

## Managing DC Link Energy



Dynamic  
Energy Storage

### KES

for drive controllers  
up to 230V

# Dynamic Energy Storage KES

for drive controllers up to 230V

A new option to process braking energy: the Dynamic Energy Storage KES. A solution that is independent of the mains. One device that can be used on almost all converters and servo controllers with a maximum DC link voltage of 540 VDC. The KES is an opportunity to increase the energy efficiency of various applications, to save resources, protect the power grid and even the users nerves.

## Active buffer module for DC links

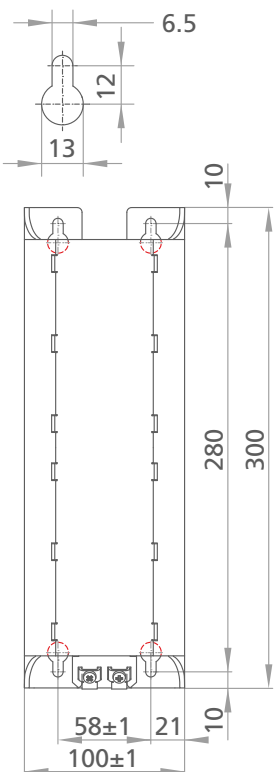
- > for single axis and multi axes systems
- > independent adjustment (Black Box)
- > no displays or any kind of control elements
- > shorter cycle times result in increased efficiency



[www.brakeenergy.com/kes](http://www.brakeenergy.com/kes)



## Installation dimensions and mounting-holes (mm)



## The operation – savings without circuit feedback

Unlike the direct DC link capacity expansion of converters, the active KES does not have any contact with the input side of the mains. The KES is only energised and charged in the event of braking. This feature leads to one of the most important characteristics: the KES does not cause any circuit feedbacks.

The KES independently sets the range of its working voltage level. This range is defined by two values from the voltage level of the DC link: the maximum voltage level of the DC link and the minimum voltage level of the DC link. From now on the KES starts absorbing energy from the DC link once the voltage level reaches the defined maximum value (e.g. in case of braking). As soon as the voltage level in the DC link reaches the defined minimum value (e.g. in case of accelerating) the KES returns its stored energy to the DC link. This is the moment when energy is being saved, because instead of using power from the grid the converter is driven by electrical energy from the KES!

The KES stops supplying energy once the voltage level in its capacitor reaches the dynamically established charging level / minimum voltage level and waits for the next braking event which recharges the capacitor. Charging, discharging, charging, etc. can take place in fractions of a second without causing any power circuit feedbacks.

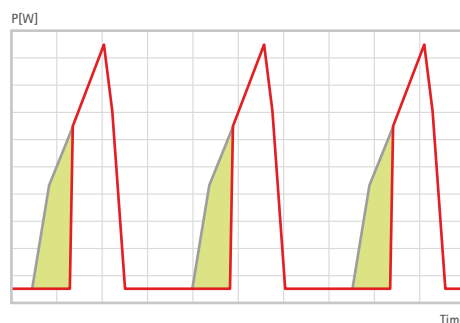
## Technical specifications KES

Parameter	Value
Useful energy approx.	1,300 Ws
Continuous voltage of the DC link	540 VDC max.
Output	10.4 kW max.
Built-in PTC discharge resistor	+
Dimensions H x W x D	300 x 100 x 201 mm
Weight approx.	6.9 kg
Protection class	IP 20

## Energy savings with the KES

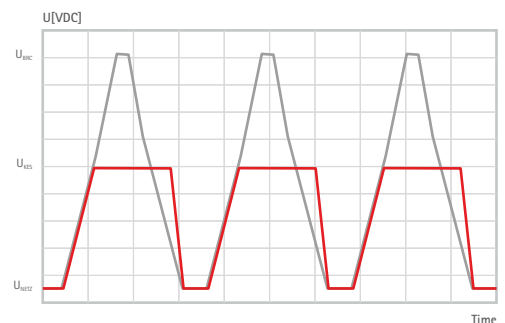
— with the KES      ■ Energy savings

— without the KES



## Voltage characteristics in the DC link

— without the KES      — with the KES

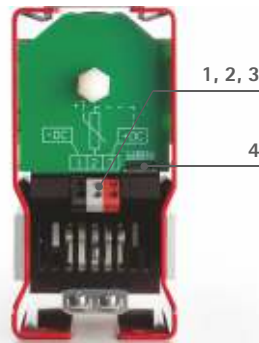


### Simple connections I

(bottom side)

With only three cables, the KES is extremely easy to connect.

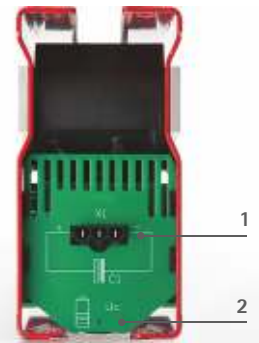
1. Negative terminal of the DC link
2. Braking transistor (braking chopper)
3. Positive terminal of the DC link
4. Connection of the RS422 interface (optional)



### Simple connections II

(top side)

1. Reverse polarity protected interface to connect extension modules
2. Safety-relevant LED: flashes as long as the unit is charged

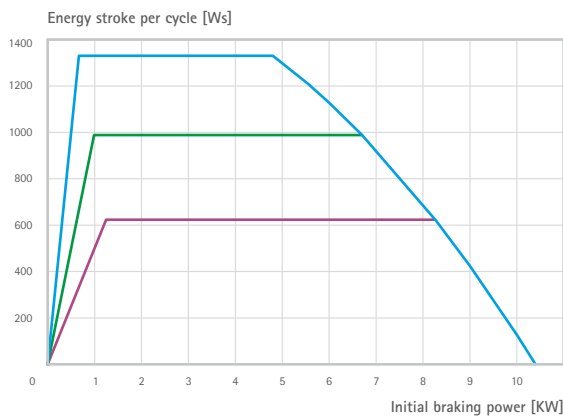


### KES Maximum Energy Stroke/Initial Braking Power

KES 2.0F,  $U_{BRmax} = 540$  VDC

#### Braking block

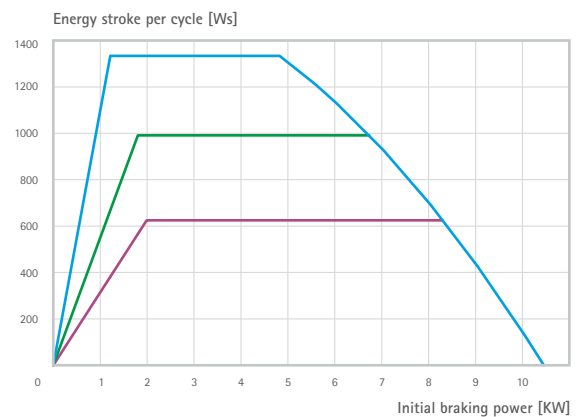
— 1s-cycle — 2s-cycle — 4s-cycle



KES 2.0F,  $U_{BRmax} = 540$  VDC

#### Braking ramp

— 1s-cycle — 2s-cycle — 4s-cycle



### Just give it a try

Based on its concept the KES can easily be tested in an existing system as a retrofit solution. To be installed the KES has to be connected in parallel to the existing braking resistor of the converter of the drive system. After a few cycles the collected data in the processor can be read out and evaluated. Based on the analysis of these data the suitable KES solution can be chosen – Can it get any easier than this?

### Control cabinet solutions

If (e.g. in case of retrofitting) the control cabinet of the machine does not provide enough space for our KES, we can also supply equipped, standardised control cabinets ready for mounting and connection. Individual solutions are possible.



# Managing DC Link Energy

Energy storage solutions and safe brake resistors in wire-wound and PTC technology

We offer:

- **Tested product quality**
- **Certified processes**
  - we undergo regular inspections by third parties
- **Individual application support**
  - owing to our modular system we can offer more than 60.000 solutions
- **Machine-specific implementation**
  - we match our products with your machines
- **High reaction rate**
  - we provide you with a suitable offer in the shortest possible time
- **Short delivery times**
  - all components are in stock
- **On-time deliveries every time**
  - we deliver on schedule in optimal lot sizes
- **Reliable partner**
  - we strive for long-term business relationships
- **Direct customer relationships**

[www.brakeenergy.com](http://www.brakeenergy.com)

We look forward to hearing from you!



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