DC-UPS-SYSTEMS I BATTERY-SYSTEMS

DC-UPS-SYSTEMS 2 A – 600 A I 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 CONTINOUS 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:

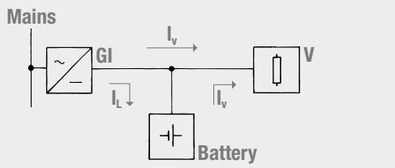
ONLINE

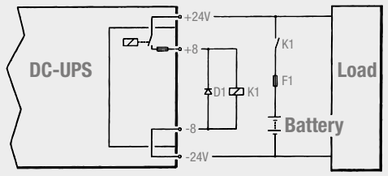
In case of **parallel operation** the consumer, DC-source and battery are working permanent in parallel. In case of standby-parallel mode (online mode) the DC-source must be able to supply permanently the battery and the consumer. The battery will be continuously fully charged and only releases the energy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

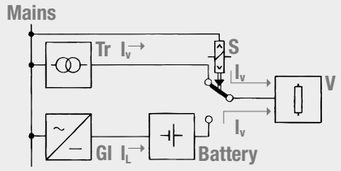
In **buffer mode** the consumer power exceeds the rated power of the DC-source, so that the lacking power has to be summon up by the battery. The battery is used to cover the peak load and is not continuously fully charged all the time. In case of a failure of the DC-source the battery will be switched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

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

$$\frac{\text{10000 JOULE x 0,9}}{\text{24 V x 10 A}} = \text{37,5 SECONDS}$$

BUFFER TIMES DC-UPS WITH ULTRA-CAPACITORS

With devices from J. Schneider, the specified kJ is usable energy, this means: WS [kj] / W = 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 = Buffer time

CEM = Capacitor extension modules to increase the buffer time

Designations C-*TEC*xx:
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-*TEC*xx:
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

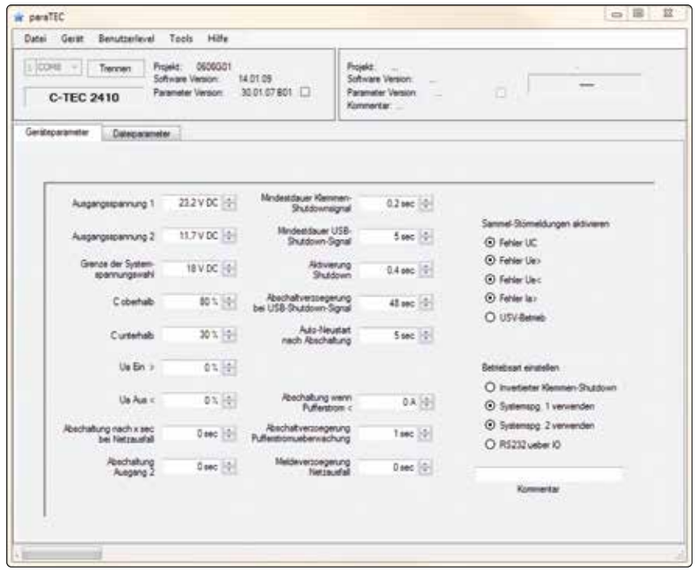
RECHARGING TIME

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

para*TEC* SOFTWARE

The **C-*TEC***s 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 Ua = 23,5 V DC, Ia = I_{nom}	> 90 %	> 90 %	> 90 %	> 90 %	> 90 %
IPC function		optional	yes	optional	
GENERAL DATA					
Type of connection input U_I	1 mm²	1 mm²	1 mm²	H 15 Messerleiste	2,5 mm²
Type of connection output U_O	1 mm²	1 mm²	1 mm²	H 15 Messerleiste	2,5 mm²
Type of connection status I / O	1 mm²	1 mm²	USB	H 15 Messerleiste	1 mm²
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 Ua = 23,5 V DC, Ia = I_{nom}	> 90 %	> 90 %	> 90 %	> 90 %	ca. 90 %
GENERAL DATA					
Type of connection input U_I	2,5 mm²	2,5 mm²	2,5 mm²	2,5 mm²	4 mm²
Type of connection output U_O	2,5 mm²	2,5 mm²	2,5 mm²	2,5 mm²	4 mm²
Type of connection status I / O	1 mm²	1 mm²	1 mm²	1 mm²	1,5 mm²
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 Ua=23,5 V DC, Ia=I_{nom}	approx. 90 %	approx. 90 %
GENERAL DATA		
Type of connection input U_I	2,5 mm²	2,5 mm²
Type of connection output U_O	2,5 mm²	2,5 mm²
Type of connection status I / O	1 mm²	1 mm²
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 Ua=23,5 V DC, Ia=I_{nom}	approx. 90 %	approx.. 90 %
GENERAL DATA		
Type of connection input U_I	2,5 mm²	2,5 mm²
Type of connection output U_O	2,5 mm²	4 mm²
Type of connection status I / O	1 mm²	1,5 mm²
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	2440 P	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	24-2	24-8	24-16	12-1	12-2
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 mm²	1,5 mm²	4 mm²	4 mm²	1,5 mm²	1,5 mm²
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-*TEC* F	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 **UCC***TEC*, developped 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 **UCC***TEC*. 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 **para***TEC* **UCC**. 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, parameterizaton, 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 **para***TEC* **UCC** 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 **para***TEC* **UCC** software can also be used for monitoring of the system.

PRIMARY SWITCHED POWER SUPPLIES

SHORT DESCRIPTION

The **UNO***TEC* **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 **UNO***TEC* **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.

UNO*TEC* **N**	**2405 N**	**2410 N**	**2420 N**
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

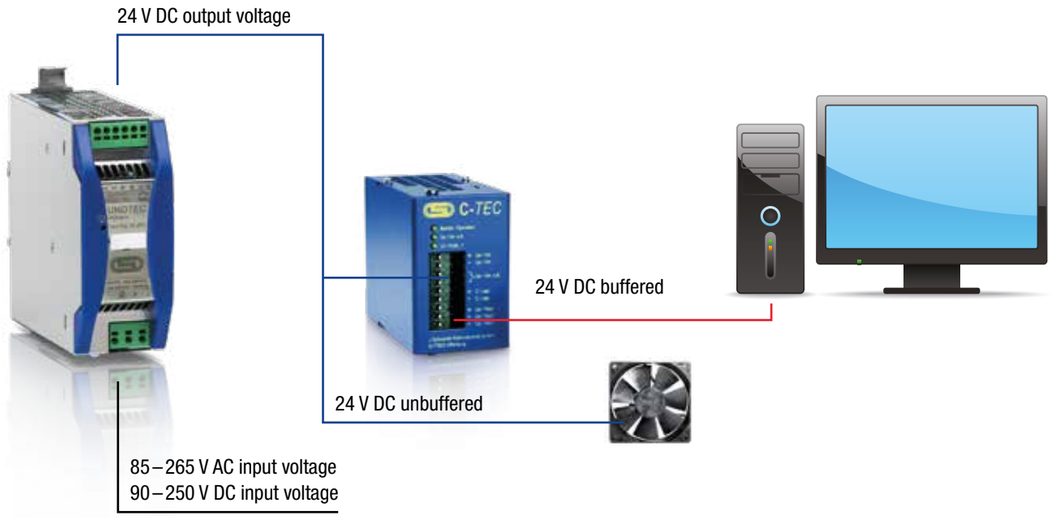
SHORT DESCRIPTION

The switch mode power supplies of the **TRE***TEC* **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.

TRE*TEC* **N**	**2406 N**	**2412 N**	**2424 N**	**2448 N**
INPUT				
Input voltage range	3 x 324...572 V AC / 450...745 V DC			480...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]	Engery [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 **AKKU***TEC* **/ 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**					
	AKKU*TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*	**AKKU***TEC*
0,5 A	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2402	2402 + NBBH 2402	2402 + NBBH 2407	2402 + NBBH 2412
1 A	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2402	2402 + NBBH 2407	2402 + NBBH 2407	2402 + NBBH 2412	2403 + NBBH 2417
2 A	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2401	2402 + NBBH 2402	2402 + NBBH 2407	2403 + NBBH 2407	2403 + NBBH 2412	2405-0 NBBH 2417	2405-0 NBBH 2440
5 A	2405 + NBBH 2401	2405 + NBBH 2402	2405 + NBBH 2402	2405-07	2405-07	2405-12	2410-0 + NBBH 2417	2410-0 + NBBH 2417	2410-0 + NBBH 2465	2420-0 + 2 x SB 100-12
10 A	2410 + NBBH 2402	2410-07	2410-07	2410-07	2410-12	2410-0 + NBBH 2417	2410-0 + NBBH 2440	2420-0 + NBBH 2465	2420-0 + 2 x SB 100-12	2 x **AKKU***TEC* 2420-0 + 4 x SB 100-12
15 A	2420-07	2420-07	2420-07	2420-12	2420-12	2420-0 + NBBH 2417	2420-0 + NBBH 2465	2420-0 + 2 x SB 100-12	1 x **AKKU***TEC* 2440-0 + 2 x SB 150-12	1 x **AKKU***TEC* 2440-0 + 4 x SB 150-12
20 A	2420-07	2420-07	2420-12	2420-12	2420-0 + NBBH 2417	2420-0 + NBBH 2440	2420-0 + NBBH 2465	1 x **AKKU***TEC* 2440-0 + 2 x SB 100-12	1 x **AKKU***TEC* 2440-0 + 4 x SB 100-12	
40 A	1 x **AKKU***TEC* 2440-0 + NBBH2407HI	1 x **AKKU***TEC* 2440-0 + NBBH 2417	1 x **AKKU***TEC* 2440-0 + NBBH 2417	1 x **AKKU***TEC* 2440-0 + NBBH 2417	1 x **AKKU***TEC* 2440-0 + NBBH 2440	1 x **AKKU***TEC* 2440-0 + NBBH 2465	1 x **AKKU***TEC* 2440-0 + 2 x SB 150-12	1 x **AKKU***TEC* 2440-0 + 4 x SB 100-12	2 x **AKKU***TEC* 2440-0 + 4 x SB 200-12	
80 A	2 x **AKKU***TEC* 2440-0 + NBBH 2417	2 x **AKKU***TEC* 2440-0 + NBBH 2417	2 x **AKKU***TEC* 2440-0 + NBBH 2440	2 x **AKKU***TEC* 2440-0 + NBBH 2465	2 x **AKKU***TEC* 2440-0 + 2 x SB 100-12	2 x **AKKU***TEC* 2440-0 + 2 x SB 150-12	2 x **AKKU***TEC* 2440-0 + 4 x SB 150-12	2 x **AKKU***TEC* 2440-0 + 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 power[1]
- Redundant-operation possible[1]
- Battery management by micro-controller
- Shut-down-input referring to ground
- Boost charge can be activated by control input referring to ground[1]
- Detection of battery wire break and battery test

SINGLE-PHASE

AKKU*TEC*	2402	2403	2403 VdS	2405	2410	2412 VdS	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						
Deep discharge protection (load rejection at 19,8 V)	yes						
STANDARDS							
Input / output isolation	according EN 61558-2-17						
Class of protection							
Type of protection	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	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 **AKKU***TEC* **2402, 2403, 2405**
2) Look at project egineering 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 / above[1]
- Protection against wrong battery polarization
- Display-panel-connection[1]

THREE-PHASE

AKKU*TEC*	2420	2440
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 Battery	40° C with derating up to 50° C 20° C	
Deep discharge protection (load shadding 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 **AKKU***TEC* **2402, 2403, 2405**
2) Look at project egineering table

DC-UPS BATTERY BUFFERED

TECHNICAL DATA

OUTPUT 12 V

AKKU*TEC*	1203	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 Battery	40° C with derating up to 50° C 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

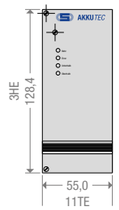
OUTPUT 48 V

AKKU*TEC*	4801	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 Battery	40° C with derating up to 50° C 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

AKKU*TEC* IN CABINET

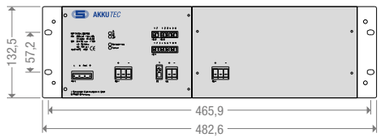
DIMENSIONS (in mm)

AKKU*TEC* 19-2403



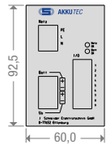
Depth: 190 mm (with grip)

AKKU*TEC* 19-2420



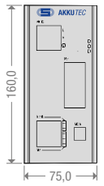
Mounting depth: 244 mm (without grip)

AKKU*TEC* 2402



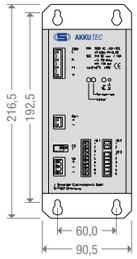
Depth: 116 mm (with terminals)

AKKU*TEC* 2405 USB



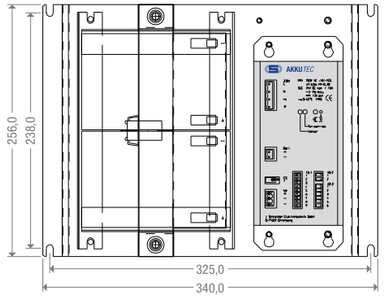
Depth: 150 mm

AKKU*TEC* 2410



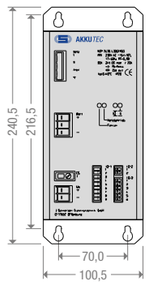
Depth: 175 mm (without terminals)

AKKU*TEC* 2410-12



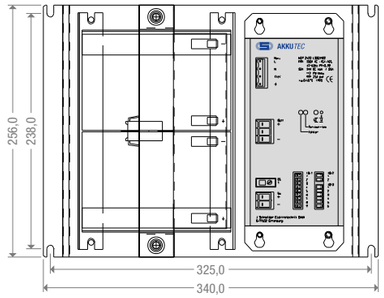
Mounting depth: 183 mm (without terminals)

AKKU*TEC* 2420



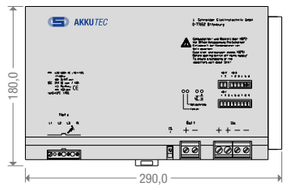
Depth: 244 mm (without terminals)

AKKU*TEC* 2420-12



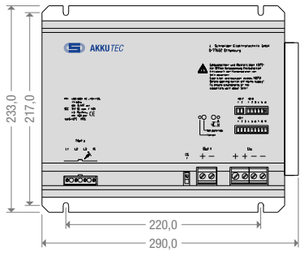
Depth: 252 mm (without terminals)

AKKU*TEC* 2440



Mounting depth: 147 mm (with terminals)

AKKU*TEC* 2440



Mounting depth: 150 mm (with terminals)

BATTERY BASED OFFLINE DC-UPS-SYSTEM

SHORT DESCRIPTION

The DC-UPS **UPSO***TEC* 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

	UPSO*TEC* 2420	UPSO*TEC* 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

AKKU*TEC* 2403 DC

The battery buffered DC power supply of the **AKKU***TEC* series corresponds to the **AKKU***TEC* **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

AKKU*TEC* SVC

The **AKKU***TEC* **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 **para***TEC* **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 **para***TEC* **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 **AKKU***TEC* **SVC** to **UCC***TEC* mode.
The back-up time depends on the state of charge of the accumulators and on the discharge current.

The AKKU*TEC* **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 **AKKU***TEC*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
AKKU*TEC* **SVC 450**	32	384 V	450 V	434 V
AKKU*TEC* **SVC 366**	26	312 V	366 V	352 V
AKKU*TEC* **SVC 220**	18	216 V	254 V	244 V
AKKU*TEC* **SVC 110**	9	108 V	126 V	122 V
AKKU*TEC* **SVC 72**	6	72 V	84 V	80 V
AKKU*TEC* **SVC 60**	5	60 V	70 V	68 V

AKKU*TEC* 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

AKKU*TEC*	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 TEC*Control* / para*TEC*

TEC*Control* SOFTWARE

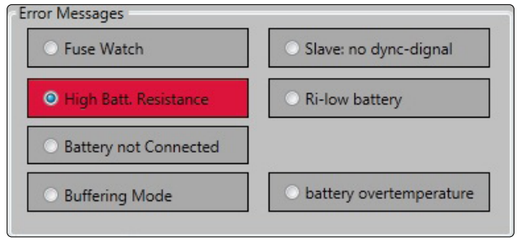
The **TEC***Control* software monitors continuously both the mains voltage and the charge status of the UPS energystorage system. In case of a mains failure, the IPC shuts down the system after a selected time. Both the UPS and the IPC will then be switched off. Once mains power is back again, the UPS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

para*TEC* SOFTWARE

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

para*TEC* VdS SOFTWARE

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



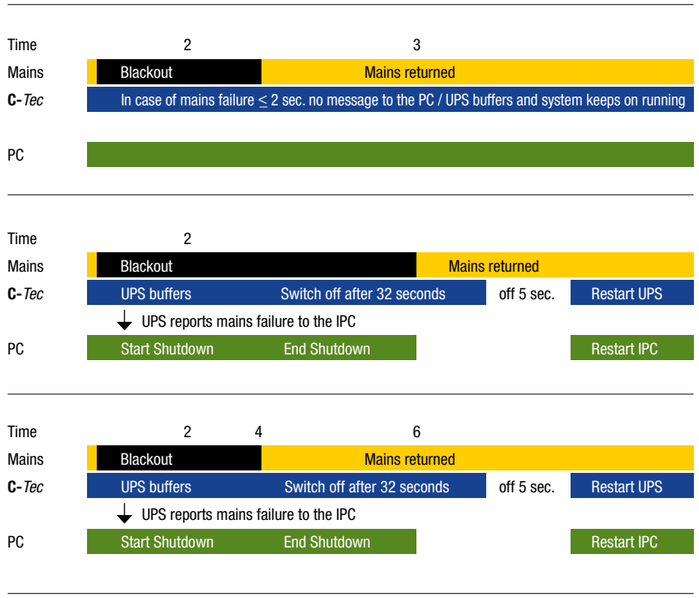
OPTIONS

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).

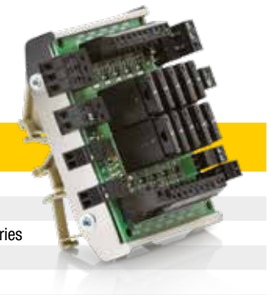
In case of mains failure > 2 seconds the **C-***TEC* signalizes the mains failure to the PC, which conducts a system shutdown after a programmable time. Subsequently the **C-***TEC* as well as the PC will be switched off. In case of mains recovery during the shutdown procedure, the **C-***TEC* separates 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. **AKKU***TEC* 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 **para***TEC* and *TEC* **Control**. The communication between the customer components and the J. Schneider power supplies **AKKU***TEC* / **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 **AKKU***TEC* **2402 / 2403** & **AKKU***TEC* **2405** & **C-***TEC* **2405 / 2408 / 2410** in series
Cable B	9 Pol Sub D 1:1 for **AKKU***TEC* **2403 DC**
Cable C1	Cable for **AKKU***TEC* **2410-2440** 1,2 M
Cable C2	Cable for **AKKU***TEC* **2410-2440** 5 M
Cable C3	Cable for **AKKU***TEC* **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 **AKKU***TEC* **2402, 2403, 2410**
Display, control panel	for **AKKU***TEC* **2410-2440**
Temperature sensor	for **AKKU***TEC* **2410-2440** for **AKKU***TEC* **2402 / 2403** & **AKKU***TEC* **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

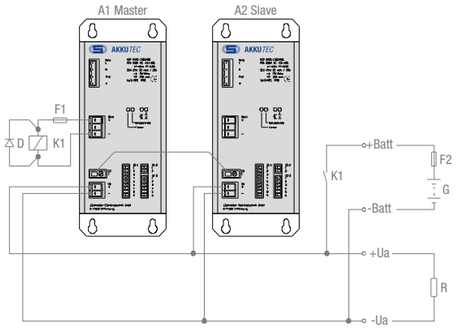
Decoupling diode set, consisting of a double Schottky diode on a potentialfree cooler with cover against direct contact and DIN rail connector.

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

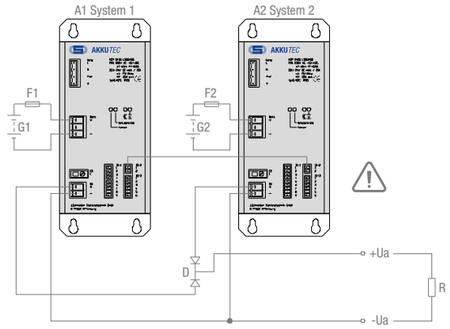
CIRCUIT EXAMPLES

TECHNICAL DATA

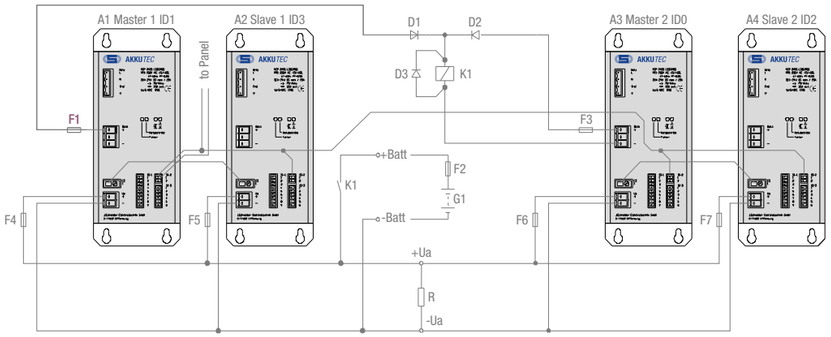
Master-slave operation (increase of power)
for device series **AKKU***TEC* **24****, e.g. **AKKU***TEC* **2420**



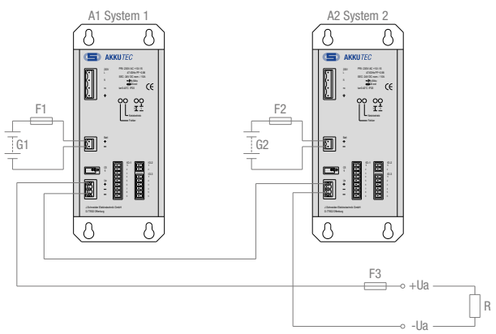
Redundant operation (increase of reliability of the system)
for device series **AKKU***TEC* **24****, e.g. **AKKU***TEC* **2420**



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



Proposal for circuit: Ua = 48 V for device series **AKKU***TEC* **24****, e.g. **AKKU***TEC* **2410**



! Please absolutely consider the safety instructions in the manual.

UPS IN CABINET

EXAMPLES OF CUSTOMER SPECIFIED UPS SYSTEMS

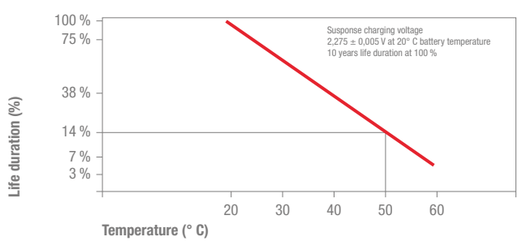
BATTERIES

AGM BATTERY TYPES

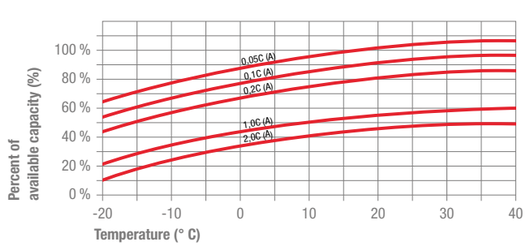
Our product types SB, SBL and SBLFT cover a complete lead-acid product range in AGM-technology with the superb characteristics of a modern, maintenance free lead acid battery; manufactured for a battery “Service Life” from 3 years up to 12 years and more according to EUROBAT definition. A Voltage range 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

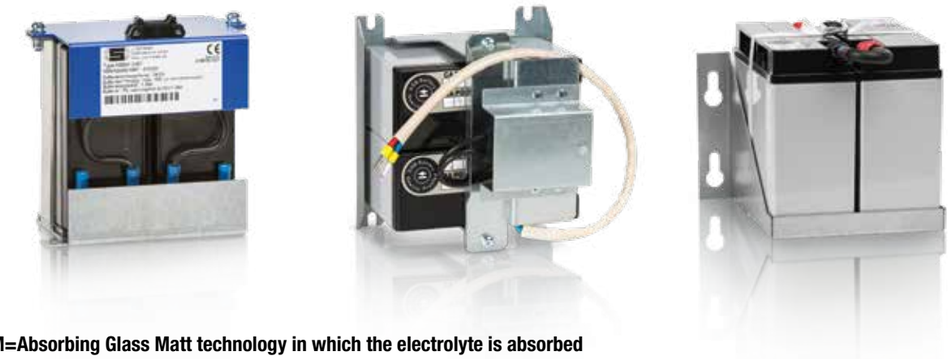
- High quality and impact resistant plastic housing made of ABS
- All batteries are manufactured according to widely known quality standard as ISO 9001 and UL
- Valve regulated design, with almost 100 % recombination
- Electrolyte bonded in glass fiber fleece (AGM = Absorb Glass Matt Technology)
- Maintenance-free 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]	Weigth [kg]

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

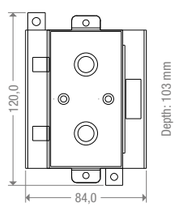
LIFE SPAN ACCORDING TO EUROBAT TILL 5 YEARS							
NBBHQ33G1M01	NBBH 2401	24	1,2	96	69	105	2
NBBHQ33G1M04	NBBH 2402	24	2,2	100	184	75	3,8
NBBHL33G1M01	NBBH 2407	24	7	115	174,5	159	6
NBBHL33G1M02	NBBH 2412	24	12	115	240,5	159	9,4

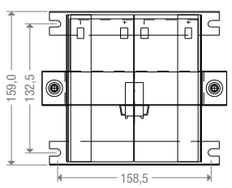
Battery set including battery fixing and battery fuse, closed, maintenance free, orientation free available

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

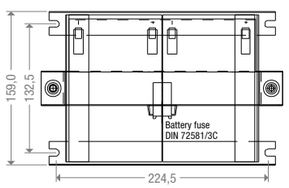
Battery set, closed, maintenance free, orientation free available

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





Depth: 115 mm
Battery set 24V/7 2Ah



Depth: 115 mm
Battery set 24V 12Ah

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*C 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 x159 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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