

# 2008 in-vehicle data buses

	EMBEDDED CONTROL				X-BY-WIRE		MOBILE MEDIA		WIRELESS
	LIN	Single-wire CAN	Low speed CAN (CAN-B)	High Speed CAN (CAN-C)	FlexRay	Byteflight	MOST	IDB-1394	Bluetooth
<b>Medium access control</b>	Master/slave	Contention	Contention	Contention	Time triggered	Master/slave	Master/slave	Contention	Master/slave
<b>Bus speed</b>	20 kbps	33 kbps	125 kbps	500 kbps to 1 Mbps	Two 10 Mbps channels	10 Mbps	25 Mbps	98 Mbps to 393 Mbps	1 Mbps
<b>Error detection (data)</b>	8-bit checksum	15-bit CRC	15-bit CRC	15-bit CRC	Three error-processing levels	16-bit CRC	CRC	CRC	CRC
<b>Physical layer</b>	Single wire, 12 V	Single wire, 5 V	Twisted pair, 5 V	Twisted pair, 5 V	Twisted pair	2-wire, 3-wire or fiber optics	Fiber optics	Unshielded twisted pair	Wireless
<b>Cost</b>	Low	Low/medium	Medium	Low/medium	High	High	High	High	High
<b>Application</b>	Sensors/actuators (e.g., window lifters, door modules)	Comfort/convenience	Comfort/convenience	Powertrain & comfort/convenience	Safety/chassis	Safety	Streaming data	Streaming data	Voice communication
<b>Affiliation/support</b>	LIN Consortium	GMLAN	CAN in automation	CAN in automation	FlexRay Consortium	BMW	MOST Cooperation	1394 Trade Association	Bluetooth SIG
<b>Web site</b>	<a href="http://www.lin-subbus.org">www.lin-subbus.org</a>	<a href="http://auto.ihs.com/document/abstract/EMJTGBAAAAAAAAA">http://auto.ihs.com/document/abstract/EMJTGBAAAAAAAAA</a>	<a href="http://www.can-cia.org/can/">www.can-cia.org/can/</a>	<a href="http://www.can-cia.org/can/">www.can-cia.org/can/</a>	<a href="http://www.flexray.com/">www.flexray.com/</a>	<a href="http://www.byteflight.com">www.byteflight.com</a>	<a href="http://www.mostcooperation.com">www.mostcooperation.com</a>	<a href="http://www.1394ta.org">www.1394ta.org</a>	<a href="http://www.bluetooth.com">www.bluetooth.com</a>
<b>Key system aspect</b>	Low cost	Selective wake-up	Fault tolerant	Main vehicle bus	Deterministic & fault tolerant	TDMA (time division multiple access)	High data rate	Consumer devices	Wireless
<b>Industry standards</b>	LIN 2.1 & J2602	J2411	ISO11898-3	ISO11898-2/-5 & J2284	—	—	—	—	J2561

For greater detail on these and other protocols not shown in the chart, refer to: "Vehicle Multiplex Communication—Serial Data Networking Applied to Vehicular Engineering," by Christopher A. Lupini ([www.sae.org/technical/books/R-340](http://www.sae.org/technical/books/R-340))

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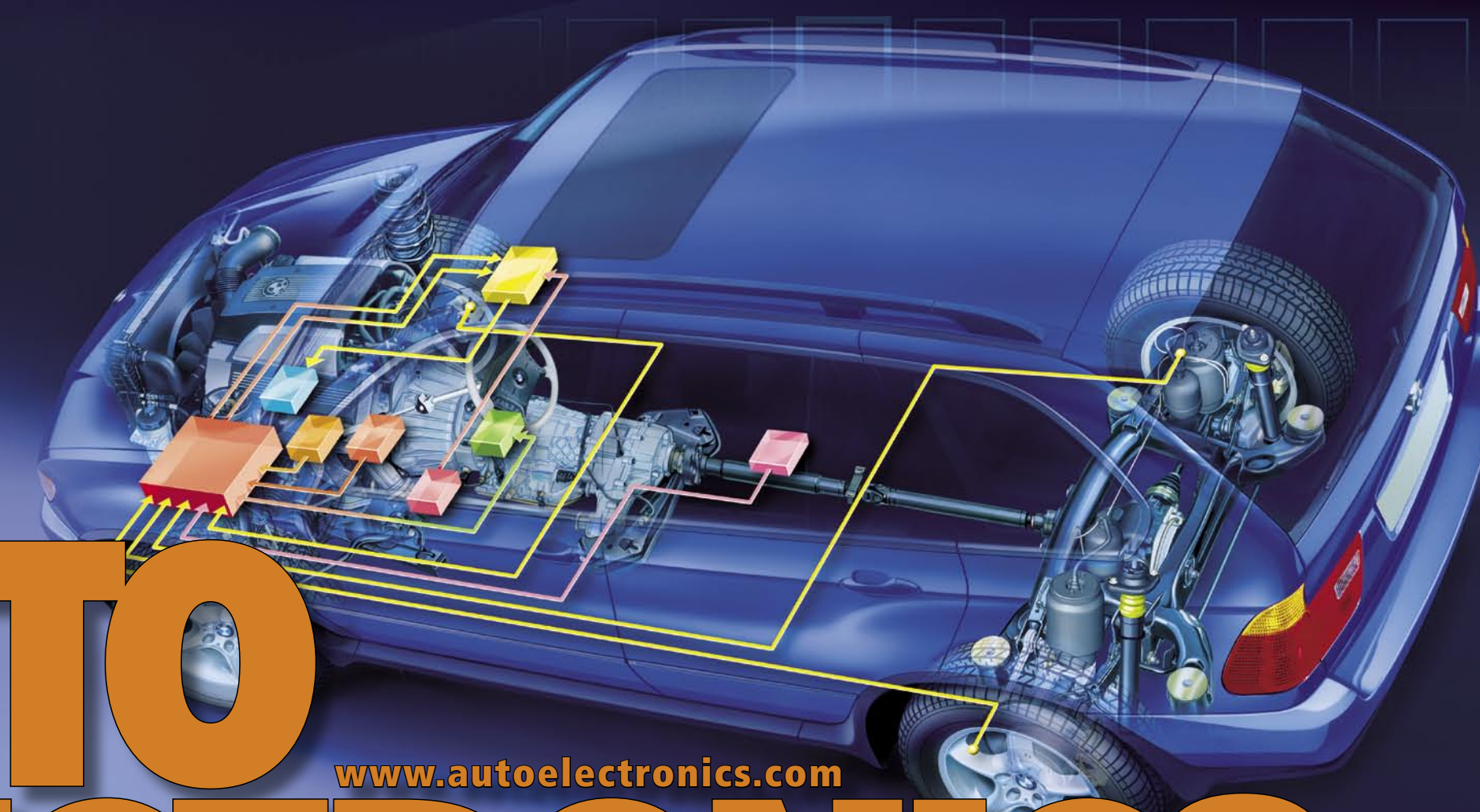
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