**vSECClib Family**

Software Libraries for Charging Station Control Units

**What is the vSECClib Family?**

vSECClib (Supply Equipment Communication Controller Library) is a family of software libraries for smart charging stations. The family consists of different libraries which cover the high-level communication between the charging station, the electric vehicle and the back end (CSMS). Each software stack can be integrated into your charging station control unit separately.

**Different Libraries - Individually Integrated**

Vector supports developers with embedded software to easily ensure the standard compliant implementation of communication functions. Each software library enables the rapid and sustainable development of smart charging stations: The .CCS stack already contains the logic for AC and DC charging communication via CCS according to ISO 15118 and DIN SPEC 70121. With the .OCPP library, customers can implement the message handling between the controller and the CSMS according to OCPP 2.0.1. Further libraries are vSECClib.P for pantograph and vSECClib.WPT for wireless charging. In the future a .PEP software stack will be available for handling the power electronics communication via Ethernet and CAN.

**Overview of Advantages**

> Simplified development of communication software for charging stations
> ISO, DIN and OCPP interfaces ready for implementation
> Mature software components with high reliability
> Reduced time to market
> Standard compliant communication between the charging station, the vehicle and the back end
> Hardware independent C/C++ library, compatible with all Linux-based systems
> Regular updates to meet standards under development

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![System architecture for smart charging.](image-url)
Available and future vSECClib libraries

### vSECClib.CCS
- Smart charging software stack for AC and DC charging
- Implementation of ISO 15118-2, -3 and DIN 70121
- Includes SLAC handling
- Authorization via EIM and PnC
- ISO 15118-20 ready through future-proof software architecture
- AUTOSAR and RTOS compatible

**Available options**
- ACD (ISO 15118-20 upcoming)
- BPT (ISO 15118-20 upcoming)

**Advantages**
- Improved error handling and schema validation
- Easy debugging, user-friendly logic
- Small memory usage
- Developer-friendly integration of C++ library

### vSECClib.OCPP
- Smart charging software stack for back end communication
- Supports full OCPP 2.0.1 message set
- Automated OCPP message handling including protocol-specific requirements and restrictions
- Full device model implementation with easy access

**Advantages**
- Easy to use interface for complex OCPP use cases
- Error handling and JSON schema validation
- High performant C++ library
- High efficiency and portability

### vSECClib.WPT
- Smart charging software stack for wireless power transfer
- First implementation of inductive charging
- Linux demo application included
- AUTOSAR and RTOS compatible

### vSECClib.PEP
- Smart charging software stack for communication to power electronics
- PEP controls and monitors energy transfer of power electronics for EV charging
- Including detailed specification of PEP for easy implementation of the protocol

**Available options**
- UP (ISO 15118: Panto-Up)
- DWN (OppCharge: Panto-Down)

**Advantages**
- Improved error handling and schema validation
- Easy debugging, user-friendly logic
- Small memory usage
- Developer-friendly integration of C++ library

### vSECClib.P
- Smart charging software stack for pantograph charging
- High power opportunity and depot charging for buses

**Available options**
- UP (ISO 15118: Panto-Up)
- DWN (OppCharge: Panto-Down)

**Advantages**
- Communication via wireless access point
- No user interaction required for charging

**More information:** vector.com/vSECClib

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**Glossary**

- **ACD:** Automatic Connection Device
- **BPT:** Bidirectional Power Transfer
- **CCS:** Combined Charging System
- **CSMS:** Charging Station Management System
- **DIS:** Draft for International Standard
- **EIM:** External Identification Means
- **EVCC:** Electric Vehicle Communication Controller
- **EVSE:** Electric Vehicle Supply Equipment
- **OCPP:** Open Charge Point Protocol
- **PE:** Power Electronics
- **PnC:** Power Network Control
- **SECC:** Supply Equipment Communication Controller
- **UI:** User Interface