



DC-UPS-SYSTEMS | BATTERY-SYSTEMS

DC-UPS-SYSTEMS 2 A–600 A | ULTRACAP-MODULES 0,2 A–600 A



**J. Schneider
Elektrotechnik**



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DC-UPS: IN GENERAL

UNINTERRUPTABLE DC-POWER SUPPLIES (DC-UPS-SYSTEMS) ENSURE THE CONTINUOUS OPERATION OF MACHINERY OR A CONTROLLED PROCESS-SHUTDOWN IN CASE OF POWER FAILURES.

J. Schneider offers a wide range of products of DC-UPS-systems from 2 A to 600 A and higher, the software and comprehensive service achievements.

Particular features of Schneider DC-UPS-systems are beside the well-known Schneider quality the following ones:

- The systems work mainly in parallel operation (online)
- Deep discharge protection for systems up to 40 A through load shedding as a standard
- Battery control by real measurement of battery voltage
- Permanent battery test
- Shut-down function
- Adjustable buffer time
- Short delivery times (most of the systems are on stock)
- In case of special systems high flexibility



DC-UPS: IN GENERAL

THE FOLLOWING OPERATION MODES ARE USED DEPENDING ON SYSTEM AND APPLICATION:

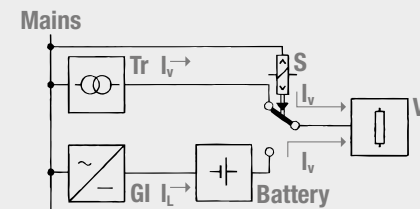
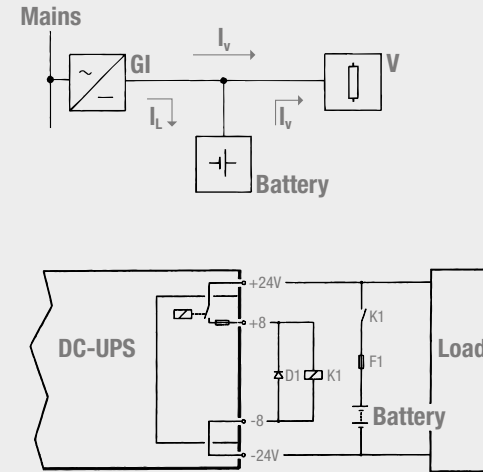
ONLINE

In case of **parallel operation** the consumer, DC-source and battery are working permanent in parallel. In case of standby-parallel mode (online mode) the DC-source must be able to supply permanently the battery and the consumer. The battery will be continuously fully charged and only releases the energy when the DC-source or the mains fails.

In **buffer mode** the consumer power exceeds the rated power of the DC-source, so that the lacking power has to be summoned up by the battery. The battery is used to cover the peak load and is not continuously fully charged all the time. In case of a failure of the DC-source the battery will be switched to energize the consumers.

OFFLINE

In case of **switching mode**, a DC-source supplies the consumer (offline). The battery will be charged by a second DC-source and kept full charged. A connection between the two current circuits first doesn't exist. If the DC-source of the consumer fails, the battery will be switched to energize the consumers.



DC-UPS WITH ULTRA-CAPACITORS

IN GENERAL

THE DC-BUFFER MODULE **C-TEC** WORKS WITH ULTRACAPACITORS AS AN ENERGY STORAGE INSIDE THE UNIT. IN CASE OF AN INTERRUPTION OF THE DC-SUPPLY, THE ENERGY OF THE ULTRACAPACITORS WILL BE RELEASED. THE LOAD WILL BE ENERGIZED FROM THE BUFFER MODULE, TILL IT IS DISCHARGED. THE BACK-UP TIME DEPENDS ON THE STATE OF CHARGE OF THE CAPACITORS AND ON THE DISCHARGE CURRENT.

HIGHLIGHTS

- Compact design, assembled in one housing
- Maintenance-free
- Deep discharge protection, thus unlimited storage period
- Operation under extreme temperatures possible (extremely high, extremely low)
- No gas generation, installation in hermetic sealed housing possible
- Fast availability because of short recharge time after discharging

BACK-UP TIMES

Compared with conventional 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:

$$\text{BUFFER TIME} = \frac{\text{ENERGY} \times 0,9}{\text{VOLTAGE} \times \text{CURRENT}}$$

$$\frac{10000 \text{ JOULE} \times 0,9}{24 \text{ V} \times 10 \text{ A}} = 50 \text{ SECONDS}$$



BUFFER TIMES DC-UPS WITH ULTRA-CAPACITORS

With devices from J. Schneider, the specified kJ are usable energy, this means: $WS [kJ] / W = \text{Buffer time}$

| C-TEC AC C-TEC | 1203-1 1203-1 | 2403-1 2403-1 | + CEM 1 + CEM 1 | + CEM 2 + CEM 2 | 2405-5 * | 2408-20 * | 2410-1 * | 2410-10 2410-10 |
|-------------------|------------------|------------------|--------------------|--------------------|-------------|--------------|-------------|--------------------|
| Current [A] | Time in seconds | | | | | | | |
| 0,5 | 150 | 75 | 150 | 225 | 375 | 1500 | 75 | 750 |
| 1 | 75 | 37,5 | 75 | 112,5 | 187,5 | 750 | 37,5 | 375 |
| 1,5 | 50 | 25 | 50 | 75 | 125 | 500 | 25 | 250 |
| 2 | 37,5 | 19 | 38 | 57 | 94 | 375 | 18,75 | 187,5 |
| 3 | 25 | 12,5 | 25 | 37,5 | 62,5 | 250 | 12,5 | 125 |
| 5 | | | | | 37,5 | 150 | 7,5 | 75 |
| 8 | | | | | | 94 | 4,5 | 45 |
| 10 | | | | | | | 3,75 | 37,5 |

| C-TEC AC C-TEC | 2420-8 2420-8 | + CEM 8 + CEM 8 | + CEM 16 + CEM 16 | 2440 P * | + CEM 8 | + CEM 16 | 1225 P * | 2425 P * | 4815 P * |
|-------------------|------------------|--------------------|----------------------|-------------|---------|----------|-------------|-------------|-------------|
| Current [A] | Time in seconds | | | | | | | | |
| 0,5 | 600 | 1200 | 1800 | 333 | 666 | 999 | 110 | 115 | 50 |
| 1 | 300 | 600 | 900 | 167 | 333 | 500 | 55 | 60 | 25 |
| 1,5 | 200 | 400 | 600 | 111 | 222 | 333 | 35 | 40 | 17 |
| 2 | 150 | 300 | 450 | 83 | 167 | 250 | 27,5 | 30 | 12,5 |
| 3 | 100 | 200 | 300 | 55,5 | 111 | 166,5 | 18 | 19,5 | 8 |
| 5 | 60 | 120 | 180 | 33 | 66 | 99 | 10 | 10,5 | 4,5 |
| 8 | 37,5 | 75 | 112,5 | 21 | 42 | 63 | 6 | 6,5 | 3 |
| 10 | 30 | 60 | 90 | 17 | 33 | 50 | 5 | 5 | 2 |
| 15 | 20 | 40 | 60 | 11 | 22 | 33 | 3 | 3,5 | 1,5 |
| 20 | 15 | 30 | 45 | 8 | 17 | 25 | 2 | 2 | |
| 30 | | | | 5,5 | 11 | 16,5 | 1,5 | | |
| 40 | | | | 4 | 8 | 12 | | | |

Basically the following formula is valid: $WS [kJ] / W = \text{Buffer time}$

CEM = Capacitor extension modules to increase the buffer time

Designations C-TECxx:

Example: C-TEC 1203-1

- C-TEC: Capacitor-buffered unit
- 12: Input and output 12 V DC
- 3: 3 A output current
- 1: 1 kJ energy

Designations AC C-TECxx:

Example: AC C-TEC 2420-8

- AC C-TEC: Input voltage AC, capacitor-buffered unit
- 24: Output 24 V DC
- 20: 20 A output current
- 8: 8 kJ energy

* = Not available with AC input

CHARGING TIMES DC-UPS WITH ULTRA-CAPACITORS

| C-TEC AC C-TEC | 1203-1 1203-1 | 2403-1 2403-1 | 2405-5 * | 2408-20 * | 2410-1 * | 2410-10 * | 2420-8 2420-8 |
|-------------------|------------------|------------------|-------------|--------------|-------------|--------------|------------------|
| Current [A] | Time in seconds | | | | | | |
| 3 | 23 | 12 | | | | | |
| 5 | | | 34 | | | | |
| 8 | | | | 85 | | | |
| 10 | | | | | 4 | 34 | 27 |
| 15 | | | | | | | 18 |
| 20 | | | | | | | 14 |

RECHARGING TIME

The devices of the C-TEC series are characterized by extremely fast recharging. In the table above you find the times, which are required for recharging the C-TEC units. "Current" means the current which is free available.

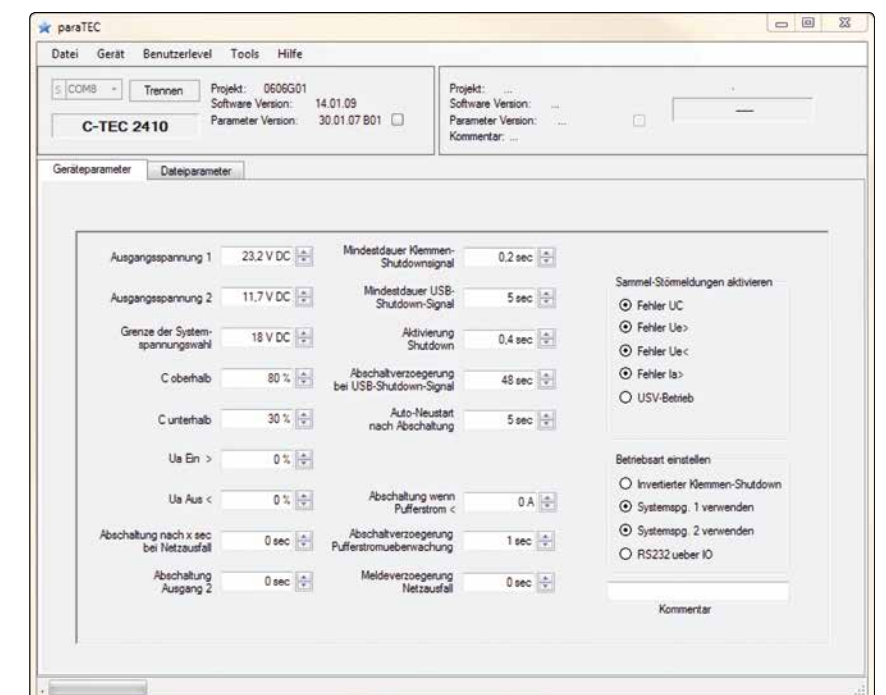
Example: A power supply with 10 A supplies a C-TEC 2405-5.

At a load of 3 A, 7 A can be used to charge the C-TEC.

* = Not available with AC input




paraTEC SOFTWARE

The C-TECs are programmable in the way that the input and output will be released only, if the total capacity is available.








BUFFER MODULES WITH ULTRA-CAPACITORS

WITH DC-INPUT



| C-TEC | 2403-05 ^{1/3/4}  | 2403-1 ^{1/3/4}  | 2403 USB ⁵ | 2403 K ^{3/4} | 1203-1 ^{1/3}  |
|--|--|---|-----------------------|-----------------------|---|
| INPUT | | | | | |
| Nominal input voltage | 24 V DC +/- 20 % | 24 V DC +/- 20 % | 24 V DC +/- 20 % | 24 V DC +/- 20 % | 12 V DC +/- 20 % |
| Stored energy in Ws | 500 | 1000 | 1000 | 1000 | 1000 |
| OUTPUT | | | | | |
| Output voltage in buffer mode ² | 23 V +/- 2 % | 23 V +/- 2 % | 23 V +/- 2 % | 23 V +/- 2 % | 11,5 V +/- 2 % |
| Nominal output current | 3 A | 3 A | 3 A | 3 A | 3 A |
| Overload shutdown | yes | yes | yes | yes | yes |
| Current limitation | 1,05 ... 1,2 x I _{Nom} | | | | |
| Efficiency U _a =23,5 V DC, I _a =I _{Nom} | > 90 % | > 90 % | > 90 % | > 90 % | > 90 % |
| IPC function | | optional | yes | optional | |
| GENERAL DATA | | | | | |
| Type of connection input U _i | 1 mm ² | 1 mm ² | 1 mm ² | H 15 Messerleiste | 2,5 mm ² |
| Type of connection output U _o | 1 mm ² | 1 mm ² | 1 mm ² | H 15 Messerleiste | 2,5 mm ² |
| Type of connection status I / O | 1 mm ² | 1 mm ² | USB | H 15 Messerleiste | 1 mm ² |
| Type of protection | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 |
| Weight | 0,5 kg | 0,58 kg | 0,58 kg | 0,3 kg | 0,55 kg |
| Storage temperature | -40 / +70° C | -40 / +70° C | -40 / +70° C | -40 / +70° C | -40 / +70° C |
| Ambient temperature | -40 / +60° C | -40 / +60° C | -40 / +60° C | -40 / +60° C | -40 / +60° C |
| Dimensions in mm | 92,5 x 60 x 116 | 92,5 x 60 x 116 | 92,5 x 60 x 116 | 19" mit 3 HE&8TE | 92,5 x 60 x 116 |


All units are compatible with **TEC Control** shut-down-software, USB and serial interface.

| C-TEC | 2405-5 / 1205-5  | 2408-20 / 1208-20  | 2410-1 / 1210-1  | 2410-10 / 1210-10  | 2420-8 ¹  |
|--|---|---|---|---|---|
| INPUT | | | | | |
| Nominal input voltage | 24 / 12 V DC | 24 / 12 V DC | 24 / 12 V DC | 24 / 12 V DC | 24 V DC |
| Stored energy in Ws | 5000 | 20000 | 1000 | 10000 | 8000 |
| OUTPUT | | | | | |
| Output voltage in buffer mode | 23,5 V / 11,7 V | 23,5 V / 11,7 V | 23,5 V / 11,7 V | 23,5 V / 11,7 V | 23,2 V |
| Nominal output current | 5 A | 8 A | 10 A | 10 A | 20 A |
| Overload shutdown | after 1,5 sec | | | | |
| Current limitation | 1,05 ... 1,2 x I _{Nom} | | | | |
| Efficiency U _a =23,5 V DC, I _a =I _{Nom} | > 90 % | > 90 % | > 90 % | > 90 % | ca. 90 % |
| GENERAL DATA | | | | | |
| Type of connection input U _i | 2,5 mm ² | 2,5 mm ² | 2,5 mm ² | 2,5 mm ² | 4 mm ² |
| Type of connection output U _o | 2,5 mm ² | 2,5 mm ² | 2,5 mm ² | 2,5 mm ² | 4 mm ² |
| Type of connection status I / O | 1 mm ² | 1 mm ² | 1 mm ² | 1 mm ² | 1,5 mm ² |
| Type of protection | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 |
| Weight | 1,7 kg | 3,5 kg | 1,2 kg | 2,1 kg | 2,2 kg |
| Storage temperature | -40 / +70° C | -40 / +70° C | -40 / +70° C | -40 / +70° C | -40 / +70° C |
| Ambient temperature | -40 / +60° C | -40 / +60° C | -40 / +60° C | -40 / +60° C | -40 / +60° C |
| Dimensions in mm | 165 x 116 x 145 | 163 x 188 x 150 | 163 x 70 x 140 | 163 x 116 x 140 | 192 x 84 x 192 |

- 1) Expandable with capacitor module CEM
- 2) programmable (look at page 7)
- 3) Without USB
- 4) Special types for industrial PC's available
- 5) IPC function (look at page 24)

WITH AC-INPUT

| AC C-TEC | 2403-1 ^{1/2}  | 1203-1 ^{1/2}  |
|--|---|---|
| INPUT | | |
| Nominal input voltage | 115–230 V AC | 115–230 V AC |
| Stored energy in Ws | 1000 | 1000 |
| OUTPUT | | |
| Output voltage in buffer mode | 23,5 V | 11,5 V |
| Nominal output current | 3 A | 3 A |
| Current limitation | 1,05 ... 1,2 x I _{Nom} | |
| Efficiency U _a =23,5 V DC, I _a =I _{Nom} | approx. 90 % | approx. 90 % |
| GENERAL DATA | | |
| Type of connection input U _i | 2,5 mm ² | 2,5 mm ² |
| Type of connection output U _o | 2,5 mm ² | 2,5 mm ² |
| Type of connection status I / O | 1 mm ² | 1 mm ² |
| Type of protection | IP 20 | IP 20 |
| Weight | 0,9 kg | 0,86 kg |
| Storage temperature | -40 / +70° C | -40 / +70° C |
| Ambient temperature | -40 / +60° C | -40 / +60° C |
| Dimensions in mm | 153 x 72 x 130 | 153 x 72 x 130 |

| AC C-TEC | 2410-10 | 2420-8  |
|--|-------------------------------|---|
| INPUT | | |
| Nominal input voltage | 100–240 V AC | 3 x 400–500 V AC |
| Stored energy in Ws | 10000 | 8000 |
| OUTPUT | | |
| Output voltage in buffer mode | 23,5 V | 23,0 V |
| Nominal output current | 10 A | 20 A |
| Current limitation | 1,05...1,2 x I _{Nom} | |
| Efficiency U _a =23,5 V DC, I _a =I _{Nom} | approx. 90 % | approx. 90 % |
| GENERAL DATA | | |
| Type of connection input U _i | 2,5 mm ² | 2,5 mm ² |
| Type of connection output U _o | 2,5 mm ² | 4 mm ² |
| Type of connection status I / O | 1 mm ² | 1,5 mm ² |
| Type of protection | IP 20 | IP 20 |
| Weight | 3,0 kg | 3,5 kg |
| Storage temperature | -40 / +70° C | -40 / +70° C |
| Ambient temperature | -40 / +60° C | -40 / +60° C |
| Dimensions in mm | 163 x 189 x 145 | 192 x 170 x 198 |

- 1) Optionally with 400 V available
- 2) Also with 500 Joule available

PASSIVE ULTRA-CAPACITOR BUFFERED POWER SUPPLIES

| C-TEC | 1225 P | 2425 P $c(U_{LUS})$ | 2440 P $c(U_{LUS})$ | 4815 P |
|-------------------------------------|-------------------------------------|--------------------------------|---------------------------------|----------------------------------|
| INPUT | | | | |
| Nominal Input voltage | 12 V DC +/- 10 % | 24 V DC +/- 10 % | 24 V DC +/- 20 % | 48 V DC +/- 10 % |
| Min. charging voltage | 11,3 V DC | 22 V DC | 23 V DC | 44 V DC |
| Max. nominal current (input) | 28 A | 28 A | 40 A | 18 A |
| OUTPUT | | | | |
| Output voltage (in mains operation) | 12 V DC +/- 10 % | 24 V DC +/- 10 % | 24 V DC +/- 10 % | 48 V DC +/- 10 % |
| Output voltage (in buffer mode) | 12,25–10 V DC | 24,5–19 V DC | 25,5–19 V DC | 49–38 V DC |
| Max. nominal output current | 25 A DC | 25 A DC | 40 A DC | 15 A DC |
| Peak currents under supply voltage | 50 A DC | 50 A DC | 40 A DC | 30 A DC |
| Buffer time (with new capacitors) | 35,9 sec. @ 1 A 0,76 sec. @ 25 A | 47 sec. @ 1 A 1 sec. @ 20 A | 170 sec. @ 1 A 4 sec. @ 40 A | 25 sec. @ 1 A 0,6 sec. @ 15 A |
| Energy | 0,46 kJ | 1,2 kJ | 4 kJ | 1,2 kJ |
| Efficiency | > 90 % | > 90 % | > 90 % | > 90 % |
| Dimensions in mm | 125 x 65 x 135 | 125 x 65 x 135 | 194 x 84 x 188 | 125 x 65 x 135 |
| Weight | 0,7 kg | 0,75 kg | 2,0 kg | 0,75 kg |

CAPACITOR EXTENSION MODULES

| CEM | 24-1 $c(U_{LUS})$ | 24-2 $c(U_{LUS})$ | 24-8 $c(U_{LUS})$ | 24-16 $c(U_{LUS})$ | 12-1 $c(U_{LUS})$ | 12-2 $c(U_{LUS})$ |
|--|----------------------|----------------------|-------------------|--------------------|----------------------|----------------------|
| INPUT | | | | | | |
| Nominal input voltage | 24 V DC | 24 V DC | 24 V DC | 24 V DC | 12 V DC | 12 V DC |
| Input voltage range | 0–26,4 V DC | 0–26,4 V DC | 0–26,4 V DC | 0–26,4 V DC | 0–13,2 V DC | 0–13,2 V DC |
| Stored energy in Ws | 1 kJ, 1000 Ws | 2 kJ, 2000 Ws | 8 kJ, 8000 Ws | 16 kJ, 16000 Ws | 1 kJ, 1000 Ws | 2 kJ, 2000 Ws |
| GENERAL DATA | | | | | | |
| Nominal output current | 3 A DC | 3 A DC | 20 A DC | 20 A DC | 3 A DC | 3 A DC |
| Fuse inrush and output | 3 A T (PTC internal) | 3 A T (PTC internal) | internal | internal | 3 A T (PTC internal) | 3 A T (PTC internal) |
| Cable cross section input and output C+ / C- | 1,5 mm ² | 1,5 mm ² | 4 mm ² | 4 mm ² | 1,5 mm ² | 1,5 mm ² |
| Type of protection | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 |
| Storage temperature | -40 ... +70° C | -40 ... +70° C | -40 ... +70° C | -40 ... +70° C | -40 ... +70° C | -40 ... +70° C |
| Ambient temperature | -40 ... +60° C | -40 ... +60° C | -40 ... +60° C | -40 ... +60° C | -40 ... +60° C | -40 ... +60° C |
| Dimensions in mm | 92,5 x 60 x 116 | 92,5 x 60 x 116 | 192 x 84 x 192 | 194 x 84 x 188 | 92,5 x 60 x 116 | 92,5 x 60 x 116 |
| Weight | 0,52 kg | 0,65 kg | 1,85 kg | 2,54 kg | 0,6 kg | 0,63 kg |

CUSTOMER SPECIFIC ULTRA CAPACITOR MODULES

| C-TECF | Nominal voltage | Capacity | Energy between (V ... V) | I _{max} | Dimensions [mm] |
|-------------------|-----------------|----------|---------------------------|------------------|------------------|
| OPEN FRAME | | | | | |
| C-TEC 25-36 F | 24 V | 36 F | 5,2 kJ (25 V ... 18 V) | 50 A | 186,4 x 190 x 70 |
| C-TEC 25-72 F | 24 V | 72 F | 10,4 kJ (25 V ... 18 V) | 50 A | 186,4 x 190 x 70 |
| C-TEC 28-32 F | 24 V | 32,7 F | 6,8 kJ (27,5 V ... 18 V) | 50 A | 186,4 x 190 x 70 |
| C-TEC 28-65 F | 24 V | 65 F | 13,5 kJ (27,5 V ... 18 V) | 50 A | 186,4 x 190 x 70 |
| C-TEC 40-23 F | 36 V | 22,5 F | 8,7 kJ (40 V ... 28 V) | 50 A | 186,4 x 190 x 70 |
| C-TEC 75-12 F | 72 V | 12 F | 20 kJ (75 V ... 48 V) | 70 A | 70 x 202 x 385 |
| C-TEC 85-11 F | 72 V | 10,5 F | 21 kJ (85 V ... 54 V) | 50 A | 300 x 223 x 70 |
| C-TEC 55-32 F | 48 V | 32 F | 25 kJ (55 V ... 38 V) | 140 A | 70 x 202 x 385 |
| C-TEC 120-7,5 F | 120 V | 7,5 F | 27 kJ (120 V ... 80 V) | 70 A | 70 x 202 x 385 |

CHARGER FOR ULTRACAPS & BATTERIES IN PITCH-SYSTEMS

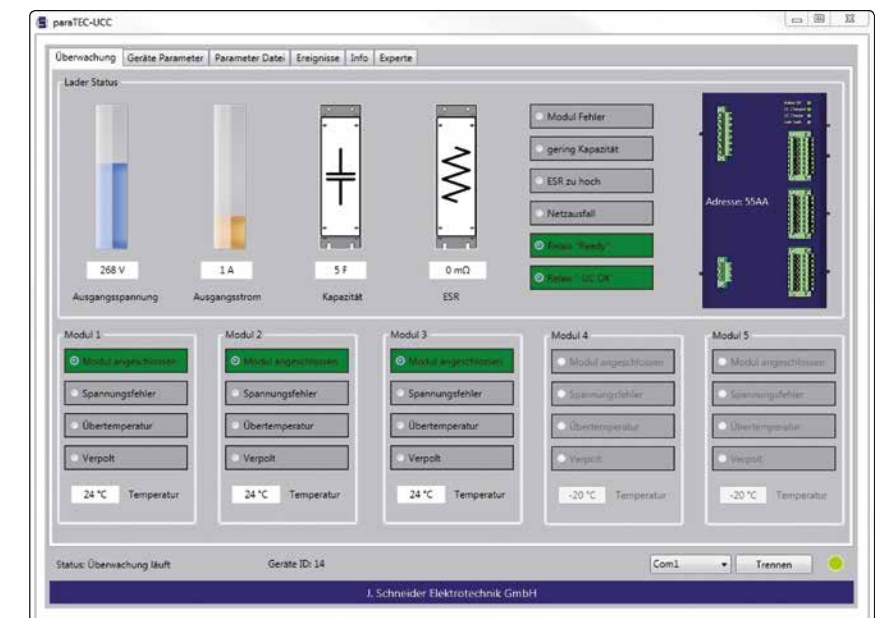
The **UCCTEC**, developed as a charging and monitoring device for ultracapacitor-modules, can now also be used for charging lead-acid batteries. Up to 5 ultracapacitor-modules with programmable voltage 0–450 V can be charged and monitored separately from **UCCTEC**. In addition to capacity polarity, single or group cell voltage, availability respectively temperature and status, the internal resistance (ESR) can also be monitored. Alternatively with the same device batteries up to 450 V can now be charged temperature controlled and monitored.

The modes „UC or battery charger“ can be selected and parameterized by using the software **paraTECUCC**. The device can be used in systems where high mechanical loads and temperature fluctuations occur, because it is characterized by a large mechanical stability (shock up to 50 G), a high working temperature range and specific immunity.

Besides relay contacts it has 2 serial interfaces for the connection of a PC (RS485) for data exchange, parameterization, service functions, remote monitoring and for the call transfer to other UCCs. The module is built without fan even with 1.7 kW rating in compact dimensions but maintenance free. This is possible due to the extremely low heat losses and a high efficiency.



With the **paraTECUCC** software you can select between lead-acid battery charger and ultracap charger. The corresponding unit parameters such as output voltage, reliable voltage range, general error a.s.o. can be programmed as well. Besides the parameterization the **paraTECUCC** software can also be used for monitoring of the system.



PRIMARY SWITCHED POWER SUPPLIES



SHORT DESCRIPTION

The **UNOTEC N** is a switch mode power supply of the latest generation, which is characterized by its high efficiency and minimum power losses. It features Power Boost and Hyper Boost function. The **UNOTEC N** can be operated redundantly. Operation in series (2 units max.) and parallel operation (up to 5 devices) are possible. Because of modern design, the device will work under a temperature up to 60 ° C without derating.

| UNOTEC N | 2405 N $c(U_L)_{US}$ | 2410 N $c(U_L)_{US}$ | 2420 N $c(U_L)_{US}$ |
|---------------------------|--|----------------------|----------------------|
| INPUT | | | |
| Input voltage range | 85 ... 265 V AC / 90 ... 250 V DC | | |
| Input current | 0,55 A at 240 V AC | 1,1 A at 240 V AC | 2,2 A at 240 V AC |
| Inrush current after 1 ms | < 13 A | | |
| OUTPUT | | | |
| Output voltage | adjustable 24 ... 28 V DC | | |
| Power boost | 150 % for 4 seconds | | |
| Efficiency | up to 95 % | | |
| Protective system | short-circuit and overload protection (output), Power Limiter | | |
| GENERAL DATA | | | |
| MTBF | > 500.000 h | | |
| Ride through | > 20 ms at 230 V AC | | |
| Status LED | LED green / red | | |
| Standards | EN 60950-1, EN 61204-3, EN 55011 B, EN 61000-3-2 | | |
| Temperature range | -13 ... +140° F without derating (storage temperature -40 ... +185° F) | | |
| Installation | DIN-rail mountable TH 35 (EN 60715) | | |
| Dimensions (h x w x d) | 125 x 50 x 137 mm | 125 x 65 x 137 mm | 125 x 85 x 137 mm |
| Miscellaneous | relay alarm contact for short-circuit, overload and overtemperature | | |
| Approvals | UL | | |
| Weight | 0,76 kg | 0,9 kg | 1,3 kg |



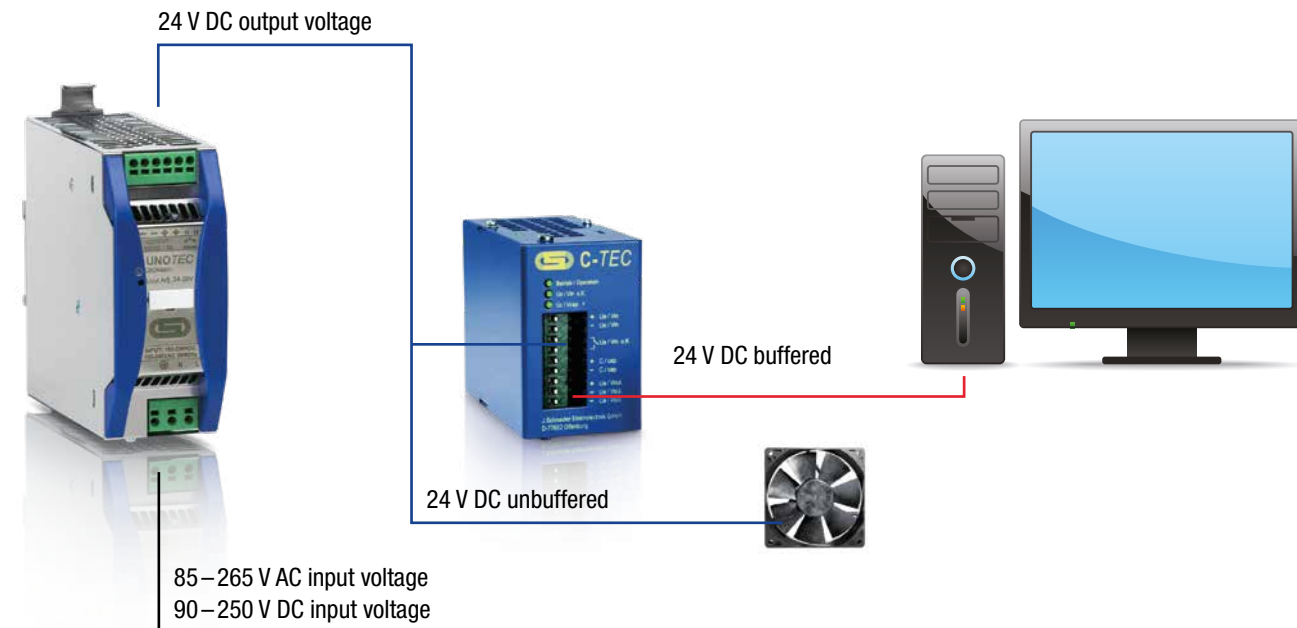
SHORT DESCRIPTION

The switch mode power supplies of the **TRETEC N** series are characterized by high efficiency (up to 95 % over the entire load range). The Power Boost feature allows to provide 150 % of the power for 5 seconds. The power supply units can be switched in parallel. In addition, they have signaling contacts for overvoltage, short circuit and temperature, an LED indicates the operating status of the devices.

| TRETEC N | 2406 N $c(U_L)_{US}$ | 2412 N $c(U_L)_{US}$ | 2424 N $c(U_L)_{US}$ | 2448 N $c(U_L)_{US}$ |
|---------------------------|--|------------------------|-----------------------|-----------------------|
| INPUT | | | | |
| Input voltage range | 3 x 324...572 V AC / 450...745 V DC | | | |
| Input current | 0,45 A at 3 x 360 V AC | 0,75 A at 3 x 360 V AC | 1,3 A at 3 x 360 V AC | 2,3 A at 3 x 360 V AC |
| Inrush current after 1 ms | < 9,5 A | < 9 A | < 13 A | < 14 A |
| OUTPUT | | | | |
| Output voltage | adjustable 24 ... 28 V DC | | | |
| Power boost | 150 % for 5 seconds | | | |
| Efficiency | up to 95 % | | | |
| Protective system | short-circuit and overload protection (output), Power Limiter | | | |
| GENERAL DATA | | | | |
| MTBF | > 1.000.000 h | | | |
| Ride through | > 25 ms at 3 x 360 V AC | | | |
| Status LED | LED green / red | | | |
| Standards | EN 60950-1, EN 61204-3, EN 55011 B, EN 61000-3-2 | | | |
| Temperature range | -13 ... +140° F without derating (storage temperature -40 ... +185° F) | | | |
| Installation | DIN-rail mountable TH 35 (EN 60715) | | | |
| Dimensions (h x w x d) | 123 x 50 x 143 mm | 123 x 65 x 143 mm | 123 x 65 x 167 mm | 138 x 109 x 182 mm |
| Miscellaneous | relay alarm contact for short-circuit, overload and overtemperature | | | |
| Approvals | UL | | | |
| Weight | 0,66 kg | 0,76 kg | 1,2 kg | 2,7 kg |

SCHNEIDER-COMBINATIONS

Possibilities of combinations of J. Schneider power supplies with C-TEC buffer modules



C-TEC combination devices (230 V AC / 400 V AC input 24 V DC output)

| | Current unbuffered [A] | Current buffered [A] | Energy [kJ] |
|---|------------------------|----------------------|-------------|
| UNO TEC 2405 / TRE TEC 2406 + C-TEC 2403-1 | 2 | 3 | 1 |
| UNO TEC 2405 / TRE TEC 2406 + C-TEC 2405-5 | 0 | 5 | 5 |
| UNO TEC 2410 / TRE TEC 2412 + C-TEC 2403-1 | 7 | 3 | 1 |
| UNO TEC 2410 / TRE TEC 2412 + C-TEC 2405-5 | 5 | 5 | 5 |
| UNO TEC 2410 / TRE TEC 2412 + C-TEC 2408-20 | 2 | 8 | 20 |
| UNO TEC 2410 / TRE TEC 2412 + C-TEC 2410-1 | 0 | 10 | 1 |
| UNO TEC 2420 / TRE TEC 2424 + C-TEC 2403-1 | 17 | 3 | 1 |
| UNO TEC 2420 / TRE TEC 2424 + C-TEC 2405-5 | 15 | 5 | 5 |
| UNO TEC 2420 / TRE TEC 2424 + C-TEC 2408-20 | 12 | 8 | 20 |
| UNO TEC 2420 / TRE TEC 2424 + C-TEC 2410-1 | 10 | 10 | 1 |

All devices of the series AKKUTEK / AC C-TEC / C-TEC and UNO TEC can be combined with our inverters.

DC-UPS BATTERY BUFFERED

PROJECT ENGINEERING TABLE

With the help of the project engineering table you can find the correct equipment for your application easily. The data refer to a recharge time of approx. 10 hours after complete discharge and 100 % load at the same time.

Other currents and times on request.



| | 2 min | 5 min | 10 min | 15 min | 30 min | 1 h | 3 h | 5 h | 10 h | 20 h |
|----------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|---|---|---|---|---|---|
| Current | Time | | | | | | | | | |
| 0,5 A | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2402 | AKKUTEK 2402 + NBBH 2402 | AKKUTEK 2402 + NBBH 2407 | AKKUTEK 2402 + NBBH 2412 |
| 1 A | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2402 | AKKUTEK 2402 + NBBH 2407 | AKKUTEK 2402 + NBBH 2407 | AKKUTEK 2402 + NBBH 2412 | AKKUTEK 2403 + NBBH 2417 |
| 2 A | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2401 | AKKUTEK 2402 + NBBH 2402 | AKKUTEK 2402 + NBBH 2407 | AKKUTEK 2403 + NBBH 2407 | AKKUTEK 2403 + NBBH 2412 | AKKUTEK 2405-0 NBBH 2417 | AKKUTEK 2405-0 NBBH 2440 |
| 5 A | AKKUTEK 2405 + NBBH 2401 | AKKUTEK 2405 + NBBH 2402 | AKKUTEK 2405 + NBBH 2402 | AKKUTEK 2405-07 | AKKUTEK 2405-07 | AKKUTEK 2405-12 | AKKUTEK 2410-0 + NBBH 2417 | AKKUTEK 2410-0 + NBBH 2417 | AKKUTEK 2410-0 + NBBH 2465 | AKKUTEK 2420-0 + NBBH 2465 2 x SB 100-12 |
| 10 A | AKKUTEK 2410 + NBBH 2402 | AKKUTEK 2410-07 | AKKUTEK 2410-07 | AKKUTEK 2410-07 | AKKUTEK 2410-12 | AKKUTEK 2410-0 + NBBH 2417 | AKKUTEK 2410-0 + NBBH 2440 | AKKUTEK 2420-0 + NBBH 2465 | AKKUTEK 2420-0 + NBBH 2465 2 x SB 100-12 | 2 x AKKUTEK 2420-0 + NBBH 2465 4 x SB 100-12 |
| 15 A | AKKUTEK 2420-07 | AKKUTEK 2420-07 | AKKUTEK 2420-07 | AKKUTEK 2420-12 | AKKUTEK 2420-12 | AKKUTEK 2420-0 + NBBH 2417 | AKKUTEK 2420-0 + NBBH 2465 | AKKUTEK 2420-0 + NBBH 2465 2 x SB 100-12 | 1 x AKKUTEK 2440-0 + NBBH 2465 2 x SB 150-12 | 1 x AKKUTEK 2440-0 + NBBH 2465 4 x SB 150-12 |
| 20 A | AKKUTEK 2420-07 | AKKUTEK 2420-07 | AKKUTEK 2420-12 | AKKUTEK 2420-12 | AKKUTEK 2420-0 + NBBH 2417 | AKKUTEK 2420-0 + NBBH 2440 | AKKUTEK 2420-0 + NBBH 2465 | 1 x AKKUTEK 2440-0 + NBBH 2465 2 x SB 100-12 | 1 x AKKUTEK 2440-0 + NBBH 2465 4 x SB 100-12 | |
| 40 A | 1 x AKKUTEK 2440-0 + NBBH 2407HI | 1 x AKKUTEK 2440-0 + NBBH 2417 | 1 x AKKUTEK 2440-0 + NBBH 2417 | 1 x AKKUTEK 2440-0 + NBBH 2417 | 1 x AKKUTEK 2440-0 + NBBH 2440 | 1 x AKKUTEK 2440-0 + NBBH 2465 | 1 x AKKUTEK 2440-0 + NBBH 2465 2 x SB 150-12 | 1 x AKKUTEK 2440-0 + NBBH 2465 4 x SB 100-12 | 2 x AKKUTEK 2440-0 + NBBH 2465 4 x SB 200-12 | |
| 80 A | 2 x AKKUTEK 2440-0 + NBBH 2417 | 2 x AKKUTEK 2440-0 + NBBH 2417 | 2 x AKKUTEK 2440-0 + NBBH 2440 | 2 x AKKUTEK 2440-0 + NBBH 2465 | 2 x AKKUTEK 2440-0 + NBBH 2465 2 x SB 100-12 | 2 x AKKUTEK 2440-0 + NBBH 2465 2 x SB 150-12 | 2 x AKKUTEK 2440-0 + NBBH 2465 4 x SB 150-12 | 2 x AKKUTEK 2440-0 + NBBH 2465 4 x SB 200-12 | | |

DC-UPS BATTERY BUFFERED

TECHNICAL DATA

IN GENERAL

- Possible operation modes: Stand-by-parallel operation, buffer battery system
- Ready for connection
- Master-Slave-operation to increase power¹
- Redundant-operation possible¹
- Battery management by micro-controller
- Shut-down-input referring to ground
- Boost charge can be activated by control input referring to ground¹
- Detection of battery wire break and battery test



SINGLE-PHASE

| AKKUTECH | 2402 $e(U_{LUs})$ | 2403 | 2403 VdS $e(U_{LUs})$ | 2405 $e(U_{LUs})$ | 2410 $e(U_{LUs})$ | 2412 VdS $e(U_{LUs})$ | 2420 |
|--|---------------------------------|----------------------|---|--------------------------|---------------------------|---|---------------------------|
| INPUT | | | | | | | |
| Rated voltage range | 115–230 V AC +/- 15 % | 230 V AC +/- 15 % | 115–230 V AC 95 V ... 265 V AC | 115–230 V AC +/- 15 % | 230 V AC -15 % / +10 % | 230 V AC +/-15 % | 230 V AC -15 % / +10 % |
| Mains frequency | 47 ... 63 Hz | | | | | | |
| OUTPUT | | | | | | | |
| Rated voltage | 24 V DC | | | | | | |
| At buffer mode | 26,8 ... 19,8 V DC | | 28,62 ... 21,60 V DC | 26,8 ... 19,8 V DC | | 28,62...21,60 V DC | 26,8 ... 19,8 V DC |
| Final charging voltage | 26,8 V DC +/- 0,4 % | | 27,4 V DC +/-0,4 % | 26,8 V DC +/- 0,4 % | | 27,4 V DC +/-0,4 % | 26,8 V DC +/- 0,4 % |
| Max. load current | 2 A | 2,85 A | 3 A | 5 A | 10 A | 12 A | 20 A |
| Max. charg. current | 2,1 A | 2,85 A | 3 A | 5,5 A | 11 A | 12 A | 22 A |
| Leakage current | < 3,5 mA | | | | | | |
| IPC function ³ | optional | optional | | yes | | | |
| BATTERY | | | | | | | |
| Buffer time ² | depends on type and battery | | | | | | |
| GENERAL DATA | | | | | | | |
| Output characteristic | I / U DIN 41773-1 | | | | | | |
| Rated temperature range | 40° C with derating up to 50° C | | | | | | |
| Battery | 20° C | | | | | | |
| Deep discharge protection (load shading at 19,8 V) | yes | | | | | | |
| STANDARDS | | | | | | | |
| Input / output isolation | according EN 61558-2-17 | | | | | | |
| Class of protection | I | | | | | | |
| Type of protection | IP 20 | | | | | | |
| EMV according EN 55011 EN 50082-2 | yes | yes | EN 50178, 1998; EN 54-4:1997+ A1:2002+ A2:2006; EN 1210110: 2006+B1:2009; EN 61000-6-4; EN 61000-6-2 | yes | yes | EN 50178, 1998; EN 54-4:1997+ A1:2002+ A2:2006; EN 1210110: 2006+B1:2009; EN 61000-6-4; EN 61000-6-2 | yes |
| MECHANICAL DATA | | | | | | | |
| Weight approx. | 0,55 kg | 0,55 kg | 0,93 kg without batt. | 1,26 kg | 1,6 kg | 1,56 kg without batt. | 2,87 kg |

1) Not for **AKKUTECH 2402, 2403, 2405**
 2) Look at project engineering table
 3) IPC function (look at page 24)

IN GENERAL

- Potentialfree control contact and LED:
 - For mains operation
 - For general error
- Battery voltage control window for voltage within / above¹
- Protection against wrong battery polarization
- Display-panel-connection¹



THREE-PHASE

| AKKUTECH | 2420 | 2440 $e(U_{LUs})$ |
|--|---------------------------------|---------------------------|
| INPUT | | |
| Rated voltage range | 3 x 400–500 V AC -15 % / +10 % | 3 x 400–500 V AC +/- 10 % |
| Mains frequency | 45 ... 65 Hz | |
| AUSGANG | | |
| Rated voltage | 24 V DC | |
| At battery mode | 26,8...19,8 V DC | |
| Final charging voltage | 26,8 V +/- 0,4 % | |
| Max. load current | 20 A | 40 A |
| Max. charg. current | 22 A | 44 A |
| Leakage current | < 3,5 mA | |
| BATTERY | | |
| Buffer time ² | depends on type and battery | |
| GENERAL DATA | | |
| Output characteristic | I / U DIN 41773-1 | |
| Rated temperature range | 40° C with derating up to 50° C | |
| Battery | 20° C | |
| Deep discharge protection (load shading at 19,8 V) | yes | |
| STANDARDS | | |
| Input / output isolation | according EN 61558-2-17 | |
| Class of protection | I | |
| Type of protection | IP 20 | |
| EMV according EN 55011, EN 50082-2 | yes | |
| MECHANICAL DATA | | |
| Weight approx. | 2,54 kg | 3,6 kg |

1) Not for **AKKUTECH 2402, 2403, 2405**
 2) Look at project engineering table

DC-UPS BATTERY BUFFERED

TECHNICAL DATA

OUTPUT 12 V

| AKKUTEK | 1203 $c(U_L)_{US}$ | 1208 | 1220 |
|---|---------------------------------|-------------------|--------------------------|
| INPUT | | | |
| Rated voltage range | 115–230 V AC +/- 15 % | | 115–230 V AC -15 / +10 % |
| Mains frequency | 47 ... 63 Hz | | |
| OUTPUT | | | |
| Rated voltage | 12 V DC | | |
| At battery mode | 13,2 ... 9,9 V DC | 13,4 ... 9,9 V DC | 13,2 ... 9,9 V DC |
| Final charging voltage | 13,2 V +/- 0,4 % | 13,4 V +/- 0,4 % | 13,2 V +/- 0,4 % |
| Max. load current | 2,85 A | 8 A | 10 A |
| Max. charg. current | 2,85 A | 8 A | 11 A |
| Leakage current | < 3,5 mA | | |
| BATTERY | | | |
| Buffer time | depends on type and battery | | |
| GENERAL DATA | | | |
| Output characteristic | I / U DIN 41773-1 | | |
| Rated temperature range | 40° C with derating up to 50° C | | |
| Battery | 20° C | | |
| Deep discharge protection (load rejection at 9,9 V) | yes | | |
| STANDARDS | | | |
| Input / output isolation | according EN 61558-2-17 | | |
| Class of protection | I | | |
| Type of protection | IP 20 | | |
| EMV according EN 55011, EN 50082-2 | yes | | |
| MECHANICAL DATA | | | |
| Weight approx. | 0,35 kg | 1,1 kg | 1,6 kg |

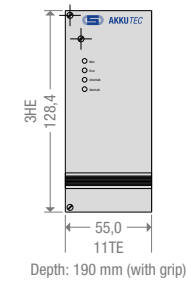
OUTPUT 48 V

| AKKUTEK | 4801 $c(U_L)_{US}$ | 4803 | 4806 | 4810 |
|--|---------------------------------|--------------------|--------------------|--------------------|
| INPUT | | | | |
| Rated voltage range | 115-230 V AC +/- 15 % | | 230 V +/- 15 % | 230 V -15 / +10 % |
| Mains frequency | 47-63 Hz | | | |
| OUTPUT | | | | |
| Rated voltage | 48 V DC | | | |
| At battery mode | 52,8 ... 39,6 V DC | 53,6 ... 39,6 V DC | 52,8 ... 39,6 V DC | 52,8 ... 39,6 V DC |
| Final charging voltage | 52,8 V +/- 0,4 % | 53,6 V +/- 0,4 % | 52,8 V +/- 0,4 % | 52,8 V +/- 0,4 % |
| Max. load current | 1 A | 3 A | 6 A | 10 A |
| Max. charg. current | 1 A | 3 A | 6 A | 11 A |
| Leakage current | < 3,5 mA | | | |
| BATTERY | | | | |
| Buffer time | depends on type and battery | | | |
| GENERAL DATA | | | | |
| Output characteristic | I / U DIN 41773-1 | | | |
| Rated temperature range | 40° C with derating up to 50° C | | | |
| Battery | 20° C | | | |
| Deep discharge protection (load rejection at 39,6 V) | yes | | | |
| STANDARDS | | | | |
| Input / output isolation | according EN 61558-2-17 | | | |
| Class of protection | I | | | |
| Type of protection | IP 20 | | | |
| EMV according EN 55011, EN 50082-2 | yes | | | |
| MECHANICAL DATA | | | | |
| Weight approx. | 0,35 kg | 1,1 kg | 1,5 kg | 2,4 kg |

AKKUTEK IN CABINET

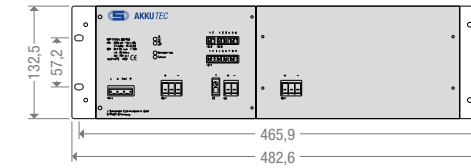
DIMENSIONS (in mm)

AKKUTEK 19-2403



Depth: 190 mm (with grip)

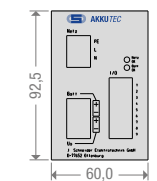
AKKUTEK 19-2420



Mounting depth: 244 mm (without grip)

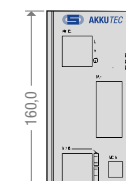


AKKUTEK 2402



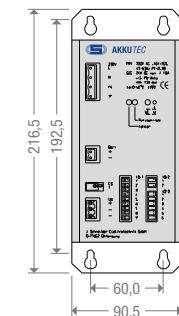
Depth: 116 mm (with terminals)

AKKUTEK 2405 USB



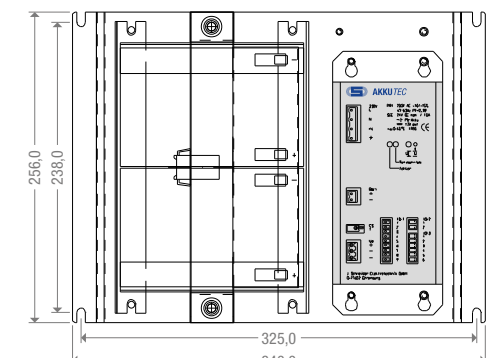
Depth: 150 mm

AKKUTEK 2410



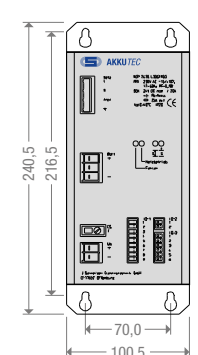
Depth: 175 mm (without terminals)

AKKUTEK 2410-12



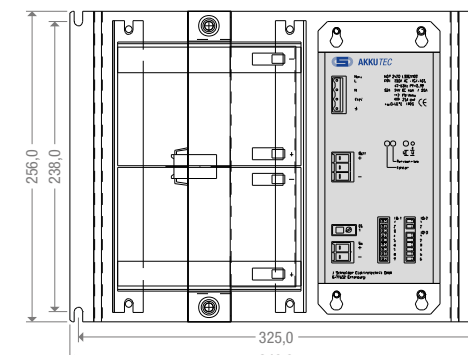
Mounting depth: 183 mm (without terminals)

AKKUTEK 2420



Depth: 244 mm (without terminals)

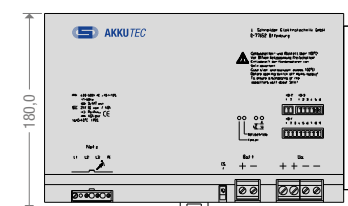
AKKUTEK 2420-12



Depth: 252 mm (without terminals)

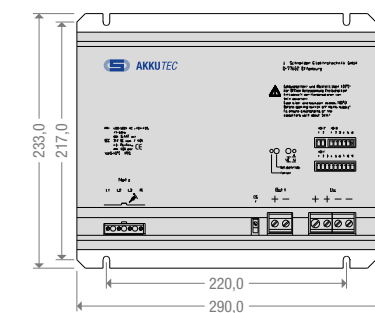


AKKUTEK 2440



Mounting depth: 147 mm (with terminals)

AKKUTEK 2440



Mounting depth: 150 mm (with terminals)



BATTERY BASED OFFLINE DC-UPS-SYSTEM

SHORT DESCRIPTION

The DC-UPS **UPS0TEC** includes charging and monitoring in one system, which charges an externally connected energy storage. The UPS needs to be supplied by an external regulated DC power supply. In case of a power failure of the DC supply, the energy of the storage will be released unregulated. The load will be supplied by the UPS until the voltage drops below the deep discharge protection. The back-up time depends on the state of charge of the energy storage and on the discharge current.

The power supply has the following characteristics:

- Microcontroller based charging and discharging of the accumulators
- Monitoring of the mains via potential-free contacts and LED
- Indication of battery charging condition (red / yellow / green)
- Vibration secured wiring with spring-type terminal technique
- High efficiency
- Overload capable
- Wide working temperature range from -25° C up to 45° C
- Shut-down input for early termination of buffering
- Monitoring of the internal resistance of the battery
- USB interface for monitoring and parameterization
- Charging of batteries and ultra capacitors



| | UPS0TEC 2420 | UPS0TEC 2440 |
|--|--------------------------|-------------------|
| INPUT | | |
| Nominal input voltage | 24 V DC (22 ... 30 V DC) | |
| Min. nominal input voltage under charging operation | 22,5 V DC ± 2 % | |
| OUTPUT | | |
| Nominal output voltage under mains operation | 24 V DC (22 ... 30 V DC) | |
| Nominal output voltage temperature controlled in buffer mode | 27,7 ... 19,2 V DC | |
| Max. nominal output current | 20 A | 40 A |
| GENERAL DATA | | |
| Degree of protection | IP 20 | |
| Operating temperature | -25° C ... 50° C | |
| Dimensions | 123 x 65 x 141 mm | 123 x 85 x 143 mm |
| Weight approx. | 0,8 kg | 0,9 kg |

AKKUTEC 2403 DC

The battery buffered DC power supply of the **AKKUTEC** series corresponds to the **AKKUTEC 2403** (look at page 16), but works with DC voltage at the input. The nominal input voltage needs to be 24 V DC (-10 % + 20 %). For further technical data please look at our website: www.j-schneider.de

CHARGER FOR BATTERIES

AKKUTEC SVC

The **AKKUTEC SVC** (Special Voltage Charger) is a charging unit for lead-acid accumulators, which has several connection possibilities. Maximum 32 pieces of 12 Volt blocks, which have a total voltage of 450 Volt (at 0° C) can be connected. 5 blocks with a total voltage of 60 Volt are pre-defined as a minimum. Other versions are specified in the table below. Charging of the batteries will be temperature controlled. The PC software **paraTEC UCC** enables the adjustment of any number of accumulators. The unit can be used in systems, in which high mechanical stress and temperature variations are available. Because it is part of a safety concept of the systems, it has additional safety systems and analysis possibilities.

With the PC software **paraTEC UCC** it is possible to change parameters and to monitor the system. With the selection of the operational mode it is possible to switch over from **AKKUTEC SVC** to **UCCTEC** mode. The back-up time depends on the state of charge of the accumulators and on the discharge current.

The AKKUTEC SVC has the following features:

- High mechanical stability
- High operation temperature range
- Serial interfaces for the communication with PC (RS485)
(for data transfer, parameterization, service functions, monitoring ...)
and for the connection to further **AKKUTEC**s
- Special noise immunity
- Integration in SPS via RS485 respectively message contacts possible
- Battery monitoring
- Potential-free contacts
- Potential-free open-collector-message outputs



| Designation | Number of blocks à 12 V | U _{Nom} (Batt.-System) | Voltage at 0° C | Voltage at 30° C |
|------------------------|-------------------------|---------------------------------|-----------------|------------------|
| AKKUTEC SVC 450 | 32 | 384 V | 450 V | 434 V |
| AKKUTEC SVC 366 | 26 | 312 V | 366 V | 352 V |
| AKKUTEC SVC 220 | 18 | 216 V | 254 V | 244 V |
| AKKUTEC SVC 110 | 9 | 108 V | 126 V | 122 V |
| AKKUTEC SVC 72 | 6 | 72 V | 84 V | 80 V |
| AKKUTEC SVC 60 | 5 | 60 V | 70 V | 68 V |

AKKUTECH IN CABINET



DC-UPS IN WALL MOUNTING CABINETS

- Accumulators are not part of the scope of delivery and must be ordered separately
- All versions in cabinets are assembled with fuse boards with 5 / 10 fuses
- All versions in cabinets include a temperature sensor for voltage tracking
- Battery fuse up to 12 A version included on safety board

OPTIONS

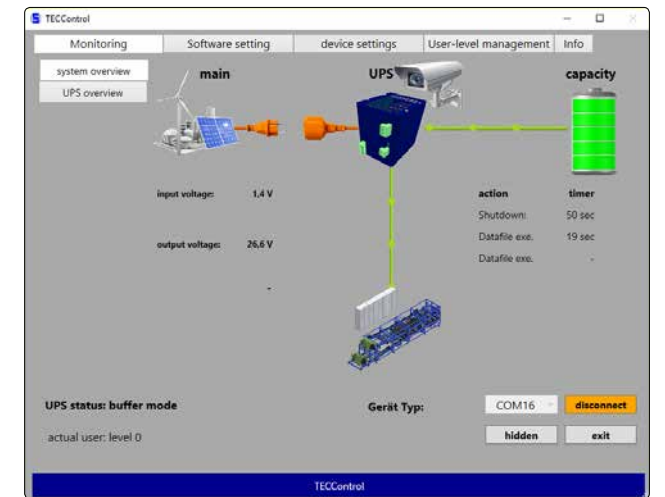
- Additional safety boards with 5 additional fuses
- Additional safety boards with 10 additional fuses
- Signal transmitter
- Blinking light

| AKKUTECH | U A [V] | I A [A] | Protection IP | Comments | Dimensions [mm] |
|-----------|---------|---------|---------------|--------------------------------------|------------------|
| 2401-1 C | 24 | 1,3 | 31 | including accumulators 24–1,3 Ah | 204 x 200 x 80 |
| 2401-2 C | 24 | 1,7 | 31 | including accumulators 24–2,3 Ah | 204 x 200 x 80 |
| 2401-12 C | 24 | 1,7 | 31 | including accumulators 12–12 Ah | 204 x 200 x 80 |
| 2403 C | 24 | 3 | 31 | suitable for accumulators 7,2–40 Ah | 362 x 464 x 145 |
| 2412 C | 24 | 12 | 31 | suitable for accumulators 7,2–65 Ah | 608 x 464 x 213 |
| 1203 P | 12 | 3 | 54 | suitable for accumulators 7,2–150 Ah | 500 x 500 x 300 |
| 2403 P | 24 | 3 | 54 | suitable for accumulators 7,2–40 Ah | 500 x 500 x 300 |
| 4801 P | 48 | 1 | 54 | suitable for accumulators 7,2–18 Ah | 500 x 500 x 300 |
| 1208 P | 12 | 8 | 54 | suitable for accumulators 7,2–150 Ah | 500 x 500 x 300 |
| 2405 P | 24 | 5 | 54 | suitable for accumulators 7,2–40 Ah | 500 x 500 x 300 |
| 4803 P | 48 | 3 | 54 | suitable for accumulators 7,2–18 Ah | 500 x 500 x 300 |
| 4806 P | 48 | 6 | 54 | suitable for accumulators 7,2–18 Ah | 1000 x 800 x 300 |
| 4810 P | 48 | 10 | 54 | suitable for accumulators 7,2–18 Ah | 500 x 500 x 300 |
| 4810 P | 48 | 10 | 54 | suitable for accumulators 7,2–85 Ah | 500 x 500 x 300 |
| 1220 P | 12 | 20 | 54 | suitable for accumulators 7,2–150 Ah | 1000 x 800 x 300 |
| 2412 P | 24 | 12 | 54 | suitable for accumulators 7,2–40 Ah | 500 x 500 x 300 |
| 2412 P | 24 | 12 | 54 | suitable for accumulators 7,2–170 Ah | 1000 x 800 x 300 |
| 2420 P | 24 | 20 | 54 | suitable for accumulators 7,2–40 Ah | 500 x 500 x 300 |
| 2420 P | 24 | 20 | 54 | suitable for accumulators 7,2–170 Ah | 1000 x 800 x 300 |
| 2424 P | 24 | 24 | 54 | suitable for accumulators 7,2–170 Ah | 1000 x 800 x 300 |

SOFTWARE TECControl / paraTEC

TECControl SOFTWARE

The **TECControl** software monitors continuously both the mains voltage and the charge status of the UPS energystorage system. In case of a mains failure, the IPC shuts down the system after a selected time. Both the UPS and the IPC will then be switched off. Once mains power is back again, the UPS releases the output voltage, allowing the system to restart automatically.

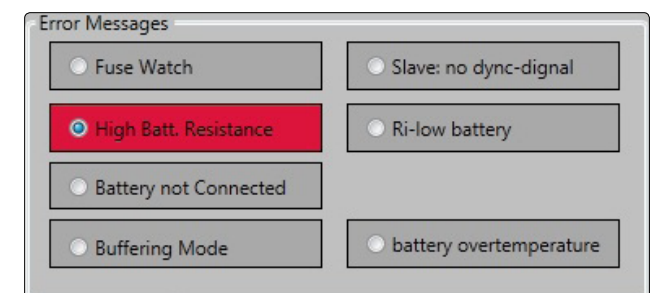
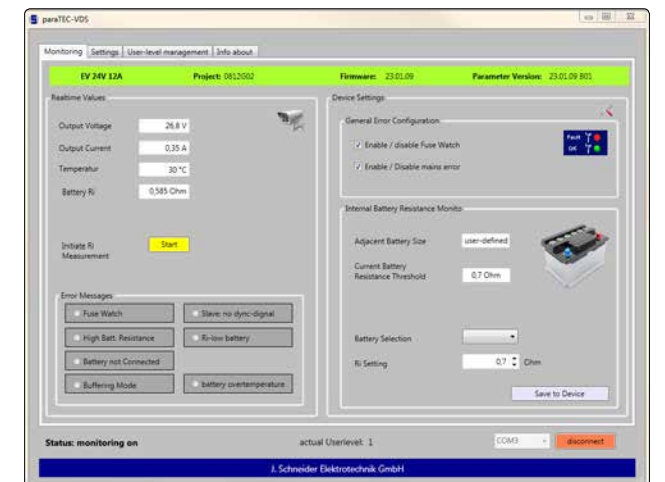


paraTEC SOFTWARE

With the **paraTEC** Software the Schneider DC-UPS systems can be programmed to special customer requirements.

paraTEC VdS SOFTWARE

With the **paraTEC VdS** Software the **AKKUTECH VdS** systems (not **AKKUTECH 2401 VdS**) can be adapted to special customer requirements. The status of voltage, current and error is also monitored with this software.



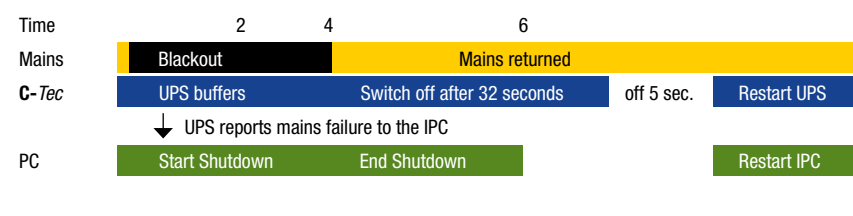
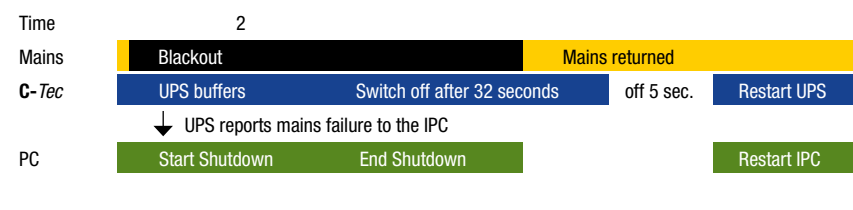
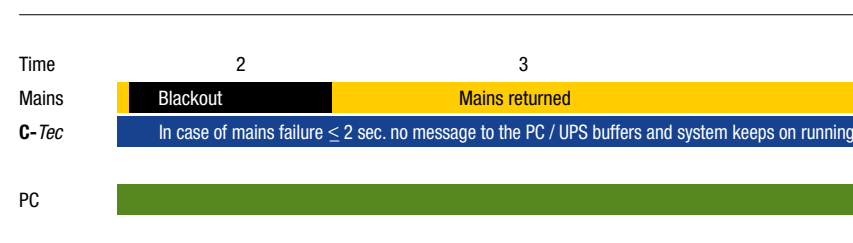
OPTIONS

IPC-FUNCTION

The **TEC Control** Software (option) monitors permanently the mains voltage. The **C-TEC** equalizes mains disturbances (voltage dips) or Short term interruptions of the input voltage (brownout).

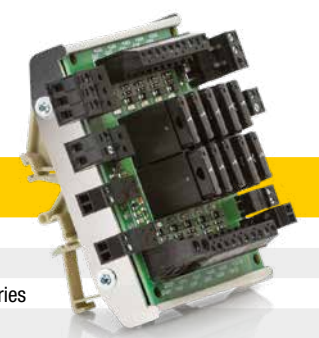
In case of mains failure > 2 seconds the **C-TEC** signalizes the mains failure to the PC, which conducts a system shutdown after a programmable time. Subsequently the **C-TEC** as well as the PC will be switched off. In case of mains recovery during the shutdown procedure, the **C-TEC** separates nevertheless the PC supply for a short time, to cause a restart without error.

With this function all mains failures can be handled without problems, even complete systems may be switched off only with the mains switch and the **C-TEC** respectively the **TEC Control** software takes over the complete internal switch off routine of the system. In this way downtimes and damages because of an uncontrolled process stop are avoided.



J. SCHNEIDER GO'S IoT / INDUSTRY 4.0: GATEWAY

With the gateway J. Schneider power supplies (e.g. **AKKUTECH** or **C-TEC**) can be integrated in the company network. Thus, on the customer PC, the monitoring or parameterization of the devices will be carried out with the proven software modules **paraTEC** and **TEC Control**. The communication between the customer components and the J. Schneider power supplies **AKKUTECH / C-TEC** takes place with the J. Schneider Gateway via Ethernet or USB. It connects in each case an active device bus of a Schneider power supply with an interface of the customer PC, on which subsequently all process data such as current, voltage, battery charge condition e.g. will be displayed and can also be accessed remotely over the internet.



| Options | |
|------------------------|---|
| TEC Control licence | Shutdown software as licence |
| TEC Control CD-ROM | Shutdown software as CD-ROM |
| Cable A | for AKKUTECH 2402 / 2403 & AKKUTECH 2405 & C-TEC 2405 / 2408 / 2410 in series |
| Cable B | 9 Pol Sub D 1:1 for AKKUTECH 2403 DC |
| Cable C1 | Cable for AKKUTECH 2410-2440 1,2 M |
| Cable C2 | Cable for AKKUTECH 2410-2440 5 M |
| Cable C3 | Cable for AKKUTECH 2410-2440 10 M |
| USB 2.0 cable | for C-TEC, AC C-TEC , from A to B with Ferrit, 0,5 m length |
| IPC switch module | for AKKUTECH 2402, 2403, 2410 |
| Display, control panel | for AKKUTECH 2410-2440 |
| Temperature sensor | for AKKUTECH 2410-2440 for AKKUTECH 2402 / 2403 & AKKUTECH 2405 in series |
| Fuse board | for FKS-fuses with max. 5 A, equipped with 5 fuses à 1 A, extension for IP31 cabinet 3 A for FKS-fuses with max. 15 A, equipped with 10 fuses à 1 A, extension for IP31 cabinet 12 A for FKS-fuses with max. 5 A, equipped with 5 fuses à 1 A, extension for IP54 cabinet, snap-on mounting for DIN rail for FKS-fuses with max. 15 A, equipped with 10 fuses à 1 A, extension for IP54 cabinet, snap-on mounting for DIN rail |

DECOUPLING MODUL

Decoupling diode set, consisting of a double Schottky diode on a potentialfree cooler with cover against direct contact and DIN rail connector.

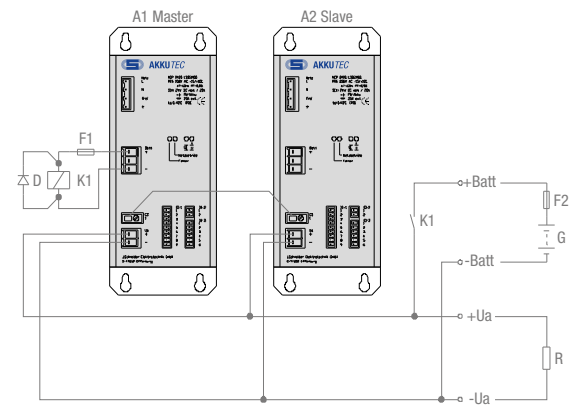


| Art.-Nr. | Type | Limiting average on state current at 45° C [A] | Increase voltage diod [V] | Height [mm] | Width [mm] | Depth [mm] |
|----------|----------------|--|---------------------------|-------------|------------|------------|
| 59610.1 | KGEK002S003M92 | 2 x 25 A | 100 V | 75 | 40 | 90 |
| 59610.2 | KGEK006S001M92 | 2 x 50 A | 45 V | 100 | 80 | 110 |

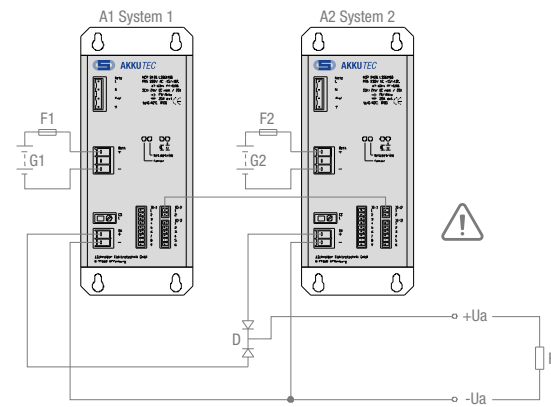
CIRCUIT EXAMPLES

TECHNICAL DATA

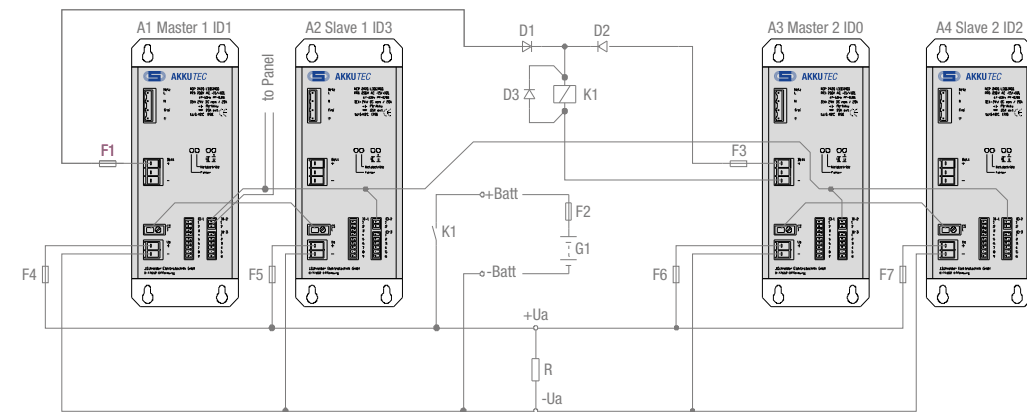
Master-slave operation (increase of power)
for device series **AKKUTEK 24****, e.g. **AKKUTEK 2420**



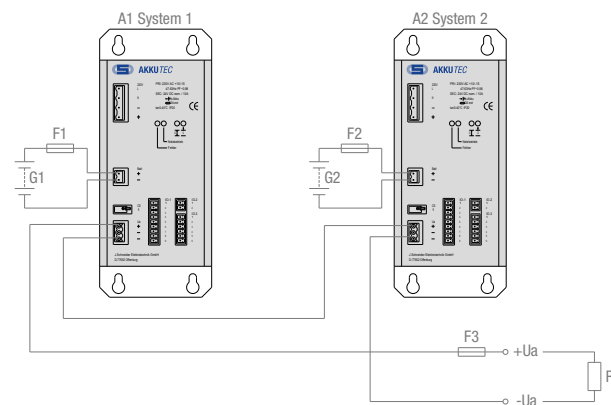
Redundant operation (increase of reliability of the system)
for device series **AKKUTEK 24****, e.g. **AKKUTEK 2420**



Combination master-slave operation (increase of power) with redundant operation (increase of reliability of the system)
for device series **AKKUTEK 24****, e.g. **AKKUTEK 2420**



Proposal for circuit: $U_a = 48\text{ V}$ for device series **AKKUTEK 24**, e.g. **AKKUTEK 2410****



! Please absolutely consider the safety instructions in the manual.

UPS IN CABINET

EXAMPLES OF CUSTOMER SPECIFIED UPS SYSTEMS



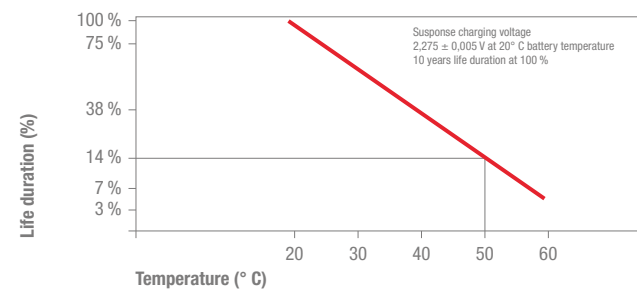
BATTERIES

AGM BATTERY TYPES

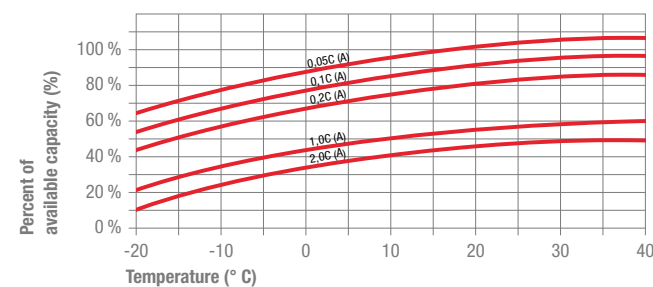
Our product types SB, SBL and SBLFT cover a complete lead-acid product range in AGM-technology with the superb characteristics of a modern, maintenance free lead acid battery; manufactured for a battery "Service Life" from 3 years up to 12 years and more according to EUROBAT definition. A Voltage range from 2 Volts (cell) up to 12 Volt (bloc) gives an extensive selection of various capacities and life time duration. All capacities ranging from 17 Ah and up are equipped with an integrated internal thread connection (Inserted terminal). All capacities, ranging below 17 Ah are usually equipped with a fast-on connector, either with 4.8 mm or 6.3 mm width. These construction offers a reliable and rugged battery design for various applications. Wherever a safe, efficient and maintenance free energy storage battery is needed, your are well advised with our product range. All batteries are produced in a sophisticated and modern production and are subject to rigorous quality controls. The performance parameters of single batteries shows a very low variance in capacity and/or internal resistance and therefore they are very suitable for all kind of applications. Our VdS certified batteries (SB) are available in different capacity ranges and cover perfectly the demand of any Fire and Security application. Meanwhile our SBL-HR range (High Rate Discharge) perfectly fits for all UPS (Uninterruptable Power Supply) applications, due to their High Rate Discharge power performance.

PRODUCT FEATURES

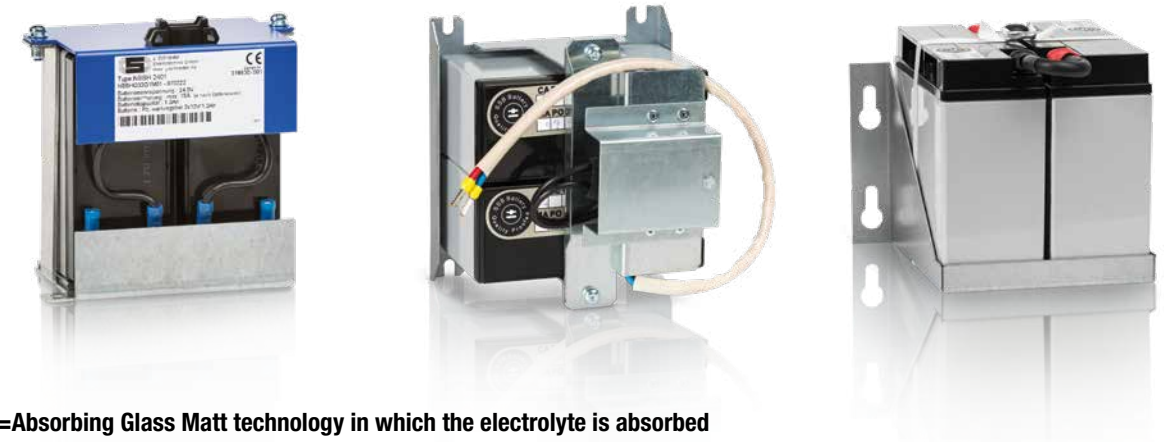
- High quality and impact resistant plastic housing made of ABS
- All batteries are manufactured according to widely known quality standard as ISO 9001 and UL
- Valve regulated design, with almost 100 % recombination
- Electrolyte bonded in glass fiber fleece (AGM = Absorb Glass Matt Technology)
- Maintenance-free operation in any position except upside down
- Excellent „High Power Discharge“ performance
- Wide operating temperature range (with corresponding temperature depending charging compensation)
- Very good charging efficiency
- Qualified as "No Dangerous Goods" according to IATA regulations / ADR / IMDG
- Long service life with low self-discharge, 1,5–3 % per month at 20° C
- Reliable "Service Life "(high performance) according EUROBAT



Temperature / lifetime characteristics



Effect of temperature on battery capacity



AGM=Absorbing Glass Matt technology in which the electrolyte is absorbed

| Art.-Nr. | Battery type | Nominal voltage [V] | Capacity [Ah] | Height [mm] | Width [mm] | Depth [mm] | Weight [kg] |
|----------|--------------|---------------------|---------------|-------------|------------|------------|-------------|
|----------|--------------|---------------------|---------------|-------------|------------|------------|-------------|

Battery set including battery fixing and battery fuse, closed, maintenance free, orientation free available

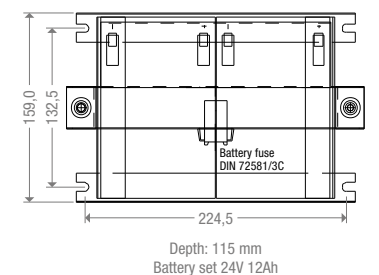
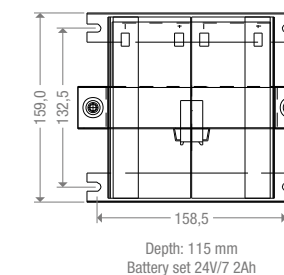
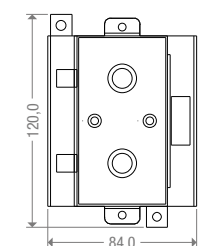
| LIFE SPAN ACCORDING TO EUROBAT TILL 5 YEARS | | | | | | | |
|---|-----------|----|-----|-----|-------|-----|-----|
| NBBHQ33G1M01 | NBBH 2401 | 24 | 1,2 | 96 | 69 | 105 | 2 |
| NBBHQ33G1M04 | NBBH 2402 | 24 | 2,2 | 100 | 184 | 75 | 3,8 |
| NBBHL33G1M01 | NBBH 2407 | 24 | 7 | 115 | 174,5 | 159 | 6 |
| NBBHL33G1M02 | NBBH 2412 | 24 | 12 | 115 | 240,5 | 159 | 9,4 |

Battery set including battery fixing and battery fuse, closed, maintenance free, orientation free available

| LIFE SPAN ACCORDING TO EUROBAT TILL 5 YEARS | | | | | | | |
|---|-----------|----|----|---------|---------|---------|--------|
| NBBH0336G01001 | NBBH 2417 | 24 | 17 | 170 | 155 | 182 | 18 |
| NBBH0336G01002 | NBBH 2424 | 24 | 24 | 137 | 335 | 200 | 20 |
| NBBH0336G01003 | NBBH 2440 | 24 | 40 | 170 | 335 | 200 | 33 |
| NBBH0336G01004 | NBBH 2465 | 24 | 65 | 2 x 170 | 2 x 335 | 2 x 200 | 2 x 26 |

Battery set, closed, maintenance free, orientation free available

| LIFE SPAN ACCORDING TO EUROBAT TILL 5 YEARS | | | | | | | |
|---|-----------|----|-----|-----|-----|-----|------|
| 452011.47 | 1,3-12 | 12 | 1,3 | 59 | 97 | 43 | 0,85 |
| 452011.20 | 2,2-12 | 12 | 2,2 | 67 | 178 | 35 | 1,05 |
| 452011.36 | 7,2-12L | 12 | 7,2 | 94 | 151 | 65 | 2,65 |
| 452011.22 | 12-12L | 12 | 12 | 94 | 151 | 98 | 4,1 |
| 452011.2 | 17-12 | 12 | 17 | 167 | 76 | 181 | 6,1 |
| 452011.4 | 26-12 | 12 | 26 | 125 | 175 | 166 | 8,92 |
| 452011.8 | 40-12 | 12 | 40 | 170 | 165 | 197 | 15,7 |
| 452011.9 | 70-12 | 12 | 70 | 174 | 166 | 350 | 24 |
| 452011.40 | 100-12 sh | 12 | 100 | 215 | 171 | 330 | 32 |
| 452011.53 | 120-12 sh | 12 | 120 | 222 | 171 | 330 | 38 |
| 452011.59 | 150-12 | 12 | 150 | 240 | 172 | 485 | 47 |
| 452011.6 | 200-12 | 12 | 200 | 218 | 522 | 238 | 65 |



SPECIAL APPLICATIONS

BACK-UP MODULES WITH ULTRA-CAPACITORS



CUSTOMER SPECIFIED UPS-SYSTEMS WITH ULTRA-CAPACITORS

Open frame
48 V 60 V UC Modules



CUSTOMER-SPECIFIED ULTRACAPACITOR MODULES



| C-TEC F | Nominal voltage | Capacity | Energy between (V ... V) | I _{max} | Dimensions [mm] |
|-----------------|-----------------|----------|---------------------------|------------------|-----------------|
| IP 20 | | | | | |
| C-TEC 25-5 F | 24 V | 5 F | 0,7 kJ (25 V ... 18 V) | 10 A | 92,5 x 60 x 116 |
| C-TEC 25-10 F | 24 V | 10 F | 1,4 kJ (25 V ... 18 V) | 20 A | 92,5 x 60 x 116 |
| C-TEC 25-36 F | 24 V | 36 F | 4,8 kJ (25 V ... 18 V) | 70 A | 192 x 84 x 192 |
| C-TEC 25-72 F | 24 V | 72 F | 9,7 kJ (25 V ... 18 V) | 70 A | 192 x 84 x 192 |
| C-TEC 60-15 F | 48 V | 15 F | 10,6 kJ (60 V ... 45 V) | 50 A | 444 x 159 x 109 |
| C-TEC 75-12 F | 72 V | 12 F | 19,7 kJ (75 V ... 45 V) | 50 A | 444 x 159 x 109 |
| C-TEC 90-10 F | 72 V | 10 F | 27,3 kJ (90 V ... 45 V) | 50 A | 444 x 159 x 109 |
| C-TEC 90-20 F | 72 V | 20 F | 54,6 kJ (90 V ... 45 V) | 50 A | 476 x 157 x 170 |
| C-TEC 20-1125 F | | 1125 F | 151,87 kJ (20 V ... 10 V) | 1000 A | 695 x 245 x 265 |
| C-TEC 30-500 F | | 500 F | 151,87 kJ (30 V ... 15 V) | 1000 A | 695 x 245 x 265 |
| C-TEC 60-125 F | | 125 F | 151,87 kJ (60 V ... 30 V) | 1000 A | 695 x 245 x 265 |

INVERTER



With the help of a Victron Energy Sine Wave Inverter, a charger and last but not least a battery with sufficient capacity, a completely autonomous power supply can be built up.

Our devices are used for lots of applications both on land and on ships and wherever a mobile 230 V / 115 V power supply is required. Victron Energy devices are suitable for all types of electrical consumers in the technical and industrial sectors, including sensitive instruments. Victron energy systems are high-quality energy sources that guarantee trouble-free operation.

| Phoenix Inverter | 12 Volt 24 Volt 48 Volt | | 12 / 180 24 / 180 | 12 / 350 24 / 350 48 / 350 |
|--------------------------------|-------------------------------|--|--|----------------------------------|
| Output rating at 25° C | [VA] | | 180 | 350 |
| Output rating at 25° C / 40° C | [W] | | 175 / 150 | 300 / 250 |
| Peak load | [W] | | 350 | 700 |
| AC current output / frequency | | | 110 V AC or 230 V AC +/- 3 % 50 Hz or 60 Hz +/- 0,1 % | |
| Input voltage range | [V DC] | | 10,5–15,5 / 21,0–31,0 / 42,0–62,0 | |
| Protective system | | | IP 20 | IP 20 |
| Weight | [kg] | | 2,7 | 3,5 |
| Dimensions | [mm] | | 72 x 132 x 200 | 72 x 155 x 237 |

| Phoenix Inverter | 12 Volt 24 Volt 48 Volt | | 12 / 1200 24 / 1200 | 12 / 1600 24 / 1600 | 12 / 2000 24 / 2000 | 12 / 3000 24 / 3000 48 / 3000 | 24 / 5000 48 / 5000 |
|--------------------------------|-------------------------------|--|---------------------------------------|------------------------|------------------------|-------------------------------------|------------------------|
| Output rating at 25° C | [VA] | | 1200 | 1600 | 2000 | 3000 | 5000 |
| Output rating at 25° C / 40° C | [W] | | 1200 / 900 | 1300 / 1200 | 1600 / 1450 | 2500 / 2200 | 4500 / 4000 |
| Peak load | [W] | | 2400 | 3000 | 4000 | 6000 | 10000 |
| AC current output / frequency | | | 230 V AC +/- 0,1 % 50 Hz +/- 0,1 % | | | | |
| Input voltage range | [V DC] | | 9,5–17 V / 19–33 V / 38–66 V | | | | |
| Protective system | | | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 |
| Weight | [kg] | | 10 | 10 | 12 | 18 | 30 |
| Dimensions | [mm] | | 375 x 214 x 110 | 375 x 214 x 110 | 500 x 255 x 125 | 362 x 258 x 218 | 444 x 328 x 240 |



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