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COMMENTED VERSION

Electric vehicle battery swap system -
Part 2: Safety requirements

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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This commented version (CMV) of the official standard IEC 62840-2:2025 edition 2.0 allows the user to identify the changes made to the previous IEC 62840-2:2016 edition 1.0. Furthermore, comments from IEC TC 69 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 62840-2 has been prepared by IEC technical committee 69: Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks. It is an International Standard.

This second edition cancels and replaces the first edition published in 2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) expands the scope to encompass both swappable battery systems (SBS) and handheld swappable battery systems (HBS);
b) introduces stricter interoperability requirements through detailed system interface specifications and defined state transition protocols;
c) enhances data security by defining safety message transmission protocols and integrating telecom network requirements;
d) increases electrical safety protection levels for battery swap stations (BSS) with specified capacitor discharge time limits to mitigate electric shock risks;
e) introduces enhanced mechanical safety requirements for automated battery handling systems, with technical alignment to ISO 10218-1 and ISO 10218-2;
f) strengthens overload and short-circuit protection for BSS through standardized testing methods and overcurrent protection specifications;
g) defines upgraded electromagnetic compatibility (EMC) standards to ensure system resilience against external interference, supplemented with EMC-related functional safety measures.

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

Draft	Report on voting
69/1046/FDIS	69/1062/RVD

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.

This document is to be read in conjunction with IEC 62840-1:2025.

In this document, the following print types are used:

– *test specifications: in italic type;*

The following differing practices of a less permanent nature exist in the countries indicated below:

– 7.5.4: the battery passport defines the necessary data to be transmitted (EU).
– 7.6.1: RCDs of type AC may be used (JP).
– 7.6.1: a device which measures leakage current over a range of frequencies and trips at pre-defined levels of leakage current, based upon the frequency, is required (US).