

Managing regen energy



Dynamic
Energy Storage

DES 2.0

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The Dynamic Energy Storage DES offers new opportunities to deal with braking energy. I.e. without power grid. A device, that can be used on almost all converters and servo controllers that have a maximum DC link voltage of 850 VDC. For a number of applications, this represents an opportunity to increase energy efficiency, save on resources while also protecting your nerves and even the electrical grid.

Active buffer module for DC links

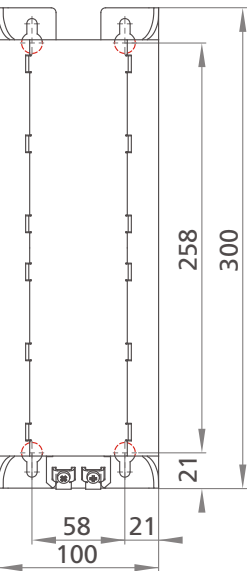
- > for single axis and mutli axes systems
- > adjusts itself independently right from the start (Black Box)
- > no buttons, display indicators, other controls
- > shorter cycle times result in increased efficiency



The operation – saving without power quality disturbances

Contrary to a direct extension of the capacity of the converters DC link, the active DES is not connected to the upstream electrical grid. The DES is only charged when braking. One of the most important consequences of this feature is: The DES does not result in power quality disturbances. The energy supply determines the level of its threshold voltage independently. The DES absorbs all the energy that would cause the voltage in the DC link to rise above this level. Conversely, the DES returns energy when the voltage level is not reached, i.e. the converter would be driven by electrical energy derived from the power grid. This is the decisive point to save energy. If the energy level in the DES capacitor falls below the dynamically determined charging voltage due to energy being dissipated, the DES terminates its operation and waits for the next braking event to recharge its capacitor with the available energy. Charging, discharging, recharging, etc. can take place in a fraction of a second without power quality disturbances.

Dimensions and mounting holes (mm)

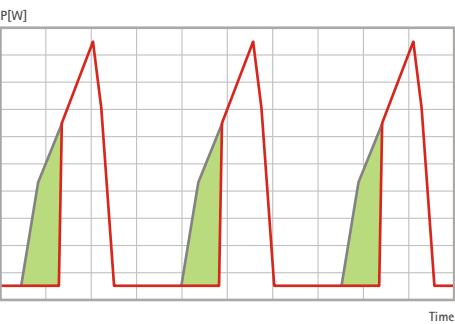


Technical specifications DES 2.0

Parameter	Value
Available storage capacity, up to	1.600 Ws
Continuous voltage DC link	850 VDC max.
Short-term peak voltage DC link	950 VDC max. (30 s in 6 min.)
Output power	18 kW max.
Installed PTC braking resistor	R_{25} 60 Ohm, P_{cont} 30 W
Dimensions H x W x D	300 x 100 x 201 mm
Weight	approx. 6,9 kg
Protection class	IP 20

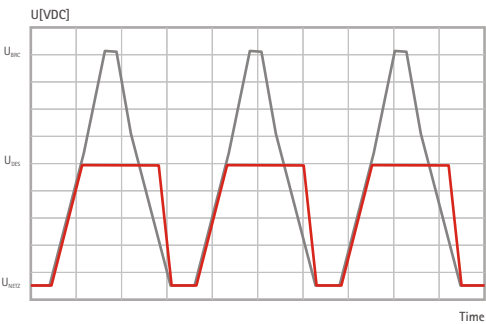
Energy savings with the DES 2.0

- with DES 2.0
- without DES 2.0
- energy savings



Voltage curve of the DC link

- without DES 2.0
- with DES 2.0





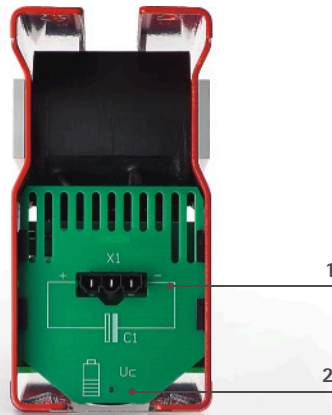
Simple connections I (bottom)

With only three cables, the DES is extremely easy to connect. And it works.

Terminal 1: negative terminal of the DC link

Terminal 2: brake transistor (brake chopper)

Terminal 3: positive terminal of the DC link



Simple connections II (top)

1. Polarity protected interface for the connection of expansion modules

2. Safety relevant LED: flashes while the storage unit is charged



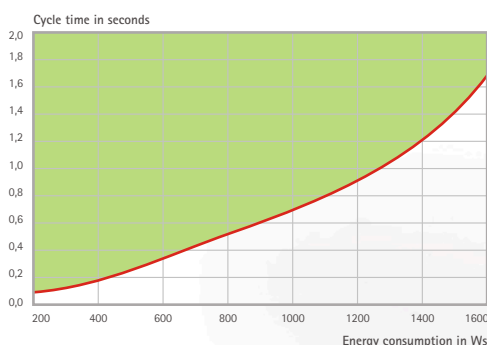
The small built in PTC braking resistor in DES safely absorbs expected and unexpected power surges.

Simple to try

Based on its concept, it is easy to test the DES in an existing system. The DES is simply connected in parallel to the brake resistor of the drive system. After a few cycles, the data collected by the processor of the DES can be read and analyzed. After the course was analyzed, an appropriate storage device is selected. It could not be easier.

Energy fluctuation/cycle time diagram

For an ambient temperature of 40° Celsius



Expansion module EM 2.0

Under some conditions, the Dynamic Energy Storage DES suffers from an insufficient storage volume. This is when expansion modules are being used. They are simply connected with the DES by means of a cable with polarity protected plugs. Nothing else.

Before connecting the DES, the storage capacitors are to be safely discharged via the discharge resistor installed in the expansion modules. The number of connected expansion modules, i.e. the amount of stored energy is tailored to match the requirements of the application.



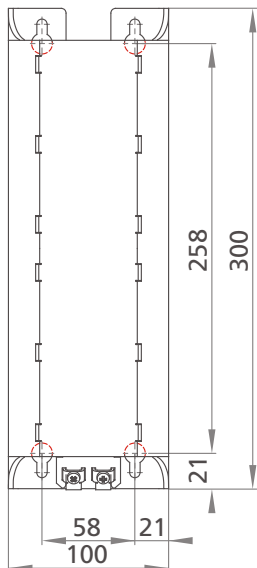
Storage expansion for the DES

- > increasing the stored energy x-times
- > simple connection using a plug
- > no configuration or commissioning required
- > discharge resistor on board

Technical specifications

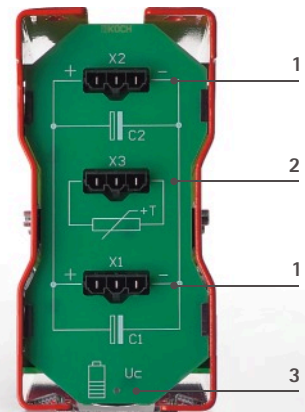
Parameter	EM 2.0A20	EM 2.0A2020
Available storage capacity, up to	1.600 Ws	3.200 Ws
Built-in PTC discharge resistor	+	+
Dimensions H x W x D mm	300 x 100 x 201	300 x 100 x 201
Weight approx.	4,1 kg	6,2 kg
Protection class	IP 20	IP 20

Dimensions and mounting holes (mm)



Simple connections I (bottom)

Ground terminals



Simple connections II (top)

1. Polarity protected interface for the connection of the DES or additional expansion modules
2. Center polarity protected interface: discharge resistor
3. Safety relevant LED: flashes while the storage unit is charged

We look forward to hearing from you!
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