

# Solar Battery

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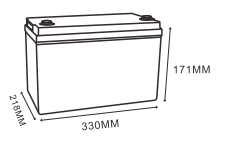
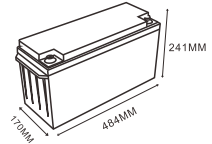
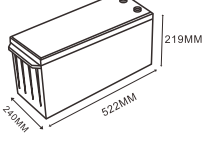
## User Instructions



# DEEP CYCLE BATTERY

(GEL Deep Cycle) series is specially designed for frequent cyclic discharge. By using strong grids and specially designed active material, the DC series battery offers 30% more cyclic life than the standby series. It is suitable for solar energy systems, marine and RV etc.

## Specification

Model	FL-G-100AH	FL-G-150AH	FL-G-200AH
Cells Per Unit	6		
Voltage Per Unit	12		
Capacity	100Ah@10hr-rate to 1.80V per cell @25°C	150Ah@10hr-rate to 1.80V per cell @25°C	200Ah@10hr-rate to 1.80V per cell @25°C
Weight	29.5KG	42KG	59.5KG
Max. Discharge Current	1000A (5 sec)	1500A (5 sec)	2000A (5 sec)
Internal Resistance	Approx. 5 mΩ	Approx. 4.2 mΩ	Approx. 4 mΩ
Recommended Maximum Charging Current Limit	30A	45A	60A
Operating Temperature Range	Discharge: -20°C ~ 60°C Charge: 0°C ~ 50°C Storage: -20°C ~ 60°C		
Normal Operating Temperature Range	25°C ± 5°C		
Float charging Voltage	13.6 to 13.8V DC/unit Average at 25°C		
Equalization and Cycle Service	14.4 to 14.6V DC/unit Average at 25°C		
Self Discharge	GEL batteries can be stored for more than 6 months at 25°C. Self-discharge ratio less than 3% per month at 25°C. Please charge batteries before using.		
SIZE			

## Constant Current Discharge Characteristics: A (25 °C)

FL-G-100AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	320.7	226.9	181.4	112.7	65.00	38.89	26.88	22.03	18.03	12.42	10.50	5.78
10.0V	311.4	215.8	177.7	110.8	64.70	38.60	26.78	21.93	17.93	12.32	10.40	5.67
10.2V	302.2	208.2	174.9	109.8	64.10	38.31	26.57	21.83	17.82	12.22	10.30	5.57
10.5V	271.3	192.1	166.5	107.1	63.50	38.02	26.47	21.62	17.61	12.12	10.20	5.46
10.8V	244.9	175.2	153.5	102.4	62.00	37.33	25.75	21.11	17.29	11.92	10.10	5.36
11.1V	209.1	156.6	137.7	95.91	58.90	35.68	24.62	20.09	16.55	11.41	9.80	5.04

FL-G-150AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	452.4	337.8	272.1	150.7	93.63	57.81	39.28	31.68	26.29	17.32	15.61	8.26
10.0V	439.3	321.4	266.5	148.8	92.38	56.64	38.56	31.23	26.06	17.25	15.46	8.11
10.2V	426.3	310.1	262.4	146.5	91.50	56.04	38.21	30.91	25.89	17.10	15.30	7.95
10.5V	382.8	286.1	249.8	142.5	90.38	55.31	37.87	30.46	25.67	16.94	15.15	7.80
10.8V	345.5	260.9	230.3	137.8	89.12	54.85	37.43	29.41	25.55	16.87	15.01	7.72
11.1V	295.0	233.2	206.5	132.5	87.01	52.65	36.70	28.99	25.36	16.74	14.84	7.41

FL-G-200AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	569.6	426.7	344.7	200.9	124.8	77.07	52.38	42.23	35.06	23.09	20.81	11.02
10.0V	553.2	406.0	337.6	198.4	123.2	75.52	51.41	41.63	34.75	23.00	20.61	10.81
10.2V	536.8	391.7	332.3	195.3	122.0	74.72	50.95	41.22	34.52	22.79	20.40	10.61
10.5V	482.0	361.4	316.4	190.0	120.5	73.74	50.50	40.61	34.23	22.59	20.20	10.40
10.8V	435.1	329.6	291.7	183.7	118.8	73.14	49.91	39.22	34.06	22.50	20.02	10.30
11.1V	371.5	294.6	261.6	176.7	116.0	70.20	48.93	38.65	33.81	22.32	19.78	9.88

## Constant Power Discharge Characteristics: W (25°C)

FL-G-100AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	3317	2416	1996	1284	751.1	458.4	319.9	262.6	215.1	148.3	125.5	69.26
10.0V	3251	2342	1964	1269	749.3	456.0	320.0	262.3	214.6	147.6	124.7	68.06
10.2V	3214	2280	1941	1260	743.5	453.3	318.6	261.7	213.9	146.6	123.6	66.80
10.5V	2926	2123	1852	1230	736.8	450.0	317.4	259.3	211.3	145.4	122.4	65.54
10.8V	2665	1957	1712	1179	723.2	444.2	308.7	253.4	207.5	143.0	121.2	64.28
11.1V	2341	1770	1541	1108	692.3	427.7	295.4	241.1	198.6	136.9	117.6	60.50

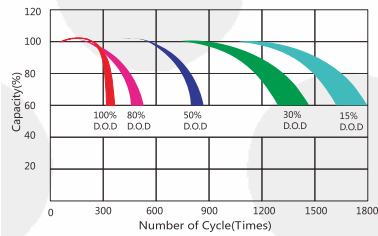
  

FL-G-150AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	4679	3598	2993	1725	1085	677.4	462.5	379.1	315.0	207.4	187.2	99.54
10.0V	4587	3487	2945	1707	1075	669.1	455.6	373.8	312.2	206.6	185.7	97.81
10.2V	4534	3395	2912	1692	1069	664.4	453.6	370.3	310.3	205.0	184.1	96.00
10.5V	4128	3162	2778	1658	1062	656.0	449.9	365.3	307.8	203.3	182.2	94.19
10.8V	3760	2914	2567	1619	1048	651.1	444.9	353.0	306.4	202.4	180.4	93.28
11.1V	3302	2635	2311	1574	1033	626.7	437.4	347.9	305.3	201.0	178.5	89.94

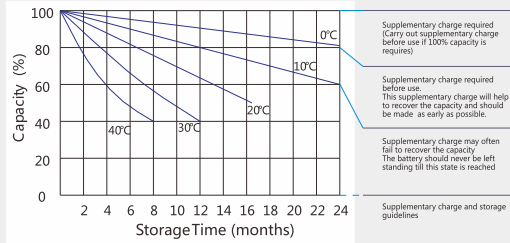
  

FL-G-200AH 12V												
F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	5892	4544	3792	2300	1447	903.2	616.7	505.5	420.0	276.5	249.6	132.7
10.0V	5776	4405	3731	2276	1433	892.2	607.5	498.4	416.2	275.5	247.6	130.4
10.2V	5710	4289	3689	2257	1425	885.8	604.8	493.7	413.7	273.4	245.4	128.0
10.5V	5198	3994	3518	2211	1416	874.6	599.9	487.1	410.4	271.1	243.0	125.6
10.8V	4734	3681	3252	2158	1398	868.1	593.2	470.6	408.5	269.9	240.6	124.4
11.1V	4159	3328	2927	2099	1377	835.6	583.2	463.9	407.0	268.0	238.0	119.9

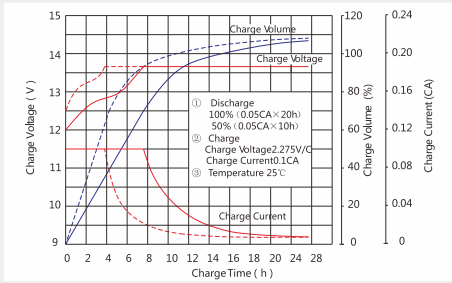
Life characteristics of cyclic use



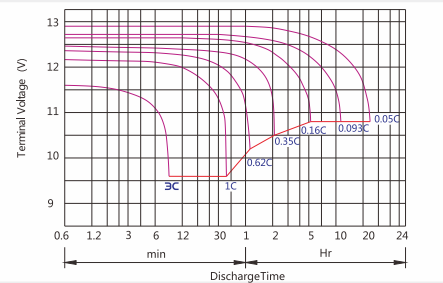
Storage characteristic



Charge characteristic Curve for standby use



Discharge characteristic Curve



### Capacity Factors With Different Temperature

Temperature	-20°C	-10°C	0°C	5°C	10°C	20°C	25°C	30°C	40°C	45°C
Capacity Factor	46%	66%	76%	83%	90%	98%	100%	103%	107%	109%

### Discharge Current VS. Discharge Voltage

Final D ischarge Voltage V /cell	1.75V	1.70V	1.60V
Discharge Current ( A )	( A ) ≤ 0.2C	0.2C < ( A ) < 1.0C	( A ) ≥ 1.0C

Charge the batteries at least once every five months, if they are stored at 25°C.

Charging M method:

Constant Vo Itage	-0.2Cx2h+14.4-14.7Vx24h, Max. Current 0.3C
Constant Current	-0.2Cx2h+0.1Cx7h+0.05Cx4h
Fast	-0.2Cx2h+0.3Cx3h

## Maintenance & Cautions

### Cycle service

- ※ Avoid battery over discharge, especially battery series connection use.
- ※ Charged with recommend voltage, ensure battery can be full recharged.
- In general, recharge capacity should be 1.1-1.15 times discharge capacity.
- ※ Effect of temperature on cycle charge voltage: -4mV/°C/Cell.
- ※ There are a number of factors that will affect the length of cyclic service.

The most significant are depth of discharge, ambient temperature, discharge rate, and the manner in which the battery is recharged.

Generally speaking, the most important factors is depth of discharge.

### Special notes:

The products should be recharged if still not being used after 4 months since the manufacturing date. Or the battery will be deteriorated or spoiled.