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*PRODUCT GUIDE*

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## Introduction

This product guide covers the **PowerSafe V** range and is designed to help you select the most appropriate battery for your particular application. Technical information includes detailed discharge performance data for each model and advice on calculating the correct battery size.

Energys has earned an international reputation for quality and reliability based on more than 100 years' experience in the manufacture of batteries, and is at the forefront of new product design to meet customer's increasing technical requirements.

The new **PowerSafe V** range of valve regulated lead acid batteries has been designed specifically for use in applications which demand the highest levels of security and reliability. With proven compliance to the most rigorous international standards, **PowerSafe V** is recognised worldwide as the premium battery for Telecom/IT applications. PowerSafe's reputation for long service life, combined with excellent high rate performance, also makes it the number one choice for high integrity, high specification UPS systems.

The use of gas recombination technology for valve regulated lead acid batteries has totally changed the concept of standby power. This technology provides the user with the freedom to use lead acid batteries in a wide range of applications.

The minimal level of gas evolution allows battery installation in cabinets or on stands, in offices or near main equipment, thus maximising space utilisation and reducing storage and maintenance costs.

**PowerSafe V** delivers superior performance whilst occupying less space than conventional standby power batteries. The use of V0 rated, flame retardant, ABS plastic for the thick wall containers and lids offers high mechanical strength with excellent safety features.



Cell Type	Nominal Voltage (V)	Nominal Capacity (Ah) @ 20°C		Dimensions (mm)			Typical Weight (kg)	Terminals			Short Circuit Current (A)	Internal Resistance (mΩ)
		C10 to 1.80Vpc	C3 to 1.80Vpc	Length	Width	Overall Height (over Insulation)		Type	Number	Thread Size		
<b>12V20</b>	12	22	18	166	125	176	9.8	female	2	M5	1482	8.5
<b>12V35</b>	12	35	30	166	156	203	14.3	female	2	M5	1680	7.5
<b>12V45</b>	12	46	39	218	164	220	18.9	female	2	M6	2019	6.24
<b>12V55</b>	12	56	48	271	164	220	22.9	female	2	M6	2470	5.1
<b>12V70</b>	12	68	60	314	164	220	26.7	female	2	M6	2550	4.94
<b>12V80</b>	12	79	69	360	164	228	31.5	female	2	M6	3500	3.6
<b>4V105</b>	4	103	80	202	191	235	16.5	male	2	M8	3571	1.12
<b>6V105</b>	6	103	80	202	191	235	22.0	male	2	M8	5310	1.13
<b>6V130</b>	6	132	108	243	206	234	27.9	female	2	M8	4846	1.3
<b>4V155</b>	4	154	120	202	202	228	23.0	male	4	M8	4802	0.833
<b>6V155</b>	6	154	120	292	202	228	33.0	male	6	M8	4800	1.25
<b>6V165/2</b>	6	173	139	296	204	234	34.1	female	2	M8	5728	1.1
<b>6V165/6</b>	6	173	139	296	204	240	35.0	female	6	M8	5000	1.2
<b>2V200</b>	2	200	148	110	208	260	13.9	female	2	M8	5833	0.36
<b>4V230</b>	4	231	180	292	202	228	32.5	male	4	M8	7207	0.555
<b>2V275</b>	2	275	204	142	208	260	18.5	female	2	M8	7000	0.3
<b>2V310</b>	2	308	240	202	202	228	23.0	male	4	M8	9259	0.216
<b>2V320</b>	2	320	269	195	208	242	22.0	female	4	M8	10000	0.2
<b>2V350</b>	2	350	264	195	208	260	24.0	female	2	M8	8750	0.24
<b>2V400/2</b>	2	400	297	195	208	260	26.2	female	2	M8	9545	0.22
<b>2V400/4</b>	2	400	297	195	208	260	27.0	female	4	M8	11052	0.19
<b>2V460/4</b>	2	462	360	292	202	228	32.5	male	4	M8	10929	0.183
<b>2V460/6</b>	2	462	360	292	202	228	33.0	male	6	M8	10929	0.183
<b>2V500/2</b>	2	500	372	238	208	260	32.5	female	2	M8	11667	0.18
<b>2V500/6</b>	2	518	417	296	204	240	34.7	female	6	M8	16154	0.13
<b>4V525*</b>	4	524	410	527	266	215	75.0	male	4	M12	7273	0.55
<b>6V525*</b>	6	524	410	527	431	215	117.0	male	6	M12	7203	0.833
<b>6V590*</b>	6	590	461	527	431	215	126.0	male	6	M12	8108	0.74
<b>2V785*</b>	2	786	615	527	266	215	58.0	male	4	M12	10811	0.185
<b>2V915*</b>	2	917	718	527	266	215	66.5	male	4	M12	12658	0.158
<b>2V1050*</b>	2	1048	820	527	266	215	75.0	male	4	M12	14388	0.139
<b>2V1575*</b>	2	1573	1230	527	431	215	117.0	male	6	M12	21622	0.0925
<b>2V1770*</b>	2	1769	1384	527	431	215	126.0	male	6	M12	24331	0.0822

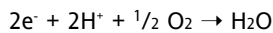
\*Horizontal installation only. Dimensions as installed.

**How gas recombination works**

When a charge current flows through a fully charged conventional lead acid cell, electrolysis of water occurs to produce hydrogen from the negative electrode and oxygen from the positive electrode. This means that water is lost from the cell and regular topping up is needed.

However, evolution of oxygen and hydrogen gases does not occur simultaneously, because the recharge of the positive electrode is not as efficient as the negative. This means that oxygen is evolved from the positive plate before hydrogen is evolved from the negative plate.

At the same time that oxygen is evolved from the positive electrode, a substantial amount of highly active spongy lead exists on the negative electrode before it commences hydrogen evolution. Therefore, providing oxygen can be transported to the negative electrode, conditions are ideal for a rapid reaction between lead and oxygen: ie. oxygen is electrochemically reduced on the negative electrode according to the following formula,

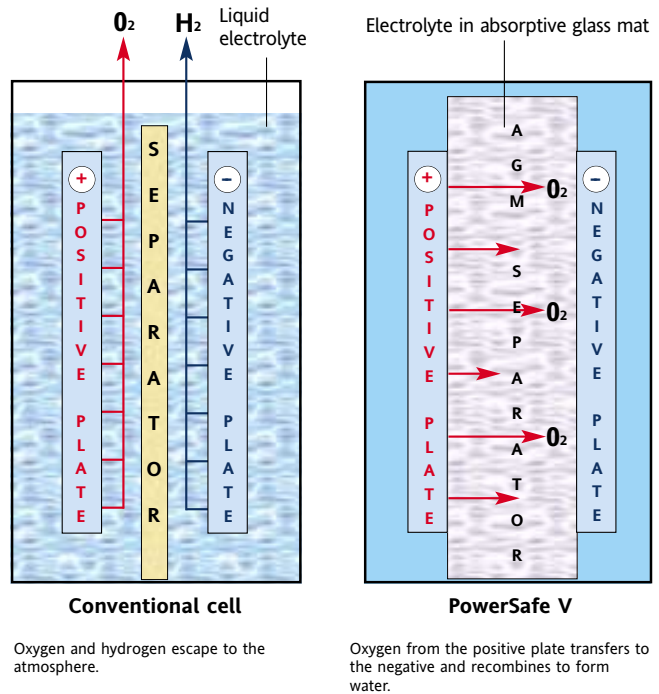


and the final product is water.

The current flowing through the negative electrode drives this reaction instead of hydrogen generation which would occur in a flooded cell.

This process is called gas recombination. If this process was 100% efficient no water would be lost from the cell. By careful design and selection of cell components, gas recombination between 95% to 99% is achieved.

**Principle of the oxygen reduction cycle**



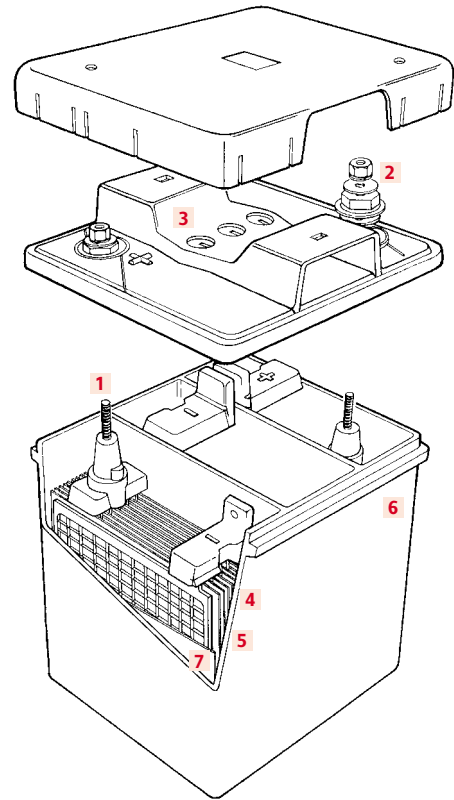
**Recombination efficiency**

Recombination efficiency is determined under specific conditions by measuring the volume of hydrogen emitted from the battery and converting this into its ampere hour equivalent. This equivalent value is then subtracted from the total ampere hours taken by the battery during the test period, and the remainder is the battery's recombination efficiency and is usually expressed as a percentage.

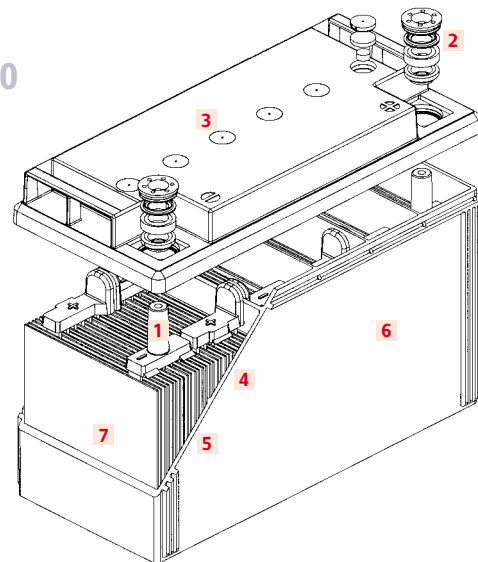
As recombination is never 100%, some hydrogen gas is emitted from PowerSafe cells and batteries through the self-regulating valve. The volume of gas emitted is very small and typical average values on constant potential float at 20°C are as follows:

PowerSafe V hydrogen emissions	
Float voltage (V)	Volume of gas emitted (ml per cell per C <sub>3</sub> Ah per month)
2.28	3.7
2.40	24.0

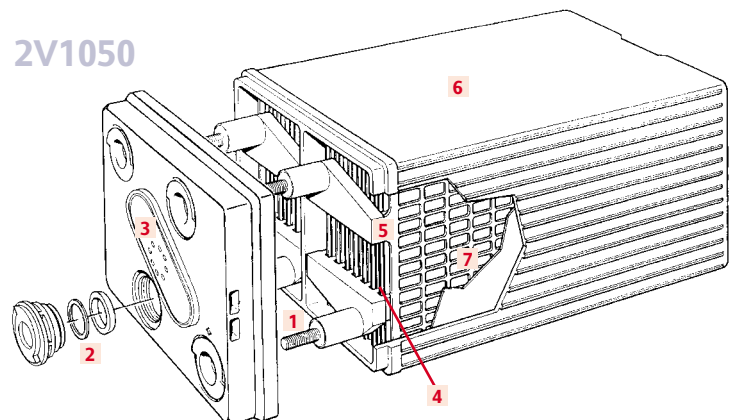
- 1 High conductivity pillars**  
Threaded brass insert for maximum conductivity and ease of installation.
- 2 High integrity pillar seal**  
Compression grommet designed for long life.
- 3 Self-regulating relief valve**  
Low pressure non-return valve prevents ingress of atmospheric oxygen.
- 4 Rugged super-thick positive plates**  
Grids designed to resist corrosion and prolong active life.
- 5 Balanced negative plates**  
Ensure optimum recombination efficiency.
- 6 Tough flame retardant cell box**  
Thick-wall V0 rated ABS plastic, highly resistant to shock and vibration.
- 7 Separators**  
Low resistance microporous glass fibre. The electrolyte is absorbed within this material.



6V105



12V80



2V1050

## Selection of Battery Size

The following examples are designed to illustrate the method of determining which PowerSafe V cell type will support your required duty load.

### Constant current discharge

*EXAMPLE A. To demonstrate constant current calculation and also the effect of temperature.*

A nominal 50V telecommunications system using a 24 cell battery and requiring 102 amps constant current will operate satisfactorily at a minimum battery terminal volts level of 42 volts.

Calculate the battery type required for 2 hours standby duration on the basis of:

- (a) 20°C operating temperature
- (b) 5°C operating temperature

#### METHOD

- (1) Minimum allowable volts per cell
$$\frac{42 \text{ volts}}{24 \text{ cells}} = 1.75\text{Vpc}$$
- (2) Hence, cell performance requirement is 102 amps constant current to 1.75Vpc
- (3) By reference to constant current performance table relating to 1.75 volts per cell level (see page 14):

#### (a) at 20°C

2V310 cell size is smallest available size to use (112 amps available).

**Conclusion: Use 24 - 2V310 cells.**

**(b) at 5°C** by reference to the table on page 27 of this product guide, available current output at 20°C is reduced by factor 0.9.

Therefore at 5°C - 2 hours output is reduced to, on 2V310 size, 112 amps x 0.9 = 101 amps.

Hence 2V310 cell size too small!

Try the next largest cell size - 2V320. At 5°C available current output is 130 amps x 0.9 = 117 amps.

**Conclusion: Use 24-2V320 cells.**

### Constant power discharge

*EXAMPLE B. To demonstrate constant power calculation.*

An inverter system requires a D.C. constant power input of 33.3 kW in the voltage range 486 volts maximum, 383 volts minimum.

Calculate the optimum battery size required for 20°C operation for a 1 hour standby period.

#### METHOD

- (1) Number of cells
$$= 486/2.28\text{Vpc} = 213 \text{ cells.}$$
- (2) Minimum volt per cell
$$383/213 = 1.798 \rightarrow 1.80\text{Vpc.}$$
- (3) Watts per cell
$$= 33300 \text{ watts} / 213 \text{ cells} = 156.33 \text{ watts per cell.}$$
- (4) Hence cell performance requirement is 156.33 watts to 1.80Vpc at 20°C.
- (5) By reference to the constant power performance table (see page 25) relating to 1.80 volts per cell level, 6V130 monobloc is the smallest available size to use.



Cell Type	Discharge Currents (Amperes) at 20°C to 1.60 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	99.0	64.0	48.0	38.0	31.0	27.0	24.0	21.0	20.0	18.0	17.0	15.0	11.0	9.0	8.0	7.0	5.0	4.3	3.5	3.1	2.7	2.5	2.3	1.9	1.0
12V35	176.4	105.0	81.2	65.1	54.6	46.9	41.4	37.8	34.1	31.5	29.0	27.3	19.4	15.2	12.6	10.9	8.4	6.9	5.8	5.1	4.5	4.0	3.7	3.1	1.6
12V45	231.8	137.6	106.7	85.6	71.8	61.9	54.7	49.7	45.0	41.4	38.3	35.9	25.5	20.0	16.6	14.3	11.0	9.0	7.7	6.7	5.9	5.3	4.8	4.1	2.1
12V55	287.3	170.1	132.2	106.0	88.9	77.0	67.9	61.6	55.9	51.3	47.6	44.5	31.5	24.8	20.5	17.7	13.7	11.2	9.5	8.3	7.3	6.6	6.0	5.1	2.6
12V70	345.2	203.9	158.9	127.4	106.9	92.9	82.0	74.0	67.4	61.7	57.4	53.4	37.9	29.8	24.7	21.2	16.4	13.4	11.4	10.0	8.8	7.9	7.2	6.1	3.1
12V80	403.2	237.6	185.6	148.8	124.8	108.8	96.0	86.4	78.9	72.0	67.2	62.4	44.3	34.8	28.8	24.8	19.2	15.7	13.3	11.7	10.3	9.2	8.4	7.1	3.7
4V105	346.0	236.0	180.0	148.0	125.0	108.0	97.9	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V105	346.0	236.0	180.0	148.0	125.0	108.0	97.9	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V130	453.1	329.4	258.7	212.0	181.7	156.5	139.0	125.0	114.0	104.0	95.9	89.2	65.8	52.5	43.7	37.9	30.0	24.7	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	515.0	376.0	296.0	244.0	208.0	181.0	160.0	144.0	130.0	119.0	110.0	102.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V155	515.0	376.0	296.0	244.0	208.0	181.0	160.0	144.0	130.0	119.0	110.0	102.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V165/2	634.0	433.0	324.0	263.0	219.0	187.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
6V165/6	634.0	433.0	324.0	263.0	219.0	187.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
2V200	681.0	477.0	369.0	300.7	260.0	230.6	205.7	185.4	169.6	157.0	144.0	131.0	91.0	74.0	60.0	52.0	41.0	34.9	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	500.0	423.0	349.0	297.0	258.0	229.0	205.0	186.0	170.0	157.0	145.0	105.0	84.2	70.6	61.1	48.7	40.5	35.2	31.3	28.3	25.8	23.6	19.9	10.3
2V275	889.0	620.0	480.0	398.7	348.9	311.5	280.4	255.4	233.6	216.0	198.0	180.0	125.0	102.0	83.0	72.0	56.0	48.1	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	984.0	718.0	565.0	466.0	396.0	345.0	305.0	274.0	248.0	227.0	209.0	194.0	140.0	112.0	93.9	81.4	64.9	54.0	47.0	41.8	37.8	34.4	31.5	26.6	13.8
2V320	1073.0	763.0	590.0	481.0	404.0	353.0	312.0	282.0	259.0	242.0	225.0	213.0	167.3	130.0	107.7	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	772.0	771.7	602.9	514.5	450.2	401.9	361.7	329.6	301.5	279.0	256.0	233.0	161.0	132.0	107.0	93.0	73.0	62.1	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	678.0	678.0	678.3	578.8	506.4	452.2	407.0	370.8	339.1	313.0	288.0	262.0	182.0	148.0	120.0	105.0	82.0	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1363.0	954.0	738.0	601.4	520.0	461.2	411.5	370.8	339.1	313.0	288.0	262.0	182.0	148.0	120.0	105.0	82.0	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	1000.0	847.0	699.0	594.0	517.0	458.0	411.0	372.0	340.0	314.0	291.0	209.0	168.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V460/6	1549.0	1130.0	889.0	733.0	624.0	543.0	481.0	431.0	391.0	357.0	329.0	305.0	217.0	173.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V500/2	531.0	531.0	531.0	531.0	531.0	531.0	470.0	426.0	391.0	363.0	341.0	319.0	234.0	185.0	150.0	131.0	103.0	87.3	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1902.0	1300.0	972.0	789.0	657.0	561.0	495.0	450.0	408.0	379.0	352.0	331.0	238.0	195.0	160.0	141.0	111.0	93.2	77.1	67.2	62.8	53.7	51.8	47.4	21.3
4V525	1161.0	969.0	826.0	720.0	632.0	560.0	505.0	459.0	422.0	390.0	364.0	341.0	251.0	199.0	166.0	144.0	114.0	96.1	83.0	73.3	65.7	59.5	54.3	46.3	24.9
6V525	1161.0	969.0	826.0	720.0	632.0	560.0	505.0	459.0	422.0	390.0	364.0	341.0	251.0	199.0	166.0	144.0	114.0	96.1	83.0	73.3	65.7	59.5	54.3	46.3	24.9
6V590	1306.0	1089.0	929.0	809.0	711.0	630.0	567.0	516.0	474.0	439.0	409.0	384.0	282.0	224.0	186.0	162.0	129.0	108.0	93.3	82.4	73.9	66.9	61.1	52.1	28.0
2V785	1742.0	1453.0	1239.0	1079.0	948.0	841.0	757.0	688.0	633.0	586.0	546.0	512.0	377.0	299.0	248.0	216.0	172.0	144.0	124.0	110.0	100.0	98.5	81.5	69.5	37.4
2V915	2034.0	1696.0	1446.0	1260.0	1107.0	982.0	884.0	803.0	739.0	684.0	638.0	597.0	440.0	349.0	290.0	252.0	200.0	168.0	145.0	128.0	115.0	104.0	95.2	81.1	43.6
2V1050	2323.0	1937.0	1652.0	1439.0	1264.0	1121.0	1009.0	918.0	844.0	781.0	728.0	682.0	502.0	398.0	331.0	288.0	229.0	192.0	166.0	147.0	131.0	119.0	109.0	92.7	49.8
2V1575	3484.0	2906.0	2478.0	2159.0	1896.0	1681.0	1514.0	1376.0	1266.0	1171.0	1092.0	1023.0	753.0	598.0	497.0	432.0	343.0	288.0	249.0	220.0	197.0	178.0	163.0	139.0	74.7
2V1770	3920.0	3270.0	2788.0	2429.0	2134.0	1892.0	1703.0	1549.0	1424.0	1318.0	1229.0	1152.0	847.0	672.0	559.0	486.0	386.0	324.0	280.0	247.0	222.0	201.0	183.0	156.0	84.1

Cell Type	Discharge Currents (Amperes) at 20°C to 1.63 volts per cell																								
	Standby Time (Minutes)							Standby Time (Hours)																	
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	99.0	64.0	48.0	38.0	31.0	27.0	24.0	21.0	20.0	18.0	17.0	15.0	11.0	9.0	8.0	7.0	5.0	4.3	3.5	3.1	2.7	2.5	2.3	1.9	1.0
12V35	176.4	105.0	81.2	65.1	54.6	46.9	41.4	37.8	34.1	31.5	29.0	27.3	19.4	15.2	12.6	10.9	8.4	6.9	5.8	5.1	4.5	4.0	3.7	3.1	1.6
12V45	231.8	137.6	106.7	85.6	71.8	61.9	54.7	49.7	45.0	41.4	38.3	35.9	25.5	20.0	16.6	14.3	11.0	9.0	7.7	6.7	5.9	5.3	4.8	4.1	2.1
12V55	287.3	170.1	132.2	106.0	88.9	77.0	67.9	61.6	55.9	51.3	47.6	44.5	31.5	24.8	20.5	17.7	13.7	11.2	9.5	8.3	7.3	6.6	6.0	5.1	2.6
12V70	345.2	203.9	158.9	127.4	106.9	92.9	82.0	74.0	67.4	61.7	57.4	53.4	37.9	29.8	24.7	21.2	16.4	13.4	11.4	10.0	8.8	7.9	7.2	6.1	3.1
12V80	403.2	237.6	185.6	148.8	124.8	108.8	96.0	86.4	78.9	72.0	67.2	62.4	44.3	34.8	28.8	24.8	19.2	15.7	13.3	11.7	10.3	9.2	8.4	7.1	3.7
4V105	333.0	231.0	178.0	147.0	125.0	108.0	97.9	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V105	333.0	231.0	178.0	147.0	125.0	108.0	97.9	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V130	453.1	329.4	258.7	212.0	181.7	156.5	139.0	125.0	114.0	104.0	95.9	89.2	65.8	52.5	43.7	37.9	30.0	24.7	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	511.0	374.0	295.0	244.0	207.0	181.0	160.0	143.0	130.0	119.0	110.0	102.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V155	511.0	374.0	295.0	244.0	207.0	181.0	160.0	143.0	130.0	119.0	110.0	102.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V165/2	609.0	424.0	321.0	262.0	218.0	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
6V165/6	609.0	424.0	321.0	262.0	218.0	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
2V200	681.0	477.0	369.0	300.7	260.0	230.6	205.7	185.4	169.6	157.0	144.0	131.0	91.0	74.0	60.0	52.0	41.0	34.9	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	500.0	421.0	348.0	296.0	258.0	228.0	205.0	186.0	170.0	157.0	145.0	105.0	84.2	70.6	61.1	48.7	40.5	35.2	31.3	28.3	25.8	23.6	19.9	10.3
2V275	889.0	620.0	480.0	398.7	348.9	311.5	280.4	255.4	233.6	216.0	198.0	180.0	125.0	102.0	83.0	72.0	56.0	48.1	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	1027.0	750.0	591.0	488.0	415.0	361.0	320.0	287.0	260.0	238.0	219.0	203.0	145.0	115.0	94.2	81.4	64.9	54.0	47.0	41.8	37.8	34.4	31.5	26.6	13.8
2V320	1028.0	742.0	579.0	474.0	398.0	349.0	312.0	282.0	259.0	242.0	225.0	213.0	167.3	130.0	107.7	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	772.0	771.7	602.9	514.5	450.2	401.9	361.7	329.6	301.5	279.0	256.0	233.0	161.0	132.0	107.0	93.0	73.0	62.1	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	678.0	678.0	678.3	578.8	506.4	452.2	407.0	370.8	339.1	313.0	288.0	262.0	182.0	148.0	120.0	105.0	82.0	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1363.0	954.0	738.0	601.4	520.0	461.2	411.5	370.8	339.1	313.0	288.0	262.0	182.0	148.0	120.0	105.0	82.0	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	1000.0	844.0	696.0	593.0	516.0	457.0	410.0	372.0	340.0	313.0	290.0	209.0	168.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V460/6	1540.0	1125.0	886.0	731.0	622.0	542.0	480.0	430.0	390.0	357.0	329.0	305.0	217.0	173.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V500/2	531.0	531.0	531.0	531.0	531.0	531.0	470.0	426.0	391.0	363.0	341.0	319.0	234.0	185.0	150.0	131.0	103.0	87.3	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1826.0	1274.0	964.0	785.0	652.0	560.0	495.0	450.0	408.0	379.0	352.0	331.0	238.0	195.0	160.0	141.0	111.0	93.2	77.1	67.2	62.8	53.7	51.8	47.4	21.3
4V525	1099.0	924.0	797.0	700.0	618.0	550.0	497.0	454.0	418.0	387.0	362.0	339.0	250.0	199.0	165.0	144.0	114.0	96.0	82.9	73.2	65.6	59.4	54.3	46.3	24.9
6V525	1099.0	924.0	797.0	700.0	618.0	550.0	497.0	454.0	418.0	387.0	362.0	339.0	250.0	199.0	165.0	144.0	114.0	96.0	82.9	73.2	65.6	59.4	54.3	46.3	24.9
6V590	1237.0	1039.0	897.0	788.0	695.0	619.0	559.0	510.0	470.0	436.0	407.0	382.0	282.0	224.0	186.0	162.0	129.0	108.0	93.2	82.4	73.8	66.8	61.1	52.1	28.0
2V785	1649.0	1385.0	1196.0	1050.0	927.0	825.0	746.0	680.0	627.0	581.0	543.0	509.0	376.0	298.0	248.0	215.0	171.0	144.0	124.0	110.0	98.4	89.1	81.4	69.4	37.3
2V915	1924.0	1616.0	1396.0	1225.0	1082.0	962.0	870.0	794.0	731.0	678.0	633.0	594.0	438.0	348.0	289.0	251.0	200.0	168.0	145.0	128.0	115.0	104.0	95.0	81.0	43.5
2V1050	2198.0	1847.0	1595.0	1400.0	1236.0	1100.0	994.0	907.0	836.0	775.0	724.0	679.0	501.0	397.0	331.0	287.0	229.0	192.0	166.0	146.0	131.0	119.0	109.0	92.6	49.7
2V1575	3298.0	2771.0	2392.0	2100.0	1854.0	1650.0	1491.0	1361.0	1254.0	1162.0	1086.0	1018.0	751.0	596.0	496.0	431.0	343.0	288.0	249.0	220.0	197.0	178.0	163.0	139.0	74.6
2V1770	3710.0	3117.0	2692.0	2363.0	2086.0	1856.0	1678.0	1531.0	1410.0	1308.0	1221.0	1146.0	845.0	671.0	558.0	485.0	386.0	324.0	280.0	247.0	221.0	201.0	183.0	156.0	83.9



Cell Type	Discharge Currents (Amperes) at 20°C to 1.65 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	93.0	62.0	46.0	37.0	31.0	26.0	24.0	21.0	19.0	18.0	16.0	15.0	11.0	9.0	8.0	7.0	5.0	4.3	3.5	3.1	2.7	2.5	2.3	1.9	1.0
12V35	168.0	102.9	78.4	64.1	53.8	46.2	40.8	37.3	33.6	31.1	29.0	27.3	19.4	15.2	12.6	10.9	8.4	6.9	5.8	5.1	4.5	4.0	3.7	3.1	1.6
12V45	224.2	135.7	104.2	84.6	71.0	61.3	54.1	49.2	44.5	41.0	38.3	35.9	25.5	20.0	16.6	14.3	11.0	9.0	7.7	6.7	5.9	5.3	4.8	4.1	2.1
12V55	280.4	168.4	130.0	105.2	88.2	76.4	67.4	61.1	55.5	51.0	47.6	44.5	31.5	24.8	20.5	17.7	13.7	11.2	9.5	8.3	7.3	6.6	6.0	5.1	2.6
12V70	341.8	203.0	157.8	127.0	106.5	92.6	81.7	73.8	67.2	61.5	57.4	53.4	37.9	29.8	24.7	21.2	16.4	13.4	11.4	10.0	8.8	7.9	7.2	6.1	3.1
12V80	403.2	237.6	185.6	148.8	124.8	108.8	96.0	86.4	78.9	72.0	67.2	62.4	44.3	34.8	28.8	24.8	19.2	15.7	13.3	11.7	10.3	9.2	8.4	7.1	3.7
4V105	323.0	227.0	177.0	146.0	124.0	108.0	97.9	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V105	323.0	227.0	177.0	146.0	124.0	108.0	97.9	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V130	432.9	319.3	252.4	209.5	179.2	155.2	137.6	123.7	114.0	104.0	95.9	89.2	65.8	52.5	43.7	37.9	30.0	24.7	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	507.0	372.0	294.0	243.0	207.0	180.0	160.0	143.0	130.0	119.0	110.0	102.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V155	507.0	372.0	294.0	243.0	207.0	180.0	160.0	143.0	130.0	119.0	110.0	102.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V165/2	589.0	416.0	318.0	260.0	218.0	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
6V165/6	589.0	416.0	318.0	260.0	218.0	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
2V200	650.0	461.2	357.2	300.7	260.0	230.6	205.7	185.4	169.6	156.7	144.0	131.0	90.8	74.2	60.1	52.4	40.9	34.9	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	500.0	420.0	347.0	295.0	257.0	228.0	205.0	186.0	170.0	156.0	145.0	105.0	84.2	70.6	61.1	48.7	40.5	35.2	31.3	28.3	25.8	23.6	19.9	10.3
2V275	831.7	598.1	467.3	398.7	348.9	311.5	280.4	255.4	233.6	215.9	198.4	180.4	125.1	102.2	82.7	72.2	56.4	48.1	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	1020.0	746.0	589.0	486.0	414.0	361.0	319.0	287.0	260.0	238.0	219.0	203.0	145.0	115.0	94.2	81.4	64.9	54.0	47.0	41.8	37.8	34.4	31.5	26.6	13.8
2V320	997.0	728.0	572.0	469.0	395.0	348.0	312.0	282.0	259.0	242.0	225.0	213.0	167.3	130.0	107.7	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	772.0	771.7	602.9	514.5	450.2	401.9	361.7	329.6	301.5	278.5	256.0	232.8	161.5	131.9	106.8	93.1	72.8	62.1	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	678.0	678.0	678.3	578.8	506.4	452.2	407.0	370.8	339.1	313.4	288.0	261.9	181.6	148.4	120.2	104.8	81.9	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1300.0	922.5	714.5	601.4	520.0	461.2	411.5	370.8	339.1	313.4	288.0	261.9	181.6	148.4	120.2	104.8	81.9	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	1000.0	841.0	694.0	591.0	515.0	456.0	409.0	371.0	340.0	313.0	290.0	209.0	168.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V460/6	1530.0	1119.0	883.0	729.0	621.0	541.0	479.0	430.0	390.0	357.0	329.0	305.0	217.0	173.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V500/2	531.0	531.0	531.0	531.0	531.0	531.0	470.0	426.0	391.0	363.0	341.0	319.0	234.0	185.0	150.0	131.0	103.0	87.3	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1769.0	1249.0	956.0	781.0	652.0	560.0	495.0	450.0	408.0	379.0	352.0	331.0	238.0	195.0	160.0	141.0	111.0	93.2	77.1	67.2	62.8	53.7	51.8	47.4	21.3
4V525	1057.0	892.0	777.0	685.0	607.0	541.0	491.0	449.0	414.0	385.0	360.0	338.0	250.0	198.0	165.0	143.0	114.0	95.8	82.8	73.2	65.6	59.4	54.2	46.2	24.8
6V525	1057.0	892.0	777.0	685.0	607.0	541.0	491.0	449.0	414.0	385.0	360.0	338.0	250.0	198.0	165.0	143.0	114.0	95.8	82.8	73.2	65.6	59.4	54.2	46.2	24.8
6V590	1189.0	1004.0	874.0	770.0	683.0	609.0	552.0	505.0	466.0	433.0	405.0	380.0	281.0	223.0	186.0	161.0	128.0	108.0	93.1	82.3	73.7	66.8	61.0	52.0	28.0
2V785	1585.0	1339.0	1166.0	1027.0	911.0	812.0	736.0	674.0	622.0	577.0	540.0	507.0	374.0	297.0	248.0	215.0	171.0	144.0	124.0	110.0	98.3	89.1	81.4	69.4	37.3
2V915	1850.0	1562.0	1360.0	1198.0	1062.0	948.0	859.0	786.0	725.0	673.0	630.0	591.0	437.0	347.0	289.0	251.0	200.0	168.0	145.0	128.0	115.0	104.0	94.9	80.9	43.5
2V1050	2114.0	1785.0	1555.0	1369.0	1214.0	1083.0	982.0	898.0	829.0	770.0	720.0	676.0	499.0	396.0	330.0	287.0	228.0	192.0	166.0	146.0	131.0	119.0	108.0	92.5	49.7
2V1575	3171.0	2677.0	2332.0	2054.0	1821.0	1624.0	1473.0	1347.0	1243.0	1154.0	1079.0	1013.0	749.0	595.0	495.0	430.0	342.0	288.0	248.0	220.0	197.0	178.0	163.0	139.0	74.5
2V1770	3567.0	3012.0	2623.0	2310.0	2049.0	1827.0	1657.0	1515.0	1399.0	1299.0	1214.0	1140.0	842.0	669.0	557.0	484.0	385.0	323.0	279.0	247.0	221.0	200.0	185.0	156.0	83.9

Cell Type	Standby Time (Minutes)										Standby Time (Hours)														
	Discharge Currents (Amperes) at 20°C to 1.67 volts per cell																								
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	91.4	60.8	45.2	36.2	30.6	26.0	23.6	21.0	19.0	18.0	16.0	15.0	11.0	9.0	8.0	7.0	5.0	4.3	3.5	3.1	2.7	2.5	2.3	1.9	1.0
12V35	162.8	100.4	77.3	62.4	53.1	45.6	40.3	36.9	33.3	30.7	28.7	26.9	19.2	15.1	12.5	10.8	8.3	6.8	5.8	5.1	4.5	4.0	3.6	3.1	1.6
12V45	216.0	131.8	102.3	82.4	70.0	60.3	53.3	48.6	44.0	40.5	37.8	35.3	25.2	19.8	16.4	14.1	10.9	8.9	7.6	6.7	5.9	5.3	4.8	4.1	2.1
12V55	269.2	163.3	127.2	102.4	86.9	75.0	66.3	60.3	54.7	50.3	46.9	43.8	31.2	24.6	20.3	17.5	13.6	11.1	9.4	8.2	7.3	6.5	5.9	5.0	2.6
12V70	326.4	196.1	153.9	123.7	104.7	90.6	80.0	72.6	66.1	60.6	56.6	52.6	37.5	29.5	24.4	21.1	16.3	13.3	11.3	9.9	8.8	7.9	7.1	6.1	3.1
12V80	383.6	229.0	180.5	145.0	122.5	106.2	93.8	85.0	77.4	70.8	66.2	61.4	43.8	34.5	28.5	24.6	19.0	15.6	13.2	11.6	10.2	9.2	8.3	7.1	3.7
4V105	313.0	222.0	175.0	145.0	124.0	108.0	97.8	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V105	313.0	222.0	175.0	145.0	124.0	108.0	97.8	89.3	82.2	76.1	70.2	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V130	419.3	311.2	247.4	206.0	176.2	153.2	136.1	122.2	112.3	103.2	94.9	88.7	65.8	52.5	43.7	37.9	30.0	24.7	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	502.0	369.0	292.0	242.0	206.0	180.0	159.0	143.0	130.0	119.0	109.0	101.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V155	502.0	369.0	292.0	242.0	206.0	180.0	159.0	143.0	130.0	119.0	109.0	101.0	72.4	57.5	47.1	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V165/2	571.0	407.0	313.0	257.0	216.0	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
6V165/6	571.0	407.0	313.0	257.0	216.0	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
2V200	629.2	448.6	349.1	294.4	255.5	226.1	203.0	183.6	167.8	155.5	143.4	130.1	90.8	74.2	60.1	52.4	40.9	34.9	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	500.0	417.0	345.0	294.0	257.0	227.0	204.0	185.0	170.0	156.0	145.0	105.0	84.2	70.6	61.1	48.7	40.5	35.2	31.3	28.3	25.8	23.6	19.9	10.3
2V275	806.8	583.1	457.3	392.5	343.9	306.5	276.6	252.9	231.1	214.3	197.6	179.2	125.1	102.2	82.7	72.2	56.4	48.1	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	1011.0	741.0	586.0	484.0	413.0	359.0	318.0	286.0	259.0	237.0	219.0	203.0	145.0	115.0	94.2	81.4	64.9	54.0	47.0	41.8	37.8	34.4	31.5	26.6	13.8
2V320	969.0	712.0	561.0	463.0	392.0	345.0	309.0	280.0	259.0	242.0	225.0	213.0	167.3	130.0	107.7	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	752.4	752.4	590.1	506.4	443.7	395.5	356.9	326.4	298.2	276.5	254.9	231.2	161.5	131.9	106.8	93.1	72.8	62.1	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	663.6	663.6	663.8	569.8	499.2	444.9	401.5	367.2	335.5	311.0	286.8	260.2	181.6	148.4	120.2	104.8	81.9	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1258.4	897.1	698.2	588.7	511.0	452.2	406.1	367.2	335.5	311.0	286.8	260.2	181.6	148.4	120.2	104.8	81.9	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	1000.0	837.0	691.0	589.0	514.0	455.0	408.0	371.0	339.0	313.0	290.0	209.0	168.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V460/6	1516.0	1112.0	878.0	726.0	619.0	539.0	478.0	429.0	389.0	356.0	328.0	304.0	217.0	173.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V500/2	522.2	522.2	522.2	522.2	522.2	522.2	463.6	420.8	386.6	359.8	336.6	315.8	234.0	185.0	150.0	131.0	103.0	87.3	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1713.0	1222.0	942.0	773.0	648.0	560.0	495.0	450.0	408.0	379.0	352.0	331.0	238.0	195.0	160.0	141.0	111.0	93.2	77.1	67.2	62.8	53.7	51.8	47.4	21.3
4V525	1013.0	861.0	756.0	667.0	595.0	532.0	484.0	443.0	410.0	381.0	357.0	336.0	249.0	198.0	165.0	143.0	114.0	95.7	82.7	73.1	65.5	59.3	54.2	46.2	24.8
6V525	1013.0	861.0	756.0	667.0	595.0	532.0	484.0	443.0	410.0	381.0	357.0	336.0	249.0	198.0	165.0	143.0	114.0	95.7	82.7	73.1	65.5	59.3	54.2	46.2	24.8
6V590	1140.0	968.0	851.0	751.0	669.0	598.0	544.0	499.0	461.0	429.0	402.0	378.0	280.0	222.0	185.0	161.0	128.0	108.0	93.0	82.2	73.7	66.7	60.9	52.0	27.9
2V785	1520.0	1291.0	1135.0	1001.0	892.0	798.0	726.0	665.0	615.0	572.0	536.0	503.0	373.0	296.0	247.0	215.0	171.0	144.0	124.0	110.0	98.2	89.0	81.3	69.3	37.2
2V915	1773.0	1506.0	1324.0	1167.0	1041.0	931.0	846.0	776.0	718.0	667.0	625.0	587.0	435.0	346.0	288.0	250.0	199.0	167.0	145.0	128.0	115.0	104.0	94.8	80.8	43.4
2V1050	2026.0	1721.0	1513.0	1334.0	1189.0	1064.0	967.0	887.0	820.0	763.0	714.0	671.0	497.0	395.0	329.0	286.0	228.0	191.0	165.0	146.0	131.0	119.0	108.0	92.4	49.6
2V1575	3039.0	2582.0	2269.0	2001.0	1784.0	1596.0	1451.0	1330.0	1230.0	1144.0	1071.0	1007.0	746.0	593.0	494.0	429.0	342.0	287.0	248.0	219.0	196.0	178.0	163.0	139.0	74.4
2V1770	3419.0	2905.0	2553.0	2252.0	2007.0	1795.0	1632.0	1497.0	1384.0	1287.0	1205.0	1133.0	839.0	667.0	556.0	483.0	385.0	323.0	279.0	247.0	221.0	200.0	183.0	156.0	83.7

Cell Type	Discharge Currents (Amperes) at 20°C to 1.69 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	89.8	59.6	44.4	35.4	30.2	26.0	23.2	21.0	19.0	18.0	16.0	15.0	11.0	9.0	8.0	7.0	5.0	4.3	3.5	3.1	2.7	2.5	2.3	1.9	1.0
12V35	157.6	97.9	76.2	60.7	52.4	45.1	39.8	36.4	33.0	30.4	28.4	26.5	19.0	14.9	12.4	10.7	8.3	6.7	5.7	5.0	4.4	4.0	3.6	3.1	1.6
12V45	207.8	128.0	100.3	80.2	69.0	59.4	52.5	47.9	43.5	40.0	37.4	34.8	25.0	19.6	16.3	14.0	10.9	8.9	7.5	6.6	5.8	5.2	4.8	4.0	2.1
12V55	258.0	158.2	124.5	99.7	85.5	73.6	65.1	59.4	54.0	49.6	46.3	43.1	30.9	24.3	20.2	17.4	13.5	11.0	9.3	8.2	7.2	6.5	5.9	5.0	2.6
12V70	311.0	189.2	149.9	120.4	102.8	88.7	78.3	71.5	65.0	59.6	55.7	51.8	37.2	29.2	24.2	20.9	16.2	13.2	11.2	9.8	8.7	7.8	7.1	6.0	3.1
12V80	364.0	220.3	175.4	141.1	120.2	103.7	91.6	83.5	75.9	69.7	65.1	60.5	43.4	34.2	28.3	24.4	18.9	15.4	13.1	11.5	10.1	9.1	8.3	7.0	3.6
4V105	302.0	218.0	173.0	144.0	123.0	108.0	97.6	89.2	82.0	75.8	70.1	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V105	302.0	218.0	173.0	144.0	123.0	108.0	97.6	89.2	82.0	75.8	70.1	65.1	47.0	37.7	31.6	27.2	21.7	18.1	15.7	14.0	12.6	11.5	10.5	8.9	4.6
6V130	405.7	303.2	242.3	202.4	173.2	151.2	134.5	120.7	110.6	102.4	93.9	88.2	65.8	52.5	43.7	37.9	30.0	24.7	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	491.0	364.0	289.0	240.0	205.0	179.0	158.0	142.0	129.0	118.0	109.0	101.0	72.2	57.3	47.0	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V155	491.0	364.0	289.0	240.0	205.0	179.0	158.0	142.0	129.0	118.0	109.0	101.0	72.2	57.3	47.0	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V165/2	552.3	398.3	309.0	254.3	214.7	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.0	7.1
6V165/6	552.3	398.3	309.0	254.3	214.7	186.0	165.0	150.0	136.0	125.0	117.0	110.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.0	7.1
2V200	608.4	435.9	340.9	288.0	251.0	221.6	200.3	181.8	166.0	154.3	142.8	129.2	90.8	74.2	60.1	52.4	40.9	34.9	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	500.0	413.0	342.0	292.0	255.0	226.0	203.0	185.0	169.0	156.0	145.0	104.0	83.9	70.5	61.1	48.7	40.5	35.2	31.3	28.3	25.8	23.6	19.9	10.3
2V275	781.9	568.2	447.3	386.3	338.9	301.5	272.9	250.4	228.6	212.6	196.7	178.0	125.1	102.2	82.7	72.2	56.4	48.1	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	999.0	734.0	581.0	481.0	410.0	358.0	317.0	285.0	259.0	237.0	218.0	203.0	144.0	115.0	94.0	81.4	64.9	54.0	47.0	41.8	37.8	34.4	31.5	26.6	13.8
2V320	941.7	695.3	550.3	457.0	389.3	341.7	305.7	278.7	259.0	242.0	225.0	213.0	167.3	130.0	107.7	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	732.8	733.1	577.2	498.4	437.3	389.1	352.1	323.2	295.0	274.4	253.8	229.7	161.5	131.9	106.8	93.1	72.8	62.1	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	649.2	649.2	649.3	560.7	492.0	437.7	396.1	363.6	331.9	308.7	285.5	258.4	181.6	148.4	120.2	104.8	81.9	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1216.8	871.8	681.9	576.1	501.9	443.1	400.6	363.6	331.9	308.7	285.5	258.4	181.6	148.4	120.2	104.8	81.9	69.8	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	1000.0	830.0	687.0	586.0	511.0	453.0	407.0	369.0	338.0	312.0	289.0	209.0	168.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V460/6	1498.0	1102.0	872.0	721.0	615.0	537.0	476.0	427.0	388.0	355.0	327.0	304.0	217.0	172.0	141.0	122.0	97.3	80.9	70.5	62.7	56.7	51.6	47.2	39.8	20.6
2V500/2	513.4	513.4	513.4	513.4	513.4	513.4	457.2	415.6	382.2	356.6	332.2	312.6	234.0	185.0	150.0	131.0	103.0	87.3	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1657.7	1195.3	927.3	765.0	644.7	560.0	495.0	450.0	408.0	379.0	352.0	331.0	238.0	195.0	160.0	141.0	111.0	93.2	77.1	67.2	62.8	53.7	51.8	45.0	21.3
4V525	970.0	830.0	734.0	648.0	580.0	521.0	475.0	437.0	405.0	377.0	354.0	333.0	247.0	197.0	164.0	143.0	114.0	95.5	82.5	72.9	65.3	59.2	54.1	46.1	24.8
6V525	970.0	830.0	734.0	648.0	580.0	521.0	475.0	437.0	405.0	377.0	354.0	333.0	247.0	197.0	164.0	143.0	114.0	95.5	82.5	72.9	65.3	59.2	54.1	46.1	24.8
6V590	1091.0	933.0	826.0	729.0	652.0	586.0	535.0	492.0	455.0	424.0	398.0	374.0	278.0	221.0	185.0	161.0	128.0	107.0	92.8	82.1	73.5	66.6	60.8	51.8	27.9
2V785	1455.0	1244.0	1101.0	973.0	870.0	782.0	713.0	655.0	607.0	566.0	530.0	499.0	371.0	295.0	246.0	214.0	171.0	143.0	124.0	109.0	98.0	88.8	81.1	69.1	37.2
2V915	1697.0	1452.0	1285.0	1135.0	1014.0	912.0	832.0	765.0	709.0	660.0	619.0	583.0	433.0	344.0	287.0	250.0	199.0	167.0	144.0	128.0	114.0	104.0	94.6	80.6	43.4
2V1050	1940.0	1659.0	1468.0	1297.0	1159.0	1042.0	951.0	874.0	810.0	754.0	707.0	666.0	495.0	394.0	328.0	285.0	227.0	191.0	165.0	146.0	131.0	118.0	108.0	92.2	49.5
2V1575	2910.0	2489.0	2203.0	1945.0	1739.0	1563.0	1426.0	1311.0	1215.0	1132.0	1061.0	999.0	742.0	590.0	493.0	428.0	341.0	286.0	248.0	219.0	196.0	178.0	162.0	138.0	74.3
2V1770	3274.0	2800.0	2478.0	2188.0	1956.0	1759.0	1604.0	1475.0	1366.0	1273.0	1194.0	1123.0	835.0	664.0	554.0	482.0	384.0	322.0	279.0	246.0	221.0	200.0	182.0	156.0	83.6

Cell Type	Discharge Currents (Amperes) at 20°C to 1.71 volts per cell																								
	Standby Time (Minutes)									Standby Time (Hours)															
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	87.8	58.2	43.4	348	29.8	25.8	22.8	20.8	19.0	17.8	16.0	15.0	11.0	9.0	8.0	6.8	5.0	4.3	3.5	3.1	2.7	2.5	2.3	1.9	1.0
12V35	148.4	95.8	75.0	594	51.6	44.5	39.4	35.9	32.7	30.2	28.1	26.3	18.8	14.8	12.3	10.6	8.2	6.7	5.7	5.0	4.4	4.0	3.6	3.1	1.6
12V45	195.0	125.2	98.6	785	67.8	58.5	51.7	47.2	42.9	39.6	36.9	34.5	24.7	19.5	16.2	13.9	10.8	8.8	7.5	6.5	5.8	5.2	4.7	4.0	2.1
12V55	241.6	154.6	122.2	975	84.0	72.5	64.1	58.5	53.2	49.1	45.8	42.8	30.7	24.1	20.0	17.2	13.3	10.9	9.3	8.1	7.2	6.4	5.9	5.0	2.6
12V70	290.3	184.8	146.9	1176	100.9	87.1	77.0	70.3	63.9	59.0	55.0	51.4	36.9	29.0	24.1	20.7	16.0	13.1	11.2	9.7	8.6	7.7	7.0	6.0	3.1
12V80	339.1	215.0	171.5	1378	117.9	101.8	90.0	82.1	74.7	68.9	64.2	60.0	43.0	33.8	28.1	24.2	18.7	15.3	13.0	11.4	10.1	9.0	8.2	7.0	3.6
4V105	291.0	214.0	171.0	1430	122.0	107.0	97.2	89.0	81.6	75.4	69.8	65.0	46.9	37.7	31.6	27.2	21.7	18.0	15.7	13.9	12.6	11.4	10.5	8.9	4.6
6V105	291.0	214.0	171.0	1430	122.0	107.0	97.2	89.0	81.6	75.4	69.8	65.0	46.9	37.7	31.6	27.2	21.7	18.0	15.7	13.9	12.6	11.4	10.5	8.9	4.6
6V130	391.8	294.8	236.8	1982	169.9	148.9	132.5	119.1	108.8	101.0	92.9	87.4	65.4	52.3	43.5	37.7	29.8	24.6	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	476.0	355.0	284.0	2360	202.0	177.0	157.0	141.0	128.0	117.0	108.0	101.0	71.7	57.0	46.9	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V155	476.0	355.0	284.0	2360	202.0	177.0	157.0	141.0	128.0	117.0	108.0	101.0	71.7	57.0	46.9	40.7	32.4	27.0	23.5	20.9	18.9	17.2	15.7	13.3	6.9
6V165/2	531.4	388.6	303.8	2504	212.2	184.8	163.8	149.0	135.4	124.6	117.2	109.8	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.0	7.1
6V165/6	531.4	388.6	303.8	2504	212.2	184.8	163.8	149.0	135.4	124.6	117.2	109.8	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.0	7.1
2V200	585.6	422.8	332.4	2817	246.0	217.5	197.2	179.1	163.7	152.1	141.0	127.9	89.9	73.3	59.7	51.9	40.7	34.7	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	500.0	406.0	3380	289.0	253.0	225.0	202.0	184.0	168.0	155.0	144.0	104.0	83.5	70.3	61.0	48.6	40.5	35.2	31.3	28.3	25.8	23.6	19.9	10.3
2V275	751.7	549.5	434.9	3763	331.4	295.3	267.9	246.7	225.5	209.5	194.2	176.2	123.9	101.0	82.2	71.6	56.1	47.8	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	972.0	719.0	571.0	4740	405.0	354.0	314.0	282.0	257.0	235.0	217.0	201.0	143.0	114.0	93.8	81.3	64.8	53.9	46.9	41.8	37.8	34.3	31.4	26.5	13.8
2V320	910.2	676.4	538.6	4490	384.4	337.6	302.2	276.4	258.0	241.4	224.9	212.8	166.9	130.0	107.6	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	708.6	709.0	561.1	4855	427.7	381.0	345.7	318.3	291.0	270.4	250.6	227.4	159.9	130.4	106.1	92.3	72.4	61.7	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	660.2	660.1	631.2	5462	481.1	428.7	388.9	358.1	327.4	304.2	282.0	255.8	179.8	146.7	119.3	103.9	81.4	69.4	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1171.2	845.6	664.7	5634	492.0	435.0	394.3	358.1	327.4	304.2	282.0	255.8	179.8	146.7	119.3	103.9	81.4	69.4	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	1000.0	819.0	6790	581.0	507.0	450.0	405.0	368.0	337.0	311.0	288.0	208.0	167.0	141.0	122.0	97.2	80.9	70.4	62.6	56.6	51.5	47.1	39.8	20.6
2V460/6	1459.0	1079.0	857.0	7110	608.0	531.0	471.0	424.0	385.0	353.0	325.0	302.0	215.0	171.0	141.0	122.0	97.2	80.9	70.4	62.6	56.6	51.5	47.1	39.8	20.6
2V500/2	503.4	503.4	503.4	503.4	503.4	503.4	449.6	409.6	377.8	352.8	329.0	309.8	233.4	183.0	149.0	129.8	102.4	86.8	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1597.0	1165.6	910.8	7526	637.8	556.0	491.6	446.8	406.6	377.6	351.2	330.0	238.0	194.8	160.0	141.0	110.0	93.2	77.1	67.2	62.8	53.7	51.8	45.0	21.3
4V525	926.0	798.0	710.0	6280	563.0	509.0	466.0	429.0	399.0	372.0	349.0	329.0	246.0	196.0	164.0	142.0	113.0	95.2	82.3	72.8	65.2	59.1	53.9	46.0	24.7
6V525	926.0	798.0	710.0	6280	563.0	509.0	466.0	429.0	399.0	372.0	349.0	329.0	246.0	196.0	164.0	142.0	113.0	95.2	82.3	72.8	65.2	59.1	53.9	46.0	24.7
6V590	1042.0	898.0	799.0	7060	633.0	572.0	524.0	483.0	448.0	419.0	393.0	370.0	276.0	220.0	184.0	160.0	128.0	107.0	92.6	81.9	73.3	66.4	60.7	51.7	27.8
2V785	1389.0	1197.0	1065.0	9420	844.0	763.0	699.0	644.0	598.0	558.0	524.0	494.0	368.0	294.0	245.0	213.0	170.0	143.0	123.0	109.0	97.8	88.6	80.9	68.9	37.1
2V915	1621.0	1396.0	1243.0	10990	985.0	890.0	815.0	751.0	698.0	651.0	611.0	576.0	430.0	342.0	286.0	249.0	198.0	167.0	144.0	127.0	114.0	103.0	94.4	80.4	43.3
2V1050	1853.0	1596.0	1420.0	12560	1126.0	1018.0	931.0	859.0	797.0	744.0	699.0	659.0	491.0	391.0	327.0	284.0	227.0	190.0	165.0	146.0	130.0	118.0	108.0	91.9	49.4
2V1575	2779.0	2394.0	2130.0	18840	1689.0	1526.0	1397.0	1288.0	1196.0	1116.0	1048.0	988.0	737.0	587.0	491.0	427.0	340.0	286.0	247.0	218.0	196.0	177.0	162.0	138.0	74.1
2V1770	3126.0	2693.0	2397.0	21190	1900.0	1717.0	1572.0	1449.0	1345.0	1256.0	1179.0	1111.0	829.0	660.0	552.0	480.0	383.0	321.0	278.0	246.0	220.0	199.0	182.0	155.0	83.4

Cell Type	Standby Time (Minutes)															Standby Time (Hours)														
	Discharge Currents (Amperes) at 20°C to 1.73 volts per cell																													
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24					
12V20	85.4	56.6	42.2	34.4	29.4	25.4	22.4	20.4	19.0	17.4	16.0	15.0	11.0	9.0	8.0	6.4	5.0	4.2	3.5	3.1	2.7	2.5	2.2	1.9	1.0					
12V35	135.1	94.1	73.9	58.6	50.6	44.0	38.9	35.3	32.2	30.0	27.8	26.3	18.7	14.7	12.2	10.5	8.1	6.7	5.7	4.9	4.4	3.9	3.6	3.0	1.6					
12V45	177.5	123.3	97.2	77.2	66.5	57.8	51.1	46.4	42.3	39.4	36.5	34.5	24.6	19.3	16.1	13.8	10.7	8.8	7.5	6.5	5.8	5.2	4.7	4.0	2.1					
12V55	220.0	152.5	120.4	95.8	82.4	71.6	63.3	57.5	52.4	48.8	45.3	42.8	30.4	23.9	19.9	17.1	13.2	10.9	9.3	8.0	7.2	6.4	5.8	5.0	2.6					
12V70	264.4	182.8	144.7	115.3	99.0	86.0	76.1	69.0	63.0	58.7	54.4	51.4	36.6	28.7	23.9	20.6	15.9	13.1	11.1	9.7	8.6	7.7	7.0	6.0	3.1					
12V80	308.7	213.1	169.0	134.9	115.6	100.5	88.9	80.6	73.6	68.5	63.5	60.0	42.7	33.5	28.0	24.0	18.6	15.3	13.0	11.3	10.0	9.0	8.2	7.0	3.6					
4V105	280.0	209.0	168.0	141.0	121.0	106.0	96.7	88.6	81.2	74.9	69.5	64.8	46.8	37.7	31.5	27.1	21.7	18.0	15.6	13.9	12.6	11.4	10.5	8.8	4.6					
6V105	280.0	209.0	168.0	141.0	121.0	106.0	96.7	88.6	81.2	74.9	69.5	64.8	46.8	37.7	31.5	27.1	21.7	18.0	15.6	13.9	12.6	11.4	10.5	8.8	4.6					
6V130	377.6	286.3	230.7	193.1	166.3	146.4	130.0	117.6	106.8	99.1	91.9	86.4	64.7	51.9	43.2	37.4	29.6	24.3	21.0	18.4	16.3	14.8	13.5	11.3	6.0					
4V155	455.0	344.0	276.0	231.0	198.0	173.0	154.0	139.0	126.0	116.0	107.0	99.5	71.1	56.6	46.8	40.6	32.4	27.0	23.4	20.9	18.9	17.1	15.7	13.2	6.9					
6V155	455.0	344.0	276.0	231.0	198.0	173.0	154.0	139.0	126.0	116.0	107.0	99.5	71.1	56.6	46.8	40.6	32.4	27.0	23.4	20.9	18.9	17.1	15.7	13.2	6.9					
6V165/2	508.2	377.8	297.4	245.2	208.6	182.4	161.4	147.0	134.2	123.8	117.6	109.4	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.0	7.1					
6V165/6	508.2	377.8	297.4	245.2	208.6	182.4	161.4	147.0	134.2	123.8	117.6	109.4	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.0	7.1					
2V200	560.7	409.2	323.3	275.4	240.6	213.9	193.5	175.4	161.0	148.8	138.1	126.1	88.1	71.6	58.8	51.1	40.2	34.3	28.8	25.6	23.6	21.1	20.0	16.9	9.3					
4V230	500.0	496.0	398.0	333.0	286.0	250.0	223.0	201.0	182.0	167.0	155.0	144.0	104.0	83.2	70.1	60.9	48.5	40.4	35.1	31.3	28.3	25.7	23.5	19.9	10.3					
2V275	716.1	527.1	419.9	362.6	321.5	287.8	261.7	241.7	221.8	205.0	190.2	173.8	121.4	98.6	81.0	70.4	55.5	47.2	39.7	35.3	32.5	29.0	27.5	23.3	12.7					
2V310	934.0	697.0	556.0	464.0	397.0	348.0	309.0	278.0	253.0	232.0	214.0	199.0	142.0	113.0	93.5	81.2	64.7	53.9	46.8	41.7	37.7	34.3	31.4	26.5	13.7					
2V320	874.6	655.2	525.8	439.0	377.2	332.8	298.6	273.2	256.0	240.3	224.6	212.4	166.2	130.0	107.5	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2					
2V350	679.8	680.1	541.8	467.9	414.8	371.4	337.6	311.9	286.2	264.5	245.5	224.3	156.7	127.3	104.6	90.8	71.6	60.9	51.2	45.5	41.9	37.5	35.0	30.0	16.4					
2V400/2	696.6	696.3	609.5	526.3	466.7	417.8	379.8	350.9	322.0	297.6	276.1	252.3	176.3	143.2	117.6	102.1	80.5	68.5	57.6	51.2	47.1	42.1	40.0	34.2	18.7					
2V400/4	1121.4	818.5	646.6	550.8	481.1	427.8	387.1	350.9	322.0	297.6	276.1	252.3	176.3	143.2	117.6	102.1	80.5	68.5	57.6	51.2	47.1	42.1	40.0	34.2	18.7					
2V460/4	1000.0	1000.0	803.0	669.0	573.0	502.0	446.0	402.0	365.0	335.0	309.0	287.0	207.0	166.0	140.0	122.0	97.1	80.9	70.3	62.6	56.6	51.4	47.0	39.7	20.6					
2V460/6	1401.0	1045.0	835.0	695.0	596.0	522.0	464.0	418.0	380.0	348.0	322.0	299.0	213.0	170.0	140.0	122.0	97.1	80.9	70.3	62.6	56.6	51.4	47.0	39.7	20.6					
2V500/2	492.2	492.2	492.2	492.2	492.2	492.2	492.2	440.8	402.8	373.4	348.4	327.0	307.4	232.2	179.0	147.0	127.4	101.2	85.7	72.0	64.0	58.9	52.6	50.0	42.8	23.4				
2V500/6	1531.0	1132.8	892.4	735.8	627.4	548.0	484.8	440.4	403.8	374.8	349.6	328.0	238.0	194.4	160.0	141.0	110.0	93.2	77.1	67.2	61.0	54.0	51.8	45.0	21.3					
4V525	882.0	766.0	684.0	607.0	546.0	495.0	454.0	420.0	391.0	366.0	344.0	325.0	243.0	194.0	163.0	141.0	113.0	94.8	82.0	72.5	65.0	58.9	53.7	45.8	24.6					
6V525	882.0	766.0	684.0	607.0	546.0	495.0	454.0	420.0	391.0	366.0	344.0	325.0	243.0	194.0	163.0	141.0	113.0	94.8	82.0	72.5	65.0	58.9	53.7	45.8	24.6					
6V590	992.0	861.0	769.0	682.0	614.0	557.0	511.0	473.0	440.0	411.0	387.0	365.0	274.0	219.0	183.0	159.0	127.0	107.0	92.3	81.6	73.1	66.2	60.5	51.5	27.7					
2V785	1323.0	1149.0	1026.0	910.0	818.0	742.0	682.0	630.0	587.0	548.0	516.0	487.0	365.0	291.0	244.0	212.0	169.0	142.0	123.0	109.0	103.0	97.5	88.3	80.6	68.7	37.0				
2V915	1543.0	1340.0	1197.0	1062.0	955.0	866.0	795.0	736.0	684.0	640.0	602.0	568.0	426.0	340.0	285.0	248.0	198.0	166.0	144.0	127.0	114.0	103.0	94.1	80.1	43.1					
2V1050	1763.0	1531.0	1368.0	1213.0	1091.0	989.0	909.0	841.0	782.0	731.0	688.0	650.0	486.0	389.0	325.0	283.0	226.0	190.0	164.0	145.0	130.0	118.0	107.0	91.6	49.3					
2V1575	2645.0	2297.0	2052.0	1820.0	1637.0	1484.0	1363.0	1261.0	1173.0	1097.0	1032.0	974.0	730.0	583.0	488.0	424.0	339.0	285.0	246.0	218.0	195.0	177.0	161.0	137.0	73.9					
2V1770	2976.0	2584.0	2308.0	2047.0	1842.0	1670.0	1534.0	1418.0	1320.0	1234.0	1161.0	1096.0	821.0	656.0	549.0	478.0	381.0	320.0	277.0	245.0	219.0	199.0	181.0	155.0	83.2					

Cell Type	Discharge Currents (Amperes) at 20°C to 1.75 volts per cell																								
	Standby Time (Minutes)										Standby Time (Hours)														
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	83.0	55.0	41.0	34.0	29.0	25.0	22.0	20.0	19.0	17.0	16.0	15.0	11.0	9.0	8.0	6.0	5.0	4.2	3.5	3.1	2.7	2.5	2.2	1.9	1.0
12V35	121.8	92.4	72.8	57.8	49.6	43.4	38.4	34.7	31.7	29.8	27.5	26.3	18.6	14.5	12.2	10.4	8.1	6.7	5.7	4.9	4.4	3.9	3.6	3.0	1.6
12V45	160.1	121.4	95.7	75.9	65.1	57.0	50.5	45.5	41.7	39.2	36.1	34.5	24.4	19.1	16.0	13.7	10.6	8.7	7.4	6.4	5.8	5.2	4.7	4.0	2.1
12V55	198.4	150.5	118.6	94.1	80.7	70.7	62.5	56.4	51.7	48.6	44.8	42.8	30.2	23.7	19.8	17.0	13.1	10.8	9.2	8.0	7.1	6.4	5.8	4.9	2.6
12V70	238.4	180.8	142.5	113.0	97.0	84.9	75.2	67.8	62.1	58.4	53.8	51.4	36.3	28.4	23.8	20.4	15.8	13.0	11.1	9.6	8.6	7.7	7.0	5.9	3.1
12V80	278.4	211.2	166.4	132.0	113.3	99.2	87.8	79.2	72.5	68.2	62.8	60.0	42.4	33.2	27.8	23.9	18.4	15.2	12.9	11.2	10.0	9.0	8.2	6.9	3.6
4V105	269.0	204.0	165.0	139.0	120.0	106.0	96.1	88.1	80.6	74.3	69.0	64.5	46.7	37.5	31.5	27.1	21.6	18.0	15.6	13.9	12.5	11.4	10.4	8.8	4.6
6V105	269.0	204.0	165.0	139.0	120.0	106.0	96.1	88.1	80.6	74.3	69.0	64.5	46.7	37.5	31.5	27.1	21.6	18.0	15.6	13.9	12.5	11.4	10.4	8.8	4.6
6V130	363.5	277.7	224.7	188.1	162.8	143.9	127.5	116.1	104.8	97.2	90.9	85.4	64.0	51.5	42.8	37.1	29.4	24.1	21.0	18.4	16.3	14.8	13.5	11.3	6.0
4V155	427.0	327.0	265.0	223.0	193.0	169.0	151.0	136.0	124.0	114.0	106.0	98.2	70.5	56.1	46.6	40.5	32.3	26.9	23.4	20.8	18.8	17.1	15.6	13.2	6.8
6V155	427.0	327.0	265.0	223.0	193.0	169.0	151.0	136.0	124.0	114.0	106.0	98.2	70.5	56.1	46.6	40.5	32.3	26.9	23.4	20.8	18.8	17.1	15.6	13.2	6.8
6V165/2	485.0	367.0	291.0	240.0	205.0	180.0	159.0	145.0	133.0	123.0	118.0	109.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
6V165/6	485.0	367.0	291.0	240.0	205.0	180.0	159.0	145.0	133.0	123.0	118.0	109.0	79.5	65.0	53.5	47.0	37.0	31.1	25.7	22.4	20.9	17.9	17.3	15.8	7.1
2V200	535.8	395.7	314.3	269.0	235.1	210.3	189.9	171.8	158.3	145.5	135.2	124.4	86.3	69.8	58.0	50.2	39.8	33.8	28.8	25.6	23.6	21.1	20.0	16.9	9.3
4V230	500.0	475.0	385.0	324.0	280.0	246.0	219.0	198.0	180.0	166.0	153.0	143.0	103.0	82.8	69.9	60.8	48.5	40.3	35.0	31.2	28.2	25.6	23.4	19.8	10.3
2V275	680.6	504.6	405.0	348.9	311.5	280.4	255.4	236.7	218.1	200.5	186.2	171.4	119.0	96.2	79.9	69.2	54.9	46.6	39.7	35.3	32.5	29.0	27.5	23.3	12.7
2V310	889.0	670.0	539.0	451.0	388.0	340.0	303.0	274.0	249.0	229.0	211.0	197.0	141.0	112.0	93.1	81.0	64.6	53.7	46.7	41.6	37.6	34.1	31.2	26.4	13.7
2V320	839.0	634.0	513.0	429.0	370.0	328.0	295.0	270.0	254.0	239.2	224.3	212.0	165.5	130.0	107.4	91.5	73.0	60.2	52.0	45.8	40.0	36.0	32.6	28.0	14.2
2V350	651.0	651.1	522.5	450.2	401.9	361.7	329.6	305.5	281.4	258.6	240.3	221.2	153.5	124.2	103.1	89.2	70.8	60.1	51.2	45.5	41.9	37.5	35.0	30.0	16.4
2V400/2	733.0	732.5	587.8	506.4	452.2	407.0	370.8	343.7	316.5	291.0	270.3	248.8	172.7	139.7	115.9	100.4	79.6	67.7	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V400/4	1071.7	791.3	628.5	538.1	470.3	420.5	379.8	343.7	316.5	291.0	270.3	248.8	172.7	139.7	115.9	100.4	79.6	67.7	57.6	51.2	47.1	42.1	40.0	34.2	18.7
2V460/4	1000.0	973.0	782.0	654.0	563.0	494.0	440.0	397.0	362.0	332.0	307.0	285.0	206.0	166.0	140.0	122.0	96.9	80.6	70.1	62.4	56.4	51.2	46.9	39.6	20.5
2V460/6	1333.0	1005.0	808.0	676.0	582.0	510.0	455.0	410.0	374.0	343.0	317.0	295.0	211.0	168.0	140.0	122.0	96.9	80.6	70.1	62.4	56.4	51.2	46.9	39.6	20.5
2V500/2	481.0	481.0	481.0	481.0	481.0	481.0	432.0	396.0	369.0	344.0	325.0	305.0	231.0	175.0	145.0	125.0	100.0	84.6	72.0	64.0	58.9	52.6	50.0	42.8	23.4
2V500/6	1465.0	1100.0	874.0	719.0	617.0	540.0	478.0	434.0	401.0	372.0	348.0	326.0	238.0	194.0	160.0	141.0	111.0	93.2	77.1	67.2	62.8	53.7	51.8	47.4	21.3
4V525	837.0	732.0	655.0	584.0	526.0	479.0	442.0	410.0	382.0	358.0	337.0	319.0	240.0	192.0	161.0	141.0	112.0	94.4	81.6	72.2	64.7	58.6	53.5	45.6	24.5
6V525	837.0	732.0	655.0	584.0	526.0	479.0	442.0	410.0	382.0	358.0	337.0	319.0	240.0	192.0	161.0	141.0	112.0	94.4	81.6	72.2	64.7	58.6	53.5	45.6	24.5
6V590	942.0	823.0	736.0	657.0	592.0	539.0	497.0	461.0	430.0	403.0	380.0	359.0	270.0	216.0	182.0	158.0	126.0	106.0	91.8	81.2	72.8	65.9	60.2	51.3	27.6
2V785	1256.0	1098.0	982.0	875.0	789.0	719.0	662.0	614.0	573.0	537.0	506.0	478.0	360.0	289.0	242.0	211.0	168.0	142.0	122.0	108.0	97.1	87.9	80.3	68.4	36.8
2V915	1465.0	1281.0	1145.0	1021.0	921.0	839.0	773.0	717.0	669.0	627.0	590.0	558.0	420.0	337.0	283.0	246.0	196.0	165.0	143.0	126.0	113.0	103.0	93.6	79.8	43.0
2V1050	1674.0	1464.0	1309.0	1167.0	1053.0	958.0	883.0	819.0	764.0	716.0	675.0	638.0	480.0	385.0	323.0	281.0	225.0	189.0	163.0	144.0	129.0	117.0	107.0	91.2	49.1
2V1575	2511.0	2195.0	1964.0	1751.0	1579.0	1438.0	1325.0	1229.0	1146.0	1074.0	1012.0	957.0	721.0	577.0	484.0	422.0	337.0	283.0	245.0	217.0	194.0	176.0	161.0	137.0	73.6
2V1770	2825.0	2470.0	2209.0	1970.0	1776.0	1617.0	1491.0	1382.0	1290.0	1209.0	1139.0	1076.0	811.0	649.0	545.0	474.0	379.0	318.0	275.0	244.0	218.0	198.0	181.0	154.0	82.8

Cell Type	Discharge Currents (Amperes) at 20°C to 1.80 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	71.0	49.0	38.0	31.0	27.0	24.0	21.0	19.0	18.0	16.0	15.0	14.0	11.0	9.0	7.0	6.0	5.0	4.1	3.4	3.0	2.7	2.4	2.2	1.8	0.9
12V35	109.2	86.1	65.1	54.6	46.2	40.6	36.6	33.1	30.3	28.1	26.3	24.9	18.0	14.0	11.6	10.0	7.8	6.4	5.5	4.8	4.2	3.8	3.5	2.9	1.6
12V45	143.5	111.5	85.6	71.8	60.7	53.4	48.1	43.5	39.9	37.0	34.5	32.7	23.6	18.4	15.3	13.2	10.2	8.4	7.2	6.2	5.6	5.0	4.6	3.9	2.1
12V55	177.8	136.8	106.0	88.9	75.2	66.1	59.6	53.9	49.4	45.8	42.6	40.5	29.3	22.8	18.9	16.3	12.7	10.4	8.9	7.7	6.9	6.2	5.6	4.8	2.5
12V70	213.7	162.0	127.4	106.9	90.4	79.5	71.6	64.7	59.4	55.1	51.0	48.6	35.2	27.4	22.7	19.6	15.2	12.5	10.7	9.3	8.3	7.5	6.8	5.8	3.1
12V80	249.6	187.2	148.8	124.8	105.6	92.8	83.7	75.6	69.3	64.3	59.3	56.8	41.1	32.0	26.6	22.9	17.8	14.6	12.5	10.9	9.7	8.7	7.9	6.7	3.6
4V105	241.0	189.0	156.0	133.0	115.0	102.0	93.2	85.8	78.7	72.7	67.4	62.8	45.6	36.9	31.0	26.7	21.2	17.7	15.4	13.7	12.4	11.2	10.3	8.7	4.5
6V105	241.0	189.0	156.0	133.0	115.0	102.0	93.2	85.8	78.7	72.7	67.4	62.8	45.6	36.9	31.0	26.7	21.2	17.7	15.4	13.7	12.4	11.2	10.3	8.7	4.5
6V130	325.6	252.4	207.0	175.4	151.5	133.8	118.6	109.8	99.7	92.1	85.8	81.6	61.2	49.1	41.4	35.9	28.5	23.8	20.4	17.9	16.0	14.5	13.2	11.3	6.0
4V155	343.0	276.0	232.0	200.0	175.0	155.0	140.0	127.0	117.0	108.0	101.0	94.0	67.8	54.7	46.0	40.0	31.8	26.5	23.1	20.5	18.5	16.8	15.4	13.0	6.7
6V155	343.0	276.0	232.0	200.0	175.0	155.0	140.0	127.0	117.0	108.0	101.0	94.0	67.8	54.7	46.0	40.0	31.8	26.5	23.1	20.5	18.5	16.8	15.4	13.0	6.7
6V165/2	413.0	324.0	265.0	222.0	193.0	171.0	153.0	140.0	130.0	122.0	115.0	107.0	77.0	63.7	52.0	46.3	37.0	31.1	25.2	22.0	20.9	17.6	17.3	15.8	7.1
6V165/6	413.0	324.0	265.0	222.0	193.0	171.0	153.0	140.0	130.0	122.0	115.0	107.0	77.0	63.7	52.0	46.3	37.0	31.1	25.2	22.0	20.9	17.6	17.3	15.8	7.1
2V200	455.6	343.7	278.1	241.9	212.5	189.9	174.1	158.3	144.7	135.7	124.4	117.0	83.8	68.6	56.7	49.5	39.3	33.8	28.7	25.5	23.6	21.1	20.0	17.2	9.1
4V230	500.0	407.0	342.0	295.0	257.0	228.0	206.0	188.0	172.0	159.0	148.0	139.0	100.0	81.3	69	60	47.7	39.8	34.6	30.8	27.8	25.2	23.1	19.5	10.1
2V275	581.0	439.2	355.1	311.5	277.2	249.2	230.5	218.1	199.4	186.9	171.3	161.2	115.5	94.6	78.1	68.2	54.1	46.5	39.5	35.1	32.6	29.1	27.5	23.4	12.5
2V310	719.0	569.0	473.0	405.0	353.0	312.0	281.0	256.0	235.0	217.0	202.0	188.0	136.0	109.0	92.0	80.0	63.6	53.0	46.2	41.1	37.0	33.6	30.8	26.0	13.5
2V320	737.0	569.0	469.0	397.0	345.0	306.0	282.0	259.0	243.0	228.6	214.9	204.0	156.5	126.0	104.6	89.6	71.4	59.2	52.0	44.8	39.4	35.2	32.0	26.8	14.1
2V350	749.6	566.7	458.2	401.9	357.7	321.6	297.4	281.4	257.2	241.2	221.1	208.0	149.0	122.0	100.8	88.0	69.8	60.0	51.0	45.3	42.0	37.6	35.0	30.1	16.1
2V400/2	843.3	637.6	515.5	452.2	402.4	361.7	334.6	316.5	289.4	271.3	248.7	234.0	167.6	137.3	113.3	99.0	78.5	67.5	57.4	50.9	47.3	42.3	40.0	33.9	18.2
2V400/4	911.2	687.3	556.2	483.8	425.1	379.8	348.2	316.5	289.4	271.3	248.7	234.0	167.6	137.3	113.3	99.0	78.5	67.5	57.4	50.9	47.3	42.3	40.0	33.9	18.2
2V460/4	1000.0	839.0	697.0	597.0	520.0	461.0	415.0	377.0	346.0	320.0	297.0	278.0	201.0	163.0	138.0	120.0	95.3	79.6	69.2	61.6	55.6	50.4	46.2	39.0	20.2
2V460/6	1078.0	853.0	709.0	607.0	529.0	469.0	422.0	384.0	352.0	325.0	302.0	283.0	203.0	164.0	138.0	120.0	95.3	79.6	69.2	61.6	55.6	50.4	46.2	39.0	20.2
2V500/2	440.0	440.0	440.0	440.0	440.0	440.0	440.0	402.0	369.0	344.0	322.0	305.0	289.0	217.0	171.0	141.0	124.0	99.0	84.4	71.8	63.6	52.9	50.0	42.4	22.8
2V500/6	1239.0	972.0	797.0	668.0	581.0	514.0	460.0	421.0	397.0	368.0	345.0	321.0	231.0	191.0	156.0	139.0	111.0	93.2	75.6	66.0	62.8	52.8	51.8	47.4	21.2
4V525	728.0	645.0	577.0	520.0	472.0	435.0	403.0	376.0	353.0	333.0	314.0	297.0	228.0	185.0	157.0	137.0	110.0	92.3	80.0	70.7	63.5	57.4	52.4	44.6	24.2
6V525	728.0	645.0	577.0	520.0	472.0	435.0	403.0	376.0	353.0	333.0	314.0	297.0	228.0	185.0	157.0	137.0	110.0	92.3	80.0	70.7	63.5	57.4	52.4	44.6	24.2
6V590	819.0	725.0	650.0	585.0	531.0	489.0	453.0	423.0	397.0	375.0	353.0	334.0	256.0	208.0	176.0	154.0	123.0	104.0	90.0	79.5	71.4	64.6	59.0	50.2	27.2
2V785	1091.0	967.0	866.0	781.0	708.0	652.0	605.0	564.0	530.0	500.0	471.0	446.0	342.0	278.0	235.0	205.0	165.0	138.0	120.0	106.0	95.3	86.1	78.6	67.0	36.2
2V915	1273.0	1128.0	1010.0	911.0	826.0	761.0	705.0	658.0	618.0	583.0	550.0	520.0	399.0	324.0	274.0	239.0	192.0	162.0	140.0	124.0	111.0	100.0	91.7	78.1	42.3
2V1050	1455.0	1289.0	1155.0	1041.0	944.0	869.0	806.0	751.0	706.0	666.0	628.0	594.0	456.0	370.0	313.0	273.0	220.0	185.0	160.0	141.0	127.0	115.0	105.0	89.3	48.3
2V1575	2183.0	1934.0	1732.0	1561.0	1416.0	1304.0	1209.0	1127.0	1059.0	999.0	942.0	891.0	684.0	555.0	470.0	410.0	329.0	277.0	240.0	212.0	191.0	172.0	157.0	134.0	72.5
2V1770	2456.0	2176.0	1949.0	1756.0	1593.0	1467.0	1360.0	1268.0	1192.0	1124.0	1060.0	1003.0	769.0	625.0	529.0	461.0	370.0	312.0	270.0	239.0	214.0	194.0	177.0	151.0	81.5

Cell Type	Discharge Currents (Amperes) at 20°C to 1.85 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	58.0	41.0	32.0	27.0	24.0	21.0	19.0	18.0	16.0	15.0	14.0	13.0	10.0	8.0	7.0	6.0	4.0	3.7	3.2	2.8	2.5	2.2	2.0	1.7	0.9
12V35	100.8	75.6	58.8	48.3	41.2	36.4	33.0	29.9	28.0	26.0	24.1	22.8	16.6	13.3	10.9	9.3	7.2	5.9	5.1	4.4	3.9	3.5	3.2	2.7	1.4
12V45	132.5	99.4	77.3	63.5	54.1	47.8	43.4	39.3	36.8	34.2	31.6	29.9	21.8	17.5	14.4	12.2	9.4	7.8	6.7	5.8	5.2	4.7	4.2	3.6	1.9
12V55	164.2	123.1	95.8	78.7	67.0	59.3	53.7	48.7	45.6	42.4	39.2	37.1	27.0	21.7	17.8	15.1	11.7	9.6	8.3	7.2	6.4	5.8	5.2	4.5	2.4
12V70	197.3	148.0	115.1	94.5	80.6	71.2	64.6	58.6	54.8	51.0	47.1	44.5	32.4	26.0	21.4	18.2	14.0	11.6	9.9	8.6	7.7	6.9	6.3	5.4	2.8
12V80	230.4	172.8	134.4	110.4	94.1	83.2	75.4	68.4	64.0	59.5	55.0	52.0	37.9	30.4	25.0	21.2	16.4	13.5	11.6	10.1	9.0	8.1	7.4	6.3	3.3
4V105	211.0	171.0	142.0	123.0	107.0	95.0	87.3	80.8	74.4	68.9	64.1	59.9	44.2	35.8	29.8	25.6	20.5	17.2	14.9	13.4	12.0	10.9	10.0	8.5	4.4
6V105	211.0	171.0	142.0	123.0	107.0	95.0	87.3	80.8	74.4	68.9	64.1	59.9	44.2	35.8	29.8	25.6	20.5	17.2	14.9	13.4	12.0	10.9	10.0	8.5	4.4
6V130	276.4	218.3	181.7	155.2	135.0	119.9	107.3	98.4	90.9	84.6	78.3	75.2	57.4	46.3	39.3	33.9	26.9	22.4	19.3	17.0	15.2	13.7	12.5	10.7	5.7
4V155	276.0	227.0	198.0	176.0	154.0	138.0	126.0	116.0	107.0	98.9	92.6	87.0	64.3	52.1	44.2	38.5	30.7	25.7	22.5	20.0	18.0	16.4	15.0	12.6	6.5
6V155	276.0	227.0	198.0	176.0	154.0	138.0	126.0	116.0	107.0	98.9	92.6	87.0	64.3	52.1	44.2	38.5	30.7	25.7	22.5	20.0	18.0	16.4	15.0	12.6	6.5
6V165/2	342.0	282.0	240.0	205.0	179.0	159.0	145.0	131.0	123.0	115.0	108.0	100.0	71.5	60.7	50.0	44.7	35.0	29.4	24.1	21.1	19.6	16.8	16.2	14.8	6.7
6V165/6	342.0	282.0	240.0	205.0	179.0	159.0	145.0	131.0	123.0	115.0	108.0	100.0	71.5	60.7	50.0	44.7	35.0	29.4	24.1	21.1	19.6	16.8	16.2	14.8	6.7
2V200	371.9	288.3	237.4	208.0	187.7	167.3	153.7	142.4	131.1	122.1	113.0	103.5	75.6	63.0	51.9	46.1	36.4	31.5	26.7	23.7	21.8	19.4	18.2	15.8	8.5
4V230	414.0	340.0	296.0	263.0	231.0	207.0	189.0	173.0	160.0	148.0	139.0	131.0	96.4	78.2	66.3	57.7	46.0	38.6	33.7	30.0	27.0	24.5	22.5	18.9	9.8
2V275	495.3	380.0	311.5	274.1	246.1	224.3	205.6	196.2	180.7	168.2	155.8	142.6	104.1	86.8	71.4	63.6	50.1	43.4	36.9	32.6	30.1	26.7	25.1	21.7	11.7
2V310	572.0	466.0	403.0	356.0	312.0	278.0	253.0	233.0	214.0	199.0	186.0	175.0	129.0	104.0	88.4	76.9	61.3	51.5	44.9	40.0	36.1	32.7	30.0	25.2	13.1
2V320	634.0	510.0	422.0	358.0	311.0	279.0	257.0	238.0	223.0	209.2	199.5	189.0	142.7	118.0	98.9	86.1	68.2	56.3	49.5	44.0	37.8	33.5	30.7	26.2	13.4
2V350	638.1	490.4	401.9	353.7	317.5	289.4	265.3	233.1	217.0	201.0	184.0	184.0	134.3	112.0	92.2	82.0	64.7	56.0	47.5	42.1	38.8	34.5	32.4	28.0	15.1
2V400/2	719.0	551.7	452.2	397.9	357.2	325.6	298.4	284.9	262.3	244.2	226.1	207.0	151.1	126.0	103.6	92.3	72.7	63.0	53.5	47.3	43.7	38.8	36.5	31.5	17.1
2V400/4	743.8	576.5	474.8	416.0	375.3	334.6	307.5	284.9	262.3	244.2	226.1	207.0	151.1	126.0	103.6	92.3	72.7	63.0	53.5	47.3	43.7	38.8	36.5	31.5	17.1
2V460/4	858.0	700.0	605.0	534.0	468.0	417.0	380.0	349.0	322.0	298.0	279.0	262.0	193.0	156.0	133.0	115.0	92.0	77.2	67.4	60	54.1	49.1	45.0	37.9	19.6
2V460/6	858.0	700.0	605.0	534.0	468.0	417.0	380.0	349.0	322.0	298.0	279.0	262.0	193.0	156.0	133.0	115.0	92.0	77.2	67.4	60	54.1	49.1	45.0	37.9	19.6
2V500/2	993.0	393.0	393.0	393.0	393.0	393.0	360.0	333.0	311.0	347.0	275.0	246.0	198.0	158.0	130.0	115.0	91.0	78.8	66.9	59.1	54.5	48.5	45.6	39.4	21.4
2V500/6	1028.0	848.0	719.0	615.0	537.0	478.0	434.0	396.0	368.0	345.0	323.0	300.0	214.0	182.0	150.0	134.0	105.0	88.1	72.3	63.3	58.9	50.4	48.7	44.6	20.1
4V525	614.0	549.0	495.0	448.0	413.0	381.0	356.0	334.0	314.0	297.0	282.0	269.0	210.0	173.0	148.0	130.0	105.0	88.1	76.6	67.8	60.7	54.9	50.0	42.7	23.3
6V525	614.0	549.0	495.0	448.0	413.0	381.0	356.0	334.0	314.0	297.0	282.0	269.0	210.0	173.0	148.0	130.0	105.0	88.1	76.6	67.8	60.7	54.9	50.0	42.7	23.3
6V590	691.0	618.0	557.0	504.0	464.0	429.0	400.0	376.0	354.0	334.0	318.0	302.0	236.0	195.0	167.0	146.0	118.0	99.1	86.2	76.2	68.3	61.7	56.3	48.1	26.2
2V785	921.0	824.0	743.0	672.0	619.0	572.0	534.0	501.0	472.0	446.0	423.0	403.0	315.0	260.0	222.0	195.0	157.0	132.0	115.0	102.0	91.1	82.3	75.1	64.1	34.9
2V915	1075.0	961.0	867.0	784.0	722.0	667.0	623.0	584.0	550.0	520.0	494.0	470.0	367.0	303.0	259.0	227.0	183.0	154.0	134.0	119.0	106.0	96.1	87.6	74.8	40.7
2V1050	1228.0	1098.0	991.0	897.0	825.0	762.0	712.0	668.0	629.0	594.0	565.0	538.0	420.0	346.0	296.0	259.0	209.0	176.0	153.0	136.0	121.0	110.0	100.0	85.4	46.5
2V1575	1842.0	1647.0	1486.0	1345.0	1238.0	1143.0	1068.0	1002.0	943.0	892.0	847.0	806.0	630.0	519.0	444.0	389.0	314.0	264.0	230.0	203.0	182.0	165.0	150.0	128.0	69.8
2V1770	2073.0	1853.0	1672.0	1513.0	1392.0	1286.0	1201.0	1127.0	1061.0	1003.0	953.0	907.0	708.0	584.0	500.0	438.0	353.0	297.0	259.0	229.0	205.0	185.0	169.0	144.0	78.5





Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.63 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	167.0	111.0	83.0	67.0	56.0	49.0	43.0	39.0	36.0	33.0	31.0	29.0	21.0	17.0	14.0	12.0	10.0	8.0	7.0	6.0	5.3	4.7	4.2	3.6	1.9
12V35	285.0	194.8	150.1	123.5	102.6	86.5	78.2	70.4	64.3	58.7	54.1	51.1	36.8	29.0	24.1	20.6	16.0	13.5	11.3	9.8	8.7	7.9	7.2	6.1	3.2
12V45	394.3	250.0	193.8	163.4	136.8	118.6	102.8	92.5	84.5	77.1	71.1	67.1	48.4	38.2	31.7	27.0	21.0	17.7	14.9	12.9	11.4	10.4	9.4	8.0	4.2
12V55	475.0	312.6	242.3	204.3	171.0	148.2	127.3	114.6	104.7	95.6	88.1	83.2	60.6	48.3	40.1	34.2	26.8	22.1	18.6	16.2	14.3	12.8	11.8	9.9	5.2
12V70	560.5	379.5	292.1	239.9	204.3	174.8	154.1	138.8	126.7	115.7	106.7	100.7	73.4	58.5	48.5	41.4	32.4	26.8	22.6	19.6	17.3	15.5	14.2	12.0	6.3
12V80	646.0	446.5	342.0	275.5	237.5	201.4	178.7	160.9	146.9	134.1	123.7	116.7	85.1	67.8	56.2	48.0	37.6	31.1	26.2	22.7	20.1	18.0	16.5	13.9	7.3
4V105	569.0	406.0	318.0	265.0	226.0	198.0	179.0	164.0	152.0	141.0	130.0	121.0	88.0	70.9	59.6	51.4	41.3	34.5	30.0	26.7	24.2	22.0	20.2	17.1	8.9
6V105	569.0	406.0	318.0	265.0	226.0	198.0	179.0	164.0	152.0	141.0	130.0	121.0	88.0	70.9	59.6	51.4	41.3	34.5	30.0	26.7	24.2	22.0	20.2	17.1	8.9
6V130	725.0	576.5	465.7	387.0	334.4	288.9	256.6	231.3	211.5	192.4	178.1	165.9	125.2	100.6	83.9	72.9	57.9	48.0	40.8	35.8	31.7	28.8	26.2	22.1	11.8
4V155	869.0	649.0	520.0	434.0	372.0	326.0	290.0	261.0	238.0	218.0	202.0	188.0	135.0	108.0	88.7	76.9	61.6	51.4	44.8	39.9	36.1	32.9	30.1	25.4	13.2
6V155	869.0	649.0	520.0	434.0	372.0	326.0	290.0	261.0	238.0	218.0	202.0	188.0	135.0	108.0	88.7	76.9	61.6	51.4	44.8	39.9	36.1	32.9	30.1	25.4	13.2
6V165/2	1035.0	763.0	600.0	495.0	418.0	370.0	324.0	292.0	265.0	248.0	231.0	214.0	154.0	125.0	105.0	92.6	73.0	62.0	51.0	44.6	42.0	35.8	34.3	31.4	14.2
6V165/6	1035.0	763.0	600.0	495.0	418.0	370.0	324.0	292.0	265.0	248.0	231.0	214.0	154.0	125.0	105.0	92.6	73.0	62.0	51.0	44.6	42.0	35.8	34.3	31.4	14.2
2V200	1123.7	824.9	652.8	538.1	470.3	419.4	374.2	339.1	312.0	290.0	266.0	244.0	171.0	141.0	115.0	100.0	78.0	67.0	55.0	49.0	45.5	40.7	38.6	32.8	17.9
4V230	900.0	900.0	743.0	620.0	532.0	465.0	414.0	373.0	340.0	312.0	288.0	268.0	195.0	158.0	133.0	115.0	92.4	77.1	67.3	59.9	54.2	49.3	45.1	38.1	19.8
2V275	1466.7	1072.2	849.6	713.3	631.6	566.9	510.1	467.3	429.9	399.0	366.0	336.0	236.0	194.0	158.0	138.0	108.0	92.0	76.0	68.0	62.7	56.0	53.1	45.1	24.7
2V310	1755.0	1305.0	1044.0	870.0	746.0	653.0	581.0	523.0	477.0	437.0	404.0	376.0	270.0	216.0	177.0	154.0	123.0	103.0	89.7	79.8	72.3	65.7	60.2	50.8	26.5
2V320	1768.0	1328.0	1071.0	886.0	748.0	663.0	593.0	539.0	495.0	465.0	433.0	411.0	303.0	254.0	208.0	180.0	144.0	119.0	104.6	92.0	79.6	71.4	65.2	53.6	28.4
2V350	1335.0	1334.6	1067.2	920.4	814.9	731.5	658.2	602.9	554.7	515.0	473.0	433.0	304.0	251.0	203.0	178.0	139.0	119.0	98.0	88.0	80.9	72.3	67.5	58.1	31.8
2V400/2	1201.0	1201.0	1200.5	1035.5	916.8	823.0	740.5	678.3	624.0	580.0	532.0	487.0	342.0	282.0	229.0	200.0	157.0	134.0	111.0	99.0	91.0	81.3	77.2	66.4	36.3
2V400/4	2249.0	1649.8	1305.5	1076.2	940.5	838.8	748.4	678.3	624.0	580.0	532.0	487.0	342.0	282.0	229.0	200.0	157.0	134.0	111.0	99.0	91.0	81.3	77.2	66.4	36.3
2V460/4	1800.0	1800.0	1491.0	1243.0	1066.0	933.0	830.0	748.0	681.0	625.0	578.0	537.0	390.0	316.0	266.0	231.0	185.0	154.0	135.0	120.0	108.0	98.6	90.3	76.2	39.7
2V460/6	2632.0	1958.0	1566.0	1305.0	1119.0	979.0	872.0	785.0	715.0	656.0	606.0	564.0	405.0	324.0	266.0	231.0	185.0	154.0	135.0	120.0	108.0	98.6	90.3	76.2	39.7
2V500/2	957.0	957.0	957.0	957.0	957.0	957.0	851.0	773.0	709.0	669.0	630.0	591.0	441.0	353.0	286.0	250.0	196.0	168.0	139.0	124.0	113.6	101.6	96.5	82.9	45.4
2V500/6	3105.0	2289.0	1801.0	1487.0	1255.0	1110.0	974.0	878.0	795.0	744.3	693.7	643.0	462.0	376.0	315.0	278.0	219.0	186.0	153.0	134.0	126.0	107.0	103.0	94.4	42.6
4V525	1832.0	1570.0	1375.0	1220.0	1082.0	972.0	884.0	810.0	750.0	697.0	654.0	616.0	460.0	368.0	308.0	268.0	215.0	181.0	157.0	139.0	125.0	113.0	103.0	88.7	48.0
6V525	1832.0	1570.0	1375.0	1220.0	1082.0	972.0	884.0	810.0	750.0	697.0	654.0	616.0	460.0	368.0	308.0	268.0	215.0	181.0	157.0	139.0	125.0	113.0	103.0	88.7	48.0
6V590	2062.0	1767.0	1547.0	1373.0	1217.0	1093.0	994.0	911.0	843.0	785.0	736.0	694.0	518.0	414.0	346.0	302.0	242.0	204.0	177.0	156.0	140.0	127.0	116.0	99.7	54.0
2V785	2749.0	2356.0	2063.0	1830.0	1623.0	1458.0	1325.0	1215.0	1124.0	1046.0	982.0	925.0	690.0	552.0	462.0	403.0	322.0	272.0	236.0	209.0	187.0	170.0	155.0	133.0	72.0
2V915	3207.0	2748.0	2407.0	2135.0	1893.0	1701.0	1546.0	1418.0	1312.0	1221.0	1145.0	1079.0	805.0	644.0	539.0	470.0	376.0	317.0	275.0	243.0	218.0	198.0	181.0	155.0	84.0
2V1050	3665.0	3141.0	2751.0	2440.0	2164.0	1944.0	1767.0	1620.0	1499.0	1395.0	1309.0	1233.0	920.0	736.0	616.0	537.0	430.0	362.0	314.0	278.0	249.0	226.0	207.0	177.0	96.0
2V1575	5497.0	4711.0	4126.0	3661.0	3246.0	2915.0	2651.0	2430.0	2249.0	2092.0	1963.0	1849.0	1381.0	1104.0	923.0	805.0	644.0	544.0	471.0	417.0	374.0	339.0	310.0	266.0	144.0
2V1770	6185.0	5300.0	4642.0	4118.0	3651.0	3280.0	2982.0	2734.0	2530.0	2354.0	2209.0	2081.0	1553.0	1242.0	1039.0	906.0	725.0	611.0	530.0	465.0	421.0	382.0	349.0	299.0	162.0

Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.65 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	160.0	110.0	83.0	67.0	56.0	49.0	43.0	39.0	36.0	33.0	31.0	29.0	21.0	17.0	14.0	12.0	10.0	8.0	7.0	6.0	5.3	4.7	4.2	3.6	1.9
12V35	275.5	191.9	148.2	120.7	100.7	86.5	78.2	70.4	64.3	58.7	54.1	51.1	36.8	29.0	24.1	20.6	16.0	13.5	11.3	9.8	8.7	7.9	7.2	6.1	3.2
12V45	384.8	243.2	191.5	161.1	134.5	115.5	102.8	92.5	84.5	77.1	71.1	67.1	48.4	38.2	31.7	27.0	21.0	17.7	14.9	12.9	11.4	10.4	9.4	8.0	4.2
12V55	465.5	304.0	239.4	201.4	168.2	144.4	127.3	114.6	104.7	95.6	88.1	83.2	60.6	48.3	40.1	34.2	26.8	22.1	18.6	16.2	14.3	12.8	11.8	9.9	5.2
12V70	543.9	370.5	289.8	236.1	201.9	172.0	154.1	138.8	126.7	115.7	106.7	100.7	73.4	58.5	48.5	41.4	32.4	26.8	22.6	19.6	17.3	15.5	14.2	12.0	6.3
12V80	622.3	437.0	340.1	270.8	235.6	199.5	178.7	160.9	146.9	134.1	123.7	116.7	85.1	67.8	56.2	48.0	37.6	31.1	26.2	22.7	20.1	18.0	16.5	13.9	7.3
4V105	557.0	401.0	318.0	265.0	226.0	198.0	179.0	164.0	152.0	141.0	130.0	121.0	88.0	70.9	59.6	51.4	41.3	34.5	30.0	26.7	24.2	22.0	20.2	17.1	8.9
6V105	557.0	401.0	318.0	265.0	226.0	198.0	179.0	164.0	152.0	141.0	130.0	121.0	88.0	70.9	59.6	51.4	41.3	34.5	30.0	26.7	24.2	22.0	20.2	17.1	8.9
6V130	714.3	562.0	455.9	383.4	330.0	287.7	255.5	230.1	212.4	194.1	179.4	167.2	125.2	100.6	83.9	72.9	57.9	48.0	40.8	35.8	31.9	28.8	26.2	22.1	11.8
4V155	869.0	649.0	520.0	434.0	372.0	326.0	290.0	261.0	238.0	218.0	202.0	188.0	135.0	108.0	88.7	76.9	61.6	51.4	44.8	39.9	36.1	32.9	30.1	25.4	13.2
6V155	869.0	649.0	520.0	434.0	372.0	326.0	290.0	261.0	238.0	218.0	202.0	188.0	135.0	108.0	88.7	76.9	61.6	51.4	44.8	39.9	36.1	32.9	30.1	25.4	13.2
6V165/2	1007.0	759.0	600.0	495.0	418.0	369.0	324.0	292.0	265.0	248.0	231.0	214.0	154.0	125.0	105.0	92.3	72.6	61.6	51.0	44.6	41.6	35.8	34.3	31.4	14.2
6V165/6	1007.0	759.0	600.0	495.0	418.0	369.0	324.0	292.0	265.0	248.0	231.0	214.0	154.0	125.0	105.0	92.3	72.6	61.6	51.0	44.6	41.6	35.8	34.3	31.4	14.2
2V200	1072.5	797.6	631.9	538.1	470.3	419.4	374.2	339.1	312.0	289.9	265.9	243.6	171.2	141.0	114.5	100.1	78.3	67.0	55.4	49.3	45.5	40.7	38.6	32.8	17.9
4V230	900.0	900.0	743.0	620.0	532.0	465.0	414.0	373.0	340.0	312.0	288.0	268.0	195.0	158.0	133.0	115.0	92.4	77.1	67.3	59.9	54.2	49.3	45.1	38.1	19.8
2V275	1372.2	1034.3	827.0	713.3	631.6	566.9	510.1	467.3	429.9	399.4	366.3	335.6	235.9	194.3	157.6	137.9	108.0	92.3	76.3	67.9	62.7	56.0	53.1	45.1	24.7
2V310	1754.0	1305.0	1044.0	870.0	746.0	653.0	581.0	523.0	477.0	437.0	404.0	376.0	270.0	216.0	177.0	154.0	123.0	103.0	89.7	79.8	72.3	65.7	60.2	50.8	26.5
2V320	1735.0	1310.0	1058.0	877.0	743.0	661.0	593.0	539.0	495.0	465.0	433.0	411.0	303.0	254.0	208.0	180.0	144.0	119.0	104.6	92.0	79.6	71.4	65.2	53.6	28.4
2V350	1335.0	1334.6	1067.2	920.4	814.9	731.5	658.2	602.9	554.7	515.3	472.7	433.0	304.4	250.6	203.5	177.9	139.4	119.1	98.4	87.7	80.9	72.3	67.5	58.1	31.8
2V400/2	1201.0	1201.0	1200.5	1035.5	916.8	823.0	740.5	678.3	624.0	579.7	531.8	487.1	342.4	282.0	229.0	200.1	156.9	134.0	110.7	98.6	91.0	81.3	77.2	66.4	36.3
2V400/4	2145.1	1595.3	1263.9	1076.2	940.5	838.8	748.4	678.3	624.0	579.7	531.8	487.1	342.4	282.0	229.0	200.1	156.9	134.0	110.7	98.6	91.0	81.3	77.2	66.4	36.3
2V460/4	1800.0	1800.0	1491.0	1243.0	1066.0	933.0	830.0	748.0	681.0	625.0	578.0	537.0	390.0	316.0	266.0	231.0	185.0	154.0	135.0	120.0	108.0	98.6	90.3	76.2	39.7
2V460/6	2630.0	1958.0	1566.0	1305.0	1119.0	979.0	872.0	785.0	715.0	656.0	606.0	564.0	405.0	324.0	266.0	231.0	185.0	154.0	135.0	120.0	108.0	98.6	90.3	76.2	39.7
2V500/2	957.0	957.0	957.0	957.0	957.0	957.0	851.0	773.0	709.0	669.0	630.0	591.0	441.0	353.0	286.0	250.0	196.0	168.0	139.0	124.0	113.6	101.6	96.5	82.9	45.4
2V500/6	3021.0	2277.0	1801.0	1486.0	1255.0	1110.0	974.0	878.0	795.0	744.3	693.7	643.0	462.0	375.0	315.0	277.0	218.0	185.0	153.0	134.0	125.0	107.0	103.0	94.4	42.6
4V525	1781.0	1531.0	1351.0	1201.0	1069.0	962.0	877.0	806.0	747.0	696.0	654.0	616.0	460.0	368.0	308.0	268.0	215.0	181.0	157.0	139.0	125.0	113.0	103.0	88.7	48.0
6V525	1781.0	1531.0	1351.0	1201.0	1069.0	962.0	877.0	806.0	747.0	696.0	654.0	616.0	460.0	368.0	308.0	268.0	215.0	181.0	157.0	139.0	125.0	113.0	103.0	88.7	48.0
6V590	2003.0	1723.0	1519.0	1351.0	1202.0	1083.0	987.0	907.0	840.0	783.0	736.0	693.0	518.0	414.0	346.0	302.0	242.0	204.0	177.0	156.0	140.0	127.0	116.0	99.7	54.0
2V785	2671.0	2297.0	2026.0	1802.0	1603.0	1444.0	1316.0	1209.0	1121.0	1044.0	981.0	925.0	690.0	552.0	462.0	403.0	322.0	272.0	236.0	209.0	187.0	170.0	155.0	133.0	72.0
2V915	3116.0	2680.0	2363.0	2102.0	1870.0	1684.0	1535.0	1411.0	1307.0	1218.0	1144.0	1079.0	805.0	644.0	539.0	470.0	376.0	317.0	275.0	243.0	218.0	198.0	181.0	155.0	84.0
2V1050	3561.0	3062.0	2701.0	2402.0	2137.0	1925.0	1755.0	1612.0	1494.0	1392.0	1308.0	1233.0	920.0	736.0	616.0	537.0	430.0	362.0	314.0	278.0	249.0	226.0	207.0	177.0	96.0
2V1575	5342.0	4593.0	4052.0	3603.0	3206.0	2887.0	2632.0	2418.0	2241.0	2088.0	1961.0	1849.0	1381.0	1104.0	923.0	805.0	644.0	544.0	471.0	417.0	374.0	339.0	310.0	266.0	144.0
2V1770	6010.0	5168.0	4558.0	4054.0	3606.0	3248.0	2961.0	2721.0	2521.0	2349.0	2207.0	2080.0	1553.0	1242.0	1039.0	906.0	725.0	611.0	530.0	469.0	421.0	382.0	349.0	299.0	162.0

Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.67 volts per cell																									
	Standby Time (Minutes)												Standby Time (Hours)													
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24	
12V20	158.4	108.4	81.8	66.2	55.6	48.6	43.0	39.0	36.0	33.0	31.0	29.0	21.0	17.0	14.0	12.0	10.0	8.0	7.0	6.0	5.3	4.7	4.2	3.6	1.9	
12V25	270.9	190.4	147.8	119.9	100.3	86.1	77.3	69.8	63.6	58.4	53.8	50.6	36.4	28.9	24.0	20.5	15.9	13.3	11.2	9.8	8.7	7.8	7.1	6.1	3.2	
12V45	370.7	299.2	190.9	160.2	133.6	114.9	101.6	91.8	83.6	76.7	70.8	66.5	47.9	38.0	31.5	26.9	20.9	17.5	14.8	12.9	11.4	10.3	9.4	8.0	4.2	
12V55	454.1	299.1	238.6	200.3	167.0	143.6	125.9	113.7	103.6	95.1	87.7	82.3	60.1	47.7	39.6	33.8	26.5	21.8	18.5	16.0	14.2	12.8	11.7	9.9	5.2	
12V70	531.5	365.2	287.9	234.7	200.7	171.6	152.4	137.6	125.4	115.1	106.2	99.7	73.0	58.0	48.1	41.1	32.2	26.5	22.5	19.5	17.2	15.5	14.1	12.0	6.3	
12V80	609.0	431.3	337.1	269.2	234.5	199.5	177.7	160.0	145.8	133.4	123.4	115.6	85.1	67.5	56.0	47.8	37.5	30.8	26.2	22.7	20.0	17.9	16.4	13.9	7.2	
4V105	546.0	396.0	316.0	265.0	226.0	198.0	179.0	164.0	152.0	141.0	130.0	121.0	88.0	70.9	59.6	51.4	41.3	34.5	30.0	26.7	24.2	22.0	20.2	17.1	8.9	
6V105	546.0	396.0	316.0	265.0	226.0	198.0	179.0	164.0	152.0	141.0	130.0	121.0	88.0	70.9	59.6	51.4	41.3	34.5	30.0	26.7	24.2	22.0	20.2	17.1	8.9	
6V130	699.8	551.4	448.7	377.7	325.1	284.4	253.1	227.8	209.9	193.2	178.0	166.6	125.2	100.6	83.9	72.9	57.9	48.0	40.8	35.8	31.8	28.8	26.2	22.1	11.8	
4V155	865.0	648.0	520.0	434.0	372.0	326.0	290.0	261.0	238.0	218.0	202.0	188.0	135.0	108.0	88.7	76.9	61.6	51.4	44.8	39.9	36.1	32.9	30.1	25.4	13.2	
6V155	865.0	648.0	520.0	434.0	372.0	326.0	290.0	261.0	238.0	218.0	202.0	188.0	135.0	108.0	88.7	76.9	61.6	51.4	44.8	39.9	36.1	32.9	30.1	25.4	13.2	
6V165/2	979.0	739.0	586.0	488.0	416.0	369.0	324.0	292.0	265.0	248.0	231.0	214.0	154.0	124.0	105.0	92.0	72.3	61.4	51.0	44.6	41.6	35.8	34.0	31.2	14.2	
6V165/6	979.0	739.0	586.0	488.0	416.0	369.0	324.0	292.0	265.0	248.0	231.0	214.0	154.0	124.0	105.0	92.0	72.3	61.4	51.0	44.6	41.6	35.8	34.0	31.2	14.2	
2V200	1050.2	780.7	620.2	529.1	463.0	413.1	371.5	337.3	309.7	288.8	265.8	242.4	171.2	141.0	114.5	100.1	78.3	67.0	55.4	49.3	45.5	40.7	38.6	32.8	17.9	
4V230	900.0	900.0	743.0	620.0	532.0	465.0	414.0	373.0	340.0	312.0	288.0	268.0	195.0	158.0	133.0	115.0	92.4	77.1	67.3	59.9	54.2	49.3	45.1	38.1	19.8	
2V275	1346.5	1015.4	813.0	705.2	623.8	560.1	505.4	464.8	426.8	397.9	366.2	334.0	235.9	194.3	157.6	137.9	108.0	92.3	76.3	67.9	62.7	56.0	53.1	45.1	24.7	
2V310	1749.0	1305.0	1044.0	870.0	746.0	653.0	581.0	523.0	477.0	437.0	404.0	376.0	270.0	216.0	177.0	154.0	123.0	103.0	89.7	79.8	72.3	65.7	60.2	50.8	26.5	
2V320	1696.0	1282.0	1038.0	866.0	737.0	656.0	587.0	535.0	495.0	465.0	433.0	411.0	303.0	254.0	208.0	180.0	144.0	119.0	104.6	92.0	79.6	71.4	65.2	53.6	28.4	
2V350	1310.6	1310.2	1049.1	910.0	804.9	722.7	652.2	599.7	550.7	513.4	472.5	431.0	304.4	250.6	203.5	177.9	139.4	119.1	98.4	87.7	80.9	72.3	67.5	58.1	31.8	
2V400/2	1180.6	1180.6	1180.2	1023.7	905.5	813.0	733.7	674.7	619.5	577.5	531.6	484.9	342.4	282.0	229.0	200.1	156.9	134.0	110.7	98.6	91.0	81.3	77.2	66.4	36.3	
2V400/4	2100.3	1561.4	1240.3	1058.1	926.1	826.1	742.9	674.7	619.5	577.5	531.6	484.9	342.4	282.0	229.0	200.1	156.9	134.0	110.7	98.6	91.0	81.3	77.2	66.4	36.3	
2V460/4	1800.0	1800.0	1491.0	1243.0	1066.0	933.0	830.0	748.0	681.0	625.0	578.0	537.0	390.0	316.0	266.0	231.0	185.0	154.0	135.0	120.0	108.0	98.6	90.3	76.2	39.7	
2V460/6	2624.0	1958.0	1566.0	1305.0	1119.0	979.0	872.0	785.0	715.0	656.0	606.0	564.0	405.0	324.0	266.0	231.0	185.0	154.0	135.0	120.0	108.0	98.6	90.3	76.2	39.7	
2V500/2	943.4	943.4	943.4	943.4	943.4	943.4	943.4	841.0	764.6	706.6	664.2	282.6	585.4	441.0	353.0	286.0	250.0	196.0	168.0	139.0	124.0	113.6	101.6	96.5	82.9	45.4
2V500/6	2938.0	2217.0	1759.0	1464.0	1250.0	1110.0	974.0	878.0	795.0	744.3	693.7	643.0	462.0	373.0	315.0	276.0	217.0	184.0	153.0	134.0	125.0	107.0	102.0	93.5	42.6	
4V525	1725.0	1490.0	1324.0	1178.0	1052.0	951.0	869.0	800.0	743.0	693.0	652.0	615.0	460.0	368.0	308.0	268.0	215.0	181.0	157.0	139.0	125.0	113.0	103.0	88.7	48.0	
6V525	1725.0	1490.0	1324.0	1178.0	1052.0	951.0	869.0	800.0	743.0	693.0	652.0	615.0	460.0	368.0	308.0	268.0	215.0	181.0	157.0	139.0	125.0	113.0	103.0	88.7	48.0	
6V590	1941.0	1676.0	1490.0	1326.0	1184.0	1070.0	978.0	901.0	836.0	780.0	733.0	692.0	518.0	414.0	346.0	302.0	242.0	204.0	177.0	156.0	140.0	127.0	116.0	99.7	54.0	
2V785	2588.0	2235.0	1987.0	1767.0	1579.0	1426.0	1304.0	1201.0	1115.0	1040.0	978.0	923.0	690.0	552.0	462.0	403.0	322.0	272.0	236.0	209.0	187.0	170.0	155.0	133.0	72.0	
2V915	3019.0	2607.0	2318.0	2062.0	1842.0	1664.0	1521.0	1401.0	1300.0	1213.0	1141.0	1077.0	805.0	644.0	539.0	470.0	376.0	317.0	275.0	243.0	218.0	198.0	181.0	155.0	84.0	
2V1050	3450.0	2980.0	2649.0	2357.0	2105.0	1902.0	1738.0	1601.0	1486.0	1387.0	1304.0	1231.0	920.0	736.0	616.0	537.0	430.0	362.0	314.0	278.0	249.0	226.0	207.0	177.0	96.0	
2V1575	5175.0	4470.0	3973.0	3535.0	3157.0	2852.0	2608.0	2401.0	2229.0	2080.0	1956.0	1846.0	1381.0	1104.0	923.0	805.0	644.0	544.0	471.0	417.0	374.0	339.0	310.0	266.0	144.0	
2V1770	5820.0	5029.0	4470.0	3977.0	3552.0	3209.0	2934.0	2702.0	2508.0	2340.0	2200.0	2077.0	1553.0	1242.0	1039.0	906.0	725.0	611.0	530.0	469.0	421.0	382.0	349.0	299.0	162.0	



Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.71 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	1546	1048	792	644	548	478	428	390	360	330	310	290	210	170	140	120	100	80	70	60	53	47	42	36	19
12V25	2588	1856	1454	1178	988	849	754	684	622	575	531	495	358	286	237	203	158	130	111	97	86	78	71	60	31
12V45	3424	2307	1885	1567	1316	1132	991	898	817	756	697	653	472	377	313	267	208	172	146	128	113	102	93	79	41
12V55	4266	2884	2356	1959	1645	1416	1227	1113	1012	937	867	811	592	468	389	332	260	213	183	159	140	127	115	98	51
12V70	5011	3532	2818	2299	1977	1698	1485	1348	1225	1134	1049	978	723	571	474	405	317	260	223	193	171	153	139	118	62
12V80	5757	4180	3279	2639	2309	1980	1744	1571	1428	1316	1221	1133	847	669	555	474	371	304	260	226	199	178	163	137	72
4V105	5150	3860	3110	2620	2250	1980	1790	1640	1520	1410	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89
6V105	5150	3860	3110	2620	2250	1980	1790	1640	1520	1410	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89
6V130	6696	5291	4325	3648	3146	2773	2474	2232	2045	1903	1751	1651	1246	1003	837	726	578	477	408	357	317	288	262	221	118
4V155	8320	6320	5110	4290	3700	3250	2890	2600	2370	2180	2010	1870	1350	1080	887	769	616	514	448	399	361	329	301	254	132
6V155	8320	6320	5110	4290	3700	3250	2890	2600	2370	2180	2010	1870	1350	1080	887	769	616	514	448	399	361	329	301	254	132
6V165/2	9216	7004	5604	4714	4094	3640	3210	2892	2610	2455	2291	2132	1540	1228	1050	912	720	608	510	446	409	358	335	308	142
6V165/6	9216	7004	5604	4714	4094	3640	3210	2892	2610	2455	2291	2132	1540	1228	1050	912	720	608	510	446	409	358	335	308	142
2V200	10010	7458	5958	5107	4483	4006	3642	3317	3039	2841	2630	2391	1695	1395	1138	993	779	666	554	493	455	407	386	328	179
4V230	9000	9000	7330	6150	5300	4650	4140	3730	3400	3120	2880	2680	1950	1580	1330	1150	924	771	673	599	542	493	451	381	198
2V275	12847	9703	7802	6822	6043	5436	4933	4570	4187	3914	3624	3294	2337	1921	1567	1368	1075	917	763	679	627	560	531	451	247
2V310	17050	12830	10320	8640	7420	6510	5790	5220	4750	4360	4030	3750	2690	2160	1770	1540	1230	1030	897	798	723	657	602	508	265
2V320	16164	12264	10030	8406	7230	6420	5750	5284	4936	4670	4330	4110	3030	2542	2080	1800	1440	1190	1046	920	796	714	652	536	284
2V350	12524	12519	10067	8803	7798	7014	6365	5896	5402	5051	4676	4251	3015	2479	2022	1766	1387	1184	984	877	809	723	675	581	318
2V400/2	11822	11823	11325	9903	8772	7891	7160	6634	6077	5682	5261	4782	3391	2789	2276	1987	1560	1332	1107	986	910	813	772	664	363
2V400/4	20019	14916	11915	10215	8967	8013	7285	6634	6077	5682	5261	4782	3391	2789	2276	1987	1560	1332	1107	986	910	813	772	664	363
2V460/4	18000	18000	14790	12380	10640	9330	8300	7480	6810	6350	5780	5370	3900	3160	2660	2310	1850	1540	1350	1200	1080	986	903	762	397
2V460/6	25570	19250	15490	12960	11140	9760	8690	7830	7130	6540	6050	5620	4040	3230	2660	2310	1850	1540	1350	1200	1080	986	903	762	397
2V500/2	9142	9142	9142	9142	9142	9142	8188	7466	6994	6536	6104	5754	4402	3492	2844	2482	1950	1670	1390	1240	1136	1016	964	829	454
2V500/6	27656	21028	16822	14150	12290	10948	9650	8696	7902	7404	6906	6408	4620	3692	3150	2736	2160	1824	1530	1340	1228	1070	1008	925	426
4V525	16100	14060	12630	11240	10120	9200	8460	7840	7300	6830	6440	6090	4590	3680	3080	2680	2150	1810	1570	1390	1250	1130	1030	887	480
6V525	16100	14060	12630	11240	10120	9200	8460	7840	7300	6830	6440	6090	4590	3680	3080	2680	2150	1810	1570	1390	1250	1130	1030	887	480
6V590	18120	15820	14200	12640	11380	10350	9520	8820	8210	7690	7250	6860	5170	4140	3460	3020	2420	2040	1770	1560	1400	1270	1160	997	540
2V785	24150	21090	18940	16860	15180	13800	12700	11750	10950	10250	9660	9140	6890	5520	4620	4030	3220	2720	2360	2090	1870	1700	1550	1330	720
2V915	28180	24600	22090	19670	17710	16100	14810	13710	12780	11960	11270	10660	8040	6440	5390	4700	3760	3170	2750	2430	2180	1980	1810	1550	840
2V1050	32210	28120	25250	22480	20240	18400	16930	15670	14600	13670	12890	12190	9190	7360	6160	5370	4300	3620	3140	2780	2490	2260	2070	1770	960
2V1575	48310	42170	37880	33720	30360	27610	25390	23510	21900	20500	19330	18280	13780	11040	9230	8050	6440	5440	4710	4170	3740	3390	3100	2660	1440
2V1770	54350	47450	42610	37930	34150	31060	28570	26450	24640	23060	21740	20570	15510	12420	10390	9060	7250	6110	5300	4690	4210	3820	3490	2990	1620

Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.73 volts per cell																											
	Standby Time (Minutes)														Standby Time (Hours)													
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24			
12V20	1518	1024	776	632	544	474	424	390	360	330	310	290	210	170	140	120	100	80	70	60	53	47	42	36	19			
12V35	2481	1807	1416	1159	969	838	743	672	613	567	523	488	355	284	236	201	157	129	110	96	85	77	70	59	31			
12V45	3279	2256	1854	1525	1304	1117	976	883	805	745	688	649	472	377	313	267	208	172	146	128	113	102	93	78	41			
12V55	4057	2820	2318	1906	1630	1397	1204	1094	998	924	859	810	592	471	390	333	261	214	182	159	140	127	115	97	51			
12V70	4774	3452	2753	2242	1950	1673	1458	1324	1208	1118	1040	970	717	569	473	404	316	260	221	192	170	153	139	117	62			
12V80	5491	4085	3188	2578	2271	1949	1708	1540	1404	1302	1204	1124	839	664	553	472	369	304	258	225	199	178	162	137	72			
4V105	4990	3800	3090	2610	2250	1980	1790	1640	1520	1410	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89			
6V105	4990	3800	3090	2610	2250	1980	1790	1640	1520	1410	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89			
6V130	6529	5166	4218	3559	3083	2728	2429	2208	2010	1872	1737	1637	1236	997	832	722	574	472	408	358	317	288	262	221	118			
4V155	8020	6160	5010	4220	3640	3210	2870	2590	2360	2160	2000	1860	1340	1070	887	769	616	514	448	399	361	329	301	254	132			
6V155	8020	6160	5010	4220	3640	3210	2870	2590	2360	2160	2000	1860	1340	1070	887	769	616	514	448	399	361	329	301	254	132			
6V165/2	8908	6852	5512	4622	4002	3540	3150	2836	2530	2392	2254	2116	1540	1224	1050	909	720	604	510	446	408	358	334	307	142			
6V165/6	8908	6852	5512	4622	4002	3540	3150	2836	2530	2392	2254	2116	1540	1224	1050	909	720	604	510	446	408	358	334	307	142			
2V200	9696	7267	5822	5012	4407	3948	3579	3258	2989	2780	2578	2359	1663	1364	1124	978	771	658	554	493	455	407	386	328	179			
4V230	9000	8880	7220	6080	5260	4630	4130	3730	3400	3120	2880	2680	1950	1580	1330	1150	924	771	673	599	542	493	451	381	198			
2V275	12381	9368	7565	6604	5887	5311	4830	4489	4118	3831	3552	3250	2292	1879	1548	1348	1064	906	763	679	627	560	531	451	247			
2V310	16490	12510	10120	8500	7330	6440	5750	5180	4720	4330	4000	3720	2680	2150	1770	1540	1230	1030	897	798	723	657	602	508	265			
2V320	15632	11932	9810	8238	7110	6340	5690	5232	4908	4590	4330	4110	3030	2546	2040	1800	1440	1190	1046	920	796	714	652	536	284			
2V350	12092	12088	9761	8521	7597	6853	6232	5792	5314	4943	4583	4194	2958	2425	1998	1739	1372	1169	984	877	809	723	675	581	318			
2V400/2	12466	12468	10981	9586	8546	7710	7011	6516	5978	5561	5156	4718	3328	2728	2248	1957	1544	1315	1107	986	910	813	772	664	363			
2V400/4	19392	14535	11644	10025	8813	7895	7158	6516	5978	5561	5156	4718	3328	2728	2248	1957	1544	1315	1107	986	910	813	772	664	363			
2V460/4	18000	18000	14590	12260	10570	9290	8290	7480	6810	6250	5780	5370	3900	3160	2660	2310	1850	1540	1350	1200	1080	986	903	762	397			
2V460/6	24740	18770	15180	12750	10990	9670	8620	7780	7080	6500	6010	5580	4020	3220	2660	2310	1850	1540	1350	1200	1080	986	903	762	397			
2V500/2	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966	8966			
2V500/6	26728	20564	16546	13870	12010	10644	9470	8528	7806	7325	6845	6364	4620	3676	3150	2728	2160	1812	1530	1340	1224	1070	1004	921	426			
4V525	15480	13610	12250	10930	9870	9000	8310	7710	7200	6750	6380	6040	4570	3680	3080	2680	2150	1810	1570	1390	1250	1130	1030	886	480			
6V525	15480	13610	12250	10930	9870	9000	8310	7710	7200	6750	6380	6040	4570	3680	3080	2680	2150	1810	1570	1390	1250	1130	1030	886	480			
6V590	17420	15310	13780	12300	11110	10130	9350	8680	8100	7600	7170	6790	5140	4140	3460	3020	2420	2040	1770	1560	1400	1270	1160	997	540			
2V785	23230	20410	18870	16400	14810	13500	12460	11570	10800	10130	9560	9060	6860	5510	4620	4030	3220	2720	2360	2090	1870	1700	1550	1330	720			
2V915	27100	23810	21430	19130	17280	15750	14540	13500	12600	11810	11160	10570	8000	6430	5390	4700	3760	3170	2750	2430	2180	1980	1810	1550	840			
2V1050	30970	27220	24500	21860	19750	18000	16610	15420	14400	13500	12750	12080	9140	7350	6160	5370	4300	3620	3140	2780	2490	2260	2070	1770	960			
2V1575	46450	40820	36740	32790	29620	27000	24920	23140	21600	20350	19130	18120	13710	11030	9230	8050	6440	5440	4710	4170	3740	3390	3100	2660	1440			
2V1770	52260	45930	41340	36880	33320	30380	28040	26030	24300	22790	21520	20380	15430	12410	10390	9060	7250	6110	5300	4690	4210	3820	3490	2990	1620			

Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.75 volts per cell																									
	Standby Time (Minutes)												Standby Time (Hours)													
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24	
12V20	1490	1000	760	620	540	470	420	390	360	330	310	290	210	170	140	120	100	80	70	60	53	47	42	36	19	
12V35	2375	1758	1378	1140	950	827	731	660	604	559	516	481	353	282	234	200	156	129	110	96	85	77	70	59	31	
12V45	3135	2204	1824	1482	1292	1102	961	867	793	735	678	646	472	377	313	267	209	172	146	128	113	102	92	78	41	
12V55	3848	2755	2280	1853	1615	1378	1182	1074	983	911	852	810	592	473	392	335	261	215	182	159	140	127	115	97	51	
12V70	4536	3373	2689	2185	1924	1648	1431	1301	1190	1102	1031	962	711	566	471	402	314	259	219	191	169	152	138	116	62	
12V80	5225	3990	3097	2518	2233	1919	1672	1508	1380	1287	1188	1115	831	659	550	470	367	303	255	224	198	178	161	136	72	
4V105	4840	3730	3050	2590	2240	1980	1790	1640	1520	1410	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89	
6V105	4840	3730	3050	2590	2240	1980	1790	1640	1520	1410	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89	
6V130	6361	5040	4111	3470	3020	2683	2384	2183	1975	1842	1722	1622	1225	991	826	718	571	467	408	358	317	288	262	221	118	
4V155	7590	5910	4850	4110	3560	3150	2820	2560	2340	2150	1990	1850	1330	1070	887	769	616	514	448	399	361	329	301	254	132	
6V155	7590	5910	4850	4110	3560	3150	2820	2560	2340	2150	1990	1850	1330	1070	887	769	616	514	448	399	361	329	301	254	132	
6V165/2	8600	6700	5420	4530	3910	3440	3090	2780	2450	2333	2217	2100	1540	1220	1050	906	720	600	510	446	406	358	333	306	142	
6V165/6	8600	6700	5420	4530	3910	3440	3090	2780	2450	2333	2217	2100	1540	1220	1050	906	720	600	510	446	406	358	333	306	142	
2V200	9383	7077	5686	4918	4330	3889	3516	3199	2939	2720	2526	2327	1630	1334	1111	964	763	649	554	493	455	407	386	328	179	
4V230	9000	6850	7040	5960	5170	4570	4100	3710	3390	3120	2880	2680	1950	1580	1330	1150	924	771	673	599	542	493	451	381	198	
2V275	11915	9034	7328	6386	5732	5187	4727	4408	4050	3747	3480	3205	2248	1837	1529	1328	1053	895	763	679	627	560	531	451	247	
2V310	15820	12120	9850	8310	7190	6340	5670	5130	4680	4300	3980	3700	2670	2140	1770	1540	1230	1030	897	798	723	657	602	508	265	
2V320	15100	11600	9590	8070	6990	6260	5630	5180	4880	4620	4330	4110	3030	2550	2030	1800	1440	1190	1046	920	796	714	652	536	284	
2V350	11660	11656	9456	8240	7396	6692	6099	5687	5225	4835	4490	4136	2901	2371	1974	1713	1358	1154	984	877	809	723	675	581	318	
2V400/2	13110	13113	10638	9270	8320	7529	6862	6398	5878	5439	5052	4653	3264	2667	2219	1927	1528	1299	1107	986	910	813	772	664	363	
2V400/4	18766	14153	11372	9835	8659	7778	7031	6398	5878	5439	5052	4653	3264	2667	2219	1927	1528	1299	1107	986	910	813	772	664	363	
2V460/4	18000	17600	14300	12060	10440	9200	8230	7450	6800	6250	5780	5370	3900	3160	2660	2310	1850	1540	1350	1200	1080	986	903	762	397	
2V460/6	23730	18180	14780	12460	10790	9500	8510	7700	7020	6460	5970	5550	4000	3210	2660	2310	1850	1540	1350	1200	1080	986	903	762	397	
2V500/2	8790	8790	8790	8790	8790	8790	8790	7900	7250	6850	6400	6040	5690	4370	3340	2780	2410	1910	1630	1390	1240	1136	1016	964	829	454
2V500/6	25800	20100	16270	13590	11730	10340	9290	8360	7710	7247	6783	6320	4620	3660	3150	2720	2160	1800	1530	1340	1220	1070	1000	918	426	
4V525	14850	13120	11810	10590	9600	8770	8120	7560	7070	6650	6280	5960	4530	3660	3080	2680	2150	1810	1570	1390	1250	1130	1030	886	480	
6V525	14850	13120	11810	10590	9600	8770	8120	7560	7070	6650	6280	5960	4530	3660	3080	2680	2150	1810	1570	1390	1250	1130	1030	886	480	
6V590	16710	14760	13290	11910	10790	9870	9130	8500	7960	7480	7070	6700	5100	4110	3460	3020	2420	2040	1770	1560	1400	1270	1160	996	540	
2V785	22270	19680	17710	15880	14390	13160	12180	11340	10610	9970	9430	8940	6800	5490	4620	4030	3220	2720	2360	2090	1870	1700	1550	1330	720	
2V915	25990	22960	20670	18530	16790	15350	14210	13230	12380	11630	11000	10430	7940	6400	5390	4700	3760	3170	2750	2430	2180	1980	1810	1550	840	
2V1050	29700	26240	23620	21180	19190	17550	16240	15110	14150	13300	12570	11920	9070	7320	6160	5370	4300	3620	3140	2780	2490	2260	2070	1770	960	
2V1575	44550	39350	35430	31760	28790	26320	24360	22670	21220	19940	18850	17880	13600	10970	9230	8050	6440	5440	4710	4170	3740	3390	3100	2660	1440	
2V1770	50120	44270	39860	35730	32380	29610	27400	25510	23870	22440	21210	20110	15300	12340	10390	9060	7250	6110	5300	4690	4210	3820	3490	2990	1620	



Cell Type	Constant Power Discharge (Watts per cell) at 20°C to 1.80 volts per cell																								
	Standby Time (Minutes)												Standby Time (Hours)												
	5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12	24
12V20	1300	900	710	590	510	450	410	370	340	320	300	280	200	160	140	120	100	80	70	60	52	47	42	36	19
12V35	2138	1615	1283	1045	893	779	688	626	570	525	492	462	338	270	223	192	149	120	105	91	81	73	67	57	30
12V45	2736	2014	1672	1406	1193	1049	904	811	743	690	647	613	448	357	295	254	197	160	138	120	106	96	87	74	39
12V55	3420	2518	2090	1758	1492	1311	1120	1004	921	855	801	764	558	445	368	316	245	199	171	149	132	119	108	91	48
12V70	3990	3016	2446	2052	1786	1549	1355	1216	1115	1035	970	914	670	540	446	382	298	242	207	180	159	144	130	110	58
12V80	4560	3515	2803	2347	2081	1786	1572	1410	1293	1200	1125	1064	783	635	525	449	350	285	243	212	187	168	152	128	67
4V105	4430	3530	2930	2510	2190	1940	1780	1640	1510	1400	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89
6V105	4430	3530	2930	2510	2190	1940	1780	1640	1510	1400	1300	1210	880	709	596	514	413	345	300	267	242	220	202	171	89
6V130	5861	4657	3829	3272	2840	2515	2236	2081	1894	1760	1644	1564	1178	950	803	698	554	463	397	348	312	282	258	221	117
4V155	6260	5090	4310	3740	3280	2920	2640	2420	2220	2060	1920	1800	1310	1060	887	769	616	514	448	399	361	329	301	254	132
6V155	6260	5090	4310	3740	3280	2920	2640	2420	2220	2060	1920	1800	1310	1060	887	769	616	514	448	399	361	329	301	254	132
6V165/2	7510	5920	4900	4180	3680	3270	2980	2750	2530	2387	2243	2100	1500	1200	1020	896	713	594	500	438	403	352	328	301	141
6V165/6	7510	5920	4900	4180	3680	3270	2980	2750	2530	2387	2243	2100	1500	1200	1020	896	713	594	500	438	403	352	328	301	141
2V200	8196	6251	5087	4477	3957	3550	3267	2973	2713	2544	2340	2199	1592	1317	1091	955	761	655	556	494	458	410	388	334	177
4V230	9000	7510	6360	5510	4840	4310	3900	3560	3280	3040	2840	2660	1940	1580	1330	1150	924	771	673	599	542	493	451	381	198
2V275	10451	8037	6565	5763	5187	4657	4307	4096	3738	3504	3224	3030	2194	1815	1504	1316	1048	902	766	681	631	565	533	453	243
2V310	13110	10500	8790	7570	6630	5900	5330	4860	4470	4140	3860	3610	2620	2120	1770	1540	1230	1030	897	798	723	657	602	508	265
2V320	13490	10700	8910	7580	6620	5910	5410	5000	4710	4460	4170	3980	2980	2470	1980	1770	1410	1170	1025	895	784	692	640	536	282
2V350	13485	10370	8471	7436	6692	6009	5557	5286	4823	4522	4160	3910	2831	2342	1940	1698	1351	1164	989	878	815	729	679	584	314
2V400/2	15171	11666	9530	8365	7529	6760	6251	5946	5426	5087	4680	4399	3185	2635	2181	1910	1520	1310	1113	988	917	820	776	657	353
2V400/4	16392	12503	10174	8953	7913	7099	6534	5946	5426	5087	4680	4399	3185	2635	2181	1910	1520	1310	1113	988	917	820	776	657	353
2V460/4	18000	15490	12970	11170	9780	8700	7860	7170	6600	6110	5690	5330	3880	3160	2660	2310	1850	1540	1350	1200	1080	986	903	762	397
2V460/6	19660	15750	13190	11360	9940	8840	7990	7290	6710	6210	5790	5420	3930	3190	2660	2310	1850	1540	1350	1200	1080	986	903	762	397
2V500/2	8100	8100	8100	8100	8100	8100	7390	6900	6440	6030	5720	5410	4140	3300	2730	2390	1900	1630	1390	1240	1145	1019	964	821	441
2V500/6	22540	17780	14710	12550	11040	9830	8940	8250	7620	7187	6753	6320	4500	3610	3060	2690	2140	1780	1500	1310	1210	1050	985	905	423
4V525	13220	11790	10610	9610	8780	8090	7520	7040	6630	6270	5930	5630	4360	3560	3020	2640	2130	1800	1570	1380	1250	1130	1030	875	477
6V525	13220	11790	10610	9610	8780	8090	7520	7040	6630	6270	5930	5630	4360	3560	3020	2640	2130	1800	1570	1380	1250	1130	1030	875	477
6V590	14880	13270	11940	10810	9880	9100	8460	7920	7460	7050	6670	6330	4900	4000	3400	2980	2400	2030	1760	1560	1400	1270	1160	985	536
2V785	19840	17690	15920	14410	13170	12130	11290	10550	9950	9400	8900	8440	6530	5330	4530	3970	3200	2700	2350	2080	1870	1690	1540	1310	715
2V915	23140	20640	18570	16810	15370	14150	13170	12310	11600	10970	10380	9850	7620	6220	5290	4630	3730	3150	2740	2420	2180	1970	1800	1530	834
2V1050	26450	23580	21220	19210	17560	16170	15050	14070	13260	12540	11860	11260	8710	7110	6040	5290	4270	3600	3130	2770	2490	2250	2060	1750	953
2V1575	39670	35370	31830	28820	26340	24260	22570	21110	19890	18810	17800	16880	130070	10670	9660	7930	6400	5400	4700	4150	3740	3380	3090	2630	1430
2V1770	44630	39800	35810	32420	29640	27290	25390	23750	22380	21160	20020	18990	14700	12000	10190	8930	7200	6060	5280	4670	4200	3800	3470	2950	1610

Cell Type		Constant Power Discharge (Watts per cell) at 20°C to 1.85 volts per cell																							
		Standby Time (Minutes)												Standby Time (Hours)											
		5	10	15	20	25	30	35	40	45	50	55	1	1.5	2	2.5	3	4	5	6	7	8	9	10	12
12V20	1080	770	620	530	460	410	370	340	320	290	270	260	190	150	130	110	90	70	60	60	49	45	40	35	18
12V35	1805	1378	1121	950	808	751	613	551	512	473	445	418	310	246	205	176	137	113	96	84	75	67	61	52	28
12V45	2356	1733	1444	1262	1049	950	806	725	673	622	585	550	407	312	270	231	182	149	127	111	100	90	82	69	37
12V55	2945	2166	1805	1577	1311	1188	944	858	792	726	696	681	504	379	334	286	226	186	159	139	125	112	102	87	46
12V70	3444	2603	2128	1834	1582	1401	1186	1078	967	925	870	818	626	470	401	344	272	223	191	167	149	134	122	103	56
12V80	3943	3040	2451	2090	1853	1615	1375	1249	1121	1073	1009	956	748	561	469	402	318	261	223	194	173	156	142	120	65
4V105	3950	3240	2710	2350	2060	1830	1690	1570	1440	1340	1250	1170	868	704	589	506	406	341	297	266	239	218	200	169	88
6V105	3950	3240	2710	2350	2060	1830	1690	1570	1440	1340	1250	1170	868	704	589	506	406	341	297	266	239	218	200	169	88
6V130	5114	4083	3417	2934	2566	2278	2049	1885	1749	1628	1510	1455	1110	900	765	661	525	439	377	333	296	269	246	210	112
4V155	5150	4270	3740	3330	2940	2630	2410	2220	2060	1910	1790	1690	1250	1020	870	759	607	510	446	398	358	325	298	252	131
6V155	5150	4270	3740	3330	2940	2630	2410	2220	2060	1910	1790	1690	1250	1020	870	759	607	510	446	398	358	325	298	252	131
6V165/2	6450	5420	4570	3930	3440	3090	2780	2530	2340	2190	2040	1890	1400	1190	985	890	703	586	478	420	397	352	324	297	134
6V165/6	6450	5420	4570	3930	3440	3090	2780	2530	2340	2190	2040	1890	1400	1190	985	890	703	586	478	420	397	352	324	297	134
2V200	6879	5360	4443	3900	3527	3165	2905	2690	2476	2306	2137	1958	1448	1222	1008	899	709	614	522	462	426	379	355	307	166
4V230	7720	6400	5600	5000	4410	3950	3620	3340	3080	2870	2690	2530	1880	1530	1300	1140	910	766	669	596	538	488	448	378	197
2V275	9161	7105	5825	5155	4626	4236	3886	3707	3411	3177	2944	2697	1994	1683	1388	1238	977	846	719	636	586	522	490	423	229
2V310	10690	8780	7630	6770	5960	5320	4860	4480	4140	3840	3600	3390	2510	2050	1740	1520	1210	1020	893	795	717	651	597	504	262
2V320	11920	9690	8100	6870	6000	5410	5010	4640	4350	4080	3860	3700	2860	2320	1920	1700	1340	1110	986	878	752	670	614	515	268
2V350	11821	9168	7516	6652	5969	5466	5014	4783	4401	4100	3798	3480	2573	2172	1792	1598	1261	1092	927	820	757	673	632	546	296
2V400/2	13298	10314	8456	7484	6715	6150	5641	5381	4951	4612	4273	3915	2894	2444	2015	1798	1418	1229	1043	923	851	757	711	614	333
2V400/4	13758	10721	8885	7800	7054	6331	5811	5381	4951	4612	4273	3915	2894	2444	2015	1798	1418	1229	1043	923	851	757	711	614	333
2V460/4	16030	13180	11440	10150	8930	7980	7290	6720	6210	5770	5410	5090	3770	3070	2610	2280	1820	1530	1340	1190	1080	976	895	756	393
2V460/6	16030	13180	11440	10150	8930	7980	7290	6720	6210	5770	5410	5090	3770	3070	2610	2280	1820	1530	1340	1190	1080	976	895	756	393
2V500/2	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280	7280
2V500/6	19360	16270	13710	11800	10340	9290	8360	7620	7040	6563	6087	5610	4200	3560	2950	2670	2110	1760	1430	1260	1190	1050	972	891	402
4V525	11400	10240	9280	8420	7770	7210	6750	6350	6000	5680	5410	5160	4060	3370	2890	2540	2060	1740	1510	1340	1200	1090	992	845	463
6V525	11400	10240	9280	8420	7770	7210	6750	6350	6000	5680	5410	5160	4060	3370	2890	2540	2060	1740	1510	1340	1200	1090	992	845	463
6V590	12830	11520	10430	9480	8740	8110	7600	7150	6750	6390	6080	5810	4570	3790	3250	2850	2310	1950	1700	1510	1350	1220	1120	951	521
2V785	17110	15360	13910	12640	11650	10810	10130	9530	9000	8520	8110	7740	6090	5050	4330	3800	3080	2600	2270	2010	1800	1630	1490	1270	695
2V915	19960	17920	16230	14740	13590	12610	11820	11120	10500	9940	9470	9030	7110	5890	5050	4440	3600	3040	2650	2340	2100	1900	1740	1480	81.1
2V1050	22810	20480	18550	16850	15540	14410	13510	12700	12000	11360	10820	10320	8120	6730	5780	5070	4110	3470	3020	2680	2400	2170	1980	1690	92.6
2V1575	34210	30720	27830	25270	23300	21620	20260	19060	18000	17050	16230	15480	12190	10100	8660	7610	6170	5210	4540	4020	3610	3260	2980	2540	1390
2V1770	38490	34570	31300	28430	26220	24320	22790	21440	20240	19180	18250	17420	13710	11360	9750	8560	6940	5860	5100	4520	4060	3670	3350	2850	1560

The PowerSafe V range of cells should be charged using constant potential chargers.

### Float voltage

At normal room temperature (20°C), the recommended float voltage is equal to 2.28 volts per cell.

To optimise battery performance it is recommended that the float voltage is adjusted for room ambient temperatures in accordance with the following table.

Temperature	Float voltage range per cell
0°C	2.33-2.36V
10°C	2.30-2.33V
20°C	2.27-2.30V
25°C	2.25-2.28V
30°C	2.24-2.27V
35°C	2.22-2.25V
40°C	2.21-2.24V

Under these conditions a recharge will be completed in approximately 72 hours.

### Charging current

A discharged VRLA battery will accept a high recharge current, but for those seeking a more economical charging system a current limit of 0.08 C<sub>10</sub> : 0.1 C<sub>3</sub> (A) is adequate.

**Note:** For a completely discharged battery, 80% of the capacity is replaced in approximately:

- 10 hours at 0.1 C<sub>10</sub>
- 6 hours at 0.3 C<sub>10</sub>
- 5 hours no current limit applied

### Fast recharge

Increasing the charge voltage to 2.40 volts per cell can reduce recharge time and it is possible, depending on the depth of discharge, to halve the recharge time. Under these conditions, however, the charge must be monitored and must be terminated when the charge current remains reasonably steady for 3 consecutive hours after the voltage limit has been reached. At the beginning of charge the current must be limited to 0.1 C<sub>10</sub> : 0.125 C<sub>3</sub> (A). This charge regime, in order to achieve a normal service life, must not be used more than once per month.

### The effect of temperature on capacity

Correction factors for capacity at different temperatures are shown in the following table, the reference temperature being 20°C.

Duration of discharge	Battery temperature								
	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C
5 minutes to 59 minutes	0.80	0.86	0.91	0.96	1	1.04	1.06	1.09	1.10
1 hour to 24 hours	0.86	0.90	0.94	0.97	1	1.03	1.05	1.06	1.07



# Operating Instructions and Guidelines

## Accidental deep discharge

- e.g. (i) discharge at a lower current for a longer time than the original system specification.  
(ii) failure of the charging system.  
(iii) battery not recharged immediately after a discharge.

When a battery is completely discharged:

- (i) the utilisation of the sulphuric acid in the electrolyte is total and the electrolyte now consists only of water. During recharge this condition may produce metallic dendrites which can penetrate the separator and cause a short circuit in a cell.  
(ii) the sulphation of the plate is at its maximum and the internal resistance of the cell is also at its maximum.

The battery should be recharged under a constant potential of 2.28 volts per cell with the current limited to a maximum of 0.3 C<sub>10</sub> (A) in order to prevent excessive internal heating. For instance, for a 6V105 the maximum charge current is 31 amps. If the sulphation of the cell/battery is extensive, then the recharge of the battery may require more than 96 hours.

**Note:** Deep discharging will produce a premature deterioration of the battery and a noticeable reduction in the life expectancy of the battery.

For optimum operation the minimum voltage of the system should be related to the duty as follows:

Duty	Minimum end voltage
5 min ≤ t ≤ 1h	1.65V
1 h ≤ t ≤ 5h	1.70V
5 h ≤ t ≤ 8h	1.75V
8 h ≤ t ≤ 20h	1.80V

In order to protect the battery it is advisable to have system monitoring and low voltage cut-out.

## Float charge ripple

Excessive ripple on the D.C. supply across a battery has the effect of reducing life and performance.

It is recommended therefore, that voltage regulation across the system including the load, but without the battery connected, under steady state conditions, shall be better than ±1% between 5% and 100% load.

Transient and other ripple type excursions can be accommodated provided that, with the battery disconnected but the load connected, the system peak to peak voltage including the regulation limits, falls within ±2.5% of the recommended float voltage of the battery.

Under no circumstances should the current flowing through the battery when it is operating under float conditions, reverse into the discharge mode.

## Electro-Magnetic Compatibility (EMC)

PowerSafe V products are covered by the EMC statement in prEN 50226:1995 which reads as follows:

Rechargeable cells or batteries are not sensitive to normal electromagnetic disturbances, and therefore no immunity tests shall be required. Free-standing rechargeable cells or batteries electrically isolated from any associated electrical system are for all practical purposes electromagnetically inert, and therefore the requirements for electromagnetic compatibility shall be deemed to be satisfied.

**Note:** It should be noted that rechargeable cells or batteries are part of an electrical system, and the manner in which they are used could invoke the requirements of the electromagnetic compatibility upon that system. In such cases, the requirements of electromagnetic compatibility shall be accommodated by the design of the system.

## Maintenance

- Every month, check that the total voltage at the battery terminals is (N x 2.28V) for a temperature of 20°C.
- N = the number of cells in the battery and 2.28 = 20°C float voltage.
- Once a year, take a reading of the individual bloc voltages in the battery. A variation of ±4.5% on individual voltages from the average voltage is acceptable.
- The system must be checked once or twice a year.

## Principal factors affecting the life of recombination batteries

- Deep discharge
- Poor control of the float voltage
- Cycling or micro-cycling
- Poor quality of charging current (excessive ripple)
- High ambient temperature

## Warning

PowerSafe V cells are already charged when delivered. They should be unpacked with care. Avoid short circuiting terminals of opposite polarity as these units are capable of discharging at a very high current, especially if the lid or the container is damaged.

## Unpacking

It is advisable to unpack all the cells or monoblocs and accessories before commencing to erect and not to unpack and erect cell by cell.

All items should be carefully checked against the accompanying advice notes to ascertain if any are missing. Advise the Sales Department of any discrepancies.

Transit insulation covers are fitted to one pole or a rigid plastic insulating cover is provided which totally protects the unit terminals. These are factory fitted to all products of the range and there is no need to remove them until access to the terminals is required.

## Setting up the battery stands

The structure should be assembled in accordance with instructions supplied with the equipment.

To level the stand use the adjustable insulating feet.

## Mounting in a cabinet

Ensure that the cabinet:

- is sufficiently strong to cope with the weight of the battery.
- is suitably insulated
- is naturally ventilated

## Connecting the cells

- Torque setting  
Tighten the nuts or bolts to the recommended levels of torque indicated on the product label.  
Always use insulated tools for fitting and torquing up battery connections.

- In series  
The number of cells in series (N) will not affect the selected float voltage per cell.  
Therefore, charging float voltage = N x Cell float Voltage  
No special circuit arrangements are required.
- In parallel  
Using constant voltage chargers, and ensuring that the connections made between the charger and the batteries have the same electrical resistance, no special arrangements have to be made for batteries in parallel.  
Although no special circuit arrangements are required, where the parallel connection is made at the charger or distribution board, to avoid out of step conditions, the bus bar run length and the area of cross section should be designed so that the circuit resistance value for each string is equal within limits  $\pm 5\%$ .

## General recommendations

- Do not wear clothing of synthetic material to avoid static generation.
- Use only a clean soft damp cloth for cleaning the cells. Do not use chemicals or detergents.
- Use insulated tools.
- Commence installation at the least accessible point.
- Consult the drawing for the correct position of the cell poles.

## Commissioning charge

Ensure that the batteries will be operated in a clean environment.

Before use, the batteries should be charged at a constant float voltage adjusted according to the ambient temperature, e.g. 2.28 volts per cell at 20°C for 48 to 96 hours or, alternatively, a voltage of 2.40 volts per cell at 20°C can be used to reduce the commissioning period from 24 to 15 hours.

Where the batteries have been stored under harsh conditions, this increased voltage recharge is particularly effective.

# Battery Storage

## Storage conditions

Store the battery in a dry, clean and preferably cool location.

## Storage time

As the batteries are supplied charged, storage time is limited. In order to easily charge the batteries after prolonged storage, it is advisable not to store batteries for more than:

- 6 months at 20°C
- 3 months at 30°C
- 6 weeks at 40°C

## Battery state of charge

The battery state of charge can be determined by measuring the open-circuit voltage of cells in rest position for 24 hours at 20°C.

State of charge	Voltage
100%	2.14Vpc
80%	2.10Vpc
60%	2.07Vpc
40%	2.04Vpc
20%	2.00Vpc

Open circuit voltage variation with temperature is 2.5mV per 10°C.

## Recharge of stored batteries

Following storage and before putting the batteries into service, a refreshing charge shall be performed at 20°C for 48 to 96 hours.

A current limit is not essential, but for optimum charge efficiency the current output of the charger can be limited to 10% of the 3-hour capacity rating.

The necessity of a refreshing charge can also be determined by measuring the open circuit voltage of a stored battery. Refreshing charge is advised if the voltage drops below 2.10 volts per cell.

Failure to observe these conditions may result in greatly reduced capacity and service life.





A comprehensive range of steel stands has been specifically designed to provide a compact battery arrangement whilst retaining the requirements of electrical and mechanical safety, ease of installation and access during operation for taking meter readings.

Transition boxes can be supplied for convenient connection of outgoing cables.

Cabinets and other special designs can be engineered and supplied to meet particular specifications.

Please contact Enersys Sales Department for further information.



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