

■ ELECTRONIC CONTROL SYSTEM

1. General

A new electronic control has been adopted to improve the acceleration feeling, shift feeling, drivability, and fuel economy.

The electronic control system of the new model's A650E, previous model's A343E and LS400's A650E automatic transmissions are compared below.

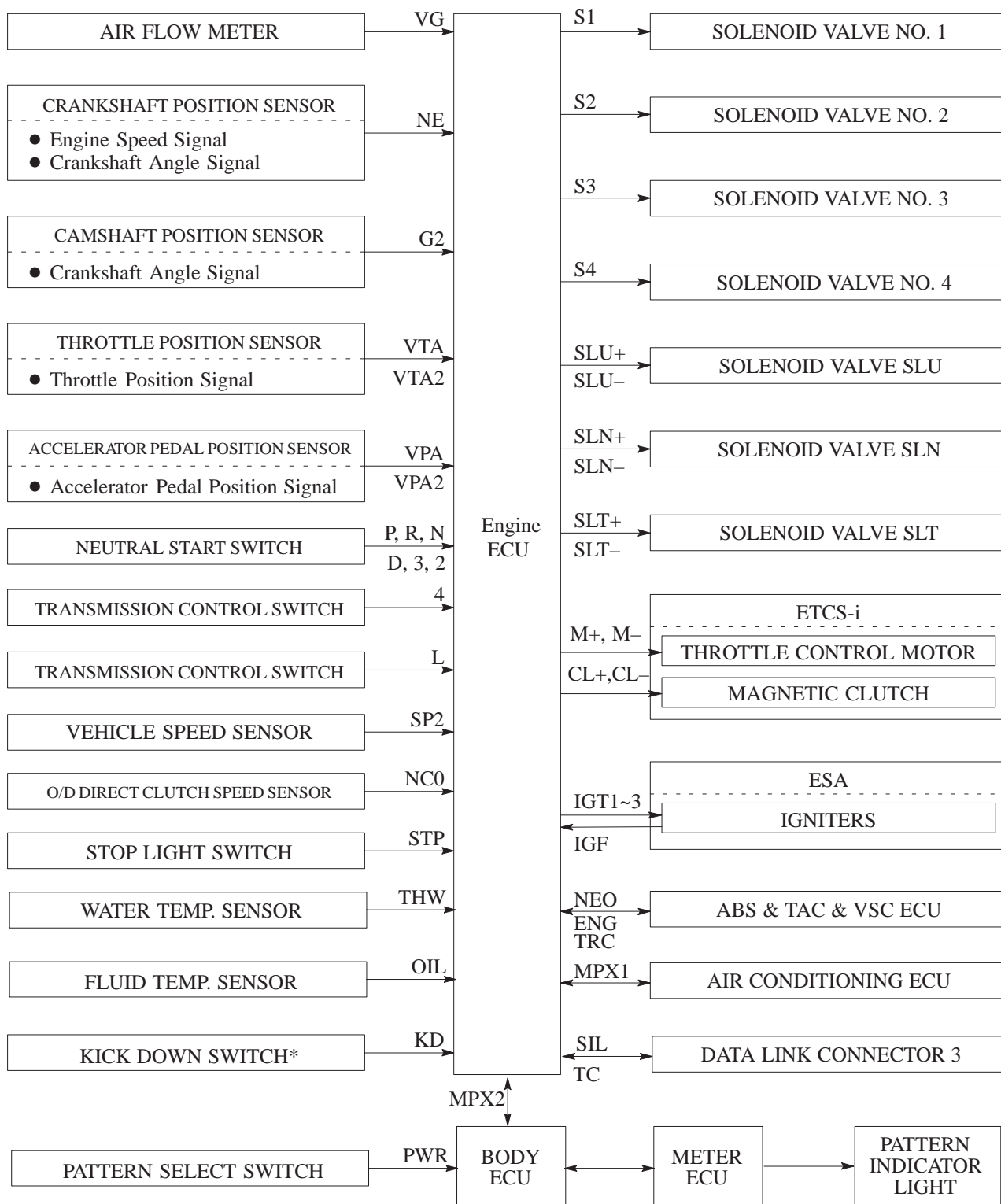
System	Function	New	Previous	LS400
		A650E	A343E	A650E
Shift Timing Control	The optimum shift pattern is selected from 2 shift patterns in the engine ECU by the pattern select switch. The engine ECU sends current to the No. 1, No. 2 and/or No. 3* solenoid valves based on signals from each sensor and shifts the gear.	○	○	○
Lock-Up Timing Control	The optimum lock-up pattern is selected from 2 lock-up patterns in the engine ECU by the pattern select switch. The engine ECU sends current to the solenoid valve SLU based on signals from each sensor and engages or disengages the lock-up clutch.	○	○	○
Flex Lock-Up Clutch Control	Controls the solenoid valve SLU, provides an intermediate mode between the ON/OFF operation of the lock-up clutch, and increases the operating range of the lock-up clutch to improve fuel economy.	○	—	○
Line Pressure Optimal Control	Based on the throttle opening angle and various signals, the engine ECU sends a signal to solenoid valve SLT to generate line pressure according to the engine output and to effect a smooth gear shift change.	○	—	○
Clutch Pressure Control	To achieve smooth shifting, the solenoid valve SLN controls the accumulator back pressure in order to finely regulate the hydraulic pressure that is applied to the clutch.	○	○	○
	Uses the solenoid valve SLU to directly control the hydraulic pressure that is applied to the clutch.	○	—	○
Engine Torque Control	Retards the engine ignition timing temporarily to improve shift feeling during up or down shifting.	○	○	○
High Response Shift Control	Through the cooperative control with the ETCS-i (Electronic Throttle Control System-intelligent), and the electronic control of supply and discharge speed of the clutch and brake hydraulic pressure, excellent response has been realized.	○	—	○
AI (Artificial Intelligence) - SHIFT	Based on the signals from various sensors, the engine ECU determines the road conditions and the intention of the driver. Thus, the shift pattern is automatically regulated to an optimal level, thus improving drivability.	○	—	○

*: Only for the A650E automatic transmission

(Continued)

System	Function	New	Previous	LS400
		A650E	A343E	A650E
Self-Diagnosis	Causes the O/D OFF indicator light to turn on to inform the driver if the electrical circuit malfunction.	—	○	—
	<ul style="list-style-type: none"> ● Causes the pattern indicator light to turn on to inform the driver if the electrical circuit malfunction. ● The diagnostic code can be checked by the pattern indicator light and the hand-held tester. ● The hand-held tester can be used to perform an active test. 	○	—	○
Fail-Safe	Controls other normally operating components, permitting continued driving if malfunctions occur in the electrical circuit.	○	○	○

2. Block Diagram



*: Models for Europe