

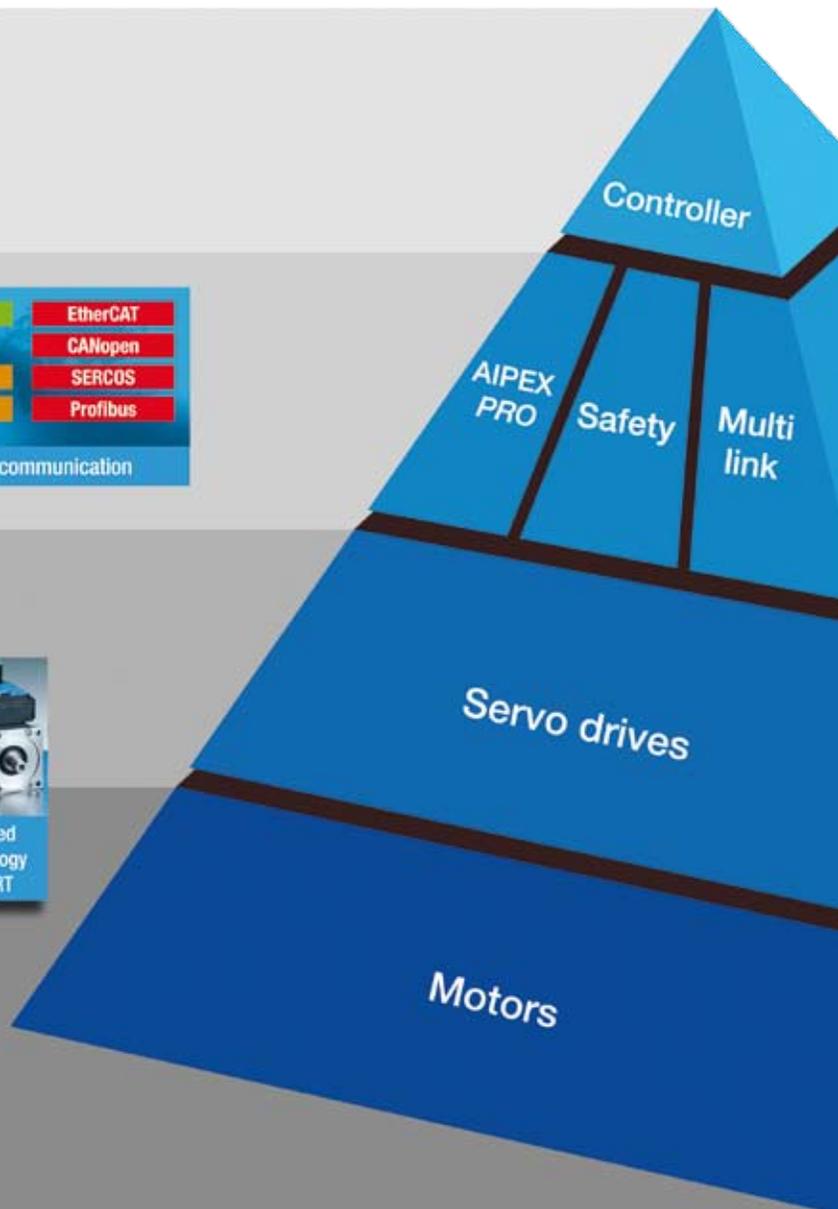
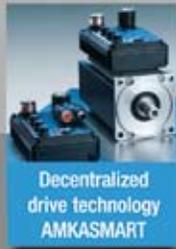


**Modular drive and control
system for integrated
automation.**

More productivity.

More flexibility. More innovation.

AMK





The AMK drive and control system.

Application-oriented, modular, integrated.

AMK's sophisticated modular drive and control system features optimally harmonized blocks in a modular and open architecture for innovative and integrated automation solutions.

The blocks offer you all necessary components for your automation solutions.

- Controllers for machines and systems
- Compact servo drives
- Servo motors in a wide range of designs, power classes and cooling types
- Distributed drive solutions
- Engineering tools and accessories

Systematically reduce your costs by using only those components from the modular system that you actually need. Features like scalability and extremely compact designs save you money as well as space. Engineering tools and pre-programmed function blocks keep your engineering costs low and facilitate startup.

The AMK system components are characterized by a high level of performance and help to increase the productivity of your machines and systems.

Remain flexible to all market trends and open to new technologies. With AMK systems, you do not have to force your ideas into predefined architectures. Demand more than just drive and control technology. Put us to the test! We will grow with you, while giving you all the freedom you need. We see your visions and implement them step-by-step following a systematic approach.

Take advantage of a technology leader with decades of experience for your goals. Whether you are looking to reduce costs, increase quantities or optimize workflow, it pays to get in touch with AMK. A crucial competitive edge is yours for the taking.

AMKAMAC A4/A5 cabinet controller ▶



AMKAMAC smartPanel ▶



▶ Controller with smartPanel



▶ The AMKAMAC A4/A5 controller series

▶ Controller with 15" smartPanel



The controllers.

Integrated, scalable, open.

The latest generation of AMKAMAC controllers offers you maximum power in a minimum of space. As a cabinet controller and a controller with visualization with extremely compact dimensions, this controller generation adapts optimally to your machine design.

The AMKAMAC A4/A5 is the optimum solution for controlling machines and systems. The strengths of this controller are fully demonstrated in both central and modular machine control concepts. The use of the EtherCAT real-time fieldbus means there are practically no more restrictions on the number of nodes on the bus. For modular machine concepts, AMKAMAC A4/A5 features synchronized cross communication with other controllers in the system. The AMKAMAC control system provides not only hardware components, but also engineering tools, web visualization, technology functions, and application software. This reduces your development effort, enabling your finished machine to be ready sooner.

The Ethernet and USB communication interfaces provide flexible options for accessing the controller. PLC programs can be loaded easily, and remote maintenance and diagnosis down to the individual node level on the fieldbus is possible. Data can be exchanged with other programs via an OPC server, and process data can be read out and managed.

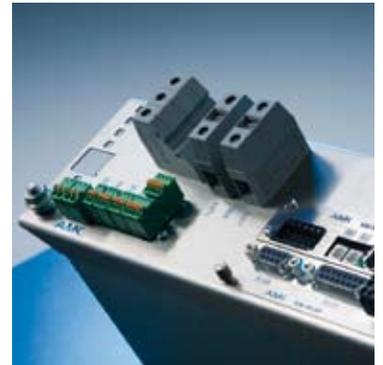
Programming

Programming is performed with the internationally proven CoDeSys programming platform. All the IEC 61131-3 programming languages are supported, and these can even be combined within the same project. You can thus use your preferred language for programming. Blocks from numerous libraries are available to the programmer.

Visualization

You can easily and conveniently create intuitive user interfaces using the web visualization integrated in CoDeSys or, alternatively, in the Qt C++ class library.

Modular servo drive series
AMKASYN KE/KW ▼



▲ Compact inverter KW



▲ Compact inverter KW



▲ Double inverter module KWD



▲ Two-axis inverter module KWZ



▲ Liquid-cooled plates



▲ Air-cooled inverters

The compact servo drives.

Intelligent, flexible, safe.

AMKASYN KE/KW servo drives

The intelligent KE/KW servo drives open up a new dimension of power density. AMK's ingenious cooling technology design ensures optimum heat removal and increases service life. You need up to 50% less volume. The option to arrange the modules according to your requirements gives you the freedom you need for ergonomic machine design.

The KE/KW device series consists of power supply and inverter modules in the power range from 2 to 200 kVA. The modular layout of the system provides maximum flexibility. The customer needs only the components required for its application. The controller platform of the AMK KE/KW drive system, together with the latest processor technology, opens up entirely new possibilities for higher performance. The use of Realtime Ethernet (RTE) via EtherCAT or VARAN means that high-performance system communication is available for automation of machines. Standard functions, such as position control, positioning, synchronous control, and electronic gearing, are included with the basic unit. All types of synchronous or asynchronous servo, high-torque or linear motors with a wide range of encoder systems can be operated in a highly dynamic and precise manner.

In terms of safety, servo drives also include Safe Torque Off (STO) as a standard feature and are PLe-compliant.

To reduce energy costs, the power supply modules are also available with sinusoidal supply/line regeneration.

Types of cooling

The liquid-cooled cold plate offers significant benefits, particularly for high power ratings. The devices can be mounted easily without having to interrupt the cooling circuit. The removal of heat via the liquid-cooled plate reduces the switch cabinet interior cooling significantly. For low power ratings, the modules with integrated air cooling offer a cost-effective alternative.

Double inverter modules AMKASYN KWD

The KWD compact double inverter module contains two independent KW inverters inside one enclosure. There is a selection of optional controller cards available, which enables you to adapt the device optimally to your application. They represent a very compact solution for precise and highly-dynamic control of different types of three-phase motors in the 1 to 5 kVA power range.

KWZ two-axis inverter module

The attractively priced KWZ drive solution contains a fixed controller card that can be used to control two drives in the 2 x 1 to 5 kVA power range. Fewer interfaces means lower costs for the device technology.

DYNASYN high-torque motors
DT series, convection-cooled
and liquid-cooled ▶



Liquid-cooled high-torque DT
series ▶



▲ Convection-cooled DT motor

Special design
of DYNASYN DS series: DS28 ▼



▲ Asynchronous servo motor



▲ SPINDASYN series



▲ Integrated motors

Servo motors.

Powerful, reliable, maintenance-free.

Decades of experience paired with a great amount of expertise and imagination have given rise to a comprehensive motor program. All motors are developed and built in-house.

The versatile selection of power classes, designs, cooling methods, and encoder types means that AMK will provide you the right motor for every application.

DYNASYN synchronous servo motors

The **DYNASYN DT and DP** motor series are synchronous servo motors with high dynamic response in a compact size.

While the lamination geometry of the DT series is optimized for high torques at low speeds, the DP series achieves high performance through high speeds. Both series feature a high level of reliability, high dynamic response and largely maintenance-free operation. The motors are available in a power range from 0.3kW to 100 kW with continuous stall torques up to 750Nm. Both convection-cooled and liquid-cooled DT and DP motors are available.

With liquid cooling the series exhibit extremely high power densities.

The field-weakening **DS28 synchronous servo motor** is a special design of the DS series. The DS28 motor series combines the advantages of high efficiency with high overload capacity. These motors feature not only a low moment of inertia, but also a maximum torque of up to 1,530Nm, which allows for quick deceleration of the load in emergency situations.

DYNASYN asynchronous motors

DYNASYN asynchronous servo motors of the DH and DW series are especially well-suited as main drives or high-power servo drives. The robust design and reinforced bearings allow for high radial bearing loads. The DYNASYN DH motor series is cooled by external ventilation while the DYNASYN DW motors are liquid-cooled. The DH motor series has a rated power up to 38kW with continuous stall torques of 43 to 225 Nm. DW motors are available in a power range up to 48kW with continuous stall torques of 14 to 320Nm.

Hollow shaft motor series SPINDASYN

SPINDASYN motors are hollow-shaft motors and enable direct mounting of a range of different ball screw roller spindles and planetary roller spindles. They contain all the components required for linear actuators, such as servo motor, DIN mounting for ball screw, optional holding brake, and position encoder. The motor bearings are designed for high axial forces up to 570kN. SPINDASYN motors are very dynamic and feature high rigidity and zero backlash. SPINDASYN motors are available in convection-cooled and liquid-cooled versions.

Special motors

We also manufacture special motors that are customized to your individual specifications in economical batch sizes.

Take advantage of our decades of experience for your drive task solutions:

- Integrated motors for all industry sectors
- Direct drives to 2000 Nm
- Winder drives
- Godet and external rotor motors
- Fan drives
- Low-voltage motors

Inverter-integrated motor
AMKASMART iDT ▶



▶ Servo controller iX and inverter-integrated motor AMKASMART iDT



▶ Servo controller iX connection



▶ Servo controller iX with and without fan

Distributed drive solutions.

Systematic approach to modular machines.

Servo controllers AMKASMART iX

The iX servo controllers feature high protection class and vibration shock resistance along with a high-voltage DC bus and realtime Ethernet communication, thus making them ideally suited for distributed installation in your machine.

They reduce the amount of space required in the central switch cabinet and make the overall machine smaller. The compact size of the iX servo controllers allows them to be placed almost anywhere. This boosts their cost effectiveness, especially in machines with many axes. The looping of power supply and communication lines reduces the cabling effort to a minimum, even in extensive machines. Additional machine modules can be easily added to the machine. Multifunctional I/O's in each servo controller are available for sensors and actuators on the machine.

There is no need for expensive, specially-made hybrid cables. Power is supplied and fast realtime Ethernet communication is carried out separately using standard cables. Moreover, an additional distributor box is not required for this system and further fieldbus components can be looped in anywhere in the machine at any time. Another benefit arises when the drives are used on moving axes. Due to its compact size and robust, vibration-resistant design,

the servo controller for several moving axes can be placed within the area of motion. This reduces the costs for the cable trailing device for linear motion axes and the number of slip rings for rotating axes.

The iX servo controllers also have something to offer in terms of safety: Every device allows Safe Torque Off (STO) to be implemented by default, and there is also an iX available with functional safety.

Inverter-integrated motor AMKASMART iDT

The iDT motor series features servo motors with integrated servo controllers. For systematic implementation of modular machines, this series allows mechanical modules to be grouped into electronically independent units. This produces functional units that can be easily and flexibly configured into machines.

The iDT system is a Plug and Play solution that combines mechanics, electronics, and software for distributed uses.

The cabling effort is reduced to a minimum by looping of power supply and communication lines from iDT to iDT, even in the case of extensive machines and machine lines. Additional machine modules can be added to the machine by simply plugging them in. The switch cabinet is still needed

only for the power supply and electronics power supply, which reduces its volume drastically.

The multifunctional I/Os available to every iDT can be used for sensors and actuators on the machine, and the high protection class up to IP65 enables trouble-free use in harsh production environments. Even safety is already integrated in the iDT, as STO can be implemented with every iDT and safe stop and motion functions are available with the "functional safety" option.

▼ Controller card KW-R07:
functional safety for your drive



▲ AMKASmart iX and iDT



▲ AMKASYN servo drive series KE/KW

Safety.

Integrated, functional, safe.

Process-related systems and machines can pose a risk to persons, property, and the environment in the event of dangerous failures and malfunctions. It must therefore be ensured that systems and machines can be safely operated.

The AMKASYN KE/KW servo drives include STO as standard feature and are PLe-compliant. Additional safety functions are optionally available with the KW-R07 controller card.

The STO function is also integrated by default in the AMKASMART iX and iDT distributed drive solutions. In addition, a version with functional safety is also available optionally.

Functional safety

- Stop functions:
 - Safe torque off (STO)
 - Safe stop (SS1, SS2)

- Safe motion functions:
 - Safely-limited speed (SLS)
 - Safe direction (SDI)
 - Safe speed range (SSR)
 - Safe operating stop (SOS)
 - Safe maximum speed (SMS)
 - Safely-limited increment (SLI)

The safety functions are controlled via safe I/O's or safe fieldbus protocol FSoE.

AIPEX^{PRO}

Engineering Tool

PLC programming

Technology functions

Machine setup

Visualization

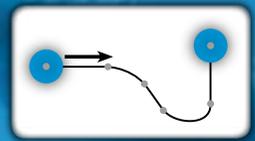
Diagnosis

Motion control

Remote access

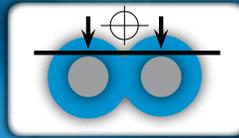
▼ AMK technology library

AM_pathcontrol



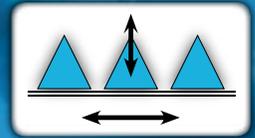
NC_Motion

AM_registercontrol



Register control

AM_pickplace



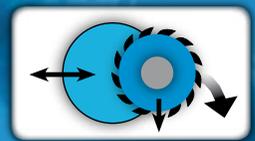
Pick and place

AM_tubularbag



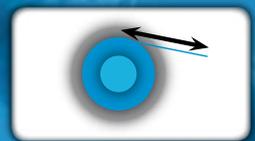
Tubular bag

AM_crosscutter



Cross cutter

AM_winder



Winder

Engineering tools and accessories.

Cost-effectiveness comes as standard.

AIPEX PRO integrates all engineering tools needed during the life cycle of a machine, e.g., programming, parameterization, startup, optimization and diagnosis. This saves you time-consuming efforts to coordinate, for example, between your PLC program containing drive parameters and the configured user data exchange via the fieldbus. AIPEX PRO does this work for you automatically and frees you from all tasks not directly tied to your application. This leaves you free to concentrate on what is really important in your application.

Configuration

Hardware configuration involves taking all the components of your drive system from a database and combining them (motor, inverter, controller module, optional cards, controllers, I/O modules).

Programming

AIPEX PRO integrates the internationally-proven CoDeSys programming platform. All the IEC 61131-3 programming languages are supported, and these can even be combined within the same project. You can use your preferred language when programming. Blocks from numerous libraries are available to the programmer.

The visualization and basic library included in the development environment provide the foundations for the automation solution. The basic library contains an extensive set of basic blocks, such as logic blocks (timers, counters, etc.) and those for implementing mathematical functions.

Libraries

This tool provides an extensive set of pre-programmed motion control and technology functions.

Motion control libraries

These blocks contain the basic functions for your machine control, such as electronic camshaft control and cam function.

Technology functions

You can make engineering processes even easier by using the technology functions, such as the tubular bag, printing mark control, winder and cross cutter functions.

PLCopen

Libraries in accordance with the PLCopen standard are also available.

Visualization

Use the graphics functions of the integrated visualization editor to create your machine visualization, while taking advantage of the ready-to-use visualization blocks. With suitable hardware, you can access web visualization on AMK controllers from anywhere in the world.

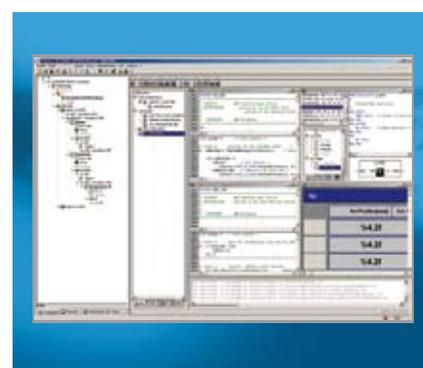
Remote maintenance and diagnosis

You can access the machine control and the drives from any location.

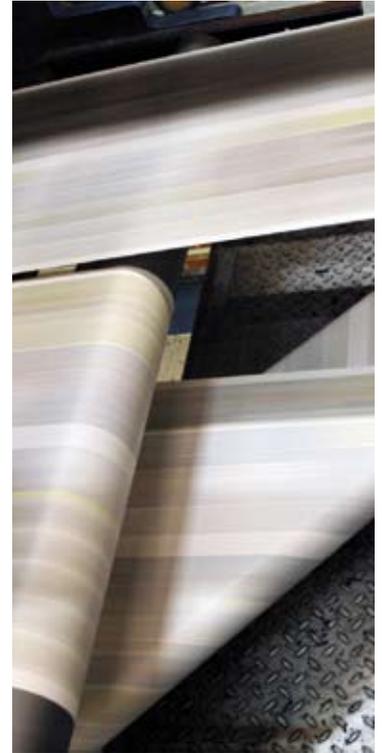
The update tool in AIPEX PRO allows you to update firmware quickly and easily.



▲ Integrated web visualization



▲ Programming with CoDeSys



Printing industry ▶



Machine tool manufacturing ▲



▲ Packaging industry



Paper processing industry ▶

Industry solutions.

Comprehensive, cost-optimized, future-oriented.

The innovative drive and control solutions of the AMK system have just the right products for your production machines!

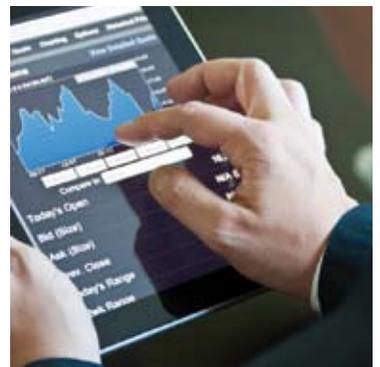
- Plastics industry
- Packaging industry
- Printing industry
- Paper processing
- Textile industry
- Food industry
- Machine tool manufacturing

No matter your industry sector, our application and development engineers have extensive theoretical and practical knowledge and would be happy to work on a customized solution for you.

Take advantage of our more than 40 years of experience for your automation tasks!

One thing is certain - we work for your success!

Convince yourself!



Service, training, and consulting.

Our know-how working for you!

Service

Comprehensive service is self-evident for us. Whenever you need support, our "Technical Support" specialists are there for you – from planning, design, installation and startup, to programming and operating a system and replacing of system parts.

Consultation

We support you with customized, project-related consultation on all aspects of your drives and controllers. You receive exactly the information you require fully tailored to your individual needs.

Training

Our comprehensive training program covers all theoretical and practical aspects of drive and control technology and offers you different training options, either in our training center or at your site.

Our training offer ranges from basic training to expert workshops. On request, we also offer project-optimized and customized training.

Control your Motion.



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