

Operating Instruction

CEM 24



CEM 24
NCBA0739G01***

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Device designation	Note	Art.-No.:	Nominal input voltage	Nominal output voltage
CEM 24-1	Capacitor extension modul 1,5kJ	NCBA0739G01001	24 V DC	24 V DC
CEM 24-2	Capacitor extension modul 3kJ	NCBA0739G01002	24 V DC	24 V DC

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1. General

The capacitor extension modul CEM 24 ensures the increase of the buffer energy of the devices **C-TEC** 2403-05; 2403-1; 2420-8 and 2440P as well as for the devices **AC C-TEC** 2403-05; **AC C-TEC** 2403-1; **AC C-TEC** 2403-1-400; **AC C-TEC** 2420-8. Do not use the device for any other purpose!

Before installation respectively use of the power supply, the operation instructions must be read carefully. The general information must be followed. Putting into operation and maintenance may only be realized by qualified personnel. The disregard or unauthorized modification may cause the loss of all guarantee and warranty claims.

1.1 Safety Regulations

	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 procedures or capacitors can lead to electric shock and severe burns.
	WARNING Even a long time after the release of the CEM a lot of energy may be stored inside the unit! When the device is de-installed, the capacitors must be discharged in a controlled way!
	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 pollutions 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 3.2).

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

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1.2 Short-description

The CEM modul is used to increase the buffer energy for the devices **C-TEC** 2403-05; 2403-1; 2420-8 and 2440P as well as for the devices **AC C-TEC** 2403-05; **AC C-TEC** 2403-1; **AC C-TEC** 2403-1-400; **AC C-TEC** 2420-8.

The **C-TEC** monitors and controls the charging and discharging of the extension moduls.

1.3 Intended Use

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

If the CEM is operated outside of its intended use, the protection supported by the CEM module cannot be guaranteed.

2 Transportation and Storage

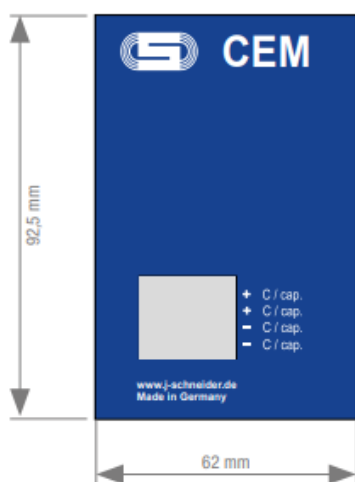
The transportation of the devices may only be done in original packaging. During transportation and storage the compliance with the environmental conditions must be observed. (see chapter 10 Technical Data). The device must be protected against humidity and direct sunlight.

3 Installation and Connection

3.1 Installation

The assembly must be done in the way, that sufficient cooling is guaranteed. A minimum distance in the area of air in- and outlets to neighbouring devices of at least 40 mm must be observed. The assembly must always be done in the way that sufficient air flow is guaranteed. All fixing points must be used for the fixation of the device. The specified environmental temperature must not be exceeded. The maximum mounting height without load reduction is 2000 m above sea level. The unit must be covered during installation, if drilling chips may fall onto respectively into the unit. **Risk of short-circuit!**

The **CEM** module must be installed and connected in discharged status.



REFERENCE

The unit must be covered during installation, if drilling chips may fall onto respectively into the unit. **Risk of short-circuit !**



HINWEIS

The device is a built-in unit. Operation is only permissible in closed cabinets or housings. The device is designed for pollution degree 2.

Snap fixation for 35 mm norm profile rail
DIN EN 50022 (NS 35 x 15 / 7,5 mm)

Mounting height: 92,5 mm
mounting width: 62,0 mm
mounting depth: 116,0 mm

3.2 Connection

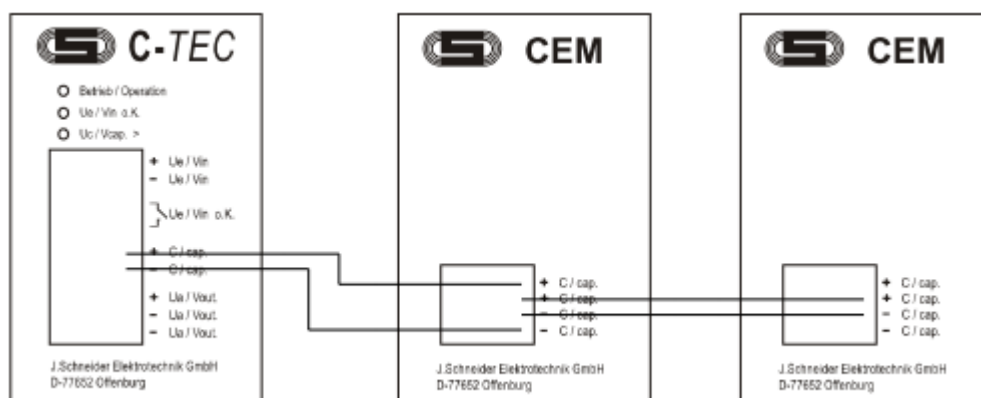
Prior to connection the values of the **C-TEC** must be compared with the values of the CEM modul (see type plate). Connection according to the designations of the connection terminals (see connection terminal). The terminals C+ of the C-TEC and of the CEM must be connected. The terminal C- of the C-TEC must be connected as well to the terminal C- of the CEM. Additional CEM modules can be connected from one modul to the next. (see "3.3 Circuitry").

Make sure, that C-TEC and CEM are connected in discharged status!

Terminals			Connection
Designation	Max. tightening torque/Nm	Cable cross section/mm ²	
+ C / cap. – C / cap.	Spring clamb terminal	0,5 – 2,0	Input voltage / CEM-Module

Dimension the cable cross section of the incoming and outgoing lines according to EN 62368-1 Table G.5; see table above

3.3 Circuitry



4 Putting into operation

The device is put into operation by switching on the DC-supply at the **C-TEC**. Make sure, that the CEM module and the **C-TEC** are discharged before switch on.

	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.)
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5 Operation

After the switch-on of the input voltage U_e at the **C-Tec** the capacitor is charged (see operating instruction **C-TEC**).

It is recommended not to increase the total back-up energy above 5kJ, because the charging time increases with the extended capacity.

6 Maintenance

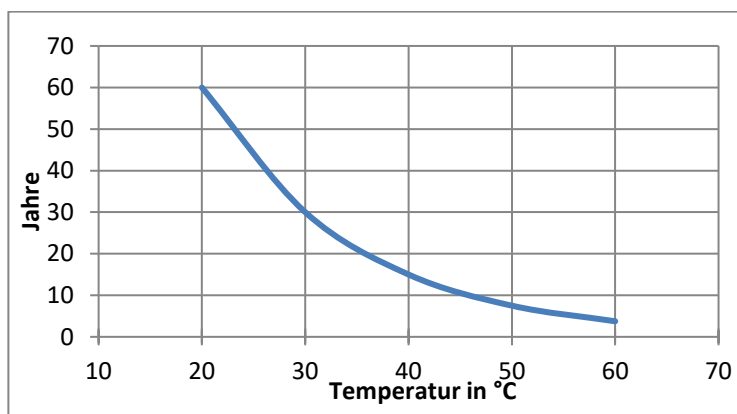
Inside the device there are no parts which should be maintained by the user.

To ensure the back-up capability of the power supply, the back-up capability of the devices should be controlled in regular distances of 3 to 6 months.

The device must be cleaned at least one time a year depending on the degree of pollution.

6.1 Life Duration of the Capacitors

The life duration of the capacitors depends on the temperature. The life duration is achieved, if the capacity is below 70% of the nominal capacity.



picture 1: life duration in dependence of the temperature

6.2 Back-up time (typical)

I_{output} Device	0,5 A	1,0 A	1,5 A	2 A	3 A
CEM 24-3	237 s	121 s	77 s	57 s	36 s
CEM 24-1	119 s	60 s	38 s	28 s	18 s

7 Putting out of operation

The putting out of operation is realized by the switch off of the supply voltage of the **C-TEC**.

Subsequently the unit buffers the load until the capacitors are discharged. Directly after the discharge, the voltage-free output is indicated with the illumination of the LED **Operation** and the fast blinking of the LED **Uc>**

The LEDs go out when the residual energy of the capacitor is consumed



CAUTION

During operation the disconnection and the connection of electrical lines is forbidden! In case of non-observance there is a risk of arcs, which may cause severe burns.

8 Disposal



This symbol indicates that the device must not be disposed with the normal domestic waste. Please dispose the product professionally as electronic scrap. Herewith materials are separated and recycled according to their qualities and you contribute in environmental protection.

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9 Norms and Regulations

Terminal voltage	SELV / PELV according to EN 50178
Emitted interference	EN 6100-3-2 EN 6100-3-3 class A EN 55011 class B EN 62040 -2
Noise immunity	EN 61000-6-2 EN 62040-2 EN 61000-4-2 (Static discharge ESD) 8kV/6kV EN 61000-4-3 (Electromagnetic fields) 10V/m 27 – 1000MHz 3V/m 1400 - 2700MHz EN 61000-4-4 (fast transients / Burst) DC IN, DC OUT 2kV others 1kV EN 61000-4-5 (Surge) DC IN 0.5kV EN 61000-4-6 (conducted immunity) 10V 150kHz – 80MHz EN 61000-4-11 (voltage interruptions) back-up with ultra capacitor
Total unit	EN 50178 EN 61010-1 / EN 61010-2-201 EN 62368-1 UL 508

10 Technical Data

Nominal input voltage	24 V DC
Input voltage range	0... 26,4 V DC
Buffer capacity	
CEM 24-1	1,5 kJ
CEM 24-2	3 kJ
Nominal input current	3 A DC
Nominal output current	3 A DC
Fusing input	3 A T (PTC internal)
fusing DC output circuit	3 A T (PTC internal)
Protective system	IP 20 and EN 60529
Storage temperature	-40...60°C
Environmental temperature	-40...60°C
Max. mounting heigth (without load reduction)	2000 m above sea level
Dimensions (HxBxT)	92,5 mm x 62 mm x 116 mm
weight	
CEM 24-1	0,5 kg
CEM 24-2	0,7 kg