



# RA12-60DG (12V60Ah)

RA12-60DG is GEL Deep cycle battery, with 12 years floating design life, superiorly designed for frequent cyclic discharge applications under extreme temperature. By using strong grid to insure reliable performance under frequent cyclic discharge use. 400 cycles could be available at 100% DOD. Offering extra-durable cyclic performance, high efficiency of recovery, that is more suitable for solar, mobility, E-toll, marine, deep discharge UPS etc..



## Specification

Cells Per Unit	6
Voltage Per Unit	12
Capacity	60Ah@20hr-rate to 1.75V per cell @25°C
Weight	Approx. 20.5 Kg
Max. Discharge Current	600 A (5 sec)
Internal Resistance	Approx. 8.6 mΩ
Operating Temperature Range	Discharge: -40°C~60°C Charge:-20°C~50°C Storage: -40°C~60°C
Normal Operating Temperature Range	25°C±5°C
Float charging Voltage	13.6to 13.8 VDC/unit Average at 25°C
Recommended Maximum Charging Current Limit	12A
Equalization and Cycle Service	14.2 to 14.4VDC/unit Average at 25°C
Self Discharge	RITAR Valve Regulated Lead Acid (VRLA) 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.
Terminal	Terminal F15
Container Material	A.B.S. (UL94-HB), Flammability resistance of UL94-V1 can be available upon request.



MH28539



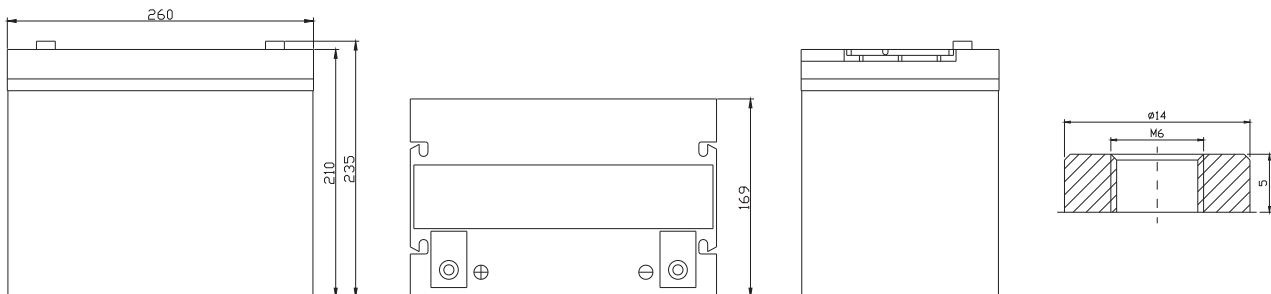
G4M20206-0910-E-16



ISO9001:2000 Certificate

## Dimensions

Unit: mm Dimension: 260 (L) × 169 (W) × 210 (H)



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

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	157.19	117.07	91.605	60.237	35.304	21.113	14.580	12.077	10.168	6.9456	5.7609	3.0739
10.0V	152.64	111.39	89.726	59.242	35.141	20.954	14.524	12.021	10.108	6.8891	5.7055	3.0180
10.2V	148.12	107.46	88.317	58.718	34.815	20.796	14.412	11.965	10.048	6.8327	5.6501	2.9621
10.5V	134.57	100.33	85.078	58.843	34.489	20.637	14.356	11.854	9.9288	6.7762	5.5947	2.9063
10.8V	122.87	92.570	79.336	58.396	33.675	20.267	13.965	11.574	9.7494	6.6633	5.5393	2.8504
11.1V	106.12	83.693	71.980	55.194	31.991	19.367	13.351	11.015	9.3307	6.3809	5.3732	2.6827

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

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	1658.3	1246.7	998.65	675.92	407.96	248.85	173.50	143.96	121.31	82.931	68.843	36.856
10.0V	1625.6	1208.5	982.61	668.18	406.98	247.54	173.56	143.78	121.00	82.532	68.409	36.216
10.2V	1607.1	1176.6	971.55	669.96	403.84	246.04	172.80	143.47	120.58	81.992	67.801	35.546
10.5V	1480.2	1108.7	937.61	671.82	400.21	244.26	172.13	142.13	119.15	81.314	67.137	34.875
10.8V	1363.9	1034.0	876.69	667.45	392.82	241.14	167.44	138.89	116.99	79.959	66.472	34.204
11.1V	1211.7	945.73	798.26	634.63	376.01	232.18	160.21	132.18	111.97	76.571	64.478	32.192

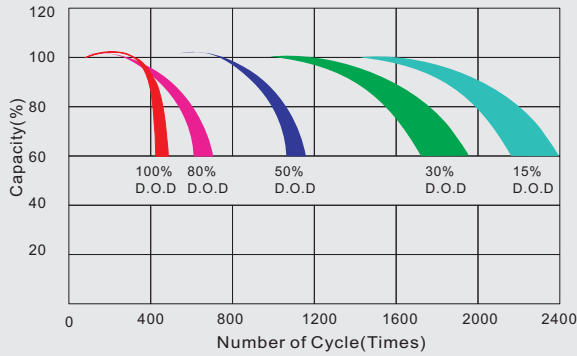
All mentioned values are average values.

# RA12-60DG

12V60Ah



## Life characteristics of cyclic use



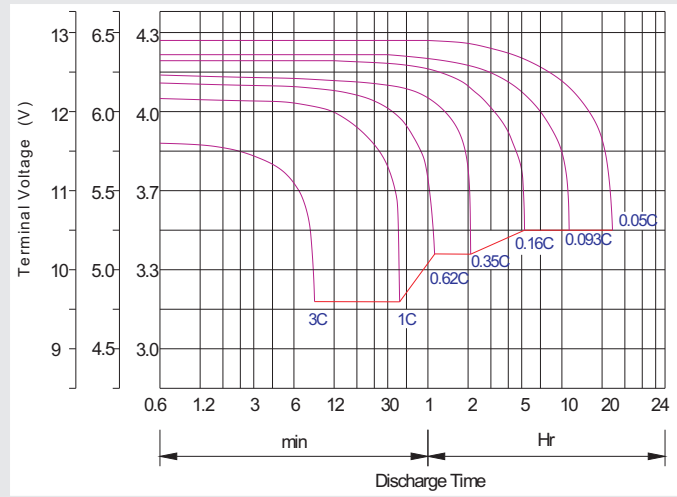
## Storage characteristic



## Charge characteristic curve for cyclic use



## Discharge characteristic curve



## Capacity Factors With Different Temperature

Battery Type		-20°C	-10°C	0°C	5°C	10°C	20°C	25°C	30°C	40°C	45°C
GEL Battery	6V&12V	50%	70%	83%	85%	90%	98%	100%	102%	104%	105%
	2V	60%	75%	85%	88%	92%	99%	100%	103%	105%	106%
AGM Battery	6V&12V	46%	66%	76%	83%	90%	98%	100%	103%	107%	109%
	2V	55%	70%	80%	85%	92%	99%	100%	104%	108%	110%

## Discharge Current VS. Discharge Voltage

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

## 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.

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

### Charging Method:

Constant Voltage	-0.2Cx2h+2.4~2.45V/Cellx24h, Max. Current 0.3CA
Constant Current	-0.2Cx2h+0.1CAx12h
Fast	-0.2Cx2h+0.3CAx4.0h