

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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

**Systèmes de transfert de puissance sans fil (WPT) Pour véhicules électriques –  
Partie 1: Exigences générales**





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**ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –****Part 1: General requirements**

## FOREWORD

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International Standard IEC 61980-1 has been prepared by IEC technical committee 69: Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks.

This second edition cancels and replaces the first edition published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the contents of IEC 61980-1:2015 have been re-organized so that this document is generally applicable to any WPT technologies;
- b) technology specific requirements, mostly for MF-WPT in the main text of IEC 61980-1:2015, have been transferred to IEC 61980-2 and IEC 61980-3;
- c) Annex A, Annex B and Annex C have been removed and contents of these annexes have been transferred to the relevant technology specific parts of the IEC 61980 series;
- d) duplications and overlaps of the requirements within IEC 61980-1:2015 have been resolved;

- e) terms and definitions which are specified in IEC 61851-1:2017 and are applicable for WPT system have been directly described in this document, with modification for some terms. The reference to IEC 61851-1 is withdrawn.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
69/731/FDIS	69/736/RVD

Full information on the voting for the approval of this International Standard 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.

In this document, the following print types are used:

- *test specifications and instructions regarding the application of this document: italic type;*
- notes: smaller roman type.

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

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- withdrawn,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

## 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 61980-2 specifically applies to magnetic field wireless power transfer (MF-WPT) for electric road vehicles 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).

The requirements described in this document are general. The technical requirements for the various wireless power transfer technologies are specific. The requirements for magnetic field-wireless power transfer systems are described in IEC 61980-2 and IEC 61980-3. Further parts of this series are reserved to other technologies.

Reference to "technology specific parts" always refer to other parts of the IEC 61980 series.

# ELECTRIC VEHICLE WIRELESS POWER TRANSFER (WPT) SYSTEMS –

## Part 1: General requirements

### 1 Scope

This part of IEC 61980 applies to the supply device for charging electric road vehicles using wireless methods at standard supply voltages per IEC 60038 up to 1 000 V AC and up to 1 500 V DC.

Electric road vehicles (EV) covers road vehicles, including plug-in hybrid road vehicles (PHEV) that derive all or part of their energy from on-board rechargeable energy storage systems (RESS).

This document also applies to wireless power transfer (WPT) equipment supplied from on-site storage systems (e.g. buffer batteries).

The aspects covered in this document include

- the characteristics and operating conditions of a supply device,
- the specification for required level of electrical safety of a supply device,
- communication between EV device and vehicle to enable and control WPT,
- efficiency, alignment and other activities to enable WPT, and
- specific EMC requirements for a supply device.

The following aspects are under consideration for future documents:

- requirements for MF-WPT systems supplying power to EVs in motion;
- requirements for bidirectional power transfer.

This document does not apply to

- safety aspects related to maintenance,
- WPT system for trolley buses, rail vehicles and vehicles designed primarily for use off-road, and
- any safety or EMC requirements for the vehicle side.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitute 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 60038, *IEC standard voltages*

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*