

Society of Automotive Engineers (SAE)

SAE – J1171 External Ignition Protection of Marine Electrical Devices

Covers all electrical devices suitable for use in marine engine compartments and fuel tank spaces. To recommend a test procedure for certifying the External Ignition Protection of electrical devices used on boats.

SAE – J1772 Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler

This SAE Recommended Practice covers the general physical, electrical, functional and performance requirements to facilitate conductive charging of EV/PHEV vehicles in North America. This document defines a common EV/PHEV and supply equipment vehicle conductive charging method including operational requirements and the functional and dimensional requirements for the vehicle inlet and mating connector.

SAE – J2293 Energy Transfer System for Electric Vehicles

Establishes requirements for Electric Vehicles (EV) and the off-board Electric Vehicle Supply Equipment (EVSE) used to transfer electrical energy to an EV from an electric Utility Power System (Utility) in North America. This document defines, either directly or by reference, all characteristics of the total EV Energy Transfer System (EV-ETS) necessary to insure the functional interoperability of an EV and EVSE of the same physical system architecture. The ETS, regardless of architecture, is responsible for the conversion of AC electrical energy into DC electrical energy that can be used to charge the Storage Battery of an EV, as shown in Figure 1. The different physical ETS system architectures are identified by the form of the energy that is transferred between the EV and the EVSE, as shown in figure 2. It is possible for an EV and EVSE to support more than one architecture. This document does not contain all requirements related to EV energy transfer, as there are many aspects of an EV and EVSE that do not affect their interoperability. Specifically, this document does not deal with the characteristics of the interface between the EVSE and the Utility, except to acknowledge the Utility as the source of energy to be transferred to the EV.

SAE – J2836 Use Cases for Communication Between Plug-In Vehicles and the Utility Grid

Establishes use cases for communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications.

****See IEC 15118-1**

SAE – J2847 Communication Between Plug-In Vehicles and the Utility Grid

Establishes requirements and specifications for communication between plug-in electric vehicles and the electric power grid, for energy transfer and other applications. Where relevant, this document notes, but does not formally specify, interactions between the vehicle and vehicle operator.

****See IEC 15118-2**

SAE – J2931 Broadband PLC Communication for Plug-in Electric Vehicles

Establishes the specifications for physical and data-link layer communications using broadband Power Line Communications (PLC) between the Plug-In Vehicle (PEV) and the Electric Vehicle Supply Equipment (EVSE) DC off-board-charger. This document deals with the specific modifications or selection of optional features in HomePlug Green PHY v1.1 necessary to support the automotive charging application over Control Pilot lines as described in SAE J1772™. PLC may also be used to connect directly to the Utility smart meter or Home Area Network (HAN), and may technically be applied to the AC mains, both of which are outside the scope of this document.

****See IEC 15118-3**

SAE – J2953 Plug-In Electric Vehicle (PEV) Interoperability with Electric Vehicle Supply Equipment (EVSE)

This SAE Recommended Practice JXXXX establishes the interoperability requirements and specifications for the communication systems between Plug-In Vehicles (PEV) and Electric Vehicle Supply Equipment (EVSE) for multiple suppliers.