oerlikon batteries

Datasheet

4CP225

Compact-Power Blockline™

Technical specifications

Type	4CP225	
Part number	62020225	
Electrical Data		
Nominal voltage	4 V	
Number of cells	2	
Rated capacity C_{10} to 1.80 Vpc at 20 °C	225 Ah	
Rated capacity C_8 to 1.75 Vpc at 25 °C	226 Ah	
Current/Power for 0.5 h back-up time 1.65 Vpc 20 °C	271 A	996 W
Current/Power for 1.0 h back-up time 1.67 Vpc 20 °C	156 A	582 W
Current/Power for 2.0 h back-up time 1.80 Vpc 20 °C	85.5 A	324 W
Current/Power for 4.0 h back-up time 1.80 Vpc 20 °C	48.6 A	184 W
Current/Power for 8.0 h back-up time 1.80 Vpc 20 °C	27.3 A	104 W
Current/Power for 10.0 h back-up time 1.80 Vpc 20 °C	22.5 A	86 W
Current/Power for 20.0 h back-up time 1.80 Vpc 20 °C	12.3 A	48 W
Conversion to capacity at 25 °C (77 °F)	20 °C Ah x 1.03 (t > 1 h)	
Internal resistance (± 10%) to IEC/EN 60896-21	0.64 mΩ	
Short circuit current (± 10%) to IEC/EN 60896-21	6.4 kA	
Self discharge at 20 °C to IEC/EN 60896-21	max. 3%/month	
Heat loss during float service at 20 °C	≈ 0.30 W	
Mechanical Data		
Weight ready for use	37.6 kg	
Height of monobloc	283 mm	
Height over terminal connector	298 mm	
Width	177 mm	
Depth	282 mm	
Number of terminals	1⊕/ 1⊖	
Dimension of connector screw hole	M8	
Suggested/maximum cable cross-section	185 mm²	
Connection torque	11 Nm	
Terminal insulation class according to IEC/EN 60529	IP20	
Diameter of diagnostic hole for voltage probe	2 mm Ø	
Connector (copper, tin-coated) rigid and insulated	90 mm²	
Complete connector and terminal connection accessoires	available	
Environmental Data		
Shelves, cabinets and racks	available upon request	
Installation	vertically/horizontally	
Distance for cooling and ventilation (preset with the rigid connectors)	10 mm	
Flame retardancy rating case/cover according to Underwriters Laboratories (UL) USA	ABS – UL 94 HB (std.) ABS-PC – UL 94 V-0 with LOI > 32%, halogen-free	
Flame barriers at vents	installed	
UL file number ®R	MH 26065	
Service life expected at 20 °C	15 years	

Operating specifications

Figure 1

Figure 2

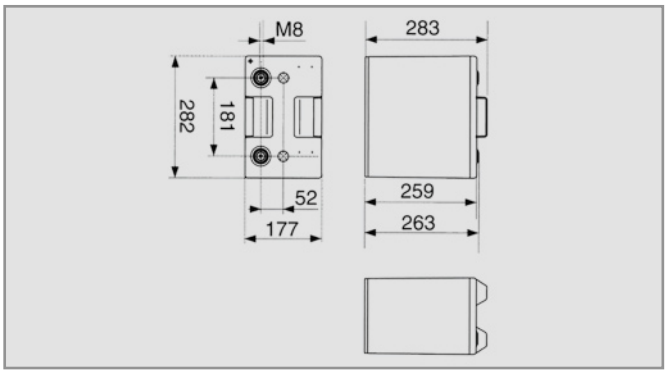
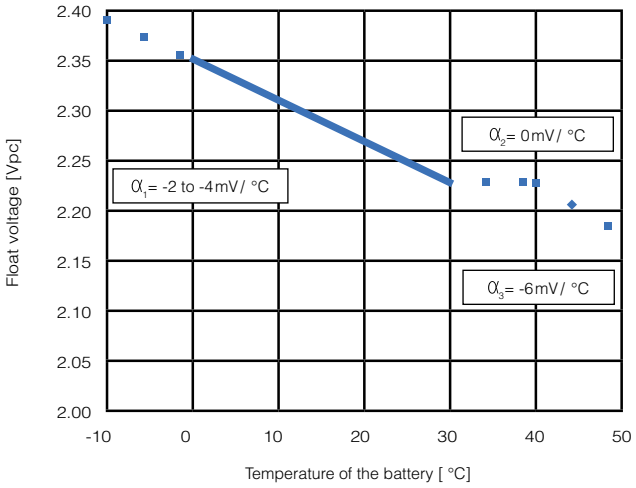


Figure 3



Temperature in °C	Temperature in °F	Percent of the rated capacity
40	104	104.8
35	95	104.2
30	86	103.6
25	77	103.0
20	68	100.0
15	59	97.0
10	50	94.0
5	41	90.0
0	32	84.7
-5	23	77.7
-10	14	69.4
-15	5	60.0
-20	-4	49.6
-25	-13	38.4
-30	-22	25.6
-35	-31	14.1
-40	-40	2.1

Battery installation and operation	Stand-by mode with constant voltage float operation according to EN 50272-2:2001
Float voltage setting according to DIN 41773	2.25 Vpc ± 1% at 20 to 25 °C (68 to 77 °F)
Float voltage with daily discharge cycles	2.29 Vpc - 2.30 Vpc (no correction factor needed)
CC-CV charge current according to DIN 41773	unlimited, otherwise 3 · I_{10} max. if T > 25 °C
Float voltage compensation in function of temperature	-2 to -4 mV/°C or with profile as displayed figure 3
Boost charge	Not needed, if desirable then 2.35 Vpc and I_{10} max. for 24 h max. at t < 30 °C
Air exchange	As a VRLA battery according to EN 50272-2:2001 $Q=0.05 \cdot N_{cells} \cdot I_{gas} \cdot C_{Ah\,C10} \cdot 10^{-3}$ [m³/h] I_{gas}= 1 (at 2.25 Vpc) I_{gas} = 8 (at 2.40 Vpc) e.g. 48 V: 0.27 m³/h = 9.54 cu.ft/h (at 2.25 Vpc)
Preferred operating temperature range	Between 15 °C (68 °F) and 25 °C (77 °F)
Maximum long term operating temperature	+40 °C (104 °F) with ventilation assured (reduced service life)
Maximum short term operating temperature (for hours)	+50 °C (122 °F) with ventilation assured (reduced service life)
Minimum fully charged operating temperature	-40 °C (-40 °F)

Discharge data

Constant current performance (in amps) to the defined end-of-discharge voltage

Voltage [Vpc]	Temp	Discharge time [Minutes]																					
		1 - 2	3	5	7	10	15	20	25	30	40	50	60	90	120	180	240	300	360	480	600	720	1200	1440
1.90	20 °C	470	431	400	372	336	288	253	225	203	171	148	131	98.4	79.6	58.5	46.7	39.1	33.7	26.6	22.1	18.9	12.1	10.3
	25 °C	484	444	412	383	346	297	261	232	209	176	152	135	101	82.0	60.3	48.1	40.3	34.7	27.4	22.8	19.5	12.5	10.6
1.87	20 °C	558	503	462	425	379	319	276	244	218	181	156	137	102	81.8	59.6	47.4	39.6	34.1	26.9	22.3	19.1	12.2	10.3
	25 °C	575	518	476	438	390	329	284	251	225	186	161	141	105	84.3	61.4	48.8	40.8	35.1	27.7	23.0	19.7	12.6	10.6
1.85	20 °C	621	554	505	462	407	339	291	255	227	188	160	141	104	83.1	60.3	47.8	39.9	34.3	27.0	22.4	19.1	12.2	10.4
	25 °C	640	571	520	476	419	349	300	263	234	194	165	145	107	85.6	62.1	49.2	41.1	35.3	27.8	23.1	19.7	12.6	10.7
1.84	20 °C	654	580	526	479	421	349	298	260	232	190	162	142	105	83.6	60.6	48.0	40.0	34.4	27.1	22.4	19.2	12.2	10.4
	25 °C	674	597	542	493	434	359	307	268	239	196	167	146	108	86.1	62.4	49.4	41.2	35.4	27.9	23.1	19.8	12.6	10.7
1.83	20 °C	687	606	548	497	434	358	305	265	236	193	164	144	105	84.1	60.9	48.2	40.1	34.5	27.1	22.4	19.2	12.2	10.4
	25 °C	708	624	564	512	447	369	314	273	243	199	169	148	108	86.6	62.7	49.6	41.3	35.5	27.9	23.1	19.8	12.6	10.7
1.82	20 °C	721	632	569	514	448	367	311	270	239	196	166	145	106	84.6	61.1	48.4	40.2	34.6	27.2	22.5	19.2	12.2	10.4
	25 °C	742	651	586	530	461	378	320	278	247	202	171	149	109	87.2	63.0	49.8	41.5	35.6	28.0	23.1	19.8	12.6	10.7
1.80	20 °C	787	683	610	547	472	383	323	279	246	200	170	148	108	85.5	61.6	48.6	40.4	34.7	27.3	22.5	19.2	12.3	10.4
	25 °C	811	704	628	564	487	395	332	287	254	206	175	152	111	88.0	63.4	50.1	41.7	35.8	28.1	23.2	19.8	12.6	10.7
1.77	20 °C	882	753	665	592	505	405	338	290	255	206	174	151	109	86.5	62.1	49.0	40.7	34.9	27.4	22.6	19.3	12.3	10.4
	25 °C	908	776	685	609	520	417	348	299	263	212	179	155	112	89.1	63.9	50.4	41.9	35.9	28.2	23.3	19.9	12.7	10.7
1.75	20 °C	938	794	696	616	523	416	346	296	259	209	176	152	110	87.0	62.4	49.1	40.8	35.0	27.4	22.6	19.3	12.3	10.4
	25 °C	966	818	717	635	539	428	356	305	267	215	181	157	113	89.6	64.2	50.6	42.0	36.0	28.2	23.3	19.9	12.7	10.7
1.72	20 °C	1009	844	735	646	544	429	355	303	265	212	178	154	111	87.6	62.6	49.3	40.9	35.1	27.5	22.7	19.4	12.3	10.4
	25 °C	1039	869	757	665	560	442	366	312	273	218	183	159	114	90.2	64.5	50.8	42.1	36.2	28.3	23.4	20.0	12.7	10.7
1.70	20 °C	1047	870	755	662	555	436	359	306	267	214	179	155	111	87.8	62.8	49.4	41.0	35.1	27.5	22.7	19.4	12.3	10.4
	25 °C	1078	897	777	681	572	449	370	315	275	220	185	159	115	90.5	64.7	50.9	42.2	36.2	28.3	23.4	19.9	12.7	10.8
1.67	20 °C	1090	886	776	662	567	443	364	310	270	216	180	156	112	88.1	62.9	49.5	41.0	35.2	27.5	22.7	19.4	12.3	10.4
	25 °C	1123	912	799	681	584	457	375	319	278	222	186	160	115	90.8	64.8	51.0	42.3	36.2	28.3	23.4	20.0	12.7	10.8
1.65	20 °C	1113	886	776	662	573	447	367	311	271	216	181	156	112	88.3	63.0	49.5	41.1	35.2	27.5	22.7	19.4	12.3	10.4
	25 °C	1147	912	799	681	590	461	378	321	279	223	186	161	115	90.9	64.9	51.0	42.3	36.2	28.4	23.4	20.0	12.7	10.8
1.63	20 °C	1134	886	776	662	579	450	369	313	272	217	182	157	112	88.4	63.1	49.6	41.1	35.2	27.5	22.7	19.4	12.3	10.4
	25 °C	1168	912	799	681	596	464	380	322	281	224	187	161	116	91.1	65.0	51.1	42.3	36.3	28.4	23.4	20.0	12.7	10.8
1.60	20 °C	1167	886	776	662	587	456	372	316	274	218	182	157	113	88.6	63.2	49.6	41.1	35.2	27.6	22.7	19.4	12.3	10.5
	25 °C	1202	912	799	681	605	469	384	325	282	225	188	162	116	91.3	65.1	51.1	42.4	36.3	28.4	23.4	20.0	12.7	10.8

Constant power performance (in watt per cell) to the defined end-of-discharge voltage

Voltage [Vpc]	Temp	Discharge time [Minutes]																					
		1 - 2	3	5	7	10	15	20	25	30	40	50	60	90	120	180	240	300	360	480	600	720	1200	1440
1.90	20 °C	899	831	768	711	640	548	480	427	386	325	282	250	188	152	112	89.0	74.5	64.0	51.0	42.5	36.5	23.5	20.0
	25 °C	925	855	791	732	659	564	494	440	398	335	290	257	193	156	115	91.7	76.7	65.9	52.5	43.8	37.6	24.2	20.6
1.87	20 °C	1061	967	883	809	718	604	522	461	413	344	296	261	194	156	114	90.0	75.5	65.0	51.0	42.5	36.5	23.5	20.0
	25 °C	1093	996	909	833	739	622	538	474	425	354	305	268	199	160	117	92.7	77.8	67.0	52.5	43.8	37.6	24.2	20.6
1.85	20 °C	1172	1058	958	872	767	638	548	481	429	355	304	267	197	158	115	91.0	76.0	65.5	51.5	42.5	36.5	23.5	20.5
	25 °C	1207	1090	987	898	789	657	564	495	442	366	313	274	203	163	118	93.7	78.3	67.5	53.0	43.8	37.6	24.2	21.1
1.84	20 °C	1226	1103	994	902	789	654	559	489	436	360	307	269	198	159	115	91.2	76.1	65.5	51.6	42.8	36.7	23.7	20.3
	25 °C	1263	1136	1024	929	813	673	576	504	449	370	317	277	204	164	119	94.0	78.3	67.4	53.1	44.1	37.8	24.5	20.9
1.83	20 °C	1281	1147	1030	931	812	669	570	498	443	364	311	272	200	160	116	91.5	76.3	65.6	51.7	42.9	36.8	23.8	20.3
	25 °C	1319	1181	1061	959	836	689	587	513	456	375	320	280	206	164	119	94.3	78.5	67.6	53.2	44.1	37.9	24.5	20.9
1.82	20 °C	1334	1189	1064	959	833	683	581	506	449	369	314	274	201	161	116	92.0	76.5	66.0	52.0	43.0	37.0	24.0	20.5
	25 °C	1374	1225	1096	987	857	703	598	521	462	380	323	282	207	165	119	94.8	78.8	68.0	53.6	44.3	38.1	24.7	21.1
1.80	20 °C	1436	1270	1128	1010	871	709	599	520	460	376	319	278	204	162	117	92.0	77.0	66.0	52.0	43.0	37.0	24.0	20.5
	25 °C	1479	1308	1162	1040	897	730	617	535	474	387	329	286	210	167	120	94.8	79.3	68.0	53.6	44.3	38.1	24.7	21.1
1.77	20 °C	1573	1376	1211	1076	920	741	622	537	473	385	326	283	206	164	118	93.0	77.0	66.5	52.0	43.0	37.0	24.0	20.5
	25 °C	1620	1417	1247	1108	948	763	640	553	487	396	335	291	212	168	121	95.8	79.3	68.5	53.6	44.3	38.1	24.7	21.1
1.75	20 °C	1652	1436	1257	1113	947	758	634	546	480	389	329	286	207	164	118	93.0	77.5	66.5	52.0	43.0	37.0	24.0	20.5
	25 °C	1702	1479	1295	1146	975	781	653	562	494	401	338	294	213	169	122	95.8	79.8	68.5	53.6	44.3	38.1	24.7	21.1
1.72	20 °C	1749	1508	1312	1156	978	778	647	556	488	394	332	288	209	165	119	93.5	77.5	66.5	52.0	43.0	37.0	24.0	20.5
	25 °C	1801	1553	1351	1190	1007	801	666	572	503	406	342	297	215	170	122	96.3	79.8	68.5	53.6	44.3	38.1	24.7	21.1
1.70	20 °C	1799	1545	1341	1177	993	788	654	561	492	397	334	290	210	166	119	93.5	77.5	66.5	52.5	43.5	37.0	24.0	20.5
	25 °C	1853	1591	1381	1212	1023	811	674	577	506	408	344	298	216	170	122	96.3	79.8	68.5	54.1	44.8	38.1	24.7	21.1
1.67	20 °C	1855	1557	1368	1177	1010	798	661	566	496	400	336	291	210	166	119	93.5	77.5	66.5	52.5	43.5	37.0	24.0	20.5
	25 °C	1911	1604	1409	1212	1040	822	681	583	511	411	346	300	216	171	123	96.3	79.8	68.5	54.1	44.8	38.1	24.7	21.1
1.65	20 °C	1882	1557	1368	1177	1018	803	665	569	498	401	337	292	211	167	119	93.5	77.5	66.5	52.5	43.5	37.0	24.0	20.5
	25 °C	1938	1604	1409	1212	1048	827	684	586	512	413	347	300	217	171	123	96.3	79.8	68.5	54.1	44.8	38.1	24.7	21.1
1.63	20 °C	1902	1557	1368	1177	1024	807	667	570	499	402	338	292	211	167	119	93.5	78.0	66.5	52.5	43.5	37.0	24.0	20.5
	25 °C	1959	1604	1409	1212	1054	831	687	587	514	414	348	301	217	171	123	96.3	80.3	68.5	54.1	44.8	38.1	24.7	21.1
1.60	20 °C	1927	1557	1368	1177	1029	811	670	573	501	403	338	293	211	167	119	94.0	78.0	67.0	52.5	43.5	37.0	24.0	20.5
	25 °C	1984	1604	1409	1212	1060	835	690	590	516	415	348	301	217	171	123	96.8	80.3	69.0	54.1	44.8	38.1	24.7	21.1