

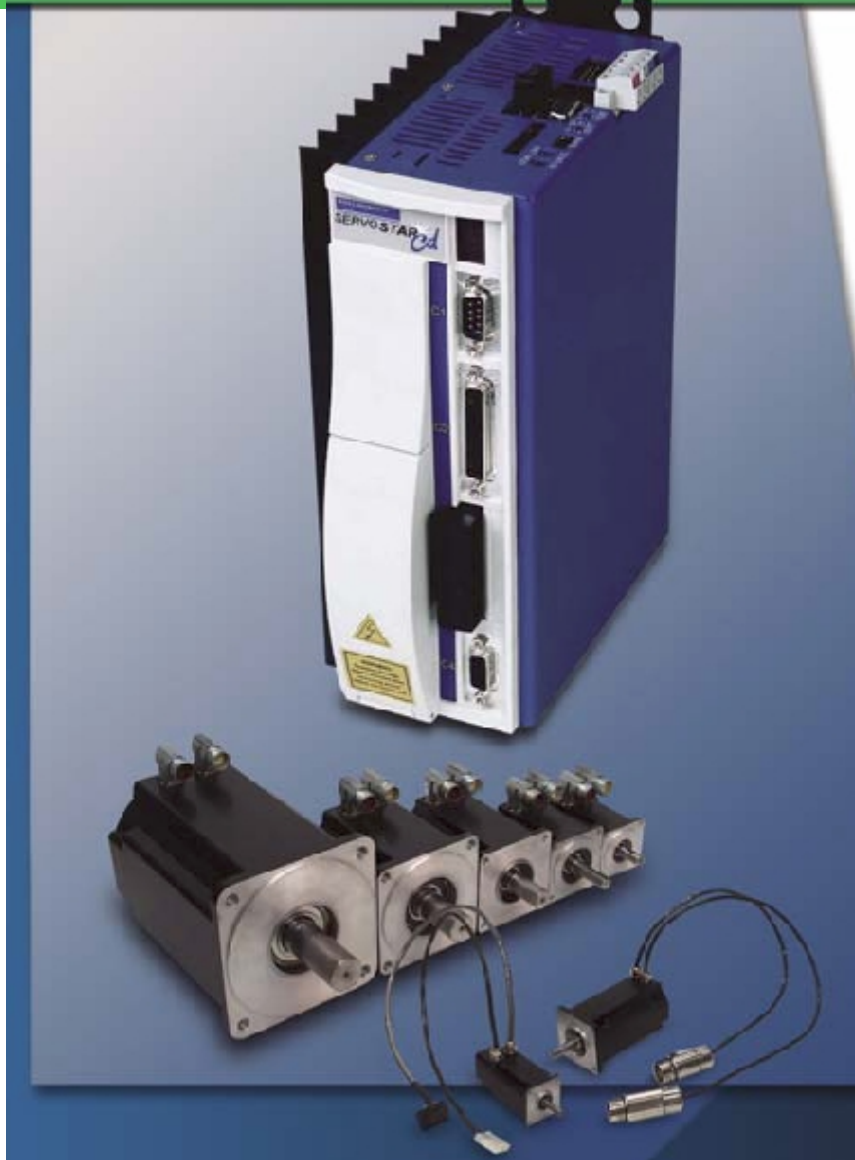


S_{pecialty} E_{lectronics} P_{roducts}

2005

CD Series 5

KOLLMORGEN
Servotronix



3A



6A



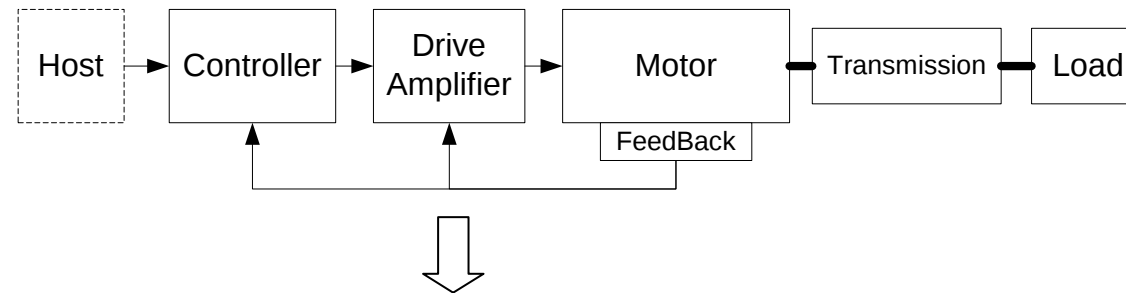
10A



20A

SSCD Series 5

Basic



Operation mode

Position, PID FF

Velocity, 5 types

Torque

From Controller

Command Network solution

Analog:

Standard +/-10VDC (C3)

Digital Technology:

RS232/RS485 (C1)

Pulse Following Input (C8)

Sercos (C4)

DeviceNet

CANOpen

Drive Amplifier

To Motor, three leads

160 - 300VDC

3/9 Amp

6/18 Amp

10/20 Amp

20/40 Amp

Feedback

Halls only

Incremental encoder with Halls

Resolver

Sine

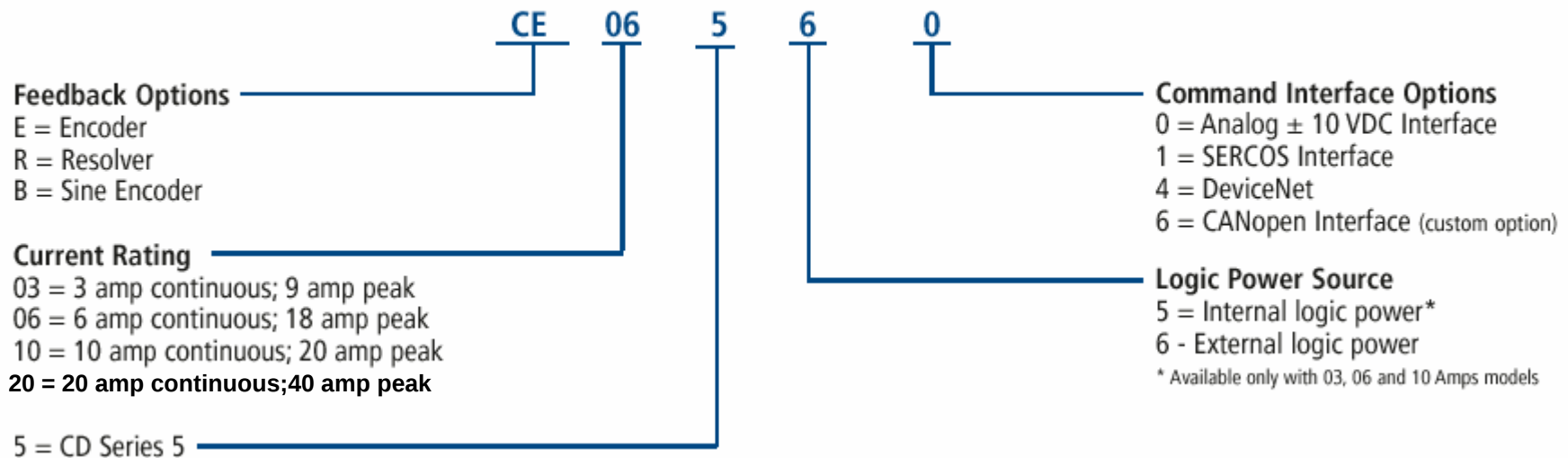
Sine EndDat /

Sine Stegmann 5V

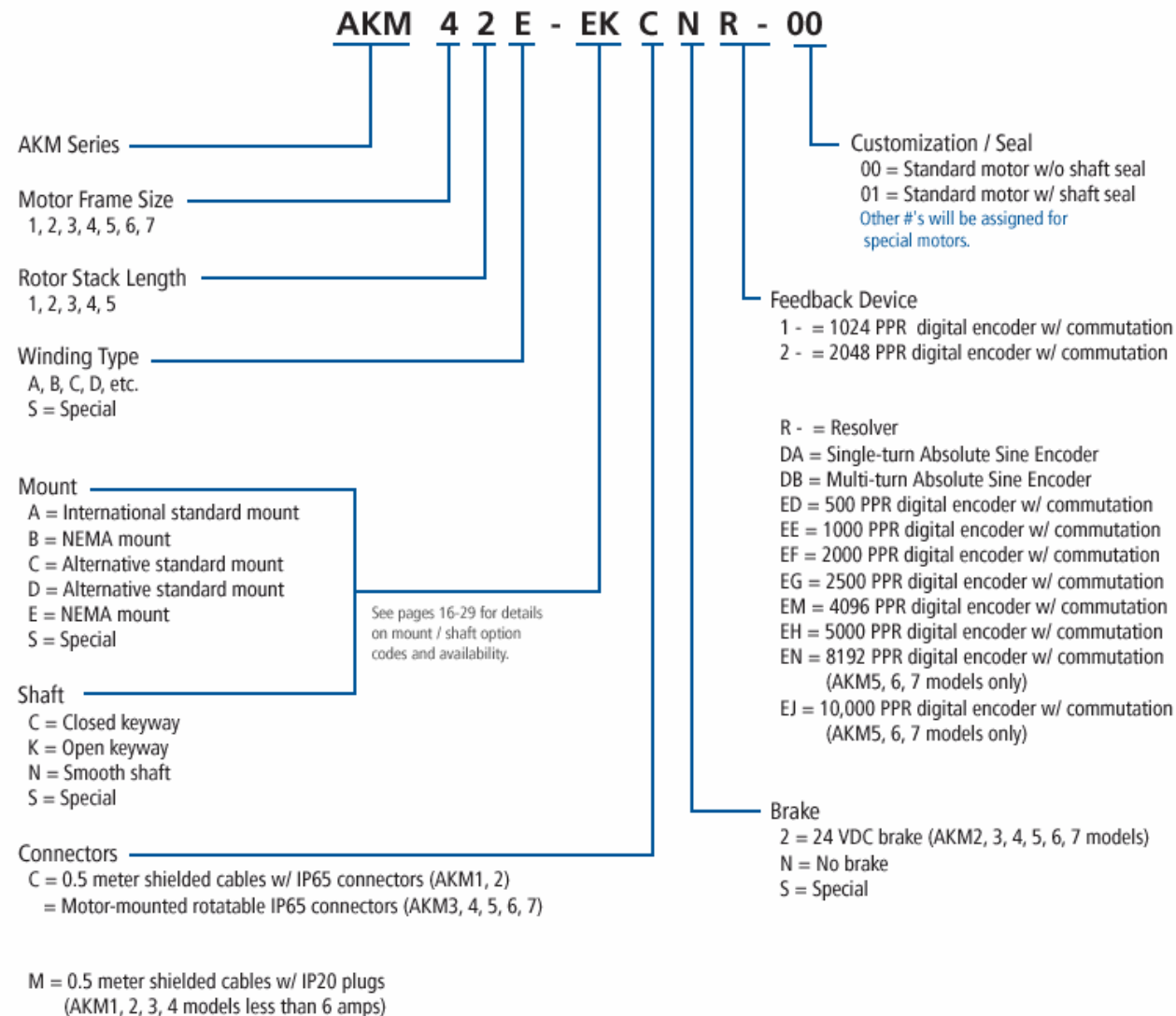
CD ordering information



Servo Drive Ordering Information



AKM ordering Information



DEMO CD Series 5



Demo

CE06550

AKM21C

11 units where shipped to NA

Ordering

PRD-DMOCD5EN-00



Options



Cable Sets	
CS-SS-RHA1HE-xx	Power and feedback cables for resolver based systems. IP65 connector at motor end and D-Sub connector at drive end for feedback.
CS-SS-RHAAHBE-xx	Power and feedback cables for resolver based systems with a brake. IP65 connector at motor end and D-Sub connector at drive end for feedback.
CS-SS-CHA1HE-xx	Power and feedback cables for encoder based systems. IP65 connector at motor end and D-Sub connector at drive end for feedback.
CS-SS-CHAAHBE-xx	Power and feedback cables for encoder based systems with a brake. IP65 connector at motor end and D-Sub connector at drive end for feedback.

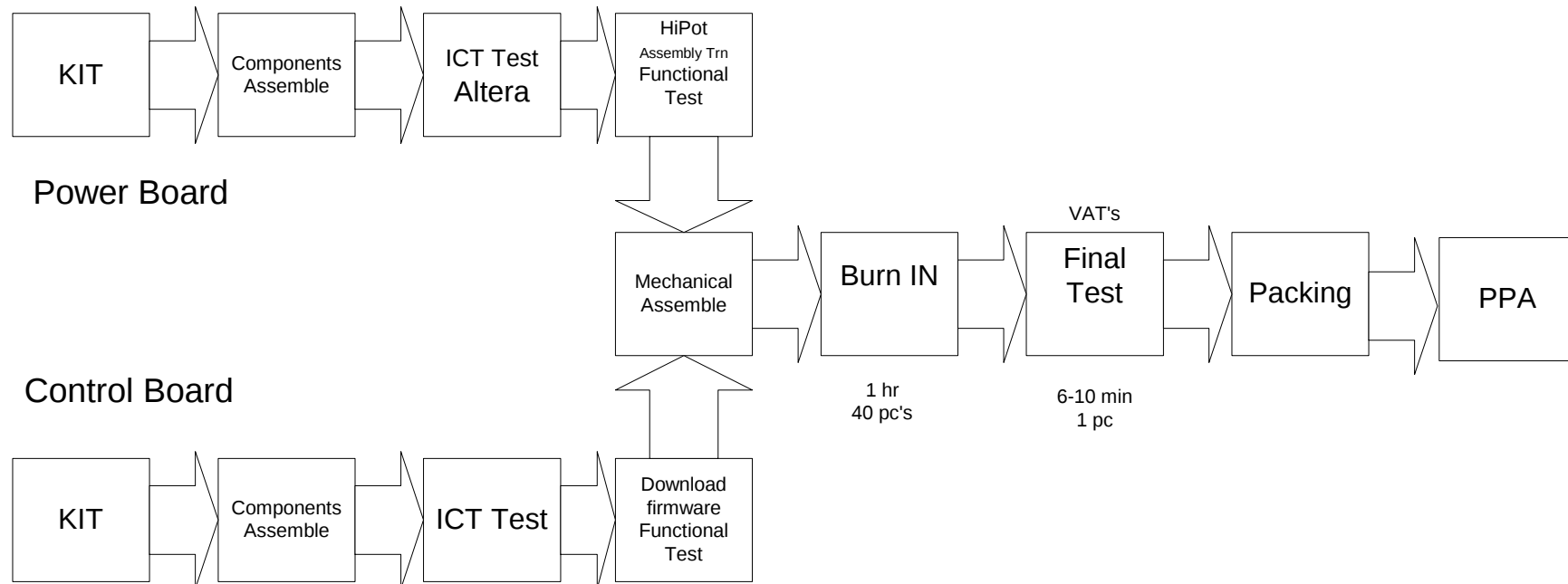
* xx requires a length in meters with options from 01, 03, 06 up to 75 meters in 3 meter increments.

Connector Kit	
CK 100	Mating plugs for C1, C2, C4, C7 and C8 Connectors

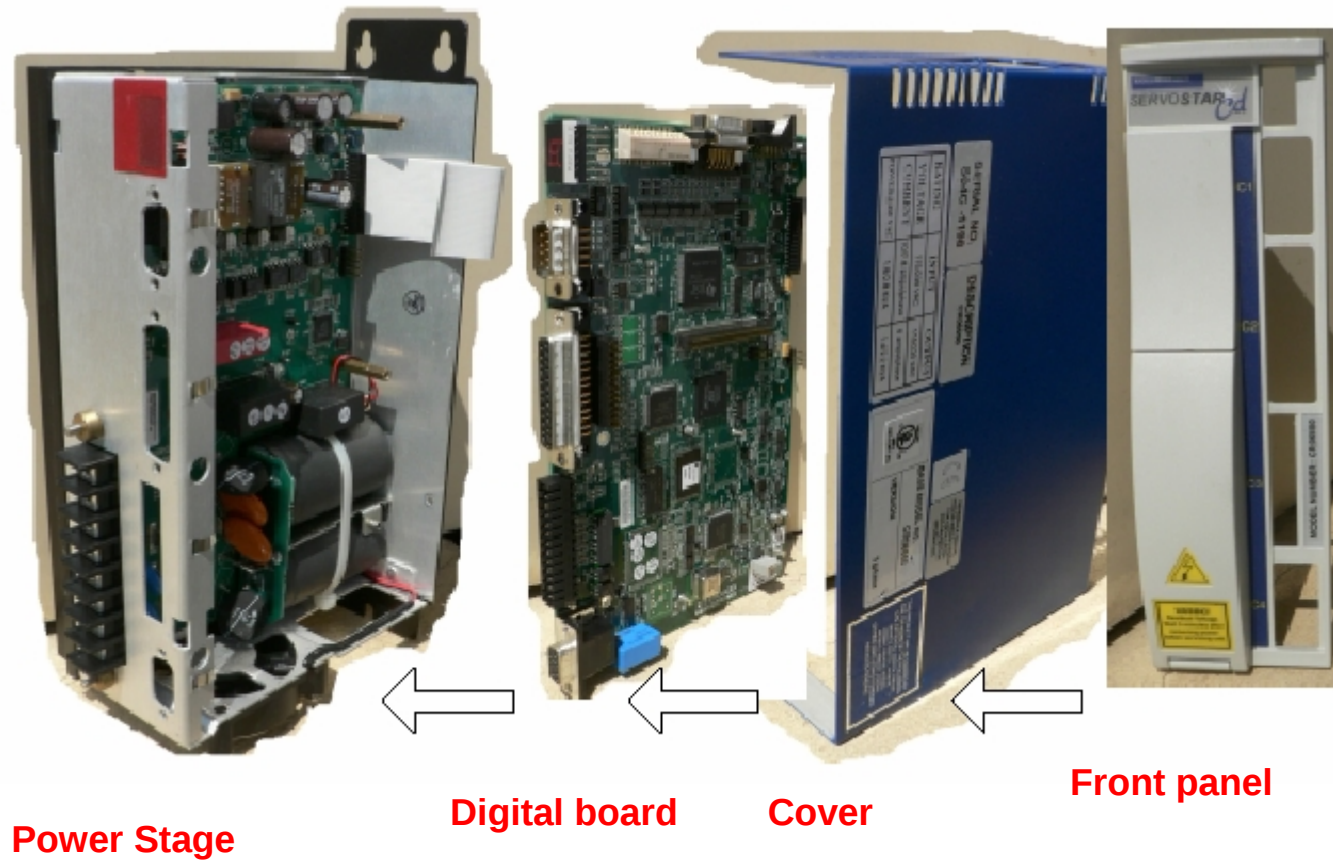
Regenerative Resistor Kit	
ERH-26	200 watts of shunt regulation for rapidly decelerating loads

Serial Cable	
A-97251-004	RS232 Serial Communications Cable, 2 meters long

CD Manufacturing Process



CD Manufacturing Process



Standard DHR cable Encoder



Hookup Table for cable model CF-SS-CHAE-XX					
Motor Pin Name	Motor Plug Pin #	Wire Color	Gage	DB-25 Pin #	Drive Pin Name
A	1	BLUE	26	1	A
A\	2	BLUE/BLACK		2	/A
B	3	GREEN		4	B
B\	4	GREEN/BLACK		5	/B
Z	5	YELLOW		15	INDEX
Z\	6	YELLOW/BLACK		16	/INDEX
Hab = S1	17	ORANGE		9	H1B
Hbc = S2	16	GRAY		10	H2B
Hca = S3	15	ORANGE/BLACK		11	H3B
THERMOSTAT	8	VIOLET		13	Thermostat High
	9	VIOLET/WHITE		25	Thermostat Low
+5V	10	RED	18	19	E5V Supply
Common	7	BLACK		7	E5V Return
	N/C	TO PIN 18, DB-25	26	22	H1A
				23	H2A
				24	H3A
	Housing	TO PINS 22,23,24		18	E5V Supply
		THERM SHIELD		Housing	Chassis
		OVERALL SHIELD			
OPTIONAL	10	RED/WHITE	18	20	E5V Supply
	7	BLACK/WHITE		8	E5V Return

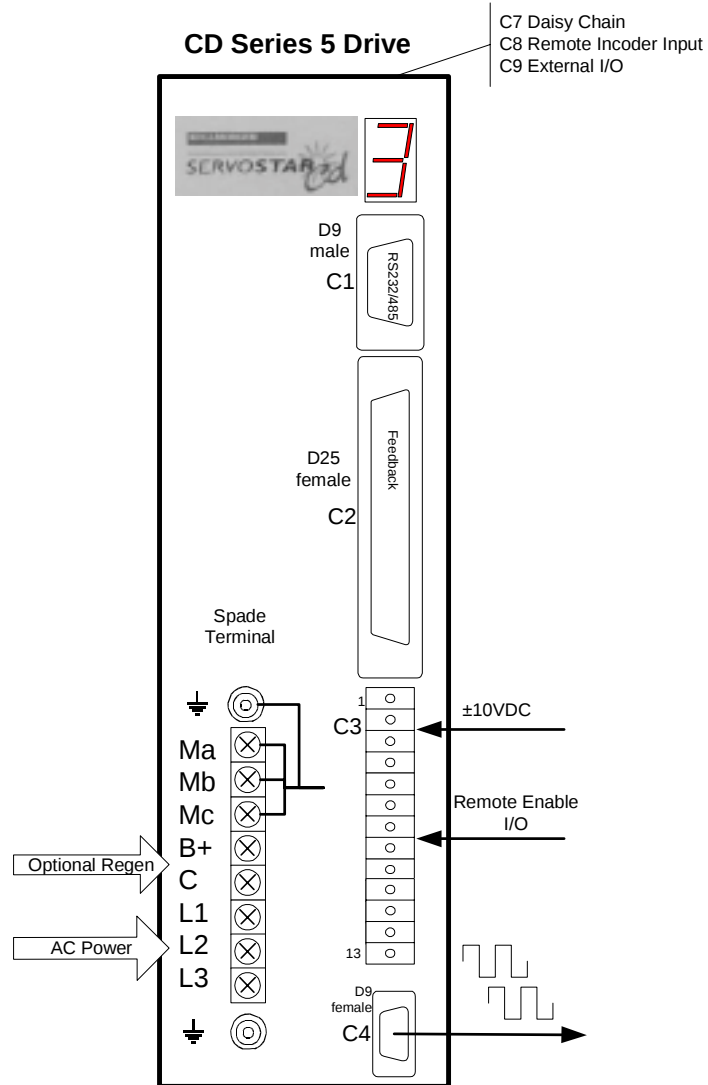
Standard DHR Cables Resolver / Sine



Hookup Table for cable model CF-SS-RHAE-XX					
Motor Pin Name	Motor Plug Pin #	Wire Color	Gage	DB-25 Pin #	Drive Pin Name
S3	3	RED	22	1	Sine High
S1	7	BLACK		2	Sine Low
S2	8	WHITE/GREEN		4	Cosine High
S4	4	WHITE/YELLOW		5	Cosine Low
R2	5	WHITE/BLACK		15	Ref High Out
R1	9	WHITE/RED		16	Ref Low Out
THERMOSTAT	2	GREEN		13	Thermostat High
	6	WHITE		25	Thermostat Low
Housing		THERM SHIELD		Housing	Chassis
		OVERALL SHIELD			

Hookup Table for cable model CF-SS-S3HAE-XX					
Motor Pin Name	Motor Plug Pin #	Wire Color	Gage	DB-25 Pin #	Drive Pin Name
B-	1	GREEN/BLACK	26	5	/B
B+	9	GREEN		4	B
A-	3	BLUE		2	/A
A+	11	BLUE/BLACK		1	A
Data+	5	YELLOW		22	H1A (C) (Data)
Data-	13	YELLOW/BLACK		9	H1B (/C) (/Data)
Clock+	8	ORANGE		23	H2A (D) (Clock)
Clock-	15	ORANGE/BLACK		10	H2B (/D) (/Clock)
Housing		OVERALL SHIELD		Housing	Chassis
Thermostat	7	VIOLET	26	25	Thermostat Low
	14	VIOLET/WHITE		13	Thermostat High
+5V (Up)	4	RED	18	19	E5V Supply
0V	2	BLACK		7	E5V Return
Housing		THERM SHIELD		Housing	Chassis

Front View, Power “C” connector



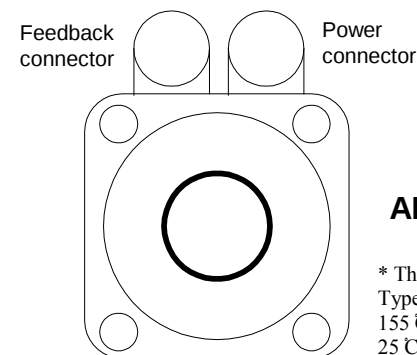
Power cable

Drive Power		Motor Power connector	
GND	Ground	2	PE grn/yel
Ma	Phase A **Bluw	3	W violet
Mb	Phase B **White	4	V brown
Mc	Phase C **Black	1	U blue
		A	Brake +
		B	Brake -

** Colors of standard KM cable



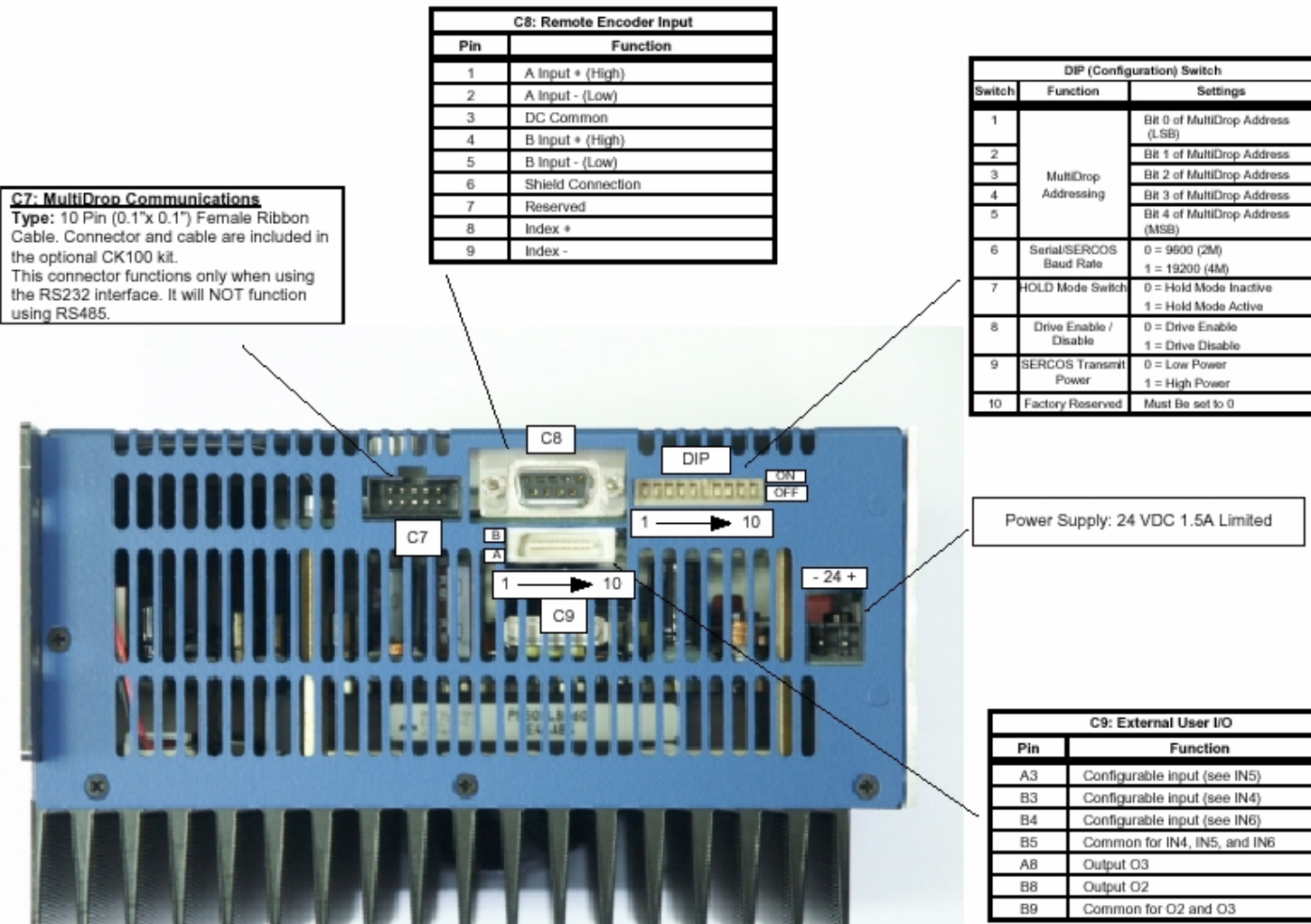
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AKM Motor

* Thermal Sensor
Type PTC
155 °C ± 5 °C switching temperature
25 °C: less then 550 ohms
Switching temperature:
More then 1330 ohms within ± 5 °C

Top view



Types of Feedbacks

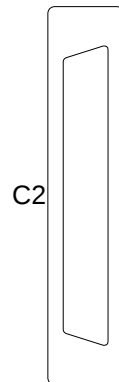


MENCTYPE - sets the motor encoder type. When this variable is changed on an encoder-based system, the drive will enter a no-comp state, requiring a CONFIG command (see CONFIG).

Encoder Characteristics				
Menctype	A/B	Marker Pulse	Absolute position	comments
0	x	x	Hall Effects	A/B/Z/H
1	x	x		A/B/Z ENCSTART, ENCINIT
2	X	x		A/B/Z ENCSTART, ENCINIT
3	x			Wake & Shake ENCSTART
4	x			Wake & Shake on power up K & ENCSTART
6	x		Hall Effects	A/B/H
7	x	x	C/D Channels	A/B/C/D/Z
8	x		C/D Channels	A/B/C/D
9	x		Endat	Heidenhain
10	x		Hiperface	Stegmann

MENCTYPE 0 - 4 can be used with both the Digital and Sine option. The drive will automatically sense the Sine Encoder board and make the appropriate adjustments.

Encoder Based “C” connector

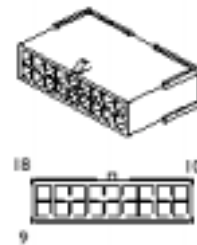


Drive Feedback C2		Motor feedback connector	
1	A	1	B green
2	A\	2	B\ green/black
3	Shield		
4	B	3	A blue
5	B\	4	A\ blue/black
6	Shield		
7	5V RTN	7	GND black
8			
9	H1b	17	W white
10	H2b	16	V grey
11	H3b	15	U brown
12	Shield		
13	Thermostat High	8	*Thermal Sensor
14	Shield		
15	Index	5	Z violet
16	Index\	6	Z\ violet/black
17	Shield		
18	5V Supply		
19	5V Supply	10	Vcc
20	5V Supply		
21	Shield		
22	H1a Tie to pin 18		
23	H2aTie to pin 18		
24	H3a Tie to pin 18		
25	Thermostat Low	9	*Thermal Sensor

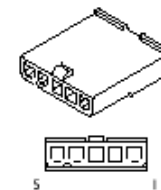


Encoder Based “M” connector

Drive Feedback C2		Motor feedback connector		
1	A	1	B	green
2	A\	2	B\	green/black
3	Shield			
4	B	3	A	blue
5	B\	4	A\	blue/black
6	Shield			
7	5V RTN	7	GND	black
8				
9	H1b	17	W	white
10	H2b	16	V	grey
11	H3b	15	U	brown
12	Shield			
13	Thermostat High	8	*Thermal Sensor	white/orange
14	Shield			
15	Index	5	Z	violet
16	Index\	6	Z\	violet/black
17	Shield			
18	5V Supply	10	Vcc	red
19	5V Supply			
20	5V Supply			
21	Shield			
22	H1a Tie to pin 18			
23	H2a Tie to pin 18			
24	H3a Tie to pin 18			
25	Thermostat Low	9	*Thermal Sensor	orange



Drive Power		Motor Power connector		
GND	Ground	5	Shield	yellow/green
Ma	Phase A	3	W	violet
Mb	Phase B	2	V	brown
Mc	Phase C	1	U	blue
		A	Brake +	
		B	Brake -	



Encoder Based Halls Menctype



Hall sensor transition table

Relevant commands: HALLS, MHINVA, B, C, MFBDIR

Note- Halls command replay Hc Hb Ha

The correct hall effect commutation is obtained by the following hall sensor states from "0" position through one electrical cycle. (CW rotation).

ZERO 2, IZERO

The ZERO command places the motor in a fixed electrical position by applying a constant current between phases.

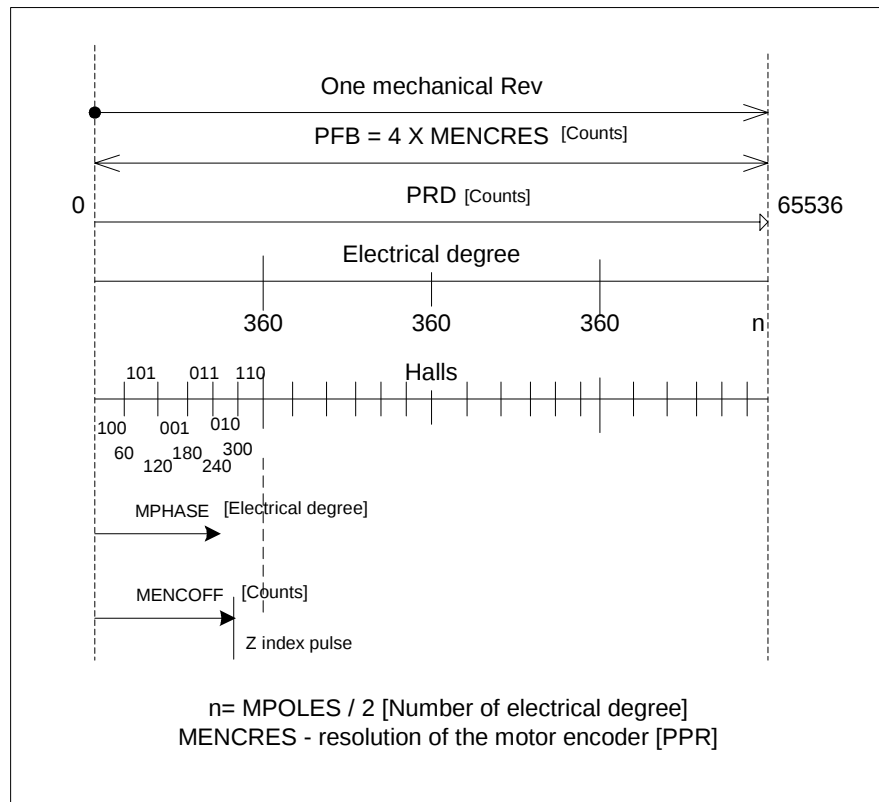
ZERO 2 (A-B)

Electrical Degree CW	Hall states A B C
0 - 60	1 0 0
60 - 120	1 0 1
120 - 180	0 0 1
180 - 240	0 1 1
240 - 300	0 1 0
300 - 360	1 1 0

Red marks hall transition

Encoder Characteristics				
Menctype	A/B	Marker Pulse	Absolute position	comments
0	x	x	Hall Effects	A/B/Z/H
1	x	x		A/B/Z ENCSTART, ENCINIT
2	X	x		A/B/Z ENCSTART, ENCINIT
3	x			Wake & Shake ENCSTART
4	x			Wake & Shake on power up K & ENCSTART
6	x		Hall Effects	A/B/H

Encoder Based One Rev



$$\text{MENC OFF} = \frac{\text{MENCRES} \times 4}{2} \times \frac{\text{degree}\{\text{HallsTransition_Where_IndexIsHigh}\}}{360}$$

1024 2048

Encoder-Based Alignment issues

The AKM motor is offered with two different line count encoders; 1024 and 2048. The published databases assume that the 2048 encoder is chosen. In the event that a 1024 line count encoder is used the Variable MECOFF must be set to ½ of the value defined for a 2048 line count encoder.

MECNOFF can be calculated using the following equation:

$$\text{MENC OFF} = \text{MENCRES} \times 4 / (\text{MPOLES} / 2) \times 240 / 360$$

Encoder base Phases



Nomenclature

Historically Kollmorgen motor phases have been designated with the letters 'A', 'B', and 'C' for each of the 3 phase connections. The new AKM motors are labeled 'U', 'V', and 'W'. The relationship of these signals is shown in the following table:

CD Nomenclature	AKM Nomenclature
Phase A	Phase W purple
Phase B	Phase V brown
Phase C	Phase U blue

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This translation is important to both the motor lead connections and hall sensor connections as they relate to the commutating encoder versions of the AKM motor series.

Compatible Firmware and Motion Link Revisions

CD Series 5 firmware version 7.0.3, or later, should be installed in the drive. Motion Link version 4.5.0 or later should be installed on the computer. A file named AKM.MO3 must be present in the Motion Link directory.

New MOTORTYPE

The MOTORTYPE variable in the CD-Series drive was installed to allow translated units for rotary or linear motors. A new MOTORTYPE argument, 3, has been added in firmware version 7.0.3 and supported by Motion Link 4.5.0.

Note: for Firmware up to 7.1.9 you should use MOTORTYPE 0 from Firmware 7.1.10 you can use both MOTORTYPE 0 and 3 will give you MPHASE = 0

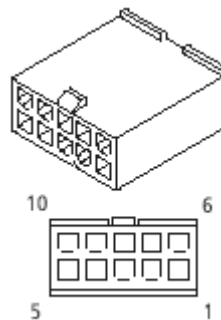
Resolver Base “C” connector



Drive Feedback C2		Motor Resolver feedback connector	
1	Sine High	3	COS- blue
2	Sine Low	7	COS+ yellow
3	Shield		
4	Cosine High	8	SIN+ red
5	Cosine Low	4	SIN - black
6	Shield		
7			
8			
9			
10			
11			
12	Shield		
13	Thermostat High	2	*Thermal Sensor
14	Shield		
15	Ref High Out	5	Ref - blk/wht
16	Ref Low Out	9	Ref + red/wht
17	Shield		
18			
19			
20			
21	Shield		
22			
23			
24			
25	Thermostat Low	6	*Thermal Sensor

Resolver Base “M” connector

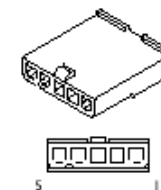
Drive Feedback C2		Motor Resolver feedback connector	
1	Sine High	3	COS- blue
2	Sine Low	7	COS+ yellow
3	Shield		
4	Cosine High	8	SIN+ red
5	Cosine Low	4	SIN - black
6	Shield		
7			
8			
9			
10			
11			
12	Shield		
13	Thermostat High	2	*Thermal Sensor
14	Shield		
15	Ref High Out	5	Ref - blk/wht
16	Ref Low Out	9	Ref + red/wht
17	Shield		
18			
19			
20			
21	Shield		
22			
23			
24			
25	Thermostat Low	6	*Thermal Sensor



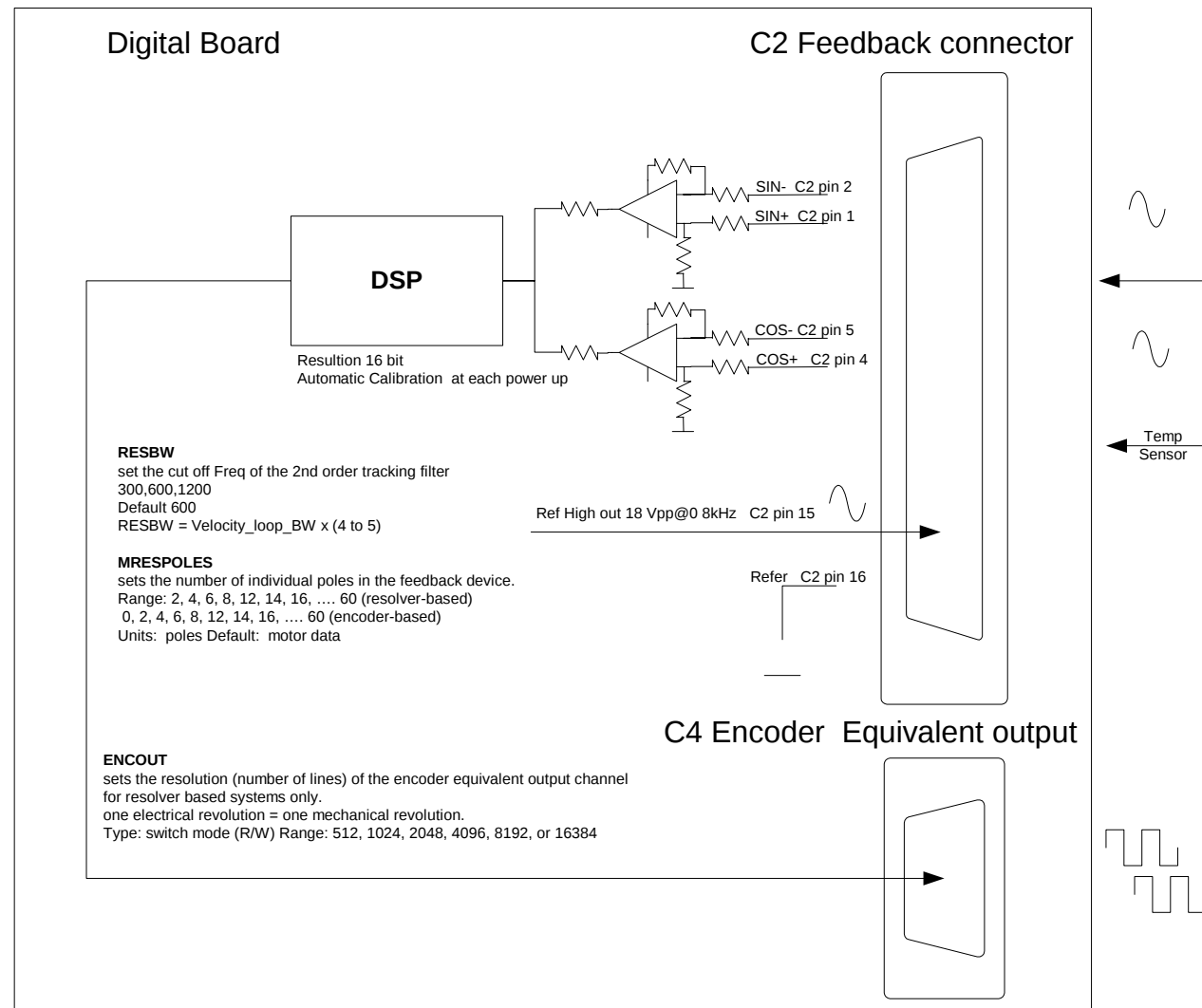
West Virginia University

Power cable

Drive Power		Motor Power connector		
GND	Ground	5	Shield	yellow/green
Ma	Phase A	3	W	violet
Mb	Phase B	2	V	brown
Mc	Phase C	1	U	blue
		A	Brake +	
		B	Brake -	



Resolver Base diagram



Resolver Base



Resolver Requirement and specification

Can use single(two poles) or multi-speed(multiple poles) resolver feedback to monitor the motor shaft

Type: Control transmitter

Transformation Ratio: approx.0.5±0.1

Modulation Frequency: approx. 8 kHz

Input voltage (from drive): 6.36 Vac rms (18Vpp @ 0)

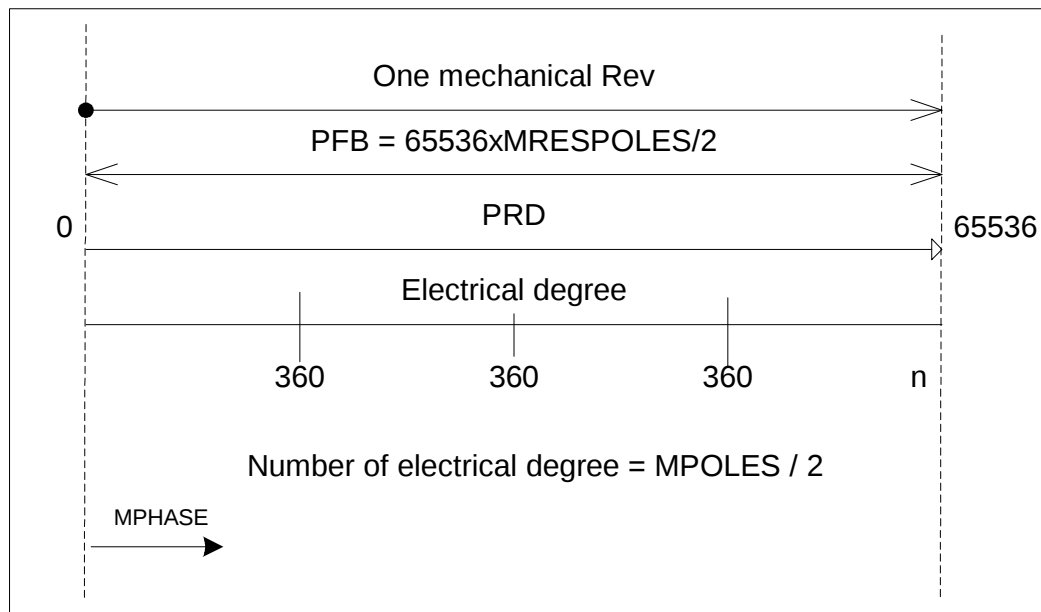
Max DC Resistance: 120 ohm

Max Drive Current: 200mA ac rms

Output voltage: =Input Voltage * Transformation Ratio, 3 Vac

RESOLVER (PRIMARY FEEDBACK)

RESOLVER DATA	UNITS	AKM 1	AKM 2,3,4	AKM 5,6,7
TYPE		1 SPEED	1 SPEED	1 SPEED
INPUT VOLTAGE	V _{RMS}	7.0	7.0	7.0
	k Hz	10	10	10
INPUT CURRENT MAX.	mA	30	30	30
TRANSFORMATION RATIO	10 %	0.5	0.5	0.5
NULL VOLTAGE	mVrms	50	50	50
MAX. ERROR (pk-pk)	MINS.	30	16	16
PHASE SHIFT		TBD	TBD	TBD
OPERATING TEMP.	°C	-55° to 155°	-55° to 155°	-55° to 155°
ROTOR INERTIA MAX.	kg cm ²	0.002	0.046	0.497



Resolver Base



Compatible Firmware and Motion Link Revisions

CD Series 5 firmware version 7.0.3, or later, should be installed in the drive. Motion Link version 4.5.0 or later should be installed on the computer. Resolver-based CD Drives with label 'Version "TYPE B"' are recommended for resolver-based (CRxx5xx) applications. A file named AKM.MO3 must be present in the Motion Link directory

Resolver-Based systems settings and offsets

The resolver alignment position is different in the AKM motors than historically found in Kollmorgen XT or Goldline motors. Setting MOTORTYPE to 3 automatically compensates for this difference.

If MOTORTYPE is set to 0 then the following recommendations must be followed when using a CRxx5xx drive with the AKM motor:

The CD variable called 'MPHASE' must be set to accommodate this difference. The correct value for MPHASE can be calculated using the following formula:

$$\text{MPHASE} = 300 - 90 * (\text{Number of Pole-Pairs})$$

The number of pole pairs for the AKM motor is found on its data sheet. Should the resulting calculation be less than 0 (a negative result) keep adding 360 to the result until the answer is positive. Cutting to the bottom line - MPHASE is 30 for 3 pole pair motors, 300 for 4 pole pair motors, 210 for 5 pole pair motors, and 120 for 6 pole pair motors.

Setting MOTORTYPE to 3 automatically compensate the MPHASE to 0.

Recommended Motor/ Servo Drive Systems, 240 VAC, 320 VDC bus



Servo Motor Model	Servo Drive Model	Peak Stall Torque Tps N-m (lb-in)	Peak Torque at at Max. Speed Tms N-m (lb-in)	Cont. Stall Torque Tcs N-m (lb-in)	Cont. Rated Torque Tcr N-m (lb-in)	Speed at Knee ωk rpm	Rated Speed ωr rpm	ωmax. Speed ωmax rpm	Cont. Stall Current Ics Arms	Current@Peak Torque Ips Arms	Inertia j kg-cm ² (lb-in-s ² x 10 ⁻³)
AKM11B	Cx035xx	0.61 (5.39)	0.584 (5.17)	0.18 (1.62)	0.17 (1.47)	7,700	8,000	8,000	1.16	4.7	0.017 (0.015)
AKM12C	Cx035xx	1.08 (9.54)	1.05 (9.29)	0.31 (2.74)	0.28 (2.47)	7,880	8,000	8,000	1.51	6.1	0.031 (0.0274)
AKM13C	Cx035xx	1.46 (12.9)	1.06 (9.38)	0.41 (3.62)	0.36 (3.22)	6,080	8,000	8,000	1.48	5.9	0.045 (0.0389)
AKM22E	Cx035xx	2.42 (21.4)	1.61 (14.2)	0.87 (7.71)	0.7 (6.18)	6,010	8,000	8,000	2.73	9.0	0.161 (0.143)
AKM23D	Cx035xx	3.84 (34)	0.0 (0.0)	1.16 (10.2)	1.03 (9.08)	3,020	5,000	6,540	2.19	8.8	0.216 (0.191)
AKM23F	Cx065xx	3.52 (31.2)	3.28 (29.0)	1.18 (10.4)	0.94 (8.28)	7,670	8,000	8,000	4.31	15.0	0.216 (0.191)
AKM24D	Cx035xx	4.76 (42.1)	0.0 (0.0)	1.41 (12.4)	1.29 (11.4)	2,620	4,000	5,420	2.21	8.8	0.27 (0.239)
AKM24F	Cx065xx	4.68 (41.4)	2.42 (21.4)	1.42 (12.6)	1.12 (9.91)	5,570	8,000	8,000	3.89	15.0	0.27 (0.239)
AKM31E	Cx065xx	3.24 (28.6)	0.77 (6.82)	1.2 (10.7)	0.95 (8.41)	5,000	6,000	8,000	2.99	9.0	0.33 (0.292)
AKM32D	Cx035xx	7.05 (62.4)	0.0 (0.0)	2.04 (18.0)	1.93 (17.1)	1,670	2,500	3,750	2.23	8.9	0.59 (0.522)
AKM32H	Cx065xx	5.36 (47.5)	2.87 (25.4)	2.1 (18.6)	1.45 (12.8)	6,560	7,000	8,000	5.50	15.0	0.59 (0.522)
AKM33E	Cx035xx	8.95 (79.3)	0.0 (0.0)	2.79 (24.7)	2.62 (23.2)	1,640	2,000	3,140	2.58	9.0	0.85 (0.752)
AKM33H	Cx065xx	7.35 (65.0)	0.0 (0.0)	2.88 (25.5)	2.27 (20.1)	5,040	5,500	6,630	5.62	15.0	0.85 (0.752)
AKM41E	Cx035xx	5.33 (47.2)	0.0 (0.0)	2.02 (17.8)	1.82 (16.1)	2,140	3,000	4,850	2.85	9.0	0.81 (0.717)
AKM41H	Cx065xx	4.78 (42.3)	3.8 (33.6)	2.06 (18.2)	1.62 (14.3)	5,070	6,000	6,000	5.60	15.0	0.81 (0.717)
AKM42E	Cx035xx	9.72 (86.0)	0.0 (0.0)	3.42 (30.3)	3.12 (27.6)	1,260	1,800	2,740	2.74	9.0	1.45 (1.28)
AKM42G	Cx065xx	9.56 (84.6)	0.0 (0.0)	3.53 (31.2)	2.9 (25.7)	2,530	3,500	4,660	4.80	15.0	1.45 (1.28)
AKM42J	Cx105xx	7.75 (68.6)	6.52 (57.7)	3.56 (31.5)	2.38 (21.0)	5,460	6,000	6,000	8.40	20.0	1.45 (1.28)
AKM43G	Cx065xx	13.2 (116)	0.0 (0.0)	4.8 (42.5)	4.0 (35.4)	2,000	2,500	3,470	4.87	15.0	2.09 (1.85)
AKM43K	Cx105xx	9.66 (85.5)	5.44 (48.1)	4.9 (43.4)	2.62 (23.2)	5,120	6,000	6,000	9.60	20.0	2.09 (1.85)
AKM44G	Cx065xx	16.1 (142)	0.0 (0.0)	5.88 (52.0)	4.9 (43.4)	1,760	2,000	2,890	5.00	15.0	2.73 (2.42)
AKM44J	Cx105xx	12.9 (114)	0.0 (0.0)	6.0 (53.1)	3.84 (34)	3,800	4,000	5,010	8.80	20.0	2.73 (2.42)
AKM51G	Cx065xx	11.7 (104)	0.0 (0.0)	4.75 (42.1)	4.03 (35.6)	1,910	2,500	3,480	4.84	14.5	3.42 (3.03)
AKM51K	Cx105xx	9.22 (81.6)	4.43 (39.2)	4.9 (43.4)	2.35 (20.8)	4,740	5,500	6,000	9.40	20.0	3.42 (3.03)
AKM52G	Cx065xx	21.5 (191)	0.0 (0.0)	8.43 (74.6)	7.69 (68.1)	1,110	1,500	1,920	4.72	14.2	3.22 (5.51)
AKM52K	Cx105xx	16.9 (150)	0.0 (0.0)	8.6 (76.1)	6.8 (60.2)	2,820	3,000	3,690	9.30	20.0	3.22 (5.51)
AKM53K	Cx105xx	22.9 (203)	0.0 (0.0)	11.6 (103)	10.1 (88.9)	2,220	2,000	2,780	9.40	20.0	9.12 (8.07)
AKM54K	Cx105xx	28.1 (249)	0.0 (0.0)	14.4 (127)	12.7 (112)	1,880	1,800	2,290	9.70	20.0	11.9 (10.6)
AKM62K	Cx105xx	22.7 (201)	0.0 (0.0)	12.2 (108)	10.4 (92)	1,870	2,000	2,700	9.60	20.0	16.9 (15.0)
AKM63K	Cx105xx	31 (274)	0.0 (0.0)	16.8 (149)	14.9 (131)	1,510	1,500	2,020	9.90	20.0	24.2 (21.4)

COMP File



Motion link motor library

XLS file “AKM CD5 Comp Calculator.xls”

Others

Motion Link Library



SERVOSTAR MOTIONLINK Motor Configuration (Off-Line)

Motor Family:
AKM Motor Library Rev 1.0.1
AKM Motors

Motor Description:
Pick your motor
Pick your motor
AKM11B*
AKM12C*
AKM13C*
AKM21E
AKM22E*
AKM23D
AKM23F*

Poles Phase
[] []

Motor Parameters

Motor Type		
Motor Model		
Peak Current		amps
Cont. Current		amps
Max Speed		rpm
Back EMF		Vrms/1000 rpm
BEMF Comp%		percent
Rotor Inertia		kg-m ²
Min Inductance		millihenries
Motor Poles		mag.poles
AGain at Peak I		percent
AGain at Cont I		percent
AGain at Zero I		percent
Torque Adv P		elec. degrees
Torque Adv C		elec. degrees
Speed Adv at V		elec. degrees
Speed Adv 1/2 V		elec. degrees

FROM DRIVE TO USER DEFINED TO DRIVE

Present Drive Type: SE03 @160 volts (Local) Presently Loaded Motor: Other (Local)

SAVE STOP Close

AKM_Motor_Selection_Guide.pdf



				AKM62				AKM63		
PARAMETER	Tol	SYMBOL	UNITS	G	K	M	P	G	K	M
Max Rated DC Bus Voltage	Max	V _{bus}	V _{dc}	640	640	640	320	640	640	640
Continuous Torque (Stall) for ΔT winding = 100°C ①②③④	Nom	T _{CS}	N-m lb-in	11.9 105	12.2 108	12.2 108	12.3 109	16.5 146	16.8 149	17.0 150
Continuous Current (Stall) for ΔT winding = 100°C ①②③④	Nom	I _{CS}	A _{rms}	4.9	9.6	13.4	18.8	4.5	9.9	13.8
Continuous Torque (Stall) for ΔT winding = 60°C ②	Nom	T _{CS}	N-m lb-in	9.49 84.0	9.72 86.0	9.72 86.0	9.83 87.0	13.2 117	13.4 119	13.6 120
Max Mechanical Speed ⑤	Nom	N _{max}	rpm	6000	6000	6000	6000	6000	6000	6000
Peak Torque ①②	Nom	T _p	N-m lb-in	29.8 264	30.1 266	30.2 267	30.4 269	41.8 370	42.6 377	43.0 381
Peak Current	Nom	I _p	A _{rms}	14.6	28.7	40.3	56.5	13.4	29.7	41.4
75VDC		Rated Torque (speed) ①②③④⑤ ⑥	T _{rtd} N-m lb-in	- -	- -	- -	- -	- -	- -	- -
		Rated Speed	N _{rtd} rpm	-	-	-	-	-	-	-
		Rated Power (speed) ①②③④⑤	P _{rtd} kW Hp	- -	- -	- -	- -	- -	- -	- -
160VDC		Rated Torque (speed) ①②③④⑤ ⑥	T _{rtd} N-m lb-in	- -	- -	- -	- -	- -	- -	- -
		Rated Speed	N _{rtd} rpm	-	-	-	-	-	-	-
		Rated Power (speed) ①②③④⑤	P _{rtd} kW Hp	- -	- -	- -	- -	- -	- -	- -
320VDC		Rated Torque (speed) ①②③④⑤ ⑥	T _{rtd} N-m lb-in	- -	10.4 92.0	9.50 84.1	8.10 71.7	- -	14.9 132	14.3 127
		Rated Speed	N _{rtd} rpm	-	2000	3000	4500	-	1500	2000
		Rated Power (speed) ①②③④⑤	P _{rtd} kW Hp	- -	2.18 2.92	2.98 4.00	3.82 5.12	- -	2.34 3.14	2.99 4.01

AKM Motor Series CD Series 5 Compensation Calculator

Motor Data Sheet Parameters:

	Parameter	Value	Units	Description
	Motor Model Numer:	AKM63K	Text	Enter just the AKM, Frame Size, and Winding Designator
Ics	Continuous Rated Current	9.9	Amp rms	Enter the Motor's rated continuous current in amperes
Ip	Peak Current	29.7	Amp rms	Enter the Motor's rated peak current in amperes
Nrtd	Rated Speed at 320 Vdc	1500	RPM	Be sure to enter the 230V ac value - not the mechanical limit
Ke	Back EMF	109.9	Volts/1k RPM	Enter the motors back emf constant for this winding configuration
Rm	Resistance	1.09	Ohms	Enter the resistance of the motor for this winding configuration
L	Inductance	9.3	mH	Enter the inductance of the motor for this winding configuration
Jm	Inertia	24.2	kg-cm2	Enter the motor's inertia in the stated units
W	Weight	24.4	Lbs	Enter the weight of the motor (Used for adaptive gain calculations)
	Pole Pairs	5	Pairs	Enter the pole-pair paramter not the number of poles

Drive Data Sheet Parameters:

	Parameter	Value	Units	Description
	Continuous rated current	10	Amperes	Continuous rated output in Amps RMS/Phase
	Peak Rated Current	20	Amperes	Peak rated output in Amps RMS/Phase
	Drive Series	5	Numeric	Enter '2' for CD Series 2, CD Lite, or CD SynqNet or '5' for CD Series 5

Calculated Compensation Parameters

AKM63K

Drive Parameters

DIPEAK	200
DICONT	100

Motor Parameters

MOTORTYPE	3 Version 7.0.0 or higher
MIPEAK	297
MICONT	99
MSPEED	1500
MBEMF	110
MJ	2420
MLMIN	930
MPOLES	10

Feedback Alignment

MPHASE (Resolver)*	0
MPHASE (Encoder)	0
MENCOFF	1092

Adaptive Gains

MLGAINZ	10
MLGAINC	9
MLGAINP	7

Torque Angle Advance

MTANGLC	0
MTANGLP	2

Velocity Angle Advance

MVANGLF	30
MVANGLH	10

ICONT
ILIM

Reference Data

1176.147

Estimated Current Loop Bandwidth

1176.147 Hertz At I Peak

20

Estimate BW at User Current Level

Enter Current

2400 Hertz

*Note: MPHASE Value for CD Series 5 resolver units requires firmware Version 7.00 or higher. Add 90 electrical degrees for earlier versions.

Typical configuration



Cheapest configuration

CRxx5x0 and AKMxxx-xxMNR-00

Note: if your motor is with in less then 0.5 m you can order the M connector use it as flying probe and assemble spade terminal for the motor leads and D25 for the feedback

High End configuration

CBxx5x0 and AKMxxx-xxxxDA or DB-00

CNC configuration

CExx5x0 AKMxxx-xxxx1 or 2-00

Technical Documentations



- **AKM_Motor_Selection_Guide.pdf**
- **SERVOSTARCDSeries5ServoAmplifierCatalog.pdf**
- **CD5AKMEncoderbased.pdf**
- **CD5AKMResolverbased.pdf**
- **WebX23SEP2005.pdf**