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Road vehicles – Vehicle to grid Communication interface – Part 3: Physical and data link layer requirements (ISO 15118-3:2015)

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The European Standard EN ISO 15118-3:2016 has the status of a Swedish Standard. This document contains the official English version of EN ISO 15118-3:2016.

**Förhållandet till övriga delar under samma huvudtitel - Utdrag ur Förord i ISO 15118-3:2016/
Relations to other parts under the same general title - Extract from the Foreword of ISO 15118-3:2016**

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 layer 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
- Part 6: General information and use-case definition for wireless communication
- Part 7: Network and application protocol requirements for wireless communication
- Part 8: Physical layer and data link layer requirements for wireless communication

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EUROPEAN STANDARD

EN ISO 15118-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2016

ICS 43.120

English Version

**Road vehicles - Vehicle to grid Communication interface -
Part 3: Physical and data link layer requirements (ISO
15118-3:2015)**

Véhicules routiers - Interface de communication entre
véhicule et réseau électrique - Partie 3: Exigences
relatives à la couche physique et à la couche liaison de
données (ISO 15118-3:2015)

Straßenfahrzeuge - Kommunikationsschnittstelle
zwischen Fahrzeug und Ladestation - Teil 3:
Anforderungen an physikalische- und
Datenverbindungsschnittstelle (ISO 15118-3:2015)

This European Standard was approved by CEN on 21 February 2016.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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European foreword

The text of ISO 15118-3:2015 has been prepared by Technical Committee ISO/TC 22 “Road vehicles” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15118-3:2016 by Technical Committee CEN/TC 301 “Road vehicles” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

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Endorsement notice

The text of ISO 15118-3:2015 has been approved by CEN as EN ISO 15118-3:2016 without any modification.

Introduction

The pending energy crisis and the 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. Thus, vehicles will reduce the dependency on oil, improve the 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 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 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 might 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.

Road vehicles — Vehicle to grid communication interface —

Part 3: Physical and data link layer requirements

1 Scope

This part of ISO 15118 specifies the requirements of the physical and data link layer for a high-level communication, directly between battery electric vehicles (BEV) or plug-in hybrid electric vehicles (PHEV), termed as EV (electric vehicle) [ISO-1], based on a wired communication technology and the fixed electrical charging installation [Electric Vehicle Supply Equipment (EVSE)] used in addition to the basic signalling, as defined in [IEC-1].

It covers the overall information exchange between all actors involved in the electrical energy exchange. ISO 15118 (all parts) is applicable for manually connected conductive charging.

Only “[IEC-1] modes 3 and 4” EVSEs, with a high-level communication module, are covered by this part of ISO 15118.

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

ISO 15118-2:2014, *Road vehicles — Vehicle to grid communication interface — Part 2: Network and application protocol requirements*

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

IEC/TS 62763:2013, *Pilot function through a control pilot circuit using PWM (pulse width modulation) and a control pilot wire*

3 Terms and definitions

For the purposes of this document, the terms and definition in [ISO-1] and the following apply.

3.1

amplitude map

specifies a transmit power-reduction factor for each subcarrier related to the tone mask

3.2

central coordinator

manager of a HomePlug Green PHY network

3.3

channel access priority

CAP

method to prioritize the channel access

Note 1 to entry: See [HPGP].