

## INFORMATION/FREEZE FRAME DATA

### 1. FREEZE FRAME DATA

#### HINT:

The freeze frame data record the driving conditions when the DTC was set. It is used for estimating or simulating the condition of the vehicle when the malfunction occurred. To check the details of the hybrid vehicle control system, check the detailed information for the DTC (Information).

- Connect the hand-held tester to the DLC3.
- Turn the power switch ON (IG).
- Turn the hand-held tester ON.
- Select the following menu items: DIAGNOSIS / OBD/MOBD / HV ECU / DTC INFO / CURRENT CODES.
- Select a DTC in order to display its freeze frame data.
- Check the freeze frame data of the DTC that has been detected.
- Check information of the DTC (see next page).

#### Freeze frame data:

Hand-held Tester Display	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
FREEZE DTC	DTC corresponding to displayed freeze frame data	—
COOLANT TEMP	Engine coolant temperature/ Min.: -40°C, Max.: 140°C	Cold or warm engine
VEHICLE SPD	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Stopped, or driving (low, medium, and high speeds)
ENG RUN TIME	Elapsed time after starting engine Min.: 0 s, Max.: 65,535 s	Elapsed time from engine start
+B	Auxiliary battery voltage/ Min.: 0 V, Max.: 65.535 V	Condition of auxiliary battery
ACCEL POS #1	Accelerator pedal position sensor No. 1/ Min.: 0 %, Max.: 100 %	Idling, accelerating, or decelerating
ACCEL POS #2	Accelerator pedal position sensor No. 2/ Min.: 0 %, Max.: 100 %	Idling, accelerating or decelerating (For comparison with above to detect failure of accelerator pedal position sensor No. 1)
AMBIENT TEMP	Ambient air temperature/ Min.: -40°C, Max.: 215°C	Ambient air temperature
INTAKE AIR TEMP	Intake air temperature/ Min.: -40°C, Max.: 140°C	Ambient air temperature
DTC CLEAR WARM	The number of times engine is warmed up after clearing DTCs/ Min.: 0, Max.: 255	Frequency of the malfunction recurrence after clearing DTCs
DTC CLEAR RUN	Drive distance after clearing DTCs/ Min.: 0 km, Max.: 65,535 km	Frequency of the malfunction recurrence after clearing DTCs
DTC CLEAR MIN	Elapsed time after clearing DTCs/ Min.: 0 min, Max.: 65,535 min	Frequency of the malfunction recurrence after clearing DTCs
ECU TYPE	Type of ECU	—
INFORMATION 1 to 5	Information code	—

## 2. INFORMATION

### HINT:

Similar to freeze frame data, information records operating condition of the HV system and components at the time of detection of a DTC.

- Select one which has an INF code from among INFORMATION 1 to 5.
- Check the information of the DTC.

### Information:

Hand-held Tester Display	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
INFORMATION N	Information code	Indication of system with malfunction
MG1 REV	MG1 revolution/ Min.: -16,384 rpm, Max.: 16,256 rpm	MG1 speed • Forward rotation appears as "+" • Backward rotation appears as "-"
MG2 REV	MG2 revolution/ Min.: -16,384 rpm, Max.: 16,256 rpm	MG2 speed (proportionate to vehicle speed) • Forward rotation appears as "+" • Backward rotation appears as "-" Moving direction of vehicle • Forward direction appears as "+" • Backward direction appears as "-"
MG1 TORQ	MG1 torque/ Min.: -512 Nm, Max.: 508 Nm	When MG1 rotation in + direction: • Torque appears as "+" while MG1 discharges • Torque appears as "-" while MG1 charges When MG1 rotation in - direction: • Torque appears as "-" while MG1 discharges • Torque appears as "+" while MG1 charges
MG2 TORQ	MG2 torque/ Min.: -512 Nm, Max.: 508 Nm	When MG2 rotation in + direction: • Torque appears as "+" while MG2 discharges • Torque appears as "-" while MG2 charges When MG2 rotation in - direction: • Torque appears as "-" while MG2 discharges • Torque appears as "+" while MG2 charges
INVERT TEMP-MG1	MG1 inverter temperature/ Min.: -50°C, Max.: 205°C	MG1 inverter temperature
INVERT TEMP-MG2	MG2 inverter temperature/ Min.: -50°C, Max.: 205°C	MG2 inverter temperature
MG2 TEMP (No2)	Transaxle fluid temperature/ Min.: -50°C, Max.: 205°C	Transaxle fluid temperature
MG2 TEMP (No1)	MG2 temperature/ Min.: -50°C, Max.: 205°C	MG2 temperature
POWER RQST	Request engine power/ Min.: 0 W, Max.: 255 kW	Engine power output requested to ECM
ENGINE SPD	Engine speed/ Min.: 0 rpm, Max.: 16,320 rpm	Engine speed
MCYL CTRL POWER	Master cylinder control torque/ Min.: -512 Nm, Max.: 508 Nm	Brake force requested by driver
SOC	Battery state of charge/ Min.: 0 %, Max.: 100 %	State of charge of HV battery
WOUT CTRL POWER	Power value discharge control/ Min.: 0 W, Max.: 81,600 W	Discharge amount of HV battery
WIN CTRL POWER	Power value charge control/ Min.: -40,800 W, Max.: 0 W	Charge amount of HV battery
DRIVE CONDITION	Drive condition ID • Engine stopped: 0 • Engine about to be stopped: 1 • Engine about to be started: 2 • Engine operated or operating: 3 • Generating or loading movement: 4 • Revving up with P position: 6	Engine operating condition

Hand-held Tester Display	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
PWR RESOURCE VB	HV battery voltage/ Min.: 0 V, Max.: 510 V	HV battery voltage
PWR RESOURCE IB	HV battery current/ Min.: -256 A, Max.: 254 A	Charging/discharging state of HV battery • Discharging amperage indicated by a positive value • Charging amperage indicated by a negative value
SHIFT POSITION	Shift position (P, R, N, D or B position) P: 0, R: 1, N: 2, D: 3, B: 4	Shift position
ACCEL SENSOR M	Accelerator pedal position sensor main/ Min.: 0 %, Max.: 100 %	Idling, accelerating, or decelerating
AUX. BATT V	Auxiliary battery voltage/ Min.: 0 V, Max.: 20 V	State of auxiliary battery
CONVERTER TEMP	Boost converter temperature/ Min.: -50°C, Max.: 205°C	Boost converter temperature
VL	High voltage before it is boosted/ Min.: 0 V, Max.: 510 V	High voltage level before it is boosted
VH	High voltage after it is boosted/ Min.: 0 V, Max.: 765 V	High voltage level after it is boosted
IG ON TIME	The time after power switch ON (IG)/ Min.: 0 min, Max.: 255 min	Time elapsed with power switch ON (IG)
VEHICLE SPD-MAX	Maximum vehicle speed/ Min.: -256 km/h, Max.: 254 km/h	Maximum vehicle speed
A/C CONSMPT PWR	A/C consumption power/ Min.: 0 kW, Max.: 5 kW	A/C load
ENG STOP RQST	Engine stop request/ NO or YES	Presence of engine stop request
IDLING REQUEST	Engine idling request/ NO or YES	Presence of idle stop request
ENGINE FUEL CUT	Engine fuel cut request/ NO or YES	Presence of fuel cut request
HV BATT CH RQST	HV battery charging request/ NO or YES	Presence of HV battery charging request
ENG WARM UP RQT	Engine warming up request/ NO or YES	Presence of engine warm-up request
STOP SW COND	Stop lamp switch ON condition/ NO or YES	Brake pedal depressed or released
CRUISE CONTROL	Cruise control active condition/ NO or YES	Operation under cruise control ON or OFF
EXCLUSIVE INFO 1 to 7	Exclusive information (in form of numerical data)	Exclusive Information linked to Information
OCCURENCE ORDER	Occurrence sequence of information	Occurrence sequence of information
INVT TMP-MG1 IG	MG1 inverter temperature after power switch ON (IG)/ Min.: -50°C, Max.: 205°C	MG1 inverter temperature soon after power switch ON (IG)
INVT TMP-MG2 IG	MG2 inverter temperature after power switch ON (IG)/ Min.: -50°C, Max.: 205°C	MG2 inverter temperature soon after power switch ON (IG)
MG2 TEMP IG	MG2 temperature after power switch ON (IG)/ Min.: -50°C, Max.: 205°C	MG2 temperature soon after power switch ON (IG)
CONVRTR TEMP IG	Boost converter temperature after power switch ON (IG)/ Min.: -50°C, Max.: 205°C	Boost converter temperature soon after power switch ON (IG)
SOC IG	Battery state of charge after power switch ON (IG)/ Min.: 0 %, Max.: 100 %	Battery state of charge soon after power switch ON (IG)
INVT TMP-MG1MAX	MG1 inverter maximum temperature/ Min.: -50°C, Max.: 205°C	Overheating state of MG1 inverter
INVT TMP-MG2MAX	MG2 inverter maximum temperature/ Min.: -50°C, Max.: 205°C	Overheating state of MG2 inverter
MG2 TEMP MAX	MG2 maximum temperature/ Min.: -50°C, Max.: 205°C	Overheating state of MG2
CONVRTR TMP MAX	Boost converter maximum temperature/ Min.: -50°C, Max.: 205°C	Overheating state of boost converter

**DIAGNOSTICS - HYBRID CONTROL SYSTEM**

Hand-held Tester Display	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
SOC MAX	Maximum status of charge/ Min.: 0 %, Max.: 100 %	Over-charging of HV battery
SOC MIN	Minimum status of charge/ Min.: 0 %, Max.: 100 %	Over-discharging of HV battery