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| 2024-11-27 | R24-11 | AUTOSAR Release Management | • Added chapter 8<br>• Revised diagrams in chapter 9<br>• replaced ChrgM with ISO15118Chrg<br>• requirements updated with service interfaces<br>• Section 3.2 updated<br>• Added missing references<br>• Fixed the scale of figures<br>• Removed appendix A with no applicable requirements<br>• changed lowercase to uppercase starting letters in bullet points |
| 2023-11-23 | R23-11 | AUTOSAR Release Management | • Initial release |

**Disclaimer**

# Contents

# Known Limitations

Currently the Charging Manager does not support the following:

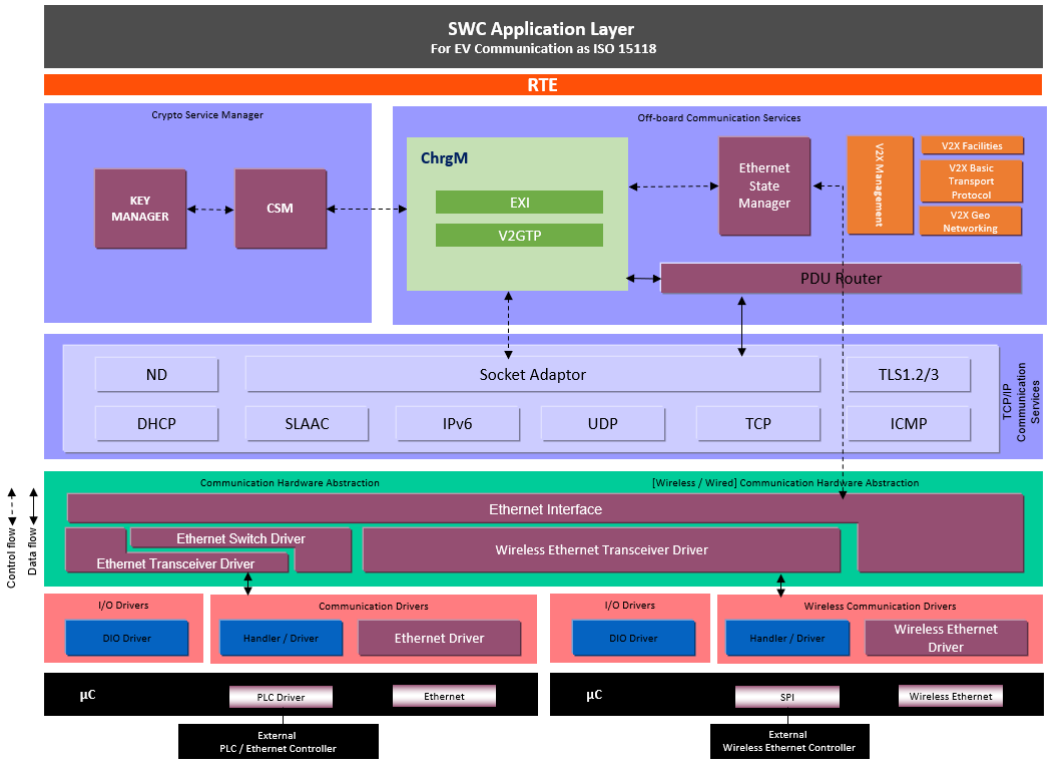
- Wireless charging as per [1]
- Bi-directional charging as per [1]
- Charging over CAN as per Chademo
- Charging over LIN

# 1 Introduction and functional overview

This specification describes the functionality, API and the configuration for the AUTOSAR Basic Software module ISO15118Chrg. The charging module (ISO15118Chrg) belongs to the service layer of the AUTOSAR layered architecture.

The ISO15118Chrg implements the V2GTP (vehicle to grid transport protocol) and the EXI (efficient XML interchange), the V2GTP defines the structure of the PDU; which is the header and payload definitions. The EXI is responsible for compression of the XML data for faster processing. The ISO15118Chrg module communicates with the Crypto stack to support data authentication and encryption, as well as certificate management and verification.

Refer to chapter 5 for ISO15118Chrg interaction with other modules. The figure given below describes the architecture:




**AUTOSAR Layered Architecture**

# 2 Acronyms and Abbreviations

The glossary below includes the relevant acronyms and abbreviations.

| Abbreviation / Acronym: | Description: |
|---|---|
| ISO15118-2 Charging Manager | Charging Manager |
| V2GTP | Vechile to Grid Transport Protocol |
| EVCC | Electric Vehicle Communcation Controller |
| SECC | Supply Equipment Communcation Controller |
| HLC | High Level Communcation |
| EVSE | Electrical Vehicle Supply Equipment |
| SDP | SECC Discovery Protocol |
| PLC | Pilot Line Communcation |
| EV | Electric Vehicle |
| CCS | Combined Charging System |
| EXI | Efficient XML Interchange |
| eMAID | e-Mobility Account Identifier |
| EIM | External Identification Means |

**Table 2.1: Acronyms and abbreviations used in the scope of this Document**

# 3 Related documentation

## 3.1 Input documents

[1] ISO 15118-20: Road Vehicles – Vehicle to Grid Interface – Part 20: 2nd Generation Network and Application Protocol Requirements

[2] ISO 15118-2: Road Vehicles – Vehicle to Grid Interface – Part 2: Network and Application Protocol Requirements

[3] Requirements on Charging Manager
AUTOSAR_CP_RS_ChargingManager

[4] Specification of Socket Adaptor
AUTOSAR_CP_SWS_SocketAdaptor

[5] Specification of PDU Router
AUTOSAR_CP_SWS_PDURouter

[6] Specification of Ethernet State Manager
AUTOSAR_CP_SWS_EthernetStateManager

[7] Specification of Basic Software Mode Manager
AUTOSAR_CP_SWS_BSWModeManager

[8] Specification of RTE Software
AUTOSAR_CP_SWS_RTE

[9] Specification of ECU State Manager
AUTOSAR_CP_SWS_ECUStateManager

[10] ISO 15118-3: Road Vehicles – Vehicle to Grid Interface – Part 3: Physical and Data Link Requirements

[11] Specification of Key Manager
AUTOSAR_CP_SWS_KeyManager

[12] Specification of Crypto Service Manager
AUTOSAR_CP_SWS_CryptoServiceManager

[13] General Specification of Basic Software Modules
AUTOSAR_CP_SWS_BSWGeneral

## 3.2 Related Standards

ISO15118-2: Road vehicles Vehicle to Grid Communication Interface, Network and application protocol requirements.

# 4 Constraints and assumptions

## 4.1 Limitations

The ISO15118Chrg module (charging manager) supports communication between the EV and the EVSE as per the standard ISO-15118, other communication standards such as CAN, LIN, FlexRay are not supported. The wireless and the wired ethernet and transceiver drivers must be configured to support IEEE802.1X and HomePlugPHY standards respectively. The ISO15118Chrg module does not support bi-directional charging.

## 4.2 Applicability to car domains

The ISO15118Chrg module can be used wherever wired and wireless charging over ethernet is used.

# 5 Dependencies to other modules

## 5.1 ECU State Manager (EcuM)

The EcuM module intializes the ISO15118Chrg module.

## 5.2 Basic Software Mode Manager (BswM)

The ISO15118Chrg module will notify the BswM about the mode changes of the ethernet network(s).

## 5.3 BSW Scheduler (SchM)

The BSW Scheduler module calls the main function of the ISO15118Chrg module.

## 5.4 Ethernet State Manager (EthSM)

The Ethernet state manager (EthSM) will notify the ISO15118Chrg module about the communication modes of the ethernet network(s).

## 5.5 Socket Adaptor (SoAd)

The socket adaptor is the upper layer of the TCPIP stack and is used by the ISO15118Chrg module for opening and closing of sockets for TCP and UDP connections.

## 5.6 TcpIp

The TCPIP stack will be used by the ISO15118Chrg module to provide services such as TCP, UDP, ICMPv6, SLAAC, DHCP, NDP, etc.

## 5.7 Ethernet Interface (EthIf)

The ethernet interface provides APIs to access the ethernet drivers and the ethernet transceiver drivers. It also provides APIs to the TCPIP stack for transmission and reception of TCP and UDP packets.

## 5.8 Ethernet Driver (EthDrv)

The ethernet driver is used to configure the ethernet controller, as per the concept [2] it must support HomePlugPHY standard.

## 5.9 Ethernet Transceiver Driver (EthTrcv)

The ethernet transceiver driver provides the APIs to configure the ethernet transceiver, which transmits and receives data to and from the ethernet bus.

## 5.10 Crypto Service Module (Csm)

The ISO15118Chrg module will use the services of the crypto module to support encryption and decryption of messages.

## 5.11 Key Manager (KeyM)

The ISO15118Chrg module will use the services of the KeyManager to support certificate management and verfication.

# 6 Requirements Traceability

The following tables reference the requirements specified in [3, CP RS ChargingManager] and links to the fulfillment of these. Please note that if column “Satisfied by” is empty for a specific requirement this means that this requirement is not fulfilled by this document.

| Requirement | Description | Satisfied by |
|---|---|---|
| **[CP_RS_ChrgM_00001]** | The ChrgM module shall initiate the process of IP address assignment. | [CP_SWS_ISO15118Chrg_00015] [CP_SWS_ISO15118Chrg_00017] [CP_SWS_ISO15118Chrg_00018] [CP_SWS_ISO15118Chrg_00020] |
| **[CP_RS_ChrgM_00002]** | The ChrgM module shall initiate the process of SECC Discovery Process (SDP). | [CP_SWS_ISO15118Chrg_00015] [CP_SWS_ISO15118Chrg_00018] [CP_SWS_ISO15118Chrg_00019] [CP_SWS_ISO15118Chrg_00021] [CP_SWS_ISO15118Chrg_00022] [CP_SWS_ISO15118Chrg_00076] [CP_SWS_ISO15118Chrg_00215] |
| **[CP_RS_ChrgM_00003]** | The ChrgM shall establish a TCP-TLS session. | [CP_SWS_ISO15118Chrg_00015] [CP_SWS_ISO15118Chrg_00021] [CP_SWS_ISO15118Chrg_00023] [CP_SWS_ISO15118Chrg_00024] [CP_SWS_ISO15118Chrg_00078] [CP_SWS_ISO15118Chrg_00079] [CP_SWS_ISO15118Chrg_00216] [SWS_ISO15118Chrg_00092] |
| **[CP_RS_ChrgM_00004]** | The ChrgM shall establish a V2G session. | [CP_SWS_ISO15118Chrg_00025] [CP_SWS_ISO15118Chrg_00026] [CP_SWS_ISO15118Chrg_00220] |
| **[CP_RS_ChrgM_00005]** | The ChrgM shall implement the EXI (efficient XML interchange). | [CP_SWS_ISO15118Chrg_00003] [CP_SWS_ISO15118Chrg_00006] |
| **[CP_RS_ChrgM_00006]** | The ChrgM shall provide security and authentication for V2G messages. | [CP_SWS_ISO15118Chrg_00086] [CP_SWS_ISO15118Chrg_00089] |
| **[CP_RS_ChrgM_00007]** | The ChrgM shall store, verify and update certificates. | [CP_SWS_ISO15118Chrg_00080] [CP_SWS_ISO15118Chrg_00081] [CP_SWS_ISO15118Chrg_00082] [CP_SWS_ISO15118Chrg_00091] |
| **[CP_RS_ChrgM_00008]** | The ChrgM shall implement the V2GTp (vehicle to grid transport protocol). | [CP_SWS_ISO15118Chrg_00004] [CP_SWS_ISO15118Chrg_00006] [CP_SWS_ISO15118Chrg_00008] [CP_SWS_ISO15118Chrg_00010] [CP_SWS_ISO15118Chrg_00011] [CP_SWS_ISO15118Chrg_00012] [CP_SWS_ISO15118Chrg_00013] [CP_SWS_ISO15118Chrg_00014] |

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| Requirement | Description | Satisfied by |
|---|---|---|
| **[CP_RS_ChrgM_00009]** | The ChrgM shall communicate with the RTE and CDDs. | [CP_SWS_ISO15118Chrg_00001] [CP_SWS_ISO15118Chrg_00002] [CP_SWS_ISO15118Chrg_00016] [CP_SWS_ISO15118Chrg_00027] [CP_SWS_ISO15118Chrg_00028] [CP_SWS_ISO15118Chrg_00029] [CP_SWS_ISO15118Chrg_00030] [CP_SWS_ISO15118Chrg_00031] [CP_SWS_ISO15118Chrg_00032] [CP_SWS_ISO15118Chrg_00033] [CP_SWS_ISO15118Chrg_00034] [CP_SWS_ISO15118Chrg_00035] [CP_SWS_ISO15118Chrg_00036] [CP_SWS_ISO15118Chrg_00037] [CP_SWS_ISO15118Chrg_00038] [CP_SWS_ISO15118Chrg_00039] [CP_SWS_ISO15118Chrg_00040] [CP_SWS_ISO15118Chrg_00041] [CP_SWS_ISO15118Chrg_00042] [CP_SWS_ISO15118Chrg_00043] [CP_SWS_ISO15118Chrg_00044] [CP_SWS_ISO15118Chrg_00045] [CP_SWS_ISO15118Chrg_00046] [CP_SWS_ISO15118Chrg_00047] [CP_SWS_ISO15118Chrg_00048] [CP_SWS_ISO15118Chrg_00049] [CP_SWS_ISO15118Chrg_00050] [CP_SWS_ISO15118Chrg_00051] [CP_SWS_ISO15118Chrg_00052] [CP_SWS_ISO15118Chrg_00053] [CP_SWS_ISO15118Chrg_00054] [CP_SWS_ISO15118Chrg_00055] [CP_SWS_ISO15118Chrg_00056] [CP_SWS_ISO15118Chrg_00057] [CP_SWS_ISO15118Chrg_00058] [CP_SWS_ISO15118Chrg_00059] [CP_SWS_ISO15118Chrg_00060] [CP_SWS_ISO15118Chrg_00061] [CP_SWS_ISO15118Chrg_00062] [CP_SWS_ISO15118Chrg_00063] [CP_SWS_ISO15118Chrg_00064] [CP_SWS_ISO15118Chrg_00065] [CP_SWS_ISO15118Chrg_00066] [CP_SWS_ISO15118Chrg_00067] [CP_SWS_ISO15118Chrg_00068] [CP_SWS_ISO15118Chrg_00069] [CP_SWS_ISO15118Chrg_00070] [CP_SWS_ISO15118Chrg_00071] [CP_SWS_ISO15118Chrg_00072] [CP_SWS_ISO15118Chrg_00073] [CP_SWS_ISO15118Chrg_00074] [CP_SWS_ISO15118Chrg_00075] [CP_SWS_ISO15118Chrg_00077] [CP_SWS_ISO15118Chrg_00084] [CP_SWS_ISO15118Chrg_00085] [CP_SWS_ISO15118Chrg_00087] [CP_SWS_ISO15118Chrg_00090] |
| **[CP_RS_ChrgM_00010]** | The ChrgM shall provide timers for managing communication. | [CP_SWS_ISO15118Chrg_00005] |
| **[CP_RS_ChrgM_00011]** | The ChrgM shall provide an error handling mechanism for V2G messages. | [CP_SWS_ISO15118Chrg_00007] [CP_SWS_ISO15118Chrg_00009] [CP_SWS_ISO15118Chrg_00219] |

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| Requirement | Description | Satisfied by |
|---|---|---|
| **[CP_RS_ChrgM_00012]** | The ChrgM shall provide callback functions. | [CP_SWS_ISO15118Chrg_00140]<br>[CP_SWS_ISO15118Chrg_00141]<br>[CP_SWS_ISO15118Chrg_00143]<br>[CP_SWS_ISO15118Chrg_00217]<br>[CP_SWS_ISO15118Chrg_00218] |
| **[SRS_BSW_00101]** | The Basic Software Module shall be able to initialize variables and hardware in a separate initialization function | [CP_SWS_ISO15118Chrg_00119] |
| **[SRS_BSW_00301]** | All AUTOSAR Basic Software Modules shall only import the necessary information | [CP_SWS_ISO15118Chrg_00115] |
| **[SRS_BSW_00305]** | Data types naming convention | [CP_SWS_ISO15118Chrg_00116]<br>[CP_SWS_ISO15118Chrg_00149]<br>[CP_SWS_ISO15118Chrg_00150]<br>[CP_SWS_ISO15118Chrg_00151]<br>[CP_SWS_ISO15118Chrg_00152]<br>[CP_SWS_ISO15118Chrg_00153]<br>[CP_SWS_ISO15118Chrg_00154]<br>[CP_SWS_ISO15118Chrg_00155]<br>[CP_SWS_ISO15118Chrg_00156]<br>[CP_SWS_ISO15118Chrg_00157]<br>[CP_SWS_ISO15118Chrg_00158]<br>[CP_SWS_ISO15118Chrg_00159]<br>[CP_SWS_ISO15118Chrg_00160]<br>[CP_SWS_ISO15118Chrg_00161]<br>[CP_SWS_ISO15118Chrg_00162]<br>[CP_SWS_ISO15118Chrg_00163]<br>[CP_SWS_ISO15118Chrg_00164]<br>[CP_SWS_ISO15118Chrg_00165]<br>[CP_SWS_ISO15118Chrg_00166]<br>[CP_SWS_ISO15118Chrg_00167]<br>[CP_SWS_ISO15118Chrg_00168]<br>[CP_SWS_ISO15118Chrg_00169]<br>[CP_SWS_ISO15118Chrg_00170]<br>[CP_SWS_ISO15118Chrg_00171]<br>[CP_SWS_ISO15118Chrg_00172]<br>[CP_SWS_ISO15118Chrg_00173]<br>[CP_SWS_ISO15118Chrg_00174]<br>[CP_SWS_ISO15118Chrg_00175]<br>[CP_SWS_ISO15118Chrg_00176]<br>[CP_SWS_ISO15118Chrg_00177]<br>[CP_SWS_ISO15118Chrg_00178]<br>[CP_SWS_ISO15118Chrg_00179]<br>[CP_SWS_ISO15118Chrg_00180]<br>[CP_SWS_ISO15118Chrg_00181]<br>[CP_SWS_ISO15118Chrg_00182]<br>[CP_SWS_ISO15118Chrg_00183]<br>[CP_SWS_ISO15118Chrg_00184]<br>[CP_SWS_ISO15118Chrg_00185]<br>[CP_SWS_ISO15118Chrg_00186]<br>[CP_SWS_ISO15118Chrg_00187]<br>[CP_SWS_ISO15118Chrg_00188]<br>[CP_SWS_ISO15118Chrg_00189]<br>[CP_SWS_ISO15118Chrg_00190]<br>[CP_SWS_ISO15118Chrg_00191]<br>[CP_SWS_ISO15118Chrg_00192]<br>[CP_SWS_ISO15118Chrg_00193]<br>[CP_SWS_ISO15118Chrg_00194]<br>[CP_SWS_ISO15118Chrg_00195]<br>[CP_SWS_ISO15118Chrg_00196]<br>[CP_SWS_ISO15118Chrg_00197]<br>[CP_SWS_ISO15118Chrg_00198]<br>[CP_SWS_ISO15118Chrg_00199]<br>▽ |

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| Requirement | Description | Satisfied by |
|---|---|---|
| | | △<br>[CP_SWS_ISO15118Chrg_00201]<br>[CP_SWS_ISO15118Chrg_00202]<br>[CP_SWS_ISO15118Chrg_00203]<br>[CP_SWS_ISO15118Chrg_00204]<br>[CP_SWS_ISO15118Chrg_00205]<br>[CP_SWS_ISO15118Chrg_00206]<br>[CP_SWS_ISO15118Chrg_00207]<br>[CP_SWS_ISO15118Chrg_00208]<br>[CP_SWS_ISO15118Chrg_00209]<br>[CP_SWS_ISO15118Chrg_00210]<br>[CP_SWS_ISO15118Chrg_00211]<br>[CP_SWS_ISO15118Chrg_00212]<br>[CP_SWS_ISO15118Chrg_00214] |
| **[SRS_BSW_00310]** | API naming convention | [CP_SWS_ISO15118Chrg_00119]<br>[CP_SWS_ISO15118Chrg_00122]<br>[CP_SWS_ISO15118Chrg_00125]<br>[CP_SWS_ISO15118Chrg_00128]<br>[CP_SWS_ISO15118Chrg_00131]<br>[CP_SWS_ISO15118Chrg_00133]<br>[CP_SWS_ISO15118Chrg_00140]<br>[CP_SWS_ISO15118Chrg_00141]<br>[CP_SWS_ISO15118Chrg_00143]<br>[CP_SWS_ISO15118Chrg_00145]<br>[CP_SWS_ISO15118Chrg_00146] |
| **[SRS_BSW_00323]** | All AUTOSAR Basic Software Modules shall check passed API parameters for validity | [CP_SWS_ISO15118Chrg_00113] |
| **[SRS_BSW_00337]** | Classification of development errors | [CP_SWS_ISO15118Chrg_00113] |
| **[SRS_BSW_00350]** | All AUTOSAR Basic Software Modules shall allow the enabling/disabling of detection and reporting of development errors. | [CP_SWS_ISO15118Chrg_00113] |
| **[SRS_BSW_00358]** | The return type of init() functions implemented by AUTOSAR Basic Software Modules shall be void | [CP_SWS_ISO15118Chrg_00119] |
| **[SRS_BSW_00384]** | The Basic Software Module specifications shall specify at least in the description which other modules they require | [CP_SWS_ISO15118Chrg_00147]<br>[CP_SWS_ISO15118Chrg_00148] |
| **[SRS_BSW_00414]** | Init functions shall have a pointer to a configuration structure as single parameter | [CP_SWS_ISO15118Chrg_00119] |
| **[SRS_BSW_00438]** | Configuration data shall be defined in a structure | [CP_SWS_ISO15118Chrg_00116] |
| **[SRS_BSW_00452]** | Classification of runtime errors | [CP_SWS_ISO15118Chrg_00114] |

**Table 6.1: Requirements Tracing**

# 7 Functional specification

The Charging Manager (ISO15118Chrg) module enables the charging process between the supply equipment (EVSE) and the vehicle (EV), the charging process is based upon the standard [2, ISO 15118-2], which supports both AC and DC charging with the option of 2 payment methods PnC (plug and charge) and EIM (external identification means). The communication between the EV (electric vehicle) and the EVSE (electric vehicle suppy equipment) is established using two modems on each side, these modems are configured as per the HomePlugPHY standard.

## 7.1 Charging Manager (ISO15118Chrg) Overview

The ISO15118Chrg (charging module) is introduced in the AUTOSAR layered architecture as a communication module in the service layer and it controls the charging process using different sets of messages. It provides interfaces to communicate with the upper layer, and the lower layers such as the socket adaptor [4, Socket Adaptor] and the [5, PDU Router]. The ISO15118Chrg also communicates with the ethernet state manager [6, Ethernet State Manager], the basic software mode manager [7, BSW Mode Manager], the basic software scheduler [8, RTE] and the [9, Ecu State Manager].

The process of charging begins when the vehicle plugs itself in the supply equipment, the EVCC (electric vehicle communication controllers) senses a voltage at the CP line, an application software SwC needs to poll this CP line, once a voltage is sensed, the SwC will inform the ISO15118Chrg via the operation `SetCpLineStatus`. This marks the beginning of the charging process. For different states of the CP line, refer to ISO15118–1.

The EVCC then establishes a data link connection with the SECC, once the data link is established it informs the ISO15118Chrg. The charging interface used in the European Union is the CCS-Type2. The exchange of messages between the vehicle and the supply equipment will take place over the PP and CP lines of the CCS-Type2 connector, and it is called Pilot Line Communication (PLC), the EVCC and the SECC must comply with [10, ISO 15118-3] for data link connection.

The high-level architecture is given in the Chapter 1.

## 7.2 Charging Manager General Requirements

**[CP_SWS_ISO15118Chrg_00001] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall provide service interfaces to the upper layer, through which the request and response messages shall be exchanged.⌋

**[CP_SWS_ISO15118Chrg_00002] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall be able to create the V2G message from the dataPtr it receives in the request message from the upper layer.⌋

**[CP_SWS_ISO15118Chrg_00003] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00005

⌈The ISO15118Chrg shall implement EXI encoding and decoding as per [2, ISO 15118-2].⌋

**[CP_SWS_ISO15118Chrg_00004] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈The ISO15118Chrg shall implement the V2GTP as per [2, ISO 15118-2]. The V2GTP is the standard communication protocol between the EV and the EVSE.⌋

**[CP_SWS_ISO15118Chrg_00005] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00010

⌈The ISO15118Chrg shall provide the following timers with their respecitve timeouts as per [2, ISO 15118-2]:

- V2G_EVCC_CommunicationSetup_Timer : Communication Setup Timer in the EVCC
- V2G_EVCC_CommunicationSetup_Timeout : Timeout for the Communication Setup Timer
- V2G_EVCC_CableCheck_Timer : Cable Check Timer in the EVCC
- V2G_EVCC_CableCheck_Timeout : Timeout for the CableCheck Timer
- V2G_EVCC_PreCharge_Timer : PreCharge Timer in the EVCC
- V2G_EVCC_Precharge_Timeout : Timeout for the PreCharge Timer
- V2G_EVCC_Ongoing_Timer : Ongoing Timer in the EVCC
- V2G_EVCC_Ongoing_Timeout : Timeout for Ongoing Timer in the EVCC
- ISO15118ChrgV2G_EVCC_Msg_Timer : Timer for message request-response pair.
- ISO15118ChrgV2G_EVCC_Msg_Timeout : Timeout for the Message Time. This is the timee between a request-response pair.

- ISO15118Chrg_SDPTimer : Timer for SDP message.
- ISO15118Chrg_SDPTimerTimeout : Timeout for SDP message.

⌋

Note: Positive response codes start with 'OK', Negative response codes with 'FAILED'.

### 7.2.1 Transmission of Charging Control Messages

**[CP_SWS_ISO15118Chrg_00006] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008, CP_RS_ChrgM_00005

⌈The ISO15118Chrg shall encode the V2G message into the EXI format, upon successful EXI encoding, the ISO15118Chrg shall then pack this EXI stream into the V2GTP format as mentioned in [2, ISO15118-2].⌋

**[CP_SWS_ISO15118Chrg_00007] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00011

⌈If there is an error during the EXI encoding operation, then the ISO15118Chrg shall inform the upper layer with an error message and shall stop the charging process and go to the state `ISO15118Chrg_Init`.⌋

**[CP_SWS_ISO15118Chrg_00008] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈The ISO15118Chrg shall send the V2GTPPDU to the lower layer by calling `PduR_<User:Up>Transmit`. The ISO15118Chrg shall also start the timer `ISO15118ChrgV2G_EVCC_Msg_Timer` when it sends the 'Request' message.⌋

**[CP_SWS_ISO15118Chrg_00009] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00011

⌈If there is an error during the V2GTP formatting process, then the ISO15118Chrg shall inform the upper layer with an error message and shall stop the V2G session, and go to the state `ISO15118Chrg_Init`.⌋

### 7.2.2 Reception of Charging Control Messages

**[CP_SWS_ISO15118Chrg_00010] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈Upon reception of message from the lower layer, the ISO15118Chrg shall perform header checks in accordance with the V2GTP as mentioned in [2, ISO15118-2].⌋

**[CP_SWS_ISO15118Chrg_00011] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈If the header checks are successful and the response code starts with 'OK', and all timeouts are respected, then the ISO15118Chrg shall:

- Decode received EXI encoded message,
- Reset the timer `ISO15118ChrgV2G_EVCC_Msg_Timer`,
- Send the complete message (header + payload) to the upper layer,
- Wait for the next message to be triggered

⌋

**[CP_SWS_ISO15118Chrg_00012] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈If timeouts are respected and the header checks are unsuccessful then the ISO15118Chrg shall:

- Discard the received PDU,
- Inform the upper layer with an error message,
- Stop the charging process an go to state `Init`,
- Reset the timer `ISO15118ChrgV2G_EVCC_Msg_Timer`,
- Reset the timer `V2G_EVCC_CableCheck_Timer`,
- Reset the timer `V2G_EVCC_PreCharge_Timer`,
- Reset the timer `V2G_EVCC_Ongoing_Timer`,
- Close the TCP-TLS connection by calling `SoAd_CloseSoCon`,
- Release the IP address by calling `SoAd_ReleaseIpAddrAssignment`,
- Delete the SECC IP address and Port Number

⌋

**[CP_SWS_ISO15118Chrg_00013] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈If the header checks are successful, all timeouts are respected, and response code starts with 'FAILED' then the ISO15118Chrg shall:

- Discard the received PDU,
- Inform the upper layer with an error message,
- Stop the charging process and go to state `Init`,
- Reset the timer `ISO15118ChrgV2G_EVCC_Msg_Timer`,
- Reset the timer `V2G_EVCC_CableCheck_Timer`,
- Reset the timer `V2G_EVCC_PreCharge_Timer`,
- Reset the timer `V2G_EVCC_Ongoing_Timer`,
- Close the TCP-TLS connection by calling `SoAd_CloseSoCon`,
- Release the IP address by calling `SoAd_ReleaseIpAddrAssignment`,
- Delete the SECC IP address and Port Number

⌋

**[CP_SWS_ISO15118Chrg_00014] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00008

⌈If any timer exceeds its respective timeout, then:

- Discard the received PDU,
- Inform the upper layer with an error message,
- Stop the charging process and go to state `Init`,
- Reset the timer `ISO15118ChrgV2G_EVCC_Msg_Timer`,
- Reset the timer `V2G_EVCC_CableCheck_Timer`,
- Reset the timer `V2G_EVCC_PreCharge_Timer`,
- Reset the timer `V2G_EVCC_Ongoing_Timer`,
- Close the TCP-TLS connection by calling `SoAd_CloseSoCon`,
- Release the IP address by calling `SoAd_ReleaseIpAddrAssignment`,
- Delete the SECC IP address and Port Number

⌋

**[CP_SWS_ISO15118Chrg_00217] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00012

⌈The ISO15118Chrg provides the operation `StateParams` using which, the states of the ISO15118Chrg shall be controlled.⌋

**[CP_SWS_ISO15118Chrg_00218] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00012

⌈Using the operations `SessionSetupParams` and `SessionStopParams`, the charging session shall be started or stopped.⌋

**[CP_SWS_ISO15118Chrg_00219] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00011

⌈ISO15118Chrg provides the operation `ErrorNotification`, using which the ISO15118Chrg shall report errors to the upper layer.⌋

## 7.3 ISO15118Chrg Connection Setup

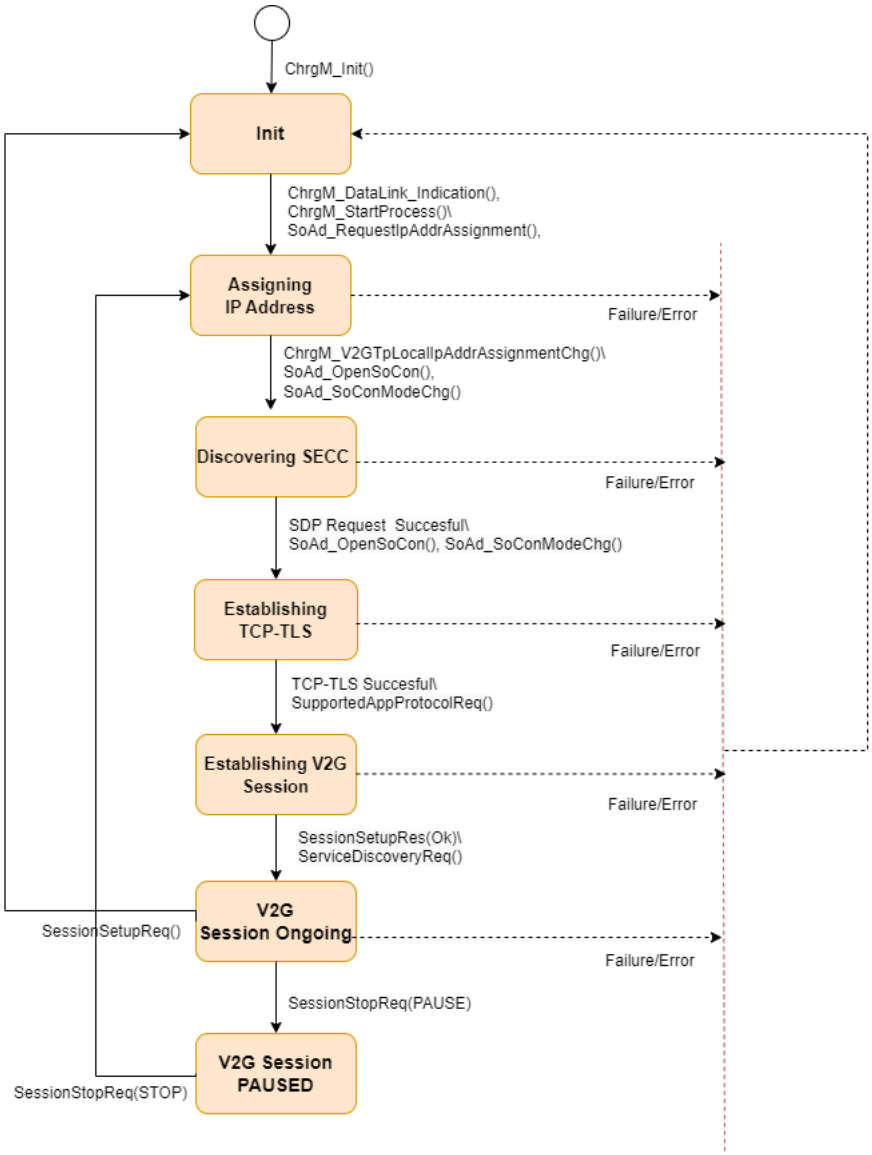


**Figure 7.1: ISO15118ChrgStateMachine**

### [CP_SWS_ISO15118Chrg_00015] General Requirement

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00001, CP_RS_ChrgM_00002, CP_RS_ChrgM_00003

⌈The ISO15118Chrg controls the state machine as given in Figure which shall contain the following states:

- Init : Initialization of the ISO15118Chrg module.
- Assigning IP address : Initiates the process of assigning IP address..
- Discovering SECC : ISO15118Chrg establishing UDP connection and discovering the SECC IP address and Port number.

- Establishing TCP-TLS : ISO15118Chrg establishing TCP-TLS connection.
- Establishing V2G Session : ISO15118Chrg establishing V2G session.
- V2G Session Ongoing : ISO15118Chrg in V2G session.
- V2G Session Paused : ISO15118Chrg pausing V2G session.

⌋

**[CP_SWS_ISO15118Chrg_00016] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall move to the state `Init` when a call to `ISO15118Chrg_Init` is made.⌋

**[CP_SWS_ISO15118Chrg_00017] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00001

⌈While the ISO15118Chrg is in the state `Init`, if:

- `ISO15118Chrg_DataLinkIndication` is called with 'ETHTRCV_LINK_STATE_ACTIV', and
- The operation `SetChargeState` is called with parameter StateMachine control set to 'ISO15118_START',

then, the ISO15118Chrg shall move to the state `Assigning IP Address` by calling `SoAd_RequestIpAddrAssignment` with parameters SoConId which the ISO15118Chrg shall get from `ISO15118ChrgSoAdSocketConnectionRef`, Type, LocalIpAddrPtr, Netmask and DefaultRouterPtr. The ISO15118Chrg shall start the timer `V2G_EVCC_CommunicationSetup_Timer`.⌋

**[CP_SWS_ISO15118Chrg_00018] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00001, CP_RS_ChrgM_00002

⌈While the ISO15118Chrg is in the state `Assigning IP Address`, if:

- `ISO15118Chrg_V2GTpLocalIpAddrAssignmentChg` returns 'TCPIP_IPADDR_STATE_ASSIGNED',

then, the ISO15118Chrg shall move to the state `Discovering SECC` by calling `SoAd_OpenSoCon` to open a UDP socket and wait for the response to`SoAd_SoConModeChg`. If `SoAdSoConModeChg` returns 'SOAD_SOCON_ONLINE', then the ISO15118Chrg shall send a SDP request message using the source port as V2G_UDP_SDP_CLIENT and the destination port as V2G_UDP_SDP_SERVER. The socket connection referenced by the parame-

ter ISO15118ChrgV2GUdpSdpClientRef shall be configured with the ports V2G_UDP_SDP_CLIENT, V2G_UDP_SDP_SERVER as per [2, ISO 15118-2].⌋

**[CP_SWS_ISO15118Chrg_00076] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00002

⌈The ISO15118Chrg shall use a separate UDP packet for each request message.⌋

**[CP_SWS_ISO15118Chrg_00019] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00002

⌈The ISO15118Chrg shall wait for at least 250ms after sending each SDP request message, the timer ISO15118Chrg_SDPTimer shall be implemented for this. After this timer expires, a new SDP request message shall be sent and the counter shall be incremented.⌋

**[CP_SWS_ISO15118Chrg_00020] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00001

⌈While the ISO15118Chrg is in the state Assigning IP Address, if:

- SoAdSoConModeChg Returns 'SOAD_SOCON_OFFLINE'
- ISO15118Chrg_V2GTpLocalIpAddrAssignmentChg Does not return 'TCPIP_IPADDR_STATE_ASSIGNED', or
- V2G_EVCC_CommunicationSetup_Timer Exceeds the V2G_EVCC_CommunicationSetup_Timeout, or
- ISO15118Chrg_DataLinkIndication States 'ETHTRCV_LINK_STATE_INACTIV', or
- Operation SetCpLineStatus returns 'INACTIVE', or

then, the ISO15118Chrg shall stop the charging process and move to the state Init. The ISO15118Chrg shall also inform the upper layer with an error message.⌋

**[CP_SWS_ISO15118Chrg_00021] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00002, CP_RS_ChrgM_00003

⌈While the ISO15118Chrg is in the state Discovering SECC, if:

- A valid SECC IP address and Port Number are received

then, the ISO15118Chrg shall move to the state Establishing TCP-TLS by calling SoAd_OpenSoCon to open a TCP socket and wait for the response to SoAdSoConModeChg. If, SoAdSoConModeChg returns 'SOAD_SOCON_ONLINE', then the

ISO15118Chrg shall establish a TLS connection over this TCP socket and close the previous UDP connection by calling SoAd_CloseSoCon.⌋

**[CP_SWS_ISO15118Chrg_00022] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00002

⌈While the ISO15118Chrg is in the state Discovering SECC, if:

- A valid SECC IP address and Port Number are not received, or
- SDP header checks fail, or
- TLS versions are not compatible, or
- V2G_EVCC_CommunicationSetup_Timer Exceeds the V2G_EVCC_CommunicationSetup_Timeout, or
- ISO15118Chrg_DataLinkIndication States 'ETHTRCV_LINK_STATE_INACTIV', or
- Operation SetCpLineStatus returns 'INACTIVE', or

then, the ISO15118Chrg shall:

- Close the UDP socket by calling SoAd_CloseSoCon,
- Release the IP address by calling SoAd_ReleaseIpAddrAssignment,
- Stop the charging process by going to the state Init,
- Inform the upper layer with an error message

⌋

**[CP_SWS_ISO15118Chrg_00078] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00003

⌈The ISO15118Chrg shall only support the message set EIM if TLS is not available. TLS comptibility can be checked in the SDP response message.⌋

**[CP_SWS_ISO15118Chrg_00023] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00003

⌈While the ISO15118Chrg is in the state Establishing TCP-TLS, if:

- TCP-TLS connection was succesfully established,

then, then the ISO15118Chrg shall trigger the message 'SupportedAppProtocolReq' to initiate the establishment of the V2G session and go to the state Establishing

V2G Session. The ISO15118Chrg shall start the timer ISO15118ChrgV2G_EVCC_Msg_Timer when this message is triggered.⌋

**[CP_SWS_ISO15118Chrg_00024] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00003

⌈While the ISO15118Chrg is in the state Establishing TCP-TLS, if:

- TCP-TLS connection could not be established, or
- V2G_EVCC_CommunicationSetup_Timer Exceeds the V2G_EVCC_CommunicationSetup_Timeout, or
- ISO15118Chrg_DataLinkIndication States 'ETHTRCV_LINK_STATE_INACTIV', or
- Operation SetCpLineStatus returns 'INACTIVE', or

then, then the ISO15118Chrg shall:

- Close the TCP socket by calling SoAd_CloseSoCon,
- Release the IP address by calling SoAd_ReleaseIpAddrAssignment,
- Stop the charging process by going to the state Init,
- Inform the upper layer with an error message

⌋

**[CP_SWS_ISO15118Chrg_00079] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00003

⌈The ISO15118Chrg shall ensure that if a previously established TLS session is switched off, then the charging process shall stop. The user shall be notified with an error message.⌋

**[CP_SWS_ISO15118Chrg_00080] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00007

⌈During the TLS handhshake process, the received SECC certificate or certificate chain shall be verified by calling KeyM_VerifyCertificate as mentioned in [11, KeyManager].⌋

**[CP_SWS_ISO15118Chrg_00081] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00007

⌈During the TLS handhshake a list of all supported V2G root certificates shall be sent to the SECC.⌋

**[CP_SWS_ISO15118Chrg_00082] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00007

⌈During the TLS handhshake, encryption and decryption mechanism shall be applied as mentioned in [2, ISO-15118-2].⌋

**[CP_SWS_ISO15118Chrg_00025] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00004

⌈While in the state `Establishing V2G Session`, if the response message 'SupportedAppProtocolRes' is returned with 'Ok', then the ISO15118Chrg shall trigger the next message 'SessionSetupReq' and shall wait for the response. If the response 'SupportedAppProtocolRes' is returned with 'FAILED' then the ISO15118Chrg shall:

- Close the TCP socket by calling `SoAd_CloseSoCon`,
- Release the IP address by calling `SoAd_ReleaseIpAddrAssignment`,
- Stop the charging process by going to the state `Init`,
- Inform the upper layer with an error message

⌋

**[CP_SWS_ISO15118Chrg_00026] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00004

⌈While in the state `Establishing V2G Session`, if the response message 'SessionSetupRes' is returned with 'Ok', then a call to the message 'ServiceDetailReq' shall take the ISO15118Chrg to the state `V2G Session Ongoing`. If the response 'SessionSetupRes' is returned with 'FAILED' then the ISO15118Chrg shall:

- Close the TCP socket by calling `SoAd_CloseSoCon`,
- Release the IP address by calling `SoAd_ReleaseIpAddrAssignment`,
- Stop the charging process by going to the state `Init`,
- Inform the upper layer with an error message

⌋

**[CP_SWS_ISO15118Chrg_00215] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00002

⌈The ISO15118Chrg shall acquire SLAC information using the operation `SlacStateParams`.⌋

**[CP_SWS_ISO15118Chrg_00216] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00003

⌈The ISO15118Chrg shall acquire SECC and TLS related information using the operation `SeccConnectionParams`.⌋

**[CP_SWS_ISO15118Chrg_00220] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00004

⌈Using the operation `SupportedAppProtocolParams`, the supportedAppProtocol parameters shall be fetched.⌋

## 7.4 ISO15118Chrg Charging Control Messages

The ISO15118Chrg has two sets of messages to control AC and DC charging. It also offers two different sets of messages depending on whether EiM or PnC is selected as a payment method.

### 7.4.1 General Control Messages

The message set for AC charging EiM is as follows:

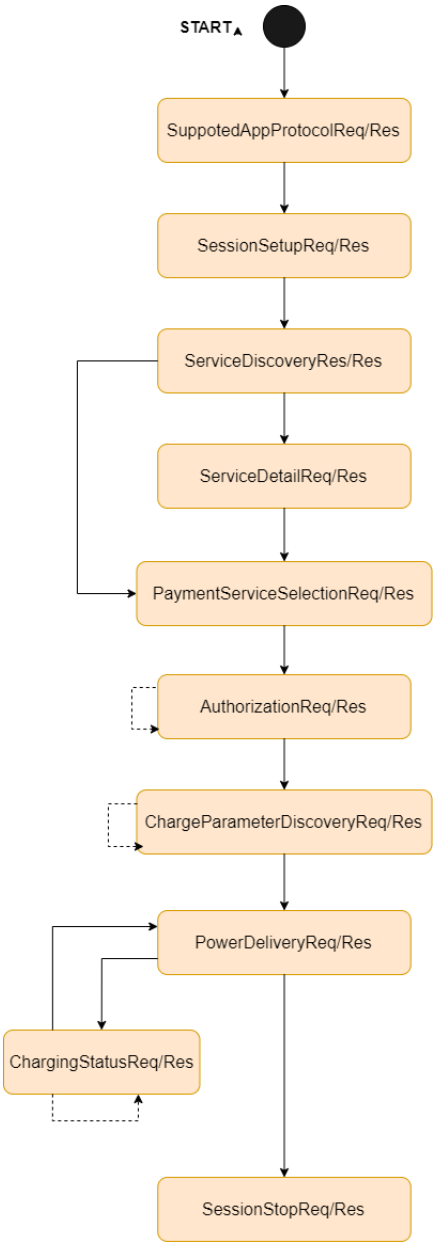


**Figure 7.2: AC EIM**

The message set for AC charging PnC is as follows:

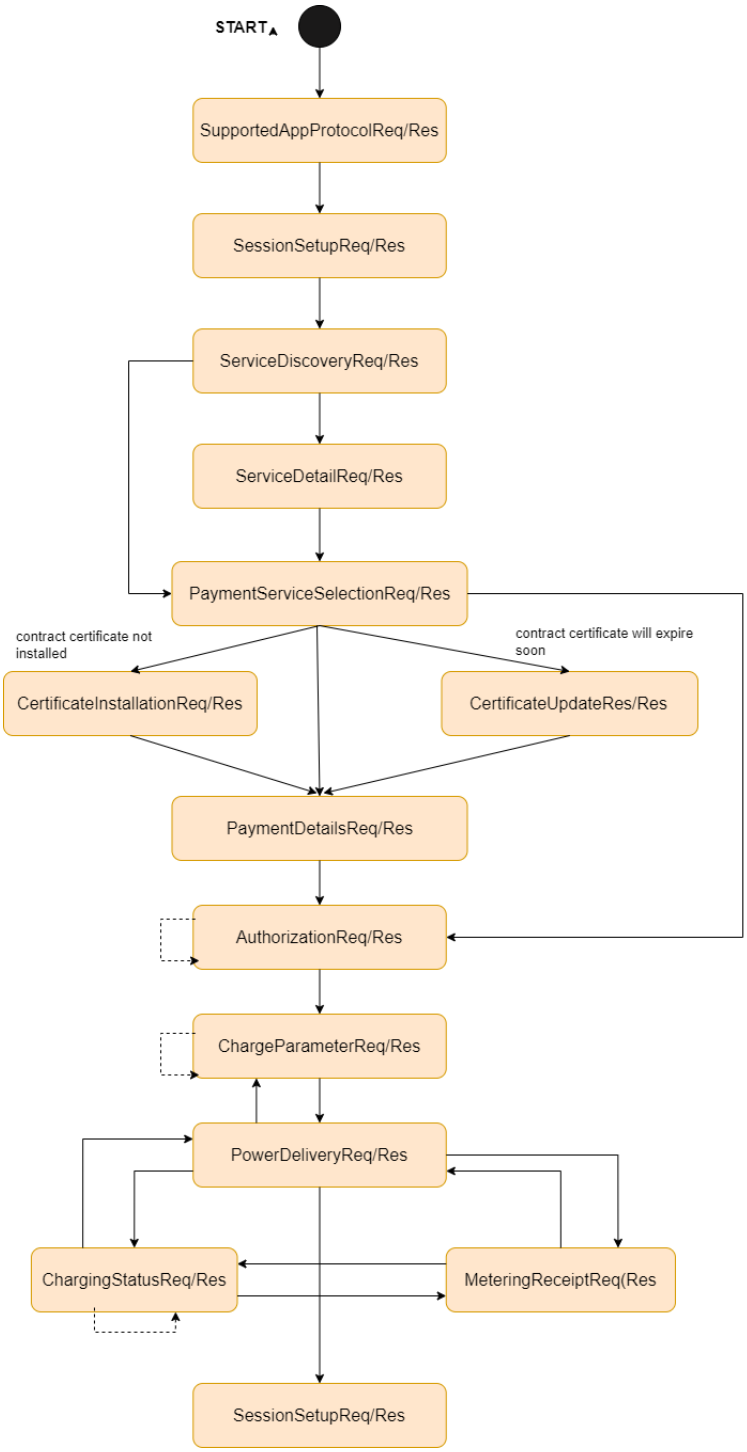


**Figure 7.3: AC PNC**

### [CP_SWS_ISO15118Chrg_00027] General Requirement

*Status:* DRAFT

*Upstream requirements:* CP_RS_ChrgM_00009

⌈Through the operation `ServiceDiscoveryParams`, the message 'ServiceDiscoveryReq' shall be triggered while the ISO15118Chrg is in the state `V2G`

`Session Ongoing`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008], [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00028] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the response message 'ServiceDiscoveryRes', the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014].⌋

**[CP_SWS_ISO15118Chrg_00029] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Once the message 'ServiceDiscoveryRes' has been processed succesfully, a call to the operation `ServiceDetailParams`, shall trigger the message 'ServiceDetailReq'. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00030] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the response message 'ServiceDetailRes', the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014].⌋

**[CP_SWS_ISO15118Chrg_00031] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The message 'ServiceDetailReq' shall be triggered again if further ServiceDetailReq are necessary to retrieve the detailed information from the SECC.⌋

Note: If the EVSE does not offer a list of services, then the message 'ServiceDetailReq' shall be skipped and the next message shall be triggered.

**[CP_SWS_ISO15118Chrg_00032] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Once the message 'ServiceDetailRes' or 'ServiceDiscoveryReq' has been processed succesfully, the a call to the operation `PaymentServiceSelectionParams`, shall trigger the message 'PaymentServiceSelectionReq'. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00033] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the response message 'PaymentServiceSelectionRes', the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014].⌋

**[CP_SWS_ISO15118Chrg_00034] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the the payment option is 'AC Charging PnC or DC Charging PnC' and there is no intention to use message sets 'CertificateInstallationReq' and 'CertificateUpdateReq', then the message 'PaymentDetailsReq' shall be triggered through the operation `PaymentDetailsParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00035] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the response message 'PaymentDetailRes', the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014].⌋

**[CP_SWS_ISO15118Chrg_00036] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon succesfully processing the response message 'PaymentServiceSelectionRes', the message 'CertificateInstallationReq' shall be triggered by the ISO15118Chrg itself, if the response message 'ServiceDetailRes' indicated that Certificate Installation is available and if the message set 'Certificate Installation' is to be used. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00086] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00006

⌈The ISO15118Chrg shall digitally sign all fields of the EXI encoded message 'CertificateInstallationReq' using the signature from the OEM provisioning certificate.⌋

**[CP_SWS_ISO15118Chrg_00037] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CertificateInstalltionRes' the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. Then the message 'PaymentDetailsReq' shall then be triggered.⌋

**[CP_SWS_ISO15118Chrg_00090] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall decrypt the field ContractSignatureEncryptedPrivateKey in the response message 'CertificateInstallationRes' by calling `Csm_Decrypt` of the [12, CryptoServiceManager].⌋

**[CP_SWS_ISO15118Chrg_00038] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon succesfully processing the response message 'PaymentServiceSelectionRes', the the message 'CertificateUpdateReq' shall be triggered by the ISO15118Chrg itself, if the response message 'ServiceDetailRes' indicated that Certificate Update is available and if the message set 'Certificate Update' is to be used. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007],

[CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00085] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall digitally sign all fields of the EXI encoded message 'CertificateUpdateReq' using the signature from the contract certificate.⌋

**[CP_SWS_ISO15118Chrg_00039] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CertificateUpdateRes' the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. Then the message 'PaymentDetailsReq' shall be triggered.⌋

**[CP_SWS_ISO15118Chrg_00089] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00006

⌈The ISO15118Chrg decrypt the field ContractSignatureEncryptedPrivateKey in the response message 'CertificateUpdateRes' by calling `Csm_Decrypt` of the [12, CryptoServiceManager].⌋

**[CP_SWS_ISO15118Chrg_00040] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the message 'PaymentDetailRes', the message 'AuthorizationReq' shall be triggered through the operation `AuthorizationParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00084] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall digitally sign all fields of the EXI encoded message 'AuthorizationReq' by using `Csm_SignatureGenerate` of the [12, CryptoServiceManager].⌋

**[CP_SWS_ISO15118Chrg_00041] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the response message 'AuthorizationRes', the ISO15118Chrg shall proceed per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014].⌋

**[CP_SWS_ISO15118Chrg_00042] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall trigger the timer `V2G_EVCC_Ongoing_Timer` if the paramater EVSEProcessing is set to Ongoing upon reception of the first 'AuthorizationRes' message, and wait for parameter EVSEProcessing equal to Finished.⌋

**[CP_SWS_ISO15118Chrg_00043] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the parameter EVSEProcessing is set to Finished in the response message 'AuthorizationRes' and the response message was succesfully processed, then the message 'ChargeParameterDiscoveryReq' shall be triggered through the operation `ChargeParameterDiscoveryParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00044] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the parameter EVSEProcessing is set to Finished in the response message 'AuthorizationRes', and the response message was succesfully processed as per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014], then the message 'ChargeParameterDiscoveryReq' shall be triggered through the operation `ChargeParameterDiscoveryParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00045] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the parameter EVSEProcessing is set to Ongoing in the response message 'AuthorizationRes', and the response message was succesfully processed as per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014], then the request message 'AuthorizationReq' shall be triggered again. The consecutive 'AuthorizationReq' messages shall be sent without a Signature, Id and GenChallenge.⌋

**[CP_SWS_ISO15118Chrg_00046] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'ChargeParameterDiscoveryRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014].⌋

**[CP_SWS_ISO15118Chrg_00091] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00007

⌈The ISO15118Chrg shall verify the digital signature in the message 'ChargeParameterDiscoveryRes' using `Csm_SignatureVerify` of the [12, CryptoServiceManager].⌋

**[CP_SWS_ISO15118Chrg_00047] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall trigger the timer `V2G_EVCC_Ongoing_Timer` if the paramater EVSEProcessing is set to Ongoing upon reception of the first 'ChargeParameterDiscoveryRes' message, and wait for parameter EVSEProcessing equal to Finished.⌋

**[CP_SWS_ISO15118Chrg_00048] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the parameter EVSEProcessing is set to Ongoing in the response message 'ChargeParameterDiscoveryRes', and the response message was succesfully processed as per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014], then the request message 'ChargeParameterDiscoveryReq' shall be triggered again.⌋

Note: Till here message sequence is same for AC and DC.

#### 7.4.1.1 Control Messages for AC Charging

**[CP_SWS_ISO15118Chrg_00049] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the parameter EVSEProcessing is set to Finished in the response message 'ChargeParameterDiscoveryRes', and the response message was succesfully processed as per the requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014], then the request message 'PowerDeliveryReq' shall be triggered through the operation `PowerDeliveryParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00050] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'PowerDeliveryRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the response message is succesfully processed, then the message 'ChargeStatusReq' shall be triggered through the operation `ChargingStatusParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00051] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'ChargeStatusRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the the response message is succesfully processed, then message 'MeteringReceiptReq' shall be triggered by the ISO15118Chrg itself, given that that parameter ReceiptRequired was set to TRUE in the response message 'ChargeStatusRes', if the parameter

ReceiptRequired was set to FALSE, then the message 'ChargeStatusReq' shall be sent again.⌋

**[CP_SWS_ISO15118Chrg_00052] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'MeteringReceiptRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. The message 'ChargeStatusReq' shall be triggered again. The ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00053] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'ChargeStatusRes', the message 'PowerDeliveryReq' shall be triggered with the parameter ChargeProgress set to STOP, if the charging process is to be STOPPED.⌋

**[CP_SWS_ISO15118Chrg_00054] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the message 'PowerDeliveryReq' was triggered with parameter ChargeProgress set to STOP, then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message. Upon reception and succesful processing of the response 'PowerDeliveryRes' message as per [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014], then request message 'SesssionStopReq' shall be trigegred to stop the AC charging process.⌋

Note: The following requirements are for EV initiated renegotiation.

**[CP_SWS_ISO15118Chrg_00055] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'ChargeStatusRes', the charge profile can be renegotiated by sending the request message 'PowerDeliveryReq' with parameter ChargeProgess set to Renegotiate.⌋

**[CP_SWS_ISO15118Chrg_00056] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'MeteringReceiptRes', the charge profile can be reneogtiated by sending the request message 'PowerDeliveryReq' with parameter ChargeProgess set to Renegotiate.⌋

Note: The following requirements are for EVSE initiated renegotiation.

**[CP_SWS_ISO15118Chrg_00057] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'ChargeStatusRes', if the parameter EVSENotification in EVSEStatus was set to Renegotiate, the renegotiatiation of the charge profile shall happen by sending the request message 'PowerDeliveryReq' with parameter ChargeProgess set to Renegotiate within the number of seconds provided in NotificationMaxDelay.⌋

#### 7.4.1.2 Control Messages for DC Charging

The message set for DC charging EiM is as follows:

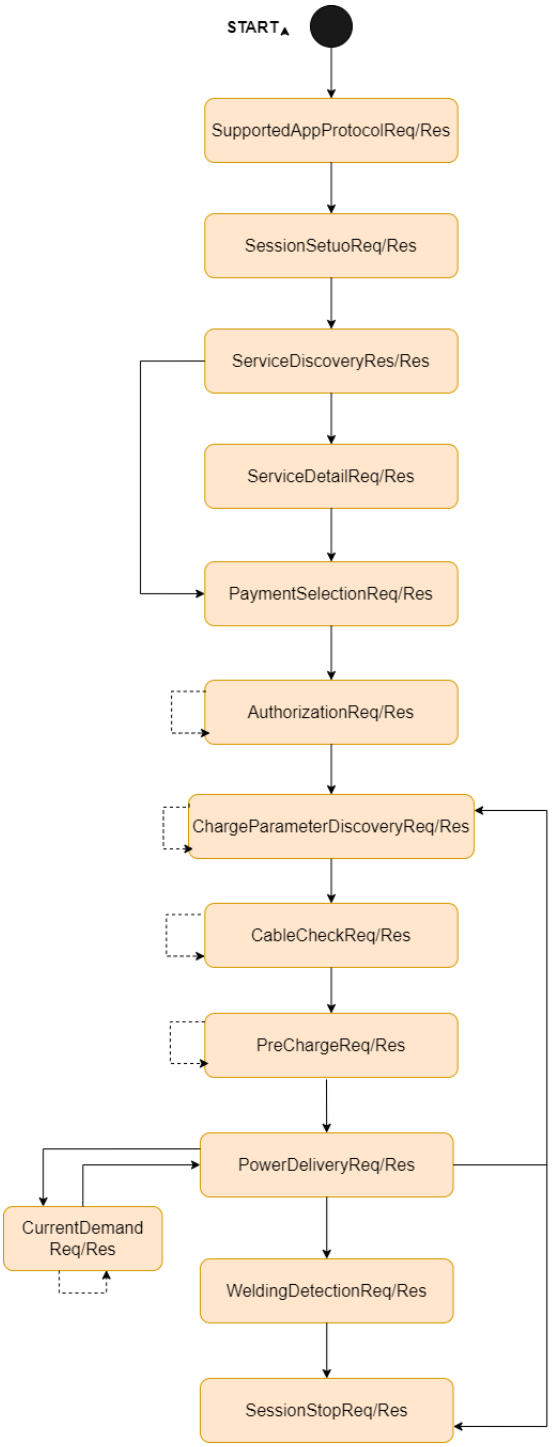


**Figure 7.4: DC EIM**

The message set for DC charging PnC is as follows:

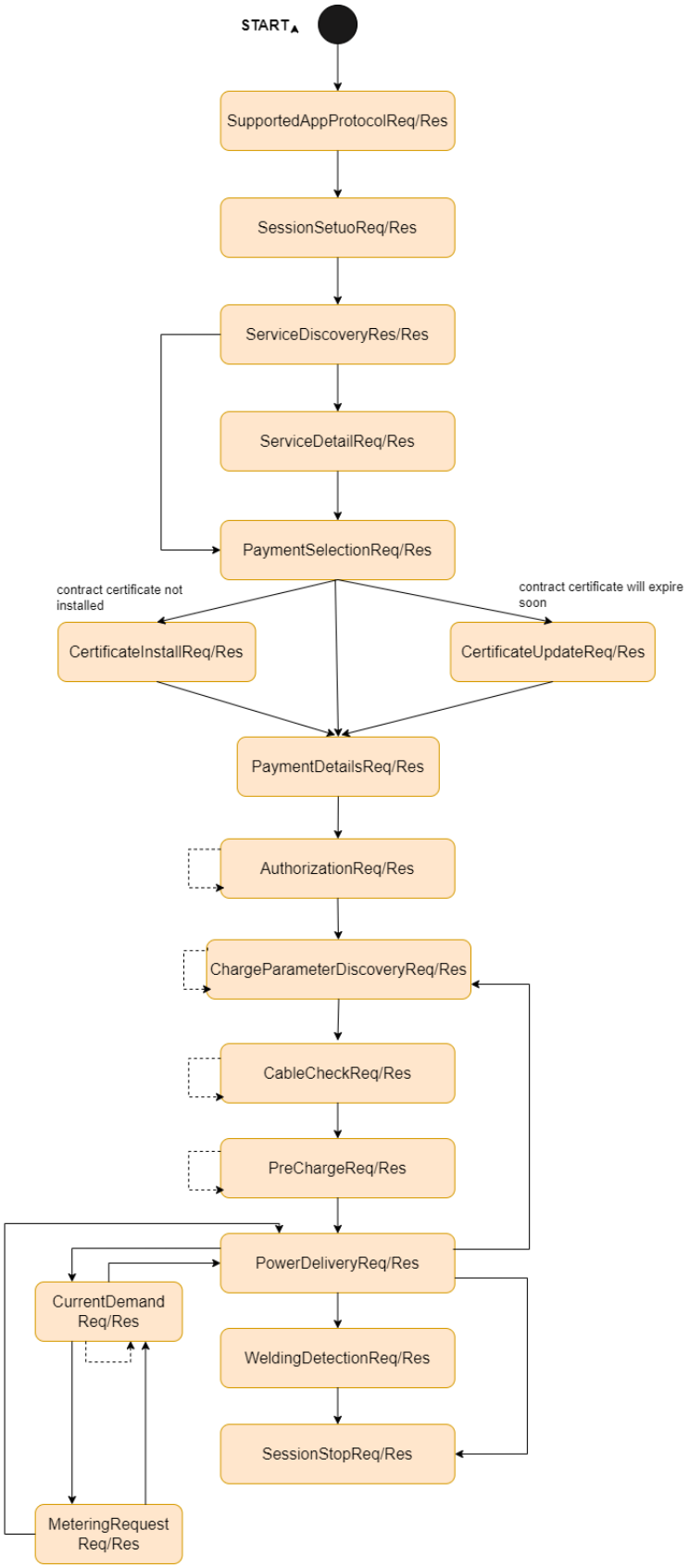


**Figure 7.5: DC PNC**

**[CP_SWS_ISO15118Chrg_00058] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'ChargeParameterDiscoveryRes', the message 'CableCheckReq' shall be triggered through the operation `CableCheckParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00059] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CableCheckRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the response message is succesfully processed, and if it contains the parameter EVSEProcessing set to Ongoing, then the message 'CableCheckReq' shall be sent again.⌋

**[CP_SWS_ISO15118Chrg_00060] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall trigger the timer `V2G_EVCC_Ongoing_Timer` if the paramater EVSEProcessing is set to Ongoing upon reception of the first 'CableCheckRes' message, and wait for parameter EVSEProcessing equal to Finished.⌋

**[CP_SWS_ISO15118Chrg_00061] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall trigger the timer `V2G_EVCC_CableCheck_Timer` when sending the first request message 'CableCheckReq'.⌋

**[CP_SWS_ISO15118Chrg_00062] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CableCheckRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the response message is succesfully processed, and if it contains the parameter EVSEProcessing set to Finished, then the message 'PreChargeReq' shall be triggered through

the operation PreChargeParams. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00063] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'PreChargeRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed and the response contains the paramater EVSEPresentVoltage which does not fulfill the threshold requirement of the EV, then the message 'PreChargeReq' shall be sent again.⌋

**[CP_SWS_ISO15118Chrg_00064] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall trigger the timer V2G_EVCC_PreCharge_Timer when sending the request message 'PreChargeReq' for the first time. The ISO15118Chrg shall only process the response message if the response indicates that EVSE output voltage has been adjusted to EV RESS voltage, else the ISO15118Chrg shall discard the response and stop the V2G session.⌋

**[CP_SWS_ISO15118Chrg_00065] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'PreChargeRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed and the response contains the paramater EVSEPresentVoltage which fulfills the threshold requirement of the EV, then the message 'PowerDeliveyReq' shall be triggered through the operation PowerDeliveryParams. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00066] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'PowerDeliveryRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed then the message 'CurrentDemandReq' shall be triggered through the operation `CurrentDemandParams`. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00067] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CurrentDemandRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed and the response contains the parameter MeteringReceipt set to TRUE, then the message 'MeteringReceiptReq' shall be triggered by the ISO15118Chrg itself. Then the ISO15118Chrg shall proceed as per requirements [CP_SWS_ISO15118Chrg_00006], [CP_SWS_ISO15118Chrg_00007], [CP_SWS_ISO15118Chrg_00008] to [CP_SWS_ISO15118Chrg_00009]. The ISO15118Chrg shall wait for the response message.⌋

**[CP_SWS_ISO15118Chrg_00087] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈The ISO15118Chrg shall digitally sign all fields of the EXI encoded message 'MeteringReceiptReq' by using `Csm_SignatureGenerate` of the [12, CryptoServiceManager].⌋

**[CP_SWS_ISO15118Chrg_00068] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CurrentDemandRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed and the response contains the parameter Meter-

ingReceipt set to FALSE and if the charging process is to be continued, then the message 'CurrentDemandReq' shall be triggered again.⌋

**[CP_SWS_ISO15118Chrg_00069] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'MeteringReceiptRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed if the charging process is to be continued, then the message 'CurrentDemandReq' shall be triggered again.⌋

**[CP_SWS_ISO15118Chrg_00070] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'MeteringReceiptRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed if the charging process is to be stopped, then the message 'PowerDeliveryReq' with the parameter ChargeProgress set to STOP shall be triggered.⌋

**[CP_SWS_ISO15118Chrg_00071] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'CurrentDemandRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed if the charging process is to be stopped, then the message 'PowerDeliveryReq' with the parameter ChargeProgress set to STOP shall be triggered.⌋

**[CP_SWS_ISO15118Chrg_00072] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'PowerDeliveryRes' to the previous 'PowerDeliveryReq' with ChargeProgress set to STOP, the message 'WeldingDetectionReq' shal be triggered through the operation `WeldingDetectionParams` if welding detection is to be performed, else the message 'SessionStopReq' shall be triggered.⌋

**[CP_SWS_ISO15118Chrg_00077] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈Upon reception of the message 'WeldingDetectionRes', the ISO15118Chrg shall proceed as per requirements mentioned [CP_SWS_ISO15118Chrg_00010], [CP_SWS_ISO15118Chrg_00011], [CP_SWS_ISO15118Chrg_00012], [CP_SWS_ISO15118Chrg_00013], [CP_SWS_ISO15118Chrg_00014]. If the message is succesfully processed, then the message 'SessionStopReq' shall be triggered.⌋

**[CP_SWS_ISO15118Chrg_00073] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈If the message 'SessionSetupReq' is triggered with parameter ChargingSession set to PAUSE, then ISO15118Chrg shall move to the state `V2G Session Paused`, stop the V2G session and terminate the transport layer, un-assign the IP, delete the SECC Port Number and IP address. The ISO15118Chrg shall be able to resume a 'PAUSED' session, by going to the state `Assigning IP Address` by calling 'SessionSetupReq', the following shall take place:

- Assign the IP address again
- Perform SDP again
- Establish TCP-TLS session again
- Establish V2G session again

The following need to be provided:

- SessionID which was communicated in the header of the SessionSetupRes message in the previous V2G Communication Session (for all request messages starting from SessionSetupReq).
- SelectedPaymentOption (PaymentServiceSelectionReq)
- RequestedEnergyTransferMode (ChargeParameterDiscoveryReq)
- DepartureTime in ChargeParameterDiscoveryReq reduced by the elapsed time
- Parameter EAmount in ChargeParameterDiscoveryReq reduced by the energy that was already charged

⌋

Note: An EVCC can resume a charging session by sending a SesstionSetupReq with a message header including the SessionID value from the previously paused V2G Communication Session. Note: The following requirements are for renegotiation during DC charging phase.

**[CP_SWS_ISO15118Chrg_00074] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'CurrentDemandRes', the charge profile can be renegotiated by sending the request message 'PowerDeliveryReq' with parameter ChargeProgess set to Renegotiate.⌋

**[CP_SWS_ISO15118Chrg_00075] General Requirement**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00009

⌈After succesfully processing the response message 'MeteringReceiptRes', the charge profile can be renegotiated by sending the request message 'PowerDeliveryReq' with parameter ChargeProgess set to Renegotiate.⌋

**[SWS_ISO15118Chrg_00092] DRAFT**

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00003

⌈ISO15118Chrg module shall retrieve TLS related information such as the TLS version by following the configuration references of `ISO15118ChrgSoAdSocketConnectionRef` and corresponding *SoAdSocketTcpTlsConnectionRef*.⌋

## 7.5 Error Classification

Section "Error Handling" of the document [13] "General Specification of Basic Software Modules" describes the error handling of the Basic Software in detail. Above all, it constitutes a classification scheme consisting of five error types which may occur in BSW modules.

Based on this foundation, the following section specifies particular errors arranged in the respective subsections below.

### 7.5.1 Development Errors

**[CP_SWS_ISO15118Chrg_00113] Definiton of development errors in module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00337, SRS_BSW_00323, SRS_BSW_00350

⌈

| *Type of error* | *Related error code* | *Error value* |
|---|---|---|
| API service called before initializing the module | ISO15118CHRG_E_UNINIT | 0x01 |
| API service called with NULL pointer | ISO15118CHRG_E_PARAM_POINTER | 0x02 |
| Invalid argument | ISO15118CHRG_E_INV_ARG | 0x03 |
| Invalid configuration set selection | ISO15118CHRG_E_INIT_FAILED | 0x06 |

⌋

### 7.5.2 Runtime Errors

**[CP_SWS_ISO15118Chrg_00114] Definiton of runtime errors in module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00452

⌈

| *Type of error* | *Related error code* | *Error value* |
|---|---|---|
| No buffer space available | ISO15118CHRG_E_NOBUFS | 0x07 |

⌋

### 7.5.3 Production Errors

No production errors.

### 7.5.4 Extended Production Errors

No extended production errors.

## 7.6 Security Events

The module does not report any security events.

# 8 API specification

Note: Chapters 8 and 9 are available at the following link:

## 8.1 Imported types

In this chapter all types included from the following files are listed.

**[CP_SWS_ISO15118Chrg_00115] Definition of imported datatypes of module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00301

⌈

| *Module* | *Header File* | *Imported Type* |
|---|---|---|
| BswM | BswM.h | BswM_ModeType |
| | BswM.h | BswM_UserType |
| Comtype | ComStack_Types.h | BufReq_ReturnType |
| | ComStack_Types.h | PduIdType |
| | ComStack_Types.h | PduInfoType |
| | ComStack_Types.h | PduLengthType |
| | ComStack_Types.h | RetryInfoType |
| | ComStack_Types.h | TpDataStateType |
| Csm | Rte_Csm_Type.h | Crypto_OperationModeType |
| | Rte_Csm_Type.h | Crypto_VerifyResultType |
| EthTrcv | Eth_GeneralTypes.h | EthTrcv_LinkStateType |
| KeyM | KeyM.h | KeyM_CertDataType |
| | Rte_KeyM_Type.h | KeyM_CertElementIdType |
| | Rte_KeyM_Type.h | KeyM_CertificateIdType |
| | Rte_KeyM_Type.h | KeyM_ServiceCertificateType |
| SoAd | SoAd.h | SoAd_SoConIdType |
| | SoAd.h | SoAd_SoConModeType |
| Std | Std_Types.h | Std_ReturnType |
| TcpIp | TcpIp.h | TcpIp_DomainType |
| | TcpIp.h | TcpIp_IpAddrAssignmentType |
| | TcpIp.h | TcpIp_IpAddrStateType |
| | TcpIp.h | TcpIp_LocalAddrIdType |
| | TcpIp.h | TcpIp_ReturnType |
| | TcpIp.h | TcpIp_SockAddrType |

⌋

## 8.2 Type definitions

### 8.2.1 ISO15118Chrg_ConfigType

**[CP_SWS_ISO15118Chrg_00116] Definition of datatype ISO15118Chrg_ConfigType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00438, SRS_BSW_00305

⌈

| | |
|---|---|
| ***Name*** | ISO15118Chrg_ConfigType (draft) |
| ***Kind*** | Structure |
| ***Description*** | This is the type of the data structure containing the initialization data for COM.<br>**Tags:** atp.Status=draft |
| ***Available via*** | Rte_ISO15118Chrg.h |

⌋

### 8.2.2 ISO15118Chrg_AC_EVChargeParameterType

**[CP_SWS_ISO15118Chrg_00153] Definition of ImplementationDataType ISO15118Chrg_AC_EVChargeParameterType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

⌈

| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_AC_EVChargeParameterType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | DepartureTime | |
| | ***Type*** | uint32 |
| | ***Comment*** | This element is used to indicate when the vehicle intends to finish the charging process. Offset in seconds from the point in time of sending this message. |
| | EAmount | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Amount of energy reflecting the EV's estimate how much energy is needed to fulfill the user configured charging goal for the current charging session. This might include energy for other purposes than solely charging the HV battery of an EV. |
| | EVMaxVoltage | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |

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|---|---|---|
| | ***Comment*** | The RMS of the maximal nominal voltage the vehicle can accept, measured between one phase and neutral. |
| | EVMaxCurrent | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum current supported by the EV per phase. |
| | EVMinCurrent | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | EVMinCurrent is used to indicate to the SECC that charging below this minimum is not energy/cost efficient for the EV. It is recommended that the SECC considers this value during the target setting process (e.g. sale tariff table should account for this value). However, if there is physical limitations or limitations indicated by the PWM signal these limitations overwrite the EVMinCurrent the EV indicated. It is implementation specific whether a vehicle chooses not to charge if the EVMinCurrent is higher than the physical limitations for efficiency reasons. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.3 ISO15118Chrg_AC_EVSEChargeParameterType

**[CP_SWS_ISO15118Chrg_00154] Definition of ImplementationDataType ISO15118Chrg_AC_EVSEChargeParameterType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_AC_EVSEChargeParameterType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | AC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_AC_EVSEStatusType |
| | ***Comment*** | Current status of the EVSE |
| | EVSENominalVoltage | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Line voltage supported by the EVSE. This is the voltage measured between one phases and neutral. If the EVSE supports multiple phase charging the EV might easily calculate the voltage between phases. This parameter is also used as reference for calculating the corresponding maximum charging current out of the PMax values in the SASchedule entities. |
| | EVSEMaxCurrent | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |

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|---|---|---|
| | ***Comment*** | Maximum allowed line current restriction set by the EVSE per phase. If the PWM ratio is set to 5% ratio then this is the only line current restriction processed by the EVCC. Otherwise, the EVCC applies the smaller current constraint from the EVSEMaxCurrent value and the PWM ratio information. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.4 ISO15118Chrg_AC_EVSEStatusType

**[CP_SWS_ISO15118Chrg_00155] Definition of ImplementationDataType ISO15118Chrg_AC_EVSEStatusType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_AC_EVSEStatusType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | RCD | |
| | ***Type*** | boolean |
| | ***Comment*** | Indicates the current status of the Residual Current Device (RCD). If RCD is equal to true, the RCD has detected an error. If RCD is equal to false, the RCD has not detected an error. This status flag is for informational purpose only. |
| | NotificationMaxDelay | |
| | ***Type*** | uint16 |
| | ***Comment*** | This value is the time in seconds from the point in time this message is sent (relative time) and expected to perform the action immediately. The SECC uses the NotificationMaxDelay element in the EVSEStatus to indicate the time until it expects the EVCC to react on the action request indicated in EVSENotification. |
| | EVSENotification | |
| | ***Type*** | ISO15118Chrg_EVSENotificationType |
| | ***Comment*** | This value is used by the SECC to influence the behavior of the EVCC. The EVSENotification contains an action that the SECC wants the EVCC to perform. The requested action is expected by the EVCC until the time provided in NotificationMaxDelay. If the target time is not in the future, the EVCC is expected to perform the action immediately. During normal operation the value of EVSENotification is set to "none". |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.5 ISO15118Chrg_AppProtocolType

**[CP_SWS_ISO15118Chrg_00156] Definition of ImplementationDataType ISO15118Chrg_AppProtocolType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_AppProtocolType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | ProtocolNameSpace | |
| | ***Type*** | ISO15118Chrg_ProtocolNameSpaceType |
| | ***Comment*** | This message element is used by the EVCC to uniquely identify the Namespace URI of a specific protocol supported by the EVCC, i.e. this is the protocol name of the related protocol. |
| | ProtocolNameSpaceLength | |
| | ***Type*** | uint8 |
| | ***Comment*** | Defines the length of the ProtocolNameSpace argument. |
| | VersionNumberMajor | |
| | ***Type*** | uint16 |
| | ***Comment*** | This message element is used by the EVCC to indicate the major version number of the protocol indicated in the message element ProtocolNamespace. |
| | VersionNumberMinor | |
| | ***Type*** | uint16 |
| | ***Comment*** | This message element is used by the EVCC to indicate the minor version number of the protocol indicated in the message element ProtocolNamespace. |
| | SchemaID | |
| | ***Type*** | uint8 |
| | ***Comment*** | This message element is used by the EVCC to indicate the SchemaID assigned by the EVCC to the protocol indicated in the message element ProtocolNamespace, VersionNumberMajor and Version NumberMinor. |
| | Priority | |
| | ***Type*** | uint8 |
| | ***Comment*** | This message element is used by the EVCC for indicating the protocol priority of a specific protocol allowing the SECC to select a protocol based on priorities. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.6 ISO15118Chrg_AppProtocolType_ArrayType

**[CP_SWS_ISO15118Chrg_00157] Definition of ImplementationDataType ISO15118Chrg_AppProtocolType_ArrayType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_AppProtocolType_ArrayType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_AppProtocolType |
| ***Size*** | 20 Elements | | |
| ***Description*** | An array of 20 elements as defined in ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.7 ISO15118Chrg_CertificateChainType

**[CP_SWS_ISO15118Chrg_00158] Definition of ImplementationDataType ISO15118Chrg_CertificateChainType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_CertificateChainType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | Id | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Comment*** | This attribute is used for referencing the message element in the signature header when a signature needs to be applied. It is used in response messages only. |
| | Certificate | |
| | ***Type*** | uint16 |
| | ***Comment*** | An x.509v3 Certificate (the "client" certificate). The certificate is DER encoded. |
| | SubCertificates | |
| | ***Type*** | ISO15118Chrg_SubCertificatesType |
| | ***Comment*** | The Chain with all Subcertificates to the Root-Certificate (not including root certificate) |

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|---|---|
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.8 ISO15118Chrg_ChargeProgressType

**[CP_SWS_ISO15118Chrg_00159] Definition of ImplementationDataType ISO15118Chrg_ChargeProgressType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ChargeProgressType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_Start | 0x00 | – |
| | ISO15118_Stop | 0x01 | – |
| | ISO15118_Renegotiate | 0x02 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.9 ISO15118Chrg_ChargeServiceType

**[CP_SWS_ISO15118Chrg_00160] Definition of ImplementationDataType ISO15118Chrg_ChargeServiceType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_ChargeServiceType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | ServiceId | |
| | ***Type*** | uint16 |
| | ***Comment*** | This element identifies a service which has been offered by the SECC in the ServiceDiscoveryRes message. |
| | ServiceName | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Comment*** | Human readable service name |
| | ServiceCategory | |
| | ***Type*** | ISO15118Chrg_ServiceCategoryType |
| | ***Comment*** | Category of a service, corresponds to the defined services, derived from the base service |
| | ServiceScope | |
| | ***Type*** | ISO15118Chrg_ServiceScopeType |
| | ***Comment*** | Additional information about usage of that service |
| | ServiceScopeLength | |
| | ***Type*** | uint8 |
| | ***Comment*** | Defines length of element ServiceScope. |
| | FreeService | |
| | ***Type*** | boolean |
| | ***Comment*** | This element is used by the SECC to indicate if a service can be used by the EVCC free of charge or not. If FreeService is equal to true, the EV can use the offered service without payment. If FreeService is equal to false, the service, if used by the EV, will be billed using the payment method negotiated using the payment option message element. |
| | SupportedEnergyTransferMode | |
| | ***Type*** | ISO15118Chrg_SupportedEnergyTransferModeType |
| | ***Comment*** | Available energy transfer modes supported by the EVSE. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.10 ISO15118Chrg_ChargingProfileType

**[CP_SWS_ISO15118Chrg_00161] Definition of ImplementationDataType ISO15118Chrg_ChargingProfileType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ChargingProfileType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_ProfileEntryType |
| ***Size*** | 24 Elements | | |
| ***Description*** | An array of 24 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.11 ISO15118Chrg_ChargingSequenceStateType

**[CP_SWS_ISO15118Chrg_00162] Definition of ImplementationDataType ISO15118Chrg_ChargingSequenceStateType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ChargingSequenceStateType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_CS_INIT | 0x00 | – |
| | ISO15118_CS_Slac | 0x01 | – |
| | ISO15118_CS_AssigningIp Address | 0x02 | – |
| | ISO15118_CS_Discovering Secc | 0x03 | – |
| | ISO15118_CS_Establishing TcpTls | 0x04 | – |
| | ISO15118_CS_Supported AppProtocol | 0x05 | – |
| | ISO15118_CS_Session Setup | 0x06 | – |
| | ISO15118_CS_Service Discovery | 0x07 | – |

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|---|---|---|---|
| | ISO15118_CS_Service Detail | 0x08 | – |
| | ISO15118_CS_Service PaymentSelection | 0x09 | – |
| | ISO15118_CS_Certificate Installation | 0x0A | – |
| | ISO15118_CS_Certificate Update | 0x0B | – |
| | ISO15118_CS_Payment Details | 0x0C | – |
| | ISO15118_CS_ Authorization | 0x0D | – |
| | ISO15118_CS_Charge ParameterDiscovery | 0x0E | – |
| | ISO15118_CS_CableCheck | 0x0F | – |
| | ISO15118_CS_PreCharge | 0x1A | – |
| | ISO15118_CS_Power Delivery | 0x1B | – |
| | ISO15118_CS_Current Demand | 0x1C | – |
| | ISO15118_CS_Charging Status | 0x1D | – |
| | ISO15118_CS_Metering Receipt | 0x1E | – |
| | ISO15118_CS_Welding Detection | 0x1F | – |
| | ISO15118_CS_SessionStop | 0x2A | – |
| ***Description*** | Charge states<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.12 ISO15118Chrg_ChargingSequenceSubStateType

**[CP_SWS_ISO15118Chrg_00163] Definition of ImplementationDataType ISO15118Chrg_ChargingSequenceSubStateType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ChargingSequenceSubStateType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | Implementation specific | 0x00 to 0x7F | – |

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|---|---|
| ***Description*** | Charge states. Literals have implementation specific values from 0x00 to 0x7F.<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.13 ISO15118Chrg_ChargingSessionType

**[CP_SWS_ISO15118Chrg_00164] Definition of ImplementationDataType ISO15118Chrg_ChargingSessionType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ChargingSessionType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_Terminate | 0x00 | – |
| | ISO15118_Pause | 0x01 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.14 ISO15118Chrg_ConsumptionCostType

**[CP_SWS_ISO15118Chrg_00165] Definition of ImplementationDataType ISO15118Chrg_ConsumptionCostType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | |
|---|---|
| ***Name*** | ISO15118Chrg_ConsumptionCostType (draft) |
| ***Kind*** | Structure |
| ***Elements*** | Cost |

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| | | |
|---|---|---|
| | ***Type*** | ISO15118Chrg_CostType |
| | ***Comment*** | Encapsulating element describing all relevant cost details for this consumption block in this Tariff Entry. |
| | startValue | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | The lowest level of consumption that defines the starting point of this consumption block. The block interval extends to the start of the next interval. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.15 ISO15118Chrg_CostKindType

**[CP_SWS_ISO15118Chrg_00166] Definition of ImplementationDataType ISO15118Chrg_CostKindType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_CostKindType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_RelativePrice Percentage | 0x00 | – |
| | ISO15118_Renewable GenerationPercentage | 0x01 | – |
| | ISO15118_CarbonDioxide Emission | 0x02 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.16 ISO15118Chrg_CostType

**[CP_SWS_ISO15118Chrg_00167] Definition of ImplementationDataType ISO15118Chrg_CostType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_CostType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | amount | |
| | ***Type*** | uint16 |
| | ***Comment*** | The estimated or actual cost per kWh |
| | amountMultiplier | |
| | ***Type*** | ISO15118Chrg_UnitMultiplierType |
| | ***Comment*** | The amountMultiplier defines the exponent to base 10 (dec). The final value is determined by amount * 10 ^ amountMultiplier. |
| | costKind | |
| | ***Type*** | ISO15118Chrg_CostKindType |
| | ***Comment*** | The kind of cost referred to in the message element amount (refer to Table 82 for the semantics description of individual enumeration values defined for this type). |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.17 ISO15118Chrg_DC_EVChargeParameterType

**[CP_SWS_ISO15118Chrg_00168] Definition of ImplementationDataType ISO15118Chrg_DC_EVChargeParameterType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_DC_EVChargeParameterType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | DepartureTime | |
| | ***Type*** | uint32 |

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| | | |
|---|---|---|
| | ***Comment*** | This element is used to indicate when the vehicle intends to finish the charging process. Offset in seconds from the point in time of sending this message. |
| | DC_EVStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVStatusType |
| | ***Comment*** | Current status of the EV |
| | EVMaximumCurrentLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum current supported by the EV |
| | EVMaximumPowerLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum power supported by the EV |
| | EVMaximumVoltageLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum voltage supported by the EV |
| | EVEnergyCapacity | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Energy capacity of the EV |
| | EVEnergyRequest | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Amount of energy the EV requests from the EVSE. |
| | FullSOC | |
| | ***Type*** | uint8 |
| | ***Comment*** | SOC at which the EV considers the battery to be fully charged |
| | BulkSOC | |
| | ***Type*** | uint8 |
| | ***Comment*** | SOC at which the EV considers a fast charge process to end. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.18 ISO15118Chrg_DC_EVErrorCodeType

**[CP_SWS_ISO15118Chrg_00169] Definition of ImplementationDataType ISO15118Chrg_DC_EVErrorCodeType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_DC_EVErrorCodeType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_No_Error | 0x00 | – |
| | ISO15118_FAILED_ RESSTemperatureInhibit | 0x01 | – |
| | ISO15118_FAILED_EVShift Position | 0x02 | – |
| | ISO15118_FAILED_ ChargerConnectorLockFault | 0x03 | – |
| | ISO15118_FAILED_ EVRESSMalfunction | 0x04 | – |
| | ISO15118_FAILED_ ChargingCurrentdifferential | 0x05 | – |
| | ISO15118_FAILED_ ChargingVoltageOutOf Range | 0x06 | – |
| | ISO15118_Reserved_A | 0x07 | – |
| | ISO15118_Reserved_B | 0x08 | – |
| | ISO15118_Reserved_C | 0x09 | – |
| | ISO15118_FAILED_ ChargingSystem Incompatibility | 0x10 | – |
| | ISO15118_NoData | 0x11 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.19 ISO15118Chrg_DC_EVPowerDeliveryParameterType

**[CP_SWS_ISO15118Chrg_00170] Definition of ImplementationDataType ISO15118Chrg_DC_EVPowerDeliveryParameterType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_DC_EVPowerDeliveryParameterType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | DC_EVStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVStatusType |
| | ***Comment*** | Current status of the EV. |
| | BulkChargingComplete | |
| | ***Type*** | boolean |
| | ***Comment*** | If set to TRUE, the EV indicates that bulk charge (approx. 80% SOC) is complete. |
| | ChargingComplete | |
| | ***Type*** | boolean |
| | ***Comment*** | If set to TRUE, the EV indicates that full charge (100% SOC) is complete. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.20 ISO15118Chrg_DC_EVSEChargeParameterType

**[CP_SWS_ISO15118Chrg_00171] Definition of ImplementationDataType ISO15118Chrg_DC_EVSEChargeParameterType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_DC_EVSEChargeParameterType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | DC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusType |
| | ***Comment*** | Current status of the EVSE |
| | EVSEMaximumCurrentLimit | |

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| | | |
|---|---|---|
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum current the EVSE can deliver |
| | EVSEMaximumPowerLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum power the EVSE can deliver |
| | EVSEMaximumVoltageLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum voltage the EVSE can deliver |
| | EVSEMinimumCurrentLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Minimum current the EVSE can deliver with the expected accuracy |
| | EVSEMinimumVoltageLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Minimum voltage the EVSE can deliver with the expected accuracy |
| | EVSECurrentRegulationTolerance | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Absolute magnitude of the regulation tolerance of the EVSA |
| | EVSEPeakCurrentRipple | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Peak-to-peak magnitude of the current ripple of the EVSE |
| | EVSEEnergyToBeDelivered | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Amount of energy to be delivered by the EVSE |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.21 ISO15118Chrg_DC_EVSEStatusCodeType

**[CP_SWS_ISO15118Chrg_00172] Definition of ImplementationDataType ISO15118Chrg_DC_EVSEStatusCodeType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | |
|---|---|
| ***Name*** | ISO15118Chrg_DC_EVSEStatusCodeType (draft) |
| ***Kind*** | Type |
| ***Derived from*** | uint8 |

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|---|---|---|---|
| ***Range*** | ISO15118_EVSE_Not Ready | 0x00 | – |
| | ISO15118_EVSE_Ready | 0x01 | – |
| | ISO15118_EVSE_ Shutdown | 0x02 | – |
| | ISO15118_EVSE_Utility InterruptEvent | 0x03 | – |
| | ISO15118_EVSE_Isolation MonitoringActive | 0x04 | – |
| | ISO15118_EVSE_ EmergencyShutdown | 0x05 | – |
| | ISO15118_EVSE_ Malfunction | 0x06 | – |
| | ISO15118_Reserved_8 | 0x07 | – |
| | ISO15118_Reserved_9 | 0x08 | – |
| | ISO15118_Reserved_A | 0x09 | – |
| | ISO15118_Reserved_B | 0x10 | – |
| | ISO15118_Reserved_C | 0x11 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.22 ISO15118Chrg_DC_EVSEStatusType

**[CP_SWS_ISO15118Chrg_00173] Definition of ImplementationDataType ISO15118Chrg_DC_EVSEStatusType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_DC_EVSEStatusType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | NotificationMaxDelay | |
| | ***Type*** | uint16 |
| | ***Comment*** | This value is the time in seconds from the point in time this message is sent (relative time) and expected to perform the action immediately. The SECC uses the NotificationMaxDelay element in the EVSEStatus to indicate the time until it expects the EVCC to react on the action request indicated in EVSENotification. |
| | EVSENotification | |
| | ***Type*** | ISO15118Chrg_EVSENotificationType |

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|---|---|---|
| | ***Comment*** | This value is used by the SECC to influence the behavior of the EVCC. The EVSENotification contains an action that the SECC wants the EVCC to perform. The requested action is expected by the EVCC until the time provided in NotificationMaxDelay. If the target time is not in the future, the EVCC is expected to perform the action immediately. During normal operation the value of EVSENotification is set to "none". |
| | EVSEIsolationStatus | |
| | ***Type*** | ISO15118Chrg_IsolationLevelType |
| | ***Comment*** | Indicates the isolation condition (result of the isolation monitoring). The parameter shall be handled according to IEC CDV 61851-23 |
| | DC_EVSEStatusCode | |
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusCodeType |
| | ***Comment*** | Indicates the internal state of the EVSE. Refer to ISO15118-2 |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.23 ISO15118Chrg_DC_EVStatusType

**[CP_SWS_ISO15118Chrg_00174] Definition of ImplementationDataType ISO15118Chrg_DC_EVStatusType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_DC_EVStatusType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | EVReady | |
| | ***Type*** | boolean |
| | ***Comment*** | If set to TRUE, the EV is ready to charge. |
| | EVErrorCode | |
| | ***Type*** | ISO15118Chrg_DC_EVErrorCodeType |
| | ***Comment*** | Indicates the EV internal status. |
| | EVRESSSOC | |
| | ***Type*** | uint8 |
| | ***Comment*** | State of charge of the EV's battery (RESS) |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.24 ISO15118Chrg_eMAIDType

**[CP_SWS_ISO15118Chrg_00175] Definition of ImplementationDataType ISO15118Chrg_eMAIDType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_eMAIDType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint8 |
| ***Size*** | 15 Elements | | |
| ***Description*** | An array to support uint8 characters.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.25 ISO15118Chrg_EnergyTransferModeType

**[CP_SWS_ISO15118Chrg_00176] Definition of ImplementationDataType ISO15118Chrg_EnergyTransferModeType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_EnergyTransferModeType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_AC_single_phase_core | 0x00 | – |
| | ISO15118_AC_three_phase_core | 0x01 | – |
| | ISO15118_DC_core | 0x02 | – |
| | ISO15118_DC_Extended | 0x03 | – |
| | ISO15118_DC_Combo_core | 0x04 | – |
| | ISO15118_DC_Unique | 0x05 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.26 ISO15118Chrg_EntryType

**[CP_SWS_ISO15118Chrg_00177] Definition of ImplementationDataType ISO15118Chrg_EntryType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_EntryType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | TimeInterval | |
| | ***Type*** | ISO15118Chrg_RelativeTimeIntervalType |
| | ***Comment*** | – |
| ***Description*** | A structure having element TimeInterval as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.27 ISO15118Chrg_EVSEIdType

**[CP_SWS_ISO15118Chrg_00178] Definition of ImplementationDataType ISO15118Chrg_EVSEIdType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_EVSEIdType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint8 |
| ***Size*** | 37 Elements | | |
| ***Description*** | An array which can support maximum of 37 uint8 characters.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.28 ISO15118Chrg_EVSENotificationType

**[CP_SWS_ISO15118Chrg_00179] Definition of ImplementationDataType ISO15118Chrg_EVSENotificationType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_EVSENotificationType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_None | 0x00 | – |
| | ISO15118_StopCharging | 0x01 | – |
| | ISO15118_Renegotiate | 0x02 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.29 ISO15118Chrg_IsolationLevelTypeType

**[CP_SWS_ISO15118Chrg_00180] Definition of ImplementationDataType ISO15118Chrg_IsolationLevelType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_IsolationLevelType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_Invalid | 0x00 | – |
| | ISO15118_Valid | 0x01 | – |
| | ISO15118_Warning | 0x02 | – |
| | ISO15118_Fault | 0x03 | – |
| | ISO15118_No_IMD | 0x04 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.30 ISO15118Chrg_MeterInfoType

**[CP_SWS_ISO15118Chrg_00181] Definition of ImplementationDataType ISO15118Chrg_MeterInfoType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_MeterInfoType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | MeterID | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Comment*** | ID of the meter in the EVSE |
| | MeterReading | |
| | ***Type*** | uint32 |
| | ***Comment*** | Current meter reading in Watthours from the EVSE |
| | SigMeterReading | |
| | ***Type*** | uint32 |
| | ***Comment*** | Signature of the meter reading This signature is generated by the EVSE meter. It is not verified at the EVCC. It might be used by a SA system for billing purposes if local regulations on metering permit it |
| | MeterStatus | |
| | ***Type*** | uint16 |
| | ***Comment*** | Current status of the meter. The definition of the content of the Meter Status is out of scope of the standard. The content may be defined by the EVSE operator or utility. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.31 ISO15118Chrg_ParameterSetTypeType

**[CP_SWS_ISO15118Chrg_00182] Definition of ImplementationDataType ISO15118Chrg_ParameterSetType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_ParameterSetType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | ParameterSetID | |
| | ***Type*** | uint16 |
| | ***Comment*** | This element is used to select a specific parameter set for a specific ServideID when selecting a service using the PaymentService SelectionReq message. |
| | Parameter | |
| | ***Type*** | ISO15118Chrg_ParameterType |
| | ***Comment*** | This element is used by the SECC to indicate which service specific parameters can be selected for a certain service using the Parameter SetID. The number of Parameter elements is limited to 16. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.32 ISO15118Chrg_ParameterSetType_ArrayType

**[CP_SWS_ISO15118Chrg_00183] Definition of ImplementationDataType ISO15118Chrg_ParameterSetType_ArrayType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ParameterSetType_ArrayType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_ParameterSetType |
| ***Size*** | 255 Elements | | |
| ***Description*** | A structure having elements as defined in ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.33 ISO15118Chrg_ParameterType

**[CP_SWS_ISO15118Chrg_00184] Definition of ImplementationDataType ISO15118Chrg_ParameterType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_ParameterType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | BooleanValue | |
| | ***Type*** | boolean |
| | ***Comment*** | This element is used to indicate the value for the parameter indicated by the element Name. A choice of 6 different element types. Only one for each parameter can be selected. |
| | ByteValue | |
| | ***Type*** | uint8 |
| | ***Comment*** | – |
| | ShortValue | |
| | ***Type*** | uint16 |
| | ***Comment*** | – |
| | IntValue | |
| | ***Type*** | uint32 |
| | ***Comment*** | – |
| | PhysicalValue | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | – |
| | StringValue | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Comment*** | – |
| ***Description*** | Pointer to an array of 255 elements as per ISO15118-2.<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.34 ISO15118Chrg_PaymentOptionListType

**[CP_SWS_ISO15118Chrg_00185] Definition of ImplementationDataType ISO15118Chrg_PaymentOptionListType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_PaymentOptionListType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_PaymentOptionType |
| ***Size*** | 2 Elements | | |
| ***Description*** | An array of 2 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.35 ISO15118Chrg_PaymentOptionType

**[CP_SWS_ISO15118Chrg_00186] Definition of ImplementationDataType ISO15118Chrg_PaymentOptionType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_PaymentOptionType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_Contract | 0x00 | – |
| | ISO15118_ExternalPayment | 0x01 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.36 ISO15118Chrg_PhysicalValueType

**[CP_SWS_ISO15118Chrg_00187] Definition of ImplementationDataType ISO15118Chrg_PhysicalValueType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_PhysicalValueType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | Multiplier | |
| | ***Type*** | ISO15118Chrg_UnitMultiplierType |
| | ***Comment*** | The Multiplier defines the exponent to base 10 (dec). The final physical value is determined by: Value * 10 ^ Multiplier [Unit] |
| | Unit | |
| | ***Type*** | ISO15118Chrg_UnitSymbolType |
| | ***Comment*** | Unit of the value. |
| | Value | |
| | ***Type*** | uint16 |
| | ***Comment*** | Value which has to be multiplied |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.37 ISO15118Chrg_PmaxScheduleEntryType

**[CP_SWS_ISO15118Chrg_00188] Definition of ImplementationDataType ISO15118Chrg_PmaxScheduleEntryType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_PmaxScheduleEntryType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | RelativeTimeInterval | |
| | ***Type*** | ISO15118Chrg_EntryType |
| | ***Comment*** | Extends the TimeIntervalType and defines the time interval the PMax ScheduleEntry is valid for based upon relative times. |
| | PMax | |

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| | | |
|---|---|---|
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Defines maximum amount of power for a time interval to be drawn from the EVSE power outlet the vehicle is connected to. This value represents the total power over all selected phases. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.38 ISO15118Chrg_PMaxScheduleType_ArrayType

**[CP_SWS_ISO15118Chrg_00189] Definition of ImplementationDataType ISO15118Chrg_PMaxScheduleType_ArrayType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_PMaxScheduleType_ArrayType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_PmaxScheduleEntryType |
| ***Size*** | 1024 Elements | | |
| ***Description*** | An array of 1024 structure variables as per ISO15118-2<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.39 ISO15118Chrg_PMaxScheduleTypePtr

**[CP_SWS_ISO15118Chrg_00190] Definition of ImplementationDataType ISO15118Chrg_PMaxScheduleTypePtr**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | |
|---|---|
| ***Name*** | ISO15118Chrg_PMaxScheduleTypePtr (draft) |
| ***Kind*** | Pointer |
| ***Type*** | ISO15118Chrg_PMaxScheduleType_ArrayType* |
| ***Description*** | Pointer to an array of PMaxScheduleEntry elements.<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.40 ISO15118Chrg_ProfileEntryType

**[CP_SWS_ISO15118Chrg_00191] Definition of ImplementationDataType ISO15118Chrg_ProfileEntryType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_ProfileEntryType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | ChargingProfileEntryStart | |
| | ***Type*** | uint16 |
| | ***Comment*** | Time when chargingProfileEntry starts to be valid. Offset in seconds from NOW |
| | ChargingProfileEntryMaxPower | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | Maximum power in Watt consumed by the EV within the current charging profile entry (beginning from ChargingProfileEntryStart) |
| | ChargingProfileEntryMaxNumberOfPhasesInUse | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Comment*** | This element is used by the EV to indicate the maximum number of phases it intends to use during the time interval defined by Charging ProfileEntryStart of this ProfileEntry. |

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|---|---|
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.41 ISO15118Chrg_ProtocolNameSpaceType

**[CP_SWS_ISO15118Chrg_00192] Definition of ImplementationDataType ISO15118Chrg_ProtocolNameSpaceType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ProtocolNameSpaceType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint8 |
| ***Size*** | 100 Elements | | |
| ***Description*** | An array to support maximum 100 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.42 ISO15118Chrg_RelativeTimeIntervalType

**[CP_SWS_ISO15118Chrg_00193] Definition of ImplementationDataType ISO15118Chrg_RelativeTimeIntervalType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_RelativeTimeIntervalType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | Duration | |
| | ***Type*** | uint32 |
| | ***Comment*** | Duration of the interval, in seconds. |

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| | | |
|---|---|---|
| | Start | |
| | ***Type*** | uint32 |
| | ***Comment*** | Start of the interval, in seconds from NOW. |
| ***Description*** | A structure having elements as per ISO15118-2.<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.43 ISO15118Chrg_ResponseCodeType

**[CP_SWS_ISO15118Chrg_00194] Definition of ImplementationDataType ISO15118Chrg_ResponseCodeType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ResponseCodeType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_Ok_NewSession Established | – | – |
| | ISO15118_OK_OldSession Joined | – | – |
| | ISO15118_OK_Certificate ExpiresSoon | – | – |
| | ISO15118_Successful NegotiationwithMinor Deviation | – | – |
| | ISO15118_FAILED | – | – |
| | ISO15118_FAILED_ SequenceError | – | – |
| | ISO15118_FAILED_Service IDInvalid | – | – |
| | ISO15118_FAILED_ UnknownSession | – | – |
| | ISO15118_FAILED_Service SelectionInvalid | – | – |
| | ISO15118_FAILED_ PaymentSelectionInvalid | – | – |
| | ISO15118_FAILED_ CertificateExpired | – | – |
| | ISO15118_FAILED_ SignatureError | – | – |

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|---|---|---|---|
| | ISO15118_FAILED_No CertificateAvailable | – | – |
| | ISO15118_FAILED_Cert ChainError | – | – |
| | ISO15118_FAILED_ ChallengeInvalid | – | – |
| | ISO15118_FAILED_ ContractCanceled | – | – |
| | ISO15118_FAILED_Wrong ChargeParameter | – | – |
| | ISO15118_FAILED_Power DeliveryNotApplied | – | – |
| | ISO15118_FAILED_Tariff SelectionInvalid | – | – |
| | ISO15118_FAILED_ ChargingProfileInvalid | – | – |
| | ISO15118_FAILED_ MeteringSignatureNotValid | – | – |
| | ISO15118_FAILED_No ChargeServiceSelected | – | – |
| | ISO15118_FAILED_Wrong EnergyTransferMode | – | – |
| | ISO15118_FAILED_ ContactorError | – | – |
| | ISO15118_FAILED_ CertificateNotAllowedAtThis EVSE | – | – |
| | ISO15118_FAILED_ CertificateRevoked | – | – |
| | ISO15118_Communication SetupTimeout | – | – |
| | ISO15118_MsgTimeout | – | – |
| | ISO15118_CableCheck Timeout | – | – |
| | ISO15118_OngoingTimeout | – | – |
| | ISO15118_Precharge Timeout | – | – |
| | ISO15118_Ok | 0x01 | – |
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.44 ISO15118Chrg_SalesTariffEntryType

**[CP_SWS_ISO15118Chrg_00195] Definition of ImplementationDataType ISO15118Chrg_SalesTariffEntryType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_SalesTariffEntryType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | RelativeTimeInterval | |
| | ***Type*** | ISO15118Chrg_RelativeTimeIntervalType |
| | ***Comment*** | Extends the TimeIntervalType and defines the time interval the Sales TariffEntry is valid for based upon relative times. |
| | EPriceLevel | |
| | ***Type*** | uint16 |
| | ***Comment*** | Defines the price level of this SalesTariffEntry (referring to NumEPrice Levels). Small values for the EPriceLevel represent a cheaper Tariff Entry. Large values for the EPriceLevel represent a more expensive TariffEntry. |
| | ConsumptionCost | |
| | ***Type*** | ISO15118Chrg_ConsumptionCostType |
| | ***Comment*** | Defines additional means for further relative price information and/or alternative costs. |
| ***Description*** | A structure having elements as per ISO15118-2.<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.45 ISO15118Chrg_SalesTariffEntryType_ArrayType

**[CP_SWS_ISO15118Chrg_00196] Definition of ImplementationDataType ISO15118Chrg_SalesTariffEntryType_ArrayType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_SalesTariffEntryType_ArrayType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_SalesTariffEntryType |
| ***Size*** | 1024 Elements | | |

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| | |
|---|---|
| ***Description*** | An array as per ISO15118-2<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.46 ISO15118Chrg_SalesTariffType

**[CP_SWS_ISO15118Chrg_00197] Definition of ImplementationDataType ISO15118Chrg_SalesTariffType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_SalesTariffType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | Id | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Comment*** | This attribute is used for referencing the message element in the signature header when a signature needs to be applied. |
| | SalesTariffID | |
| | ***Type*** | uint8 |
| | ***Comment*** | SalesTariff identifier used to identify one sales tariff. A SAID remains a unique identifier for one schedule throughout a charging session. |
| | SalesTariffDescription | |
| | ***Type*** | ISO15118Chrg_TariffDescriptionType |
| | ***Comment*** | A human readable title/short description of the sales tariff e.g. for HMI display purposes. |
| | SalesTariffDescriptionLength | |
| | ***Type*** | uint8 |
| | ***Comment*** | Defines length of the SalesTariffDescription argument. |
| | NumEPriceLevels | |
| | ***Type*** | uint16 |
| | ***Comment*** | Defines the overall number of distinct price levels used across all provided SalesTariff elements. |
| | SalesTariffEntry | |
| | ***Type*** | ISO15118Chrg_SalesTariffEntryType_ArrayType |
| | ***Comment*** | Encapsulating element describing all relevant details for one time interval of the SalesTariff. The number of SalesTariffEntry elements is limited by the parameter MaxEntriesSAScheduleTuple. |
| ***Description*** | A structure having elements as per ISO15118-2.<br>**Tags:** atp.Status=draft | |

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|---|---|
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.47 ISO15118Chrg_SAScheduleListType

**[CP_SWS_ISO15118Chrg_00198] Definition of ImplementationDataType ISO15118Chrg_SAScheduleListType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_SAScheduleListType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_SAScheduleTupleType |
| ***Size*** | 3 Elements | | |
| ***Description*** | An array of 3 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.48 ISO15118Chrg_SAScheduleTupleType

**[CP_SWS_ISO15118Chrg_00199] Definition of ImplementationDataType ISO15118Chrg_SAScheduleTupleType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_SAScheduleTupleType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | SAScheduleTupleID | |
| | ***Type*** | uint8 |
| | ***Comment*** | Unique identifier within a charging session for a SAScheduleTuple element An SAID remains a unique identifier for one schedule throughout a charging session. |
| | PMaxSchedule | |

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|---|---|---|
| | ***Type*** | ISO15118Chrg_PMaxScheduleTypePtr |
| | ***Comment*** | Encapsulating element describing all relevant details for one PMax Schedule from the secondary actor. |
| | SalesTariff | |
| | ***Type*** | ISO15118Chrg_SalesTariffType |
| | ***Comment*** | Encapsulating element describing all relevant details for one Sales Tariff from the secondary actor |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.49 ISO15118Chrg_SelectedServiceListType

**[CP_SWS_ISO15118Chrg_00214] Definition of ImplementationDataType ISO15118Chrg_SelectedServiceListType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_SelectedServiceListType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_SelectedServiceType |
| ***Size*** | 16 Elements | | |
| ***Description*** | An array of 16 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.50 ISO15118Chrg_SelectedServiceType

**[CP_SWS_ISO15118Chrg_00201] Definition of ImplementationDataType ISO15118Chrg_SelectedServiceType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | |
|---|---|---|
| ***Name*** | ISO15118Chrg_SelectedServiceType (draft) | |
| ***Kind*** | Structure | |
| ***Elements*** | ServiceID | |
| | ***Type*** | uint16 |
| | ***Comment*** | Unique identifier of the service |
| | ParameterSetID | |
| | ***Type*** | uint16 |
| | ***Comment*** | This element is used to select a specific parameter set for a specific ServideID when selection a service using the PaymentService SelectionReq message. |
| ***Description*** | A structure having elements as per ISO15118-2<br>**Tags:** atp.Status=draft | |
| ***Variation*** | – | |
| ***Available via*** | Rte_ISO15118Chrg.h | |

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### 8.2.51 ISO15118Chrg_ServiceCategoryType

**[CP_SWS_ISO15118Chrg_00202] Definition of ImplementationDataType ISO15118Chrg_ServiceCategoryType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ServiceCategoryType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_EVCharging | 0x00 | – |
| | ISO15118_Internet | 0x01 | – |
| | ISO15118_Contract Certificate | 0x02 | – |
| | ISO15118_OtherCustom | 0x03 | – |

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| | |
|---|---|
| ***Description*** | An enumeration having values as per ISO15118-2.<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.52 ISO15118Chrg_ServiceListType

**[CP_SWS_ISO15118Chrg_00203] Definition of ImplementationDataType ISO15118Chrg_ServiceListType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ServiceListType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_ChargeServiceType |
| ***Size*** | 8 Elements | | |
| ***Description*** | An array of 8 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.53 ISO15118Chrg_ServiceParameterListTypePtr

**[CP_SWS_ISO15118Chrg_00204] Definition of ImplementationDataType ISO15118Chrg_ServiceParameterListTypePtr**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | |
|---|---|
| ***Name*** | ISO15118Chrg_ServiceParameterListTypePtr (draft) |
| ***Kind*** | Pointer |
| ***Type*** | ISO15118Chrg_ParameterSetType_ArrayType* |
| ***Description*** | Pointer to an array of 255 elements as per ISO15118-2.<br>**Tags:** atp.Status=draft |

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|---|---|
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.54 ISO15118Chrg_ServiceScopeType

**[CP_SWS_ISO15118Chrg_00205] Definition of ImplementationDataType ISO15118Chrg_ServiceScopeType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_ServiceScopeType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint8 |
| ***Size*** | 32 Elements | | |
| ***Description*** | An array which can support maximum of 32 uint8 characters.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.55 ISO15118Chrg_StateMachineControlType

**[CP_SWS_ISO15118Chrg_00206] Definition of ImplementationDataType ISO15118Chrg_StateMachineControlType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_StateMachineControlType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | ISO15118_START | 0x00 | – |
| | ISO15118_RENEGOTIATE | 0x01 | – |
| | ISO15118_NORMAL_STOP | 0x02 | – |
| | ISO15118_EMERGENCY_STOP | 0x03 | – |

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|---|---|
| ***Description*** | Machine control commands<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.56 ISO15118Chrg_StringType

**[CP_SWS_ISO15118Chrg_00207] Definition of ImplementationDataType ISO15118Chrg_StringType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_StringType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint8 |
| ***Size*** | 64 Elements | | |
| ***Description*** | An array of uint8 of which supports maximum of 64 characters. Note: Use NULL character as the ending.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.57 ISO15118Chrg_SubCertificatesType

**[CP_SWS_ISO15118Chrg_00208] Definition of ImplementationDataType ISO15118Chrg_SubCertificatesType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_SubCertificatesType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint16 |
| ***Size*** | 4 Elements | | |

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| | |
|---|---|
| ***Description*** | An array of 4 elements.<br>**Tags:** atp.Status=draft |
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.58 ISO15118Chrg_SupportedEnergyTransferModeType

**[CP_SWS_ISO15118Chrg_00209] Definition of ImplementationDataType ISO15118Chrg_SupportedEnergyTransferModeType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_SupportedEnergyTransferModeType (draft) | | |
| ***Kind*** | Array | ***Element type*** | ISO15118Chrg_EnergyTransferModeType |
| ***Size*** | 6 Elements | | |
| ***Description*** | An array of 6 elements.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.59 ISO15118Chrg_TariffDescriptionType

**[CP_SWS_ISO15118Chrg_00210] Definition of ImplementationDataType ISO15118Chrg_TariffDescriptionType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_TariffDescriptionType (draft) | | |
| ***Kind*** | Array | ***Element type*** | uint8 |
| ***Size*** | 32 Elements | | |
| ***Description*** | An array which can support maximum of 32 uint8 characters.<br>**Tags:** atp.Status=draft | | |

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|---|---|
| ***Variation*** | – |
| ***Available via*** | Rte_ISO15118Chrg.h |

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### 8.2.60 ISO15118Chrg_UnitMultiplierType

**[CP_SWS_ISO15118Chrg_00211] Definition of ImplementationDataType ISO15118Chrg_UnitMultiplierType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_UnitMultiplierType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | sint8 | | |
| ***Range*** | -3..+3 | – | – |
| ***Description*** | The Multiplier defines the exponent to base 10 (dec). The final physical value is determined by: Value * 10 ^ Multiplier [Unit].<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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### 8.2.61 ISO15118Chrg_UnitSymbolType

**[CP_SWS_ISO15118Chrg_00212] Definition of ImplementationDataType ISO15118Chrg_UnitSymbolType**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ISO15118Chrg_UnitSymbolType (draft) | | |
| ***Kind*** | Type | | |
| ***Derived from*** | uint8 | | |
| ***Range*** | h | 0x00 | time in hours |
| | m | 0x01 | time in minutes |
| | s | 0x02 | time in seconds |

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| | | | |
|---|---|---|---|
| | A | 0x03 | current in ampere |
| | V | 0x04 | voltage in volt |
| | W | 0x05 | power in watts |
| | Wh | 0x06 | energy in watthours |
| ***Description*** | – <br> **Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |
| ***Available via*** | Rte_ISO15118Chrg.h | | |

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## 8.3 Function definitions

### [CP_SWS_ISO15118Chrg_00119] Definition of API function ISO15118Chrg_Init

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310, SRS_BSW_00101, SRS_BSW_00358, SRS_BSW_-00414

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_Init (draft) | |
| ***Syntax*** | `void ISO15118Chrg_Init ( const ISO15118Chrg_ConfigType* ConfigPtr )` | |
| ***Service ID [hex]*** | 0x1 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Non Reentrant | |
| ***Parameters (in)*** | ConfigPtr | Pointer to configuration parameter set, used e.g., for post build parameters |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | None | |
| ***Return value*** | None | |
| ***Description*** | This service initializes the ISO15118Chrg module <br> **Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg.h | |

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### [CP_SWS_ISO15118Chrg_00122] Definition of API function ISO15118Chrg_DataLinkIndication

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_DataLinkIndication (draft) | |
| ***Syntax*** | `void ISO15118Chrg_DataLinkIndication (`<br>`  uint8 CtrlIdx,`<br>`  EthTrcv_LinkStateType TransceiverLinkState`<br>`)` | |
| ***Service ID [hex]*** | 0x2 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Non Reentrant | |
| ***Parameters (in)*** | CtrlIdx | Index of the Ethernet controller within the context of the Ethernet Interface |
| | TransceiverLinkState | Actual transceiver link state of the specific network handle |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | None | |
| ***Return value*** | None | |
| ***Description*** | This API is called by the EthSM to inform the ISO15118Chrg module about the state of the data link connection.<br>**Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg.h | |

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### [CP_SWS_ISO15118Chrg_00131] Definition of callback function ISO15118Chrg_V2GTpCopyRxData

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpCopyRxData (draft) | |
| ***Syntax*** | `BufReq_ReturnType ISO15118Chrg_V2GTpCopyRxData (`<br>`  PduIdType id,`<br>`  const PduInfoType* info,`<br>`  PduLengthType* bufferSizePtr`<br>`)` | |
| ***Service ID [hex]*** | 0x44 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Reentrant | |
| ***Parameters (in)*** | id | Identification of the received I-PDU. |
| | info | Provides the source buffer (SduDataPtr) and the number of bytes to be copied (SduLength). An SduLength of 0 can be used to query the current amount of available buffer in the upper layer module. In this case, the SduDataPtr may be a NULL_PTR. |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | bufferSizePtr | Available receive buffer after data has been copied. |

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| | | |
|---|---|---|
| ***Return value*** | BufReq_ReturnType | `BUFREQ_OK`: Data copied successfully<br>`BUFREQ_E_NOT_OK`: Data was not copied because an error occurred. |
| ***Description*** | This function is called to provide the received data of an I-PDU segment (N-PDU) to the upper layer. Each call to this function provides the next part of the I-PDU data. The size of the remaining buffer is written to the position indicated by bufferSizePtr.<br>**Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg.h | |

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## [CP_SWS_ISO15118Chrg_00125] Definition of callback function ISO15118Chrg_V2GTpCopyTxData

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpCopyTxData (draft) | |
| ***Syntax*** | `BufReq_ReturnType ISO15118Chrg_V2GTpCopyTxData (`<br>`  PduIdType id,`<br>`  const PduInfoType* info,`<br>`  const RetryInfoType* retry,`<br>`  PduLengthType* availableDataPtr`<br>`)` | |
| ***Service ID [hex]*** | 0x43 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Reentrant | |
| ***Parameters (in)*** | id | Identification of the transmitted I-PDU. |
| | info | Provides the destination buffer (SduDataPtr) and the number of bytes to be copied (SduLength). If not enough transmit data is available, no data is copied by the upper layer module and BUFREQ_E_BUSY is returned. The lower layer module may retry the call. An SduLength of 0 can be used to indicate state changes in the retry parameter or to query the current amount of available data in the upper layer module. In this case, the Sdu DataPtr may be a NULL_PTR. |
| | retry | This parameter is used to acknowledge transmitted data or to retransmit data after transmission problems.<br>If the retry parameter is a NULL_PTR, it indicates that the transmit data can be removed from the buffer immediately after it has been copied. Otherwise, the retry parameter must point to a valid RetryInfoType element.<br>If TpDataState indicates TP_CONFPENDING, the previously copied data must remain in the TP buffer to be available for error recovery. TP_DATACONF indicates that all data that has been copied before this call is confirmed and can be removed from the TP buffer. Data copied by this API call is excluded and will be confirmed later. TP_DATARETRY indicates that this API call shall copy previously copied data in order to recover from an error. In this case TxTpDataCnt specifies the offset in bytes from the current data copy position. |
| ***Parameters (inout)*** | None | |

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|---|---|---|
| ***Parameters (out)*** | availableDataPtr | Indicates the remaining number of bytes that are available in the upper layer module's Tx buffer. availableDataPtr can be used by TP modules that support dynamic payload lengths (e.g. FrIsoTp) to determine the size of the following CFs. |
| ***Return value*** | BufReq_ReturnType | `BUFREQ_OK`: Data has been copied to the transmit buffer completely as requested.<br>`BUFREQ_E_BUSY`: Request could not be fulfilled, because the required amount of Tx data is not available. The lower layer module may retry this call later on. No data has been copied.<br>`BUFREQ_E_NOT_OK`: Data has not been copied. Request failed. |
| ***Description*** | This function is called to acquire the transmit data of an I-PDU segment (N-PDU). Each call to this function provides the next part of the I-PDU data unless retry->TpDataState is TP_DATARETRY. In this case the function restarts to copy the data beginning at the offset from the current position indicated by retry->TxTpDataCnt. The size of the remaining data is written to the position indicated by availableDataPtr.<br>**Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg.h | |

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## 8.4 Callback notifications

This is a list of functions provided for other modules.

### [CP_SWS_ISO15118Chrg_00140] Definition of callback function ISO15118Chrg_V2GTpLocalIpAddrAssignmentChg

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00012, SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpLocalIpAddrAssignmentChg (draft) | |
| ***Syntax*** | `void ISO15118Chrg_V2GTpLocalIpAddrAssignmentChg (`<br>`  TcpIp_LocalAddrIdType IpAddrId,`<br>`  TcpIp_IpAddrStateType State`<br>`)` | |
| ***Service ID [hex]*** | 0x18 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Non Reentrant | |
| ***Parameters (in)*** | IpAddrId | IP address Identifier, representing an IP address specified in the TcpIp module configuraiton (e.g. static IPv4 address on EthIf controller 0). |
| | State | state of IP address assignment |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | None | |
| ***Return value*** | None | |
| ***Description*** | The SoAd calls this API to inform the ISO15118Chrg module about the status of the IP address.<br>**Tags:** atp.Status=draft | |

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|---|---|
| ***Available via*** | ISO15118Chrg_SoAd.h |

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### [CP_SWS_ISO15118Chrg_00133] Definition of callback function ISO15118Chrg_V2GTpRxIndication

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpRxIndication (draft) | |
| ***Syntax*** | `void ISO15118Chrg_V2GTpRxIndication ( PduIdType id, Std_ReturnType result )` | |
| ***Service ID [hex]*** | 0x45 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Reentrant | |
| ***Parameters (in)*** | id | Identification of the received I-PDU. |
| | result | E_OK: The PDU was received. E_NOT_OK: Reception of the PDU failed. |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | None | |
| ***Return value*** | None | |
| ***Description*** | Called by the lower layer after an I-PDU has been received or after the final I-PDU has been received in case of segmentation.<br>**Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg.h | |

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### [CP_SWS_ISO15118Chrg_00141] Definition of callback function ISO15118Chrg_V2GTpSoConModeChg

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00012, SRS_BSW_00310

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| | |
|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpSoConModeChg (draft) |
| ***Syntax*** | `void ISO15118Chrg_V2GTpSoConModeChg ( SoAd_SoConIdType SoConId, SoAd_SoConModeType Mode )` |
| ***Service ID [hex]*** | 0x21 |
| ***Sync/Async*** | Synchronous |
| ***Reentrancy*** | Reentrant for different SoConIds. Non reentrant for the same SoConId. |

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| | | |
|---|---|---|
| ***Parameters (in)*** | SoConId | socket connection index specifying the socket connection with the mode change. |
| | Mode | new socket connection mode |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | None | |
| ***Return value*** | None | |
| ***Description*** | The SoAd calls this API to inform the ISO15118Chrg module about the status of the socket connection. Note: The parameter SoAdSocketSoConModeChgNotifUpperLayerRef of SoAd SocketConnectionGroup in container SoAdSocketConnectionGroup (see ECUC_SoAd_00161) of the CP-SWS-SocketAdaptor shall be configured.<br>**Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg_SoAd.h | |

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## [CP_SWS_ISO15118Chrg_00128] Definition of callback function ISO15118Chrg_V2GTpStartOfReception

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpStartOfReception (draft) | |
| ***Syntax*** | `BufReq_ReturnType ISO15118Chrg_V2GTpStartOfReception ( PduIdType id, const PduInfoType* info, PduLengthType TpSduLength, PduLengthType* bufferSizePtr )` | |
| ***Service ID [hex]*** | 0x46 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Reentrant | |
| ***Parameters (in)*** | id | Identification of the I-PDU. |
| | info | Pointer to a PduInfoType structure containing the payload data (without protocol information) and payload length of the first frame or single frame of a transport protocol I-PDU reception, and the MetaData related to this PDU. If neither first/single frame data nor MetaData are available, this parameter is set to NULL_PTR. |
| | TpSduLength | Total length of the N-SDU to be received. |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | bufferSizePtr | Available receive buffer in the receiving module. This parameter will be used to compute the Block Size (BS) in the transport protocol module. |
| ***Return value*** | BufReq_ReturnType | `BUFREQ_OK`: Connection has been accepted. bufferSizePtr indicates the available receive buffer; reception is continued. If no buffer of the requested size is available, a receive buffer size of 0 shall be indicated by bufferSizePtr.<br>`BUFREQ_E_NOT_OK`: Connection has been rejected; reception is aborted. bufferSizePtr remains unchanged.<br>`BUFREQ_E_OVFL`: No buffer of the required length can be provided; reception is aborted. bufferSizePtr remains unchanged. |

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|---|---|
| ***Description*** | This function is called at the start of receiving an N-SDU. The N-SDU might be fragmented into multiple N-PDUs (FF with one or more following CFs) or might consist of a single N-PDU (SF). The service shall provide the currently available maximum buffer size when invoked with TpSdu Length equal to 0.<br>**Tags:** atp.Status=draft |
| ***Available via*** | ISO15118Chrg.h |

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### [CP_SWS_ISO15118Chrg_00143] Definition of callback function ISO15118Chrg_V2GTpTxConfirmation

*Status:* DRAFT
*Upstream requirements:* CP_RS_ChrgM_00012, SRS_BSW_00310

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| | | |
|---|---|---|
| ***Service Name*** | ISO15118Chrg_V2GTpTxConfirmation (draft) | |
| ***Syntax*** | `void ISO15118Chrg_V2GTpTxConfirmation ( PduIdType id, Std_ReturnType result )` | |
| ***Service ID [hex]*** | 0x48 | |
| ***Sync/Async*** | Synchronous | |
| ***Reentrancy*** | Reentrant | |
| ***Parameters (in)*** | id | Identification of the transmitted I-PDU. |
| | result | E_OK: The PDU was transmitted. E_NOT_OK: Transmission of the PDU failed. |
| ***Parameters (inout)*** | None | |
| ***Parameters (out)*** | None | |
| ***Return value*** | None | |
| ***Description*** | The lower layer calls this API of the ISO15118Chrg module to inform the ISO15118Chrg module about the status of the transmitted PDU.<br>**Tags:** atp.Status=draft | |
| ***Available via*** | ISO15118Chrg.h | |

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## 8.5 Scheduled functions

These functions are directly called by Basic Software Scheduler. The following functions shall have no return value and no parameter. All functions shall be non reentrant.

### [CP_SWS_ISO15118Chrg_00146] Definition of scheduled function ISO15118Chrg_MainFunction_Rx

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | |
|---|---|
| ***Service Name*** | ISO15118Chrg_MainFunction_Rx (draft) |
| ***Syntax*** | `void ISO15118Chrg_MainFunction_Rx ( void )` |
| ***Service ID [hex]*** | 0x24 |
| ***Description*** | This function performs the processing of the AUTOSAR ISO15118Chrg module's receive processing.<br>**Tags:** atp.Status=draft |
| ***Available via*** | ISO15118Chrg_SchM.h |

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### [CP_SWS_ISO15118Chrg_00145] Definition of scheduled function ISO15118Chrg_MainFunction_Tx

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00310

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| | |
|---|---|
| ***Service Name*** | ISO15118Chrg_MainFunction_Tx (draft) |
| ***Syntax*** | `void ISO15118Chrg_MainFunction_Tx ( void )` |
| ***Service ID [hex]*** | 0x23 |
| ***Description*** | This function performs the processing of the AUTOSAR ISO15118Chrg module's transmit processing.<br>**Tags:** atp.Status=draft |
| ***Available via*** | ISO15118Chrg_SchM.h |

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## 8.6 Expected interfaces

### 8.6.1 Mandatory Interfaces

**[CP_SWS_ISO15118Chrg_00147] Definition of mandatory interfaces required by module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00384

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| *API Function* | *Header File* | *Description* |
|---|---|---|
| BswM_RequestMode | BswM.h | Generic function call to request modes. This function shall only be used by other BSW modules that does not have a specific mode request interface. |
| Csm_Decrypt | Csm.h | Decrypts the given encrypted data and store the decrypted plaintext in the memory location pointed by the result pointer. |
| Csm_Encrypt | Csm.h | Encrypts the given data and store the ciphertext in the memory location pointed by the result pointer. |
| Csm_KeyDerive | Csm.h | Derives a new key by using the key elements in the given key identified by the keyId. The given key contains the key elements for the password and salt. The derived key is stored in the key element with the id 1 of the key identified by targetCryptoKeyId. |
| Csm_KeyElementSet | Csm.h | Sets the given key element bytes to the key identified by keyId. |
| Csm_KeyExchangeCalcPubVal | Csm.h | Calculates the public value of the current user for the key exchange and stores the public key in the memory location pointed by the public value pointer. |
| Csm_KeyExchangeCalcSecret | Csm.h | Calculates the shared secret key for the key exchange with the key material of the key identified by the keyId and the partner public key. The shared secret key is stored as a key element in the same key. |
| Csm_RandomGenerate | Csm.h | Generate a random number and stores it in the memory location pointed by the result pointer. |
| Csm_SignatureGenerate | Csm.h | Uses the given data to perform the signature calculation and stores the signature in the memory location pointed by the result pointer. |
| Csm_SignatureVerify | Csm.h | Verifies the given signature by checking if it was generated with the given data. |
| Det_ReportRuntimeError | Det.h | Service to report runtime errors. If a callout has been configured then this callout shall be called. |
| KeyM_CertElementGet | KeyM.h | Provides the content of a specific certificate element. The certificate configuration defines how the certificate submodule can find the element, e.g. by providing the object identifier (OID). This function is used to retrieve this information if only one element is assigned to the respective OID. |

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| API Function | Header File | Description |
|---|---|---|
| KeyM_GetCertificate | KeyM.h | This function provides the DER encoded certificate data |
| KeyM_ServiceCertificate | KeyM.h | The key server requests an operation from the key client. The type of operation is specified in the first parameter KeyM_ServiceCertificateType. Certificate operation requests are operated through this function. This function is only available if the configuration parameter KeyMServiceCertificate FunctionEnabled is set to TRUE. |
| KeyM_SetCertificate | KeyM.h | This function provides the certificate data to the key management module to temporarily store the certificate. |
| KeyM_Update | KeyM.h | This function is used to initiate the key generation or update process. |
| KeyM_VerifyCertificate | KeyM.h | This function verifies a certificate that was previously provided with KeyM_SetCertificate() against already stored and provided certificates stored with other certificate IDs. |
| PduR_ISO15118ChrgTransmit | PduR_ISO15118Chrg.h | Requests transmission of a PDU. |
| SoAd_CloseSoCon | SoAd.h | This service closes the socket connection specified by SoConId. |
| SoAd_IfTransmit | SoAd.h | Requests transmission of a PDU. |
| SoAd_IsConnectionReady | SoAd.h | API allows to check if a communication over this socket connection is possible for a dedicated remote address. It includes that the socket connection is bound to a socket, a physical address is available for the requested remote address and if a security association is configured that a secured connection is already established. |
| SoAd_OpenSoCon | SoAd.h | This service opens the socket connection specified by SoConId. |
| SoAd_RequestIpAddrAssignment | SoAd.h | By this API service the local IP address assignment which shall be used for the socket connection specified by SoConId is initiated. |

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### 8.6.2 Optional Interfaces

**[CP_SWS_ISO15118Chrg_00148] Definition of optional interfaces requested by module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00384

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| API Function | Header File | Description |
|---|---|---|
| Det_ReportError | Det.h | Service to report development errors. |

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### 8.6.3 Configurable Interfaces

Not applicable.

## 8.7 Service Interfaces

This section provides the necessary service interfaces.

### 8.7.1 Charge Parameters

**[CP_SWS_ISO15118Chrg_00150] Definition of ClientServerInterface ChargeParameters**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ChargeParameters (draft) | | |
| ***Comment*** | ISO15118 module uses this interface to request data from the ASW.<br>**Tags:** atp.Status=draft | | |
| ***IsService*** | true | | |
| ***Variation*** | – | | |
| ***Possible Errors*** | 0 | E_OK | Operation successful |
| | 1 | E_NOT_OK | Operation failed |
| | 2 | ISO15118CHRG_ SLACSTATEAVAILABLE | Slac state available |
| | 3 | ISO15118CHRG_SLAC-STATENOTAVAILABLE | Slac state not available |
| | 4 | ISO15118CHRG_ CONNECTIONDETAIL-SAVAILABLE | Connection details available |
| | 5 | ISO15118CHRG_ CONNECTIONDETAIL-SNOTAVAILABLE | Connection details not available |
| | 6 | ISO15118CHRG_STAT-EDETAILSAVAILABLE | State details available |
| | 7 | ISO15118CHRG_ STATEDETAILSNO-TAVAILABLE | State details not available |

| | | |
|---|---|---|
| ***Operation*** | AuthorizationParams | |
| ***Comment*** | Get Id. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |

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| | | |
|---|---|---|
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | Id | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Direction*** | OUT |
| | ***Comment*** | Id as per ISO15118-2. String will be implemented as an array of uint8's. |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | CableCheckParams | |
| ***Comment*** | Get parameters for cable check. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | DC_EVStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVStatus as per ISO15118-2 |
| | ***Variation*** | – |
| | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | ResponseCode as per ISO15118-2 |
| | ***Variation*** | – |
| | DC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVSEStatus as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | ChargeParameterDiscoveryParams | |
| ***Comment*** | Get charge discovery parameters. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | AC_EVChargeParameter | |
| | ***Type*** | ISO15118Chrg_AC_EVChargeParameterType |
| | ***Direction*** | IN |
| | ***Comment*** | AC_EVChargeParameter as per ISO15118-2 |
| | ***Variation*** | – |
| | DC_EVChargeParameter | |
| | ***Type*** | ISO15118Chrg_DC_EVChargeParameterType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVChargeParameter as per ISO15118-2. |

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|---|---|---|
| | ***Variation*** | – |
| | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | SAScheduleList | |
| | ***Type*** | ISO15118Chrg_SAScheduleListType |
| | ***Direction*** | IN |
| | ***Comment*** | SAScheduleList as per ISO15118-2 |
| | ***Variation*** | – |
| | AC_EVSEChargeParameter | |
| | ***Type*** | ISO15118Chrg_AC_EVSEChargeParameterType |
| | ***Direction*** | IN |
| | ***Comment*** | AC_EVSEChargeParameter as per ISO15118-2 |
| | ***Variation*** | – |
| | DC_EVSEChargeParameter | |
| | ***Type*** | ISO15118Chrg_DC_EVSEChargeParameterType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVSEChargeParameter as per ISO15118-2 |
| | ***Variation*** | – |
| | MaxEntriesSAScheduleTuple | |
| | ***Type*** | uint16 |
| | ***Direction*** | OUT |
| | ***Comment*** | MaxEntriesSAScheduleTuple as per ISO15118. |
| | ***Variation*** | – |
| | RequestedEnergyTransferMode | |
| | ***Type*** | ISO15118Chrg_EnergyTransferModeType |
| | ***Direction*** | OUT |
| | ***Comment*** | RequestedEnergyTransferMode as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | ChargingStatusParams | |
| ***Comment*** | Send response code, SAScheduleTupleID, AC_EVSEStatusPtr. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | SAScheduleTupleID | |
| | ***Type*** | uint8 |

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|---|---|---|
| | ***Direction*** | IN |
| | ***Comment*** | SAScheduleTupleID as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEMaxCurrent | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEMaxCurrent as per ISO15118-2 |
| | ***Variation*** | – |
| | AC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_AC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | AC_EVSEStatus as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | CurrentDemandParams | |
| ***Comment*** | Get Current demand request parameters. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | DC_EVStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVStatus as per ISO15118-2 |
| | ***Variation*** | – |
| | EVTargetCurrentPtr | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVTargetCurrent as per ISO15118-2 |
| | ***Variation*** | – |
| | EVMaximumVoltageLimitPtr | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVMaximumVoltageLimit as per ISO15118-2 |
| | ***Variation*** | – |
| | EVMaximumCurrentLimitPtr | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVMaximumPowerLimit as per ISO15118-2 |
| | ***Variation*** | – |
| | EVMaximumPowerLimitPtr | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVMaximumPowerLimit as per ISO15118-2 |
| | ***Variation*** | – |
| | RemainingTimeToFullSoCPtr | |

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| | | |
|---|---|---|
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | The ASW provides the parameter RemainingTimeToFullSoC to the ISO15118. |
| | ***Variation*** | – |
| | RemainingTimeToBulkSoCPtr | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | RemainingTimeToBulkSoC as per ISO15118-2 |
| | ***Variation*** | – |
| | EVTargetVoltagePtr | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVTargetVoltage as per Iso15118-2. |
| | ***Variation*** | – |
| | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response Code as per ISO15118-2. |
| | ***Variation*** | – |
| | DC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | ISO15118 provides the DC_EVSEStatus to ASW. |
| | ***Variation*** | – |
| | EVSEPresentVoltage | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPresentVoltage as per ISO15118-2. |
| | ***Variation*** | – |
| | EVSEPresentCurrent | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPresentCurrent as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSECurrentLimitAchieved | |
| | ***Type*** | boolean |
| | ***Direction*** | IN |
| | ***Comment*** | EVSECurrentLimitAchieved as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEVoltageLimitAchieved | |
| | ***Type*** | boolean |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEVoltageLimitAchieved as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEPowerLimitAchieved | |
| | ***Type*** | boolean |

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|---|---|---|
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPowerLimitAchieved as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEMaximumPowerLimit | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEMaximumPowerLimit as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEID | |
| | ***Type*** | ISO15118Chrg_EVSEIdType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEID as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEID_Length | |
| | ***Type*** | uint8 |
| | ***Direction*** | IN |
| | ***Comment*** | Defines length of EVSEID argument. |
| | ***Variation*** | – |
| | SAScheduleTupleID | |
| | ***Type*** | uint8 |
| | ***Direction*** | IN |
| | ***Comment*** | SAScheduleTupleID as per ISO15118-2 |
| | ***Variation*** | – |
| | MeterInfo | |
| | ***Type*** | ISO15118Chrg_MeterInfoType |
| | ***Direction*** | IN |
| | ***Comment*** | MeterInfo as per ISO15118-2 |
| | ***Variation*** | – |
| | BulkChargingComplete | |
| | ***Type*** | boolean |
| | ***Direction*** | OUT |
| | ***Comment*** | BulkCharging as per ISO15118-2. |
| | ***Variation*** | – |
| | ChargingComplete | |
| | ***Type*** | boolean |
| | ***Direction*** | OUT |
| | ***Comment*** | ChargingComplete as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | |
|---|---|
| ***Operation*** | ErrorNotification |
| ***Comment*** | Error notification to the upper layer. |
| ***Mapped to API*** | – |
| ***Variation*** | – |
| ***Parameters*** | ResponseCode |

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| | | |
|---|---|---|
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | – | |

| | | |
|---|---|---|
| ***Operation*** | PaymentDetailsParams | |
| ***Comment*** | Get eMAID and ContractSignatureCertificateChain. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSETimeStamp | |
| | ***Type*** | uint32 |
| | ***Direction*** | IN |
| | ***Comment*** | ISO15118 provides the EVSETimeStamp to ASW |
| | ***Variation*** | – |
| | eMAID | |
| | ***Type*** | ISO15118Chrg_eMAIDType |
| | ***Direction*** | OUT |
| | ***Comment*** | eMAID as per ISO15118-2. |
| | ***Variation*** | – |
| | eMAID_Length | |
| | ***Type*** | uint8 |
| | ***Direction*** | OUT |
| | ***Comment*** | Define length of eMAID. |
| | ***Variation*** | – |
| | ContractSignatureCertChain | |
| | ***Type*** | ISO15118Chrg_CertificateChainType |
| | ***Direction*** | OUT |
| | ***Comment*** | ContractSignatureCertificateChain as per ISO15118-2. |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | PaymentServiceSelectionParams | |
| ***Comment*** | Get PaymentOption and ServiceList. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |

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| | | |
|---|---|---|
| | ***Variation*** | – |
| | SelectedPaymentOption | |
| | ***Type*** | ISO15118Chrg_PaymentOptionType |
| | ***Direction*** | OUT |
| | ***Comment*** | PaymentOption as per ISO15118-2 |
| | ***Variation*** | – |
| | SelectedServiceList | |
| | ***Type*** | ISO15118Chrg_SelectedServiceListType |
| | ***Direction*** | OUT |
| | ***Comment*** | ServiceList as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | PowerDeliveryParams | |
| ***Comment*** | Get ChargeProgress, SAScheduleTupleId, ChargingProfile, DC_EVPowerDeliveryParameter. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | DC_EVPowerDeliveryParameter | |
| | ***Type*** | ISO15118Chrg_DC_EVPowerDeliveryParameterType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVPowerDeliveryParameter as per ISO15118-2. |
| | ***Variation*** | – |
| | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | ResponseCode as per ISO15118-2 |
| | ***Variation*** | – |
| | AC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_AC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | ISO15118 provides the AC_EVSEStatus to the ASW. |
| | ***Variation*** | – |
| | DC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | ISO15118 provides the DC_EVSEStatus to the ASW. |
| | ***Variation*** | – |
| | ChargeProgress | |
| | ***Type*** | ISO15118Chrg_ChargeProgressType |
| | ***Direction*** | OUT |
| | ***Comment*** | ChargeProgress as per ISO15118-2. |
| | ***Variation*** | – |
| | SAScheduleTupleID | |
| | ***Type*** | uint8 |
| | ***Direction*** | OUT |

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|---|---|---|
| | ***Comment*** | SAScheduleTupleId as per ISO15118-2. |
| | ***Variation*** | – |
| | ChargingProfile | |
| | ***Type*** | ISO15118Chrg_ChargingProfileType |
| | ***Direction*** | OUT |
| | ***Comment*** | ChargingProfile as per ISO15118-2. |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | PreChargeParams | |
| ***Comment*** | Get pre charge parameters. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | DC_EVStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVSEStatus as per ISO15118-2 |
| | ***Variation*** | – |
| | EVTargetVoltage | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPresentVoltage as per ISO15118-2. |
| | ***Variation*** | – |
| | EVTargetCurrent | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPresentCurrent as per ISO15118-2. |
| | ***Variation*** | – |
| | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | DC_EVSEStatus | |
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVSEStatus as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSEPresentVoltage | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPresentVoltage as per ISO15118-2 |
| | ***Variation*** | – |

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|---|---|
| ***Possible Errors*** | E_OK<br>E_NOT_OK |

| | | |
|---|---|---|
| ***Operation*** | SeccConnectionParams | |
| ***Comment*** | Acquire SeccIp, Secc Port Number and TLS connection information. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | SeccIpAddr | |
| | ***Type*** | uint64 |
| | ***Direction*** | IN |
| | ***Comment*** | This parameter provides the Secc Ip address to the application software. |
| | ***Variation*** | – |
| | SeccPortNumber | |
| | ***Type*** | uint16 |
| | ***Direction*** | IN |
| | ***Comment*** | This parameter provides the Secc port number to the application software. |
| | ***Variation*** | – |
| | TLSInfo | |
| | ***Type*** | ISO15118Chrg_StringType |
| | ***Direction*** | IN |
| | ***Comment*** | TLS information, such as version info. |
| | ***Variation*** | – |
| | IPAddressAssignmentSucceeded | |
| | ***Type*** | boolean |
| | ***Direction*** | IN |
| | ***Comment*** | Value 1 for IP address assigned, Value 0 for IP address not assigned |
| | ***Variation*** | – |
| | TLSAssignmentSucceeded | |
| | ***Type*** | boolean |
| | ***Direction*** | IN |
| | ***Comment*** | Value 1 for TLS successful, Value 0 for TLS unsuccessful |
| | ***Variation*** | – |
| ***Possible Errors*** | ISO15118CHRG_CONNECTIONDETAILSAVAILABLE<br>ISO15118CHRG_CONNECTIONDETAILSNOTAVAILABLE | |

| | | |
|---|---|---|
| ***Operation*** | ServiceDetailParams | |
| ***Comment*** | Get ServiceId | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | ServiceParameterListPtr | |
| | ***Type*** | ISO15118Chrg_ServiceParameterListTypePtr |
| | ***Direction*** | IN |

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| | | |
|---|---|---|
| | ***Comment*** | ServiceParameterList as per ISO15118-2 |
| | ***Variation*** | – |
| | ServiceId | |
| | ***Type*** | uint16 |
| | ***Direction*** | OUT |
| | ***Comment*** | ServiceId as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | ServiceDiscoveryParams | |
| ***Comment*** | Get ServiceScope and ServiceCategory. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | PaymentOptionList | |
| | ***Type*** | ISO15118Chrg_PaymentOptionListType |
| | ***Direction*** | IN |
| | ***Comment*** | PaymentOptionList as per ISO15118-2 |
| | ***Variation*** | – |
| | ChargeService | |
| | ***Type*** | ISO15118Chrg_ChargeServiceType |
| | ***Direction*** | IN |
| | ***Comment*** | Charge service as per ISO15118-2 |
| | ***Variation*** | – |
| | ServiceList | |
| | ***Type*** | ISO15118Chrg_ServiceListType |
| | ***Direction*** | IN |
| | ***Comment*** | Service list as per ISO15118-2 |
| | ***Variation*** | – |
| | ServiceScope | |
| | ***Type*** | ISO15118Chrg_ServiceScopeType |
| | ***Direction*** | OUT |
| | ***Comment*** | ServiceScope as per ISO15118-2 |
| | ***Variation*** | – |
| | ServiceCategory | |
| | ***Type*** | ISO15118Chrg_ServiceCategoryType |
| | ***Direction*** | OUT |
| | ***Comment*** | ServiceCategory as per ISO15118-2 |
| | ***Variation*** | – |

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|---|---|
| ***Possible Errors*** | E_OK<br>E_NOT_OK |

| | | |
|---|---|---|
| ***Operation*** | SessionSetupParams | |
| ***Comment*** | Handle EVCCID for session setup. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | Response code as per ISO15118-2 |
| | ***Variation*** | – |
| | EVSETimeStamp | |
| | ***Type*** | uint32 |
| | ***Direction*** | IN |
| | ***Comment*** | EVSETimeStamp as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | SessionStopParams | |
| ***Comment*** | Get ChargingSession. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ResponseCodeType | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | ResponseCode as per ISO15118-2 |
| | ***Variation*** | – |
| | ChargingSession | |
| | ***Type*** | ISO15118Chrg_ChargingSessionType |
| | ***Direction*** | OUT |
| | ***Comment*** | ChargingSession as per ISO15118-2. |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | SlacStateParams | |
| ***Comment*** | Acquire SLAC information. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | EVSEState | |
| | ***Type*** | boolean |
| | ***Direction*** | IN |
| | ***Comment*** | 1: EVSE_FOUND , 0: EVSE_NOT_FOUND |
| | ***Variation*** | – |

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|---|---|
| ***Possible Errors*** | ISO15118CHRG_SLACSTATEAVAILABLE<br>ISO15118CHRG_SLACSTATENOTAVAILABLE |

| | | |
|---|---|---|
| ***Operation*** | StateParams | |
| ***Comment*** | Provides the current state of the ISO15118 state machine | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | ChargingSequenceState | |
| | ***Type*** | ISO15118Chrg_ChargingSequenceStateType |
| | ***Direction*** | IN |
| | ***Comment*** | This enumeration provides the state information. |
| | ***Variation*** | – |
| | ChargingSequenceSubState | |
| | ***Type*** | ISO15118Chrg_ChargingSequenceSubStateType |
| | ***Direction*** | IN |
| | ***Comment*** | – |
| | ***Variation*** | – |
| ***Possible Errors*** | ISO15118CHRG_STATEDETAILSAVAILABLE<br>ISO15118CHRG_STATEDETAILSNOTAVAILABLE | |

| | | |
|---|---|---|
| ***Operation*** | SupportedAppProtocolParams | |
| ***Comment*** | Get SupportedAppProtocol parameters. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | AppProtocol | |
| | ***Type*** | ISO15118Chrg_AppProtocolType_ArrayType |
| | ***Direction*** | OUT |
| | ***Comment*** | AppProtocol as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | WeldingDetectionParams | |
| ***Comment*** | Get DC_EVStatus. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | EVSEPresentVoltage | |
| | ***Type*** | ISO15118Chrg_PhysicalValueType |
| | ***Direction*** | IN |
| | ***Comment*** | EVSEPresentVoltage as per ISO15118-2 |
| | ***Variation*** | – |
| | ResponseCode | |
| | ***Type*** | ISO15118Chrg_ResponseCodeType |
| | ***Direction*** | IN |
| | ***Comment*** | ResponseCode as per ISO15118-2 |
| | ***Variation*** | – |
| | DC_EVSEStatus | |

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| | | |
|---|---|---|
| | ***Type*** | ISO15118Chrg_DC_EVSEStatusType |
| | ***Direction*** | IN |
| | ***Comment*** | DC_EVSEStatus as per ISO15118-2 |
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

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### 8.7.2 Charge Control

#### [CP_SWS_ISO15118Chrg_00149] Definition of ClientServerInterface ChargeControl

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ChargeControl (draft) | | |
| ***Comment*** | Using this interface, the application software can fetch connection details from the ISO15118.<br>**Tags:** atp.Status=draft | | |
| ***IsService*** | true | | |
| ***Variation*** | – | | |
| ***Possible Errors*** | 0 | E_OK | Operation successful |
| | 1 | E_NOT_OK | Operation failed |
| | 4 | ISO15118CHRG_CONNECTIONDETAILSAVAILABLE | Connection details available |
| | 5 | ISO15118CHRG_CONNECTIONDETAILSNOTAVAILABLE | Connection details not available |
| | 8 | ISO15118CHRG_STATEAVAILABLE | State available |
| | 9 | ISO15118CHRG_STATEUNAVAILABLE | State not available |

| | | |
|---|---|---|
| ***Operation*** | SetChargeState | |
| ***Comment*** | The application software can control the state machine of the ISO15118 charging manager using this operation. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | StateMachineControl | |
| | ***Type*** | ISO15118Chrg_StateMachineControlType |
| | ***Direction*** | IN |
| | ***Comment*** | This enumeration provides the different control states. |

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| | | |
|---|---|---|
| | ***Variation*** | – |
| ***Possible Errors*** | E_OK<br>E_NOT_OK | |

| | | |
|---|---|---|
| ***Operation*** | SetCpLineStatus | |
| ***Comment*** | Acquire Cp line status information from application software. | |
| ***Mapped to API*** | – | |
| ***Variation*** | – | |
| ***Parameters*** | CpLineStatus | |
| | ***Type*** | boolean |
| | ***Direction*** | IN |
| | ***Comment*** | 1: CP_LINE_ACTIVE , 0: CP_LINE_INACTIVE |
| | ***Variation*** | – |
| ***Possible Errors*** | ISO15118CHRG_STATEAVAILABLE<br>ISO15118CHRG_STATEUNAVAILABLE | |

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## 8.8 Ports Interfaces

The necessary ports are provided here.

### 8.8.1 Required Service Port

**[CP_SWS_ISO15118Chrg_00152] Definition of Port ChargeParametersPort required by module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ChargeParametersPort (draft) | | |
| ***Kind*** | RequiredPort | ***Interface*** | ChargeParameters |
| ***Description*** | This is a required port at the application software side using which Tx\Rx parameters are exchanged via V2G messages.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |

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### 8.8.2 Provided Service Port

**[CP_SWS_ISO15118Chrg_00151] Definition of Port ChargeControlPort provided by module ISO15118Chrg**

*Status:* DRAFT
*Upstream requirements:* SRS_BSW_00305

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| | | | |
|---|---|---|---|
| ***Name*** | ChargeControlPort (draft) | | |
| ***Kind*** | ProvidedPort | ***Interface*** | ChargeControl |
| ***Description*** | This is a provided port at the ISO15118 BSW module to control the state of the ISO15118, and fetch connection details.<br>**Tags:** atp.Status=draft | | |
| ***Variation*** | – | | |

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# 9 Sequence diagrams

## 9.1 Data Link Indication

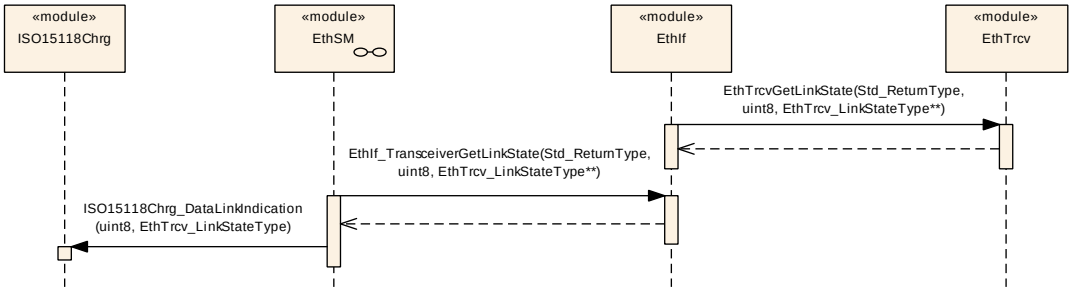


**Figure 9.1: Data Link Indication**

## 9.2 Start IP Address Assignment

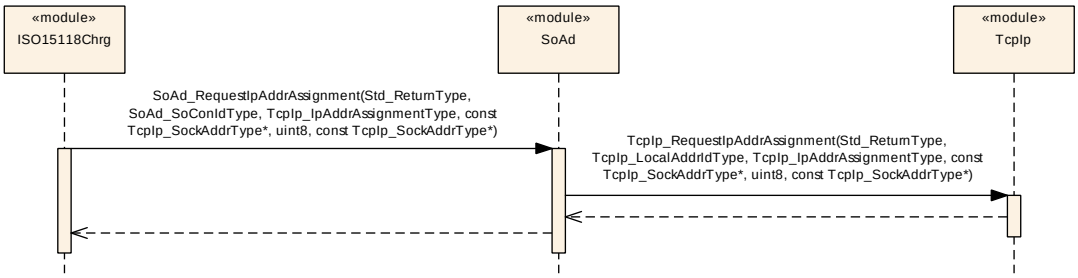


**Figure 9.2: IP Address Assignment**

## 9.3 SECC Discovery Process

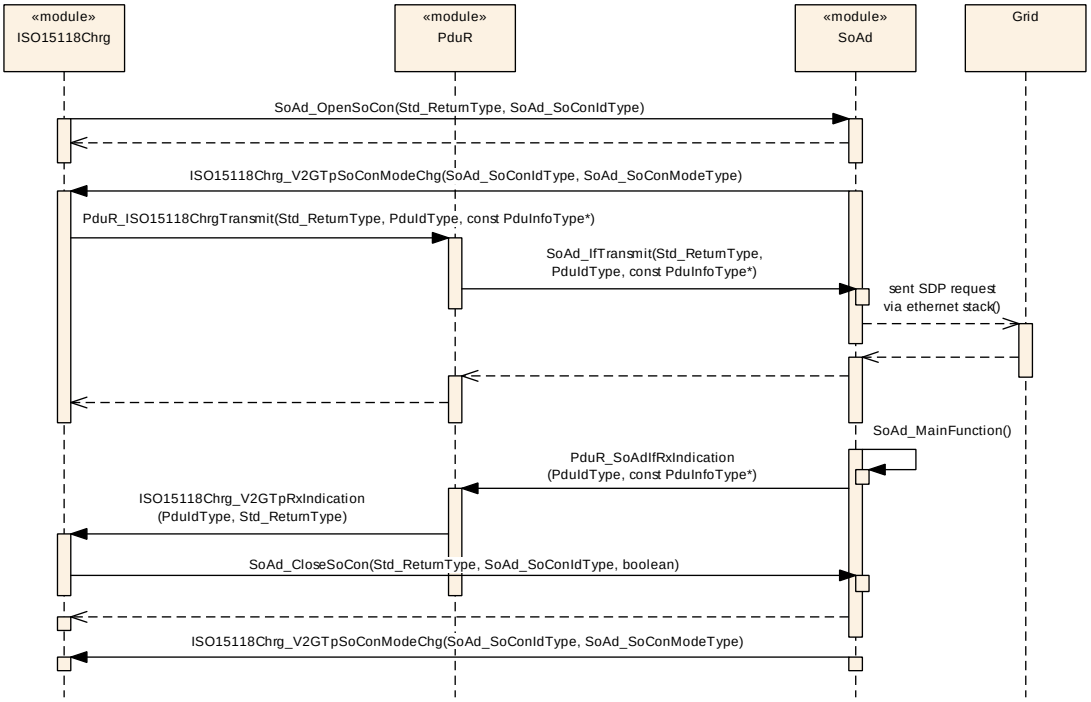


**Figure 9.3: SECC Discovery**

## 9.4 Transmission

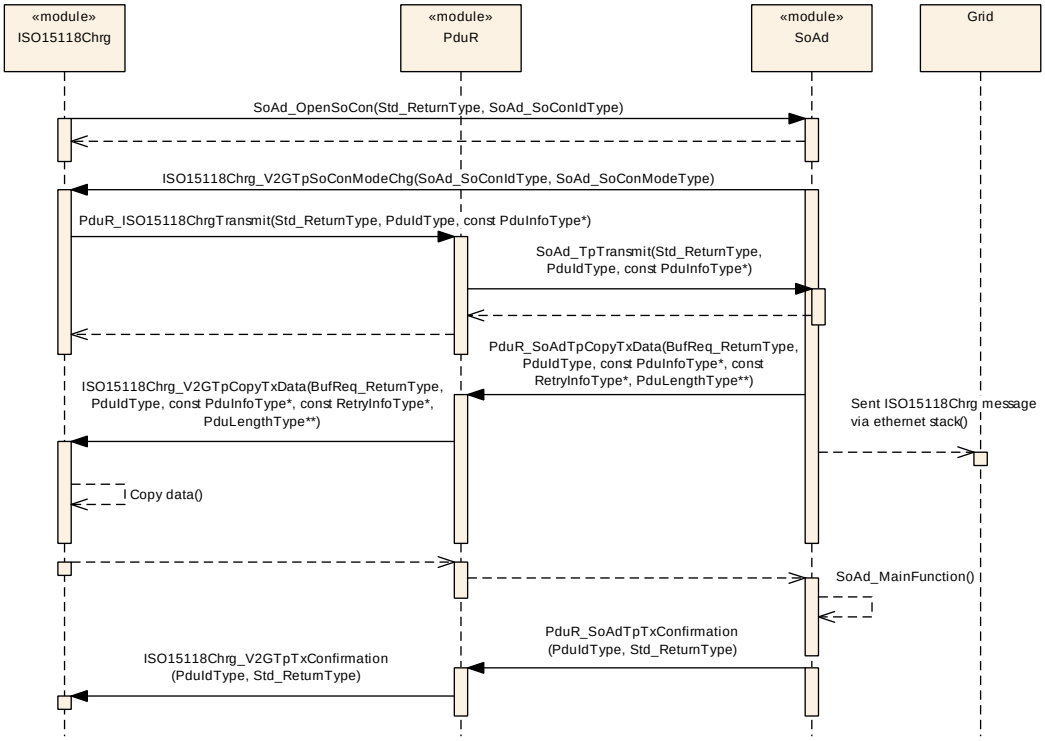


**Figure 9.4: Transmission**

## 9.5 Reception

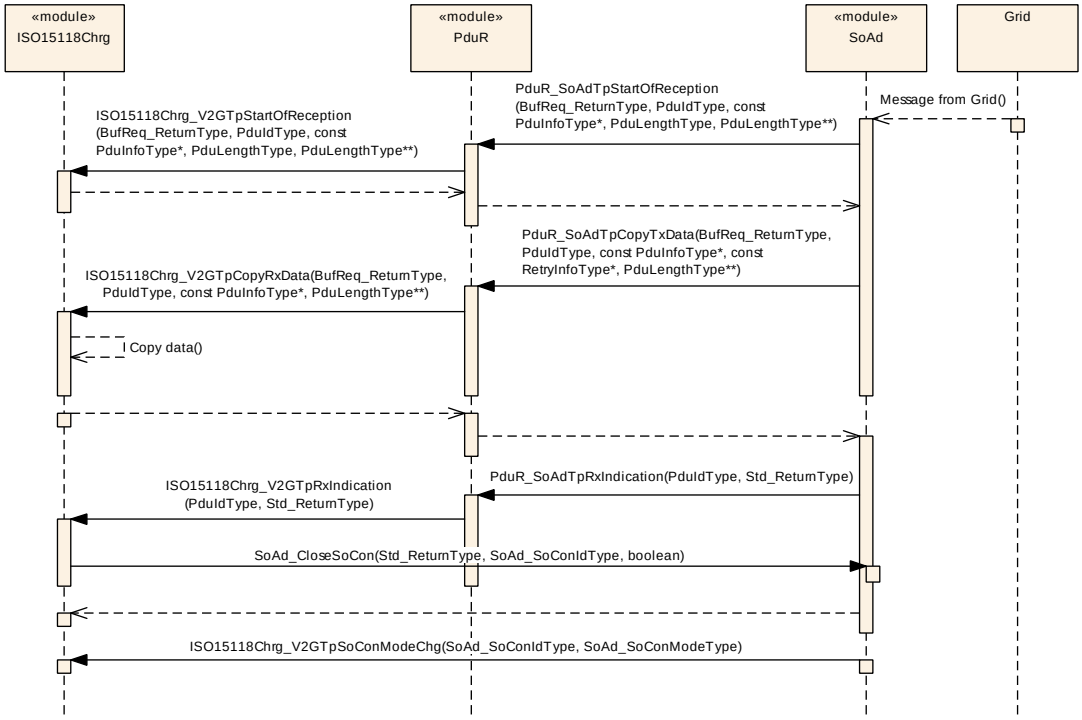


**Figure 9.5: Reception**

# 10 Configuration specification

In general, this chapter defines configuration parameters and their clustering into containers. In order to support the specification Chapter 10.1 describes fundamentals. It also specifies a template (table) you shall use for the parameter specification. We intend to leave Chapter 10.1 in the specification to guarantee comprehension.

Chapter 10.2 specifies the structure (containers) and the parameters of the module ISO15118Chrg.

Chapter 10.3 specifies published information of the module ISO15118Chrg.

## 10.1 How to read this chapter

For details refer to the chapter 10.1 “Introduction to configuration specification” in SWS_BSWGeneral.

## 10.2 Containers and configuration parameters

### 10.2.1 ISO15118Chrg

#### [ECUC_ISO15118Chrg_00001] Definition of EcucModuleDef ISO15118Chrg

*Status:* DRAFT

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| | |
|---|---|
| **Module Name** | ISO15118Chrg |
| **Description** | Configuration of the ISO15118 module. |
| **Post-Build Variant Support** | false |
| **Supported Config Variants** | VARIANT-PRE-COMPILE |

| **Included Containers** | | |
|---|---|---|
| **Container Name** | **Multiplicity** | **Scope / Dependency** |
| ISO15118ChrgGeneral | 1 | General configuration of the ISO15118 module.<br>**Tags:** atp.Status=draft |
| ISO15118ChrgService | 1 | Configuration paramters to configure the ISO15118ChrgService<br>**Tags:** atp.Status=draft |
| ISO15118ChrgTimer | 0..* | Configuration of ISO15118Chrg Timers.<br>**Tags:** atp.Status=draft |
| ISO15118ChrgV2GTP | 0..1 | Configuration of the Vehicle to Grid Transport Protocol<br>**Tags:** atp.Status=draft |

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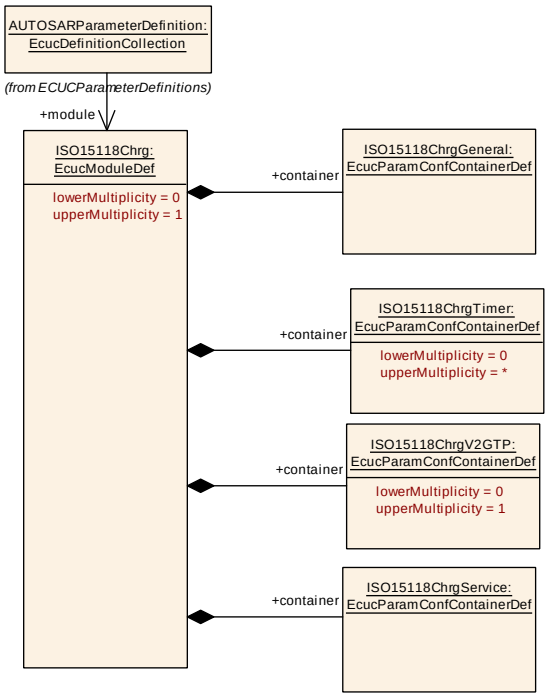


**Figure 10.1: Top level configuration structure of ISO15118Chrg**

### 10.2.2 ISO15118ChrgGeneral

**[ECUC_ISO15118Chrg_00009] Definition of EcucParamConfContainerDef ISO15118ChrgGeneral**

*Status:* DRAFT

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| | |
|---|---|
| **Container Name** | ISO15118ChrgGeneral |
| **Parent Container** | ISO15118Chrg |
| **Description** | General configuration of the ISO15118 module.<br>**Tags:** atp.Status=draft |
| **Configuration Parameters** | |

| **Included Parameters** | | |
|---|---|---|
| **Parameter Name** | **Multiplicity** | **ECUC ID** |
| ISO15118ChrgDevErrorDetect | 1 | [ECUC_ISO15118Chrg_00029] |
| ISO15118ChrgMainFunctionCycleTime | 1 | [ECUC_ISO15118Chrg_00031] |
| ISO15118ChrgVersionInfoApi | 1 | [ECUC_ISO15118Chrg_00030] |

| **No Included Containers** |
|---|

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### [ECUC_ISO15118Chrg_00029] Definition of EcucBooleanParamDef ISO15118ChrgDevErrorDetect

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgDevErrorDetect | | |
| **Parent Container** | ISO15118ChrgGeneral | | |
| **Description** | Switches the development error detection and notification on or off.<br>• true: detection and notification is enabled.<br>• false: detection and notification is disabled.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 1 | | |
| **Type** | EcucBooleanParamDef | | |
| **Default value** | false | | |
| **Post-Build Variant Value** | false | | |
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: local | | |

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### [ECUC_ISO15118Chrg_00031] Definition of EcucFloatParamDef ISO15118Chrg MainFunctionCycleTime

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgMainFunctionCycleTime | | |
| **Parent Container** | ISO15118ChrgGeneral | | |
| **Description** | This parameter defines the cycle time in seconds of the periodic calling of ISO15118Chrg main function.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 1 | | |
| **Type** | EcucFloatParamDef | | |
| **Range** | ]0 .. INF[ | | |
| **Default value** | – | | |
| **Post-Build Variant Value** | false | | |
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: local | | |

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### [ECUC_ISO15118Chrg_00030] Definition of EcucBooleanParamDef ISO15118ChrgVersionInfoApi

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgVersionInfoApi | | |
| **Parent Container** | ISO15118ChrgGeneral | | |
| **Description** | Enables and disables the version info API.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 1 | | |
| **Type** | EcucBooleanParamDef | | |
| **Default value** | false | | |
| **Post-Build Variant Value** | false | | |
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: local | | |

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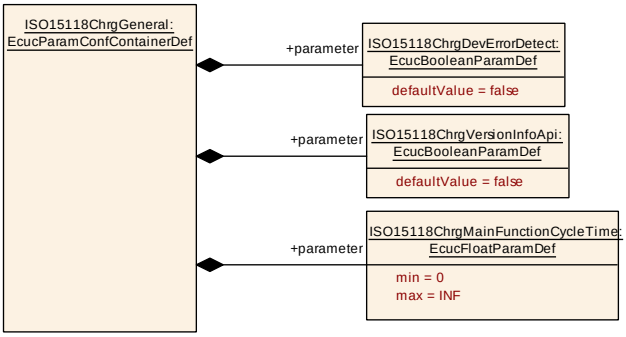


**Figure 10.2: General Configuration parameters of ISO15118Chrg**

## 10.2.3 ISO15118ChrgTimer

### [ECUC_ISO15118Chrg_00033] Definition of EcucParamConfContainerDef ISO15118ChrgTimer

*Status:* DRAFT

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| Container Name | ISO15118ChrgTimer |
|---|---|
| Parent Container | ISO15118Chrg |
| Description | Configuration of ISO15118Chrg Timers.<br>**Tags:** atp.Status=draft |
| Post-Build Variant Multiplicity | false |
| Configuration Parameters | |

| Included Parameters | | |
|---|---|---|
| **Parameter Name** | **Multiplicity** | **ECUC ID** |
| ISO15118ChrgV2gEvccMsgTimeout | 1 | [ECUC_ISO15118Chrg_00013] |

| No Included Containers |
|---|

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### [ECUC_ISO15118Chrg_00013] Definition of EcucFloatParamDef ISO15118ChrgV2gEvccMsgTimeout

*Status:* DRAFT

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| Parameter Name | ISO15118ChrgV2gEvccMsgTimeout | |
|---|---|---|
| Parent Container | ISO15118ChrgTimer | |
| Description | This parameter define the maximum time that is allowed between a request and its corresponding response message.<br>**Tags:** atp.Status=draft | |
| Multiplicity | 1 | |
| Type | EcucFloatParamDef | |
| Range | [-INF .. INF] | |
| Default value | – | |
| Scope / Dependency | scope: ECU | |

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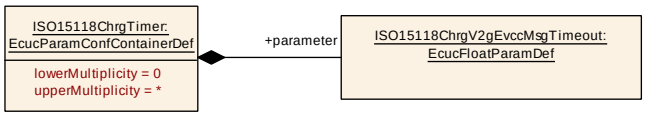


**Figure 10.3: ISO15118Chrg Timers**

### 10.2.4 ISO15118ChrgV2GTP

**[ECUC_ISO15118Chrg_00010] Definition of EcucParamConfContainerDef ISO15118ChrgV2GTP**

*Status:* DRAFT

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| | |
|---|---|
| **Container Name** | ISO15118ChrgV2GTP |
| **Parent Container** | ISO15118Chrg |
| **Description** | Configuration of the Vehicle to Grid Transport Protocol<br>**Tags:** atp.Status=draft |
| **Post-Build Variant Multiplicity** | false |
| **Configuration Parameters** | |

| **Included Parameters** | | |
|---|---|---|
| **Parameter Name** | **Multiplicity** | **ECUC ID** |
| ISO15118ChrgV2GSrcTcpDataRef | 1 | [ECUC_ISO15118Chrg_00026] |
| ISO15118ChrgV2GUdpSdpClientRef | 0..1 | [ECUC_ISO15118Chrg_00034] |

| **Included Containers** | | |
|---|---|---|
| **Container Name** | **Multiplicity** | **Scope / Dependency** |
| ISO15118ChrgV2GTPPdu | 0..1 | Contains the configuration parameters of the ISO15118 module's Pdus that are exchanged between ISO15118 and the PduR.<br>**Tags:** atp.Status=draft |

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**[ECUC_ISO15118Chrg_00026] Definition of EcucReferenceDef ISO15118ChrgV2GSrcTcpDataRef**

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgV2GSrcTcpDataRef | | |
| **Parent Container** | ISO15118ChrgV2GTP | | |
| **Description** | Reference to SoAdSocketConnectionGroup to access the local IP address and TCP port for building the endpoint option to send V2G messages.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 1 | | |
| **Type** | Reference to SoAdSocketConnectionGroup | | |
| **Post-Build Variant Multiplicity** | false | | |
| **Post-Build Variant Value** | false | | |
| **Multiplicity Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |

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| | | | |
|---|---|---|---|
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: ECU | | |

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### [ECUC_ISO15118Chrg_00034] Definition of EcucReferenceDef ISO15118ChrgV2GUdpSdpClientRef

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgV2GUdpSdpClientRef | | |
| **Parent Container** | ISO15118ChrgV2GTP | | |
| **Description** | Reference to SoAdSocketConnectionGroup to access the local IP address and Udp port for building the endpoint option for SECC discovery process.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 0..1 | | |
| **Type** | Reference to SoAdSocketConnectionGroup | | |
| **Post-Build Variant Multiplicity** | false | | |
| **Post-Build Variant Value** | false | | |
| **Multiplicity Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: ECU | | |

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### [ECUC_ISO15118Chrg_00035] Definition of EcucParamConfContainerDef ISO15118ChrgV2GTPPdu

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Container Name** | ISO15118ChrgV2GTPPdu | | |
| **Parent Container** | ISO15118ChrgV2GTP | | |
| **Description** | Contains the configuration parameters of the ISO15118 module's Pdus that are exchanged between ISO15118 and the PduR.<br>**Tags:** atp.Status=draft | | |
| **Post-Build Variant Multiplicity** | true | | |
| **Multiplicity Configuration Class** | **Pre-compile time** | X | VARIANT-PRE-COMPILE |
| | **Link time** | – | |

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| | | | |
|---|---|---|---|
| | **Post-build time** | – | |
| **Configuration Parameters** | | | |

| **Included Parameters** | | |
|---|---|---|
| **Parameter Name** | **Multiplicity** | **ECUC ID** |
| ISO15118ChrgV2GTPPduHandleId | 0..1 | [ECUC_ISO15118Chrg_00023] |
| ISO15118ChrgV2GTPPduPayloadType | 1 | [ECUC_ISO15118Chrg_00027] |
| ISO15118ChrgV2GTPPduProtocolVersion | 1 | [ECUC_ISO15118Chrg_00028] |
| ISO15118ChrgV2GTPPduRef | 1 | [ECUC_ISO15118Chrg_00024] |

| **No Included Containers** |
|---|

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## [ECUC_ISO15118Chrg_00023] Definition of EcucIntegerParamDef ISO15118Chrg V2GTPPduHandleId

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgV2GTPPduHandleId | | |
| **Parent Container** | ISO15118ChrgV2GTPPdu | | |
| **Description** | PDU identifier assigned by ISO15118Chrg module. The parameter is required by the API calls ISO15118_V2GTpRxIndication, ISO15118_V2GTpCopyRxData, ISO15118_V2GTpStartOfReception to receive I-PDUs from the PduR. For Tx-I-PDUs this handle Id is used for the APIs calls ISO15118_V2GTpTxConfirmation, ISO15118_V2GTpCopyTxData to transmit respectively confirm transmissions of I-PDUs.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 0..1 | | |
| **Type** | EcucIntegerParamDef (Symbolic Name generated for this parameter) | | |
| **Range** | 0 .. 65535 | | |
| **Default value** | – | | |
| **Post-Build Variant Multiplicity** | false | | |
| **Post-Build Variant Value** | false | | |
| **Multiplicity Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: ECU | | |

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### [ECUC_ISO15118Chrg_00027] Definition of EcucIntegerParamDef ISO15118Chrg V2GTPPduPayloadType

*Status:* DRAFT

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| | | |
|---|---|---|
| **Parameter Name** | ISO15118ChrgV2GTPPduPayloadType | |
| **Parent Container** | ISO15118ChrgV2GTPPdu | |
| **Description** | This parameter contains the information about how to decode the payload following the V2GTP header.<br>**Tags:** atp.Status=draft | |
| **Multiplicity** | 1 | |
| **Type** | EcucIntegerParamDef | |
| **Range** | 0 .. 65535 | |
| **Default value** | – | |
| **Scope / Dependency** | scope: local | |

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### [ECUC_ISO15118Chrg_00028] Definition of EcucIntegerParamDef ISO15118Chrg V2GTPPduProtocolVersion

*Status:* DRAFT

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| | | |
|---|---|---|
| **Parameter Name** | ISO15118ChrgV2GTPPduProtocolVersion | |
| **Parent Container** | ISO15118ChrgV2GTPPdu | |
| **Description** | This parameter specifies the protocol version of the V2GTP message that is transmitted in the Pdu.<br>**Tags:** atp.Status=draft | |
| **Multiplicity** | 1 | |
| **Type** | EcucIntegerParamDef | |
| **Range** | 0 .. 255 | |
| **Default value** | – | |
| **Scope / Dependency** | scope: local | |

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## [ECUC_ISO15118Chrg_00024] Definition of EcucReferenceDef ISO15118ChrgV2GTPPduRef

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgV2GTPPduRef | | |
| **Parent Container** | ISO15118ChrgV2GTPPdu | | |
| **Description** | Reference to the "global" Pdu structure to allow harmonization of handle IDs in the COM-Stack.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 1 | | |
| **Type** | Reference to Pdu | | |
| **Post-Build Variant Value** | false | | |
| **Value Configuration Class** | **Pre-compile time** | X | VARIANT-PRE-COMPILE |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | | | |

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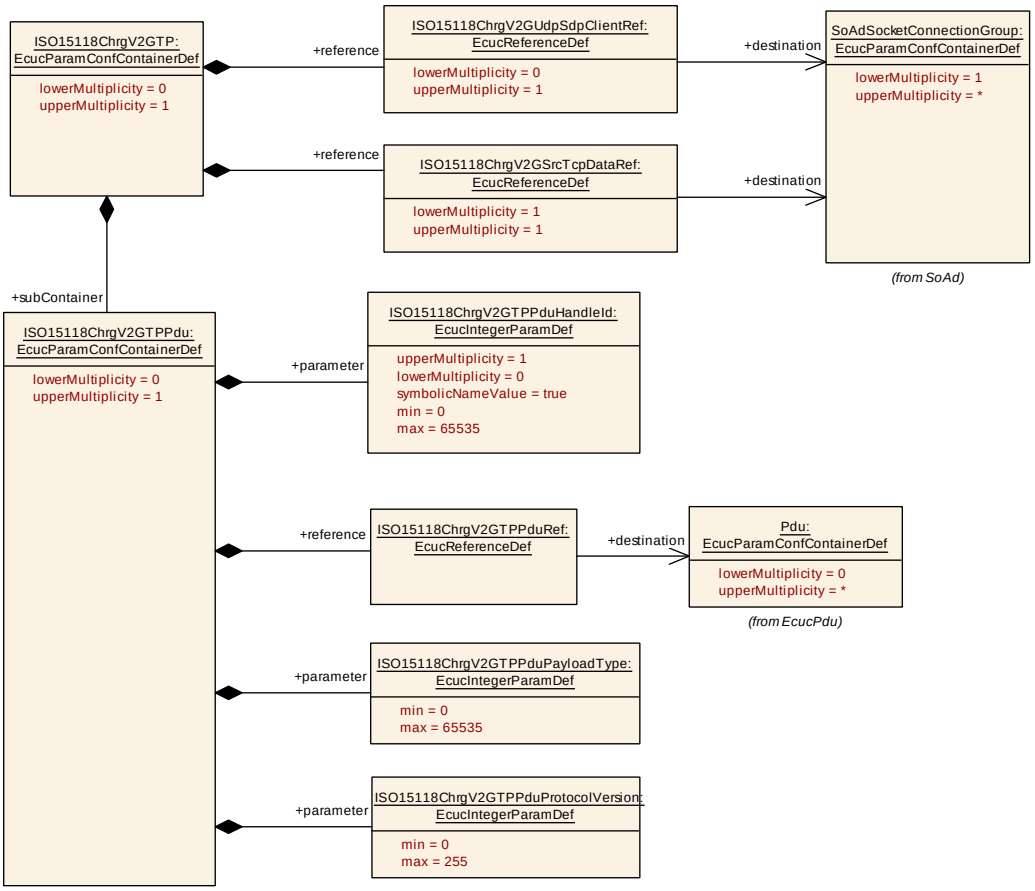


**Figure 10.4: Configuration of V2G protocol**

### 10.2.5 ISO15118ChrgService

**[ECUC_ISO15118Chrg_00032] Definition of EcucParamConfContainerDef ISO15118ChrgService**

*Status:* DRAFT

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| | |
|---|---|
| **Container Name** | ISO15118ChrgService |
| **Parent Container** | ISO15118Chrg |
| **Description** | Configuration paramters to configure the ISO15118ChrgService<br>**Tags:** atp.Status=draft |
| **Configuration Parameters** | |

| **Included Parameters** | | |
|---|---|---|
| **Parameter Name** | **Multiplicity** | **ECUC ID** |
| ISO15118ChrgSoAdSocketConnectionRef | 1 | [ECUC_ISO15118Chrg_00025] |

| **No Included Containers** |
|---|

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**[ECUC_ISO15118Chrg_00025] Definition of EcucReferenceDef ISO15118ChrgSoAdSocketConnectionRef**

*Status:* DRAFT

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| | | | |
|---|---|---|---|
| **Parameter Name** | ISO15118ChrgSoAdSocketConnectionRef | | |
| **Parent Container** | ISO15118ChrgService | | |
| **Description** | Reference to SoAdSocketConnection, which specifies the socket connection of the socket connection group. The ISO15118Chrg receives the SoConId for API calls between ISO15118Chrg and SoAd. The ISO15118Chrg shall use this parameter to access TLS information. Since the referenced SoAdSocketConnection is part of a SoAdSocketConnectionGroup the SoAdSocketTcpTlsConnectionRef of the same SoAdSocketConnectionGroup can be used to retrieve the TLS information.<br>**Tags:** atp.Status=draft | | |
| **Multiplicity** | 1 | | |
| **Type** | Symbolic name reference to SoAdSocketConnection | | |
| **Post-Build Variant Value** | false | | |
| **Value Configuration Class** | **Pre-compile time** | X | All Variants |
| | **Link time** | – | |
| | **Post-build time** | – | |
| **Scope / Dependency** | scope: ECU | | |

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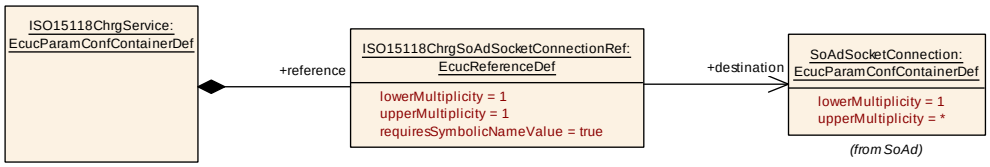


**Figure 10.5: Configuration of ISO15118Chrg services**

## 10.3 Published Information

For details refer to the chapter 10.3 “Published Information” in SWS_BSWGeneral.

# A Change history of AUTOSAR traceable items

## A.1 Traceable item history of this document according to AUTOSAR Release R23-11

### A.1.1 Added Specification Items in R23-11

[CP_SWS_ISO15118Chrg_00001] [CP_SWS_ISO15118Chrg_00002]
[CP_SWS_ISO15118Chrg_00003] [CP_SWS_ISO15118Chrg_00004]
[CP_SWS_ISO15118Chrg_00005] [CP_SWS_ISO15118Chrg_00006]
[CP_SWS_ISO15118Chrg_00007] [CP_SWS_ISO15118Chrg_00008]
[CP_SWS_ISO15118Chrg_00009] [CP_SWS_ISO15118Chrg_00010]
[CP_SWS_ISO15118Chrg_00011] [CP_SWS_ISO15118Chrg_00012]
[CP_SWS_ISO15118Chrg_00013] [CP_SWS_ISO15118Chrg_00014]
[CP_SWS_ISO15118Chrg_00015] [CP_SWS_ISO15118Chrg_00016]
[CP_SWS_ISO15118Chrg_00017] [CP_SWS_ISO15118Chrg_00018]
[CP_SWS_ISO15118Chrg_00019] [CP_SWS_ISO15118Chrg_00020]
[CP_SWS_ISO15118Chrg_00021] [CP_SWS_ISO15118Chrg_00022]
[CP_SWS_ISO15118Chrg_00023] [CP_SWS_ISO15118Chrg_00024]
[CP_SWS_ISO15118Chrg_00025] [CP_SWS_ISO15118Chrg_00026]
[CP_SWS_ISO15118Chrg_00027] [CP_SWS_ISO15118Chrg_00028]
[CP_SWS_ISO15118Chrg_00029] [CP_SWS_ISO15118Chrg_00030]
[CP_SWS_ISO15118Chrg_00031] [CP_SWS_ISO15118Chrg_00032]
[CP_SWS_ISO15118Chrg_00033] [CP_SWS_ISO15118Chrg_00034]
[CP_SWS_ISO15118Chrg_00035] [CP_SWS_ISO15118Chrg_00036]
[CP_SWS_ISO15118Chrg_00037] [CP_SWS_ISO15118Chrg_00038]
[CP_SWS_ISO15118Chrg_00039] [CP_SWS_ISO15118Chrg_00040]
[CP_SWS_ISO15118Chrg_00041] [CP_SWS_ISO15118Chrg_00042]
[CP_SWS_ISO15118Chrg_00043] [CP_SWS_ISO15118Chrg_00044]
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[CP_SWS_ISO15118Chrg_00055] [CP_SWS_ISO15118Chrg_00056]
[CP_SWS_ISO15118Chrg_00057] [CP_SWS_ISO15118Chrg_00058]
[CP_SWS_ISO15118Chrg_00059] [CP_SWS_ISO15118Chrg_00060]
[CP_SWS_ISO15118Chrg_00061] [CP_SWS_ISO15118Chrg_00062]
[CP_SWS_ISO15118Chrg_00063] [CP_SWS_ISO15118Chrg_00064]
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[CP_SWS_ISO15118Chrg_00067] [CP_SWS_ISO15118Chrg_00068]
[CP_SWS_ISO15118Chrg_00069] [CP_SWS_ISO15118Chrg_00070]
[CP_SWS_ISO15118Chrg_00071] [CP_SWS_ISO15118Chrg_00072]
[CP_SWS_ISO15118Chrg_00073] [CP_SWS_ISO15118Chrg_00074]
[CP_SWS_ISO15118Chrg_00075] [CP_SWS_ISO15118Chrg_00076]

[CP_SWS_ISO15118Chrg_00077] [CP_SWS_ISO15118Chrg_00078]
[CP_SWS_ISO15118Chrg_00079] [CP_SWS_ISO15118Chrg_00080]
[CP_SWS_ISO15118Chrg_00081] [CP_SWS_ISO15118Chrg_00082]
[CP_SWS_ISO15118Chrg_00084] [CP_SWS_ISO15118Chrg_00085]
[CP_SWS_ISO15118Chrg_00086] [CP_SWS_ISO15118Chrg_00087]
[CP_SWS_ISO15118Chrg_00089] [CP_SWS_ISO15118Chrg_00090]
[CP_SWS_ISO15118Chrg_00091] [CP_SWS_ISO15118Chrg_00113]
[CP_SWS_ISO15118Chrg_00114] [CP_SWS_ISO15118Chrg_00115]
[CP_SWS_ISO15118Chrg_00116] [CP_SWS_ISO15118Chrg_00117]
[CP_SWS_ISO15118Chrg_00118] [CP_SWS_ISO15118Chrg_00119]
[CP_SWS_ISO15118Chrg_00122] [CP_SWS_ISO15118Chrg_00123]
[CP_SWS_ISO15118Chrg_00125] [CP_SWS_ISO15118Chrg_00128]
[CP_SWS_ISO15118Chrg_00131] [CP_SWS_ISO15118Chrg_00133]
[CP_SWS_ISO15118Chrg_00135] [CP_SWS_ISO15118Chrg_00136]
[CP_SWS_ISO15118Chrg_00137] [CP_SWS_ISO15118Chrg_00138]
[CP_SWS_ISO15118Chrg_00139] [CP_SWS_ISO15118Chrg_00140]
[CP_SWS_ISO15118Chrg_00141] [CP_SWS_ISO15118Chrg_00143]
[CP_SWS_ISO15118Chrg_00145] [CP_SWS_ISO15118Chrg_00146]
[CP_SWS_ISO15118Chrg_00147] [CP_SWS_ISO15118Chrg_00148]

### A.1.2 Changed Specification Items in R23-11

none

### A.1.3 Deleted Specification Items in R23-11

none

## A.2 Traceable item history of this document according to AUTOSAR Release R24-11

### A.2.1 Added Specification Items in R24-11

| Number | Heading |
|---|---|
| [CP_SWS_ISO15118Chrg_00149] | Definition of ClientServerInterface ChargeControl |
| [CP_SWS_ISO15118Chrg_00150] | Definition of ClientServerInterface ChargeParameters |
| [CP_SWS_ISO15118Chrg_00151] | Definition of Port ChargeControlPort provided by module ISO15118Chrg |

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| Number | Heading |
|---|---|
| [CP_SWS_ISO15118Chrg_00152] | Definition of Port ChargeParametersPort required by module ISO15118Chrg |
| [CP_SWS_ISO15118Chrg_00153] | Definition of ImplementationDataType ISO15118Chrg_AC_EVChargeParameterType |
| [CP_SWS_ISO15118Chrg_00154] | Definition of ImplementationDataType ISO15118Chrg_AC_EVSEChargeParameterType |
| [CP_SWS_ISO15118Chrg_00155] | Definition of ImplementationDataType ISO15118Chrg_AC_EVSEStatusType |
| [CP_SWS_ISO15118Chrg_00156] | Definition of ImplementationDataType ISO15118Chrg_AppProtocolType |
| [CP_SWS_ISO15118Chrg_00157] | Definition of ImplementationDataType ISO15118Chrg_AppProtocolType_ArrayType |
| [CP_SWS_ISO15118Chrg_00158] | Definition of ImplementationDataType ISO15118Chrg_CertificateChainType |
| [CP_SWS_ISO15118Chrg_00159] | Definition of ImplementationDataType ISO15118Chrg_ChargeProgressType |
| [CP_SWS_ISO15118Chrg_00160] | Definition of ImplementationDataType ISO15118Chrg_ChargeServiceType |
| [CP_SWS_ISO15118Chrg_00161] | Definition of ImplementationDataType ISO15118Chrg_ChargingProfileType |
| [CP_SWS_ISO15118Chrg_00162] | Definition of ImplementationDataType ISO15118Chrg_ChargingSequenceStateType |
| [CP_SWS_ISO15118Chrg_00163] | Definition of ImplementationDataType ISO15118Chrg_ChargingSequenceSubStateType |
| [CP_SWS_ISO15118Chrg_00164] | Definition of ImplementationDataType ISO15118Chrg_ChargingSessionType |
| [CP_SWS_ISO15118Chrg_00165] | Definition of ImplementationDataType ISO15118Chrg_ConsumptionCostType |
| [CP_SWS_ISO15118Chrg_00166] | Definition of ImplementationDataType ISO15118Chrg_CostKindType |
| [CP_SWS_ISO15118Chrg_00167] | Definition of ImplementationDataType ISO15118Chrg_CostType |
| [CP_SWS_ISO15118Chrg_00168] | Definition of ImplementationDataType ISO15118Chrg_DC_EVChargeParameterType |
| [CP_SWS_ISO15118Chrg_00169] | Definition of ImplementationDataType ISO15118Chrg_DC_EVErrorCodeType |
| [CP_SWS_ISO15118Chrg_00170] | Definition of ImplementationDataType ISO15118Chrg_DC_EVPowerDeliveryParameterType |
| [CP_SWS_ISO15118Chrg_00171] | Definition of ImplementationDataType ISO15118Chrg_DC_EVSEChargeParameterType |
| [CP_SWS_ISO15118Chrg_00172] | Definition of ImplementationDataType ISO15118Chrg_DC_EVSEStatusCodeType |
| [CP_SWS_ISO15118Chrg_00173] | Definition of ImplementationDataType ISO15118Chrg_DC_EVSEStatusType |

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| Number | Heading |
|---|---|
| [CP_SWS_ISO15118Chrg_00174] | Definition of ImplementationDataType ISO15118Chrg_DC_EVStatusType |
| [CP_SWS_ISO15118Chrg_00175] | Definition of ImplementationDataType ISO15118Chrg_eMAIDType |
| [CP_SWS_ISO15118Chrg_00176] | Definition of ImplementationDataType ISO15118Chrg_EnergyTransferModeType |
| [CP_SWS_ISO15118Chrg_00177] | Definition of ImplementationDataType ISO15118Chrg_EntryType |
| [CP_SWS_ISO15118Chrg_00178] | Definition of ImplementationDataType ISO15118Chrg_EVSEIdType |
| [CP_SWS_ISO15118Chrg_00179] | Definition of ImplementationDataType ISO15118Chrg_EVSENotificationType |
| [CP_SWS_ISO15118Chrg_00180] | Definition of ImplementationDataType ISO15118Chrg_IsolationLevelType |
| [CP_SWS_ISO15118Chrg_00181] | Definition of ImplementationDataType ISO15118Chrg_MeterInfoType |
| [CP_SWS_ISO15118Chrg_00182] | Definition of ImplementationDataType ISO15118Chrg_ParameterSetType |
| [CP_SWS_ISO15118Chrg_00183] | Definition of ImplementationDataType ISO15118Chrg_ParameterSetType_ArrayType |
| [CP_SWS_ISO15118Chrg_00184] | Definition of ImplementationDataType ISO15118Chrg_ParameterType |
| [CP_SWS_ISO15118Chrg_00185] | Definition of ImplementationDataType ISO15118Chrg_PaymentOptionListType |
| [CP_SWS_ISO15118Chrg_00186] | Definition of ImplementationDataType ISO15118Chrg_PaymentOptionType |
| [CP_SWS_ISO15118Chrg_00187] | Definition of ImplementationDataType ISO15118Chrg_PhysicalValueType |
| [CP_SWS_ISO15118Chrg_00188] | Definition of ImplementationDataType ISO15118Chrg_PmaxScheduleEntryType |
| [CP_SWS_ISO15118Chrg_00189] | Definition of ImplementationDataType ISO15118Chrg_PMaxScheduleType_ArrayType |
| [CP_SWS_ISO15118Chrg_00190] | Definition of ImplementationDataType ISO15118Chrg_PMaxScheduleTypePtr |
| [CP_SWS_ISO15118Chrg_00191] | Definition of ImplementationDataType ISO15118Chrg_ProfileEntryType |
| [CP_SWS_ISO15118Chrg_00192] | Definition of ImplementationDataType ISO15118Chrg_ProtocolNameSpaceType |
| [CP_SWS_ISO15118Chrg_00193] | Definition of ImplementationDataType ISO15118Chrg_RelativeTimeIntervalType |
| [CP_SWS_ISO15118Chrg_00194] | Definition of ImplementationDataType ISO15118Chrg_ResponseCodeType |
| [CP_SWS_ISO15118Chrg_00195] | Definition of ImplementationDataType ISO15118Chrg_SalesTariffEntryType |

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| Number | Heading |
|---|---|
| [CP_SWS_ISO15118Chrg_00196] | Definition of ImplementationDataType ISO15118Chrg_SalesTariffEntryType_ArrayType |
| [CP_SWS_ISO15118Chrg_00197] | Definition of ImplementationDataType ISO15118Chrg_SalesTariffType |
| [CP_SWS_ISO15118Chrg_00198] | Definition of ImplementationDataType ISO15118Chrg_SAScheduleListType |
| [CP_SWS_ISO15118Chrg_00199] | Definition of ImplementationDataType ISO15118Chrg_SAScheduleTupleType |
| [CP_SWS_ISO15118Chrg_00201] | Definition of ImplementationDataType ISO15118Chrg_SelectedServiceType |
| [CP_SWS_ISO15118Chrg_00202] | Definition of ImplementationDataType ISO15118Chrg_ServiceCategoryType |
| [CP_SWS_ISO15118Chrg_00203] | Definition of ImplementationDataType ISO15118Chrg_ServiceListType |
| [CP_SWS_ISO15118Chrg_00204] | Definition of ImplementationDataType ISO15118Chrg_ServiceParameterListTypePtr |
| [CP_SWS_ISO15118Chrg_00205] | Definition of ImplementationDataType ISO15118Chrg_ServiceScopeType |
| [CP_SWS_ISO15118Chrg_00206] | Definition of ImplementationDataType ISO15118Chrg_StateMachineControlType |
| [CP_SWS_ISO15118Chrg_00207] | Definition of ImplementationDataType ISO15118Chrg_StringType |
| [CP_SWS_ISO15118Chrg_00208] | Definition of ImplementationDataType ISO15118Chrg_SubCertificatesType |
| [CP_SWS_ISO15118Chrg_00209] | Definition of ImplementationDataType ISO15118Chrg_SupportedEnergyTransferModeType |
| [CP_SWS_ISO15118Chrg_00210] | Definition of ImplementationDataType ISO15118Chrg_TariffDescriptionType |
| [CP_SWS_ISO15118Chrg_00211] | Definition of ImplementationDataType ISO15118Chrg_UnitMultiplierType |
| [CP_SWS_ISO15118Chrg_00212] | Definition of ImplementationDataType ISO15118Chrg_UnitSymbolType |
| [CP_SWS_ISO15118Chrg_00214] | Definition of ImplementationDataType ISO15118Chrg_SelectedServiceListType |
| [CP_SWS_ISO15118Chrg_00215] | General Requirement |
| [CP_SWS_ISO15118Chrg_00216] | General Requirement |
| [CP_SWS_ISO15118Chrg_00217] | General Requirement |
| [CP_SWS_ISO15118Chrg_00218] | General Requirement |
| [CP_SWS_ISO15118Chrg_00219] | General Requirement |
| [CP_SWS_ISO15118Chrg_00220] | General Requirement |
| [SWS_ISO15118Chrg_00092] | DRAFT |

**Table A.1: Added Specification Items in R24-11**

### A.2.2 Changed Specification Items in R24-11

none

### A.2.3 Deleted Specification Items in R24-11

| Number | Heading |
|---|---|
| [CP_SWS_ISO15118Chrg_00117] | Definition of datatype ChrgM_ResponseCodeType |
| [CP_SWS_ISO15118Chrg_00118] | Definition of datatype ChrgM_ErrorHandlerType |
| [CP_SWS_ISO15118Chrg_00123] | Definition of API function ChrgM_StartProcess |
| [CP_SWS_ISO15118Chrg_00135] | Definition of API function ChrgM_SessionSetupIndication |
| [CP_SWS_ISO15118Chrg_00136] | Definition of API function ChrgM_PaymentServiceSelectionIndication |
| [CP_SWS_ISO15118Chrg_00137] | Definition of API function ChrgM_SessionStopIndication |
| [CP_SWS_ISO15118Chrg_00138] | Definition of API function ChrgM_ErrorIndication |
| [CP_SWS_ISO15118Chrg_00139] | Definition of API function ChrgM_CpLineStatus |

**Table A.2: Deleted Specification Items in R24-11**