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Model Year Start: 2023	**Model:** Prius Prime	**Prod Date Range:** [03/2023 -]
Title: HYBRID / BATTERY CONTROL: MOTOR GENERATOR CONTROL SYSTEM (for PHEV Model): DATA LIST / ACTIVE TEST; 2023 - 2024 MY Prius Prime [03/2023 -]		

DATA LIST / ACTIVE TEST

DATA LIST

NOTICE:

- Some Data List values may vary significantly if there are slight differences in the environment in which the vehicle is operating when measurements are obtained. Variations may also occur due to aging of the vehicle. Due to these considerations, it is not always possible to provide definite values to be used for judgment of malfunctions. It is possible that a malfunction may be present even if measured values are within the reference range.
- In the event of a problem with intricate symptoms, collect sample data from another vehicle of the same model, operating under identical conditions in order to reach an overall judgment by comparing all of the items in the Data List.

(a) Check the results by referring to the following table.

HINT:

- When reviewing Data List information, try to select only the specific Data List items related to the inspection being performed. If all items are selected when checking the Data List, the interval between updates for each item will be longer, resulting in delayed or incorrect data.
- Using a custom list makes it possible to easily select smaller groups of related Data List items.
- The following custom lists are available:
  - All Data
  - Inverter
  - Resolver
  - DC/DC Converter
  - Resolver Learning

Powertrain > Motor Generator > Data List

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
MIL	MIL status Normal condition: OFF	-
Number of Emission DTC	Emissions-related DTCs	-
Complete Parts Monitor	Comprehensive component monitor	-
Fuel System Monitor	Fuel system monitor	-
Misfire Monitor	Misfire monitor	-
EGR/VVT Monitor	EGR/VVT monitor	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
A/F (O2) Sensor Heater Monitor	O2S (A/FS) heater monitor	-
A/F (O2) Sensor Monitor	O2S (A/FS) monitor	-
Secondary Air Injection System Monitor	Secondary air injection system monitor	-
EVAP Monitor	EVAP monitor	-
Heated Catalyst Monitor	Heated catalyst monitor	-
Catalyst Monitor	Catalyst monitor	-
EGR/VVT Monitor Result	EGR/VVT monitor result	-
A/F (O2) Sensor Heater Monitor Result	A/F (O2) sensor heater monitor result	-
A/F (O2) Sensor Monitor Result	A/F (O2) sensor monitor result	-
Secondary Air Injection System Monitor Result	Secondary air injection system monitor result	-
EVAP Monitor Result	EVAP monitor result	-
Heated Catalyst Monitor Result	Heated catalyst monitor result	-
Catalyst Monitor Result	Catalyst monitor result	-
Calculate Load	Calculate load (value increases in proportion to increase in load)	-
Coolant Temperature	Engine coolant temperature Cold start→Fully warmed up: Gradually rises After warming up: 75 to 100°C (167 to 212°F)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Engine Speed	Engine speed Engine stopped: 0 rpm While engine running at a constant speed: No significant fluctuation	-
Vehicle Speed	Vehicle speed Vehicle stopped: 0 km/h (0 mph) While driving at a constant speed: No significant fluctuation	-
Intake Air Temperature	Intake air temperature Constant: Same as ambient air temperature	-
Throttle Position Sensor No.1 Voltage %	Throttle position sensor	-
Engine Run Time	Elapsed time after starting engine	Elapsed time from initial engine start until the ignition switch is turned off.
MIL ON Run Distance	Drive distance from MIL on	-
Warmup Cycle Cleared DTC	Warmup cycles after DTCs cleared	-
Distance from DTC Cleared	Distance driven after DTCs cleared	-
Component Monitor Result (Current)	Comprehensive component monitor (Current)	-
Fuel System Monitor Result (Current)	Fuel system monitor result (Current)	-
Misfire Monitor Result (Current)	Misfire monitor result (Current)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Component Monitor ENA (Current)	Comprehensive component monitor	-
Fuel System Monitor ENA (Current)	Fuel system monitor ENA (Current)	-
Misfire Monitor ENA (Current)	Misfire monitor ENA (Current)	-
EGR/VVT Monitor ENA (Current)	EGR/VVT monitor ENA (Current)	-
O2 Sensor Heater ENA (Current)	O2 sensor heater ENA (Current)	-
A/F (O2) Sensor Monitor ENA (Current)	A/F (O2) sensor monitor ENA (Current)	-
Secondary Air Injection System Monitor ENA (Current)	Secondary air injection system monitor ENA (Current)	-
EVAP Monitor ENA (Current)	EVAP monitor ENA (Current)	-
Heated Catalyst Monitor ENA (Current)	Heated catalyst monitor ENA (Current)	-
Catalyst Monitor ENA (Current)	Catalyst monitor ENA (Current)	-
EGR/VVT Monitor Result (Current)	EGR/VVT monitor result (Current)	-
O2 Sensor Heater Monitor Result (Current)	O2 sensor heater monitor result (Current)	-
A/F (O2) Sensor Monitor Result (Current)	A/F (O2) sensor monitor result (Current)	-
Secondary Air Injection System Monitor Result (Current)	Secondary air injection system monitor result (Current)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
EVAP Monitor Result (Current)	EVAP monitor result (Current)	-
Heated Catalyst Monitor Result (Current)	Heated catalyst monitor result (Current)	-
Catalyst Monitor Result (Current)	Catalyst monitor result (Current)	-
Battery Voltage	Auxiliary battery voltage 11 to 15 V: Ignition switch ON	When ignition switch ON (READY): approx. 12.5 to 15.0 V. When ignition switch ON: same as auxiliary battery voltage (approx. 12 V). If the voltage becomes 11 V or less when the ignition switch is ON (READY), the hybrid vehicle control ECU stores inverter with converter assembly DTCs. If the voltage becomes 9.5 V or less, the ignition switch will not be able to be turned to ON (READY).
Ambient Temperature	Ambient air temperature Ignition switch ON: Same as ambient air temperature	-
Running Time from MIL ON	Running time from MIL on	-
Time after DTC Cleared	Time after DTCs cleared	-
Shift SW Status (N,P Range)	Shift lever position sensor Shift state P or N: ON Shift state other than P or N: OFF	-
Hybrid/EV Battery System Voltage	HV battery voltage Ignition switch ON: 200 to 400 V	-
Hybrid/EV Battery System Current	HV battery current Ignition switch ON: -4 to 4 A	-
Boosting Converter Temperature Duty(Upper)	Boost converter temperature duty (Upper) (CPU input data)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Motor Inverter Temperature Duty	Motor inverter temperature duty (CPU input data)	-
Motor U Current AD Value(Lower Resolution)	Motor U phase current AD value (Lower resolution)	-
Motor V Current AD Value(Lower Resolution)	Motor V phase current AD value (Lower resolution)	-
Motor W Current AD Value(Lower Resolution)	Motor W phase current AD value (Lower resolution)	-
Motor V Current AD Value(Higher Resolution)	Motor V phase current AD value (Higher resolution)	-
Motor W Current AD Value(Higher Resolution)	Motor W phase current AD value (Higher resolution)	-
Motor U Current(Lower Resolution)	Motor U phase current (Lower resolution)	-
Motor V Current(Lower Resolution)	Motor V phase current (Lower resolution)	-
Motor W Current(Lower Resolution)	Motor W phase current (Lower resolution)	-
Generator U Current(Lower Resolution)	Generator U phase current (Lower resolution)	-
Generator V Current(Lower Resolution)	Generator V phase current (Lower resolution)	-
Generator W Current(Lower Resolution)	Generator W phase current (Lower resolution)	-
Motor ECU Power Supply (For 31V)	Motor generator control ECU power supply (for 31 V)	-
Motor ECU Power Supply (For AD0)	Motor generator control ECU power supply (for AD0)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Motor ECU Power Supply (For 2.5V)	Motor generator control ECU power supply (for 2.5 V)	-
Motor ECU Power Supply (For 2.5V Sub)	Motor generator control ECU power supply (for 2.5 V sub)	-
Motor Revolution	Motor (MG2) speed (detected by resolver sensor) While driving: Varies depending on vehicle speed	Motor (MG2) speed changes in proportion to vehicle speed. Motor (MG2) speed is not influenced by accelerator pedal opening angle, engine speed or generator (MG1) speed.
Motor Torque	Motor (MG2) torque value While driving: Varies depending on vehicle operating conditions	-
Motor Control Mode	Motor control mode	-
Motor Carrier Frequency	Motor carrier frequency	-
Motor Inverter Shut Down Signal	Motor inverter shutdown signal	-
Generator Revolution	Generator (MG1) speed (detected by resolver sensor) During charge or discharge: Varies depending on vehicle operating conditions	Generator (MG1) speed is set to obtain requested target engine speed
Generator Torque	Generator (MG1) torque value During charge or discharge: Varies depending on vehicle operating conditions	-
Generator Control Mode	Generator control mode	-
Generator Carrier Frequency	Generator carrier frequency	-
Generator Inverter Shut Down Signal	Generator (MG1) inverter shutdown signal	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Inverter Coolant Temperature AD Value	Coolant (for inverter) temperature AD value	-
Inverter Coolant Temperature	Coolant (for inverter) temperature Cold start→Fully warmed up: Gradually rises	Normal: 65°C (149°F) or less
Inverter Input Current	Inverter input current	-
Inverter Water Pump Duty	Inverter water pump motor driver request duty Ignition switch ON (READY): 40 to 85 %	Hybrid vehicle control ECU
Inverter Water Pump Revolution	Inverter water pump speed Ignition switch ON (READY): 1051 to 8617 rpm	When the inverter water pump assembly is not operating: 200 rpm or less
Collinear Graphic Engine Revolution	Col-linear graphic engine speed	-
Motor Resolver After Offset	Motor resolver after offset	-
Motor Resolver Offset Value	Motor resolver offset value	-
Generator Resolver After Offset	Generator resolver after offset	-
Generator Resolver Offset Value	Generator resolver offset value	-
Motor Resolver Supply Voltage	Motor resolver supply voltage	-
VL Voltage	High voltage before it is boosted Ignition switch ON (READY): Practically the same as the HV battery voltage	-
VH Voltage	High voltage after it is boosted	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
	Engine revving up with shift lever in P: After boosted voltage to below 650 V	
Boosting Converter PWM Duty	Boost converter PWM duty	-
Boosting Converter Control Mode	Boost converter control mode	-
Boosting Converter Carrier Frequency	Boost converter signal carrier frequency	-
Boosting Converter Shut Down Signal	Boost converter shutdown signal	-
Generate Request Torque	Generator (MG1) torque request value	-
Shift Position	Shift position Matches currently selected shift state: P, R, N, D or B	-
Short Wave Highest Value	Waveform voltage in abnormal insulation detection circuit in battery ECU assembly	-
Fail Safe Mode	Fail safe mode	-
Accelerator Position	Accelerator position Accelerator pedal depressed: Changes with accelerator pedal pressure	-
WIN Control Limit Power	Power flowing to HV battery (Charging) (detected at battery voltage sensor) -38.76 kW or more	-
WOUT Control Limit Power	Power flowing from HV battery (Discharging)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
	(detected at battery voltage sensor) 25.50 kW or less	
Engine Control Mode	Engine control mode	-
Emergency Shutdown Signal	Inverter emergency shutdown Inverter emergency shutdown: ON Normal: OFF	-
Ready ON Status	State of system (READY) Ignition switch ON (READY): ON	-
SMR Status	System main relay status Ignition switch ON (READY): ON	-
Generator Resolver Offset Complete Status	Generator resolver learning complete status Generator resolver learning has been completed: ON	-
Generator Inverter High Current(GFINV)	Generator (MG1) inverter high current Normal: OFF	-
Generator Inverter Shut Down Status	Generator (MG1) inverter shutdown status Generator inverter shutdown: ON Normal: OFF	-
Motor Resolver Offset Complete Status	Motor resolver learning complete status Motor resolver learning has been completed: ON	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Motor Inverter High Current(MFINV)	Motor inverter high current Normal: OFF	-
Motor Inverter Shut Down Status	Motor inverter shutdown status Motor inverter shutdown: ON Normal: OFF	-
Inverter Input High Voltage(OVH)	Inverter input high voltage Normal: OFF	-
Boosting Converter Input High Voltage(OVL)	Boost converter input high voltage Normal: OFF	-
Boosting Converter Input High Current(CFINV)	Boost converter input high current Normal: OFF	-
Boosting Converter Shut Down Status	Boost converter shutdown status Boost converter shutdown: ON Normal: OFF	-
Generator Inverter Temperature	Generator inverter temperature Vehicle left for 1 day at an ambient temperature of 25°C (77°F): 8 to 35°C (46.4 to 95°F) While driving with an ambient temperature of 25°C (77°F): 25 to 120°C (77 to 248°F)	-
Boosting Converter Temperature(Upper)	Boosting converter temperature (Upper)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
	Vehicle left for 1 day at an ambient temperature of 25°C (77°F): 8 to 35°C (46.4 to 95°F) While driving with an ambient temperature of 25°C (77°F): 25 to 120°C (77 to 248°F)	
Boosting Converter Temperature 1(Lower)	Boosting converter temperature 1 (Lower) Vehicle left for 1 day at an ambient temperature of 25°C (77°F): 8 to 35°C (46.4 to 95°F) While driving with an ambient temperature of 25°C (77°F): 25 to 120°C (77 to 248°F)	-
Motor Inverter Temperature	Motor inverter temperature Vehicle left for 1 day at an ambient temperature of 25°C (77°F): 8 to 35°C (46.4 to 95°F) While driving with an ambient temperature of 25°C (77°F): 25 to 120°C (77 to 248°F)	-
Total Distance Traveled	Drive total distance	-
Total Distance Traveled - Unit	Drive total distance unit	-
Inverter Temperature Increase History	Inverter temperature increase history	Displays the history of when the inverter temperature temporarily rose **HINT:** When high-load driving or other operations that would cause the inverter to become hot are repeated, there may be an input even under normal conditions.
Boosting Converter B Temperature (Upper)	Boosting converter B temperature (Upper) Vehicle left for 1 day at an ambient temperature of 25°C (77°F): 8 to 35°C (46.4 to 95°F)	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
	While driving with an ambient temperature of 25°C (77°F): 25 to 120°C (77 to 248°F)	
Boosting Converter B Temperature 1 (Lower)	Boosting converter B temperature 1 (Lower) Vehicle left for 1 day at an ambient temperature of 25°C (77°F): 8 to 35°C (46.4 to 95°F) While driving with an ambient temperature of 25°C (77°F): 25 to 120°C (77 to 248°F)	-
Boosting Converter B Temperature Duty (Upper)	Boosting converter B temperature duty (Upper)	-
Boosting Converter B Inverter Input Current	Boosting converter B inverter input current	-
Boosting Converter B PWM Duty	Boosting converter B PWM duty	-
Boosting Converter B Input High Current (CFINV2)	Boosting converter B input high current Normal: OFF	-
Boosting Converter B Shut Down Status	Boosting converter B shutdown status Boosting converter B shutdown: ON Normal: OFF	-
Inverter Input Current (Bch)	Inverter input current (Bch)	-
Boosting Converter B Inverter Input Current (Bch)	Boosting converter B inverter input current (Bch)	-
Charging and Power Feeding Mode	Charging and Power Feeding Mode	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Generator Temperature Sensor Voltage	Generator temperature sensor voltage	-
Generator Temperature	Generator temperature	-
Generator Temperature just after IG ON	Generator temperature just after IG ON	-
Generator Maximum Temperature	Generator maximum temperature	-
Motor Temperature Sensor Voltage	Motor temperature sensor voltage	-
Motor Temperature	Motor temperature	-
Motor Temperature just after IG ON	Motor temperature just after IG ON	-
Motor Maximum Temperature	Motor maximum temperature	-
Transaxle Oil Temperature Sensor Voltage	Transaxle oil temperature sensor voltage	-
Transaxle Oil Temperature	Transaxle oil temperature	-
Generator ECU Power Supply	Generator ECU power supply	-
Generator ECU Power Supply (For AD0)	Generator ECU power supply (for AD0)	-
Generator ECU Power Supply (For 2.5V)	Generator ECU power supply (for 2.5V)	-
Generator Torque	Generator torque	-
Battery Temperature	Battery temperature	-
M/C Control Torque	M/C control torque	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Hybrid/EV Battery SOC	Hybrid/EV battery SOC	-
Boosting Converter Shut Down Status (Generator Output)	Boosting converter shut down status (generator output)	-
Rear Motor Inverter Shut Down Status (Generator Output)	Rear motor inverter shut down status (generator output)	-
Motor Inverter Shut Down Status (Generator Output)	Motor Inverter shut down status (generator output)	-
Generator Inverter Shut Down Status (Generator Output)	Generator inverter shut down status (generator output)	-
Boosting Converter Overcurrent Status	Boosting converter overcurrent status	-
Motor W High Current Flag	Motor W high current flag	-
Motor V High Current Flag	Motor V high current flag	-
Motor U High Current Flag	Motor U high current flag	-
Generator W High Current Flag	Generator W high current flag	-
Generator V High Current Flag	Generator V high current flag	-
Generator U High Current Flag	Generator U high current flag	-
Generator Rectangle Control Status	Generator rectangle control status	-
Motor Rectangle Control Status	Motor rectangle control status	-

TESTER DISPLAY	MEASUREMENT ITEM	DIAGNOSTIC NOTE
Rear Motor Rectangle Control Status	Rear motor rectangle control status	-
Generator PWM Control Request Status	Generator PWM control request status	-
Motor PWM Control Request Status	Motor PWM control request status	-
Generator PWM Control Status	Generator PWM control status	-
Motor PWM Control Status	Motor PWM control status	-
Generator PWM Rate Control Request Status	Generator PWM rate control request status	-
Motor PWM Rate Control Request Status	Motor PWM rate control request status	-
Generator PWM Rate	Generator PWM rate	-
Motor PWM Rate	Motor PWM rate	-
Generator Inverter Temperature Duty	Generator inverter temperature duty	-
Engine Speed (Camshaft Position Sensor)	Engine speed (camshaft position sensor)	-
Engine Speed (Crankshaft Position Sensor)	Engine speed (crankshaft position sensor)	-