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Commissioning Instructions and Report

For Dry-Charged Stationary Vented Lead Acid Batteries

OPzS cells and OPzS Blocks

Assembly and CE-marking by .....

Number of cells/blocks:

.....

Date .....

.....

Commissioning by .....

Date .....

Type:.....

Safety Instructions

Read the instructions carefully and place them close to the battery.

Work on batteries to be carried out by skilled personnel only!

While working on batteries wear safety glasses, goggles and protective clothing! Comply with accident prevention rules and with EN 50 272-2, VDE 0105 part1!

No smoking!

Do not expose batteries to naked flames, glowing embers or sparks, as it may cause an explosion.

Acid splashes in the eyes or on the skin must be washed with water. In case of accident consult a doctor immediately!

Clothing contaminated by acid should be washed in water.

Risk of explosion and fire.
Caution: Metal parts of the battery are always under voltage. Do not place tools or other metal objects on the battery!
Avoid short circuits!

Electrolyte is highly corrosive.

Batteries and cells are heavy.
Ensure secure installation!
Use only suitable handling equipment e.g. lifting gear in accordance with VDI 3616.

Dangerous voltage!

Batteries with this symbol can be recycled.

Treat batteries as special waste.
Do not mix them with other industrial or household waste.
Recycling can be achieved through a recognized company for battery recycling or by returning them to the manufacturer, depending on the agreement you have made.

Usage of the battery which does not comply with the OPERATING INSTRUCTIONS, repairs carried out with non-approved spare parts, use of additives in the electrolyte or unauthorised interference with the battery will invalidate any claim for warranty.

The completed commissioning report (see §8) must be sent back to SYSTEMS SUNLIGHT S.A. or its local agent

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1. Inspections

Before commissioning all cells/blocks must be inspected for mechanical damage. Assemble the cells/blocks in accordance with their polarity. If necessary, the contact surface of the poles and the connectors have to be cleaned. The connectors have to be firmly mounted, by tightening the terminal screws M10 with a torque of 23 Nm.
The charging unit must be checked for operational readiness. Ensure the correct polarity: Positive terminal of the battery to the positive terminal of the charger.
Before filling the cells ensure that the conditions, as set by standard EN 50 272-2, regarding installation and ventilation, are reserved.

2. Filling Cells

Sulphuric acid with specific density at 20˚C of 1,235 kg/l are used to fill the OPzS cells. The purity of the acid is specified in DIN 43 530 part 2.
If concentrated sulphuric acid is supplied, it must be diluted with purified water (DIN 43 530 part 4, max conductivity 30µS/cm). The mixing instructions must be observed. Never put concentrated sulphuric acid into the cells!
The acid temperature should be 20˚C ±10K. For temperature correction of the acid density see 4.9 of the OPERATING INSTRUCTION.
After removing the vent plugs, the cells must be filled to the max electrolyte level mark, using acid-resistant filling devices.

3. Reaction Time

Within 2 – 6 hours, after filling the acid, the densities and temperatures of 4 pilot cells have to be measured and noted in the commissioning report. In block batteries use the cell adjacent to the positive terminal.
If the temperature rise is less than 5 K and the electrolyte density has not fallen more than 0.02 kg/l below the acid density, a commissioning charge as under 4.1 to 4.3 is adequate.
Should the temperature rise or the density decrease be outside of the given limits, an extended commissioning charge as under 4.4 is necessary.

4. Commissioning

It is important that the first charge is carried out fully and without interruptions. The commissioning should be recorded in the commissioning report overleaf.
The electrolyte temperature of the battery must not exceed 55˚C at any time, if necessary the charge operation has to be delayed.
After commissioning charge, switch to the charging voltage as set out in the OPERATING INSTRUCTIONS.

4.1. Simplified Commissioning with the Float Voltage

Apply the float charge voltage to the battery. After approximately one month, full charge state is reach. The acid density reaches its final value after 3 to 6 months.

4.2. Commissioning with the Boost Charge Voltage

Apply the boost charge voltage of (2,33V to 2,40V) x number of cells. The charge current at the beginning should be minimum 5A per 100Ah. The charging time should be minimum 24 hours. The rise of the specific density to the nominal values will take some days.

4.3. Commissioning with Constant Current (I-characteristic)

A starting current of 10 to 20A per 100Ah is recommended. After reaching 2,40V per cell the charging currents have to be restricted according to the OPERATING INSTRUCTION 4.6. Charging must continue until all cells have reached a minimum of 2,60V, the electrolyte density has risen to their nominal value of 1,24 ±0,01 g/ml and both values have not risen over 2 hours.

4.4. Extended Commissioning

Extended storage or climatic influences (high humidity or strong temperature fluctuations) reduce the state of charge and make an extended commissioning charge necessary:
1. Charge with ca. 15A per 100Ah until 2,40V per cell (1-4h)
2. Charge with ca. 5A per 100Ah for 12 hours
3. Interrupt for 1 hour
4. Charge with ca. 5A per 100Ah for 4 hours

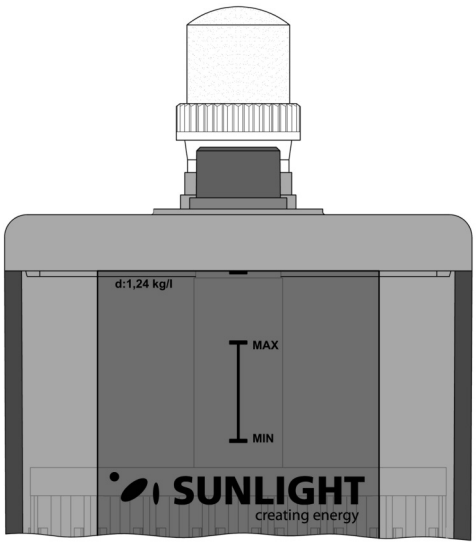
Repeat items 3. and 4. until all cells have reached a minimum of 2,60V, the electrolyte density has risen to their nominal value of 1,24 ±0,01 g/ml and both values have not risen over 2 hours.

5. Electrolyte Density Adjustment

If the electrolyte density at the end of commissioning is too high, replace part of the electrolyte with purified water as specified in DIN 43 530 part 4. The electrolyte density from cells to cell should not deviate more than 0.01 kg/l. With greater deviations adjust the electrolyte density and notice it in the report.

6. Electrolyte Level Adjustment

On completion of commissioning, top up with acid to bring the electrolyte level to the “MAX” mark.



7. Notes

Acid which has escaped or spilt must be carefully collected or soaked up with suitable absorbent material and properly disposed of. Remaining quantities have to be neutralised. This can be done with soda solution (1 kg soda to 10 l water) or other neutralising agents. Neutralising agents must not enter the cells.
Finally clean the battery surface with clear water, no solvents, no detergents.
The OPERATING INSTRUCTIONS apply when operating the battery.

8. Commissioning Report

Was the acid delivered by SYSTEMS SUNLIGHT S.A.?
☐ yes ☐ no

If not, attach the test results (chlorine, iron and other harmful metals according to DIN 43 530 part 2).

The commissioning charge was carried out according to item ☐ 4.1 ☐ 4.2 ☐ 4.3 ☐ 4.4

Commissioning charge: start on ..... at..... h
end on ..... at..... h

Time	pilot cell 1			pilot cell 2			pilot cell 3			pilot cell 4		
	d/kg/l	T/°C	V/V	d/kg/l	T/°C	V/V	d/kg/l	T/°C	V/V	d/kg/l	T/°C	V/V
2h after filling												
Start of charging												
End of charging												

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Cell or block voltages and densities of all cells on completion of the commissioning charge.
Mean temperature .....°C.

No.	V / V	d /kg/l	No.	V / V	d /kg/l	No.	V / V	d /kg/l	No.	V / V	d /kg/l	No.	V / V	d /kg/l
1			25			49			73			97		
2			26			50			74			98		
3			27			51			75			99		
4			28			52			76			100		
5			29			53			77			101		
6			30			54			78			102		
7			31			55			79			103		
8			32			56			80			104		
9			33			57			81			105		
10			34			58			82			106		
11			35			59			83			107		
12			36			60			84			108		
13			37			61			85			109		
14			38			62			86			110		
15			39			63			87			111		
16			40			64			88			112		
17			41			65			89			113		
18			42			66			90			114		
19			43			67			91			115		
20			44			68			92			116		
21			45			69			93			117		
22			46			70			94			118		
23			47			71			95			119		
24			48			72			96			120		

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