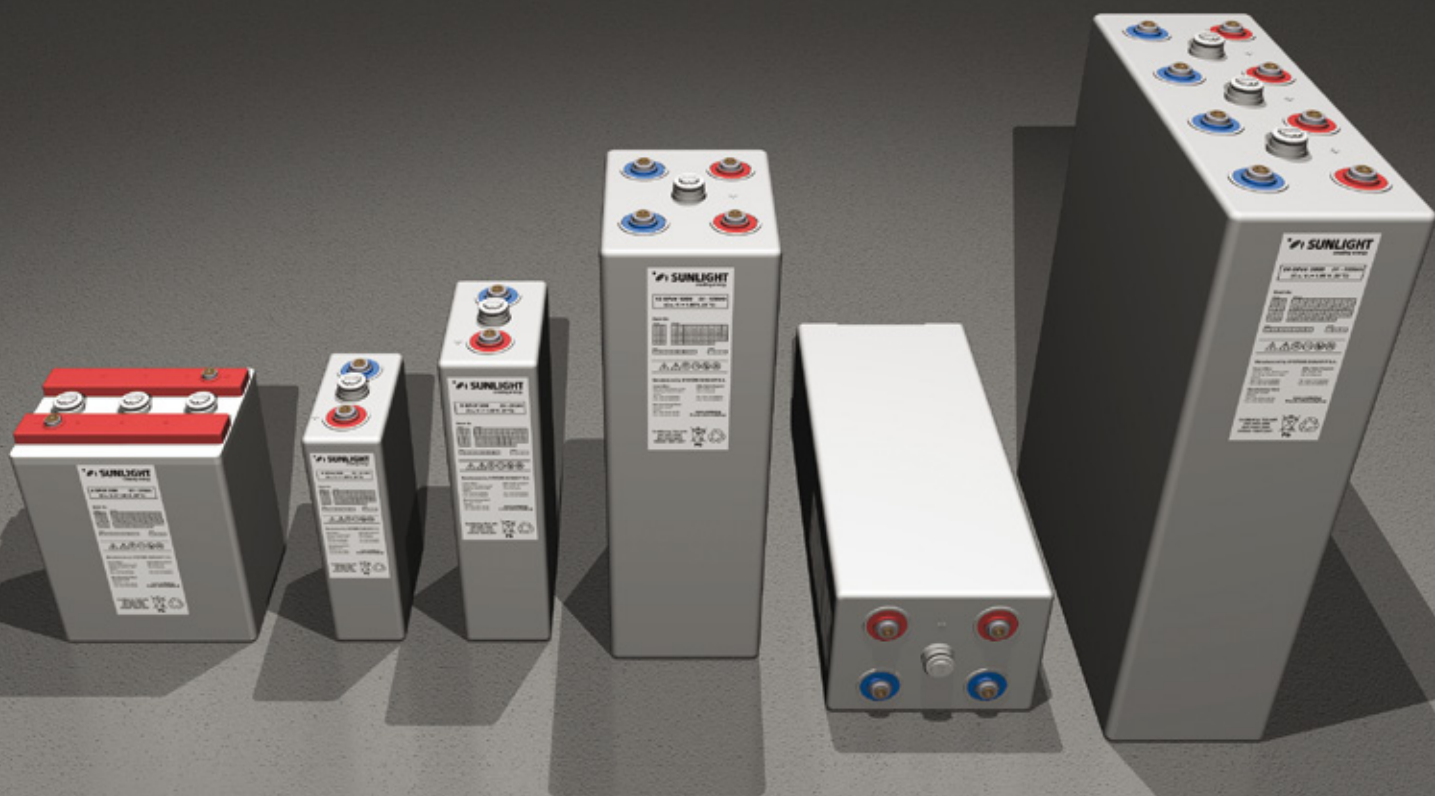


OPzV Batteries

Technical Data



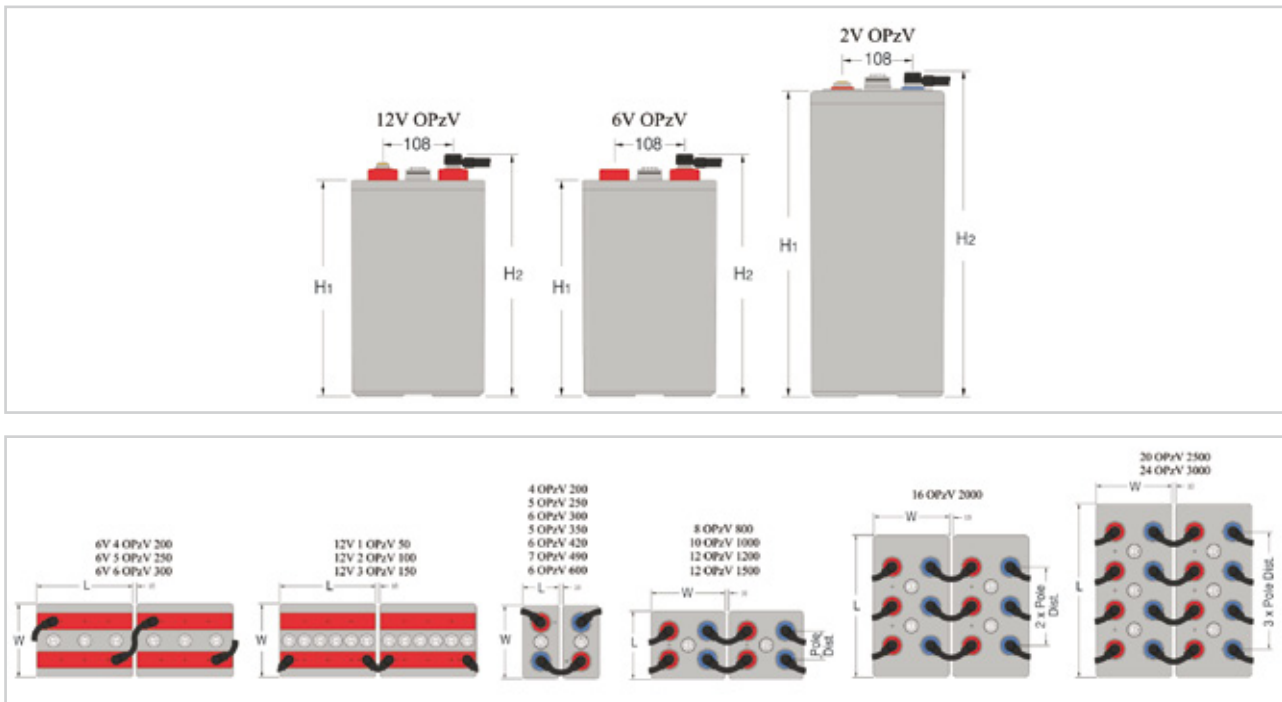
 **SUNLIGHT**
creating energy

Product Range

	Type	Positive Plates Number		Number of Poles	Nom. capacity (Ah at 20°C)				Length (mm)	Width (mm)	Height ₁ (mm)	Height ₂ (mm)	Pole Dist. (mm)	Weight (approx. kg)	Nom. Voltage	Short Circuit Current (A)	Internal Resistance (mOhm)
		C10 (Ah) 1.80 Vpc	C5 (Ah) 1.75 Vpc		C3 (Ah) 1.75 Vpc	C1 (Ah) 1.75 Vpc											
Cells	2V 4 OPzV 200 ¹	4	50	2	224	202	179	124	103	206	355	382	-	20	2	2300	0.88
	2V 5 OPzV 250 ¹	5	50	2	280	253	224	155	124	206	355	382	-	24	2	2860	0.71
	2V 6 OPzV 300 ¹	6	50	2	336	303	268	185	145	206	355	382	-	28	2	3380	0.60
	2V 5 OPzV 350 ¹	5	70	2	405	365	320	212	124	206	471	498	-	31	2	3380	0.60
	2V 6 OPzV 420 ¹	6	70	2	486	438	384	252	145	206	471	498	-	37	2	3980	1.00
	2V 7 OPzV 490 ¹	7	70	2	567	512	447	292	166	206	471	498	-	42	2	4520	0.45
	2V 6 OPzV 600 ¹	6	100	2	690	623	539	330	145	206	646	673	-	50	2	4360	0.47
	2V 8 OPzV 800 ¹	8	100	4	920	831	720	445	191	210	646	673	80	68	2	5980	0.34
	2V 10 OPzV 1000 ¹	10	100	4	1150	1039	899	554	233	210	646	673	110	82	2	7380	0.28
	2V 12 OPzV 1200 ¹	12	100	4	1380	1247	1076	657	275	210	646	673	140	97	2	8640	0.24
	2V 12 OPzV 1500 ¹	12	125	4	1620	1470	1275	784	275	210	797	824	140	120	2	9440	0.22
	2V 16 OPzV 2000 ¹	16	125	6	2160	1960	1701	1049	399	214	772	799	110	165	2	12680	0.16
	2V 20 OPzV 2500 ¹	20	125	8	2700	2452	2130	1322	487	212	772	799	110	200	2	16240	0.13
	2V 24 OPzV 3000 ¹	24	125	8	3240	2940	2544	1552	576	212	772	799	140	240	2	18460	0.11
Blocks	6V 4 OPzV 200 ²	4	50	2	206	190	169	117	272	205	332	371	-	48	6	2260	2.70
	6V 5 OPzV 250 ²	5	50	2	257	237	211	146	380	205	332	371	-	63	6	2740	2.22
	6V 6 OPzV 300 ²	6	50	2	309	285	253	173	380	205	332	371	-	70	6	3220	1.89
	12V 1 OPzV 50 ²	1	50	2	51	47	42	30	272	205	332	371	-	43	12	620	19.80
	12V 2 OPzV 100 ²	2	50	2	102	94	84	59	272	205	332	371	-	52	12	1240	9.90
	12V 3 OPzV 150 ²	3	50	2	153	141	126	88	380	205	332	371	-	72	12	1720	7.08

¹ According to DIN 40 742 ² According to DIN 40 744 *includes installed connectors and shrouds.

Drawings



All dimensions and weights shown are subject to manufacturing tolerances

Technical Features

Design

Positive plates	Tubular plates with corrosion resistant Lead Calcium Tin Alloy.
Negative plates	Pasted negative plates of grid design with optimized Lead Calcium Tin Alloy.
Separators	Low resistance, microporous PVC
Electrolyte	Diluted sulphuric acid fixed as GEL
Container, lid material	Plastic case made of polymer plastic ABS (acrylonitrile-butadiene-styrene copolymer). Optionally available in flame retardant plastic ABS.
Poles	Premium design with insert and rubber seal in the lid for hardness and acid resistance. M10 brass inlay.
Connectors	Accurate voltage and impedance measurements are possible due to bolt-on type design. Steel bolts with plastic encapsulated heads. A wide variety of insulated flexible and solid copper connectors is available.
Pressure relief valve	Relief valve with integral flame arrestor.

Charging

Floating voltage set point	2.25 V/cell at 20°C.
Recommended Boost Charge Voltage	2.33 V/cell - 2.40 V/cell at 20°C
Max. charge current	No limit for float voltage applications. The maximum permissible ripple current value is 0.05 I ₁₀ . Under no circumstance this value should exceed 0.1 I ₁₀ .
Max. 60 sec safety current	2500A per pair of poles
Recommended End of Discharge voltage	1.60 V/cell for 15 min - 1 hr discharge 1.70 V/cell for 1 hr - 5 hr discharge 1.75 V/cell for 5 hr - 8 hr discharge 1.80 V/cell for 8 hr - 10 hr discharge In the performance tables, the end of discharge voltages extend up to 1.60 V, however it is highly recommended to take into consideration the values above, in order to avoid deep battery discharges.

Operational Data

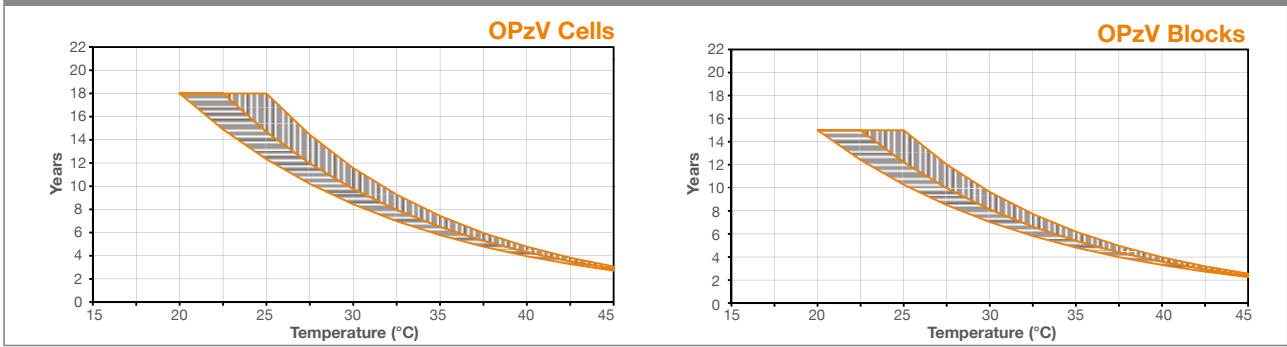
Expected service life	18 years for 2V cells and 15 years for 6V & 12V blocks (stand-by float, 20°C).
Maintenance-free	No topping up water during life.
Operating temperature	Recommended 10°C to 30°C. Min: -20°C / Max: 45°C. At very low temperatures (i.e. below 0°C) the acid in the electrolyte may reach a density where it freezes (between -6°C and -13°C for a fully discharged battery).
Storage Time	Maximum shelf life up to 6 months at 20°C, 4 months at 30°C or 2 months at 40°C.
Self discharge rate	Approx. 2% per month at 20°C.
Expected number of cycles	The number of such cycles which can be obtained is typically over 1600 at 60% DoD, as dictated by the IEC896-2 (>1000 cycles).

Certified Quality

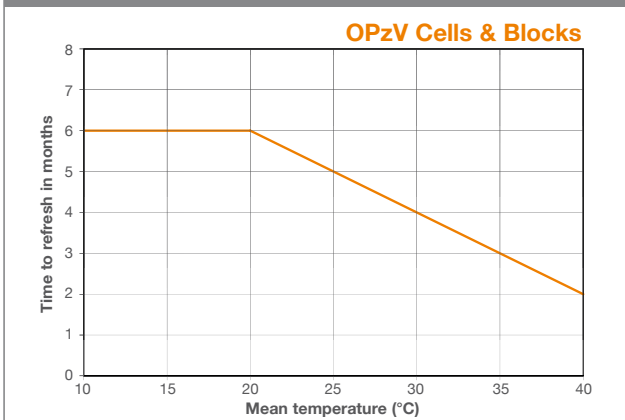
- “Long Life” according to Eurobat classification
- Tested according to IEC 60896-21 and fully compliant to IEC 60896-22
- Optimized for deep discharge recovery according to DIN 43539T5 Part 5
- Full conformity to DIN 40742 specifications for OPzV cells and DIN 40744 for OPzV blocks
- Compliant to the safety requirements of EN 50272-2 for stationary batteries
- Manufactured in SUNLIGHT’s European production facilities, certified with ISO 9001, ISO 14001, BS OHSAS 18001

Diagrams

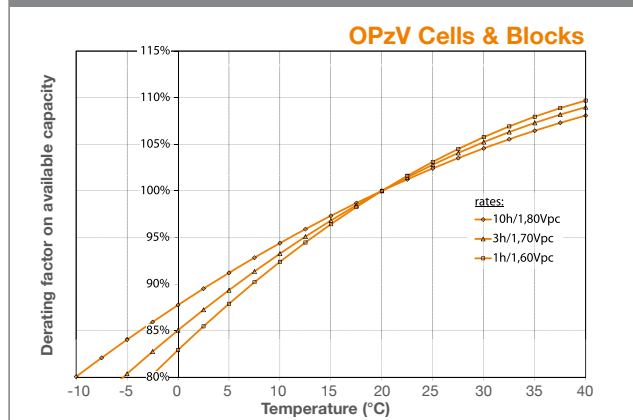
Expected Service Life vs. Operating Temperature



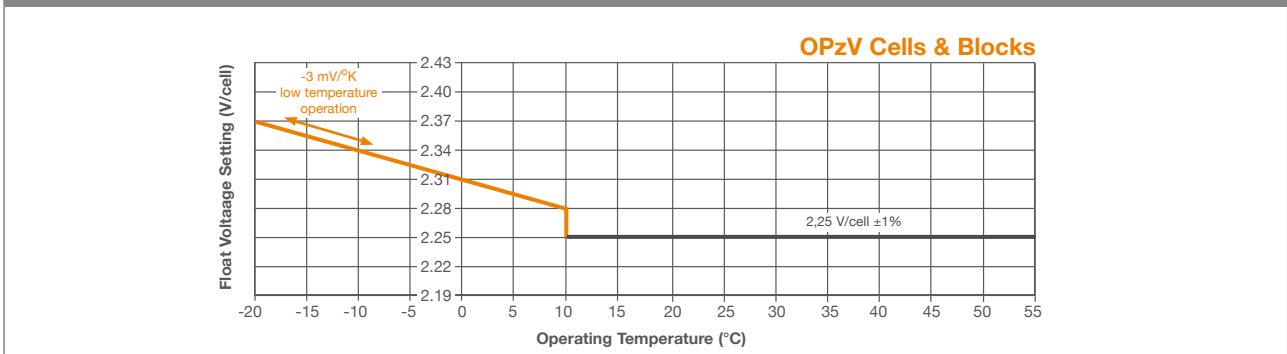
Time to Refresh vs. Temperature



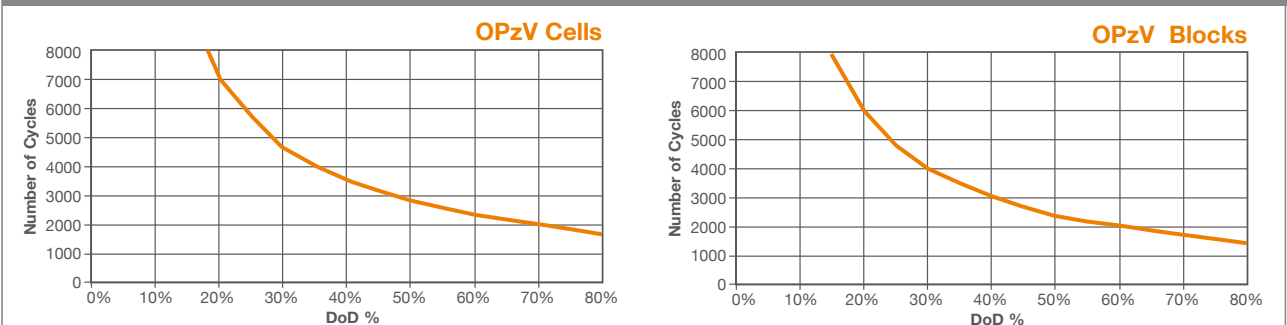
Capacity vs. Temperature



Float Voltage Setting vs. Operating Temperature



Expected Number of Cycles vs. DoD at 20°C



Performance Data

Discharge Constant Power at 20°C (Watts/cell)

		End Voltage 1.83 V/cell														
		10 min	15 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h
Monoblocks	12V 1 OPzV 50	79.4	73.0	59.6	50.8	44.4	30.1	23.1	18.9	16.0	14.0	12.4	11.2	9.3	8.1	5.3
	12V 2 OPzV 100	158.8	146.1	119.2	101.6	88.8	60.2	46.2	37.7	32.0	27.9	24.8	22.3	18.7	16.1	10.5
	12V 3 OPzV 150	225.9	209.0	172.4	147.8	129.9	88.9	68.5	56.1	47.7	41.6	37.0	33.3	27.9	24.1	15.7
	6V 4 OPzV 200	299.0	277.6	230.7	198.5	174.7	119.9	92.5	75.8	64.4	56.2	50.0	45.0	37.7	32.5	21.3
	6V 5 OPzV 250	366.2	340.6	284.1	245.1	216.2	149.0	115.1	94.4	80.3	70.1	62.3	56.2	47.1	40.6	26.6
	6V 6 OPzV 300	423.7	395.3	332.0	287.9	254.7	176.9	137.0	112.6	95.9	83.8	74.5	67.2	56.4	48.7	31.9
2V Cells	4 OPzV 200	319.7	297.5	247.7	212.9	187.2	128.2	99.0	81.3	69.4	60.7	54.1	48.9	41.1	35.6	23.5
	5 OPzV 250	396.9	369.4	308.0	265.1	233.2	160.0	123.6	101.5	86.6	75.8	67.6	61.0	51.4	44.5	29.4
	6 OPzV 300	470.5	438.6	366.5	315.9	278.2	191.3	147.9	121.6	103.8	90.8	81.0	73.2	61.6	53.3	35.2
	5 OPzV 350	473.5	454.3	391.1	344.4	308.1	218.9	171.8	142.5	122.3	107.5	96.1	87.1	73.5	63.9	42.5
	6 OPzV 420	563.7	535.9	462.8	408.4	366.1	261.1	205.3	170.4	146.3	128.7	115.1	104.3	88.1	76.6	51.0
	7 OPzV 490	637.5	609.9	529.0	468.3	420.8	301.8	237.9	197.8	170.0	149.6	133.9	121.4	102.6	89.2	59.4
	6 OPzV 600	637.0	630.0	564.6	511.0	467.1	349.4	280.7	235.7	203.8	180.0	161.5	146.6	124.3	108.2	72.4
	8 OPzV 800	874.6	858.7	768.5	693.5	632.7	470.6	377.0	316.0	273.0	240.9	216.0	196.0	166.1	144.5	96.6
	10 OPzV 1000	1066.7	1058.0	952.1	860.3	785.5	585.7	469.8	394.1	340.5	300.6	269.6	244.8	207.4	180.5	120.7
	12 OPzV 1200	1248.9	1232.5	1119.8	1014.1	928.0	695.6	559.6	470.2	406.8	359.3	322.4	292.9	248.3	216.2	144.8
	12 OPzV 1500	1514.3	1489.1	1346.6	1218.0	1113.2	830.8	666.2	558.3	481.9	425.0	380.8	345.4	292.1	253.8	168.7
	16 OPzV 2000	2048.3	2019.2	1807.6	1633.7	1492.0	1111.5	890.5	745.7	643.5	567.3	508.2	460.9	389.7	338.5	225.0
	20 OPzV 2500	2578.4	2554.2	2288.1	2064.6	1882.3	1396.6	1116.8	934.2	805.6	709.9	635.7	576.3	487.1	423.1	281.0
	24 OPzV 3000	2973.6	2947.6	2649.0	2402.0	2199.0	1649.0	1325.5	1112.2	961.0	848.0	760.1	689.7	583.6	507.2	337.5

		End Voltage 1.80 V/cell														
		10 min	15 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h
Monoblocks	12V 1 OPzV 50	87.4	80.2	64.9	54.9	47.8	32.0	24.4	19.8	16.8	14.6	12.9	11.6	9.7	8.4	5.4
	12V 2 OPzV 100	174.9	160.4	129.8	109.9	95.5	64.0	48.8	39.7	33.6	29.2	25.9	23.3	19.4	16.7	10.9
	12V 3 OPzV 150	249.4	229.9	188.2	160.3	140.2	94.8	72.5	59.2	50.1	43.6	38.7	34.8	29.1	25.1	16.3
	6V 4 OPzV 200	329.5	305.1	251.4	214.9	188.1	127.5	97.7	79.7	67.6	58.8	52.2	47.0	39.2	33.8	22.0
	6V 5 OPzV 250	404.0	374.4	309.9	265.7	233.1	158.6	121.7	99.4	84.3	73.4	65.2	58.6	49.0	42.2	27.5
	6V 6 OPzV 300	468.0	435.2	362.8	312.5	275.1	188.5	145.1	118.7	100.8	87.9	78.0	70.2	58.8	50.6	33.0
2V Cells	4 OPzV 200	353.4	327.8	270.0	230.1	201.0	135.7	104.1	85.2	72.4	63.2	56.3	50.8	42.6	36.9	24.3
	5 OPzV 250	438.8	407.2	336.0	286.6	250.5	169.4	130.0	106.4	90.5	79.0	70.3	63.4	53.3	46.1	30.3
	6 OPzV 300	520.8	483.6	400.1	341.9	299.1	202.7	155.7	127.5	108.5	94.7	84.3	76.1	63.9	55.3	36.4
	5 OPzV 350	533.8	503.0	429.9	375.9	334.3	233.7	182.0	150.3	128.5	112.7	100.6	91.0	76.7	66.5	44.0
	6 OPzV 420	630.0	594.1	509.3	446.4	397.6	279.1	217.7	179.9	154.0	135.0	120.6	109.1	92.0	79.7	52.8
	7 OPzV 490	714.2	676.7	582.8	512.7	457.8	323.1	252.7	209.1	179.1	157.2	140.4	127.1	107.2	93.0	61.7
	6 OPzV 600	723.6	702.0	623.1	561.2	510.7	376.1	299.5	250.2	215.5	189.8	169.9	154.0	130.1	113.0	75.2
	8 OPzV 800	992.6	957.9	847.3	760.7	690.6	505.9	401.7	335.0	288.3	253.7	227.0	205.6	173.7	150.8	100.2
	10 OPzV 1000	1225.8	1185.9	1050.2	944.2	858.0	630.0	500.9	418.0	359.9	316.8	283.4	256.8	217.0	188.4	125.3
	12 OPzV 1200	1430.0	1389.4	1235.9	1114.4	1014.9	749.5	597.5	499.4	430.4	379.1	339.4	307.7	260.1	226.0	150.4
	12 OPzV 1500	1724.1	1670.7	1483.7	1335.7	1215.0	893.5	710.3	592.2	509.3	447.9	400.4	362.5	305.7	265.0	175.2
	16 OPzV 2000	2320.1	2244.4	1990.5	1790.9	1627.7	1194.8	948.9	790.7	679.8	597.7	534.2	483.6	407.7	353.4	233.6
	20 OPzV 2500	2957.1	2850.5	2520.4	2263.0	2053.3	1500.8	1189.7	990.4	851.0	747.8	668.2	604.7	509.7	441.7	291.8
	24 OPzV 3000	3369.5	3279.0	2920.1	2635.8	2402.3	1775.0	1414.3	1180.6	1016.3	894.2	799.7	724.3	611.1	529.9	350.6

		End Voltage 1.75 V/cell														
		10 min	15 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	6 h	7 h	8 h	10 h	12 h	20 h
Monoblocks	12V 1 OPzV 50	99.7	90.9	72.5	60.7	52.3	34.3	25.8	20.8	17.5	15.2	13.4	12.1	10.1	8.6	5.6
	12V 2 OPzV 100	199.5	181.9	145.1	121.3	104.6	68.5	51.6	41.6	35.1	30.4	26.9	24.1	20.1	17.3	11.2
	12V 3 OPzV 150	285.2	261.6	211.2	177.9	154.2	102.0	77.0	62.3	52.6	45.6	40.3	36.2	30.2	25.9	16.8
	6V 4 OPzV 200	376.5	346.5	281.4	237.7	206.3	136.8	103.5	83.8	70.7	61.4	54.3	48.8	40.7	35.0	22.7
	6V 5 OPzV 250	461.6	425.9	347.6	294.4	256.0	170.5	129.2	104.7	88.3	76.7	67.9	61.0	50.8	43.7	28.4
	6V 6 OPzV 300	535.7	496.1	408.0	347.5	303.2	203.3	154.5	125.3	105.9	91.9	81.4	73.2	61.0	52.5	34.1
2V Cells	4 OPzV 200	405.2	373.2	301.8	253.4	219.1	144.6	109.6	89.1	75.4	65.7	58.3	52.5	44.0	38.0	24.9
	5 OPzV 250	503.3	463.9	375.8	315.9	273.2	180.6	137.0	111.3	94.3	82.1	72.9	65.7	55.0	47.5	31.2
	6 OPzV 300	597.3	551.5	448.0	377.3	326.7	216.4	164.2	133.5	113.1	98.5	87.5	78.8	66.0	57.0	37.4
	5 OPzV 350	616.3	578.0	487.1	420.5	370.1	252.6	194.1	159.0	135.2	118.1	105.1	94.8	79.7	68.9	45.5
	6 OPzV 420	727.7	683.0	578.0	500.3	441.0	302.1	232.5	190.5	162.2	141.7	126.1	113.8	95.6	82.8	54.6
	7 OPzV 490	828.3	779.5	662.7	575.9	509.0	350.6	270.5	221.9	189.0	165.2	147.1	132.8	111.6	96.6	63.8
	6 OPzV 600	846.3	809.1	712.1	635.4	573.0	411.9	323.6	267.8	229.1	200.7	178.9	161.6	136.0	117.7	77.8
	8 OPzV 800	1158.2	1103.0	966.2	859.5	773.4	552.7	433.0	357.8	305.9	267.8	238.6	215.5	181.2	156.8	103.6
	10 OPzV 1000	1431.9	1365.6	1198.7	1067.7	961.7	689.0	540.4	446.8	382.1	334.6	298.2	269.4	226.5	196.1	129.6
	12 OPzV 1200	1680.6	1603.7	1413.1	1262.9	1140.0	821.5	646.0	535.0	458.0	401.3	357.8	323.3	272.0	235.5	155.7
	12 OPzV 1500	2012.4	1921.9	1691.1	1509.4	1361.2	977.0	766.3	633.1	540.8	473.1	421.3	380.2	319.2	275.9	181.3
	16 OPzV 2000	2706.4	2580.3	2268.2	2022.4	1822.2	1305.4	1022.9	844.8	721.4	630.9	561.7	507.0	425.6	367.8	241.6
	20 OPzV 2500	3438.7	3276.3	2872.4	2554.2	2296.8	1638.7	1281.9	1057.6	902.6	789.2	702.5	633.9	532.0	459.7	301.9
	24 OPzV 3000	3951.7	3772.0	3332.5	2981.8	2695.4	1943.5	1527.7	1263.8	1080.3	945.6	842.2	760.4	638.6	552.1	362.9

