

Technical Specification for Stationary VRLA-GEL - Cells

1. Application

The BAE SECURA PVV SOLAR Series batteries offer a robust and reliable solution for storing regenerative energy in demanding environments. Designed for low maintenance operation, they require no water refilling throughout their service life. Featuring a special tubular electrode design and fixed gel electrolyte, the BAE SECURA PVV 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



UL file no. MH64832

2. Types, capacities, dimensions, weights

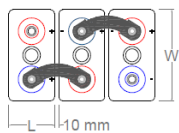
Type	C _{1h} 20°C	C _{10h} 20°C	C _{20h} 20°C	C _{72h} 20°C	C _{100h} 20°C	C _{120h} 20°C	C _{240h} 20°C	R _i 1)	I _k 2)	Length (L)	Width (W)	Height (H)	Weight filled	Lead mass
U _e V/cell	Ah	Ah	Ah	Ah	Ah	Ah	Ah	mΩ	kA	inch	inch	inch	lbs	lbs
2 PVV 140	71	121	134	153	157	158	165	1.65	1.30	4.06	8.11	15.95	27.4	17.2
3 PVV 210	107	182	202	229	236	238	247	1.15	1.86	4.06	8.11	15.95	37.6	23.2
4 PVV 280	143	243	268	306	314	318	331	0.89	2.40	4.06	8.11	15.95	42.7	29.2
5 PVV 350	179	304	336	383	393	397	412	0.73	2.91	4.88	8.11	15.95	51.4	35.2
6 PVV 420	215	364	404	460	472	477	496	0.63	3.39	5.71	8.11	15.95	60.4	41.3
5 PVV 550	254	447	506	570	583	589	609	0.68	3.14	4.88	8.11	20.47	69.3	47.7
6 PVV 660	302	529	598	671	686	693	715	0.58	3.64	5.71	8.11	20.47	81.4	56.0
7 PVV 770	350	610	688	770	788	795	820	0.52	4.12	6.54	8.11	20.47	93.5	64.4
6 PVV 900	417	729	834	943	968	978	1012	0.46	4.63	5.71	8.11	27.44	112.4	78.6
7 PVV 1050	492	858	980	1116	1140	1154	1195	0.36	5.81	8.27	7.52	27.44	136.4	93.5
8 PVV 1200	559	970	1106	1252	1280	1296	1344	0.32	6.54	8.27	7.52	27.44	151.6	105.2
9 PVV 1350	616	1090	1252	1418	1450	1464	1524	0.34	6.29	8.27	9.17	27.44	169.7	117.0
10 PVV 1500	691	1200	1382	1562	1600	1620	1675	0.28	7.50	8.27	9.17	27.44	185.0	128.6
11 PVV 1650	748	1320	1512	1713	1750	1764	1836	0.28	7.56	8.27	10.83	27.44	203.4	140.5
12 PVV 1800	822	1440	1644	1857	1900	1920	1989	0.24	8.63	8.27	10.83	27.44	218.6	152.1
11 PVV 2090	839	1570	1772	2023	2070	2088	2169	0.27	7.86	8.27	10.83	33.27	238.6	160.7
12 PVV 2280	927	1710	1918	2181	2230	2256	2337	0.23	9.18	8.27	10.83	33.27	256.8	174.5
13 PVV 2470	1040	1890	2120	2426	2490	2508	2592	0.18	11.91	8.43	15.71	32.36	289.8	191.0
14 PVV 2660	1125	2070	2320	2678	2740	2772	2880	0.17	12.63	8.43	15.71	32.36	311.4	204.3
15 PVV 2850	1191	2170	2420	2772	2840	2868	2976	0.16	13.25	8.43	15.71	32.36	326.0	217.8
16 PVV 3040	1265	2300	2580	2937	3000	3036	3144	0.15	13.94	8.43	15.71	32.36	344.3	231.7
17 PVV 3230	1358	2480	2780	3182	3260	3300	3408	0.14	15.32	8.35	19.17	32.36	382.6	254.3
18 PVV 3420	1433	2610	2920	3348	3420	3468	3576	0.13	16.03	8.35	19.17	32.36	400.0	267.6
19 PVV 3610	1507	2740	3080	3506	3590	3624	3744	0.12	16.70	8.35	19.17	32.36	418.0	281.1
20 PVV 3800	1581	2870	3220	3664	3750	3792	3912	0.12	17.37	8.35	19.17	32.36	436.2	294.9
22 PVV 4180	1740	3210	3600	4118	4220	4272	4416	0.11	18.43	8.35	22.68	32.36	453.4	322.2
24 PVV 4560	1887	3470	3900	4442	4550	4596	4752	0.10	19.76	8.35	22.68	32.36	489.5	349.3
26 PVV 4940	2014	3650	4060	4608	4710	4764	4920	0.10	21.02	8.35	22.68	32.36	518.3	376.3

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

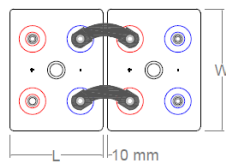
Height (H) is the maximum distance between container bottom and top of the bolts in assembled condition.

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

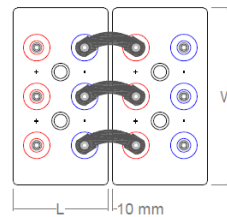
3. Terminal positions



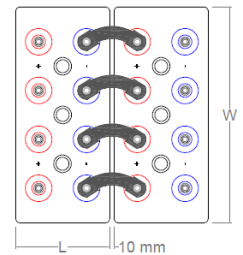
2 PVV 140 to 6 PVV 900



7 PVV 1050 to 12 PVV 2280



13 PVV 2470 to 16 PVV 3040



17 PVV 3230 to 26 PVV 4940

Technical Specification for BAE *SECURA PVV SOLAR*

4. Design

Positive electrode	Tubular-plate with a polyester gauntlet and solid grids in a corrosion-resistant PbCaSn-alloy
Negative electrode	Round-grid flat plate in a 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), UL-94 V-0 rating, Light grey color
Valve	Optional: Container and Lid in ABS, UL 94 V-0 rating, dark grey color Valve with flame arrestor, opening pressure approx. 120 mbar, closing pressure approx. 50 mbar
Pole - bushing	100% gas and electrolyte tight, sliding, injection moulded "Panzerpol"
Kind of pole	M10 brass insertion
Kind of protection	IP 25 regarding EN 60529, touch protected according to BGV A3
Horizontal Operation	Please use BAE special type PVV "horizontal". The construction and Production of this type

5. Installation

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

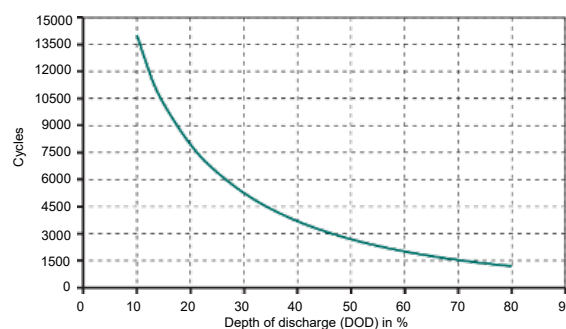
6. Maintenance

Every 6 months	Check and record battery voltage, pilot cell voltages and temperatures
Every 12 months	Check and record battery voltage, cell voltages and temperatures

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 Recommended: $I_{max} = 2 \times I_{10}$, min. charge current has to be $1.5A/100Ah$ C_{10}
Initial Charge Current (I or bulk phase)	Restricted from 2.30 V to 2.40 V/cell, operating instructions to be followed
Charge voltage, cyclic operation	$U = 2.25$ V/cell
Float voltage/non-cyclic	No adjustment necessary if battery temperature is between $10^{\circ}C$ and $45^{\circ}C$ ($50^{\circ}F$ and $86^{\circ}F$) $\Delta U/\Delta T = \pm 0.003$ V/K below $10^{\circ}C$ in the monthly average
Adjustment of charge voltage	Within period of 1 up to 4 weeks
Recharge to 100%	$-20^{\circ}C$ to $45^{\circ}C$ ($-4^{\circ}F$ to $113^{\circ}F$); recommended $10^{\circ}C$ to $30^{\circ}C$ ($50^{\circ}F$ to $86^{\circ}F$)
Battery temperature	App. 2% per month at $20^{\circ}C$ ($68^{\circ}F$)
Self-discharge	$>3,000$ (A+B) at $40^{\circ}C$ ($104^{\circ}F$)
IEC 61427 cycles	$>1,500$ at $20^{\circ}C$ ($68^{\circ}F$)
IEC 60896-21 cycles	

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
UL Safety Recognition	UL 1989 Recognized, UL File No. MH64832

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