

# PowerSafe®

Sustainable solutions

## PowerSafe® OPzV



The PowerSafe® OPzV range has been specifically developed for renewable energy applications and in particular solar energy systems.

These single 2 volt cells are optimised for repeated deep cycling, high reliability and very low maintenance. This balanced combination of features makes OPzV cells the ideal solution for many of the most demanding applications and particularly for unmanned or remote installations where the highest level of reliability is essential.

The design brings together Valve Regulated Lead Acid (VRLA) technology and high performance tubular positive plates to produce an exceptional combination of benefits in a single cell.

VRLA technology has been enhanced to withstand the repeated, deep discharge of cells used for solar energy storage. It avoids the water loss associated with conventional lead acid batteries and therefore eliminates the need for topping-up. The use of a gel electrolyte means there is no free acid inside the cell so it can operate horizontally and vertically and be transported safely without fear of spills.

Tubular positive plates are widely used in batteries for heavy-duty cycling applications. This robust construction has been incorporated within the OPzV design to complement the low-maintenance features of the VRLA technology.

### Key Benefits

- Capacities from 296Ah to 4408Ah at the 120 hour rate (C120)
- Up to 5560 cycles to 25% depth of discharge
- Highest EUROBAT classification - 'Very Long Life'
- Vertical or horizontal installation
- No topping up required
- Minimal maintenance required
- Excellent operational safety including: fully insulated connectors, immobilised electrolyte, one way pressure relief valve with integral flame arrestor

## General Specifications

Powersafe OPzV Type	Nominal Voltage (V)	Number of Terminals	Nominal Capacity (Ah)		Nominal Dimensions						Typical Weight		Short Circuit Current (A)	Internal Resistance (mΩ)
			10 hr rate to 1.80Vpc @20°C	120 hr rate to 1.85Vpc @25°C	Length		Width		Height		kg	lbs		
					mm	in	mm	in	mm	in				
4 OPzV 200	2	2	215	296	103	4.06	206	8.12	403	15.88	19.5	43	2195	0.95
5 OPzV 250	2	2	265	371	124	4.89	206	8.12	403	15.88	23.5	51.9	2737	0.76
6 OPzV 300	2	2	320	445	145	5.71	206	8.12	403	15.88	28.0	61.8	3175	0.66
5 OPzV 350	2	2	385	538	124	4.89	206	8.12	520	20.49	31.0	68.4	3410	0.61
6 OPzV 420	2	2	465	644	145	5.71	206	8.12	520	20.49	36.5	80.5	4043	0.51
7 OPzV 490	2	2	540	752	166	6.54	206	8.12	520	20.49	42.0	92.6	4607	0.45
6 OPzV 600	2	2	705	968	145	5.71	206	8.12	695	27.38	50.0	110.3	3796	0.55
8 OPzV 800	2	4	940	1284	210	8.27	191	7.53	695	27.38	68.0	150	5200	0.40
10 OPzV 1000	2	4	1170	1608	210	8.27	233	9.18	695	27.38	82.0	180.8	6460	0.32
12 OPzV 1200	2	4	1410	1932	210	8.27	275	10.84	695	27.38	97.0	213.9	7675	0.27
12 OPzV 1500	2	4	1600	2196	210	8.27	275	10.84	845	33.29	120.0	264.6	7510	0.28
16 OPzV 2000	2	6	2110	2940	212	8.35	397	15.64	820	32.31	165.0	363.8	10048	0.21
20 OPzV 2500	2	8	2640	3672	212	8.35	487	19.19	820	32.31	200.0	441	12606	0.17
24 OPzV 3000	2	8	3170	4404	212	8.35	576	22.69	820	32.31	240.0	529.2	14964	0.14

**Note:** Height shown is overall height, including connectors and shrouds.

## Installation and Operation

- Cells can be installed horizontally or vertically to minimise use of floor space
- Optional racking offers easy installation and space saving accommodation

## Standards

- Compliant with international standard IEC 61427-1:2013
- Tested according to international standard IEC 60896-21 and compliant to defined requirements of IEC 60896-22
- Conforms to the DIN standard 40742 (valve regulated OPzV single cells)
- Proof against deep discharge according to DIN 43539 Part 5
- Classified as “very long life” according to the EUROBAT guide 2015
- Low ventilation requirement according to EN 50272-2 and IEC 62485-2
- The management systems governing the manufacture of PowerSafe® OPzV products are ISO 9001:2008 and ISO 14001:2004 certified

## Construction

**Positive electrode:** Tubular plate with lead-tin-calcium alloy

**Negative electrode:** Flat plate with lead calcium alloy grid

**Separators:** Low resistance microporous material

**Container and lid:** Made from Acrylonitrile Butadiene Styrene (ABS) with optional flame retardant ABS available (UL94 V-0)

**Electrolyte:** Sulphuric acid immobilised as a gel

**Terminals:** With brass inserts and M10 stainless steel bolts. Coloured washers provided for easy polarity recognition

**Connectors:** • For vertical installation: insulated solid copper connector (30mm x 3mm)

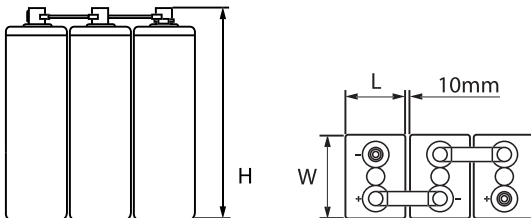
• For horizontal installation: insulated flexible cable connectors (70mm<sup>2</sup>)

Each connector design is of the bolt-on type and allows for voltage measurements

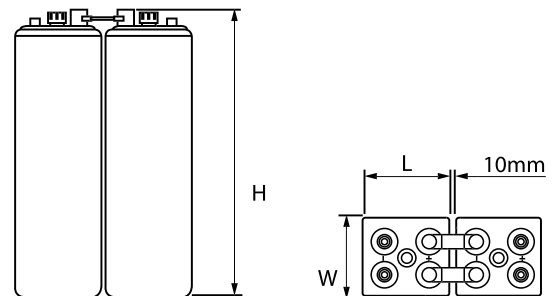
**Pressure relief valve:** One way valve with flame arrestor

## Outline Drawings

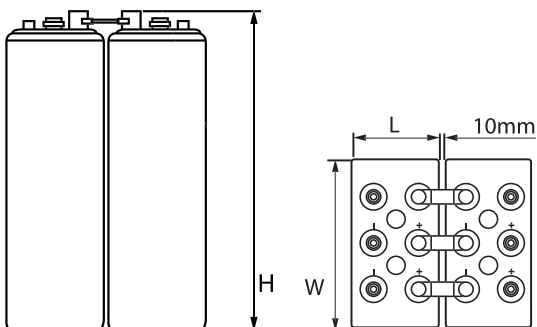
4 OPzV 200 - 6 OPzV 600



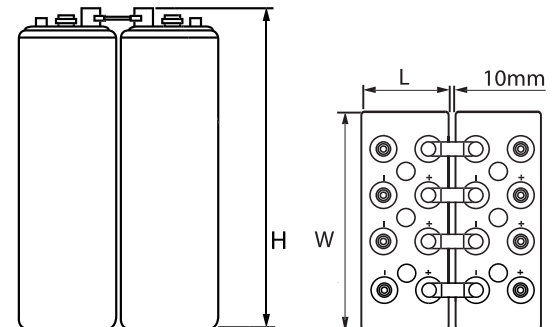
8 OPzV 800 - 12 OPzV 1500



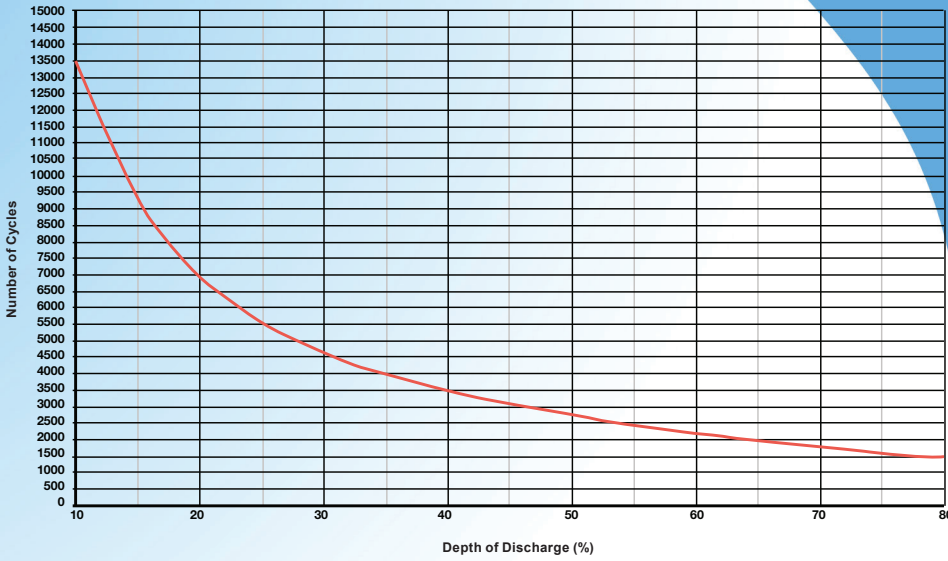
16 OPzV 2000



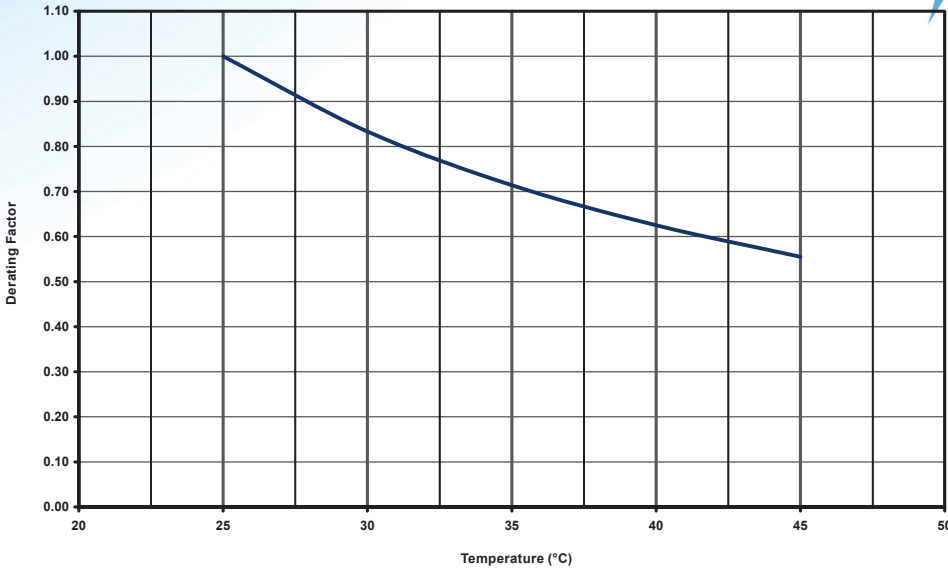
20 OPzV 2500 - 24 OPzV 3000



**PowerSafe® OPzV Renewable Energy Applications  
Number of Cycles vs Depth of Discharge (25°C)**



**Batteries for Renewable Energy Applications  
Derating Factor for Number of Cycles vs Average Cell Temperature**



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