Last Modified: 12-04-2024	6.11:8.1.0	**Doc ID:** RM100000002BIYY
Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: PLUG-IN CHARGE CONTROL SYSTEM (for PHEV Model): U117B87; Lost Communication with Hybrid/EV Battery Energy Control Module "A" (ch2) Missing Message; 2023 - 2024 MY Prius Prime [03/2023 -]		

DTC	**U117B87**	**Lost Communication with Hybrid/EV Battery Energy Control Module "A" (ch2) Missing Message**

DESCRIPTION

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

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
U117B87	Lost Communication with Hybrid/EV Battery Energy Control Module "A" (ch2) Missing Message	The plugin charge control ECU cannot receive signals from the battery ECU assembly (1 trip detection logic)	• Battery ECU assembly • Plugin charge control ECU assembly • Wire harness or connector	Comes on	Master Warning: Comes on	Plug-in Control	B	SAE Code: U117B

MONITOR DESCRIPTION

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

MONITOR STRATEGY

Related DTCs	U117B: Lost Communication with Battery ECU
Required sensors/components	Battery 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 U117B87 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:

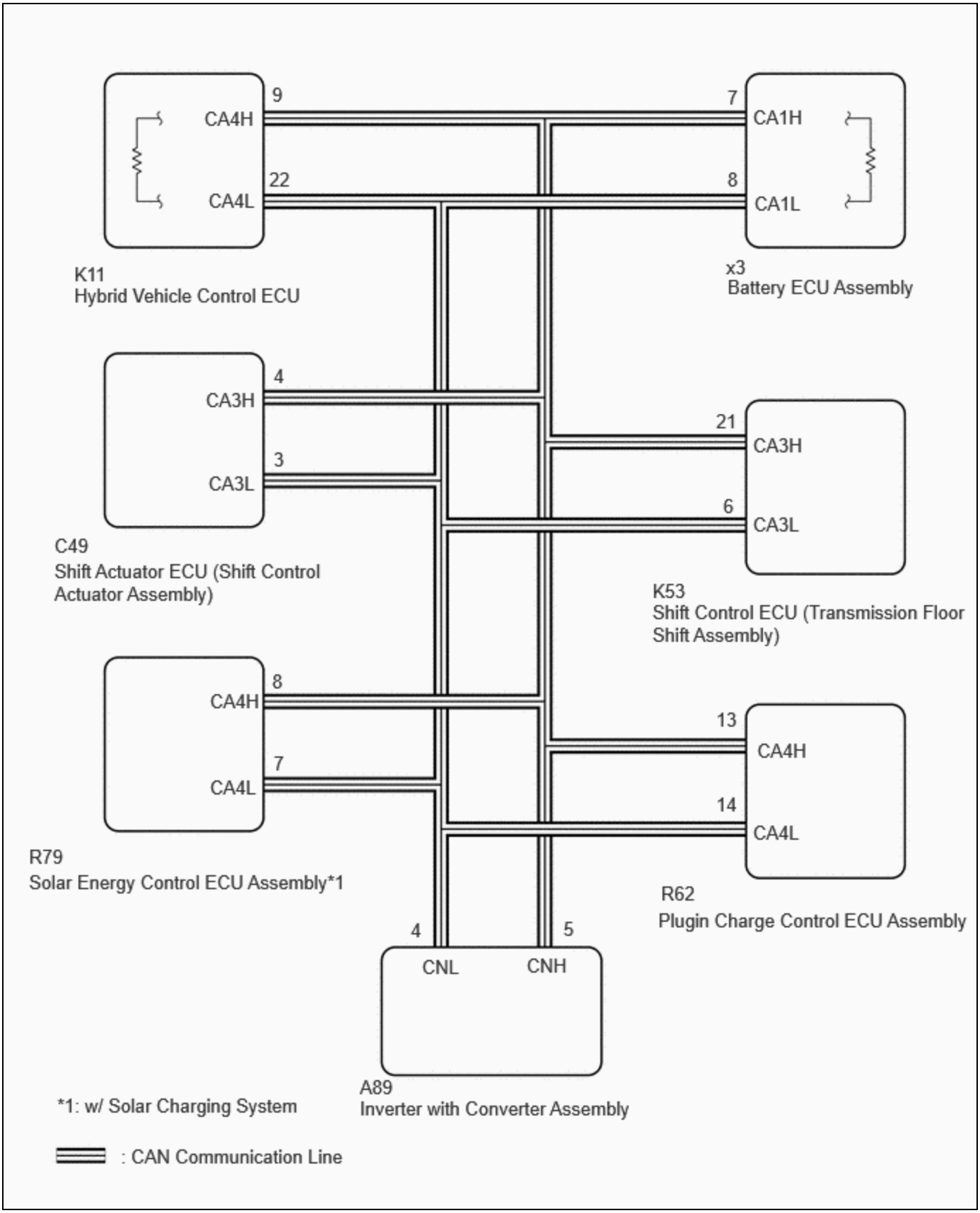
   [*1]: Normal judgment procedure.

   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:

- Be sure to check that the applicable DTC is output from the Plug-in Charge Control System.
- 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
U117B87 only is output	A
U117B87 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

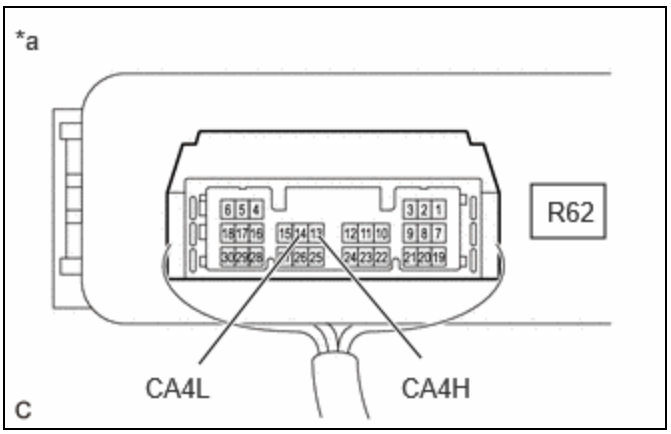
(b) Measure the resistance according to the value(s) in the table below.

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 - BATTERY ECU ASSEMBLY)**

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 - BATTERY ECU ASSEMBLY)**

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,x3)
Click Connector(R62)
Click Connector(x3)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
R62-13 (CA4H) - x3-7 (CA1H)	Ignition switch off	Below 1 Ω	Ω
R62-14 (CA4L) - x3-8 (CA1L)	Ignition switch off	Below 1 Ω	Ω
R62-13 (CA4H) - R62-14 (CA4L)	Ignition switch off	1 MΩ or higher	MΩ
x3-7 (CA1H) - x3-8 (CA1L)	Ignition switch off	1 MΩ or higher	MΩ

NOTICE:

Make sure that each connector between the plugin charge control ECU assembly and battery 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 BATTERY ECU ASSEMBLY**

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

5.	**CHECK FOR SHORT TO GND IN CAN BUS LINE (WITH BATTERY ECU ASSEMBLY DISCONNECTED)**

Pre-procedure1

(a) Disconnect the x3 battery ECU assembly connector.

NOTICE:

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

(b) Connect the SST.

HINT:

Click here INFO

Procedure1

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

Standard Resistance:

EWD INFO

Click Location & Routing(x3)
Click Connector(x3)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
x3-7 (CA1H) or x3-8 (CA1L) - Body ground	Ignition switch off	200 Ω or higher	Ω

Post-procedure1

(d) Disconnect the SST.

(e) Connect the battery ECU assembly connector.

OK ▶ **REPLACE BATTERY ECU ASSEMBLY**

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.

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 - BATTERY ECU ASSEMBLY)**