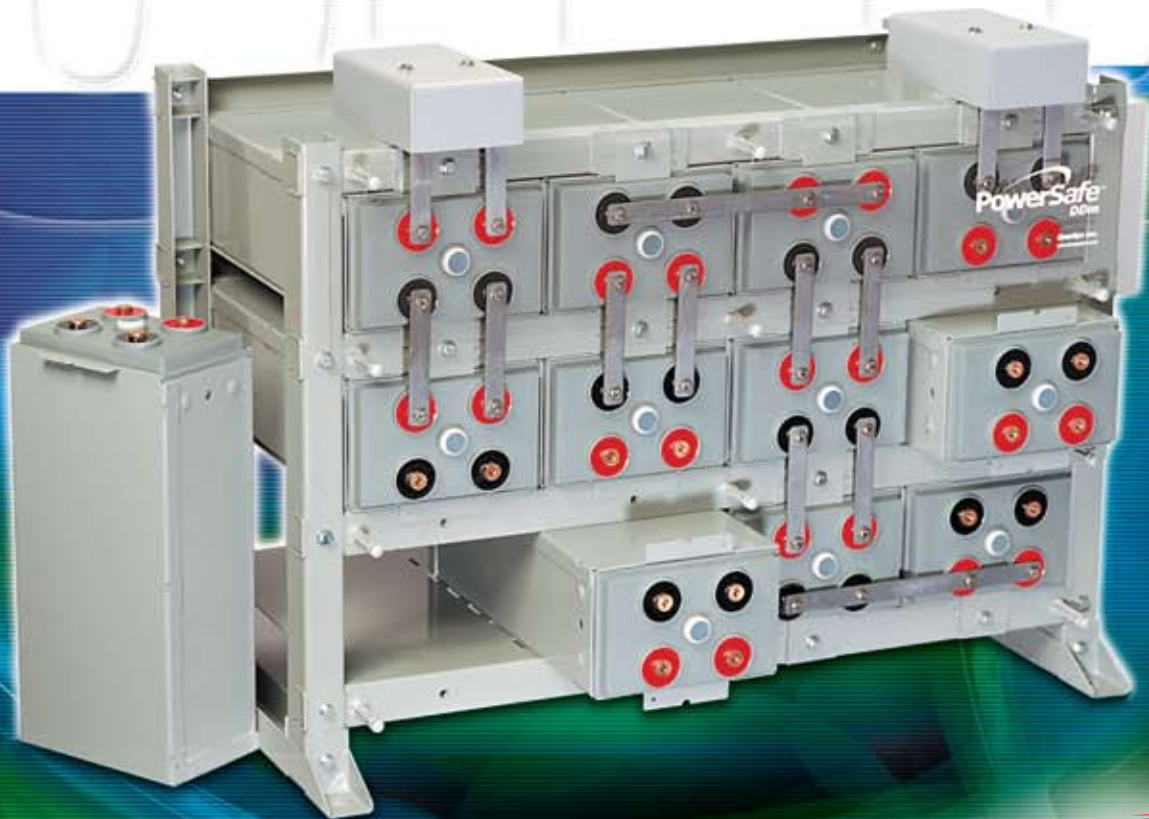


Battery Range Summary  
292-4094 WPC

**PowerSafe®**  
DDm



# PowerSafe® DDm

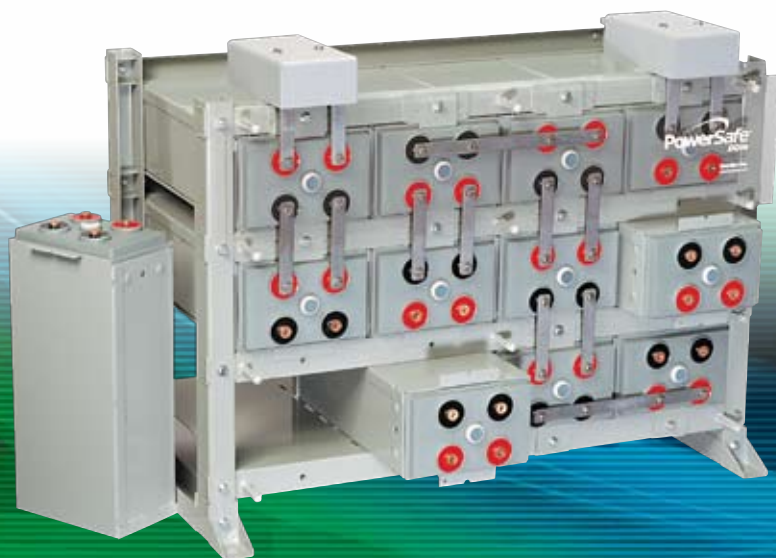
## The PowerSafe® DDm Battery.

The PowerSafe® DDm battery range offers an ideal solution for large capacity Valve Regulated Lead-Acid (VRLA) battery requirements. The PowerSafe DDm battery's steel can (module) design, with its integral racking system, provides a cost effective battery system. This creates a compact, quick and simple installation process.

The PowerSafe DDm battery system's cutting-edge technology incorporates an enhanced cell design with a superior racking system. The enhanced cell incorporates thicker positive plates for longer life. The welded/epoxy, dual post seal design provides the highest integrity seal in the industry. The large copper post design also enhances the high rate performance.

Cells are encased in dedicated protective steel cans (modules) that maintain constant, uniform compression for the life of the cell. The easy to assemble racking system provides total flexibility for system configuration and its built-in thermal management allows air flow between the cells, resulting in fast, effortless installation even in the most difficult locations.

The PowerSafe DDm battery, with its optimized recombination technology and extra thick plates, provides excellent performance and service life for mission critical systems.



## Construction

- Positive plate – Thick 0.252” lead-calcium-tin grids minimize corrosion and prolong life
- Negative plate – Balanced lead-calcium grids optimize recombination efficiency
- Absorbed Glass Mat (AGM) separator – Mechanically strong, low electrical resistance, microporous glass fiber which completely absorbs the electrolyte into its structure
- Container/Cover – Flame retardant polypropylene standard (UL94 V-0/L.O.I. 28%)
- Containers are single-piece construction
- Electrolyte – Diluted sulfuric acid
- Terminal post – Lead casting terminal, threaded copper insert, with large surface area, to provide maximum conductivity
- Terminal seal – Ring burn with secondary epoxy resin seal is 100% water bath tested in the factory and proven in service
- Relief valve – Operates at 2-3 psi and is complete with integral flame arrestor
- UL File Number MH27851

## Features

- 100% “out of box” initial battery capacity
- Valve Regulated Lead Acid (VRLA) recombinant technology – low maintenance – no watering required
- Capacity: 292-4094 Watts per Cell (WPC) – 15 min. rate to 1.67 VPC @ 25°C (77°F)
- Frame design allows for maximum heat dissipation
- Seismically certified to 1997 UBC Zone 4 for many configurations
- Steel module design, cells factory installed in permanent steel modules with 1 or 2 cells per can
- Module can be configured 2, 3, 4 or 6 cells wide in single cell modules; 2, 4 or 6 cells wide in 2-cell modules for maximum flexibility
- Simplified installation
- Top termination standard on most models – Optional side termination available
- Clear flame retardant safety shields allow for easy visual inspection without removal
- Inter-unit connectors and terminal plates: tin-plated copper – Optional lead-plated copper available

## Benefits of the steel can (module) design

- Ease of installation, simply set up rack and install modules
- Uniform and consistent compression
- “Designed-In” thermal management allows maximum air flow
- Flexible configuration
- Cell protection from damage during transport

## Installation

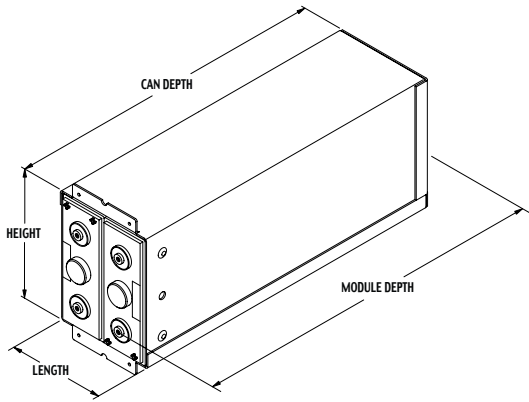
- Steel module design is easier to install, does not require removal from protective steel cans (modules) during installation
- Flexible configuration – 2, 3, 4 or 6 cells wide in single cell modules or 2, 4 or 6 cells wide in 2-cell modules
- Total front access for easy maintenance
- Floor anchoring – Easy access during install, rack can be set before stowing modules

# Range Summary

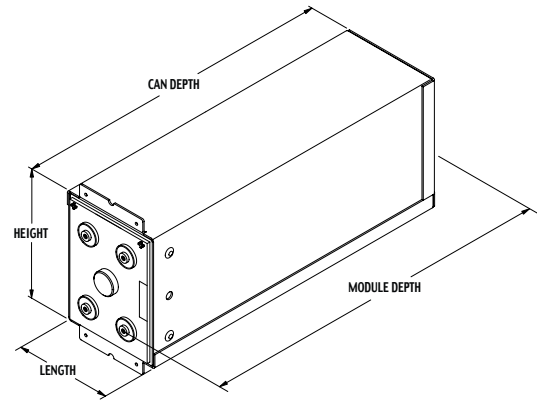
## GENERAL SPECIFICATIONS

Type	Watts/Cell 15 min rate to 1.67 @ 25 °C (77 °F)	Nominal Dimensions								Electrolyte (1.300 S.G.)				Pure Acid (1.835 S.G.)									
		Length		Height		Can Depth		Module Depth		Typical Weight of Cell(s) in Can	Internal* Resistance	Short Circuit Current	Volume (per cell)		Weight (per cell)		Volume (per cell)		Weight (per cell)		Lead Weight (per cell)		
		mm	in	mm	in	mm	in	mm	in				kg	lbs	Micro-Ohms	(Amps)	gal	L	lbs	kg	gal	L	lbs
		mm	in	mm	in	mm	in	mm	in	kg	lbs	Micro-Ohms	(Amps)	gal	L	lbs	kg	gal	L	lbs	kg	lbs	kg
DDm35-07	292	112	4.4	165	6.5	333	13.1	366	14.4	19.1	42.0	1400	1490	0.5	1.8	5.2	2.4	0.14	0.5	2.1	0.9	15	6.8
DDm50-09	477	188	7.4	165	6.5	333	13.1	366	14.4	34.3	75.4	825	2525	0.7	2.5	7.3	3.3	0.19	0.7	2.9	1.3	22	9.8
DDm50-13	716	265	10.4	165	6.5	333	13.1	366	14.4	49.5	108.9	550	3790	1.0	3.8	10.8	4.9	0.28	1.1	4.3	1.9	32	14.5
DDm50-17	954	176	6.9	165	6.5	333	13.1	366	14.4	34.0	74.7	413	5050	1.3	5.0	14.4	6.5	0.37	1.4	5.7	2.6	44	20.0
DDm85-13	1054	265	10.4	165	6.5	519	20.4	554	21.8	75.7	166.5	515	4050	1.6	5.9	16.9	7.7	0.44	1.7	6.7	3.0	48	21.8
DDm85-15	1230	303	11.9	165	6.5	519	20.4	554	21.8	88.5	194.8	441	4730	1.9	7.0	20.0	9.1	0.52	2.0	7.9	3.6	58	26.5
DDm85-21	1757	214	8.4	165	6.5	519	20.4	554	21.8	64.5	142.0	309	6750	2.7	10.1	28.9	13.1	0.75	2.8	11.5	5.2	85	38.5
DDm85-25	2108	252	9.9	165	6.5	519	20.4	554	21.8	74.4	163.7	258	8080	3.1	11.7	33.6	15.2	0.87	3.3	13.3	6.0	100	45.1
DDm85-27	2284	271	10.7	165	6.5	519	20.4	554	21.8	80.8	177.8	238	8760	3.4	12.9	36.8	16.7	0.96	3.6	14.6	6.6	110	49.9
DDm85-33	2811	328	12.9	165	6.5	519	20.4	554	21.8	97.9	217.5	193	10805	4.3	16.1	46.0	20.9	1.20	4.5	18.3	8.3	139	63.0
DDm100-21	1995	214	8.4	165	6.5	590	23.2	624	24.5	73.5	163.4	270	7720	3.2	12.1	34.7	15.7	0.90	3.4	13.7	6.2	105	47.6
DDm100-25	2394	252	9.9	165	6.5	590	23.2	624	24.5	86.5	192.1	225	9265	3.8	14.5	41.6	18.9	1.08	4.1	16.5	7.5	127	57.6
DDm100-27	2593	271	10.7	165	6.5	590	23.2	624	24.5	92.0	204.3	208	10025	4.2	15.7	44.9	20.4	1.17	4.4	17.8	8.1	138	62.6
DDm100-33	3192	328	12.9	165	6.5	590	23.2	624	24.5	115.3	256.3	169	12335	5.1	19.3	55.2	25.0	1.44	5.4	21.9	9.9	170	77.1
DDm125-25	3071	252	9.9	226	8.9	562	22.1	597	23.5	112.3	249.6	168	12410	4.8	18.2	52.0	23.6	1.35	5.1	20.6	9.4	163	73.9
DDm125-27	3327	271	10.7	226	8.9	562	22.1	597	23.5	120.8	268.4	155	13450	5.3	20.1	57.4	26.0	1.49	5.6	22.8	10.3	178	80.5
DDm125-33	4094	328	12.9	226	8.9	562	22.1	597	23.5	144.1	320.3	126	16550	6.5	24.4	69.9	31.7	1.82	6.9	27.7	12.6	220	99.8

\* Resistance Values are for reference only and not intended to represent an ohmic value or base line measurement.



2-Cell Module



Single Cell Module

### CONSTANT POWER

#### Discharge Rates (KW per Cell) to 1.60 VPC at 25°C (77°F)

TYPE	Nom Ah	Standby Time (Minutes)						
		5	10	15	20	30	45	60
DDm35-07	135	0.474	0.373	0.303	0.255	0.196	0.148	0.121
DDm50-09	200	0.679	0.577	0.504	0.445	0.360	0.281	0.232
DDm50-13	300	1.019	0.865	0.756	0.667	0.541	0.421	0.348
DDm50-17	400	1.359	1.153	1.008	0.889	0.721	0.561	0.464
DDm85-13	510	1.437	1.275	1.143	1.037	0.869	0.699	0.583
DDm85-15	595	1.676	1.488	1.334	1.210	1.014	0.816	0.680
DDm85-21	850	2.395	2.125	1.906	1.728	1.449	1.165	0.971
DDm85-25	1020	2.874	2.550	2.287	2.074	1.739	1.398	1.165
DDm85-27	1105	3.113	2.763	2.477	2.247	1.883	1.515	1.263
DDm85-33	1360	3.832	3.400	3.049	2.765	2.318	1.865	1.554
DDm100-21	1000	2.686	2.390	2.150	1.956	1.656	1.348	1.139
DDm100-25	1200	3.224	2.868	2.579	2.348	1.988	1.618	1.366
DDm100-27	1300	3.492	3.108	2.794	2.543	2.153	1.753	1.480
DDm100-33	1600	4.298	3.825	3.439	3.130	2.650	2.157	1.822
DDm125-25	1500	4.105	3.664	3.320	3.036	2.586	2.103	1.750
DDm125-27	1625	4.447	3.970	3.597	3.289	2.802	2.278	1.896
DDm125-33	2000	5.474	4.886	4.427	4.048	3.448	2.804	2.334

#### Discharge Rates (KW per Cell) to 1.63 VPC at 25°C (77°F)

TYPE	Nom Ah	Standby Time (Minutes)						
		5	10	15	20	30	45	60
DDm35-07	135	0.457	0.365	0.299	0.254	0.196	0.148	0.121
DDm50-09	200	0.658	0.562	0.494	0.439	0.358	0.281	0.232
DDm50-13	300	0.988	0.843	0.742	0.659	0.537	0.421	0.348
DDm50-17	400	1.317	1.124	0.989	0.878	0.715	0.561	0.464
DDm85-13	510	1.382	1.230	1.108	1.008	0.853	0.691	0.583
DDm85-15	595	1.612	1.436	1.292	1.176	0.995	0.806	0.680
DDm85-21	850	2.303	2.051	1.846	1.680	1.422	1.152	0.971
DDm85-25	1020	2.763	2.461	2.215	2.016	1.706	1.382	1.165
DDm85-27	1105	2.994	2.666	2.400	2.184	1.848	1.498	1.263
DDm85-33	1360	3.685	3.281	2.954	2.688	2.275	1.843	1.554
DDm100-21	1000	2.593	2.314	2.087	1.905	1.626	1.332	1.130
DDm100-25	1200	3.112	2.777	2.505	2.286	1.951	1.598	1.356
DDm100-27	1300	3.371	3.008	2.714	2.477	2.114	1.731	1.469
DDm100-33	1600	4.149	3.702	3.340	3.049	2.602	2.131	1.808
DDm125-25	1500	3.943	3.542	3.220	2.955	2.533	2.073	1.750
DDm125-27	1625	4.272	3.838	3.488	3.201	2.744	2.246	1.896
DDm125-33	2000	5.257	4.723	4.293	3.940	3.377	2.764	2.334



**Discharge Rates (KW per Cell) to 1.65 VPC at 25°C (77°F)**

TYPE	Nom Ah	Standby Time (Minutes)						
		5	10	15	20	30	45	60
DDm35-07	135	0.445	0.358	0.296	0.252	0.195	0.148	0.121
DDm50-09	200	0.643	0.551	0.486	0.434	0.355	0.281	0.232
DDm50-13	300	0.964	0.826	0.729	0.651	0.533	0.421	0.348
DDm50-17	400	1.285	1.102	0.973	0.869	0.711	0.561	0.464
DDm85-13	510	1.341	1.199	1.082	0.986	0.840	0.684	0.579
DDm85-15	595	1.565	1.399	1.262	1.151	0.980	0.798	0.675
DDm85-21	850	2.235	1.998	1.803	1.644	1.400	1.141	0.964
DDm85-25	1020	2.682	2.398	2.163	1.973	1.680	1.369	1.157
DDm85-27	1105	2.906	2.598	2.343	2.137	1.820	1.483	1.254
DDm85-33	1360	3.576	3.197	2.884	2.630	2.240	1.825	1.543
DDm100-21	1000	2.523	2.259	2.043	1.868	1.601	1.318	1.121
DDm100-25	1200	3.028	2.711	2.451	2.241	1.922	1.582	1.346
DDm100-27	1300	3.280	2.937	2.655	2.428	2.082	1.713	1.458
DDm100-33	1600	4.037	3.615	3.268	2.988	2.562	2.109	1.794
DDm125-25	1500	3.831	3.453	3.147	2.896	2.492	2.049	1.744
DDm125-27	1625	4.150	3.741	3.410	3.137	2.699	2.219	1.890
DDm125-33	2000	5.108	4.605	4.196	3.861	3.322	2.731	2.326

**Discharge Rates (KW per Cell) to 1.67VPC at 25°C (77°F)**

TYPE	Nom Ah	Standby Time (Minutes)						
		5	10	15	20	30	45	60
DDm35-07	135	0.432	0.350	0.292	0.250	0.194	0.148	0.121
DDm50-09	200	0.626	0.539	0.477	0.428	0.352	0.280	0.232
DDm50-13	300	0.939	0.809	0.716	0.642	0.528	0.420	0.348
DDm50-17	400	1.252	1.078	0.954	0.856	0.705	0.560	0.464
DDm85-13	510	1.299	1.165	1.054	0.963	0.825	0.676	0.574
DDm85-15	595	1.516	1.360	1.230	1.124	0.962	0.789	0.669
DDm85-21	850	2.166	1.942	1.757	1.605	1.375	1.127	0.956
DDm85-25	1020	2.599	2.331	2.108	1.926	1.649	1.352	1.147
DDm85-27	1105	2.815	2.525	2.284	2.087	1.787	1.465	1.243
DDm85-33	1360	3.465	3.108	2.811	2.569	2.199	1.803	1.530
DDm100-21	1000	2.450	2.201	1.995	1.827	1.573	1.302	1.111
DDm100-25	1200	2.940	2.642	2.394	2.193	1.888	1.563	1.333
DDm100-27	1300	3.185	2.862	2.593	2.376	2.045	1.693	1.444
DDm100-33	1600	3.920	3.522	3.192	2.924	2.517	2.083	1.778
DDm125-25	1500	3.717	3.358	3.071	2.833	2.445	2.020	1.726
DDm125-27	1625	4.026	3.638	3.327	3.069	2.648	2.189	1.869
DDm125-33	2000	4.956	4.478	4.094	3.777	3.260	2.694	2.301

**Discharge Rates (KW per Cell) to 1.70 VPC at 25°C (77°F)**

TYPE	Nom Ah	Standby Time (Minutes)						
		5	10	15	20	30	45	60
DDm35-07	135	0.412	0.337	0.284	0.245	0.192	0.147	0.121
DDm50-09	200	0.599	0.519	0.461	0.416	0.346	0.277	0.232
DDm50-13	300	0.898	0.779	0.692	0.624	0.520	0.415	0.348
DDm50-17	400	1.198	1.038	0.923	0.832	0.693	0.554	0.464
DDm85-13	510	1.235	1.110	1.009	0.926	0.797	0.661	0.564
DDm85-15	595	1.441	1.295	1.178	1.080	0.930	0.771	0.658
DDm85-21	850	2.059	1.850	1.682	1.543	1.329	1.102	0.940
DDm85-25	1020	2.470	2.220	2.019	1.851	1.595	1.322	1.128
DDm85-27	1105	2.676	2.405	2.187	2.006	1.728	1.432	1.222
DDm85-33	1360	3.294	2.960	2.692	2.468	2.126	1.763	1.504
DDm100-21	1000	2.337	2.106	1.918	1.762	1.525	1.273	1.092
DDm100-25	1200	2.805	2.527	2.301	2.114	1.829	1.527	1.310
DDm100-27	1300	3.038	2.738	2.493	2.290	1.982	1.655	1.419
DDm100-33	1600	3.740	3.370	3.069	2.819	2.439	2.037	1.747
DDm125-25	1500	3.535	3.208	2.948	2.728	2.364	1.970	1.691
DDm125-27	1625	3.829	3.476	3.194	2.955	2.561	2.135	1.831
DDm125-33	2000	4.713	4.278	3.931	3.637	3.152	2.627	2.254

**Discharge Rates (KW per Cell) to 1.75 VPC at 25°C (77°F)**

TYPE	Nom Ah	Standby Time (Minutes)						
		5	10	15	20	30	45	60
DDm35-07	135	0.374	0.311	0.266	0.232	0.185	0.143	0.119
DDm50-09	200	0.549	0.481	0.430	0.390	0.331	0.268	0.227
DDm50-13	300	0.824	0.721	0.644	0.585	0.496	0.403	0.340
DDm50-17	400	1.098	0.961	0.859	0.780	0.662	0.537	0.453
DDm85-13	510	1.118	1.010	0.926	0.855	0.742	0.625	0.541
DDm85-15	595	1.304	1.178	1.080	0.997	0.866	0.729	0.631
DDm85-21	850	1.863	1.683	1.543	1.425	1.237	1.042	0.902
DDm85-25	1020	2.236	2.020	1.852	1.710	1.484	1.250	1.082
DDm85-27	1105	2.422	2.188	2.006	1.852	1.608	1.354	1.172
DDm85-33	1360	2.981	2.693	2.469	2.280	1.979	1.667	1.443
DDm100-21	1000	2.131	1.933	1.774	1.639	1.428	1.206	1.047
DDm100-25	1200	2.557	2.320	2.129	1.967	1.713	1.447	1.257
DDm100-27	1300	2.770	2.513	2.307	2.131	1.856	1.568	1.362
DDm100-33	1600	3.410	3.093	2.839	2.623	2.284	1.929	1.676
DDm125-25	1500	3.205	2.938	2.715	2.521	2.205	1.860	1.611
DDm125-27	1625	3.472	3.183	2.942	2.731	2.389	2.015	1.746
DDm125-33	2000	4.273	3.918	3.621	3.361	2.940	2.479	2.148

## SYSTEM CONFIGURATOR

Type	Watts/Cell 15 min rate to 1.67 @ 25°C (77°F)	Cells per module	Nominal Voltage (V)	Nominal Row Height		Nominal Stack Depth		Nominal Stack Length						Typical System Weight Per Cell (1)					
				mm	in	mm	in	2 Wide		3 Wide		4 Wide		6 Wide		Unpacked		Packed	
								mm	in	mm	in	mm	in	mm	in	kg	lbs	kg	lbs
DDm35-07	292	2	4	219.2	8.63	412.8	16.25	324.6*	12.78*	N/A	N/A	438.4*	17.26*	429.3	16.90	12.0	26.0	13.3	29.3
DDm50-09	477	2	4	219.2	8.63	412.8	16.25	400.8*	15.78*	N/A	N/A	467.6	18.41	657.9	25.90	21.3	47.0	22.8	50.3
DDm50-13	716	2	4	219.2	8.63	412.8	16.25	477.0*	18.78*	N/A	N/A	620.0	24.41	886.5	34.90	29.5	65.0	31.0	68.3
DDm50-17	954	1	2	219.2	8.63	412.8	16.25	441.5	17.38	619.0	24.37	791.2	31.15	1144.5	45.06	39.9	88.0	41.4	91.3
DDm85-13	1054	2	4	219.2	8.63	596.9	23.50	477.0*	18.78*	N/A	N/A	620.0	24.41	886.5	34.90	43.6	96.0	45.1	99.3
DDm85-15	1230	2	4	219.2	8.63	596.9	23.50	515.1*	20.28*	N/A	N/A	696.2	27.41	1000.8	39.40	50.4	111.0	51.9	114.3
DDm85-21	1757	1	2	219.2	8.63	596.9	23.50	517.4	20.37	732.0	28.82	943.6	37.15	1412.2	55.60	72.1	159.0	73.6	162.3
DDm85-25	2108	1	2	219.2	8.63	596.9	23.50	593.6	23.37	846.3	33.32	1096.0	43.15	1640.1	64.57	83.0	183.0	84.5	186.3
DDm85-27	2284	1	2	219.2	8.63	596.9	23.50	631.7	24.87	903.7	35.58	1172.5	46.16	1755.4	69.11	90.3	199.0	91.8	202.3
DDm85-33	2811	1	2	219.2	8.63	596.9	23.50	746.0	29.37	1074.9	42.32	1400.8	55.15	2098.0	82.60	111.1	245.0	112.6	248.3
DDm100-21	1995	1	2	219.2	8.63	666.8	26.25	517.4	20.37	732.0	28.82	943.6	37.15	1412.2	55.60	83.9	185.0	85.4	188.3
DDm100-25	2394	1	2	219.2	8.63	666.8	26.25	593.6	23.37	846.3	33.32	1096.0	43.15	1640.1	64.57	99.3	219.0	100.9	222.3
DDm100-27	2593	1	2	219.2	8.63	666.8	26.25	631.7	24.87	903.7	35.58	1172.5	46.16	1172.5	69.11	107.1	236.0	108.6	239.3
DDm100-33	3192	1	2	219.2	8.63	666.8	26.25	746.0	29.37	1074.9	42.32	1400.8	55.15	2098.0	82.60	130.2	287.0	131.7	290.3
DDm125-25	3071	1	2	279.4	11.00	698.5	27.50	621.8	24.48	870.5	34.27	1127.0	44.37	1668.3	65.68	122.0	269.0	123.5	272.3
DDm125-27	3327	1	2	279.4	11.00	698.5	27.50	659.9	25.98	927.9	36.53	1203.2	47.37	1783.6	70.22	131.5	290.0	133.3	293.3
DDm125-33	4094	1	2	279.4	11.00	698.5	27.50	774.2	30.48	1099.0	43.27	1431.8	56.37	2126.2	83.71	161.0	355.0	162.5	358.3

(1) Includes hardware for calculating system weight

\* Standard top termination not available, stack length is with same side termination

## Formula

System Height = (Row Height x # of Cell High) + 9.0"

System Length = Stack Length x # of Stacks

System Weight = Cell Weight x # of Cells

## Actual Example

24-DDm85-21, 4 cells wide per stack x 6 cells high per stack

System Height = (8.63" x 6) + 9.0" = 60.78"

System Length = 37.15" x 1 = 37.15"

System Weight = 159.0 lbs. x 24 = 3816.0 lbs.

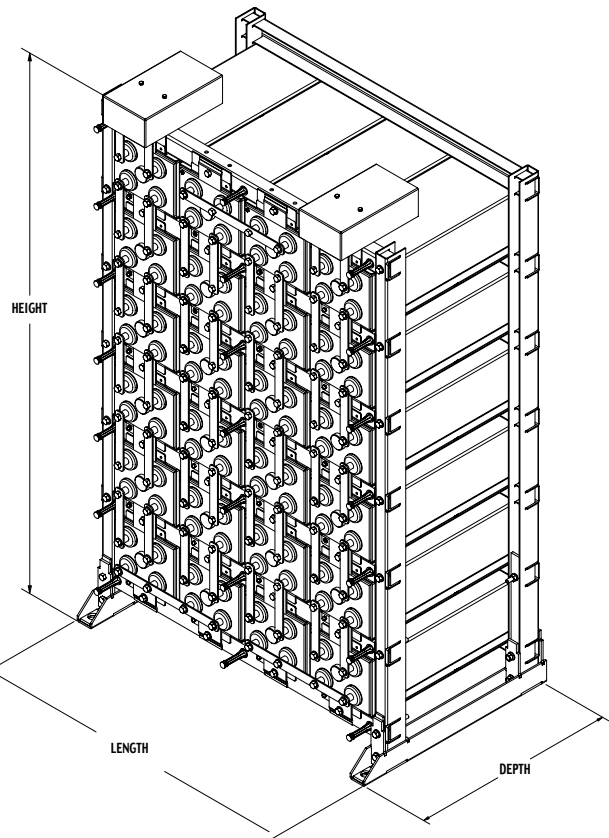
## Additional Example

240-DDm125-25, 4 cells wide per stack x 6 cells high per stack

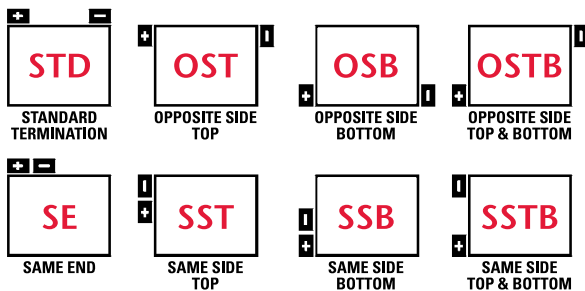
System Height = (11.00" x 6) + 9.0" = 75.00"

System Length = 44.37" x 10 = 443.70"

System Weight = 269.0 lbs x 240 = 64,560.0 lbs.



## TERMINATION LOCATIONS



**EnerSys**  
2366 Bernville Road  
Reading, PA 19605  
USA  
Tel:+1-610-208-1991  
+1-800-538-3627

**EnerSys EMEA**  
Löwenstrasse 32  
Zürich, Switzerland  
Tel:+41 (0) 44 215 74 10

**EnerSys Asia**  
152 Beach Road  
Gateway East Building #11-03  
Singapore 189721  
Tel:+65 6508 1780

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