AKM®2G Servo Motor

Three-Phase AC Permanent Magnet Servo Motor

Part Number Scheme and Connectivity

KOLLMORGEN

A REGAL REXNORD BRAND

AKM2G Servo Motor Nomenclature

AKM®2G Brushless Servo Motor

AKM2G – 6 2 K – A N C N DA 0 0

AKM2G Series

Flange Size

2	58mm	5	114mm
3	72mm	6	142mm
4	88mm	7	192mm

Rotor Length

1, 2, 3, 4, 5

Winding Type

A to Z

KL ... QL Low-voltage options

S Special

Mount

A IEC with accuracy N

Shaft

C Keyway

N Smooth shaft

S Special

Connections

For all options see following page

S Special

Brake

2 24 V holding brake

N Without brake

S Special

Feedback Device

For all options see following page

S Special

Thermal Sensor

0 PT-1000 + PTC

1 PT-1000

2 PTC

3 KTY84-130 Equivalent

S Special

Customization

0 Standard

T Mineral filled PTFE seal (Teflon®)

V Viton® shaft seal

x Special

Feedback Unit Options

Functional Safety Capable

Code[3]	Description	AKM2Gx[4]	Connector	Single-turn or Multi-turn	Feedback Type/Size	Feedback Resolution: Device Resolution (Sin/Cos per Rev., Bits or Lines/Rev.)	Feedback Resolution: AKD Internal Resolution	Feedback Resolution: AKD2G Internal Resolution	Feedback Resolution: # of Absolute revs.	Accuracy[1,2] (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							
		5-7 ≤ 20A			21					
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							
		5-7 ≤ 20A			AD58					
AB		2 non-LV	Y	Multi-turn	AD34				4096	
		3, 4	AD, C							
		5-7 ≤ 20A			AD58					
CA	SFD3 Smart Feedback Device Gen. 3	2-4	AH, D	Single-turn	15	24-Bits	24-Bits	24-Bits	1	±585"
		5-7 ≤ 20A	AH, D		21					
		7 > 20A	E		21					
CB	SFD-M Smart Feedback Device Multi-turn	2-7 ≤ 20A	AH, D	Multi-turn	15	24-Bits	24-Bits	24-Bits	65,536	±60"
		7 > 20A	E							
GU	HIPERFACE DSL® Capacitive	2-7 ≤ 20A	D	Multi-turn	EEM37-2*	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	±60"
		3, 4	AD, C							
		5-7 ≤ 20A			ECN1313	2048 Sin/Cos	27-Bits			±20"
DB		2 non-LV	Y	Multi-turn	EQN1125	512 Sin/Cos	25-Bits		4096	±60"
		3, 4	AD, C							
		5-7 ≤ 20A			EQN1325	2048 Sin/Cos	27-Bits			±20"
LD	EnDat® 2.2/22 Inductive	2-4	D	Multi-turn	EQI 1131**	19-Bits	19-Bits	19-Bits	4096	±120"
		5-7 ≤ 20A			EQI 1331**					±65"
		7 > 20A	H							
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							
		5-7 ≤ 20A			21					±540"
		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.

1. 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.
2. Accuracy refers to overall system accuracy once installed in the motor. Noise refers to the RMS position noise when at stand-still.
3. 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.
4. 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.

*Sick HIPERFACE DSL® model EEM37-2. Please visit https://www.sick.com to download the latest safety data sheet.

**HEIDENHAIN models EQI1131 & EQI1331. Please visit https://www.heidenhain.com to download the latest safety data sheets.

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, HDSL, 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
	HDSL	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
	HDSL	5 / 4 / 2	48 / 30	16 / 4	IP65
ytec®	Power & Brake	4 / 5	7 / 3.6	1.5 / 0.75	IP65
	Resolver	- / 12	- / 5	- / 0.75	IP65
	EnDat 2.1 / BiSS B	- / 12	- / 5	- / 0.75	IP65

Feedback and Connector Availablity

AKM2G-2

Feedback Code \ Connector Code	A	D	Y
2-			•
Ax			•
Cx	•	•	
GU		•	
Dx			•
LD		•	
R-			•

AKM2G- 3-6

Feedback Code \ Connector Code	A	C	D
2-	•	•	
Ax	•	•	
Cx	•		•
GU			•
Dx	•	•	
LD			•
R-	•	•	

AKM2G-7 (L, N Windings)

Feedback Code \ Connector Code	A	C	D
2-	•	•	
Ax	•	•	
Cx	•		•
GU			•
Dx	•	•	
LD			•
R-	•	•	

AKM2G-7 (P, Q, R Windings)

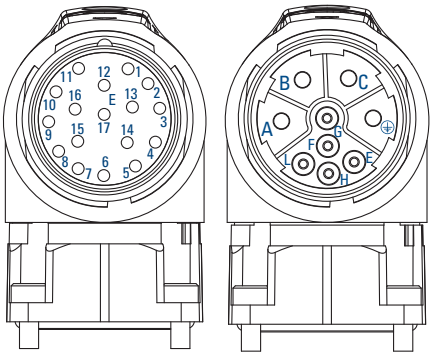
Feedback Code \ Connector Code	A	E	H	J
2-	•		•	
Ax	•		•	
Cx		•	•	
GU				•
Dx	•		•	
LD			•	
R-	•		•	

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

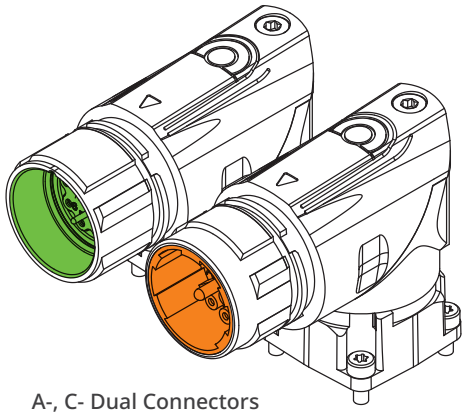
AKM2G Motor Connector Pinouts

Dual Cable Options – Power & Feedback

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

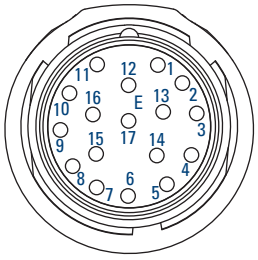


A-, C- Dual Connectors
C- Power Pinout Shown

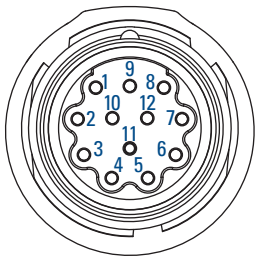


A-, C- Dual Connectors

A-, C- Feedback Connector Pinouts



A-, C- 17-pin Connector



A-, C- 12-pin Connector

Commutating Encoder Feedback

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

EnDat/BiSS

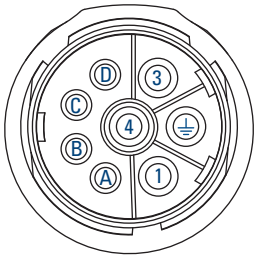
Pin	Function
1	B –
2	PE
3	A –
4	Vcc 5 Vdc
5	DATA
6	N/C
7	Thermal Sensor +
8	Clock
9	B +
10	Un Sense (Common)
11	A +
12	Up Sense (VCC)
13	DATA
14	Thermal Sensor –
15	Clock
16	N/C
17	N/C

Resolver 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

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

A- Power Connector Pinout



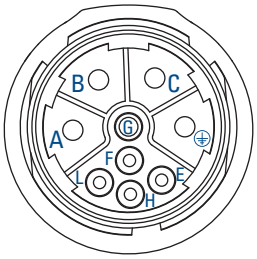
A- Connector

Power Connector

Pin	Function
1	U
‡	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

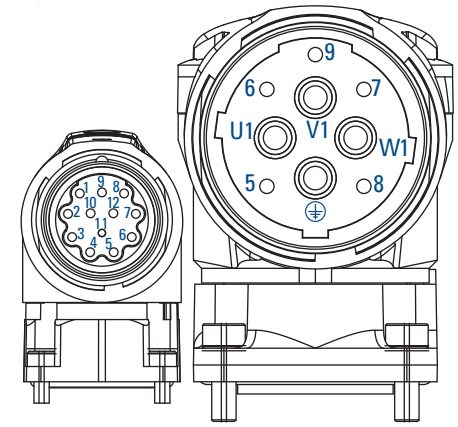
Pin	Function
A	U
⏚	PE
C	W
B	V
F	Brake +
G	Brake -
E	N/C
H	N/C
L	N/C

Shield Connected to Motor Ground Internal to Motor

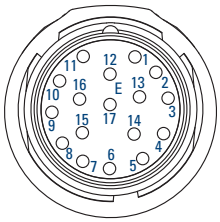
AKM2G Motor Connector Pinouts

Dual Cable Options – Power & Feedback

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



Resolver Connector Power Connector



EnDat® Connector

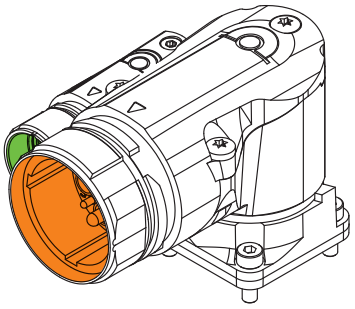
EnDat

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.



H- Dual Connectors

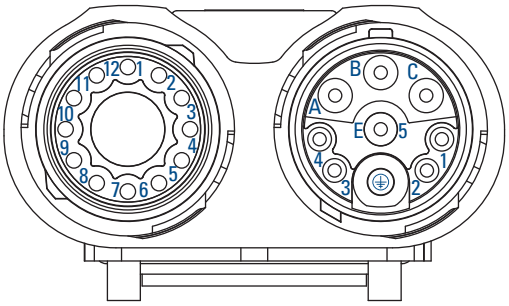
Power Connector

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

Shield Connected to Motor Ground Internal to Motor

Dual Cable Options – Power & Feedback

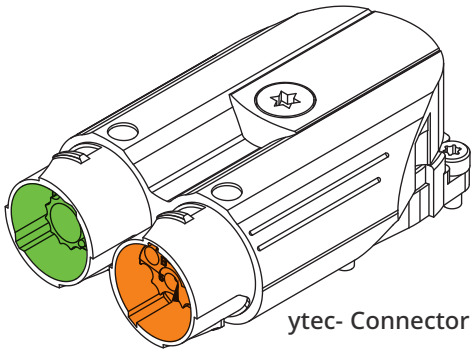
ytec®- Connector Pinout – AKM2G2 only



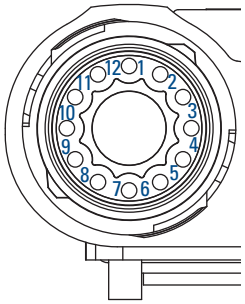
Feedback Power + Brake

Power Connector

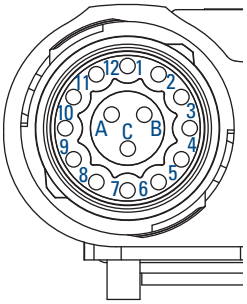
Pin	Function
1	BR+
2	BR–
3	N/C
4	N/C
5	N/C
A	U
B	W
C	V
E	N/C
G	PE



ytec- Connector



Resolver Connector



EnDat/BiSS, Comcoder

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

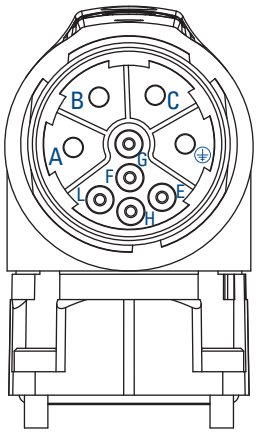
Pin	Function
1	B+
2	B–
3	A+
4	A –
5	Z
6	Z–
7	GND
8	Thermal Sensor +
9	Thermal Sensor –
10	Vcc
11	N/C
12	N/C
A	U
B	V
C	W

AKM2G Motor Connector Pinouts

Single Cable Options – Power & Feedback

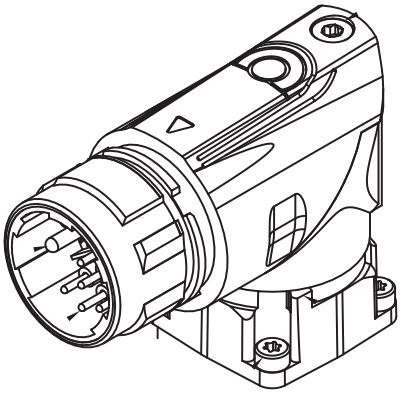
D– Connector Pinouts – Hybrid power and feedback for SFD3, SFD-M, DSL, and EnDat for all AKM2G < 20 Amps Continuous

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

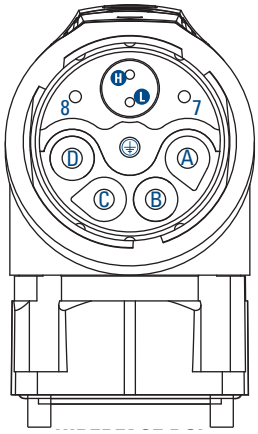


Power + SFD3/SFD-M

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

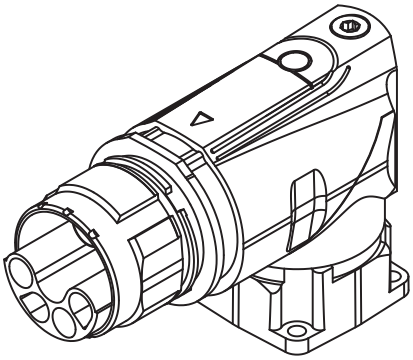


D- Hybrid Power + HIPERFACE DSL® Connector Option

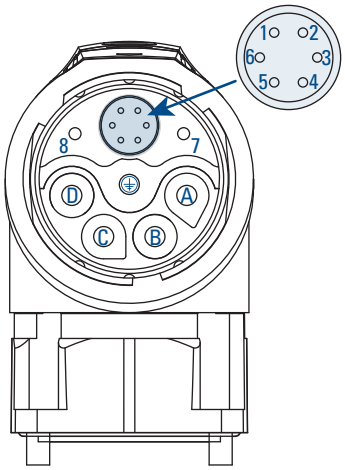


Power + HDSL

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

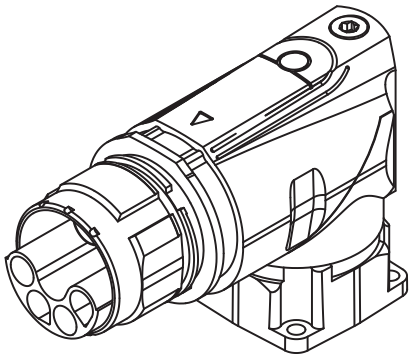


D- Hybrid Power + EnDat® Connector Option



Power + EnDat

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

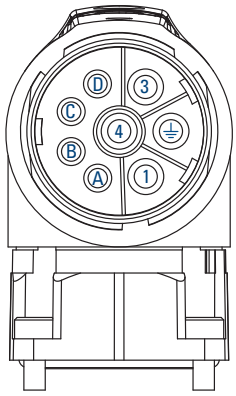


Single Cable Options – Power & Feedback

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

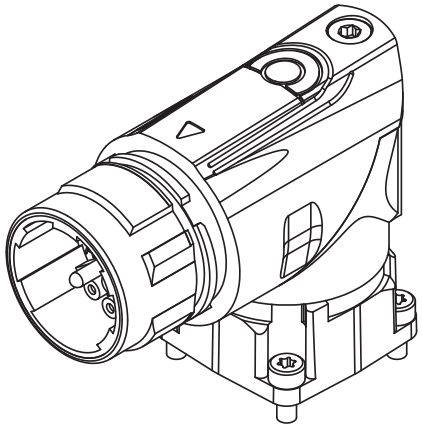
A- Hybrid Power + SFD3/SFD-M Connector Option



Power + SFD3/SFD-M

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

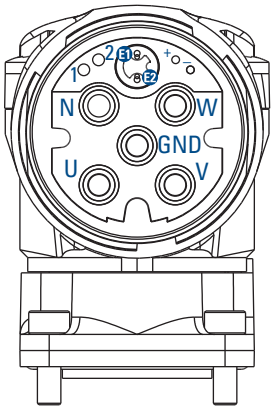
Connector Part Number:
BEDC-110-NN-00-00-1216-000



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

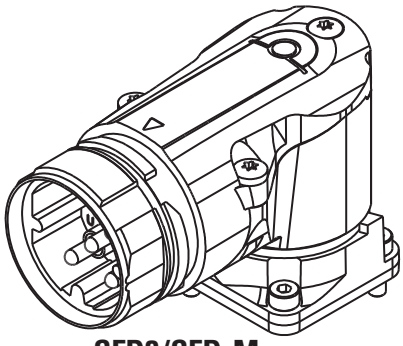
Note: Only for use with legacy AKM cables - not compatible with 2G Cables

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



Power + SFD3/SFD-M

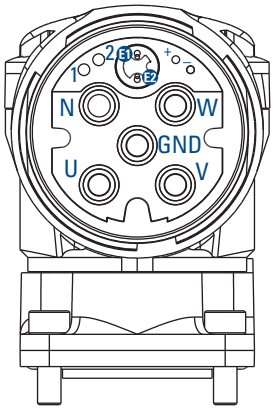
Pin	Function
U	Phase U
V	Phase V
W	Phase W
N	N/C
GND	PE
1	Brake +
2	Brake -
+	N/C
-	N/C
E2	SFD3/SFD-M -
E1	SFD3/SFD-M +



SFD3/SFD-M

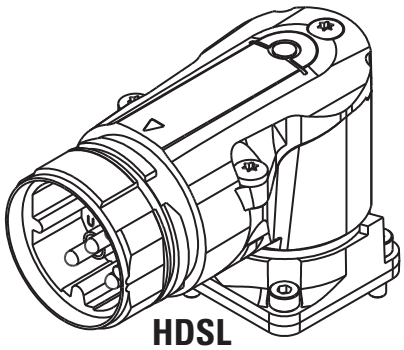
J– Connector Pinouts – Hybrid combined power and feedback for DSL for AKM2G7 > 20 Amps Continuous

J- Hybrid Power + HIPERFACE DSL® Connector Option



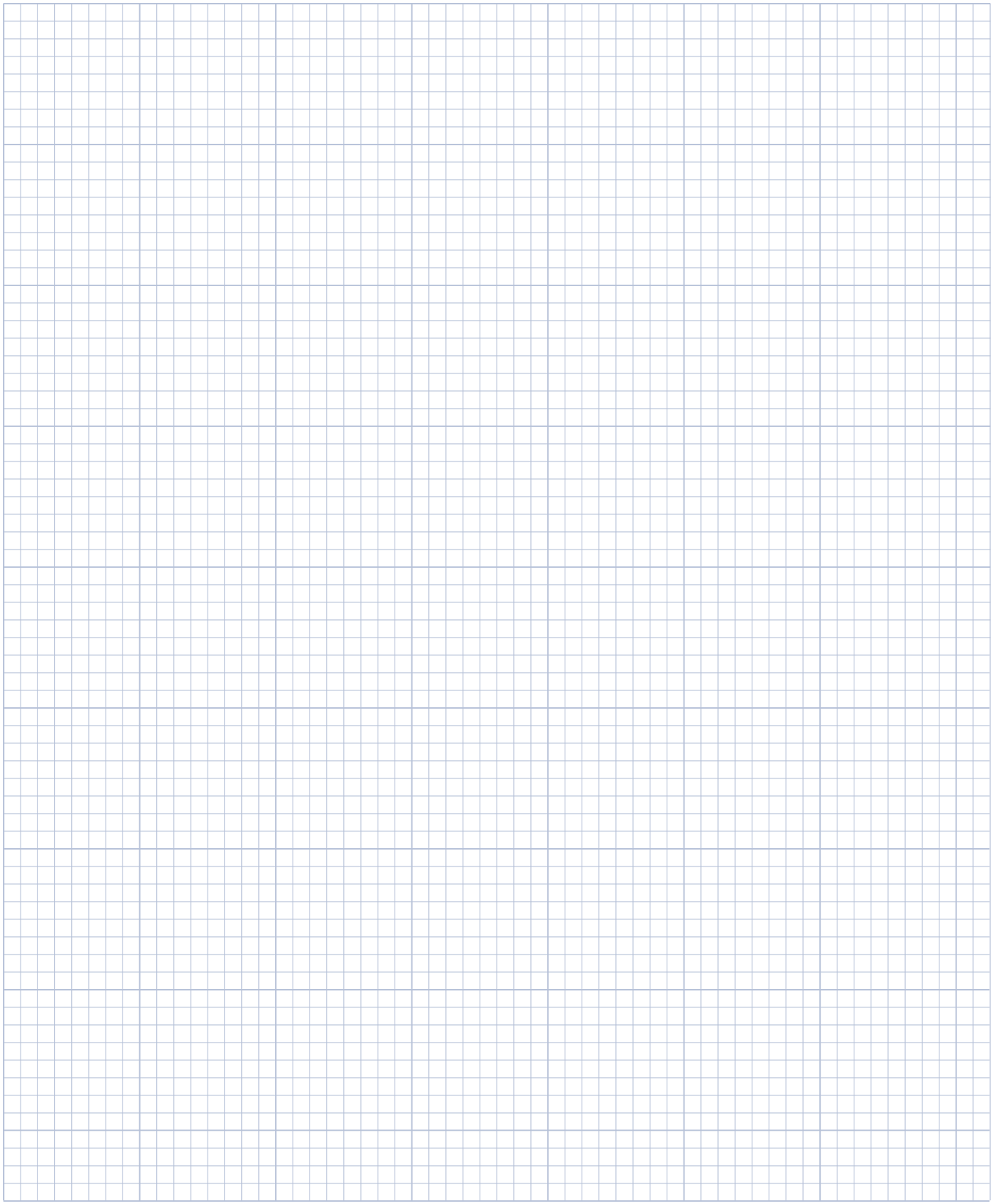
Power + HDSL

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	HDSL -
E1	HDSL +



HDSL

Notes



0.125 inch divisions

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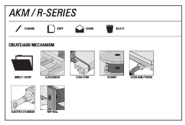

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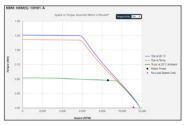
Size your motion system based on application requirements and motion profiles.



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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.

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