eclipseina

List of Charging Trainings
by Eclipseina GmbH
(Online, onsite and In-house)

Status July 2024

Content

Training Dates and Registration

Training dates

All current dates can be found on our website: https://eclipseina.com

Registration

Please send us an e-mail to: training@eclipseina.com

Please include the following data:

- Training title:
- Training date:
- Name of participant:
- Participant's contact details:
- Company:
- Billing address:

Trainings

Introduction to Electric Charging

Electric Charging for Managers

Description

This training offers you a quick introduction to the topic of electric charging in the context of electromobility. You will first receive a general introduction to the topic of charging. Then we will go into electric driving and finally you will be familiarized with charging communication via Power-Line-Communication PLC.

Target Group

Line managers, project managers

Prerequisites

Electrical engineering basics are of advantage

Training Content

Introduction to electric charging

- Charging technology basics
- Charging with alternating current AC versus direct current DC
- Status quo

Introduction to electric driving

- Motivation for electric driving
- Energy consumption
- Development of the electric vehicle
- Current challenges of e-mobility
- Components of an electric vehicle

Introduction to the Power-Line-Communication PLC

- Overview of charging types, plugs and currents
- Pulse width modulation PWM and control pilot

- Orthogonal frequency division multiplexing and the billing system via PLC

Duration

1 day

Price

Online: 990 € per participant
Onsite: 1090 € per participant

Electric Charging Introduction

In this training you will learn the basics of electric charging. First, you will receive a general introduction to the topic of charging. Then we will go into electric driving and finally you will be introduced to charging communication via Power-Line-Communication PLC.

Target Group

Developers who want to get into the topic of charging

Prerequisites

Electrical engineering fundamentals are of advantage

Training Content

Electric Charging: Introduction

- Charging technology basics
- Differences between AC and DC charging
- Current status regarding electric charging

Electric driving: Introduction

- Why drive electric?
- Consideration of energy consumption
- The evolution of the electric vehicle over time
- Current challenges of e-mobility
- Overview of the different components of an electric vehicle

Power line communication: Introduction

- Overview of different charging types, plugs and current levels
- Pulse width modulation PWM and control pilot CP
- Orthogonal frequency division multiplexing OFDM and the billing system via power line communication PLC

Duration

1 day

Price

Online: 890 € per participant
Onsite: 990 € per participant

Charging communication for hardware developers

Introduction to hardware development for PLC in electric charging

In the first part of this training, you will get an introduction to charging, to electric driving. In the second part, charging communication via Power-Line-Communication PLC will be discussed in more detail.

Target Group

Hardware developers who want to get into the development of components for charging communication

Prerequisites

Electrical engineering fundamentals

Training Content

Introduction

- Electric Charging: Charging technology, differences between AC and DC charging

- Electric driving: Motivation, energy consumption, evolution over time, challenges, components of the electrified powertrain

Power Line Communication PLC

- Introduction to PLC: charging types, connectors and currents, pulse width modulation PWM and control pilot CP, orthogonal frequency division multiplexing OFDM and the billing system via power line communication PLC
- Hardware consideration: Standardized charging interface, overview of network forms, components of the charging pole EVSE, sequence of charging communication, differences between various hardware components
- PWM signal: circuit for Control Pilot CP, tolerances and disturbances of the PWM signal, open points in the definition of the CP, detailed consideration of standards
- Power Line Communication PLC transmitter

Duration

2 days

Price

Online: 1320 € per participant
Onsite: 1490 € per participant

Hardware development and calibration of parameters

The first part of this training deals with the hardware for the Power-Line-Communication PLC. The second part deals with the Signal Level Attenuation Characterization SLAC and explains the SLAC functionality as well as the calibration of the SLAC.

Target Group

Developers who want to get into the development of components for charging communication

Prerequisites

Electrical engineering fundamentals, electrical charging fundamentals

Training Content

Hardware considerations of the Power-Line-Communication PLC

- Hardware consideration: standardized charging interface, overview of network forms, components of the charging station EVSE, sequence of charging communication, differences between various hardware components
- PWM signal: circuit for Control Pilot CP, tolerances and disturbances of the PWM signal, open points in the definition of the CP, detailed consideration of standards
- Power Line Communication PLC transmitter

Signal Level Attenuation Characterization SLAC

- SLAC function: description of SLAC functionality, parking lot test
- Calibration description of SLAC: SLAC level measurement, measurement of SLAC with a test system

Duration

2 Days

Price

Online: 1320 € per participant
Onsite: 1490 € per participant

Expert training: PSD power spectral density calibration of PLC modems

Impedance measurement and PSD calibration of PLC modems according to ISO 15118-3 for EV and EVSE

In the first part of this training, we briefly discuss the hardware for the Power-Line-Communication PLC.

The second part deals with the Signal Level Attenuation Characterization SLAC and explains the SLAC functionality as well as the calibration of the SLAC.

You will get to know the PSD power spectral density calibration of PLC modems according to ISO15118-3 for EV and EVSE. For this we are going to measure the impedance on the communication line.

Target Group

Hardware developers who develop or test controllers for charging communication.

Prerequisites

Electrical engineering expertise, electrical charging fundamentals

Training Content

Hardware considerations of the Power-Line-Communication PLC

Introduction

- standardized charging interface
- different forms of networks
- charging station EVSE components
- charging communication sequence
- differences between various hardware components

PWM signal

- Control Pilot CP circuit
- possible tolerances and disturbances of the PWM signal
- open points in the definition of the CP
- standards

Power Line Communication PLC transmitter

PSD power spectral density calibration of PLC modems

Signal Level Attenuation Characterization SLAC function

- description of SLAC functionality
- parking lot test

Calibration description of SLAC

- SLAC level measurement
- Measurement of SLAC with test systems specialized for impedance measurement
- PSD power spectral density calibration including practical exercise with expert equipment

Calibration is carried out in practical exercises with the aid of special measuring equipment.

Duration

2 Days

Price

Onsite: 2990 € per participant

Charging communication for software developers

Introduction to software development for PLC in electric charging

In the first part of this training, you will get an introduction about charging, electric driving and about the Power-Line-Communication PLC. In the second part, the software stack in charging communication will be discussed in detail.

Target Group

Software developers who want to start developing components for charging communication

Prerequisites

Electrical engineering fundamentals are of advantage, software development experience

Training Content

Introduction

- Electric charging: Charging technology, differences between AC and DC charging
- Electric driving: Motivation, energy consumption, evolution over time, challenges, components of the electrified powertrain
- Introduction to PLC: charging types, connectors and currents, pulse width modulation PWM and control pilot CP, orthogonal frequency division multiplexing OFDM and the billing system via power line communication PLC

Charging communication in software

- Short introduction to Orthogonal Frequency Division Multiplexing OFDM and the billing system via Power-Line-Communication PLC
- V2G communication in the charging process, and start of charging communication
- OSI Layer 3 7 with IPv6, DHCPv6, UDP, TCP, TLS, V2G Session Layer, EXI, and Application Layer

Duration

2 Days

Price

Online: 1320 € per participant
Onsite: 1490 € per participant

Electric Charging Communication for Software Developers of SW Stack

In this training you will get to know the software stack necessary for charging communication.

Target Group

Software developers who want to start developing components for charging communication

Prerequisites

Software experience in the area of communication is an advantage

Training Content

Introduction to Orthogonal Frequency Division Multiplexing OFDM

- Short introduction to OFDM

Charging communication in software

- V2G communication in the charging process, as well as start of charging communication
- OSI Layer 3 7 with IPv6, DHCPv6, UDP, TCP, TLS, V2G Session Layer, EXI and Application Layer

Duration

1 day

Price

Online:	890 € per participant
Onsite:	990 € per participant