AKD™ Servo Drive

Our AKD series is a complete range of Ethernet-based servo drives that are fast, feature-rich, flexible and integrate quickly and easily into any application.* AKD ensures plug-and-play commissioning for instant, seamless access to everything in your machine. And, no matter what your application demands, AKD offers industry-leading servo performance, communication options, and power levels, all in a smaller footprint.

This robust, technologically advanced family of drives delivers optimized performance when paired with our best-in-class components, producing higher quality results at greater speeds and more uptime. With Kollmorgen servo components, we can help you increase your machine's overall effectiveness by 50%.

* Patents pending.

The Benefits of AKD Servo Drive

|	
• Optimized Performance in Seconds	• Auto-tuning is one of the best and fastest in the industry
	• Automatically adjusts all gains, including observers
	• Immediate and adaptive response to dynamic loads
	• Precise control of all motor types
	• Compensation for stiff and compliant transmission and couplings
• Greater Throughput and Accuracy	• Up to 27-bit-resolution feedback yields unmatched precision and excellent repeatability
	• Very fast settling times result from a powerful dual processor system that executes industry-leading and patent pending servo algorithms with high resolution
	• Advanced servo techniques such as high-order observer and bi-quad filters yield industry-leading machine performance
	• Highest bandwidth torque-and-velocity loops. Fastest digital current loop in the market
• Easy-to-Use Graphical User Interface (GUI) for Faster Commissioning and Troubleshooting	• Six-channel real-time software oscilloscope commissions and diagnoses quickly
	• Multi-function Bode Plot allows users to quickly evaluate performance
	• Auto-complete of programmable commands saves looking up parameter names
	• One-click capture and sharing of program plots and parameter settings allow you to send machine performance data instantly
	• Widest range of programming options in the industry
• Flexible and Scalable to Meet Any Application	• 3 to 24 Arms continuous current; 9 to 48 Arms peak
	• Very high power density enables an extremely small package
	• True plug-and-play with all standard Kollmorgen servomotors and positioners
	• Supports a variety of single and multi-turn feedback devices— Smart Feedback Device (SFD), EnDat2.2, 01, BiSS, analog Sine/Cos encoder, incremental encoder, HIPERFACE®, and resolver
	• Tightly integrated Ethernet motion buses without the need to add large hardware: EtherCAT®, SynqNet®, Modbus/TCP, EtherNet/IP, PROFINET, and CANopen®
	• Scalable programmability from base torque-and-velocity through multi-axis master

AKD Servo Drive

The AKD servo drive delivers cutting-edge technology and performance with one of the most compact footprints in the industry. These feature-rich drives provide a solution for nearly any application, from basic torque-and-velocity applications, to indexing, to multi-axis programmable motion with embedded Kollmorgen Automation Suite. The versatile AKD sets the standard for power density and performance.

Micron™ Gearheads

AKM™ Servomotors
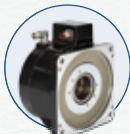
Kollmorgen Cartridge DDR™ Motors

Housed Direct Drive Rotary Motors

Best-in-Class Components
AKD works seamlessly with Kollmorgen motors and positioners–well-known for quality, reliability, and performance.

Direct Drive Linear Motors*

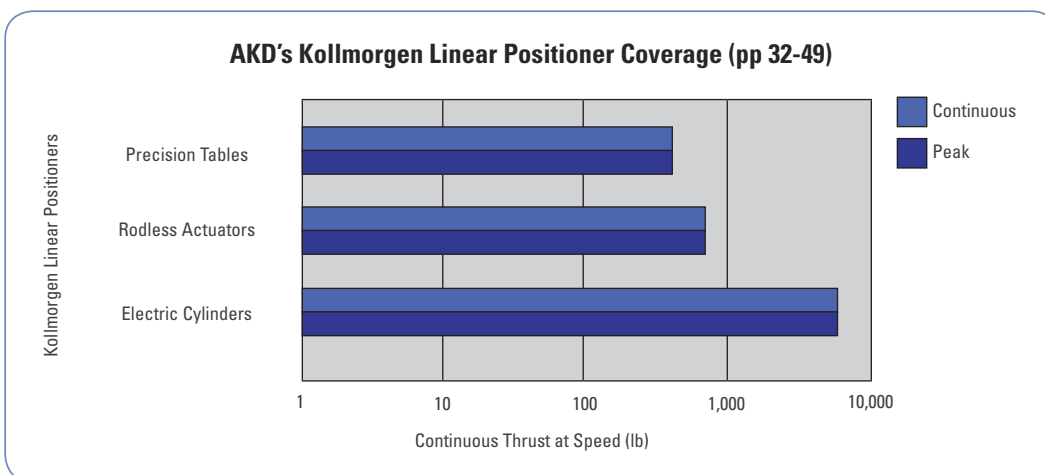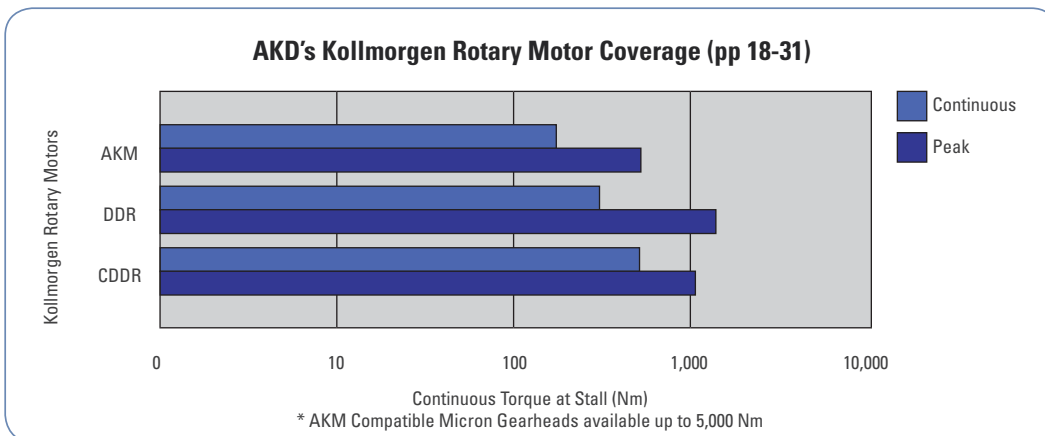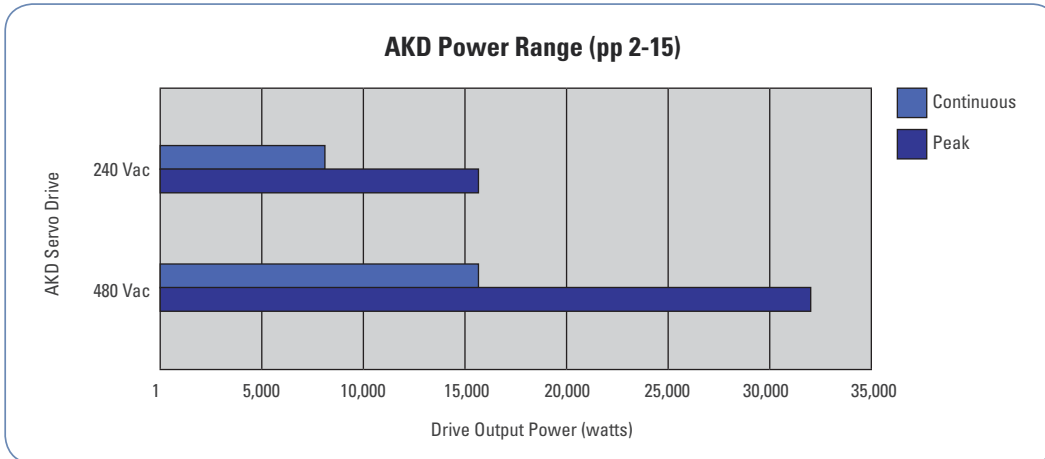Linear Positioners

Multi-Axis Precision Tables

AKD™ Servo Drive

* For more information on our direct drive linear motors, visit www.kollmorgen.com/brushlessddl

AKD Servo Drive Range of Coverage

When you pair the AKD servo drive with any of our Kollmorgen motors or linear positioners, you'll achieve optimized performance. From 3 to 24 Arms continuous current and 9 to 48 Arms peak current, the feature-rich AKD provides a solution for nearly any application.

AKD Power Range (pp 2-15)

Continuous
Peak

AKD Servo Drive

- 240 Vac
- 480 Vac

Drive Output Power (watts)
1   5,000   10,000   15,000   20,000   25,000   30,000   35,000

AKD's Kollmorgen Rotary Motor Coverage (pp 18-31)

Continuous
Peak

Kollmorgen Rotary Motors

- AKM
- DDR
- CDDR

Continuous Torque at Stall (Nm)
* AKM Compatible Micron Gearheads available up to 5,000 Nm
0   10   100   1,000   10,000

AKD's Kollmorgen Linear Positioner Coverage (pp 32-49)

Continuous
Peak

Kollmorgen Linear Positioners

- Precision Tables
- Rodless Actuators
- Electric Cylinders

Continuous Thrust at Speed (lb)
1   10   100   1,000   10,000

AKD Servo Drive

AKD servo drive is specifically designed with the versatility, communications, and power you need to expand machine performance and increase integration speeds. Motor set-up is plug-and-play and multiple Ethernet connectivity options provide both open and closed protocols. Online troubleshooting and data verification enable faster, bug-proof programming. And a broad power range in a smaller, compact design allows you to use these robust drives with a single interface while experiencing industry-leading, high-performance servo loops.

AKD Specifications		
Encoder Output or AUX Encoder Input	2.5 MHz Maximum line frequency	
Feedback	Smart Feedback Device (SFD), EnDat2.2, 01, BiSS, analog Sine/Cos encoder, incremental encoder, HIPERFACE®, and resolver	
Logic supply	24 Vdc	
	Base drive	With I/O expansion
Digital input (24 Vdc)	8 (1 dedicated to enable)	20 (1 dedicated to enable)
Digital output (24 Vdc)	3 (1 dedicated to fault relay)	13 (1 dedicated to fault relay)
Analog input (+/- 10 Vdc, 16-bit)	1	2
Analog output (+/- 10 Vdc, 16-bit)	1	2
Programmable inputs	7	19
Programmable outputs	2	12
Sink/Source inputs/outputs	Yes	Yes

Modbus/TCP

Industry-leading power density

General Specifications

120 / 240 Vac 1 & 3 Phase (85 -265 V)	Continuous Current (Arms)	Peak Current (Arms)	Drive Continuous Output Power Capacity (Watts)	Internal Regen (Watts)	(Ohms)	Height mm (in)	Width mm (in)	Depth mm (in)	Depth with Cable Bend Radius mm (in)
AKD-■00306	3	9	1100	0	0	168 (6.61)	57 (2.24)	153 (6.02)	184 (7.24)
AKD-■00606	6	18	2000	0	0	168 (6.61)	57 (2.24)	153 (6.02)	184 (7.24)
AKD-■01206	12	30	4000	100	15	195 (7.68)	76 (2.99)	186 (7.32)	215 (8.46)
AKD-■02406	24	48	8000	200	8	250 (9.84)	100 (3.94)	230 (9.06)	265 (10.43)

240/480 Vac 3 Phase (187-528 V)	Continuous Current (Arms)	Peak Current (Arms)	Drive Continuous Output Power Capacity (Watts)	Internal Regen (Watts)	(Ohms)	Height mm (in)	Width mm (in)	Depth mm (in)	Depth with Cable Bend Radius mm (in)
AKD-■00307	3	9	2000	100	33	256 (10.08)	70 (2.76)	186 (7.32)	221 (8.70)
AKD-■00607	6	18	4000	100	33	256 (10.08)	70 (2.76)	186 (7.32)	221 (8.70)
AKD-■01207	12	30	8000	100	33	256 (10.08)	70 (2.76)	186 (7.32)	221 (8.70)
AKD-■02407	24	48	16,000	200	23	310 (12.20)	105 (4.13)	229 (9.02)	264 (10.39)
AKD-■04807	48	96	32,000	400		*Coming in 2012*			
AKD-■09607	96	192	64,000	800		*Coming in 2012*			

Note: For complete AKD model nomenclature, refer to page 67

Scalable Programmability

The AKD servo drive delivers cutting-edge technology and performance with one of the most compact footprints in the industry. The AKD is flexible enough for virtually any application. From one axis that is as simple as analog torque and velocity, to 128 axes of fully programmable synchronized motion, AKD is the answer.

Benefits

- Optimized performance in seconds
- Greater throughput and accuracy
- Easy-to-use Graphical User Interface (GUI) for faster commissioning and troubleshooting
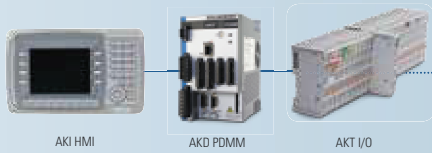- Flexible and scalable to meet any application

BASIC Programmable 1.5 Axis Drive ("T" Option)

- Adds BASIC programmability to base AKD
- 4Khz programmable interrupt service routines
- Conditional statements, built-in math functions, user functions and subroutines
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O
- Same package size as base drive

Motion Tasking ("P" Option)

- Adds simple point-and-click indexing to base drive
- Provides user with pre-programmed options
- Guides novice user through simplified steps to create indexing moves
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O
- Same package size as base drive

Base AKD ("B" Option)

- Controlled by analog torque-and-velocity commands
- Includes electronic gearing via X9 connector
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O

Basic Operation

Single-Axis

Panel PAC Controller   AKT I/O

AKD Servo Drive   AKD Servo Drive   AKD Servo Drive   AKD Servo Drive

AKI HMI   AKD PDMM   AKT I/O

AKD Servo Drive   AKD Servo Drive   AKT I/O

**Kollmorgen Automation Suite
Programmable Automation Controller (PAC)**

**AKD PDMM used standalone as a single-axis
drive with integrated controller and soft-PLC**

**Seamlessly add additional axes and AKD
PDMM serves as a high-performance
multi-axis machine controller**

- Includes all the capabilities of Kollmorgen Automation Suite™ – a fully integrated, truly scalable programming solution
- Choose from all five IEC 61131-3 languages (structured text, function block diagram, ladder diagram, instruction list, sequential function chart) for soft PLC process programming
- Program motion using your choice of PLCopen for motion or our innovative Pipe Network™
- Exclusive function blocks, such as "wait," enable your program to act as a scanning or sequential language
- Onboard I/O includes 17 digital (with 2 high-speed inputs) and 2 analog
- Controls AKT™ remote I/O for nearly unlimited expandability
- AKD PDMM only adds 30mm width to AKD base drives

- Provide true synchronized-path control of up to 8 or more axes
- Reduce cabinet size and wiring requirements with onboard motion and machine control in a single, compact package
- Easily manage remote I/O and the I/O of all attached drives via EtherCAT
- Use PLCopen for motion or Pipe Network™ to program sophisticated camming and gearing applications in a matter of minutes
- Add 11 digital and 2 analog I/O to the system with each additional AKD Servo axis incorporated
- Includes 2 high-speed digital inputs for each additional AKD servo axis

- Build EtherCAT-based systems up to 128 axes of high-performance motion using a PAC controller
- This scalable solution provides a full integrated development environment for any application, whether programming a single axis of motion, a multi-axis AKD PDMM™ system, or a PAC-based system up to 128 axes
- Panel PACs include the choice of a 10", 15" or 17" touchscreen user interface
- PAC controllers include choice of Celeron or Core2Duo processor for scalable performance
- Program camming, gearing and other motion applications using a choice of PLC open for motion or the graphical Pipe Network™
- Add 11 digital and 2 analog I/O to the system with each additional AKD Servo axis incorporated
- Includes 2 high-speed digital inputs for each additional AKD servo axis
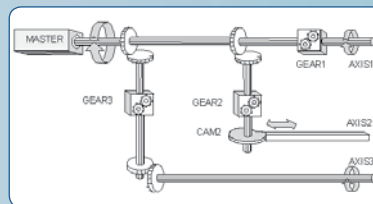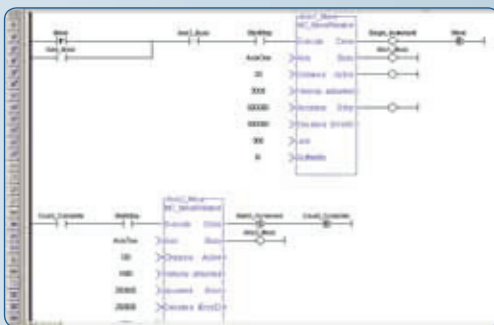
IEC 61131-3 with five languages for process programming (soft PLC)

Choice of PLCopen for motion or Kollmorgen *exclusive* Pipe Network for motion programming

Using the exclusive Pipe Network provides a one-to-one translation of a mechanical system into a logical world.

Programming

Multi-Axis Programming

AKD BASIC Drives

High Performance Capabilities in an Integrated Drive/Control Solution

Add co-engineering to your toolbox. Save money, simplify your machine and customize performance to meet the specific needs of each customer or application – as needed, today or tomorrow.

Our new Kollmorgen AKD™ BASIC drives add BASIC-programmable machine and motion control to the superior performance of our AKD drive platform. So engineers can quickly customize performance at the drive level without touching the PLC. In fact, for many applications you can avoid the expense, wiring and cabinet space of a PLC altogether.

Whether you rely on your own engineering expertise or Kollmorgen's, the base and Expanded I/O versions of our AKD BASIC drive give you the unprecedented machine and motion control flexibility in a compact, fully integrated drive package. It's one more example of our co-engineering mission to help you deliver exactly what your customers want – when they want it – in solutions that are more cost-effective to build, simpler in design and faster to market.

AKD BASIC Language Programmable Drive

In addition to the wide selection and key features of our proven AKD, the standard version of our AKD BASIC drive offers:

- **Programmable machine control built into the drive,** so you can engineer perfect axis-level performance without touching the machine controller. In fact, AKD BASIC can eliminate the need for a PLC in single and 1.5 axis applications – reducing wiring requirements, panel space, design complexity and cost.

- **High performance motion control built into the drive,** enabling increased speed for more complex moves in a simpler design with reduced wiring.

- **BASIC Language programming,** providing simple program flow control in a solution that's easy to learn, quick to master and universally accepted.

- **An integrated development environment,** allowing single-point programming, de-bugging, commissioning, tuning and management of your AKD BASIC drive from within AKD WorkBench. Our BASIC editor provides innovative features that speed development time and reduce coding errors.

- **Source code lockout with password protection,** freeing you to differentiate your product with drive-level control while safeguarding your intellectual property.

Expanded I/O AKD BASIC Programmable Drive

Building on the features of the AKD BASIC drive, we also offer an expanded I/O version that adds:

- **A total of 20 digital inputs, 13 digital outputs, 2 analog inputs and 2 analog outputs,** reducing or eliminating the need for remote I/O and its associated installation and wiring costs.

- **An SD memory card slot** for loading, and restoring programs and parameters, without the need for a PC.

I/O Capabilities	Base Version	Expanded I/O Version
Digital Inputs	8	20
Digital Outputs	3	13
Analog Inputs	1	2
Analog Outputs	1	2

Development Tools that Speed Programming and Improve Quality

Co-engineering is a powerful tool. To make it easy for you to provide better solutions for your customers, we provide an innovative BASIC programming environment within Kollmorgen WorkBench. So there's only one software package to use for all of your drive setup, configuration, tuning and management tasks in addition to motion and machine control programming.

Pre-built code templates give your application a head-start, while automatic formatting, highlighting and other ease-of-use features increase programming speed and accuracy. Complete access to all programming capabilities and drive features within a single environment helps speed your development of complete, optimally engineered solutions.

Novice users will enjoy a short ramp-up time to productive coding, while experienced users will discover well-designed tools that take their programming skills to new levels of speed and quality.

1. Integrated axis setup
2. Code snippets simplify formatting
3. Auto-complete helps speed coding and reduce errors
4. Automatic color coding makes it easy to distinguish comments, parameters, print statements and other types of code
5. Full debugger accelerates development
6. Packaged program console provides instant program status
7. Menu-driven navigation provides intuitive look and feel
8. Window pinning maximizes workspace

AKD PDMM™ Integrated Servo Drive and Automation Controller

Build Simpler and Better with Drive-Resident Machine and Motion Control

Extend your design options. Control as many as eight axes or more without the need for a PLC or PAC. Reduce cabinet space and wiring requirements. Program perfect machine and motion control for any project using a single, fully integrated programming environment. Build a better machine at a lower cost.

Our new addition to the AKD™ drive family combines one servo axis, a master controller that supports multiple additional axes, and the full automation capability of Kollmorgen Automation Suite™(refer to page K4 for more information on Kollmorgen Automation Suite).—all in a single, compact package.

Welcome to the AKD PDMM™ programmable drive, multi-axis master.

Performance Specifications

120/240 VAC 1- and 3-Phase	Continuous Current (Arms)	Peak Current (Arms)	H (mm/inches)	W (mm/inches)	D (mm/inches)
AKD-M00306-MCEC-0000	3	9	168 / 6.61	89 / 3.50	156 / 6.14
AKD-M00606-MCEC-0000	6	18	168 / 6.61	89 / 3.50	156 / 6.14
AKD-M01206-MCEC-0000	12	30	196 / 7.72	107 / 4.22	187 / 7.36

240/400/480 VAC 3-Phase	Continuous Current (Arms)	Peak Current (Arms)	H (mm/inches)	W (mm/inches)	D (mm/inches)
AKD-M00307-MCEC-0000	3	9	256 / 10.08	99 / 3.90	185 / 7.28
AKD-M00607-MCEC-0000	6	18	256 / 10.08	99 / 3.90	185 / 7.28
AKD-M01207-MCEC-0000	12	30	256 / 10.08	99 / 3.90	185 / 7.28

Features

- Kollmorgen Automation Suite™ provides fully integrated programming, testing, setup and commissioning
- Embedded web server utility simplifies service
- Control 8 axes or more* while reducing machine footprint
  - EtherCAT multi-axis master motion controller integrated with a standard AKD™ drive axis
  - Full IEC61131-3 soft PLC for machine control, with support for all 5 programming languages
  - Choice of PLCopen for motion or Pipe Network™ for programming motion control
  - 32 kB non-volatile memory stores machine data to eliminate scrap upon restart after power failure
  - SD Card slot simplifies backup and commissioning, with no PC required
  - Onboard I/O includes 13 digital inputs, 4 digital outputs, 1 analog input, 1 analog output (expandable with AKT series of remote I/O) (refer to page K19 for information on AKT I/O)
- Works with Kollmorgen Visualization Builder for programming AKI human-machine interface panels (refer to page K10 for more information on Kollmorgen Visualization Builder)

*Maximum axis count depends on motion/automation complexity and performance (8 axes nominal based on medium complexity at 4 kHz network update rate)

A Single, Scalable Development Suite

Kollmorgen Automation Suite™ simplifies and accelerates development through a unified system of software, hardware, and collaborative co-engineering. This scalable solution provides a fully integrated development environment for any application, whether you're programming a single axis of motion, a multi-axis AKD PDMM™ system, or a PAC-based system up to 128 axes. Kollmorgen Automation Suite has been proven to:
(refer to page K11 for information on AKC PAC products)

- Improve product throughput by up to 25% with industry-leading motion bandwidth

- Reduce scrap by up to 50% with world-class servo accuracy, seamless power-failure recovery and highly dynamic changeovers

- Increase precision for better quality, reduced waste and less downtime using EtherCAT—the field bus with motion bus performance

- Enable more adaptable, sustainable and innovative machines that measurably improve marketability and profitability

A Single Family of Servo Drives

Kollmorgen AKD™ servo drives deliver cutting-edge performance in a compact footprint. From basic torque-and-velocity applications, to indexing, to multi-axis programmable motion, these feature-rich drives offer:

- Plug-and-play compatibility with your servomotor

- All the advantages of Kollmorgen´s breadth of motor platforms including AKM™, CDDR™, and other direct-drive technologies

- The fastest velocity and position loop updates

- Full-frequency autotuning for perfect motion across the performance spectrum

- Real-time feedback from a wide variety of devices

Our Best Drive and Automation Solution in a Single Package

The new AKD PDMM programmable drive, multi-axis master combines our AKD drive platform with the full feature set of Kollmorgen Automation Suite in a single package —providing complete machine and motion control for up to eight axes or more.

You need only one development suite and one drive family for all your projects. And you can rely on one source for all the motion components and co-engineering expertise you need to build a better machine.

With AKD PDMM, the best in machine engineering has never been easier, faster or more cost-effective.
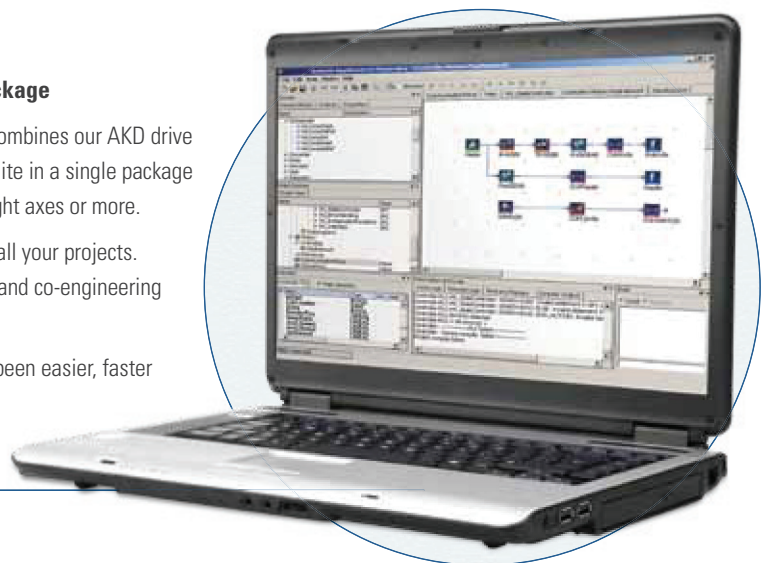
Kollmorgen WorkBench

Our simple Graphical User Interface (GUI), Kollmorgen WorkBench, is designed to expedite and streamline the user's experience with the AKD servo drive. From easy application selection and reduced math, to a sleek six-channel scope; the user interface is extremely easy to use. Kollmorgen WorkBench supports intuitive access to the exclusive Performance Servo Tuner (PST) available inside AKD. The patent pending PST makes auto-tuning the AKD high-performance servo drive with world-class Kollmorgen motors very simple.

User-Friendly Environment

Logical flow, colorful icons and easy access simplify interactions with the AKD servo drive. The folder structure allows for instant identification and easy navigation.
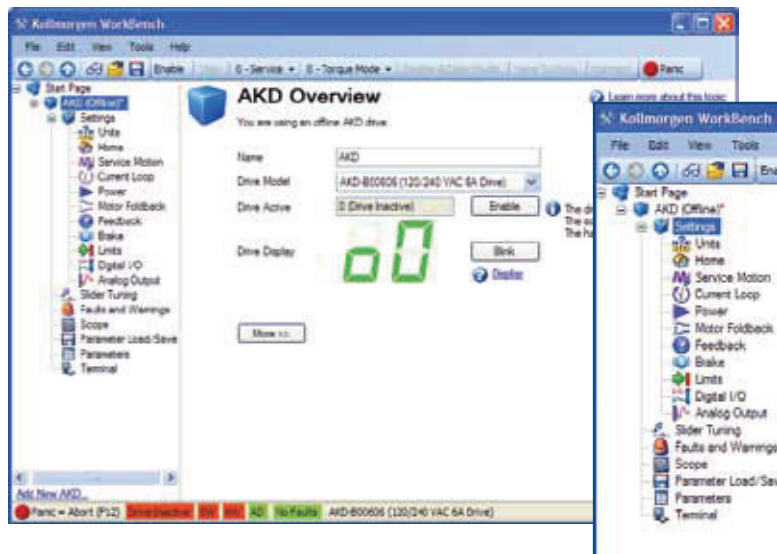
Sleek Six-Channel "Real-Time" Software Oscilloscope

The easy-to-use AKD servo drive interface has a sleek digital oscilloscope that provides a comfortable environment for users to monitor performance. There are multiple options to share data in the format you prefer at the click of a button.
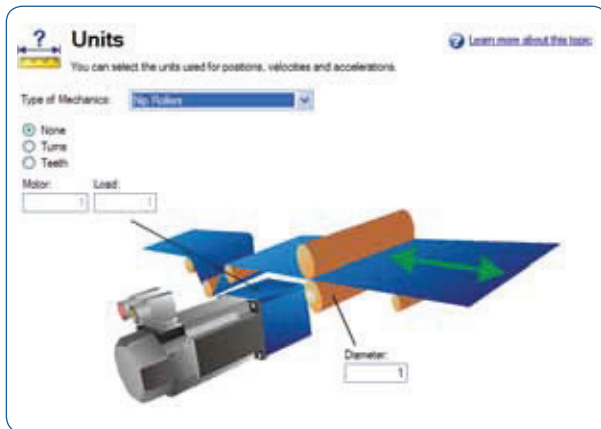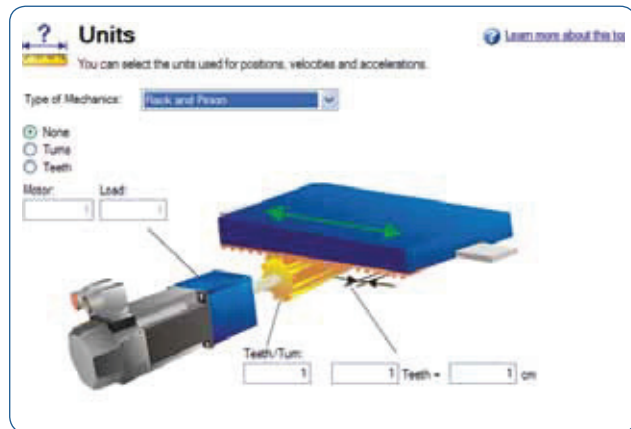
- Save as an image
- Load to an e-mail
- Print
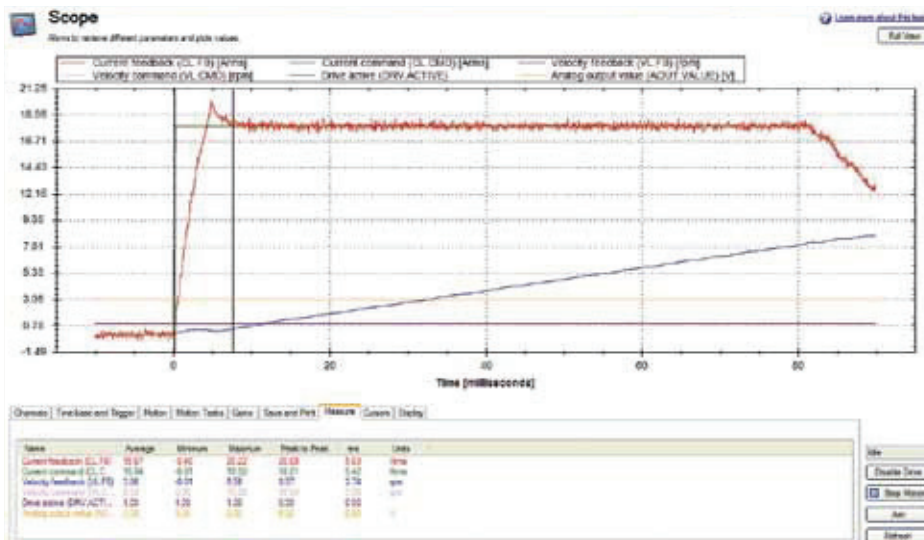
Application Selection

Simplifies set-up by allowing use of machine or application-based units. Nip roller and rack and pinion set-ups shown.

Nip Roller Application Selection

Rack and Pinion Application Selection

Data-Sharing

The ease-of-sharing continues in the parameters window. Kollmorgen WorkBench provides the user the easy options of printing or emailing the parameter values at the click of a button.

AKD Connector Layout and Functionality

Ethernet Connectivity

- Ethernet-based AKD servo drive provides the user with multiple bus choices
- EtherCAT® (DSP402 protocol), Modbus/TCP, SynqNet®, EtherNet/IP, PROFINET and CANopen®
- No option cards are required

Industrial Design

- Rugged circuit design and compact enclosure for space-saving, modern appearance – minimizes electrical noise emission and susceptibility
- Full fault protection
- UL, cUL listed, and CE
- No external line filters needed (480 Vac units) for CE & UL compliance
- Removable screw terminal connectors for easy connections
- DC Bus sharing
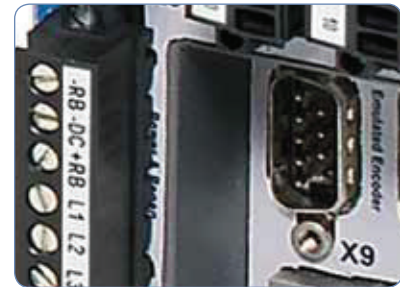
Safe-Torque-Off (STO)

(IEC 61800 SIL2)

- Switches off the power stage to ensure personnel safety and prevents an unintended restart of the drive, even in fault condition
- Allows logic and communication to remain on during power stage shut down

Internal Regenerative Braking Resistor

(All powers except 120/240 Vac 3 Arms and 6 Arms)

- Simplifies system components
- Saves overhead of managing external regeneration when internal regeneration is sufficient

Performance Servo Tuner (PST)

- Exclusive patent pending auto-tuner reaches optimized set-up in seconds
- Handles inertia mismatches up to 1000:1
- Industry leading bandwidth under compliant and stiff load conditions, no matter the mechanical bandwidth of the machine

Plug-and-Play with Kollmorgen Motors and Positioners

- Electronic motor nameplates allow parameters to automatically load for fast commissioning
- Motion in seconds
- Custom motor parameters easily entered

I/O (Base Drive)

- 8 digital inputs (1 dedicated to enable)
- 2 high-speed digital inputs (maximum time delay of 1.0 µs)
- 3 digital outputs (1 dedicated to fault relay)
- 1 analog input - 16 bit
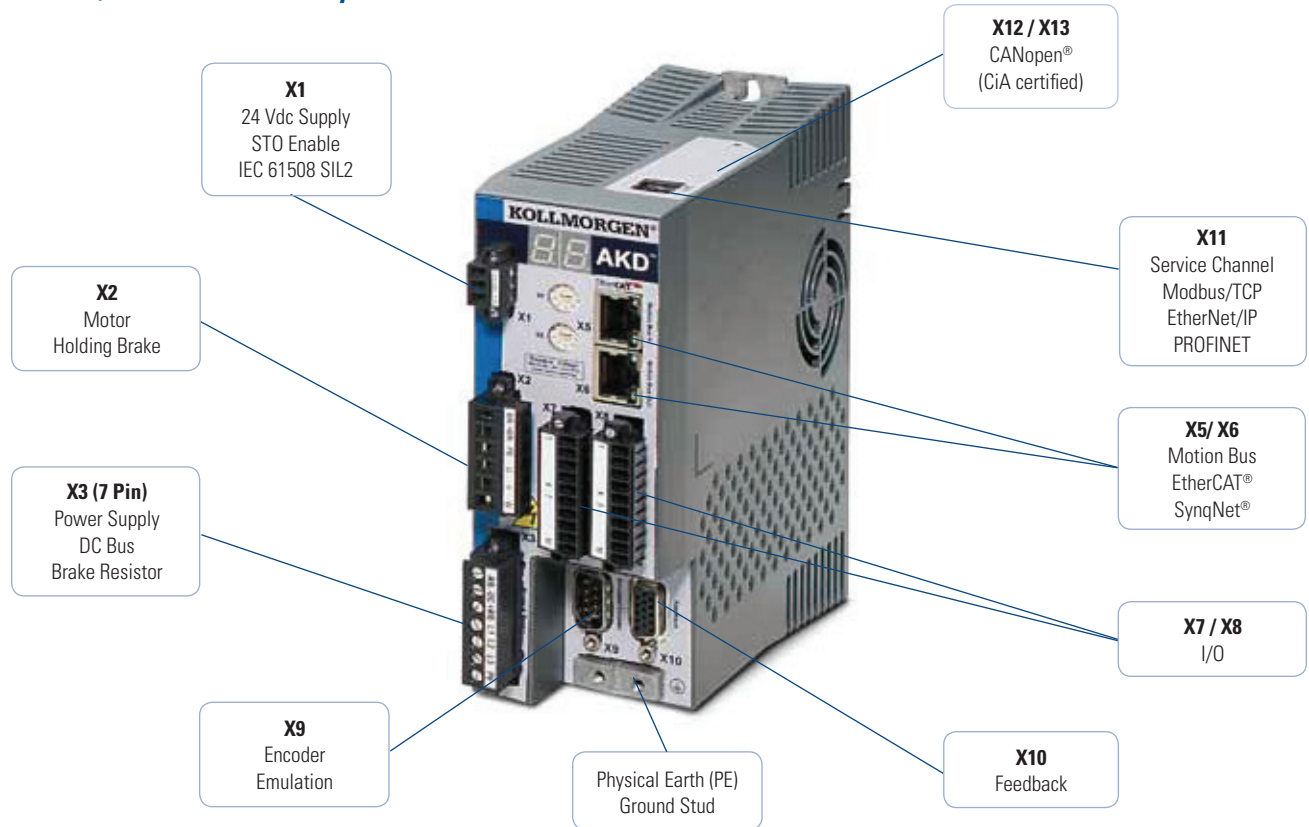- 1 analog output - 16 bit

AKD 120/240 Vac Connector Layout
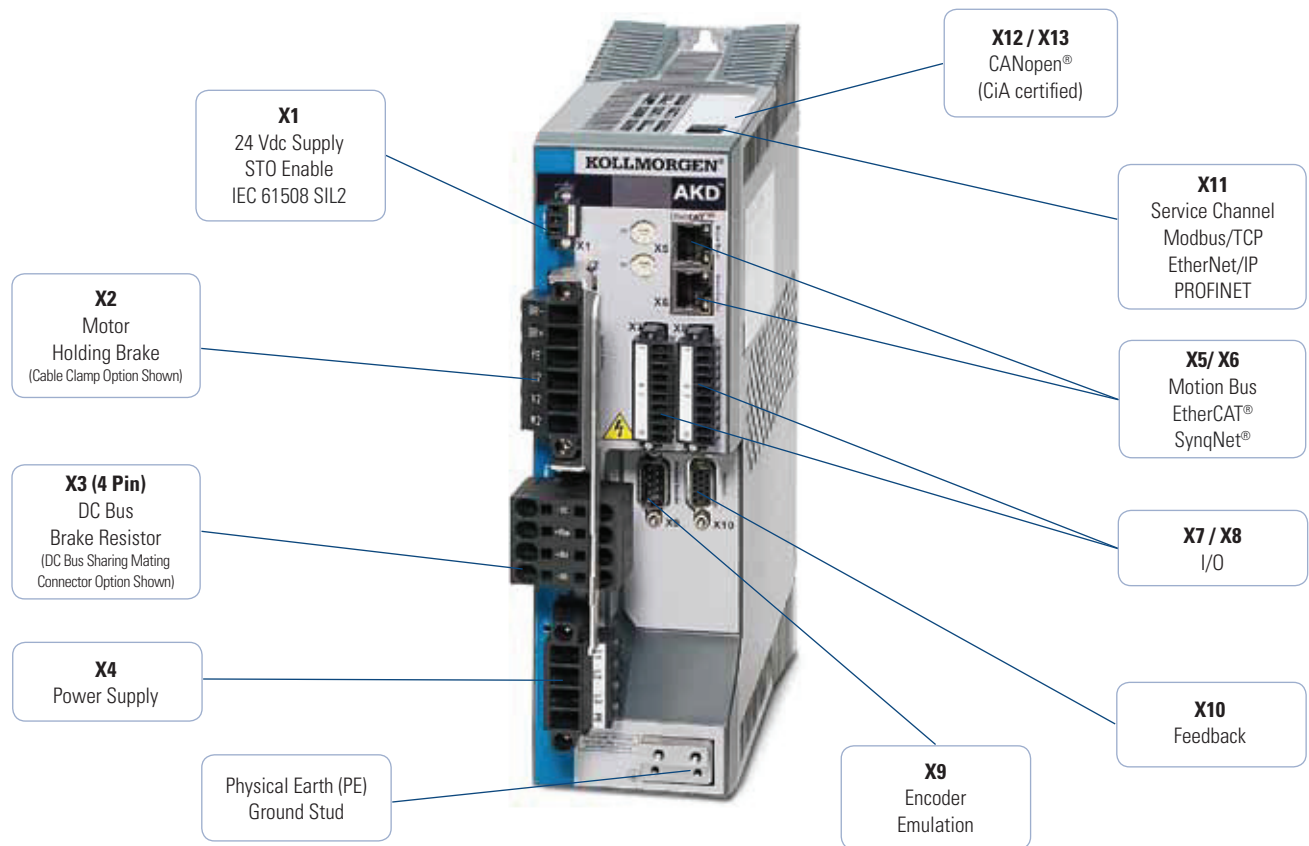
X1
24 Vdc Supply
STO Enable
IEC 61508 SIL2

X2
Motor
Holding Brake

X3 (7 Pin)
Power Supply
DC Bus
Brake Resistor

X9
Encoder
Emulation

X12 / X13
CANopen®
(CiA certified)

X11
Service Channel
Modbus/TCP
EtherNet/IP
PROFINET

X5/ X6
Motion Bus
EtherCAT®
SynqNet®

X7 / X8
I/O

Physical Earth (PE)
Ground Stud

X10
Feedback

AKD 240/480 Vac Connector Layout

X1
24 Vdc Supply
STO Enable
IEC 61508 SIL2

X2
Motor
Holding Brake
(Cable Clamp Option Shown)

X3 (4 Pin)
DC Bus
Brake Resistor
(DC Bus Sharing Mating
Connector Option Shown)

X4
Power Supply

Physical Earth (PE)
Ground Stud

X12 / X13
CANopen®
(CiA certified)

X11
Service Channel
Modbus/TCP
EtherNet/IP
PROFINET

X5/ X6
Motion Bus
EtherCAT®
SynqNet®

X7 / X8
I/O

X10
Feedback

X9
Encoder
Emulation

Accessories

CANopen Accessories

We offer cables, terminators and adaptors for simple integration with CANopen machine networks.

Shielding Solutions

AKD servo drive can be equipped with shielding plates.

Motion Bus and Service Port Cables

We offer industrial shielded PUR cables with RJ45 connections for demanding industrial environments. These cables outperform office cables in EMC resilience, durability, and life.

Brake Resistors

We offer a full line of brake resistors up to 6000 watts. Brake resistors are impedance matched with AKD and are available in many sizes and form factors.
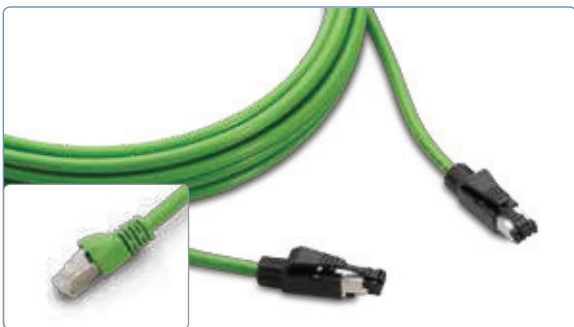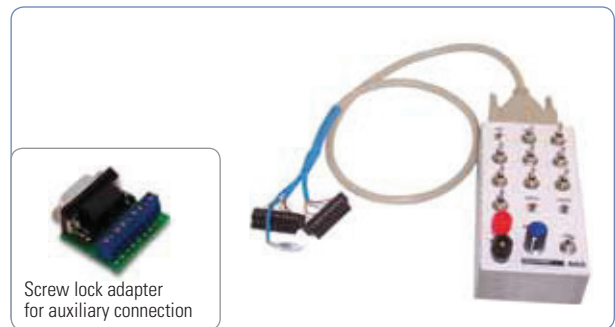

LEFT: Line filter
RIGHT: Motor choke

Chokes and Filters

Line filters are offered to improve reliability and to protect the life of the machine in less stable environments. Motor chokes reduce radiated emissions and are recommended for applications with cable lengths >25 meters.

Screw lock adapter for auxiliary connection

I/O Control Box and Breakout Adapter

Our I/O Control Box is pre-populated with I/O switches and a power connection for quicker prototyping.

Servo System Cables

Value Line power and feedback cables are suitable for most standard applications. High-performance Flex Line power and feedback cables are available for trailing and flexing applications or where longer lengths are required.

Mating Connectors

AKD servo drives include screw type mating connectors. Alternative connectors for DC Bus and mains sharing are also available. D-sub and RJ-type connectors are not included.

Specification Comparison

	Value Line	Flex Line
Lengths offered	1, 3, 6, 9, 12 m	1-50 m, 1/2 m increments
Max ampacity (continuous)	12 A	24 A
Static flex radius	10 x Cable outside dimension (OD)	10 x Cable outside dimension (OD)
Dynamic flex (1,000,000 cycles)	Not rated	15 x Cable outside dimension (OD)
Motor connectors available	Euro style	Euro style
Maximum motor connector IP rating	IP67	IP65
Cable agency approvals	RoHS, UL, CE	UL, CSA, CE, NEC, NFPA
Feedback supported	SFD, EnDat2.2, 01, BiSS, resolver, HIPERFACE®	SFD, Sine Encoder, EnDat2.2, 01, BiSS, resolver, HIPERFACE®, comcoder
Holding brake	Available	Available

Power Cables

AKD Servo Drive	Value Line	OD (mm)	Value Line with Brake	OD (mm)	Flex Line	OD (mm)	Flex Line with Brake	OD (mm)
3/6 Amp	VP-507BEAN-XX	9.4	VP-508CFAN-XX	10.9	CP-507CCAN-XX-X	12.7	CP-507CDAN-XX-X	14.5
12 Amp	VP-508CEAN-XX	10.3	VP-508CFAN-XX	10.9	CP-507CCAN-XX-X	12.7	CP-507CDAN-XX-X	14.5
20 Amp	VP-508DEAN-XX	11.7	VP-508DFAN-XX	12.9	CP-508DCAN-XX-X	14.5	CP-508DDAN-XX-X	16.6
24 Amp	Not available	Not available	Not available	Not available	CP-508EDBN-XX-X	18.3	CP-508EDBN-XX-X	18.3

Feedback Cables

Feedback Type	Value Line	OD (mm)	Flex Line	OD (mm)
SFD	VF-DA0474N-XX	6.7	CF-DA0374N-XX-X	7.5
EnDat 2.1 / BiSS, HIPERFFACE®	VF-SB4474N-XX	9.7	CF-SB7374N-XX-X	11.2
Resolver	VF-RA2474N-XX	9.7	CF-RA2574N-XX-X	9.5
Incremental / comcoder	Not available	Not available	CF-CB7374N-XX-X	11.2

Note: Refer to page 66 for matching cables by motor type and drive.