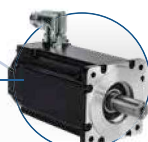


# AKD<sup>®</sup> Servo Drive

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.



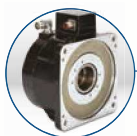
AKMH<sup>™</sup> Hygienic Stainless Steel Motors



AKM<sup>®</sup> 2G Servo Motors



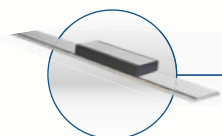
Frameless Brushless Direct Drive Motors



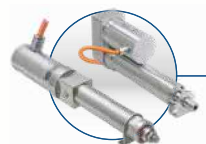
Cartridge DDR<sup>™</sup> Motors



Housed DDR<sup>™</sup> Motors



ICH Direct Drive Linear Motors



ERD Hygienic Stainless Steel Linear Actuators



AKD<sup>®</sup>-N Decentralized Servo Drive



AKD<sup>®</sup> Servo Drive



Control of motors with AKD<sup>®</sup> PDMM programmable multi-axis master

## Best-in-Class Components

AKD works seamlessly with Kollmorgen motors and actuators – well-known for quality, reliability, and performance.



Industry-leading power density



## General Specifications

120 / 240 V AC 1 & 3 Phase (85 - 265 V)	Continuous Current (A <sub>rms</sub> )	Peak Current (A <sub>rms</sub> )	Drive Continuous Output Power Capacity (Watts)	Internal Regen (Watts) (Ohms)		Height mm	Width mm	Depth mm	Depth with Cable Bend Radius mm
AKD-■00306	3	9	1100	0	0	168	59	156	184
AKD-■00606	6	18	2000	0	0	168	59	156	184
AKD-■01206	12	30	4000	100	15	196	78	187	215
AKD-■02406	24	48	8000	200	8	248	100	228	265

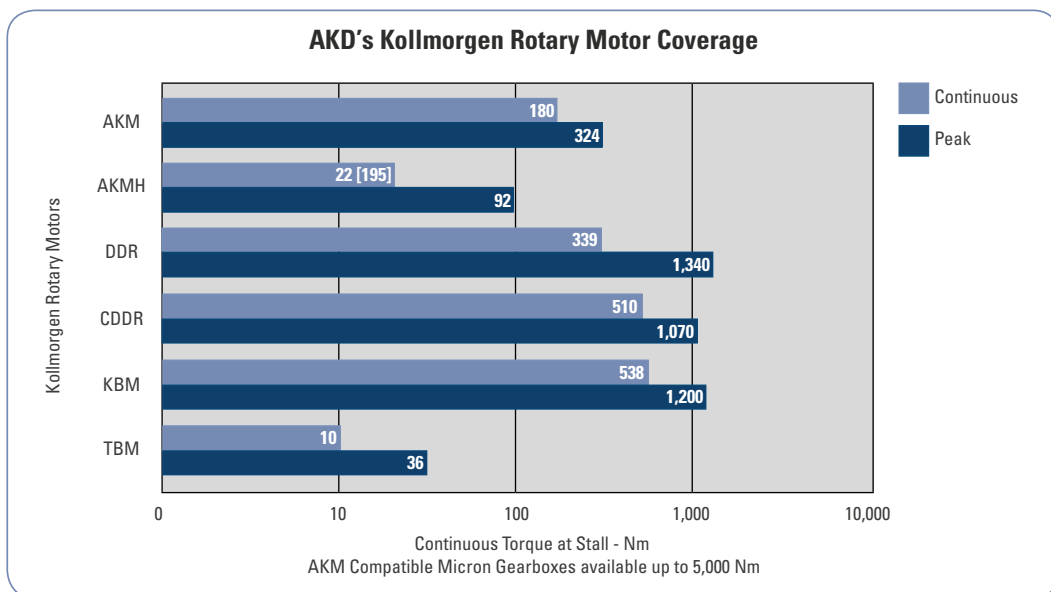
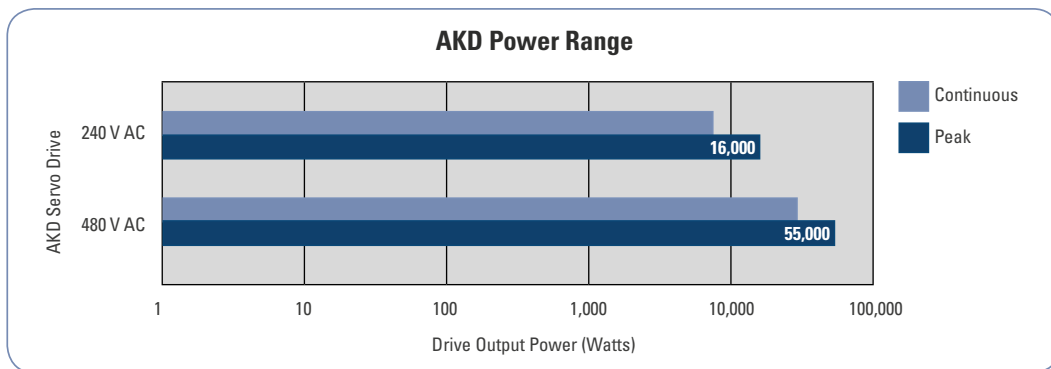
  

240/480 V AC 3 Phase (187-528 V)	Continuous Current (A <sub>rms</sub> )	Peak Current (A <sub>rms</sub> )	Drive Continuous Output Power Capacity (Watts)	Internal Regen (Watts) (Ohms)		Height mm	Width mm	Depth mm	Depth with Cable Bend Radius mm
AKD-■00307	3	9	2000	100	33	256	70	185	221
AKD-■00607	6	18	4000	100	33	256	70	185	221
AKD-■01207	12	30	8000	100	33	256	70	185	221
AKD-■02407	24	48	16,000	200	23	306	105	228	264
AKD-■04807	48	96	35,000	—	—	385	185	225	260

# AKD<sup>®</sup> Servo Drive

## Range of Coverage

When you pair the AKD servo drive with any of our Kollmorgen motors or linear actuators, you'll achieve optimized performance. From 3 A<sub>rms</sub> to 48 A<sub>rms</sub> continuous current and 9 A<sub>rms</sub> to 96 A<sub>rms</sub> peak current, the feature-rich AKD provides a solution for nearly any application.



## Feedback & I/O

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

	Standard Drive	With I/O expansion *
Encoder Output or AUX Encoder Input	2.5 MHz Maximum line frequency	
Feedback	Smart Feedback Device (SFD), EnDat 2.2, EnDat 2.1, BiSS, analog Sine/Cos encoder, incremental encoder, HIPERFACE®, and resolver	
Logic supply	24 V DC	
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

Note: Only with AKD-T

# AKD<sup>®</sup> Servo Drive

## Ethernet Connectivity

- Ethernet-based AKD servo drive provides the user with multiple bus choices
- EtherCAT<sup>®</sup> (DSP402 protocol), Modbus<sup>®</sup> TCP, SynqNet<sup>®</sup>, EtherNet/IP<sup>™</sup>, PROFINET<sup>®</sup>, SERCOS III, and CANopen<sup>®</sup>
- 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 V AC 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 V AC 3 A<sub>rms</sub> and 6 A<sub>rms</sub>)

- 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 Actuators

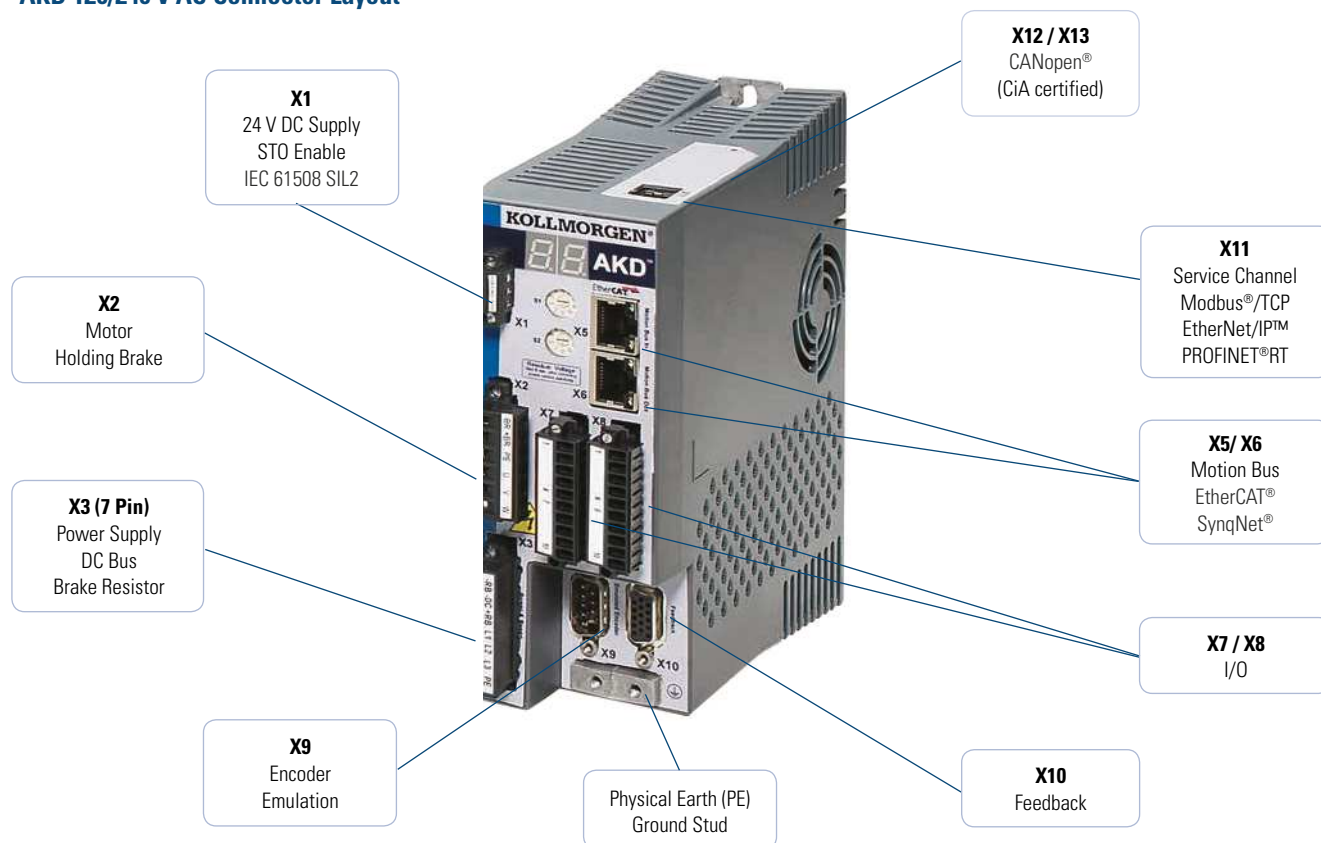
- Electronic motor nameplates allow parameters to automatically load for fast commissioning
- Motion in seconds
- Custom motor parameters easily entered

## I/O (Base Drive)

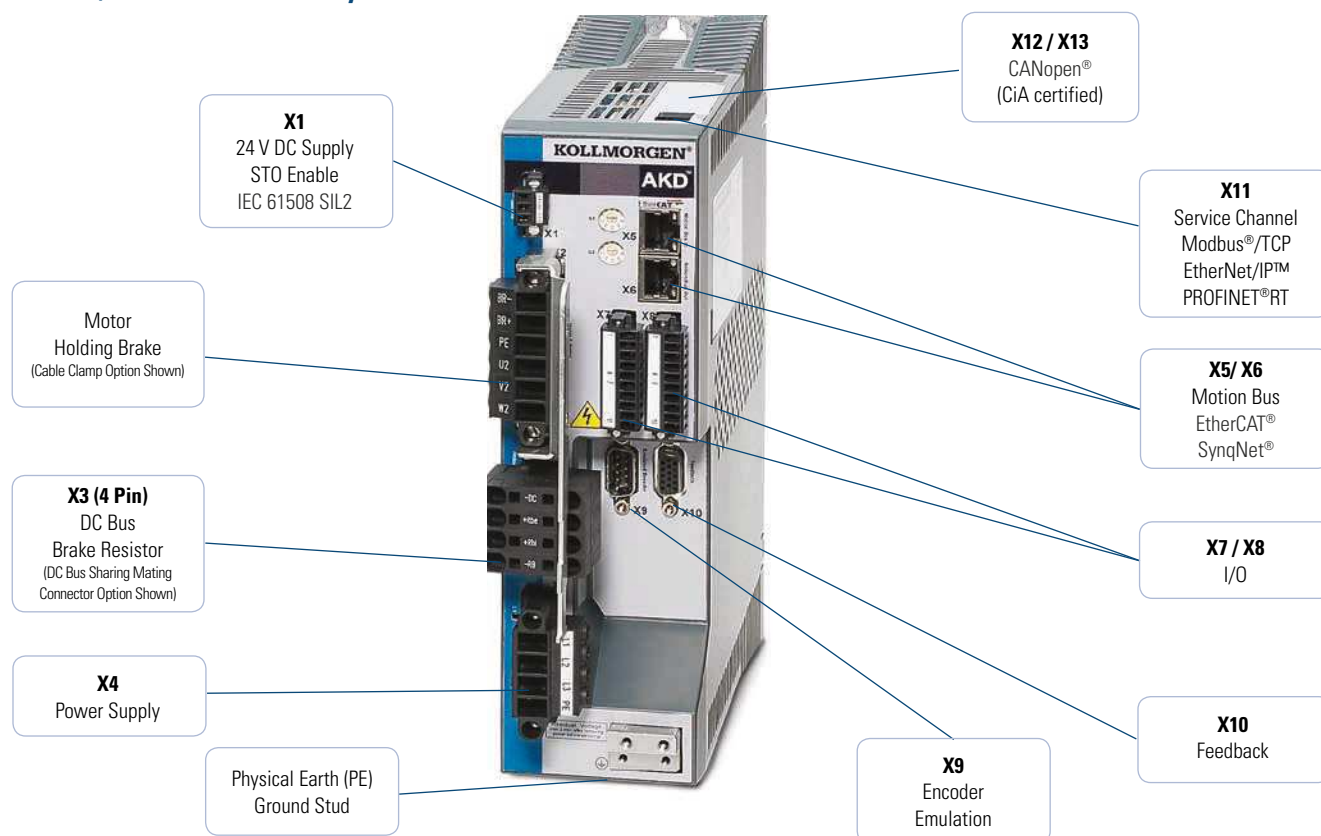
- 8 digital inputs (1 dedicated to enable)
- 2 high-speed digital inputs (maximum time delay of 1.0 μs)
- 3 digital outputs (1 dedicated to fault relay)
- 1 analog input - 16 bit
- 1 analog output - 16 bit



## AKD 120/240 V AC Connector Layout



## AKD 240/480 V AC Connector Layout





# AKD<sup>®</sup> 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<sup>®</sup> 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.

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

### 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.



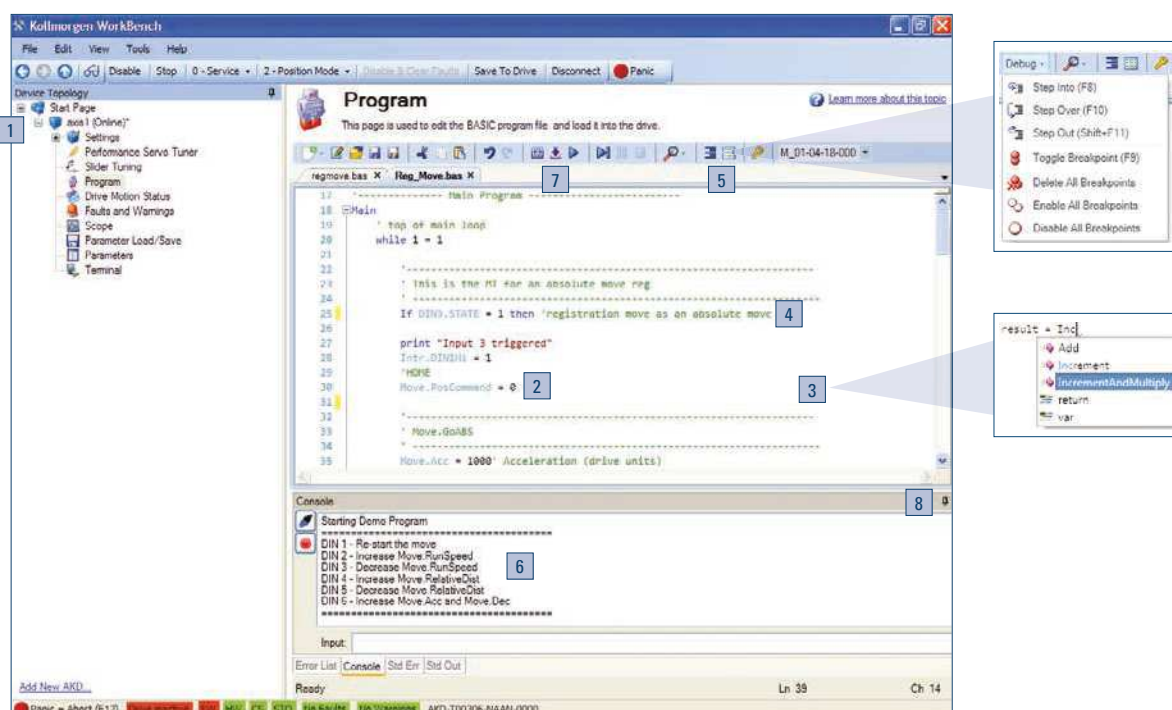
## Development Tools that Speed Programming and Improve Quality

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<sup>®</sup> PDMM Drive-Resident 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<sup>®</sup> drive family combines one servo axis, a master controller that supports multiple additional axes, and the full automation capability of Kollmorgen Automation Suite™ —all in a single, compact package.

Welcome to the AKD<sup>®</sup> PDMM programmable drive, multi-axis master.

### Performance Specifications

120/240 V AC 1- and 3-Phase	Continuous Current (Arms)	Peak Current (Arms)	H (mm)	W (mm)	D (mm)
AKD-M00306-MCEC-0000	3	9	168	89	156
AKD-M00606-MCEC-0000	6	18	168	89	156
AKD-M01206-MCEC-0000	12	30	196	107	187
AKD-M02406-MCEC-0000	24	48	248	96	228

240/400/480 V AC 3-Phase	Continuous Current (Arms)	Peak Current (Arms)	H (mm)	W (mm)	D (mm)
AKD-M00307-MCEC-0000	3	9	256	99	185
AKD-M00607-MCEC-0000	6	18	256	99	185
AKD-M01207-MCEC-0000	12	30	256	99	185
AKD-M02407-MCEC-0000	24	48	306	99	228
AKD-M04807-MCEC-0000	48	96	385	185	225



### Features

- Kollmorgen Automation Suite™ provides fully integrated programming, testing, setup and commissioning
- Embedded web server utility simplifies service
- Control 32 axes or more\* while reducing machine footprint
- EtherCAT<sup>®</sup> multi-axis master motion controller integrated with a standard AKD<sup>®</sup> 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<sup>™</sup> 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
- On-board I/O includes 13 digital inputs, 4 digital outputs, 1 analog input, 1 analog output (expandable with AKT series of remote I/O)
- Works with Kollmorgen Visualization Builder for programming AKI human-machine interface panels

\*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 PCMM-based system up to 64 axes or more. Kollmorgen Automation Suite has been proven to:

- 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 servo motor
- 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 auto-tuning 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 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.

