



Trialog is working on EV charge since more than 10 years and had several opportunities to develop a strong expertise on Electro-Mobility charge protocols like IEC 61851-1, DIN 70121, ISO 15118 and OCPP 1.6/2.0.

In this context, Trialog has developed several communication stacks and validation tools.

**YaCCS, the SECC CCS Communication Stack** is one of these stacks. It provides a robust and reliable communication stack to perform ISO 15118 or DIN 70121 charge with a compatible vehicle over PLC.

## Supported Features

### Supported versions

- DIN 70121
- ISO 15118-3 / ISO 15118-2
- ISO 15118-20 V2G
  - → provided as an additional option
  - will be available in Q4 2022 with early pre-releases since Q1 2022

### Supported PLC chipset

- QCA7000/5 from Qualcomm
- ST2100 from IoTecha

### Current Status - DIN 70121 / ISO 15118-3 / ISO 15118-2

Functions	Current Status	Details
PLC SLAC	100%	Note: Listening to BCBToggle is not in the scope of the stack, it is related to the EVSE IEC 61851-1 module. Note: Calibrating the PLC power emission on each carrier to -75dBm/Hz is not in the scope of the stack because it depends of the internal hardware and wiring of the EVSE.
SDP	100%	
TCP	100%	

TLS	100%	
SupportedAppProtocol	100%	
DC Message Set	100%	
AC Message Set	100%	
EIM Message Set	100%	
PnC Message Set	100%	
SmartCharging	100%	
Renegotiation	100%	
Pause / Resume	100%	<p>Waiting for compatible EV for complete validation.</p> <p>Note: Listening to BCBToggle is not in the scope of the stack, it is related to the EVSE IEC 61851-1 module.</p> <p>Note: Applying X1/X2 is not in the scope of the stack, it is related to the EVSE IEC 61851-1 module.</p>

## Current Status - ISO 15118-3 / ISO 15118-20

Features	Current status	Details
PLC SLAC	Already included in the ISO 15118-3 stack	
SDP	Already included in the ISO 15118 code base of the ISO 15118-2 stack	
TCP	Already included in the ISO 15118 code base of the ISO 15118-2 stack	
TLS	Already included in the ISO 15118 code base of the ISO 15118-2 stack	
SupportedAppProtocol	Already included in the ISO 15118 code base of the ISO 15118-2 stack	
DC Message Set	Released June 22	
DC Message Set for BPT	Released June 22	
AC Message Set	Released June 22	
AC Message Set for BPT	Released June 22	
ACD Message Set	Not included	
WPT Message Set	Not included	
EIM Message Set	Released June 22	

<b>PnC Message Set</b>	Release 2023 or 2024	
<b>Dynamic mode</b>	Released June 22	
<b>Scheduled mode</b>	Release 2023	
<b>Renegotiation</b>	Release Q1 23	
<b>Pause / Resume</b>	Release 2023	<i>Note: Listening to BCBToggle is not in the scope of the stack, it is related to the EVSE IEC 61851-1 module. Note: Applying X1/X2 is not in the scope of the stack, it is related to the EVSE IEC 61851-1 module.</i>
<b>Multiplexing</b>	Release Q1 23	
<b>TLS 1.3 with Mutual Auth</b>	In progress Release Q4 2022	

## Technical Details

---

The YaCCS SECC stack is developed as a C/C++ programs using Boost libraries and the OpenSSL library for TLS and PnC:

- C++11 is a minimal requirement
- Boost is known to be compatible with at least GCC, C++0x: 4.4.7

The YaCCS SECC stack is regularly used on Linux based OS with kernel 4.9.11 or 5.4:

- Minimal Linux kernel version: 3.4
- Link with the Qualcomm PLC modem using the qcaspi driver of the Linux kernel
- Compatible with at least Intel and ARM architectures

Typical hardware: Freescale i.MX287, RAM 128MB.

Minimum hardware requirement to connect the Qualcomm PLC Modem:

- SPI Bus to connect to the chipset
- 4 GPIOs for chipset configuration
- 3.3V (Pmax 1W)

Note: The ST2100 can only be used on IoTecha hardware. IoTecha is providing the driver license.

## Validation and Interoperability

---

The YaCCS SECC stack is ready to use, fully validated with Trialog's ComboCS test system, currently deployed in DC charging stations and France, and under deployment into several charging stations by 7 manufacturers around the world (AC and DC). The

stack has also been tested on the field and participated to the 2019, 2021 and 2023 European CharIN Festivals in order to provide interoperability confidence. The interoperability with the following EVs has for example been covered using a test environment:

AC Charge	DC Charge
Daimler Smart EV ComboCS Porsche Cayenne	BMW i3 BMW ID3 Dacia Spring DS3 Crossback e-tense EV ComboCS Fiat e500 Honda e Hyundai Ioniq Hyundai Ioniq 2 Jaguar I-Pace Kia e-Niro Peugeot e-208 Peugeot e-2008 Renault Zoé 2 Tesla model S VW e-UP

## Contact us

For more information about **YaCCS**, the **SECC CCS Communication Stack**, please contact us: [emobilitysales@trialog.com](mailto:emobilitysales@trialog.com).