# Powerizer



1、 SCOPE

This specification governs the performance of the following Nickel-Metal hydride Cylindrical cell and its stack-up battery。

Model：MH- D10000

Cell Size： D( $\phi 32.1^{\pm 0.2} \times 61.0^{\pm 0.5}$)

2 、DATA OF STACK UP BATTERIES

All data involves voltage and weight to stack-up battery are equal to the value of unit cell time the number of unit cell which consisted in the stack-up batteries

Example ： Stack-up batteries consisting three unit cells

Nominal voltage of unit cell=1.2V

Nominal voltage of stack-up batteries =1.2V×3=3.6V

3、 RATINGS

| Description | Unit | Specification | Conditions |
|---|---|---|---|
| Nominal Voltage | V/Cell | 1.2 | Unit cell |
| Nominal Capacity | mAh | 10000 | Standard Charge/Discharge |
| Standard Charge | mA | 1000(0.1C) | $T_1$=0~45℃(see Note1) |
| | Hour | 14~16 | |
| Quick Charge | mA | 3000 (0.3C) | -Δ V=0~5mV/cell or Timer Cutoff=120% nominal capacity or Temp.Cutoff=55℃, $T_1$=10~45℃ |
| | Hour | 4.0approx (see Note 2) | |
| Trickle Charge | mA | (0.05C)~(0.1C) | $T_1$=0~45℃ |
| Standard discharge | mA | 1800 (0.2C) | $T_1$= -30~60℃ Humidity：Max.85% |
| Discharge Cut-off Voltage | V/cell | 1.0 | |
| Storage Temperature | ℃ | -30~65 | Discharged state、Humidity、Max.85% |
| Typical Weight | Gram | 165 | Unit cell |

4、 PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature : 20±5℃

Relative Humidity : 65±20%

Notes: Standard Charge/Discharge Conditions:

Charge: 1000 mA(0.1C)×14 hours

Discharge: 2000 mA(0.2C) to 1.0V/cell

| Test | Unit | Specification | Conditions | Remarks |
|---|---|---|---|---|
| Capacity | mAh | ≥10000 | Standard Charge Discharge | up to 3 cycles are allowed |
| Open Circuit Voltage(OCV) | V/cell | ≥1.25 | Within l hour after standard Charge | |
| Internal Impedance | mΩ/cell | ≤7.0 | Upon fully charge(lKHz) | |
| High Rate Discharge(1C) | minute | ≥54 | Standard Charge, l hour rest Before discharge by 10000mA (1C)to 1.0V/cell | up to 3 cycles are allowed |
| Overcharge | / | No leakage nor explosion | 1000mA(0.1C)Charge 28 days | |
| Charge Retention | mAh | ≥7000(70%) | Standard Charge, Storage: 28 days, Standard Discharge | |
| IEC Cycle Life | Cycle | ≥500 | IEC285(1993)4.4.1 | (see Note 3) |
| Accelerated Cycle Life | Cycle | ≥400 | Charge:3000mA(0.3C) Discharge: 5000mA(0.5C) To 1.0V/cell, End-of:80% nominal Capacity | Cycling charging cut-off condition: -△V=0~5mV/cell and Timer cut –off=110% Nominal capacity Input and Temp.cutoff=55℃ |
| Leakage | | No leakage nor deformation | Fully charged at 0.3C for 4.0 hrs Stand for 14 days | |
| Vibration Resistance | | Change of voltage should be under 0.02V/cell,Change of impedance should be under 5 milli-ohm/cell | Charge the battery 0.1C 14hrs,then leave for 24hrs,check battery before/after vibration, amplitude 1.5mm Vibration 3000 CPM Any direction for 60mins. | |
| Impact Resistance | | Change of voltage sho-uld be under 0.02V/cell Change of impedance should be under 5 milli-ohm/cell | Charge the battery 0.1C 14hrs Then leave for 24hrs,check bat-before/after dropped, Height 50cm Wooden board(thickness 30mm) Direction not specified,3 times. | |

5、CONFIGURATION, DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

6、EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

7、WARRANTY

One year limited warranty against workmanship and material defects.

8、CAUTION

⑴Reverse charging is not acceptable.

⑵Charge before use. The cells/batteries are delivered in an uncharged state.

⑶Do not charge/discharge with more than our specified current.

⑷Do not short circuit the cell/battery Permanent damage to the cell/battery may result.

⑸Do not incinerate or mutilate the cell/battery.

⑹Do not solder directly to the cell/battery.

⑺the life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.

⑻store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.

Notes：

⑴ $T_1$: Ambient Temperature.

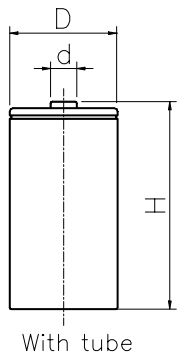
⑵ Approximate charge time from discharged state, for reference only.

⑶ IEC285(1993)4.4.1 Cycle Life:

| Cycle No. | Charge | Rest | Discharge |
|---|---|---|---|
| 1 | 0.1C×16h | None | 0.25C×2h20min |
| 2-48 | 0.25C×3h10min | None | 0.25C×2h20min |
| 49 | 0.25C×3h10min | None | 0.25C to 1.0V/cell |
| 50 | 0.1C×16h | 1-4h | 0.2C to 1.0V/cell |
| Cycles l to so shall be repeated until the discharge duration on any 50th Cycle becomes less than 3 h. | | | |

# Powerizer

**MODEL No:** MH-D10000 **Description:**10000mAh D SIZE NI-MH

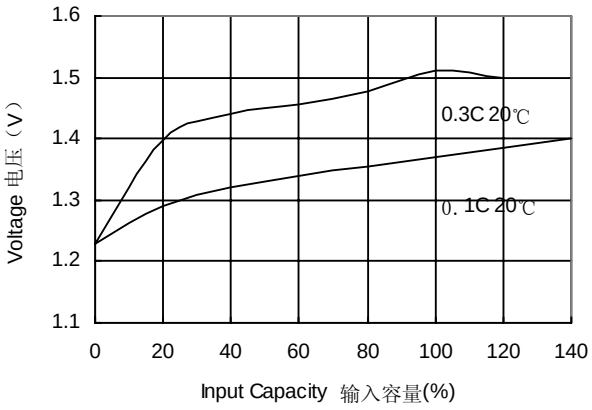



| Dimension of the cell | |
|---|---|
| D | Φ32.1±0.2 |
| d | Φ8.0±0.05 |
| H | 60.5±0.5 |

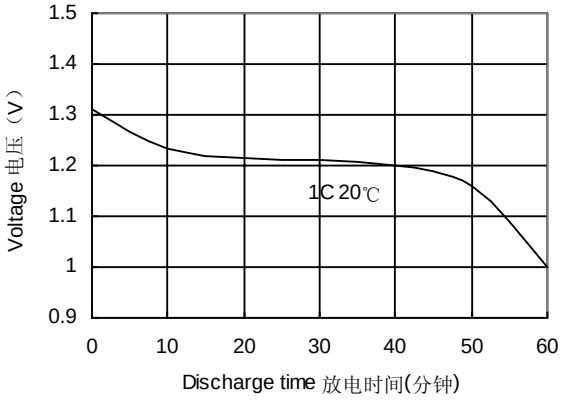
Specification

| | | | |
|---|---|---|---|
| Nominal Capacity 额定容量 | | | 10000 mAh |
| Nominal Voltage 额定电压 | | | 1.2 V |
| Charge current 充电电流 | | Standard 标准 | 1900mA |
| | | Quick 快充 | 3000 mA |
| Charge time 充电时间 | | Standard 标准 | 14~16 Hrs |
| | | Quick 快充 | 4.0 Hrs |
| Ambient Temperature 使用温度 | Charge 充电 | Standard 标准 | 0℃~45℃ |
| | | Quick 快充 | 10℃~45℃ |
| | Discharge 放电 | | -30℃~60℃ |
| | Storage 储存 | | -30℃~65℃ |
| Internal Impedance(mΩ) (After Charge)充电后内阻 | | | Max≤7.0 |
| Weight 重量 | | | 165g |

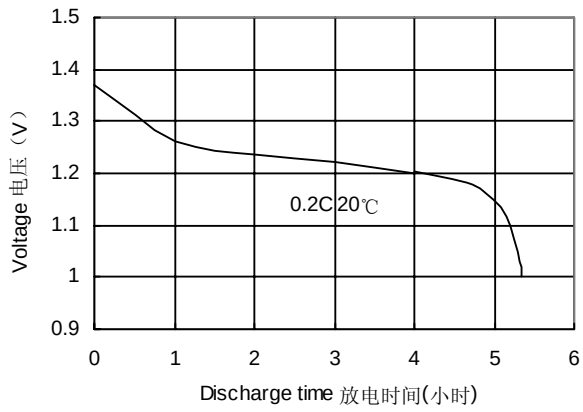
Charge(充 电)




Discharge at high rate(高倍率放电)




Discharge at low rate(低倍率放电)




Charge Retention(荷电保持能力)