



Buffer Module with Supercapacitors

C-TEC 2410-12

■ Highlights:

- compact design, assembled in one housing
- maintenance-free
- deep discharge protection, thus unlimited storage possible
- operation in extreme temperatures possible (extremely high, extremely low)
- no gas emission, so use in closed housings possible
- fast availability because of short recharge time after discharge



■ Back-up times

Compared with normally used buffer modules with capacitors the new **C-TEC** realizes longer back-up times. They are depending on the energy of the capacitors and can be calculated as follows:

$$\text{back-up time} = \frac{\text{energy}}{\text{voltage} \times \text{current}}$$

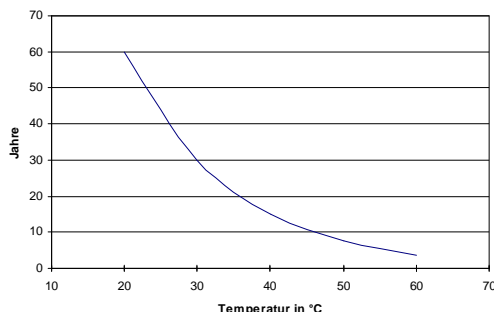
with full charged capacitors :

$$\frac{12000 \text{ Joule}}{24\text{V} \times 10\text{A}} = 50 \text{ secondes}$$

examples of calculated back-up times with full charged capacitors:

24V	1A	500 sec. (8,3 min.)	12V	1A	1000 sec. (16,6 min.)
24V	2A	250 sec. (4,1 min.)	12V	2A	500 sec. (8,3 min.)
24V	5A	100 sec. (1,6 min.)	12V	2A	200sec. (3,3 min.)

■ Life duration depending on the temperature:



Life duration is defined as the time, during which the capacity amounts to 70%.



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■ Short description

The DC-buffer module **C-TEC** works with Ultracapacitors as energy storage inside the housing. This capacitor is charged in normal operation from an external, regulated DC-power supply. In case of an interruption of the DC-supply, the energy of the Ultracapacitors is released. The load is energised from the buffer module, til it is discharged. The back-up time depends on the state of charge of the capacitor and on the discharge current.

■ Technical Data:

Type C-TEC	2410	
Input		
nominal input voltage	12V / 24V	
input voltage range	10,5 - 27V DC from 12V -12,5% to 24V +12,5%	
nominal inrush current	10,0A	
max. inrush current	35A / 2ms	
fusing	15A (FK2) (internal)	
Output		
output voltage in buffer-operation		
system voltage 12V	11,7V DC +/-4%	
system voltage 24V	23,5V DC +/-2%	
nominal output current	10 A	
limiting current control	10,3A DC +/-0,1A	
switch off when limiting current is exceeded	after 1,5 secondes	
current limitation	1,05...1,2xI _{Nom}	
efficiency U _a =23,5V DC, I _a =I _{Nom}	> 90%	
max. power-loss "worst-case"	20 W	
fusing DC-output circuit	15A (FK2) (internal)	
fusing capacitor circuit	25A (FK2) (internal)	
General Data		
type of connection input "U _E "	spring clips max. 2,5mm ²	
type of connection output "U _A "	spring clips max. 2,5mm ²	
type of connection measurements"I/O"	spring clips max. 1mm ²	
type of connection USB	USB-B socket	
type of protection	IP 20 and EN 60529	
weight	2,1 kg	
storage temperature	- 20 - 60°C	
environmental temperature	- 10 - 60°C	
dimensions	165 x 130 x 145mm (HxWxD)	
Display and Signalling outputs	LED illuminates when:	potentialfree relays-contact
operation, LED green	system voltage present at terminal U _E resp. U _K	
U _E ok, LED green	external supply present, U _E > U _{SYSTEM}	two-way-contact, max. contact load 30V DC/0,5 A
U _C > , LED green	Energy in the capacitor > 80%, expires when: energy in the capacitor < 30%	normally open contact max. contact load 30V DC / 0,5A
error, LED red	overvoltage at interal capacitor over- or under voltage at the terminal "U _E " overcurrent at the output	normally open contact, max. contact load 30V DC / 0,5A
Signalling inputs		
Shut-down	Stop of the UPS operation	potentialfree gate input, switch level: 24V DC (6-45V DC)

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