

Last Modified: 12-04-2024	6.11:8.1.0	Doc ID: RM100000028ZX0
Model Year Start: 2023	Model: Prius Prime	Prod Date Range: [12/2022 -]
Title: HYBRID / BATTERY CONTROL: MOTOR GENERATOR CONTROL SYSTEM (for M20A-FXS): P06B01C,....,P32CF87; Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range; 2023 - 2024 MY Prius Prius Prime [12/2022 -]		

DTC	P06B01C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
------------	----------------	---

DTC	P06B31C	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
------------	----------------	---

DTC	P06B31F	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Intermittent
------------	----------------	---

DTC	P0A1A49	Generator Control Module Internal Electronic Failure
------------	----------------	---

DTC	P0A1B47	Drive Motor "A" Control Module Watchdog / Safety MC Failure
------------	----------------	--

DTC	P0A1B49	Drive Motor "A" Control Module Internal Electronic Failure
------------	----------------	---

DTC	P0A1C49	Drive Motor "B" Control Module Internal Electronic Failure
------------	----------------	---

DTC	P1C2A1C	Generator A/D Converter Circuit Circuit Voltage Out of Range
------------	----------------	---

DTC	P1C2A71	Generator A/D Converter Circuit Actuator Stuck
------------	----------------	---

DTC	P1C2B1C	Drive Motor "A" Control Module A/D Converter Circuit Voltage Out of Range
------------	----------------	--

DTC	P1C2B49	Drive Motor "A" Control Module A/D Converter Circuit Internal Electronic Failure
------------	----------------	---

DTC	P1C2B71	Drive Motor "A" Control Module A/D Converter Circuit Actuator Stuck
------------	----------------	--

DTC	P1C2C1C	Drive Motor "B" Control Module AD Converter Circuit Voltage Out of Range
DTC	P1C2C71	Drive Motor "B" Control Module A/D Converter Circuit Actuator Stuck
DTC	P1C601F	Generator Control Module Position Sensor REF Power Source Circuit Intermittent
DTC	P1C621F	Generator Control Module Offset Power Circuit Intermittent
DTC	P26DF1C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range
DTC	P26DF1F	Generator Control Module Position Sensor REF Power Source Circuit Intermittent
DTC	P310A1F	Communication Error from Drive Motor "B" to Drive Motor "A" Circuit Intermittent
DTC	P310A83	Communication Error from Drive Motor "B" to Drive Motor "A" Value of Signal Protection Calculation Incorrect
DTC	P310A86	Communication Error from Drive Motor "B" to Drive Motor "A" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
DTC	P310A87	Communication Error from Drive Motor "B" to Drive Motor "A" Missing Message
DTC	P310B1F	Communication Error from Drive Motor "A" to Drive Motor "B" Circuit Intermittent
DTC	P310B83	Communication Error from Drive Motor "A" to Drive Motor "B" Value of Signal Protection Calculation Incorrect
DTC	P310B86	Communication Error from Drive Motor "A" to Drive Motor "B" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid

DTC	P310B87	Communication Error from Drive Motor "A" to Drive Motor "B" Missing Message
DTC	P313383	Communication Error from Generator to Drive Motor "A" Value of Signal Protection Calculation Incorrect
DTC	P313386	Communication Error from Generator to Drive Motor "A" Signal Invalid
DTC	P313387	Communication Error from Generator to Drive Motor "A" Missing Message
DTC	P313483	Communication Error from Drive Motor "A" to Generator Value of Signal Protection Calculation Incorrect
DTC	P313486	Communication Error from Drive Motor "A" to Generator Signal Invalid
DTC	P313487	Communication Error from Drive Motor "A" to Generator Missing Message
DTC	P32BF1F	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Circuit Intermittent
DTC	P32BF83	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Value of Signal Protection Calculation Incorrect
DTC	P32BF86	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
DTC	P32BF87	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Missing Message
DTC	P32CF1F	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Circuit Intermittent

DTC	P32CF83	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Value of Signal Protection Calculation Incorrect
------------	----------------	--

DTC	P32CF86	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Signal (Some Circuit Quantity, Reported via Serial Data) Invalid
------------	----------------	--

DTC	P32CF87	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Missing Message
------------	----------------	---

DESCRIPTION

The motor generator control ECU (MG ECU), which is built into the inverter with converter assembly, monitors its internal operation and will store DTCs if it detects a malfunction. If any of the following DTCs are output, replace the inverter with converter assembly.

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P06B01C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P06B0
P06B31C	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Voltage Out of Range	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P06B3
P06B31F	Drive Motor "B" Control Module Position Sensor REF Power Source Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P1C61

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P0A1A49	Generator Control Module Internal Electronic Failure	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0A1A
P0A1B47	Drive Motor "A" Control Module Watchdog / Safety MC Failure	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0A1B
P0A1B49	Drive Motor "A" Control Module Internal Electronic Failure	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0A1B
P0A1C49	Drive Motor "B" Control Module Internal Electronic Failure	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P0A1C
P1C2A1C	Generator A/D Converter Circuit Voltage Out of Range	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2A
P1C2A71	Generator A/D Converter Circuit Actuator Stuck	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2A

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P1C2B1C	Drive Motor "A" Control Module A/D Converter Circuit Voltage Out of Range	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2B
P1C2B49	Drive Motor "A" Control Module A/D Converter Circuit Internal Electronic Failure	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2B
P1C2B71	Drive Motor "A" Control Module A/D Converter Circuit Actuator Stuck	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2B
P1C2C1C	Drive Motor "B" Control Module AD Converter Circuit Voltage Out of Range	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2C
P1C2C71	Drive Motor "B" Control Module A/D Converter Circuit Actuator Stuck	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P1C2C
P1C601F	Generator Control Module Position Sensor REF Power Source Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored.	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P1C60

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
		(1 trip detection logic)						
P1C621F	Generator Control Module Offset Power Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P1C62
P26DF1C	Generator Control Module Position Sensor REF Power Source Circuit Voltage Out of Range	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P26DF
P26DF1F	Generator Control Module Position Sensor REF Power Source Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P19F7
P310A1F	Communication Error from Drive Motor "B" to Drive Motor "A" Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P310A

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
		or P1C5E19 is stored. (1 trip detection logic)						
P310A83	Communication Error from Drive Motor "B" to Drive Motor "A" Value of Signal Protection Calculation Incorrect	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P310A
P310A86	Communication Error from Drive Motor "B" to Drive Motor "A" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P310A
P310A87	Communication Error from Drive Motor "B" to Drive Motor "A" Missing Message	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P310A
P310B1F	Communication Error from Drive Motor "A" to Drive Motor "B" Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P310B

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
P310B83	Communication Error from Drive Motor "A" to Drive Motor "B" Value of Signal Protection Calculation Incorrect	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P310B
P310B86	Communication Error from Drive Motor "A" to Drive Motor "B" Signal (Some Circuit Quantity, Reported via Serial Data) Invalid	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P310B
P310B87	Communication Error from Drive Motor "A" to Drive Motor "B" Missing Message	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P310B
P313383	Communication Error from Generator to Drive Motor "A" Value of Signal Protection Calculation Incorrect	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P3133
P313386	Communication Error from Generator to Drive Motor "A" Signal Invalid	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P3133
P313387	Communication Error from Generator to Drive Motor "A" Missing Message	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P3133
P313483	Communication Error from Drive Motor "A"	Motor generator control ECU	Inverter with	Comes on	Master Warning:	Motor Generator	A	SAE Code:

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
	to Generator Value of Signal Protection Calculation Incorrect	internal malfunction (1 trip detection logic)	converter assembly		Comes on			P3134
P313486	Communication Error from Drive Motor "A" to Generator Signal Invalid	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P3134
P313487	Communication Error from Drive Motor "A" to Generator Missing Message	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P3134
P32BF1F	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P32BF
P32BF83	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Value of Signal Protection Calculation Incorrect	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P32BF
P32BF86	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Signal (Some Circuit Quantity, Reported	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P32BF

DTC NO.	DETECTION ITEM	DTC DETECTION CONDITION	TROUBLE AREA	MIL	WARNING INDICATE	DTC OUTPUT FROM	PRIORITY	NOTE
	via Serial Data) Invalid							
P32BF87	Lost Communication between Drive Motor "A" and "B" (Drive Motor "A") Missing Message	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P32BF
P32CF1F	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Circuit Intermittent	Motor generator control ECU internal malfunction detected when DTC P0C7917, P0E5717, P0D3319, P1C5D19, P1C5F19 or P1C5E19 is stored. (1 trip detection logic)	Inverter with converter assembly	Does not come on	Master Warning: Does not come on	Motor Generator	A	SAE Code: P32CF
P32CF83	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Value of Signal Protection Calculation Incorrect	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P32CF
P32CF86	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Signal (Some Circuit Quantity, Reported via Serial Data) Invalid	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P32CF
P32CF87	Lost Communication between Drive Motor "A" and "B" (Drive Motor "B") Missing Message	Motor generator control ECU internal malfunction (1 trip detection logic)	Inverter with converter assembly	Comes on	Master Warning: Comes on	Motor Generator	A	SAE Code: P32CF

MONITOR DESCRIPTION

The motor generator control ECU monitors its internal operation and will illuminate the MIL and store a DTC if it detects a malfunction.

MONITOR STRATEGY

Related DTCs	<p>P06B0 (INF P06B01C): Sensor Power Supply "A" Circuit (31V for Drive Motor "A"/Generator)</p> <p>P06B3 (INF P06B31C): Sensor Power Supply "B" Circuit (31V for Drive Motor "B"/Generator)</p> <p>P06D6 (INF P06D61C): Sensor Reference Voltage "F" Circuit (2.5V for Drive Motor "A"/Generator)</p> <p>P0A1A (INF P0A1A49): Generator Control Module</p> <p>P0A1B (INF P0A1B47/P0A1B49): Drive Motor "A" Control Module</p> <p>P0A1C (INF P0A1C49): Drive Motor "B" Control Module</p> <p>P19F8 (INF P19F81C): Sensor Reference Voltage "G" Circuit (2.5V for Generator)</p> <p>P19F9 (INF P19F91C): Sensor Reference Voltage "H" Circuit (2.5V for Drive Motor "B"/Generator)</p> <p>P1C2A (INF P1C2A1C/P1C2A71): Generator Control Module A/D Processing</p> <p>P1C2B (INF P1C2B49/P1C2B1C/P1C2B71): Drive Motor "A" Control Module A/D Processing</p> <p>P1C2C (INF P1C2C1C/P1C2C71): Drive Motor "B" Control Module A/D Processing</p> <p>P26DF (INF P26DF1C): Sensor Power Supply "D" Circuit (31V for Generator)</p> <p>P310A (INF P310A83/P310A86/P310A87): Lost Communication With Drive Motor "B" Control Module</p> <p>P310B (INF P310B83/P310B86/P310B87): Lost Communication With Drive Motor "A" Control Module (Drive Motor "B" Control Module)</p> <p>P3133 (INF P313383/P313386/P313387): Lost Communication With Generator Control Module</p> <p>P3134 (INF P313483/P313486/P313487): Lost Communication With Drive Motor "A" Control Module</p> <p>P32BF (INF P32BF83/P32BF86/P32BF87): Lost Communication With Drive Motor "B" Control Module (Generator Control Module)</p> <p>P32CF (INF P32CF83/P32CF86/P32CF87): Lost Communication With Generator Control Module (Drive Motor "B" Control Module)</p>
Required sensors/components	Motor generator 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

Motor generator control ECU	<p>DTC P06B0 (INF P06B01C) is not detected</p> <p>DTC P06B3 (INF P06B31C) is not detected</p> <p>DTC P06D6 (INF P06D61C) is not detected</p> <p>DTC P0A1A (INF P0A1A49) is not detected</p> <p>DTC P0A1B (INF P0A1B47/P0A1B49) is not detected</p> <p>DTC P0A1C (INF P0A1C49) is not detected</p> <p>DTC P19F8 (INF P19F81C) is not detected</p> <p>DTC P19F9 (INF P19F91C) is not detected</p> <p>DTC P1C2A (INF P1C2A1C/P1C2A71) is not detected</p> <p>DTC P1C2B (INF P1C2B49/P1C2B1C/P1C2B71) is not detected</p> <p>DTC P1C2C (INF P1C2C1C/P1C2C71) is not detected</p> <p>DTC P26DF (INF P26DF1C) is not detected</p> <p>DTC P310A (INF P310A83/P310A86/P310A87) is not detected</p> <p>DTC P310B (INF P310B83/P310B86/P310B87) is not detected</p> <p>DTC P3133 (INF P313383/P313386/P313387) is not detected</p> <p>DTC P3134 (INF P313483/P313486/P313487) is not detected</p> <p>DTC P32BF (INF P32BF83/P32BF86/P32BF87) is not detected</p> <p>DTC P32CF (INF P32CF83/P32CF86/P32CF87) is not detected</p>
-----------------------------	---

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](#)

- Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure).
- Turn the ignition switch off and wait for 2 minutes or more.
- Turn the ignition switch to ON and wait for 15 seconds 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.

- Enter the following menus: Powertrain / Motor Generator / Utility / All Readiness.
- 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, perform the normal judgment procedure again.

PROCEDURE

1.	REPLACE INVERTER WITH CONVERTER ASSEMBLY
-----------	---

Click here 

NEXT  **COMPLETED**

