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2013 NISSAN Altima Sedan OEM Service and Repair Workshop Manual

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Diagnosis Description

SIEMD-7504893

Counter system counts up at every operation of power switch from OFF to ON under condition that the same malfunction is not detected. On the other hand, if the same DTC as memorized one is detected again, the count is reset and the counter system counts up again from “0”.

SIEMD-7504809

APPLICABLE ITEM

Diagnosis mode	Description
Self Diagnostic Result	Display DTC which electric shift control module memorizes. **NOTE:** **Self-diagnostic results and freeze frame data can be read and erased quickly.***
Data Monitor	Can read the input/output data of the inverter (rear).
Work support	Adjusts the components and systems quickly yet accurately
ECU Identification	Displays the part number of the inverter (rear).

*: The following diagnosis information is erased by erasing.

- DTC
- Freeze frame data (FFD)

SELF DIAGNOSTIC RESULT

Refer to DTC Index.

When "Current DTC" is displayed in the "Self Diagnostic Result"

- There is currently an error in the system.

When "Past DTC" is displayed in the "Self Diagnostic Result"

- An error was detected in the system in the past, however the conditions have currently returned to normal.

Freeze Frame Data (FFD)

The following vehicle status is recorded when DTC is detected and is displayed on CONSULT.

Item	(Unit)	Remarks
Odo	(km)	Displays the mileage (odometer value) when the DTC was detected.
DTC count		The IGN counter is displayed in "FFD". After the DTC is normally reset, it displays the number of times the power switch is turned OFF→ON. Refer to Diagnosis Description. • If a malfunction (DTC) is being detected, "0" is displayed. • Once the normal state is recovered, the displayed value increases as 1, 2, 3...38, 39 every time the power switch is turned ON from OFF. Once it reaches 40, it will no longer be counted up.
Motor oil temperature 1	(degc)	Displays the oil temperature of the rear traction motor.
Inverter excitation module circuit board temperature	(degc)	Displays the temperature of the excitation board inside the inverter (rear).
Inverter coolant temperature 1	(degc)	Displays the coolant temperature of the inverter (rear).
Inverter condenser temperature	(degc)	Displays the capacitor temperature inside the inverter (rear).
Inverter power module estimated	(degc)	Displays estimated value 1 of the power module temperature in the inverter (rear).

Item	(Unit)	Remarks
temperature 1		
Inverter power module estimated temperature 2	(degc)	Displays estimated value 2 of the power module temperature in the inverter (rear).
Inverter input high voltage	(V)	Displays the high voltage that is input into the inverter (rear).
Motor d current 1	(A)	Displays the current value at the d-shaft of the rear traction motor.
Motor d current 2	(A)	Displays the current filter value at the d-shaft of the rear traction motor.
Motor q current 1	(A)	Displays the current value at the q-shaft of the rear traction motor.
Motor q current 2	(A)	Displays the current filter value at q-shaft of the rear traction motor.
Rotor current	(A)	Displays the rotor current value of the rear traction motor
Roter current (Filter)	(A)	Displays the rotor current filter value of the rear traction motor.
Resolver angle (Before offset)	(deg)	Displays the raw value (before correction) of the rotor resolver angle sensor at the rear traction motor.
Inverter carrier frequency		Displays the carrier frequency of the inverter (rear).
Command motor d current value	(A)	Displays the current command value at the d-shaft of the rear traction motor.
Command motor q current value	(A)	Displays the current command value at the q-shaft of the rear traction motor.
Command rotor current value	(A)	Displays the rotor current command value of the rear traction motor.
Motor temperature sensor status		Displays the status of the rear traction motor temperature sensor.
Motor oil temperature sensor status		Displays the status of the oil temperature sensor at the rear traction motor.
Inverter excitation module circuit board temperature sensor status		Displays the status of the excitation board temperature sensor in the inverter (rear).
Inverter circuit temperature sensor 1 status		Displays the status of board temperature sensor 1 in the inverter (rear).
Inverter circuit temperature sensor 2 status		Displays the status of board temperature sensor 2 in the inverter (rear).
Inverter circuit temperature sensor 3 status		Displays the status of board temperature sensor 3 in the inverter (rear).
Inverter condenser temperature sensor status		Displays the status of the capacitor temperature sensor in the inverter (rear).
U phase current sensor status		Displays the status of the U-phase current sensor at the rear traction motor.
V phase current sensor status		Displays the status of the V-phase current sensor at the rear traction motor.
W phase current sensor status		Displays the status of the W-phase current sensor at the rear traction motor.
Inverter high voltage monitor circuit status		Displays the status of the high voltage monitor circuit at the inverter (rear).
Command torque (CAN)	(Nm)	Displays the rear traction motor torque command value received from the VCM via EV system CAN.
Motor estimated torque	(Nm)	Displays the estimated value at rear traction motor torque.
Motor speed 1	(rpm)	Displays the speed of the rear traction motor.
Inverter status (CAN)		Displays the internal status of the inverter (rear) that was sent from the inverter (rear) via EV system CAN.
Li-ion battery voltage 1	(V)	Displays the Li-ion battery voltage value received from the LBC via EV system CAN.
Sleep/wake up request		Displays the wakeup/sleep command value received from the VCM via EV system CAN.
Discharge request		Displays the discharge command value received from the VCM via EV system CAN.
Vibration control		Displays vibration control ON/OFF received from the VCM via EV system CAN.

Item	(Unit)	Remarks
Motor control status		Displays the control status of the rear traction motor that was sent from the inverter (rear) via EV system CAN.
Safety maximum torque	(Nm)	Displays the safety maximum torque value received from the VCM via EV system CAN.
Safety minimum torque	(Nm)	Displays the safety minimum torque value received from the VCM via EV system CAN.
Command oil pump speed 1	(rpm)	Displays the speed command that is sent to the rear traction motor oil pump.
Motor oil temperature (Inside oil pump)	(degc)	Displays the oil temperature in the rear traction motor oil pump.
Oil pump speed 1	(rpm)	Displays the speed of the rear traction motor oil pump.
Oil pump circuit current consumption 1	(mA)	Displays the current consumption of the rear traction motor oil pump circuit.
Oil pump internal status 1		Displays the internal status of the rear traction motor oil pump.
Oil pump communication reception status		Displays the LIN communication receiving status of the rear traction motor oil pump.
Inverter CAN diagnosis		Displays CAN diagnosis permit/prohibit of the inverter (rear).
Oil pump communication status1		Displays the LIN communication status on the rear traction motor oil pump side.
12V power voltage	(V)	Displays the voltage of the low voltage in the inverter (rear).
Inverter power module temperature 1	(%)	Displays power module temperature 1 in the inverter (rear).
Inverter power module temperature 2	(%)	Displays power module temperature 2 in the inverter (rear).
Inverter power module temperature 3	(%)	Displays power module temperature 3 in the inverter (rear).
Inverter power module temperature 4	(%)	Displays power module temperature 4 in the inverter (rear).
Inverter power module temperature 5	(%)	Displays power module temperature 5 in the inverter (rear).
Inverter power module temperature 6	(%)	Displays power module temperature 6 in the inverter (rear).
Resolver voltage (S1-S3)	(mV)	Displays the detected voltage at the S1 - S3 systems of the rear traction motor resolver.
Resolver voltage (S2-S4)	(mV)	Displays the detected voltage at the S2 - S4 systems of the rear traction motor resolver.
Resolver IC diagnosis result 1		Displays the IC diagnosis result of the rear traction motor resolver.
Resolver IC diagnosis result 2		Displays the IC diagnosis result (latch) of the rear traction motor resolver.
Inverter internal circuit voltage 1	(V)	Displays voltage value 1 of the inverter (rear) internal circuit.
Inverter internal circuit voltage 2	(V)	Displays voltage value 2 of the inverter (rear) internal circuit.
Inverter internal circuit voltage 3	(V)	Displays voltage value 3 of the inverter (rear) internal circuit.
Inverter power module temperature sensor 1 status		Displays the status of the power module temperature 1 sensor in the inverter (rear).
Inverter power module temperature sensor 2 status		Displays the status of the power module temperature 2 sensor in the inverter (rear).
Inverter power module temperature sensor 3 status		Displays the status of the power module temperature 3 sensor in the inverter (rear).
Inverter power module temperature sensor 4 status		Displays the status of the power module temperature 4 sensor in the inverter (rear).

Item	(Unit)	Remarks
Inverter power module temperature sensor 5 status		Displays the status of the power module temperature 5 sensor in the inverter (rear).
Inverter power module temperature sensor 6 status		Displays the status of the power module temperature 6 sensor in the inverter (rear).
DTC		Displays DTCs for the inverter (rear) that caused freeze frame data to be stored.
Rotor current 1	(A)	Displays rotor current value 1 of the rear traction motor.
Rotor current 2	(A)	Displays rotor current value 2 of the rear traction motor.
Ignition signal		Displays the status of the power ON signal.
U phase current	(A)	Displays the current value detected in the U-phase of the rear traction motor.
V phase current	(A)	Displays the current value detected in the V-phase of the rear traction motor.
W phase current	(A)	Displays the current value detected in the W-phase of the rear traction motor.
Inverter power module temperature (Maximum value) 1	(degc)	Displays maximum value of power module temperature 1 - 6 in the inverter (rear).
Inverter circuit board temperature sensor 3	(degc)	Displays the value of board temperature sensor 3 in the inverter (rear).
Inverter circuit board temperature sensor 1	(degc)	Displays the value of board temperature sensor 1 in the inverter (rear).
Stator temperature	(degc)	Displays the stator temperature of the rear traction motor.
Resolver angle (offset)	(deg)	Displays the rotor resolver angle offset value at the rear traction motor.
Inverter circuit board temperature sensor 2	(degc)	Displays the value of board temperature sensor 2 in the inverter (rear).
Motor speed 2	(rpm)	Displays the speed of the rear traction motor.
Motor torque	(Nm)	Displays the estimated torque of the rear traction motor.
Command torque	(Nm)	Displays the torque command value of the rear traction motor.
Inverter high voltage (Monitor)	(V)	Displays the high voltage value that is recognized by the inverter (rear).
Inverter 12 V power voltage (Monitor)	(V)	Displays the 12V battery voltage value that is recognized by the inverter (rear).
Resolver angle detection circuit diagnosis result		Displays the diagnosis result for the resolver angle detection circuit of the inverter (rear).
Ignition signal (CAN)		Displays the value of the power ON signal transmitted from the VCM.
Inverter initial diagnosis		Displays the initial diagnosis status of the inverter (rear).
Inverter high voltage circuit diagnosis result		Displays the diagnosis result for the high voltage system of the inverter (rear).
Inverter abnormal state		Displays the error status of the inverter (rear).
Inverter torque control function diagnosis result		Displays the diagnosis result for the torque control function in the inverter (rear).
Inverter normalization temperature		Displays the maximum normalized temperature in the inverter (rear).
Motor normalization temperature		Displays the maximum normalized temperature inside the rear traction motor.
Inverter coolant temperature 2		Displays the coolant temperature of the inverter (rear).
Inverter abnormality judgement 1		Displays the status of hardware error judgement in the inverter (rear).
Inverter abnormality judgement 2		Displays the status of software error judgement in the inverter (rear).
Rotor current diagnosis result		Displays the diagnosis result for the rotor current of the rear traction motor.
Stator current diagnosis result		Displays the diagnosis result for the stator current of the rear traction motor.

Item	(Unit)	Remarks
Resolver angle detection circuit diagnosis result		Displays the diagnosis result for the resolver angle of the rear traction motor.
Inverter direct current value	(A)	Displays the estimated DC current value of the inverter (rear).
Resolver offset 2		Displays the resolver offset CRC value that was written to the inverter (rear).
Resolver offset 1	(deg)	Displays the resolver offset value that was written to the inverter (rear).
Inverter control malfunction status 1		Displays the status when a control error occurs in the inverter (rear).
Relay status (CAN)		Displays the relay drive signal (diagnosis status) from the VCM.
Inverter current sensor status		Displays the diagnosis status for the current sensor in the inverter (rear).
Inverter malfunction reset (Data 1)		Displays error reset data 1 in the inverter (rear).
Inverter malfunction reset (Data 2)		Displays error reset data 2 in the inverter (rear).
Inverter malfunction reset (Data 3)		Displays error reset data 3 in the inverter (rear).
Inverter malfunction reset (Data 4)		Displays error reset data 4 in the inverter (rear).
Inverter malfunction reset (Data 5)		Displays error reset data 5 in the inverter (rear).
Inverter malfunction reset (Data 5_1)		Displays error reset data 5_1 in the inverter (rear).
Inverter malfunction reset (Data 5_2)		Displays error reset data 5_2 in the inverter (rear).
Inverter malfunction reset (Data 5_3)		Displays error reset data 5_3 in the inverter (rear).
Motor three-phase current (Maximum value)	(A)	Displays the maximum value of three-phase current in the rear traction motor.
Rotor temperature 1	(degc)	Displays rotor temperature estimated value 1 of the rear traction motor.
Rotor temperature 2	(degc)	Displays rotor temperature estimated value 2 of the rear traction motor.
Rotor temperature (Before offset)	(degc)	Displays the rotor temperature estimated value (before correction) of the rear traction motor.
Inverter power module temperature (Maximum value) 2	(degc)	Displays maximum value of power module temperature 1 - 6 in the inverter (rear).
Inverter interlock diagnosis		Displays the interlock status of the inverter (rear).
Motor speed 3	(rpm)	Displays the speed of the rear traction motor.
Inverter interlock 1 status		Displays the status of interlock 1 at the inverter (rear).
Inverter interlock 2 status		Displays the status of interlock 2 at the inverter (rear).
Li-ion battery voltage 2	(V)	Displays the Li-ion battery voltage received from the LBC via EV system CAN.
Inverter control malfunction status 2		Displays the status when a control error occurs in the inverter (rear).
Inverter control status 2		Displays the control status in the inverter (rear).
Drive prohibition signal (CAN)		Displays the rear traction inverter drive prohibit signal received from the VCM via EV system CAN.
Inverter drive mode		Displays the drive mode request received at from the VCM via EV system CAN.
High voltage relay status		Displays the high voltage relay status received from the VCM via EV system CAN.
Command oil pump speed 2	(rpm)	Displays the speed command that is sent to the rear traction motor oil pump.

Item	(Unit)	Remarks
Oil pump internal status 2		Displays the internal status of the rear traction motor oil pump.
Motor oil temperature 2	(degc)	Displays the oil temperature of the rear traction motor.
Command oil pump oil flow	(L/min)	Displays the flow volume command that is sent to the rear traction motor oil pump.
Oil pump speed 2	(rpm)	Displays the speed of the rear traction motor oil pump.
Oil pump circuit current consumption 2	(mA)	Displays the current consumption of the rear traction motor oil pump circuit.
Oil pump communication status 2		Displays the LIN communication status at the rear traction motor oil pump.
Oil pump current consumption status		Displays the current consumption status received from the rear traction motor oil pump.
Oil pump communication status 3		Displays the oil pump LIN communication status received from the rear traction motor oil pump.
Oil pump speed status		Displays the oil pump speed status received from the rear traction motor oil pump.
Motor oil heat dissipation temperature	(degc)	Displays the estimated heat dissipation temperature for the oil temperature of the rear traction motor.
Inverter excitation module high arm IGBT status		Displays high arm IGBT errors for the excitation circuit inside the inverter (rear).
Inverter excitation module low arm IGBT status		Displays low arm IGBT errors for the excitation circuit inside the inverter (rear).
Inverter excitation module high arm IGBT driver circuit status		Displays high arm driver circuit errors for the excitation circuit inside the inverter (rear).
Inverter excitation module low arm IGBT driver circuit status		Displays low arm driver circuit errors for the excitation circuit inside the inverter (rear).
Inverter over voltage malfunction (High voltage)		Displays overvoltage errors for the high voltage of the inverter (rear).
Inverter low voltage malfunction (High voltage)		Displays low voltage errors for the high voltage of the inverter (rear).
Inverter power module high arm IGBT status		Displays high arm power module errors for the inverter (rear).
Inverter power module low arm IGBT status		Displays low arm power module errors for the inverter (rear).
Inverter excitation module drive circuit status		Displays the status of the excitation drive circuit in the inverter (rear).
Inverter control status 1		Displays the control status of the inverter (rear).
Resolver angle detection circuit status		Displays the error status for the resolver angle detection circuit in the inverter (rear).

DATA MONITOR

NOTE:
The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor item	(Unit)	Remarks
Motor speed 1	(rpm)	Displays the rear traction motor speed that is used in rear traction motor control.
Inverter input voltage (High voltage)	(V)	Displays the high voltage that is input into the inverter (rear).
Rotor current value 1	(A)	Displays rotor current value 1 of the rear traction motor.

Monitor item	(Unit)	Remarks
Rotor current value 2	(A)	Displays rotor current value 2 of the rear traction motor.
Ignition signal		Displays the status of the power ON signal.
Inverter power module temperature	(degc)	Displays maximum value of power module temperature 1 - 6 in the inverter (rear).
Resolver offset value		Displays the resolver offset value for the rear traction motor that was recorded in the inverter (rear).
Rotor resistance value		Displays the rotor resistance value for the rear traction motor that was recorded in the inverter (rear).
Inverter initial diagnosis		Displays the initial diagnosis status of the inverter (rear). • Not diagnosed • During diagnosis • Time out error
Inverter high voltage circuit diagnosis result		Displays the diagnosis result for the high voltage system of the inverter (rear). • OK: No error • Malfunction 1: The difference between the high voltage of the inverter (rear) and the voltage of the Li-ion battery was at or above the prescribed value. • Malfunction 5: While the high-voltage relay was ON, the Li-ion battery voltage was at or above the prescribed value, however the high voltage that was input into the inverter (rear) was at or below the prescribed value. • Malfunction 6: A Li-ion battery system error was received. • Malfunction 7: While the high-voltage relay was OFF, the Li-ion battery voltage was at or above the prescribed value, and the high voltage of the inverter (rear) was also at or above the prescribed value.
Inverter torque control function diagnosis result		Displays the diagnosis result for the torque control function in the inverter (rear). • OK: No error • Malfunction 12: Error in the drive limit or regeneration prohibit function when a Li-ion battery system error was received. • Malfunction 14: Torque output from the rear traction motor exceeded the function safety range on the positive side. • Malfunction 15: Torque output from the rear traction motor exceeded the function safety range on the negative side.
Inverter abnormality judgement 1		Displays the status of hardware error judgement in the inverter (rear). • OK: No error • Malfunction 1: PWM cut (driving not possible)
Inverter abnormality judgement 2		Displays the status of software error judgement in the inverter (rear). • OK: No error • Malfunction 1: An error occurred, however normal driving continues. • Malfunction 2: PWM cut (driving not possible)
Rotor current diagnosis result		Displays the diagnosis result for the rotor current of the rear traction motor.

Monitor item	(Unit)	Remarks
		• OK: No error • Excitation current sensor 1: Excitation current sensor 1 error • Excitation current sensor 2: Excitation current sensor 2 error • Excitation current sensor 1 & 2: Excitation current sensor 1 & 2 error • Circuit disconnection: Disconnection of the excitation current circuit
Stator current diagnosis result		Displays the diagnosis result for the stator current of the rear traction motor. • OK: Normal • Malfunction 4: Current sensor error
Inverter over voltage malfunction (High voltage)		Displays overvoltage errors for the high voltage of the inverter (rear).
Inverter control status 1		Displays the internal control status of the inverter (rear). • Initial state: Sequence start point • Traction: The rear traction motor can output drive force. • Malfunction: The inverter (rear) detected an error. • Stand-by: Waiting for drive request from the VCM • During discharge: Capacitor discharge process in progress in the inverter (rear) • Initial diagnosis: Initial diagnosis of the rear traction motor is in progress.
12 V battery voltage	(V)	Displays the 12V battery voltage received from the VCM via EV system CAN.
Re-programming judgement result		Displays permit/prohibit for reprogramming by the immobilizer. • OK: Reprogramming is permitted. • NG: Reprogramming is prohibited.
Key available		Displays the activation state of the immobilizer.
Inverter temperature	(degc)	Displays the value of the board temperature sensor in the inverter (rear).
Inverter power module high arm IGBT status		Displays high arm power module errors for the inverter (rear). • OK: No error • NG: Abnormal
Inverter power module low arm IGBT status		Displays low arm power module errors for the inverter (rear). • OK: No error • NG: Abnormal
Li-ion battery abnormality state		Displays the error status of the Li-ion battery received from the Li-ion battery controller via EV system CAN. • OK: No error • Malfunction 1: Malfunction other than those related to overcharge, over-discharge, and overheating • Malfunction 2: Malfunction of monitoring function (voltage, current, temperature, or other sensor, or CPU, power supply, etc.) for overcharge, over-discharge, and