



# RA12-110FD (12V110Ah)

RA12-110FD is AGM Deep cycle battery with 10 years floating design life, specially designed for frequent cyclic discharge usage. By using strong grid and specific paste plate, it makes battery have 30% more cyclic life time than standby series. It is applicable for solar energy system, golf cart, electric wheelchair, etc..



## Specification

|  |   |
|--|---|
| Cells Per Unit                             | 6   |
| Voltage Per Unit                           | 12  |
| Capacity                                   | 110Ah@10hr-rate to 1.80V per cell @25°C   |
| Weight                                     | Approx. 33.0 Kg   |
| Max. Discharge Current                     | 1100 A (5 sec)  |
| Internal Resistance                        | Approx. 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                     | 13.6 to 13.8 VDC/unit Average at 25°C   |
| Recommended Maximum Charging Current Limit | 33 A  |
| Equalization and Cycle Service             | 14.6 to 14.8 VDC/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 F9   |
| Container Material                         | A.B.S. (UL94-HB) , Flammability resistance of UL94-V1 can be available upon request.  |



MH28539



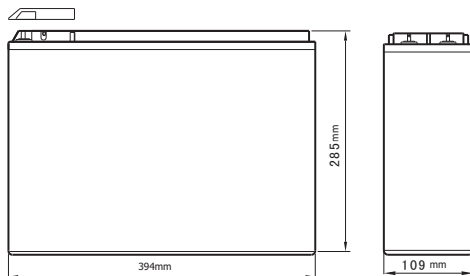
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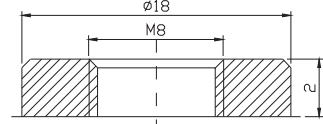
ISO9001:2000 Certificate

## Dimensions

Unit: mm Dimension: 394(L)×109(W)×285(H)



Terminal F9



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

| F.V/Time | 5MIN  | 10MIN | 15MIN | 30MIN | 1HR   | 2HR   | 3HR   | 4HR   | 5HR   | 8HR   | 10HR  | 20HR  |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9.60V    | 322.2 | 254.7 | 199.7 | 121.0 | 71.50 | 41.54 | 29.57 | 24.24 | 19.84 | 13.66 | 11.55 | 6.110 |
| 10.0V    | 312.9 | 242.4 | 195.6 | 118.9 | 71.17 | 41.23 | 29.46 | 24.12 | 19.72 | 13.55 | 11.44 | 5.999 |
| 10.2V    | 303.6 | 233.8 | 191.4 | 116.7 | 70.51 | 40.91 | 29.23 | 24.01 | 19.60 | 13.44 | 11.33 | 5.888 |
| 10.5V    | 272.6 | 215.7 | 182.3 | 115.8 | 69.85 | 40.60 | 29.12 | 23.79 | 19.37 | 13.33 | 11.22 | 5.777 |
| 10.8V    | 246.1 | 196.7 | 168.0 | 113.9 | 68.20 | 39.87 | 28.33 | 23.23 | 19.02 | 13.11 | 11.11 | 5.666 |
| 11.1V    | 211.1 | 175.8 | 150.7 | 105.5 | 64.79 | 38.10 | 27.08 | 22.10 | 18.20 | 12.55 | 10.78 | 5.332 |

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

| F.V/Time | 5MIN | 10MIN | 15MIN | 30MIN | 1HR   | 2HR   | 3HR   | 4HR   | 5HR   | 8HR   | 10HR  | 20HR  |
|----------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9.60V    | 3399 | 2713  | 2169  | 1348  | 826.2 | 489.6 | 351.9 | 288.9 | 236.7 | 163.1 | 138.1 | 73.26 |
| 10.0V    | 3332 | 2630  | 2138  | 1331  | 824.2 | 487.0 | 352.0 | 288.5 | 236.1 | 162.4 | 137.2 | 71.99 |
| 10.2V    | 3272 | 2560  | 2114  | 1322  | 817.9 | 484.1 | 350.5 | 287.9 | 235.3 | 161.3 | 136.0 | 70.65 |
| 10.5V    | 2978 | 2384  | 2019  | 1312  | 810.5 | 480.5 | 349.1 | 285.2 | 232.5 | 160.0 | 134.6 | 69.32 |
| 10.8V    | 2721 | 2187  | 1884  | 1298  | 795.6 | 474.4 | 339.6 | 278.7 | 228.3 | 157.3 | 133.3 | 67.99 |
| 11.1V    | 2361 | 1984  | 1716  | 1215  | 761.5 | 456.8 | 324.9 | 265.2 | 218.5 | 150.6 | 129.3 | 63.99 |

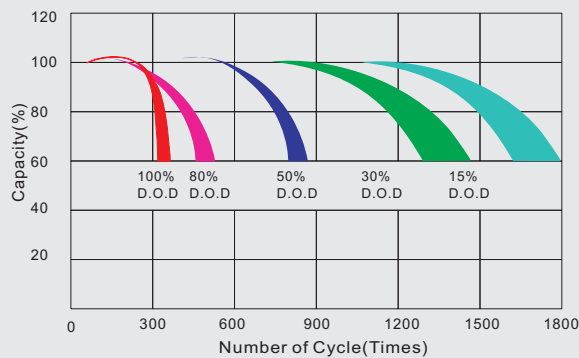
All mentioned values are average values.

# RA12-110FD

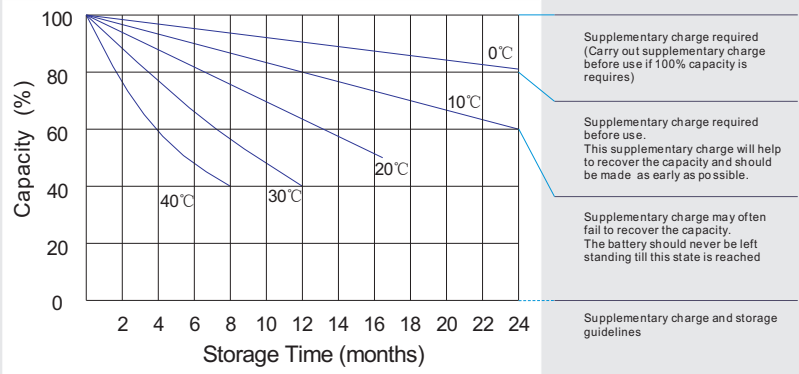
12V110Ah



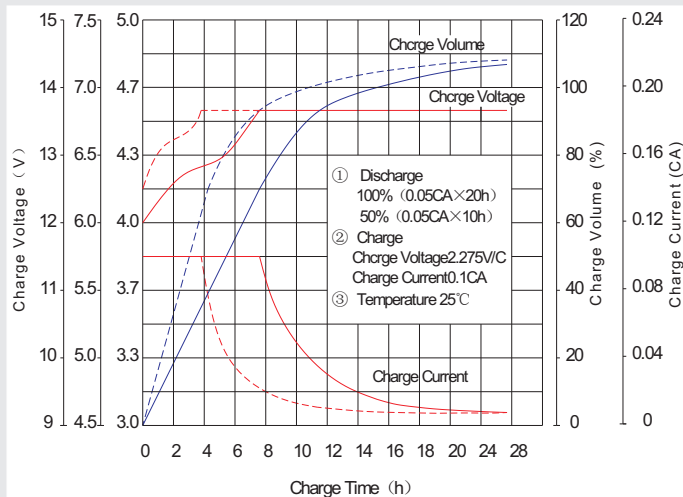
## Life characteristics of cyclic use



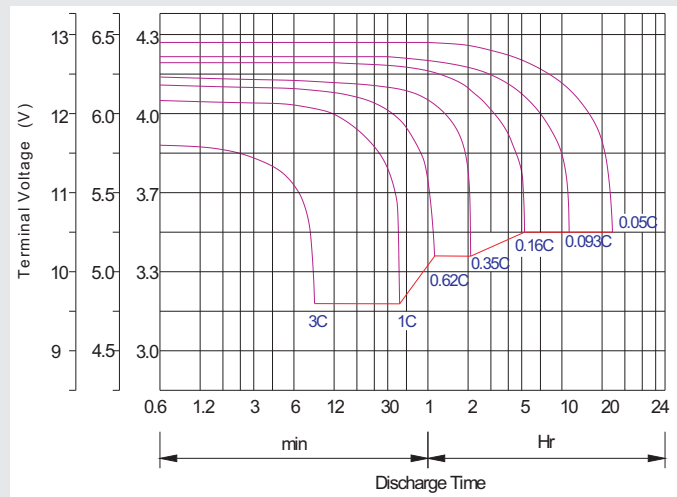
## Storage characteristic



## Charge characteristic curve for cyclic 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 |

## Maintenance & Cautions

### Cycle service

- ※ Avoid battery over discharge, especially battery series connection use.
- ※ Charged with recommend voltage, ensure battery can be full recharged.
- In general, recharge capacity should be 1.1-1.15 times discharge capacity.
- ※ Effect of temperature on cycle charge voltage: -4mV/°C/Cell.
- ※ There are a number of factors that will affect the length of cyclic service.
- The most significant are depth of discharge, ambient temperature, discharge rate, and the manner in which the battery is recharged.
- Generally speaking, the most important factors is depth of discharge.

**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 0.3CA |
| Constant Current | -0.2Cx2h+0.1CAx12h                              |
| Fast             | -0.2Cx2h+0.3CAx4.0h                             |