

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



### 1. Application

BAE *SECURA PVV solar* batteries are maintenance-free and used to store electric energy in medium and large solar photovoltaic installations. Due to the robust tubular plate design BAE PVV Batteries are excellent suited for highest requirements regarding cycling ability and long lifetime.

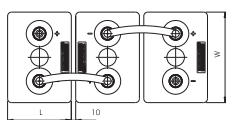
### 2. Technical data (Reference temperature 20 °C)

Type	C <sub>1h</sub> Ah	C <sub>10h</sub> Ah	C <sub>20h</sub> Ah	C <sub>72h</sub> Ah	C <sub>100h</sub> Ah	C <sub>120h</sub> Ah	C <sub>240h</sub> Ah	R <sub>i</sub> 1) mΩ	I <sub>k</sub> 2) kA	Length mm	Width mm	Height mm	Weight kg
U <sub>e</sub> [V per cell]	1.65	1.80	1.80	1.80	1.80	1.80	1.80						
<b>2 PVV 140</b>	74	132	143	170	180	182	189	2.400	0.84	105	208	420	15.5
<b>3 PVV 210</b>	100	193	210	252	264	268	277	1.600	1.27	105	208	420	17.7
<b>4 PVV 280</b>	136	239	262	315	329	334	348	1.200	1.70	105	208	420	20.0
<b>5 PVV 350</b>	165	286	314	378	394	400	415	0.960	2.15	126	208	420	23.0
<b>6 PVV 420</b>	198	344	378	453	473	481	499	0.800	2.57	147	208	420	28.8
<b>5 PVV 550</b>	252	444	496	573	587	594	609	0.710	2.88	126	208	535	32.0
<b>6 PVV 660</b>	303	532	596	688	705	712	732	0.600	3.46	147	208	535	36.7
<b>7 PVV 770</b>	341	597	666	763	785	793	813	0.510	4.04	168	208	535	41.0
<b>6 PVV 900</b>	391	700	794	907	932	942	979	0.450	4.58	147	208	710	52.0
<b>8 PVV 1200</b>	506	903	1,022	1,166	1,190	1,200	1,255	0.340	6.10	215	193	710	68.9
<b>10 PVV 1500</b>	647	1,150	1,312	1,504	1,530	1,548	1,620	0.270	7.63	215	235	710	84.6
<b>12 PVV 1800</b>	762	1,360	1,540	1,764	1,800	1,812	1,896	0.230	9.15	215	277	710	99.6
<b>12 PVV 2280</b>	954	1,640	1,854	2,160	2,200	2,220	2,294	0.240	8.58	215	277	855	115.0
<b>16 PVV 3040</b>	1,291	2,240	2,520	2,944	3,010	3,036	3,120	0.180	11.40	215	400	815	156.2
<b>20 PVV 3800</b>	1,618	2,820	3,160	3,700	3,780	3,816	3,936	0.144	14.30	215	490	815	195.0
<b>22 PVV 4180</b>	1,749	3,020	3,400	3,960	4,040	4,080	4,200	0.131	15.67	215	580	815	216.0
<b>24 PVV 4560</b>	1,960	3,430	3,860	4,521	4,610	4,656	4,800	0.120	17.10	215	580	815	236.0
<b>26 PVV 4940</b>	2,067	3,570	4,000	4,680	4,770	4,824	4,968	0.111	18.52	215	580	815	250.0

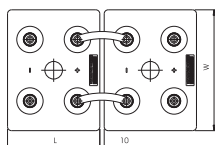
1) R<sub>i</sub> and 2) I<sub>k</sub> values according to IEC 60896-21

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

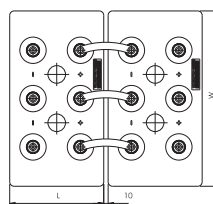
### 3. Terminal position



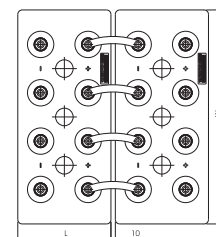
2 PVV 140 - 6 PVV 900



8 PVV 1200 to 12 PVV 2280



16 PVV 3040



20 PVV 3800 to 26 PVV 4940

# Technical Specification of BAE *SECURA PVV solar*

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 mm<sup>2</sup> or insulated solid copper connectors with cross-section 90, 150 or 300 mm<sup>2</sup>.

## 4. Design

Positive electrode	tubular-plate with woven 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 (20 °C), 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	valve 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 solar* batteries are designed for indoor applications. For outdoor applications please contact BAE.

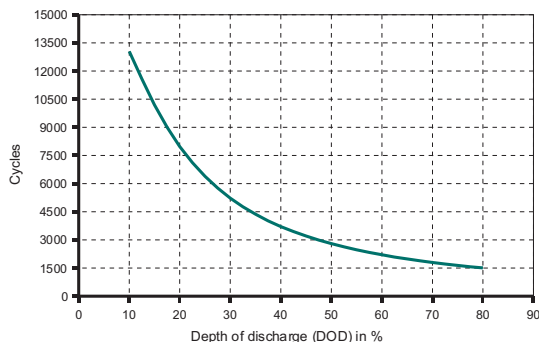
## 6. Maintenance

Every 6 months	check battery voltage as well as temperature
Every 12 months	check connections, record battery cell voltage as well as temperature

## 7. Operational data

Depth of discharge (DOD)	max. 80 % (U <sub>e</sub> = 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	unlimited, the minimal charge current has to be I <sub>10</sub>
Charge voltage at cyclic operation	restricted from 2.30 V to 2.40 V per cell, operating instruction is to be observed
Floating voltage/non cyclic voltage	2.25 V/cell
Adjustment of charge voltage	no adjustment necessary if battery temperature is between 10 °C and 45 °C in the monthly average, otherwise $\Delta U/\Delta T = -0.003$ V/cell per K
Recharge to 100 %	within a period of 1 up to 4 weeks
IEC 61427 cycles	>3000 (A+B)
Battery 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



BAE Batterien GmbH  
 Wilhelminenhofstraße 69/70  
 12459 Berlin · Germany  
 P.O. Box 9 · 12442 Berlin  
 Tel. +49 30 53001-661  
 Fax +49 30 5354949  
 E-mail: info@bae-berlin.de  
 www.bae-berlin.de