

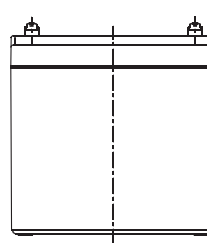
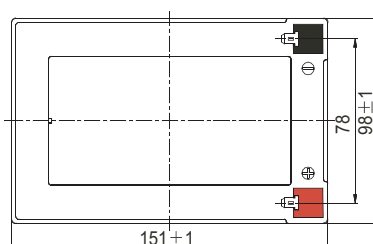
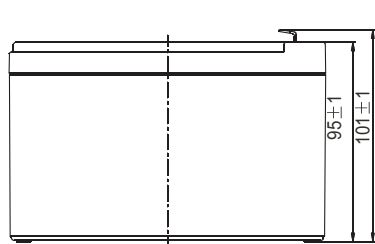
## NP 12-12

NP 12-12 is a general purpose VRLA battery with 5 years floating design life, meet with IEC 60896-21, 60896-22, JIS standard. With heavy duty grid, thickness plates, special additives, NP series have long and reliable standby service life.



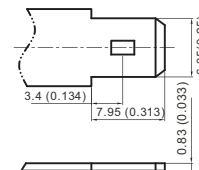
| Physical Characteristics |                       | Technical Characteristics           |                                      |
|--------------------------|-----------------------|-------------------------------------|--------------------------------------|
| Nominal Voltage          | 12V                   | Internal Resistance                 | Approx. 14 mΩ                        |
| Nominal Capacity (20hrs) | 12Ah                  | Recommended Charging Current at 20C | 3,6 A                                |
| Dimension LxWxH          | 151 x 98 x 101 +/-2mm | Float charging Voltage              | 13,5 to 13,8 VDC/unit Average at 20C |
| Weight                   | Approx 3,5 kg         | Equalization and Cycle Service      | 14,4 to 15,0 VDC/unit Average at 20C |
| Standard Terminal        | T2                    | Max Discharge Current               | 180A (5sec)                          |

## Dimensions



### Terminal: T2

Unit: mm [inches]



Container Material : A.B.S. UL94-HB

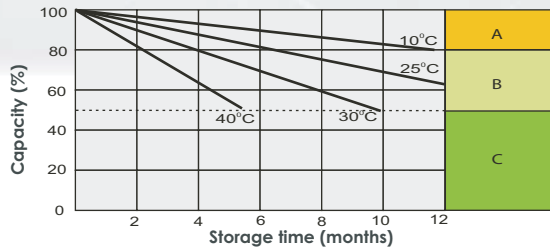
## Constant Current & Power Discharge Characteristics: Amperes (25C) / Watts/cell (25C)

| Final Voltage | Time | 5min | 10min | 15min | 20min | 30min | 45min | 1Hr  | 2Hr  | 3Hr  | 4Hr  | 5Hr  | 6Hr  | 8Hr  | 10Hr | 20Hr  |
|---------------|------|------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|-------|
| 1.85V/cell    | A    | 22.9 | 15.2  | 12.5  | 11.0  | 9.02  | 7.04  | 5.83 | 3.58 | 2.70 | 2.22 | 1.88 | 1.63 | 1.30 | 1.08 | 0.594 |
| 1.80V/cell    | A    | 27.4 | 18.2  | 14.7  | 12.6  | 10.1  | 7.73  | 6.31 | 3.84 | 2.88 | 2.36 | 1.98 | 1.70 | 1.34 | 1.12 | 0.600 |
| 1.75V/cell    | A    | 32.8 | 20.9  | 16.4  | 13.9  | 10.8  | 8.27  | 6.67 | 4.00 | 2.98 | 2.42 | 2.03 | 1.75 | 1.38 | 1.14 | 0.606 |
| 1.70V/cell    | A    | 38.1 | 23.3  | 18.0  | 15.1  | 11.5  | 8.67  | 6.96 | 4.14 | 3.05 | 2.47 | 2.08 | 1.79 | 1.40 | 1.16 | 0.617 |
| 1.65V/cell    | A    | 42.0 | 25.3  | 19.3  | 16.2  | 12.1  | 9.06  | 7.20 | 4.27 | 3.14 | 2.54 | 2.12 | 1.82 | 1.42 | 1.18 | 0.625 |
| 1.60V/cell    | A    | 46.3 | 27.4  | 20.8  | 17.1  | 12.8  | 9.42  | 7.49 | 4.38 | 3.21 | 2.60 | 2.17 | 1.86 | 1.45 | 1.20 | 0.629 |
| 1.85V/cell    | W    | 42.6 | 28.4  | 23.6  | 20.8  | 17.1  | 13.5  | 11.3 | 6.96 | 5.26 | 4.33 | 3.69 | 3.20 | 2.56 | 2.14 | 1.18  |
| 1.80V/cell    | W    | 49.5 | 33.4  | 27.2  | 23.6  | 19.0  | 14.7  | 12.1 | 7.41 | 5.58 | 4.59 | 3.86 | 3.33 | 2.65 | 2.21 | 1.19  |
| 1.75V/cell    | W    | 58.8 | 37.9  | 30.0  | 25.8  | 20.2  | 15.7  | 12.7 | 7.69 | 5.75 | 4.68 | 3.95 | 3.42 | 2.71 | 2.26 | 1.20  |
| 1.70V/cell    | W    | 67.3 | 41.7  | 32.7  | 27.8  | 21.4  | 16.3  | 13.2 | 7.94 | 5.88 | 4.78 | 4.04 | 3.48 | 2.75 | 2.29 | 1.22  |
| 1.65V/cell    | W    | 73.1 | 44.6  | 34.7  | 29.5  | 22.4  | 16.9  | 13.6 | 8.17 | 6.02 | 4.88 | 4.11 | 3.54 | 2.79 | 2.32 | 1.23  |
| 1.60V/cell    | W    | 79.2 | 47.5  | 36.6  | 30.6  | 23.3  | 17.5  | 14.1 | 8.33 | 6.13 | 4.99 | 4.18 | 3.61 | 2.84 | 2.35 | 1.24  |

## Capacity factors with different temperature

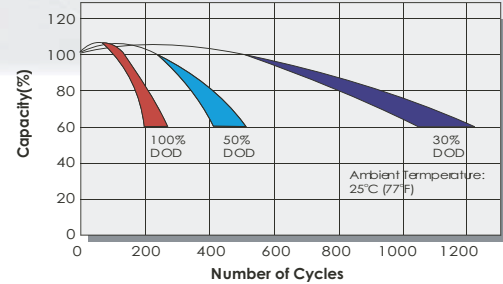
| BATTERY TYPE |        | -20C | -10C | 0C  | 5C  | 10C | 20C | 25C  | 30C  | 40C  | 45C  |
|--------------|--------|------|------|-----|-----|-----|-----|------|------|------|------|
| GEL BATTERY  | 6V&12V | 50%  | 70%  | 83% | 85% | 90% | 98% | 100% | 102% | 104% | 105% |
|              | 2V     | 60%  | 75%  | 85% | 88% | 92% | 99% | 100% | 103% | 105% | 106% |
| AGM BATTERY  | 6V&12V | 46%  | 66%  | 76% | 83% | 90% | 98% | 100% | 103% | 107% | 109% |
|              | 2V     | 55%  | 70%  | 80% | 85% | 92% | 99% | 100% | 104% | 108% | 110% |

### Storage characteristics



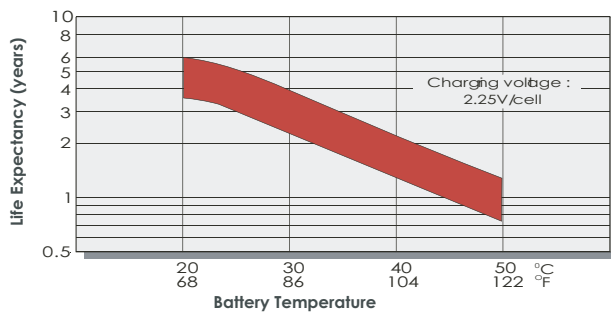
- A** No supplementary charge required  
(Carry out supplementary charge before use if 100% capacity is required.)  
Supplementary charge required before use. Optional charging way as below:  
1.Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell.  
2.Charged for above 20hours at limited current 0.25CA and constant voltage 2.45V/cell.  
3.Charged for 8-10 hours at limited current 0.05CA.
- B** Supplementary charge may often fail to recover the capacity.  
The battery should never be left standing till this is reached.
- C**

### Cycle Life in Relation to depth of discharge

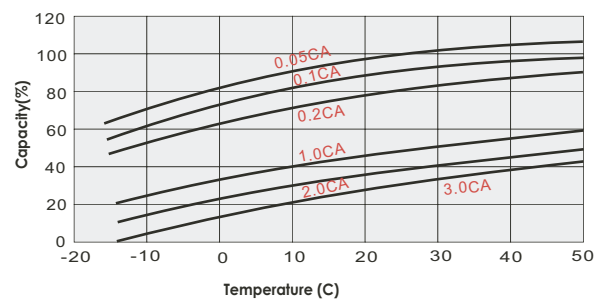


Testing condition  
Discharging: Current 0.17C (FV 1.7V/cell)  
Charging: Current 0.25C max, voltage 2.45V/cell  
Charging volume: 125% of discharged capacity

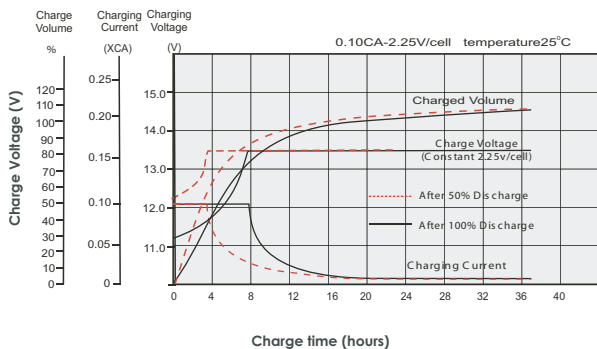
### Effect of temperature on long term float life



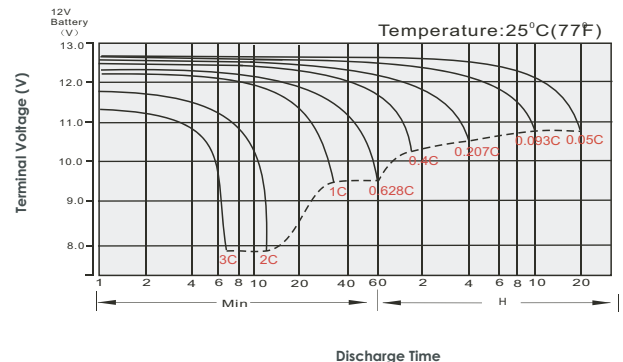
### Temperature effects in relation to battery capacity



### Float Charging Characteristics



### Discharge characteristics curve



### Discharge Current VS. Discharge Voltage

| Final Discharge Voltage V/cell | 1,75V      | 1,70V             | 1,60V      |
|--------------------------------|------------|-------------------|------------|
| Discharge Current (A)          | (A) ≤ 0.2C | 0.2C < (A) < 1.0C | (A) ≥ 1.0C |

Charge the batteries at least once every six months, if they are stored at 25C  
Charging Method:

| Constant Voltage | -0.2Cx2h+2.4~2.45V/Cellx24h, Max.Current 0.3CA |
|------------------|------------------------------------------------|
| Constant Current | -0.2Cx2h+0.1CAx12h                             |
| Fast             | -0.2Cx2h+0.3CAx4.0h                            |

### Maintenance & Cautions

#### Float Service:

- \* Every month, recommend inspection every battery voltage
- \* Every three months, recommend equalization charge for one time.

#### Equalization charge method:

Discharge: 100% rate capacity discharge

Charge: Max. current 0.3CA, constant voltage 2,4-2,45V/Cell charge 24h

\* Effect of temperature on float charge voltage: -3mV/C/Cell

\* Length of service life will be directly affected by the number of discharge cycles, depth of discharge, ambient temperature and charging voltage.