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SIST-TS CLC IEC/TS 61980-3:2020

01-september-2020

Brezžični sistemi za prenos električne energije za električna vozila (WPT) - 3. del: Posebne zahteve za sistem brezžičnega prenosa energije z magnetnim poljem

Electric vehicle wireless power transfer (wpt) systems - Part 3: Specific requirements for the magnetic field wireless power transfer systems

Kontaktlose Energieübertragungssysteme (WPT) für Elektrofahrzeuge - Teil 3: Spezifische Anforderungen für die kontaktlosen Energieübertragungssysteme mit Magnetfeld

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Systèmes de transport d'énergie sans fil pour véhicules électriques - Partie 3 : Exigences spécifiques relatives aux systèmes de transport d'énergie sans fil à base de champs magnétiques

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Ta slovenski standard je istoveten z: **CLC IEC/TS 61980-3:2020**

ICS:

43.120	Električna cestna vozila	Electric road vehicles

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TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CLC IEC/TS 61980-3

June 2020

ICS 43.120

English Version

Electric vehicle wireless power transfer (WPT) systems - Part 3: Specific requirements for the magnetic field wireless power transfer systems (IEC/TS 61980-3:2019)

Systèmes de transfert de puissance sans fil (WPT) pour véhicules électriques - Partie 3 : Exigences spécifiques relatives aux systèmes de transfert de puissance sans fil en présence de champs magnétiques (IEC/TS 61980-3:2019)

Kontaktlose Energieübertragungssysteme (WPT) für Elektrofahrzeuge - Teil 3: Spezifische Anforderungen für die kontaktlosen Energieübertragungssysteme mit Magnetfeld (IEC/TS 61980-3:2019)

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Comité Européen de Normalisation Electrotechnique
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European foreword

This document (CLC IEC/TS 61980-3:2020) consists of the text of IEC/TS 61980-3:2019 prepared by IEC/TC 69 "Electric road vehicles and electric industrial trucks".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Technical Specification IEC/TS 61980-3:2019 was approved by CENELEC as a European Technical Specification without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60038	NOTE	Harmonized as EN 60038
CISPR 11	NOTE	Harmonized as EN 55011

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 60947-2	-	Low-voltage switchgear and controlgear - Part 2: Circuit-breakers	EN 60947-2	-
IEC 61008-1	-	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) - Part 1: General rules	EN 61008-1	-
IEC 61009-1	-	Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) - Part 1: General rules	EN 61009-1	-
IEC 62423	-	Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses	EN 62423	-
IEC/TS 61980-2	2019	Electric vehicle wireless power transfer (WPT) systems - Part 2: Specific requirements for communication between electric road vehicle (EV) and infrastructure	CLC IEC/TS 61980-2	2020
DIN 7405	1963	Wire staple 24/6 for office-staplers		
-	-	Cold rolled low carbon steel flat products for cold forming – Technical delivery conditions	EN 10130	-

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Publication	Year	Title	EN/HD	Year
ICNIRP Guidelines	1998	ICNIRP guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz), International commission on nonionizing radiation protection		
ICNIRP Guidelines	2010	ICNIRP guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz), International commission on non-ionizing radiation protection		
UL 2251	-	Standard for plugs, receptacles, and couplers for electric vehicles		

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IEC TS 61980-3

Edition 1.0 2019-06

TECHNICAL SPECIFICATION

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ICS 43.120

ISBN 978-2-8322-6675-5

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ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –

Part 3: Specific requirements for the magnetic field wireless power transfer systems

FOREWORD

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The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 61980-3, which is a Technical Specification, has been prepared by IEC technical committee 69: Electric road vehicles and electric industrial trucks.

SIST-TS CLC IEC/TS 61980-3:2020

The text of this Technical Specification is based on the following documents:

Draft TS	Report on voting
69/554A/DTS	69/616B/RVDTS

Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61980 series, published under the general title *Electric vehicle wireless power transfer (WPT) systems*, can be found on the IEC website.

This part is to be used in conjunction with IEC 61980-1:2015.

The clauses of the particular requirements in this document supplement or modify the corresponding clauses in IEC 61980-1:2015. Where the text indicates an "addition" to or a "replacement" of the relevant requirement, test specification or explanation of IEC 61980-1:2015, these changes are made to the relevant text of IEC 61980-1:2015, which then becomes part of the standard. Where no change is necessary, the words "Clause xx of IEC 61980-1:2015 is applicable" are used. Additional items to those of IEC 61980-1:2015 are numbered starting 101. Additional annexes are lettered from AA onwards.

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

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- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

The IEC 61980 series is published in separate parts according to the following structure:

– IEC 61980-1 covers general requirements for electric road vehicle (EV) wireless power transfer (WPT) systems including general background and definitions. (e.g. efficiency, electrical safety, EMC);
– IEC TS 61980-2 covers specific requirements for communication between electric road vehicle (EV) and wireless power transfer (WPT) systems including general background and definitions.
– IEC TS 61980-3 covers specific requirements for electric road vehicle (EV) magnetic field wireless power transfer (MF-WPT) systems including general background and definitions (e.g. efficiency, electrical safety, EMC).

The requirements described in IEC 61980-1 are general. The technical requirements for the various wireless power transfer (WPT) technologies are very different; they are specified in the technology specific parts of the IEC 61980 series. A list of possible WPT technologies is listed in IEC 61980-1. The requirements for magnetic field wireless power transfer systems (MF-WPT) are described in this document. Further parts of the IEC 61980 series will describe other technologies such as power transfer via electric field (EF-WPT) or via electromagnetic field wireless power transfer systems (EF-WPT) or electromagnetic field-WPT systems, also named microwave-WPT systems (MW-WPT).

Reference to "technology specific parts" always refers to each parts of the IEC 61980 series. The structure of the "technology specific parts" follows the structure of IEC 61980-1.

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WPT systems are still under development. For this reason, there is the future but not immediate possibility of an agreement to publish an International Standard. The committee has decided, by following the procedure set out in ISO/IEC Directives part 1:2018, 2.3, that the publication of a Technical Specification is appropriate. The reason for publishing the Technical Specification is a high market need for a first basic technical description.

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IEC TS 61980-2, also published as a Technical Specification for the same reason as IEC TS 61980-3, deals with communication and for this reason has an independent structure. The numbering of the clauses does not follow the numbering of the other parts of the IEC 61980 series.

The electric road vehicles (EV) requirements of the MF-WPT system are covered by ISO PAS 19363.

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ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –

Part 3: Specific requirements for the magnetic field wireless power transfer systems

1 Scope

This part of IEC 61980, which is a Technical Specification, applies to the equipment for the magnetic field wireless power transfer (MF-WPT) of electric power from the supply network to electric road vehicles for purposes of supplying electric energy to the RESS (rechargeable energy storage system) and/or other on-board electrical systems. The MF-WPT system operates at standard supply voltages ratings per IEC 60038 up to 1 000 V AC and up to 1 500 V DC The power transfer takes place while the electric vehicle (EV) is stationary.

This document also applies to MF-WPT equipment supplied from on-site storage systems (e.g. buffer batteries) at standard supply voltages ratings per IEC 60038 up to 1 000 V AC and up to 1 500 V DC.

The aspects covered in this document include

– the characteristics and operating conditions,

– the required level of electrical safety,

– requirements for basic communication for safety and process matters if required by a MF-WPT system,

– requirements for positioning to assure efficient and safe MF-WPT power transfer, and

– specific EMC requirements for MF-WPT systems.

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The following aspects are under consideration for future documents:

– requirements for two- and three-wheel vehicles,

– requirements for MF-WPT systems supplying power to EVs in motion, and

– requirements for bidirectional power transfer.

This standard does not apply to

– safety aspects related to maintenance, and

– trolley buses, rail vehicles and vehicles designed primarily for use off-road.

NOTE The teRMS used in this document are specifically for MF-WPT.

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 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60947-2, *Low-voltage switchgear and controlgear – Part 2: Circuit-breakers*

IEC 61008-1, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules*

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IEC 61009-1, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) – Part 1: General rules*

IEC TS 61980-2:2019, *Electric vehicle wireless power transfer (WPT) systems – Part 2: Specific requirements for communication between electric road vehicle (EV) and infrastructure with respect to wireless power transfer (WPT) systems*

IEC 62423, *Type F and type B residual current operated circuit-breakers with and without integral overcurrent protection for household and similar uses*

DIN 7405:1963, *Wire staple 24/6 for office-staplers*

EN 10130, *Cold rolled low carbon steel flat products for cold forming – Technical delivery conditions*

ICNIRP Guidelines 1998, *ICNIRP guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz)*, International commission on non-ionizing radiation protection, published in: Health Physics 74(4):494-522; 1998

ICNIRP Guidelines 2010, *ICNIRP guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz)*, International commission on non-ionizing radiation protection, published in: Health Physics 99(6):818-836; 2010

UL 2251, Standard for plugs, receptacles, and couplers for electric vehicles

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3 Terms and definitions

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For the purposes of this document, the terms and definitions given in IEC 61980-1 and the following apply.

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

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

Additional terms and definitions:

3.101
primary coil
component of the primary device according IEC 61980-1 comprising one or more electrical windings generating a magnetic field for wireless power transfer (MF-WPT)

3.102
secondary coil
component of the secondary device according IEC 61980-1 comprising one or more electrical windings generating a magnetic field for wireless power transfer (MF-WPT)

3.103
system frequency
frequency range over which the system is designed to transfer power

Note 1 to entry: The bandwidth is a frequency range above and below the nominal frequency, and need not be centred at the nominal frequency. Spurious harmonics are not included in the bandwidth.