Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM10000000290A7
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [12/2022 -]
Title: THEFT DETERRENT / KEYLESS ENTRY: SMART KEY SYSTEM (for Start Function): Power Source Mode does not Change to ON (READY); 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

Power Source Mode does not Change to ON (READY)

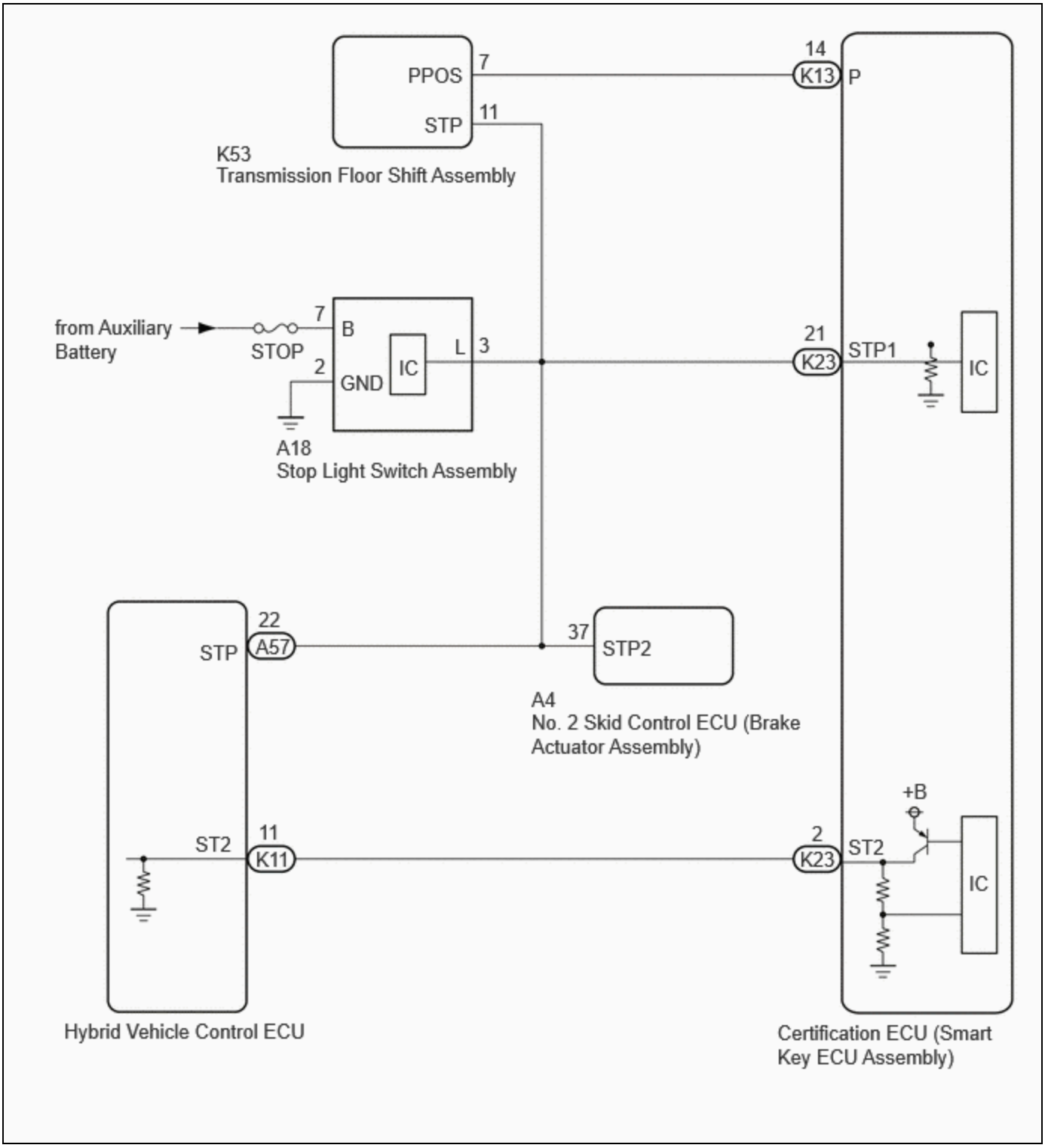
DESCRIPTION

When the electrical key transmitter sub-assembly is in the cabin and the power switch is pressed, the certification ECU (smart key ECU assembly) receives a signal and changes the power source mode. Additionally, when the shift position is in P and the brake pedal is depressed, the hybrid control system can be started by pressing the power switch.

Related Data List and Active Test Items

PROBLEM SYMPTOM	DATA LIST AND ACTIVE TEST
Power source mode does not change to ON (READY)	**Power Source Control** • Stop Light Switch • Shift P Signal Condition (Line) • Power Supply Condition **Smart Key** • Immobiliser • S Code Check • L Code Check

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

- When using the GTS with the ignition switch off, perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less until communication between the GTS and the vehicle begins, and then select the vehicle model manually.

  Then select Model Code "KEY REGIST" under manual mode and enter the following menus: Body Electrical / Smart Key(CAN). While using the GTS, periodically perform lock and unlock operations using the door control switch of the multiplex network master switch assembly at intervals of 1.5 seconds or less to maintain communication between the GTS and the vehicle.

- The smart key system (for Start Function) uses the LIN communication system and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Troubleshoot the smart key system (for Start Function) after confirming that the communication systems are functioning properly.

  Click here INFO
- If the smart key system (for Start Function) has been canceled, enable the system before performing troubleshooting.

  Click here INFO
- Inspect the fuses for circuits related to this system before performing the following procedure.
- Before replacing the certification ECU (smart key ECU assembly) or electrical key transmitter sub-assembly, refer to Registration.

  Click here INFO
- After completing repairs, confirm that the problem does not recur.
- After repair, confirm that no DTCs are output by performing "DTC Output Confirmation Operation".

PROCEDURE

1.	**CHECK POWER SWITCH CONDITION**

(a) Get into the vehicle while carrying an electrical key transmitter sub-assembly.

(b) Move the shift position to P.

(c) With the brake pedal released, check that pressing the power switch causes the power source mode to change.

RESULT	PROCEED TO
Power source mode changes : Off → ACC → ON → off	A
Power source mode does not change to ACC or ON	B
Power source mode changes to ON but not to ACC	C
Power source mode changes to ON but not to ACC	D

B ▶ **GO TO OTHER PROBLEM (Power Source Mode does not Change to ON (IG and ACC))**

C ▶ **GO TO OTHER PROBLEM (Power Source Mode does not Change to ON (ACC))**

D ▶ **GO TO OTHER PROBLEM (Power Source Mode does not Change to ON (IG))**

A

2.	**READ VALUE USING GTS (STOP LIGHT SWITCH)**

(a) Read the Data List according to the display on the GTS.

Body Electrical > Power Source Control > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Stop Light Switch	State of brake pedal	OFF or ON	OFF: Brake pedal released ON: Brake pedal depressed	• Use this item to determine if the stop light switch assembly is malfunctioning. • The hybrid control system cannot be started when this item is OFF. • If the stop light switch assembly is malfunctioning, the hybrid control system can be started by pressing and holding the power switch for a certain period of time.

Body Electrical > Power Source Control > Data List

TESTER DISPLAY
Stop Light Switch

OK:
The GTS display changes correctly in response to the brake pedal operation.

NG ▶ **GO TO STEP 10**

OK

3.	**READ VALUE USING GTS (SHIFT P SIGNAL CONDITION (LINE))**

(a) Read the Data List according to the display on the GTS.

Body Electrical > Power Source Control > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Shift P Signal Condition (Line)	Shift position P	Shift P, Other than shift P, Shift N or Other than shift P/N	Shift P: Shift position in P Shift N: Shift position in N Other than shift P/N: Other than shift position in P or N	Use this item to determine if the shift position switch is malfunctioning.

Body Electrical > Power Source Control > Data List

TESTER DISPLAY
Shift P Signal Condition (Line)

OK:
The GTS display changes correctly in response to the shift position.

NG ▶ **GO TO STEP 8**

OK ▼

4.	**READ VALUE USING GTS (POWER SUPPLY CONDITION)**

(a) Read the Data List according to the display on the GTS.

Body Electrical > Power Source Control > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Power Supply Condition	Power supply state	OFF, ACC ON, IGR ON, IGP ON or Starter ON	OFF: Ignition switch off ACC ON: Ignition switch ACC IGR ON: Ignition switch ON IGP ON: Ignition switch ON Starter ON: Sending hybrid control system start request signal	-

Body Electrical > Power Source Control > Data List

TESTER DISPLAY
Power Supply Condition

NOTICE:

Check that the key indicator display is displayed on the multi-information display in the combination meter assembly, and then press the power switch.

OK:

The GTS display changes correctly in response to the power switch operation.

NG ▶ **GO TO STEP 7**

OK ▼

5.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - HYBRID VEHICLE CONTROL ECU)**

(a) Disconnect the K23 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the K11 hybrid vehicle control ECU connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(K23,K11)
Click Connector(K23)
Click Connector(K11)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K23-2 (ST2) - K11-11 (ST2)	Always	Below 1 Ω
K23-2 (ST2) or K11-11 (ST2) - Other terminals and body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

6.	**CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)**

(a) Connect the K23 certification ECU (smart key ECU assembly) connector.

(b) Connect the K11 hybrid vehicle control ECU connector.

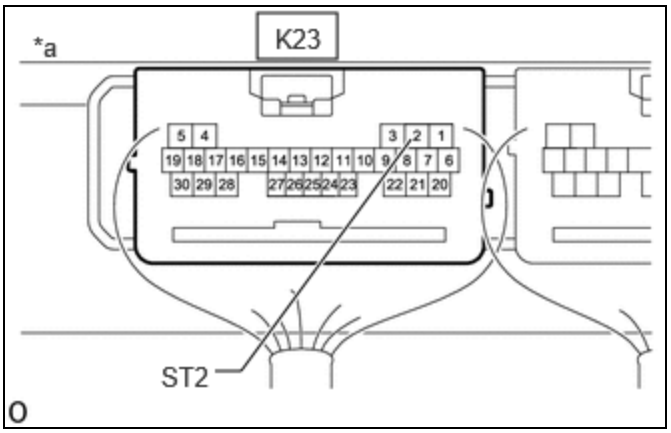
(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(K23)
Click Connector(K23)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K23-2 (ST2) - Body ground	With the brake pedal depressed, the power switch is pressed and held → After approx. 3 sec. has elapsed, the power switch is released	8.5 V or higher → 1.0 V or less



*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))

OK ▶ **GO TO HYBRID CONTROL SYSTEM**

NG ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)** INFO

7.	CHECK SECURITY INDICATOR LIGHT (IMMOBILISER FUNCTION UNSET)

(a) Get into the vehicle while carrying an electrical key transmitter sub-assembly.

(b) Move the shift position to P.

(c) Press the power switch with the brake pedal released and check that the security indicator light changes from blinking to off at the same time that the power source mode changes to ACC.

OK:

The security indicator light changes from blinking to off at the same time that the power source mode changes to ACC.

HINT:

The immobiliser function can be determined to be operating correctly if the security indicator light changes from blinking to off at the same time that the power source mode changes to ACC.

OK ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)** INFO

NG ▶ **GO TO OTHER PROBLEM (Immobiliser System does not Operate Properly)**

8.	**CHECK TRANSMISSION FLOOR SHIFT ASSEMBLY**

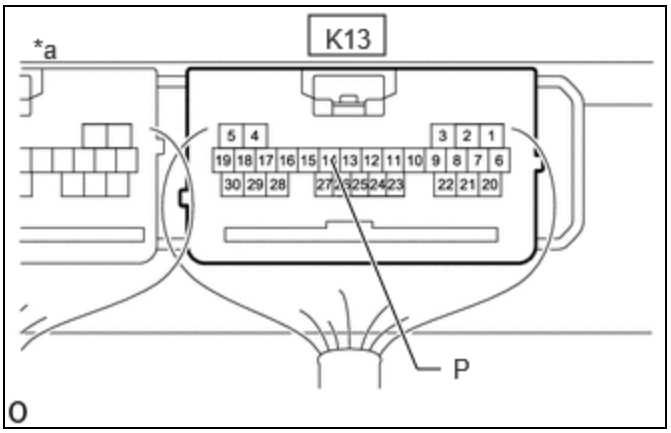
(a) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(K13)
Click Connector(K13)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K13-14 (P) - Body ground	Ignition switch ACC → ignition switch ON and Shift position in P	Pulse generation (24 to 25 Hz or 30 to 31 Hz, High voltage: 9 V or more, Low voltage: below 1 V, duty ratio: 25 %)
	Ignition switch ACC → ignition switch ON and Shift position in N	Pulse generation (24 to 25 Hz or 30 to 31 Hz, High voltage: 9 V or more, Low voltage: below 1 V, duty ratio: 55 %)
	Ignition switch ACC → ignition switch ON and Shift position in other then P or N	Pulse generation (24 to 25 Hz or 30 to 31 Hz, High voltage: 9 V or more, Low voltage: below 1 V, duty ratio: 40 %)



*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))

OK ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)** INFO

NG ▼

9.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - TRANSMISSION FLOOR SHIFT ASSEMBLY)**

(a) Disconnect the K13 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the K53 transmission floor shift assembly connector.

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(K13,K53)
Click Connector(K13)
Click Connector(K53)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K13-14 (P) - K53-7 (PPOS)	Always	Below 1 Ω
K13-14 (P) or K53-7 (PPOS) - Other terminals and body ground	Always	10 kΩ or higher

OK ▶ **REPLACE TRANSMISSION FLOOR SHIFT ASSEMBLY**

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

10.	**CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH ASSEMBLY - POWER SOURCE AND BODY GROUND)**

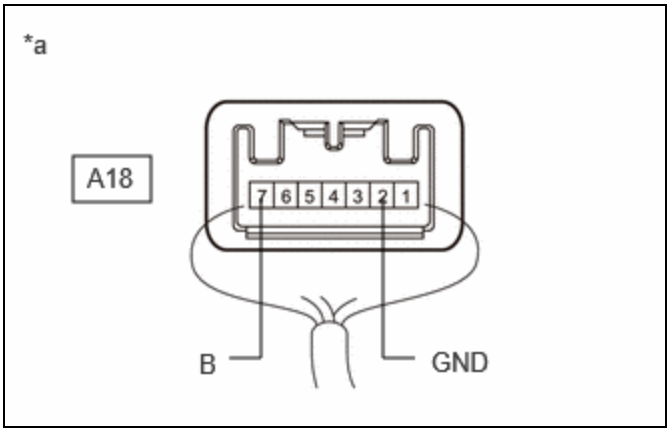
(a) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(A18)
Click Connector(A18)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-7 (B) - Body ground	Ignition switch off	11 to 14 V



*a	Component with harness connected (Stop Light Switch Assembly)

(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(A18)
Click Connector(A18)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A18-2 (GND) - Body ground	Always	Below 1 Ω

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

11.	**CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) - STOP LIGHT SWITCH ASSEMBLY)**

(a) Disconnect the K23 certification ECU (smart key ECU assembly) connector.

(b) Disconnect the A57 hybrid vehicle control ECU connector.

(c) Disconnect the A18 stop light switch assembly connector.

(d) Disconnect the A4 No. 2 skid control ECU (brake actuator assembly) connector.

(e) Disconnect the K53 transmission floor shift assembly connector.

(f) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(K23,A18)
Click Connector(K23)
Click Connector(A18)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
K23-21 (STP1) - A18-2 (L)	Always	Below 1 Ω
K23-21 (STP1) or A18-2 (L) - Other terminals and body ground	Always	10 kΩ or higher

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK ▼

12.	**CHECK STOP LIGHT SWITCH ASSEMBLY**

(a) Check the stop light switch assembly.

Click here INFO

OK ▶ **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)** INFO

NG ▶ **REPLACE STOP LIGHT SWITCH ASSEMBLY**