

# **SLOVENSKI STANDARD**

## **kSIST FprEN ISO 15118-1:2015**

**01-april-2015**

---

**Cestna vozila - Komunikacijski vmesnik med vozilom in omrežjem - 1. del: Splošne informacije in definicija primera uporabe (ISO 15118-1:2013)**

Road vehicles - Vehicle to grid communication interface - Part 1: General information and use-case definition (ISO 15118-1:2013)

Straßenfahrzeuge - Kommunikationsschnittstelle zwischen Fahrzeug und Ladestation - Teil 1: Allgemeine Informationen und Festlegungen der Anwendungsfälle (ISO 15118-1:2013)

Véhicules routiers - Interface de communication entre véhicule et réseau électrique - Partie 1: Informations générales et définition de cas d'utilisation (ISO 15118-1:2013)

**Ta slovenski standard je istoveten z: FprEN ISO 15118-1**

<https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015>

---

**ICS:**

43.040.15	Avtomobilska informatika. Vgrajeni računalniški sistemi	Car informatics. On board computer systems
43.120	Električna cestna vozila	Electric road vehicles

**kSIST FprEN ISO 15118-1:2015**

**en**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**FINAL DRAFT**  
**FprEN ISO 15118-1**

January 2015

ICS 43.040.15; 43.120

English Version

**Road vehicles - Vehicle to grid communication interface - Part 1:  
General information and use-case definition (ISO 15118-1:2013)**

Véhicules routiers - Interface de communication entre  
véhicule et réseau électrique - Partie 1: Informations  
générales et définition de cas d'utilisation (ISO 15118-  
1:2013)

Straßenfahrzeuge - Kommunikationsschnittstelle zwischen  
Fahrzeug und Ladestation - Teil 1: Allgemeine  
Informationen und Festlegungen der Anwendungsfälle (ISO  
15118-1:2013)

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 301.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

	Page
Foreword.....	3

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN ISO 15118-1:2015](https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015)

<https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015>

## Foreword

The text of ISO 15118-1:2013 has been prepared by Technical Committee ISO/TC 22 “Road vehicles” of the International Organization for Standardization (ISO) and has been taken over as FprEN ISO 15118-1:2015 by Technical Committee CEN/TC 301 “Road vehicles” the secretariat of which is held by AFNOR.

This document is currently submitted to the Unique Acceptance Procedure.

### Endorsement notice

The text of ISO 15118-1:2013 has been approved by CEN as FprEN ISO 15118-1:2015 without any modification.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

SIST EN ISO 15118-1:2015

<https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015>



# INTERNATIONAL STANDARD

**ISO  
15118-1**

First edition  
2013-04-15

Corrected version  
2013-10-01

---

---

## 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*

(<https://standards.iteh.ai>)

Document Preview

SIST EN ISO 15118-1:2015

<https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015>

---

---

Reference number  
ISO 15118-1:2013(E)



© ISO 2013

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

SIST EN ISO 15118-1:2015

<https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland



# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Symbols and abbreviated terms</b> .....	<b>9</b>
<b>5 Requirements</b> .....	<b>10</b>
5.1 Communication concept.....	10
5.2 General considerations.....	11
5.3 User-specific requirements.....	11
5.4 OEM-specific requirements.....	12
5.5 Utility-specific requirements.....	13
<b>6 Actors</b> .....	<b>14</b>
6.1 General.....	14
<b>7 Use Case Elements</b> .....	<b>15</b>
7.1 General.....	15
7.2 Start of charging process [A].....	17
7.3 Communication set-up [B].....	20
7.4 Certificate handling [C].....	20
7.5 Identification and Authorization [D].....	23
7.6 Target setting and charging scheduling [E].....	29
7.7 Charging controlling and re-scheduling [F].....	36
7.8 Value Added Services [G].....	42
7.9 End of charging process [H].....	43
<b>Annex A (informative) Charging infrastructure architecture</b> .....	<b>45</b>
<b>Annex B (informative) Security</b> .....	<b>55</b>
<b>Annex C (informative) Examples of charging scenarios derived from the use case elements</b> .....	<b>60</b>
<b>Bibliography</b> .....	<b>65</b>

## ISO 15118-1:2013(E)

## 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. [www.iso.org/directives](http://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. [www.iso.org/patents](http://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.

The committee responsible for this document is ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 15118-1 was developed in cooperation with IEC TC 69, *Electric road vehicles and electric industrial trucks*.

ISO 15118 consists of the following parts, under the general title *Road vehicles — Vehicle to grid communication interface*:

- *Part 1: General information and use-case definition*
- *Part 2: Network and application protocol requirements*
- *Part 3: Physical and data link layer requirements*

The following parts are under preparation:

- *Part 4: Network and application protocol conformance test*
- *Part 5: Physical layer and data link layer conformance test*

This corrected version of ISO 15118-1:2013 incorporates the following correction:

- The ISO/IEC double logo was added to the cover page.

## 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 CO<sub>2</sub> 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 standardization 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 information transfer between the vehicle, the local installation and the grid has not been treated sufficiently.

Such communication is beneficial for the optimization of energy resources and energy production systems as vehicles can recharge 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 may serve in the future to contribute to the stabilization of the electrical grid as well as to support additional information services required to operate electric vehicles efficiently.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN ISO 15118-1:2015](https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015)

<https://standards.iteh.ai/catalog/standards/sist/26a8695a-636d-472b-9a5f-96d1a3f9ddcf/sist-en-iso-15118-1-2015>



# Road vehicles — Vehicle to grid communication interface —

## Part 1:

## General information and use-case definition

### 1 Scope

ISO 15118 specifies the communication between Electric Vehicles (EV), including Battery Electric Vehicles and Plug-In Hybrid Electric Vehicles, and the Electric Vehicle Supply Equipment (EVSE). As the communication parts of this generic equipment are the Electric Vehicle Communication Controller (EVCC) and the Supply Equipment Communication Controller (SECC), ISO 15118 describes the communication between these components. Although ISO 15118 is oriented to the charging of electric road vehicles, it is open for other vehicles as well.

This part of ISO 15118 specifies terms and definitions, general requirements and use cases as the basis for the other parts of ISO 15118. It provides a general overview and a common understanding of aspects influencing the charge process, payment and load levelling.

ISO 15118 does not specify the vehicle internal communication between battery and charging equipment and the communication of the SECC to other actors and equipment (beside some dedicated message elements related to the charging). All connections beyond the SECC, and the method of message exchanging are considered to be out of the scope as specific use cases.

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 ISO 15118 as well.

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

NOTE 3 This part of ISO 15118 and ISO 15118-2 are designed to work independent of data transfer medium used. However, this series of documents are made for fitting the specified data link layers in the corresponding documents in this 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 60050, *International electrotechnical vocabulary*

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

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*

## ISO 15118-1:2013(E)

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TR 8713 and the following apply.

#### 3.1

##### **actor**

entity which characterizes a role played by a user or any other system that interacts with the subject

#### 3.2

##### **amount of energy for charging**

energy required by the EV until the departure time has been reached or the battery's SOC is at 100 %

Note 1 to entry: This might include the amount of energy the EV consumes for other vehicle features than solely charging the battery.

#### 3.3

##### **authentication**

procedure between EVCC and SECC or between USER and EVSE or SA, to prove that the provided information (see identification) is either correct, valid, or it belongs to the EVCC, the USER or the SECC

#### 3.4

##### **authorization**

procedure for EVSE to verify if EV is allowed to be charged

#### 3.5

##### **basic signalling**

physical signalling according to the pilot function provided by IEC 61851-1, Annex A

#### 3.6

##### **Battery Management System**

##### **BMS**

electronic device that controls or manages the electric and thermal functions of the battery system and that provides communication between the battery system and other vehicle controllers

#### 3.7

##### **certificate**

electronic document which uses a digital signature to bind a public key with an identity

Note 1 to entry: ISO 15118 describes several certificates covering different purposes (e.g. Contract Certificate including the contract ID and OEM Provisioning Certificates)

#### 3.8

##### **charger**

power converter that performs the necessary functions for charging a battery

#### 3.9

##### **charging control**

function that confirms the maximum charge current which is allowed to be drawn from EVSE based on charging schedule

Note 1 to entry: Actual charge current to the battery should be controlled by BMS. It is not in scope of ISO 15118.

#### 3.10

##### **charging scenario**

combination of use case elements to fulfil a specific charging use case

#### 3.11

##### **charging schedule**

scheme which contains the power limits for charging the EV for a specific time

Note 1 to entry: The EV should apply the negotiated limits as close as possible, to allow power balancing for the DSO