■DIFFERENCES BETWEEN CAN, LIN, AVC-LAN AND BEAN

1. General

- The protocols, which are the rules for establishing data communication, differ between the CAN, LIN, AVC-LAN and BEAN. If the ECUs in the networks use different frameworks for their data, such as communication speed, communication wire, and signals, they will be unable to understand each other. Therefore, protocols (rules) must be established among them.
- Compared to the LIN, AVC-LAN and BEAN*, the CAN features high-speed data transmission. Therefore, the CAN is able to transmit larger amounts of data faster than other protocols. This feature makes it possible to transmit data accurately in the power train and chassis control system, which requires large amounts of data to be transmitted in short periods of time.

*: The BEAN is used in the body electrical system of the previous Land Cruiser (Station Wagon) and some other TOYOTA models, but is not used on the new Land Cruiser (Station Wagon).

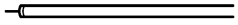
Protocol	CAN (ISO Standard)	LIN (LIN Consortium)	AVC-LAN (TOYOTA Original)	BEAN (TOYOTA Original)
Communication Speed	500 kbps*/ HS-CAN 250 kbps*/ MS-CAN (Max. 1 M bps)	Max. 20 kbps*	Max. 17.8 kbps	Max. 10 kbps*
Communication Wire	Twisted-pair Wire	AV Single Wire	Twisted-pair Wire	AV Single Wire
Drive Type	Differential Voltage Drive	Single Wire Voltage Drive	Differential Voltage Drive	Single Wire Voltage Drive
Data Length	1-8 Byte (Variable)	2, 4, 8 Byte (Variable)	0-32 Byte (Variable)	1-11 Byte (Variable)

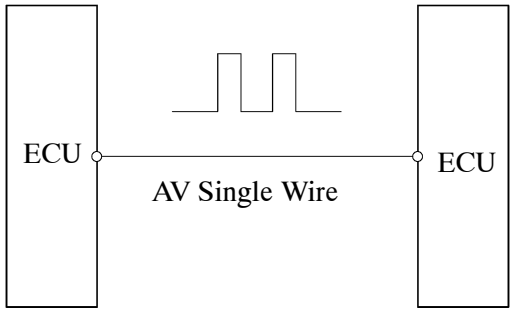
*: bps: abbreviation for “Bits Per Second”, indicating the number of bits that can be transmitted per second.

2. Communication Wire

A twisted-pair wire is used for CAN and AVC-LAN communication. A single, AV (Automobile Vinyl) wire is used for LIN and BEAN* communication.

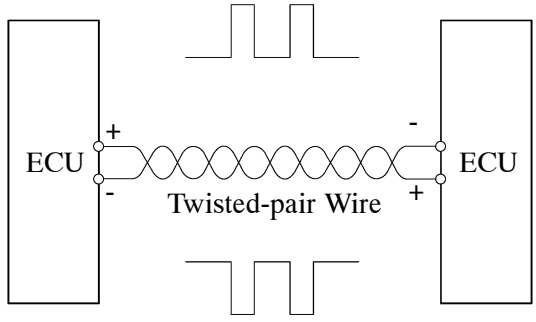
*: The BEAN is used in the body electrical system of the previous Land Cruiser (Station Wagon) and some other TOYOTA models, but is not used on the new Land Cruiser (Station Wagon).

Communication Wire	Outline
Twisted-pair Wire  241BE168	This communication wire is a pair of twisted lines. Communication is driven by applying different voltages to the two lines in order to send a single signal. This system, which is called a “Differential Voltage Drive”, reduces noise.
AV Single Wire  240BE09	This is a lightweight single communication wire that consists of a single core line surrounded by insulation. Voltage is applied to this line in order to drive communication, and this system is called a “Single Wire Voltage Drive”.



240BE11

Single Wire Voltage Drive



240BE12

Differential Voltage Drive

BE