AKD-N™ Decentralized Servo Drive

The new decentralized AKD-N servo drives from Kollmorgen can be placed in the immediate vicinity of the motor thanks to its robust, compact construction and protection class IP67. Plug-in connections, excellent motor compatibility and high degree of integrated functionality: With the decentralized AKD-N servo drives, you can develop drive and automation architectures that are easily comprehensible, and integrate with the central AKD servo drives. Using EtherCAT as a system bus, we reduce complexity further since the AKD-N can collect I/O signals on the axis and pass them on in bundled form.

Improved Overall Equipment Effectiveness (OEE)

With AKD-N you increase the effectiveness beyond the entire life cycle of your machine (OEE, Overall Equipment Effectiveness). The design configuration and simple connection technology decrease the time for assembly, installation, and start-up. During the operating phase, the AKD-N plays a valuable part in energy savings due to the integrated DC connection. Further advantages in production are faster cleaning cycles thanks to a higher protection class as well as fewer cables in combination with a space-saving switch cabinet superstructure. Moreover, the assembly and connection technology increases the availability – and thereby productivity – because maintenance and service tasks are completed faster.

The Advantages of Decentralized Servo Drives

• Reduced costs	• Reduced cabling because DC and fieldbus, power supply, I/O level as well as safety (STO) run in one cable • Faster and simple assembly, even without special knowledge, through ready-made and tested cables • Lack of derating enables smaller motor and servo drive combinations compared to integrated system with the same output power • Significantly lower power dissipation in the control cabinet - usually no air conditioning required
• Compacter machines	• Smaller and therefore more easily integrated switch cabinets • Servo drives in the immediate vicinity of the motor • Robust construction in Protection class IP67 makes protective enclosures superfluous
• Faster startup	• Plug connectors in IP67 for connection without tools • At only eleven millimeters, the thin hybrid cable can be laid in a space-saving manner – even in tight machine corners, thanks to a small bending radius • Simple connection of I/O systems or fieldbuses directly to the drive • Parameterization with the tools of the Kollmorgen WorkBench
• Higher machine effectiveness (OEE)	• Design supports fast and effective cleaning • High operating safety through robust construction • Precision through digital feedback • Everything at a glance: Status display on servo drive
• More flexibility in machine design	• Compatible with all motors from Kollmorgen with single- or dual-cable connection • Simple combination of central and decentralized controllers within the comprehensive AKD family • Faster modification and upgrade options through linear topology as well as I/O and fieldbus interfaces at the axis

AKD-N Decentralized Servo Drives

Our Way of Making Machines Simpler and More Efficient

- Advantage: Lower machine complexity
- Advantage: Greater freedom of design
- Advantage: Higher OEE (Overall Equipment Effectiveness)

Complete integration in the AKD family

Decentralized solution reduces effort and costs for switch cabinet

Startup with the Kollmorgen WorkBench

MotionBus (EtherCAT) for connection to automation systems

Status LED for simple diagnosis

Wide power range: 3 A, 6 A and 12 A models

Connection of external additional components

Simple connection of local I/O

Options like tertiary fieldbus and local STO offer maximal flexibility

A single AKD-C supplies up to 16 AKD-N

IP67 / UL type 4x housing reduces cleaning times and makes special protective enclosures redundant.

Simple and fast attachment

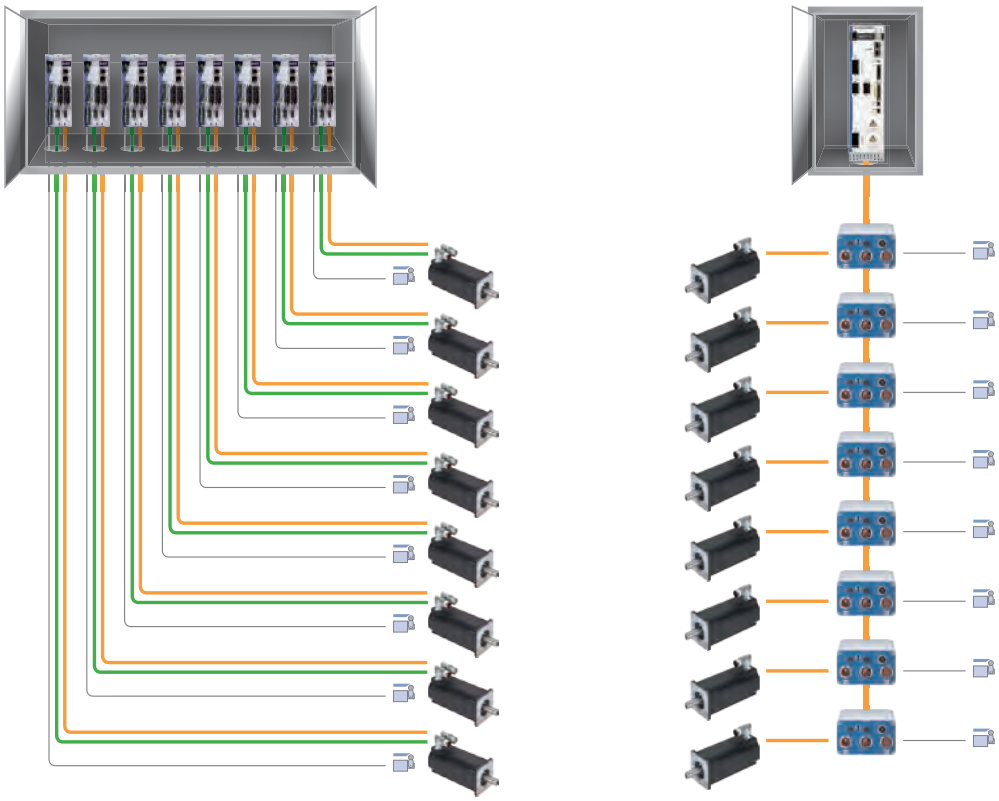
Compatible with all motors from Kollmorgen

A single cable with 11 mm diameter for DC bus, electrical supply, EtherCAT fieldbus and STO reduces cabling outlay, increases the reliability and enables flexible machine design

Hybrid motor cable for simplified cabling, faster installation and higher reliability

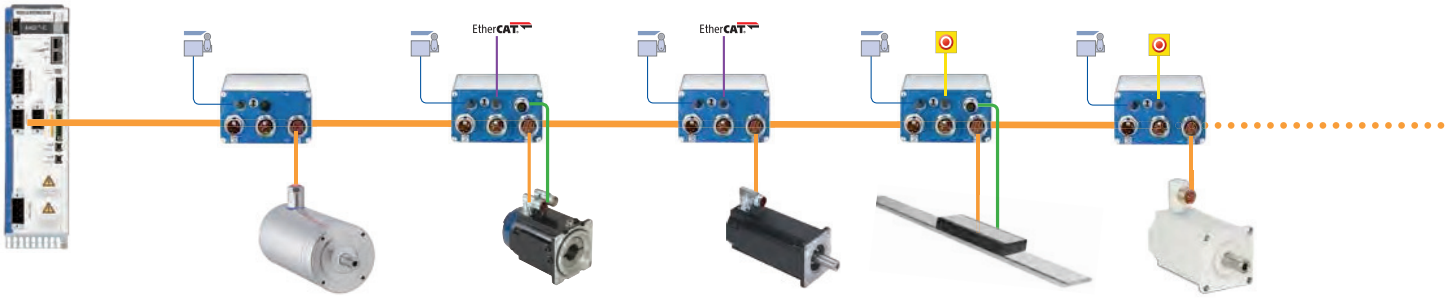
Why Lay 372 m of Cable when 42 m Will Suffice?

Imagine your machine includes eight axes each with a distance of three meters. The switch cabinet is 5 meters away and on each axis there is also a switch. With this thoroughly realistic example, that equates to a total of 372 meters of cable – with our AKD-N it would have been 42 meters. The decentralized servo technology of the AKD-N saves 330 meters here! That is cable that does not have to be purchased or laid and which does not require any space in the machine construction. We find that these are very good grounds for starting the comparison. We combine the AKD-N servo controllers and their power supply modules with pre-assembled and tested system cables – it doesn't get much simpler than this.



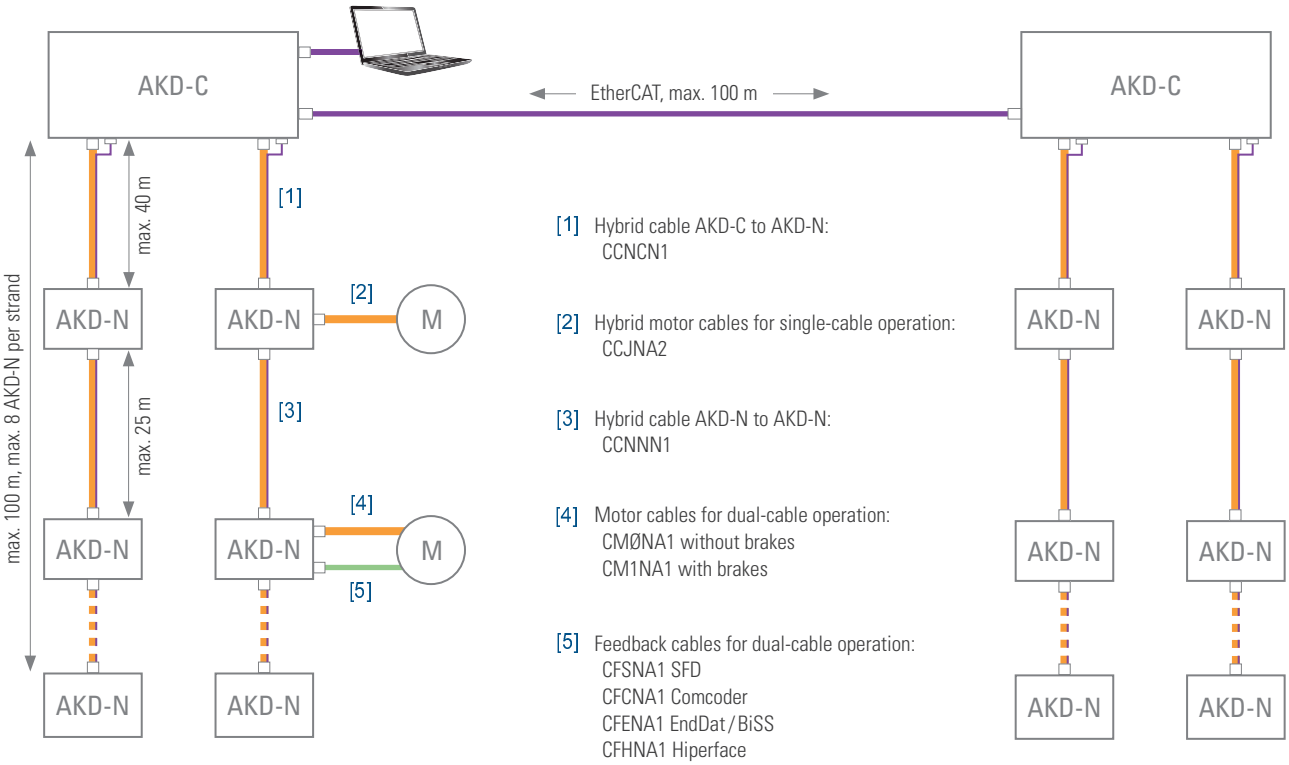
Regardless of which Motor: Plug and Play

Our AKD-N decentralized servo controllers work optimally with every motor. Within our Kollmorgen system, you can also thoroughly use all advantages of the single-cable connection technology individually.



AKD-N Decentralized Servo Drives

Technical Data and Topology



[1] Hybrid cable AKD-C to AKD-N:
CCNCN1

[2] Hybrid motor cables for single-cable operation:
CCJNA2

[3] Hybrid cable AKD-N to AKD-N:
CCNNN1

[4] Motor cables for dual-cable operation:
CMØNA1 without brakes
CM1NA1 with brakes

[5] Feedback cables for dual-cable operation:
CFSNA1 SFD
CFCNA1 Comcoder
CFENA1 EndDat / BiSS
CFHNA1 Hiperface

AKD-N Decentralized Servo Drives

Continuous current	3 A, 6 A, 12 A
Peak current	9 A, 18 A, 36 A
Continuous input power	1.5 kVA, 3 kVA, 6 kVA
Protection class	IP67
Digital inputs/outputs	3 digital inputs / 1 digital output
Safety function	STO SIL 2 (only AKD-N-DS)
Feedback systems Dual-cable (not with -DB)	SFD (digital resolver), BISS-C, Comcorder, hall sensor, Endat 2.1 and 2.2, Hiperface
Feedback systems Single-cable	SFD3 (digital resolver)
Communication	EtherCAT
Dimensions (W x H x D)	Housing: 3 A, 6 A: 130 x 75 x 201 (mm) 12 A: 130 x 75 x 301 (mm) With plugs 3A, 6 A: 130 x 75 x 228 (mm) 12 A: 130 x 75 x 328 (mm)

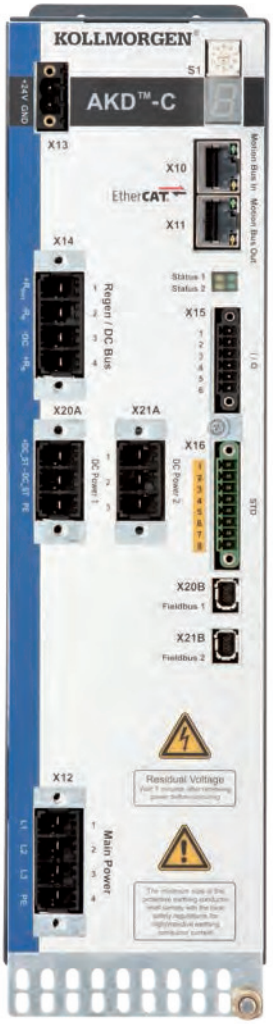
* Subject to change

AKD-C Power Supply Module

Line voltage	400 / 480 V
Overall performance	10 kW, 20 kW *
Intermediate circuit voltage	560 / 680 V DC
Output current	17 A (peak 34 A), 34 A (peak 68 A) *
Protection class	IP20
Output strands	2, for up to 8 AKD-N apiece
Safety function	one STO Enable and STO Status apiece for each strand, SIL 2
Digital inputs/outputs	1 input, 1 output, 1 relay output
Communication	EtherCAT, TCP/IP service interface
Dimensions (W x H x D)	Housing (Front) 10 kW: 80 x 329 x 184 (mm) 20 kW: tba * Installation dimension with plugs 10 kW: 80 x 329 x 231 (mm) 20 kW: tba *

* Available in 2016

Connections and Controls



[1] Network connection for service PC (TCP/IP) (on the top)

[2] Setting the IP address

[3] 24 V DC power supply

[4] Error and status displays

[5] Motion Bus I/O connections (EtherCAT)

[6] Status display of the local fieldbus

[7] Connection for external brake resistor and KCM buffer module

[8] I/O (1 each digital input and output, 1 relay output)

[9] DC outputs for connection of up to eight decentralized AKD-N servo drives apiece

[10] STO input, STO status output (one each per strand),

[11] Local fieldbus for communication with AKD-N

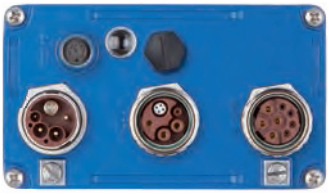
[12] Power connection 400 V / 480 V AC

Connection Options for AKD-N

AKD-N-	Single-cable technology	Separate feedback	Digital I/O	Tertiary fieldbus	Local STO
DB	✓	—	✓	—	—
DF	—	✓	✓	✓	—
DG	✓	—	✓	✓	—
DS	—	✓	✓	—	✓
DT	✓	—	✓	—	✓

AKD-N-DB

[4] [5]



[1] [2] [3]

[1] [2] Connections for hybrid cable

[3] Motor connection

AKD-N-DF, -DS

[4] [5] [6] [7]

[1] [2] [3]

[4] 3 digital inputs, 1 digital outputs

[5] Status/error display with LED

AKD-N-DG, -DT

[4] [5] [6]

[1] [2] [3]

[6] STO connection (-DS) / Tertiary fieldbus (-DF)

[7] Connection for feedback with dual-cable technology

Model Nomenclature

AKD / AKD-N Servo Drives

AKD – P 003 07 – NB CC – 0000

AKD Series

Version

P Position controller with motion tasks
D BASIC
M PDMM

Rated Current

003 3 A
006 6 A
012 12 A
024 24 A
048 48 A

Voltage

06 120 / 240 V AC, 1-ph / 3-ph *
07 240 / 480 V AC, 3-ph
* AKD-x02406 240 V AC only

Version

0000 X11, X32

Connection Options

AN Analog
CN CANopen
EC EtherCAT
EI Ethernet/IP
CC CANopen and EtherCAT
PN PROFINET

Expansions

NB Without expansion
IC I/O option card (only AKD-T)
MC Motion control card 0.8 GHZ
M1 Motion control card 1.2 GHz

AKD – C 010 07 – CB EC – E000

AKD Series

Version

C Central Power Supply IP20

Power Class

010 10 kW (17 kW @ 570 V DC)
020 20 kW (34 kW @ 570 V DC) (available in 2016)

Voltage Class

07 400 to 480 V AC, 3-ph

Customization

x000 Standard (x = language)

Connection Option

EC EtherCAT

Expansions

CB No expansion

AKD – N 003 07 – DB EC – E000

AKD Series

Version

N Near servo drive IP65/67

Current Class

003 3 Arms
006 6 Arms
012 12 Arms

Voltage Class

07 700 V DC

Customization

x000 Standard (x = language)

Connection Option

EC EtherCAT

Expansions

DB Hybrid motor cable
DF Feedback connector and tertiary fieldbus
DG Hybrid motor cable and tertiary fieldbus
DS Feedback connector and individual STO
DT Hybrid motor cable and individual STO

Note: Options in blue type refer to standard products.