

### MS Series SLA Battery

#### MHB MS Series--Small-size batteries

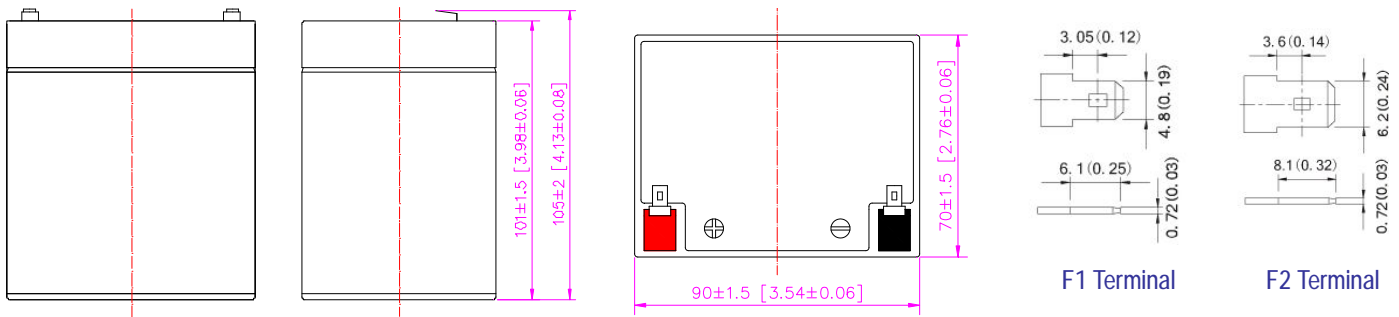
- 100% before shipment testing, stable and reliable long-term quality
- patented grid alloy formula and updated manufacturing technique
- completely sealed and maintenance-free, low self-discharge
- Excellent charging and re-charging acceptance
- Cycle use: More than 260 cycles at 100% DOD
- Floating & standby use: 3-5 years

#### Application:

- Alarm System
- Cable Television
- Communication Equipment
- Emergency Power System
- Security System
- Medical Equipment
- UPS
- Power tools
- Control Equipment
- Toys

#### Construction:

- Component .....Raw material
- Positive .....Lead dioxide
- Negative .....Lead
- Container .....ABS
- Cover .....ABS
- Sealant .....Epoxy
- Safety valve .... Rubber
- Terminal .....Copper
- Separator .....Fiber glass
- Electrolyte .....Sulfuric acid

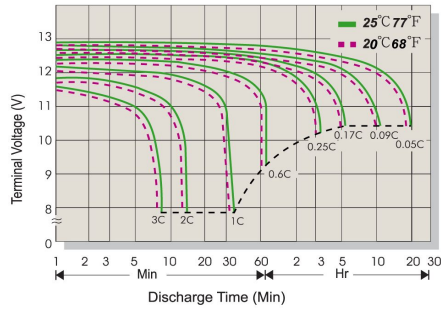


#### Speification:

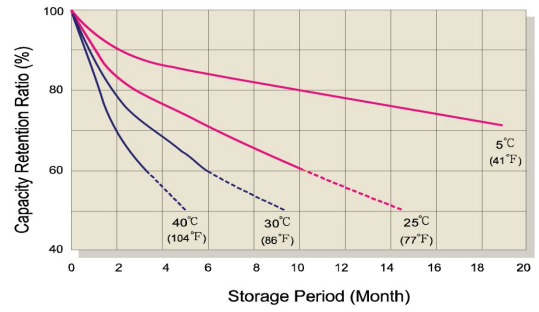
Battery Model	MS 4.5-12 12V4.5AH			
Designed Floating Life	3~5 Years			
Capacity (25°C)	20HR(0.225A,10.5V)	10HR(0.42A,10.5V)	5HR(0.73A,10.5V)	1HR(2.48A,10.5V)
	4.50AH	4.2AH	3.65AH	2.48AH
Dimensions	Length	Width	Height	Total Height
	90mm (3.54inch)	70mm (2.76inch)	101mm (3.98inch)	105mm (4.13inch)
Approx. Weight	1.46Kg (3.22 lbs) ± 5%			
Internal Resistance	Full charged at 25°C : ≤42mΩ			
Self Discharge	2% of capacity declined per month at (25°C)			
Capacity Affected by Temp.(20HR)	40°C	25°C	0°C	-15°C
	102%	100%	85%	65%
Charge Voltage(25°C)	Cycle use		Float use	
	14.4-14.7V(-30mV/°C), max. Current: 1.35A		13.5-13.8V (-20mV/°C)	

**FUJIAN MINHUA POWER SOURCE CO., LTD.**

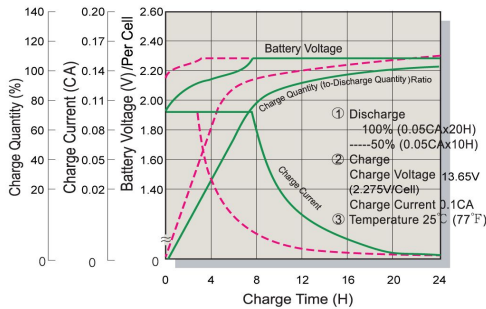
### Terminal Voltage (V) and Discharge Time



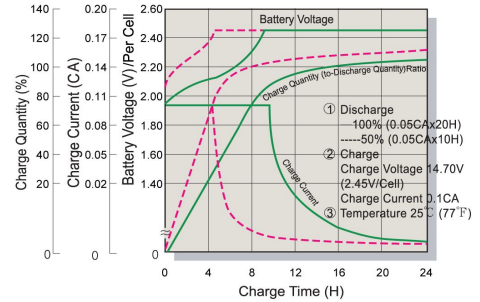
### Capacity Retention Characteristic



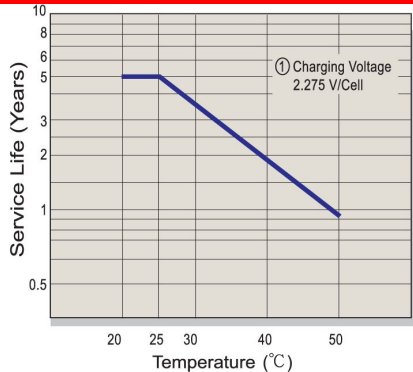
### Battery Voltage and Charge Time for Standby Use



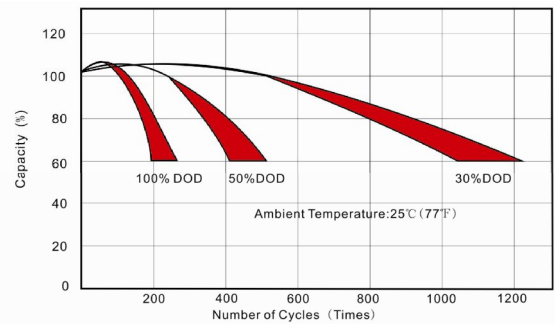
### Battery Voltage and Charge Time for Cycle Use



### Tickle(or Float) Service Life



### Cycle Service Life



### Constant Current Discharge (CC, Unit: A) at 25°C (77°F)

F.V/Time	5Min	10Min	15Min	30Min	1Hr	2Hr	3Hr	4Hr	5Hr	8Hr	10Hr	20Hr
1.85V/Cell	12.50	9.41	6.77	4.08	2.45	1.43	1.09	0.87	0.72	0.49	0.39	0.21
1.80V/Cell	13.16	9.91	7.13	4.29	2.58	1.51	1.15	0.91	0.76	0.51	0.42	0.22
1.75V/Cell	13.30	10.00	7.20	4.34	2.61	1.52	1.16	0.92	0.76	0.52	0.42	0.23
1.70V/Cell	13.47	10.40	7.30	4.39	2.64	1.54	1.17	0.93	0.77	0.53	0.43	0.23
1.67V/Cell	13.56	10.80	7.35	4.42	2.66	1.55	1.18	0.94	0.78	0.53	0.43	0.23
1.60V/Cell	13.87	10.90	7.51	4.52	2.72	1.59	1.21	0.96	0.80	0.54	0.44	0.23

### Constant Power Discharge (CP, Unit: W) at 25°C (77°F)

F.V/Time	5Min	10Min	15Min	30Min	1Hr	2Hr	3Hr	4Hr	5Hr	8Hr	10Hr	20Hr
1.85V/Cell	23.75	17.88	12.86	7.75	4.65	2.72	2.07	1.64	1.37	0.93	0.75	0.40
1.80V/Cell	25.01	18.83	13.55	8.16	4.90	2.86	2.18	1.73	1.44	0.98	0.79	0.42
1.75V/Cell	25.27	19.02	13.68	8.24	4.95	2.89	2.20	1.75	1.45	0.99	0.80	0.43
1.70V/Cell	25.60	19.27	13.86	8.35	5.02	2.93	2.23	1.77	1.47	1.00	0.81	0.43
1.67V/Cell	25.77	19.40	13.96	8.40	5.05	2.95	2.25	1.78	1.48	1.01	0.81	0.44
1.60V/Cell	26.35	19.84	14.27	8.59	5.16	3.02	2.30	1.82	1.52	1.03	0.83	0.45