



# S90-12 (12V90Ah)

Helios (Deep Cycle GEL, 12 Volts) series is pure GEL battery with 12 years floating design life, it is ideal for standby or frequent cyclic discharge applications under extreme environments. By using strong grids, high purity lead and patented Gel electrolyte, the Helios series offers excellent recovery after deep discharge under frequent cyclic discharge use, and can deliver 400 cycles at 100% DOD. Suitable for solar, CATV, marine, RV and deep discharge UPS, communication, and telecommunication, etc.



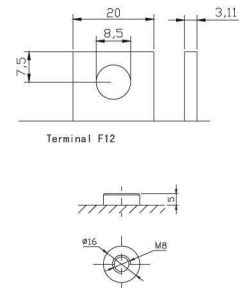
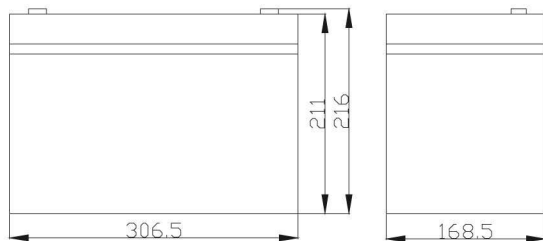
## Specification

Cells Per Unit	6
Voltage Per Unit	12
Capacity	90Ah@20hr-rate to 1.75V per cell @25°C
Weight	Approx. 28.5 Kg (Tolerance ±2%)
Max. Discharge Current	900 A (5 sec)
Internal Resistance	Approx. 6.5 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	13.6 to 13.8 VDC/unit Average at 25°C
Recommended Maximum Charging Current Limit	18A
Equalization and Cycle Service	14.2 to 14.4VDC/unit Average at 25°C
Self Discharge	SIGA 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/F12
Container Material	A.B.S. UL94-HB, UL94-V0 Optional.



## Dimensions

Unit: mm Dimension: 306.5 (L) × 168.5 (W) × 235 (H)



### Constant Current Discharge Characteristics: A (25°C)(The capacity reaches the peak value after 5-20 cycles.)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	224.0	166.8	130.5	85.84	52.47	31.59	22.85	18.24	15.49	10.49	8.710	4.775
10.0V	217.5	158.7	127.9	84.42	52.23	31.35	22.77	18.16	15.40	10.41	8.626	4.688
10.2V	211.1	153.1	125.9	83.67	51.75	31.12	22.59	18.07	15.31	10.32	8.543	4.601
10.5V	191.8	143.0	121.2	83.85	51.26	30.88	22.50	17.90	15.12	10.24	8.459	4.500
10.8V	175.1	131.9	113.1	83.21	49.52	30.32	21.89	17.48	14.75	9.827	8.190	4.273
11.1V	151.2	119.3	102.6	78.65	47.05	28.98	20.93	16.64	14.12	9.411	7.948	4.022

### Constant Power Discharge Characteristics: W (25°C)(The capacity reaches the peak value after 5-20 cycles.)

F.V/Time	5MIN	10MIN	15MIN	30MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
9.60V	2363	1777	1423	963.2	606.3	372.3	272.6	217.5	184.8	125.3	104.1	57.25
10.0V	2317	1722	1400	952.2	604.9	370.4	272.1	217.2	184.3	124.7	103.4	56.25
10.2V	2290	1677	1384	954.7	600.2	368.1	270.9	216.7	183.7	123.8	102.5	55.21
10.5V	2109	1580	1336	957.3	594.8	365.5	269.8	214.7	181.5	122.8	101.5	54.00
10.8V	1944	1473	1249	951.1	577.7	360.8	262.5	209.8	177.1	117.9	98.28	51.28
11.1V	1727	1348	1138	904.3	553.0	347.4	251.1	199.7	169.4	112.9	95.37	48.26

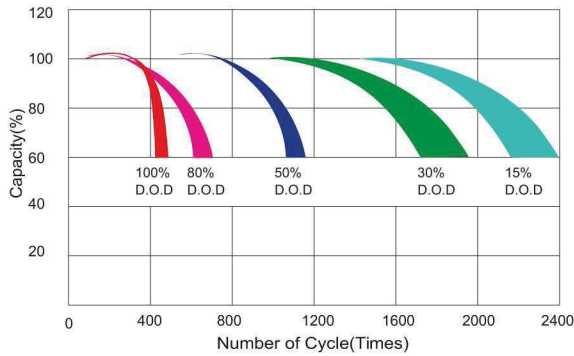
All mentioned values are average values (Tolerance ±2%).

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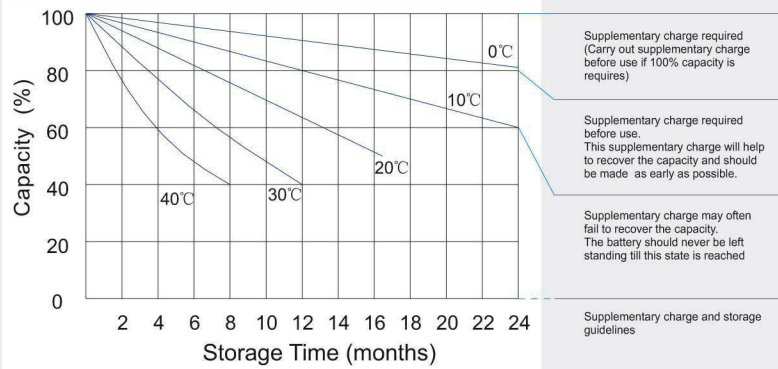
# 12V90Ah



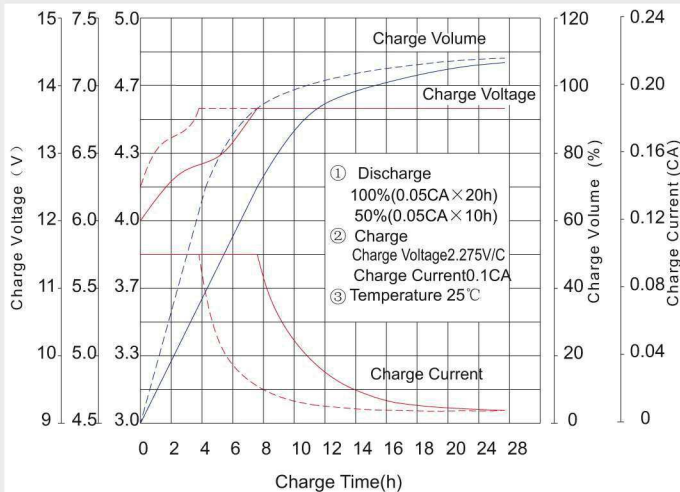
### Life characteristics of cyclic use



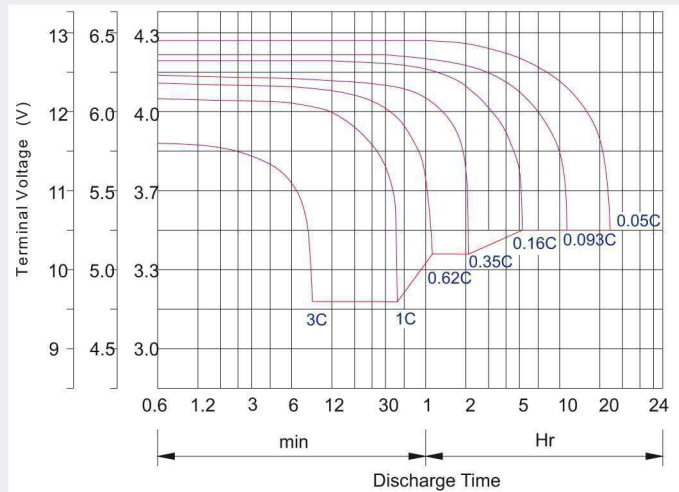
### Storage characteristic



### 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

**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 0.2C
Constant Current	-0.2Cx2h+0.1Cx12h
Fast	-0.2Cx2h+0.2Cx6h

Bolt	M5	M6	M8
Terminal	F3 F4 F13 F18 T25 T26	F8 F11 F12-1 F15	F5 F9 F10 F12 F14 F16
Torque	6~7N·m	8~10N·m	10~12N·m

### Maintenance & Cautions

#### Cycle service

- ※ Avoid battery over discharge, especially battery sereis 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 specking, the most important factors is depth of discharge.