

AKM[®]2G Servo Motor

Three-Phase AC Permanent Magnet Servo Motor

Part Number Scheme and Connectivity

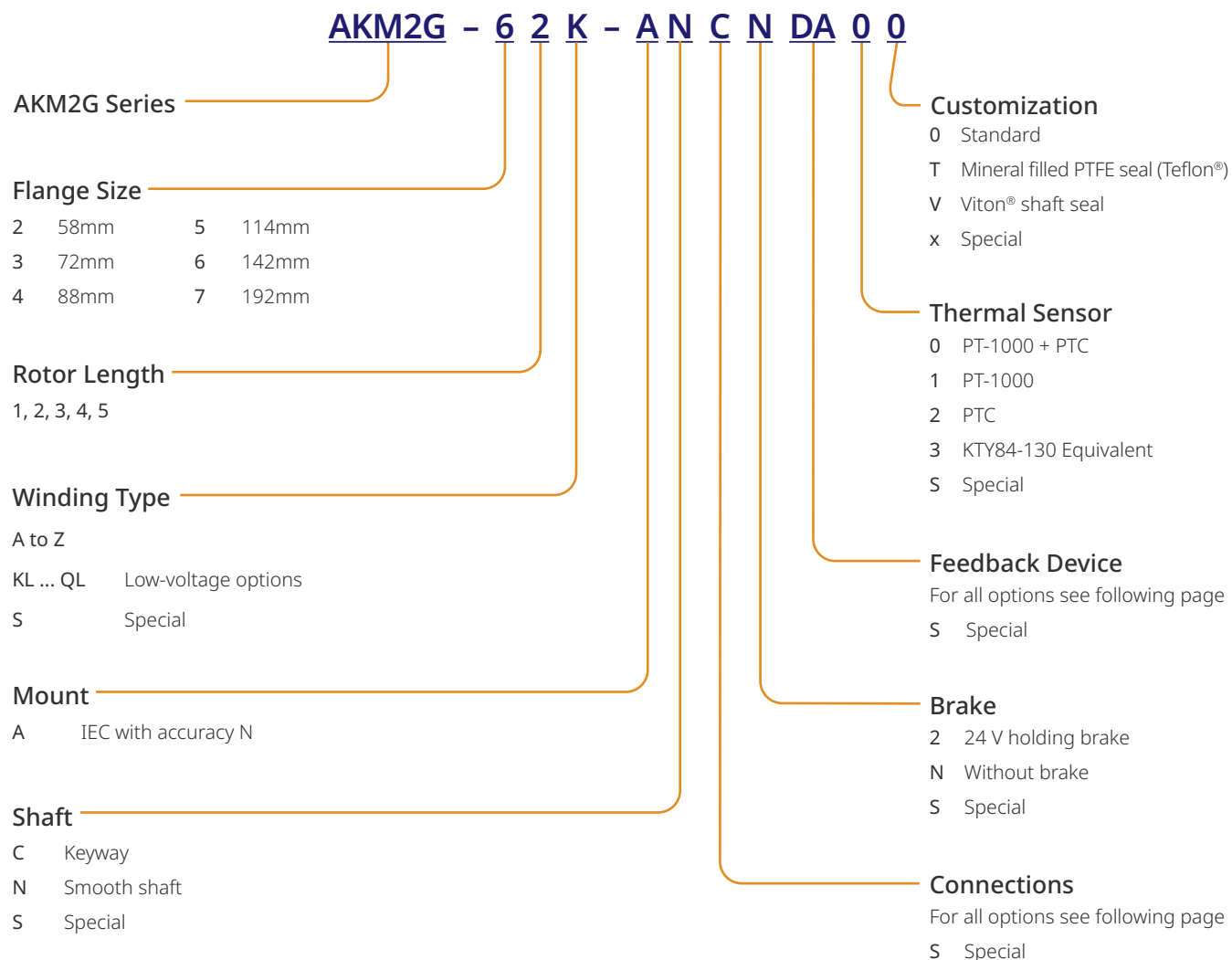


KOLLMORGEN

A REGAL REYNOLD BRAND

AKM2G Servo Motor Nomenclature

AKM®2G Brushless Servo Motor



Feedback Unit Options

Functional Safety Capable/Pending: Contact Customer Support

Feedback Unit Options						Feedback Resolution				
Functional Safety Capable/Pending: Contact Customer Support										
Code ³	Description	AKM2Gx ⁴	Connector	Single-turn or Multi-turn	Feedback Type/Size	Device Resolution (Sin/Cos per Rev., Bits or Lines/Rev.)	AKD Internal Resolution	AKD2G Internal Resolution	# of Absolute revs.	Accuracy ¹ · (arc-sec)
2-	Commutating Encoder	2 non-LV	Y	Single-turn	15	2048 Lines	8,192	8,192	None	±218.2"
		3-4	Ad, C		21					
		5-7 ≤ 20A								
AA	BiSS B Optical Sine Encoder	2 non-LV	Y	Single-turn	AD34	2048 Sin/Cos	27-Bits	32-Bits	1	±36"
		3, 4	Ad, C		AD58					
		5-7 ≤ 20A								
AB		2 non-LV	Y	Multi-turn	AD34				4096	
		3, 4	Ad, C		AD58					
		5-7 ≤ 20A								
CA	SFD3 Smart Feedback Device Gen. 3	2-4	Ad, D	Single-turn	15	24-Bits	24-Bits	24-Bits	1	±585"
		5-7 ≤ 20A	Ad, D		21					
		7 > 20A	E		21					
CB	SFD-M Smart Feedback Device Multi-turn	2-7 ≤ 20A	Ad, D	Multi-turn	15	24-Bits	24-Bits	24-Bits	65,536	±60"
GU	HIPERFACE DSL® Capacitive	2-7 ≤ 20A	D	Single-turn	EEM37	17-Bits	17-Bits	17-Bits	1	±240"
		7 > 20A	J							
DA	EnDat® 2.2/01 Optical	2 non-LV	Y	Single-turn	ECN1113	512 Sin/Cos	25-Bits	32-Bits	1	±120"
		3, 4	Ad, C		ECN1313	2048 Sin/Cos	27-Bits			
DB		2 non-LV		Y	Multi-turn	EQN1125	512 Sin/Cos		25-Bits	4096
			3, 4	Ad, C		EQN1325	2048 Sin/Cos		27-Bits	
LD	EnDat® 2.2/22 Inductive	2-4	D		Multi-turn	EQI 1131	19-Bits	19-Bits	19-Bits	4096
		5-7 ≤ 20A		H		EQI 1331				
		7 > 20A								
R-	Resolver Inductive	2 non-LV	Y	Single-turn	15	1 pole pair (16-Bits)	16-Bits	16-Bits	1	±600"
		3-4	Ad, C		21					±540"
		5-7 ≤ 20A								
			7 > 20A		H					

AH = M23 Hybrid power/SFD3/SFD-M connector pinned for use with legacy AKM performance cables – not compatible with AKM2G cables.

AD = M23 Dual connectors with power connector pinned for use with legacy AKM performance cables – not compatible with AKM2G cables.

- AKD drives have a resolver measurement accuracy of ±45", for a drive w/ motor accuracy of ±585" and RMS Noise of ±9.9" Accuracy & RMS Noise data when used with other drives may be different.
- Accuracy refers to overall system accuracy once installed in the motor. Noise refers to the RMS position noise when at stand-still.
- All feedback options, except R- and 2-, have Motor ID support with embedded electronic motor nameplate data included for easy plug-and-play commissioning with Kollmorgen servo drives.
- AKM2G-LV Size 2 models are only available in single-connector configurations.

With AKD drives, all received positions are interpolated to a 32-bit resolution per revolution. When using a drive other than AKD consult the drive manufacturer for this information.

AKM2G Servo Motor Nomenclature

Connector Options

Model Designation	Connection	Compatible AKM2Gx	Position of connection
A* (Hybrid)	1 SpeedTec® M23 (AKM cable pinned)	AKM2G2 - AKM2G7 ≤ 20 Amps	Angular, rotatable, motor mounted
A (Dual)	2 SpeedTec® M23 (AKM cable pinned)	AKM2G3 - AKM2G7 ≤ 20 Amps	Angular, rotatable, motor mounted
C	2 SpeedTec® M23	AKM2G3 - AKM2G7 ≤ 20 Amps	Angular, rotatable, motor mounted
D*	1 htec® M23	AKM2G2 - AKM2G7 ≤ 20 Amps	Angular, rotatable, motor mounted
E*	1 M40 (AKM cable pinned)	AKM2G7 > 20 Amps	Angular, rotatable, motor mounted
H	1 M40 Power, 1 M23 Feedback	AKM2G7 > 20 Amps	Angular, rotatable, motor mounted
J*	1 htec® Connector M40	AKM2G7 > 20 Amps	Angular, rotatable, motor mounted
Y	1 ytec® Connector	AKM2G2 (non LV)	Rotatable, motor mounted

* Hybrid connectors valid for SFD3, SFD-M, DSL, and EnDat 2.2 Feedback only.

Connector Description

Connector	Usage	Contacts - Pins Power/Signal	Max. Current [A] Power/Signal	Max. Cross Section [mm²] Power/Signal	Protection Class
M23 SpeedTec® right angle connectors (Size 1)	Power & Brake	4 / 5	20 / 10	4 / 1.5	IP65
	Comcoder	- / 15	- / 10	4 / 1.5	IP65
	Resolver	- / 12	- / 10	- / 0.5	IP65
	DSL	5 / 2 / 2	20 / 10	4 / 1.5	IP65
	SFD3/SFD-M	4 / 5	20 / 10	4 / 1.5	IP65
	EnDat 2.2	5 / 4 / 6	20 / 10	4 / 1.5	IP65
	EnDat 2.1 / BiSS B	- / 12	- / 10	4 / 1.5	IP65
M40 (Size 1.5)	Power & Brake	4 / 5	48 / 30	16 / 4	IP65
	SFD3	4 / 5	48 / 30	16 / 4	IP65
	DSL	5 / 4 / 2	48 / 30	16 / 4	IP65
	Power & Brake	4 / 5	7 / 3.6	1.5 / 0.75	IP65
ytec®	Resolver	- / 12	- / 5	- / 0.75	IP65
	EnDat 2.1 / BiSS B	- / 12	- / 5	- / 0.75	IP65

Feedback and Connector Availability

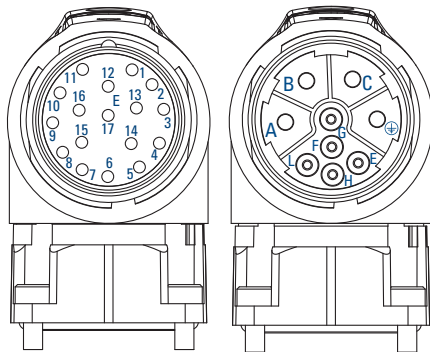
AKM2G-2					AKM2G- 3-6					AKM2G-7 (L, N Windings)					AKM2G-7 (P, Q, R Windings)						
Connector Code		A	D	Y	Connector Code		A	C	D	Connector Code		A	C	D	Connector Code		A	E	H	J	
Feedback Code	2-			•	Feedback Code	2-	•	•		Feedback Code	2-	•	•		Feedback Code	2-	•		•		
	Ax			•		Ax	•	•			Ax	•	•			Ax	•		•		
	Cx	•	•			Cx	•		•		Cx	•		•		CA		•	•		
	GU		•			GU			•		GU			•		GU				•	
	Dx			•		Dx	•	•			Dx	•	•			Dx	•		•	•	
	LD		•			LD			•		LD			•		LD			•	•	
	R-			•		R-	•	•			R-	•	•			R-	•		•	•	

- = Hybrid (power + feedback) single connector
- = Dual power and feedback connectors

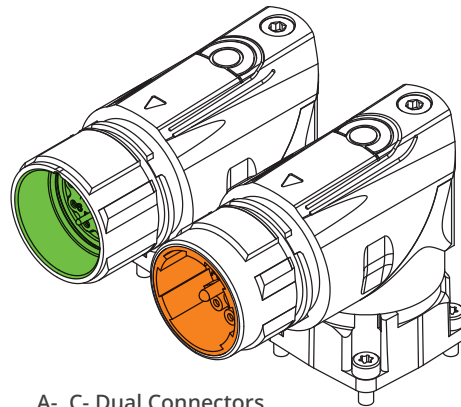
AKM2G Motor Connector Pinouts

Dual Cable Options – Power & Feedback

A-, C- Dual Connector Pinouts – AKM2G 3-7 ≤ 20 Amps Continuous

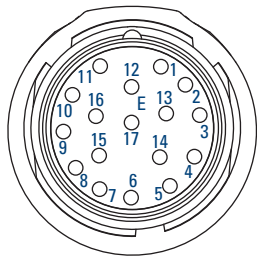


A-, C- Dual Connectors
C- Power Pinout Shown



A-, C- Dual Connectors

A-, C- Feedback Connector Pinouts



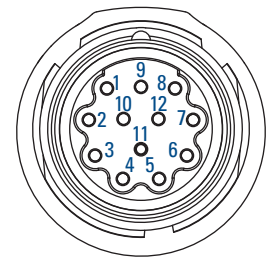
A-, C- Connector

Commutating Encoder Feedback

Pin	Function
1	B
2	B
3	A
4	A̅
5	Z
6	Z̅
7	GND
8	Thermal Sensor +
9	Thermal Sensor -
10	Vcc
11	N/C
12	N/C
13	N/C
14	N/C
15	U
16	V
17	W

Resolver Connector

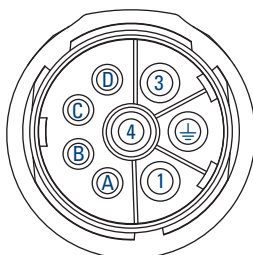
Pin	Function
1	N/C
2	Thermal Sensor +
3	S4, COS-
4	S3, SIN-
5	R2, REF-
6	Thermal Sensor -
7	S2, COS+
8	S1, SIN+
9	R1, REF+
10	N/C
11	N/C
12	N/C



A-, C- Connector

Shield is Not Connected at Motor End.
On motor mounted connectors, the thermal sensor lead colors are (+) Blue, (-) Black.

A- Power Connector Pinout



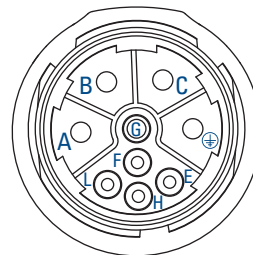
A- Connector

Power Connector

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

Note: Only for use with legacy AKM cables - not compatible with 2G Cables

C- Power Connector Pinout



C- Connector

Power Connector

Pin	Function
A	U
⊕	PE
C	W
B	V
F	Brake +
G	Brake -
E	N/C
H	N/C
L	N/C

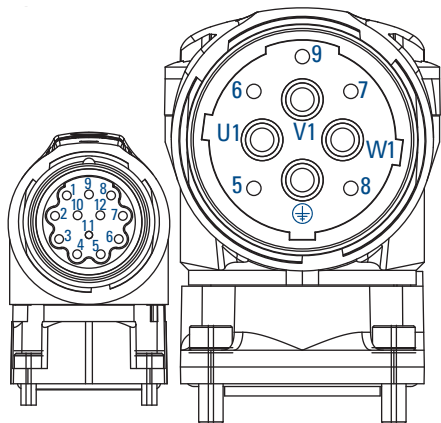
Shield Connected to Motor Ground Internal to Motor



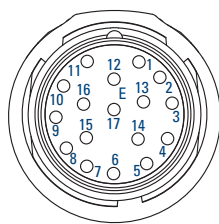
AKM2G Motor Connector Pinouts

Dual Cable Options – Power & Feedback

H- Dual Connector Pinout – AKM2G7 > 20 Amps Continuous resolver motors



Resolver Connector Power Connector



EnDat®
Connector

EnDat

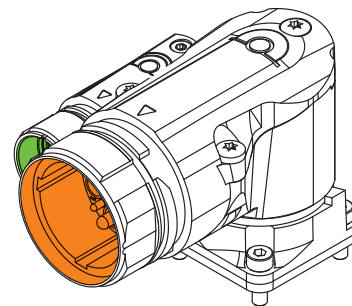
Pin	Function
1	B –
2	PE
3	A –
4	Vcc 5 Vdc
5	DATA
6	N/C
7	Thermal Sensor +
8	Clock
9	B +
10	Un Sense (Common)
11	A +
12	Up Sense (VCC)
13	DATA
14	Thermal Sensor –
15	Clock
16	N/C
17	N/C

Resolver

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

Shield is Not Connected at Motor End
On motor mounted connectors, the thermal sensor lead colors are (+) Blue, (–) Black.

Shield Connected to Motor
Ground Internal to Motor



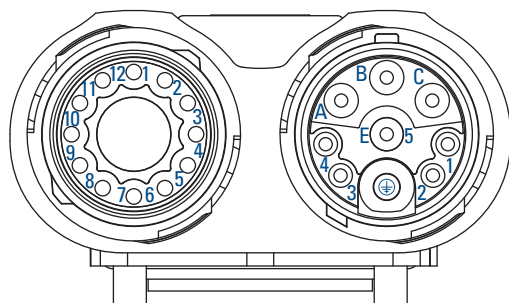
H- Dual Connectors

Power Connector

Pin	Function
U1	U
V1	V
W1	W
⊕	PE
5	Brake +
6	N/C
7	N/C
8	Brake –
9	N/C

Dual Cable Options – Power & Feedback

ytec® - Connector Pinout – AKM2G2 only

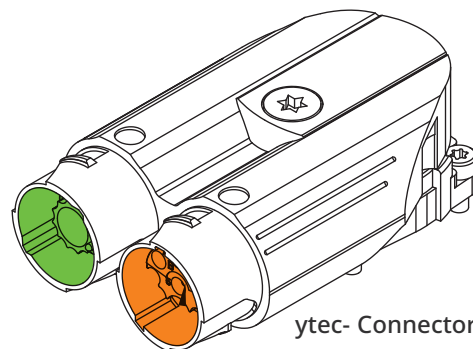


Feedback

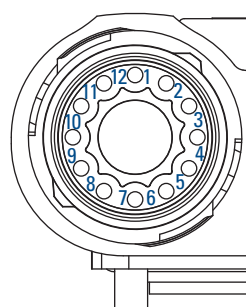
Power + Brake

Power Connector

Pin	Function
1	BR+
2	BR-
3	N/C
4	N/C
5	N/C
A	U
B	W
C	V
E	N/C
G	PE



ytec- Connector



Resolver Connector

ytec-Resolver Connector

Connector Part Number:
EEDA-101-NN-00-00-0001-000

Resolver

Pin	Function
1	N/C
2	TH+
3	S4, cos-
4	S3, sin-
5	R2, ref-
6	TH-
7	S2, cos+
8	S1, sin+
9	R1, ref+
10	N/C
11	N/C
12	N/C

ytec-EnDat/BiSS Connector

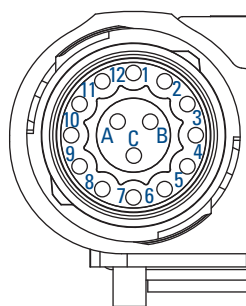
Connector Part Number:
EEDA-103-NN-00-00-0001-000

EnDat® /BiSS

Pin	Function
1	B-
2	GND
3	A-
4	Vcc
5	DATA+
6	N/C
7	Thermal Sensor +
8	Clock
9	B+
10	Un Sense (Common)
11	A+
12	Up Sense (VCC)
A	DATA-
B	Thermal Sensor -
C	Clock-

Commutating Encoder

Pin	Function
1	B+
2	B-
3	A+
4	A -
5	Z
6	Z-
7	GND
8	Thermal Sensor +
9	Thermal Sensor -
10	Vcc
11	N/C
12	N/C
A	U
B	V
C	W



EnDat/BiSS, Comcoder

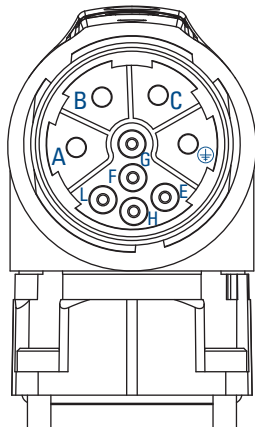


AKM2G Motor Connector Pinouts

Single Cable Options – Power & Feedback

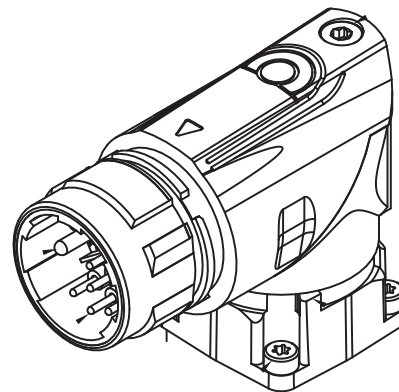
D- Connector Pinouts – Hybrid power and feedback for SFD3, SFD-M, DSL, and EnDat for all AKM2G < 20 Amps Continuous

D- Hybrid Power + SFD3/SFD-M Connector Option

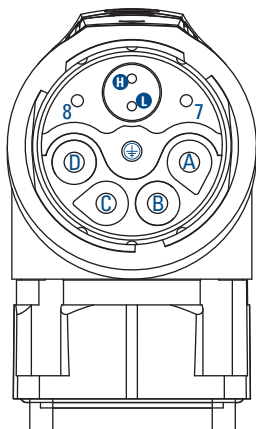


Power + SFD3/SFD-M

Pin	Function
A	Phase U
B	Phase V
C	Phase W
⊕	PE
E	N/C
F	Brake +
G	Brake -
H	SFD +
L	SFD -

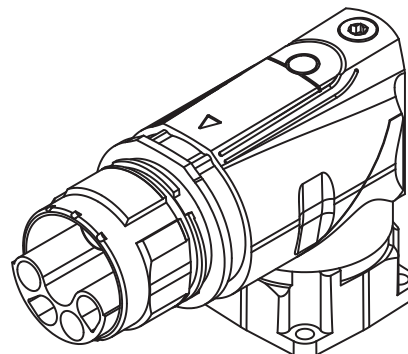


D- Hybrid Power + HIPERFACE DSL® Connector Option

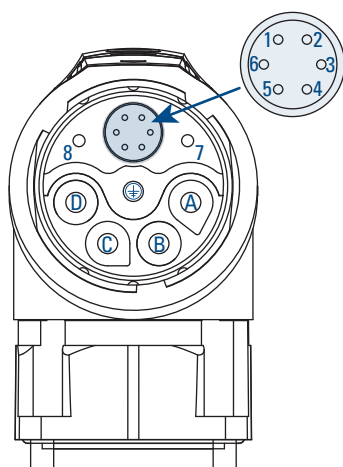


Power + DSL

Pin	Function
A	Phase U
B	Phase V
C	Phase W
D	N/C
⊕	PE
8	Brake +
7	Brake -
L	DSL -
H	DSL +



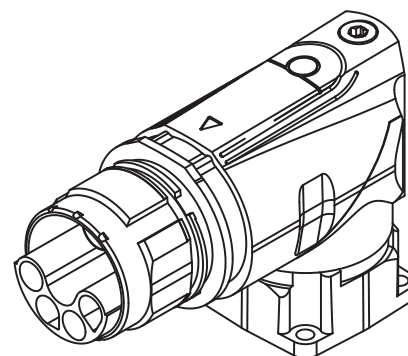
D- Hybrid Power + EnDat® Connector Option



Power + EnDat

Pin	Function
A	Phase U
B	Phase V
C	Phase W
D	N/C
⊕	PE
8	Brake +
7	Brake -
1	Up
2	0 V
3	Data +
4	Data -
5	Clock +
6	Clock -

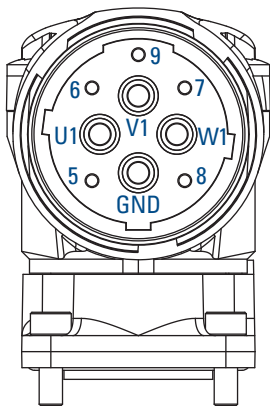
Ethernet



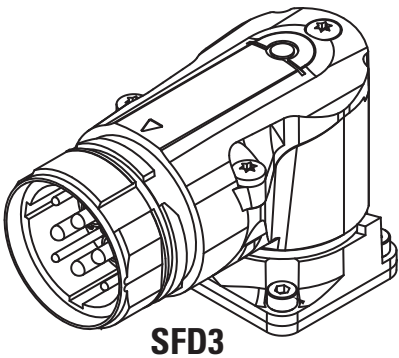
Single Cable Options – Power & Feedback

J- Connector Pinouts – Hybrid combined power and feedback for SFD3 and DSL for AKM2G7 > 20 Amps Continuous

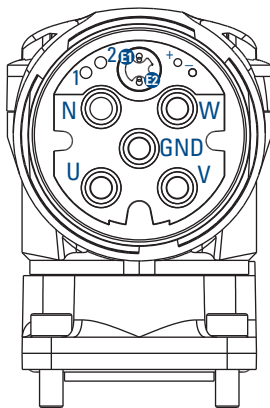
J- Hybrid Power + SFD3 Connector Option



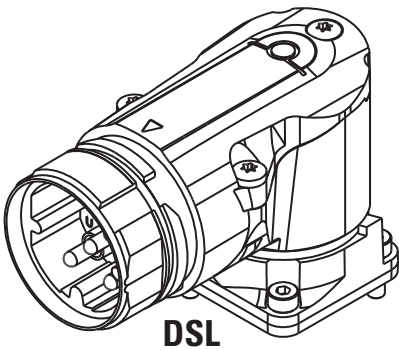
Power + SFD3	
Pin	Function
U1	Phase U
V1	Phase V
W1	Phase W
GND	PE
5	Brake +
6	SFD+
7	SFD-
8	Brake -
9	N/C



J- Hybrid Power + HIPERFACE DSL® Connector Option



Power + DSL	
Pin	Function
U	Phase U
V	Phase V
W	Phase W
N	N/C
GND	PE
1	Brake +
2	Brake -
+	N/C
-	N/C
E2	DSL -
E1	DSL +



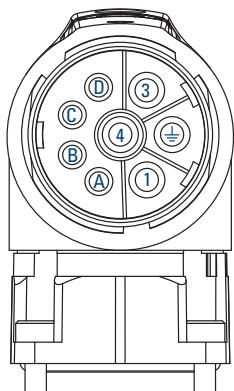
AKM2G Motor Connector Pinouts

Single Cable Options – Power & Feedback

A- Connector Pinout – AKM2G 2-7 ≤ 20 Amps Continuous SFD3/SFD-M motors

Note: Only for use with legacy AKM cables - not compatible with 2G Cables

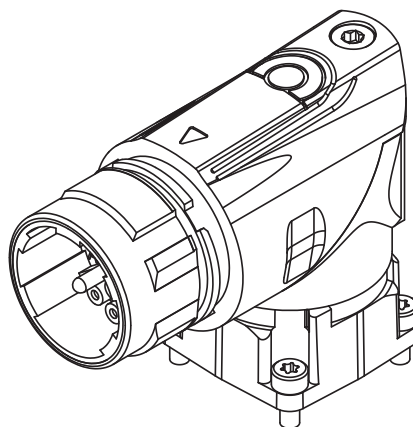
A- Hybrid Power + SFD3/SFD-M Connector Option



Power + SFD3/SFD-M

Pin	Function
1	U
⊕	PE
3	W
4	V
A	Brake +
B	Brake -
C	SFD3/-M +
D	SFD3/-M -

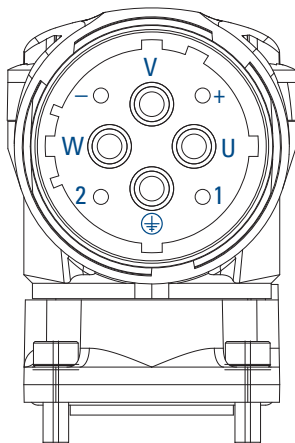
Connector Part Number:
BEDC-110-NN-00-00-1216-000



E- Connector Pinout – AKM2G7 > 20 Amps Continuous SFD3 motors

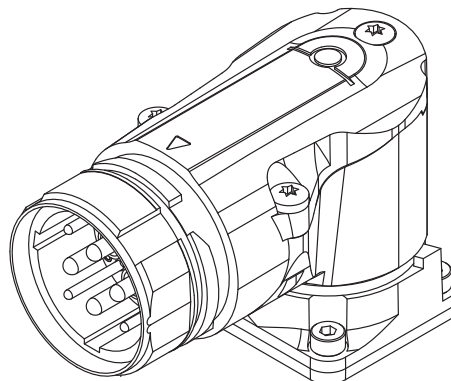
Note: Only for use with legacy AKM cables - not compatible with 2G Cables

E- Hybrid Power + SFD3 Connector Option

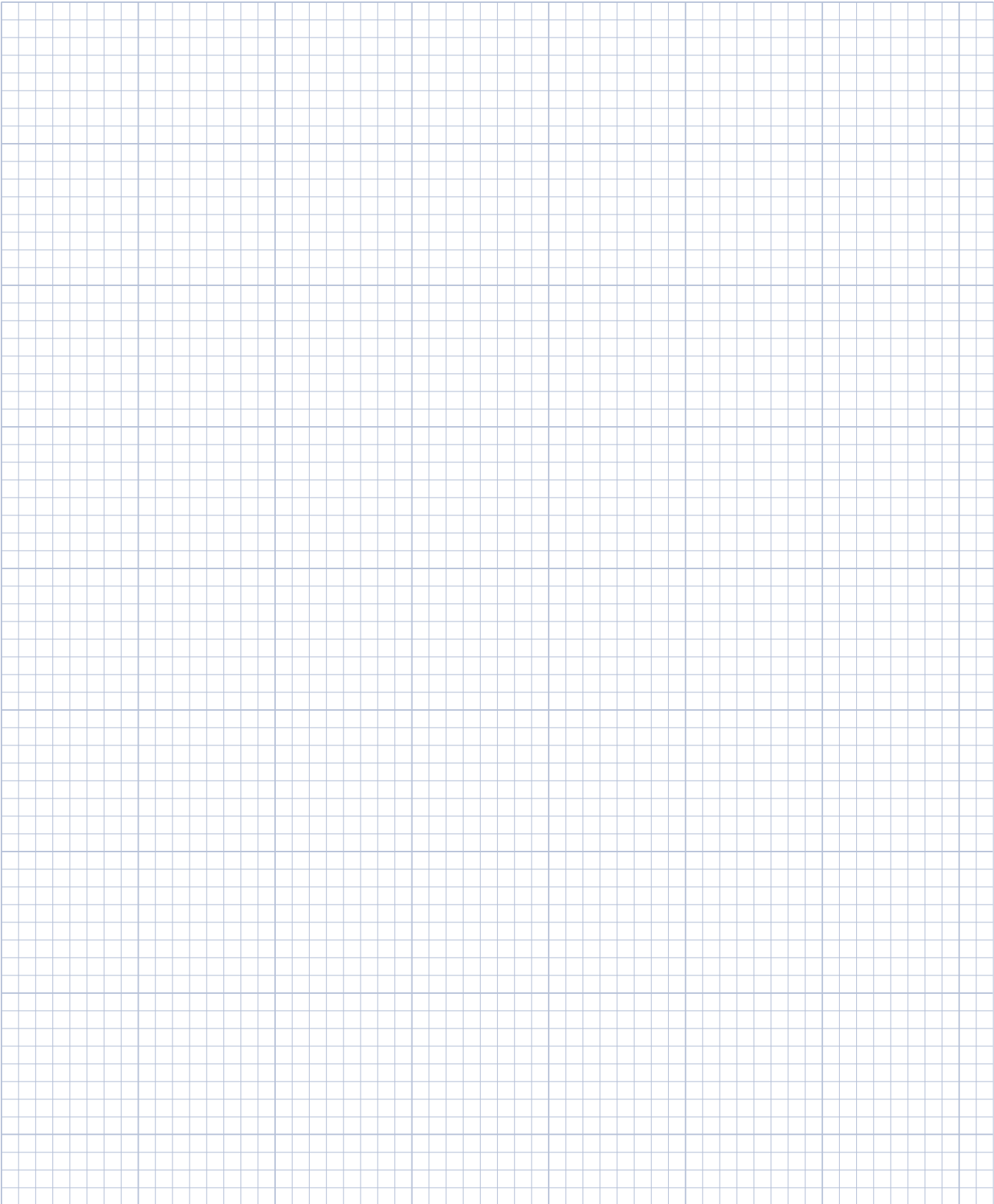


Power + SFD3

Pin	Function
U	Phase U
W	Phase W
V	Phase V
⊕	PE
+	Brake +
1	SFD +
2	SFD -
-	Brake -



Notes



0.125 inch divisions

More Expertise for a More Successful Machine

Our global engineering, service and support network provides deep knowledge of all the major industries that rely on advanced motion control and automation technology. We offer world-class engineering expertise, self-service design tools, personalized field service, and easy access to our design, application and manufacturing centers in strategic locations across the globe.

About Kollmorgen

Kollmorgen, a Regal Rexnord brand, has more than 100 years of motion experience, proven in the industry's highest-performing, most reliable motors, drives, linear actuators, AGV (Automated Guided Vehicle) control solutions, and automation control platforms. We deliver breakthrough solutions that combine exceptional performance, reliability and ease of use, giving machine builders an irrefutable marketplace advantage.

KOLLMORGEN

A REGAL REXNORD BRAND

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