OSAKA
BATTERIES

OPzS (2V)
Flooded Batteries

The OPzS Series is designed for regular and long deep discharge applications. It is ideal for renewable energy applications like Solar & Wind along with off-grid applications. Very high expected service life due to optimized low-antimony alloy. Excellent discharge cycle stability and excellent medium to long rate discharge due to tubular plate design. This series provides high capacity application in area with unstable grid and unrealiable power supply. Their designed life for standby usage is 18-20 years.

Power Management Instruments

OPzS (2V) Flooded Batteries

Designed for regular and long deep discharge idea for energy island (Solar / Wind) off grid applications. High capacity application in area with unstable grid and unrealiable power supply.

Application

- Transmission & Distribution Substations
- Industrial Control
- Renewable Energy
- Power Plants
- Railway Signaling
- Telecommunication & IT

Product Feature

- 2 Volt
- Tubular positive plates with special low antimony lead alloy lead alloy reduce loss of water
- Excellent cycling also in state of partial discharge
- Additional electrolyte to reduce topping up
- Electrolyte : high purity sulphuric acid solution with 1.240 specific gravity at 20 ℃
- Ceramic plug filter electrolyte from escaping gasses
- Installation in vertical position.
- Terminal M10 thread female type

Electrical Charcteristics

Nomomnal voltage:	2V
Capacity range:	150AH~3000AH
Self discharge:	< 4~5%/month at 25 ℃
Operating temperature:	Discharge : - 40 ℃ ~ 50 ℃
	Charge : - 20 ℃ ~ 45 ℃
	Storage : - 20 ℃ ~ 40 ℃
Recommended temperature:	20~25 ℃
Design life:	12 year (in float operation in temperature controlled environment)
Standby use float voltage:	2.23V/cell
Boost charge voltage:	2.40V/cell

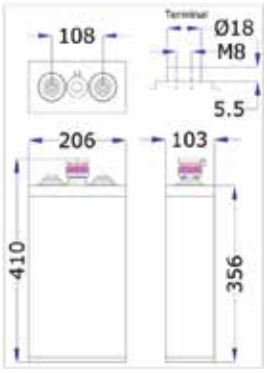
Standard

ISO9001
ISO14001
IEC 60896-11

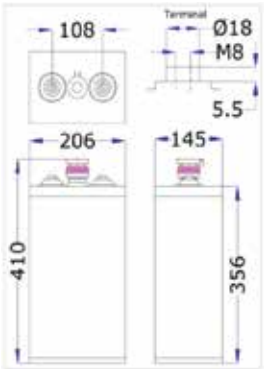
Main Specification & Type

Type	Nominal Voltage (V)	Nominal Capacity C10 (AH) F.V=1.80V/CELL	Dimensions (mm)				Weight Appx (kg) ±5%	Internal Resistance (MΩ 25℃)	Max. Discharge Current (A) (5 sec)
			L±2	W±2	H±5	TH±5			
3OPzS150	2	150	103	206	356	410	15.5	1.15	750
4OPzS200	2	200	103	206	356	410	17.0	1.10	1000
5OPzS250	2	250	145	206	356	410	21.5	0.61	1200
6OPzS300	2	300	145	206	356	410	24.3	0.53	1400
6OPzS400	2	400	145	206	471	536	33.7	0.52	1800
7OPzS500	2	500	166	206	471	536	38.9	0.50	2000
6OPzS600	2	600	145	206	646	704	46.5	0.45	2500
8OPzS800	2	800	191	210	646	704	64.8	0.35	3200
10OPzS1000	2	1000	233	210	646	704	81.5	0.28	3800
12OPzS1500	2	1500	275	210	795	853	135.0	0.21	5000
16OPzS2000	2	2000	399	214	775	833	152.0	0.17	7500
24OPzS3000	2	3000	576	212	775	833	223.0	0.13	10000

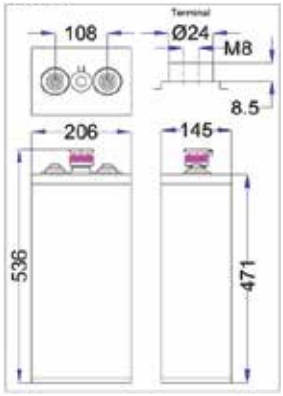
3OPzS150 - 4OPzS200



5OPzS250 - 6OPzS300



6OPzS400



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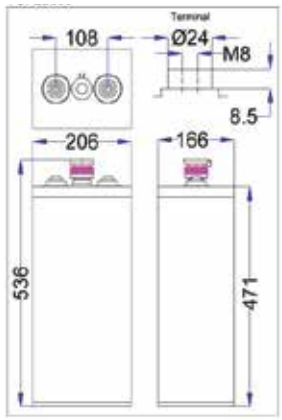

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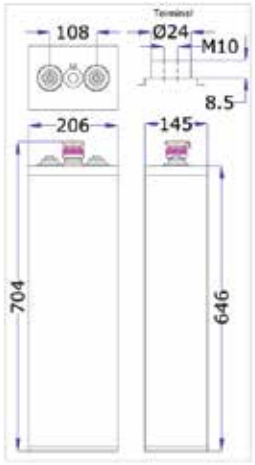
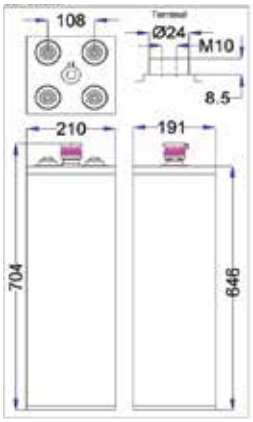
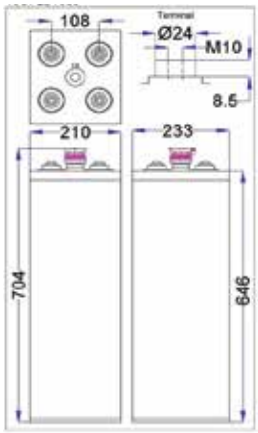


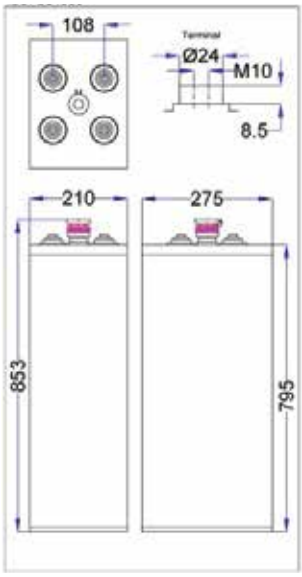
8OPzS800



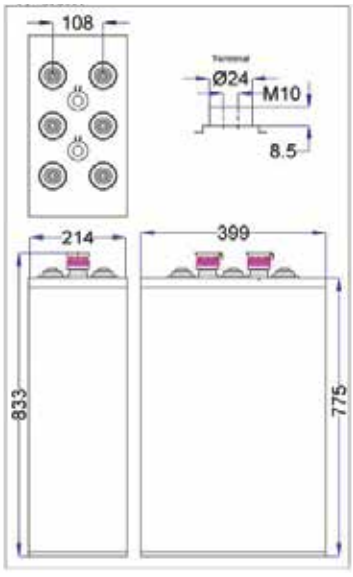
10OPzS1000



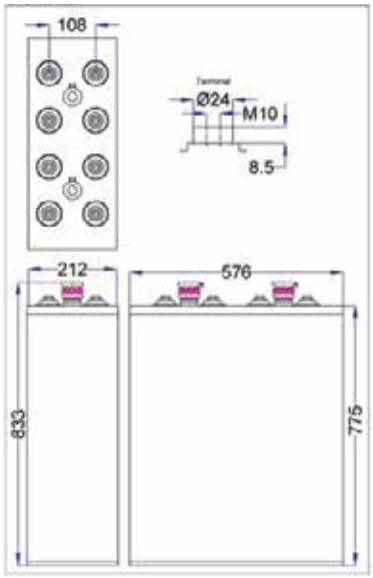
12OPzS1500



16OPzS2000



24OPzS3000



Self Discharge@25 °C: Remaining Capacity 94% /1month
Nominal Operating Temperature: 20±5 °C

Initial Charge

1. Constant Current Charge

Type	Initial Electrolyte sp,gr	Charge Current	Charge Time	Final Electrolyte sp.gr
OPzS150~OPzS3000	1.220±0.005/25 °C	0.06xC10 A	30 Hours	1.240±0.005/25 °C

2. Constant Voltage Charge

Type	Initial Electrolyte sp,gr	Voltage	Max. Charge		Final Electrolyte sp.gr
			Max. Current	Time	
OPzS150~OPzS3000	1.220±0.005/25 °C	2.35 V	0.1x10 A	72~100hr	1.240±0.005/25 °C

Fully Charge

1. *Constant Current Charge*
   The battery voltage and specific gravity of electrolyte remain stable ove 3hours at end charge, and activite bubbles generated with in the electrolyte.
2. *Constant Voltage Charge*
   The charging current and specific gravity of electrolyte kept constant for more than 3 hours at end charge.
3. If the temperature of the electrolyte is not 25 °C, The specific gravity of the electrolyte should be calculated by the following formula.
   $S_{25} = St + 0.0007\ (t-25)$
   S_{25} : Specific Gravity of electrolyte at 25 °C
   St : Specific Gravity of electrolyte at t °C
   t : Temperature
   In case of Temperature 34 °C, Specific Gravity of electrolyte : 1.230
   Accurate Specific Gravity of electrolyte is S25 = 1.230 + 0.0007 (34-25)= 1.236

Equalizing Charge

1. Charge the battery with 2.4V /cell for 24~48 hours

Battery Operation

1. Floating Charge
   Charge Voltage : 2.23V(25 °C),
2. Charge and Discharge
   Equalizing charging the battery after discharge and per 3 month.

Type	Max. Charge Current
OPzS150 - OPzS3000	0.25x C10 A

Design Cycle Life 1500 Cycle @ 80% DOD at 25 °C
Design floating Life 20 year at 25 °C

Specifications of OPzS Battery

Constant Current Discharge Characteristics at 25°C (A)

	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
3OPzS150	**1.70**	116.7	80.8	49.4	38.5	27.1	17.2	15.2	8.2
	1.75	114.0	78.8	48.8	38.3	27.0	17.1	15.1	8.1
	1.80	110.0	76.5	47.6	37.1	26.4	17.0	15.0	7.9
	1.85	104.0	72.0	44.7	34.8	24.6	15.9	14.2	7.7
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
4OPzS200	**1.70**	156.9	108.7	66.4	51.8	36.5	23.1	20.4	11.0
	1.75	153.3	106.0	65.6	51.5	36.3	22.9	20.3	10.9
	1.80	147.9	102.9	64.0	49.9	35.4	22.8	20.1	10.6
	1.85	139.9	96.8	60.1	46.8	33.1	21.3	19.0	10.3
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
5OPzS250	**1.70**	195.2	135.1	82.6	64.4	45.4	28.7	25.4	13.7
	1.75	190.7	131.8	81.6	64.1	45.1	28.5	25.2	13.5
	1.80	184.0	127.9	79.6	62.1	44.1	28.4	25.0	13.2
	1.85	173.9	120.4	74.7	58.2	41.2	26.5	23.7	12.8

Constant Current Discharge Characteristics at 25°C (A)

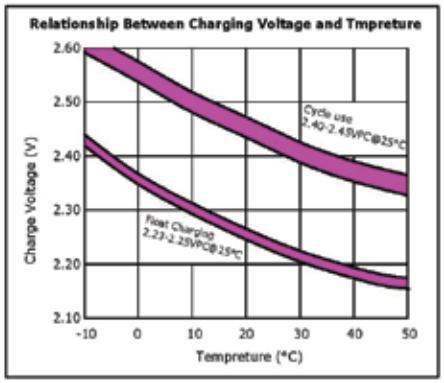
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
4OPzS300	**1.70**	234.0	162.0	99.0	77.2	54.4	34.4	30.4	16.4
	1.75	228.6	158.0	97.8	76.8	54.1	34.2	30.2	16.2
	1.80	220.6	153.4	95.4	74.4	52.8	34.0	30.0	15.8
	1.85	208.5	144.4	89.6	69.8	49.4	31.8	28.4	15.4
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
6OPzS400	**1.70**	312.5	216.3	132.2	103.1	72.6	45.9	40.6	21.9
	1.75	305.2	211.0	130.6	102.6	72.2	45.7	40.3	21.6
	1.80	294.5	204.8	127.4	99.3	70.6	45.4	40.1	21.1
	1.85	278.5	192.8	119.6	93.2	65.9	42.5	37.9	20.6
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
7OPzS500	**1.70**	390.9	270.7	165.4	129.0	90.9	57.5	50.8	27.4
	1.75	381.9	264.0	163.4	128.3	90.3	57.1	50.5	27.1
	1.80	368.5	256.3	159.4	124.3	88.3	56.8	50.1	26.4
	1.85	348.4	241.2	149.7	116.6	82.5	53.1	47.4	25.7
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
6OPzS600	**1.70**	468.0	324.0	198.0	154.4	108.8	68.8	60.8	32.8
	1.75	457.2	316.0	195.6	153.6	108.1	68.4	60.4	32.4
	1.80	441.1	306.8	190.8	148.8	105.7	68.0	60.0	31.6
	1.85	417.1	288.7	179.2	139.6	98.8	63.6	56.8	30.8
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
8OPzS800	**1.70**	624.9	432.7	264.4	206.2	145.3	91.9	81.2	43.8
	1.75	610.5	421.9	261.2	205.1	144.4	91.3	80.7	43.3
	1.80	589.1	409.6	254.8	198.7	141.1	90.8	80.1	42.2
	1.85	556.9	385.5	239.2	186.4	131.9	84.9	75.8	41.1
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
10OPzS1000	**1.70**	780.5	540.3	330.2	257.5	181.4	114.7	101.4	54.7
	1.75	762.4	526.9	326.2	256.2	180.3	114.1	100.7	54.0
	1.80	735.6	511.6	318.2	248.1	176.3	113.4	100.1	52.7
	1.85	695.5	481.5	298.8	232.7	164.7	106.1	94.7	51.4
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
12OPzS1500	**1.70**	1170.0	810.0	495.0	386.0	272.0	172.0	152.0	82.0
	1.75	1142.9	789.9	489.0	384.0	270.3	171.0	151.0	81.0
	1.80	1102.8	766.9	477.0	372.0	264.2	170.0	150.0	79.0
	1.85	1042.6	721.8	447.9	348.9	246.9	159.0	142.0	77.0
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
16OPzS2000	**1.70**	1560.9	1080.7	660.4	515.0	362.9	229.5	202.8	109.4
	1.75	1524.8	1053.9	652.4	512.3	360.6	228.1	201.5	108.1
	1.80	1471.3	1023.1	636.3	496.2	352.5	226.8	200.1	105.4
	1.85	1391.0	963.0	597.6	465.5	329.4	212.1	189.4	102.7
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
24OPzS3000	**1.70**	2340.0	1620.0	990.0	772.0	544.0	344.0	304.0	164.0
	1.75	2285.8	1579.9	978.0	768.0	540.5	342.0	302.0	162.0
	1.80	2205.6	1533.8	953.9	743.9	528.5	340.0	300.0	158.0
	1.85	2085.3	1443.6	895.8	697.8	493.8	318.0	284.0	154.0

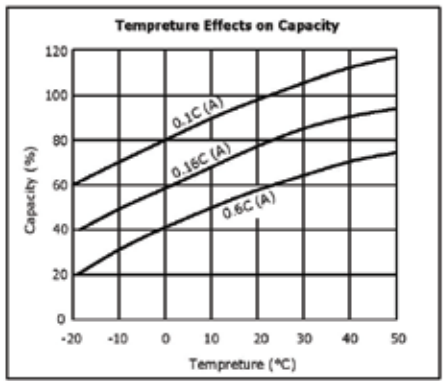
Constant Power Discharge Characteristics at 25°C (Watt)

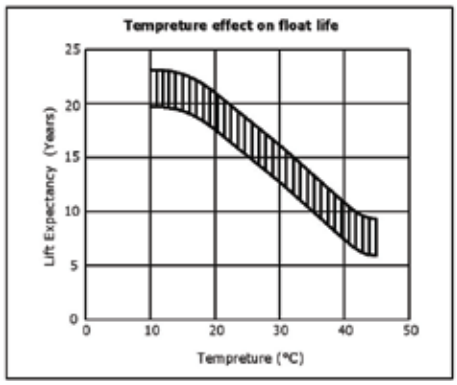
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
3OPzS150	**1.70**	219.0	153.0	95.3	75.8	53.6	35.0	30.3	16.4
	1.75	213.0	150.0	93.8	75.0	53.3	36.3	30.0	16.3
	1.80	206.0	146.0	91.5	72.8	51.6	33.8	29.9	16.2
	1.85	192.0	135.0	85.5	67.7	48.2	31.4	27.8	15.0
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
4OPzS200	**1.70**	292.4	204.3	127.3	101.2	71.6	46.7	40.5	21.9
	1.75	284.4	200.3	125.3	100.2	71.2	48.4	40.1	21.8
	1.80	275.1	195.0	122.2	97.2	68.9	45.1	39.9	21.6
	1.85	256.4	180.3	114.2	90.4	64.3	41.9	37.1	20.0
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
5OPzS250	**1.70**	364.6	254.7	158.6	126.2	89.2	58.3	50.4	27.3
	1.75	354.6	249.7	156.1	124.8	88.7	60.4	49.9	27.1
	1.80	342.9	243.0	152.3	121.2	85.9	56.3	49.8	27.0
	1.85	319.6	224.7	142.3	112.7	80.2	52.3	46.3	25.0
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
6OPzS300	**1.70**	437.0	306.0	191.0	152.0	107.0	69.9	60.6	32.7
	1.75	426.0	300.0	188.0	150.0	106.0	69.6	60.0	32.6
	1.80	412.0	291.0	183.0	146.0	103.0	67.5	59.7	32.4
	1.85	383.0	270.0	171.0	135.0	96.0	62.7	55.5	30.0
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
6OPzS400	**1.70**	584.9	408.6	254.5	202.4	143.2	93.5	80.9	43.8
	1.75	568.9	400.6	250.5	200.3	142.4	96.9	80.1	43.5
	1.80	550.2	389.9	244.4	194.4	137.8	90.3	79.9	43.3
	1.85	512.8	360.5	228.3	180.8	128.6	83.9	74.2	40.1
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
7OPzS500	**1.70**	729.1	509.4	317.3	252.4	178.4	116.5	100.9	54.6
	1.75	709.1	499.4	312.3	249.7	177.5	120.8	99.9	54.3
	1.80	685.8	486.1	304.6	242.4	171.8	112.5	99.5	53.9
	1.85	639.2	449.5	284.7	225.4	160.3	104.5	92.6	49.9
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
6OPzS600	**1.70**	874.0	612.0	382.0	304.0	214.0	140.0	121.0	65.4
	1.75	853.0	600.0	376.0	300.0	213.0	139.0	120.0	65.3
	1.80	824.0	582.0	366.0	292.0	206.0	135.0	119.0	64.8
	1.85	766.0	540.0	342.0	270.0	192.0	125.0	111.0	60.0
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
8OPzS800	**1.70**	1169.8	817.2	509.0	404.9	286.3	186.9	161.8	87.6
	1.75	1137.7	801.2	501.0	400.6	284.7	193.8	160.2	87.1
	1.80	1100.3	779.9	488.7	388.9	275.6	180.5	159.7	86.5
	1.85	1025.6	721.1	456.7	361.6	257.3	167.7	148.5	80.1
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
10OPzS1000	**1.70**	1458.2	1018.7	634.6	504.7	356.9	233.0	201.8	109.2
	1.75	1418.3	998.8	624.6	499.4	354.9	241.6	199.7	108.5
	1.80	1371.7	972.1	609.2	484.7	343.6	225.1	199.1	107.9
	1.85	1278.4	898.9	569.3	450.8	320.7	209.1	185.1	99.9

Constant Power Discharge Characteristics at 25°C (Watt)

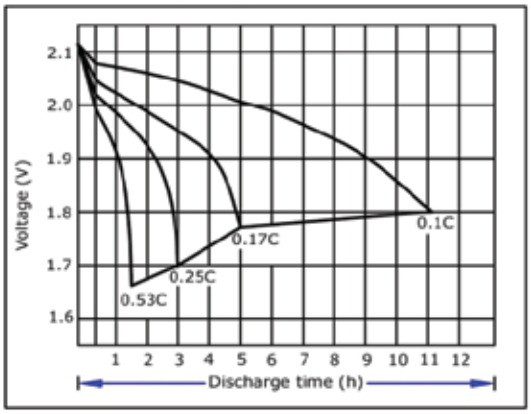
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
12OPzS1500	**1.70**	2187.3	1528.1	951.8	757.1	535.3	349.6	302.6	163.8
	1.75	2127.4	1498.2	936.9	749.1	532.4	362.3	299.6	162.8
	1.80	2057.5	1458.2	913.9	727.1	515.4	337.6	298.6	161.8
	1.85	1917.7	1348.4	854.0	676.2	481.0	313.6	277.7	149.8
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
16OPzS2000	**1.70**	2916.4	2037.5	1269.1	1009.4	713.8	466.1	403.5	218.4
	1.75	2836.5	1997.6	1249.1	998.8	709.8	483.1	399.5	217.1
	1.80	2743.3	1944.3	1218.5	969.5	687.2	450.1	398.2	215.7
	1.85	2556.9	1797.8	1138.6	901.6	641.4	418.1	370.2	199.7
	F.V (v)	Time							
		30min	1hr	2hr	3hr	5hr	8hr	10hr	20hr
24OPzS3000	**1.70**	4374.6	3056.2	1903.7	1514.1	1070.7	699.1	605.3	327.6
	1.75	4254.8	2996.3	1873.7	1498.1	1064.7	724.7	599.2	325.6
	1.80	4115.0	2916.4	1827.7	1454.2	1030.7	675.2	597.3	323.6
	1.85	3835.3	2696.7	1707.9	1352.3	962.1	627.2	555.3	299.6



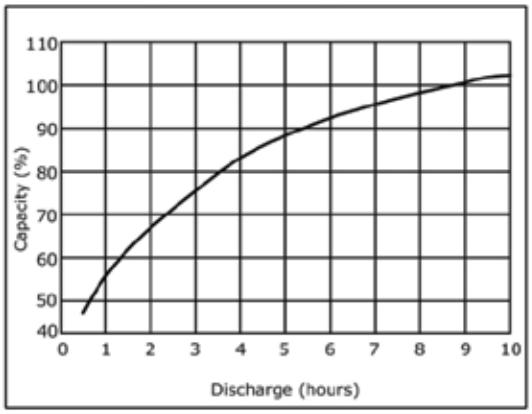




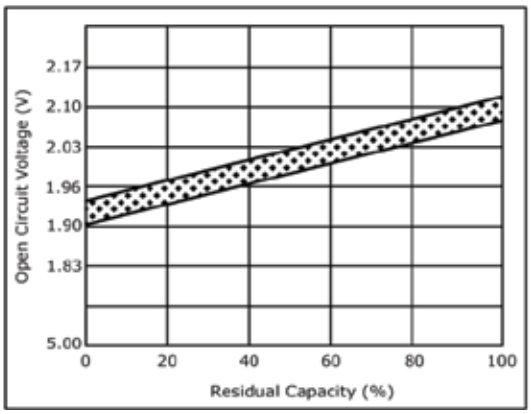
Discharge Characteristics(25°C)



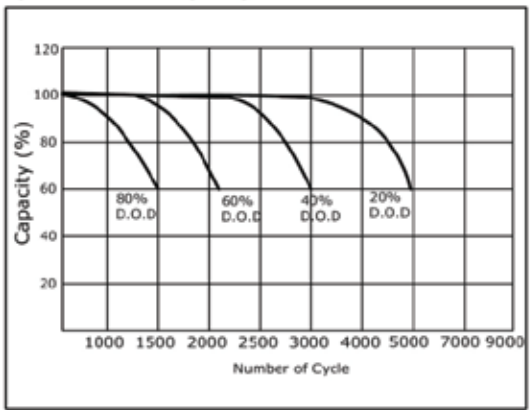
Effect of Discharge rate on Capacity

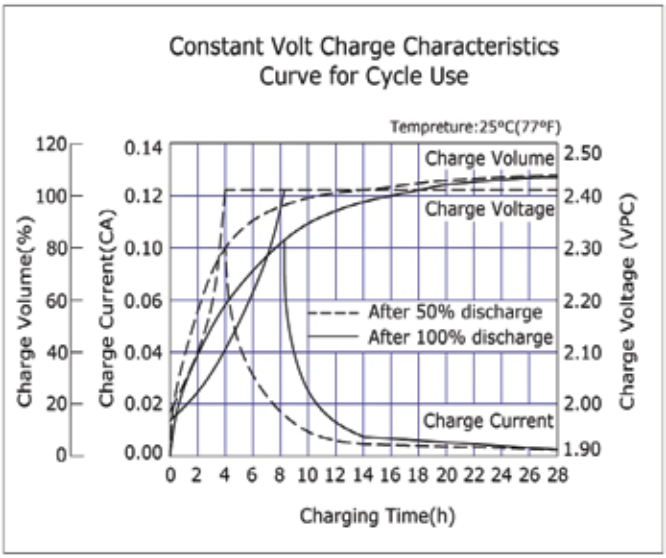


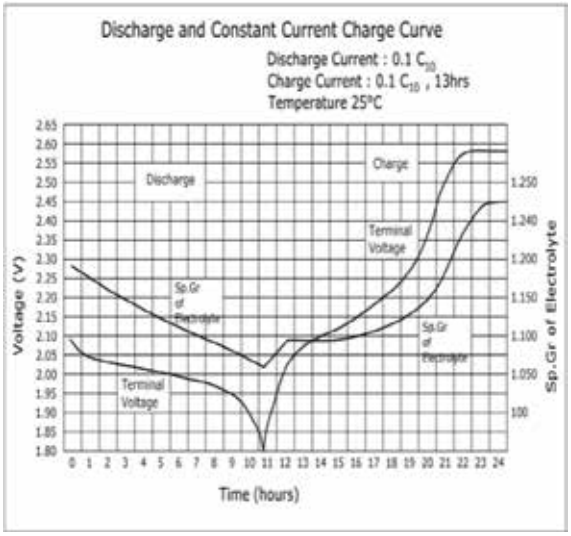
Voltage and Residual Capacity (25°)



Cycle Life on D.O.D (25°C)







*All data and specifications are subject to change without any prior notice.

Pakistan Accumulators (Pvt) Limited
Factory: Plot # 20, 21, 22 Phase III, Industrial Estate, Hattar, Distt. Haripur KPK, Pakistan
UAN: +92-51-111-22-00-22, Fax: +92-51-2855164 | URL: www.volta.com.pk | Email: VRLA@volta.com.pk