

### MS Series SLA Battery

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

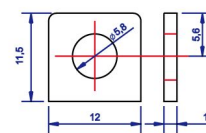
- 100% before shipment testing, stable and reliable long-term quality
- patented grid alloy formula and updated manufacturing technique
- completely sealed and maintenance-free, low self-discharge
- Excellent charging and re-charging acceptance
- Cycle use: More than 260 cycles at 100% DOD
- Floating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

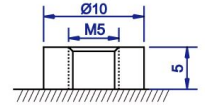
#### Construction:

- 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



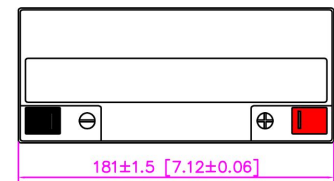
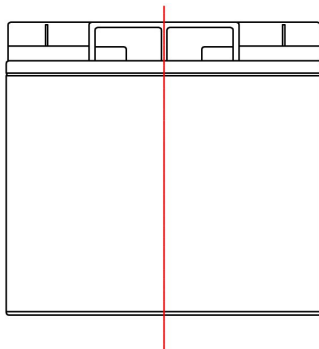
M5 Bolt & Nut

T1 Terminal



M5 Bolt

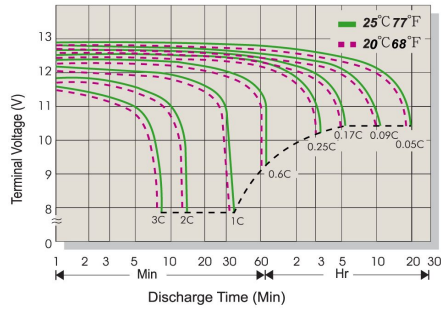
B1 Terminal



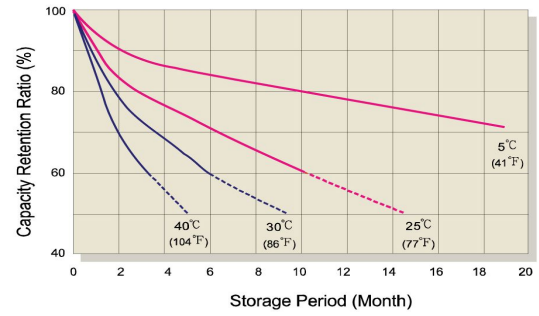
#### Speification:

Battery Model	MS 20-12 12V20AH			
Designed Floating Life	3~5 Years			
Capacity (25°C)	20HR(1.00A,10.5V)	10HR(1.924A,10.5V)	5HR(3.599A,10.5V)	1HR(12.05A,10.5V)
	20.00AH	19.24AH	18.00AH	12.05AH
Dimensions	Length	Width	Height	Total Height
	181mm (7.12inch)	77mm (3.03inch)	160mm (6.30inch)	167mm (6.57inch)
Approx. Weight	5.60Kg (12.35 lbs) ±5%			
Internal Resistance	Full charged at 25°C : ≤225mΩ			
Self Discharge	3% 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(25oC)	Cycle use		Float use	
	14.4-15.0V(-30mV/°C), max. Current: 6A		13.5-13.8V (-20mV/°C)	

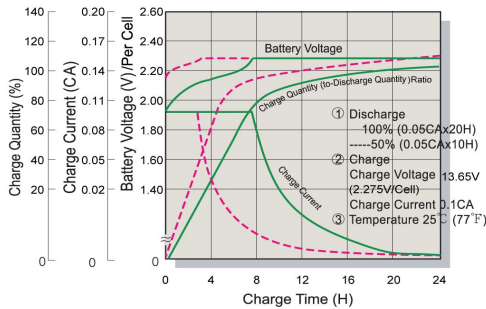
### Terminal Voltage (V) and Discharge Time



### Capacity Retention Characteristic



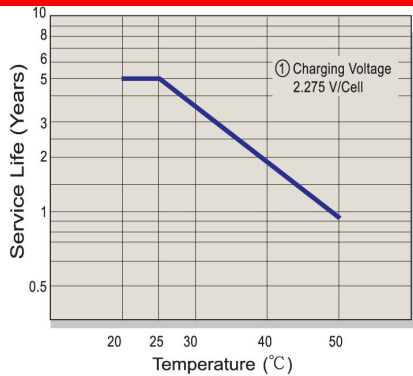
### Battery Voltage and Charge Time for Standby Use



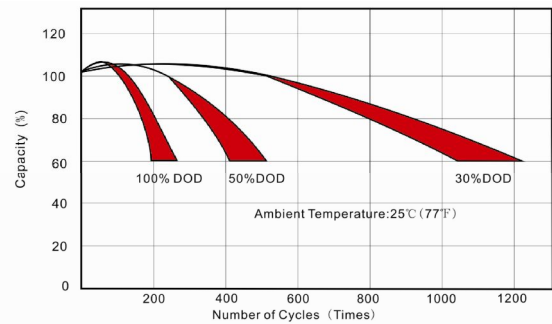
### Battery Voltage and Charge Time for Cycle Use



### 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	6Hr	10Hr	20Hr
1.85V/Cell	65.76	38.82	30.51	19.89	11.61	6.71	5.15	4.231	3.467	2.826	1.853	0.963
1.80V/Cell	67.01	39.56	31.09	20.27	11.83	6.84	5.25	4.312	3.533	2.880	1.889	0.982
1.75V/Cell	68.27	40.30	31.67	20.65	12.05	6.97	5.35	4.392	3.599	2.934	1.924	1.000
1.70V/Cell	74.41	42.72	33.57	21.47	12.26	7.09	5.44	4.470	3.663	2.986	1.958	1.018
1.67V/Cell	81.92	46.35	36.43	22.67	12.39	7.16	5.50	4.518	3.702	3.018	1.979	1.029
1.60V/Cell	88.75	48.76	38.33	23.64	12.53	7.24	5.56	4.566	3.742	3.050	2.000	1.040

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

F.V/Time	5Min	10Min	15Min	30Min	1Hr	2Hr	3Hr	4Hr	5Hr	6Hr	10Hr	20Hr
1.85V/Cell	128.23	75.69	59.49	38.78	22.63	13.08	10.05	8.25	6.76	5.51	3.61	1.88
1.80V/Cell	130.67	77.14	60.63	39.52	23.07	13.33	10.24	8.41	6.89	5.62	3.68	1.91
1.75V/Cell	133.12	78.59	61.76	40.26	23.50	13.58	10.43	8.57	7.02	5.72	3.75	1.95
1.70V/Cell	145.11	83.30	65.47	41.87	23.91	13.82	10.61	8.72	7.14	5.82	3.82	1.98
1.67V/Cell	159.75	90.37	71.03	44.21	24.17	13.97	10.73	8.81	7.22	5.88	3.86	2.01
1.60V/Cell	173.06	95.09	74.73	46.10	24.43	14.12	10.84	8.90	7.30	5.95	3.90	2.03