

An American National Standard

IEEE Recommended Practice for Installation and Maintenance of Lead-Acid Batteries for Photovoltaic (PV) Systems

Sponsor
**IEEE Standards Coordinating Committee 21
Photovoltaics**

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Foreword

(This Foreword is not a part of ANSI/IEEE Std 937–1987, IEEE Recommended Practice for Installation and Maintenance of Lead-Acid Batteries for Photovoltaic (PV) Systems.)

This standard applies to all terrestrial photovoltaic power systems, regardless of size or application, that contain storage subsystems.

The installations addressed herein apply to the operation of an ac, ac/dc, or dc system with the battery, PV generating subsystem, and load all connected in parallel. Ideally, the PV generating subsystem should be adequate to supply the normal load and maintain the battery(s) in a charged condition.

Proper maintenance is primary to ensure satisfactory operation, help prolong battery life, and aid in determining the need for battery replacement.

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IEEE Recommended Practice for Installation and Maintenance of Lead-Acid Batteries for Photovoltaic (PV) Systems

1. Scope

This recommended practice provides design considerations and procedures for storage, location, mounting, ventilation, assembly, and maintenance of lead-acid storage batteries for photovoltaic power systems. Safety precautions and instrumentation considerations are also included.

While this document gives general recommended practices, battery manufacturers may provide specific instructions for battery installation and maintenance.

2. Definitions

The following definitions apply specifically to this recommended practice. For other definitions see ANSI/IEEE Std 100-1984 [1].¹

capacity (C): Generally, the total number of ampere-hours that can be withdrawn from a fully charged battery at a specific discharge rate and electrolyte temperature, and to a specific cutoff voltage.

cell: The basic electrochemical unit, characterized by an anode and a cathode used to receive, store, and deliver electrical energy. For a lead-acid system, the cell is characterized by a nominal 2 V potential.

dry-charged battery: A battery in which the electrolyte has been removed for ease in shipping or storage or both.

life: The period during which a fully charged battery is capable of delivering at least a specified percentage of its capacity, generally 80%.

3. References

[1] ANSI/IEEE Std 100-1984, IEEE Standard Dictionary of Electrical and Electronic Terms.²

[2] ANSI /IEEE Std 928-1986, IEEE Recommended Criteria for Terrestrial Photovoltaic Power Systems.

[3] ANSI/NFPA 70-1987, National Electrical Code.

[4] Illuminating Engineering Society Handbook 1984.³

[5] NEMA IB 1-1982, Definitions for Lead-Acid Industrial Storage Batteries.⁴

[6] NEMA IB 7-1980, Testing Arresters Vents Used on Lead-Acid Industrial Storage Batteries for Stationary Service.

¹ The numbers in brackets correspond to those of the references in Sections 3 of this standard.

² ANSI documents are available from the Sales Department, American National Standards Institute, 1430 Broadway, New York, NY 10018.

³ IES publications are available from the Illuminating Engineering Society, 345 East 47th Street, New York, NY 10017.

⁴ NEMA documents are available from the National Electrical Manufacturers Association, 2101 L Street, NW Washington, DC 20037.