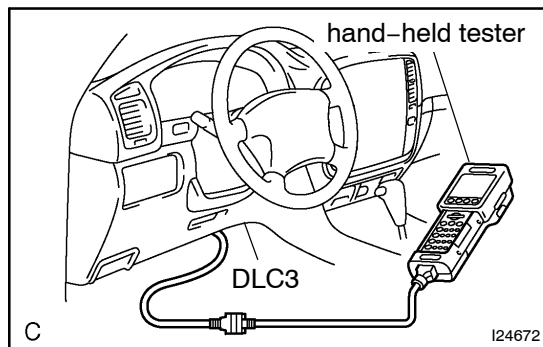




PRE-CHECK

1. DIAGNOSIS SYSTEM

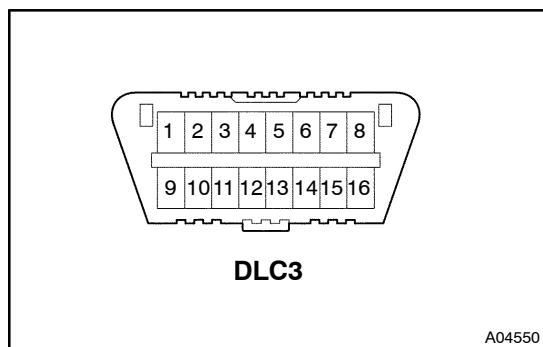
(a) Description

ECU data of this system can be read from DLC3 of the vehicle.

Therefore when there seems to be a trouble on this system, use hand-held tester to check and troubleshoot it.

(b) Check the DLC3.

The vehicle's ECM uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.



Terminal No.	Connection/Specified Condition	Condition
4	Chassis Ground ↔ Body Ground/1 or less	Always
13	TC ↔ Body Ground/9 – 14 V	Always

HINT:

If the display shows "UNABLE TO CONNECT TO VEHICLE" when the cable of the hand-held tester is connected to DLC3, the ignition switch is turned ON and the hand-held tester is operated, there is a problem either on the vehicle side or the tool side.

- If communication is normal when the tool is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication does not function when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

2. USING HAND-HELD TESTER

(a) Hook up the hand-held tester to the DLC3.

(b) Monitor the ECU data by following the prompts on the tester screen.

HINT:

Hand-held tester has a "Snapshot" function which records the monitored data.

Please refer to the hand-held tester operator's manual for further details.

3. DTC CLEAR

DTC and the freeze frame data can be erased by operating the hand-held tester.

4. DATA LIST

HINT:

By the DATA LIST displayed on the hand-held tester, you can read the value of the switch, sensor, actuator and so on without removing any parts. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

(a) Connect the hand-held tester to DLC3.

- (b) Turn the ignition switch ON.
 (c) According to the display on tester, read the "DATA LIST".
 (1) Body ECU (Main)

Power source & ignition switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ACC SW	ACC SW signal	ON: IG key is in ACC, ON or START position OFF: IG key is in OFF position	–
IG SW	IG SW signal	ON: IG key is in ON or START position OFF: IG key is in OFF or ACC position	–

Key unlock warning switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
KEY UNLOCK WRN SW	Key unlock warning SW signal	ON: Key is IG key cylinder OFF: Key is not in IG key cylinder	–

Door courtesy switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
LUGG COURTSY SW	Luggage compartment door's courtesy SW signal	ON: Luggage door is open OFF: Luggage door is closed	–
D DOR CTY SW	Driver's door courtesy SW signal	ON: Driver's door is open OFF: Driver's door is closed	–
P DOR CTY SW	Passenger's door courtesy SW signal	ON: Passenger's door is open OFF: Passenger's door is closed	–
Rr DOR CTY SW	Rear door courtesy SW signal	ON: Either right or left rear door is open OFF: Both the right and left doors are closed.	–

Headlight dimmer switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
DIMMER SW	Dimmer SW signal	ON: Dimmer SW is on (High Beam) or High flasher SW is on OFF: Dimmer SW is OFF (Low Beam) and High flasher SW is off	–
HIGH FLASHER SW	High flasher SW signal	ON: High flasher SW is on OFF: High flasher SW is off	–

Light control switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
AUTO LIGHT SW	Auto light SW signal	ON: Light control SW is in Auto position OFF: Light control SW is in except Auto position	–
HEAD LIGHT SW	Head light SW signal	ON: Light control SW is in HEAD position OFF: Light control SW is in except HEAD position	–
TAIL LIGHT SW	Taillight SW signal/ON	ON: Light control SW is in TAIL or HEAD position OFF: Light control SW is in OFF or AUTO position	–
TAIL CANCEL SW	Tail cancel switch	ON: Tail cancel switch is ON position OFF: Tail cancel switch is OFF position	–

Door key lock and unlock switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
DOR KEY SW-LOCK	Passenger or back Door key switch lock side	ON: Passenger or back door key switch is lock position OFF: Passenger or back door key switch is unlock position	–
P DOR KEY SW-UL	Passenger or back door key switch unlock side	ON: Passenger or back door key switch is unlock position OFF: Passenger or back door key switch is lock position	–
P LOCK POS SW	Passenger lock posi- tion switch	ON: Passenger lock position switch is lock position OFF: Passenger lock position switch is unlock position	–
Rr. LOCK POS SW	Rear lock position switch	ON: Rear lock position switch is lock position OFF: Rear lock position switch is unlock position	–
D/L SW-LOCK	Door lock switch lock side	ON: Door lock switch is lock position OFF: Door lock switch is unlock position	–
D/L SW-UNLOCK	Door lock switch un- lock side	ON: Door lock switch is unlock position OFF: Door lock switch is lock position	–

Parking brake switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
PARKING BRAKE SW	Parking brake switch	ON: Parking brake switch is ON position OFF: Parking brake switch is OFF position	–

Driver seat buckle switch :

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
D SEAT BUCKL SW	Driver seat buckle switch	ON: Driver seat buckle switch is ON position OFF: Driver seat buckle switch is OFF position	–

Seat memory switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
SEAT M1 SW	Seat memory switch 1	ON: Seat memory switch 1 is ON position OFF: Seat memory switch 1 is OFF position	–
SEAT M2 SW	Seat memory switch 2	ON: Seat memory switch 2 is ON position OFF: Seat memory switch 2 is OFF position	–
SEAT SET SW	Seat set switch	ON: Seat set switch is ON position OFF: Seat set switch is OFF position	–

DRL relay circuit:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
DRL FUNCTION	DRL function	ON: DRL is ON position OFF: DRL is OFF position	–

Door lock control:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
AUTO LOCK	Vehicle speed sensing auto lock function	ON: Vehicle speed sensing auto lock is ON OFF: Vehicle speed sensing auto lock is OFF	–
UNLK/KEY TWICE	Unlock w/ 2 times D key operation	ON: Unlock w/ 2 times D key operation is ON position OFF: Unlock w/ 2 times D key operation is OFF position	–
ALL UNLK/OPN-CL	All Unlock w/ D door open-close	ON: All Unlock w/ D door open-close is ON position OFF: All Unlock w/ D door open-close is OFF position	–

DIAGNOSTICS – BODY CONTROL SYSTEM

UNLOCK/PARK	Unlock w/ IG ON, shift P, speed 0	ON: Unlock w/ IG ON, shift P, speed is ON position OFF: Unlock w/ IG ON, shift P, speed is OFF position	–
AUTO LOCK/SHIFT	Auto Lock/shift not P	ON: Auto Lock/shift not P is ON position OFF: Auto Lock/shift not P is OFF position	–

Wireless door lock control:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
WIRELESS OPER	Wireless door lock control function	ON: Wireless door lock control function OFF: Wireless door lock control does not function	–
HAZARD ANS BACK	Hazard answer back of the wireless	ON: Hazard answer back of the wireless is ON position OFF: Hazard answer back of the wireless is OFF position	–

Wireless door lock buzzer:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
WIRELESS BUZZ VOL	Wireless door lock buzzer volume	OFF/MIN/MID3/MID2/MID1/MAX	–
DOWN/WIRELESS	P/W DOWN W/ transmitter	ON: P/W DOWN W/ transmitter ON position OFF: P/W DOWN W/ transmitter OFF position	–
AUTO LOCK DELAY	Auto lock time	30 s./60 s.	–
UNLOCK/2 OPER	2 times operation wireless unlock	ON: 2 times operation wireless unlock is ON position OFF: 2 times operation wireless unlock is OFF position	–
ALARM FUNCTION	Panic function	ON: Panic function is ON position OFF: Panic function is OFF position	–
OPEN DOOR WARN	Open door warning buzzer	ON: Open door warning buzzer is ON OFF: Open door warning buzzer is OFF	–

Light control sensor:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ILLUMINATE RATE	Illumination rate information	–	–

Illumination:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
LIGHTING TIME	Lighting time	7.5 s./15 s./30 s.	–
ILLUMI SYSTEM	Operation of illumination system	ON: Illumination is ON position OFF: Illumination is OFF position	–
LIGHT CONTROL	Light control condition of illumination system	ON: Illumination system is ON OFF: Illumination system is OFF	–
I/L ON/ACC OFF	Light the I/L when ACC OFF	ON: Light the I/L when ACC OFF is ON position OFF: Light the I/L when ACC OFF is OFF position	–
I/L ON/UNLOCK	Interior light ON w/unlock	ON: Interior light ON w/unlock is ON position OFF: Interior light ON w/unlock is OFF position	–
RESPONSE TIME	Response time	0.1 s./1.0 s.	–

Park / Neutral position switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P/N POS SW	P/N position switch	ON: Shift is P position OFF: Shift is except P position	–

Alternator signal:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
ALT L SIG	Alternator L terminal	ON: Input voltage is 2.0 or 6.0 V OFF: No voltage	–

Others:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
SENSITIVITY	Turn on luminous intensity	DARK2/DARK1/NORMAL/LIGHT1/LIGHT2	–
LIGHT OFF DELAY	Light auto OFF delay	OFF/30 s./60 s./90 s.	–
DISP EX ON SEN	Display extinction luminous intensity	DARK2/DARK1/NORMAL/LIGHT1/LIGHT2	–
DISP EX OFF SEN	Display extinction release luminous intensity	DARK2/DARK1/NORMAL/LIGHT1/LIGHT2	–

(2) Body ECU (Sub)

Power source & ignition switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
IG SW	IG SW signal	ON: IG key is in ON or START position OFF: IG key is in OFF or ACC position	–

Park / Neutral position switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
P/N POS SW	P/N position switch	ON: Shift is R position OFF: Shift is except R position	–

Wiper switch:

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
WIPER SW (SM)	S/M terminal (front wiper position) of wiper switch	ON: Front wiper is except stop position OFF: Front wiper is stop position	–
R-LINKED WIPER	Reverse linked wiper function	ON: Front wiper switch ON and shift lever R OFF: –	–

5. ACTIVE TEST**HINT:**

Performing the ACTIVE TEST using the hand-held tester allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

- (a) Connect the hand-held tester to the DLC3.
- (b) Turn the ignition switch ON.
- (c) According to the display on tester, perform the "ACTIVE TEST".
 - (1) Body ECU (Main)

Item	Test Details	Diagnostic Note
HAZARD	Turns Hazard light flasher relay ON/OFF	–
BUZZ CONT SOUND	Wireless buzzer ON/OFF	–
BUZZ RESP SOUND	Wireless buzzer ON/OFF	–
HEAD LIGHT	Turns Head light relay ON/OFF	–
HEAD LIGHT (HI)	Turns Head light relay ON/OFF	–
TAIL LIGHT	Turns Tail light relay ON/OFF	–

DIAGNOSTICS – BODY CONTROL SYSTEM

DRL RLY	(Test Details) Turns DRL relay ON/OFF (Vehicle Condition) IG SW is ON, Engine is stopped and Light control SW is in OFF position.	–
DIMMER SIG	Turns auto dimmer ON/OFF	–
ILLUMI OUTPUT	(Test Details) Turns Interior light and Key illumination ON/OFF (Vehicle Condition) Interior light SW is in Door position	–
OPN DOR WRN LGT	Open door warning light ON/OFF	–
P P/W UP/DOWN	Passenger power window UP/DOWN	–
RL P/W UP/DOWN	RL power window UP/DOWN	–
RR P/W UP/DOWN	RR power window UP/DOWN	–
R ROOM LIGHT	Rear room light ON/OFF	–
DOOM RLY CUT	Doom light ON/OFF	–
DOOR LOCK	Drive the Door lock motor at all doors LOCK/UN-LOCK	–

(2) Body ECU (Sub)

Item	Test Details	Diagnostic Note
CONSOLE LIGHT	Center console light ON/OFF	–
STEP LIGHT	Side step light and outer foot light ON/OFF	IG = NO key and all doors are locked
R WIPER MOT	Rear wiper motor ON/OFF	–
SCUFF PLATE LEG	Foot light and inside door handle illumination ON/OFF	–