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|---|---|---|
| **Last Modified:** 12-04-2024 | 6.11:8.1.0 | **Doc ID:** RM100000002BIYW |
| **Model Year Start:** 2023 | **Model:** Prius Prime | **Prod Date Range:** [03/2023 - ] |
| **Title:** HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): U115187; Lost Communication with Hybrid/EV Powertrain Control Module (ch3) Missing Message; 2023 - 2024 MY Prius Prime [03/2023 - ] | | |

| | | |
|---|---|---|
| **DTC** | **U115187** | **Lost Communication with Hybrid/EV Powertrain Control Module (ch3) Missing Message** |

# DESCRIPTION

The plugin charge control ECU assembly communicates with the hybrid vehicle control ECU via CAN communication.

| DTC NO. | DETECTION ITEM | DTC DETECTION CONDITION | TROUBLE AREA | MIL | WARNING INDICATE | DTC OUTPUT FROM | PRIORITY | NOTE |
|---|---|---|---|---|---|---|---|---|
| U115187 | Lost Communication with Hybrid/EV Powertrain Control Module (ch3) Missing Message | The plugin charge control ECU cannot receive signals from the hybrid control ECU<br>(1 trip detection logic) | • Hybrid vehicle control ECU<br>• Plugin charge control ECU assembly<br>• Wire harness or connector | Comes on | Master Warning:<br>Comes on | Plug-in Control | B | SAE Code:<br>U1151 |

# MONITOR DESCRIPTION

If the plug-in charge control ECU detects a problem with CAN communication with the ECM, it will illuminate the MIL and store a DTC.

# MONITOR DESCRIPTION

| | |
|---|---|
| Related DTCs | U1151: Lost Communication with HV Hybrid vehicle control ECU |
| Required sensors/components | Hybrid vehicle control ECU, Plug-in charge control ECU |
| Frequency of operation | Continuous |
| Duration | TMC's intellectual property |
| MIL operation | Immediately |
| Sequence of operation | None |

# TYPICAL ENABLING CONDITIONS

| | |
|---|---|
| The monitor will run whenever the following DTCs are not stored | TMC's intellectual property |

| | |
|---|---|
| Other conditions belong to TMC's intellectual property | - |

## TYPICAL MALFUNCTION THRESHOLDS

| | |
|---|---|
| TMC's intellectual property | - |

## COMPONENT OPERATING RANGE

| | |
|---|---|
| Plugin charge control ECU | DTC U115187 is not detected |

## CONFIRMATION DRIVING PATTERN

**HINT:**

- After repair has been completed, clear the DTC and then check that the vehicle has returned to normal by performing the following All Readiness check procedure.

  Click here INFO
- When clearing the permanent DTCs, refer to the "CLEAR PERMANENT DTC" procedure.

  Click here INFO

1. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
2. Turn the ignition switch off and wait for 2 minutes or more.
3. With ignition switch ON and wait for 2 minutes or more. [*1]

   **HINT:**

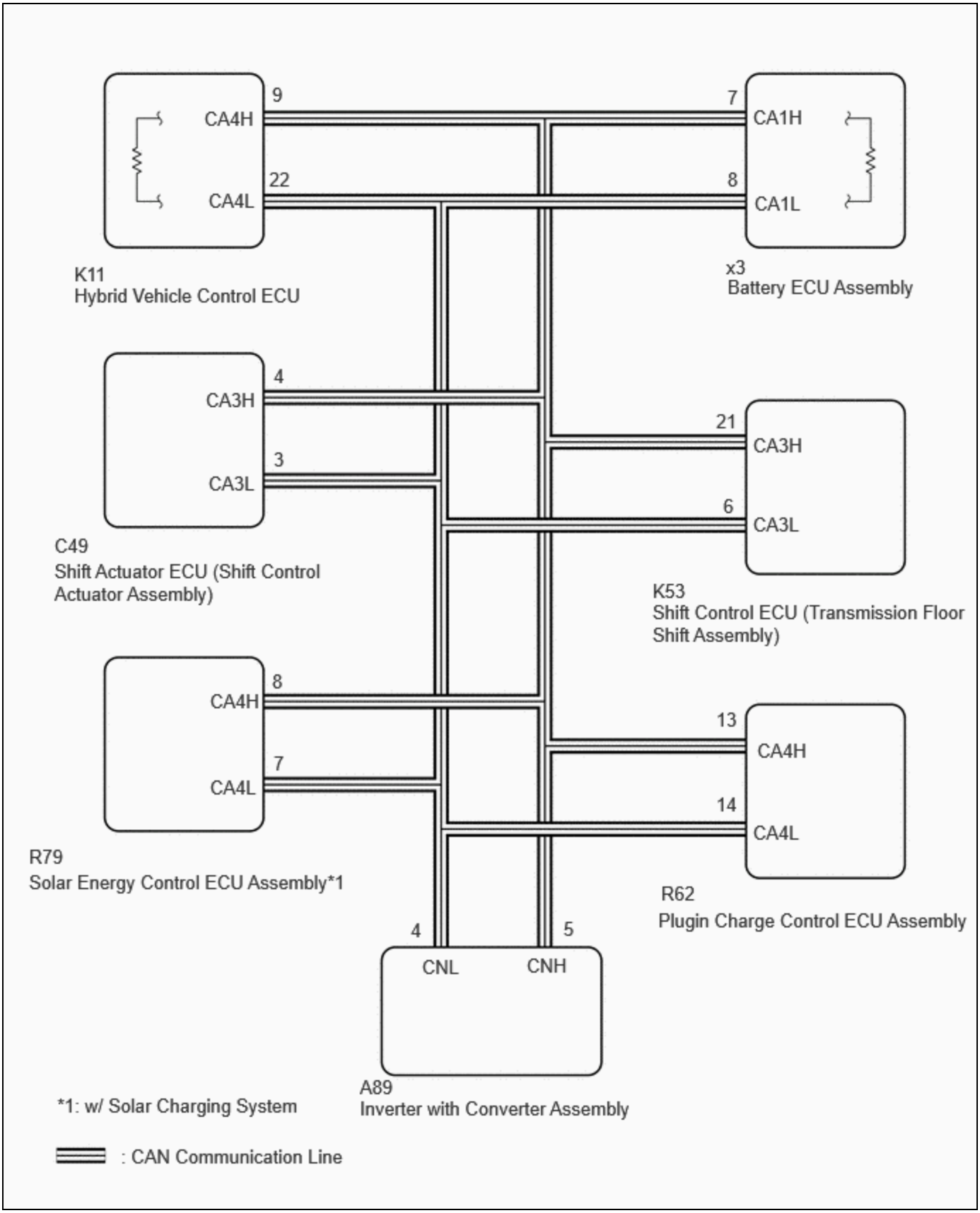
   [*1]: Normal judgment procedure.

   The normal judgment procedure is used to complete DTC judgment and also used when clearing permanent DTCs.
4. Enter the following menus: Powertrain / Plug-in Control / Utility / All Readiness.
5. Check the DTC judgment result.

   **HINT:**

   - If the judgment result shows NORMAL, the system is normal.
   - If the judgment result shows ABNORMAL, the system has a malfunction.
   - If the judgment result shows INCOMPLETE or N/A, perform the normal judgment procedure again.

## WIRING DIAGRAM




# CAUTION / NOTICE / HINT

**CAUTION:**

Refer to the precautions before inspecting high voltage circuit.

Click here INFO

**NOTICE:**

- After the ignition switch is turned off, there may be a waiting time before disconnecting the negative (-) auxiliary battery terminal.

  Click here INFO
- When disconnecting and reconnecting the auxiliary battery.

**HINT:**

When disconnecting and reconnecting the auxiliary battery, there is an automatic learning function that completes learning when the respective system is used.

Click here INFO

## PROCEDURE

| | |
|---|---|
| **1.** | **CHECK DTC OUTPUT (HEALTH CHECK)** |

Pre-procedure1

(a) Enter the following menus: Health Check.

Procedure1

(b) Check for DTCs.

| RESULT | PROCEED TO |
|---|---|
| U115187 only is output | A |
| U115187 and other DTCs are output | B |

Post-procedure1

(c) Turn the ignition switch off.

**B** ▶ **GO TO DTC CHART**

**A** ▼

| | |
|---|---|
| **2.** | **CHECK FOR SHORT TO GND IN CAN BUS LINE (WITH ECU CONNECTED)** |

Pre-procedure1

(a) Disconnect the cable from the negative (-) auxiliary battery terminal.

Procedure1

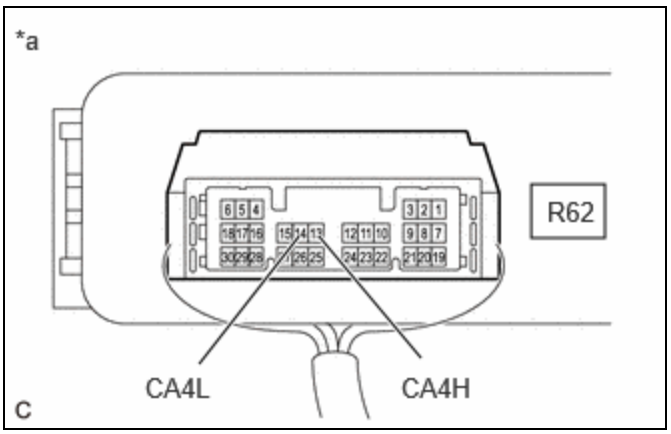
(b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

**Click Location & Routing(R62)**
**Click Connector(R62)**

| TESTER CONNECTION | CONDITION | SPECIFIED CONDITION | RESULT |
|---|---|---|---|
| R62-13 (CA4H) or R62-14 (CA4L) - Body ground | Cable from negative (-) auxiliary battery terminal disconnected | 200 Ω or higher | Ω |




| | |
|---|---|
| *a | Component with harness connected (Plugin Charge Control ECU Assembly) |

Result:

| PROCEED TO |
|---|
| OK |
| NG |

Post-procedure1

(c) Connect the cable to the negative (-) auxiliary battery terminal.

**NG** ▶ **GO TO STEP 5**

**OK** ▼

| | |
|---|---|
| **3.** | **CHECK FOR OPEN IN CAN MAIN BUS LINES (PLUGIN CHARGE CONTROL ECU ASSEMBLY - HYBRID VEHICLE CONTROL ECU)** |

Pre-procedure1

(a) Disconnect the R62 plugin charge control ECU assembly connector.

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(R62)
Click Connector(R62)

| TESTER CONNECTION | CONDITION | SPECIFIED CONDITION | RESULT |
|---|---|---|---|
| R62-13 (CA4H) - R62-14 (CA4L) | Ignition switch off | 54 to 69 Ω | Ω |

Post-procedure1

(c) Connect the plugin charge control ECU assembly.

**OK** ▶ **REPLACE PLUGIN CHARGE CONTROL ECU ASSEMBLY**

**NG** ▼

| | |
|---|---|
| **4.** | **CHECK HARNESS AND CONNECTOR (PLUGIN CHARGE CONTROL ECU ASSEMBLY - HYBRID VEHICLE CONTROL ECU)** |

**CAUTION:**

Be sure to wear insulated gloves.

**NOTICE:**

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check the terminals of the connector for deformation and corrosion.

Pre-procedure1

(a) Check that the service plug grip is not installed.

**NOTICE:**

After removing the service plug grip, do not turn the ignition switch to ON, unless instructed by the repair manual because this may cause a malfunction.

(b) Disconnect the R62 plugin charge control ECU assembly connector.

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

(d) Disconnect the A89 inverter with converter assembly connector.

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

(f) Disconnect the C49 shift actuator ECU (shift control actuator assembly) connector.

(g) Disconnect the R79 solar energy control ECU assembly connector. (w/ Solar charging system)

(h) Disconnect the x3 battery ECU assembly connector.

(i) Connect the SST.

**HINT:**

Click here INFO

Procedure1

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

Standard Resistance:

EWD INFO

**Click Location & Routing(R62,K11)**
**Click Connector(R62)**
**Click Connector(K11)**

| TESTER CONNECTION | CONDITION | SPECIFIED CONDITION | RESULT |
|---|---|---|---|
| R62-13 (CA4H) - K11-9 (CA4H) | Ignition switch off | Below 1 Ω | Ω |
| R62-14 (CA4L) - K11-22 (CA4L) | Ignition switch off | Below 1 Ω | Ω |
| R62-13 (CA4H) - R62-14 (CA4L) | Ignition switch off | 1 MΩ or higher | MΩ |
| K11-9 (CA4H) - K11-22 (CA4L) | Ignition switch off | 1 MΩ or higher | MΩ |

**NOTICE:**

Make sure that each connector between the plugin charge control ECU assembly and hybrid vehicle control ECU assembly is not loose or disconnected and its terminals are not deformed or corroded.

Post-procedure1

(k) Disconnect the SST.

(l) Connect the battery ECU assembly connector.

(m) Connect the solar energy control ECU assembly connector. (w/ Solar Charging System)

(n) Connect the shift actuator ECU (shift control actuator assembly) connector.

(o) Connect the shift control ECU (transmission floor shift assembly) connector.

(p) Connect the inverter with converter assembly connector.

(q) Connect the Hybrid vehicle control ECU connector.

(r) Connect the plugin charge control ECU assembly connector.

**OK** ▶ **REPLACE HYBRID VEHICLE CONTROL ECU**

**NG** ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR IN CAN BUS LINE (PLUGIN CHARGE CONTROL ECU ASSEMBLY - HYBRID VEHICLE CONTROL ECU)**

| | |
|---|---|
| **5.** | **CHECK FOR SHORT TO GND IN CAN BUS LINE (WITH HYBRID VEHICLE CONTROL ECU DISCONNECTED)** |

Pre-procedure1

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

**NOTICE:**

- Before disconnecting the connector, check that it is not loose or disconnected.
- Check the terminals of the connector for deformation and corrosion.

Procedure1

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

Standard Resistance:

EWD INFO

**Click Location & Routing(K11)**
**Click Connector(K11)**

| TESTER CONNECTION | CONDITION | SPECIFIED CONDITION | RESULT |
|---|---|---|---|
| K11-9 (CA4H) or K11-22 (CA4L) - Body ground | Ignition switch off | 200 Ω or higher | Ω |

Post-procedure1

(c) Connect the hybrid vehicle control ECU connector.

**OK** ▶ **REPLACE HYBRID VEHICLE CONTROL ECU**

**NG** ▼

| | |
|---|---|
| **6.** | **CHECK FOR SHORT TO GND IN CAN BUS LINE (WITH PLUGIN CHARGE CONTROL ECU ASSEMBLY DISCONNECTED)** |

Pre-procedure1

(a) Disconnect the R62 plugin charge control ECU assembly connector.

Procedure1

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

Procedure1

Standard Resistance:

EWD INFO

**Click Location & Routing(R62)**
**Click Connector(R62)**

| TESTER CONNECTION | CONDITION | SPECIFIED CONDITION | RESULT |
|---|---|---|---|
| R62-13 (CA4H) or R62-14 (CA4L) - Body ground | Ignition switch off | 200 Ω or higher | Ω |

Post-procedure1

(c) Connect the plugin charge control ECU assembly connector.

**OK** ▶ **REPLACE PLUGIN CHARGE CONTROL ECU ASSEMBLY**

**NG** ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR IN CAN BUS LINE (PLUGIN CHARGE CONTROL ECU ASSEMBLY - HYBRID VEHICLE CONTROL ECU)**