# DATA SHEET

# FP12-20

FULBAT™
GENERAL PURPOSE BATTERY

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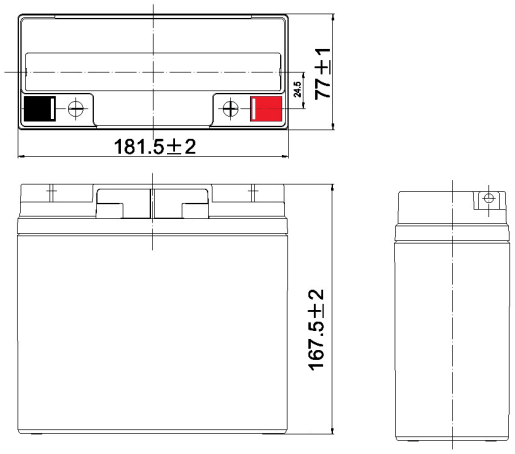
NON-SPILLABLE

AGM

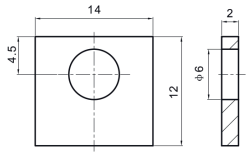
FP Series are general purpose batteries with 5 years design life in float service. With advanced AGM valve regulated technology and high purity raw material, the FP series batteries ensure high performance and reliable standby service life. They have been designed specifically for applications such as security & alarm systems, UPS, Telecom, power grid, medical equipment and emergency lighting. It can also be used for light cycling use. For intensive cycling, the FPC or FPG cyclic ranges are recommended.

## DIMENSIONS & WEIGHT

| | |
|---|---|
| LENGHT | 181.5±2mm |
| WIDTH | 77±1mm |
| TOTAL HEIGHT | 167.5±2mm |
| WEIGHT | 5.78kg (tolerance ± 3%) |




## TERMINAL (MM)




## SPECIFICATION

| | |
|---|---|
| Nominal voltage | 12V (6 cells) |
| Nominal capacity | 20Ah (20hr) |
| Design life | 5 years at 20°C |
| Internal resistance | Approx 15mΩ |
| Terminal | T3 |
| Max. discharge current | 300A (5 sec) |
| Reference capacity | 20.0Ah (20hr, 1.80V/cell, 25°C/77°F)<br>18.6Ah (10hr, 1.80V/cell, 25°C/77°F)<br>17.0Ah (5hr, 1.75V/cell, 25°C/77°F)<br>15.3Ah (3hr, 1.75V/cell, 25°C/77°F)<br>12.6Ah (1hr, 1.60V/cell, 25°C/77°F) |
| Charge voltage<br>Standby use voltage | 13.5V ~ 13.8V 25°C/77°F<br>Temperature compensation: -10mV/°C/Cell |
| Cycle use voltage | 14.4V ~ 15.0V 25°C/77°F<br>Temperature compensation: -15mV/°C/Cell |
| Operating temp. range | Discharge: -15°C ~ 50°C<br>Charge: 0°C ~ 40°C<br>Storage: -15°C ~ 40°C |
| Nominal operating temp. range | 25°C ± 3°C / 77°F ± 5°F |
| Self discharge | Can be stored for up to 6 months at 25°C/77°F and then recharging is recommended. Monthly self-discharge ratio is less than 3% at 25°C/77°F |
| Capacity affected by temp. | 40°C/104°F 103%<br>25°C/77°F 100%<br>0°C/32°F 86% |
| Container material | A.B.S. UL94-HB \| UL94-V0 optional |

## APPLICATIONS

## APPROVALS

ISO9001 - Quality management system
ISO14001 - Environmental management System
Approved for transport by Air (IATA)
Designed in accordance with IEC 60896-21/22

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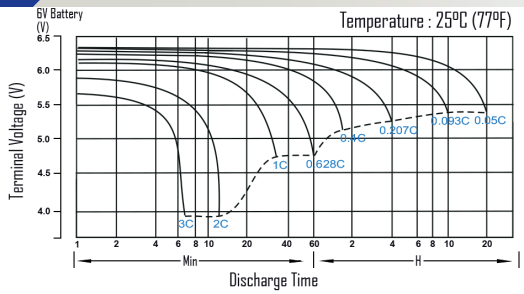
## CONSTANT CURRENT DISCHARGE (AMPERES) AT 25°C/77°F

| F.V/Time | 5min | 10min | 15min | 20min | 30min | 45min | 1h | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 20h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.85V/cell | 38.1 | 29.2 | 24.2 | 20.9 | 16.2 | 11.9 | 10.1 | 5.95 | 4.65 | 3.78 | 3.09 | 2.68 | 2.16 | 1.80 | 0.99 |
| 1.80V/cell | 51.1 | 37.4 | 29.3 | 24.8 | 19.1 | 13.9 | 11.3 | 6.49 | 5.01 | 4.04 | 3.31 | 2.87 | 2.29 | 1.86 | 1.00 |
| 1.75V/cell | 57.6 | 41.1 | 32.0 | 26.6 | 19.8 | 14.4 | 11.8 | 6.73 | 5.10 | 4.13 | 3.40 | 2.95 | 2.33 | 1.91 | 1.01 |
| 1.70V/cell | 63.5 | 44.8 | 34.1 | 28.0 | 20.7 | 15.0 | 12.2 | 6.90 | 5.24 | 4.24 | 3.49 | 3.01 | 2.36 | 1.95 | 1.03 |
| 1.65V/cell | 70.0 | 48.3 | 36.3 | 29.7 | 21.8 | 15.4 | 12.4 | 7.00 | 5.47 | 4.39 | 3.58 | 3.08 | 2.40 | 1.99 | 1.04 |
| 1.60V/cell | 77.2 | 52.4 | 38.8 | 31.7 | 23.0 | 16.0 | 12.6 | 7.30 | 5.63 | 4.52 | 3.70 | 3.14 | 2.42 | 2.01 | 1.05 |

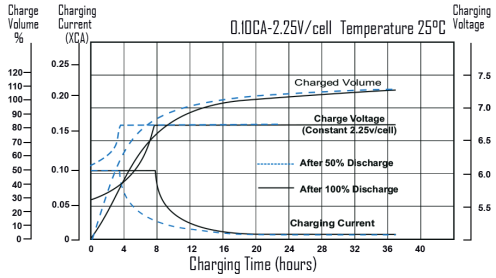
## CONSTANT POWER DISCHARGE (WATTS/CELL) AT 25°C/77°F

| F.V/Time | 5min | 10min | 15min | 20min | 30min | 45min | 1h | 2h | 3h | 4h | 5h | 6h | 8h | 10h | 20h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.85V/cell | 69.6 | 54.0 | 45.2 | 39.5 | 30.9 | 22.9 | 19.4 | 11.6 | 9.07 | 7.40 | 6.05 | 5.26 | 4.26 | 3.57 | 1.96 |
| 1.80V/cell | 92.5 | 68.2 | 53.9 | 46.0 | 35.9 | 26.5 | 21.6 | 12.5 | 9.71 | 7.86 | 6.46 | 5.62 | 4.51 | 3.68 | 1.98 |
| 1.75V/cell | 102.0 | 73.8 | 58.1 | 49.0 | 36.9 | 27.2 | 22.5 | 12.9 | 9.85 | 8.00 | 6.61 | 5.76 | 4.58 | 3.77 | 2.00 |
| 1.70V/cell | 109.3 | 78.6 | 61.2 | 51.1 | 38.2 | 28.2 | 23.1 | 13.2 | 10.1 | 8.20 | 6.77 | 5.87 | 4.64 | 3.84 | 2.03 |
| 1.65V/cell | 118.8 | 84.0 | 64.6 | 53.9 | 40.0 | 28.6 | 23.5 | 13.3 | 10.5 | 8.45 | 6.93 | 5.98 | 4.70 | 3.91 | 2.05 |
| 1.60V/cell | 128.0 | 89.1 | 67.9 | 56.8 | 41.9 | 29.7 | 23.6 | 13.9 | 10.8 | 8.69 | 7.13 | 6.09 | 4.73 | 3.95 | 2.06 |

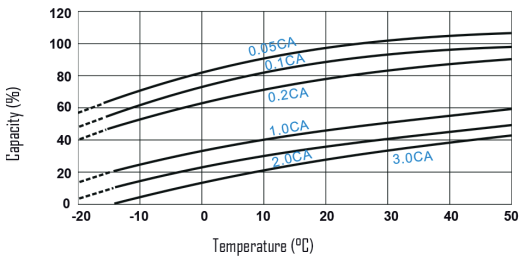
## DISCHARGE CHARACTERISTICS



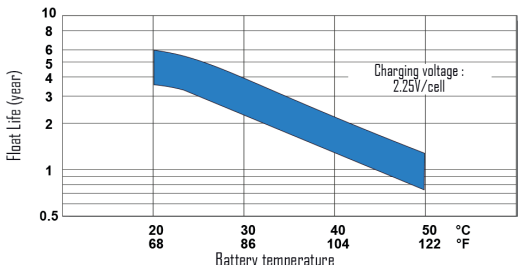

## FLOAT CHARGING CHARACTERISTICS



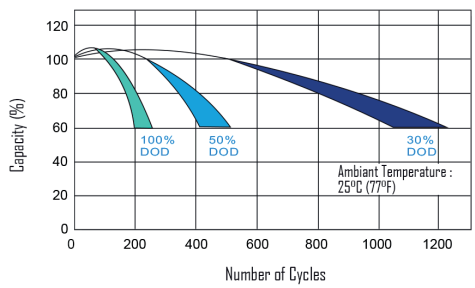

## TEMPERATURE EFFECTS IN RELATION TO BATTERY CAPACITY




## EFFECT OF TEMPERATURE ON LONG TERM FLOAT LIFE

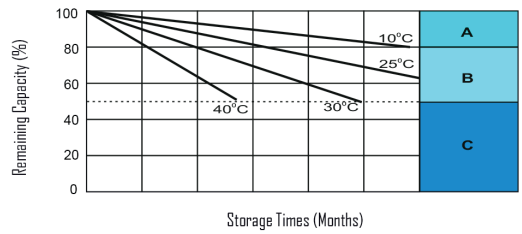



## CYCLE LIFE IN RELATION TO DEPTH OF DISCHARGE




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

## 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 limted 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

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