Modular drive and control system for integrated automation.

Greater productivity. More flexibility. Greater innovation.
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
- Decentralized 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 preprogrammed function blocks keep your engineering costs low and facilitate startup.

With their high levels of performance, the components in the AMK system help increase the productivity of your machines and systems.

Remain flexible to all market trends and open to new technologies. AMK systems do not restrict your creativity by forcing you to use predefined architectures. Insist on more than just drive and control technology. Insist on what we can offer you! We develop together with you, while at the same time allowing you all the freedom you need for innovations. We share your dreams and want to help turn them into reality with our systematic, step-by-step approach.

Make the most of our decades of experience as technology pioneers as you look to achieve your goals. Whether you are looking to reduce costs, increase productivity, or refine your processes, it pays to get in touch with AMK. We can help you achieve a real competitive edge.
The AMKAMAC controller series

AMKAMAC cabinet controller

AMKAMAC smartPanel

A series controller

ISA decentralized controller

AMKAMAC cabinet controller

The AMKAMAC controller series
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 A series is the optimum solution for controlling machines and plants. 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, the controller series features synchronized cross communication with other controllers in the system. The AMKAMAC control system combines hardware components with 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 a large number of 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.

**Power**
The AMKAMAC A4 controller is equipped with an ARM processor, while the AMKAMAC A5 has an ATOM processor and the latest high-performance version. The AMKAMAC A6 controller has a dual core ATOM processor that enables parallel use of Windows and real-time Linux.

**iSA decentralized controller**
The iSA decentralized controller establishes the basis for modular machines that are completely free of control cabinets. It has a three-phase power connection and provides both a DC bus supply for servo drives and an integrated 24 V supply and control intelligence. As a high-performance motion controller with real-time Linux operating system, iSA ensures decentralized intelligence.
AMKASYN KE/KW servo drive series

Controller card

Controller card with safety

KW compact inverter with cold plate

Cold plates in a variety of dimensions
The compact servo drives.
Intelligent, flexible, safe.

AMKASYN KE/KW servo drives
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. You need only the components required for your 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 real-time 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.

The KE/KW intelligent servo converters open up new dimensions 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. In terms of safety, servo drives also include Safe Torque Off (STO) as a standard feature and are PL e-compliant. To help reduce energy costs, the supply modules are also available with sinusoidal supply/regenerative feedback.

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 control 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 the 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 involves a fixed controller card which can be used to control two drives in the 2 x 1 to 5 kVA power range. This cuts the costs associated with the device technology by reducing the number of interfaces.
DYNASYN high-torque motors
DT series, convection-cooled and liquid-cooled

SPINDASYN SKT series

SPINDASYN SEZ series

DS 28

Liquid-cooled DT motor

Liquid-cooled DT motor

Single-cable solution
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, DP, and DD 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 0.3 kW to 100 kW with continuous stall torques up to 750 Nm. Both convection-cooled and liquid-cooled DT, DP, and DD motors are available. With liquid cooling, the series exhibits 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 levels of efficiency with a high overload capacity. These motors feature not only a low moment of inertia, but also a maximum torque of up to 1,530 Nm, which allows for quick deceleration of the load in case of emergencies.

**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 570 kN. SPINDASYN motors are very dynamic and feature high rigidity and zero backlash. SPINDASYN motors are available in convection-cooled and liquid-cooled versions.

**DYNASYN asynchronous motors**

The 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 38 kW with continuous stall torques of 43 to 225 Nm. DW motors are available in a power range up to 48 kW with continuous stall torques of 14 to 320 Nm.

**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
AMKASMART IDT5

AMKASMART ihXT motor with integrated servo controller

iC servo converter (optional with fan)
IX servo inverter
IX servo inverter with and without fan
Distributed drive solutions.
Systematic approach to modular machines.

**AMKASMART iX and iC servo drives**
The decentralized servo drive is available with high-voltage DC link connection (iX servo inverter) and with integrated power supply (iC servo converter). Real-time Ethernet is used for communication. As decentralized modules with high degree of protection and vibration/shock resistance, they are ideal for decentralized installation in your machines.

They reduce the amount of space required in the central control cabinet and make the overall machine smaller. The compact size of the servo drive 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/Os in each servo drive are available for sensors and actuators on the machine.

There is no need for hybrid cables with expensive connectors. Power supply and fast real-time Ethernet communication are routed 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 drive 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 servo drives also have something to offer in terms of safety: Safe Torque Off (STO) is a standard feature with each device, and functional safety is available optionally.

**AMKASMART iDT motor with integrated servo drive**
The IDT motor series features servo motors with integrated servo drives. 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 decentralized 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 control cabinet is still needed only for the power supply and electronics power supply, which reduces its volume drastically.

The multifunctional I/Os available on 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.

**AMKASMART ihXT motor with integrated servo drive**
The ihXT series expands the AMKASMART decentralized product family to include a full-value servo drive with a power range of 150 to 450 watts. These drives have everything you need for precise servo control.

The compact dimensions, the elimination of expensive connectors, and cutting of the installation effort in half through hybrid cables saves you up to 90% of your cable costs. The clever plug-in terminal connection in IP65 also reduce the connector costs by at least two thirds.

When combined with the ISA decentralized controller, modular machines that are completely free of control cabinets are possible.
Controller card with functional safety for your drive

AMKASYN KE/KW servo drive series

AMKASMART IX, IC, and IDT

AMKASYN KE/KW servo drive series
Safety.
Integrated, functional, safe.

Process manufacturing plants 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 process manufacturing plants and machines can be safely operated.

The AMKASYN KE/KW servo drives include STO as a standard feature and are PL e-compliant. The KW-R07 and KW-R17 controller cards allow you to implement functional safety via safe I/Os or FSoE. Both controller cards are PL e-compliant according to EN ISO 13849-1.

The STO function is also integrated by default in the AMKASMART iC, iX, and iDT decentralized 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/Os or safe fieldbus protocol FSoE.
Engineering tools and accessories.
Cost-effectiveness is pre-programmed.

AIPEX PRO integrates all engineering tools needed during the life cycle of a machine, e.g., programming, parameter assignment, commissioning, optimization, and diagnostics. 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, converter, 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 a large number of libraries are available to the programmer.

In a development environment, visualization and the basic library 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 system, such as the electronic cam controller and cam disc function.

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

**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 diagnostics**
You have worldwide access to the machine controllers and the drives from any location.

The Update tool in AIPEX PRO allows you to update firmware quickly and easily.
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
… and much more

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 50 years of experience for your automation tasks!

For one thing is certain – we work for your success!

Convince yourself!
Consulting, training, and service.
Our know-how working for you!

Consulting
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.

Service
It goes without saying that we offer comprehensive service. Whenever you need support, our "Technical Support" specialists are there for you – from planning, design, installation and commissioning, to programming and operating a system, and to retrofitting of system parts.
AMK AMAC
controllers

AMKASYN
servo converters

DYNASYN
servo motors

AMKASMART
decentralized
drive technology

SPINDASYN
linear drives