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**BSI Standards Publication**

## **Safety specifications**

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Part 3: Electrical safety

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## National foreword

This British Standard is the UK implementation of ISO 6469-3:2018+A1:2020. It supersedes BS ISO 6469-3:2018, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee PEL/69, Electric vehicles.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2020  
Published by BSI Standards Limited 2020

ISBN 978 0 539 02602 3

ICS 43.120

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2018.

### Amendments/corrigenda issued since publication

Date	Text affected
30 April 2020	Implementation of ISO amendment A1:2020

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Third edition  
2018-10-01

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# Electrically propelled road vehicles — Safety specifications —

## Part 3: Electrical safety

*Véhicules routiers électriques — Spécifications de sécurité —  
Partie 3: Sécurité électrique*



Reference number  
ISO 6469-3:2018(E)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. [www.iso.org/directives](http://www.iso.org/directives)

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. [www.iso.org/patents](http://www.iso.org/patents)

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

This document was prepared by Technical Committee ISO/TC 22 *Road vehicles*, Subcommittee SC 37, *Electrically propelled vehicles*.

This third edition cancels and replaces the second edition (ISO 6469-3:2011), which has been technically revised.

The main changes compared to the previous edition are as follows:

- extension of pure electric shock protection to all electric safety requirements including those against thermal incidents;
- introduction of definitions and requirements for new voltage classes B1 and B2;
- addition of specific requirements for capacitive discharge;
- new test specification for the isolation resistance monitoring system; and
- new requirements and test for touch current.

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# Safety specifications —

## Part 3: Electrical safety

**IMPORTANT** — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

### 1 Scope

This document specifies electrical safety requirements for voltage class B electric circuits of electric propulsion systems and conductively connected auxiliary electric systems of electrically propelled road vehicles.

It specifies electrical safety requirements for protection of persons against electric shock and thermal incidents.

It does not provide comprehensive safety information for manufacturing, maintenance and repair personnel.

NOTE 1 Electrical safety requirements for post-crash are described in ISO 6469-4.

NOTE 2 Electrical safety requirements for conductive connections of electrically propelled road vehicles to an external electric power supply are described in ISO 17409.

NOTE 3 Specific electrical safety requirements for magnetic field wireless power transfer between an external electric power supply and an electrically propelled vehicle are described in ISO PAS 19363.

NOTE 4 Electrical safety requirements for motorcycles and mopeds are described in ISO 13063.

### 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.

ISO 7010, *Graphical symbols — Safety colours and safety signs — Registered safety signs*

ISO 17409, *Electrically propelled road vehicles — Connection to an external electric power supply — Safety requirements*

ISO 20653, *Road vehicles — Degrees of protection (IP code) — Protection of electrical equipment against foreign objects, water and access*

IEC 60664 (all parts), *Insulation coordination for equipment within low-voltage systems*

IEC 60950-1, *Information technology equipment — Safety — Part 1: General requirements*

IEC 60990:2016, *Methods of measurement of touch current and protective conductor current*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.