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**Electric vehicle wireless power transfer (WPT) systems –
Part 3: Specific requirements for magnetic field wireless power transfer systems**

**Systèmes de transfert de puissance sans fil (WPT) pour véhicules électriques –
Partie 3: Exigences spécifiques pour les systèmes de transfert de puissance
sans fil par champ magnétique**



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 43.120

ISBN 978-2-8322-6023-4

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ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –**Part 3: Specific requirements for magnetic
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The text of this International Standard is based on the following documents:

Draft	Report on voting
69/857/FDIS	69/866/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/standardsdev/publications.

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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.

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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, EMF);
- IEC 61980-2¹ specifically applies to magnetic field wireless power transfer (MF-WPT) for electric road vehicles (EV) and covers specific requirements for system activities and communication between the electric road vehicle side and the off-board side, including general background and definitions;
- IEC 61980-3 covers specific power transfer requirements for the off-board side of magnetic field wireless power transfer systems for electric road vehicles (e.g. efficiency, electrical safety, EMC, EMF).

Requirements for the on-board side of MF-WPT for electric road vehicles are covered in ISO 19363.

IEC 61980-3 follows the structure of IEC 61980-1:2020.

¹ Under preparation. Stage at the time of publication: IEC/AFDIS 61980-2:2022.

ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –

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

1 Scope

This part of IEC 61980 applies to the off-board supply equipment for wireless power transfer via magnetic field (MF-WPT) 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 voltage ratings per IEC 60038 up to 1 000 V AC and up to 1 500 V DC from the supply network. The power transfer takes place while the electric vehicle (EV) is stationary.

Off-board supply equipment fulfilling the requirements in this document are intended to operate with EV devices fulfilling the requirements described in ISO 19363.

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.

The following aspects are under consideration for future documents:

- requirements for MF-WPT systems for two- and three-wheel vehicles,
- requirements for MF-WPT systems supplying power to EVs in motion,
- requirements for bidirectional power transfer,
- requirements for flush mounted primary device,
- requirements for MF-WPT systems for heavy duty vehicle, and
- requirements for MF-WPT systems with inputs greater than 11,1 kVA.

This document 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 61439-1:2020, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

IEC 61439-7:2018, *Low-voltage switchgear and controlgear assemblies – Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicle charging stations*

IEC 61980-1:2020, *Electric vehicle wireless power transfer (WPT) systems – Part 1: General requirements*

IEC 61980-2:—, *Electric vehicle wireless power transfer (WPT) systems – Part 2: Specific requirements for MF-WPT system communication and activities*²

ISO 19363:2020, *Electrically propelled road vehicles – Magnetic field wireless power transfer – Safety and interoperability requirements*

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

ICNIRP, *ICNIRP guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz)*, Health Physics 99(6):818-836; 2010

Recommendation ITU-R SM.2110-1:2019, *Guidance on frequency ranges for operation of non-beam wireless power transmission for electric vehicles*

3 Terms and definitions

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>

Clause 3 of IEC 61980-1:2020 is applicable.

Additional terms and definitions:

3.101

accessible part

part of equipment that can be touched without the use of a tool, excluding parts when under the vehicle

3.102

alignment

relative position in X- and Y- direction of the secondary device to the primary device for a given secondary device ground clearance

3.103

alignment tolerance area

intended WPT operating area in X- and Y- direction for a given secondary device ground clearance

² Under preparation. Stage at the time of publication: IEC/AFDIS 61980-2:2022.