

# INTERNATIONAL STANDARD



**Electric vehicle wireless power transfer (WPT) systems –  
Part 1: General requirements**



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## Electric vehicle wireless power transfer (WPT) systems – Part 1: General requirements

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**ELECTRIC VEHICLE WIRELESS  
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International Standard IEC 61980-1 has been prepared by Technical Committee 69: Electric road vehicles and electric industrial trucks.

The text of this standard is based on the following documents:

FDIS	Report on voting
69/370/FDIS	69/380/RVD

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

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

This part is to be used in conjunction with the appropriate part of IEC 61980 series.

NOTE The following print types are used:

- requirements: in roman type;
- test specifications: in italic type;
- notes: in small roman type.

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- withdrawn,
- replaced by a revised edition, or
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## INTRODUCTION

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

Part 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).

Future Part 2 will cover specific requirements for communication between electric road vehicle (EV) and wireless power transfer (WPT) systems including general background and definitions.

Future Part 3 will cover 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, EMF).

The requirements described in Part 1 are general. The technical requirements for the various wireless power transfer (WPT) technologies are very different, they will be treated in technology specific parts of the 61980 series. A list of possible WPT technologies can be seen in 6.2. The requirements for magnetic field-wireless power transfer systems (MF-WPT) will be described in future Part 3. Further parts of this series will describe other technologies such as power transfer via electric 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 refer to the technology specific future Part 3 and further technology specific parts of this series. The structure of the "technology specific parts" will follow the structure of Part 1.

Electric road vehicle (EV) will be covered by ISO 19363<sup>1</sup>.

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<sup>1</sup> Under consideration.

# ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –

## Part 1: General requirements

### 1 Scope

This part of IEC 61980 applies to the equipment for the wireless transfer 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 in an operational state when connected to the supply network, at standard supply voltages ratings per IEC 60038 up to 1 000 V a.c. and up to 1 500 V d.c.

This standard also applies to Wireless Power Transfer (WPT) equipment supplied from on-site storage systems (e.g. buffer batteries, etc.).

The aspects covered in this standard include:

- the characteristics and operating conditions;
- the specification for required level of electrical safety;
- requirements for basic communication for safety and process matters if required by a WPT system;
- requirements for basic positioning, efficiency and process matters if required by a WPT system;
- requirements for two- and three-wheel vehicles (under consideration);
- requirements for WPT system while driving (under consideration);
- requirements for bidirectional power transfer (under consideration);
- specific EMC requirements for WPT systems.

This standard does not apply to:

- safety aspects related to maintenance;
- trolley buses, rail vehicles and vehicles designed primarily for use off-road;
- WPT vehicle power supply circuit, which is covered by ISO 6469 series, ISO 19363<sup>2</sup>;
- EMC requirements for on-board equipment while connected, which are covered in IEC 61851-21-1<sup>3</sup>;
- high level communication which are covered in ISO/IEC 15118 series.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60038, *IEC standard voltages*

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<sup>2</sup> Under consideration.

<sup>3</sup> Under consideration.