U.S. Department of Transportation

Intelligent Transportation Systems Standards Fact Sheet

February 2002

SAE J2366 (Draft) ITS Data Bus (IDB) Protocol

Overview

To obtain a copy of these draft standards, please contact:

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Publication Dates: November 2001

The ITS Data Bus (IDB) is a common network interface for consumer devices in vehicles. A serial communication bus, it may be the bridge between the development-cycle time difference of automobiles and electronics. It may also meet the need to be able to upgrade automobile electronics during the life of the vehicle.

The long development time required to produce a new automobile and the short development time of today's consumer electronic devices has meant that the electronics in a vehicle might lag the state of the art by several years. With the growing consumer-oriented electronics content in today's vehicles, it is becoming more difficult for the automotive manufacturers to meet consumers' expectations for electronic devices in vehicles. The result is increasing pressure on the vehicle manufacturers from after-market electronics suppliers, who can update and expand their product lines quickly.

This fact sheet covers the major standards that describe the IDB. The standards that define the four layers of the IDB protocol stack are: J2366-1 Physical Layer; J2366-2 Link Layer; J2366-4 Thin Transport Layer; and J2366-7 Application Message Layer.

What are these standards for?

The IDB is a serial communications protocol developed by the SAE ITS Data Bus Committee with the support of the Consumer Electronics Association (CEA) division of the Electronics Industry Association (EIA). Its primary goal is to provide a means of connecting consumer devices to a common network in a vehicle without requiring the consumer electronics manufacturers to develop interfaces to the different proprietary original equipment manufacturer (OEM) vehicle buses, nor to have to complete automotive-type qualifications on every product which might be of value in an ITS application.

The IDB is an open, non-proprietary serial communications protocol designed to allow a wide variety of consumer devices to share information across a common network in the vehicle. To add system functionality, the IDB can be interfaced to the existing OEM vehicle bus via a gateway (described in SAE J2367), which allows a selective exchange of data between devices on the IDB and devices on the vehicle bus. This allows the IDB to operate independently of all vehicle systems, giving the consumer electronics manufacturers the freedom to integrate IDB interfaces into their popular consumer products without the need for performing a full automotive level network qualification. This independence is important since, in reality, the IDB is a consumer electronics network operating in a vehicle, not simply another automotive network. It is targeted for networking consumer devices that are independent from existing automotive control systems.

Who uses them?

The IDB is intended to be used by vehicle manufacturers to prepare their vehicles for consumer electronics devices, and by the consumer electronics manufacturers to be able to build one version of their products that can be used in any vehicle. Additionally, it may be used by the after market electronics industry to develop a stand-alone version of the IDB to simplify integrated installation of add-on automotive electronics. The ultimate users are the consumers, the vehicle buyers, who will be able to configure their vehicles much the same way as they configure their home theaters and personal computers.

How are they used?

The documents define the complete operation of the IDB. Equipment designers can use these documents to develop software drivers and hardware interfaces for their products so that they will be "IDB-compliant."

Scope

The IDB specifications encompass the definition of the physical medium (unshielded twisted pair), the topology (multidrop bus), media access control mechanisms (token passing), initialization of an IDB network, plug-and-play insertion and removal of devices, message fragmentation and defragmentation, guaranteed delivery of messages, and the application message syntax.

The four standards: J2366-1 Physical Layer; J2366-2 Link Layer; J2366-4 Thin Transport Layer; and J2366-7 Application Message Layer, define the four layers of the IDB protocol stack. The document set includes J2366-7LX, a lexicon of all the parameters defined for use in the application layer. In addition, it identifies a series of documents (still under development), each of which defines the standard message set for a class of devices (e.g., entertainment, telecommunications, vehicle security, navigation, etc.).

Related documents

To accommodate the broad scope of this effort, the IDB specifications have been divided into several individual documents. At present, the following documents are defined:

SAE J1760—ITS Data Bus Data Security Services Recommended Practice
SAE J2355—ITS Data Bus—Architecture Reference Model Information Report
SAE J2366-1—ITS Data Bus—Protocol Physical Layer Recommended Practice (this standard)
SAE J2366-2—ITS Data Bus—Protocol Link Layer Recommended Practice (this standard)
SAE J2366-4—ITS Data Bus—Protocol Thin Transport Layer Recommended Practice (this standard)
SAE J2366-7—ITS Data Bus—Protocol Application Message Layer Recommended Practice (this standard)
SAE J2367—ITS Data Bus—Gateway Recommended Practice
SAE J2590—PMODE for In-Vehicle Networks Recommended Practice

For more information on ITS standards, contact the Federal Highway Administration, ITS Joint Program Office, Room 3401, HOIT, 400 7th Street, SW, Washington, DC 20590, phone: 202-366-2180, fax: 202-366-3302, Web site: www.its-standards.net

Produced by the Jet Propulsion Laboratory for the U.S. Department of Transportation