

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

1. Application

Maintenance-free OPzV.block.solar batteries are used to store electrical energy in smaller solar photovoltaic installations. Due to the robust tubular plate design OPzV.block.solar batteries are excellently suited for highest requirements regarding cycling ability and long lifetime.

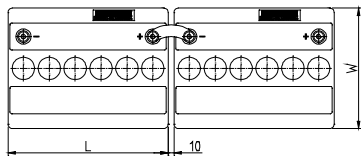
2. Technical data (Reference temperature 20 °C)

MOLL 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
U _e [V/cell]	1,67	1,80	1,80	1,80	1,80	1,80	1,80						
12V 1 OPzV.block.solar 80	35	60	67	76	78	79	82	17,47	0,73	272	205	385	43
12V 2 OPzV.block.solar 140	68	110	120	133	137	138	142	9,55	1,34	272	205	385	52
12V 3 OPzV.block.solar 210	103	167	182	203	208	210	216	6,74	1,91	380	205	385	74,2
6V 4 OPzV.block.solar 280	137	224	244	273	279	282	290	2,66	2,42	272	205	385	51
6V 5 OPzV.block.solar 350	172	281	306	343	350	354	364	2,24	2,87	380	205	385	65
6V 6 OPzV.block.solar 420	207	337	368	412	421	424	439	1,94	3,31	380	205	385	73,8
2V 12 OPzV.block.solar 840	413	674	734	820	838	846	873	0,29	7,33	205	272	385	51
2V 15 OPzV.block.solar 1050	517	844	920	1.029	1.050	1.062	1.094	0,24	8,81	205	380	385	65
2V 18 OPzV.block.solar 1260	622	1.010	1.108	1.238	1.260	1.272	1.317	0,21	10,18	205	380	385	73,8

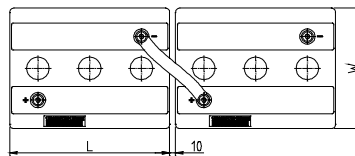
1, 2) Internal resistance R_i and short circuit current I_k according to IEC 60896-21.

Height is the maximum height between container bottom and top of the bolt in assembled condition. All values given in the table represent maximum values without voltage loss of connectors on the basis of 100 % DOD. Please consider item 7.

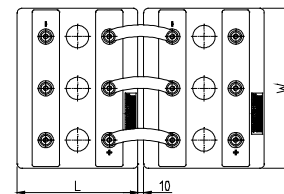
3. Terminal positions



12V 1 OPzV.block.solar 80 to
12V 3 OPzV.block.solar 210



6V 4 OPzV.block.solar 280 to
6V 6 OPzV.block.solar 420



2V 12 OPzV.block.solar 840 to
2V 18 OPzV.block.solar 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 solid insulated copper connectors with a cross-section of 90, 150 or 300 mm².



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4. Design

Positive electrode	tubular plate with woven polyester gauntlet and solid grids made of a corrosion-resistant PbCaSn-alloy
Negative electrode	grid-plate made of 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 (Styrene acrylonitrile), 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-proof, sliding plastic-coated "Panzerpol"
Protection class	IP 25 according to EN 60529, protected from contact according to VBG 4

5. Installation

OPzV.block.solar batteries are designed for indoor applications.
For outdoor applications please contact the battery manufacturer.

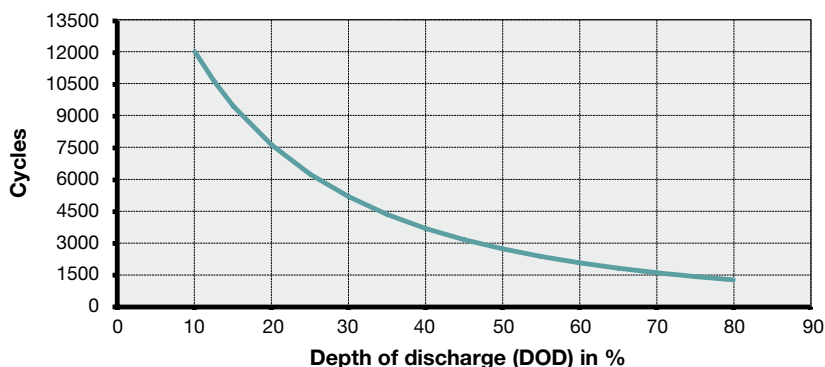
6. Maintenance

Every 6 months	check battery voltage, cell voltages and temperatures
Every 12 months	check connections, record battery voltage, cell voltages and temperatures (according to operation instructions)

7. Operational data

Depth of discharge (DOD)	max. 80 % ($U_g = 1.91$ 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	$5 \times I_{10}$ to zu $0.01 \times I_{10}$
Floating voltage/non cyclic voltage	2.25 V/cell
Charge voltage at cyclic operation	2.30 V – 2.35 V/cell
• DOD per Day < 40 % C_{10}	2.35 V – 2.40 V/cell
• DOD per Day > 40 % - 60 % C_{10}	
Adjustment of charge voltage	no adjustment necessary if battery temperature is between 10 °C und 45 °C in the monthly average, $\Delta U/\Delta T = -0.003$ V/cell per °C below 10 °C
Recharge to 100 %	within a period of 1 up to 4 weeks
IEC 61427 cycles	2100 (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 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. The cells/batteries 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