

# Safe Discharge Unit for large capacities



Safe  
Discharge Unit

**SDU**

## Safe Discharge Unit SDU

The self-protecting device with an energy intake capacity of about 200 kilowatt seconds (SDU-200) respectively of about 400 kilowatt seconds (SDU-400) and a discharge power of approx. 1,400 watts, is the perfect addition for capacitor banks. The connection to the DC link via DC switch makes the unit ideal for ensuring a safe voltage level of the drive controller and the capacitor modules, for example, during maintenance. An emergency discharge unit is integrated as well.

### Safe Discharge Unit for large capacities

### Environmental conditions

Parameter	Value
Ambient temperature	-10°C to +65°C (transport, storage) 0°C to +40°C (operation)
Relative humidity	<95% (transport, storage) <85% (operation)
Type of cooling	air cooling (convection)
Protection class of the housing	IP20
Degree of contamination of installation location	2
Noise emission	The SDU does not emit any noise (< 70 dB(A))

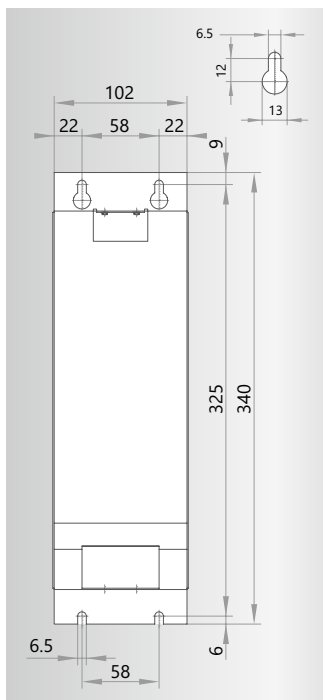
### Technical data SDU

Parameter	SDU-200	SDU-400
Average discharge power	approx. 1,400 W	approx. 1,400 W
Energy intake	approx. 200 kW <sub>s</sub>	approx. 400 kW <sub>s</sub>
Max. operating voltage	800 VDC	800 VDC
Nominal operating voltage	470 VDC	470 VDC
Isolation voltage	2,800 VDC	2,800 VDC
Max. surface temp. on the housing <sup>1</sup>	front 30°C	front 62°C
Max. surface temp. on the housing <sup>1</sup>	top 55°C	top 85°C
Dimensions mm H x W x D	340 x 102 x 90	340 x 102 x 92
Weight	approx. 3.0 kg	approx. 3.7 kg
Max. cable cross section	4 mm <sup>2</sup>	4 mm <sup>2</sup>
Nominal cross section	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>
Protection class	IP20	IP20

<sup>1</sup>at 20°C ambient temperature



### Installation dimensions and mounting holes (mm)



### Technical data of the switchable emergency discharge integrated in the SDU

Parameter	Value
Average discharge power	approx. 40 W



# Switch

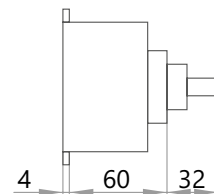
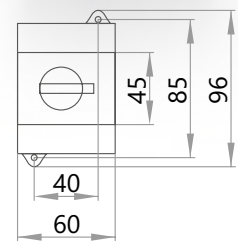
Two SDUs can be connected to one switch. This almost doubles the discharge capacity and reduces the discharge time almost by half.

A signal contact shows, whether the SDU is switched on or not.



## Technical data of the switch

Parameter	Value					
Max. operating voltage	1,000 VDC (at a contamination degree of 3)					
Max. current	25 A					
Data according to IEC 60947-3						
Rated operational current (VDC)	500	600	700	800	900	1,000
2 poles in series	25 A	25 A	23 A	20 A	16 A	11 A
1 pole	11 A	8 A	6 A	4 A	3 A	2 A
Dimensions H x W x D	96 x 60 x 84 mm					
Weight	0.22 kg					
Max. cable cross section	10 mm <sup>2</sup>					



# Discharge example

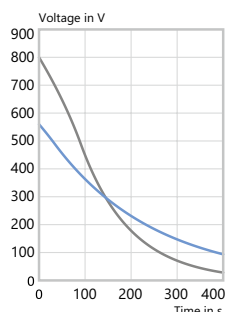
## Example 1

SDU directly at the DC Link, energy 200 respectively 400 kJ, room temperature approx. 20°C

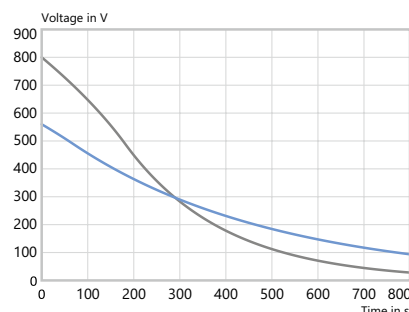
### Discharge DC Link

— DC Link 800 VDC      — DC Link 560 VDC

SDU-200  
(200 kJ energy)



SDU-400  
(400 kJ energy)



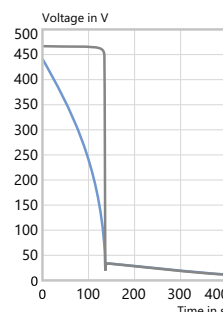
## Example 2

SDU at the PxrRX, energy 200 respectively 400 kJ, max. storage voltage 450 VDC, DC link voltage 470 VDC, room temperature approx. 20°C

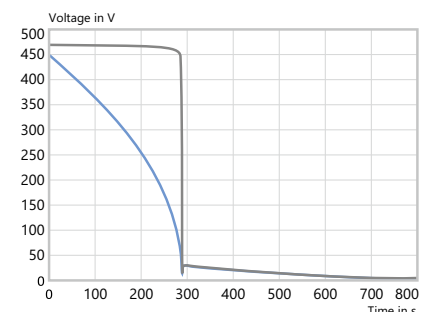
### Discharge PxrRX

— DC Link voltage      — Capacitor voltage

SDU-200  
(200 kJ energy)



SDU-400  
(400 kJ energy)



Duration to discharge up to voltage level

SDU-200 (200 kJ energy)  
≤ 60 VDC      ≤ 10 VDC

SDU-400 (400 kJ energy)  
≤ 60 VDC      ≤ 10 VDC

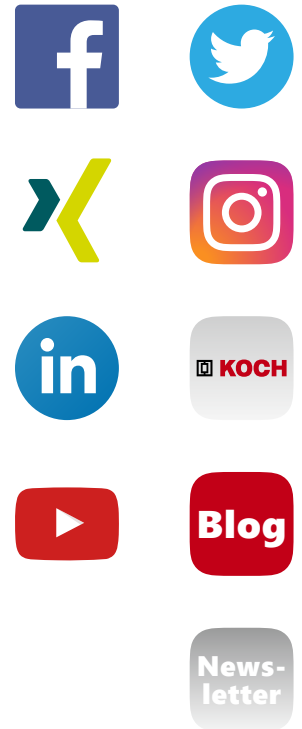
DC Link voltage 800 VDC	ca. 320 s (5 min 20 s)	ca. 513 s (8 min 33 s)	ca. 630 s (10 min 30 s)	ca. 1015 s (16 min 55 s)
DC Link voltage 560 VDC	ca. 500 s (8 min 20 s)	ca. 900 s (15 min)	ca. 990 s (16 min 30 s)	ca. 1775 s (29 min 35 s)
At DSM 4.0	ca. 140 s (2 min 20 s)	ca. 440 s (7 min 20 s)	ca. 290 s (4 min 50 s)	ca. 610 s (10 min 10 s)

Minimum waiting time for the next discharge after maximum energy intake, to discharge with maximum power: approx. 6,000 seconds (approx. 100 min). A pre-load is not a problem but extends the discharge duration.

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We look forward to hearing from you!



Michael Koch GmbH  
Zum Grenzgraben 28, 76698 Ubstadt-Weiher, Tel. +49 7251 96 26-200  
www.brakeenergy.com, mail@bremsenergie.de

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