

# Installation instructions

## (Batteries / stands / cabinets) for stationary batteries



Observe the operating instructions!

Work on batteries only under instruction of skilled personnel only, observing commissioning instructions and instructions for use!



When working on batteries wear protective glasses and clothing! Observe the accident prevention rules as well as EN 50272-2, VDE 0105 part 1!



Smoking prohibited! Do not expose the battery to open flame, glowing embers or sparks as explosion and fire hazard exists!



Acid splashes in the eyes or on the skin must be washed out or off with plenty of water. Then consult a doctor immediately. Clothing contaminated with acid should be washed with water!



Explosion and fire hazard, avoid short circuits! Caution! Metal parts of the batteries are always live, do not place tools or other objects on the battery!



Electrolyte is strongly corrosive. Under normal operating conditions exposure to electrolyte is impossible. Should the casing be destroyed, the released fixed electrolyte is as corrosive as liquid electrolyte.



Block batteries and cells are extremely heavy!

Ensure secure installation!

Only use suitable handling

equipment, tools and measuring equipment!



Dangerous voltage!

### 1. Requirements and preparations for installation

**1.1.** Before installation ensure that the battery room is clean and dry and is furnished with a lockable door. The battery room must be set out and marked with warning marks according to EN 50272-2. Particular attention must be paid to the following:

- floor load-carrying capacity and nature (conveying paths and battery room)
- electrolyte resistance of battery installation surface
- no ignitable sources (e.g. open flame, glowing objects, electric switches) near the cell openings (500 mm "safety distance")
- ventilation conditions

To ensure smooth operation, coordination between other persons working in the same room is necessary.

**1.2.** Check deliveries for completeness and damage. If necessary, clean all parts before assembling.

**1.3.** Observe all documentation included with the delivery (e.g. battery-, rack-, cabinet-assembly drawings).

**1.4.** Before renewing old batteries ensure that all electric loads are switched off (separator, fuses, switches). This must be carried out by qualified personnel.

**CAUTION: Do not carry out unauthorised switching!**

**1.5.** Open-circuit voltage measurements of individual cells or block batteries. Ensure correct polarity. With unfilled and charged batteries these measurements can only be carried out after start-up. Fully charged cells have the following listed open circuit voltages at an electrolyte temperature of 20 °C:

OPzS cells	DIN 40736 P1	(2.08 ± 0.01) V/C
OPzS bloc batteries	DIN 40737 P3	(2.08 ± 0.01) V/C
max.power cells	DIN 40736 P2	(2.08 ± 0.01) V/C
solar.power cells		(2.08 ± 0.01) V/C
GroE cells	DIN 40738	(2.06 ± 0.01) V/C
OGi cells	DIN 40734	(2.08 ± 0.01) V/C
OGi bloc batteries	DIN 40739	(2.08 ± 0.01) V/C
OSP cells		(2.11 ± 0.01) V/C
OSRHC cells		(2.08 ± 0.01) V/C
USV bloc batteries		(2.13 ± 0.01) V/C
OPzV cells	DIN 40742	(2.08 - 2.14) V/C
OPzV bloc batteries	DIN 40744	(2.08 - 2.14) V/C
power.com SB/power.com HC		(2.08 - 2.14) V/C
net.power		(2.08 - 2.14) V/C

The open-circuit voltages of a battery's individual cells must not deviate from each other more than 0.02 V.

The following maximum open-circuit voltage deviations for block batteries apply:

4 V block batteries	0.03 V/block
6 V block batteries	0.04 V/block
12 V block batteries	0.05 V/block

Higher temperatures decrease, lower temperatures increase the open-circuit voltage. With a deviation of 15 K from the nominal temperature the open-circuit voltage changes by 0.01 V/cell. Should greater deviations occur, consult the supplier.

## 2. Racks

**2.1.** Align the racks according to the installation drawing. Should an installation drawing be missing, the following minimum distances must be observed:

- To the wall: 100 mm on all sides for the cell or block container, or 50 mm for the rack.

- 1.5 metres by a nominal or component voltage > 120 V between non-insulated terminals or connectors and earthed parts (e.g. water pipes) or between the battery's end terminals.

During installation it must be ensured that DIN VDE 0510, Part 2, EN 50272-2 is adhered to (e.g. cover electrically conductive parts with insulating mats).

- To ignitable sources: For distance from the nearest cell vent see EN 50272-2.

- To passageways: 1.5 x cell width (installation depth) but not less than 50 cm.

**2.2.** Align racks horizontally using the levelling parts or adjustable insulators provided. The distances of the support profiles must correspond with the cell or block battery size. Check rack stability and ensure that all screw and clamp connectors are firmly seated. If stipulated, earth the rack or parts thereof. Protect screw connectors from corrosion.

Please note that when using wooden racks a flexible connector must be fitted between each rack joint.

**2.3.** Check that cells or block batteries are sound (visually, polarity).

**2.4.** Place each cell or block battery onto the rack with the correct polarity. With large

cells it is recommended that cell installation should commence from the middle of the rack.

- Arrange cells or batteries plumb and level with the correct polarity.

- Distance between the cells should be approx. 10 mm or according to the length of the connectors supplied.

- If necessary clean the contact surface of the terminals and connectors.

- With screwed connectors:

- Remove protective caps from terminals

- Check

· that the terminal surfaces are properly greased with neutraliser and protected by means of red or blue terminal cover rings,

· that the O-ring or grease groove is completely filled with neutraliser and the O-ring is seated, as specified, on the grease pad,

· that the threaded insert is sufficiently full of neutraliser and the terminal contact surface is greased.

- Fit cell or block connectors and tighten with an insulated torque wrench (20 Nm  $\pm$  1 Nm). Caution: Screws are approved for single use.

- Fit row, step, tier connectors and tighten observing the specified torques.

- After fitting, the welded connectors of the individual cells GroE/OGi/OPzS/OSP.HC/max.power must be aligned and welded to the terminals as specified.

Observe the specifications under VBG 15.

- If necessary, fit insulating caps onto cell/block connectors and end terminals.

- Ensure short-circuit proof installation work. Wiring with a dielectric strength and a designed operating voltage above the maximum possible battery system voltage must be used, or a distance of approx. 10 mm between wiring and electrically conductive parts must be kept or the connectors must be furnished with additional insulation. Avoid mechanical stress on the cell/battery terminals.

- If applicable, remove transport plugs and replace with sealing plugs.

- Check electrolyte level (observe operating instructions/commissioning instructions).

- Measure the total voltage which should equal the total open circuit voltages of the individual cells/block batteries.

- If necessary, number the cells or block batteries visibly (from the battery's positive

terminal to the negative terminal).

- Affix polarity labels for the battery connectors.

- After assembly completion affix nameplate integrated in operating instructions.

- Affix safety marking sign and operating instructions visibly.

The batteries must not be cleaned with feather dusters or dry cloths, this could cause electrostatic charge (explosion hazard).

## 3. Cabinets

### 3.1. Cabinets with built-in battery:

- The battery cabinet is assembled on site (observing the relevant accident prevention rules).

- Take into account additional space needed between wall and cabinet for possible or planned cable entries.

- Remove any transport safety devices from the built-in cells or block batteries.

- Check cells or block batteries for correct position and mechanical damage.

### 3.2. Cabinets with separately delivered cells or block batteries:

- Only filled and charged cells or block batteries (vented or sealed) are built into cabinets.

- Assemble cabinet, place in designated location and align (observing the relevant accident prevention rules).

- Place cells or block batteries into the cabinet according to assembly plan and spacing specified, connect them and mark (see item 2.4).

## 4. CE marking

Since 01.01.97 an EC declaration of conformity under the low voltage regulation is required for batteries from 75 V to 1500 V nominal voltage with the corresponding CE labelling on the battery. The battery installer of the battery plant is responsible for issuing the declaration and affixing the CE label on or next to the battery's nameplate.

### CAUTION!

**Before connecting to the charger ensure that all assembly work has been duly completed!**