



**2CP1600 BATTERY
PRODUCT
SPECIFICATION**

Part Number 61361600

TECHNOLOGY

VRLA-AGM Valve Regulated Lead-Acid and Absorbed Glass Mat

ELECTRICAL DATA


Type	2CP1600			
Nominal Voltage	2 volts (1 cell)			
Rated Capacity	1610 Ah - C ₁₀ to 1.80 Vpc at 20 °C 1632 Ah - C ₁₀₀ to 1.80 Vpc at 20 °C			
Current / Power				
0.5 hr back-up time	1.65 Vpc	20 °C	1904 A	3222 W
1.0 hr back-up time	1.67 Vpc	20 °C	1260 A	2252 W
2.0 hr back-up time	1.80 Vpc	20 °C	614 A	1173 W
4.0 hr back-up time	1.80 Vpc	20 °C	346 A	671 W
8.0 hr back-up time	1.80 Vpc	20 °C	195 A	373 W
10.0 hr back-up time	1.80 Vpc	20 °C	161 A	307 W
20.0 hr back-up time	1.80 Vpc	20 °C	86 A	168 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	0.10 mΩ			
Short circuit current (± 10%) to IEC/EN 60896-21	18.0 kA			
Self discharge at 20° C IEC/EN 60896-21	max. 3%/month			
Heat loss during float service at 20 °C	≈ 1.60 W			

MECHANICAL DATA

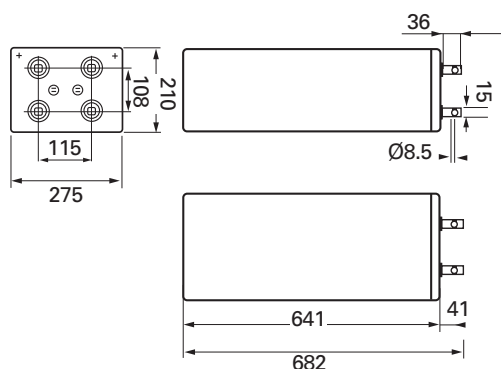
Weight ready for use	116.0 kg
Depth of cell	641 mm
Depth over terminal connector	682 mm
Width	210 mm
Height (operate horizontally only)	275 mm
Number of terminals	2 positive/2 negative
Terminals	ø 8.5 mm (through hole M8)
Suggested/maximum cable cross-section	4·185 mm ² *) up to 6·185 mm ² / up to 4·240 mm ² *)
Connection torque	25 Nm
Terminal insulation class according to IEC/EN 60529	IP20
Diameter of diagnostic hole for voltage probe	4.0 mm ø
Connector (copper, tin-coated) rigid and insulated	4·90 mm ²
Complete connector and terminal connection accessories	available

*) for UPS duties the connecting cables must be dimensioned specially

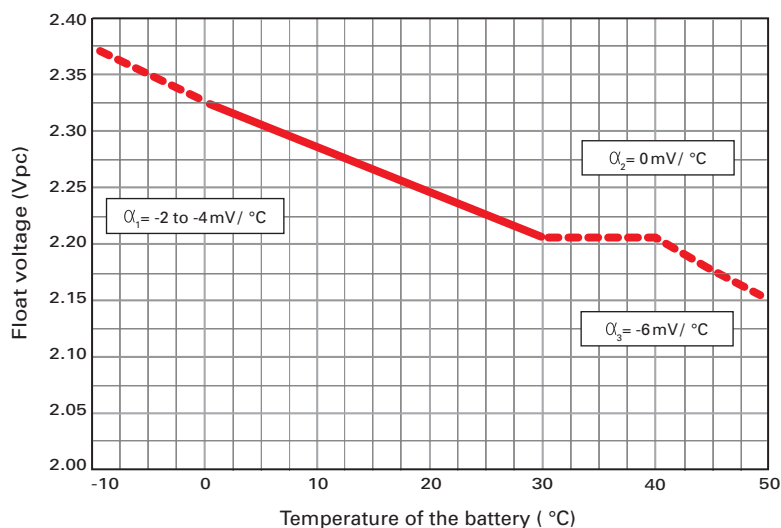
ENVIRONMENTAL DATA

Installation	Only horizontally
Distance for cooling and ventilation (preset with the rigid connectors)	8 mm minimum
Flame retardancy rating case/cover according to Underwriters Laboratories (UL) USA	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
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	2.25 Vpc \pm 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 $3 \cdot I_{10}$ 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_{10} max. for 24 hr max. at temp < 30 °C
Air exchange	As a VRLA battery according to EN 50272-2:2001 $Q = 0.05 \cdot N_{\text{cells}} \cdot I_{\text{gas}} \cdot C_{\text{Ah C10}} \cdot 10^3 \text{ [m}^3\text{/h]}$ $I_{\text{gas}} = 1$ (at 2.25 Vpc) $I_{\text{gas}} = 8$ (at 2.40 Vpc) e.g. 48 V : 1.932 m ³ /hr = 68.23 cu.ft/hr (at 2.25 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)

2CP1600 BATTERY PRODUCT SPECIFICATION

DISCHARGE DATA

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

Voltage (Vpc)	Temp.	Discharge time [min]																			
		5	10	15	20	25	30	40	50	60	90	120	180	240	300	360	480	600	720	1200	1440
1.90	20 °C	1510	1392	1281	1184	1040	973	858	771	719	645	534	389	315	268	237	187	155	133	84.8	72.0
	25 °C	1555	1434	1320	1220	1071	1002	884	794	741	664	550	401	324	276	244	193	160	137	87	74
1.87	20 °C	1723	1586	1457	1345	1198	1121	1006	891	810	688	565	406	327	276	242	190	157	134	85	73
	25 °C	1775	1633	1501	1385	1234	1155	1036	918	834	709	582	418	337	284	249	196	162	138	88	75
1.85	20 °C	1850	1735	1605	1485	1356	1241	1064	942	861	712	581	416	333	280	245	192	159	135	86	73
	25 °C	1906	1787	1653	1530	1397	1278	1096	970	887	733	598	428	343	288	252	198	164	139	88	75
1.84	20 °C	1900	1783	1665	1548	1421	1308	1119	983	887	725	589	421	336	283	246	193	159	135	86	73
	25 °C	1957	1836	1715	1594	1464	1347	1153	1012	914	747	607	434	346	291	254	199	164	139	89	75
1.83	20 °C	1940	1830	1721	1600	1484	1363	1164	1013	910	734	595	425	339	284	247	194	160	136	86	73
	25 °C	1998	1885	1773	1648	1529	1404	1199	1043	937	756	613	438	349	293	255	199	165	140	89	75
1.82	20 °C	1957	1864	1771	1657	1540	1428	1212	1056	938	745	602	429	341	286	249	194	160	136	86	73
	25 °C	2016	1920	1824	1707	1586	1471	1248	1088	966	767	620	442	351	295	256	200	165	140	89	75
1.80	20 °C	2223	1989	1845	1725	1606	1503	1304	1123	990	763	614	436	346	289	250	195	161	136	86	73
	25 °C	2290	2049	1900	1777	1654	1548	1343	1157	1020	786	632	449	356	298	257	201	165	140	89	75
1.77	20 °C	2405	2156	1967	1830	1713	1606	1407	1226	1069	786	629	454	357	296	251	196	161	137	87	73
	25 °C	2477	2221	2026	1885	1764	1654	1449	1263	1101	810	648	468	368	305	258	202	166	141	89	75
1.75	20 °C	2573	2324	2075	1910	1787	1675	1473	1288	1116	798	637	458	360	297	252	197	162	137	87	73
	25 °C	2650	2394	2137	1967	1841	1725	1517	1327	1149	822	656	472	371	306	260	202	166	141	89	76
1.72	20 °C	2574	2453	2233	2013	1869	1753	1544	1352	1182	814	647	463	363	300	253	197	162	137	87	74
	25 °C	2651	2527	2300	2073	1925	1806	1590	1393	1217	838	666	477	374	309	261	203	167	141	89	76
1.70	20 °C	2575	2454	2329	2111	1938	1805	1596	1396	1212	822	652	465	364	301	254	198	162	138	87	74
	25 °C	2652	2528	2399	2174	1996	1859	1644	1438	1248	847	672	479	375	310	262	204	167	142	90	76
1.67	20 °C	2576	2455	2430	2219	2007	1869	1644	1444	1260	832	658	468	366	302	256	199	163	138	87	74
	25 °C	2653	2529	2503	2286	2067	1925	1693	1487	1298	857	678	482	377	311	263	205	168	142	90	76
1.65	20 °C	2577	2456	2431	2288	2055	1904	1677	1469	1288	837	661	470	367	303	257	200	163	138	87	74
	25 °C	2654	2530	2504	2357	2117	1961	1727	1513	1327	862	681	484	378	312	264	205	168	142	90	76
1.63	20 °C	2578	2457	2432	2369	2123	1942	1705	1500	1311	841	664	471	368	304	258	200	164	139	87	74
	25 °C	2655	2531	2505	2440	2187	2000	1756	1545	1350	866	684	485	379	313	266	206	168	143	90	76
1.60	20 °C	2579	2458	2433	2413	2177	1986	1736	1513	1325	846	667	473	369	304	259	201	164	139	88	74
	25 °C	2656	2532	2506	2485	2242	2046	1788	1558	1365	871	687	487	380	313	267	207	169	143	90	76

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

Voltage (Vpc)	Temp.	Discharge time [min]																			
		5	10	15	20	25	30	40	50	60	90	120	180	240	300	360	480	600	720	1200	1440
1.90	20 °C	2794	2580	2390	2220	2012	1881	1668	1497	1375	1226	1018	768	621	523	453	358	299	256	165	141
	25 °C	2877	2658	2461	2286	2072	1937	1718	1542	1416	1263	1049	791	640	539	467	369	308	264	170	145
1.87	20 °C	3126	2883	2666	2473	2228	2084	1905	1715	1548	1299	1069	795	638	536	462	365	302	259	166	142
	25 °C	3220	2970	2746	2547	2295	2147	1962	1766	1594	1338	1101	819	657	552	476	376	311	267	171	146
1.85	20 °C	3273	3086	2892	2703	2511	2324	2020	1797	1641	1342	1098	811	648	542	467	368	303	260	166	142
	25 °C	3371	3179	2979	2784	2586	2394	2081	1851	1690	1382	1131	835	667	558	481	379	312	268	171	146
1.84	20 °C	3354	3167	2980	2791	2602	2420	2096	1850	1684	1362	1110	819	653	546	470	370	304	261	167	142
	25 °C	3455	3262	3069	2875	2680	2493	2159	1906	1735	1403	1143	844	673	562	484	381	313	268	172	147
1.83	20 °C	3409	3222	3036	2863	2688	2504	2171	1907	1725	1421	1156	850	659	550	472	371	305	261	167	142
	25 °C	3511	3319	3127	2949	2769	2579	2236	1964	1777	1464	1191	876	679	567	486	382	314	269	172	147
1.82	20 °C	3484	3297	3110	2957	2760	2578	2243	1969	1773	1439	1167	851	665	554	474	372	306	262	167	143
	25 °C	3589	3396	3203	3046	2843	2655	2310	2028	1826	1482	1202	877	685	571	488	383	315	270	172	147
1.80	20 °C	3694	3409	3220	3033	2863	2698	2373	2080	1854	1453	1173	853	671	558	476	373	307	263	168	143
	25 °C	3805	3511	3317	3124	2949	2779	2444	2142	1910	1496	1208	878	691	575	490	384	316	271	173	147
1.77	20 °C	3929	3603	3361	3184	3009	2849	2528	2233	1969	1466	1178	854	677	562	478	374	308	264	168	143
	25 °C	4047	3711	3462	3280	3099	2934	2604	2300	2028	1510	1213	880	697	579	492	386	317	272	173	147
1.75	20 °C	4078	3771	3464	3278	3096	2935	2616	2312	2037	1485	1190	862	680	565	480	375	309	264	168	143
	25 °C	4200	3884	3568	3376	3189	3023	2694	2381	2098	1530	1226	888	700	582	494	387	318	272	173	147
1.72	20 °C	4111	3867	3623	3378	3199	3038	2717	2410	2128	1510	1206	870	686	568	481	377	310	265	168	143
	25 °C	4234	3983	3732	3479	3295	3129	2799	2482	2192	1555	1242	896	707	585	496	388	319	273	174	148
1.70	20 °C	4112	4087	3781	3474	3278	3103	2782	2473	2185	1523	1214	874	688	570	483	378	311	266	169	143
	25 °C	4235	4210	3894	3578	3376	3196	2865	2547	2251	1569	1250	900	709	587	498	389	320	274	174	148
1.67	20 °C	4113	4088	3915	3575	3354	3172	2849	2540	2252	1538	1224	878	691	573	485	379	312	267	169	144
	25 °C	4236	4211	4032	3682	3455	3267	2934	2616	2320	1584	1261	904	712	590	500	390	321	275	174	148
1.65	20 °C	4114	4089	3934	3671	3407	3222	2887	2568	2281	1544	1229	882	693	573	487	380	313	267	169	144
	25 °C	4237	4212	4052	3781	3509	3319	2974	2645	2349	1590	1266	908	714	591	502	391	322	275	174	148
1.63	20 °C	4115	4090	4035	3742	3450	3263	2923	2607	2312	1550	1232	883	694	574	489	381	314	268	170	144
	25 °C	4238	4213	4156	3854	3554	3361	3011	2685	2381	1597	1269	909	714	591	504	392	323	276	175	148
1.6	20 °C	4116	4091	4036	3857	3522	3309	2971	2645	2336	1557	1237	885	694	574	491	382	315	269	170	144
	25 °C	4239	4214	4157	3973	3628	3408	3060	2724	2406	1604	1274	912	715	591	506	393	324	277	175	148



www.enersys-emea.com

EnerSys
 P.O. Box 14145
 Reading, PA 19612-4145
 USA
 Tel: +1-610-208-1991
 +1-800-538-3627
 Fax: +1-610-372-8613

EnerSys - (EMEA)
 EH Europe GmbH
 Löwenstrasse 32
 8001 Zurich, Switzerland

EnerSys Asia