

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

**Artisan Technology Group**
(217) 352-9330 | sales@artisantg.com | artisantg.com

**Full-service, independent repair center**
with experienced engineers and technicians on staff.

**We buy your excess, underutilized, and idle equipment**
along with credit for buybacks and trade-ins.

**Custom engineering**
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

**Expert team | Trust guarantee | 100% satisfaction**

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

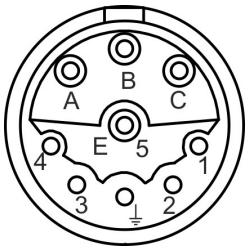
**Visit our website - *Click HERE***

# AKM

## Part number Scheme and Connectivity

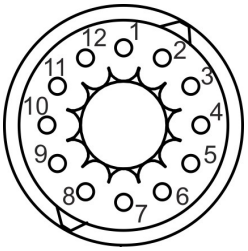


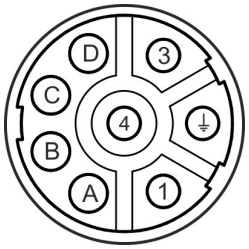






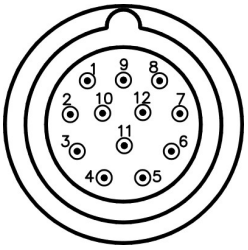


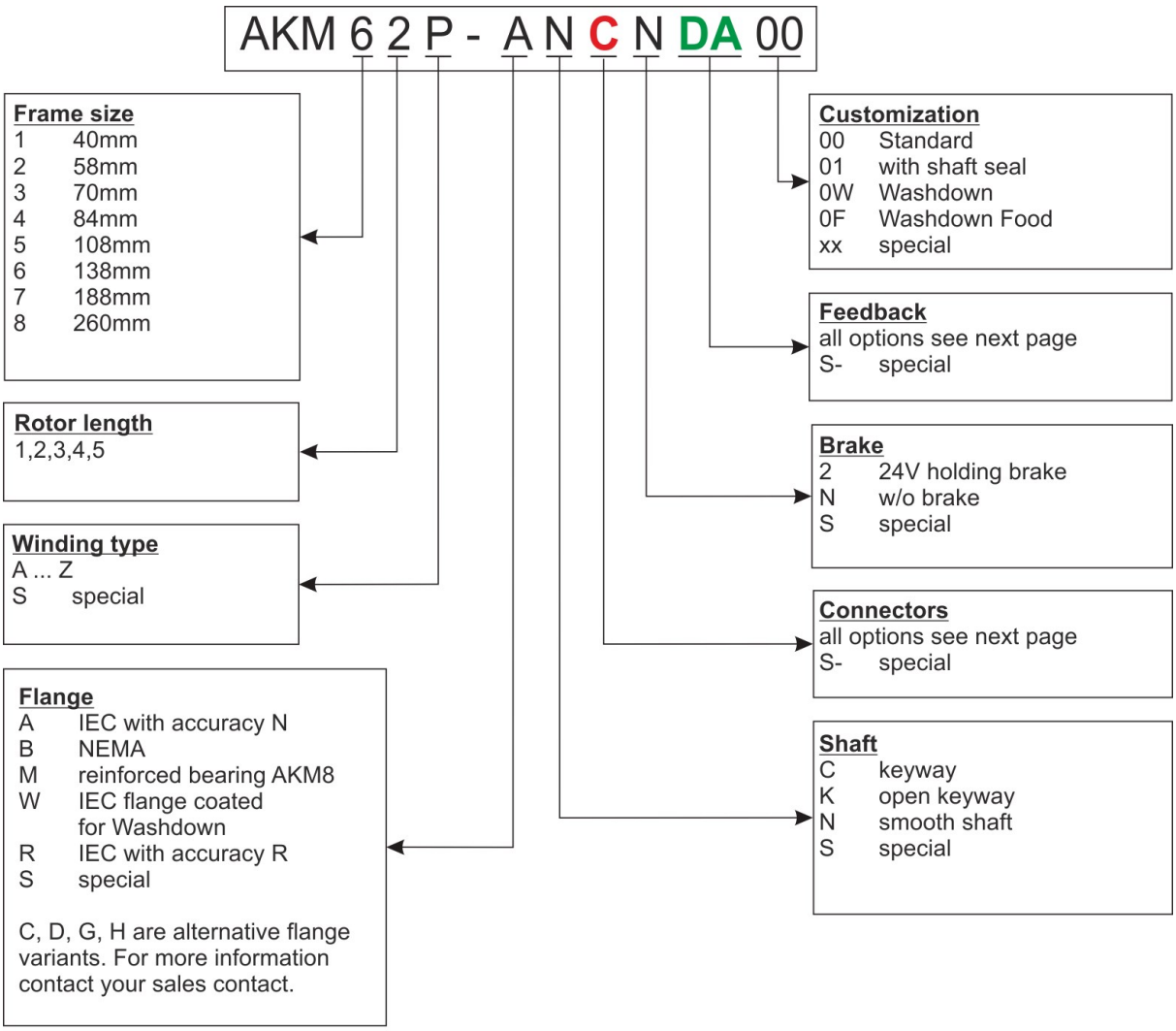





Edition June 2020

# 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,<br>1 Feedback connector M12 | AKM4-AKM7 (≤23,5A) | Motor mounted.<br>M23-6 angular, rotatable.<br>M12 Straight. |
| T | 2 | X | 1 Terminal box, 1 Feedback connector SpeedTec Ready | AKM8 | Motor mounted |
| - | U** | - | 1 power connector M23-6,<br>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 (DA)

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

| Connector code (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.

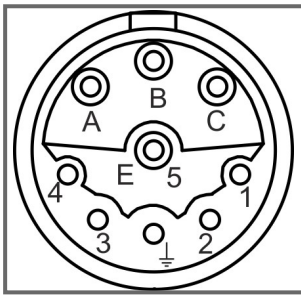
# 2 Connector Pinout

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 | | | |

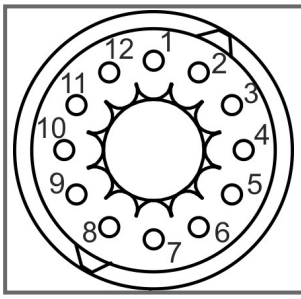
## 2.1 Connector codes 1, Y: AKM1

### 2.1.1 Power



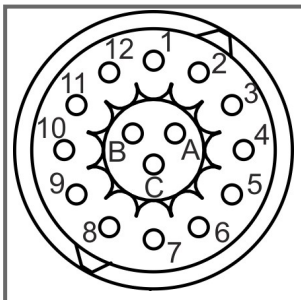

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | BR + | A | U |
| 2 | BR - | B | W |
| 3 | n.c. | C | V |
| 4 | n.c. | E | n.c. |
| 5 | n.c. | ⏚ | PE |

### 2.1.2 Resolver (Feedback code R-)



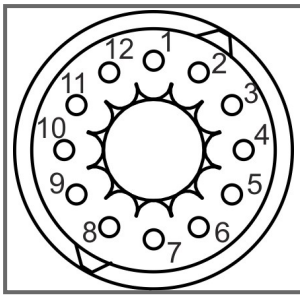

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | n.c. | 7 | S2, cos+ |
| 2 | TH + | 8 | S1, sin+ |
| 3 | S4, cos- | 9 | R1, ref+ |
| 4 | S3, sin- | 10 | n.c. |
| 5 | R2, ref- | 11 | n.c. |
| 6 | TH - | 12 | n.c. |

### 2.1.3 ComCoder (Feedback code 1-, 2-)



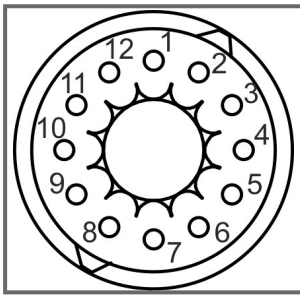

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | B + | 9 | TH - |
| 2 | B - | 10 | Up |
| 3 | A + | 11 | n.c. |
| 4 | A - | 12 | n.c. |
| 5 | Z + | A | Hall U |
| 6 | Z - | B | Hall V |
| 7 | 0V | C | Hall W |
| 8 | TH + | | |

### 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)



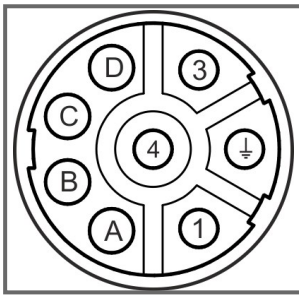

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | TH + | 7 | Data - |
| 2 | TH - | 8 | Sin + |
| 3 | n.c. | 9 | Cos + |
| 4 | Sin - | 10 | Up |
| 5 | Cos - | 11 | 0V |
| 6 | Data + | 12 | n.c. |

## 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 |

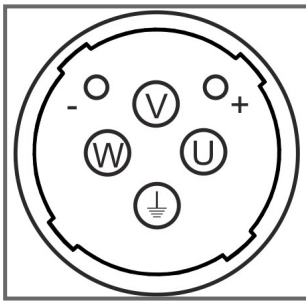
### 2.2.1 Power

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



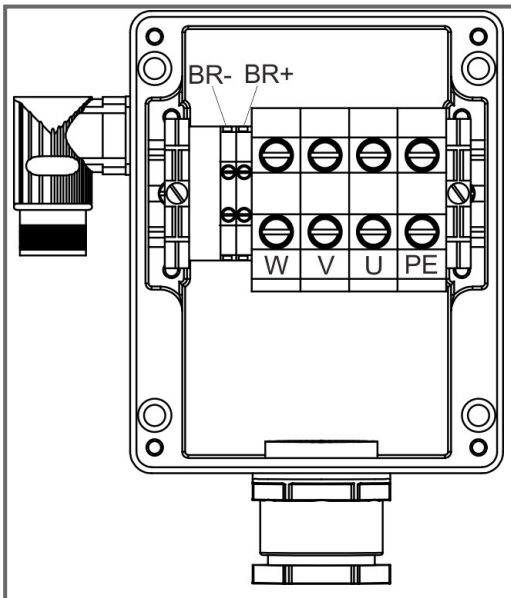

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | U | A | BR + |
| ⏚ | PE | B | BR - |
| 3 | W | C | n.c |
| 4 | V | D | n.c. |

Connector code 1, H for AKM7, AKM82T



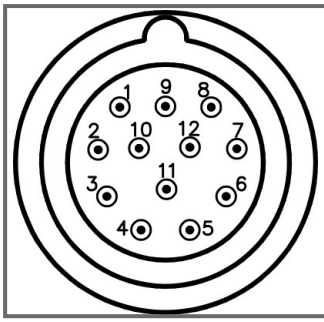

| Pin | Function | Pin | Function |
|---|---|---|---|
| U | U | + | BR + |
| V | V | - | BR - |
| W | W | | |
| ⏚ | PE | | |

Connector code 2, T for AKM8



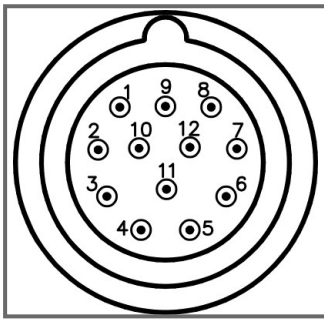

| Terminal | Function | Terminal | Function |
|---|---|---|---|
| U | Phase U | BR - | Brake - |
| V | Phase V | BR + | Brake + |
| W | Phase W | PE | Protective Earth |

### 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. |

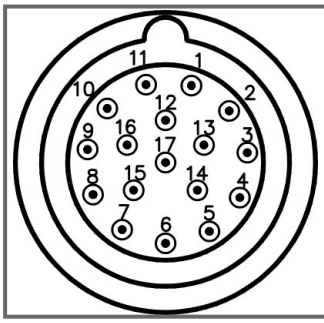
### 2.2.3 SFD (Feedback code C-)




| 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. |

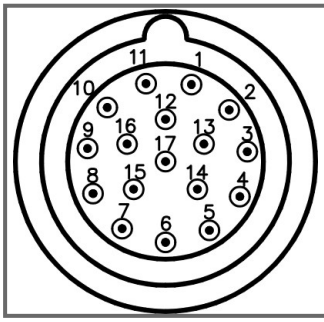
### 2.2.4 Encoder (Feedback codes Ax, Dx, Lx, Gx)

| Model | Feedback code |
|---|---|
| AKM1 | GC (Sx Drives), GD (Sx Drives) |
| AKM2 - AKM7 | AA, AB, DA, DB, LA, LB,<br>GA (Sxyz Drives) , GJ/GM (AKD Drives),<br>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 + | | |

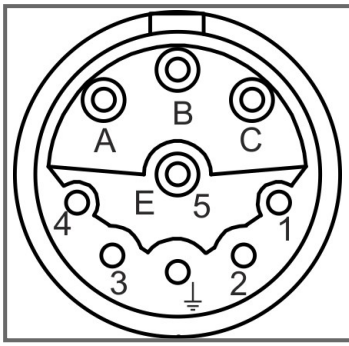
### 2.2.5 ComCoder (Feedback codes 1-, 2-)




| 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. | | |

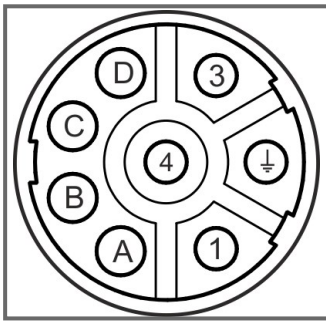
## 2.3 Connector code D: AKM1 - AKM6

### 2.3.1 Power & SFD AKM1 (Feedback code C-)



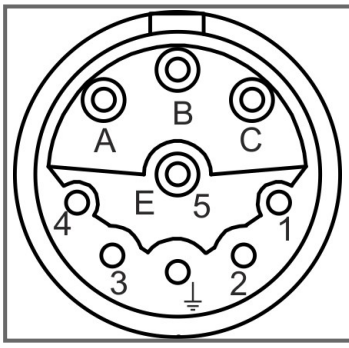

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | Up | A | U |
| 2 | 0V | B | W |
| 3 | Data - | C | V |
| 4 | Data + | E | n.c. |
| 5 | n.c. | ⏚ | PE |

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



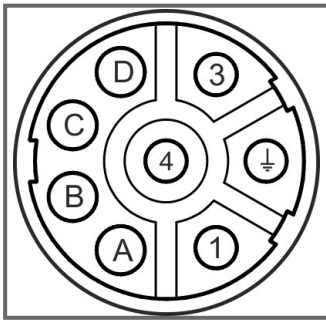

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | U | A | Up |
| ⏚ | PE | B | 0V |
| 3 | W | C | Data - |
| 4 | V | D | Data + |

### 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 |

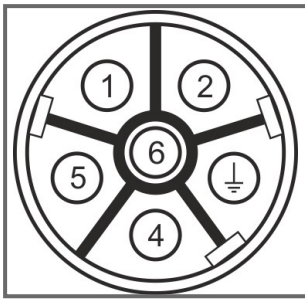
### 2.3.4 Power & SFD3/DSL AKM2 - AKM6 (Feedback codes CA, GE, GF)




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

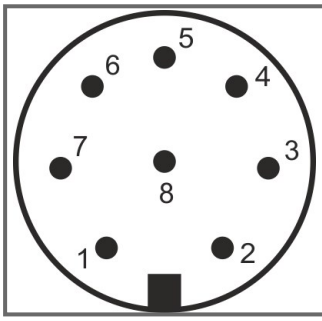
## 2.4 Connector codes R & U: AKM4 - AKM7

### 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.

For assistance with your application needs, visit www.kollmorgen.com or contact us at:


**North America**
**KOLLMORGEN**
203A West Rock Road
Radford, VA 24141 USA
**Web:** www.kollmorgen.com
**Mail:** support@kollmorgen.com
**Tel.:** +1 - 540 - 633 - 3545
**Fax:** +1 - 540 - 639 - 4162

**Europe**
**KOLLMORGEN Europe GmbH**
Pempelfurtstraße 1
40880 Ratingen, Germany
**Web:** www.kollmorgen.com
**Mail:** technik@kollmorgen.com
**Tel.:** +49 - 2102 - 9394 - 0
**Fax:** +49 - 2102 - 9394 - 3155

**China & Southeast Asia**
**KOLLMORGEN Asia**
Floor 4, Building 9, No. 518,
North Fuquan Road,
Changning District,
Shanghai 200335, China
**Web:** www.kollmorgen.cn
**Mail:** sales.china@kollmorgen.com
**Tel.:** +86 - 400 - 661 - 2802
**Fax:** +86 - 21 - 6071 - 0665

**Artisan Technology Group** is an independent supplier of quality pre-owned equipment

## Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

## We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

## Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP