

This is a preview of "ISO 15118-3:2015". [Click here to purchase the full version from the ANSI store.](#)

First edition
2015-05-15

Road vehicles — Vehicle to grid communication interface —

Part 3: Physical and data link layer requirements

*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*



Reference number
ISO 15118-3:2015(E)

© ISO 2015

This is a preview of "ISO 15118-3:2015". [Click here to purchase the full version from the ANSI store.](#)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2015, Published in Switzerland

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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

This is a preview of "ISO 15118-3:2015". Click here to purchase the full version from the ANSI store.

Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	4
5 Conventions	5
5.1 Definition of OSI based services.....	5
5.2 Requirement structure.....	5
5.3 Normative references convention.....	5
6 System architecture	6
6.1 Communication layers overview.....	6
6.2 Definition of high-level communication and basic signalling.....	7
6.2.1 Basic signalling.....	7
6.2.2 High-level communication.....	7
6.3 Identification requirements.....	8
6.4 System requirements.....	8
6.4.1 Overview.....	8
6.4.2 EVSE.....	8
6.4.3 EV.....	9
6.5 Configuration of a low-layer communication module.....	10
7 Connection coordination	10
7.1 General.....	10
7.2 Overview.....	10
7.3 Plug-in phase.....	17
7.3.1 EVSE side.....	17
7.3.2 EV side.....	17
7.4 Initialization phase.....	17
7.5 Loss of communication.....	18
7.5.1 EVSE side.....	18
7.5.2 EV side.....	18
7.6 Sleep mode and wake-up.....	19
7.6.1 Entering the sleep mode.....	19
7.6.2 Wake-up.....	19
7.6.3 During a charge pause.....	20
7.7 Plug-out phase.....	20
8 Timings and constants	21
9 Matching EV — EVSE process	22
9.1 Overview.....	22
9.2 Initialization of matching process.....	24
9.3 Discovery of the connected low-layer communication module.....	24
9.4 Validation of matching decision.....	25
9.5 Set-up a logical network.....	27
9.6 Leave the logical network.....	27
9.7 Error handling.....	27
10 EMC requirements	27
11 Signal coupling	27
12 Layer 2 interfaces	28
12.1 Overview.....	28

This is a preview of "ISO 15118-3:2015". [Click here to purchase the full version from the ANSI store.](#)

12.2	Data SAP.....	28
12.3	Data link control SAP to layer 3.....	28
Annex A (normative) HomePlug Green PHY on control pilot line		30
Annex B (informative) IEEE 1901.2 G3-PLC profile on control pilot line.....		72
Bibliography.....		79

This is a preview of "ISO 15118-3:2015". Click here to purchase the full version from the ANSI store.

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 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 31, *Data communication*.

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*

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.