

Harmonization of OBD Communication Protocols

This document requests GRPE guidance towards harmonizing OBD communication protocols based on SAE J1979-2 and its ISO counterpart.

Currently, SAE J1979 and ISO 1531-5 are used worldwide. However, the communication protocols in these twin standards have reached their capacity limits to add new Diagnostic Trouble Codes (DTC). The current “two-byte” protocol allows for a limited number of Diagnostic Trouble Codes (DTCs) and the remaining DTCs are running out. SAE recently established J1979-2 to extend and expand the current system by enabling “three-byte” DTC.

Last January, GRPE adopted supplements to the 06 and 07 series of amendments to UN Regulation No. 83 (ECE/TRANS/WP.29/GRPE/2023/10 and GRPE-87-13-Rev.2, as combined in Annexes V and VI to the session report) which included the introduction of SAE J1979-2. A similar measure is included in proposals under GRPE consideration to amend the 02 and 03 series of amendments to UN Regulation No. 154.

In the United States, the California Air Resources Board (CARB) is expected to accept SAE J1979-2 from the 2023 model year and to require this communication protocol on all new vehicles from the 2027 model year.

The “OBDOnUDS” services defined under SAE J1979-2 are a superset of WWH-OBD (ISO 27145) specifications required by the EURO and China VI regulations for Heavy Duty vehicles.

AAPC believes that this technological upgrade offers an opportunity to promote worldwide harmonization with significant benefits to regulatory authorities, manufacturers, and consumers:

- Enable more data to be made available regarding individual DTC status, including information on the DTC decision for the current driving cycle.
- Enable more data to be made available regarding individual DTC monitoring frequency and individual DTC completion for readiness used during vehicle inspections.
- Enable new standardized data parameters, especially to align with technological progress (e.g., hybrid and electric vehicles).
- Enable use of a common software package across all markets, resulting in reliable vehicle/offboard tool communication and globally standardized data.
- Ensure that standardized data and fault codes will be supported for future technologies and new vehicle features.
- Reduce complexity and proliferation of electronic control unit (ECU) software by allowing vehicle manufacturers and offboard tools and equipment manufacturers to use common diagnostic communication protocols worldwide.

AAPC appreciates the GRPE efforts to update UN R83 and UN R154 and thanks OICA for their proposals in this regard. AAPC would like to see these efforts extended to promote harmonization across all Contracting Parties to the 1958, 1997, and 1998 Agreements as well as to encourage acceptance worldwide. Therefore, AAPC seeks GRPE guidance on potential means to achieve this end via WP.29 instruments and procedures.