05IHB–01

INFORMATION/FREEZE FRAME DATA

1. FREEZE FRAME DATA

HINT:

The freeze frame data records the driving condition at the time of detection of a DTC. It is used for estimating or simulating the condition of the vehicle when malfunction occurred. To check the details of the hybrid vehicle control system, check the detailed information for the DTC (Information).

(a) Connect the intelligent tester II to the DLC3.
(b) Turn the power switch ON (IG).
(c) Turn the intelligent tester II ON.
(d) On the System Select screen, enter the following menus: Powertrain / Hybrid Control / DTC.
(e) Select a DTC in order to display its freeze frame data.
(f) Check the freeze frame data of the DTC that has been detected.
(g) Check information of the DTC (see next page).

Freeze frame data:

Intelligent Tester II Display (abbreviation)	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
Freeze Frame DTC (Freeze DTC)	DTC corresponding to displayed freeze frame data	—
Engine Coolant Temp (Coolant Temp)	Engine coolant temperature/ Min.: −40°C, Max.: 140°C	Cold or warm engine
Vehicle Spd (Vehicle Spd)	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Stopped, or driving (low, medium, and high speeds)
Engine Run Time (Eng Run Time)	Elapsed time after starting engine Min.: 0 s, Max.: 65,535 s	Elapsed time from engine start
+B (+B)	Auxiliary battery voltage/ Min.: 0 V, Max.: 65.535 V	Condition of auxiliary battery
Accel Pedal Pos #1 (Accel Pos #1)	Accelerator pedal position sensor No. 1/ Min.: 0 %, Max.: 100 %	Idling, accelerating, or decelerating
Accel Pedal Pos #2 (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 Temperature (Ambient Temp)	Ambient air temperature/ Min.: −40°C, Max.: 215°C	Ambient air temperature
Intake Air Temperature (Intake Air Temp)	Intake air temperature/ Min.: −40°C, Max.: 140°C	Ambient air temperature
DTC Clear Warm Up (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 Distance (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 (DTC Clear Min)	Elapsed time after clearing DTCs/ Min.: 0 min, Max.: 65,535 min	Frequency of the malfunction recurrence after clearing DTCs
Type of ECU (ECU Type)	Type of ECU	—
Detail Code 1 to 5 (Code 1 to 5)	Information code	—
Detail information 1 to 5 (Information 1 to 5)	Availability of detailed information	—

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.

(a) Select Detail Information beneath Detail Code which has an INF code.

(b) Press the ”Details” key.

(c) Check the information of the DTC.

Information:

Intelligent Tester II Display (abbreviation)	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
Information n (Information n)	Information code	Indication of system with malfunction
Generator (MG1) Rev (MG1 Rev)	MG1 revolution/ Min.: –16,384 rpm, Max.: 16,256 rpm	MG1 speed • Forward rotation appears as ”+” • Backward rotation appears as ”–”
Motor (MG2) Revolution (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 ”–”
Generator (MG1) Torq (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
Motor (MG2) Torq (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
Inverter Temp (MG1) (Invert Temp–MG1)	MG1 inverter temperature/ Min.: –50°C, Max.: 205°C	MG1 inverter temperature
Inverter Temp (MG2) (Invert Temp–MG2)	MG2 inverter temperature/ Min.: –50°C, Max.: 205°C	MG2 inverter temperature
Motor Temp MG2 (No2) (MG2 (No2) Temp)	Transaxle fluid temperature/ Min.: –50°C, Max.: 205°C	Transaxle fluid temperature
Motor Temp MG2 (No1) (MG2 (No1) Temp)	MG2 temperature/ Min.: –50°C, Max.: 205°C	MG2 temperature
Request Power (Power Rqst)	Request engine power/ Min.: 0 W, Max.: 255 kW	Engine power output requested to ECM
Engine Spd (Engine Spd)	Engine speed/ Min.: 0 rpm, Max.: 16,320 rpm	Engine speed
Master Cylinder Ctrl Trq (Mcyl Ctrl Power)	Master cylinder control torque/ Min.: –512 Nm, Max.: 508 Nm	Brake force requested by driver
SOC (SOC)	Battery state of charge/ Min.: 0 %, Max.: 100 %	State of charge of HV battery
WOUT Control Power (WOUT Ctrl Power)	Power value discharge control/ Min.: 0 W, Max.: 81,600 W	Discharge amount of HV battery
WIN Control Power (WIN Ctrl Power)	Power value charge control/ Min.: –40,800 W, Max.: 0 W	Charge amount of HV battery

Intelligent Tester II Display (abbreviation)	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
Drive Condition ID (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
Power Resource VB (Pwr Resource VB)	HV battery voltage/ Min.: 0 V, Max.: 510 V	HV battery voltage
Power Resource IB (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 Sensor Shift Pos (Shift Position)	Shift position (P, R, N, D or B position)	Shift position
Accel Sensor Main (Acc Sensor Main)	Accelerator pedal position sensor main/ Min.: 0 %, Max.: 100 %	Idling, accelerating, or decelerating
Auxiliary Batt Voltage (Aux. Batt V)	Auxiliary battery voltage/ Min.: 0 V, Max.: 20 V	State of auxiliary battery
Converter Temperature (Converter Temp)	Boost converter temperature/ Min.: –50°C, Max.: 205°C	Boost converter temperature
VL–Voltage before Raise (VL)	High voltage before it is boosted/ Min.: 0 V, Max.: 510 V	High voltage level before it is boosted
VH–Voltage after Raise (VH)	High voltage after it is boosted/ Min.: 0 V, Max.: 765 V	High voltage level after it is boosted
The Time of Ignition ON (IG ON Time)	The time after power switch ON (IG)/ Min.: 0 min, Max.: 255 min	Time elapsed with power switch ON (IG)
Vehicle Speed (Max) (Vehicle Spd–Max)	Maximum vehicle speed/ Min.: –256 km/h, Max.: 254 km/h	Maximum vehicle speed
A/C Power (A/C Consmpt Pwr)	A/C consumption power/ Min.: 0 kW, Max.: 5 kW	A/C load
Engine Stop Request (Eng Stop Rqst)	Engine stop request/ NO or YES	Presence of engine stop request
Engine Idling Request (Idling Request)	Engine idling request/ NO or YES	Presence of idle stop request
Engine Fuel Cut (Engine Fuel Cut)	Engine fuel cut request/ NO or YES	Presence of fuel cut request
Main Batt Charging Rqst (HV Batt Ch Rqst)	HV battery charging request/ NO or YES	Presence of HV battery charging request
Engine Warming Up Rqst (Eng Warm Up Rqt)	Engine warming up request/ NO or YES	Presence of engine warm–up request
Stop Switch (Stop SW Cond)	Stop lamp switch ON condition/ NO or YES	Brake pedal depressed or released
Cruise Control (Cruise Control)	Cruise control active condition/ NO or YES	Operation under cruise control ON or OFF
Exclusive Information 1 to 7 (Exclusive Info 1 to 7)	Exclusive information (in form of numerical data)	Exclusive Information linked to Information
Occurrence Order (Occurence Ordr)	Occurrence sequence of information	Occurrence sequence of information
Inv–T (MG1) aftr IG–ON (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)
Inv–T (MG2) aftr IG–ON (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)

Intelligent Tester II Display (abbreviation)	Measurement Item/Range (Display)	Suspected Vehicle Status When Malfunction Occurs
Mtr–T (MG2) aftr IG–ON (MG2 Temp IG)	MG2 temperature after power switch ON (IG)/ Min.: –50°C, Max.: 205°C	MG2 temperature soon after power switch ON (IG)
Conv–Tmp after IG–ON (Converter 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 after IG–ON (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)
Inv–Temp (MG1) MAX (Invt Tmp–MG1Max)	MG1 inverter maximum temperature/ Min.: –50°C, Max.: 205°C	Overheating state of MG1 inverter
Inv–Temp (MG2) Max (Invt Tmp–MG2Max)	MG2 inverter maximum temperature/ Min.: –50°C, Max.: 205°C	Overheating state of MG2 inverter
Mtr–Temp (MG2) Max (MG2 Temp Max)	MG2 maximum temperature/ Min.: –50°C, Max.: 205°C	Overheating state of MG2
Converter Temp Max (Convrtr Tmp Max)	Boost converter maximum temperature/ Min.: –50°C, Max.: 205°C	Overheating state of boost converter
Status of Charge Max (SOC Max)	Maximum status of charge/ Min.: 0 %, Max.: 100 %	Over–charging of HV battery
Status of Charge Min (SOC Min)	Minimum status of charge/ Min.: 0 %, Max.: 100 %	Over–discharging of HV battery