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**2CP400 BATTERY  
PRODUCT  
SPECIFICATION**

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Part Number 70700400

### TECHNOLOGY

VRLA-AGM-GEL Valve Regulated Lead-Acid and Absorbed Glass Mat, Gel electrolyte


### ELECTRICAL DATA

Type	2CP400	
Nominal Voltage	2 volts (1 cell)	
Rated Capacity	406 Ah - C <sub>10</sub> to 1.80 Vpc at 20 °C 500 Ah - C <sub>100</sub> to 1.80 Vpc at 20 °C	
Current / Power		
0.5 hr back-up time	1.65 Vpc 20 °C	502.1 A 904 W
1.0 hr back-up time	1.67 Vpc 20 °C	285.5 A 539 W
2.0 hr back-up time	1.80 Vpc 20 °C	155.3 A 292 W
4.0 hr back-up time	1.80 Vpc 20 °C	91.7 A 164 W
8.0 hr back-up time	1.80 Vpc 20 °C	50.4 A 92.1 W
10.0 hr back-up time	1.80 Vpc 20 °C	40.6 A 76.8 W
20.0 hr back-up time	1.80 Vpc 20 °C	19.8 A 43.4 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	0.38 mΩ	
Short circuit current (± 10%) to IEC/EN 60896-21	5.3 kA	
Self discharge at 20° C IEC/EN 60896-21	max. 3%/month	
Heat loss during float service at 20 °C	≈ 0.41 W	

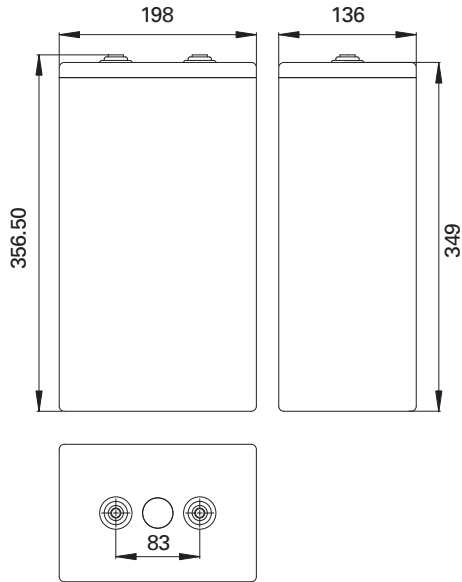
### MECHANICAL DATA

Weight ready for use	30.1 kg
Height of cell	349 mm
Height over terminal connector	356.50 mm
Width	198 mm
Depth	136 mm
Number of terminals	1⊕ / 1⊖
Terminals	M10 female
Suggested/maximum cable cross-section	185 mm <sup>2</sup>
Connection torque	20 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 <sup>2</sup>
Complete connector and terminal connection accessories	available

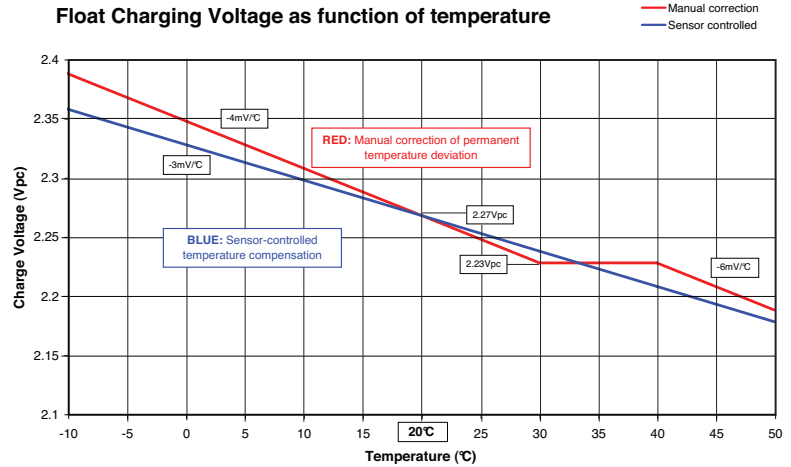
### ENVIRONMENTAL DATA

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 (standard) ABS - PC - UL 94 V-0 with LOI > 32% halogen free (optional)
Flame barriers at vents	Installed
UL file number 	-
Service life expected at 20 °C	15 years
Eurobat classification	12+ Long Life
Shelves, cabinets and racks	available upon request

**BATTERY DRAWINGS**



**FLOAT VOLTAGE COMPENSATION AS A FUNCTION OF TEMPERATURE**



**CAPACITY CORRECTION FACTORS AS A FUNCTION OF TEMPERATURE**

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

**INSTALLATION & OPERATION CHARACTERISTICS**

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	2.27 Vpc ± 1% at 20 °C - 25 °C (68 °F - 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 <sub>10</sub> max. if temp > 25 °C
Float voltage compensation in function of temperature	-2 to -4 mV / °C or with profile as displayed in graph above
Boost charge	Not needed, if desirable then 2.35 Vpc and I <sub>10</sub> max. for 24 hr max. at temp < 30 °C
Air exchange	As a VRLA battery according to EN 50272-2:2001 $Q = 0.05 \cdot N_{cells} \cdot I_{gas} \cdot C_{Ah\ C10} \cdot 10^3$ [m <sup>3</sup> /h] I <sub>gas</sub> = 1 (at 2.27 Vpc) I <sub>gas</sub> = 8 (at 2.40 Vpc) e.g. 48 V : 0.4872 m <sup>3</sup> /hr = 17.2 cu.ft/hr (at 2.27 Vpc)
Preferred operating temperature range	Between 15 °C - 25 °C (59 °F - 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)

## 2CP400 BATTERY PRODUCT SPECIFICATION

### DISCHARGE DATA

Постоянным током (в Амперах) до определенного напряжения в конце разряда

Напряжение	Температура	Продолжительность разряда																						
		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	545	536	519	503	479	438	399	364	334	286	250	223	171	140	106	86.3	72.7	62.7	48.7	39.5	33.1	19.6	16.0
	25 °C	561	552	535	518	493	451	411	375	344	295	258	230	176	144	109	88.9	74.9	64.6	50.2	40.7	34.1	20.2	16.5
1.87	20 °C	636	623	601	580	548	494	445	402	366	309	268	237	179	146	109	88.3	74.1	63.7	49.4	40	33.4	19.7	16.0
	25 °C	655	641.6	619.0	597.4	564.4	508.8	458.3	414.0	376.9	318.2	276.0	244.1	184.3	150.3	112.2	90.9	76.3	65.6	50.8	41.2	34.4	20.2	16.5
1.85	20 °C	701	686	659	633	595	532	476	427	386	323	278	245	183	149	111	89.5	75	64.3	49.7	40.2	33.6	19.7	16.1
	25 °C	722	706.5	678.7	651.9	612.8	547.9	490.2	439.8	397.5	332.6	286.3	252.3	188.4	153.4	114.3	92.1	77.2	66.2	51.1	41.4	34.6	20.3	16.5
1.84	20 °C	734	717	688	660	619	551	491	439	396	330	284	249	186	150	112	90	75.3	64.6	49.9	40.3	33.7	19.8	16.1
	25 °C	756	738.5	708.6	679.8	637.5	567.5	505.7	452.1	407.8	339.9	292.5	256.4	191.5	154.5	115.3	92.7	77.5	66.5	51.3	41.5	34.7	20.3	16.5
1.83	20 °C	768	750	717	687	643	570	506	451	406	337	288	253	188	152	113	90.5	75.7	64.9	50	40.4	33.7	19.8	16.1
	25 °C	791	772.5	738.5	707.6	662.2	587.1	521.1	464.5	418.1	347.1	296.6	260.5	193.6	156.5	116.3	93.2	77.9	66.8	51.5	41.6	34.7	20.4	16.5
1.82	20 °C	801	781.6	746.8	714.4	666.1	588.6	520.2	462.6	415.1	343.4	293.1	256.4	189.5	153.0	113.2	90.9	75.9	65.0	50.1	40.4	33.7	19.8	16.1
	25 °C	825	805.1	769.2	735.8	686.1	606.3	535.8	476.5	427.6	353.7	301.8	264.1	195.2	157.6	116.6	93.6	78.2	67.0	51.6	41.7	34.7	20.4	16.5
1.80	20 °C	868	845.0	804.4	766.9	711.6	623.8	547.5	484.1	432.3	355.1	301.5	265.8	193.0	155.3	114.5	91.7	76.5	65.4	50.4	40.6	33.8	19.8	16.1
	25 °C	894	870.3	828.6	789.9	732.9	642.6	563.9	498.7	445.3	365.7	310.6	270.7	198.8	160.0	117.9	94.4	78.8	67.4	51.9	41.8	34.8	20.4	16.6
1.77	20 °C	962	934.1	884.8	839.6	773.8	671.1	583.6	512.1	454.5	369.9	312.2	270.9	197.3	158.1	116.0	92.6	77.2	65.9	50.6	40.8	34.0	19.8	16.1
	25 °C	991	962.2	911.4	864.8	797.0	691.3	601.1	527.5	468.2	381.0	321.5	279.0	203.2	162.8	119.5	95.4	79.5	67.9	52.2	42.0	35.0	20.4	16.6
1.75	20 °C	1018	987.0	932.1	882.2	809.7	698.0	603.8	527.6	466.7	377.9	317.9	275.1	199.6	159.5	116.8	93.1	77.5	66.2	50.8	40.9	34.0	19.9	16.1
	25 °C	1049	1016.7	960.1	908.6	834.0	719.0	621.9	543.5	480.7	389.3	327.4	283.4	205.5	164.3	120.3	95.9	79.8	68.2	52.3	42.1	35.0	20.5	16.6
1.72	20 °C	1090	1054	992	935	854	731	628	546	481	387	325	280	202.2	161.2	117.7	93.7	77.9	66.5	51	41	34.1	19.9	16.2
	25 °C	1122	1085.6	1021.7	963.0	879.6	752.9	646.8	562.3	495.4	398.6	334.7	288.4	208.2	166.0	121.2	96.5	80.2	68.4	52.5	42.2	35.1	20.5	16.6
1.70	20 °C	1128	1090.0	1023.4	963.5	877.7	748.0	640.8	555.7	488.5	392.1	327.8	282.6	203.4	162.0	118.1	94.0	78.1	66.6	51.0	41.0	34.1	19.9	16.2
	25 °C	1162	1122.7	1054.1	992.4	904.0	770.4	660.0	572.4	503.2	403.9	337.7	291.1	209.5	166.9	121.6	96.8	80.4	68.6	52.6	42.3	35.2	20.5	16.6
1.67	20 °C	1175	1134.0	1062.1	997.7	906.0	768.4	655.8	566.9	497.2	397.7	331.7	285.5	204.9	162.9	118.6	94.3	78.3	66.8	51.1	41.1	34.2	19.9	16.2
	25 °C	1211	1168.0	1094.0	1027.6	933.2	791.5	675.5	583.9	512.1	409.6	341.7	294.0	211.1	167.8	122.1	97.1	80.6	68.8	52.7	42.3	35.2	20.5	16.7
1.65	20 °C	1203	1159.7	1084.6	1017.5	922.4	780.2	664.3	573.3	502.1	400.8	333.9	287.1	205.8	163.5	118.9	94.5	78.4	66.9	51.2	41.1	34.2	19.9	16.2
	25 °C	1239	1194.5	1117.2	1048.1	950.0	803.6	684.2	590.5	517.1	412.8	343.9	295.7	211.9	168.4	122.4	97.3	80.8	68.9	52.7	42.4	35.2	20.5	16.7
1.63	20 °C	1232	1186.1	1107.7	1037.8	939.0	792.0	672.9	579.7	506.9	403.9	336.0	288.6	206.6	164.0	119.1	94.6	78.5	66.9	51.2	41.2	34.2	19.9	16.2
	25 °C	1268	1221.7	1140.9	1068.9	967.1	815.8	693.1	597.0	522.2	416.0	346.1	297.3	212.8	168.9	122.7	97.5	80.9	69.0	52.8	42.4	35.3	20.5	16.7
1.60	20 °C	1285	1235.8	1150.9	1075.7	969.9	813.9	688.6	591.3	515.8	409.5	339.9	291.5	208.0	164.9	119.6	94.9	78.7	67.1	51.3	41.2	34.3	20.0	16.2
	25 °C	1324	1272.9	1185.4	1107.9	999.0	838.3	709.3	609.0	531.3	421.8	350.1	300.3	214.3	169.8	123.2	97.8	81.1	69.1	52.9	42.5	35.3	20.6	16.7

Постоянной мощностью (в Вт/элемент) до определенного напряжения в конце разряда.

Напряжение	Температура	Продолжительность разряда																						
		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	1008	1001	973	940	888	808	737	677	625	541	477	427	326	264	194	155	130	112	89.0	75.0	65.0	43.0	38.0
	25 °C	1038	1031	1002	968	915	832	759	697	644	557	491	440	336	272	200	160	134	115	91.7	77.3	67.0	44.3	39.1
1.87	20 °C	1189	1179	1140	1095	1026	920	830	754	690	590	515	457	342	275	200	158	132	114	90.0	76.0	65.1	43.1	38.0
	25 °C	1225	1214	1174	1128	1057	948	855	777	711	608	530	471	352	283	206	163	136	117	92.7	78.3	67.1	44.4	39.1
1.85	20 °C	1307	1295	1249	1195	1113	989	886	800	728	617	535	473	352	281	203	160	134	115	91.0	76.2	65.3	43.1	38.0
	25 °C	1346	1334	1286	1231	1146	1019	913	824	750	636	551	487	363	289	209	165	138	118	93.7	78.4	67.2	44.4	39.1
1.84	20 °C	1364	1351	1301	1242	1154	1022	911	821	746	630	545	480	356	284	204	161	134	115	91.2	76.3	65.4	43.2	38.0
	25 °C	1405	1391	1340	1279	1188	1052	939	846	768	649	561	495	366	292	210	166	138	119	94.0	78.6	67.4	44.5	39.1
1.83	20 °C	1419	1405	1351	1288	1193	1052	936	841	762	641	553	487	359	286	205	162	135	116	91.5	76.5	65.6	43.3	38.0
	25 °C	1462	1447	1391	1326	1229	1084	964	866	785	660	570	502	370	295	212	167	139	119	94.2	78.8	67.5	44.6	39.1
1.82	20 °C	1472	1457	1399	1331	1230	1081	959	859	777	652	561	493	363	288	207	163	135	116	92.0	76.6	65.7	43.4	38.0
	25 °C	1516	1501	1441	1371	1267	1113	988	885	800	672	578	508	374	297	213	168	139	119	94.8	78.9	67.7	44.7	39.1
1.80	20 °C	1571	1553	1487	1411	1298	1133	999	892	804	671	575	504	368	292	208	164	136	117	92.1	76.8	65.9	43.4	38.0
	25 °C	1618	1600	1532	1453	1337	1167	1029	919	828	691	592	519	379	301	214	169	140	121	94.9	79.1	67.8	44.7	39.1
1.77	20 °C	1699	1678	1602	1514	1385	1198	1050	931	836	693	591	516	375	296	210	165	137	117	92.2	76.9	66.0	43.5	38.0
	25 °C	1750	1728	1650	1559	1427	1234	1082	959	861	714	609	531	386	305	216	170	141	121	95.0	79.2	68.0	44.8	39.1
1.75	20 °C	1771	1748	1665	1571	1432	1234	1077	953	853	704	600	522	378	298	212	166	137	118	92.3	77.1	66.1	43.6	38.0
	25 °C	1824	1800	1715	1618	1475	1271	1109	982	879	725	618	538	389	307	218	171	141	121	95.1	79.4	68.1	44.9	39.1
1.72	20 °C	1861	1836	1745	1641	1490	1277	1109	978	873	718	610	530	382	300	213	166	138	118	92.4	77.2	66.3	43.6	38.0
	25 °C	1917	1891	1797	1690	1535	1315	1142	1007	899	740	628	546	393	309	219	171	142	121	95.2	79.5	68.3	45.0	39.1
1.70	20 °C																							