



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



1. Application

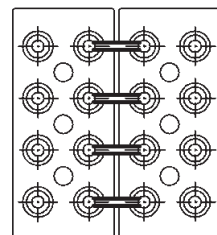
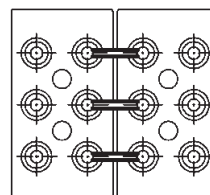
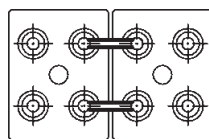
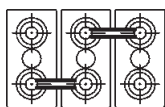
BAE PVV cell solar batteries are maintenance-free and used to store electric energy in medium and large solar photovoltaic installations.

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
U _e (100 %)/Vpc	1.65	1.80	1.80	1.80	1.80	1.80	1.80						
U _e (80 %)/Vpc	1.74	1.91	1.91	1.91	1.91	1.91	1.91						
4 PVV 280	138	239	264	316	330	336	350	1.200	1.70	105	208	420	20.0
5 PVV 350	167	287	316	378	394	400	417	0.960	2.15	126	208	420	23.0
6 PVV 420	208	359	396	473	494	504	525	0.800	2.57	147	208	420	28.8
5 PVV 550	256	444	498	573	588	594	612	0.710	2.88	126	208	535	32.0
6 PVV 660	307	533	596	688	705	712	734	0.600	3.46	147	208	535	36.7
7 PVV 770	346	598	668	770	786	794	816	0.510	4.04	168	208	535	41.0
6 PVV 900	395	701	794	914	932	942	981	0.450	4.58	147	208	710	52.0
8 PVV 1200	511	903	1,022	1,173	1,190	1,212	1,257	0.340	6.10	215	193	710	68.9
10 PVV 1500	654	1,160	1,314	1,512	1,540	1,560	1,620	0.270	7.63	215	235	710	84.6
12 PVV 1800	770	1,360	1,542	1,764	1,800	1,824	1,896	0.230	9.15	215	277	710	99.6
12 PVV 2280	963	1,650	1,854	2,160	2,210	2,232	2,296	0.240	8.58	215	277	855	115.0
16 PVV 3040	1,302	2,250	2,520	2,952	3,010	3,048	3,144	0.180	11.40	215	400	815	156.2
20 PVV 3800	1,632	2,820	3,180	3,708	3,790	3,828	3,936	0.144	14.30	215	490	815	195.0
22 PVV 4180	1,765	3,020	3,400	3,960	4,040	4,080	4,200	0.131	15.67	215	580	815	216.0
24 PVV 4560	1,976	3,440	3,860	4,521	4,620	4,668	4,824	0.120	17.10	215	580	815	236.0
26 PVV 4940	2,086	3,570	4,020	4,680	4,780	4,824	4,968	0.111	18.52	215	580	815	250.0

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

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 insulated solid copper connectors with cross-section 90, 150 or 300 mm² or flexible insulated copper cables with cross-section 25, 35, 50, 70, 95 or 120 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.

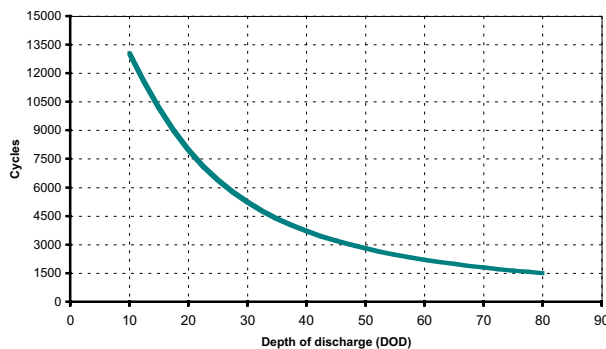
6. Maintenance

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)	restricted to 80 % according to final voltage per cell and discharge time as per Item 2, deep discharges of more than 80 % DOD have to be avoided
charge current	may vary from $5 \times I_{10}$ down to $0.01 \times I_{10}$
charge voltage	restricted from 2.30 V to 2.40 V per cell
• 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 $\Delta U/\Delta T = -0.003 \text{ Vpc/K}$
recharge to 100 %	within a period of one up to 4 weeks
IEC 61427 cycles	test is still running, currently 2100 cycles (A+B) reached
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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