

BAE *SECURA PVV BLOCK solar*

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

1. Application

BAE *SECURA PVV BLOCK solar* batteries don't need to be refilled with water during the whole service life. Therefore, this battery type is maintenance-free. This eliminates checking of electrolyte level.

The batteries are used to store electrical energy in smaller 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)

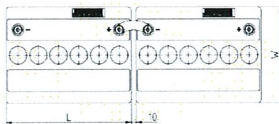
Type	C_{1h} Ah	C_{10h} Ah	C_{20h} Ah	C_{72h} Ah	C_{100h} Ah	C_{120h} Ah	C_{240h} Ah	R_i 1) mΩ	I_k 2) kA	Length (L) mm	Width (W) mm	Height (H) mm	Weight kg	
12 V 1 PVV	70	35	60	67	76	78	79	82	17.47	0.73	272	205	385	43.0
12 V 2 PVV	140	68	110	120	133	137	138	142	9.55	1.34	272	205	385	52.0
12 V 3 PVV	210	103	167	182	203	208	210	216	6.74	1.91	380	205	385	74.2
6 V 4 PVV	280	137	224	244	273	279	282	290	2.66	2.42	272	205	385	51.0
6 V 5 PVV	350	172	281	306	343	350	354	364	2.24	2.87	380	205	385	65.0
6 V 6 PVV	420	207	337	368	412	421	424	439	1.94	3.31	380	205	385	73.8
2 V 12 PVV	840	413	674	734	820	838	846	873	0.29	7.33	272	205	385	51.0
2 V 15 PVV	1050	517	844	920	1,029	1,050	1,062	1,094	0.24	8.81	380	205	385	65.0
2 V 18 PVV	1260	622	1,010	1,108	1,238	1,260	1,272	1,317	0.21	10.18	380	205	385	73.8

1, 2) Internal resistance R_i and short circuit current I_k according to IEC 60896-21

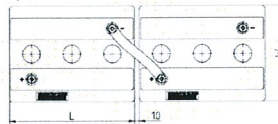
Height (H) is the maximum height between container bottom and top of the bolts in assembled condition.

All values given in the table correspond to 100 % DOD without voltage drop of connectors. Please consider item 7.

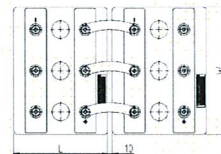
3. Terminal positions



12 V 1 PVV 70 to 12 V 3 PVV 210



6 V 4 PVV 280 to 6 V 6 PVV 420



2 V 12 PVV 840 to 2 V 18 PVV 1260

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.

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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 SAN (Styrol-Acrylic-Nitrile), grey coloured (colour may vary slightly from given image), 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 EN 60529, touch protected according to VBG 4
Horizontal operation	Please use BAE special type PVV "horizontal". The construction and production of this type is adapted to the horizontal operation.

5. Installation

BAE *SECURA PVV BLOCK solar* batteries are designed for indoor applications. For outdoor applications please contact BAE.

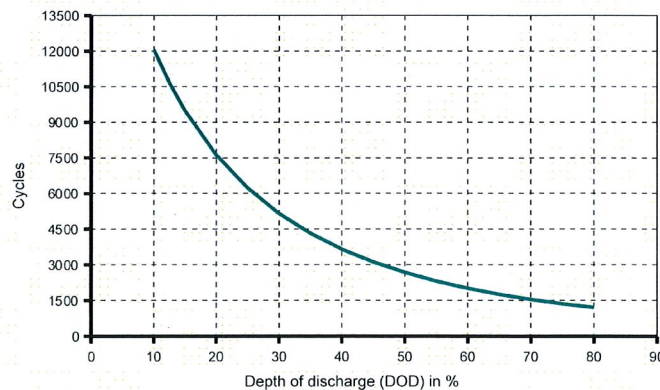
6. Maintenance

Every 6 months	check battery voltage, pilot block voltages, temperatures
Every 12 months	check connections, record battery voltage, block voltages and temperatures

7. Operational data

Depth of discharge (DOD)	max. 80 % ($U_e = 1.91$ V/cell for discharge times >10 h; 1.80 V/cell for 1 h), deep discharges of more than 80 % DOD have to be avoided
Initial charge current (I or bulk phase)	unlimited, the minimal charge current has to be 1.5 A/100 Ah C_{10}
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 per cell
Adjustment of charge voltage	no adjustment necessary if battery temperature is between 10 °C and 45 °C (50 °F and 113 °F) in the monthly average, $\Delta U/\Delta T = -0.003$ V/cell per K below 10 °C (50 °F)
Recharge to 100 %	within a period of 1 up to 4 weeks
IEC 61427 cycles	2,100 (A+B) at 40 °C (104 °F)
Battery temperature	-20 °C to 45 °C (-4 °F to 113 °F), recommended temperature range 10 °C to 30 °C (50 °F to 86 °F)
Self-discharge	approx. 2 % per month at 20 °C (68 °F)

8. Number of cycles as function of Depth of discharge



9. Transport

Batteries are not subject to ADR (road transport), if the conditions of Special Provisions 598 and 238 (Chapter 3.3) are observed. BAE cells/batteries are conform to the IMDG-Code, therefore these products are no dangerous goods on sea transport.

10. Standards

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