



# OPzV12-180 (12V180Ah)

Ritar OPzV series is a Valve Regulated Lead Acid battery that adopts immobilized GEL and Tubular Plate technology to offer high reliability and performance. The Battery is designed and manufactured according to DIN standards and with die-casting positive grid and patent formula of active material. OPzV series exceeds DIN standard values with more than 20 years floating design life at 25°C and is even more suitable for cyclic use under extreme operating conditions.

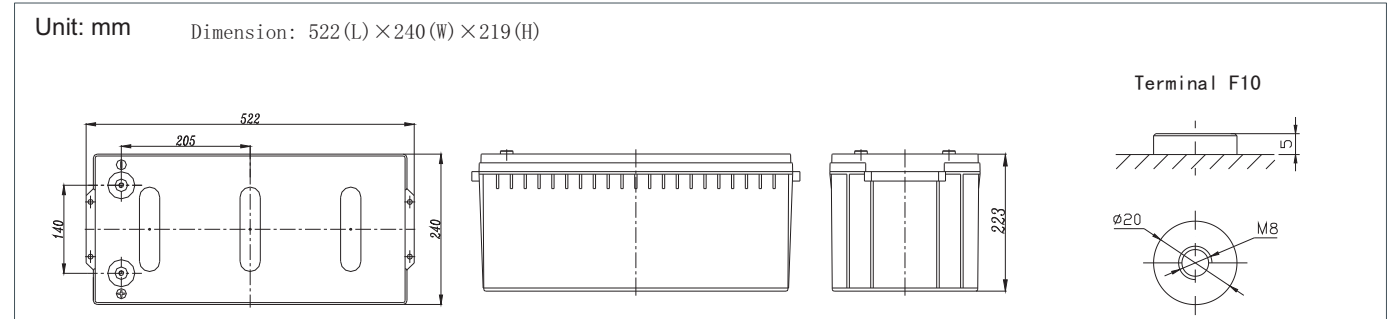


## Specification

|                                      |   |
|--------------------------------------|---|
| Cells Per Unit                       | 6   |
| Voltage Per Unit                     | 12  |
| Capacity                             | 180Ah@10hr-rate to 1.80V per cell @25°C   |
| Weight                               | Approx. 66.5 Kg(Tolerance ±2%)  |
| Max. Discharge Current               | 1800 A (5 sec)  |
| Internal Resistance                  | Approx. 6.6 mΩ  |
| Operating Temperature Range          | Discharge: -40°C~70°C<br>Charge: 0°C~50°C<br>Storage: -20°C~60°C  |
| Normal Operating Temperature Range   | 25°C±5°C  |
| Float charging Voltage               | 13.6 to 13.8 VDC/unit Average at 25°C   |
| Recommended Maximum Charging Current | 36A   |
| Equalization and Cycle Service       | 14.2 to 14.4VDC/unit Average at 25°C  |
| Self Discharge                       | RITAR 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                             | Terminal F10  |
| Container Material                   | A.B.S. UL94-HB, UL94-V0 Optional.   |



## Dimensions



### Constant Current Discharge Characteristics: A (25°C)

| F.V/ Time | 30min | 1h    | 2h    | 3h    | 4h    | 5h    | 6h    | 8h    | 10h   | 20h   |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 11.4      | 88.56 | 70.20 | 49.50 | 37.54 | 30.78 | 26.60 | 23.94 | 18.68 | 16.02 | 8.411 |
| 11.2      | 99.00 | 77.40 | 53.10 | 39.81 | 32.49 | 27.98 | 25.38 | 19.56 | 16.74 | 8.789 |
| 11.0      | 113.4 | 86.40 | 57.60 | 42.43 | 34.20 | 29.19 | 26.28 | 20.43 | 17.46 | 9.167 |
| 10.8      | 126.0 | 93.60 | 59.76 | 43.65 | 34.88 | 29.88 | 27.00 | 20.95 | 18.00 | 9.450 |
| 10.5      | 140.4 | 100.3 | 62.46 | 45.40 | 35.46 | 30.60 | 27.54 | 21.30 | 18.36 | 9.639 |
| 10.2      | 154.8 | 103.5 | 64.26 | 46.27 | 36.08 | 30.96 | 27.90 | 21.48 | 18.54 | 9.734 |
| 9.90      | 159.7 | 110.0 | 66.42 | 47.52 | 36.59 | 31.32 | 28.26 | 21.65 | 18.72 | 9.828 |
| 9.60      | 166.5 | 113.8 | 68.94 | 49.50 | 37.62 | 31.86 | 28.62 | 21.83 | 18.90 | 9.923 |

### Constant Power Discharge Characteristics: W (25°C)

| F.V/ Time | 30min | 1h    | 2h    | 3h    | 4h    | 5h    | 6h    | 8h    | 10h   | 20h   |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 11.4      | 1017  | 808.6 | 574.2 | 436.3 | 361.4 | 314.3 | 284.0 | 224.2 | 195.9 | 102.8 |
| 11.2      | 1119  | 878.1 | 608.9 | 457.1 | 381.0 | 329.4 | 300.2 | 233.6 | 204.3 | 107.2 |
| 11.0      | 1254  | 957.3 | 648.0 | 480.8 | 399.4 | 342.4 | 310.0 | 242.0 | 211.6 | 111.1 |
| 10.8      | 1370  | 1021  | 669.7 | 491.6 | 407.0 | 349.9 | 317.5 | 247.2 | 216.9 | 113.8 |
| 10.5      | 1486  | 1067  | 691.4 | 506.7 | 412.5 | 358.6 | 322.9 | 250.4 | 220.0 | 115.5 |
| 10.2      | 1593  | 1078  | 708.8 | 515.4 | 419.0 | 361.8 | 326.2 | 252.5 | 222.1 | 116.6 |
| 9.90      | 1621  | 1126  | 728.3 | 526.6 | 424.4 | 365.0 | 329.4 | 254.6 | 223.1 | 117.1 |
| 9.60      | 1640  | 1160  | 745.7 | 543.9 | 435.2 | 368.3 | 331.6 | 255.6 | 224.2 | 117.7 |

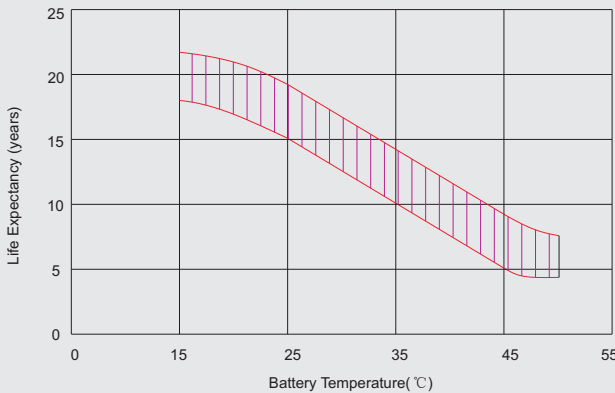
All mentioned values are average values (Tolerance ±2%).

# OPzV12-180

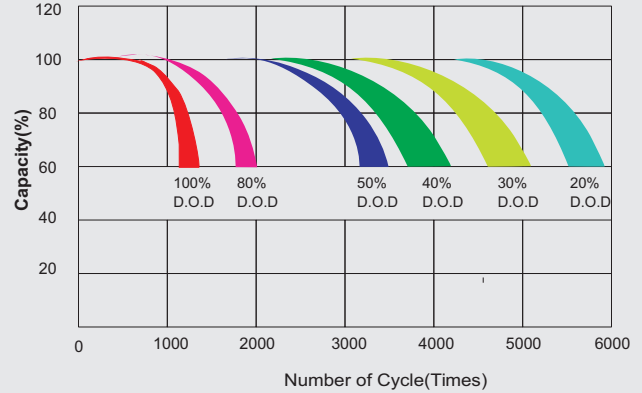
# 12V180Ah



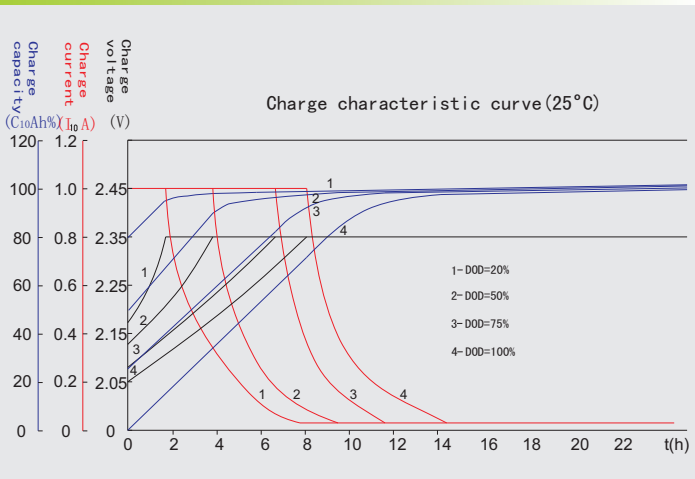
## Effect of temperature on long term float life



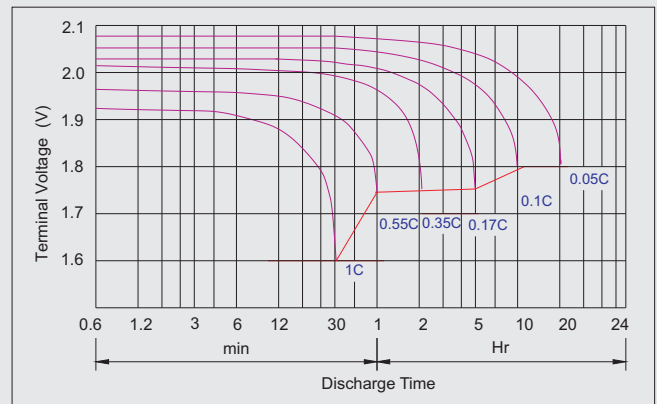
## Life characteristics of cyclic use



## Charge characteristic Curve for cyclic use



## Discharge characteristic Curve



### Long time discharge capacity for solar/wind application

| Model      | Capacity | F.V=1.85VPC |          |          |           |           |           |
|------------|----------|-------------|----------|----------|-----------|-----------|-----------|
|            |          | C24 (Ah)    | C48 (Ah) | C72 (Ah) | C100 (Ah) | C120 (Ah) | C240 (Ah) |
| OPzV12-180 |          | 181.3       | 191.5    | 201.1    | 205.2     | 209.3     | 221.6     |

### Capacity factors vs temperature (OPzV series)

| Temperature | -30°C | -20°C | -10°C | 0°C | 10°C | 20°C | 25°C | 30°C | 40°C | 45°C | 50°C |
|-------------|-------|-------|-------|-----|------|------|------|------|------|------|------|
| Capacity    | 60%   | 75%   | 83%   | 89% | 92%  | 99%  | 100% | 103% | 105% | 107% | 109% |

## Discharge Current VS. Final Voltage

| Discharge current                 | Final voltage (V) |
|-----------------------------------|-------------------|
| $I_{dis} \leq 0.1I_{10}$          | 1.90              |
| $0.1I_{10} < I_{dis} \leq I_{10}$ | 1.85              |
| $I_{10} < I_{dis} \leq 4I_{10}$   | 1.80              |
| $4I_{10} < I_{dis} \leq 6I_{10}$  | 1.75              |
| $6I_{10} < I_{dis} \leq 10I_{10}$ | 1.70              |
| $I_{dis} > 15I_{10}$              | 1.60              |

Charge the batteries at least once every one year, if they are stored at 25°C.

Charging Method:

|                  |  |
|------------------|--|
| Constant Voltage | -0.2Cx2h+2.35~2.40V, 24h, Max. Current 0.2CA |
| Constant Current | -0.2Cx2h+0.1CAx12h                           |

## Maintenance & Cautions

### Float Service:

※ Every month, recommend inspection every battery voltage.

※ Every three months, recommend equalization charge for one time.

Equalization charge method:

Discharge: 40~50% rate capacity discharge.

Charge: Max. current 0.2CA, constant voltage 2.35-2.40V/Cell charge 24h.

※ Effect of temperature on float charge voltage: -3mV/°C/Cell.

※ Service life will be directly affected by the number of discharge

cycles, depth of discharge, ambient temperature and charging method.