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Road vehicles — Vehicle-to-Grid Communication Interface —

Part 2: Network and application protocol requirements

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

Partie 2: Exigences du protocole d'application et du réseau

Reference number
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Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 3

4 Symbols and abbreviated terms 7

5 Conventions 8
5.1 Definition of OSI based services 8
5.2 Requirement structure 8
5.3 Usage of RFC references 8
5.4 Notation used for XML schema diagrams 9

6 Document overview 9

7 Basic requirements for V2G communication 11
7.1 General information 11
7.2 Service primitive concept of OSI layered architecture 11
7.3 Security concept 12
7.4 V2G communication states and data link handling 21
7.5 Data Link Layer 26
7.6 Network Layer 26
7.7 Transport Layer 28
7.8 V2G Transfer Protocol 32
7.9 Presentation Layer 36
7.10 Application Layer 46

8 Application Layer messages 55
8.1 General information and definitions 55
8.2 Protocol handshake definition 56
8.3 V2G Message Definition 60
8.4 V2G Communication Session and BodyElement Definitions 62
8.5 Complex data types 104
8.6 Identification Modes and Message Set definitions 137
8.7 V2G communication timing 170
8.8 Message sequencing and error handling 184
8.9 Request-Response Message Sequence examples 206

Annex A (informative) Mapping of Part 1 use case elements 214

Annex B (informative) Mapping of ISO 15118 message element names to SAE J2847/2 terms 250

Annex C (normative) Schema definition 254

Annex D (informative) Message examples 278

Annex E (informative) Application of certificates 299

Annex F (normative) Certificate profiles 313

Annex G (informative) Encryption for the Distribution of Secret Keys 321

Annex H (normative) Specification of Identifiers 323

Annex I (informative) Message sequencing for renegotiation 326

Annex J (informative) Overview on XML Signatures 330

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Annex K (informative) Summary of requirements **334**
Bibliography **341**

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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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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

ISO 15118-2 was developed in conjunction 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*[1]

[1] To be published.

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Introduction

The pending energy crisis and necessity to reduce greenhouse gas emissions has led the vehicle manufacturers to 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 the global energy efficiency and reduce the total CO_2 emissions for road transportation if the electricity is produced from renewable sources. To charge the batteries of such vehicles, specific charging infra-structure 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 EV and the EVSE has not been treated sufficiently.

Such communication is necessary for the optimization of energy resources and energy production systems so that vehicles can recharge in the most economical or most energy efficient way. It is also required to develop efficient and convenient billing 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 and economically.

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Road vehicles — Vehicle-to-Grid Communication Interface — Part 2: Network and application protocol requirements

1 Scope

This part of ISO 15118 specifies the communication between battery electric vehicles (BEV) or plug-in hybrid electric vehicles (PHEV) and the Electric Vehicle Supply Equipment. The application layer message set defined in this part of ISO 15118 is designed to support the energy transfer from an EVSE to an EV. ISO 15118-1 contains additional use case elements (Part 1 Use Case Element IDs: F4 and F5) describing the bidirectional energy transfer. The implementation of these use cases requires enhancements of the application layer message set defined herein. The definitions of these additional requirements will be subject of the next revision of this International Standard.

The purpose of this part of ISO 15118 is to detail the communication between an EV (BEV or a PHEV) and an EVSE. Aspects are specified to detect a vehicle in a communication network and enable an Internet Protocol (IP) based communication between EVCC and SECC.



Key

1 Scope of ISO/IEC FDIS 15118-2:2013(E)

2 Message definition considers use cases defined for communication between SECC to SA

Figure 1 — Communication relationship among EVCC, SECC and secondary actor

This part of ISO 15118 defines messages, data model, XML/EXI based data representation format, usage of V2GTP, TLS, TCP and IPv6. In addition, it describes how data link layer services can be accessed from a layer 3 perspective. The Data Link Layer and Physical Layer functionality is described in ISO 15118-3.

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.

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes*

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

IEC 61851-1, *Electric vehicle conductive charging system — Part 1: General requirements (Ed 2.0 2010)*

IEC 61851-22, *Electric vehicle conductive charging system - Part 22: AC electric vehicle charging station*

IEC CDV 61851-23, *Electric vehicle conductive charging system - Part 23: D.C. electric vehicle charging station (Ed 1.0 2012)*

IEC 62196, *Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles*

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