

SECTION **BCS**

BODY CONTROL SYSTEM

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DTC INDEX

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SERVICE INFORMATION

DTC INDEX

U1000-U1010

INFOID:000000004159522

DTC	Items (CONSULT screen terms)	Reference
U1000	CAN COMM CIRCUIT	BCS-13, "U1000 CAN COMM CIRCUIT"
U1010	CONTROL UNIT (CAN)	BCS-13, "U1010 CONTROL UNIT (CAN)"

B2192-B2194

INFOID:000000004159523

DTC	Items (CONSULT screen terms)	Reference
B2192	ID DISCORD BCM-ECM	BL-245, "B2192 ID DISCORD, BCM-ECM"
B2193	CHAIN OF BCM-ECM	BL-244, "B2193 CHAIN OF BCM-ECM"
B2194	DISCORD BCM-I-KEY	BL-245, "B2590 DISCORD BCM-I-KEY" ^{NOTE}

NOTE:

B2194 has the same meaning as B2590 (Intelligent Key unit).

PRECAUTIONS

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PRECAUTIONS

Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:000000005213745

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SUPPLEMENTAL RESTRAINT SYSTEM" and "SEAT BELTS" of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the "SUPPLEMENTAL RESTRAINT SYSTEM".
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

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BCM (BODY CONTROL MODULE)

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BCM (BODY CONTROL MODULE)

System Description

INFOID:000000004159525

BCM (Body Control Module) controls the operation of various electrical units installed on the vehicle.

BCM FUNCTION

BCM has combination switch reading function for reading the operation of combination switches (light, wiper, washer, turn signal) in addition to a function for controlling the operation of various electrical components. Also it has an interface function allowing it to receive signals from the combination meter, and send signals to ECM using CAN communication.

CAN COMMUNICATION CONTROL

CAN communication allows a high rate of information transmission through the two communication lines (CAN L line, CAN H line) connecting the various control units in the system. Each control unit transmits/receives data but selectively reads required data only. For details of signals that are transmitted/received by BCM via CAN communication, refer to [LAN-29, "CAN System Specification Chart"](#).

BCM STATUS CONTROL

BCM changes its status depending on the operation status in order to save power consumption.

1. CAN communication status
 - With ignition switch ON, CAN communicates with other control units normally.
 - Control by BCM is being operated properly.
 - When ignition switch is OFF, switching to sleep mode is possible.
 - Even when ignition switch is OFF, if CAN communication with IPDM E/R and combination meter is active, CAN communication status is active.
2. Sleep transient status
 - This status shuts down CAN communication when ignition switch is turned OFF.
 - It transmits sleep request signal to IPDM E/R and combination meter.
 - Two seconds after CAN communication of all control units stops, sleep transient status is switches to CAN communication inactive status.
3. CAN communication inactive status
 - With ignition switch OFF, CAN communication is not active.
 - With ignition switch OFF, control performed only by BCM is active.
 - Three seconds after CAN communication of all control units stops, CAN communication inactive status is switches to sleep status.
4. Sleep status
 - BCM is activated with low power mode.
 - CAN communication is not active.
 - When CAN communication operation is detected, it switches to CAN communication status.
 - When a state of the following switches changes, it switches to CAN communication status.
 - Key switch (ACC, ON)
 - Key slot
 - Intelligent Key (lock/unlock signal)
 - Hazard switch
 - Door lock/unlock switch
 - Front door switch (driver side, passenger side)
 - Rear door switch (LH, RH)
 - Trunk lid opener switch
 - Combination switch (passing, lighting switch 1ST position, front fog lamp)
 - Key cylinder switch
 - When control performed only by BCM is required by switch, it shifts to CAN communication inactive mode.
 - Status of combination switch reading function is changed.

SYSTEMS CONTROLLED BY BCM DIRECTLY

System	Reference
Power door lock	BL-24
Power window ^{NOTE}	GW-14

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System	Reference
Sunroof ^{NOTE}	RF-10
Automatic drive positioner ^{NOTE}	SE-14
Room lamp timer	LT-202

NOTE:

Power supply only. No system control.

SYSTEMS CONTROLLED BY BCM AND IPDM E/R

System	Reference
Panic alarm	BL-197
Theft warning system	BL-197
IVIS (NATS)	BL-220
Headlamp	<ul style="list-style-type: none"> • LT-6 (For USA) • LT-35 (For Canada)
Auto light system	LT-65
Parking, license plate and tail lamps	LT-183
Front fog lamp	LT-135
Front wiper and washer system	WW-3
Rear window defogger	GW-64

SYSTEMS CONTROLLED BY BCM AND COMBINATION METER

System	Reference
Turn signal and hazard warning lamps	LT-152
Warning chime	DI-56

SYSTEMS CONTROLLED BY BCM AND INTELLIGENT KEY UNIT

System	Reference
Intelligent Key	BL-42

SYSTEMS CONTROLLED BY BCM, COMBINATION METER AND IPDM E/R

System	Reference
Oil pressure warning lamp	DI-35

SYSTEMS CONTROLLED BY BCM, LOW TIRE PRESSURE WARNING CONTROL UNIT AND COMBINATION METER

System	Reference
Low tire pressure warning lamp and buzzer	WT-11

MAJOR COMPONENTS AND CONTROL SYSTEM

BCM (BODY CONTROL MODULE)

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System	Input	Output
Intelligent Key system	<ul style="list-style-type: none"> • Intelligent Key unit • Door switch • Key slot 	<ul style="list-style-type: none"> • All door locking actuator • Trunk lid opener actuator • Turn signal lamp (LH, RH) • Combination meter
Power door lock system	<ul style="list-style-type: none"> • Power window main switch (door lock and unlock switch) • Power window sub switch (passenger side) (door lock and unlock switch) • Key cylinder switch • Each door switch • Key slot • combination meter • TCM 	All-door locking actuator
Power supply (IGN) to power window, sunroof	Ignition power supply	Power window and sunroof system
Power supply (BAT) to power window, sunroof and power seat	Battery power supply	Power window, sunroof system and power seat
Panic alarm	<ul style="list-style-type: none"> • Key slot • Intelligent Key unit 	IPDM E/R
Theft warning system	<ul style="list-style-type: none"> • All-door switch • Hood switch • Intelligent Key unit • Power window main switch (door lock and unlock switch) 	<ul style="list-style-type: none"> • IPDM E/R • Security indicator lamp
Auto light system	<ul style="list-style-type: none"> • Optical sensor • Combination switch 	IPDM E/R
Exterior lamp battery saver control	<ul style="list-style-type: none"> • Ignition switch • Combination switch 	IPDM E/R
<ul style="list-style-type: none"> • Headlamp • Parking, license plate and tail lamp 	Combination switch	<ul style="list-style-type: none"> • IPDM E/R • Combination meter
Front fog lamp	Combination switch	<ul style="list-style-type: none"> • IPDM E/R • Combination meter
Turn signal lamp	<ul style="list-style-type: none"> • Ignition switch • Combination switch 	<ul style="list-style-type: none"> • Turn signal lamp • Combination meter
Hazard lamp	Hazard switch	<ul style="list-style-type: none"> • Turn signal lamp • Combination meter
Interior room lamp timer	<ul style="list-style-type: none"> • Key slot • Ignition switch • Power window main switch (door lock and unlock switch) • Front door switch driver side • All-door switch 	Interior room lamp
Key warning chime*	<ul style="list-style-type: none"> • Key slot • Front door switch driver side 	Combination meter (Warning buzzer)
Light warning chime	<ul style="list-style-type: none"> • Combination switch • Front door switch driver side 	Combination meter (Warning buzzer)
Tire pressure monitoring system	Low tire pressure warning control unit	Combination meter (Warning buzzer) (Warning lamp)
Seat belt warning chime	<ul style="list-style-type: none"> • Combination meter [Seat belt buckle (driver side) switch] • Ignition switch 	Combination meter (Warning buzzer)

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System	Input	Output
Front wiper and washer system	<ul style="list-style-type: none"> Ignition switch Combination switch IPDM E/R Unified meter and A/C amp. Rain sensor 	IPDM E/R
Rear window defogger	<ul style="list-style-type: none"> Ignition switch Multifunction switch AV control unit 	IPDM E/R

NOTE:

*: Functions only when the Intelligent Key is inserted in key slot.

Combination Switch Reading Function

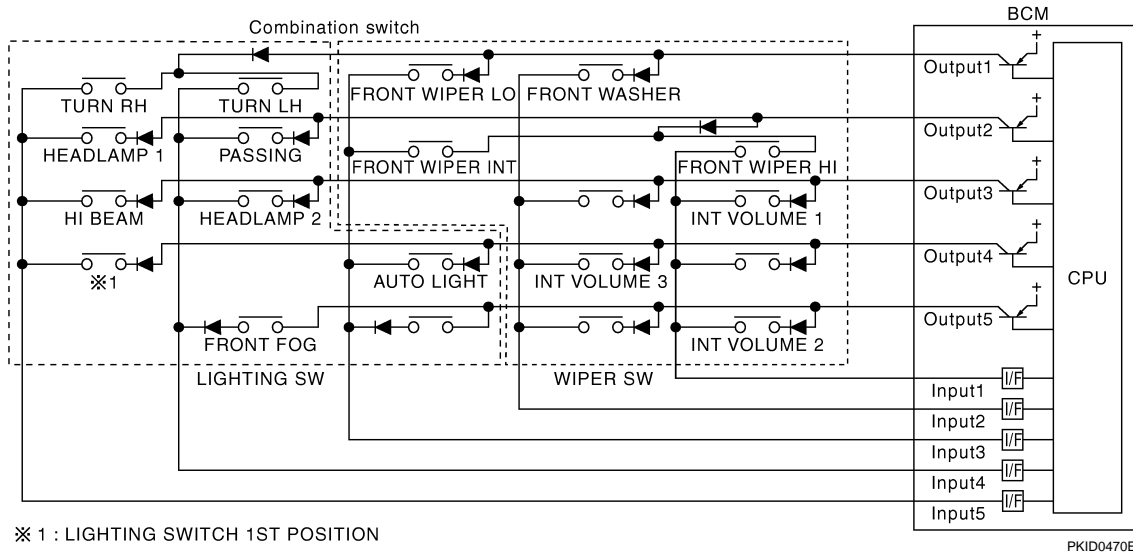
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OUTLINE

- BCM reads combination switch (lighting switch, wiper switch) status, and controls various electrical component according to the result.
- BCM reads information of a maximum of 20 switches by combining five output terminals (OUTPUT 1-5) and five input terminals (INPUT 1-5).

OPERATION DESCRIPTION

- BCM activates transistors of output terminals (OUTPUT 1-5) periodically, and allows current to flow in turn.
- If any (1 or more) switches are turned ON, circuit of output terminals (OUTPUT 1-5) and input terminals (INPUT 1-5) becomes active.
- At this time, transistors of output terminals (OUTPUT 1-5) are activated to allow current to flow. When voltage of input terminals (INPUT 1-5) corresponding to that switch changes, interface in BCM detects voltage change, and BCM determines that switch is ON.



OPERATION TABLE OF BCM AND COMBINATION SWITCHES

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BCM reads operation status of combination switch using combinations shown in table below.

	COMB SW OUTPUT 1		COMB SW OUTPUT 2		COMB SW OUTPUT 3		COMB SW OUTPUT 4		COMB SW OUTPUT 5	
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
COMB SW INPUT 1	—	—	FRONT WIPER HI ON	FRONT WIPER HI OFF	INT VOLUME 1 ON	INT VOLUME 1 OFF	—	—	INT VOLUME 2 ON	INT VOLUME 2 OFF
COMB SW INPUT 2	FRONT WASHER ON	FRONT WASHER OFF	—	—	—	—	INT VOLUME 3 ON	INT VOLUME 3 OFF	—	—
COMB SW INPUT 3	FRONT WIPER LO ON	FRONT WIPER LO OFF	FRONT WIPER INT ON	FRONT WIPER INT OFF	—	—	AUTO LIGHT ON	AUTO LIGHT OFF	—	—
COMB SW INPUT 4	TURN LH ON	TURN LH OFF	PASSING ON	PASSING OFF	HEAD-LAMP 2 ON	HEAD-LAMP 2 OFF	—	—	FRONT FOG ON	FRONT FOG OFF
COMB SW INPUT 5	TURN RH ON	TURN RH OFF	HEAD-LAMP 1 ON	HEAD-LAMP 1 OFF	HI BEAM ON	HI BEAM OFF	LIGHTING SW (1ST) ON	LIGHTING SW (1ST) OFF	—	—

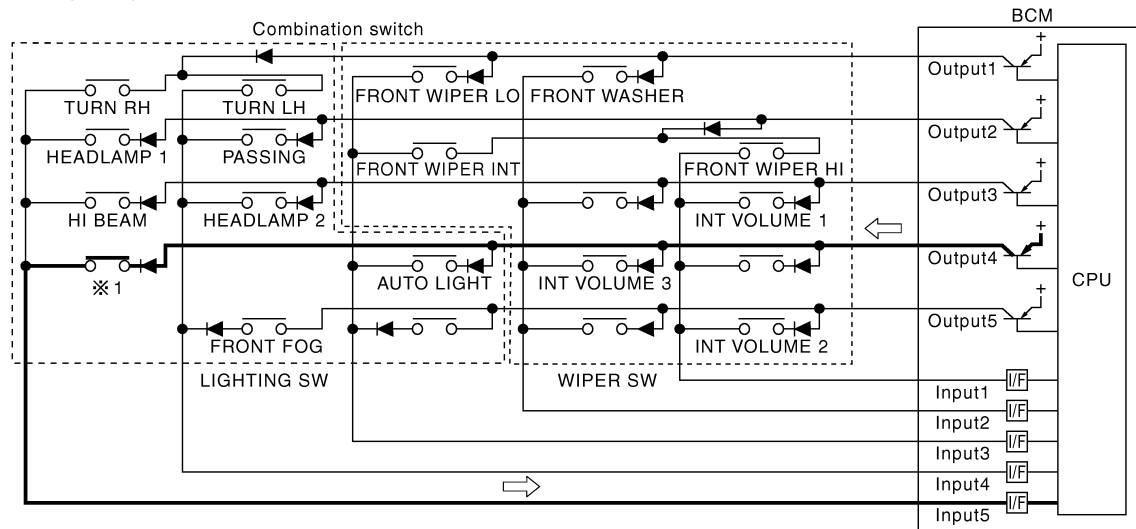
PKIC0276E

NOTE:

Headlamp system has a dual switch.

SAMPLE OPERATION

- When lighting switch 1ST position is turned ON, contact in combination switch turns ON. At this time if OUTPUT 4 transistor is activated, BCM detects that voltage changes in INPUT 5.
- When OUTPUT 4 transistor is ON, BCM detects that voltage changes in INPUT 5, and judges that lighting switch 1ST position is ON. Then BCM sends tail lamp and clearance lamp request signal to IPDM E/R using CAN communication.
- When OUTPUT 4 transistor is activated again, BCM detects that voltage changes in INPUT 5, and recognizes that lighting switch 1ST position is continuously ON.



※ 1 : LIGHTING SWITCH 1ST POSITION

PKID0471E

NOTE:

Each OUTPUT terminal transistor is activated at 10 ms intervals. Therefore after switch is turned ON, electrical loads are activated with time delay. But this time delay is so short that it cannot be detected by human senses.

OPERATION MODE

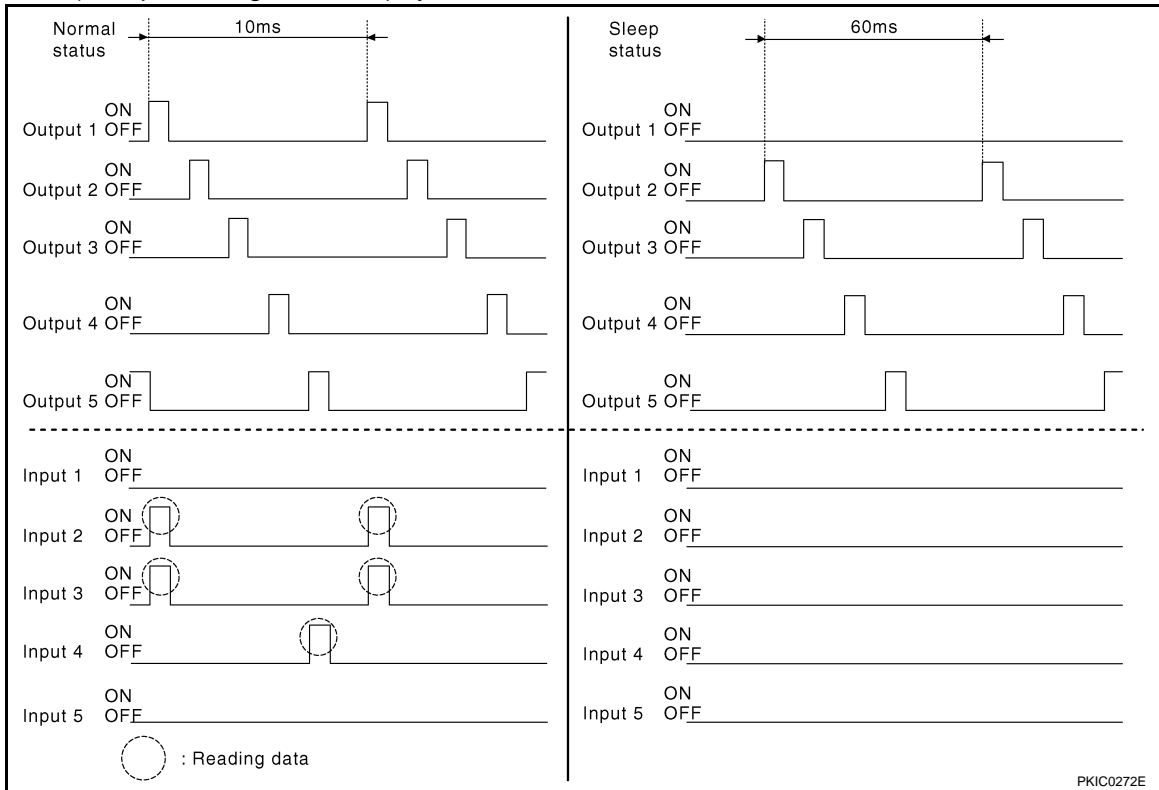
Combination switch reading function has operation modes shown below.

1. Normal status
 - When BCM is not in sleep status, OUTPUT terminals (1-5) send out ON signal every 10 ms.
2. Sleep status

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- When BCM is in sleep status, transistors of OUTPUT 1 stop the output, and BCM enters low power mode. Mean while OUTPUT 2-5 send out ON signal every 60 ms, and accept only input from lighting switch (except turn signal switch) system.



WIPER DIAL POSITION SETTING

Front wiper intermittent operation delay interval is determined from a combination of 3 switches (intermittent operation dial position 1, 2, and 3) and vehicle speed signal.

After each intermittent operation delay interval, BCM sends front wiper request signal to IPDM E/R.

Wiper dial position	Intermittent operation interval	Combination switch		
		Intermittent operation dial position 1	Intermittent operation dial position 2	Intermittent operation dial position 3
1	Short	ON	ON	ON
2		ON	ON	OFF
3		ON	OFF	OFF
4	Long	OFF	OFF	OFF
5		OFF	OFF	ON
6		OFF	ON	ON
7		OFF	ON	OFF

Example: For wiper dial position 1

Using combination switch reading function, BCM detects ON/OFF status of intermittent operation dial positions 1, 2, and 3.

When combination switch status is as listed below, BCM determines that it is wiper dial position 1.

- Intermittent operation dial position 1: ON (Continuity exists between combination switch output 3 and input 1.)
- Intermittent operation dial position 2: ON (Continuity exists between combination switch output 5 and input 1.)
- Intermittent operation dial position 3: ON (Continuity exists between combination switch output 4 and input 2.)

BCM determines front wiper intermittent operation delay interval from wiper dial position and vehicle speed, and sends wiper request signal (INT) to IPDM E/R.

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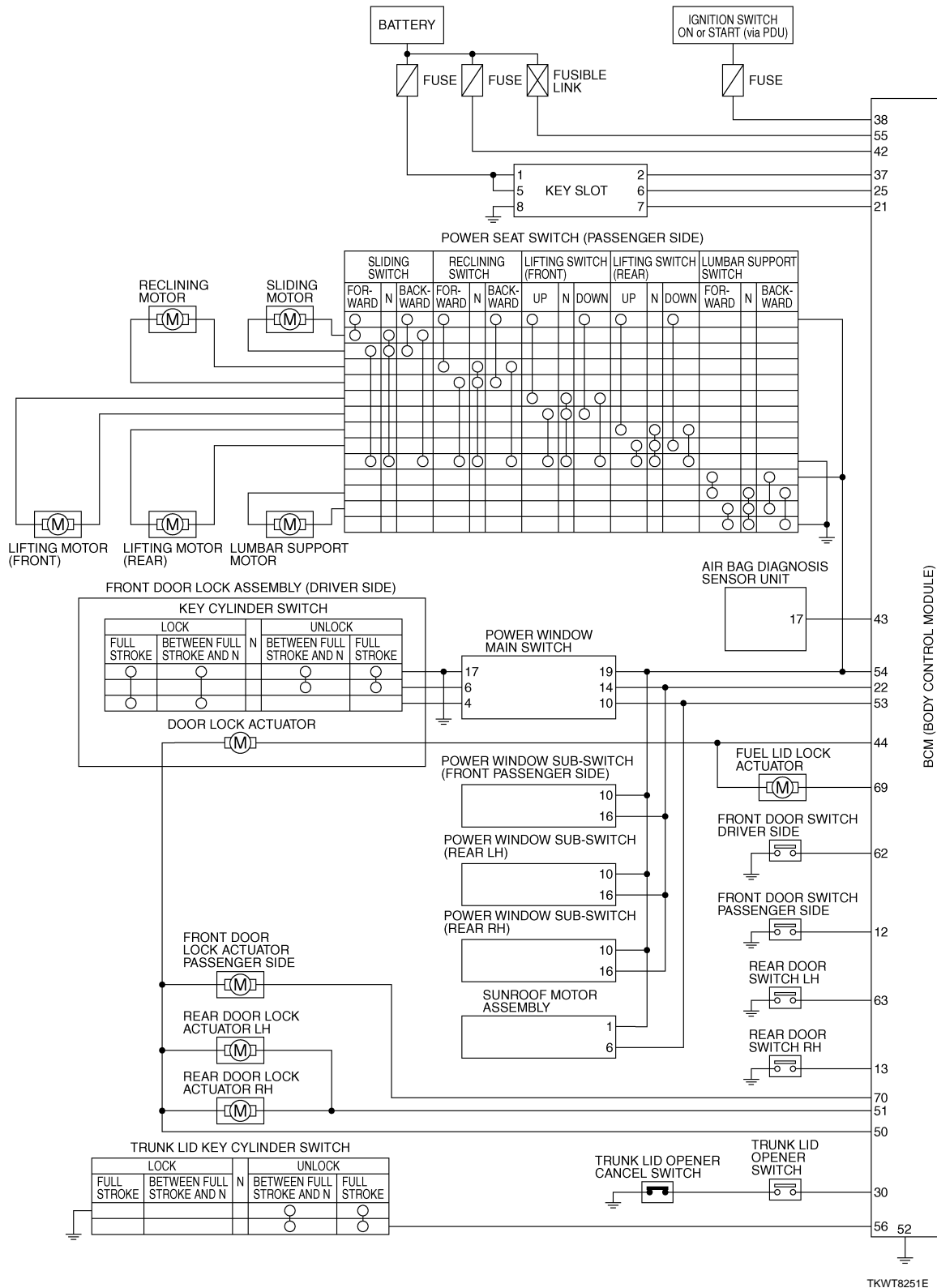
CAN Communication Unit

INFOID:000000004159528

Refer to [LAN-29. "CAN System Specification Chart"](#).

Schematic

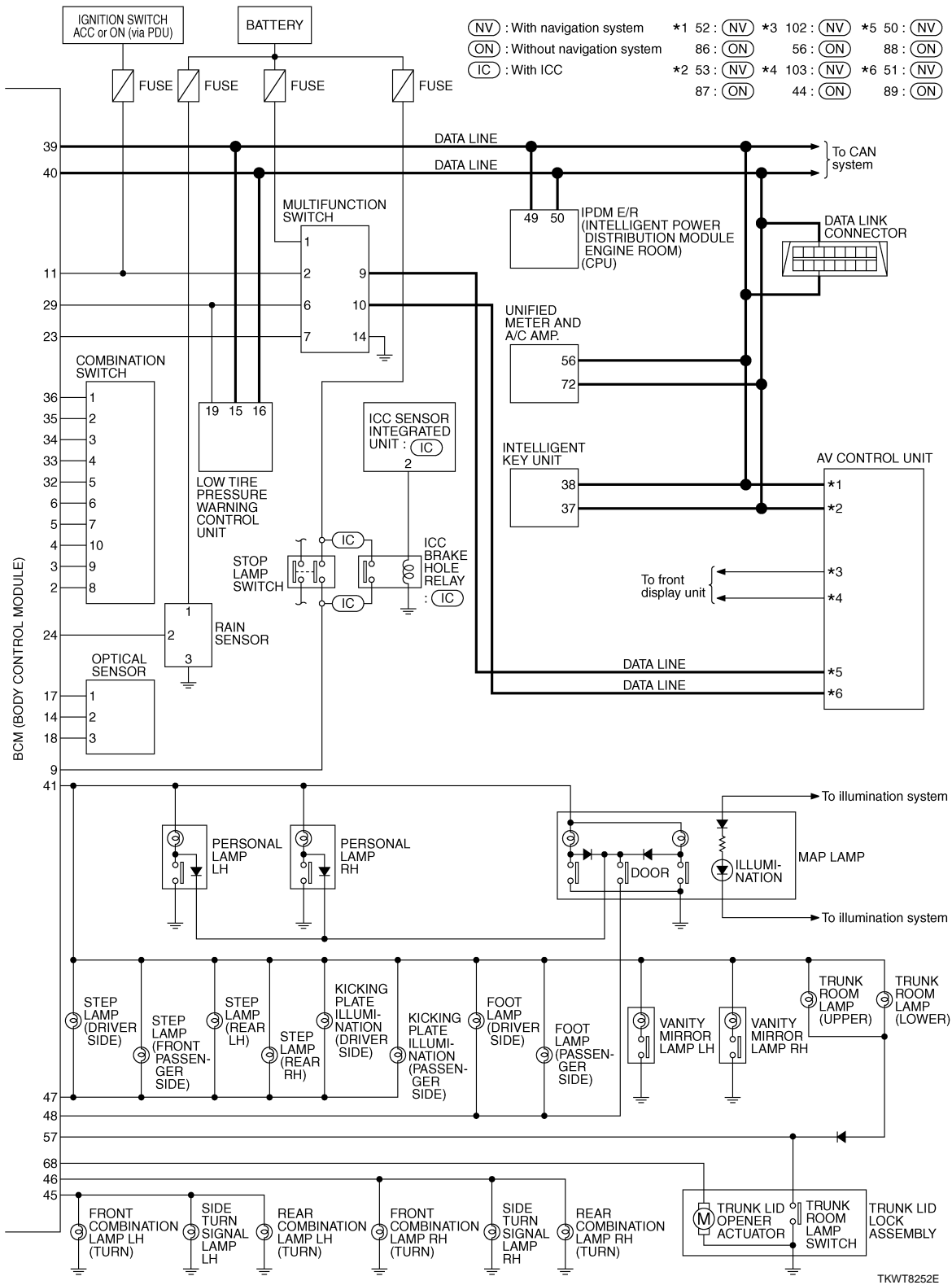
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CONSULT-III Function (BCM)

INFOID:000000004159529

CONSULT-III can display each diagnostic item using the diagnostic test modes shown following.

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BCM diagnostic test item	Check item, diagnostic test mode	Content
Inspection by part	Work Support	Changes setting of each function.
	Self- Diagnostic Result	BCM performs self-diagnosis of CAN communication.
	Data Monitor	Displays the input data of BCM in real time.
	Can Diag Support Monitor	The result of transmit/receive diagnosis of CAN communication can be read.
	Active Test	Gives a drive signal to a load to check the operation.
	Ecu Identification	BCM part number can be read.

ITEMS OF EACH PART

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection item.

×: Applicable

System and item	CONSULT-III display	Diagnostic test mode (Inspection by part)		
		Work Support	Data Monitor	Active Test
BCM	BCM	×		
Power door lock system	DOOR LOCK		×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Room lamp timer	INT LAMP	×	×	×
Headlamp	HEAD LAMP	×	×	×
Wiper	WIPER	×	×	×
Turn signal lamp Hazard lamp	FLASHER		×	×
Intelligent Key system	INTELLIGENT KEY		×	×
Combination switch	COMB SW		×	
IVIS	IMMU		×	×
Room lamp battery saver	BATTERY SAVER	×	×	×
Trunk lid	TRUNK		×	×
Vehicle security system	THEFT ALM	×	×	×
Retained power control	RETAINED PWR	×	×	
Oil pressure switch	SIGNAL BUFFER		×	×
Panic system	PANIC ALARM			×

WORK SUPPORT

Item	Description
RESET SETTING VALUE	Return a value set with Work Support of each system to a default value in factory shipment.

SELF-DIAGNOSTIC RESULT

DTC	DTC Detection Condition	Possible cause
U1000: CAN COMM CIRCUIT	When BCM cannot communicate CAN communication signal continuously for 2 seconds or more.	CAN communication system
U1010: CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of BCM.	BCM

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U1000 CAN COMM CIRCUIT

INFOID:000000004159530

1. PERFORM SELF DIAGNOSTIC

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check "Self Diagnostic Result" of BCM.

Is "U1000: CAN COMM CIRCUIT" displayed?

- YES >> Refer to [LAN-20, "Trouble Diagnosis Flow Chart"](#).
 NO >> Refer to [GI-26, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

U1010 CONTROL UNIT (CAN)

INFOID:000000004159531

1. REPLACE BCM

When DTC "U1010: CONTROL UNIT (CAN)" is detected, replace BCM.

>> Replace BCM. Refer to [BCS-14, "Removal and Installation of BCM"](#).

Check BCM Power Supply and Ground Circuit

INFOID:000000004159532

1. CHECK FUSES AND FUSIBLE LINK

Check for blown fuses and fusible link.

Unit	Power source	Fuse and fusible link No.
BCM	Battery	F
		21
	Ignition switch ON or START position	1
	Ignition switch ACC or ON position	6

Refer to [LT-186, "Wiring Diagram - TAIL/L -"](#).

OK or NG

- OK >> GO TO 2.
 NG >> If fuse or fusible link is blown, be sure to eliminate cause of malfunction before installing new fuse or fusible link. Refer to [PG-4](#).

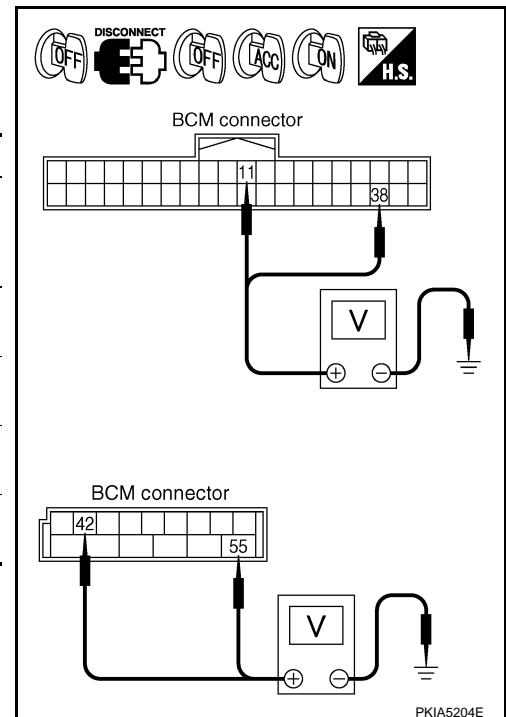
2. CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check voltage between BCM harness connector and ground.

Terminal (+)		Terminal (-)	Ignition switch position		
BCM connector	Terminal		OFF	ACC	ON
M1	11	Ground	Approx. 0 V	Battery voltage	Battery voltage
	38		Approx. 0 V	Approx. 0 V	Battery voltage
M2	42		Battery voltage	Battery voltage	Battery voltage
	55		Battery voltage	Battery voltage	Battery voltage

OK or NG

- OK >> GO TO 3.
 NG >> Repair harness or connector.



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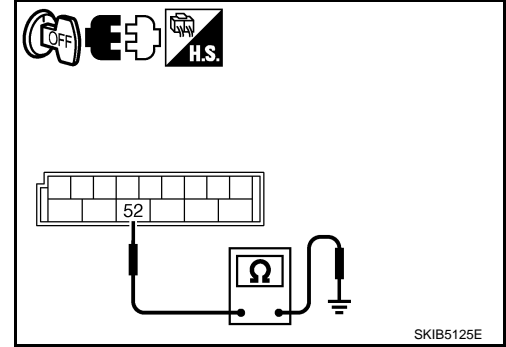
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

Terminal		Ground	Continuity
BCM connector	Terminal		Yes
M2	52		

OK or NG

- OK >> INSPECTION END
- NG >> Repair harness or connector.

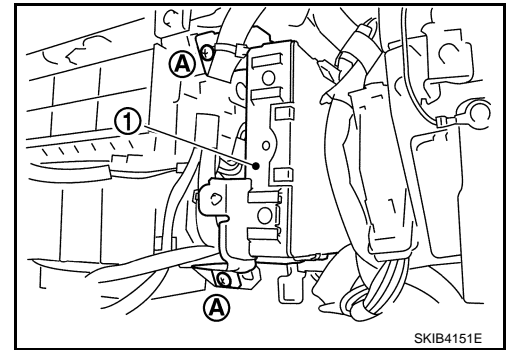


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Removal and Installation of BCM

REMOVAL

1. Remove glove box cover. Refer to [JP-12](#).
2. Remove screws (A), and pull out the BCM (1).
3. Disconnect connector.
4. Remove BCM (1).



INSTALLATION

Installation is the reverse order of removal.

NOTE:

When replacing BCM perform initialization of NATS system and registration of all NATS ignition key IDs.