



**Gel Battery  
12V 120Ah**

#### VRLA technology

VRLA stands for Valve Regulated Lead Acid, which means that the batteries are sealed. Gas will escape through the safety valves only in case of overcharging or cell failure. VRLA batteries are maintenance free for life.

#### Sealed (VRLA) Gel Batteries

Here the electrolyte is immobilized as gel. Gel batteries in general have a longer service life and better cycle capacity than AGM batteries.

#### Low Self-Discharge

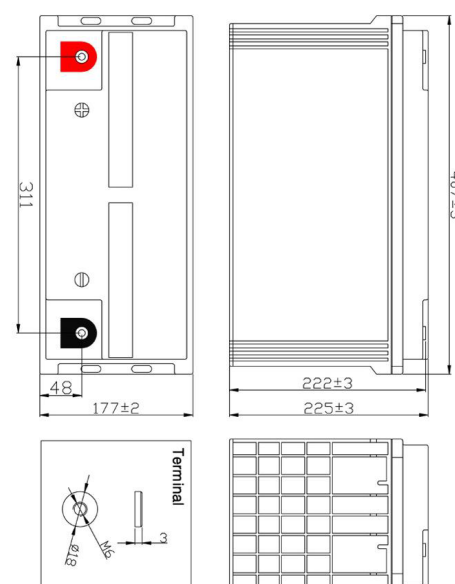
Because of the use of lead calcium grids and high purity materials, NCTS VRLA batteries can be stored during long periods of time without recharge. The rate of self-discharge is less than 2% per month at 20°C. The self-discharge doubles for every increase in temperature by 10°C. NCTS VRLA batteries can therefore be stored for up to a year without recharging, if kept under cool conditions.

#### Exceptional Deep Discharge Recovery

NCTS VRLA batteries have exceptional discharge recovery, even after deep or prolonged discharge. Nevertheless, repeatedly deep and prolonged discharge has a very negative effect on the service life of all lead acid batteries.

#### SPECIFICATIONS:

|                                    |   |                               |
|------------------------------------|---|-------------------------------|
| <b>Nominal Voltage (V)</b>         | 12V (6 cells in series)   |                               |
| <b>Rated Capacity</b>              | 120.0Ah   | (C <sub>10</sub> , 1.8V/cell) |
| <b>Dimensions(mm)</b>              | Length  | 407±3 mm                      |
|                                    | Width   | 177±3 mm                      |
|                                    | Height  | 222±3 mm                      |
|                                    | Total Height  | 225±3 mm                      |
| <b>Nominal Capacity @25°C (Ah)</b> | 20 Hour rate (6.540A to 10.8 volts)   | 130.8Ah                       |
|                                    | 10 Hour rate (12.24A to 10.8 volts)   | 122.4Ah                       |
|                                    | 5 Hour rate (21.00A to 10.8 volts)  | 105.0Ah                       |
|                                    | 1 Hour rate (75.96A to 10.5 volts)  | 75.9Ah                        |
| <b>Approx. Weight</b>              | 35.0 kg   |                               |
| <b>Terminal</b>                    | T13   |                               |
| <b>Max. Discharge Current</b>      | 960A @25°C (5s)   |                               |
| <b>Internal Resistance</b>         | 4mΩ @25°C (Full Charged Battery)  |                               |
| <b>Floating Design Life</b>        | 15 years @25°C (80%DOD≥500 Cycles)  |                               |
| <b>Ambient Temperature</b>         | Charge : -20°C~50°C   |                               |
|                                    | Discharge : -40°C~60°C  |                               |
|                                    | Storage : -20°C~60°C  |                               |
| <b>Container Material</b>          | A.B.S, UL94-HB, UL94-V0, Optional   |                               |
| <b>Self Discharge</b>              | Deep cycle Gel batteries can be stored for more than 6 months at 25°C. Self-Discharge ratio less than 3% per month at 25°C. Please charge batteries before using. |                               |



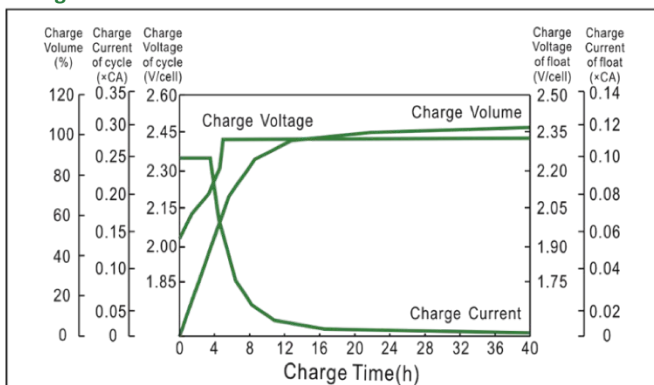
#### CONSTANT CURRENT DISCHARGE CHARACTERISTICS (A), (25°C)

| F.V/Time   | 5min  | 10min | 15min | 30min | 60min | 2H    | 3H    | 5H    | 8H    | 10H   | 20H   |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1.60V/cell | 408.0 | 271.8 | 217.7 | 135.0 | 78.00 | 46.62 | 33.12 | 22.18 | 14.90 | 12.72 | 6.960 |
| 1.70V/cell | 366.0 | 250.2 | 207.0 | 131.4 | 76.92 | 46.02 | 32.52 | 31.65 | 14.66 | 12.54 | 6.780 |
| 1.75V/cell | 330.0 | 231.0 | 197.4 | 127.8 | 75.96 | 45.42 | 32.16 | 21.32 | 14.52 | 12.42 | 6.660 |
| 1.80V/cell | 294.0 | 210.5 | 185.4 | 122.9 | 74.40 | 44.80 | 31.80 | 21.00 | 14.30 | 12.24 | 6.540 |

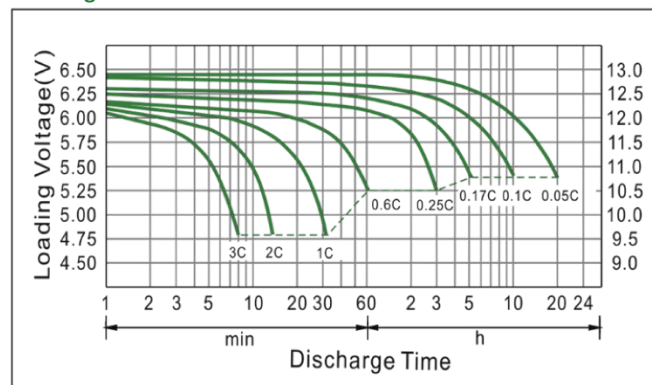
#### CONSTANT WATTAGE DISCHARGE CHARACTERISTICS (WATT), (25°C)

| F.V/Time   | 5min  | 10min | 15min | 30min | 60min | 2H    | 3H    | 5H    | 8H    | 10H   | 20H   |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1.60V/cell | 703.8 | 484.7 | 395.5 | 252   | 149.5 | 90.91 | 65.69 | 44.09 | 29.66 | 25.33 | 13.91 |
| 1.70V/cell | 646.6 | 454.5 | 381.2 | 247.5 | 148.1 | 90.12 | 64.66 | 43.15 | 29.25 | 25.04 | 13.56 |
| 1.75V/cell | 591.3 | 425.4 | 366.8 | 242.5 | 146.9 | 89.33 | 64.11 | 42.61 | 29.04 | 24.84 | 13.32 |
| 1.80V/cell | 534.1 | 393.1 | 347.6 | 235.5 | 144.5 | 88.85 | 63.55 | 42.00 | 28.61 | 24.48 | 13.08 |

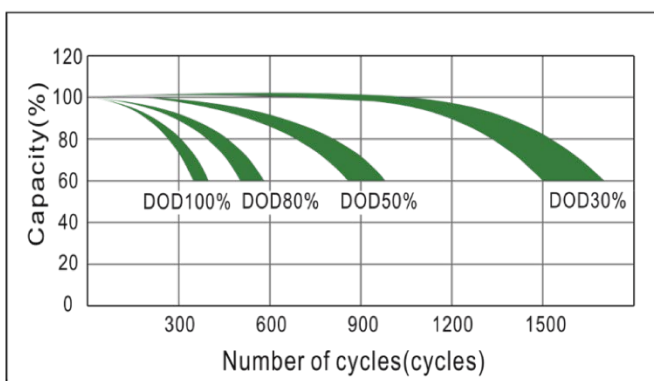
#### Charge Characteristics



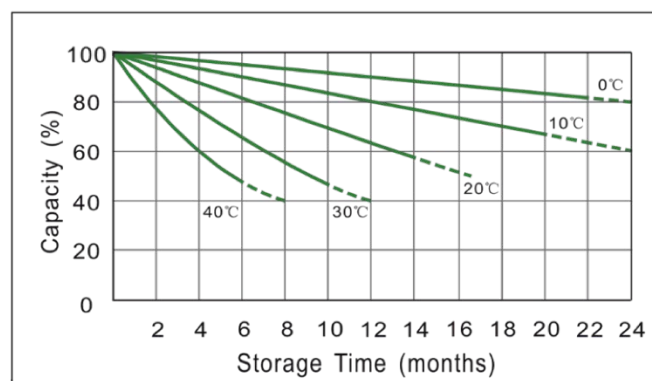
#### Discharge Characteristics



#### Cycle service life in relation to depth of discharge



#### Capacity Storage Characteristics



### CAPACITY FACTORS WITH DIFFERENT TEMPERATURE

| Battery type |          | -20°C | -10°C | 0°C | 5°C | 10°C | 20°C | 25°C | 30°C | 40°C | 45°C |
|--------------|----------|-------|-------|-----|-----|------|------|------|------|------|------|
| 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% |

### MAINTENANCE & CAUTIONS

- Charging Procedure

| Application              | Charging method   | Charge voltage at 25°C | Temperature compensation coefficient of charging voltage | Max. charging current | Temperature |
|--------------------------|---|------------------------|--|-----------------------|-------------|
| For standby power source | Constant voltage charging<br>(With current restriction) | 2.25~2.30 V/cell       | -3mV/°C/cell   | 0.2CA                 | -20~50°C    |
| For cycle service        |   | 2.45~2.50 V/cell       | -4mV/°C/cell   | 0.3CA                 |             |

- Every month, recommend inspection every battery voltage
- Every three months, recommend equalization charge for one time.  
Equalization charge method:  
Step 1: Discharge: 100% rate capacity discharge.  
Step 2: Charge: Max. Current 0.3CA, constant voltage 2.45-2.50V/Cell charge 24h.
- Avoid battery over discharge, especially battery in series connection use. Charged with recommend voltage ensure battery can be full charged. In general, recharge capacity should be 1.1-1.15 times discharge cycles.
- Length of service life will be directly affected by the number of discharge cycles, depth of discharge, Ambient temperature and charging voltage.
- Charge the batteries at least once every six months, if they are stored at 25°C.  
Charging Method:
  - Constant Voltage: -0.2C×2h+2.4~2.45V/cell×24h, Max. Current 0.25CA
  - Constant Current: -0.2C×2h+0.1C×12h
  - Fast: -0.2C×2h+0.3C×4h
- Terminal of torque:

| Bolt     | M5     | M6                | M8              |
|----------|--------|-------------------|-----------------|
| Terminal | T3、T10 | T4、T7、T11、T12、T13 | T5、T6、T8、T9、T14 |
| Torque   | 6~7N.m | 8~10N.m           | 10~12N.m        |

Notice: The manufacturer reserves the right to change and modify the design and specifications without prior notice.  
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