

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)

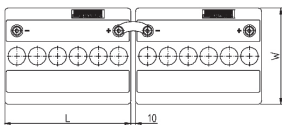
| Type | C_{1h} Ah | C_{10h} Ah | C_{20h} Ah | C_{72h} Ah | C_{100h} Ah | C_{120h} Ah | C_{240h} Ah | R_i 1) mΩ | I_k 2) kA | Length (L) mm | Width (W) mm | Height (H) mm | Weight kg |
|-----------------|----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|-------------------|-------------------|---------------------|--------------------|---------------------|--------------|
| 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

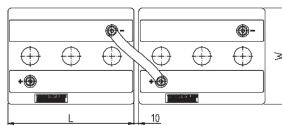
Height (H) is the maximum height between container bottom and top of the bolts in assembled condition.

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

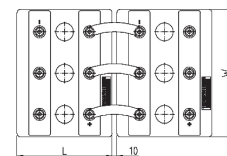
3. Terminal positions



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 arrester, 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.

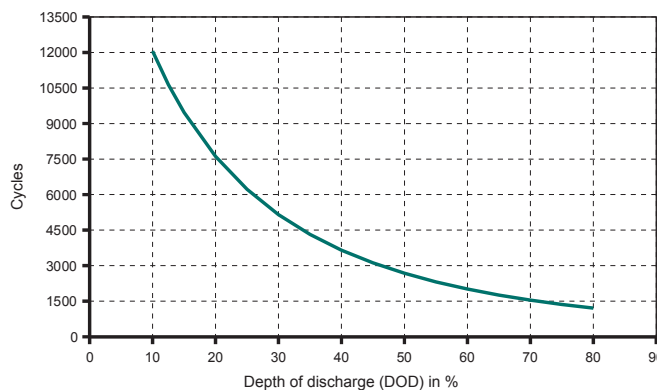
6. Maintenance

| | |
|-----------------|----------------------------------------------------------------------------|
| 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 |



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12/2012 4803728 Technical details may be subject to alterations.