



OPzV Series Tubular Gel Battery

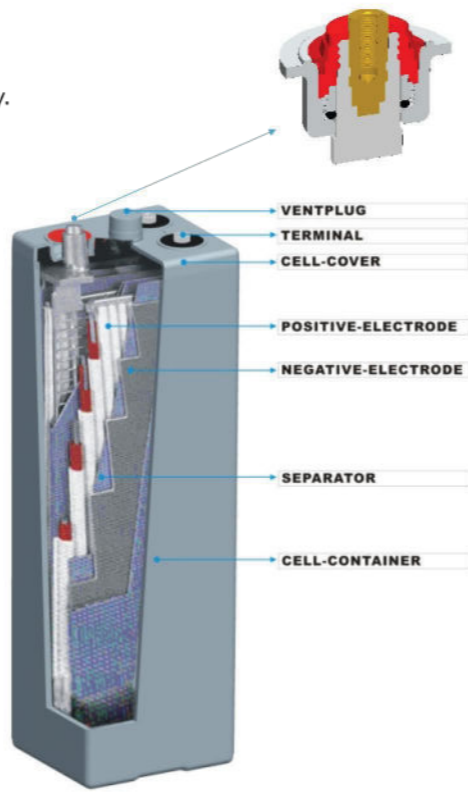




OPzV Series Battery

Main Technical Advantages

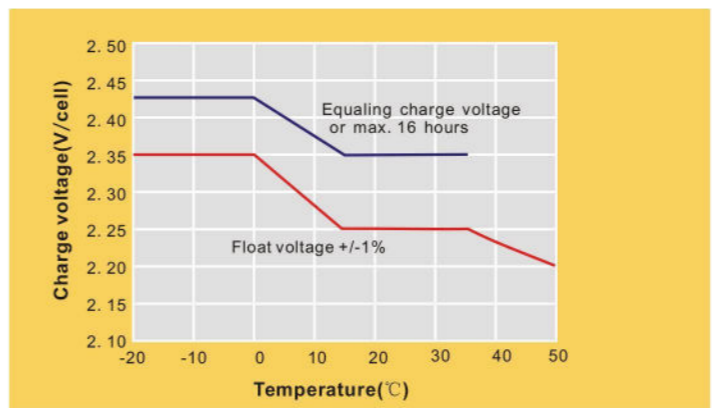
- Completely leak-free throughout the life of the battery.
- Service life up to 18-20 years in continuous float operation down to approx. 80% capacity.
- Positive Tubular Plate with lead-tin-calcium alloy.
- Negative Flat Plate with lead-calcium alloy grid.
- GEL Electrolyte for long life and wide temperature range.
- Jar Material - ABS to UL94 HB (Optional Flame retardant to UL94V-0 available)
- Low gassing thanks to antimony-free alloy and internal oxygen recombination. Minimum space required, room requirements are minimal (e.g. No washing facilities needed), ventilation requirements are minimal.
- Easy to move and handle.
- Terminal design - terminals with copper alloy insert and M10 stainless steel bolts. Colored polarity cap for easy recognition.
- Easy install using cable connectors with insulated terminal covers.
- Ready for immediate use without further commissioning work.
- Can be installed vertically or horizontally to save floor space.
- Very low self-discharge <50% of rated capacity in 2 years at 20°C ambient temperature.
- High cyclic ability over 600 cycles when discharged at 10 hours rate to an end voltage of 1.8Volt/cell at 20°C.
- Deep discharge protected, a load can be connected to the battery for up to 4 weeks.
- No internal short circuits possible due to the gel structure.
- No acid stratification, so no equalizing charge necessary.



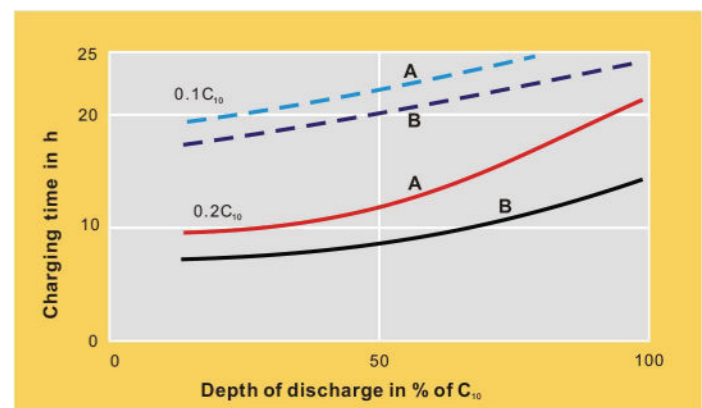
Main Applications

- Telecommunications
- Radio and cellular telephone relay stations
- Emergency lighting systems
- Power stations, renewable energy storage, off grid (solar/wind) energy storage.
- High cycling UPS and computer back-up
- Railway signaling
- Maritime standby power on ships and ashore
- Process and control engineering
- Standby power
- Utility Switchgear & Control

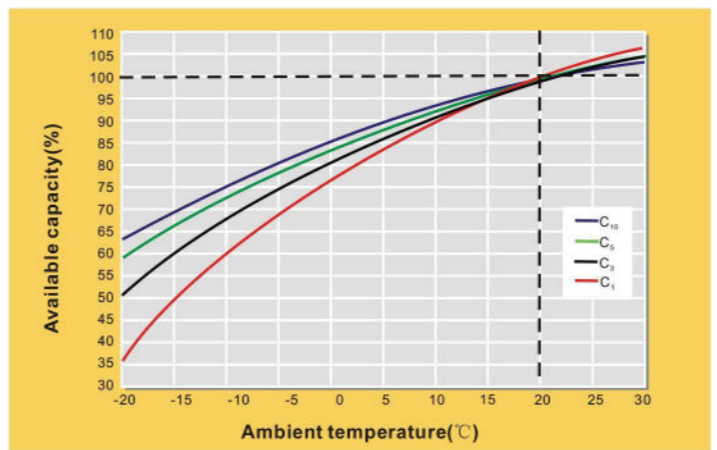
OPzV Curve



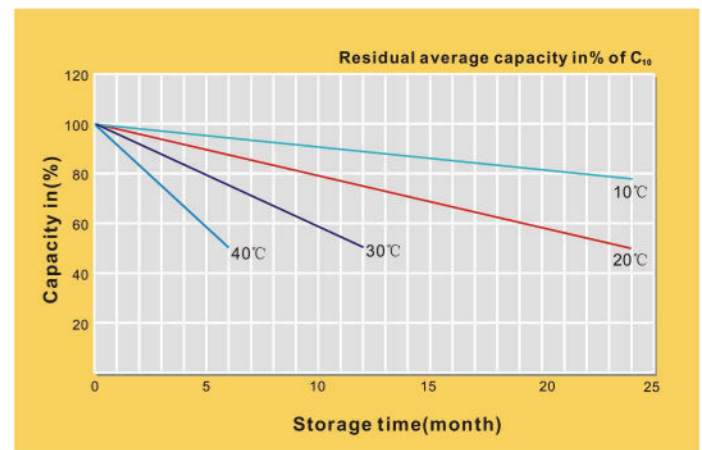
We recommend the voltage 2.25V for continuous charging. The charging voltage should be compensated to the curve under different ambient temperature.



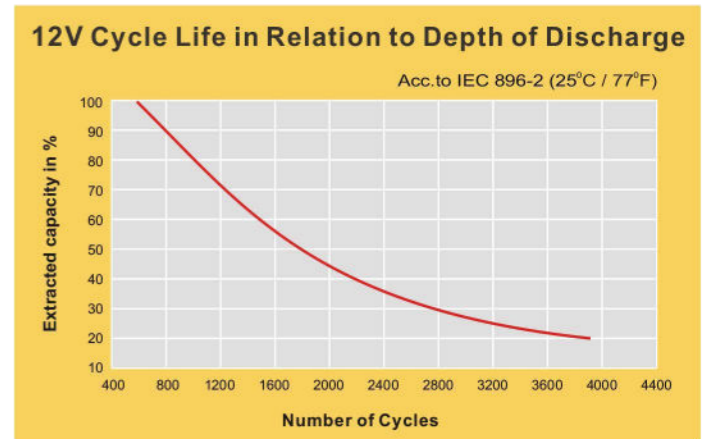
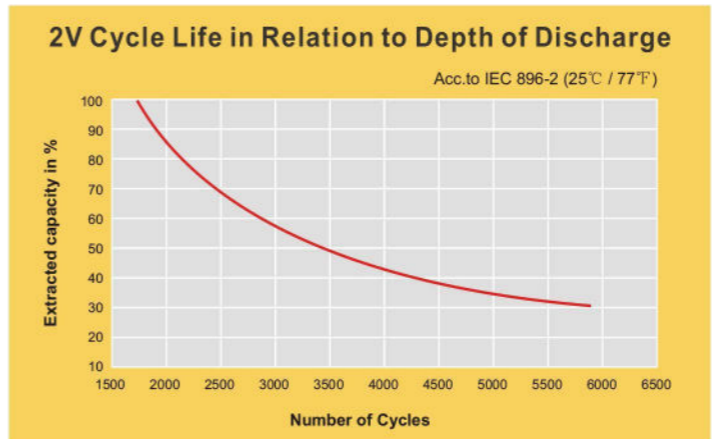
Re-charging time in relation to the initial charging current at 20°C.
 Charge voltage:
 A— 2.25V/cell B— 2.40V/cell
 - - - State of charge 100% - - - State of charge 90%



Available capacity in relation to the ambient temperature



Self-discharge in relation to the storage temperature

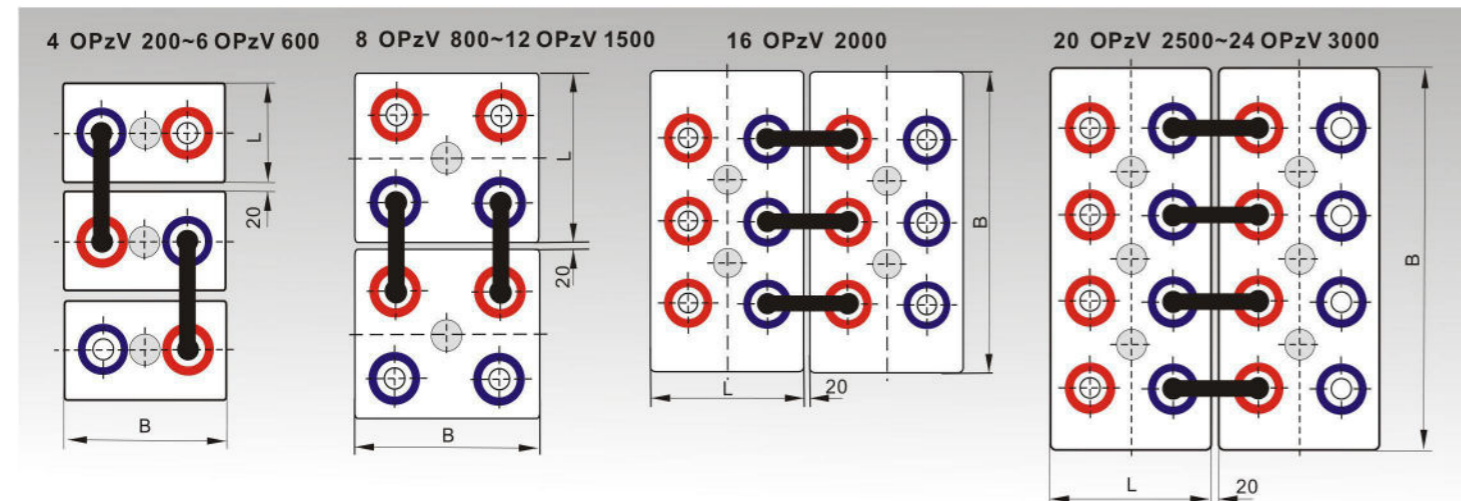


OPzV Specification

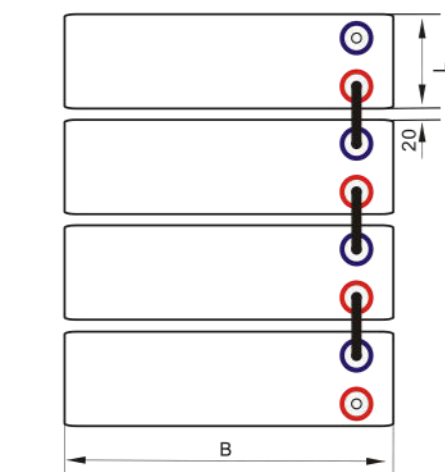
Model Number	Nominal Voltage (V)	Rated Capacity C ₁₀ (Ah)	Dimension (mm/in)								Approx Weight	
			Length		Width		Height		Total Height			
			mm	in	mm	in	mm	in	mm	in	Kg	lbs
4 OPzV 200	2	200	103	4.06	206	8.11	355	13.98	390	15.35	18.0	39.7
5 OPzV 250	2	250	124	4.88	206	8.11	355	13.98	390	15.35	22.0	48.5
6 OPzV 300	2	300	145	5.71	206	8.11	355	13.98	390	15.35	26.0	57.3
5 OPzV 350	2	350	124	4.88	206	8.11	471	18.54	506	19.92	29.0	63.9
6 OPzV 420	2	420	145	5.71	206	8.11	471	18.54	506	19.92	34.0	74.9
7 OPzV 490	2	490	166	6.54	206	8.11	471	18.54	506	19.92	39.0	86.0
6 OPzV 600	2	600	145	5.71	206	8.11	646	25.43	681	26.81	46.0	101.4
8 OPzV 800	2	800	191	7.52	210	8.27	646	25.43	681	26.81	64.5	142.2
10 OPzV 1000	2	1000	233	9.17	210	8.27	646	25.43	681	26.81	78.5	173.0
12 OPzV 1200	2	1200	275	10.83	210	8.27	646	25.43	681	26.81	93.0	205.0
12 OPzV 1500	2	1500	275	10.83	210	8.27	796	31.34	831	32.72	115.0	253.5
16 OPzV 2000	2	2000	399	15.71	214	8.27	772	30.39	807	31.77	155.0	341.6
20 OPzV 2500	2	2500	487	19.17	212	8.35	772	30.39	807	31.77	196.0	432.0
24 OPzV 3000	2	3000	576	22.68	212	8.35	772	30.39	807	31.77	232.0	511.3
12V 3 OPzV100FT	12	100	551	21.7	110	4.33	287	11.30	287	11.30	39.0	86.0
12V 3 OPzV120FT	12	120	551	21.7	110	4.33	287	11.30	287	11.30	42.5	93.7
12V 4 OPzV150FT	12	150	549.5	21.6	124.5	4.90	315	12.40	315	12.40	53.0	116.9

Type according to DIN 40742

Connection



12V 3 OPzV 100FT~12V 3 OPzV 150FT



Constant Current (Amp) and Constant Power (Watt) Discharge Table

Type	1.90 V/cell-Discharge in Amps at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	129	119	97.0	74.7	52.1	40.5	28.0	19.7	16.7	
5 OPzV 250	162	149	121	93.4	65.1	50.6	35.0	24.6	20.9	
6 OPzV 300	194	179	146	112	78.1	60.7	41.9	29.5	25.1	
5 OPzV 350	208	194	164	130	90.0	70.2	48.6	34.3	29.2	
6 OPzV 420	249	233	197	157	108	84.3	58.3	41.1	35.1	
7 OPzV 490	291	272	229	183	126	98.3	68.1	48.0	40.9	
6 OPzV 600	310	298	266	223	152	119	82.6	58.3	50.1	
8 OPzV 800	413	398	354	297	202	158	110	77.8	66.8	
10 OPzV 1000	517	497	443	371	253	198	138	97.2	83.5	
12 OPzV 1200	620	597	532	445	303	238	165	117	100	
12 OPzV 1500	663	656	620	555	373	294	205	145	125	
16 OPzV 2000	885	874	827	740	498	392	273	193	167	
20 OPzV 2500	1106	1093	1034	925	622	490	341	241	209	
24 OPzV 3000	1327	1311	1241	1110	746	587	409	290	251	
12V 3 OPzV100FT	78.5	71.2	53.0	40.4	27.3	21.4	15.0	10.6	9.06	
12V 3 OPzV120FT	90.6	84.3	63.6	48.5	32.8	25.7	18.0	12.8	10.9	
12V 4 OPzV150FT	118.6	106	79.5	60.6	41.1	32.0	22.5	15.9	13.6	

Type	1.90 V/cell-Discharge in W/cell at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	245	227	187	145	102	79.4	55.2	39.1	33.3	
5 OPzV 250	306	284	234	182	127	99.3	69.0	48.9	41.6	
6 OPzV 300	367	341	281	218	153	119	82.8	58.7	49.9	
5 OPzV 350	393	370	316	254	176	138	96.0	68.1	58.2	
6 OPzV 420	472	444	380	305	211	165	115	81.7	69.9	
7 OPzV 490	551	518	443	355	246	193	134	95.3	81.5	
6 OPzV 600	587	568	513	433	297	233	163	116	99.8	
8 OPzV 800	782	758	684	578	395	311	217	154	133	
10 OPzV 1000	978	947	855	722	494	389	272	193	166	
12 OPzV 1200	1174	1136	1026	867	593	466	326	232	200	
12 OPzV 1500	1256	1249	1197	1080	729	576	404	288	250	
16 OPzV 2000	1675	1665	1597	1440	973	768	539	384	333	
20 OPzV 2500	2093	2082	1996	1800	1216	960	673	480	416	
24 OPzV 3000	2512	2498	2395	2160	1459	1152	808	576	499	
12V 3 OPzV100FT	145.3	145.2	120.4	89.9	57.3	43.8	30.7	21.4	18.1	
12V 3 OPzV120FT	163.5	154.3	135.8	102.3	65.7	50.2	35.6	25.0	21.3	
12V 4 OPzV150FT	196.5	195.4	169.4	127.4	82.1	62.8	44.4	31.3	26.6	

Type	1.85 V/cell-Discharge in Amps at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	171	155	122	89.7	60.8	46.7	31.9	22.2	18.7	
5 OPzV 250	213	194	153	112	76.0	58.4	39.9	27.8	23.4	
6 OPzV 300	256	233	183	135	91.2	70.0	47.8	33.3	28.1	
5 OPzV 350	274	253	206	157	105	81.0	55.5	38.7	32.8	
6 OPzV 420	329	303	248	188	126	97.2	66.5	46.4	39.3	
7 OPzV 490	384	354	289	219	147	113	77.6	54.2	45.9	
6 OPzV 600	409	389	335	267	177	137	94.2	65.8	56.2	
8 OPzV 800	545	518	446	356	236	183	126	87.8	74.9	
10 OPzV 1000	682	648	558	445	295	228	157	110	93.7	
12 OPzV 1200	818	777	670	535	354	274	188	132	112	
12 OPzV 1500	876	854	781	666	436	339	233	164	140	
16 OPzV 2000	1167	1139	1041	888	581	452	311	218	187	
20 OPzV 2500	1459	1424	1302	1110	726	565	389	273	234	
24 OPzV 3000	1751	1708	1562	1332	871	677	467	327	281	
12V 3 OPzV100FT	96.5	85.1	63.6	46.5	29.5	22.5	16.1	11.3	9.57	
12V 3 OPzV120FT	115.8	102.1	76.3	55.8	35.4	27.0	19.3	13.5	11.5	
12V 4 OPzV150FT	144.8	127.7	95.4	69.7	44.2	33.7	24.1	16.9	14.4	

Type	1.85 V/cell-Discharge in W/cell at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	318	292	233	174	118	91.2	62.7	44.1	37.3	
5 OPzV 250	397	365	292	217	148	114	78.4	55.1	46.6	
6 OPzV 300	476	438	350	260	177	137	94.1	66.1	55.9	
5 OPzV 350	510	475	394	303	204	158	109	76.7	65.2	
6 OPzV 420	612	570	473	363	245	190	131	92.0	78.2	
7 OPzV 490	714	665	552	424	286	221	153	107	91.3	
6 OPzV 600	761	730	640	517	344	268	185	130	112	
8 OPzV 800	1014	973	853	689	459	357	247	174	149	
10 OPzV 1000	1268	1217	1066	862	574	446	309	217	186	
12 OPzV 1200	1522	1460	1279	1034	689	535	370	261	224	
12 OPzV 1500	1629	1605	1492	1288	847	661	459	324	279	
16 OPzV 2000	2171	2140	1990	1718	1129	882	612	432	373	
20 OPzV 2500	2714	2675	2487	2147	1412	1102	765	540	466	
24 OPzV 3000	3257	3210	2985	2577	1694	1323	918	648	559	
12V 3 OPzV100FT	160.9	146.7	122.4	90.5	57.6	44.0	31.7	22.4	19.1	
12V 3 OPzV120FT	193.0	176.1	147.0	109.0	69.2	52.8	38.1	26.9	22.9	
12V 4 OPzV150FT	241.3	220.1	183.6	135.8	86.5	66.1	47.6	33.6	28.6	

Type	1.80 V/cell-Discharge in Amps at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	210	188	142	101	66.8	50.8	34.4	23.8	20.0	
5 OPzV 250	263	235	178	126	83.5	63.5	43.0	29.8	25.0	
6 OPzV 300	315	282	214	152	100	76.2	51.6	35.7	30.0	
5 OPzV 350	337	306	240	176	115	88.1	59.8	41.4	35.0	
6 OPzV 420	405	367	289	212	139	106	71.8	49.7	42.0	
7 OPzV 490	472	429	337	247	162	123	83.7	58.0	49.0	
6 OPzV 600	503	470	390	301	195	149	102	70.5	60.0	
8 OPzV 800	671	627	520	401	259	199	135	94.0	80.0	
10 OPzV 1000	839	784	650	502	324	249	169	118	100	
12 OPzV 1200	1006	941	780	602	389	298	203	141	120	
12 OPzV 1500	1077	1034	910	750	479	369	252	175	150	
16 OPzV 2000	1436	1379	1214	1000	638	491	336	234	200	
20 OPzV 2500	1795	1723	1517	1250	798	614	420	292	250	
24 OPzV 3000	2154	2068	1820	1500	957	737	504	350	300	
12V 3 OPzV100FT	116.0	98.3	71.4	51.0	31.9	24.1	16.9	11.8	10.0	
12V 3 OPzV120FT	139.2	118.0	85.7	61.2	38.3	28.9	20.3	14.2	12.0	
12V 4 OPzV150FT	174.1	147.5	107.1	76.5	47.9	36.1	25.3	17.7	15.0	

Type	1.80 V/cell-Discharge in W/cell at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	384	348	269	194	129	98.8	67.4	47.1	39.7	
5 OPzV 250	480	435	337	243	161	123	84.3	58.8	49.6</	

Constant Current (Amp) and Constant Power (Watt) Discharge Table

Type	1. 75 V/cell-Discharge in Amps at 20°C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	248	210	152	105	68.6	51.9	35.1	24.2	20.3	
5 OPzV 250	311	263	190	131	85.8	64.9	43.8	30.3	25.4	
6 OPzV 300	373	316	228	158	103	77.9	52.6	36.3	30.5	
5 OPzV 350	399	343	256	183	119	90.1	61.0	42.1	35.6	
6 OPzV 420	479	411	308	220	142	108	73.1	50.6	42.7	
7 OPzV 490	559	480	359	257	166	126	85.3	59.0	49.8	
6 OPzV 600	595	526	416	313	200	152	104	71.7	60.9	
8 OPzV 800	794	702	554	418	267	203	138	95.6	81.3	
10 OPzV 1000	992	877	693	522	333	254	173	119	102	
12 OPzV 1200	1190	1053	832	626	400	305	207	143	122	
12 OPzV 1500	1274	1157	970	781	492	377	257	178	152	
16 OPzV 2000	1698	1543	1293	1041	656	502	342	237	203	
20 OPzV 2500	2123	1929	1617	1301	820	628	428	297	254	
24 OPzV 3000	2548	2314	1940	1561	984	754	513	356	305	
12V 3 OPzV100FT	133.1	109.9	76.8	54.3	33.5	25.2	17.5	12.1	10.2	
12V 3 OPzV120FT	159.7	131.8	92.2	65.2	40.2	30.3	21.1	14.6	12.2	
12V 4 OPzV150FT	199.7	164.8	115.2	81.5	50.3	37.9	26.3	18.2	15.3	

Type	1. 75 V/cell-Discharge in W/Cell at 20°C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	446	384	284	201	132	101	68.5	47.8	40.3	
5 OPzV 250	558	480	355	251	165	126	85.6	59.7	50.4	
6 OPzV 300	669	577	426	301	198	151	103	71.7	60.4	
5 OPzV 350	717	626	480	350	228	174	119	83.2	70.5	
6 OPzV 420	860	751	576	420	274	209	143	99.8	84.6	
7 OPzV 490	1003	876	672	491	320	244	167	116	98.7	
6 OPzV 600	1069	962	779	598	385	295	202	141	121	
8 OPzV 800	1425	1282	1038	198	513	394	270	189	161	
10 OPzV 1000	1782	1603	1298	997	641	492	337	236	201	
12 OPzV 1200	2138	1923	1557	1196	769	591	404	283	242	
12 OPzV 1500	2288	2114	1817	1491	946	730	501	351	302	
16 OPzV 2000	3051	2819	2422	1987	1262	973	668	469	403	
20 OPzV 2500	3814	3523	3028	2484	1577	1216	835	586	504	
24 OPzV 3000	4576	4228	3634	2981	1893	1460	1002	703	604	
12V 3 OPzV100FT	226.2	193.5	145.3	104.6	65.0	49.2	34.4	24.0	20.3	
12V 3 OPzV120FT	271.5	232.2	174.0	126.0	77.9	59.0	41.3	28.8	24.3	
12V 4 OPzV150FT	339.4	290.2	217.9	157.0	97.4	73.7	51.6	36.0	30.4	

Type	1.60 V/cell-Discharge in Amps at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	313	251	171	114	72.8	54.6	36.5	25.0	20.9	
5 OPzV 250	392	314	214	143	91.1	68.3	45.7	31.3	26.1	
6 OPzV 300	470	377	257	171	109	81.9	54.8	37.5	31.4	
5 OPzV 350	503	409	289	199	126	94.7	63.5	43.5	36.6	
6 OPzV 420	604	490	347	239	151	114	76.2	52.3	43.9	
7 OPzV 490	704	572	405	279	176	133	88.9	61.0	51.2	
6 OPzV 600	750	628	469	341	212	160	108	74.1	62.7	
8 OPzV 800	1001	838	626	454	283	214	144	98.8	83.6	
10 OPzV 1000	1251	1047	782	568	354	267	180	123	105	
12 OPzV 1200	1501	1256	939	681	424	321	216	148	125	
12 OPzV 1500	1606	1381	1095	849	522	396	267	184	157	
16 OPzV 2000	2142	1841	1460	1131	696	528	356	245	209	
20 OPzV 2500	2677	2301	1826	1414	870	661	446	307	261	
24 OPzV 3000	3212	2762	2191	1697	1044	793	535	368	314	
12V 3 OPzV100FT	169.6	135.4	89.2	61.1	37.1	27.7	18.8	12.7	10.7	
12V 3 OPzV120FT	203.6	162.4	107.0	73.3	44.5	33.2	22.6	15.3	12.8	
12V 4 OPzV150FT	254.5	203.1	133.8	91.7	55.7	41.6	28.2	19.1	16.0	

Type	1.60 V/cell-Discharge in W/cell at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	532	439	311	214	138	104	70.6	49.0	41.3	
5 OPzV 250	665	549	389	267	173	130	88.2	61.2	51.6	
6 OPzV 300	799	658	467	321	207	157	106	73.5	61.9	
5 OPzV 350	855	715	526	373	239	181	123	85.3	72.2	
6 OPzV 420	1026	857	631	448	286	217	147	102	86.6	
7 OPzV 490	1197	1000	736	523	334	253	172	119	101	
6 OPzV 600	1276	1098	853	637	402	306	208	145	124	
8 OPzV 800	1701	1464	1137	850	536	409	278	193	165	
10 OPzV 1000	2126	1830	1421	1062	670	511	347	242	206	
12 OPzV 1200	2551	2196	1705	1275	804	613	417	290	248	
12 OPzV 1500	2730	2414	1989	1588	989	757	517	360	309	
16 OPzV 2000	3640	3218	2653	2118	1319	1010	689	481	413	
20 OPzV 2500	4550	4023	3316	2647	1649	1262	861	601	516	
24 OPzV 3000	5460	4828	3979	3177	1979	1515	1033	721	619	
12V 3 OPzV100FT	274.4	224.3	163.9	115.8	70.9	53.3	36.6	25.1	21.1	
12V 3 OPzV120FT	329.2	269.1	197.0	139.0	85.1	64.0	43.9	30.1	25.3	
12V 4 OPzV150FT	411.6	336.4	245.9	173.7	106.3	80.0	54.8	37.6	31.6	

Type	1. 70 V/cell-Discharge in Amps at 20°C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	279	230	161	109	70.4	53.0	35.6	24.5	20.5	
5 OPzV 250	348	287	201	136	88.0	66.3	44.5	30.6	25.7	
6 OPzV 300	418	344	241	164	106	79.5	53.4	36.8	30.8	
5 OPzV 350	448	374	271	191	122	91.9	61.9	42.7	36.0	
6 OPzV 420	537	449	326	229	146	110	74.3	51.2	43.2	
7 OPzV 490	627	523	380	267	170	129	86.7	59.8	50.3	
6 OPzV 600	668	574	440	325	205	156	105	72.6	61.6	
8 OPzV 800	891	766	587	424	273	207	140	96.8	82.2	
10 OPzV 1000	1113	957	733	542	342	259	175	121	103	
12 OPzV 1200	1336	1149	880	651	410	311	210	145	123	
12 OPzV 1500	1430	1236	1027	811	504	385	261	180	154	
16 OPzV 2000	1906	1684	1369	1081	673	513	348	240	205	
20 OPzV 2500	2383	2105	1711	1351	841	641	434	301	257	
24 OPzV 3000	2859	2526	2054	1621	1009	769	521	361	308	
12V 3 OPzV100FT	145.4	119.3	82.2	57.4	34.7	26.2	18.0	12.3	10.3	
12V 3 OPzV120FT	174.4	143.2	98.6	68.9	41.6	31.4	21.6	14.8	12.4	
12V 4 OPzV150FT	218.0	179.0	123.3	86.1	52.1	39.3	27.0	18.5	15.5	

Type	1. 70 V/cell-Discharge in W/Cell at 20°C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	492	413	298	207	135	102	69.3	48.3	40.7	
5 OPzV 250	615	517	372	259	168	128	86.7	60.3	50.9	
6 OPzV 300	738	620	447	311	202	153	104	72.4	61.0	
5 OPzV 350	790	673	503	362	233	177	121	84.1	71.2	
6 OPzV 420	948	808	604	434	280	213	145	101	85.4	
7 OPzV 490	1106	942	704	506	326	248	169	118	99.7	
6 OPzV 600	1178	1034	816	617	393	300	205	143	122	
8 OPzV 800	1571	1379	1088	823	524	400	273	191	163	
10 OPzV 1000	1964	1724	1360	1029	654	500	341	238	203	
12 OPzV 1200	2357	2069	1632	1234	785	600	409	286	244	
12 OPzV 1500	2522	2274	1903	1538	966	742	507	355	305	
16 OPzV 2000	3363	3032	2538	2051	1288	989	676	474	407	
20 OPzV 2500	4204	3790	3172	2564	1610	1236	846	592	509	
24 OPzV 3000	5045	4548	3807	3076	1932	1483	1015	710	610	
12V 3 OPzV100FT	251.0	209.7	154.1	110.0	67.0	50.8	35.2	24.4	20.5	
12V 3 OPzV120FT	301.2	251.7	185.0	132.0	80.4	61.0	42.3	29.3	24.6	
12V 4 OPzV150FT	376.4	314.6	231.2	165.0	100.5	76.2	52.8	36.6	30.8	

Type	1.65 V/cell-Discharge in Amps at 20 °C									
	10min	15min	30min	1h	2h	3h	5h	8h	10h	
4 OPzV 200	299	242	167	112	71.9	54.0	36.2	24.8	20.8	
5 OPzV 250	374	303	209	140	89.9	67.5	45.2	31.0	25.9	
6 OPzV 300	449	364	251	168	108	81.0	54.2	37.2	31.1	
5 OPzV 350	481	395	282	196	124	93.6	62.9	43.2	36.3	
6 OPzV 420	577	474	339	235	149	112	75.4	51.8	43.6	
7 OPzV 490	673	553	395	274	174	131	88.0	60.5	50.9	
6 OPzV 600	717	607	458	335	209	158	107	73.5	62.3	
8 OPzV 800	956	809	610	446	279	211	142	98.0	83.0	
10 OPzV 1000	1196	1011	763	558	349	264				