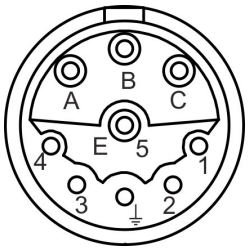
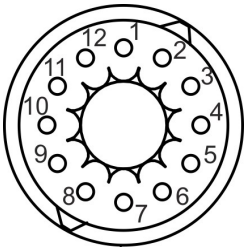
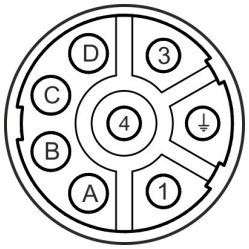
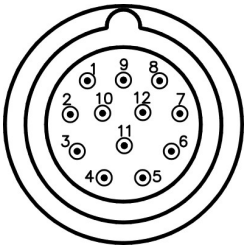
AKM

Part number Scheme and Connectivity



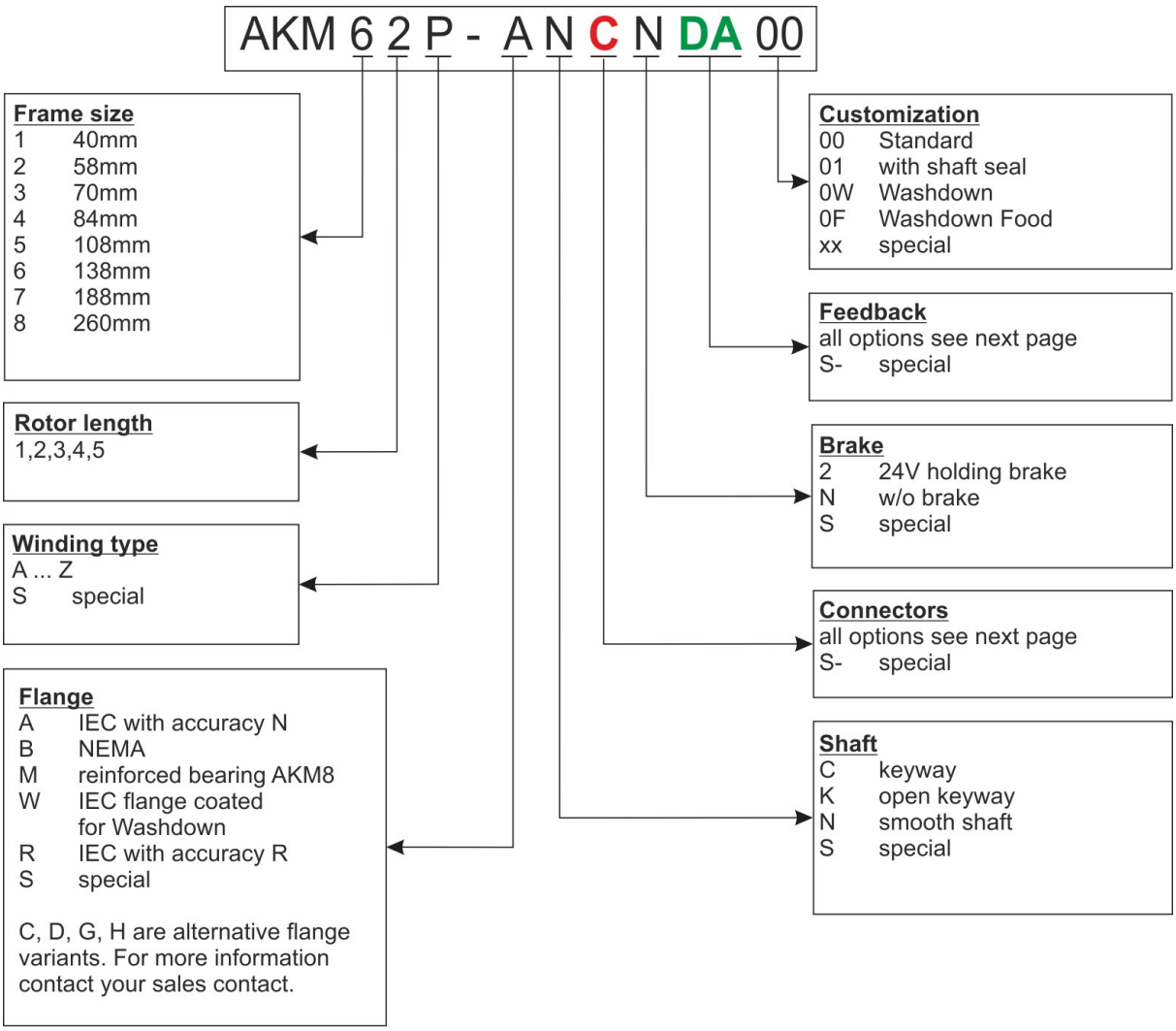






Edition May 2020

1 AKM Connector Codes and Pinout



1.1 Connector Options (C)

Technical description of used connectors see KDN (Mating Connectors).

Connector Description

Connector	Usage*	Contacts - Pins Power/Signal	max. Current [A] Power/Signal	max. Cross Section [mm²] Power/Signal	Protection Class	Suggested mating connector
M23 SpeedTec Ready (Size 1)	Power & Brake	4 / 4	23.5 / 10	4 / 1.5	IP65	BSTA-108-NN-00-08-0036
	Feedback	- / 12	- / 10	- / 0.5	IP65	ASTA-021-NN-00-10-0035
	Feedback	- / 17	- / 9	- / 0.5	IP65	ASTA-035-NN-00-10-0035
	Hybrid*	4 / 4	23.5 / 10	4 / 1.5	IP65	BSTA-108-NN-00-08-0036
M40 (Size 1.5)	Power & Brake	4 / 2	75 / 30	16 / 4	IP65	CSTA-263-NN-00-26-0001
M12	DRIVE-CLiQ	- / 8	- / 2	- / 0.5	IP65	Standard Siemens Drive-Cliq cable
M23-6	DRIVE-CLiQ	6 / -	23.5 / -	4 / -	IP65	
i-tec	Hybrid*	4 / 5	14 / 3.6	1.5 / 0.75	IP65	ESTB-202-NN-00-1110-0500
y-tec	Power & Brake	4 / 5	14 / 3.6	1.5 / 0.75	IP65	ESTB-202-NN-00-31-0500
	Feedback	- / 12	- / 5	- / 0.75	IP65	ESTB-002-NN-00-31-0001
	Feedback	- / 15	- / 5	- / 0.75	IP65	ESTB-205-NN-00-31-0002
Terminal box	Power & Brake	4 / 2	150 / 15	25 / 2.5	IP65	-

* Hybrid means: Power and Feedback (plus Brake) on the same connector and in one cable

Reference Connector-Motor

PTC*	KTY 84-130*	PT1000*	Connection	Usable with	Position of connection
B	1	3	2 SpeedTec Ready connectors	AKM2	Angular, rotatable, motor mounted
C	7	4	2 SpeedTec Ready connectors	AKM1-AKM2	0.5m cable mounted
C	1	4	2 SpeedTec Ready connectors	AKM3-AKM7 (≤ 23,5A)	Angular, rotatable, motor mounted
D**	-	9	1 i-tec Hybrid connector	AKM1	Motor mounted
D**	-	9	1 Hybrid connector SpeedTec Ready	AKM2-AKM6	Angular, rotatable, motor mounted
G	-	V	2 SpeedTec Ready connectors	AKM2-AKM7 (≤ 23,5A)	Straight, motor mounted
H	-	W	1 power connector M40, 1 Feedback connector SpeedTec Ready	AKM7xQ & AKM82T	Angular, rotatable, motor mounted
-	R**	-	1 power connector M23-6, 1 Feedback connector M12	AKM4-AKM7 (≤23,5A)	Motor mounted. M23-6 angular, rotatable. M12 Straight.
T	2	X	1 Terminal box, 1 Feedback connector SpeedTec Ready	AKM8	Motor mounted
-	U**	-	1 power connector M23-6, 1 Feedback connector M12	AKM4-AKM7 (≤23,5A)	Straight, motor mounted
Y	1	Z	1 y-tec connector	AKM1	Motor mounted

* Temperature sensor PTC or KTY or PT1000

** With connector options D, R, and U the temperature sensor type depends on the feedback, see (➜ # 5)

1.2 Feedback Options (CA)

Motor length depends on the built-in feedback device

Technical description of the feedback systems see Kollmorgen Developer Network (MultiFeedback).

1.2.1 Feedback Description

Code	Description	Type	Remarks	Lines per rev.	# of revs.	usable with drives
1-	Comcoder	EPC 15T	Single turn, optical	1024	1	All
2-	Comcoder	EPC 15T	Single turn, optical	2048	1	All
AA	BiSS B Encoder	AD34/AD58	Single turn, optical	2048	1	All
AB	BiSS B Encoder	AD34/AD58	Multi turn, optical	2048	4096	All
C-	SFD	Size 10/15/21	Single turn, inductive, 4 lines	11bit	1	AKD
CA	SFD3	Size 10/15/21	Single turn, inductive, 2 lines	11bit	1	AKD,S700
DA	EnDAT 2.1 Encoder	ECN1113/1313	Single turn, optical	512/2048*	1	All
DB	EnDAT 2.1 Encoder	EQN1125/1325	Multi turn, optical	512/2048*	4096	All
LA	EnDAT 2.1 Encoder	ECI1118/1319	Single turn, inductive	16/32**	1	All
LB	EnDAT 2.1 Encoder	EQI1130/1331	Multi turn, inductive	16/32**	4096	All
MA	DRIVE-CLiQ Encoder	ECN1324S	Safety Single turn, optical	24bit	1	Siemens
MB	DRIVE-CLiQ Encoder	EQN1336S	Safety Multi turn, optical	24bit	4096	Siemens
GA	HIPERFACE Encoder	SKS36	Single turn, optical	128	1	Sx
GB	HIPERFACE Encoder	SKM36	Multi turn, optical	128	4096	Sx
GC	HIPERFACE Encoder	SEK34	Single turn, capacitive	16	1	Sx
GD	HIPERFACE Encoder	SEL34	Multi turn, capacitive	16	4096	Sx
GE	HIPERFACE DSL Encoder	EKS36	Single turn, optical,	18bit	1	AKD,S700
GF	HIPERFACE DSL Encoder	EKM36	Multi turn, optical,	18bit + 12bit	4096	AKD,S700
GJ	HIPERFACE Encoder	SKS36	Single turn, optical	128	1	AKD
GK	HIPERFACE Encoder	SKM36	Multi turn, optical	128	4096	AKD
GM	Safe HIPERFACE Encoder	SKS36S	Safety, like **GJ**, SIL2, PLd, Cat.3	128***	1	AKD
GN	Safe HIPERFACE Encoder	SKM36S	Safety, like **GK**, SIL2, PLd, Cat.3	128***	4096	AKD
GP	HIPERFACE Encoder	SEK34	Single turn, capacitive	16	1	AKD
GR	HIPERFACE Encoder	SEL34	Multi turn, capacitive	16	4096	AKD
R-	Resolver	Size 10/15/21	Single turn, inductive	2 poles	1	All

* x/y data for AKM2-4/AKM5-8
** x/y data for AKM2-3/AKM4-8
*** Certificates for safety feedbacks: see Kollmorgen Developer Network (Approvals) or Kollmorgen website.

1.2.2 Reference Feedback-Motor

Steckercode (PTC/KTY 84-130/PT1000)		B/1/3	C/1/4	C/7/4 (Cable)	D/-/9	G/-/V	H/-/W	-/R/-	T/2/X	-/U/-	Y/1/Z
Code	Feedback	Usable with AKM...									
1-	Comcoder	2	3-7	1-2	-	2-6	7,82T	-	8	-	1
2-	Comcoder	2	3-7	1-2	-	2-6	7,82T	-	8	-	1
AA	BiSS B	2	3-7	2	-	2-6	7,82T	-	8	-	-
AB	BiSS B	2	3-7	2	-	2-6	7,82T	-	8	-	-
C-	SFD***	2	3-7	1-2	1-6 (PTC)*	2-6	7,82T	-	8	-	1
CA	SFD3	-	-	-	1-6 (PT1000)	-	-	-	-	-	-
DA	EnDAT 2.1	2	3-7	2	-	2-6	7,82T	-	8	-	-
DB	EnDAT 2.1	2	3-7	2	-	2-6	7,82T	-	8	-	-
LA	EnDAT 2.1	2	3-7	2	-	2-6	7,82T	-	8	-	-
LB	EnDAT 2.1	2	3-7	2	-	2-6	7,82T	-	8	-	-
MA	DRIVE-CLiQ**	-	-	-	-	-	-	4-7	-	4-7	-
MB	DRIVE-CLiQ**	-	-	-	-	-	-	4-7	-	4-7	-
GA	Hiperface	2	3-7	2	-	2-6	7,82T	-	8	-	-
GB	Hiperface	2	3-7	2	-	2-6	7,82T	-	8	-	-
GC	Hiperface	-	-	1	-	-	-	-	-	-	1
GD	Hiperface	-	-	1	-	-	-	-	-	-	1
GE	Hiperface DSL	-	-	-	2-6 (PT1000)	-	-	-	-	-	-
GF	Hiperface DSL	-	-	-	2-6 (PT1000)	-	-	-	-	-	-
GJ	Hiperface	2	3-7	2	-	2-6	7,82T	-	8	-	-
GK	Hiperface	2	3-7	2	-	2-6	7,82T	-	8	-	-
GM	Safe Hiperface	2	3-7	2	-	2-6	7,82T	-	8	-	-
GN	Safe Hiperface	2	3-7	2	-	2-6	7,82T	-	8	-	-
GP	Hiperface	-	-	1	-	-	-	-	-	-	1
GR	Hiperface	-	-	1	-	-	-	-	-	-	1
R-	Resolver	2	3-7	1-2	-	2-6	7,82T	-	8	-	1

* no brake
** temperature sensor according to current Siemens requirements. For more information contact Kollmorgen.

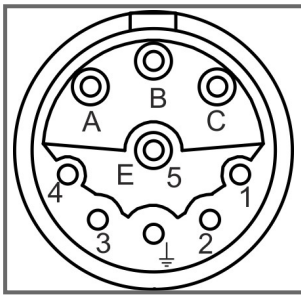
2 Connector Pinout

All connector views: facing front. Abbreviations used :

U	Motor phase U		**BR**	Motor holding brake		**Up**	Sensor Voltage supply
V	Motor phase V		**TH**	Thermal sensor		**0V**	Ground for Sensor Voltage supply
W	Motor phase W		**Z**	Zero pulse			
PE	Protection Earth		**n.c.**	not connected			

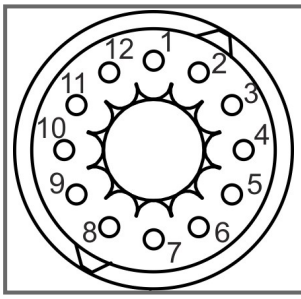
2.1 Connector codes 1, Y: AKM1

2.1.1 Power



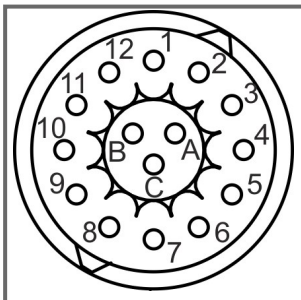
Pin	Function	Pin	Function
1	BR +	A	U
2	BR -	B	W
3	n.c.	C	V
4	n.c.	E	n.c.
5	n.c.	⏚	PE

2.1.2 Resolver (Feedback code R-)



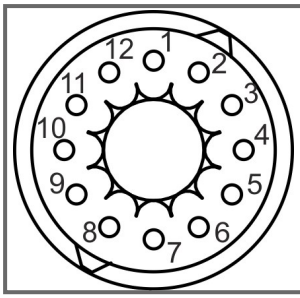
Pin	Function	Pin	Function
1	n.c.	7	S2, cos+
2	TH +	8	S1, sin+
3	S4, cos-	9	R1, ref+
4	S3, sin-	10	n.c.
5	R2, ref-	11	n.c.
6	TH -	12	n.c.

2.1.3 ComCoder (Feedback code 1-, 2-)



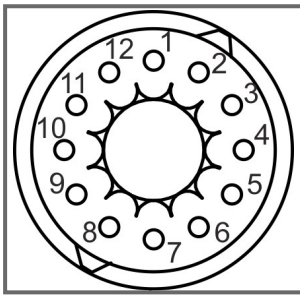
Pin	Function	Pin	Function
1	B +	9	TH -
2	B -	10	Up
3	A +	11	n.c.
4	A -	12	n.c.
5	Z +	A	Hall U
6	Z -	B	Hall V
7	0V	C	Hall W
8	TH +		

2.1.4 SFD (Feedback code C-)



Pin	Function	Pin	Function
1	Up	7	n.c.
2	0V	8	n.c.
3	Data -	9	n.c.
4	Data +	10	n.c.
5	n.c.	11	n.c.
6	n.c.	12	n.c.

2.1.5 Encoder (Feedback codes GC, GD - S300...S700 drives only)



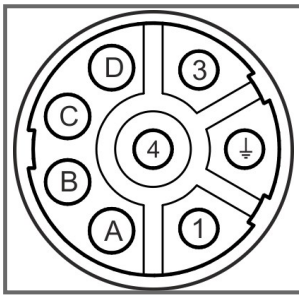
Pin	Function	Pin	Function
1	TH +	7	Data -
2	TH -	8	Sin +
3	n.c.	9	Cos +
4	Sin -	10	Up
5	Cos -	11	0V
6	Data +	12	n.c.

2.2 Connector codes 1, 2, 7, B, C, G, H, T: AKM1 - AKM8

Model	Connector code (PTC)	Connector code (KTY 84-130)
AKM1	C	7
AKM2	B, C	1, 7
AKM3 - AKM7	C	1
AKM2 - AKM6	G	-
AKM7, AKM82T	H	1
AKM8	T	2

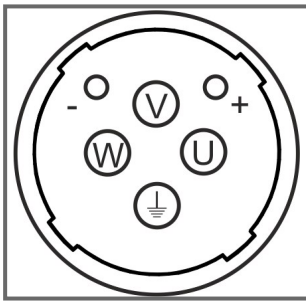
2.2.1 Power

Connector codes 1, 7, B, C, G for AKM1 - AKM7



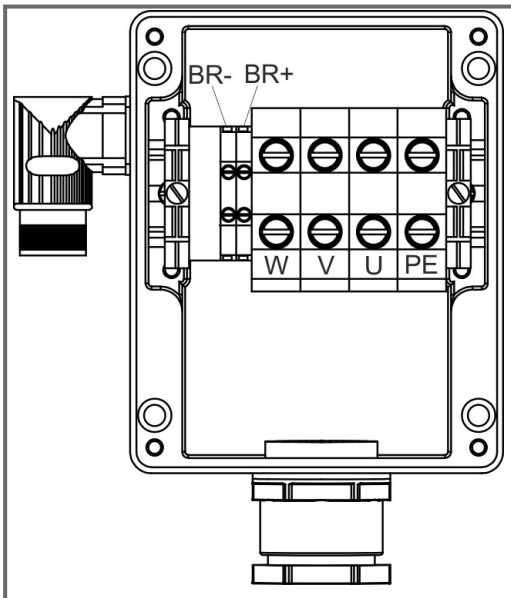
Pin	Function	Pin	Function
1	U	A	BR +
⏚	PE	B	BR -
3	W	C	n.c
4	V	D	n.c.

Connector code 1, H for AKM7, AKM82T



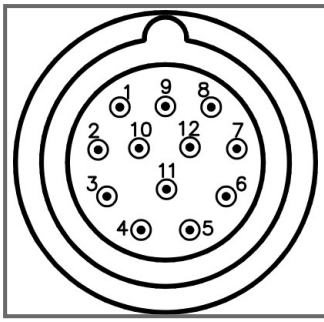
Pin	Function	Pin	Function
U	U	+	BR +
V	V	-	BR -
W	W		
⏚	PE		

Connector code 2, T for AKM8



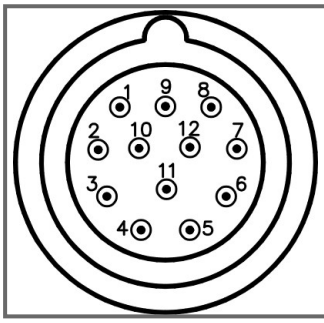
Terminal	Function	Terminal	Function
U	Phase U	BR -	Brake -
V	Phase V	BR +	Brake +
W	Phase W	PE	Protective Earth

2.2.2 Resolver (Feedback code R-)



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

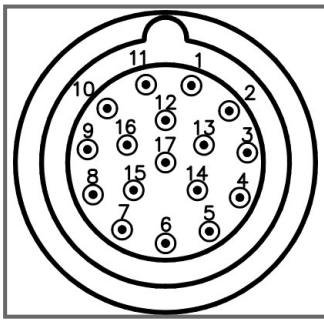
2.2.3 SFD (Feedback code C-)



Pin	Function	Pin	Function
1	Up	7	n.c.
2	0V	8	n.c.
3	Data -	9	n.c.
4	Data +	10	n.c.
5	reserved (shield)	11	n.c.
6	n.c.	12	n.c.

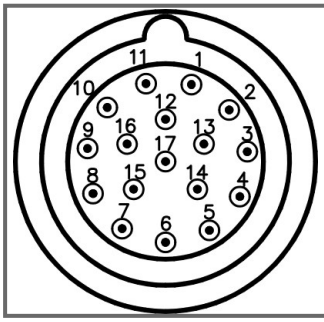
2.2.4 Encoder (Feedback codes Ax, Dx, Lx, Gx)

Model	Feedback code
AKM1	GC (Sx Drives), GD (Sx Drives)
AKM2 - AKM7	AA, AB, DA, DB, LA, LB, GA (Sxyz Drives) , GJ/GM (AKD Drives), GB (Sxyz Drives), GK/GN (AKD Drives)



Pin	Function	Pin	Function	Pin	Function
1	B -	7	TH +	13	Data -
2	0V	8	Clock +	14	TH -
3	A -	9	B +	15	Clock -
4	Up	10	Sense -	16	n.c
5	Data +	11	A +	17	n.c.
6	n.c.	12	Sense +		

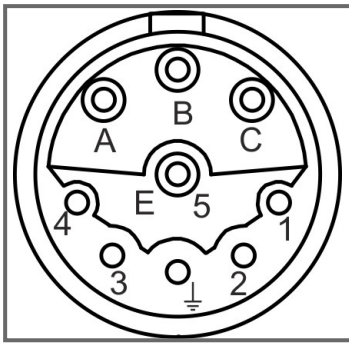
2.2.5 ComCoder (Feedback codes 1-, 2-)



Pin	Function	Pin	Function	Pin	Function
1	B +	7	0V	13	n.c.
2	B -	8	TH +	14	n.c.
3	A +	9	TH -	15	Hall U
4	A -	10	Up	16	Hall V
5	Z +	11	n.c.	17	Hall W
6	Z -	12	n.c.		

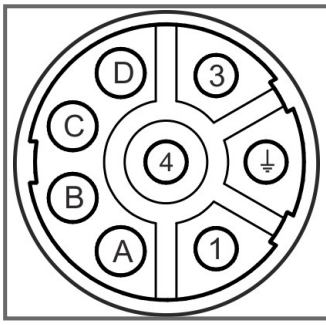
2.3 Connector code D: AKM1 - AKM6

2.3.1 Power & SFD AKM1 (Feedback code C-)



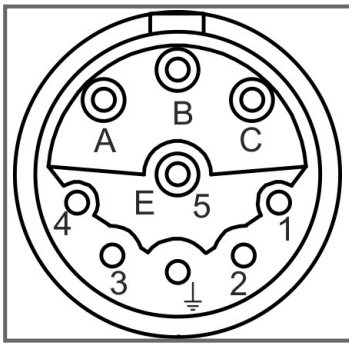
Pin	Function	Pin	Function
1	Up	A	U
2	0V	B	W
3	Data -	C	V
4	Data +	E	n.c.
5	n.c.	⏚	PE

2.3.2 Power & SFD AKM2 - AKM6 (Feedback code C-)



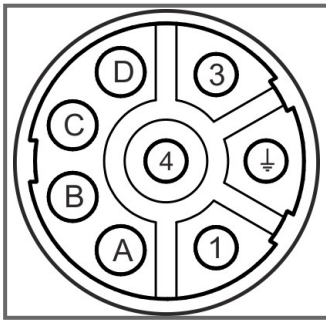
Pin	Function	Pin	Function
1	U	A	Up
⏚	PE	B	0V
3	W	C	Data -
4	V	D	Data +

2.3.3 Power & SFD3 AKM1 (Feedback codes CA)



Pin	Function	Pin	Function
1	BR+	A	U
2	BR-	B	W
3	Data -	C	V
4	Data +	E	n.c.
5	n.c.	⏚	PE

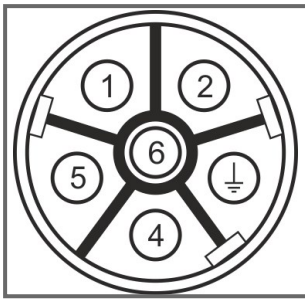
2.3.4 Power & SFD3/DSL AKM2 - AKM6 (Feedback codes CA, GE, GF)



Pin	Function	Pin	Function
1	U	A	BR+
⏚	PE	B	BR-
3	W	C	Data -
4	V	D	Data +

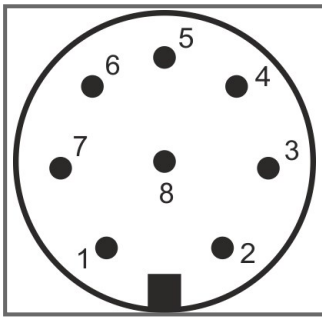
2.4 Connector codes R & U: AKM4 - AKM7

2.4.1 Power



Pin	Function	Pin	Function
1	U	4	BR +
2	V	5	BR -
⏚	PE	6	W

2.4.2 DRIVE-CLiQ (Feedback codes MA, MB)



Pin	Function	Pin	Function
1	Up	5	0V
2	n.c.	6	TXN
3	RXP	7	TXP
4	RXN	8	n.c.

About KOLLMORGEN

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

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