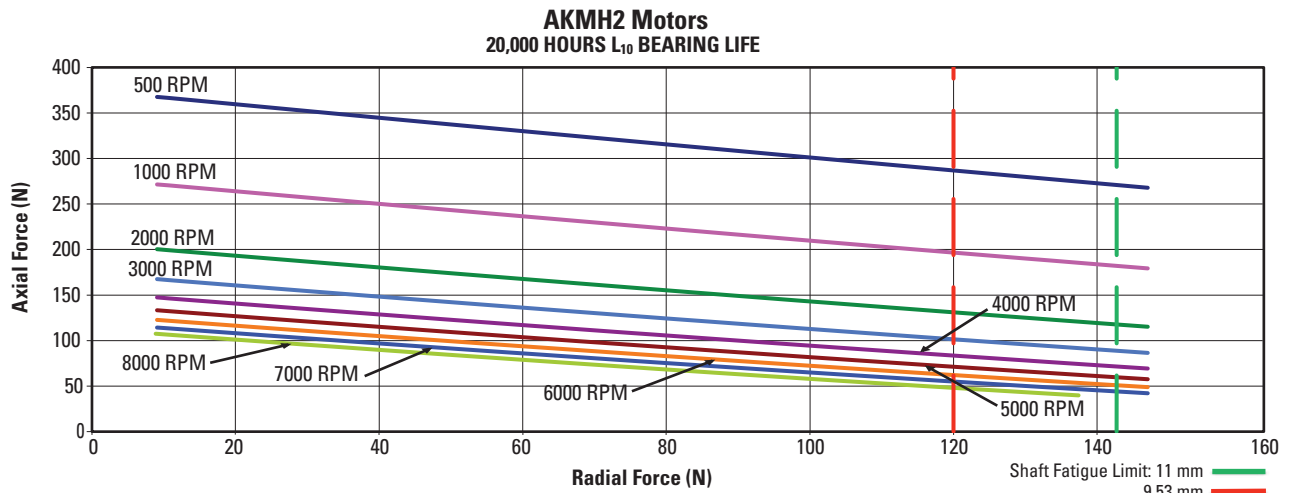
⑦ Resistance is measured with 1 meter of cable.

⑧ Face mount adds 2,5 kg

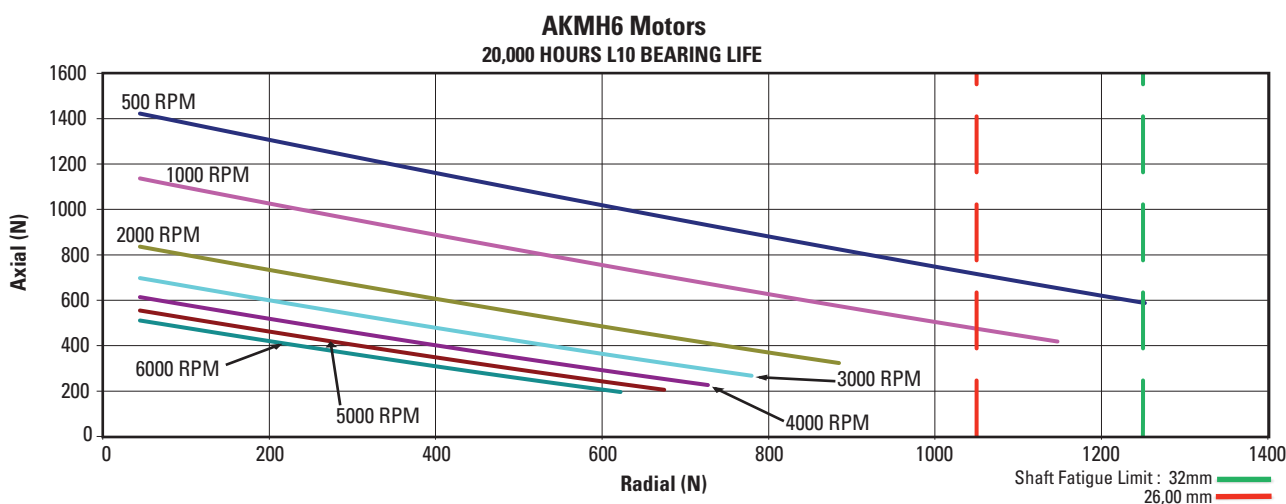
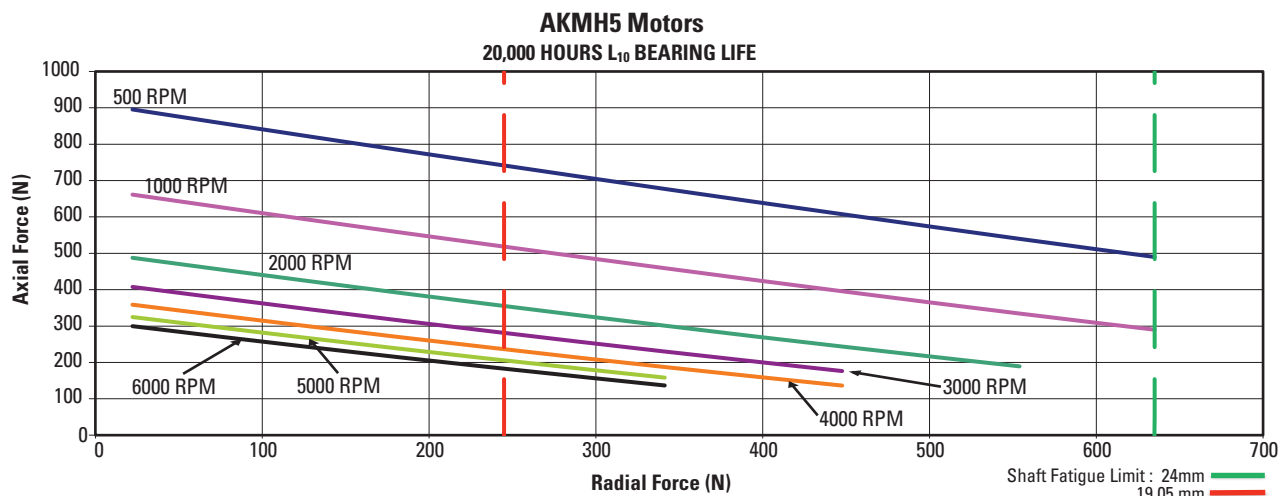
⑨ Brake options adds 3,4 kg

L10 Bearing Fatigue Life and Shaft Loading

Bearing Fatigue



Bearing Fatigue



Shaft Loading

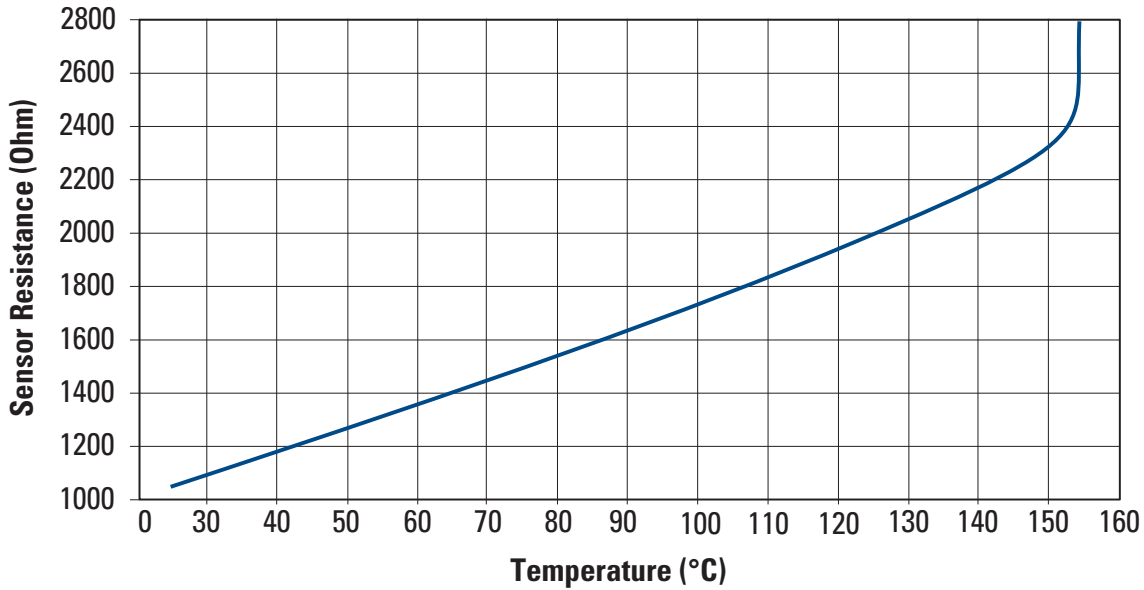
Motor	Max. Radial Force (N)	Max. Axial Force(N)
AKMH2xy-A / C	140	600
AKMH2xy-B / D	120	600
AKMH3xy-A / C	200	600
AKMH4xy-A / C	450	1400
AKMH4xy-B / D	195	1400
AKMH5xy-A / C / G / H	635	1740
AKMH5xy-B / D	245	1740
AKMH6xy-A / C	1250	2200
AKMH6xy-D	1050	2200

The maximum radial load ratings reflect the following assumptions:

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

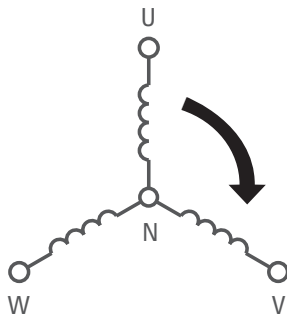
Overload Protection

The standard version of each motor is fitted with an electrically isolated temperature sensor (rated temperature 155 °C ±5%). The sensor does not provide any protection against short, heavy overloading. The sensor is integrated into the monitoring system of the AKD.



Phase Diagram

Motor Winding Configuration and Rotation – All Motors



Phase between voltages U, V, W when the motor is rotated CW (viewed from the drive shaft end).

Brake Option

Holding Brake

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

AKMH Motor Brake Specifications

Motor Size	Minimum Static Torque at 120 °C	Power Consumption at 24 V, 20 °C	Current at 24 V, 20 °C	Inertia	Closing Time (engage)	Opening Time (release)	Backlash	
							Maximum	Typical
	Nm	Watts ±7 %	A DC	kg·cm ²	ms	ms	deg	deg
AKMH2	1,42	8,4	0,35	0,011	36	35	1,01	0,46
AKMH3	2,5	10,1	0,42	0,011	20	50	1,01	0,46
AKMH4	5,3	12,8	0,53	0,068	30	75	0,81	0,37
AKMH5	14,5	19,5	0,82	0,173	30	115	0,71	0,31
AKMH6	25	25,7	1,07	0,605	40	155	0,51	0,24

Note 1: Operating Voltage: 24 V DC ± 10%.

Note 2: Maximum backlash is calculated using worst-case tolerancing, and typical backlash is calculated using statistical tolerancing.

Feedback Options

Robust resolver based encoder systems have been proven for several years in many drive systems. More than ten years ago Kollmorgen began pioneering the advance towards the digital resolver; bringing to market the innovation that combines the benefits of a robust analog technology with the advantages of digital encoder systems. Whether you choose the digital resolver SFD3 or high-resolution digital Hiperface®-DSL encoders, Kollmorgen single-cable technology will bring you significant cost advantages, better performance and higher data reliability - from the very first meter of cable.

AKMH Servomotor with AKD/AKD-N Servo Drive

Feedbackdevice	Option Code	Plug-and-Play, Motor-ID	Resolution with AKD, AKD-N (Bit)	Accuracy arc-min (±)
Digital Resolver, SFD3 single-turn, 2-wire	CA	Y	24	9
Hiperface-DSL-Encoder, single-turn	GE	Y	18	0,60
Hiperface-DSL-Encoder, multi-turn	GF	Y	18	0,60

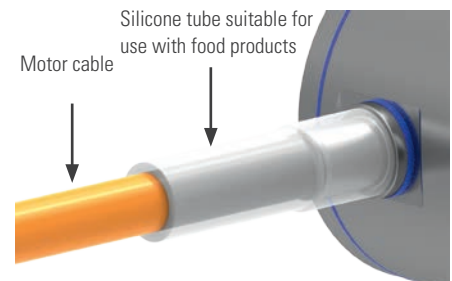
Cable Options

Technical Data of the Hybrid Cable

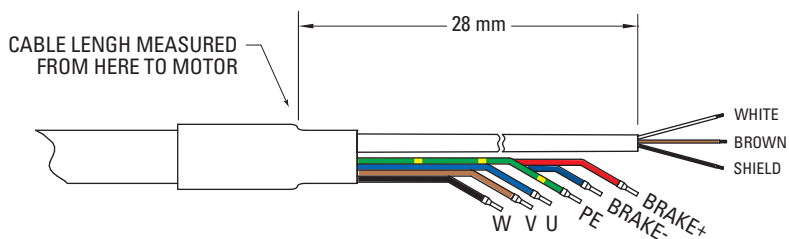
Electric Properties and Design	
Type of cable	Multi-core insulated hybrid cable; only one cable type required for digital resolver SFD3 and Hiperface DSL
Max. Operating Voltage	600 V
Max. Operating temperature	125 C
Inner conductor	1x4, 2x2 including shield, overall shield
Motor connection	4 conductors in AWG14 or AWG12 (meet the standards NFPA79 (Electrical Standard for Industrial Machinery), EN-60204-1 (Safety of Machinery – Electrical Equipment of Machines) and IEC 60364-5-52 (Electrical Installations), without additional motor overload protection being required based on the motor output)
Brake	Two conductors, insulated
Communication	Two conductors, insulated, nominal impedance 110 Ohm (± 10 Ohm) for high data rates
Overall shield	Available
Vent	Available
Approvals	UL, CSA, CE, RoHS compliant materials in accordance with EU Directive 2002/95/EC Not approved for direct contact with food products (see below)
Mechanical Properties	
Material	TPE (thermoplastic elastomer), suitable for regular cleaning
Protection class	IP69K
External diameter	
Rated current of up to 12A	15.1 mm, 17.8 mm (including protective sleeve), bending radius of more than 153 mm, inner conductor 4xAWG14
Rated current of up to 20A	16.5 mm, 19.05 mm (including protective sleeve) bending radius of more than 165 mm, inner conductor 4xAWG12
Including silicone tube	25.4 mm (for cable types with a rated current of 12 A and 20 A)
Bending radius	At least 10 times the cable diameter; not suitable as ground cable
Color	RAL2003 (pastel orange)
Chemical properties	Resistant to standard cleaning products
Light resistance	Not UV resistant

Using the Cable in Direct Contact with Food Products

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

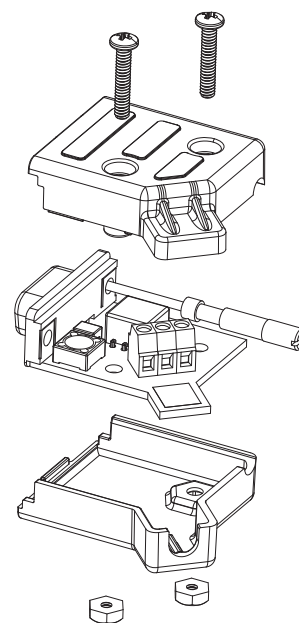
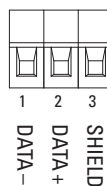


Digital Resolver SFD3 Cable Wiring

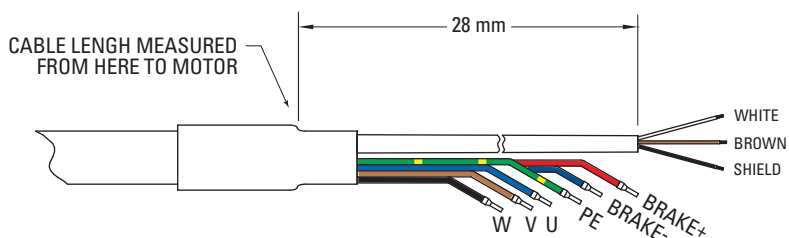


All Motor Power Connections (flying leads)	
Function	Color
Phase U	Blue
Phase V	Brown
Phase W	Black
PE	Green / Yellow
Brake +	Red (18 AWG)
Brake -	Blue (18 AWG)
Shield	

SFD3				
Function	Color	Terminal Strip in Adapter	Pin (AKD)	Pin (Adapter)
DATA -	White	-	6	1
DATA +	Brown	+	7	2
SHIELD		SHIELD	Housing	3

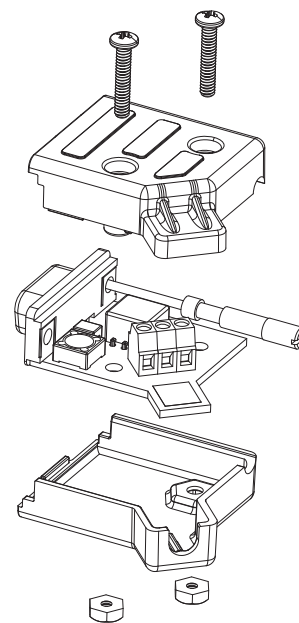
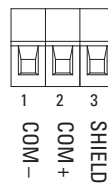


Hiperface DSL Cable Wiring



All Motor Power & Brake Connections (flying leads)	
Function	Color
Phase U	Blue
Phase V	Brown
Phase W	Black
PE	Green / Yellow
Brake +	Red (18 AWG)
Brake -	Blue (18 AWG)
Shield	

Hiperface DSL			
Function	Color	Terminal Strip in Adapter	Pin (Adapter)
COM -	White	-	1
COM +	Brown	+	2
SHIELD		SHIELD	3

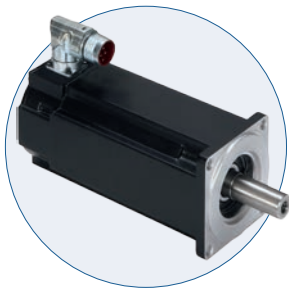


Universal Drive Solutions for the Food, Beverage, and Pharmaceutical Industries

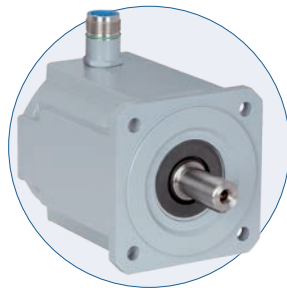
Motors from Kollmorgen provide the perfect mix of performance and hygiene

The Kollmorgen modular system includes a wide range of motors with carefully graduated performance data, a variety of connection options, and feedback devices. With more than 500,000 standard motor designs, you will definitely find a suitable motor to meet your requirements.

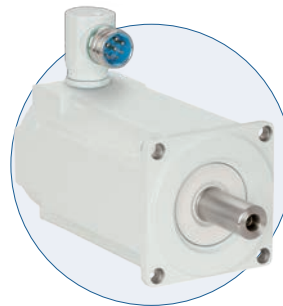
Meeting the strict legal regulations and the customers' requests for innovative yet cost-effective drive solutions always poses a challenge to the mechanical engineer. Drive solutions from Kollmorgen provide the perfect mix of hygiene and performance data for applications in normal and difficult operating environments, as well as for hygienic drives. Kollmorgen has invested more than 70 years of experience in the AKM, AKM Washdown, AKM Washdown Food and AKMH stainless steel motor ranges that prove themselves on a daily basis in the testing conditions of the food, beverage, and pharmaceutical industries.



AKM



AKM Washdown



AKM Washdown Food



AKMH Hygienic Stainless Steel

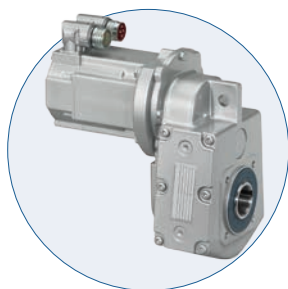
	AKM	AKM Washdown	AKM Washdown Food	AKMH
Area of application	Dry area	Wet area	Wet area	Wet area, hygienic
Suitable for high-pressure and high-temperature cleaning		Limited	Limited	X
Round stainless steel housing				X
Stainless Steel Shaft	X	X	X	X
FDA-compliant, coating suitable for use with food products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

From Special to Standard Solution Thanks to Co-Engineering

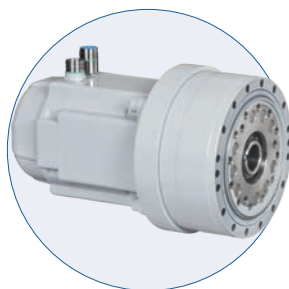
Powerful, ready-to-install, washable: hygienic motor/gearhead combinations

Thanks to the Washdown, Washdown Food and Hygienic type AKM gearmotors, Kollmorgen has been able to realize most of the transport and rotary applications in the food and beverage industry, as well as downstream packaging using standardized drive solutions. This is based on combining an AKM servomotor with highly efficient gearheads.

The main advantages of the ready-to-install drive units with a consistent, hygienic design include: significantly reduced cleaning times due to smooth and water-repellant surfaces, low energy costs thanks to the highly efficient motor/gearhead combinations, as well as simplified design options for machines implemented by means of space-saving assembly without additional stainless steel casings. Thanks to the use of FDA-compliant materials and the specially rounded housing design, motor/gearhead combinations from Kollmorgen meet the highest hygiene standards and reduce the risk of product contaminations and recall campaigns.



AKM41E-BF06



AKM62L-F2CS-A35-59



AKM62K-BK17



AKMH65M-AQT160-004

Type		AKM41E-BF06	AKM62L-F2CS-A35-59	AKM62K-BK17	AKMH65M-AQT160-004
Version		Washdown, coated	Washdown, coated	Washdown-Food, coated	Hygienic, stainless steel
Rated output torque	Nm	51	668	175	64
Endurable acceleration torque	Nm	76	1390	400	876
Average output speed	rpm	75	28	181	675
Maximum output speed	rpm	95	67	200	1000
Gear ratio		31.5	59	19.39	4
Transmitter		Resolver	Resolver	Resolver	Digital resolver SFD3, Hiperface DSL
Special features			Circumferential backlash of less than 1 arcmin, holding brake	FDA-compliant coating, lubrication, and bearing grease	Circumferential backlash of 13 arcmin, single cable solution
Benefits		<ul style="list-style-type: none"> Developed for regular cleaning with common cleaning products with pH2 of up to 12 Space-saving motor/gearhead technology Increased service life in rough environmental conditions 	<ul style="list-style-type: none"> High peak performance and minimal circumferential backlash Extremely compact design including highest torque efficiency Long service life thanks to washdown coating 	<ul style="list-style-type: none"> Lower energy cost thanks to high efficiency of the servomotor and gearhead Suitable for indirect contact with food products Simple to clean thanks to rounded housing design 	<ul style="list-style-type: none"> Fast to clean thanks to hygienic design and single cable solution Simple startup by means of electronic rating plate and single cable connection technology Reduced risk of food products having to be recalled thanks to hygienic design

AKD™ Servo Drive

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

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

The advantages for you

- Higher machine speed/throughput

- Less rejects, better quality

- Quicker exchange, increased availability

- Reduced time-to-market

Key features

- Feedback with maximum resolution (up to 27 bit)
- Torque and speed control with high bandwidth – The quickest digital torque control on the market: 0.67 μ s
- Multi function Bode plot simplifies the evaluation and optimization of drive and machine performance
- Patented, powerful autotuning algorithms
- Enhanced servo technology enables excellent machine performance
- High-resolution analog input (digital --> analog)
- Two powerful processors enable quick settling time
- "Real time" software oscilloscope with six channels for quick startup and diagnostics
- Automatic completion of programmable commands saves searching for parameter names
- The recording and transmission of program plots and parameter settings with a mouse click enables the immediate transfer of machine performance data
- Powerful and user-friendly user interface
- Robust and reliable quality
- Supports a great number of single-turn and multi-turn feedback systems – Digital resolvers (SFD), EnDat2.2, EnDat2.1, BiSS, analog sin/cos encoders, incremental encoders, HIPERFACE® and resolvers
- Integrated motion bus systems EtherCAT®, SynqNet®, PROFINET®, Ethernet/IP® and CANopen®
- For operating rotary and linear motors
- Wide range of programming options
- Compatible with many front end controllers
- Exceptional power density

AKD Standard Servo Drive

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

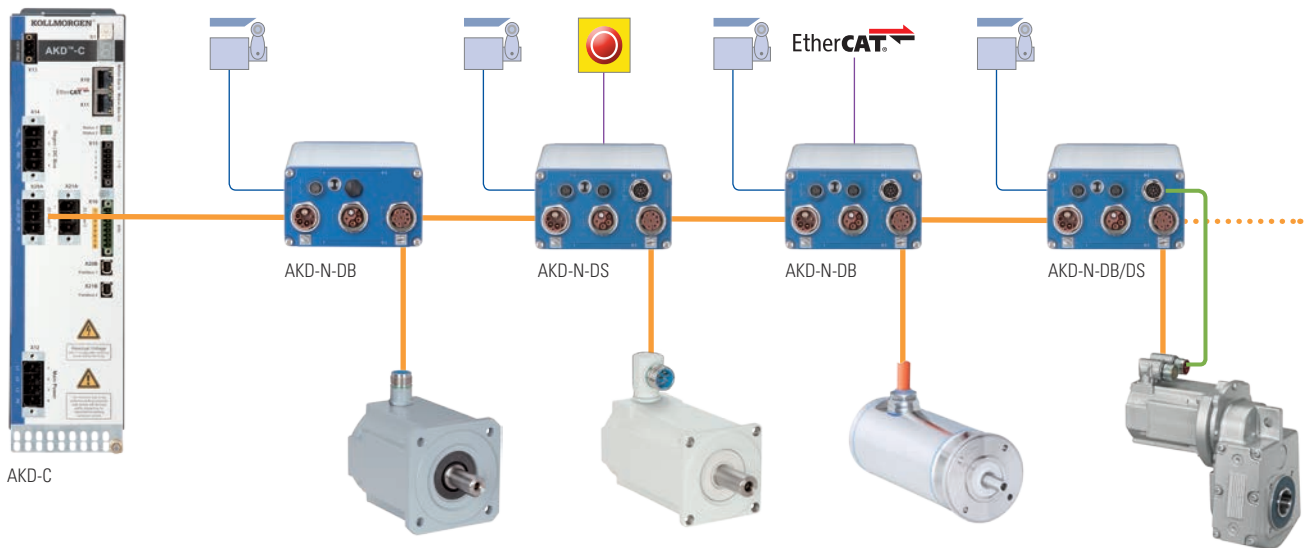


General Specifications

120 / 240 V AC 1-ph / 3-ph (85 -265 V)	Continuous Current (A _{rms})	Peak Current (A _{rms})	Drive Continuous Output Power (kW)	Internal Regen (kW) (Ohms)		Height (mm)	Width (mm)	Depth (mm)	Depth with Cable Bend Radius (mm)
AKD-■00306	3	9	1,1	–	–	168	59	156	185
AKD-■00606	6	18	2	–	–	168	59	156	185
AKD-■01206	12	30	4	0,1	15	196	78	187	max. 215
AKD-■02406	24	48	8	0,2	8	238	100	228	max. 265
480 V AC 3-ph (187 -528 V)	Continuous Current (A _{rms})	Peak Current (A _{rms})	Drive Continuous Output Power (kW)	Internal Regen (kW) (Ohms)		Height (mm)	Width (mm)	Depth (mm)	Depth with Cable Bend Radius (mm)
AKD-■00307	3	9	2	0,1	33	256	70	185	max. 225
AKD-■00607	6	18	4	0,1	33	256	70	185	max. 225
AKD-■01207	12	30	8	0,1	33	256	70	185	max. 225
AKD-■02407	24	48	16	0,2	23	306	105	228	max. 265

AKD-N Distributed Servo Drive

Our decentralized servo drive system increases the efficiency over the entire life cycle of a machine (overall equipment effectiveness, OEE). First of all, the design configuration and the simple connection technology decrease the time for assembly, installation and startup in machine construction. During the operating phase, the AKD-N then play a valuable part in energy savings due to the integrated DC connection. Further advantages in the production are faster cleaning cycles via high protection types as well as fewer cables in combination with space-saving switch cabinet superstructures for an increase in production space. Moreover, the assembly and connection technology increases the availability – and thus the productivity – as maintenance and service tasks are completed faster.



More Freedom in Terms of Machine Design

Plug-in connections, free motor selection, mounting where there is already space, a high degree of integrated functions: These are only four examples of why straightforward drive and automation structures can be developed with the decentralized AKD-N servo drives – even in conjunction with the central AKD servo amplifiers. By using EtherCAT as the system bus for our servo amplifiers, we further reduce the complexity as the AKD-N can collect I/O signals and pass them on in bundled form. For that matter, the same can be said of the assembly and installation. No industrial electrical training is required for this purpose.

General Specifications

Model	Continuous Current (A _{eff})	Peak Current (A _{eff})	Continuous Input Power (kVA)	Protection Class	I/O Options			Feedback System	
					Digital I/O	Local STO	Tert. Fieldbus	Single Cable	Dual Cable
AKD-N-DB	3/6	9/18	1,5/3	IP67	3/1	–	–	Digital Resolver SFD3, Hiperface DSL	–
AKD-N-DF	3/6	9/18	1,5/3	IP67	3/1	–	✓		Digital Resolver SFD3 BISS-C, Comcoder EnDAT
AKD-N-DS	3/6	9/18	1,5/3	IP67	3/1	✓	–		
AKD-C ① (Power Supply Module)	17	34	10 kW ②	IP20	1/1 1 Relay	✓③	–	na	na

① For 2x8 AKD-N ② Total power ③ STO input and STO status output, one each per strand

MOTIONEERING® Application Engine

To help select and size Kollmorgen components, this Windows®-based motor-sizing program takes a systems approach to the selection of brushless DC servomotors, stepper motors and drives. MOTIONEERING application engine, available at www.kollmorgen.com, uses a project concept for the collection and saving of rotary and linear multi-axis load information. This provides the user the flexibility to sum the effects of multiple axes of motion for power supply and shunt regeneration sizing.

A wide variety of linear and rotary mechanisms are provided including lead screw, rack and pinion, conveyor, nip rolls, cylinder, rotary, and direct data-entry using unique sizing algorithms and product databases criteria.

The searchable database consists of hundreds of systems on product combinations including rotary housed and frameless brushless servomotors, direct drive rotary and linear brushless servomotors, linear positioners (electric cylinders, rodless positioners, and precision tables) and stepper systems.

The MOTIONEERING application engine also provides versatile units-of-measure selection options for mechanism and motion profile data-entry, with the ability to convert data into other available units. Online Help explains program functions and the definition of terms and equations used in the program.

Features

- Group multiple mechanisms within a “project” – organize and combine data for power supply and regeneration sizing
- Types of mechanisms for analysis include lead screw, rack and pinion, conveyor, nip rolls, rotary and direct drive linear motor
- Motion profile options include simple triangle, 1/3-1/3-1/3 trapezoidal, variable traverse trapezoidal, and more
- Search results display shows color highlighted solution set of options for easy evaluation of system specifications and selection

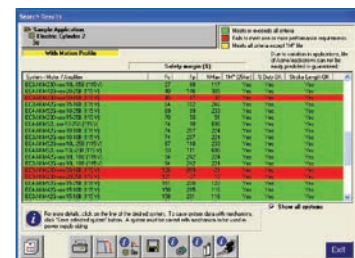
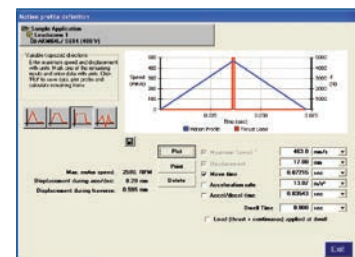
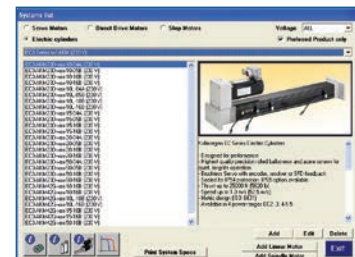
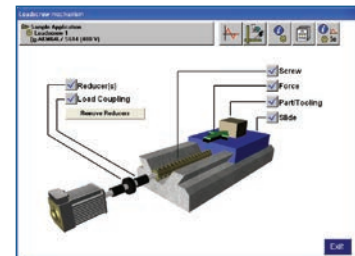
Supported Operating Systems

- Microsoft® Windows 2000, XP, Vista, Windows 7

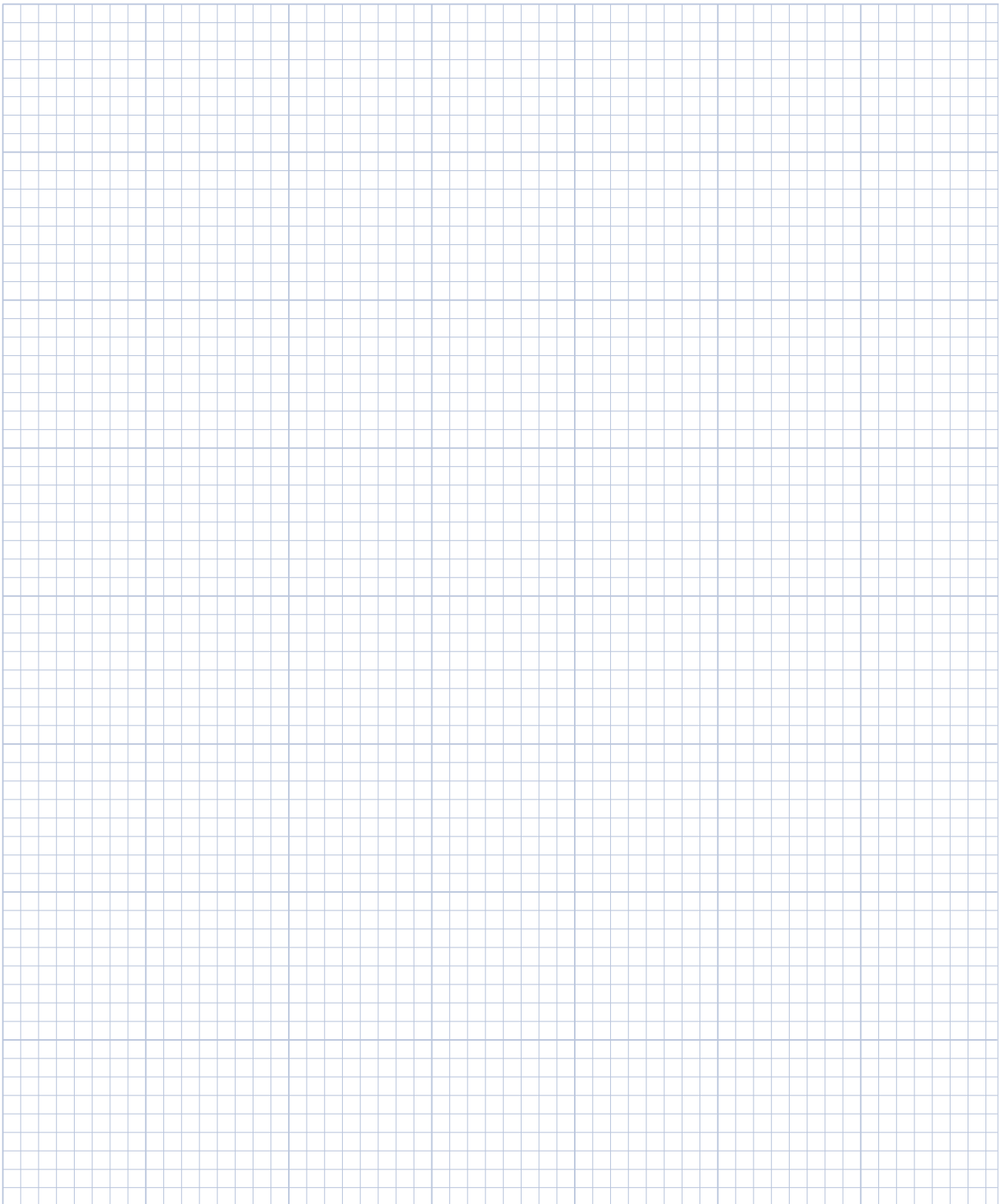
Motioneering 6.4.0 includes

- AKMH Hygienic Stainless Steel Motors and AKD systems at 120, 240, 400 and 480 V
- Designed to meet IP69K, EHEDG, 3A, and built with FDA approved food grade materials
- 19 frame/stack length combinations
- Continuous torque to 22 Nm
- Peak torque to 92 Nm
- Corrected length dimensions of some AKM servomotor & gearmotor models
- Corrected CH132 thermal resistance
- Added HIPERFACE DSL sine encoder to search field

Note: Performance curves included for all servomotor systems

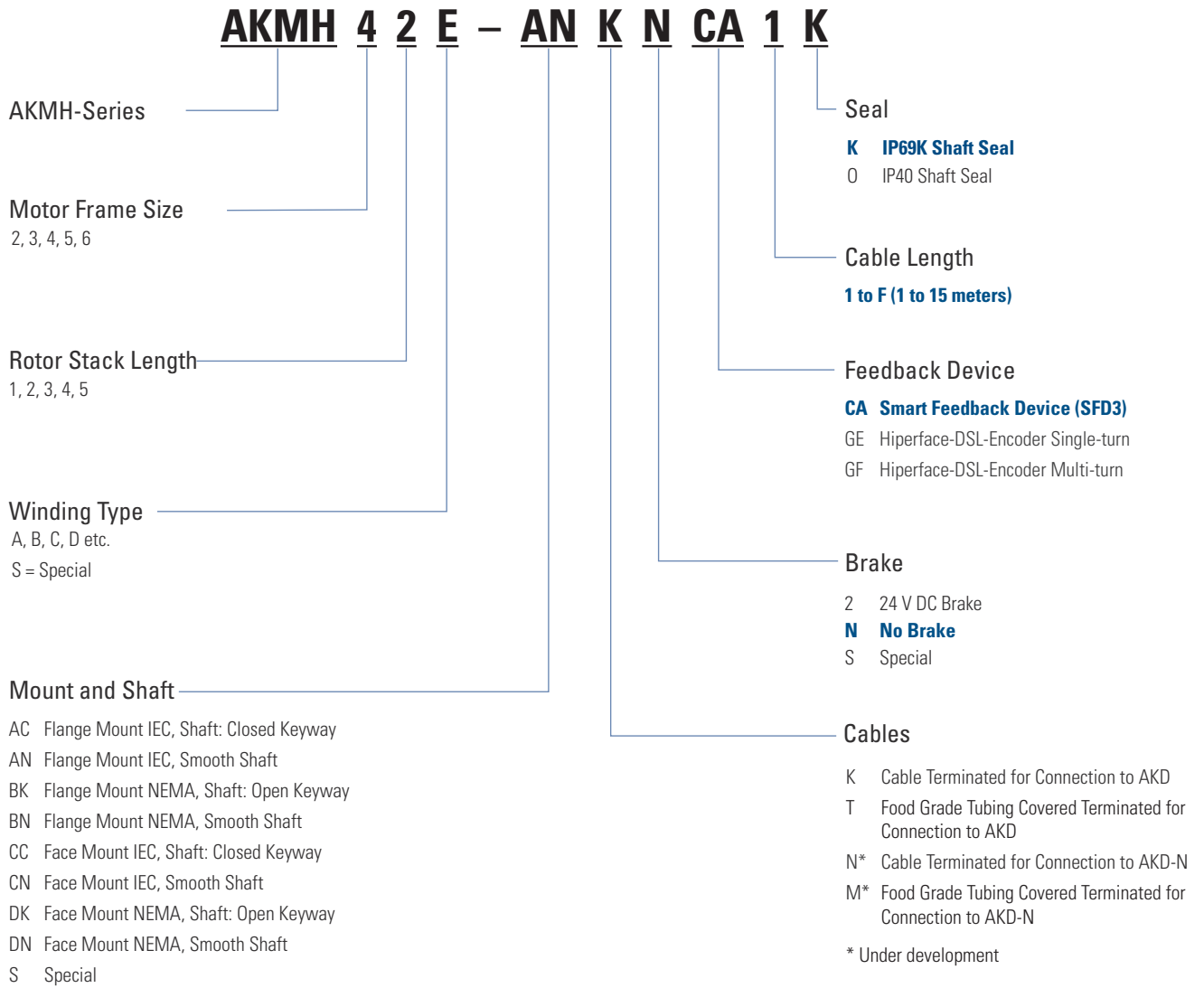


Motor Model	Torque (Nm)	Speed (rpm)	Other Specs
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...
ECM100-200-100-100-100	100	1000	...



Model Nomenclature

AKMH Hygienic Stainless Steel Servomotor



AKD Servo Drive

AKD - P 003 07 - NB CC - 0000

AKD-Family

Version

- P Position Indexer (Motion Tasking)
- T BASIC
- M PDMM

Current Rating

- 003 3 A
- 006 6 A
- 012 12 A
- 024 24 A

Voltage

- 06 120/240 V AC, 1-ph/3-ph
- 07 240/480 V AC, 3-ph

Variants

- 0000 Standard**

Connectivity

- AN Analog
- CN CANopen
- EC EtherCAT
- EI EtherNet/IP
- CC CANopen and EtherCAT**
- PN PROFINET

Expansions

- NB No Expansion
- IC Expands I/O Version and SD Card Slot (AKD-T only)
- MC Motion Control Card (AKD-M only)

AKD-C Power Supply Unit

AKD - C 010 07 - CB EC - E000

AKD-Family

Device Type

- C Central Power Supply IP20

Power Class

- 010 10 kW (17 kW @ 570 V DC)

Voltage Class

- 07 400 ... 480 V AC, 3-ph

Customization

- x000 Standard (x=Language)

Connection Option

- EC EtherCAT

Expansions

- CB No Expansion

AKD-N Distributed Servo Drive

AKD - N 003 07 - DB EC - E000

AKD-Family

Device Type

- N Near Servo Drive IP65/67

Current Class

- 003 3 A_{rms}
- 006 6 A_{rms}

Voltage Class

- 07 700 V DC

Customization

- x000 Standard (x=Language)

Connection Option

- EC EtherCAT

Expansions

- DB Hybrid Motor Cable
- DF Feedback Connector and Tertiary Fieldbus
- DS Feedback Connector and Local STO

About Kollmorgen

Kollmorgen is a leading provider of drive systems and components for machine engineering. Through world-class knowledge in motion, industry-leading quality and deep expertise in linking and integrating standard and custom products, Kollmorgen delivers breakthrough solutions unmatched in performance, reliability and ease-of-use, giving machine builders an irrefutable marketplace advantage.

For assistance with your application needs, visit www.kollmorgen.com for a global contact list.

- Application Centers
- Worldwide Development and Production Locations
- Worldwide Production Locations



KOLLMORGEN®

Because Motion Matters™

KOLLMORGEN Europe GmbH
Pempelfurtstraße 1
40880 Ratingen
Germany
Telephone: +49 (0) 2102 9394 0
Fax: +49 (0) 2102 9394 3155
E-Mail: think@kollmorgen.com