Technical Specification for Stationary VLA – Raised Post Block Batteries

1. Application

The OPzS Series flooded tubular plate 6-12V multi-cell blocks are one of the most enduring lead acid batteries on the market today. They are ideally suited for stand-by operations as well as for capacitive loads. They perfectly meet requirements for bridging times between 1h to more than 10h. The raised-post “N7” design permits individual intercell connection resistance testing.

This battery has an IEC 896-2 cycle rating of 1200 to 80% DOD, and is great for backup power in the applications listed below:

**Application Uses:**
- Power generation plants
- Electrical utilities applications
- Telecommunications
- Microwave radio systems
- Emergency lighting
- Outdoor enclosures
- Photovoltaic applications

2. Types, capacities, dimensions, weights

<table>
<thead>
<tr>
<th>Type</th>
<th>U, V/cell</th>
<th>1 min 25°C</th>
<th>C1 25°C</th>
<th>C4 25°C</th>
<th>C8 25°C</th>
<th>C12 25°C</th>
<th>R1 1)</th>
<th>I2 2)</th>
<th>Length (L)</th>
<th>Width (W)</th>
<th>Height (H)</th>
<th>Weight dry</th>
<th>Weight filled</th>
<th>Lead mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>12V 1 OPzS 50-N7</td>
<td>90.8</td>
<td>29</td>
<td>45</td>
<td>53</td>
<td>60</td>
<td>19.20</td>
<td>0.64</td>
<td>10.71</td>
<td>8.07</td>
<td>15.16</td>
<td>65.6</td>
<td>90.4</td>
<td>55.1</td>
<td></td>
</tr>
<tr>
<td>12V 2 OPzS 100-N7</td>
<td>167</td>
<td>58</td>
<td>90</td>
<td>104</td>
<td>118</td>
<td>9.60</td>
<td>1.28</td>
<td>10.71</td>
<td>8.07</td>
<td>15.16</td>
<td>82.1</td>
<td>105.8</td>
<td>77.1</td>
<td></td>
</tr>
<tr>
<td>12V 3 OPzS 150-N7</td>
<td>235</td>
<td>87</td>
<td>137</td>
<td>159</td>
<td>180</td>
<td>6.40</td>
<td>1.92</td>
<td>14.96</td>
<td>8.07</td>
<td>15.16</td>
<td>117.0</td>
<td>153.0</td>
<td>107.4</td>
<td></td>
</tr>
<tr>
<td>6V 3 OPzS 150-N7</td>
<td>233</td>
<td>87</td>
<td>137</td>
<td>159</td>
<td>180</td>
<td>3.10</td>
<td>1.92</td>
<td>10.71</td>
<td>8.07</td>
<td>15.16</td>
<td>62.9</td>
<td>92.6</td>
<td>53.7</td>
<td></td>
</tr>
<tr>
<td>6V 4 OPzS 200-N7</td>
<td>294</td>
<td>115</td>
<td>182</td>
<td>212</td>
<td>240</td>
<td>2.40</td>
<td>2.56</td>
<td>10.71</td>
<td>8.07</td>
<td>15.16</td>
<td>75.9</td>
<td>102.5</td>
<td>69.0</td>
<td></td>
</tr>
<tr>
<td>6V 5 OPzS 250-N7</td>
<td>345</td>
<td>142</td>
<td>228</td>
<td>265</td>
<td>300</td>
<td>1.92</td>
<td>3.20</td>
<td>14.96</td>
<td>8.07</td>
<td>15.16</td>
<td>91.2</td>
<td>133.2</td>
<td>84.2</td>
<td></td>
</tr>
<tr>
<td>6V 6 OPzS 300-N7</td>
<td>393</td>
<td>169</td>
<td>274</td>
<td>318</td>
<td>360</td>
<td>1.60</td>
<td>3.84</td>
<td>14.96</td>
<td>8.07</td>
<td>15.16</td>
<td>104.2</td>
<td>143.1</td>
<td>99.5</td>
<td></td>
</tr>
</tbody>
</table>

1) Internal resistance from IEC 60896-11; 2) Short circuit current from IEC 60896-11; All data is subject to change. Height (H) is the maximum distance between container bottom and top of bolts in assembled condition.

3. Terminal positions

![Terminal positions diagram](image)

12V 1 OPzS 50-N7 to 12V 3 OPzS 150-N7

6V 3 OPzS 150-N7 to 6V 6 OPzS 300-N7
4. Design

- Positive electrode: Tubular - plate with a polyester gauntlet and solid grids in a corrosion-resistant PbSb1.6SnSe - alloy
- Negative electrode: Round-grid flat plate in low antimony alloy with long-life expander material
- Separation: Microporous separator
- Electrolyte: Sulphuric acid with a density of 1.24 kg/l,
- Container: High impact, transparent SAN (Styrol-Acrylic-Nitrile), UL-94 rating: HB
- Lid: High impact SAN in dark grey color, UL-94 rating: HB
- Blocks with blind cells: 4V, 8V, and 10V
- Flame arrestors: Includes standard ceramic arrestors with optional ceramic flip-top funnel arrestors acc. DIN 40740 available
- Pole - bushing: 100% gas and electrolyte tight, sliding, injection-moulded "Panzerpole"
- Kind of pole: M10 brass insertion
- Intercell connector: Insulated solid copper connectors with cross-sections of 90, 150 or 300 mm² depending upon application
- Inter-tier connectors: Flexible insulated copper cables
- Connector screw: M10 stainless steel
- Kind of protection: IP 25 regarding DIN 40050, touch protected according VBG 4.

5. Charging

- IU - characteristic: Imax without limitation
  \[ U = 2.23 \text{ V/cell} \pm 1\% \text{, between } 10^\circ\text{C and } 30^\circ\text{C (50 }^\circ\text{F and } 86^\circ\text{F)}\]
  \[ \Delta U/\Delta T = +/\ - 0.003 \text{ V/K below } 10^\circ\text{C in the monthly average} \]
- Float current: 20mA/100Ah, increasing to 30mA/100Ah at the end of life
- Equalize charge: U = 2.33 to 2.40V/cell, time limited
- Charging time up to 90%: 6h with 1.5\cdot I_{10} \text{ initial current, } 2.23 \text{ V/cell, } 80\% \text{ C3 discharged}

6. Discharge characteristics

- Reference temperature: 25°C (77°F)
- Initial capacity: 95% or better at time of delivery
- Depth of discharge (DOD): Normally up to 80%
- Deep discharges: More than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

7. Maintenance

- Every 6 months: Check and record battery voltage, pilot block voltage and temperature
- Every 12 months: Check and record battery voltage, block voltages and temperatures

8. Operational data

- Operational life: 20 years in stand-by operation, float at 20°C to 25°C (68°F to 77°F)
- Water - refilling - interval: Up to 3 years, float at 20 °C to 25 °C (68°F to 77°F)
- IEC 60 896-2 cycles: > 1200
- Self-discharge: app. 3% per month at 20°C (68 °C)
- Operational temperature: -20°C to 55°C (-4°F to 131°F); recommended 10°C to 30°C (50°F to 86°F)
- Battery according to: DIN 40737 part 3
- Tests according to: IEC 60896-11
- Safety standard, ventilation: DIN EN 50272-2
- Transport: Subject to DOT Regulations – See SDS sheet for details