
**Road vehicles — Vehicle to grid
communication interface —**

**Part 1:
General information and use-case
definition**

*Véhicules routiers — Interface de communication entre véhicule et
réseau électrique —*

Partie 1: Informations générales et définition de cas d'utilisation





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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 jointly by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*, and Technical Committee IEC/TC 69, *Electric road vehicles and electric industrial trucks*. The draft was circulated for voting to the national bodies of both ISO and IEC.

This second edition cancels and replaces the first edition (ISO 15118-1:2013) which has been technically revised. The main changes compared to the previous edition are as follows:

- new use cases and requirements for wireless communication, wireless power transfer, automatic connection devices and bidirectional power transfer have been added; and
- as usage of private data and cyber security are becoming an important concern for users, requirements for more traceability and data privacy have also been added.

A list of all parts in the ISO 15118 series can be found on the ISO website.

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.

Introduction

The pending energy crisis and the necessity to reduce greenhouse gas emissions have led vehicle manufacturers to make a very significant effort to reduce the energy consumption of their vehicles. They are presently developing vehicles partly or completely propelled by electric energy. Those vehicles will reduce the dependency on oil, improve global energy efficiency and reduce the total CO₂ emissions for road transportation if the electricity is produced from renewable sources. To charge the batteries of such vehicles, specific charging infrastructure is required.

Much of the standardisation work on dimensional and electrical specifications of the charging infrastructure and the vehicle interface is already treated in the relevant ISO or IEC groups. However, the question of the interoperability of information transfer between the vehicle, the local installation and the grid is also of the utmost importance.

Such communication is beneficial for the optimisation of energy resources and energy production systems as vehicles can charge or discharge at the most economic or most energy-efficient instants. It is also required to develop efficient and convenient payment systems in order to cover the resulting micro-payments. The necessary communication channel can serve in the future to contribute to the stabilisation of the electrical grid as well as to support additional information services required to operate electric vehicles efficiently.

The requirements of this document form the basic framework for all use cases descriptions and related documents in the ISO 15118 series. This document is the result of a large consensus among all the actors of the electro mobility and is a guideline for implementers of the ISO 15118 series.

Road vehicles — Vehicle to grid communication interface —

Part 1: General information and use-case definition

1 Scope

This document, as a basis for the other parts of the ISO 15118 series, specifies terms and definitions, general requirements and use cases for conductive and wireless HLC between the EVCC and the SECC.

This document is applicable to HLC involved in conductive and wireless power transfer technologies in the context of manual or automatic connection devices.

This document is also applicable to energy transfer either from EV supply equipment to charge the EV battery or from EV battery to EV supply equipment in order to supply energy to home, to loads or to the grid.

This document provides a general overview and a common understanding of aspects influencing identification, association, charge or discharge control and optimisation, payment, load levelling, cybersecurity and privacy. It offers an interoperable EV-EV supply equipment interface to all e-mobility actors beyond SECC.

The ISO 15118 series does not specify the vehicle internal communication between battery and other internal equipment (beside some dedicated message elements related to the energy transfer).

NOTE 1 Electric road vehicles specifically are vehicles in categories M (used for carriage of passengers) and N (used for carriage of goods) (compare ECE/TR ANS/WP.29/78 ev.2). This does not prevent vehicles in other categories from adopting the ISO 15118 series as well.

NOTE 2 This document is destined to orientate the message set of ISO 15118-2 and ISO 15118-20¹⁾. The absence of any particular use case in this document does not imply that it will not be put into practice, with the required messages.

NOTE 3 This document, ISO 15118-2 and ISO 15118-20 are designed to work independent of data transfer medium used. However, the ISO 15118 series is made for fitting the specified data link layers in the corresponding documents in this series.

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/TR 8713, *Electrically propelled road vehicles — Vocabulary*

ISO 15118-2, *Road vehicles — Vehicle to grid communication interface — Part 2: Network and application protocol requirements*

ISO 15118-3, *Road vehicles — Vehicle to grid communication interface — Part 3: Physical and data link layer requirements*

1) Under preparation. Stage at the time on publication: ISO/DIS 15118-20:2019.

ISO 15118-1:2019(E)

ISO 15118-8, *Road vehicles — Vehicle to grid communication interface — Part 8: Physical layer and data link layer requirements for wireless communication*

ISO 15118-20²⁾, *Road vehicles — Vehicle to grid communication interface — Part 20: 2nd generation network and application protocol requirements*

EN 50549-1, *Requirements for generating plants to be connected in parallel with distribution networks — Part 1: Connection to a LV distribution network — Generating plants up to and including Type B*

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

IEC 61980-2, *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*

2) Under preparation. Stage at the time of publication: ISO/DIS 15118-20:2019.