

### General Features



- ◆ Using oxygen recombination technology: maintenance-free
- ◆ Special grid alloy: less gassing, less self-discharging
- ◆ For longer cycle life: special paste formula, over dimensioned negative plate, optimised manufacturing process, additives for deep discharge
- ◆ Thermal management system (optional)
- ◆ Special anti-vibration design (optional)
- ◆ High quality AGM separator: extend cycle life and prevent micro short circuit
- ◆ ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)



|  |  |                        |   |                       |
|--|--|------------------------|---|-----------------------|
| Battery Type                           | Valve-Regulated, Absorbed Glass Mat (AGM) Technology |                        |   |                       |
| Nominal Voltage                        | 12V  |                        |   |                       |
| Capacity (20 °C)                       | 20HR(5.14A, 1.8V/cell)                               | 10HR(9.71A, 1.8V/cell) | 5HR(17.5A, 1.75V/cell)                            | 1HR(68.6A, 1.6V/cell) |
|  | 102.9AH  | 97.1AH                 | 87.5AH  | 68.6AH                |
| Dimensions                             | Length   | Length                 | Length  | Length                |
|  | 330mm(13.0inches)                                    | 173mm(6.8inches)       | 212mm(8.35inches)                                 | 200mm(7.87inches)     |
| Approx Weight                          | Approx 30.0 kg (66.2lbs)                             |                        |   |                       |
| Internal Resistance                    | Full Charged at 20 °C: Approx 4.9 mΩ                 |                        |   |                       |
| Self Discharge                         | 3% of capacity declined per month at 20 °C           |                        |   |                       |
| Capacity affected by Temperature(10HR) | 40 °C  | 25 °C                  | 0 °C  | -15 °C                |
|  | 103%   | 100%                   | 86%   | 65%                   |
| Charging Voltage (V)                   | Cycle use  |                        | Float use   |                       |
|  | 14.4V~15.0V at 20 °C. Temp. Coefficient -30mV/ °C    |                        | 13.5V~13.8V at 20 °C. Temp. Coefficient -20mV/ °C |                       |
| Current                                | Max. Discharge Current(5s)                           |                        | Initial Charging Current                          |                       |
|  | 1200A  |                        | Less than 30A                                     |                       |
| Operating Temp. Range                  | Discharge  |                        | Charging  |                       |
|  | -15~50 °C(5~122 °F)                                  |                        | 0~40 °C(32~104 °F)                                |                       |
|  | Storage  |                        |   |                       |
|  |  |                        | -15~40 °C(5~104 °F)                               |                       |

### Constant Current Discharge (Amperes) at 20 °C (68 °F)

| F.V/Time   | 10min | 15min | 20min | 30min | 45min | 1h   | 2h   | 3h   | 4h   | 5h   | 6h   | 8h   | 10h  | 20h  |
|------------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| 1.85V/cell | 155.0 | 136.0 | 120.3 | 96.1  | 74.9  | 60.4 | 35.4 | 25.7 | 20.3 | 16.8 | 14.7 | 11.6 | 9.57 | 5.08 |
| 1.80V/cell | 170.4 | 146.3 | 127.7 | 101.7 | 77.9  | 62.3 | 36.3 | 26.1 | 20.6 | 17.1 | 14.9 | 11.8 | 9.71 | 5.14 |
| 1.75V/cell | 179.6 | 152.0 | 131.7 | 104.3 | 80.1  | 63.6 | 37.1 | 26.8 | 21.2 | 17.5 | 15.1 | 11.9 | 9.80 | 5.19 |
| 1.70V/cell | 192.7 | 159.2 | 136.8 | 108.1 | 82.1  | 65.6 | 37.9 | 27.4 | 21.6 | 17.8 | 15.4 | 12.1 | 9.89 | 5.23 |
| 1.65V/cell | 205.8 | 167.2 | 141.9 | 111.9 | 84.2  | 67.3 | 38.8 | 28.1 | 22.0 | 18.1 | 15.6 | 12.2 | 10.0 | 5.27 |
| 1.60V/cell | 221.2 | 176.7 | 147.6 | 115.0 | 86.4  | 68.6 | 39.5 | 28.5 | 22.3 | 18.4 | 15.9 | 12.4 | 10.1 | 5.30 |

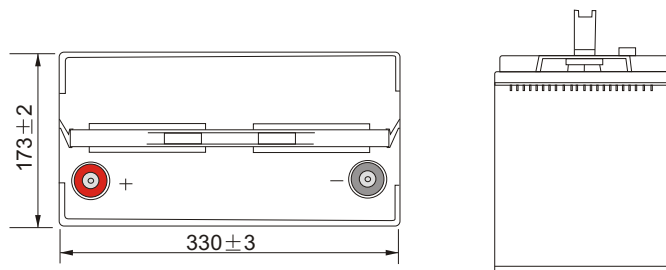
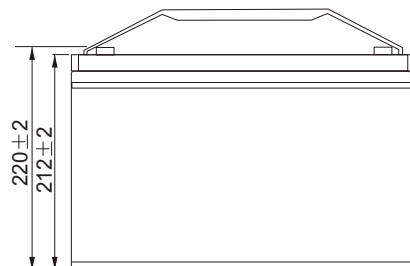
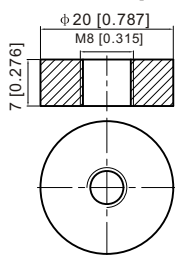
### Constant Power Discharge (Watts) at 20 °C (68 °F)

| F.V/Time   | 10min | 15min | 20min | 30min | 45min | 1h    | 2h   | 3h   | 4h   | 5h   | 6h   | 8h   | 10h  | 20h   |
|------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|-------|
| 1.85V/cell | 290.5 | 256.8 | 228.5 | 184.2 | 144.5 | 117.3 | 69.2 | 50.4 | 40.1 | 33.4 | 29.2 | 23.2 | 19.3 | 10.29 |
| 1.80V/cell | 314.4 | 273.0 | 240.7 | 193.5 | 149.6 | 120.5 | 70.7 | 51.1 | 40.5 | 33.8 | 29.5 | 23.5 | 19.5 | 10.39 |
| 1.75V/cell | 327.1 | 280.4 | 246.1 | 197.1 | 152.7 | 122.2 | 71.8 | 52.1 | 41.4 | 34.4 | 29.9 | 23.7 | 19.6 | 10.44 |
| 1.70V/cell | 345.9 | 290.4 | 253.4 | 202.9 | 155.9 | 125.6 | 73.1 | 53.1 | 42.0 | 34.9 | 30.3 | 23.9 | 19.7 | 10.48 |
| 1.65V/cell | 365.5 | 302.7 | 261.4 | 208.9 | 159.2 | 128.3 | 74.7 | 54.3 | 42.7 | 35.3 | 30.8 | 24.1 | 19.9 | 10.53 |
| 1.60V/cell | 386.0 | 316.0 | 269.2 | 213.2 | 162.4 | 130.4 | 75.6 | 54.9 | 43.2 | 35.8 | 31.1 | 24.3 | 20.0 | 10.57 |

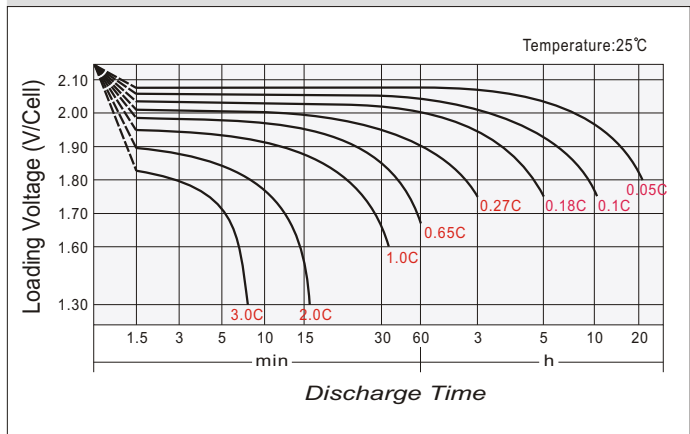
# Dimensions

## T11 Terminal

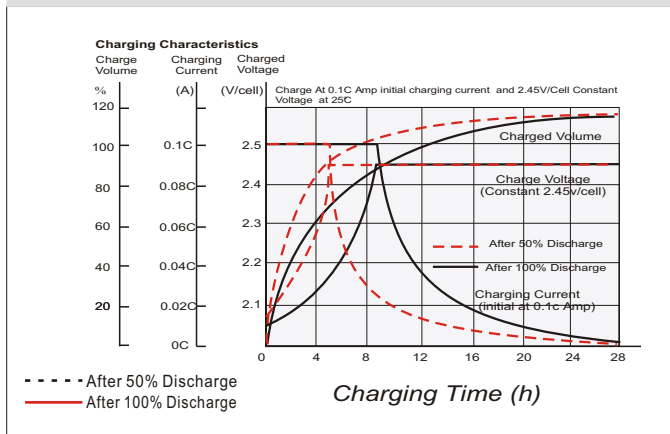
Unit: mm [inches]



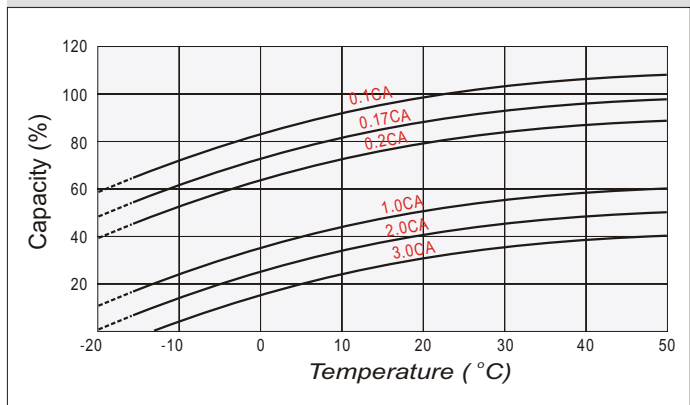
## Discharge characteristics



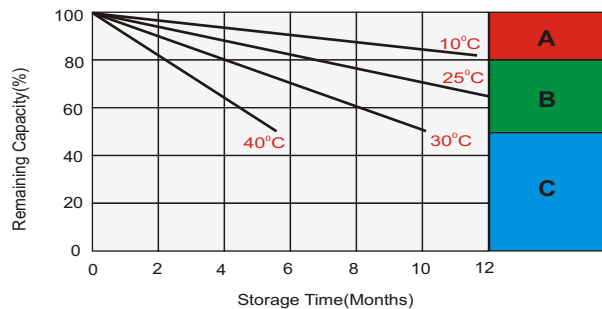
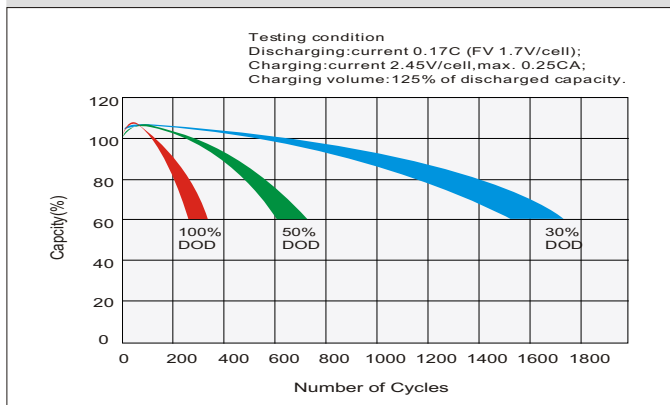
## Cycle use charging characteristics



## Temperature effects in relation to battery capacity



## Cycle Life in Relation to Depth of Discharge



## Self Discharge Characteristics

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