

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

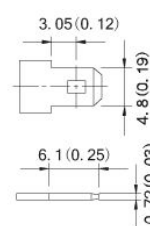
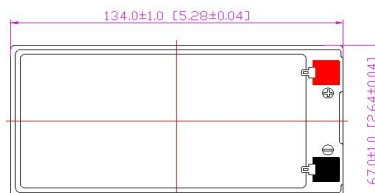
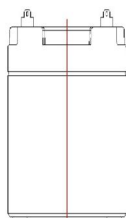
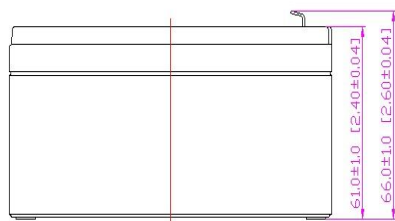
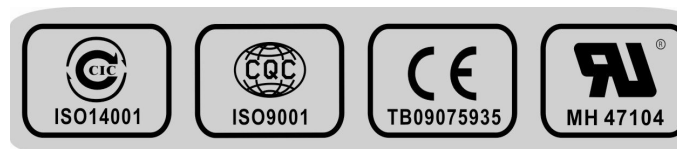
- 100% before shipment testing, stable and reliable long-term quality
- patented grid alloy formula and updated manufacturing technique
- completely sealed and maintenance-free, low self-discharge
- Excellent charging and re-charging acceptance
- Cycle use: More than 260 cycles at 100% DOD
- Floating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

#### Application:

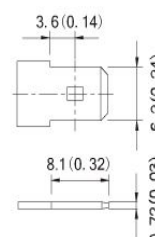
- Alarm System
- Cable Television
- Communication Equipment
- Emergency Power System
- Security System
- Medical Equipment
- UPS
- Power tools
- Control Equipment
- Toys

#### 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



F1 Terminal



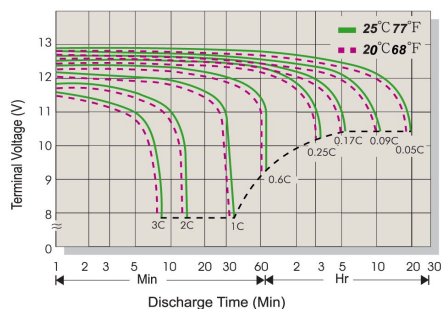
F2 Terminal

#### Speification:

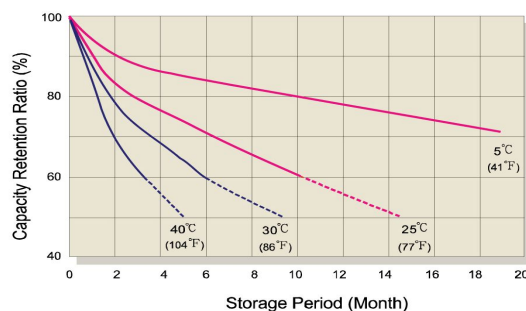
| Battery Model                    | MS 3.5-12 12V3.5AH                         |                    |                      |                   |
|----------------------------------|--------------------------------------------|--------------------|----------------------|-------------------|
| Designed Floating Life           | 3~5 Years                                  |                    |                      |                   |
| Capacity (25℃)                   | 20HR(0.175A,10.5V)                         | 10HR(0.331A,10.5V) | 5HR(0.595A,10.5V)    | 1HR(2.030A,10.5V) |
|                                  | 3.50 AH                                    | 3.31 AH            | 2.98 AH              | 2.03 AH           |
| Dimensions                       | Length                                     | Width              | Height               | Total Height      |
|                                  | 134 mm                                     | 67 mm              | 61 mm                | 66 mm             |
| Approx. Weight                   | 1.33Kg ±3%                                 |                    |                      |                   |
| Internal Resistance              | Full charged at 25℃ : ≤55.00 mΩ            |                    |                      |                   |
| Self Discharge                   | 2% of capacity declined per month at (25℃) |                    |                      |                   |
| Capacity Affected by Temp.(20HR) | 40℃                                        | 25℃                | 0℃                   | -15℃              |
|                                  | 102%                                       | 100%               | 85%                  | 65%               |
| Charge Voltage(25℃)              | Cycle use                                  |                    | Float use            |                   |
|                                  | 14.4-15.0V(-30mV/℃), max. Current: 1.00A   |                    | 13.5-13.8V (-20mV/℃) |                   |

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

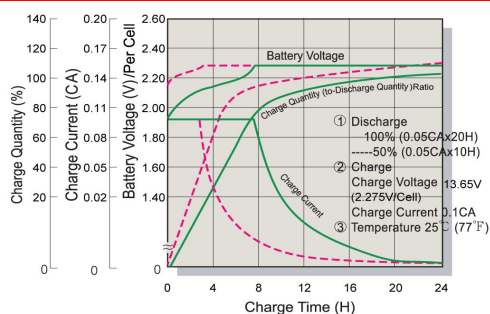
### Terminal Voltage (V) and Discharge Time



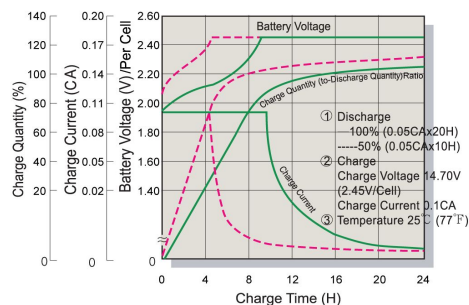
### Capacity Retention Characteristic



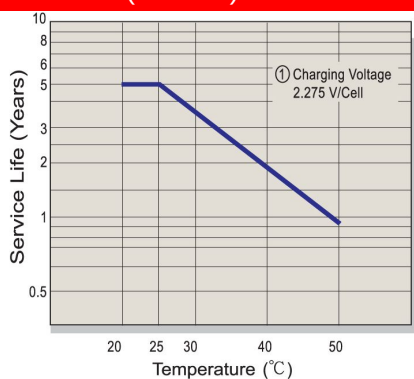
### Battery Voltage and Charge Time for Standby Use



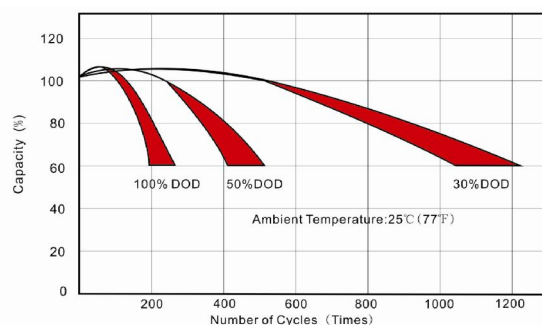
### Battery Voltage and Charge Time for Cycle Use



### 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   | 6Hr   | 10Hr  | 20Hr  |
|------------|-------|-------|-------|-------|------|------|------|-------|-------|-------|-------|-------|
| 1.80V/Cell | 11.38 | 7.86  | 5.44  | 3.37  | 1.99 | 1.16 | 0.88 | 0.703 | 0.584 | 0.499 | 0.325 | 0.172 |
| 1.75V/Cell | 11.60 | 8.00  | 5.54  | 3.44  | 2.03 | 1.18 | 0.90 | 0.716 | 0.595 | 0.508 | 0.331 | 0.175 |
| 1.70V/Cell | 11.94 | 8.24  | 5.88  | 3.58  | 2.06 | 1.20 | 0.92 | 0.729 | 0.605 | 0.517 | 0.337 | 0.178 |
| 1.67V/Cell | 12.29 | 8.48  | 6.37  | 3.78  | 2.08 | 1.22 | 0.93 | 0.737 | 0.612 | 0.523 | 0.341 | 0.180 |
| 1.60V/Cell | 12.64 | 8.72  | 6.71  | 3.94  | 2.11 | 1.23 | 0.94 | 0.745 | 0.618 | 0.528 | 0.345 | 0.182 |

### 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 |
|------------|------|-------|-------|-------|------|------|------|------|------|------|------|------|
| 1.80V/Cell | 22.2 | 15.32 | 10.61 | 6.58  | 3.88 | 2.27 | 1.72 | 1.37 | 1.14 | 0.97 | 0.63 | 0.33 |
| 1.75V/Cell | 22.6 | 15.61 | 10.81 | 6.70  | 3.95 | 2.31 | 1.76 | 1.40 | 1.16 | 0.99 | 0.65 | 0.34 |
| 1.70V/Cell | 23.3 | 16.08 | 11.46 | 6.97  | 4.02 | 2.35 | 1.79 | 1.42 | 1.18 | 1.01 | 0.66 | 0.35 |
| 1.67V/Cell | 24.0 | 16.55 | 12.43 | 7.36  | 4.06 | 2.37 | 1.81 | 1.44 | 1.19 | 1.02 | 0.66 | 0.35 |
| 1.60V/Cell | 24.6 | 17.01 | 13.08 | 7.68  | 4.11 | 2.40 | 1.83 | 1.45 | 1.21 | 1.03 | 0.67 | 0.35 |