

Technical Specification for Valve Regulated Lead-Acid Batteries (VRLA)



1. Application

BAE PVV cell solar batteries are maintenance-free and used to store electric energy in medium and large solar photovoltaic installations.

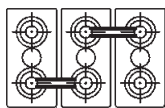
2. Technical data (Reference temperature 20°C)

Type	C _{1 h} Ah	C _{10 h} Ah	C _{20 h} Ah	C _{72 h} Ah	C _{100 h} Ah	C _{120 h} Ah	C _{240 h} Ah	R _i 1) mΩ	I _k 2) kA	Length mm	Width mm	Height mm	Weight kg
Ue [V per cell]	1.65	1.80	1.80	1.80	1.80	1.80	1.80						
4 PVV 280	136	239	262	315	329	334	348	1.20	1.70	105	208	420	20
5 PVV 350	165	286	314	378	394	400	415	0.96	2.15	126	208	420	23
6 PVV 420	198	344	378	453	473	481	499	0.80	2.57	147	208	420	28.8
5 PVV 550	252	444	496	573	587	594	609	0.71	2.88	126	208	535	32
6 PVV 660	303	532	596	688	705	712	732	0.60	3.46	147	208	535	36.7
7 PVV 770	341	597	666	763	785	793	813	0.51	4.04	168	208	535	41
6 PVV 900	391	700	794	907	932	942	979	0.45	4.58	147	208	710	52
8 PVV 1200	506	903	1 022	1 166	1 190	1 200	1 255	0.34	6.10	215	193	710	68.9
10 PVV 1500	647	1 150	1 312	1 504	1 530	1 548	1 620	0.27	7.63	215	235	710	84.6
12 PVV 1800	762	1 360	1 540	1 764	1 800	1 812	1 896	0.23	9.15	215	277	710	99.6
12 PVV 2280	954	1 640	1 854	2 160	2 200	2 220	2 294	0.24	8.58	215	277	855	115
16 PVV 3040	1 291	2 240	2 520	2 944	3 010	3 036	3 120	0.18	11.40	215	400	815	156.2
20 PVV 3800	1 618	2 820	3 160	3 700	3 780	3 816	3 936	0.14	14.30	215	490	815	195
22 PVV 4180	1 749	3 020	3 400	3 960	4 040	4 080	4 200	0.13	15.67	215	580	815	216
24 PVV 4560	1 960	3 430	3 860	4 521	4 610	4 656	4 800	0.12	17.10	215	580	815	236
26 PVV 4940	2 067	3 570	4 000	4 680	4 770	4 824	4 968	0.11	18.52	215	580	815	250

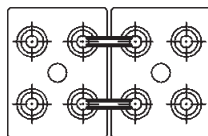
1) R_i and 2) I_k values according to IEC 60896-21

All values given in the table correspond to 100 % DOD. Please consider item 7.

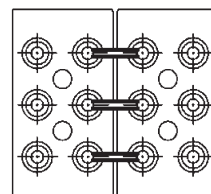
3. Terminal position



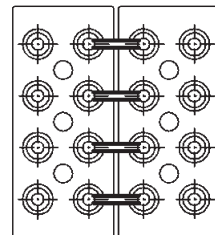
4 PVV 280 to 6 PVV 900



8 PVV 1200 to 12 PVV 2280



16 PVV 3040



20 PVV 3800 to 26 PVV 4940

Terminals are designed as female poles with brass inlay M10 for flexible insulated copper cables with cross-section 25, 35, 50, 70, 95 or 120 mm² or insulated solid copper connectors with cross-section 90, 150 or 300 mm².

Technical Specification of BAE *SECURA PVV CELL solar*

4. Design

positive electrode	tubular - plate with a polyester gauntlet and solid grids in a corrosion-resistant PbCaSn - alloy
negative electrode	grid - plate in PbCaSn alloy with long life expander material
separation	microporous separator
electrolyte	sulphuric acid with a density of 1.24 kg/l, fixed as GEL by fumed silica
container and lid	high impact, ABS (Acrylonitrile-Butadiene-Styrene), grey coloured, UL-94 rating: HB, on request also in UL-94 rating: V-0
valve	one valve per cell with flame arrestor, opening pressure approx. 120 mbar
pole-bushing	100% gas- and electrolyte-tight, sliding, plastic-coated "Panzerpol"
kind of protection	IP 25 regarding DIN 40050, touch protected according to VBG 4

5. Installation

BAE SECURA PVV CELL solar batteries are designed for indoor applications.

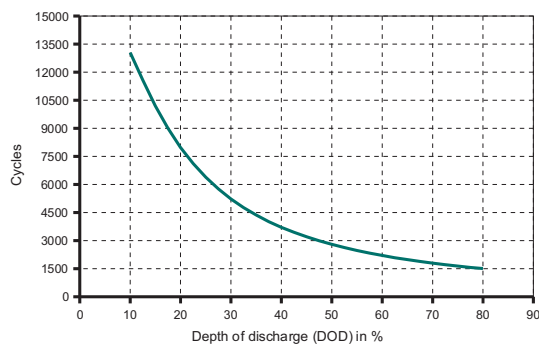
6. Maintenance

every 6 months	check battery voltage as well as temperature
every 12 months	check of mechanical and electrical connections, record battery cell voltage as well as 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 of more than 80 % DOD have to be avoided
charge current	may vary from $5 \times I_{10}$ down to $0.01 \times I_{10}$
floating voltage	2.25 V per cell
charge voltage at cyclic operation	
• DOD per day < 40 % C_{10}	2.30 V – 2.35 V per cell
• DOD per day > 40 % - 60 % C_{10}	2.35 V – 2.40 V per cell
adjustment of charge voltage	no adjustment necessary if battery temperature is between 10 °C and 45 °C in the monthly average, otherwise $\Delta U/\Delta T = -0.003$ Vpc/K
recharge to 100 %	within a period of one up to 4 weeks
IEC 61427 cycles	3000 (A+B)
operational temperature	-20 °C to 45 °C, recommended temperature range 10 °C to 30 °C
self-discharge	approx. 2 % per month at 20°C

8. Number of cycles as function of DOD (Depth of discharge)



9. Transport

Batteries are not subject to ADR (road transport), if the conditions of special rule 598 (chapter 3.3) are observed.

10. Standards

Test standard	IEC 60896-21, IEC 61427
Safety standard, ventilation	EN 50272-2



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