

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



1. Application

BAE PVV Block solar batteries are maintenance-free and used to store electric energy in small solar photovoltaic installations.

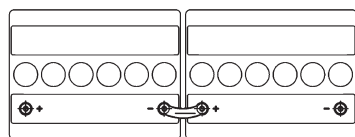
2. Technical data (Reference temperature 20°C)

| 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 | | | | | | |
| 12V 1 PVV 70 | 37.1 | 57.3 | 61.6 | 69.9 | 71.8 | 72.6 | 74.8 | 21.60 | 0.58 | 272 | 205 | 385 | 43 |
| 12V 2 PVV 140 | 71.5 | 109 | 118 | 133 | 137 | 138 | 144 | 10.80 | 1.15 | 272 | 205 | 385 | 52 |
| 12V 3 PVV 210 | 107 | 165 | 178 | 201 | 206 | 208 | 216 | 7.20 | 1.73 | 380 | 205 | 385 | 74.2 |
| 6V 4 PVV 280 | 148 | 229 | 246 | 280 | 287 | 290 | 300 | 2.70 | 2.30 | 272 | 205 | 385 | 51 |
| 6V 5 PVV 350 | 185 | 286 | 308 | 349 | 359 | 362 | 374 | 2.16 | 2.88 | 380 | 205 | 385 | 65 |
| 6V 6 PVV 420 | 222 | 344 | 370 | 419 | 431 | 435 | 448 | 1.80 | 3.45 | 380 | 205 | 385 | 73.8 |
| 2V 12 PVV 840 | 445 | 688 | 740 | 835 | 862 | 872 | 900 | 0.30 | 6.90 | 272 | 205 | 385 | 51 |
| 2V 15 PVV 1050 | 557 | 860 | 926 | 1 044 | 1 070 | 1 089 | 1 123 | 0.24 | 8.63 | 380 | 205 | 385 | 65 |
| 2V 18 PVV 1260 | 668 | 1 030 | 1 110 | 1 260 | 1 290 | 1 308 | 1 348 | 0.20 | 10.35 | 380 | 205 | 385 | 73.8 |

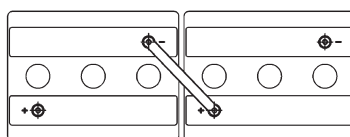
1) R_i and 2) I_k values according to IEC 60896-21

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

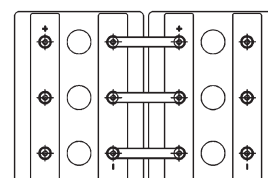
3. Terminal position



12V 1 PVV 70 to 12V 3 PVV 210



6V 4 PVV 280 to 6V 6 PVV 420



2V 12 PVV 840 to 2V 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.

Technical Specification of BAE *SECURA PVV BLOCK 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, SAN (Styrol-Acrylic-Nitrile), 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 BLOCK solar batteries are designed for indoor applications.

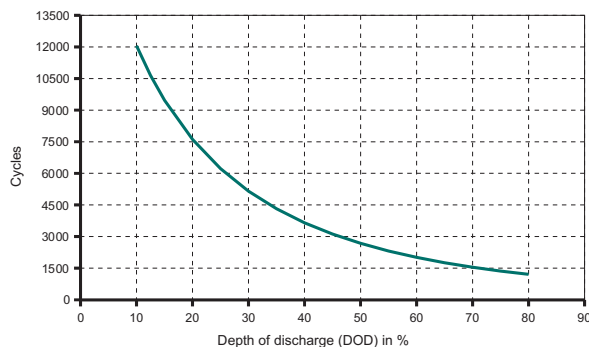
6. Maintenance

| | |
|-----------------|--|
| 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; 1.80 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 | 2100 (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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