

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Standard interface for connecting charging stations to local energy management systems –

Part 1: General requirements, use cases and abstract messages

Interface normalisée pour la connexion des bornes de charge aux systèmes locaux de gestion de l'énergie –

Partie 1 : Exigences générales, cas d'utilisation et messages abstraits

<https://standards.iteh.ai/catalog/standards/iec/fe01f39c-6d2c-4d69-b28f-629d747bd50a/iec-63380-1-2025>



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2025 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC -

webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Standard interface for connecting charging stations to local energy management systems –

Part 1: General requirements, use cases and abstract messages

Interface normalisée pour la connexion des bornes de charge aux systèmes locaux de gestion de l'énergie –

Partie 1 : Exigences générales, cas d'utilisation et messages abstraits

<https://standards.iteh.ai/catalog/standards/iec/fe01f39c-6d2c-4d69-b28f-629d747bd50a/iec-63380-1-2025>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.240.99, 43.120

ISBN 978-2-8327-0343-4

Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

FOREWORD.....	13
INTRODUCTION	15
1 Scope.....	17
2 Normative references.....	17
3 Terms, definitions, and abbreviated terms.....	17
3.1 Terms and definitions.....	17
3.2 Abbreviated terms.....	19
4 Scenarios and user stories	20
4.1 General	20
4.2 Stakeholders.....	21
4.3 User stories	21
4.4 Use case actors.....	23
4.4.1 General.....	23
4.4.2 Charging station	23
4.4.3 Energy management system (EMS)	23
4.4.4 Electric vehicle (EV).....	24
4.5 Mapping of user stories to use cases.....	24
5 Technical use cases	25
5.1 Overview	25
5.1.1 General.....	25
5.1.2 Wording.....	25
5.1.3 Reading the graphics	26
5.2 Charging station commissioning and configuration	26
5.2.1 General.....	26
5.2.2 Scenario overview.....	26
5.2.3 Scenario implementation requirements.....	27
5.2.4 Scenario details.....	27
5.2.5 Scenarios and use case functions.....	28
5.3 Coordinated EV charging.....	29
5.3.1 General.....	29
5.3.2 Scenario overview.....	30
5.3.3 Scenario implementation requirements.....	31
5.3.4 Scenario flow.....	32
5.3.5 Scenario details.....	33
5.3.6 Scenarios and use case functions.....	42
5.3.7 Dependencies to other use cases	42
5.4 EV charging electricity measurement	43
5.4.1 General.....	43
5.4.2 Scenario overview.....	43
5.4.3 Scenario implementation requirements.....	44
5.4.4 Scenario details.....	44
5.4.5 Scenarios and use case functions.....	46
5.4.6 Dependencies to other use cases	46
5.5 EV charging summary	46
5.5.1 General.....	46
5.5.2 Scenario overview.....	47

5.5.3	Scenario implementation requirements.....	47
5.5.4	Scenario details – Scenario 1 – EMS sends charging session summary to charging station	47
5.5.5	Scenarios and use case functions.....	48
5.5.6	Dependencies to other use cases	48
5.6	EV commissioning and configuration	49
5.6.1	General.....	49
5.6.2	Scenario overview.....	49
5.6.3	Scenario implementation requirements.....	50
5.6.4	Scenario details	51
5.6.5	Scenarios and use case functions.....	56
5.6.6	Dependencies to other use cases	56
5.7	EV state of charge	56
5.7.1	General.....	56
5.7.2	Scenario overview.....	57
5.7.3	Scenario implementation requirements.....	57
5.7.4	Scenario details : Scenario 1 – Monitor EV's state of charge	57
5.7.5	Scenarios and use case functions.....	58
5.8	Limitation of active power consumption	58
5.8.1	General.....	58
5.8.2	Detailed background information and rules	59
5.8.3	State machine	62
5.8.4	Scenario overview.....	64
5.8.5	Scenario implementation requirements.....	65
5.8.6	Scenario details	65
5.8.7	Scenarios and use case functions.....	69
5.8.8	Dependencies to other use cases	69
5.8.9	Further information and rules	69
5.9	Monitoring of active power consumption.....	70
5.9.1	General.....	70
5.9.2	Scenario overview.....	70
5.9.3	Scenario implementation requirements.....	71
5.9.4	Scenario details	71
5.9.5	Scenarios and use case functions.....	74
5.10	Optimization of self-consumption during EV charging	75
5.10.1	General.....	75
5.10.2	Scenario overview.....	75
5.10.3	Scenario implementation requirements.....	75
5.10.4	Scenario details	76
5.10.5	Dependencies to other use cases	78
5.11	Overload protection by EV charging current curtailment.....	79
5.11.1	General.....	79
5.11.2	Derivation of the time limits for the involved units	79
5.11.3	Further information.....	80
5.11.4	Scenario overview.....	80
5.11.5	Scenario implementation requirements.....	80
5.11.6	Scenario details	81
5.11.7	Scenarios and use case functions.....	82
5.11.8	Dependencies to other use cases	83

5.12	Basic EV charging/discharging	84
5.12.1	General.....	84
5.12.2	Scenario overview.....	84
5.12.3	Scenario implementation requirements.....	85
5.12.4	Scenario details.....	85
5.12.5	Scenarios and use case functions.....	88
5.12.6	Dependencies to other use cases – EV commissioning and configuration	88
5.13	Dynamic bidirectional EV charging	89
5.13.1	General.....	89
5.13.2	Dynamic mode.....	90
5.13.3	Scenario overview.....	90
5.13.4	Scenario implementation requirements.....	91
5.13.5	Scenarios and use case functions.....	91
5.13.6	Scenarios and use case functions.....	96
5.13.7	Dependencies to other use cases	97
5.13.8	Further information and rules	97
6	Generic use case functions (UCF)	98
6.1	General	98
6.2	Concepts	98
6.3	UCF_AC_Measurement – Generic description.....	98
6.3.1	General.....	98
6.3.2	Measurement	100
6.3.3	Electrical connection data	107
6.4	UCF_Characteristics – Generic description.....	112
6.4.1	General.....	112
6.4.2	Characteristics.....	113
6.5	UCF_Charging_Power_Limits – Generic description	113
6.5.1	General.....	113
6.5.2	Electrical connection parameters	114
6.5.3	Electrical connection permitted values	114
6.6	UCF_Consumption_Curve – Generic description	115
6.6.1	General.....	115
6.6.2	Consumption curve	116
6.7	UCF_Device_Configuration – Generic description.....	120
6.7.1	General.....	120
6.7.2	Device configuration – Key value description	121
6.7.3	Device configuration data	121
6.7.4	Write device configuration data	122
6.8	UCF_Device_State – Generic description	123
6.8.1	General.....	123
6.8.2	Device state	124
6.9	UCF_EV_Connected – Generic description.....	125
6.9.1	General.....	125
6.9.2	Information content	125
6.10	UCF_Heartbeat – Generic description	125
6.10.1	General.....	125
6.10.2	Heartbeat.....	126
6.11	UCF_Identification – Generic description	126

6.11.1	General.....	126
6.11.2	Identification.....	126
6.12	UCF_Incentive_Table – Generic description.....	127
6.12.1	General.....	127
6.12.2	Incentive table.....	128
6.12.3	Write incentive table.....	132
6.13	UCF_Load_Control – Generic description.....	135
6.13.1	General.....	135
6.13.2	Load constraints.....	136
6.14	UCF_Manufacturer_Information – Generic description.....	138
6.14.1	General.....	138
6.14.2	Manufacturer data.....	138
6.15	UCF_Maximum_Power_Limitation_Curve – Generic description.....	139
6.15.1	General.....	139
6.15.2	Maximum power limitation curve.....	140
6.15.3	Update maximum power limitation curve – Time series data.....	142
6.16	UCF_Measurement – Generic description.....	142
6.16.1	General.....	142
6.16.2	Measurement.....	143
6.17	UCF_Power_Limit.....	144
6.17.1	Generic description.....	144
6.17.2	Additional information.....	146
6.18	UCF_Operation_Mode – Generic description.....	146
6.18.1	General.....	146
6.18.2	Current operation mode – Operation mode description.....	147
6.18.3	Send operation mode – Operation mode description.....	147
6.19	UCF_Session_Summary – Generic description.....	147
6.19.1	General.....	147
6.19.2	Session summary.....	148
6.19.3	Session summary write – Charging summary data.....	150
6.20	UCF_Setpoint – Generic description.....	151
6.20.1	General.....	151
6.20.2	Setpoint.....	152
	Bibliography.....	154

Figure 1 – Overview of the IEC 63380 series..... 20

Figure 2 – Communication scope of the IEC 63380 series..... 21

Figure 3 – Sources of information for an EMS..... 24

Figure 4 – Charging station commissioning and configuration – High-level use case functionality overview..... 26

Figure 5 – Charging station commissioning and configuration – Scenario overview..... 26

Figure 6 – Charging station commissioning and configuration – Scenario 1 overview..... 27

Figure 7 – Charging station commissioning and configuration – Scenario 2 overview..... 28

Figure 8 – Coordinated EV charging – High-level use case functionality overview..... 29

Figure 9 – Charging session example..... 30

Figure 10 – Coordinated EV charging – Scenario overview..... 31

Figure 11 – Coordinated EV charging – Scenario flow..... 32