

## 6-DZM-13.1

## 12V 13.1Ah(2hr) GRAPHENE VRLA BATTERY



Chilwee BG (BLACK GOLD) Series high energy VRLA Battery is specially designed based on Graphene Technology, which has obviously improve the battery's capacity, output power, cycle life and high/low temperature performance. The Chilwee BG (BLACK GOLD) Series provides longer range, larger power and extremely long life for motive power applications, i.e. electric bicycles, electric tricycles, electric motorcycles and other device require DC power source.

### FEATURES & BENEFITS

- \* Designed based on Graphene Technology enables the BG (BLACK GOLD) series Battery with the the features of excellent long range, larger power and extremely long life.
- \* Unique structure of battery container and lid to ensure excellent gas recommendation efficiency, less gas released so that water loss rate is reduced.
- \* Sepcial grid alloy material and special lead paste prescription have been utilized to resist corrosion on plates, prolong the life of the battery.
- \* Increased positive active material to improve the battery's initial capacity and service life.
- \* Redesigned battery container and terminal, more attractive appearance and easy for installation.

### COMPARISON BETWEEN BG SERIES AND STANDARD BATTERY

TESTING ITEM	STANDARD BATTERY	BLACK GOLD SERIES	COMPARISON
INITIAL CAPACITY, FOR THE FIRST 3 CYCLES	20.2AH	22.2AH	<b>10% IMPROVED</b>
CAPACITY , AFTER 69 CYCLES	21AH	24.5AH	<b>16% IMPROVED</b>
DISCHARGE TIME @ END-VOLTAGE : 12V	65 MINUTES	90 MINUTES	<b>34% IMPROVED</b>
WATER LOSS RATE	0.1 GRAM / CYCLE	0.06 GRAM/ CYCLE	<b>40% DECREASED</b>
DISCHARGE TIME @ -15 °C	94 MINUTES	112 MINUTES	<b>18% IMPROVED</b>
CYCLE LIFE @ 100% DOD	400 CYCLES	610 CYCLES	<b>52% IMPROVED</b>

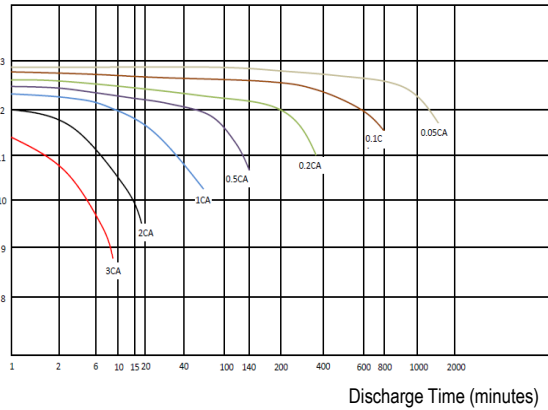
### SPECIFICATION

Nominal Voltage (V)		12V
Open Circuit Voltage (V/Block)		13.1V - 13.45V
Number of Cells (Per Block)		6 Cells
Rated Capacity (Ah, 25°C)	2h rate (to 1.75V/Cell)	13.1Ah
	3h rate (to 1.75V/Cell)	14Ah
	5h rate (to 1.80V/Cell)	15Ah
	10h rate (to 1.80V/Cell)	16.5Ah
	20h rate (to 1.85V/Cell)	18Ah
Nominal Weight (Kgs)		Approx. 4.45 Kgs
Dimension (L X W X H, Total Height. mm)		(151mm±0.5) X (101mm±0.5) X (98mm±0.5), (100mm±0.5)
Container Material		Enhanced ABS
Charge Voltage	Float (V/Block)	13.50V - 13.80V
	Cycle (V/Block)	14.60V - 14.80V
Maximum Discharge Current (A)		100A (5s)
Maximum Charge Current (A)		2.0 A
Working Temperature(°C)	Operation (maximum):	-20°C to 50°C
	Operation (recommended):	20°C to 30°C
Storage Temperature(°C)		-20°C to 50°C

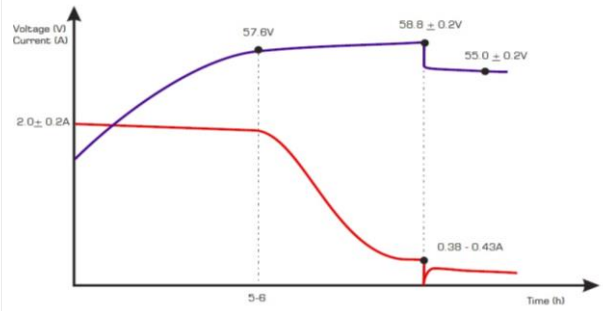
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**Discharge Curves at Different Discharge Rate (25°C)**  
Voltage (V)

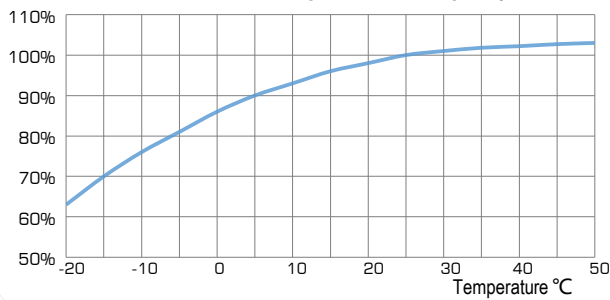


**Charge Curve for 6-DZM-13.1 (4 Blocks/String)**

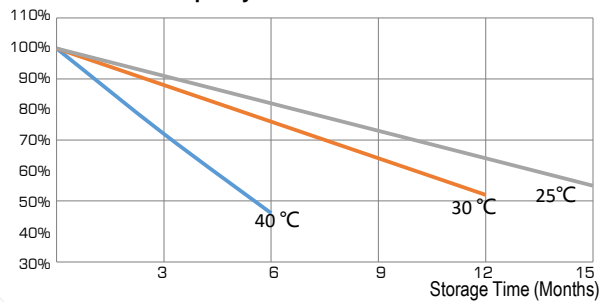


**Phase 1:** The Max. charge current is 2.0A, and the charge voltage is gradually risen up to 57.6V;  
**Phase 2:** The charge voltage is gradually risen up to 58.8V+ 0.2V. When the charge current has dropped to 0.38A-0.43A, shifting to float charge.  
**Phase 3:** The constant float charge voltage is 55.0V+ 0.2V.

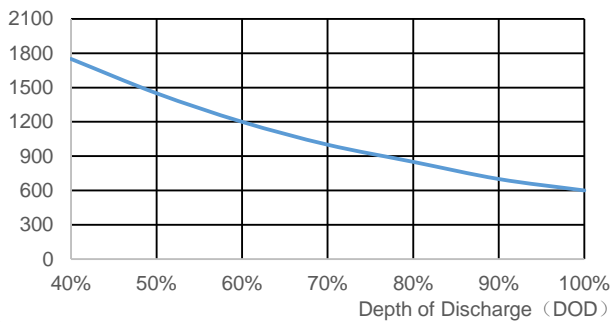
**Effect of Temperature on Capacity**



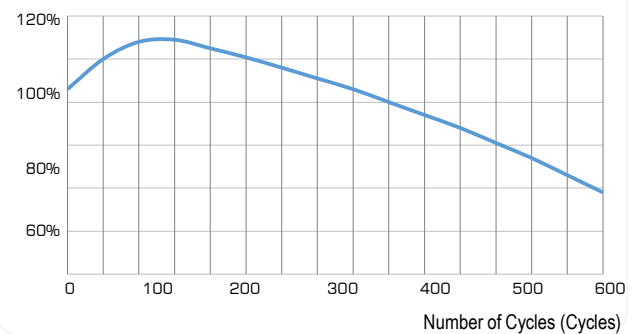
**Capacity Retention Characteristics**



**Cycle life vs DOD**



**Number of Cycles vs. Capacity**



## RECOMMENDED SETTING PARAMETERS

Item		24V Battery Bank	36V Battery Bank	48V Battery Bank
Charger Parameters	Max. Charge Voltage (V)	29.3V-29.5V	43.8V-44.2V	58.6V-59.0V
	Float Charge Voltage (V)	27.4V-27.6V	41.0V-41.4V	54.8V-55.2V
	Max. Charge Current (A)	1.8A-2.2A	1.8A-2.2A	1.8A-2.2A
	Shifting Current (A)	0.38A-0.43A	0.38A-0.43A	0.38A-0.43A
	Temperature Compensation Coefficient (mV/°C/Cell)	2.5 ~ 4.0mV/°C/Cell	2.5 ~ 4.0mV/°C/Cell	2.5 ~ 4.0mV/°C/Cell
Controller Parameters	Low-voltage Protection (V)	21V±0.5V	31.5V±0.5V	42V±0.5V
	Limited Current (A)	≤15A	≤15A	≤15A
	Lock Turn-on Current (A)	≤0.1A	≤0.1A	≤0.1A
Electric Motor Setting	Average Current (A)	≤7A	≤7A	≤7A
	Electric Motor Power (W)	≤150W	≤250W	≤350W