

MU 220

2V 220Ah

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

Specification

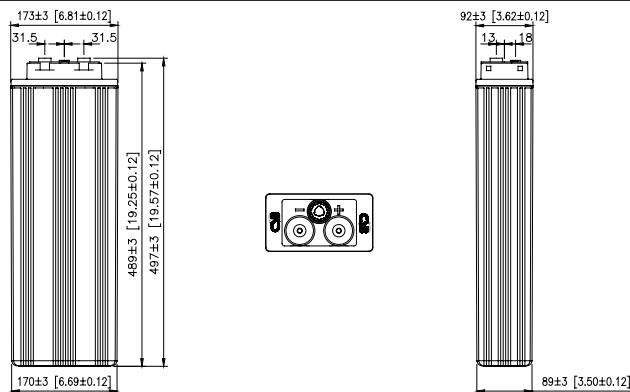
Cells Per Unit	1
Voltage Per Unit	2
Capacity	220Ah @ 10hr-rate to 1.80V per cell @25 °C (77°F)
Weight	Approx. 15.5 kg(34.17 lbs)
Maximum Discharge Current	1320A(5sec)
Internal Resistance	Approx. 0.5~1.2mΩ
Operating Temperature Range	Discharge: -20°C~50°C (-4°F~122°F) Charge: 0°C~40°C (32°F~104°F) Storage: -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 at 25 °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(Recessed Terminal)
Container Material	The container and cover are made of flame retardant plastics which meet UL 94-V0 specifications. The oxygen index level is higher than 28.



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)

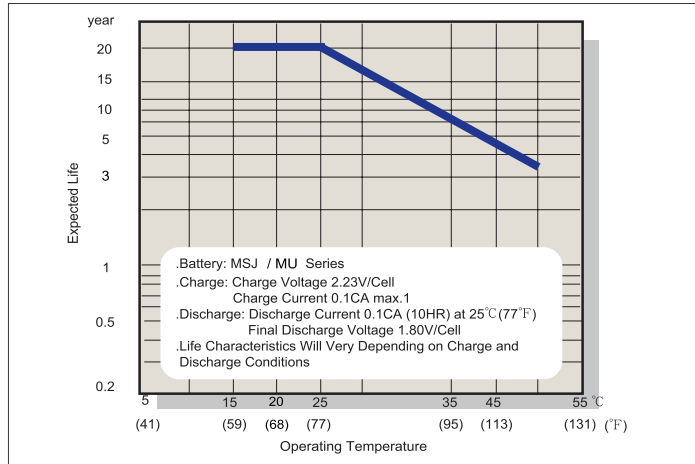
F.V/Time	60MIN	90MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	149	111	91.0	69.0	55.0	45.0	38.0	30.0	23.9
1.65V	144	108	89.0	66.0	53.0	44.0	37.0	29.0	23.5
1.70V	140	106	86.0	64.0	51.0	42.0	36.0	28.0	23.3
1.75V	130	100	82.0	61.0	49.0	41.0	35.0	27.0	22.6
1.80V	121	93.0	78.0	58.0	47.0	39.0	33.0	26.0	22.0
1.83V	107	85.0	72.0	55.0	44.0	36.0	31.0	25.0	20.9

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

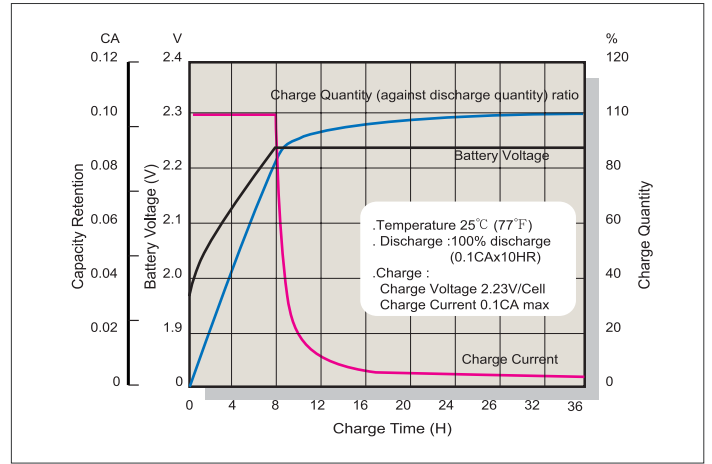
F.V/Time	60MIN	90MIN	2HR	3HR	4HR	5HR	6HR	8HR	10HR
1.60V	257	194	161	122	96.0	81.0	69.0	54.0	45.0
1.65V	252	191	159	120	96.0	80.0	69.0	54.0	45.0
1.70V	246	188	156	117	95.0	78.0	68.0	53.0	44.0
1.75V	232	179	150	113	92.0	76.0	66.0	52.0	43.0
1.80V	218	169	143	108	88.0	73.0	63.0	50.0	42.0
1.83V	210	163	139	105	86.0	72.0	62.0	49.0	41.0

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

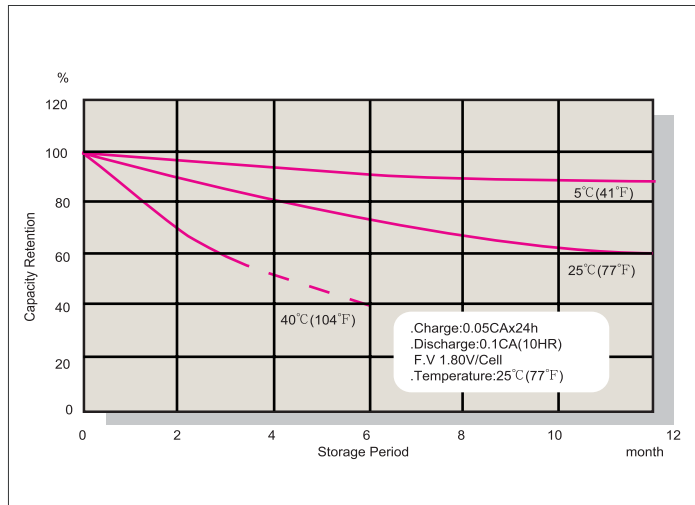
Expected Life V.S Operating Temperature



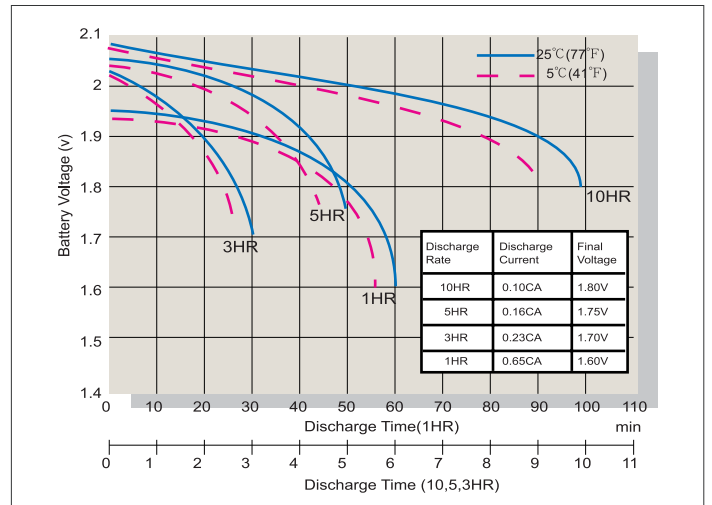
Typical Constant Voltage Charge Characteristics



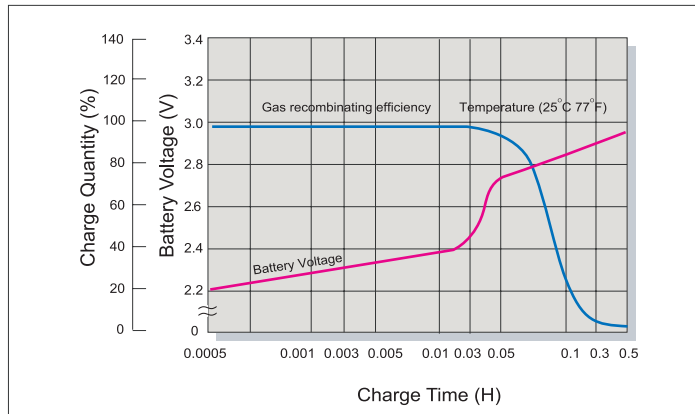
Capacity Retention Characteristics



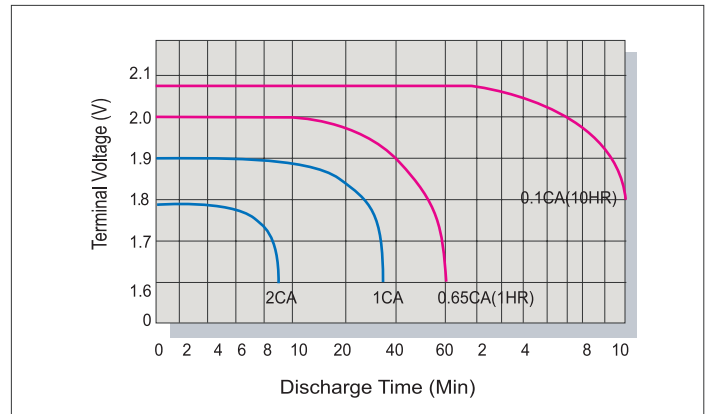
Discharge Characteristics



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 ≥ 0.20 C	1.70
A > 0.40 C	1.60

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