

MU 220

2V 220Ah

MU-220 is a Long service life battery with 15~20 years expected life under normal float charge. As with all CSB batteries, all are rechargeable, highly efficient, leak proof and maintenance free.

Specification

| | |
|---|---|
| Cells Per Unit | 1 |
| Voltage Per Unit | 2 |
| Capacity | 220Ah @ 10hr-rate to 1.80V per cell @25 °C (77°F) |
| Weight | Approx. 15.5kg(34.1 lbs) |
| Maximum Discharge Current | 1320A(5sec) |
| Internal Resistance | Approx. 0.5~1.2 mΩ |
| Operating Temperature Range | Discharge: -20°C~50°C (-4°F~122°F) Charge: 0°C~40°C (32°F~104°F) Storage: -20°C~40°C (-4°F~104°F) |
| Nominal Operating Temperature Range | 25°C±3°C (77°F±5°F) |
| Float Charging Voltage | 2.23±0.02/Cell AT25°C (77°F) Temp. Coefficient-3.3mV/°C (-1.8mV/°F) |
| Recommended Maximum Charging Current Limit | 66A |
| Equalization and Cycle Service | 2.35V Temps coefficient -3.3mV/°C (-1.8mV/°F) |
| Terminal | Pb-Ca-Sn Alloy |
| Container Material | The container and cover are made of flame retardant plastics which meet UL-94V-0 specifications. The oxygen index level is higher than 28. |



MH14533(N)



ISO9001
No :041005117



ISO 14001
NO.UM 1-12-0045

CSB-manufactured batteries are UL-recognized components under UL924 and UL1989. CSB is also certified by ISO 9001 and ISO 14001.

Dimensions

Unit:(mm)

Constant Current Discharge Characteristics Unit:A (25°C,77°F)

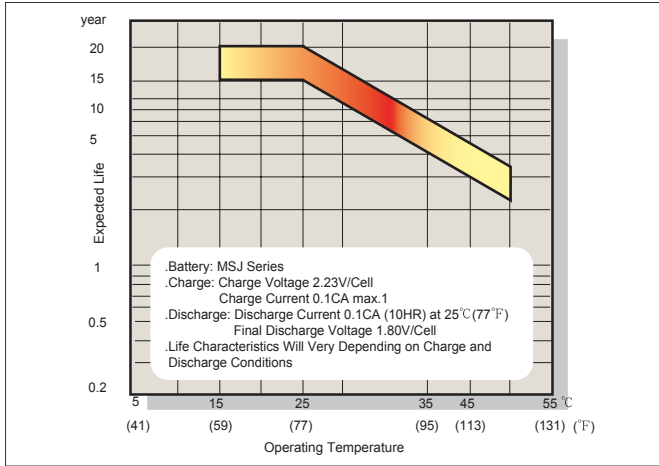
| F.V/Time | 30MIN | 60MIN | 90MIN | 2HR | 3HR | 4HR | 5HR | 6HR | 8HR | 10HR |
|----------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 1.60V | 227.00 | 142.00 | 107.00 | 89.00 | 68.00 | 54.00 | 46.00 | 39.00 | 30.00 | 25.00 |
| 1.65V | 218.00 | 138.00 | 105.00 | 87.00 | 66.00 | 53.00 | 45.00 | 38.00 | 30.00 | 25.00 |
| 1.70V | 205.00 | 133.00 | 102.00 | 84.00 | 63.00 | 51.00 | 43.00 | 37.00 | 29.00 | 24.00 |
| 1.75V | 185.00 | 123.00 | 96.00 | 80.00 | 60.00 | 49.00 | 41.00 | 35.00 | 28.00 | 23.00 |
| 1.80V | 168.00 | 115.00 | 90.00 | 76.00 | 58.00 | 47.00 | 40.00 | 34.00 | 27.00 | 22.00 |
| 1.83V | 150.00 | 112.00 | 89.00 | 73.00 | 55.00 | 44.00 | 36.00 | 31.00 | 25.00 | 21.00 |

Constant Power Discharge Characteristics Unit:W (25°C,77°F)

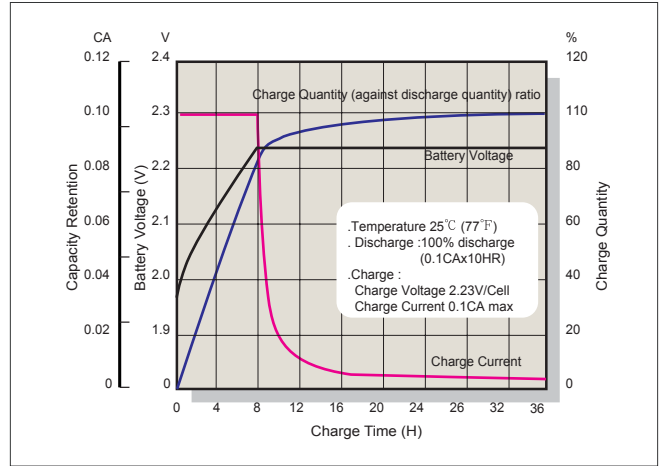
| F.V/Time | 30MIN | 60MIN | 90MIN | 2HR | 3HR | 4HR | 5HR | 6HR | 8HR | 10HR |
|----------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|
| 1.60V | 358.00 | 245.00 | 187.00 | 156.00 | 120.00 | 95.00 | 81.00 | 70.00 | 55.00 | 45.00 |
| 1.65V | 354.00 | 241.00 | 185.00 | 155.00 | 118.00 | 95.00 | 80.00 | 70.00 | 55.00 | 45.00 |
| 1.70V | 344.00 | 234.00 | 181.00 | 152.00 | 115.00 | 94.00 | 78.00 | 69.00 | 54.00 | 44.00 |
| 1.75V | 318.00 | 220.00 | 171.00 | 145.00 | 111.00 | 91.00 | 76.00 | 66.00 | 52.00 | 43.00 |
| 1.80V | 296.00 | 207.00 | 163.00 | 139.00 | 107.00 | 88.00 | 74.00 | 64.00 | 51.00 | 42.00 |
| 1.83V | 268.00 | 203.00 | 162.00 | 134.00 | 102.00 | 83.00 | 67.00 | 59.00 | 47.00 | 41.00 |

- All mentioned values are average values.
- Cycle Information : 300~400 cycles@DOD80%, 600~700 cycles@DOD50%, 900~1200 cycles@DOD30%

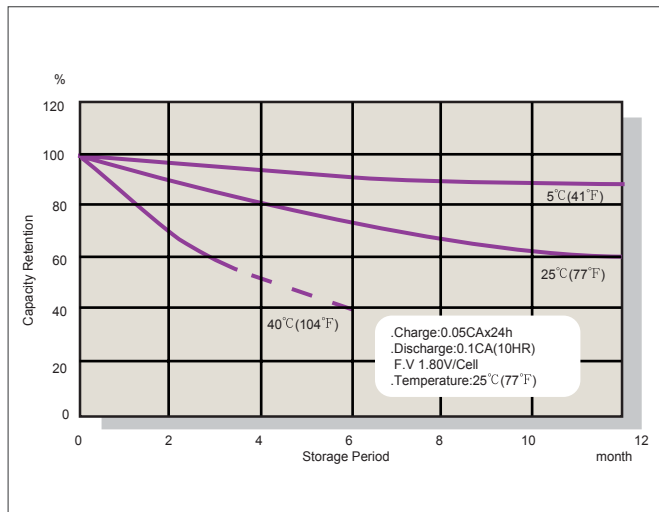
Expected Life V.S Operating Temperature



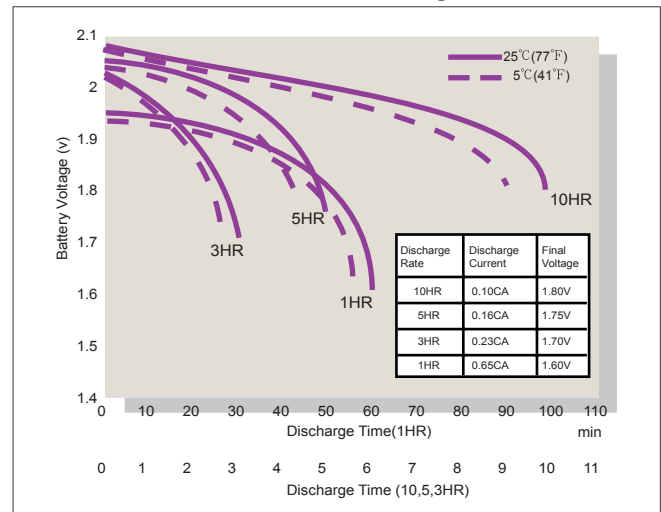
Typical Constant Voltage Charge Characteristics



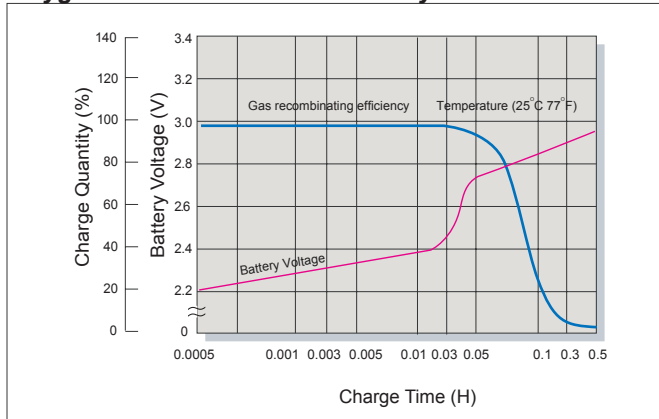
Capacity Retention Characteristics



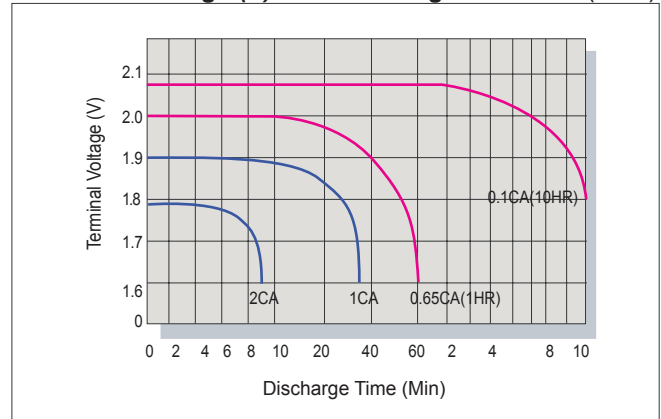
Discharge Characteristics



Oxygen Recombination Efficiency Chart



Terminal Voltage (V) and Discharge Time 25°C (77°F)



Charging Procedures

| Application | Charge Voltage (V/Cell) | | | Max. Charge Current |
|-------------|-------------------------|-----------|-----------------|---------------------|
| | Temperature | Set Point | Allowable Range | |
| Standby | 25°C (77°F) | 2.23 | 2.21~2.25 | 0.3C |

Discharge Current VS. Discharge Voltage

| Discharge Current (A) | Final Discharge Voltage (V/Cell) |
|-----------------------|----------------------------------|
| 0.05C > A | 1.90 |
| 0.15C > A ≥ 0.05C | 1.80 |
| 0.20 C > A ≥ 0.15C | 1.75 |
| 0.40 C > A ≥ 0.20C | 1.70 |
| A > 0.40 C | 1.60 |

Sales Office URL: WWW.CSB-BATTERY.COM

CSB BATTERY CO., LTD.
TAIWAN OFFICE
 Tel: +886-2-8751-5000
 Fax: +886-2-8751-6161
 E-mail: service@csb-battery.com.tw

CSB BATTERY LOGISTICS (SHANGHAI) CO., LTD.
SHANGHAI OFFICE
 Tel: +86-21-5046-1622, 5046-0833
 Fax: +86-21-5064-3314

CSB BATTERY TECHNOLOGIES, INC
USA OFFICE
 Tel: +1-817-244-7777/1-8003 CSBUSA(272872)
 Fax: +1-817-244-4445
 E-mail: csb@csb-battery.com

CSB BATTERY LOGISTICS (SHANGHAI) CO., LTD.
BEIJING OFFICE
 Tel: +86-10-6597-8060, 6597-8070
 Fax: +86-10-6597-8050
 E-mail: chinasls@csb-battery.com

CSB BATTERY OF NETHERLANDS B.V
NETHERLANDS OFFICE
 Tel: +31(0) 180 418 140
 Fax: +31(0) 180 418 327
 E-mail: eurosales@csb-battery.com

CSB BATTERY LOGISTICS (SHANGHAI) CO., LTD.
SHENZHEN OFFICE
 Tel: +86-755-2694-2788/2606/2706
 Fax: +86-755-2694-2748
 E-mail: she@csb-battery.com.tw