



SURFACE VEHICLE RECOMMENDED PRACTICE

J1939™-01

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Superseding J1939-1 JUN2018

On-Highway Equipment Control and Communication Network

RATIONALE

This document has been updated with references to SAE publications and formatting changes. SAE J1939-76 was added as an SAE publication.

FOREWORD

The SAE J1939 communications network is defined using a collection of individual SAE J1939 documents based upon the layers of the open system interconnect (OSI) model for computer communications architecture. The SAE J1939-1 on-highway equipment control and communication network document specifies the minimum set of SAE J1939 documents that define the truck and bus control and communications vehicle network as it applies to on-highway equipment.

The SAE J1939 communications network is a high-speed ISO 11898-1 CAN based communications network that supports real-time closed loop control functions, simple information exchanges, and diagnostic data exchanges between electronic control units (ECUs) physically distributed throughout the vehicle. SAE J1939 network is the next generation successor to the SAE J1708 and SAE J1587 low speed networks. SAE J1708 and SAE J1587 are older, widely used networks intended to provide simple information exchange, including diagnostic data, between ECUs. SAE J1939 is capable of performing all of the functions of SAE J1708 and SAE J1587 networks, as well as providing control system support.

The SAE J1939 communications network is developed for use in heavy-duty environments and is suitable for horizontally integrated vehicle industries. The SAE J1939 communications network is applicable for light-duty, medium-duty, and heavy-duty vehicles used on-road or off-road, and for appropriate stationary applications which use vehicle derived components (e.g., generator sets). Vehicles of interest include, but are not limited to, on-highway and off-highway trucks and their trailers, construction equipment, and agricultural equipment and implements. The physical layer aspects of SAE J1939 reflect its design goal for use in heavy-duty environments. Horizontally integrated vehicles involve the integration of different combinations of loose package components, such as engines and transmissions that are sourced from many different component suppliers. The SAE J1939 common communication architecture strives to offer an open interconnect system that allows the ECUs associated with different component manufacturers to communicate with each other.

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Documents

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1. SCOPE

SAE J1939-1 specifies the minimum set of SAE J1939 documents that define the Truck and bus control and communications vehicle network as it applies to on-highway equipment. Vehicles covered include all on-highway straight trucks and combination vehicles. A combination vehicle consists of one towing vehicle (tractor) and one or more towed vehicles (trailers and dollies). Dolly axles within the road train are considered to be towed vehicles.

1.1 Purpose

It is the intention of the SAE J1939 family of recommended practices to allow electronic devices to communicate with each other by providing a standard architecture. SAE J1939-01 describes the particular set of SAE J1939 documents used to implement an open interconnect system for electronic systems in a heavy-duty on-highway vehicle.

1.2 Degrees of Openness

A network based upon this document is open to the degree that any two devices which conform to SAE J1939-1 can be connected via the network and communicate with each other without functional interference. Devices that conform to different SAE J1939-x documents may not be capable of communicating directly with one another and in some cases may cause degradation or complete disruption of the entire network.

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 +1 724-776-4970 (outside USA), www.sae.org.

SAE J1939	Serial Control and Communications Heavy Duty Vehicle Network - Top Level Document
SAE J1939-03	On-Board Diagnostics Implementation Guide
SAE J1939-11	Physical Layer, 250 kbps, Twisted Shielded Pair
SAE J1939-13	Off-Board Diagnostic Connector
SAE J1939-14	Physical Layer, 500 kbps
SAE J1939-15	Physical Layer, 250 kbps, Un-Shielded Twisted Pair (UTP)
SAE J1939-16	Automatic Baud Rate Detection Process
SAE J1939-21	Data Link Layer
SAE J1939-31	Network Layer
SAE J1939-71	Vehicle Application Layer
SAE J1939-73	Application Layer - Diagnostics
SAE J1939-76	SAE J1939 Functional Safety Communications Protocol
SAE J1939-81	Network Management