



Charging Communication with ISO 15118

Basic Training

Get a perfect jumpstart into the industry-approved charging communication standard ISO 15118. Learn the key concepts across all communication layers of this future-proof technology so you can actively shape this thriving e-mobility market with your innovative and interoperable EV charging products.

WHAT YOU GET:

- › Thorough introduction to the Combined Charging System (CCS)
- › How the EV and charging station build up a stable communication link via CCS hardware, Pulse-Width Modulation (PWM), Signal Level Attenuation Characterization (SLAC), and the SECC discovery protocol (SDP)
- › Mechanism used to mutually agree on DIN SPEC 70121 or ISO 15118 as the communication protocol
- › Overview of the ISO 15118 document family and its relation to the seven ISO/OSI communication layers
- › Identification mechanisms External Identification Means (EIM) & Plug & Charge
- › In-depth walk-through of the communication sequence for AC and DC charging
- › Available tools for the EV and charging station to do smart charging and renegotiate a charging schedule
- › Global support of ISO 15118
- › Features and outlook to the next edition of ISO 15118-2 (now called ISO 15118-20)
- › Important forums, industry events, and further resources you don't want to miss out on

YOUR TRAINER: Dr. Marc Mültin



Dr. Marc Mültin (V2G Clarity) is a recognized e-mobility expert and co-author of the ISO 15118 and related international standards. He works now with companies and research institutions across the globe to integrate ISO 15118's promising Plug & Charge feature into their products and innovations.

His mission has been to help bring convenient, secure and user-friendly electric vehicle charging to a global audience.

WHO SHOULD ATTEND:

(Electrical) engineers, managers, product designers, entrepreneurs, technology consultants; anyone interested in the field of e-mobility and charging communication.

As this is an introductory course we welcome participants with no prior experience in the field. Although a background in engineering and/or computer science is beneficial it is not required to understand the topic.

HOW

Our renowned expert in the field of Charging Communication will guide you in an interactive workshop through the intricacies of ISO 15118, using illustrative examples and a memorable step-by-step guide.



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Basic Training

AGENDA:

Welcome

The Combined Charging System (CCS) – Short introduction of CharIN's CCS related documents

SLAC – The solution to crosstalk in powerline communication between EV & EVSE via CCS

Efficient XML interchange (EXI) - XML on a binary level

SupportedAppProtocol – Choosing a mutually supported protocol

Introduction to ISO 15118 – Overview of the use cases within the ISO 15118

The ISO 15118 document family

- » Set up of the ISO 15118 documentation family (15118-1 – 15118-9) and its connection to 7-communication layers of the Open Systems Interconnection (OSI)
- » Publishing timeline of the single ISO parts & outlook to additional functionalities with edition 2 of ISO 15118

AC and DC charging message sequence

PMaxSchedule and SalesTariff – Influencing the charging schedule

- » Negotiation of a charging profile for the vehicle in detail incl. sales tariff information (Grid & supplier oriented incentive to affect the charging profile) & charging parameters

Global support of ISO 15118

Important forums, industry events, and further resources

COSTS:

In-house trainings upon request.

Price and booking:

CharIN member: € 975.00 (excl. applicable VAT)

Regular: € 1490.00 (excl. applicable VAT)

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Charging Communication with ISO 15118

Advanced Training

Take a deep dive into the topic of secure charging communication with the user-convenient Plug & Charge feature of ISO 15118. We'll focus on the certificate concept, necessary public-key infrastructures, encrypted communication via TLS, and XML-based signatures. The conveyed knowledge will enable you to build state-of-the-art secure and user-friendly EV charging products that shape the e-mobility market

WHAT YOU GET:

- » The cryptographic foundations of ISO 15118 to secure the communication
- » Understanding digital certificates and digital signatures
- » An overview of the ISO 15118 public-key infrastructures
- » How the EV and charging station encrypt the communication using Transport Layer Security (TLS)
- » How a contract certificate enables a seamless identification and authorization via the Plug & Charge feature
- » The backend processes and market roles needed to establish a well-orchestrated Plug & Charge ecosystem (VDE Application Guide VDE-AR-E 2802-100-1)

HOW:

Our renowned expert in the field of Charging Communication, Dr. Marc Mültin (V2G Clarity), will guide you in an interactive workshop through the intricacies of ISO 15118, using illustrative examples and a memorable step-by-step guide. This limited-availability workshop, set in a unique automotive-related venue, is sure to be an invaluable learning experience.

YOUR TRAINER: Dr. Marc Mültin



Dr. Marc Mültin (V2G Clarity) is a recognized e-mobility expert and co-author of the ISO 15118 and related international standards. He works now with companies and research institutions across the globe to integrate ISO 15118's promising Plug & Charge feature into their products and innovations.

His mission has been to help bring convenient, secure and user-friendly electric vehicle charging to a global audience.

WHO SHOULD ATTEND:

- » (Electrical) engineers, managers, product designers, entrepreneurs, technology consultants; anyone interested in the field of e-mobility and Charging Communication.
- » As this is an advanced course we recommend that participants have prior experience in the field. For the best possible preparation and a smooth learning experience we recommend that participants visit our Basic Training first.



Charging Communication with ISO 15118

Advanced Training

AGENDA:

Welcome

Cryptographic Foundations of ISO 15118: symmetric and asymmetric cryptosystems, digital certificates and signatures, and key-agreement protocols

The certificate concept and public-key infrastructures outlined in ISO 15118 and their relation to the various e-mobility market roles

Setup of an encrypted communication link between the EV and charging station via TLS (Transport Layer Security) and ISO 15118 certificates

Certificate installation: how a contract certificate enables a seamless identification and authorization via the Plug & Charge feature

In-depth training on the VDE application guide VDE-AR-E 2802-100-1, titled "Certificate handling for electric vehicles, charging infrastructure and backend systems within the framework of ISO 15118". This application guide is the blueprint for establishing a well-orchestrated Plug & Charge ecosystem

COSTS:

In-house trainings upon request.

Price and booking:

CharIN member: € 1170,00 (excl. applicable VAT)

Regular: € 1790,00 (excl. applicable VAT)

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