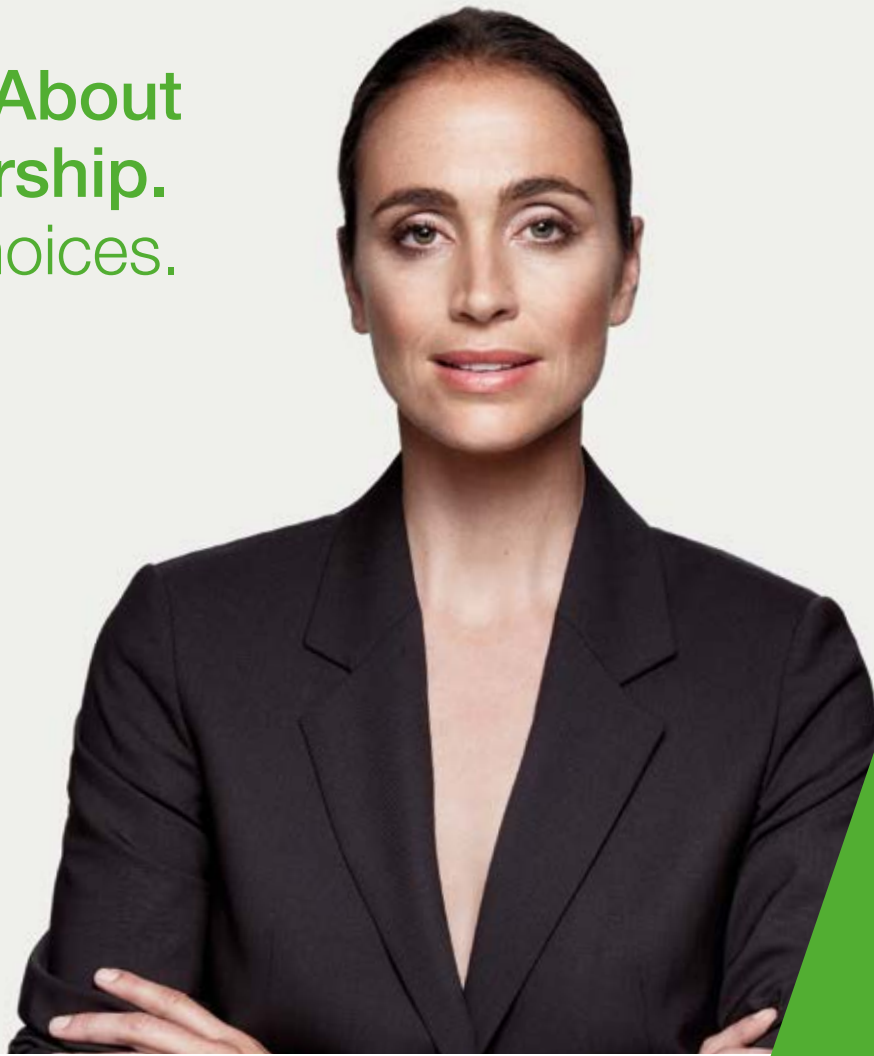


It's All About
Partnership.
And Choices.



KeDrive D3

Multi-axis drive system for safe
automation solutions

KEBA[®]
Automation by innovation.

It's All About Partnership. And Choices.

Automation solutions become a success factor when they give our customers the freedom to make the most of their competitive advantage. A good relationship needs space.

The KEBA Formula

It is this unique mixture of creativity, enthusiasm, determination and enjoyment of working together that makes our employees KEBAns.



Working in agile teams provides an excellent breeding ground for encouraging the development of different talents and personalities. As part of an organisation with flat hierarchies, it is the people who work here that create a very special working atmosphere. Creating an environment in which you can really feel the innovation.



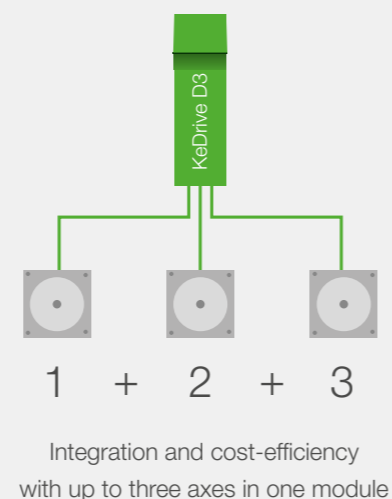
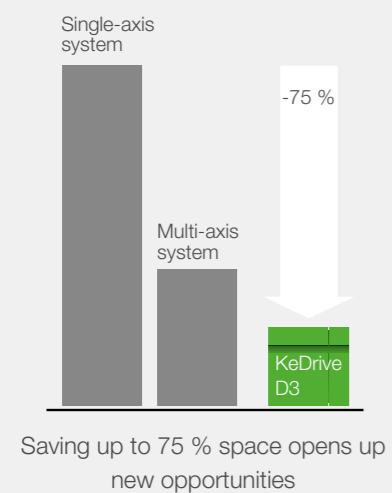
Multi-axis drive solutions for safe machine automation

KeDrive D3 is setting new standards in drive engineering. We have found a way to combine seemingly contrary characteristics into a single solution. This is made possible by radical increase in integration at all levels, reducing the amount of required materials and thus the overall size, and enhancing performance with regard to connectivity, dynamics and precision. Another benefit of the high level of integration is increased system availability, which translates into increased machine availability. At the same time, this approach reduces the complexity of the system and simplifies the engineering.

KeDrive D3 meets the challenge of combining state-of-the-art engineering with cost-effectiveness – an attribute that makes KEBA truly unique.

Compact and powerful multi-axis system

- // Drive controller with up to 630 A
- // Central power supply units with up to 140 kW nominal power / 240 kW peak power
- // High energy efficiency through DC link with active power supply units and energy storage systems



- // Powerful
- // Safe
- // Open
- // Flexible
- // Energy-efficient
- // Dynamic & precise

Full flexibility

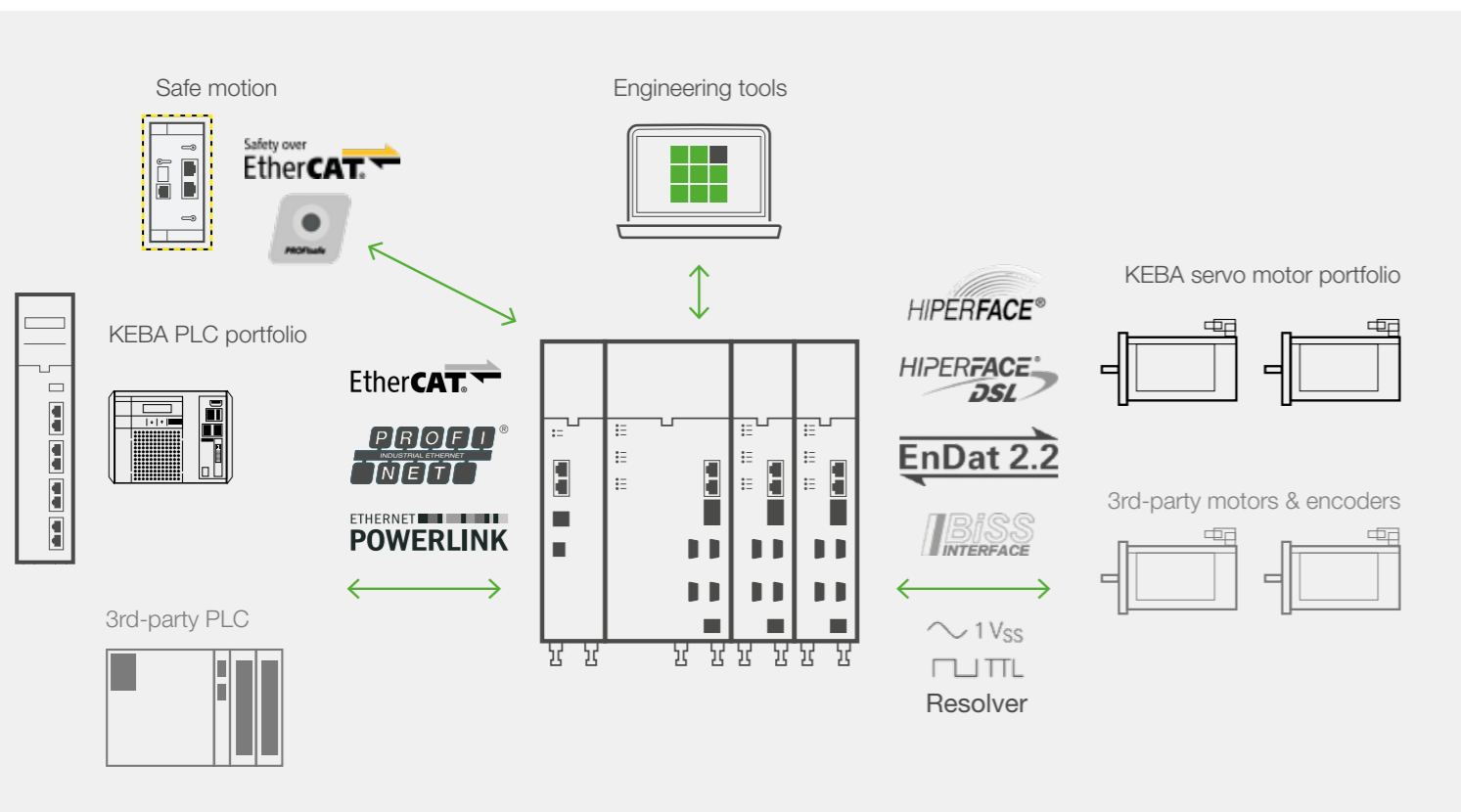
The world of KEBA automation is open. You define which concepts and solutions and ultimately which products create your competitive edge. Our mission is to open up new opportunities for you through maximum differentiation by combining your know-how and our technology. For this reason, our drive systems harmonize with a wide variety of automation concepts.

Flexible real-time communication

// EtherCAT, PROFINET and Powerlink for the standardized integration into different control systems. Of course also included: FSoE or PROFIsafe safety protocols.

Universal, open motor and feedback interface

// Use KEBA servo motors to solve highly diverse load and motion requirements. For cases where our portfolio does not provide a good fit for your solution, we can easily integrate your motor together with the encoder system.



Energy-efficient drive technology

Optimal energy management for a “green footprint” of your machines with KeDrive D3 Smart DC Systems

The energy transition and rising energy prices demand sustainable and efficient solutions for machines and systems. 70 % of the energy in factory automation is consumed by electric drives—a significant savings potential with regard to operation and installation cost.

As a machine manufacturer or plant operator, what is your mission and what are your challenges?

We work together with you to develop smart and efficient solutions.

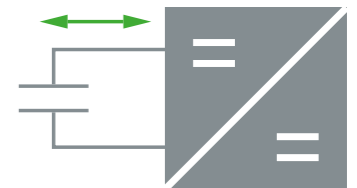
Active power supply units

- // **Energy recovery** feeds regenerative energy into the AC grid
- // **Controlled DC link voltage** for best drive utilization and mains independence
- // Limitation of **the mains input power**



Controlled energy storage systems

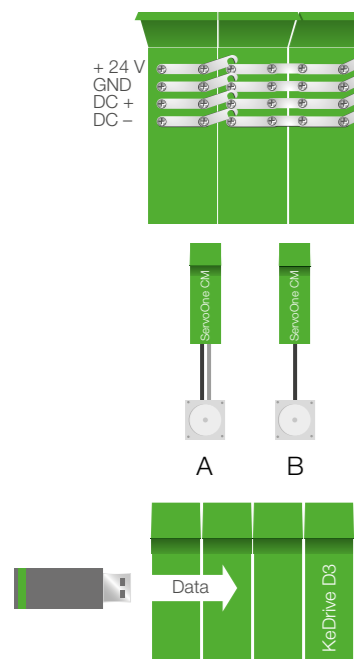
- // **Temporary storage** for regenerative energy
- // Peak power reduction through “**peak shaving**”
- // Bridging of mains failures (short time **UPS** for DC link)
- // Reduced harmonic distortion (THD) due to **sinusoidal mains currents**



Highlights

Simplicity.

We simplify your automation to give you more time for what matters.



Simple installation

Installation is much less complex than for conventional solutions: firstly because of the small number of components needed, and secondly because these components can be quickly connected using a simple connection system.

One-cable technology

KeDrive D3 supports one-cable technology as well as conventional encoder systems. This makes it possible to omit the encoder cable entirely and further simplify installation.

Fast commissioning

Project planning and configuration are easy with the convenient KeStudio DriveManager PC tool. The initial drive design is performed using the Servosoft software.

Integrated safety technology.

Easily and quickly adapted to your specific needs.

Built into axis controller as standard

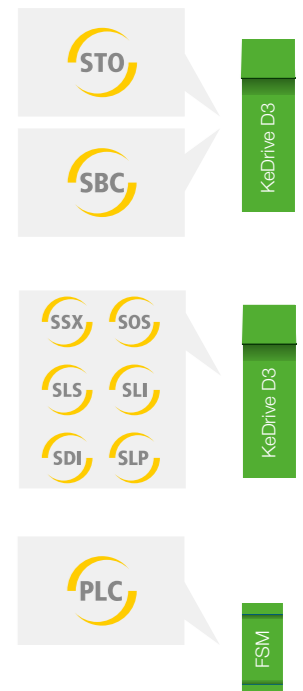
KeDrive D3 comes with STO (SIL3, PLe, Kat 4) and SBC (SIL2, PLd, Kat 3) as standard. This makes the drive system suitable for applications with high demands on safety, for example in presses or for the handling of suspended loads.

SafeMotion in axis controller (option)

The axis controller safely monitors the motion in compliance with EN / IEC 61508 and EN / ISO 13849. Available safety functions include SS1, SS2, SOS, SLS, SLI, SDI and SLP with up to SIL3, PL e, Cat 4. With the high safety levels that can be achieved, deployment is possible in all safety-critical applications.

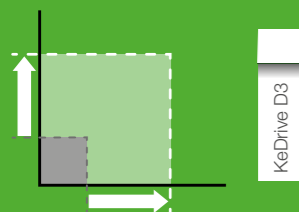
Machine safety control system

The FSM safety control system easily manages the safe I/Os and controls the safe movements of multiple axes. The intuitive SafetyManager drag&drop UI allows users to configure, program and then validate the entire safety system. CRCs ensure data consistency, which can be verified for series processes.



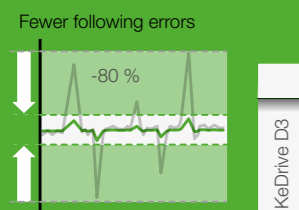
Dynamics & precision.

Maximum machine productivity with KeDrive D3.



Increase productivity

One of the key characteristics of a machine is its productivity. The higher the output per time unit, the greater the machine's economy. More and more often, this is paired with a demand for greater precision. KeDrive D3 comes with a wide range of features and functionality aimed at increasing the dynamics and precision of machinery.

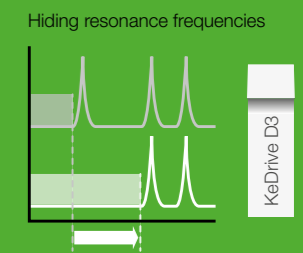


Compensate for errors

Features are included that compensate for encoder errors, mechanical resonance frequencies and errors in the mechanical transmission path, as well as friction and detent torque compensation. In addition, there is a predictive feed-forward structure with pico-interpolation. With the built-in auto-tuning functions, you are just one click away from your optimal configuration.

Adapt automatically

For the optimal control of vibrating mechanical components, KeDrive D3 identifies the mechanical transmission path with its frequency response and its resonance frequencies. This information is used for the automatic parameter adjustment of status controllers with observers, achieving extreme dynamics and outstanding precision near the limit of what is technically feasible.



Early detection of wear

Condition monitoring in the drive enables predictive maintenance and early responses, for example to the wear of mechanical components. It thus increases the productivity of your machine. The large volume of data is analyzed and compressed immediately in the drive using mathematical models. This turns "big data" into "smart data", providing significant relief in terms of data transfer.



Technical specifications



Drive controller KeDrive D3-DA												
Max. output current [A] ⁽¹⁾	4.5	9	18	36	54 (40) ⁽²⁾	72	100	135	240	280/310 ⁽³⁾	440/500 ⁽³⁾	-/630 ⁽³⁾
Nominal current [A]	1.5	3	6	12	18(16) ⁽²⁾	24	32	45	80	130/150 ⁽³⁾	210/250 ⁽³⁾	-/300 ⁽³⁾
Dimensions [mm]	Size 1: 55 x 310 x 241			Size 2: 110 x 310 x 241			Size 3: 165 x 390 x 251			Size 4: 275 x 390 x 251		
Single-axis controller	Size 1			Size 2			Size 3			Size 4		
Double-axis controller	Size 1		Size 2		Size 3			-				
Triple-axis controller	Size 1		Size 2		-							
Encoder interface	Resolver, SinCos, TTL, HIPERFACE, HIPERFACE DSL, EnDAT, BiSS, Tamagawa, Nikon											
Field bus	EtherCAT, PROFINET IRT, POWERLINK											
Standard inputs	11 DI											
Safety inputs	4 DI											
Standard safety technology	STO (SIL3, PL e Cat. 4), SBC (SIL2, PL d Cat 3)											
Optional safety technology	Safe motion monitoring SSX, SOS, SLS, SLP, ... - Safe field buses: EtherCAT FSoE, PROFIsafe											
Cooling system	Air cooling, ColdPlate (only Size 1 & Size 2), liquid cooling (only Size 3 & Size 4)											

1) Overload at 2 kHz and up to 500 ms 2) For double-axis controller 3) Liquid cooling

Active power supply modules KeDrive D3-DP 310 ¹⁾	
Size	Size 3
Nominal power (bidirectional)	30 kW 55 kW
Peak power (bidirectional)	60 kW (for 10s) 110 kW (for 10s)
Dimensions [mm]	165 x 390 x 251
Controlled DC link voltage	350 - 750 Vdc
Supply voltage	3 x 230 - 480 V AC ± 10 %
Precharging with charging module D3-DL 300	x
Built-in brake chopper with charging module D3-DL 300	6 kW (115 kW peak)
Cooling	Air cooling, liquid cooling

1) Operation only possible in combination with charging module D3-DL 300 (Size 1, 55 x 310 x 241)

Passive power supply units KeDrive D3-DP 30x						
Size	Size 1	Size 2		Size 3		Size 4
Nominal power [kW]	11	22	37	45	90	120/140 ⁽³⁾
Max. power [kW]	22	44	120	90	180	240/240 ⁽³⁾
Dimensions [mm]	55 x 310 x 241	110 x 310 x 241		165 x 390 x 251		275 x 390 x 251
Supply voltage	3 x 230 - 480 V AC ± 10 %			3 x 400 - 480 V AV ± 10 %		
Built-in brake chopper	x	x	x	x	x	x
Built-in brake resistor	Option	Option	-	-	-	Option ⁽³⁾
Power pack 24 V DC, 20 A	Option	Option	-	-	-	-
Built-in power shut-down	x	x	x	x	x	x
Line contactor control	x	x	x	x	x	x
Cooling	Air cooling, ColdPlate (only Size 1 and Size 2), liquid cooling (only Size 3 and Size 4)					

3) Liquid cooling

Controlled energy storage systems				Capacitance modules	
Energy manager KeDrive D3-EM 300		Energy storage KeDrive D3-ES 300		KeDrive D3-DC 300	
Nominal power ⁽¹⁾	63/75 kW ⁽²⁾	Capacitance	110 mF	DC link capacitance [µF]	3,600 +/- 10 %
Peak power ⁽¹⁾	94/118 kW ⁽²⁾ (for 0.2s)	Voltage range	100 - 390 V		
Max. power	202/240 kW	Max. energy	7.8 kJ	Dimensions [mm]	110 x 310 x 251
Dimensions [mm]	275 x 390 x 251	Dimensions [mm]	275 x 310 x 251		
Supply voltage	325 - 678 VDC	Power supply	Energy manager		
Cooling	Air cooling, liquid cooling	Cooling	Air cooling		

1) All specifications for 300 V storage voltage 2) Liquid cooling

KEBA Industrial Automation Germany GmbH

Gewerbestraße 5-9, 35633 Lahnau/Germany, Phone +49 6441 966-0, info@keba.de

KEBA Industrial Automation GmbH

Reindlstraße 51, 4040 Linz/Austria, Phone +43 732 7090-0, keba@keba.com

KEBA Group worldwide

Austria / China / Czech Republic / Germany / India / Italy / Japan / Netherlands /
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