

Use Cases for Communication between Plug-in Vehicles and Off-Board DC Charger

RATIONALE

This document will use the on-board charger as a basis, then add and delete info that address the new criteria for vehicle architectures that have been introduced as Plug-In Electric Vehicles (PEV). Rechargeable Energy Storage Systems (RESS) have also changed dramatically since Electric Vehicles were introduced and new technologies along with packaging aspects may require specific communication criteria.

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1. SCOPE

This SAE Information Report SAE J2836/2™ establishes use cases and general information for communication between plug-in electric vehicles and the DC Off-board charger. Where relevant, this document notes, but does not formally specify, interactions between the vehicle and vehicle operator.

This applies to the off-board DC charger for conductive charging, which supplies DC current to the vehicle battery of the electric vehicle through a SAE J1772™ Hybrid coupler or SAE J1772™ AC Level 2 type coupler on DC power lines, using the AC power lines or the pilot line for PLC communication, or dedicated communication lines that is further described in SAE J2847/2.

The specification supports DC energy transfer via Forward Power Flow (FPF) from grid-to-vehicle.

The relationship of this document to the others that address PEV communications is further explained in section 5.

This is the 1st version of this document and completes step 1 effort that captures the initial objectives of the SAE task force. The intent of step 1 was to record as much information on “what we think works” and publish. The effort continues however, to step 2 that allows public review for additional comments and viewpoints, while the task force also continues additional testing and early implementation. Results of step 2 effort will then be incorporated into updates of this document and lead to a republished version.

1.1 Purpose

The purpose of SAE J2836/2™ is to document the general information which must be supported by SAE Recommended Practice SAE J2847/2, *Communication between Plug-in Vehicles and the off-board charger in the EV Supply Equipment (EVSE)*.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

J1772	SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler
J2836-1	Use Cases for Communication between Plug-in Vehicles and Utility Grid (Surface Vehicle Information Report).
J2836-3	Use Cases for Communication between Plug-in Vehicles and the Utility Grid for Reverse Power Flow (Surface Vehicle Information Report).
J2847-1	Communication between Plug-in Vehicles and the Utility Grid (Surface Vehicle Recommended Practice).
J2847-2	Communication between Plug-in Vehicles and the Supply Equipment (EVSE) (Surface Vehicle Recommended Practice).
J2847-3	Communication between Plug-in Vehicles and the Utility Grid for Reverse Power Flow (Surface Vehicle Recommended Practice).
J2931-1	Digital Communications for Plug-in Electric Vehicles

2.2 Related Publications (Optional)

The following publications are provided for information purposes only and are not a required part of this document:

3. DEFINITIONS

3.1 AVAILABLE LINE CURRENT (ALC)

Available Line Current is transmitted by the EVSE using the Pilot duty cycle identified in SAE J1772™. This indicates to the vehicle the maximum current draw for this premises. The purpose of this is for the vehicle not to request more current than this and to not trip the premises circuit breaker.

3.2 CHARGER

The charger can either be on-board the vehicle or off-board. On-board chargers require AC energy transfer to the vehicle (either 120 or 240V single phase) and Off-board chargers are within the EVSE and require DC energy transfer to the vehicle.