

# SIN12-12 (12V12Ah)

SIN series is a general purpose battery with 5 years design life in float service . It meets with IEC and JIS standards .With up-dated AGM valve regulated technology and high purity raw materials, the SIN series battery has reliable standby service life. It is suitable for UPS/EPS, medical equipment, emergency light and security systems applications



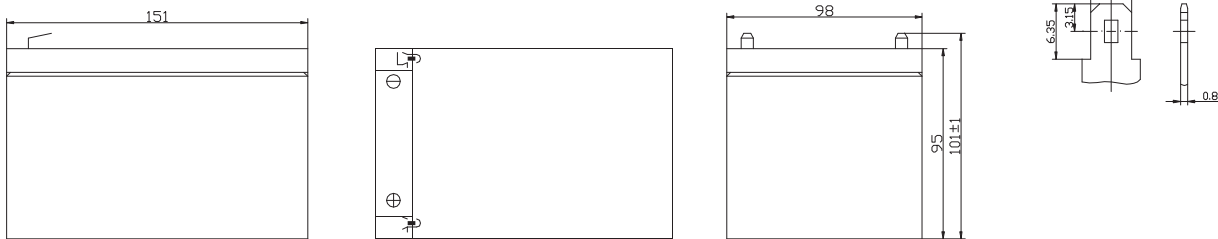
## Specification

|  |   |
|--|---|
| Cells Per Unit                             | 6   |
| Voltage Per Unit                           | 12  |
| Capacity                                   | 12Ah@20hr-rate to 1.75V per cell @25°C  |
| Weight                                     | Approx. 3.8 Kg(Tolerance±4%)  |
| Max. Discharge Current                     | 120 A (5 sec)   |
| Internal Resistance                        | Approx. 16.5 mΩ   |
| Operating Temperature Range                | Discharge: -20°C~60°C<br>Charge: 0°C~50°C<br>Storage: -20°C~60°C  |
| Normal Operating Temperature Range         | 25°C±5°C  |
| Float charging Voltage                     | 13.7 to 13.9 VDC/unit Average at 25°C   |
| Recommended Maximum Charging Current Limit | 3.6 A   |
| Equalization and Cycle Service             | 14.6 to 14.8 VDC/unit Average at 25°C   |
| Self Discharge                             | SINERGY Valve Regulated Lead Acid (VRLA) 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. |
| Terminal                                   | Faston Tab 187(F1)  |
| Container Material                         | A.B.S. UL94-HB, UL94-V0 Optional.   |



## Dimensions

Unit: mm Dimension: 151(L)×98(W)×95(H)



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

| F.V/Time | 5MIN  | 10MIN | 15MIN | 30MIN | 1HR   | 2HR   | 3HR   | 4HR   | 5HR   | 8HR   | 10HR  | 20HR  |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9.60V    | 47.33 | 31.03 | 23.11 | 12.30 | 7.799 | 4.769 | 3.143 | 2.560 | 2.104 | 1.386 | 1.200 | 0.642 |
| 10.0V    | 45.62 | 30.26 | 22.37 | 12.15 | 7.695 | 4.673 | 3.084 | 2.523 | 2.085 | 1.380 | 1.187 | 0.637 |
| 10.2V    | 42.94 | 28.76 | 21.75 | 11.96 | 7.622 | 4.623 | 3.057 | 2.498 | 2.071 | 1.368 | 1.169 | 0.619 |
| 10.5V    | 38.60 | 26.89 | 20.51 | 11.63 | 7.529 | 4.563 | 3.030 | 2.461 | 2.054 | 1.355 | 1.163 | 0.606 |
| 10.8V    | 34.58 | 25.08 | 19.36 | 11.25 | 7.424 | 4.525 | 2.995 | 2.377 | 2.044 | 1.350 | 1.144 | 0.582 |
| 11.1V    | 30.26 | 22.99 | 17.86 | 10.82 | 7.248 | 4.343 | 2.936 | 2.343 | 2.035 | 1.339 | 1.126 | 0.572 |

### CONSTANT POWER DISCHARGE CHARACTERISTICS : W(25°C)

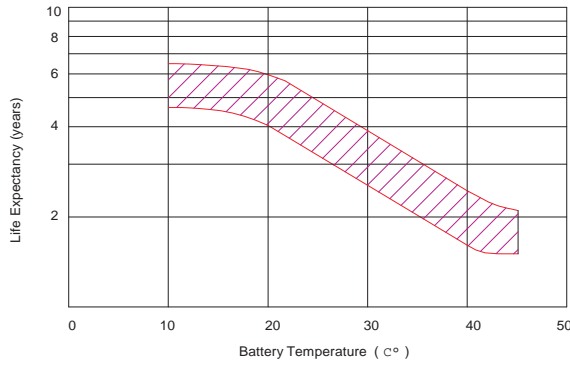
| F.V/Time | 5MIN  | 10MIN | 15MIN | 30MIN | 1HR   | 2HR   | 3HR   | 4HR   | 5HR   | 8HR   | 10HR  | 20HR  |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9.60V    | 513.3 | 340.3 | 255.0 | 140.8 | 93.23 | 56.20 | 37.57 | 30.64 | 25.20 | 16.59 | 14.37 | 7.705 |
| 10.0V    | 500.0 | 333.2 | 251.4 | 139.4 | 91.87 | 55.45 | 36.96 | 30.21 | 24.97 | 16.53 | 14.24 | 7.642 |
| 10.2V    | 475.5 | 320.0 | 248.1 | 138.2 | 91.19 | 54.97 | 36.64 | 29.92 | 24.82 | 16.40 | 14.05 | 7.446 |
| 10.5V    | 434.0 | 306.8 | 235.1 | 135.3 | 89.96 | 54.38 | 36.37 | 29.52 | 24.62 | 16.26 | 13.95 | 7.320 |
| 10.8V    | 391.6 | 287.0 | 222.2 | 132.1 | 88.79 | 53.99 | 35.95 | 28.52 | 24.51 | 16.19 | 13.74 | 7.026 |
| 11.1V    | 345.3 | 267.2 | 209.2 | 128.5 | 86.84 | 52.10 | 35.25 | 28.11 | 24.42 | 16.08 | 13.54 | 6.915 |

All mentioned values are average values(Tolerance±2%).

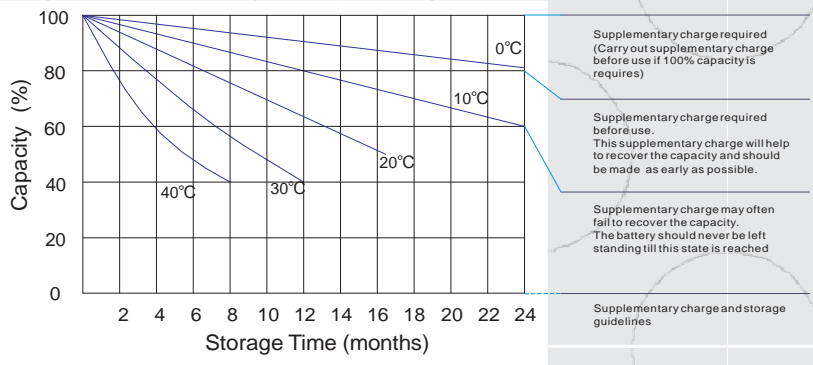
# SIN12-12

# 12V12Ah

**Effect of temperature on long term float life**



**Storage characteristic**



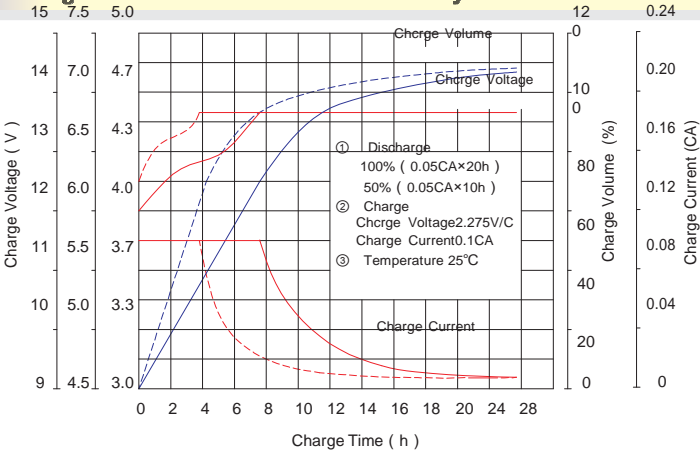
Supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)

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

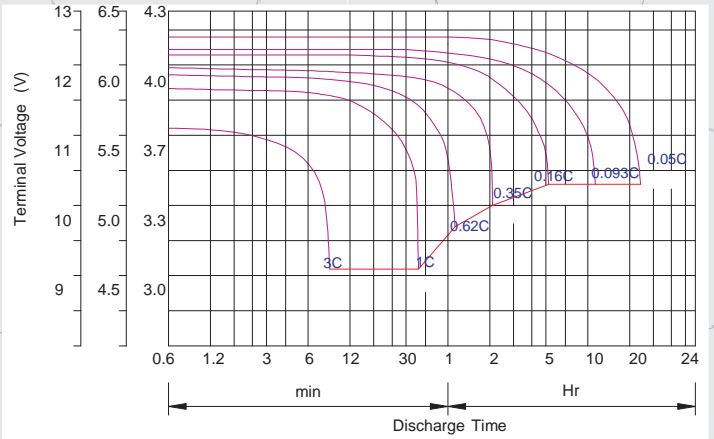
Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this state is reached

Supplementary charge and storage guidelines

**Charge characteristic Curve for standby use**



**Discharge characteristic Curve**



## 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% |

## 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 25°C.**

Charging Method:

|                  |  |
|------------------|--|
| Constant Voltage | -0.2Cx2h+2.4-2.45V/cellx24h, Max. Current 0.3C |
| Constant Current | -0.2Cx2h+0.1Cx12h                              |
| Fast             | -0.2Cx2h+0.3Cx4h                               |

| Bolt     | M5                    | M6               | M8                    |
|----------|-----------------------|------------------|-----------------------|
| Terminal | F3 F4 F13 F18 T25 T26 | F8 F11 F12-1 F15 | F5 F9 F10 F12 F14 F16 |
| Torque   | 6~7N-m                | 8~10N-m          | 10~12N-m              |

## 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.