



SLOVENSKI STANDARD
SIST EN ISO 18246:2023

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Mopedi in motorna kolesa na električni pogon - Varnostne zahteve za prevodno (kabelsko) priključitev na zunanje električno napajanje (ISO 18246:2023)

Electrically propelled mopeds and motorcycles - Safety requirements for conductive connection to an external electric power supply (ISO 18246:2023)

Elektrisch angetriebene Mopeds und Motorräder - Sicherheitsanforderungen für die leitende Verbindung mit einer externen Energieversorgung (ISO 18246:2023)

Cyclomoteurs et motorcycles à propulsion électrique - Exigences de sécurité relatives au couplage conducteur à une station extérieure d'alimentation d'énergie externe (ISO 18246:2023)

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Electrically propelled mopeds and motorcycles - Safety requirements for conductive connection to an external electric power supply (ISO 18246:2023)

Cyclomoteurs et motocycles à propulsion électrique - Exigences de sécurité relatives au couplage conducteur à une station extérieure d'alimentation d'énergie externe (ISO 18246:2023)

Elektrisch angetriebene Mopeds und Motorräder - Sicherheitsanforderungen für die leitende Verbindung mit einer externen Energieversorgung (ISO 18246:2023)

This European Standard was approved by CEN on 24 March 2023.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	3

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European foreword

This document (EN ISO 18246:2023) has been prepared by Technical Committee ISO/TC 22 "Road vehicles" in collaboration with Technical Committee CEN/TC 301 "Road vehicles" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2023, and conflicting national standards shall be withdrawn at the latest by October 2023.

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This document supersedes EN ISO 18246:2017.

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The text of ISO 18246:2023 has been approved by CEN as EN ISO 18246:2023 without any modification.

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STANDARD

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**Electrically propelled mopeds and
motorcycles — Safety requirements
for conductive connection to an
external electric power supply**

*Cyclomoteurs et motocycles à propulsion électrique — Exigences de
sécurité relatives au couplage conducteur à une borne d'alimentation
électrique externe*

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CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
3.1 General.....	2
3.2 Charging.....	4
3.3 Connection.....	5
3.4 Electrical safety.....	6
4 Environmental and operational conditions	9
5 General requirements	10
6 Connection between the plug or vehicle couplers and RESS of the vehicle	10
6.1 General.....	10
6.1.1 Connections among charger, RESS, and vehicle.....	10
6.1.2 General requirements for connection.....	12
6.1.3 Requirements for connection or no connection to the earth.....	12
6.1.4 Specific requirements for the vehicle inlet.....	18
6.1.5 Vehicle behaviour during charging.....	19
6.2 AC connection.....	19
6.2.1 Requirements for the connection to AC supply network (mains).....	19
6.2.2 Requirements of connection and/or disconnection process in AC contacts.....	19
6.2.3 Protection from unintended voltage for AC connection.....	19
6.2.4 Additional requirements for AC electric power supply.....	20
6.3 DC connection.....	20
6.3.1 Requirements of connection and/or disconnection process in DC contacts.....	20
6.3.2 Protection from unintended voltage for DC connection.....	20
6.3.3 Specific requirements.....	20
7 Protection against electric shock	21
7.1 General requirements.....	21
7.1.1 General requirements for connected sections of a circuit.....	21
7.1.2 General requirements for voltage class A.....	21
7.1.3 General requirements for voltage class B.....	21
7.2 Basic protection.....	21
7.3 Fault protection and additional measures.....	21
7.3.1 Equipotential bonding.....	21
7.3.2 Alternative protection measures.....	22
7.3.3 Requirements for protective barrier or enclosures.....	22
7.3.4 Requirements for insulation.....	23
7.4 Protection against access to hazardous-live-parts.....	23
7.4.1 General.....	23
7.4.2 Requirements of the degree of protection of barrier/enclosures against electric shock.....	23
7.5 Insulation coordination.....	23
7.5.1 AC connection.....	23
7.5.2 DC connection.....	24
7.6 Touch current.....	24
8 Protection against thermal incident	24
8.1 Overcurrent protection.....	24
8.1.1 Overload protection.....	24
8.1.2 Short circuit protection for AC connection.....	24
8.1.3 Short-circuit protection for DC connection.....	25

ISO 18246:2023(E)

8.2	Arc protection for DC connections	25
8.3	Residual energy after disconnection	25
9	Additional requirements and test procedure	25
9.1	General conditions on tests	25
9.2	Protection against ingress of solid foreign objects and water	26
9.3	Withstand voltage test	26
9.3.1	General	26
9.3.2	Test voltage	26
9.3.3	Dielectric withstand voltage of voltage class A direct current part	27
9.4	Isolation resistance	27
9.4.1	General	27
9.4.2	Additional measures at a non-maintained isolation resistance	27
9.5	Creepage distance and clearance	27
9.6	Requirements for the emission of hazardous gases and other hazardous substances	27
9.7	Permissible surface temperature	28
9.8	Unintentional charging system behaviour	28
9.8.1	General	28
9.8.2	Unintended reverse power flow	28
9.9	Electromagnetic compatibility	28
9.9.1	Susceptibility	28
9.9.2	Emissions	28
9.10	Service	28
10	Marking, instructions, and indications	28
10.1	Marking	28
10.2	Legibility	29
10.3	Connection instructions	29
10.4	Indication	29
	Annex A (informative) Charging types	30
	Annex B (normative) EV connected to DC EV supply equipment according to IEC 61851-25	34
	Annex C (normative) Connection of an EV to a DRI EV supply equipment according to the IEC TS 61851-3 series	36
	Bibliography	37

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 (see 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 (see www.iso.org/patents).

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For an explanation of 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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 38, *Motorcycles and mopeds*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 301, *Electrically propelled road vehicles*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 18246:2015), which has been technically revised.

The main changes are as follows:

- terms and definitions have been updated;
- requirements for protection against electric shock ([Clause 7](#)) have been rewritten;
- descriptions for additional requirements and test procedure ([Clause 9](#)) have been simplified;
- requirements for the specific DC charging systems have been described in the Annexes (Annex B for IEC 61851-25 and Annex C for IEC TS 61851-3 series).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO 18246:2023(E)**Introduction**

This document prescribes basic safety requirements for electrically propelled mopeds and motorcycles, which are called electrically propelled vehicles (EVs), for simplicity, while connected to an external electric power supply. The safety requirements for off-board appliances/equipment are not described in this document.¹⁾

This document does not standardize specific charging method in the body text. The requirements for specific DC charging systems are described in [Annex B](#) and [Annex C](#).

Moped and motorcycle are defined in ISO 3833:1977, 3.4 and 3.5.

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1) See IEC 60335-2-29, IEC 61851-25, and IEC TS 61851-3 series.

Electrically propelled mopeds and motorcycles — Safety requirements for conductive connection to an external electric power supply

1 Scope

This document specifies safety requirements for conductive connection of electrically propelled mopeds and motorcycles (referred to as the EVs) to external electric circuits.

NOTE 1 External electric circuits include external electric power supplies and external electric loads.

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

It applies only to on-board charging systems between the plug or vehicle inlet and RESS circuits.

NOTE 2 The requirements when not connected to external electric circuits are specified in the ISO 13063 series.

Requirements for bidirectional energy transfer DC to AC are under consideration and are not part of this document.

NOTE 3 The safety requirements for DC EV supply equipment where protection relies on electrical separation are specified in IEC 61851-25.

NOTE 4 The safety requirements for DC EV supply equipment where protection relies on double or reinforced insulation are specified in IEC TS 61851-3-1 and IEC TS 61851-3-2.

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 6469-3:2021, *Electrically propelled road vehicles — Safety specifications — Part 3: Electrical safety*

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

ISO 13063-3:2022, *Electrically propelled mopeds and motorcycles — Safety specifications — Part 3: Electrical safety*

ISO 17409:2020, *Electrically propelled road vehicles — Conductive power transfer — Safety requirements*

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

IEC 60664 SER, *Insulation coordination for equipment within low-voltage systems — All Parts*

IEC 61140:2016, *Protection against electric shock — Common aspects for installation and equipment*

IEC 61851-1:2017, *Electric vehicle conductive charging system — Part 1: General requirements*

IEC 61851-23, *Electric vehicle conductive charging system — Part 23: DC electric vehicle charging station*

IEC 61851-25:2020, *Electric vehicle conductive charging system — Part 25: DC EV supply equipment where protection relies on electrical separation*

ISO 18246:2023(E)

IEC/TS 61851-3-1:—,²⁾*Electric Vehicles conductive charging system — Part 3-1: DC EV supply equipment where protection relies on double or reinforced insulation – General rules and requirements for stationary equipment*

IEC 62196-2, *Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles — Part 2: Dimensional compatibility and interchangeability requirements for a.c. pin and contact-tube accessories*

IEC/TS 62196-4, *Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles — Part 4: Dimensional compatibility and interchangeability requirements for d.c. pin and contact-tube accessories for class II or class III applications*

IEC 62196-6, *Plugs, socket-outlets, vehicle connectors and vehicle inlets — Conductive charging of electric vehicles — Part 6: Dimensional compatibility requirements for DC pin and contact-tube vehicle couplers for DC EV supply equipment where protection relies on electrical separation*

3 Terms and definitions

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

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

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

3.1 General**3.1.1 electrically propelled vehicle****EV**

vehicle with one or more electric drive(s) for vehicle propulsion

Note 1 to entry: In the context of this document, the term electrically propelled vehicle (EV) includes only moped or motorcycle.

[SOURCE: ISO 13063-3:2022, 3.14, modified — Terminological entry "EV" and note 1 to entry are added.]

3.1.2 rechargeable energy storage system**RESS**

rechargeable system that stores energy for delivery of electric energy for the electric drive

EXAMPLE Battery, capacitor, flywheel.

[SOURCE: ISO 13063-3:2022, 3.23]

3.1.3 removable RESS

RESS (3.1.2) that can be moved/removed from an EV (3.1.1) by hand (portable RESS) or with the assistance of an installation/device (mobile RESS)

[SOURCE: EN 50604-1:2016 +A1:2021, 3.18]

3.1.4 indoor use

intended for operation under normal ambient conditions in a building

[SOURCE: IEC 61851-1:2017, 3.6.1]

2) Under preparation. Stage at the time of publication: IEC 69/845/DTS:2022.

3.1.5

outdoor use

capable of operating under specific range of outdoor conditions

[SOURCE: IEC 61851-1:2017, 3.6.2]

3.1.6

maximum working voltage

highest value of AC voltage (rms) or of DC voltage that can occur in an electric system under any normal operating conditions according to the manufacturers' specifications, disregarding transients and ripple

[SOURCE: ISO 13063-3:2022, 3.20]

3.1.7

voltage class A

classification of an electric component or circuit, if its *maximum working voltage* (3.1.6) is ≤ 30 V a.c. or ≤ 60 V d.c., respectively

Note 1 to entry: The values 60 V d.c. and 30 V a.c. are selected taking into account humid weather conditions.

3.1.8

voltage class B

classification of an electric component or circuit, if its *maximum working voltage* (3.1.6) is > 30 and $\leq 1\,000$ V a.c. or > 60 and $\leq 1\,500$ V d.c., respectively

Note 1 to entry: The values 60 V d.c. and 30 V a.c. are selected taking into account humid weather conditions.

3.1.9

electric chassis

conductive parts of a vehicle that are electrically connected and whose potential is taken as reference

[SOURCE: ISO 13063-3:2022, 3.11] [SIST EN ISO 18246:2023](https://standards.iteh.ai/catalog/standards/sist/9b557ea9-c68c-4d08-beaa-ed1ce792935e/sist-en-iso-18246-2023)

3.1.10

accessible part

part which can be touched by means of the standard test finger

[SOURCE: IEC 442-01-15, modified — "a" is deleted.]

3.1.11

degree of protection

protection provided by an enclosure against access, foreign objects and/or water and verified by standardized test methods

EXAMPLE IPXXB (by test finger), IPXXC (by test rod), or IPXXD test wire (by test wire), in accordance with ISO 20653

[SOURCE: ISO 20653:2013, 3.2, modified — EXAMPLES are added.]

3.1.12

single fault condition

condition in which one means for protection against electric shock is defective or one fault is present which could cause a hazard

Note 1 to entry: If a single fault condition results in one or more other fault conditions, all are considered as one single fault condition.

[SOURCE: IEC 61140:2016, 3.1.4]