



KeDrive for Motion



The compact
control and drive system
with integrated safety control

KEBA[®]

Automation by innovation.

Concentrated functionality packed into the smallest space

- Up to 50% saving in space inside the control cabinet compared to conventional system configurations
- Uniform, compact and full form factor
- Modular, scalable system set-up
- Intelligent control module with look-ahead path and motion planning
- Integrated, cross-axis safety control system with safe I/Os (optional)
- Energy-efficient power supply module, optionally regenerative
- Highly dynamic 1-, 2- and 3-axis drive modules with 300% overload capacity

KeDrive for Motion

Integrated MMI enables straightforward start-up and service

Intelligent control module with optionally integrated cross-axis safety control system and safe I/Os
WxHxD (mm): 55/310/240

Energy-efficient power supply module, optionally regenerative
WxHxD (mm): 55/310/240

Drive module for continuous motor currents from 1.5 A to max. 12 A
WxHxD (mm): 55/310/240

Drive module for continuous motor currents from 12 A to max. 24 A
WxHxD (mm): 110/310/240





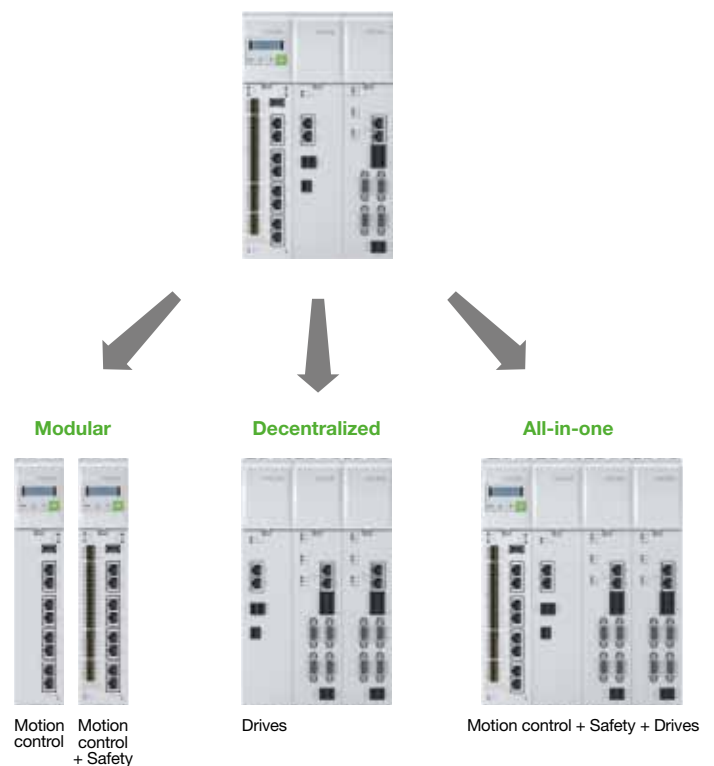
Fast and safe on the ideal path with KeDrive for Motion

Fantastically flexible – fits perfectly

The KeDrive for Motion system really can be used ingeniously and universally – from straightforward PLC applications to highly complex multiple robot applications.

The modular set-up enables the optimum solution for every application:

- As an all-in-one control and drive system with user-friendly, time-saving configuration and programming with only one software tool
- With a modular system set-up as an intelligent control system with scalable performance
- As a decentralised, economical drive system which is operated remotely from control system



KeMotion

The open control platform for machine and robot manufactures

Ready to use and individual on all levels

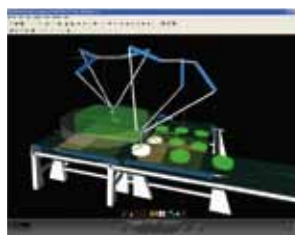
With KeMotion KEBA offers a turnkey control platform including both PLC and robot functionality which is customizable on all levels.

Turnkey system solution

KeMotion integrates a complete robot control with ready to use support for a multitude of kinematics.

The fully featured robot command set and the easy to use graphical online teach-in enables each user to run a robot within less than 4 hours.

Intelligent path control ensures maximum performance on all axes, highest productivity and fastest operation speeds are applied in all operating conditions.



Programming as easy as can be

- One software for PLC & robot
- Over 30 types of robots selectable
- Convenient graphical configuration guide

Fully featured offline simulation

- Easy optimizing the robot program
- Saving of time at startup
- Testing before hardware is delivered

Fast machine adjustment and startup

- Automatic setting of dynamics
- Easy compensation of mechanical tolerances
- Exact adjustments of mechanics with user-friendly wizards



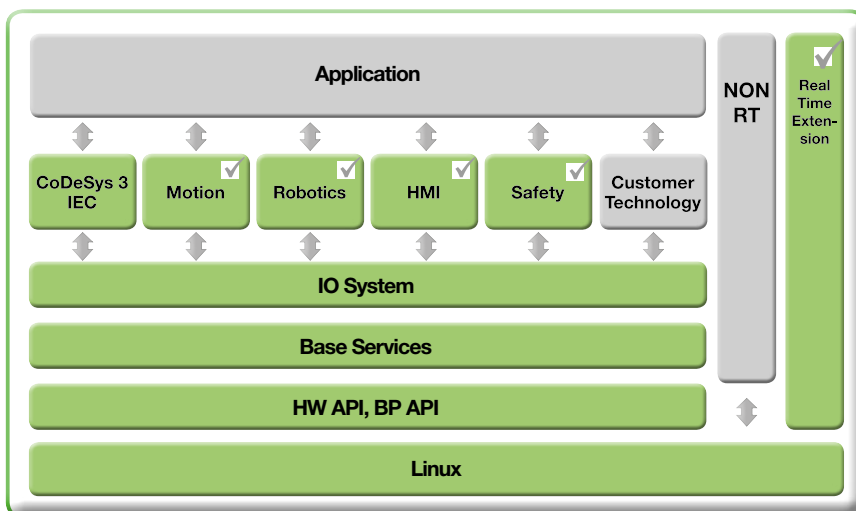
Open system platform

KeMotion offers full scalability on all levels. The KeMotion SDK allows the use of basic functionalities like I/O access, diagnosis and communication services directly from your C/C++ environment. In addition to the turnkey PLC and robotics technologies both realtime and non-realtime applications can be implemented on the same platform making your system as individual as possible.

Thanks to the unique open system architecture of the comprehensive KeMotion automation platform customers easily can integrate own process know-

how and corresponding components by themselves as needed. For all other parts of the automation system they trust in the long lasting experience of KEBA.

Customers so can concentrate their resources on pushing the development of their own core areas. There is no longer need for sharing specific process knowhow, it remains protected.



- CoDeSys 3.5 PLC runtime system
- KEBA motion and robot control according to PLCopen
- KeMotion SDK for I/O system, diagnosis, alarm, HW access, etc.
- C/C++ development environment
- Comprehensive security concept integrated

KeMotion Safety

The KeMotion safety technology meets international safety guidelines and standards. It is a programmable safety controller for robot axes as well as for single-axis, which is integrated directly into the KeMotion control.

Safe robot movements realized easily

The high level of integration eliminates many additional safety components that otherwise would be required in a conventional safe construction of a robot cell.

Any serial robot kinematics and system concepts can be easily realized thanks to freely configurable monitoring points.

Space-saving system design

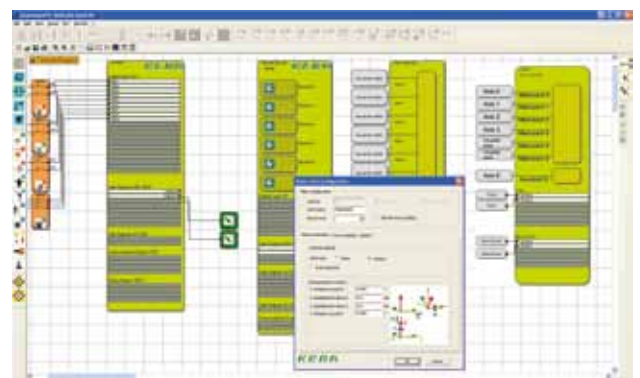
Robot movements can be limited to a sufficient degree for the process with the space-saving KeMotion safety technology.

Therefore, the safety guards for a safe robot housing can be brought closer to the robot, a space-saving setup in smallest space is made possible.

Fast time to market

A fast implementation of safe machine projects and the fulfillment of normative requirements are easily possible thanks to the robot safety control certified by TÜV Rheinland. Additionally, experts from KEBA support customers whenever needed.

The comprehensive safety concept as well as the comprehensive predefined safety features facilitate compliance with the schedule and quality requirements.





Monitoring functions

Safe robot standstill

- Up to 12 axes
- Monitoring with maintained energy supply

Safe limited robot speed

- Up to 11 axes in a kinematic chain
- Up to 2 robot kinematics
- Monitoring of TCP and freely configurable monitoring points at the robot, e.g. elbow

Safe monitoring zones

- 6 monitoring zones (inside and outside)
- Each zone can be defined by a box or a cylinder

Safe axis monitoring

- Safe monitoring of robot joints
- Monitoring of position, speed and acceleration of single axes and robot axes

Safe tool changing

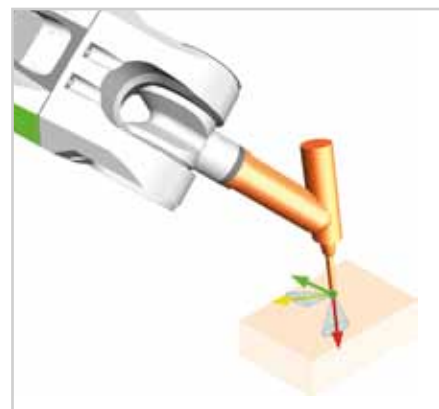
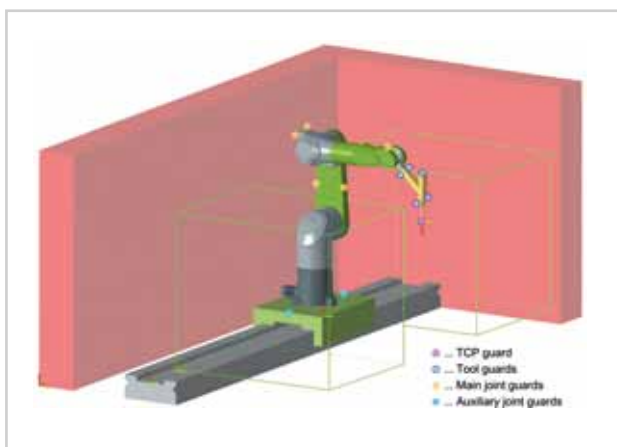
- Up to 7 tools

Safe tool orientation

- Safe monitoring of TCP orientation, e.g. for laser cutters and welding robots

Safe communication

- FSoE Master/Slave
- ProfiSafe Slave
- CIP Safety

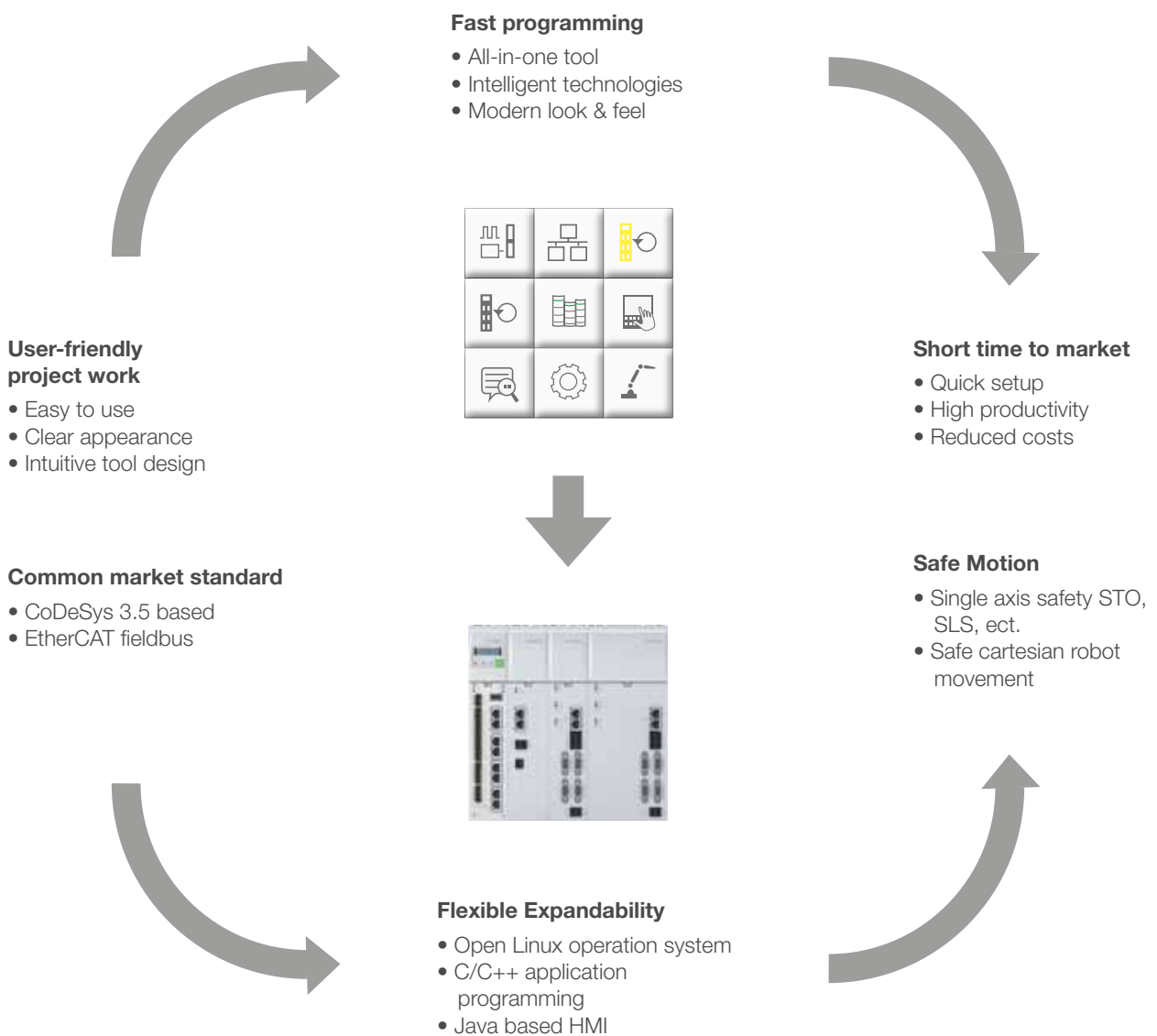


KeMotion

Intelligent, easy to use software

One user-friendly all-in-one software tool for configuration, programming and diagnostics of PLC, motion, robotics and safety.

- Universal, intuitive user interface
- Intelligent wizards and ready-made templates
- Fastest commissioning of robots
- Parametrizing instead of programming
- Over 30 types of kinematics pre-configured





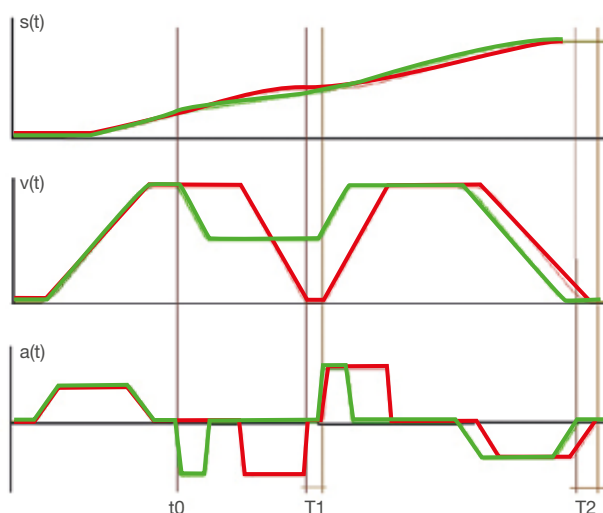
Intelligent Motion – The essential steps ahead

Thanks to the look-ahead path planning „Intelligent Motion the intelligent KeMotion robot control can tell precisely where and when robot arms and moved objects will be – even in multi-robot applications.

This results in a vibration-free, kinematics-friendly operation with smooth, dynamic movements without abrupt start/stop procedures.

- 10% less energy-consumption
- 10% higher productivity
- Maxed out use of workspaces
- Less maintenance efforts
- Protection of mechanics

Gain of time of Intelligent Motion compared to a conventional control



The position, speed and acceleration pattern of a conventionally planned motion (red) compared to a sequence with Intelligent Motion from KEBA (green).

The red kinematics have to wait for an external signal during the time T1 (idle time) whereas the green kinematics are informed about the waiting time at t0 and therefore can reduce their speed accordingly.

As an effect of the look-ahead motion planning and the successional avoiding of stops the green kinematics can finish their motion earlier by the time T2.

KeDrive for Motion

Technical data

Control unit

	DU 32x/A	DU 33x/A	DU 34x/A	DU 36x/A
Performance data				
Processor	Atom	Atom	Celeron	Core i3
Frequency [GHz]	0.6	1.3	2x 1.1	2x 2.1
RAM [MB]	512	512	1024	1024
Cycle time typ. [μ s]	8000	4000	1000	500
Communication				
EtherCAT master	yes			
Sercos III master	optional			
Ethernet	2			
Monitor interface	DVI			
USB	3			
RT-Ethernet slave	optional (Profinet, EthernetIP, EtherCAT, Sercos)			
Storage	CFast			
Dimensions [mm]				
Width x height x depth	55 x 310 x 240			
Optional Integrated Safety				
	Basic		Advanced	
Safe Motion programmable	yes		yes	
Safe digital Input	8		20	
Safe digital Output	4		10	
Digital Output	4		4	
Relays Out	-		2	



Drive module

	DA 3x0/A-01xx	DA 3x0/A-03xx	DA 3x0/A-06xx	DA 3x0/A-12xx	DA 310/A-24xx	
Performance data						
Continuous current per axis [A]	1.5	3	6	12	24	
Peak current per axis [A]	4.5	9	18	36	72	
Available as single, double, triple axis drive module	•	•	•	•	single only	
Functional data						
Multi-Encoder interface	Resolver, SinCos, Hiperface DSL, EnDat 2.1/2.2					
Additional Encoder interface	SinCos, TTL					
Fieldbus	EtherCAT CoE					
Safety (SIL3, PL e, Cat 4)	STO					
Digital inputs	9					
Safety digital inputs	4					
Cooling type	Heat sink / cold plate (optional)					
Dimensions [mm]						
Width	single axis drive module	55	55	55	55	110
	double axis drive module	55	55	55	110	n.a.
	triple axis drive module	55	55	55	110	n.a.
Height x depth	310 x 240					

Supply module

	DP 300/A-0450	DP 300/A-1050	DP 300/A-2250
Performance data			
DC bus continuous power [kW]	4	10	22
Mains voltage [V]	3x 230...480		
24V DC cont. current [A]	20		
Dimensions [mm]			
Width	55		110
Height x depth	310 x 240		
Functional data			
Brake resistor	external		
DC charging	charging current delimitation		

Fit for the future with KEBA.

KEBA AG was founded in 1968 and is an internationally successful electronics company headquartered in Linz (Austria) with branch offices worldwide. In line with its credo, "Automation by innovation" KEBA has been developing and producing inventive, top quality automation solutions for 45 years for industrial, banking, services and energy automation branches.

Indeed, as a result of competence, experience and courage, KEBA is the technology and innovation leader in its market segments. Extensive development and production expertise have proved a recipe for highest quality.

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