



DC-UPS

NCPA1034G01*** (C-TEC 2440P)

Seite

1. In General	2
1.1 General Safety Instructions	2
1.2 Short Description	3
1.3 Intended Use	3
2 Transportation and Storage	3
3 Installation and Connection	4
3.1 Installation	4
3.2 Installation view	4
3.3 Connection	5
3.4 Circuit diagram	5
4 Putting into operation	6
4.1 Display and messages	6
5 Operation	6
5.1 Back-up operation	6
6 Maintenance	6
7 Putting out of operation	7
8 Disposal	7
9 Norms and regulations	7
10 Technical Data	8
10.2 ON-Time	9
10.3 Back-up time (typical)	9

Operating Instruction

C-TEC 2440 P

1. In General

The DC-back-up module is designed for the back-up of a DC-power supply in case of voltage failure. Therefore the back-up module is charged by an external, regulated DC power supply

1.1 General Safety Instructions

	REFERENCE Before installation respectively use of the power supply, the operation instructions must be read carefully. The general information must be followed. The disregard may cause loss of all guarantee and warranty claims!
	WARNING Only specialized electricians are authorized to commission and maintain the unit. In-proper handling with voltage or capacitors may cause arcs and severe burns.
	WARNING Even a long time after the release of the C-TEC a lot of energy may be stored inside the unit! Caution: Risk of short-circuit and arcs. Dismantling of the unit may only be done by the manufacturer!
	DANGER All work on the unit may only be performed in de-energized state! The five safety rules must be observed. Input and output lines must be dimensioned and fused sufficiently! Never open the housing! Repairs may only be done by the manufacturer. Non-observance can lead to fatal electric shocks.
	WARNING Only for use in climatically controlled environment, for further details see section 10 Technical Data.
	REFERENCE In case of error we recommend to send the unit back to the manufacturer.

The operation is only permissible in dry rooms and closed cabinets. The unit is designed for pollution degree 2. The valid VDE regulations must be respected, especially VDE 0100 and EN60204. Supply and output lines must be dimensioned and fused sufficiently. The permissible environmental temperature range must be respected.

The DC output circuit must be fused externally to avoid the overload (see section 3.3).

To de-energize the unit at the output, it must be separated from the mains and the internal energy storage must be discharged!

1.2 Short Description

The DC-back-up module of the series C-TEC includes inside the housing ultracapacitors as energy- storage. These capacitors are charged with an external, regulated DC-power supply during normal operation. If the DC supply is interrupted, the energy of the ultracapacitors is released. The load is charged from the back-up module until it is discharged. The back-up time depends on the state of charge of the capacitors and of the load current.

The back-up module has the following characteristics:

- Maintenance-free because of long-life ultra capacitors.
- Microcontroller based charging and discharging of the ultra capacitors.
- Control of operation and status of charge via potentialfree contacts and LED's
- Single cell monitoring on over- and undervoltage
- Monitoring on overtemperature of the energy storage

1.3 Intended Use

The C-TEC is designed and developed for the industrial and plant engineering sector. The installation of the C-TEC is to be carried out exclusively by qualified electricians.

If the C-TEC is operated outside of its intended use, the protection supported by the C-TEC cannot be guaranteed.

2 Transportation and Storage

The transportation of the devices may only be done in original packaging. During transportation and storage the compliance with the environmental conditions must be observed. (see item 10 Technical Data). The device must be protected against humidity and direct sunlight.

Operating Instruction

C-TEC 2440 P

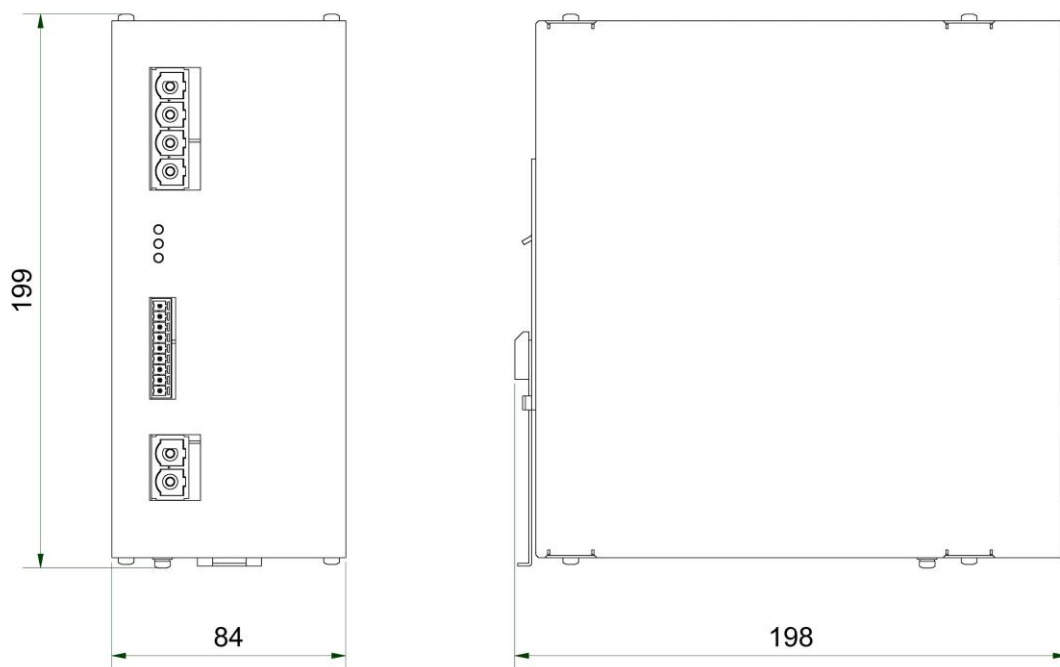
3 Installation and Connection

3.1 Installation

The assembly must be done in the way that sufficient air flow is guaranteed. The specified environmental temperature must not be exceeded. The maximum mounting height without load reduction amounts to 2000m above sea level.

	REFERENCE To ensure sufficient air circulation a minimum distance to the neighbouring units of 40 mm must be observed. No heat sources must be below the housing.
	REFERENCE The unit must be covered during the installation, if drilling chips may fall onto respectively into the unit. Risk of short-circuit.
	REFERENCE The unit is a built-in unit. The operation is only permissible in dry rooms. . The unit is designed for impurity degree 2 and controlled environment in the sense of UL508. See Operating Instruction for ambient conditions.
	REFERENCE Connection only with copper conductors, min. 75°C

3.2 Installation view



Dimensions: mounting depth: 198 mm without terminals picture similar (depending on variants)

Operating Instruction

C-TEC 2440 P

3.3 Connection

The values of the DC-supply must be compared with the values on the type plate. Connection according to the designations of the connection terminals (look at circuit diagram and terminal assignment).

Designation	Terminal		connection
	Max. tightening torque/Nm	Cable cross section /mm ²	
Ue + / Ua -	1,8	6,0 - 16	Input voltage / load
Netz Mains 1=COM, 2=NO, 3=NC	0,25	0,2 – 1,5	Message contact main (potential-free relay contact)
Ucap. > Vcap > 4=COM, 5=NO, 6=NC			Message contact Ucap. > (potential-free relay contact)
(Default) 7=COM, 8=NO, 9=NC			Message contact (potential-free relay contact)
C / cap. + C / cap. -	1,8	6,0 - 16	Capacitor extension module

Dimension the cable cross section of the supply and output cables according to EN 62368-1 table G.5; see also the table above.

If the system is constructed according to EN 62368-1 and supply cables leave the room (building wiring), observe section 6.5.3 of EN 62368-1.



WARNING

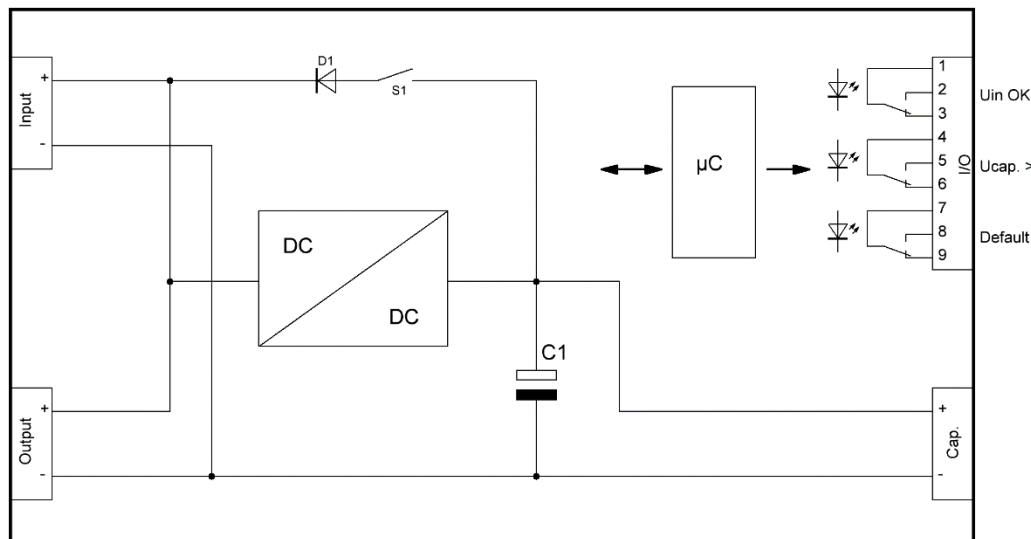
Only SELV or PELV voltage sources (according to EN 60204-1) are permitted for supplying the device.
Failure to observe this may result in electric shock with fatal consequences



CAUTION

Observe the accordance of the nominal voltage and the polarization during the connection of the terminals. In case of non-observance risk of arcs at the lines, which may cause burns

3.4 Circuit diagram



4 Putting into operation

The unit is put into operation by switch on of the DC supply at the terminal ,input'

	REFERENCE If the devices are built in systems, in which over voltages are switched on for testing, (for example according to EN60204-1 / VDE0113 part1 19.4 voltage test), The device must be separated from the test equipment before the switch on of the voltage. (Original text EN60204-1: parts, which are not designed for the testing voltage must be disconnected during the test.)
---	---

4.1 Display and messages

Uin OK	LED green, illuminates at: external supply present, means $U_E > U_{SYSTEM}$	Potential-free changer, max. contact load 30V DC/ 0,5A
Ucap. >	LED green, illuminates at: energy in the capacitor > 80% LED green expires at: energy in the capacitor < 30% (values refer to the standard parameterization)	Potential-free changer, max. contact load 30V DC/ 0,5A
Default	LED red, illuminates at: • Overvoltage present at the internal capacitor • Over or undervoltage at a capacitor cell • Over temperature at the capacitor (energy store C1)	Potential-free changer, max. contact load 30V DC/ 0,5A

5 Operation

The back-up capacitors is charged after the switch-on. This type of operation is displayed by the illumination of the green LED 'Uin OK.'. The charge of the capacitors is only possible if the feeding voltage is higher than the system voltage (voltage in back-up operation).

5.1 Back-up operation

If the supply fails respectively drops under the minimum input voltage, the C-TEC switches over to back-up mode. The green LED 'UE-o.k.' expires.

The illumination of a LED causes the upward movement of the corresponding message relay. (look at principle circuit diagram point 3.4).

6 Maintenance

No parts that should be maintained by the user are inside the unit.
The unit must be cleaned regularly depending on the degree of pollution

Operating Instruction

C-TEC 2440 P

7 Putting out of operation

The putting out of operation is made by the switch off of the supply voltage. The connections 'Input' and 'Output' are under voltage until the capacitors are discharged below 19V. The connection Cap. drives always the corresponding capacitor voltage. To reach a complete voltage free state of the unit as fast as possible, the unit can be totally discharged at the terminals +/- Cap. with a maximum current of 40A.



CAUTION

During the operation, the disconnection and connection of electrical lines is forbidden! In case of non-observance there is the risk of arcs at the lines, which can cause burnings

8 Disposal



Das Symbol weist darauf hin, dass dieses Produkt nicht über den normalen Hausmüll entsorgt werden darf. Entsorgen Sie das Produkt bitte fachgerecht als Elektroschrott. Dadurch werden Materialien entsprechend ihrer Eigenschaften getrennt und wiederverwertet und Sie leisten einen wichtigen Beitrag zum Umweltschutz.

9 Norms and regulations

Terminal voltage	SELV / PELV according to EN 60204-1	
Emitted interference	EN 61000-3-2 and EN 61000-3-3 class A, EN 55011 class B, EN 62040-2	
Interference resistance	EN 62040-2, EN 61000-6-2	
	EN61000-4-2 (Static discharge ESD)	8kV/6kV
	EN61000-4-3 (Elecromagnetic fields)	10V/m 27 – 1000MHz 3V/m 1400 - 2700MHz
	EN61000-4-4 (fast transient / Burst)	DC IN, DC OUT 2kV (other 1kV)
	EN61000-4-5 (surge current load / Surge)	DC IN 0.5kV
	EN61000-4-6 (conducted noise immunity)	10V 150kHz – 80MHz
	EN61000-4-11 (voltage drops)	back-up with Ultracapacitor
Total unit	EN 50178 EN 61010-1 / EN 61010-2-201 / EN 62368-1 UL 508 / C22.2 Nr.107-01	

Operating Instruction

C-TEC 2440 P



J. Schneider
Elektrotechnik

10 Technical Data

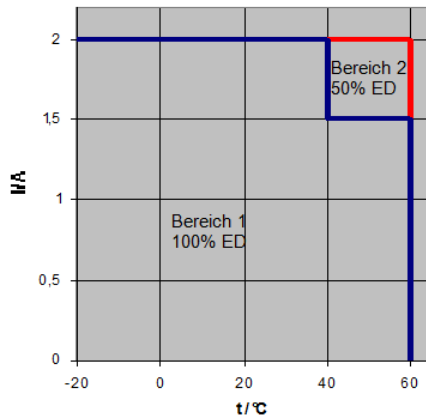
Nominal input voltage	24V DC $\pm 10\%$ SELV/PELV according to EN 60204-1	fusing +/- Cap	40A slow acting internal
	21,6-26,4V DC	Type of connection 'Input' type of connection 'Output'	Plug-in connector With screw type terminals 0,75-10mm ² (AWG20-6) 1,8 Nm (15,9lbf in)
Input voltage range	23V DC	Type of connection messages 'I/O'	Plug-in connector With screw type terminals 0,14-1,5mm ² (AWG28-16) 0,25 Nm (2,2lbf in)
Min. charge voltage	40,0 A	Protective system	IP 20 u. EN 60529
	19-25,5V	weight	2,2kg
Nominal input current	40A DC	Storage temperature / ambient temperature	-20...60°C
Output voltage in back-up operation	>90%	dimensions	199 x 84 x 198 mm (H x W x D)
Nominal output current	10W (charging operation) 30W (discharge operation)		

Operating Instruction

C-TEC 2440 P

10.2 ON-Time

Only the charging and discharging cycles of the capacitors are relevant for the consideration of the duty cycle. If the buffer module is charged and operates in stand-by mode, no heating of the energy storage device occurs. This case is therefore thermally equivalent to a switched-off unit.



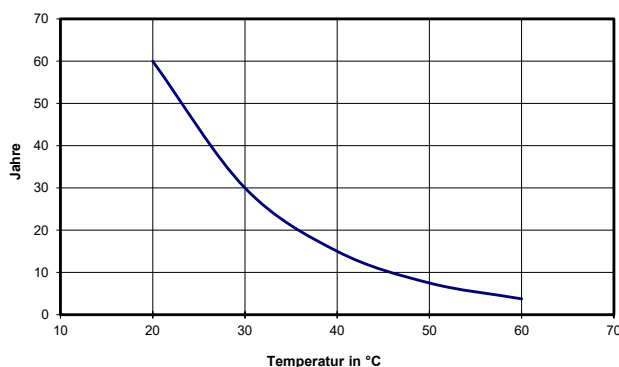
field 1: 100% on-time
uninterrupted charge and discharge operation
field 2: 50% on-time
Five charge- and discharge cycles in direct sequence are permissible

picture 1: on-time in dependence of load current and ambient temperature

10.3 Back-up time (typical)

I_{output}	0,5 A	1,0 A	1,5 A	2 A	3 A	5 A	8 A	10 A	15 A	20 A	30 A	40 A
Device												
C-TEC 2440 P	339,3 s	179,4 s	121,5 s	91,7 s	61,3 s	36,6 s	22,5 s	17,8 s	11,4 s	8,3 s	5,1 s	3,5 s

Life duration Capacitors



REFERENCE



The life duration of the capacitors depends on the temperature!
The life duration is reached when the capacity dropped down to 70% of the nominal capacity.

Device designation	notes	art.-no.	nominal- input voltage	Nominal output voltage
C-TEC 2440P	Standard device, input decoupled	NCPA1034G01001	24V DC	24V DC