

Kollmorgen Automation Suite™

Kollmorgen's machine automation solution dramatically simplifies how you approach the many complex automation challenges of today's machines. We have put together an integrated system that encompasses three facets – the integrated development environment, engineering services, and our best-in-class automation and motion components – to help create a differentiated machine, get to market faster, and have the ease of collaborating with just one vendor.

Integrated Development Environment – Quickly and easily design, refine and troubleshoot all of a machine's automated solutions in this highly intuitive application featuring a single programming environment that provides great flexibility and control.

Engineering Services – A Kollmorgen representative establishes a collaborative, consultative relationship from the beginning by assessing needs and objectives. Then, an electronic sketch of a machine concept is generated using our System Designer drag-and-drop software, specifying all the necessary components including creation of a sample bill of materials. Field engineers and application engineers constantly support the design and build phase as well as the factory installation phase to ensure that your needs are met from concept to production. Additional services are available that include start-up and troubleshooting assistance, development and on-site deployment and training.

Best-in-Class Automation and Motion Components – With Kollmorgen, there's security in knowing the necessary components that form the building blocks of a machine are always available. No one offers a wider range of standard, modified standard and custom products.

Kollmorgen Co-engineering – More than a solutions provider, we Co-engineer a better fit with your company using both products and services. From a wide breadth of product modifications, over 500,000 standard options with 5-day delivery on our AKM line, to aftermarket revenue protection and training programs, Kollmorgen Co-engineering helps you differentiate your machine and business.

We accept your challenges as our own. That's the Kollmorgen Co-engineering difference.

The Benefits of Kollmorgen Automation Suite

- | | |
|---|---|
| <ul style="list-style-type: none"> • Powerful High-Performance Machines | <ul style="list-style-type: none"> • Up to 25% greater throughput • Up to 50% scrap reduction • Improved accuracy • Advanced motion to enable unique machine performance |
| <ul style="list-style-type: none"> • Deliver Machines to Market Faster | <ul style="list-style-type: none"> • Up to 30% reduction in development time • Services available for program development, training, start-up, and support • Industry standard programming environment and industrial networks |
| <ul style="list-style-type: none"> • Real-time, Highly Intuitive Development Software with Enhanced Ease-of-Use and Seamless Integration | <ul style="list-style-type: none"> • Single integrated programming environment for automation, motion and all hardware • Drag-and-drop motion programming • Certified best-in-class components that are tested to work together • Seamless drive integration and configuration for optimal drive set-up |
| <ul style="list-style-type: none"> • Complete and Proven Machine Automation Solution | <ul style="list-style-type: none"> • The result of over 20 years of refining automation and motion programming and implementation • Combines the best of our engineering experience across the multiple suppliers and platforms that form today's Kollmorgen • Kollmorgen Automation Suite has undergone over five years of extensive field testing in customer applications |

Kollmorgen Automation Suite

Kollmorgen Automation Suite is an integrated set of tools and components that help the automation system designer build high-performance machines.

- The customer solution is programmed using the integrated development environment. The resulting user application is deployed on the AKC™ Programmable Automation Controller (PAC) or AKD™ PDMM™ Integrated Servo Drive and Automation Controller. Ease-of-use features built into the product family ensure that the development process is accelerated.
- The AKC family has been created with an eye towards simplifying choices to the required level. And our extensive experience means that you receive the correct recommendations on the platform of choice. The AKD PDMM provides many of the capabilities of our AKC PAC product for applications of up to 8 or more axes in a package that includes an integrated AKD servo drive axis.
- The AKC PAC and AKD PDMM communicate with AKD servo drives and AKT™ I/O terminals using the EtherCAT® motion bus. EtherCAT provides a real-time deterministic network for fast response and high-performance.
- AKI™ Human Machine Interfaces (HMI) are connected to the AKC PAC and AKD PDMM using ModBus TCP for simple and reliable communication with quick and easy set-up.
- AKD drives can operate a wide range of Kollmorgen motors including the industry-leading AKM™ standard rotary servomotor. Micron™ TRUE Planetary™ gearheads are available to complete the system. Additionally unique solutions like the Cartridge Direct Drive Rotary™ motor as well as other direct drive rotary and linear motors let you choose the optimum solution for your system needs.
- All required motor/drive and network cables are available to ensure interoperability and fast time to an operating system.
- As a machine builder or an OEM manufacturer, you can focus on machine performance and key customer requirements while Kollmorgen provides you with complementary intellectual value, expertise, and economies of scale with a streamlined product family.

Our certified components mean that the commissioning and start-up process is faster. Our new servo drive, the AKD, is integrated into the product line to deliver the next generation of servo technology. With the award-winning motor and drive component families integrated into the solution set, the customer receives significant reduction in start-up and commissioning effort due to the provided auto-recognize and auto-configure features.

Kollmorgen Automation Suite also comes with extensive engineering, support, and training services available. Our experience in creating and optimizing applications for performance means that you always create a solution that outperforms to deliver higher productivity for your engineering teams and production machines.

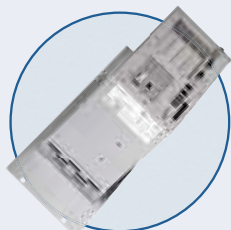
Development Software with Integrated Human Machine Interface (HMI) Support and CAM Tools



Programmable Automation Controllers (PAC) and Integrated Servo Drive/Automation Controllers



Integrated Touch Panel



Rack-Mount



Standard

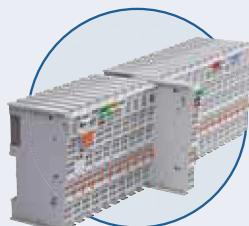


AKD Servo Drive Integrated

HMI, I/O, and System Cables



HMI



I/O



Motor and Feedback Cables

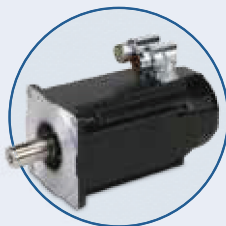


Network Cables

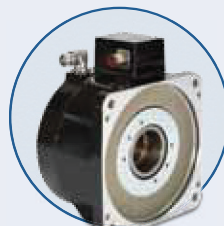
AKD Servo Drives, Motors, and Gearheads



AKD Servo Drives



AKM Servomotors



Cartridge DDR Motors



Micron Gearheads

Software PLC

Easy-to-Use, Auto-Discover, Auto-Recognize, Auto-Configure, Scope, CAM, IEC 61131-3 PLC

- Kollmorgen Automation Suite offers an integrated set of tools that allow the automation systems programmer to achieve quality software results. This includes not only our motion control solution set, but also the industry standard IEC 61131-3 toolkit for PLC programming.
- The environment for developing PLC programs has been created to help the engineer create solutions faster. Recognize and configure motion control components to accelerate systems development. With auto-recognize and auto-configure features, testing efforts are reduced.
- Once an application or a function block has been created for a given application, the user can store this as a “user-defined function block” to promote reuse of tested software in subsequent projects to save time.
- Maintain your standards in corporate programming languages by using any of the IEC 61131-3 languages. In fact, enhance it further by mixing and matching languages to deliver the best solution for the application.
- Kollmorgen Automation Suite’s integrated development environment allows the developer to create solutions without having to connect a single device by using the offline simulator. This lets you start creating systems before the first hardware component is delivered. Simply configure your system network in “offline development” mode and change the status of the devices when you actually connect them.
- Standard debugging features like step into, step over, etc. are available to troubleshoot programs. In addition, debugging support is available in the form of a soft oscilloscope into which several variables can be plugged in – the display can also be configured to suit the scale that the developer desires.
- Our excellent CAM editor lets you create complex CAM profiles online using a graphical interface. It is also possible to import existing CAM profile points into the CAM editor to allow you to seamlessly reuse your existing machine building experience.

The screenshot displays the Kollmorgen Automation Suite interface with four programming language views:

- Sequential Function Chart (SFC):** Shows a sequence of steps (1-4) with associated logic and transitions.
- Function Block Diagram (FBD):** Shows a network of function blocks connected by lines.
- Ladder Diagram (LD):** Shows a traditional ladder logic network with normally open and closed contacts.
- Structured Text (ST):** Shows the following code:

```
Structured Text (ST)
On Machine_Enable TRUE DO //Enable Axis
  MLAxisPower( PipeNetwork.AXIS1 22 ,
  MLAxisPower( PipeNetwork.AXIS2 31 ,
END_DO;

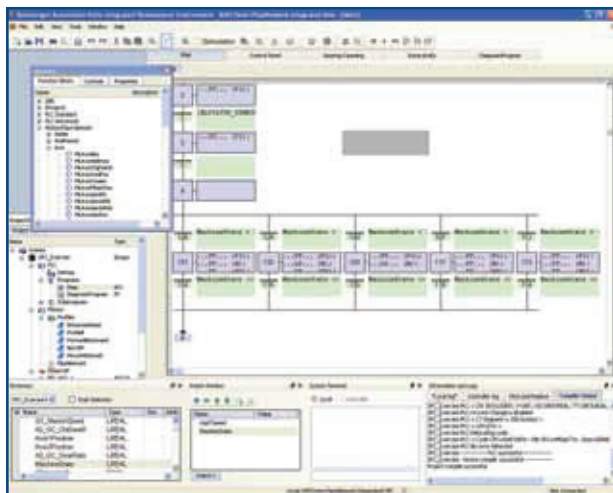
IF FALSE Machine_Enable TRUE = 0 and St
  MLAxisPower( PipeNett
END_IF;

IF FALSE Machine_Enable
  MLAxisPower( PipeNett
END_IF;

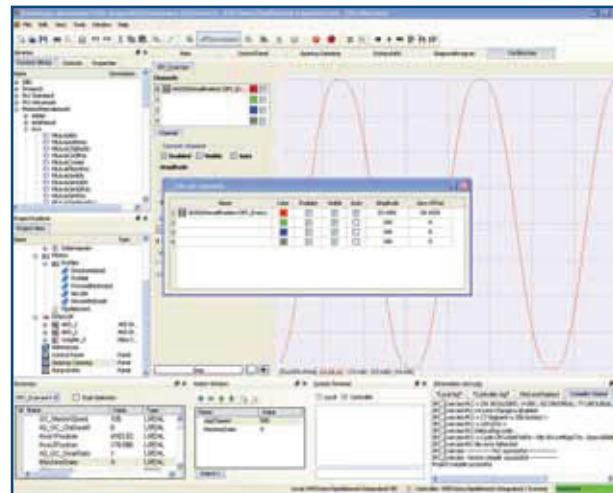
//Stop Motion button pre
ON b_GC_StopMotion FALSE
  MLMstRun( PipeNetwork
  b_GC_StartMotion TRU
END_DO;
```
- Instruction List (IL):** Shows the following code:

```
Instruction List (IL)
Begin_IL
  LD Input1 TRUE
  AND Input2 FALSE
  JHPC Test
  //Store Result
  ST Output FALSE
  JRP End
Test:
  //Store Input1
  LD Input1 TRUE
  ST Output FALSE
END:
END_IL
```

All five IEC 61131-3 PLC languages are supported



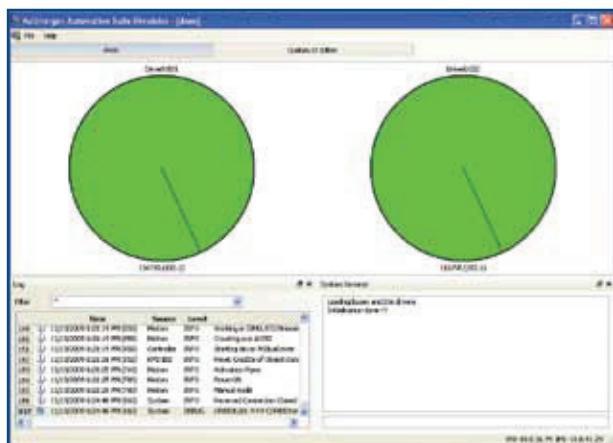
Customizable environment for docking/undocking and floating panels on the screen
 Watch window to closely monitor special variables
 Filter information and log messages to focus on the essentials
 Ability to customize the environment and set parameters across the environment



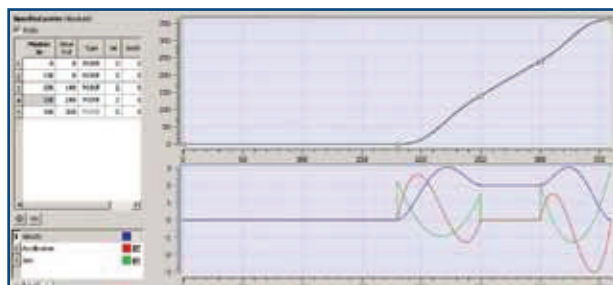
Built-in soft oscilloscope



Automatic I/O variable creation with scope definitions
 Adding bus couplers with I/Os onto a motion network topology



Simulator with PLC simulation and motion



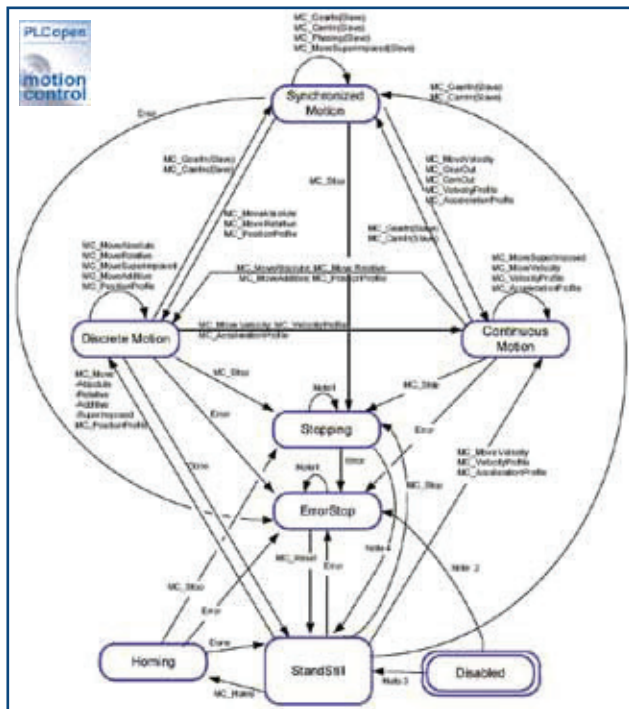
Graphical environment for creating CAMs

Motion Programming

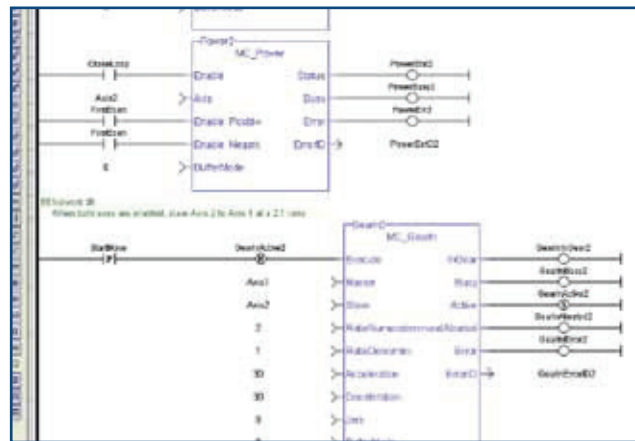
Our solution offering in motion control is backed by vast experience solving customer problems in the industry. We recognize that customers may want standard solutions for reuse of existing knowledge and resource bases or may want customized solutions that offer differentiation. To this end, we offer two motion control programming solutions.

PLCopen for motion

With Kollmorgen Automation Suite, you can program systems using the industry standard PLCopen for motion. It is an open standard (www.plcopen.org) with wide acceptance. Also, it is an industry standard that is vendor and product independent. PLCopen for motion provides a framework to build industry-specific motion blocks.



PLCopen state diagram



PLCopen example program code

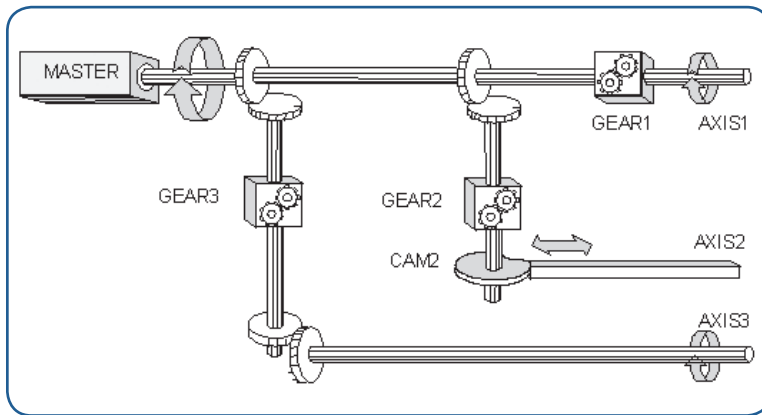
Pipe Network™

Graphical programming using the Pipe Network is a Kollmorgen innovation from many years of experience and it has been fine-tuned to deliver exceptional performance to motion-centric applications. Motion control building blocks have been converted into drag-and-drop icons that can be used to create motion control solutions. Since it is a graphical programming environment, systems are developed faster, with improved quality, increased self-documentation of system topology, and easier maintenance since a picture conveys the architecture and the relationships between the different axes of a system more effectively. Since it has been in operation for many years, the building blocks have been optimized to deliver higher performance than other solutions in the marketplace.

The solution has a demonstrated record of increased Overall Equipment Effectiveness (OEE), increased productivity, higher accuracy, and scrap reduction.

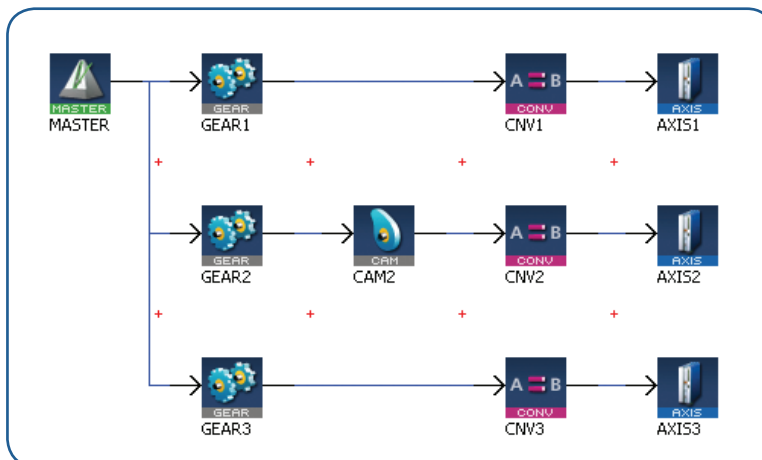
Mechanical System

- Main drive moves mechanical system
- Speeds and movements are adapted with mechanical elements, like gear boxes and CAM discs



Pipe Concept

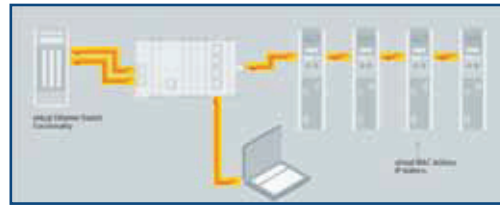
- Main drive is replaced by a virtual master
- Mechanical elements are copied by logical blocks with the same function
- One-to-one replacement of the mechanical system



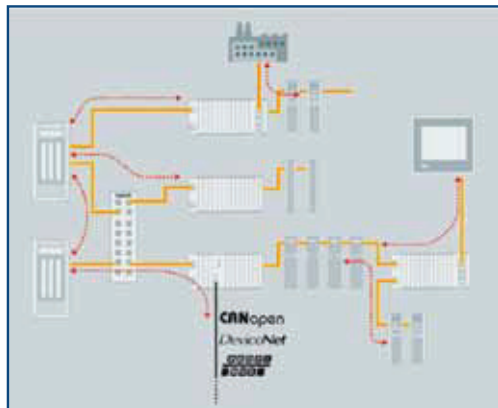
Real-time Motion Bus

EtherCAT® Real-time Bus for Motion and I/O Connectivity

- Real-time Ethernet-based motion bus
- Widely-accepted open standard
- Standard Ethernet cabling = lower implementation cost
- High bandwidth utilization for high-performance
- Interoperability with other buses
- Wide availability of devices
- Auto-recognition of Kollmorgen Automation Suite-compatible components



Transparent for all Ethernet protocols



Versatile network architecture

Process Data	Update Time
256 distributed digital I/O	11 μ s = 0,01 ms
1000 distributed digital I/O	30 μ s
200 analog I/O (16 bit)	50 μ s \leftrightarrow 20 kHz
100 Servo Axis, with 8 Bytes input and output data each	100 μ s
1 Fieldbus Master-Gateway (1486 Bytes Input and 1486 Bytes Output Data)	150 μ s

EtherCAT performance overview

HMI Software Tools

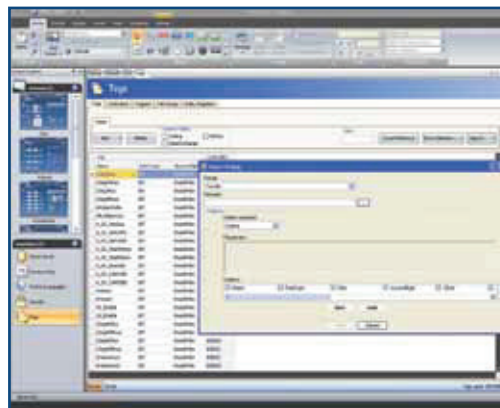
Kollmorgen Automation Suite Visualization Builder™ HMI Software

Kollmorgen Automation Suite Visualization Builder operates from within the Kollmorgen Automation Suite integrated development environment making it quick and easy to create your HMI program and transfer it to the target hardware (either a touch panel PAC or standalone HMI panel).

- Choose application variables (tags) to be used by the Kollmorgen Automation Suite Visualization Builder; a file is automatically created

Features include

- Multi-screen navigation
- Trending
- Recipes
- Alarm management
- Internal variables
- Multiple text – change of control based on input value
- Function keys
- Security



HMI developer environment

Programmable Automation Controller (PAC)

AKC™ Programmable Automation Controller

AKC Programmable Automation Controllers are powerful and robust industrial computers with pre-installed software components designed especially for rugged use in close proximity to machinery. Available in models with integrated high-resolution touch panels, in standard (screenless box format), or rack mount (screenless) formats and with a variety of CPU and memory choices. All models are equipped with reliable compact flash drives for application and program storage. They are fully equipped and ready for operation right out of the box for faster time to market.



Integrated Touch Panel

- Built-in high-performance motion and PLC engine running in a real-time operating system (RTOS) for reliable performance.
- Panel PACs offer all of the power and design features of our standard PACs with the addition of your choice of a 10", 15", or 17" integrated display. Combined with Kollmorgen Visualizer RT in your choice of 250, 2000 or 4000 tag runtime licenses, the panel PAC provides a complete integrated solution with high resolution HMI in one package.

AKC-PNC-D1 High-Performance

Technical Data	AKC-PNC-D1-224-150-00-000	AKC-PNC-D1-224-170-00-000
Display	15.0" TFT	17.0" TFT
Resolution	1024 × 768	1280 × 1024
Brightness	250cd / m ²	250cd / m ²
Touchscreen	Resistive analog	
Weight	ca. 8.9 kg	ca. 10.8 kg
Dimensions (H×W×D)	354 × 450 × 163 mm	399 × 461 × 168 mm
Processor	Intel® Core™ 2 Duo 1.86 GHz	
RAM	2 GB	
Compact flash	4 GB	
NVRAM	128 k	
I/O standard	5x USB (1x front, 4x rear side), 1x LAN 10 / 100, 1x LAN 100 / 1000, 2x RS232, 1x DVI-I	
Free slots	2x PCI	
Power supply	24 Vdc	
Cooling	Fanless	
EMC	US:FCC47 CFR PART15; Class A level, CE:EN61000-6-2; EN55022 / A (CISPR22)	
Certifications	CE, FCC, cULus	
Protection class	IP65 front (NEMA 250 Type 12 and 13)	
Altitude	Operating: 10000 ft (3.048 m), Storage: 15000 ft (4.622 m)	
Shock DIN EN 60068-2-27	Operating: 15 G 11 ms duration / Storage: 30 G, 11 ms duration (half-sinus)	
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1 G / 3 axis / Storage: 10-500 Hz: 2 G / 3 axis	
Temperature / Humidity	Operating: 0°C to +50° / 20 to 85% non condensing / Storage: -20°C to +60° / 5 to 95% non condensing	
MTBF	> 40000 h (excluding the Backlight Tube)	
RoHS compliant	Yes	

Programmable Automation Controller (PAC)

AKC-PNC-C1 Enhanced Performance

Technical Data	AKC-PNC-C1-224-100-00-000	AKC-PNC-C1-224-150-00-000
Display	10.0" TFT	15.0" TFT
Resolution	800 × 600	1024 × 768
Brightness	350cd / m ²	250cd / m ²
Touchscreen	Resistive analog	
Weight	ca. 7.9 kg	ca. 8.9 kg
Dimensions (H×W×D)	312 × 380 × 163 mm	354 × 450 × 163 mm
Processor	Celeron® 1.2 GHz	
RAM	2 GB	
Compact flash	4 GB	
NVRAM	128 k	
I/O standard	5x USB (1x front, 4x rear side), 1x LAN 10/100, 1x LAN 100/1000, 2x RS232, 1x DVI-I	
Free slots	2x PCI	
Power supply	24 Vdc	
Cooling	Fanless	
EMC	US:FCC47 CFR PART15; Class A level, CE:EN61000-6-2; EN55022/A (CISPR22)	
Certifications	CE, FCC, cULus	
Protection class	IP65 front (NEMA 250 Type 12 and 13)	
Altitude	Operating: 10000 ft (3.048 m), storage: 15000 ft (4.622 m)	
Shock DIN EN 60068-2-27	Operating: 15 G 11 ms duration / storage: 30 G, 11 ms duration (half-sinus)	
Vibration DIN EN 60068-2-6	Operating: 10-500 Hz: 1G / 3 axis / storage: 10-500 Hz: 2G / 3 axis	
Temperature / Humidity	Operating: 0°C to +50° / 20 to 85% non condensing / storage: -20°C to +60° / 5 to 95% non condensing	
MTBF	> 40000 h (excluding the backlight tube)	
RoHS compliant	Yes	



Standard

- Standard style PACs offer the flexibility of separating your HMI display from the controller unit. A variety of CPU choices along with substantial built-in RAM and NVRAM provide the right solution for your application.
- Our high-performance box PAC can be mated to a 19" rack mount unit to provide a rack mount PAC for those who prefer this configuration.

AKC-PLC-C1, AKC-PLC-D2 and AKC-RMC-D2 High-Performance (no display)

Technical Data	AKC-PLC-C1-224-00N-00-000	AKC-PLC-D2-224-00N-00-000	AKC-RMC-D2-224-00N-00-000
Construction	Heavy duty steel		
Mounting	Wall mount, desktop	Wall mount, desktop	Rack mount
Control panel switch	Power on		
CPU	Intel® Celeron® 1.2 GHz	Intel® Dual Core 2.26 GHz	Intel® Dual Core 2.26 GHz
RAM	2 GB		
NVRAM	128 k		
Compact flash	4 GB		
I/O standard	2x USB 2.0, 2-4x RS232, 1x LPT, 2x PS/2		
Ethernet	1x LAN 10/100, 1x LAN 10/100/1000		
Expansion slots	2x PCI, PCMCIA optional		
Power supply	24 Vdc		
Cooling	Fanless cooling		
Certifications	CE, FCC A, cULus		
Shock IEC60068-2-27	Operating: 15 G, 11ms / storage: 30 G, 11 ms duration		
Vibration IEC 60068-2-6	Operating: 10-500 Hz, 1 G / 3 axis / storage: 10-500 Hz: 2 G / 3 axis		
Temperature / Humidity	Operating: 0° C to +50° C / 20 to 85% non condensing / storage: -20° C to +60° C / 5 to 95% non condensing		
MTBF	> 40000 h		
RoHS compliant	Yes		

Human Machine Interface (HMI)

AKI™ Interface

Kollmorgen Automation Suite's combination of easy-to-use, high-performance HMI development software and industrial grade HMI panels gives your machine unparalleled visualization capabilities. Great-looking displays that are easy to develop and implement in a rugged and reliable touch screen package.

Integrated Ethernet connectivity and program development from within the Kollmorgen Automation Suite software environment provides seamless set-up and operation.



HMI

Typical AKI HMI Panel



Front view



Rear view



Primary connector view



Access panel view

AKI-CDT-MOD-04T

Hardware	
Display	TFT-LCD. 320 x 240 pixels, 64K colors. LED backlight lifetime at the ambient temperature of +25 °C: >10,000 h.
Screen size / Active display, W x H	3.5" / 70.1 x 52.6 mm
Front / Rear seal	IP 66 / IP 20
Touchscreen material	Touch screen: Polyester on glass, 1 million finger touch operations. Overlay: Autotex F157 / F207
Reverse side material	Powder-coated aluminum
Processor / RAM	416 MHz RISC CPU (Intel Xscale) / 64 MB
Flash memory	32 MB with 12 MB for applications and fonts
Real-time clock	±20 PPM + error because of ambient temperature. Total maximum error: 1 min/month at 25 °C Temperature coefficient: -0.034±0.006 ppm/°C ²
Power consumption at rated voltage	Normal: 0.15 A, Maximum: 0.35 A
Fuse	Internal fuse, 2.0 AT, 5 x 20 mm
Power supply	+24 Vdc (20 - 30 Vdc). 3-pin jack connection block. CE: The power supply must conform with the requirements according to IEC 60950 and IEC 61558-2-4. UL and cUL: The power supply must conform with the requirements for class II power supplies.
Operating temperature	Vertical installation: 0 ° to +50 °C Horizontal installation: 0 ° to +40 °C
Storage temperature	-20 ° to +70 °C
Relative operating humidity	5 - 85 % non-condensed
Certificates and Approvals	
CE approvals	Noise tested according to EN61000-6-3 emission and EN61000-6-2 immunity.
UL, cUL approvals (when product or packing is marked)	UL 1604 Class I, Div 2 / UL 508 / UL 50 4x indoor use only
DNV	Yes
NEMA	4x indoor use only
Germanischer Lloyd	Yes
Communication	
Ethernet	10/100 Mbit/s. Shielded RJ 45
USB	Host type A (USB 1.1), max. output current 500 mA
Dimensions	
Front panel, W x H x D	155.8 x 119 x 6 mm
Cut out dimensions	139 x 105 mm
Mounting depth	57 mm (157 mm including clearance)
Weight	0.6 kg

Human Machine Interface (HMI)

AKI-CDT-MOD-06T

Hardware	
Display	TFT-LCD. 320 x 240 pixels, 64K colors. LED backlight lifetime at the ambient temperature of +25 °C: >20,000 h.
Screen size / Active display, W x H	5.7" / 115.2 x 86.4 mm
Front / rear seal	IP 66 / IP 20
Touchscreen material	Touch screen: Polyester on glass, 1 million finger touch operations. Overlay: Autotex F157/ F207
Reverse side material	Powder-coated aluminum
Processor / RAM	416 MHz RISC CPU (Intel Xscale) / 64 MB
Flash memory	32 MB with 12 MB for applications and fonts
Real-time clock	±20 PPM + error because of ambient temperature. Total maximum error: 1 min/month at 25 °C Temperature coefficient: -0.034±0.006 ppm/°C ²
Power consumption at rated voltage	Normal: 0.25 A, Maximum: 0.45 A
Fuse	Internal fuse, 2.0 AT, 5 x 20 mm
Power supply	+24 Vdc (20 - 30 Vdc), 3-pin jack connection block. CE: The power supply must conform with the requirements according to IEC 60950 and IEC 61558-2-4. UL and cUL: The power supply must conform with the requirements for class II power supplies.
Operating temperature	Vertical installation: 0 ° to +50 °C Horizontal installation: 0 ° to +40 °C
Storage temperature	-20 ° to +70 °C
Relative operating humidity	5 - 85 % non-condensed
Certificates and Approvals	
CE approvals	Noise tested according to EN61000-6-3 emission and EN61000-6-2 immunity.
UL, cUL approvals (when product or packing is marked)	UL 1604 Class I, Div 2 / UL 508 / UL 50 4x indoor use only
DNV	Yes
NEMA	4x indoor use only
Germanischer Lloyd	Yes
Communication	
Ethernet	10/100 Mbit/s. Shielded RJ 45
USB	Host type A (USB 1.1), max. output current 500 mA
Dimensions	
Front panel, W x H x D	202 x 152 x 6 mm
Cut out dimensions	180 x 130 mm
Weight	0.9 kg

AKI-CDT-MOD-10T

Hardware	
Display	TFT-LCD. 800 x 600 pixels, 64K colors. CCFL backlight lifetime at the ambient temperature of +25 ° C: >50,000 h.
Screen size / Active display, W x H	10.4" / 211.2 x 158.4 mm
Front / Rear seal	IP 66 / IP 20
Touchscreen material	Touch screen: Polyester on glass, 1 million finger touch operations. Overlay: Autotex F157/ F207
Reverse side material	Powder-coated aluminum
Processor / RAM	520 MHz RISC CPU (Intel Xscale) / 64 MB
Flash memory	32 MB with 12 MB for applications and fonts
Real-time clock	±20 PPM + error because of ambient temperature. Total maximum error: 1 min/month at 25 °C Temperature coefficient: -0.034±0.006 ppm/°C2
Power consumption at rated voltage	Normal: 0.5 A, Maximum: 1.0 A
Fuse	Internal fuse, 2.0 AT, 5 x 20 mm
Power supply	+24 Vdc (20 - 30 Vdc), 3-pin jack connection block. CE: The power supply must conform with the requirements according to IEC 60950 and IEC 61558-2-4. UL and cUL: The power supply must conform with the requirements for class II power supplies.
Operating temperature	Vertical installation: 0 ° to +50 ° C Horizontal installation: 0 ° to +40 ° C
Storage temperature	-20 ° to +70 ° C
Relative operating humidity	5 - 85 % non-condensed
Certificates and Approvals	
CE approvals	Noise tested according to EN61000-6-4 emission and EN61000-6-2 immunity.
UL, cUL approvals (when product or packing is marked)	UL 1604 Class I, Div 2 / UL 508 / UL 50 4x indoor use only
DNV	Yes
NEMA	4x indoor use only
Germanischer Lloyd	Yes
Communication	
Ethernet	10/100 Mbit/s. Shielded RJ 45
USB	Host type A (USB 1.1), max. output current 500 mA Device type B (USB 1.1)
Dimensions	
Front panel, W x H x D	302 x 228 x 6 mm
Cut out dimensions	265 x 206 mm
Mounting depth	58 mm (158 mm including clearance)
Weight	2.1 kg

Human Machine Interface (HMI)

AKI-CDF-MOD-06T

Hardware	
Display	TFT-LCD. 320 x 240 pixels, 64K colors. LED backlight lifetime at the ambient temperature of +25 °C: >20,000 h.
Screen size / Active display, W x H	5.7" / 115.2 x 86.4 mm
Function keys	16 (8 with integrated LED and text strip)
LEDs	16 (8 with integrated LED and text strip)
Front / rear seal	IP 66 / IP 20
Keyboard material	Membrane switch keyboard with metal domes. Overlay film of Autotex F157 with print on reverse side. 1 million operations.
Reverse side material	Powder-coated aluminum
Processor / RAM	416 MHz RISC CPU (Intel Xscale) / 64 MB
Flash memory	32 MB with 12 MB for applications and fonts
Real-time clock	±20 PPM + error because of ambient temperature. Total maximum error: 1 min/month at 25 °C Temperature coefficient: -0.034±0.006 ppm/°C2
Power consumption at rated voltage	Normal: 0.25 A, Maximum: 0.45 A
Fuse	Internal fuse, 2.0 AT, 5 x 20 mm
Power supply	+24 Vdc (20 - 30 Vdc), 3-pin jack connection block. CE: The power supply must conform with the requirements according to IEC 60950 and IEC 61558-2-4. UL and cUL: The power supply must conform with the requirements for class II power supplies.
Operating temperature	Vertical installation: 0 ° to +50 ° C Horizontal installation: 0 ° to +40 ° C
Storage temperature	-20 ° to +70 ° C
Relative operating humidity	5 - 85 % non-condensed
Certificates and Approvals	
CE approvals	Noise tested according to EN61000-6-3 emission and EN61000-6-2 immunity.
UL, cUL approvals (when product or packing is marked)	UL 1604 Class I, Div 2 / UL 508 / UL 50 4x indoor use only
DNV	Yes
NEMA	4x indoor use only
Germanischer Lloyd	Yes
Communication	
Serial port RS422/RS485	25-pin D-sub contact, female with standard locking screws 4-40 UNC.
Serial port RS232C	9-pin D-sub contact, male with standard locking screws 4-40 UNC.
Ethernet	10/100 Mbit/s. Shielded RJ 45
USB	Host type A (USB 1.1), max. output current 500 mA
Field buses (expansion modules)	Profibus DP slave
Dimensions	
Front panel, W x H x D	275 x 168 x 6 mm
Cut out dimensions	275 x 168 x 6 mm
Mounting depth	57 mm (157 mm including clearance)
Weight	1.2 kg

AKI-CDF-MOD-10T

Hardware	
Display	TFT-LCD. 8000 x 6000 pixels, 64K colors. LED backlight lifetime at the ambient temperature of +25 ° C: >50,000 h.
Screen size / Active display, W x H	10.4" / 211.2 x 158.4 mm
Function keys	22 (10 with integrated LED and text strip)
LEDs	22 (10 with integrated LED and text strip)
Front / rear seal	IP 66 / IP 20
Keyboard material	Membrane switch keyboard with metal domes. Overlay film of Autotex F157 with print on reverse side. 1 million operations.
Reverse side material	Powder-coated aluminum
Processor / RAM	520 MHz RISC CPU (Intel Xscale) / 64 MB
Flash memory	32 MB with 12 MB for applications and fonts
Real-time clock	±20 PPM + error because of ambient temperature. Total maximum error: 1 min/month at 25 ° C Temperature coefficient: -0.034±0.006 ppm/°C ²
Power consumption at rated voltage	Normal: 0.5 A, Maximum: 1.0 A
Fuse	Internal fuse, 3.15 AT, 5 x 20 mm
Power supply	+24 Vdc (20 - 30 Vdc). 3-pin jack connection block. CE: The power supply must conform with the requirements according to IEC 60950 and IEC 61558-2-4. UL and cUL: The power supply must conform with the requirements for class II power supplies.
Operating temperature	Vertical installation: 0 ° to +50 ° C Horizontal installation: 0 ° to +40 ° C
Storage temperature	-20 ° to +70 ° C
Relative operating humidity	5 - 85 % non-condensed
Certificates and Approvals	
CE approvals	Noise tested according to EN61000-6-3 emission and EN61000-6-2 immunity.
UL, cUL approvals (when product or packing is marked)	UL 1604 Class I, Div 2 / UL 508 / UL 50 4x indoor use only
DNV	Yes
NEMA	4x indoor use only
Germanischer Lloyd	Yes
Communication	
Serial port RS422/RS485	25-pin D-sub contact, female with standard locking screws 4-40 UNC.
Serial port RS232C	9-pin D-sub contact, male with standard locking screws 4-40 UNC.
Ethernet	10/100 Mbit/s. Shielded RJ 45
USB	Host type A (USB 1.1), max. output current 500 mA
CF-Slot	Compact flash, type I and II
Field buses (expansion modules)	Profibus DP slave
Dimensions	
Front panel, W x H x D	382 x 252 x 6 mm
Cut out dimensions	343 x 208 mm
Mounting depth	58 mm (158 mm including clearance)
Weight	2.5 kg

Human Machine Interface (HMI)

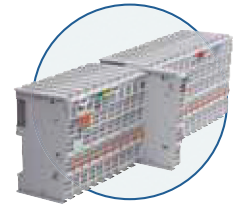
AKI-CDT-MOD-15T

Hardware	
Display	TFT-LCD. 1024 x 768 pixels, 64K colors. CCFL backlight lifetime at the ambient temperature of +25 °C: >35,000 h.
Screen size / Active display, W x H	15.0" / 304.1 x 228.1 mm
Front / Rear seal	IP 66 / IP 20
Touchscreen material	Touch screen: Polyester on glass, 1 million finger touch operations. Overlay: Autotex F157/ F207.
Reverse side material	Powder-coated aluminum
Processor / RAM	520 MHz RISC CPU (Intel Xscale) / 64 MB
Flash memory	32 MB with 12 MB for applications and fonts
Real-time clock	±20 PPM + error because of ambient temperature. Total maximum error: 1 min/month at 25 °C Temperature coefficient: -0.034±0.006 ppm/°C ²
Power consumption at rated voltage	Normal: 1.2 A, Maximum: 1.7 A
Fuse	Internal fuse, 3.15 AT, 5 x 20 mm
Power supply	+24 Vdc (20 - 30 Vdc), 3-pin jack connection block. CE: The power supply must conform with the requirements according to IEC 60950 and IEC 61558-2-4. UL and cUL: The power supply must conform with the requirements for class II power supplies.
Operating temperature	Vertical installation: 0 ° to +50 °C Horizontal installation: 0 ° to +40 °C
Storage temperature	-20 ° to +70 °C
Relative operating humidity	5 - 85 % non-condensed
Certificates and Approvals	
CE approvals	Noise tested according to EN61000-6-4 emission and EN61000-6-2 immunity.
UL, cUL approvals (when product or packing is marked)	UL 1604 Class I, Div 2 / UL 508 / UL 50 4x indoor use only
DNV	Yes
NEMA	4x indoor use only
Germanischer Lloyd	Yes
Communication	
Ethernet	10/100 Mbit/s. Shielded RJ 45
USB	Host type A (USB 1.1), max. output current 500 mA Device type B (USB 1.1)
Dimensions	
Front panel, W x H x D	398 x 304 x 6 mm
Cut out dimensions	356 x 279 mm
Mounting depth	60 mm (160 mm including clearance)
Weight	3.7 kg

I/O Terminal

Advanced Kollmorgen Terminal (AKT)

The Kollmorgen Automation Suite includes an array of I/O options for applications that need more I/O than can be provided by the onboard I/O of the drives or for applications that need specialized functionality such as thermocouple management through I/O. The DIN rail mount IP20 terminals simply slide together and connect to the system's EtherCAT bus where they are auto-recognized for easy configuration.



I/O

Typical Bus Coupler



EtherCAT bus coupler

Typical I/O Terminal



Front wiring view



Side label view

Available Motion Bus Coupler Model	
AKT-ECT-000-000	EtherCAT Bus Coupler
Available Analog Input Terminal Models	
AKT-AN-410-000	4 channel analog input module, 0-10 Vdc
AKT-AN-420-000	4 channel analog input module, 0-20 ma
AKT-AN-810-000	8 channel analog input module, 0-10 Vdc
AKT-AN-820-000	8 channel analog input module, 0-20 ma
AKT-AN-200-000	2 channel thermocouple input module
AKT-AN-400-000	4 channel thermocouple input module
Available Analog Output Terminal Models	
AKT-AT-220-000	2 channel analog output module, 0-20 ma
AKT-AT-410-000	4 channel analog output module, 0-10 Vdc
AKT-AT-420-000	4 channel analog output module, 0-20 ma
AKT-AT-810-000	8 channel analog output module, 0-10 Vdc
AKT-AT-820-000	8 channel analog output module, 0-20 ma
Available Digital Output Terminal Models	
AKT-DT-004-000	4 channel digital output module, 0.5A
AKT-DT-008-000	8 channel digital output module, 0.5A
AKT-DT-2RT-000	2 channel relay output module, 2.0A, N/O
Available Digital Input Terminal Models	
AKT-DN-004-000	4 channel digital input module, 3ms
AKT-DNH-004-000	4 channel digital input module, .2ms
AKT-DN-008-000	8 channel digital input module, 3ms
AKT-DNH-008-000	8 channel digital input module, .2ms
Available Specialty Terminal Models	
AKT-EM-000-000	End module
AKT-IM-000-000	Isolation module
AKT-PS-024-000	Bus feed terminal, 24 Vdc
AKT-PSF-024-000	Bus feed terminal, 24 Vdc, fused
Available Field Bus Coupler Models	
AKT-PRB-000-000	Profibus Bus Coupler
AKT-ENP-000-000	Ethernet/IP Bus Coupler

Services

Application Development, Start-up, Troubleshooting, and Training

The Kollmorgen Automation Suite portfolio offers extensive application development services and solutions development for the customer. Some of the key areas in which application engineering services are available include:

- Development and on-site deployment with IEC 61131-3, Pipe Network, PLCopen for motion, HMI, and motion control for standard motion and complex synchronized motion across many axes
- Knowledge transfer to help you maintain systems
- Helps reduce manpower investment for the initial efforts of machine building
- Ability to help you integrate your machine to the factory floor or your data to your ERP systems

These are available to our customers to leverage our experience, when necessary, with developing solutions. Start-up and troubleshooting services are available to ensure the rapid commissioning of new systems and to resolve unexpected issues that may arise with a new or established installation.

In addition, Kollmorgen offers wide-ranging training in many areas related to motion control and automation. Training can be either onsite or offsite and uses specialized demo kits for hands-on participation. Demo kits allow the trainee to see actual motion in action and receive real-time experience and feedback during the training program. The course can be taken online or in a classroom setting. Either way, the student can have access to a training kit that includes: A controller, AKD servo drives, I/O, and AKM servomotors in a single, compact unit.

Courses are available in the IEC 61131-3 languages, PLC solution architecture, HMI solution development, and motion control. On request, custom training courses are also offered to suit the specific needs of a given organization.

www.kollmorgen.com/kas

On the Kollmorgen Automation Suite website, find extensive information about developing solution architectures. It provides the right level of information and is structured to prevent information overload. Complete, detailed data sheets and installation manuals for the various Kollmorgen Automation Suite products are available for download on the site.

In addition, personalize your experience with the MyKAS website - interact with Kollmorgen's product development, engineering, and marketing teams. This website can be used for:

- **Bug Reporting**

Reporting bugs and receiving direct support from the R&D and product management teams.

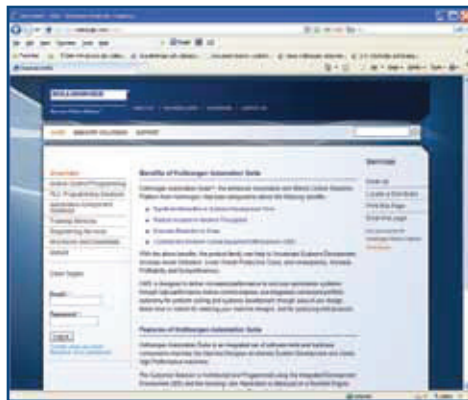
- **Dynamic FAQs (Frequently Asked Questions)**

Most static FAQs are a guesswork of what the systems development engineers may be interested in. The Kollmorgen FAQ evolves by looking at what the developer community needs. Questions that receive higher viewing bubble to the top to provide information on areas of customer concern. This also alerts Kollmorgen to aspects of the product which may need to be explained better. Such alerts result in benefit to the engineer as Kollmorgen can improve product documentation or create additional examples.

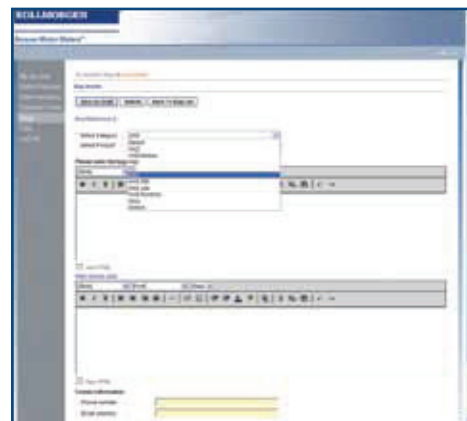
The community can also ask questions online and Kollmorgen's continuous improvement philosophy ensures that these questions are taken into account either for online response or for future product development.

- **Online Purchases**

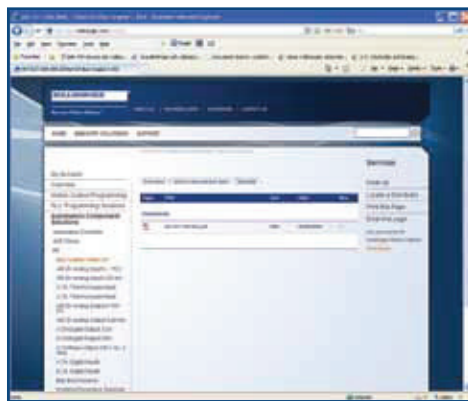
Using PayPal™, purchase limited sets of items online for development and prototyping.



Learn about the product family and offerings



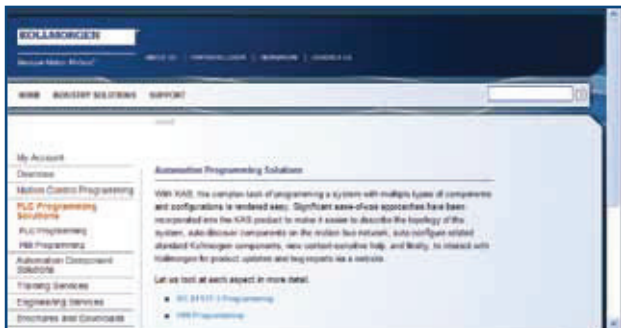
Rich text edit of bug report to product management and engineering. Workflow includes automatic email/follow-up request to product management and engineering management



Review product specifications and download manuals and datasheets online

Personalized Services

- Living FAQ that makes highly clicked questions bubble to the top
- Report bugs and review responses online
- Ask questions and review responses online
- Buy products with payments integrated by PayPal
- Download software using provided download codes
- Review past purchases and print receipts online



Discover Kollmorgen Automation Suite programming solution and approach



Make online purchase



Review our engineering and training services capabilities



View purchases

Advanced Systems Creation

Creating Your System with our Sales Representative

Our sales representatives bring more to the process of developing your unique system solution than just years of automation and motion control experience. Our new Kollmorgen System Designer tool lets them sit down with you and design the outline of your system on the spot.

- The System Designer tool contains a complete portfolio of Kollmorgen Automation Suite products from PACs for control right down to the cables that connect the system elements together. Because the components are pre-certified, your choices are always validated to create known systems where the components have been designed to work together in an optimal fashion.
- Simply diagram the system by dragging and dropping components onto an application palette. Connect these components using cables that are certified in the system. It is almost impossible to make a wrong connection.
- Once the parts and part numbers have been selected, the sales representative can generate a bill of materials for your review and even generate a standardized proposal for your system.
- The focus of work activities is not on the drawing process but capturing your requirements effectively to develop the right automation and motion control system architecture.

System Designer Tool

- Template application wizard
- All Kollmorgen Automation Suite-enabled components
- Part number selection
- System interconnections

