

HR 1221W F2

12V 21W

HR 1221W F2 is specially designed for high efficient discharge application. Its characteristics are small volume, light weight and high discharge efficiency. It can be used for more than 260 cycles at 100% discharge in cycle service, or three to five years in standby service.



Specification

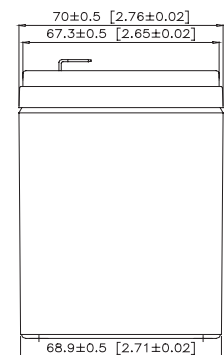
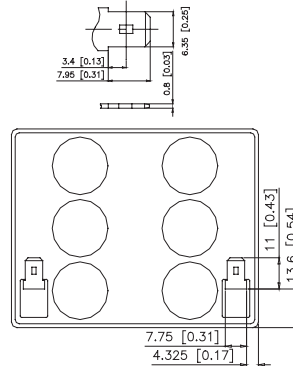
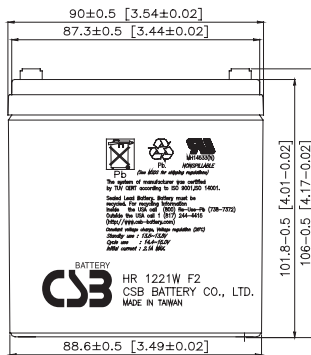
| | |
|---|---|
| Cells Per Unit | 6 |
| Voltage Per Unit | 12 |
| Capacity | 21W @ 15minute-rate to 1.67V per cell @25 °C (77°F) |
| Weight | Approx. 1.9kg(4.2 lbs) |
| Maximum Discharge Current | 90A(5sec) |
| Internal Resistance | Approx. 25mΩ |
| Operating Temperature Range | Discharge: -20°C~50°C (-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 | 13.5 to 13.8 VDC/unit Average at 25°C (77°F) |
| Recommended Maximum Charging Current Limit | 2.1A |
| Equalization and Cycle Service | 14.4 to 15.0 VDC/unit Average at 25°C (77°F) |
| Self Discharge | CSB Batteries can be stored for more than 6 months at 25°C (77°F). Please charge batteries before using. For higher temperatures the time interval will be shorter. |
| Terminal | Faston Tab 250 |
| Container Material | -ABS (UL94-HB)*Flammability resistance of UL94-V0 can be available upon request. |



CSB-manufactured batteries are UL-recognized components under UL924 as well as ISO 9001 and ISO 14001 certified.

Dimensions

unit: (MM)



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

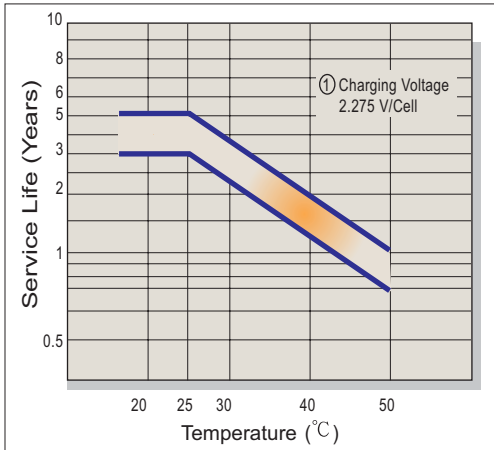
| F.V/Time | 2MIN | 4MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 60MIN | 90MIN |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1.60V | 46.42 | 31.17 | 24.42 | 20.33 | 16.42 | 12.33 | 10.67 | 7.18 | 4.02 | 2.83 |
| 1.67V | 43.38 | 30.12 | 23.78 | 19.98 | 16.30 | 12.27 | 10.61 | 7.15 | 4.00 | 2.71 |
| 1.70V | 42.08 | 29.67 | 23.50 | 19.83 | 16.25 | 12.25 | 10.58 | 7.13 | 3.99 | 2.66 |
| 1.75V | 37.58 | 27.42 | 22.17 | 19.00 | 15.75 | 12.00 | 10.42 | 7.13 | 3.99 | 2.56 |
| 1.80V | 33.08 | 25.17 | 20.83 | 18.17 | 15.25 | 11.75 | 10.25 | 7.12 | 3.98 | 2.46 |
| 1.85V | 28.58 | 22.92 | 19.50 | 17.34 | 14.75 | 11.50 | 10.09 | 7.12 | 3.98 | 2.36 |

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

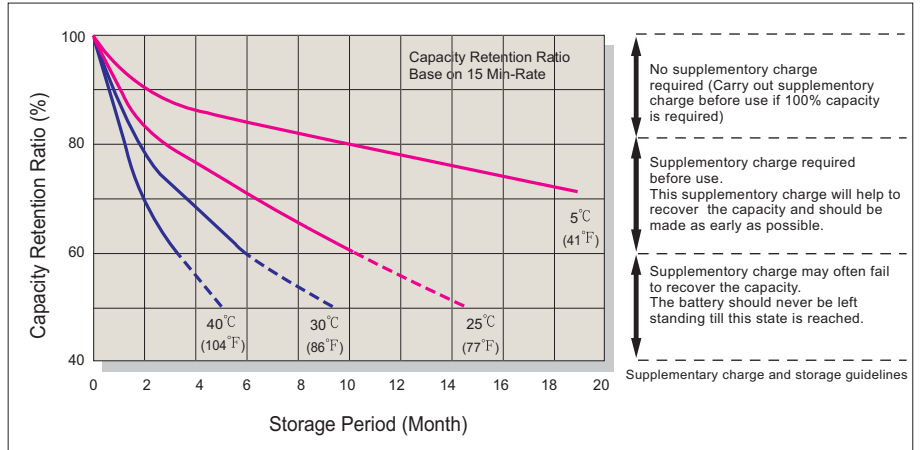
| F.V/Time | 2MIN | 4MIN | 6MIN | 8MIN | 10MIN | 15MIN | 20MIN | 30MIN | 60MIN | 90MIN |
|----------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|
| 1.60V | 557.00 | 374.00 | 293.00 | 244.00 | 197.00 | 148.00 | 128.00 | 86.10 | 48.20 | 33.90 |
| 1.67V | 520.60 | 361.40 | 285.30 | 239.80 | 195.60 | 147.30 | 127.30 | 85.75 | 47.99 | 32.50 |
| 1.70V | 505.00 | 356.00 | 282.00 | 238.00 | 195.00 | 147.00 | 127.00 | 85.60 | 47.90 | 31.90 |
| 1.75V | 451.00 | 329.00 | 266.00 | 228.00 | 189.00 | 144.00 | 125.00 | 85.50 | 47.85 | 30.70 |
| 1.80V | 397.00 | 302.00 | 250.00 | 218.00 | 183.00 | 141.00 | 123.00 | 85.40 | 47.80 | 29.50 |
| 1.85V | 343.00 | 275.00 | 234.00 | 208.00 | 177.00 | 138.00 | 121.00 | 85.30 | 47.75 | 28.30 |

• All mentioned values are average values.

Trickle (or Float) Service Life



Capacity Retention Characteristic



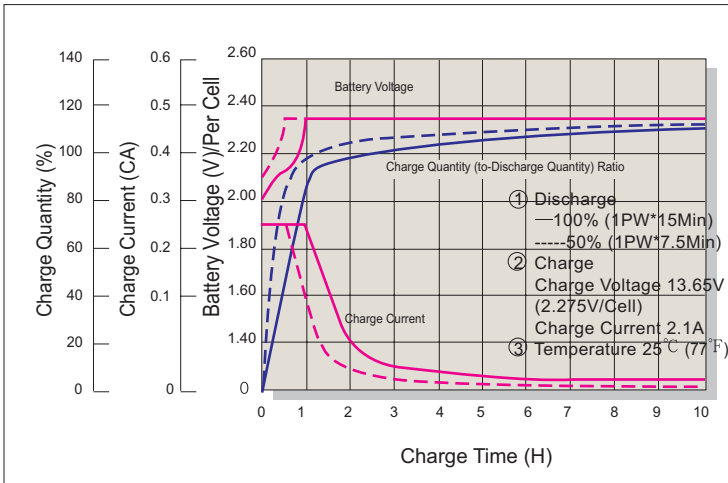
No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)

Supplementary charge required before use. This supplementary charge will help to recover the capacity and should be made as early as possible.

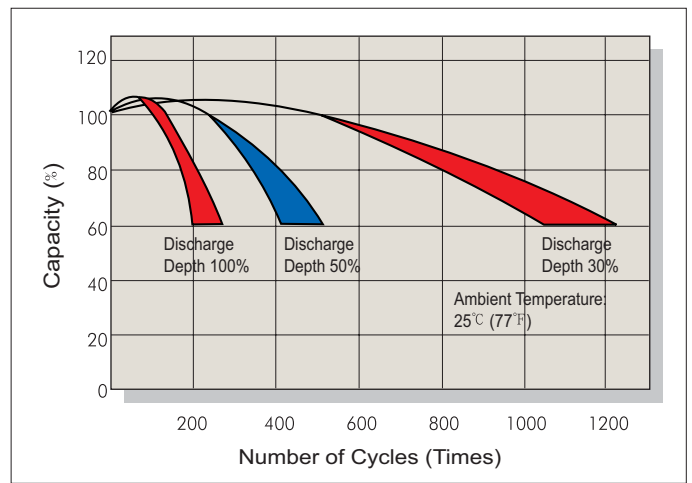
Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this state is reached.

Supplementary charge and storage guidelines

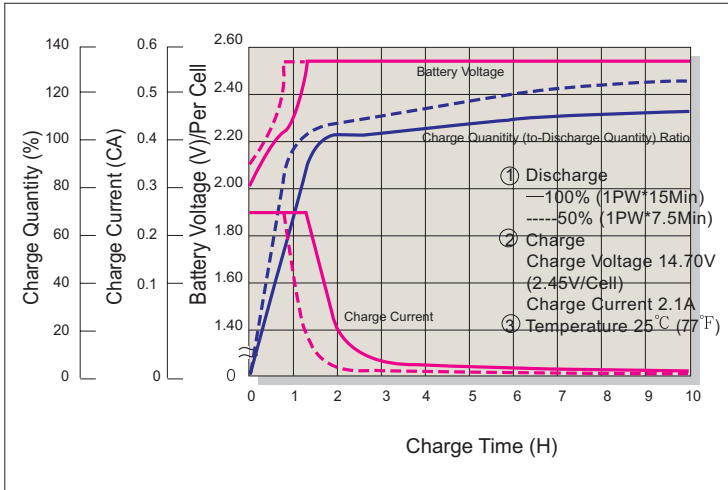
Battery Voltage and Charge Time for Standby Use



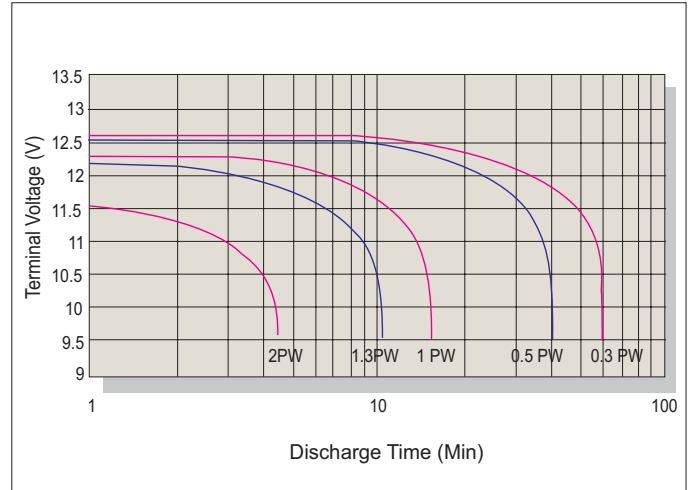
Cycle Service Life



Battery Voltage and Charge Time for Cycle Use



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 | |
| Cycle Use | 25°C (77°F) | 2.45 | 2.40-2.50 | 0.3C |
| Standby | 25°C (77°F) | 2.275 | 2.25-2.30 | |

Discharge Current VS. Discharge Voltage

| Final Discharge Voltage V/Cell | 1.75 | 1.70 | 1.55 | 1.30 |
|--------------------------------|------------|-------------------|-------------------|------------|
| Discharge Current (A) | 0.2C > (A) | 0.2C < (A) < 0.5C | 0.5C < (A) < 1.0C | (A) > 1.0C |

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