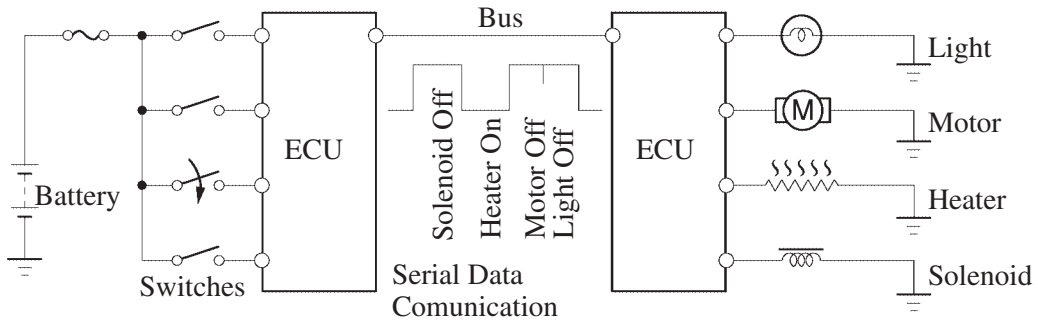
MULTIPLEX COMMUNICATION SYSTEM

■ DESCRIPTION

The multiplex communication system has the following features:

- In the conventional system, electrical loads such as motors and lights were directly connected by wire harnesses to their switches which controlled their operation. However, in the multiplex communication system, the wire harness is replaced by serial data communication by the ECU, to provide functions similar to the conventional system, through a single serial communication bus. With this system, even when multiple tasks demand additional switches and electrical loads, communication among ECUs can be implemented through the serial communication bus only, resulting in a large reduction in wire harnesses.

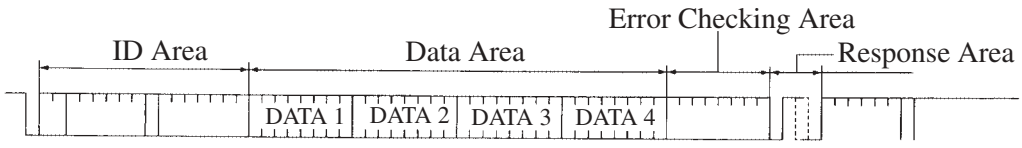
▶ Conceptual Drawing of Multiplex Communication System ◀



Toyota Century 162BE26

Conventional Models 163BE27

- To transmit a vast amount of signals (data) accurately and efficiently, the multiplex communication system has adopted a time-sharing multiplex system as its signal transmission system. With this system, various types of data, such as those of turning a switch ON or OFF, are assigned to the signals that are divided into small time intervals.



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- The multiplex communication system is newly adopted in the body electrical systems. This system is comprised of the communication nodes of the body ECU, each door ECU, rear light ECU, engine ECU and etc. The body electrical systems are controlled by a serial communication in which each ECU is linked to another via a single communication line.
- The communication lines are divided into 2 systems, the body system and the door system. The body system communication line is used primarily for controlling the meters, rear light and the air conditioner, etc. The door system communication line is used primarily for controlling the power window system and the door lock control system, etc.
- To enhance reliability, a backup communication line is provided between the body ECU and the rear light ECUs to achieve a dual transfer of the illumination signal of the rear lights.
- A customized function is provided for changing the functions such as enabling or disabling the vehicle-speed sensing auto lock function, or varying the length of time in which the lights of the illuminated entry system are lit, etc., through the use of a hand-held tester.

The table below shows the systems under the control of the multiplex communication system and related ECUs (communication nodes).

ECU / System	Body ECU	Engine ECU	Meter ECU	Air Conditioner ECU	Rear Junction Block ECU	Rear Light ECU (LH)	Rear Light ECU (RH)	Driver Door ECU	Passenger Door ECU	Rear Left Door ECU	Rear Right Door ECU
Power Window	△							○	△	△	△
Door Lock Control	○	△						△	△	△	△
Wireless Door Lock Remote Control	○				△			△	△	△	△
Wiper	○	△									
Light Auto Turn-Off	○							△			
Automatic Light Control	○							△			
Illuminated Entry	○							△	△	△	△
Luggage Door Opener	○				△						
Fuel Lid Opener	○				△						
Customized Body Electronics	○										
Diagnosis	○	△	△	△	△	△	△	△	△	△	△
Rear Light Control	○					△	△				
Meter Indication	△	△	○	△	△	△	△	△	△	△	△
Air Conditioner		△		○	△						

○: Master control (The ECU, which has a central role in controlling each system, outputs the signals to other ECUs to activate motors or other applicable components.)

△: Sub control (The ECU which has a supporting role in controlling each system, outputs control signals to the master control, or receives signals from the master control to activate motors or other applicable components.)