

Technical specifications

Type

2CP465

Part number

61020465


Electrical Data

Nominal voltage	2 V	
Number of cells	1	
Rated capacity C ₁₀ to 1.80 Vpc at 20 °C	467 Ah	
Rated capacity C ₈ to 1.75 Vpc at 25 °C	481 Ah	
Current/Power for 0.5 h back-up time 1.65 Vpc 20 °C	574 A	1024 W
Current/Power for 1.0 h back-up time 1.67 Vpc 20 °C	326 A	613 W
Current/Power for 2.0 h back-up time 1.80 Vpc 20 °C	178 A	342 W
Current/Power for 4.0 h back-up time 1.80 Vpc 20 °C	105 A	199 W
Current/Power for 8.0 h back-up time 1.80 Vpc 20 °C	57.9 A	108 W
Current/Power for 10.0 h back-up time 1.80 Vpc 20 °C	46.7 A	86 W
Current/Power for 20.0 h back-up time 1.80 Vpc 20 °C	22.8 A	38 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	0.23 mΩ	
Short circuit current (± 10%) to IEC/EN 60896-21	8.7 kA	
Self discharge at 20 °C to IEC/EN 60896-21	max. 3%/month	
Heat loss during float service at 20 °C	≈ 0.47 W	

Mechanical Data

Weight ready for use	40.0 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 mm ²	
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 mm ²	
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 	MH 26065
Service life expected at 20 °C	15 years

Operating specifications

Figure 1



Figure 2

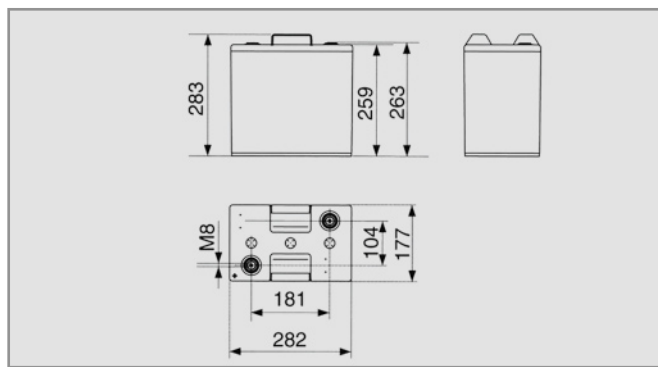
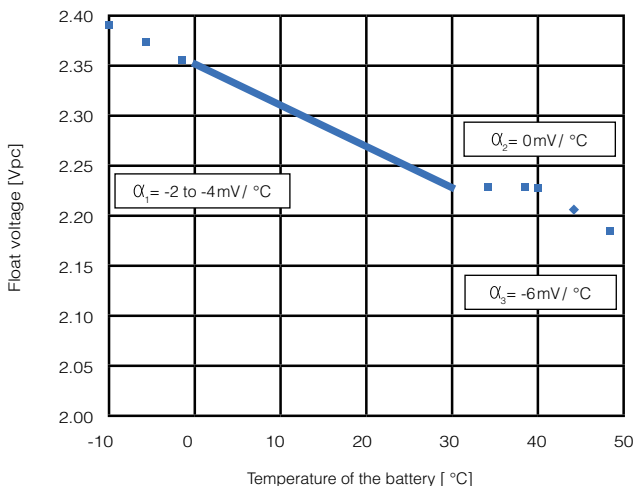


Figure 3



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

Float voltage setting according to DIN 41773

Float voltage with daily discharge cycles

CC-CV charge current according to DIN 41773

Float voltage compensation in function of temperature

Boost charge

Air exchange

Preferred operating temperature range

Maximum long term operating temperature

Maximum short term operating temperature (for hours)

Minimum fully charged operating temperature

Stand-by mode with constant voltage float operation according to EN 50272-2:2001

2.25 Vpc ± 1% at 20 to 25 °C (68 to 77 °F)

2.29 Vpc - 2.30 Vpc (no correction factor needed)

unlimited, otherwise 3 · I₁₀ max. if T > 25 °C

-2 to -4 mV/°C or with profile as displayed figure 3

Not needed, if desirable then 2.35 Vpc and I₁₀ max. for 24 h max. at t < 30 °C

As a VRLA battery according to EN 50272-2:2001

$Q=0.05 \cdot N_{\text{cells}} \cdot I_{\text{gas}} \cdot C_{\text{Ah}} C_{10} \cdot 10^{-3} [\text{m}^3/\text{h}]$

I_{gas} = 1 (at 2.25 Vpc) I_{gas} = 8 (at 2.40 Vpc)

e.g. 48 V: 0.5604 m³/h = 19.79 cu.ft/h (at 2.25 Vpc)

Between 15 °C (68 °F) and 25 °C (77 °F)

+40 °C (104 °F) with ventilation assured (reduced service life)

+50 °C (122 °F) with ventilation assured (reduced service life)

-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	623	612	593	575	547	500	455	416	382	327	286	255	195	161	122	98.9	83.4	71.9	55.9	45.4	38.0	22.5	18.3
	25 °C	642	630	611	592	563	515	469	428	393	337	295	263	201	166	126	102	85.9	74.1	57.6	46.8	39.1	23.2	18.9
1.87	20 °C	727	712	687	663	626	565	509	460	418	353	306	271	204	167	125	101	85.0	73.1	56.7	45.9	38.4	22.6	18.4
	25 °C	749	733	708	683	645	582	524	474	431	364	315	279	210	172	129	104	87.6	75.3	58.4	47.3	39.6	23.3	19.0
1.85	20 °C	801	783	753	724	680	609	544	488	442	370	318	280	210	170	127	102	85.9	73.8	57.1	46.1	38.5	22.7	18.4
	25 °C	825	806	776	746	700	627	560	503	455	381	328	288	216	175	131	105	88.5	76.0	58.8	47.5	39.7	23.4	19.0
1.84	20 °C	839	820	786	755	707	630	561	502	453	378	324	285	212	172	128	103	86.3	74.1	57.3	46.3	38.6	22.7	18.5
	25 °C	864	845	810	778	728	649	578	517	467	389	334	294	218	177	132	106	88.9	76.3	59.0	47.7	39.8	23.4	19.1
1.83	20 °C	877	857	820	786	734	652	578	516	464	385	330	289	214	174	129	104	86.7	74.4	57.4	46.4	38.7	22.7	18.5
	25 °C	903	883	845	810	756	672	595	531	478	397	340	298	220	179	133	107	89.3	76.6	59.1	47.8	39.9	23.4	19.1
1.82	20 °C	916	893	854	816	761	673	595	529	474	392	335	293	217	175	130	104	87.1	74.7	57.6	46.5	38.8	22.8	18.5
	25 °C	943	920	879	841	784	693	612	545	489	404	345	302	223	180	134	107	89.7	76.9	59.3	47.9	39.9	23.4	19.0
1.80	20 °C	992	966	919	877	813	713	626	553	494	406	345	300	221	178	131	105	87.7	75.1	57.9	46.7	38.9	22.8	18.5
	25 °C	1022	995	947	903	838	734	645	570	509	418	355	309	227	183	135	108	90.4	77.4	59.6	48.1	40.1	23.5	19.1
1.77	20 °C	1100	1068	1011	960	884	767	667	585	519	423	357	310	226	181	133	106	88.5	75.7	58.2	46.9	39.1	22.8	18.6
	25 °C	1133	1100	1042	988	911	790	687	603	535	435	368	319	232	186	137	109	91.2	78.0	59.9	48.3	40.2	23.5	19.1
1.75	20 °C	1164	1128	1065	1008	925	798	690	603	533	432	363	315	228	183	134	107	88.9	76.0	58.4	47.0	39.1	22.9	18.6
	25 °C	1199	1162	1097	1038	953	822	711	621	549	445	374	324	235	188	138	110	91.6	78.3	60.1	48.4	40.3	23.6	19.1
1.72	20 °C	1246	1204	1133	1069	976	835	718	624	550	443	371	320	231	184	135	107	89.3	76.3	58.6	47.1	39.2	22.9	18.6
	25 °C	1283	1240	1167	1101	1005	860	740	643	567	456	382	330	238	190	139	111	92.0	78.6	60.4	48.5	40.4	23.6	19.2
1.70	20 °C	1290	1246	1170	1101	1003	855	732	635	558	448	375	323	233	185	135	108	89.6	76.5	58.7	47.2	39.3	22.9	18.6
	25 °C	1329	1283	1205	1134	1033	881	754	654	575	462	386	333	240	191	139	111	92.3	78.8	60.4	48.6	40.4	23.6	19.2
1.67	20 °C	1344	1296	1214	1140	1036	878	749	648	568	454	379	326	234	186	136	108	89.8	76.6	58.8	47.3	39.3	22.9	18.6
	25 °C	1384	1335	1250	1174	1067	905	772	667	585	468	391	336	241	192	140	111	92.5	78.9	60.5	48.7	40.5	23.6	19.2
1.65	20 °C	1376	1325	1240	1163	1054	892	759	655	574	458	382	328	235	187	136	108	90.0	76.7	58.8	47.3	39.3	22.9	18.6
	25 °C	1417	1365	1277	1198	1086	918	782	675	591	472	393	338	242	193	140	112	92.7	79.0	60.6	48.7	40.5	23.6	19.2
1.63	20 °C	1408	1356	1266	1186	1073	905	769	662	579	462	384	330	236	188	136	108	90.1	76.8	58.9	47.3	39.4	22.9	18.6
	25 °C	1450	1396	1304	1222	1105	932	792	682	597	475	396	340	243	193	141	112	92.8	79.1	60.6	48.7	40.5	23.6	19.2
1.60	20 °C	1469	1412	1315	1229	1108	930	787	676	590	468	389	333	238	189	137	109	90.3	77.0	59.0	47.4	39.4	23.0	18.6
	25 °C	1514	1455	1355	1266	1142	958	811	696	607	482	400	343	245	194	141	112	93.0	79.3	60.7	48.8	40.6	23.7	19.2

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	1182	1161	1133	1097	1038	941	855	782	720	622	548	491	379	311	233	188	158	136	105	84.0	69.0	37.0	29.0
	25 °C	1217	1196	1167	1130	1069	969	881	805	742	641	564	506	390	320	240	194	163	140	108	86.5	71.1	38.1	29.9
1.87	20 °C	1362	1334	1297	1250	1174	1052	946	857	783	668	584	520	395	323	240	192	161	138	106	85.0	70.0	38.0	29.0
	25 °C	1403	1374	1336	1288	1209	1084	974	883	806	688	602	536	407	333	247	198	166	142	109	87.6	72.1	39.1	29.9
1.85	20 °C	1487	1454	1409	1354	1265	1125	1004	905	823	697	606	537	405	329	243	195	162	139	107	85.0	70.0	38.0	29.0
	25 °C	1532	1498	1451	1395	1303	1159	1034	932	848	718	624	553	417	339	250	201	167	143	110	87.6	72.1	39.1	29.9
1.84	20 °C	1553	1516	1466	1405	1308	1158	1031	927	841	710	616	545	410	332	245	196	163	139	107	85.8	70.5	37.7	29.3
	25 °C	1599	1561	1510	1447	1347	1193	1062	955	866	731	634	561	422	342	252	201	168	144	110	88.3	72.6	38.8	30.1
1.83	20 °C	1615	1576	1521	1456	1352	1192	1058	949	859	723	625	553	414	335	246	196	164	140	107	85.9	70.6	37.7	29.3
	25 °C	1663	1623	1567	1499	1393	1228	1090	977	885	745	644	569	427	345	254	202	168	144	111	88.5	72.7	38.8	30.2
1.82	20 °C	1674	1633	1577	1508	1399	1229	1087	971	877	735	634	559	418	338	248	197	164	140	108	86.0	71.0	38.0	29.0
	25 °C	1724	1682	1624	1553	1441	1266	1120	1000	903	757	653	576	431	348	255	203	169	144	111	88.6	73.1	39.1	29.9
1.80	20 °C	1794	1746	1683	1604	1481	1292	1136	1010	909	758	651	572	425	342	250	199	165	141	108	86.0	71.0	38.0	29.0
	25 °C	1848	1798	1733	1652	1525	1331	1170	1040	936	781	671	589	438	352	258	205	170	145	111	88.6	73.1	39.1	29.9
1.77	20 °C	1955	1899	1824	1732	1589	1374	1199	1060	949	785	671	588	434	348	253	201	167	142	109	87.0	71.0	38.0	29.0
	25 °C	2014	1956	1879	1784	1637	1415	1235	1092	977	809	691	606	447	358	261	207	172	146	112	89.6	73.1	39.1	29.9
1.75	20 °C	2047	1985	1903	1804	1649	1418	1232	1086	970	799	681	596	438	350	255	202	167	142	109	87.0	71.0	38.0	29.0
	25 °C	2108	2045	1960	1858	1698	1461	1269	1119	999	823	701	614	451	361	263	208	172	146	112	89.6	73.1	39.1	29.9
1.72	20 °C	2155	2087	1997	1888	1719	1469	1271	1116	993	815	693	605	443	354	256	203	168	143	109	87.0	71.0	38.0	30.0
	25 °C	2220	2150	2057	1945	1771	1513	1309	1149	1023	839	714	623	456	365	264	209	173	147	112	89.6	73.1	39.1	30.9
1.70	20 °C	2210	2138	2043	1929	1753	1494	1290	1130	1005	823	699	609	445	355	257	203	168	143	109	87.0	71.0	38.0	30.0
	25 °C	2276	2202	2104	1987	1806	1539	1329	1164	1035	848	720	627	458	366	265	209	173	147	112	89.6	73.1	39.1	30.9
1.67	20 °C	2270	2195	2095	1975	1791	1522	1310	1146	1017	831	705	613	447	356	258	204	169	143	109	87.0	71.0	38.0	30.0
	25 °C	2338	2261	2158	2034	1845	1568	1349	1180	1048	856	726	631	460	367	266	210	174	147	112	89.6	73.1	39.1	30.9
1.65	20 °C	2303	2226	2123	2000	1812	1536																	