

Limited Warranty for Batteries

Amosolar Co., Ltd. – manufacturer of storage batteries, hereinafter called the “Company”, warrants our batteries to be free from defects in materials and workmanship under normal use and service and under normal operating conditions as per the detailed terms and conditions outlined in this policy. Its obligation under this warranty is limited to repairing or replacing, at its sole discretion, such defective products. All liability under this warranty will cease on the expiration of the warranty period.

Warranty Conditions

- Warranty is against manufacturing defects only.
- Warranty is for **“specified period” from date of sale from the “Company” / from the Authorized National Distributor, OR from date of installation at site of original end customer**, whichever is earlier. Warranty is restricted and conditional for use under certain applications. **Refer Annexure I for details of warranty period.**
- For determining whether warranty is applicable, the End Customer / Channel Partner /OEM has to produce the copy of the purchase invoice from the Company/National Distributor with the serial number mentioned on the invoice. In the absence of a proof of purchase, warranty will be determined from the product serial number.
- End customers / Channel Partners / OEM’s are advised to log in a service request with email to info@amo-solar.com. Warranty replacement will be given once the Company technician has inspected the customer site and ascertained the cause of failure. The channel partner / OEM may offer standby batteries if required, but the defective batteries should be kept at site to enable the technician to carry out tests properly.
- With regard to claims the Company's decision is final and binding. The right to determine whether or not a battery needs recharge or replacement rests with the Company.
- In case the battery is replaced, the defective battery will become the property of the Company and no scrap rebate will be given for it. The warranty period on the battery being replaced shall commence from the date of sale of the original battery and not from the day it was replaced.
- Adjudication and settlement of the claim is a time bound process since the battery has to be tested for the reported failure. The dispatch of batteries would be done from nearest company location where the replacement battery is available and through reputed courier companies, and timeframe for resolution is based on estimated shipment times. Any delay in shipment due to reasons beyond the control of the company will not constitute any breach of commitment on resolution times.
- In case a battery model is phased out, the company reserves the right to provide any other model of the same capacity suited to the application as settlement of warranty.
- Routine maintenance of Flooded Batteries are not in scope of warranty or support from the company. The purchaser of the battery is required to understand the maintenance requirements from where they're purchasing the battery, and accordingly adhere to the same, failing which warranty will be void.
- Charging of discharged batteries at customer site by company technician is not in scope of warranty.
- Any service or support beyond the scope of warranty will be provided on a “best effort” basis at a cost.
- In case of any assistance, customers are requested to contact the company service center / write to info@amo-solar.com.
- Customers are deemed to have read, understood and agreed to these conditions at the time of purchase.

Warranty Exclusions

- If used in any application other than specified by Company. The list of applications approved for each type of battery is provided in specification datasheet. If the application is not listed in the specification datasheet, the user is advised to check with the company on warranty applicability with respect to the specific application prior to purchase.
- If there's any physical damage or bulge in the battery due to overcharging.
- If any wires have been soldered on the terminals.
- If the container, covers and the terminals are damaged due to negligent maintenance, tampering or destroyed in accident such as fire, wreckage or explosion, or damage caused by any abuse or neglect, or any cause or calamity beyond human control.
- If the batteries connected in a string are of different AH capacities or combined with other makes.
- Due to faulty UPS system, incorrect charging or over charging.
- If flooded batteries are not maintained on a periodic basis as per the usage guidelines, resulting in deterioration of the plates and diminished battery performance or failure.
- If the battery is subject to misuse whatsoever or if battery has not been charged, discharged, stored or serviced in accordance with the manufacturer's instructions.

For getting the maximum life and performance out of the battery the following recommendations have to be followed.

Operating environment

- Temperature of 15 --- 30 degree Celsius. Recommended normal operating temperature is between 25 --- 27 degree Celsius. High temperature will reduce battery life dramatically. A ten---degree rise in temperature will reduce battery life by half for VRLA sealed maintenance free batteries.
- Relative Humidity less than 90%
- Ensure adequate ventilation where the batteries are fitted.
- Avoid direct sunshine
- Keep far from fire and heat
- Keep far from chemical reagent or solvent
- Keep battery clean and dry.

Safety

- There's no free electrolyte present in the VRLA maintenance free battery to affect the customer during handling. However acid can leak due to container crack or damage. Flooded batteries have free acid, and will spill if not handled carefully. If exposed to acid, do the following.
- Drops of acid on clothing: Treat with soap and water. Rinse it with large quantity of water before drying it.
- Drops of acid in eyes: Rinse continuously for about 5 minutes in clean running water and then immediately consult a doctor.
- Batteries should not be kept in air tight enclosures / closed units / systems which does not have ventilation. Adequate ventilation should be provided.

Charging & Discharging Requirements

- Recommended float Voltage of 13.6---13.8V per 12V battery module. Maximum float charging voltage should not exceed 13.8V per 12V battery at 27 degree Celsius. Recommended Boost Voltage is 14.2V to 14.4V at 27 degree Celsius. If the ambient temperature is higher then float voltage should reduce by 0.004V per cell or 0.025V per 12V battery for every degree rise in temperature. This is the most misunderstood aspect of battery charging since even a miniscule increase in charging voltage leads to overcharge resulting in inherent water loss in the battery leading to loss of life and performance.
- Charging current of maximum 20% of C20 capacity. i.e. for a 100AH battery maximum charging current should be 20 Amps. As regards minimum charging current, batteries need minimum of 10% of their capacity as charge current in order to achieve 100% charge within the recharge time specified by manufacturers. A lower charging current does not affect battery life, but if the power outages are frequent and the battery does not reach full charge, it leads to reduction of battery life. On the other hand higher charging current beyond 20% results in faster charging but again affects battery life. It's very important that charging current is between 10% to 20% of battery capacity to obtain maximum battery life.
- Discharge current should be between 0.5 ~ 3 C20A.
- A normal gel VRLA battery has a life of 500 cycles of charge/discharge cycles at 90% depth of discharge at normal operating temperature of 25 --- 27 degree Celsius. Lower depths of discharge will result in longer cycle life. Please refer to the individual battery technical specifications for exact data. Correct sizing of the battery depending on load and backup time requirement will result in optimal life and performance
- Discharge end voltage should be more than or equal to 1.75V per cell or 10.5V for a 12V battery i.e the battery should not be discharged below 10.5V. For high rate discharges from 1C to 3C the end voltage can be reduced up to 9.6V. Refer the battery technical specification table for exact values.
- After a discharge, charge the batteries immediately within 24 hours to prevent sulphation of the plates and / or hydrations shorts.

Installation requirements

- Check individual battery voltages and ensure open circuit voltage (OCV) is above 12.8V and all batteries being installed in a string are within +/- 0.18V of each other. If the battery voltages vary beyond this, then the battery voltages have to be equalized. Failure to do so will lead to early battery failures.
- Connect batteries in such a way that OCV's are in descending order from the positive terminal of the UPS i.e. If the battery voltages in a 4 battery system are 12.81V, 12.83V, 12.84V & 12.81V then batteries should be connected in the following order from the positive terminal of the UPS, 12.84V, 12.83V, 12.81V, 12.81V.
- Connect the right terminal, choose the appropriate cable, and install the connectors firmly. Use a torque wrench and terminal protection to avoid short circuit.
- Ensure batteries are placed on a rack insulated from the ground. Use rubber or wooden strips under the rack legs. If batteries are placed on the ground directly, ensure it's placed on a rubber mat or wooden slab or any insulated material to prevent grounding.
- Use battery in a good ventilated room / location
- Check for proper torque at terminal bolt connections.

Battery Stocking requirements

- Battery should be stocked in temperature ideally between 10 --- 30 degree Celsius and the storage area should be well ventilated.
- Avoid direct sunshine and keep far away from heat sources, chemical reagents or other solvents
- Recharge the battery once every 3 months if kept in stock. Charging current of 0.15C20A and a boost charge voltage of 2.45V/cell for a period of 5 --- 8 hours.



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Handling used batteries

- It is the responsibility of the user to ensure that used batteries are properly disposed by returning them to the dealer / manufacturer / authorized battery recycler.
- Do not discard the battery in trash or give away or sell to an unauthorized person.
- Please note the violations of these guidelines may lead to legal action / prosecution by the government authorities.

Contact:

AMOSOLAR CO., LTD.

Address: Room 605, Greenland Lanhai International Building, 210 Qianshan Road, Shushan District, Hefei City, Anhui Province

Web: www.amo-solar.com

Email: info@amo-solar.com

ANNEXURE I

Sl.No.	Battery Rating	Warranty Period
1.	GEL VRLA Batteries: 12V 24AH to 12V 250AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
2.	GEL VRLA Batteries: 2V 50AH to 2V 3000AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
3.	Tubular Gel Batteries OPzV / Opzs: 2V 200AH to 2V 3000AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
4.	AGM VRLA Batteries: 6V 2.8AH to 6V 12AH 12V 1.3AH to 12V 26AH 12V 33AH to 12V 250AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
5.	Front Terminal: 12V 50AH to 12V 180AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
6.	AGM VRLA Deep Cycle Batteries: 12V 24Ah to 12V 250AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
7.	Deep Cycle Batteries: 12V 24AH to 12V 250AH	36 months from installation or 37 months from date of supply from company, whichever is earlier
8.	Lithium Battery 12V 24V 48V 51.2V Series	60 months from installation or 61 months from date of supply from company, whichever is earlier

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