



Naps Photovoltaic Batteries for Industrial Systems

Low Antimony

Tubular Plate Single Cells

Type Secura OPzS

Low antimony tubular plate 2 Volt lead-acid single cells are ideal for use in most larger industrial renewable energy systems.

Secura OPzS vented single cells are 2V tubular plate lead-acid units with nominal capacities in the range 292 to 4703 Ah (C_{100}). They are normally supplied as fully assembled batteries of the required voltage and capacity including necessary cables and interconnects. Optionally, a wide variety of rack configurations is available for complete battery systems.

Featuring the highest standards of construction, Secura OPzS cells combine the excellent corrosion resistance and cycling capability of the tubular positive plate construction with the low maintenance advantages of a low antimony positive plate lead alloy.

- Tubular positive plates with a woven polyester gauntlet combine excellent resistance to grid corrosion and good cycle life.
- Thick pasted negative plates with long life expander ensure a long service life.
- Low antimony alloys in both positive and negative plates reduce self-discharge, water consumption and corrosion throughout the lifetime of the battery.
- Microporous separator ensures electrical isolation between the plates, a homogeneous distribution of electrolyte and good retention of the active materials.
- The 1.24 acid density ensures a long service life. The large electrolyte volume and low water consumption mean reduced maintenance.
- Transparent container (SAN) allows easy checking of acid levels.
- Gas- and acid-tight pole bush with double O ring seal allows for trouble-free positive plate growth during ageing.
- Screw terminals (M10 brass insert) allow easy interconnections using flexible insulated copper cables, with cross-section of 35, 50, 70, 95 or 120 mm². Interconnect protection IP 25 (DIN 40050), touch protected to VBG 4.
- Optional sintered ceramic explosion proof caps ensure safe operation and also prevent acid leakage.
- Storage: Up to 2 years for dry charged cells in low temperature and low humidity conditions

- High capacity and reliability is achieved with the use of proven materials and design.
- Long lifetime is assured by the tubular plate construction.
- Low water consumption due to the low antimony alloy and the large electrolyte reserve above the plates.
- Transparent container allows easy inspection of acid level.
- Double O ring pole seal allows for plate growth as the battery ages.
- Safe operation due to flame retardant vent plugs.
- Supplied dry charged for safe and economical transportation.

The main technical characteristics of the Secura OPzS single cells are described at the left.

Naps Secura OPzS Single Cells Technical Data

Name	Capacity* (Ah)				Dimensions			Weight (kg)		Acid volume (l)	
	10h	100h	200h	300h	L mm	W mm	H mm	empty	filled**	total	reserve***
40PzS200	210	292	304	308	105	208	420	12.2	17.2	4.0	0.4
50PzS250	270	376	391	397	126	208	420	14.6	20.8	5.0	0.5
60PzS300	320	445	463	470	147	208	420	17.2	24.3	5.7	0.6
50PzS350	400	557	579	588	126	208	535	18.9	26.9	6.5	0.7
60PzS420	490	682	709	720	147	208	535	22.2	31.5	7.5	0.9
70PzS490	570	793	825	837	168	208	535	25.2	36.1	8.8	1.0
60PzS600	670	932	969	984	147	208	710	31.9	44.8	10.4	1.2
80PzS800	890	1238	1288	1307	215	193	710	44.2	61.3	13.8	1.5
100PzS1000	1120	1558	1620	1645	215	235	710	52.3	74.5	17.9	2.0
120PzS1200	1340	1865	1940	1969	215	277	710	62.1	88	20.9	2.4
120PzS1500	1690	2352	2446	2483	215	277	855	80.4	114.3	27.3	2.8
160PzS2000	2250	3131	3256	3305	215	400	815	102.5	151.5	39.5	3.4
200PzS2500	2810	3910	4066	4127	215	490	815	129.8	193	51.0	4.2
240PzS3000	3380	4703	4891	4964	215	580	815	159.4	234.5	60.6	5.1

* Initial capacity to 1.80V/cell at 20°C

** For acid density 1.24 kg/litre

*** Acid volume above plates between min and max marks

Capacity (C₁₀₀) at low temperature

20°C	15°C	10°C	5°C	0°C	-5°C	-10°C	-20°C
100%	98%	94%	90%	85%	79%	72%	55%

Watering requirements

On float duty at 20°C, watering interval is approximately 3 years. At 1% daily overcharge (typical for photovoltaic systems), recommended watering interval is 1 year.

Self discharge rate:

Approx 3% per month at 20°C

Maximum recommended depth of discharge: 80%

Standards

Conforms to: DIN 40 736 part 1

Tested to: IEC 896 - 1

Safety standard: VDE 0510 part 2

Transport: Non-hazardous goods for road transport

Estimation of service life in photovoltaic systems

average working temperature °C	years	If daily cycling is less than
20	13	15%
25	9	22%
30	6	31%
35	5	44%
40	3	62%

of C₁₀

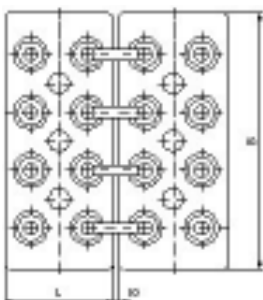
If dialy cycling is greater than above limits lifetime will be reduced.

Service life on float charge (not photovoltaics)

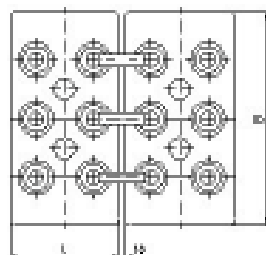
average working temperature °C	years
20	>16
30	>8
40	>4

Cycle life

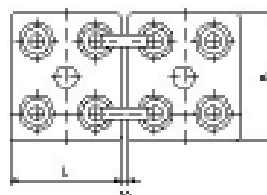
1500 cycles under IEC 896-1 conditions, equivalent to 60% of nominal C10 per cycle. This cycle life is only applicable at a constant 20°C and full recharge on each cycle.



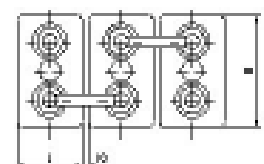
20 OPzV 2500 to 24 OPzV 3000



16 OPzV 2000



8 OPzV 800 to 12 OPzV 1500



OPzV 200 to 6 OPzV 600