

# SECTION **BCS**

## BODY CONTROL SYSTEM

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**BCS**

# PRECAUTIONS

## PRECAUTIONS

PFP:00001

### Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

AKS008YT

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 SRS and SB section 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 SRS section.
- 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 for Battery Service

AKS003RC

Before disconnecting the battery, lower both the driver and passenger windows. This will prevent any interference between the window edge and the vehicle when the door is opened/closed. During normal operation, the window slightly raises and lowers automatically to prevent any window to vehicle interference. The automatic window function will not work with the battery disconnected.

# BCM (BODY CONTROL MODULE)

PFP:284B2

## BCM (BODY CONTROL MODULE)

### System Description

AKS000Z3

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

### BCM FUNCTION

BCM has a combination switch reading function for reading the operation of combination switches (light, wiper washer, turn signal) in addition to the function for controlling the operation of various electrical components. Also, it functions as an interface that receives signals from the A/C auto amplifier, and sends signals to ECM using CAN communication.

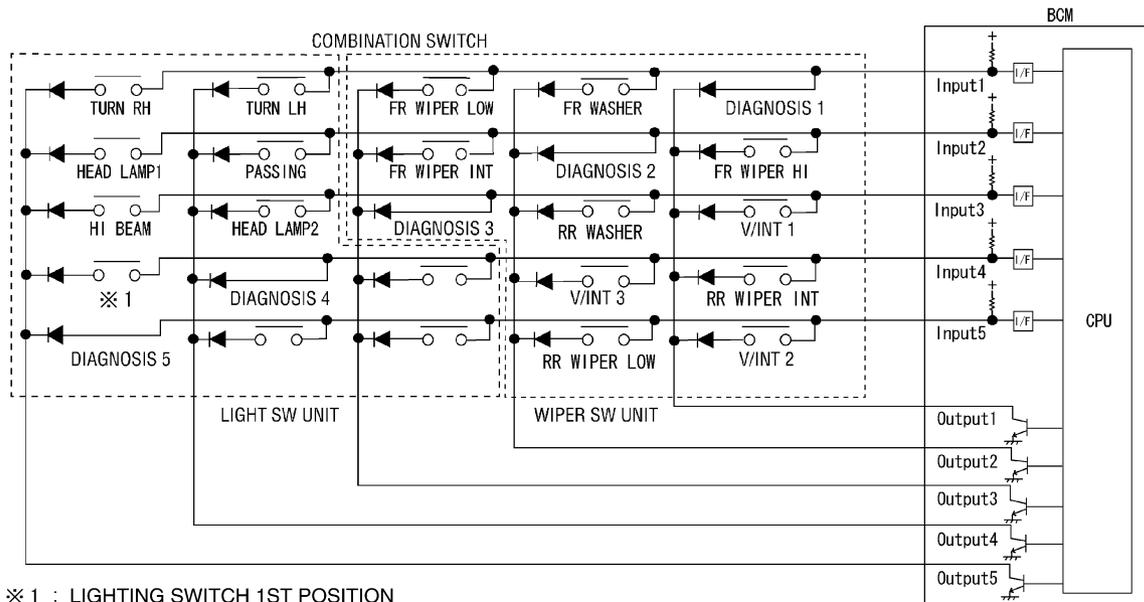
### COMBINATION SWITCH READING FUNCTION

#### 1. Description

- BCM reads combination switch (light, wiper washer, turn signal) status, and controls various electrical components according to the results.
- BCM reads information of 20 switches and 5 diagnostic results by combining five output terminals (OUTPUT 1 - 5) and five input terminals (INPUT 1 - 5).

#### 2. Operation description

- BCM outputs battery voltage from input terminals (INPUT 1 - 5) all the time. At the same time output terminals (OUTPUT 1 - 5) activate transistors in turn, and allow current to flow. At this time, if any (1 or more) of the switches are ON, the input terminals corresponding to these switches detect current flow, and the interface of BCM detects the condition. Then BCM judges switches are ON.



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BCS



# BCM (BODY CONTROL MODULE)

## 5. Operation mode

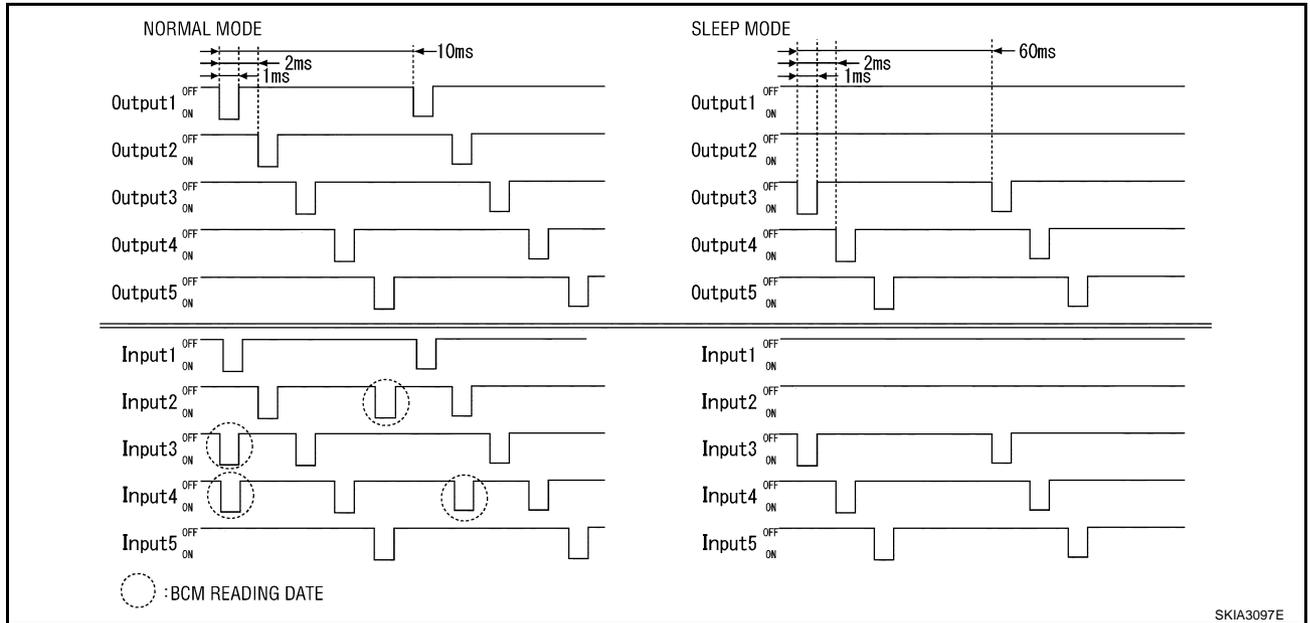
- Combination switch reading function has operation modes shown below.

### a. Normal mode

- When BCM is not in sleep mode, each OUTPUT (1 - 5) terminal turns ON-OFF at 10 ms intervals.

### b. Sleep mode

- When BCM is in sleep mode, transistors of OUTPUT 1 and 2 stop the output, and BCM enters low-current-consumption mode. OUTPUTS (3 - 5) turn ON-OFF at 60 ms intervals, and receive lighting switch input only.



## CAN COMMUNICATION CONTROL

CAN communication is capable of dealing with a lot of information through the two communication lines (CAN L-line, CAN H-line) connecting control units in the system. Also each control unit functions to transmit and receive data, and reads necessary information only.

## 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 status

- This is the status to stop 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 with another control unit stops, it 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.
- Two seconds after CAN communication with another control unit stops, it switches to CAN communication inactive status.

### 4. Sleep status

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## BCM (BODY CONTROL MODULE)

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- BCM is activated with low-current-consumption mode.
- CAN communication is not active.
- When CAN communication operation is detected, it switches to CAN communication status.
- When control performed only by BCM is required by switch, it shifts to CAN communication inactive mode.
- It changes combination switch reading function.

### SYSTEMS CONTROLLED BY BCM DIRECTLY

- Power door lock system. Refer to [BL-18, "POWER DOOR LOCK SYSTEM"](#) .
- Remote keyless entry system. Refer to [BL-48, "REMOTE KEYLESS ENTRY SYSTEM"](#) .
- Power window system. Refer to [GW-17, "POWER WINDOW SYSTEM"](#) . NOTE
- Room lamp timer. Refer to [LT-209, "INTERIOR ROOM LAMP"](#) .
- Warning chime. Refer to [DI-84, "WARNING CHIME"](#) .
- Turn signal and hazard warning lamps. Refer to [LT-135, "TURN SIGNAL AND HAZARD WARNING LAMPS"](#) .

### NOTE:

Power supply only. No system control.

### SYSTEMS CONTROLLED BY BCM AND IPDM E/R

- Panic alarm. Refer to [BL-48, "REMOTE KEYLESS ENTRY SYSTEM"](#) .
- Theft warning system. Refer [BL-91, "VEHICLE SECURITY \(THEFT WARNING\) SYSTEM"](#) .
- IVIS (NATS). Refer to [BL-121, "NVIS \(NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS\)"](#) .
- Headlamp, tail lamp, auto light system. Battery saver control.
- Wiper. Refer to [WW-4, "FRONT WIPER AND WASHER SYSTEM"](#) .
- Front washer. Refer to [WW-4, "FRONT WIPER AND WASHER SYSTEM"](#) .
- Rear window defogger. Refer to [GW-57, "REAR WINDOW DEFOGGER"](#) .

# BCM (BODY CONTROL MODULE)

## MAJOR COMPONENTS AND CONTROL SYSTEM

System	Input	Output
Remote keyless entry system	key fob	<ul style="list-style-type: none"> <li>● All-door locking actuator</li> <li>● Back door opener actuator</li> <li>● Turn signal lamp (LH, RH)</li> </ul>
Power door lock system	<ul style="list-style-type: none"> <li>● Power window main switch (door lock and unlock switch)</li> <li>● Power window sub switch (passenger side) (door lock and unlock switch)</li> </ul>	All-door locking actuator
Power supply (IGN) to power window	Ignition power supply	Power supply to power window system
Power supply (BAT) to power window system and power seat	Battery power supply	Power supply to power window system and power seat
Panic alarm	<ul style="list-style-type: none"> <li>● Key switch</li> <li>● Remote controller</li> </ul>	IPDM E/R
Theft warning system	<ul style="list-style-type: none"> <li>● All-door locking actuator</li> <li>● Back door opener actuator</li> </ul>	IPDM E/R
Battery saver control	<ul style="list-style-type: none"> <li>● Ignition switch</li> <li>● Combination switch</li> </ul>	IPDM E/R
Headlamp	Combination switch	IPDM E/R
Tail lamp	Combination switch	IPDM E/R
Turn signal lamp	Combination switch	<ul style="list-style-type: none"> <li>● Turn signal lamp</li> <li>● Combination meter</li> </ul>
Hazard lamp	Hazard switch	<ul style="list-style-type: none"> <li>● Turn signal lamp</li> <li>● Combination meter</li> </ul>
Room lamp timer	<ul style="list-style-type: none"> <li>● Key switch</li> <li>● Key fob</li> <li>● Power window main switch (door lock and unlock switch)</li> <li>● Front door switch driver side</li> <li>● All-door switch</li> </ul>	Interior room lamp
Key warning chime	<ul style="list-style-type: none"> <li>● Key switch</li> <li>● Front door switch driver side</li> </ul>	Combination meter (warning buzzer)
Light warning chime	<ul style="list-style-type: none"> <li>● Combination switch</li> <li>● Key detection switch</li> <li>● Front door switch driver side</li> </ul>	Combination meter (warning buzzer)
Seat belt warning chime	Combination meter (Seat belt buckle (driver side) switch)	Combination meter (warning buzzer)
Vehicle-speed-sensing intermittent wiper	<ul style="list-style-type: none"> <li>● Combination switch</li> <li>● Combination meter</li> </ul>	IPDM E/R
Rear window defogger	Rear window defogger switch	IPDM E/R
Air conditioner switch signal	A/C auto amplifier	ECM
Blower fan switch signal	A/C auto amplifier	ECM

## CAN Communication System Description

AKS000Z4

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicles are equipped with many electronic control units and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

# BCM (BODY CONTROL MODULE)

## CAN Communication Unit

AKS003MH

Body type	Coupe						
Axle	2WD						
Engine	VQ35DE						
Transmission	A/T	M/T					
Brake control	TCS	ABS		TCS		VDC	
Low tire pressure warning system	Not appli- cable	Not appli- cable	Applica- ble	Not appli- cable	Applica- ble	Not appli- cable	Applica- ble
CAN communication unit							
ECM	×	×	×	×	×	×	×
TCM	×						
Data link connector	×	×	×	×	×	×	×
Unified meter and A/C amp.	×	×	×	×	×	×	×
BCM	×	×	×	×	×	×	×
Low tire pressure warning control unit			×		×		×
Steering angle sensor						×	×
ABS actuator and electric unit (control unit)	×	×	×	×	×		
VDC/TCS/ABS control unit						×	×
IPDM E/R	×	×	×	×	×	×	×
CAN communication type	<u>BCS-9, "TYPE 1"</u>	<u>BCS-10, "TYPE 2/TYPE3"</u>		<u>BCS-11, "TYPE 4/TYPE5"</u>		<u>BCS-12, "TYPE 6/TYPE7"</u>	

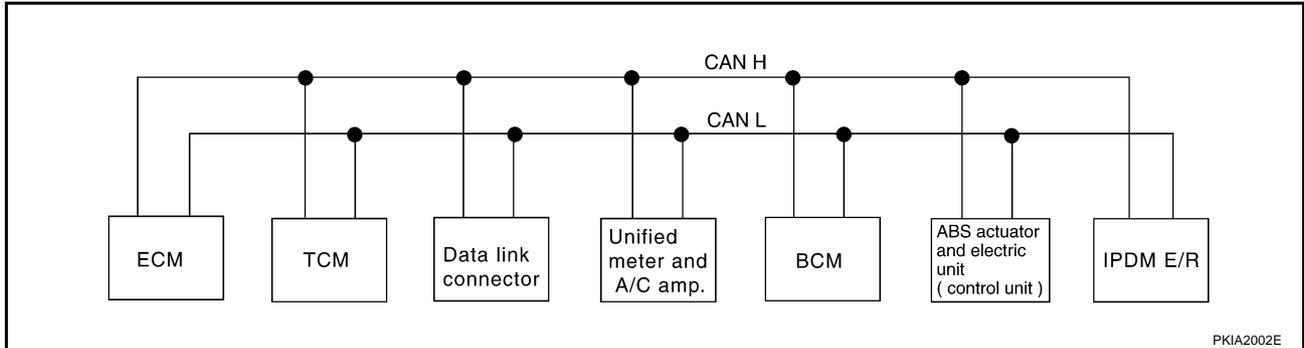
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# BCM (BODY CONTROL MODULE)

## TYPE 1

### System diagram

- Type1



### Input/output signal chart

T: Transmit R: Receive

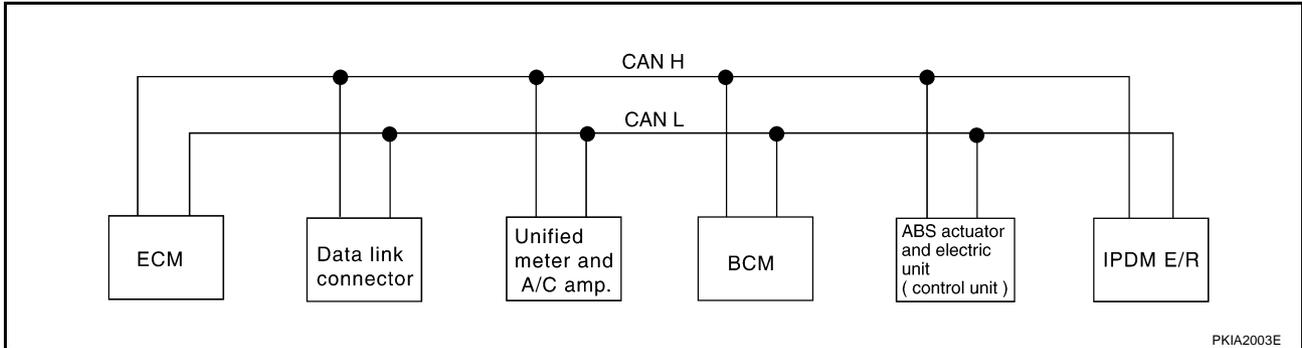
Signals	ECM	TCM	Unified meter and A/C amp.	BCM	ABS actuator and electric unit (control unit)	IPDM E/R
A/C switch signal	R			T		
A/C compressor request signal	T					R
A/C compressor feedback signal	T		R			
Blower fan motor switch signal	R			T		
Cooling fan speed request signal	T					R
Position lights request signal			R	T		R
Low beam request signal				T		R
Low beam status signal	R					T
High beam request signal			R	T		R
High beam status signal	R					T
Vehicle speed signal			R		T	
	R	R	T	R		
Sleep request 1 signal			R	T		
Sleep request 2 signal				T		R
Wake up request 1 signal			R	T		
Door switch signal			R	T		R
Turn indicator signal			R	T		
Seat belt buckle switch signal			T	R		
Buzzer output signal			R	T		
Front wiper request signal				T		R
Front wiper stop position signal				R		T
Rear window defogger switch signal				T		R
Rear window defogger control signal	R					T
Hood switch signal				R		T
Theft warning horn request signal				T		R
Horn chirp signal				T		R

# BCM (BODY CONTROL MODULE)

## TYPE 2/TYPE3

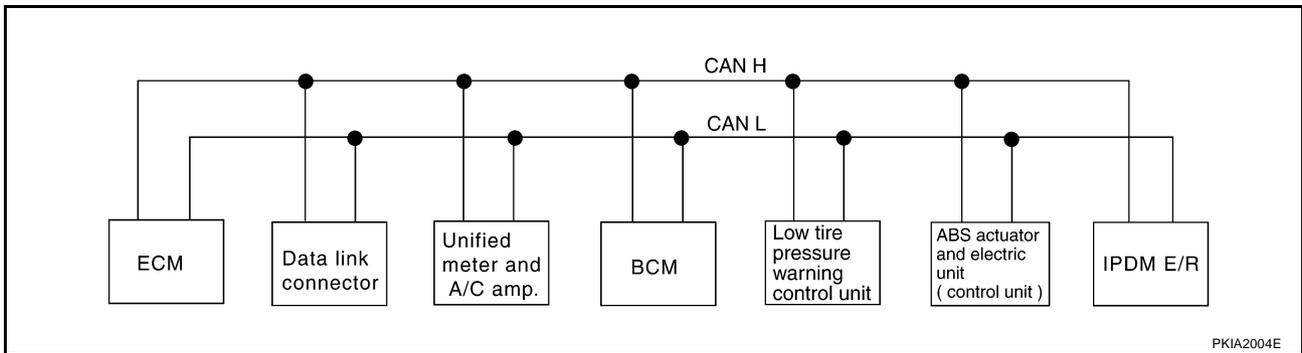
### System diagram

- Type2



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- Type3



PKIA2004E

### Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
A/C switch signal	R		T			
A/C compressor request signal	T					R
A/C compressor feedback signal	T	R				
Blower fan motor switch signal	R		T			
Cooling fan speed request signal	T					R
Position lights request signal			R	T		R
Low beam request signal			T			R
Low beam status signal	R					T
High beam request signal		R	T			R
High beam status signal	R					T
Vehicle speed signal		R			T	
	R	T	R	R		
Sleep request 1 signal		R	T			
Sleep request 2 signal			T			R
Wake up request 1 signal		R	T			
Door switch signal		R	T			R
Turn indicator signal		R	T			
Seat belt buckle switch signal		T	R			
Buzzer output signal		R	T			

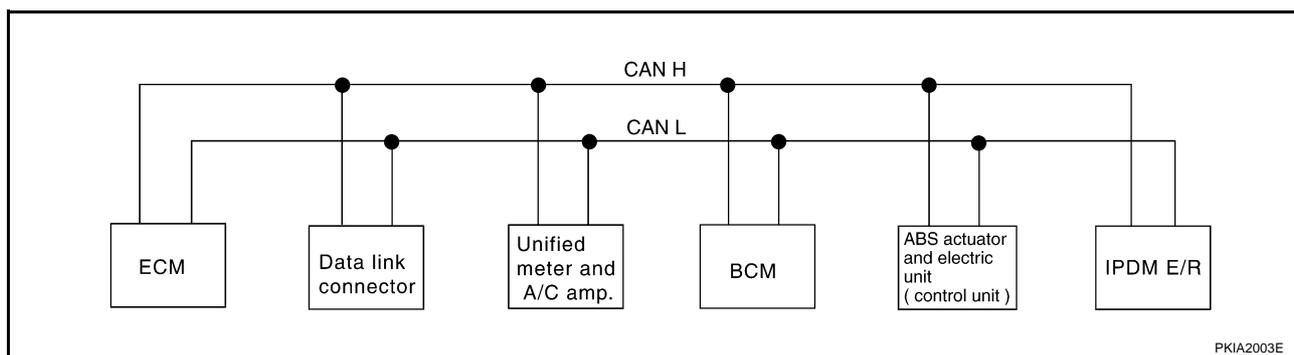
# BCM (BODY CONTROL MODULE)

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Front wiper request signal			T			R
Front wiper stop position signal			R			T
Rear window defogger switch signal			T			R
Rear window defogger control signal	R					T
Hood switch signal			R			T
Theft warning horn request signal			T			R
Horn chirp signal			T			R

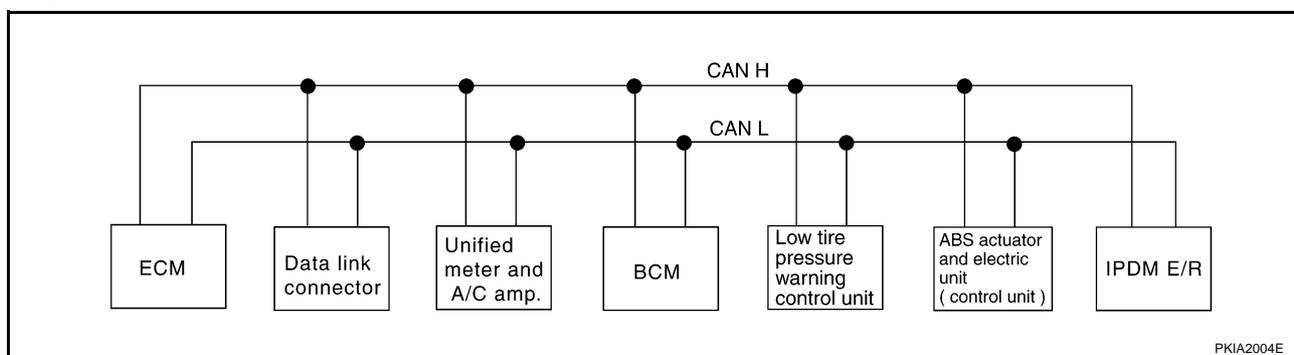
## TYPE 4/TYPER5

### System diagram

- Type4



- Type5



### Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
A/C switch signal	R		T			
A/C compressor request signal	T					R
A/C compressor feedback signal	T	R				
Blower fan motor switch signal	R		T			
Cooling fan speed request signal	T					R
Position lights request signal		R	T			R
Low beam request signal			T			R
Low beam status signal	R					T

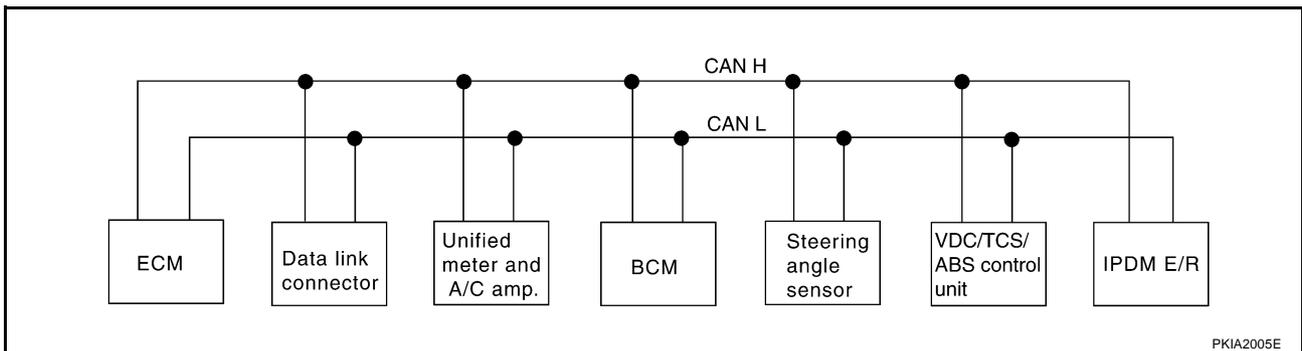
# BCM (BODY CONTROL MODULE)

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	ABS actuator and electric unit (control unit)	IPDM E/R
High beam request signal		R	T			R
High beam status signal	R					T
Vehicle speed signal		R			T	
	R	T	R	R		
Sleep request 1 signal		R	T			
Sleep request 2 signal			T			R
Wake up request 1 signal		R	T			
Door switch signal		R	T			R
Turn indicator signal		R	T			
Seat belt buckle switch signal		T	R			
Buzzer output signal		R	T			
Front wiper request signal			T			R
Front wiper stop position signal			R			T
Rear window defogger switch signal			T			R
Rear window defogger control signal	R					T
Hood switch signal			R			T
Theft warning horn request signal			T			R
Horn chirp signal			T			R

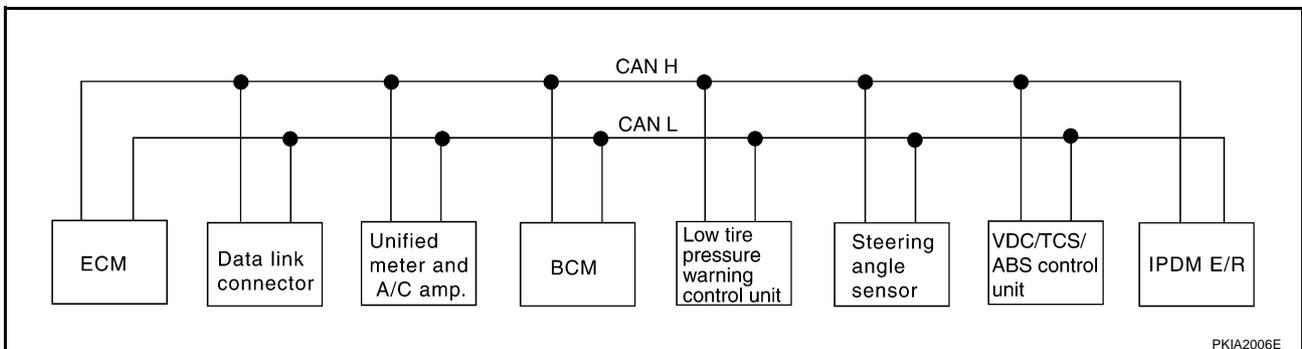
## TYPE 6/TYPE7

### System diagram

- Type6



- Type7



# BCM (BODY CONTROL MODULE)

## Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Unified meter and A/C amp.	BCM	Low tire pressure warning control unit	Steering angle sensor	VDC/TCS/ABS control unit	IPDM E/R
A/C switch signal	R		T				
A/C compressor request signal	T						R
A/C compressor feedback signal	T	R					
Blower fan motor switch signal	R		T				
Cooling fan speed request signal	T						R
Position lights request signal		R	T				R
Low beam request signal			T				R
Low beam status signal	R						T
High beam request signal		R	T				R
High beam status signal	R						T
Vehicle speed signal		R				T	
	R	T	R	R			
Sleep request 1 signal		R	T				
Sleep request 2 signal			T				R
Wake up request 1 signal		R	T				
Door switch signal		R	T				R
Turn indicator signal		R	T				
Seat belt buckle switch signal		T	R				
Buzzer output signal		R	T				
Front wiper request signal			T				R
Front wiper stop position signal			R				T
Rear window defogger switch signal			T				R
Rear window defogger control signal	R						T
Hood switch signal			R				T
Theft warning horn request signal			T				R
Horn chirp signal			T				R

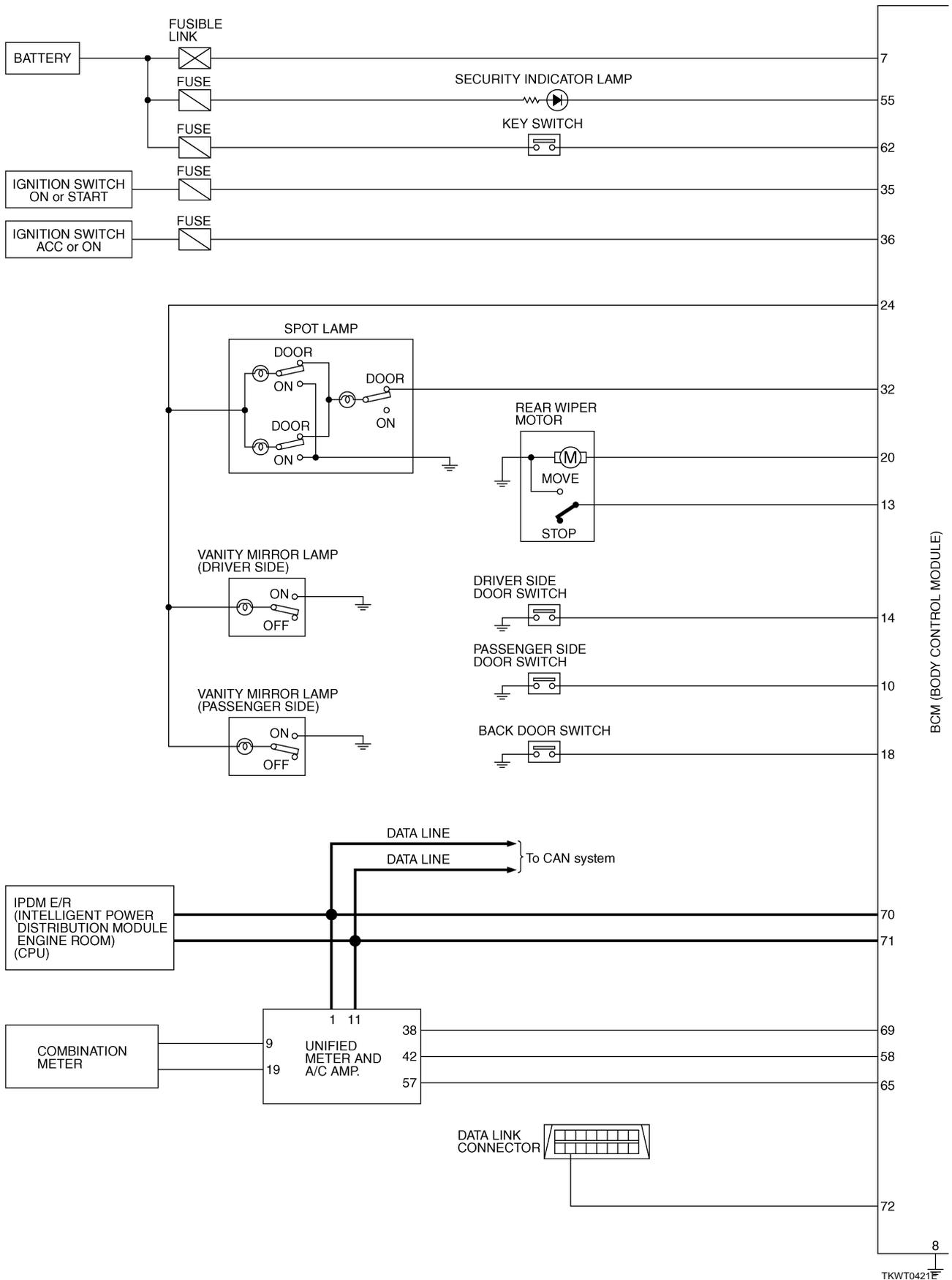
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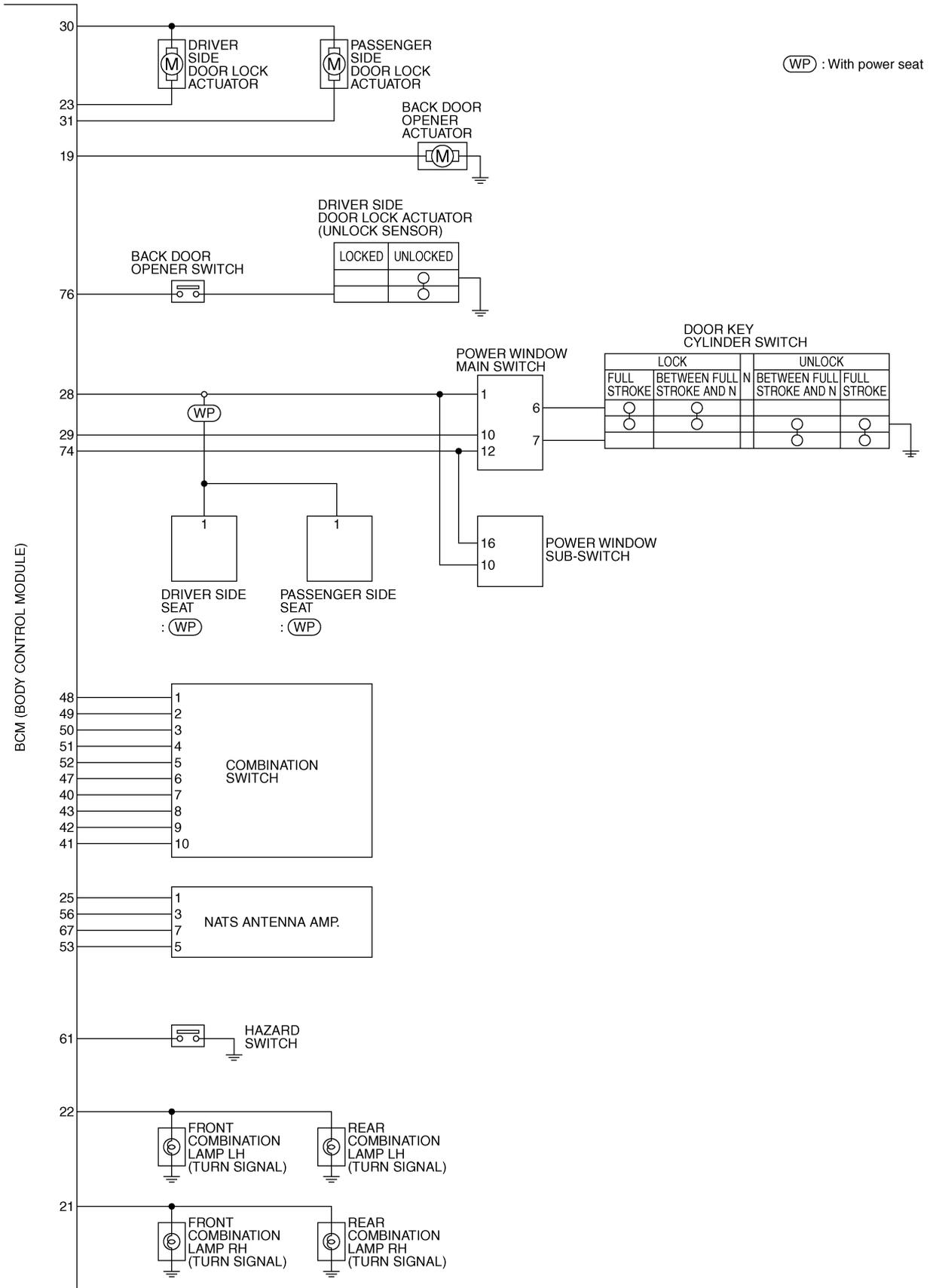
# BCM (BODY CONTROL MODULE)

## Schematic

AKS000Z5



# BCM (BODY CONTROL MODULE)



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# BCM (BODY CONTROL MODULE)

## CONSULT-II

AKS000Z6

CONSULT-II can display each diagnostic item using the following diagnostic test modes: work support, self-diagnostic results, data monitor and active test through data reception and command transmission via the BCM communication line.

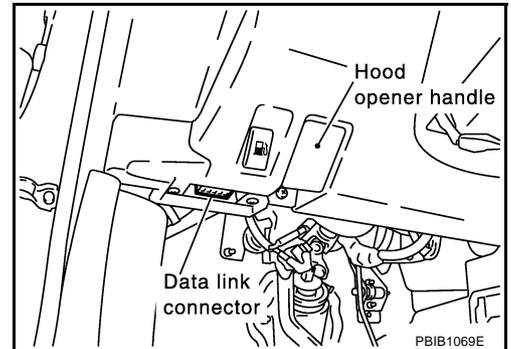
BCM diagnostic test item	Check item, diagnostic test mode	Content
Inspection by part	WORK SUPPORT	Changes setting of each function.
	SELF-DIAGNOSIS RESULTS	BCM performs self-diagnosis of CAN communication and combination switch.
	DATA MONITOR	Displays the input data of BCM in real time.
	CAN DIAG SUPPORT MNTR	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.

## CONSULT-II INSPECTION PROCEDURE

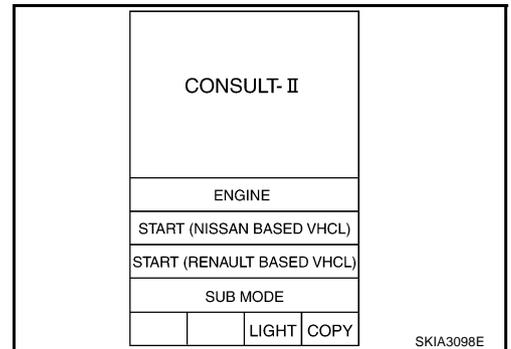
### CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

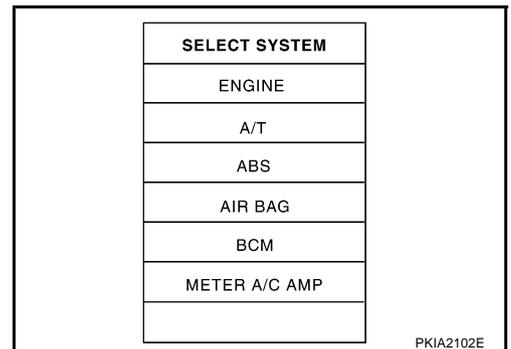
1. With the ignition switch OFF, connect CONSULT-II and CONSULT-II CONVERTER to the data link connector, then turn the ignition switch ON.



2. Touch "START (NISSAN BASED VHCL)".

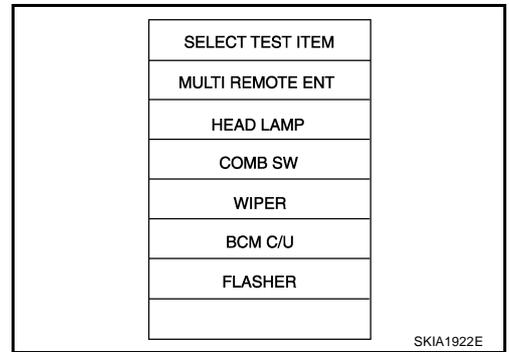


3. Touch "BCM" on "SELECT SYSTEM" screen. If "BCM" is not indicated, go to [GI-39, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



# BCM (BODY CONTROL MODULE)

4. Select the desired part to be diagnosed on the “SELECT TEST ITEM” screen.



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## ITEMS OF EACH PART

×:Applicable

System and item	CONSULT-II display	Diagnostic test mode (Inspection by part)				
		WORK SUPPORT	SELF-DIAG RESULTS	DATA MONITOR	CAN DIAG SUPPORT MNTR	ACTIVE TEST
Power door lock system	DOOR LOCK	×		×		×
Rear window defogger	REAR DEFOGGER			×		×
Key warning chime	KEY WARN ALM			×		×
Light warning chime	LIGHT WARN ALM			×		×
Seat belt warning chime	SEAT BELT ALM			×		×
Room lamp timer	INT LAMP	×		×		×
Interior lamp battery saver	BATTERY SAVER	×		×		×
Vehicle security system	THEFT ALM	×		×		×
Retained power control	RETAINED PWR	×		×		×
Remote keyless entry system	MULTI REMOTE ENT	×		×		×
Headlamp	HEAD LAMP	×		×		
Combination switch	COMB SW			×		
Wiper	WIPER			×		×
BCM	BCM C/U		×	×	×	
Turn signal lamp Hazard lamp	FLASHER			×		×
NVIS	IMMU			×		×
Air conditioner switch signal Blower fan switch signal	SIGNAL BUFFER			×		× <sup>NOTE</sup>
Trunk lid	TRUNK					×

BCS

**NOTE:**

This item is displayed, but cannot test it.

# BCM (BODY CONTROL MODULE)

## CAN Communication Inspection Using CONSULT-II (Self-Diagnosis)

AKS000Z7

### 1. SELF-DIAGNOSTIC RESULT CHECK

**CAUTION:**

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

1. Connect to CONSULT-II, and select "BCM" on "SELECT SYSTEM" screen.
2. Select "BCM control unit" on "SELECT WORK ITEM" screen, and select "SELF-DIAG RESULTS".
3. Check display content in self-diagnostic results.

CONSULT-II display code	Diagnosis item
U1000	INITIAL DIAG
	TRANSMIT DIAG
	ECM
	IPDM E/R
	METER/M&A

Contents displayed

No malfunction>>Inspection End

Malfunction in CAN communication system>>After printing the monitor items, go to "CAN System". Refer to [LAN-4, "Precautions When Using CONSULT-II"](#).

# BCM (BODY CONTROL MODULE)

AKS000ZA

## Inspection of BCM Power Supply and Ground Circuit

### 1. FUSE AND FUSIBLE LINK INSPECTION

Check if any of the following BCM fuses and fusible links are blown.

Terminal No.	Signal name	Fuse No., fusible link No.
7	Battery	F
35	Ignition switch ON or START	1
36	Ignition switch ACC or ON	6

- Refer to LT wiring diagram LT-H/LAMP-01, [LT-18](#).

OK or NG

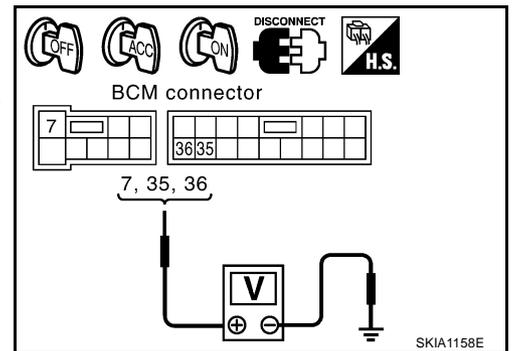
OK >> GO TO 2.

NG >> Replace fuse or fusible link.

### 2. POWER SUPPLY CIRCUIT INSPECTION

Disconnect BCM connector. To measure voltage, connect following harness connector terminals to positive probe and body ground to negative one.

Terminals		Power source	Ignition switch	Reference value
(+)	(-)			
Connector	Terminal (wire color)			
E105	7(R)	Battery power	OFF	Battery voltage
M1	35 (W/L)	Ignition power supply	ON	Battery voltage
	36 (LG)	ACC power supply	ACC	Battery voltage



- Refer to LT wiring diagram LT-H/LAMP-01, [LT-18](#).

OK or NG

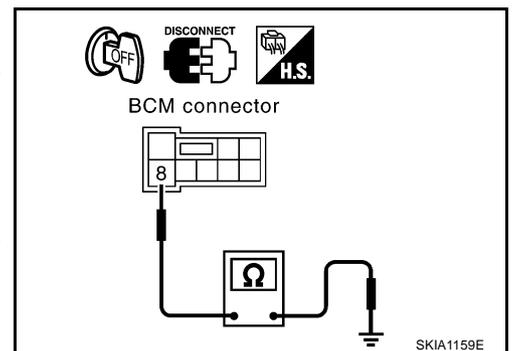
OK >> GO TO 3.

NG >> Replace BCM power supply circuit harness.

### 3. GROUND CIRCUIT INSPECTION

Check continuity between the following harness connector of BCM and body ground.

Terminals		Continuity
(+)	(-)	
Connector	Terminal (wire color)	
E105	8 (B)	Ground YES



- Refer to LT wiring diagram LT-H/LAMP-01, [LT-18](#).

OK or NG

OK >> Normal

NG >> Replace BCM ground circuit harness.

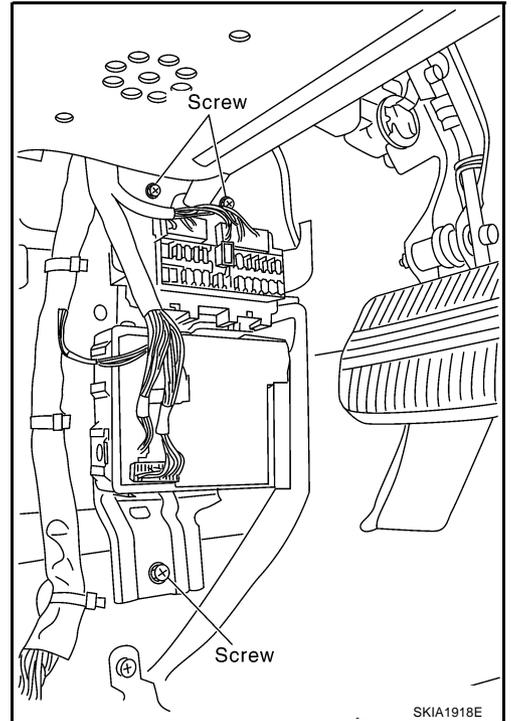
# BCM (BODY CONTROL MODULE)

AKS000ZB

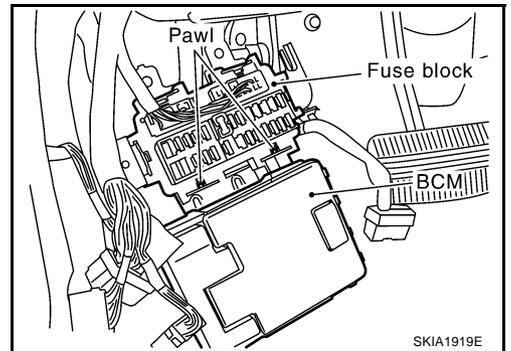
## Removal and Installation of BCM

### REMOVAL

1. Remove the dash side finisher (LH). Refer to [EI-32, "BODY SIDE TRIM"](#) in "EI Exterior/Interior."
2. Disconnect BCM connector.
3. Remove bracket mounting screws (3) to remove BCM and fuse block with bracket.



4. Raise the pawl of fuse block and remove bracket from fuse block to remove BCM.



### INSTALLATION

- Install in the reverse order of removal.