

Technical Specification for Stationary VLA - Cells

1. Application

The BAE SECURA PVS SOLAR Series batteries offer a robust and reliable solution for storing regenerative energy in demanding environments. Featuring a special tubular electrode design and fixed gel electrolyte, the BAE SECURA PVS SOLAR batteries deliver exceptional reliability and a high cycle life.

Application Uses:

Renewable Energy Applications
Photovoltaic power generation
Stand-alone photovoltaic systems
Hybrid applications
Outdoor enclosures



2. Types, capacities, dimensions, weights

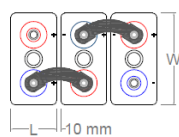
Type	C _{1h} 20°C	C _{10h} 20°C	C _{72h} 20°C	C _{100h} 20°C	C _{120h} 20°C	C _{240h} 20°C	R _i 1)	I _k 2)	Length (L)	Width (W)	Height (H)	Weight dry	Weight filled	Lead mass
U _e V/cell	Ah	Ah	Ah	Ah	Ah	Ah	mΩ	kA	inch	inch	inch	lbs	lbs	lbs
2 PVS 140	63	111	141	143	144	148	1.52	1.37	4.06	8.11	15.95	20.1	31.9	15.5
3 PVS 210	95	167	211	215	217	222	1.06	1.96	4.06	8.11	15.95	24.8	36.2	20.4
4 PVS 280	127	223	282	287	289	295	0.84	2.46	4.06	8.11	15.95	28.2	39.6	24.2
5 PVS 350	159	279	352	359	361	369	0.70	2.98	4.88	8.11	15.95	33.7	47.8	29.3
6 PVS 420	191	334	424	431	434	444	0.60	3.47	5.71	8.11	15.95	39.9	56.6	34.4
5 PVS 550	223	389	486	496	500	513	0.57	3.61	4.88	8.11	20.47	44.0	63.5	38.2
6 PVS 660	267	467	583	595	601	616	0.49	4.18	5.71	8.11	20.47	51.7	75.0	45.0
7 PVS 770	310	544	681	694	700	720	0.44	4.69	6.54	8.11	20.47	59.1	86.1	51.7
6 PVS 900	352	665	856	877	888	916	0.47	4.41	5.71	8.11	27.44	72.8	104.4	63.2
7 PVS 1050	415	777	993	1020	1033	1065	0.36	5.66	8.27	7.52	27.44	92.8	135.6	77.6
8 PVS 1200	473	886	1137	1160	1178	1216	0.32	6.36	8.27	7.52	27.44	102.8	144.2	87.2
9 PVS 1350	522	992	1274	1300	1320	1365	0.33	6.2	8.27	9.17	27.44	113.3	166.2	96.8
10 PVS 1500	585	1100	1418	1450	1464	1516	0.28	7.25	8.27	9.17	27.44	123.5	175.0	106.5
11 PVS 1650	635	1210	1555	1590	1608	1665	0.28	7.36	8.27	10.83	27.44	134.5	197.5	116.1
12 PVS 1800	698	1320	1699	1740	1752	1816	0.24	8.41	8.27	10.83	27.44	144.1	205.9	125.8
11 PVS 2090	790	1470	1836	1870	1884	1941	0.24	8.38	8.27	10.83	33.27	160.3	233.5	136.4
12 PVS 2280	869	1600	2001	2040	2052	2116	0.22	9.48	8.27	10.83	33.27	170.7	243.3	148.0
13 PVS 2470	978	1740	2174	2210	2232	2292	0.16	13.03	8.43	15.71	32.36	200.2	303.8	163.1
14 PVS 2660	1051	1880	2332	2380	2400	2448	0.15	13.82	8.43	15.71	32.36	210.1	313.9	174.1
15 PVS 2850	1123	2010	2498	2550	2568	2640	0.14	14.43	8.43	15.71	32.36	220.9	323.9	185.3
16 PVS 3040	1195	2140	2664	2710	2736	2808	0.13	15.2	8.43	15.71	32.36	232.3	334.2	197.0
17 PVS 3230	1280	2290	2858	2910	2940	3000	0.12	16.91	8.35	19.17	32.36	259.5	386.0	214.8
18 PVS 3420	1352	2420	3024	3080	3108	3192	0.11	17.55	8.35	19.17	32.36	268.7	394.8	225.8
19 PVS 3610	1425	2560	3189	3250	3276	3360	0.11	18.36	8.35	19.17	32.36	279.5	404.8	237.0
20 PVS 3800	1496	2690	3355	3420	3444	3528	0.11	18.92	8.35	19.17	32.36	290.8	415.0	248.7
22 PVS 4180	1635	2950	3686	3750	3780	3888	0.10	19.92	8.35	22.68	32.36	320.5	471.7	271.4
24 PVS 4560	1777	3220	4010	4090	4128	4224	0.09	21.26	8.35	22.68	32.36	342.2	491.7	293.8
26 PVS 4940	1917	3480	4341	4420	4464	4584	0.09	22.49	8.35	22.68	32.36	363.8	511.4	316.3

1) Internal resistance from IEC 60896-11; 2) Short circuit current from IEC 60896-11; All data is subject to change.

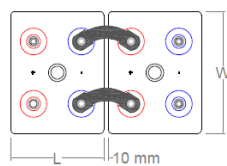
Height (H) is the maximum distance between container bottom and top of the bolts in assembled condition.

All values published in the table correspond to 100 % discharge of current depending capacity without voltage drop of connectors.

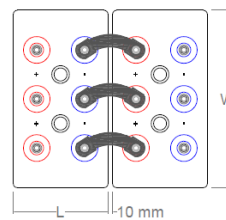
3. Terminal positions



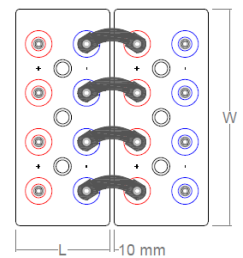
2 PVS 140 to 6 PVS 900



7 PVS 1050 to 12 PVS 2280



13 PVS 2470 to 16 PVS 3040



17 PVS 3230 to 26 PVS 4940

Technical Specification for BAE *SECURA PVS SOLAR*

4. Design

Positive electrode

Tubular plate with a polyester gauntlet and solid grids in a corrosion-resistant PbSbSnSe 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 at 20 °C (68 °F)

Container

High impact, transparent SAN (Styrene-Acrylonitrile), UL 94 HB rating

Lid

Optional: High impact, transparent Polycarbonate, UL 94 V-0 rating

High impact SAN in grey color (color may vary slightly from image),

UL 94 HB rating (Alternate High Impact ABS, UL94 V-0 rating available)

Flame arrestors

Includes standard ceramic arrestors with optional ceramic flip-top funnel arrestors available according to DIN 40740

Pole - bushing

100% gas and electrolyte tight, sliding, injection moulded "Panzerpol"

Kind of pole

M10 brass insertion

Connector screw

M10 stainless steel with insulated cap, standard

Kind of protection

IP 25 regarding EN 60529, touch protected according to BGV A3

5. Installation

BAE *SECURA PVS SOLAR* batteries are designed for indoor applications. For outdoor applications an appropriately designed enclosure is to be used, please contact BAE Batteries USA.

6. Maintenance

Every 6 months

Check and record battery voltage, pilot cell voltages and temperatures

Every 12 months

Check and record battery voltage, cell voltages and temperatures

Every 3 years

Average water-refilling interval (depends on use and ambient temperature)

7. Operational Data

Depth of discharge (DOD)

Max 80% ($U_e = 1.91$ V/cell for discharge times >10 h; 1.74 V/cell for 1 h)

Deep discharges

More than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

Initial Charge Current

Recommended: $I_{max} = 2 \times I_{10}$, min. charge current has to be 5A/100Ah C_{10}

(I or bulk phase)

Charge voltage, cyclic operation

Restricted from 2.30 V to 2.40 V/cell, operating instructions to be followed

Float voltage/non-cyclic voltage

$U = 2.23$ V/cell $\pm 1\%$, between 10°C and 30°C (50°F and 86°F)

Adjustment of charge voltage

No adjustment necessary if battery temperature is between 10°C and 30°C (50°F and 86°F) $\Delta U/\Delta T = \pm 0.003$ V/K below 10°C in the monthly average

Recharge to 100%

Within period of 1 up to 4 weeks

Battery temperature

-20°C to 55°C (-4°F to 131°F), recommended 10°C to 30°C (50°F and 86°F)

Self-discharge

Approx. 3 % per month at 20 °C (68 °F)

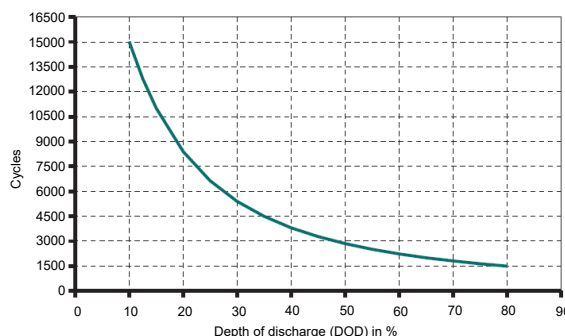
IEC 61427 cycles

3150 (A+B) at 40 °C (104 °F)

IEC 60896-11 cycles

> 1500 at 20 °C (68 °F)

8. Number of cycles as function of Depth of discharge



9. Standards and Transport

Tests according

IEC 60896-11, IEC 61427

Safety standard, ventilation

IEC 62485-2

Transport

Subject to DOT Regulations – See SDS for details

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