

SAE J1939-22

Mapping of J1939 messages to CAN FD frames

In March, the SAE J1939-22 document has been released. It specifies the mapping of parameter groups to CAN FD data frames. It includes a Multi-PDU concept as described originally in the CiA 602-2 specification.



The SAE J1939-22 specification includes a new transport layer supporting CAN FD frames (Source: CiA/Adobe Stock)

The SAE J1939 documents are intended for light-, medium-, and heavy-duty vehicles. Vehicles of interest include, but are not limited to, on- and off-highway trucks and their trailers, construction equipment, and agricultural equipment as well as implements. The purpose of these documents is to provide an open interconnect system for electronic systems. It is the intention of these documents to allow electronic control units to communicate with each other by providing a standard architecture.

SAE J1939-22 specifies the mapping of J1939 messages to CAN FD frames including a transport layer protocol making use of 64-byte data field. These improved features compared with the Classical CAN protocol are in particular important for functional safety, cybersecurity, and extended transport capability. Of course, the 82-pages J1939-22 document provides backward compatibility with the SAE J1939DA describing many suspect parameters and parameter groups. This Excel-sheet is updated

quarterly. The last version is from March 2021.

The J1939-22 document adapts the Multi-PDU concept of the CiA 602-2 specification. This means, multiple Parameter Groups can be mapped into a single CAN FD frame. In order to avoid double-specifications, CiA has withdrawn CiA 602-2.

The physical layer is specified in SA J1939-17 providing recommendations for an arbitration bit-rate of 500 kbit/s and a data-phase bit-rate of 2 Mbit/s. This recommended practice includes references to the CiA 601 series.

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