

Technical Specification for Stationary VLA - Cells

1. Application

The BAE SECURA PVS SOLAR Series batteries are the optimal solution for a reliable and robust storage of regenerative energy under extreme conditions in the industrial sector.

The special tubular electrode design distinguishes the BAE SECURA PVS SOLAR batteries leading to high security and reliability as well as high cycle life time

Application Uses:

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



2. Types, capacities, dimensions, weights

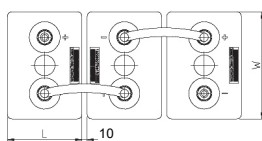
Type	C _{1h} 20°C	C _{10h} 20°C	C _{72h} 20°C	C _{100h} 20°C	C _{120h} 20°C	C _{240h} 20°C	R _i 1)	I _k 2)	Length (L)	Width (W)	Height (H)	Weight dry	Weight filled	Lead mass
U _e V/cell	Ah	Ah	Ah	Ah	Ah	Ah	mΩ	kA	inch	inch	inch	lbs	lbs	lbs
2 PVS 140	63	111	141	143	144	148	1.52	1.37	4.06	8.11	15.95	20.1	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.

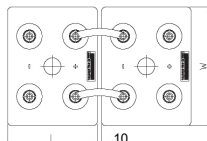
Height (H) is the maximum distance between container bottom and top of the bolts in assembled condition.

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

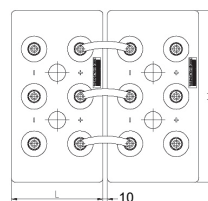
3. Terminal positions



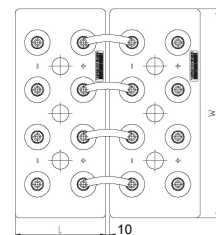
2 PVS 140 to 6 PVS 900



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 (Styrol-Acrylic-Nitrile), UL-94 rating: HB (Alternate High impact, transparent Polycarbonate, UL 94 V-0 rating avail.)
Lid	High impact SAN in dark grey color (color may vary slightly from image), UL-94 rating: HB (Alternate High Impact ABS, UL94 rating: V0 available)
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 "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.

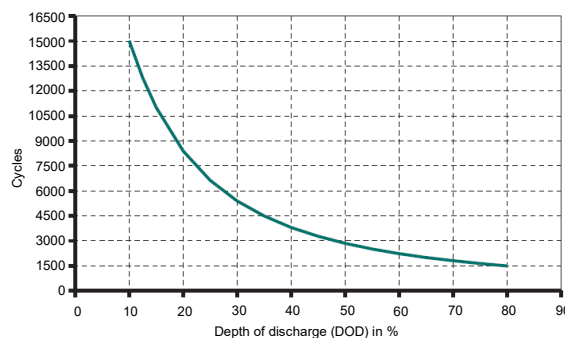
6. Maintenance

Every 6 months	Check and record battery voltage, pilot cell voltage and temperature
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 (I or bulk phase)	I_{max} without limitation, minimum charge current has to be 5A/100Ah C_{10}
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 +/- 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) $\Delta U/\Delta T = +/- 0.003$ V/K below 10°C in the monthly average
Recharge to 100%	Within period of 1 up to 4 weeks
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

BAE Batteries USA • 484 County Road V V • Somerset WI 54025
 TEL (715) 247-2262 FAX (715) 247-5741
www.baebatteriesusa.com

