

INTERNATIONAL STANDARD

**Electrical energy storage(EES) systems -
Part 4-3: Protection requirements of battery-based energy storage systems
(BESS) according to environmental conditions**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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systems (BESS) according to environmental conditions**

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IEC 62933-4-3 has been prepared by IEC technical committee TC120: Electrical Energy Storage (EES) systems. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
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Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 62933 series, published under the general title *Electrical energy storage (EES) systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

According to reports over the world, BESS have been influenced by environmental and climatic conditions of the areas where they are installed. The BESS can be particularly affected by temperature, humidity, and vibration and natural disasters. In order to minimize the impacts, this document is expected to be of great help in stable installation and operation by presenting the causes, risk factors and the appropriate measures for each environmental condition when installing the BESS.

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1 Scope

This part of IEC 62933 applies to the effects of the environmental conditions on battery-based energy storage systems (BESS). This document addresses these effects and identifies causes, chains of events and final effects on the BESS. Based on those effects, preventative or mitigating measures are described. Typical environmental effects on the BESS include, but are not limited to, the effects of lightning, seismic activities, water, air, flora, fauna, and humans. The described measures focus on the entire BESS including all power and communication connections and their point of connections (POCs).

The scope of this document is limited to BESS specific requirements and operating conditions. Specific design or safety requirements of individual BESS subsystems are excluded from this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62933-1:2024, *Electrical energy storage (EES) systems - Part 1: Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62933-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

environmental factor

physical, social and attitudinal environment in which people live and conduct their lives

[SOURCE: ISO 9999:2022, 3.7]

3.2

risk analysis

systematic use of available information to identify hazards and to estimate the risk

[SOURCE: ISO/IEC Guide 51:2014, 3.10]

3.3

seismic action

action caused by earthquake ground motions

[SOURCE: ISO 2394:2015, 2.3.15]

3.4

human factors

environmental, organisational, and job factors that influence behaviour of work in a way that can affect health and safety outcomes including the performance of critical safety systems