

# SECTION **BCS**

## BODY CONTROL SYSTEM

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# PRECAUTIONS

## PRECAUTIONS

PFP:00011

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

EKS00736

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. 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 harness connectors.

## Maintenance Information

EKS008WP

If any of following part is replaced, always replace with new\* one.

If it's not (or fail to do so), the electrical system may not be operated properly.

\*: New one means a virgin control unit that has never been energized on-board.

### RHD MODELS

- BCM (Models without Intelligent Key system)
- Intelligent Key unit (Models with Intelligent Key system)
- ECM
- IPDM E/R
- Combination meter
- EPS control unit

### LHD MODELS

- BCM (Models without Intelligent Key system)
- Intelligent Key unit (Models with Intelligent Key system)
- ECM

## Wiring Diagrams and Trouble Diagnosis

EKS00737

When you read wiring diagrams, refer to the following:

- [GI-14, "How to Read Wiring Diagrams"](#) in GI section.
- [PG-4, "POWER SUPPLY ROUTING"](#) for power distribution circuit in PG section.

When you perform trouble diagnosis, refer to the following:

- [GI-10, "How to Follow Trouble Diagnoses"](#) in GI section.
- [GI-24, "How to Perform Efficient Diagnosis for an Electrical Incident"](#) in GI section.

## BCM (BODY CONTROL MODULE)

PFP:284B2

### System Description

EKS007SV

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

BCM reads combination switch (headlamp, wiper and 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).

Refer to [LT-104, "COMBINATION SWTCH"](#).

### SYSTEMS CONTROLLED BY BCM

- Power door lock system. Refer to [BL-14, "POWER DOOR LOCK SYSTEM"](#).
- Super lock system. Refer to [BL-60, "POWER DOOR LOCK — SUPER LOCK —"](#).
- Multi-remote control system. Refer to [BL-110, "MULTI-REMOTE CONTROL SYSTEM"](#).
- Power window system. Refer to [GW-40, "POWER WINDOW SYSTEM"](#).
- Interior room lamp timer. Refer to [LT-114, "INTERIOR ROOM LAMP"](#).
- Warning chime. Refer to [DI-58, "WARNING CHIME"](#).
- Turn signal and hazard warning lamps. Refer to [LT-67, "TURN SIGNAL AND HAZARD WARNING LAMPS"](#).
- Rear wiper. Refer to [WW-58, "REAR WIPER AND WASHER SYSTEM"](#).
- Rear fog lamp. Refer to [LT-59, "REAR FOG LAMP"](#).

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

- NATS. Refer to [BL-201, "NATS\(Nissan Anti-Theft System\)"](#).
- Headlamp, tail lamp, Battery saver control. Refer to [LT-6, "EXTERIOR LAMP BATTERY SAVER CONTROL"](#).
- Front wiper. Refer to [WW-4, "FRONT WIPER AND WASHER SYSTEM"](#) (without rain sensor) or [WW-37, "FRONT WIPER AND WASHER SYSTEM \(WITH RAIN SENSOR\)"](#).
- Front washer. Refer to [WW-4, "FRONT WIPER AND WASHER SYSTEM"](#) (without rain sensor) or [WW-37, "FRONT WIPER AND WASHER SYSTEM \(WITH RAIN SENSOR\)"](#).
- Rear window defogger. Refer to [GW-14, "REAR WINDOW DEFOGGER"](#).
- Front fog lamp. Refer to [LT-48, "FRONT FOG LAMP"](#).
- Headlamp washer. Refer to [WW-73, "HEADLAMP WASHER"](#).

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### SYSTEMS CONTROLLED BY BCM AND INTELLIGENT KEY UNIT

- Intelligent Key system. Refer to [BL-135, "INTELLIGENT KEY SYSTEM"](#).

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# BCM (BODY CONTROL MODULE)

## INPUT/OUTPUT

System	Input	Output
Multi-remote control system	Remote controller	<ul style="list-style-type: none"> <li>● Door lock actuator</li> <li>● Back door release actuator</li> <li>● Turn signal lamp (LH, RH)</li> </ul>
Intelligent Key system	Intelligent Key unit	<ul style="list-style-type: none"> <li>● Door lock actuator</li> <li>● Back door release actuator</li> <li>● Turn signal lamp</li> <li>● Combination meter</li> </ul>
Power door lock system/ Super lock system	<ul style="list-style-type: none"> <li>● Key switch</li> <li>● Door lock/unlock switch</li> <li>● Door switches</li> </ul>	<ul style="list-style-type: none"> <li>● Door lock actuator</li> <li>● Back door release actuator</li> </ul>
Power supply (IGN) to power window system	Ignition power supply	<ul style="list-style-type: none"> <li>● Power window main switch</li> <li>● Front power window switch (passenger side)</li> <li>● Sunroof motor assembly</li> </ul>
Power supply (BAT) to power window system	Battery power supply	<ul style="list-style-type: none"> <li>● Power window main switch</li> <li>● Front power window switch (passenger side)</li> <li>● Sunroof motor assembly</li> </ul>
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 (headlamp relay)
Tail lamp	Combination switch	IPDM E/R (tail lamp relay)
Rear fog lamp	Combination switch	Rear combination lamp (Refer fog)
Turn signal lamp	Combination switch	<ul style="list-style-type: none"> <li>● Turn signal lamps</li> <li>● Combination meter</li> </ul>
Hazard warning lamp	Hazard switch	<ul style="list-style-type: none"> <li>● Turn signal lamps</li> <li>● Combination meter</li> </ul>
Interior room lamp timer	<ul style="list-style-type: none"> <li>● Key switch</li> <li>● Intelligent Key unit (key switch signal)</li> <li>● Remote controller</li> <li>● Door lock/unlock switch</li> <li>● Front door switch (driver side)</li> <li>● Door switches</li> </ul>	Interior room lamp
Ignition key warning chime	<ul style="list-style-type: none"> <li>● Key switch</li> <li>● Intelligent Key unit (key switch signal)</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 switch</li> <li>● Intelligent Key unit (key switch signal)</li> <li>● Front door switch (driver side)</li> </ul>	Combination meter (warning buzzer)
Front wiper with rain sensor	<ul style="list-style-type: none"> <li>● Combination switch</li> <li>● Combination meter</li> <li>● Rain sensor</li> </ul>	IPDM E/R (front wiper relays)
Front washer	Combination switch	Washer motor
Rear wiper	Combination switch	Rear wiper motor
Rear washer	Combination switch	Washer motor

## BCM (BODY CONTROL MODULE)

System	Input	Output
Headlamp washer	Headlamp washer switch	Headlamp washer relay (via IPDM E/R)
Rear window defogger	<ul style="list-style-type: none"><li>● A/C auto amp. (Rear window defogger switch) (with auto amp).</li><li>● Heater control panel (Rear window defogger switch) (with manual A/C).</li></ul>	IPDM E/R (rear window defogger relay)
A/C switch signal	A/C auto amp.	ECM
Blower fan switch signal	A/C auto amp.	ECM

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# BCM (BODY CONTROL MODULE)

## 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. Pre-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
  - 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.

# BCM (BODY CONTROL MODULE)

## CAN Communication SYSTEM DESCRIPTION

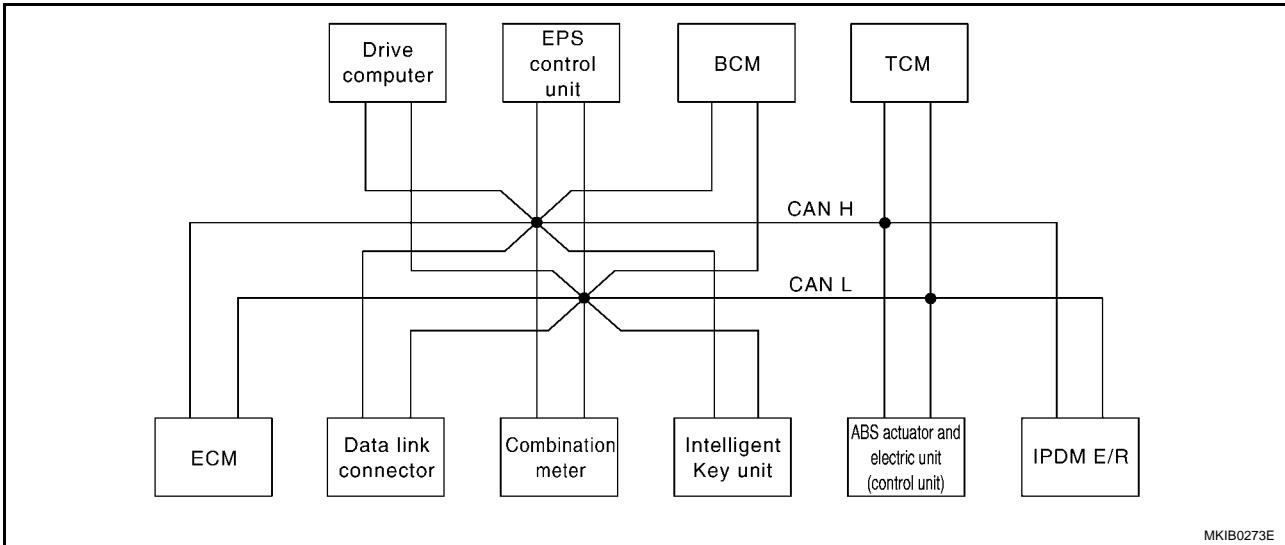
EKS007SX

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.

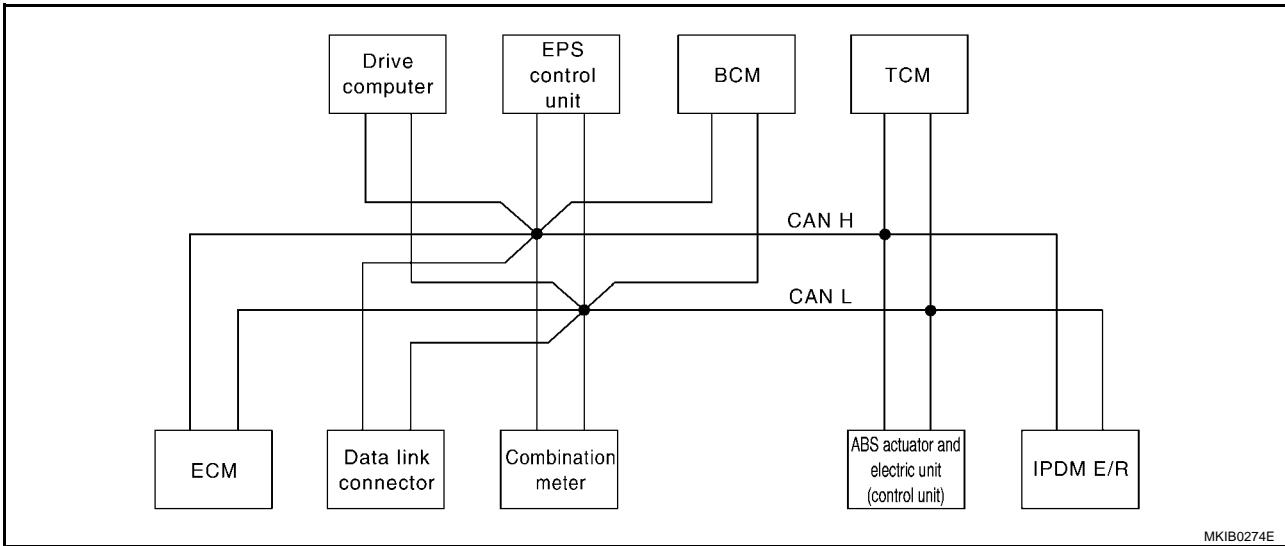
### A/T MODELS

#### System diagram

- With Intelligent Key system



- Without Intelligent Key system



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# BCM (BODY CONTROL MODULE)

## Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Combi-nation meter.	Intelli-gent Key unit	Drive com-puter	EPS control unit	BCM	ABS actuator and electric unit (control unit)	TCM	IPDM E/R
Engine speed signal	T	R		R	R				
Engine coolant temperature signal	T	R							
A/T self-diagnosis signal	R							T	
Output shaft revolution signal	R							T	
Accelerator pedal position signal	T							R	
Closed throttle position signal	T							R	
Wide open throttle position signal	T							R	
A/T shift position signal		R						T	
Stop lamp switch signal		T						R	
O/D OFF indicator lamp signal		R						T	
Engine and A/T integrated control signal	T							R	
	R							T	
Fuel consumption monitor signal	T	R							
Oil pressure switch signal		R		R					T
A/C compressor request signal	T								R
Heater fan switch signal	R					T			
Cooling fan speed request signal	T								R
Cooling fan speed status signal	R								T
Position lights request signal		R		R		T			R
Position light status signal	R								T
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
Day time light request signal						T			R
Vehicle speed signal	R	R			R		T		
	R	T	R	R	R	R			
Sleep/wake up signal		R	R			T			R
Door switch signal		R	R	R		T			R
Turn indicator signal		R				T			
Buzzer output signal		R				T			
		R	T						
MI signal	T	R		R					
Front wiper request signal						T			R
Front wiper stop position signal						R			T
Rear window defogger switch signal						T			R

# BCM (BODY CONTROL MODULE)

Signals	ECM	Combi- nation meter.	Intelli- gentKey unit	Drive com- puter	EPS control unit	BCM	ABS actuator and electric unit (control unit)	TCM	IPDM E/ R
Rear window defogger control signal	R								T
Drive computer signal		T		R					
EPS warning lamp signal		R		R	T				
ABS warning lamp signal		R		R			T		
ABS operation signal	R						T		
Brake warning lamp signal		R		R			T		
Buck-up lamp signal					R	T			
Fuel low warning signal		T		R					
Battery charge malfunction signal		T		R					
Air bag system warning signal		T		R					
Brake fluid level warning signal		T		R					
Engine coolant temperature warning signal		T		R					
Front fog lamp request signal		R				T			R
Rear fog lamp status signal		R				T			
Headlamp washer request signal						T			R
Door lock/unlock request signal			R			T			
Door lock/unlock status signal			R			T			
KEY indicator signal		R	T						
LOCK indicator signal		R	T						

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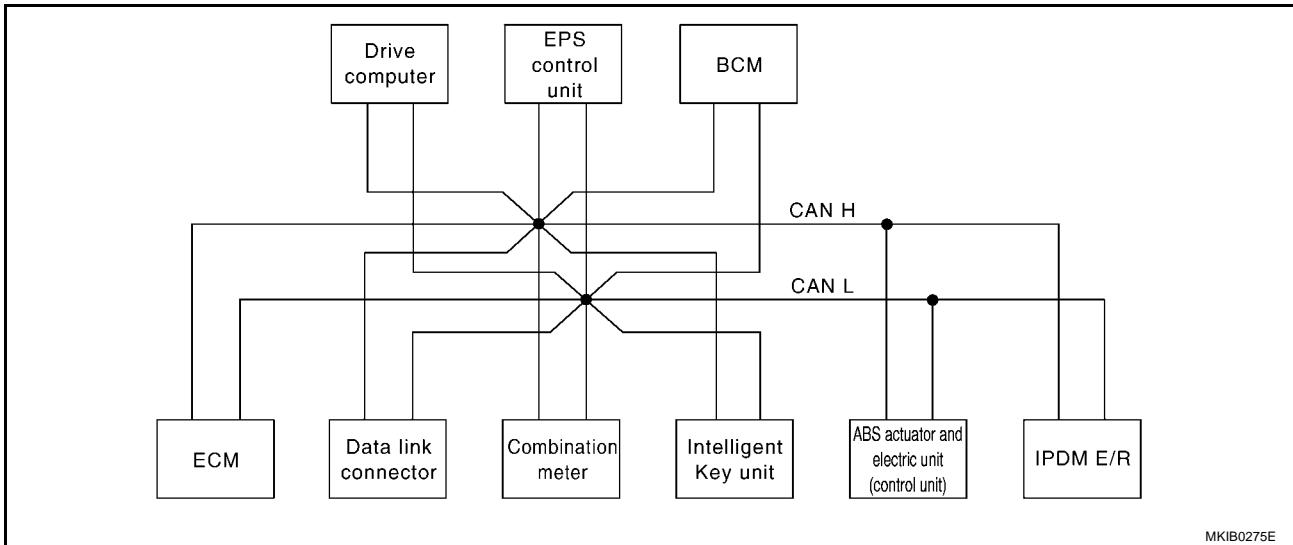
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# BCM (BODY CONTROL MODULE)

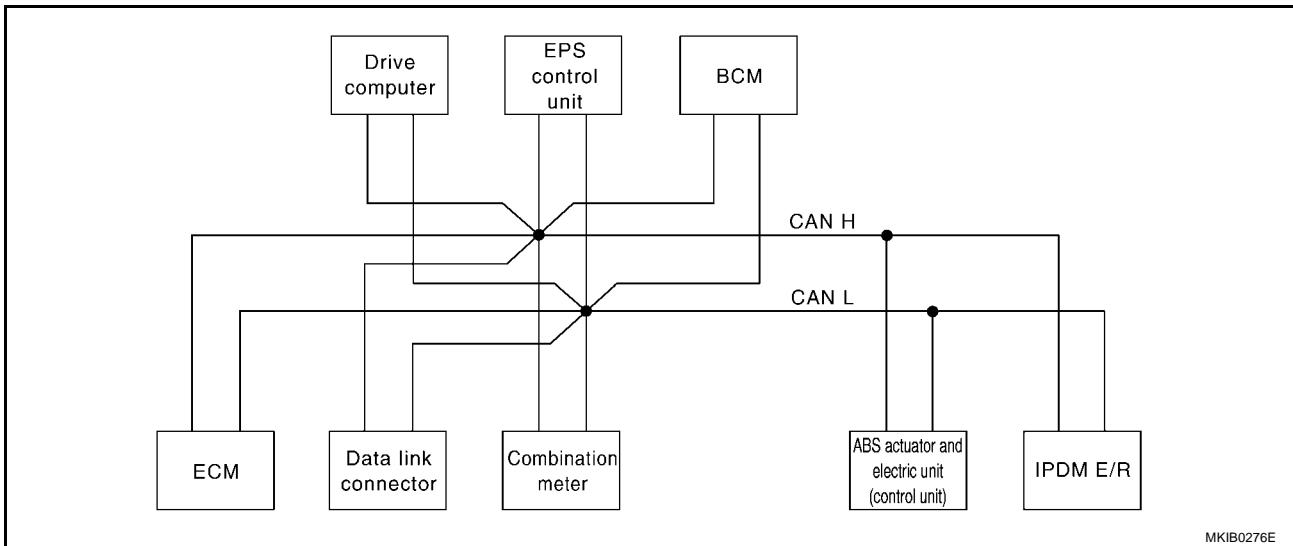
## M/T MODELS

### System diagram

- With Intelligent Key system



- Without Intelligent Key system



### Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Combina- tion meter.	Intelli- gent Key unit	Drive computer	EPS con- trol unit	BCM	ABS actuator and elec- tric unit (control unit)	IPDM E/ R
Engine speed signal	T	R		R	R			
Engine coolant temperature signal	T	R						
Fuel consumption monitor signal	T	R						
Oil pressure switch signal		R		R				T
A/C compressor request signal	T							R
Heater fan switch signal	R					T		
Cooling fan speed request signal	T							R
Cooling fan speed status signal	R							T
Position lights request signal		R		R		T		R

# BCM (BODY CONTROL MODULE)

Signals	ECM	Combina-tion meter.	Intelli-gent Key unit	Drive computer	EPS control unit	BCM	ABS actuator and elec-tric unit (control unit)	IPDM E/R
Position light status signal	R							T
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
Day time light request signal						T		R
Vehicle speed signal	R	R			R		T	
	R	T	R	R	R	R		
Sleep/wake up signal		R	R			T		R
Door switch signal		R	R	R		T		R
Turn indicator signal		R				T		
Buzzer output signal		R				T		
		R	T					
MI signal	T	R		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
Drive computer signal		T		R				
EPS warning indicator signal		R		R	T			
ABS warning lamp signal		R		R			T	
ABS operation signal	R			R			T	
Brake warning lamp signal		R					T	
Buck-up lamp signal					R	T		
Fuel low warning signal		T		R				
Battery charge malfunction signal		T		R				
Air bag system warning signal		T		R				
Brake fluid level warning signal		T		R				
Engine coolant temperature warning signal		T		R				
Front fog lamp request signal		R				T		R
Rear fog lamp status signal		R				T		
Headlamp washer request signal						T		R
Door lock/unlock request signal			R			T		
Door lock/unlock status signal			R			T		
KEY indicator signal		R	T					
LOCK indicator signal		R	T					

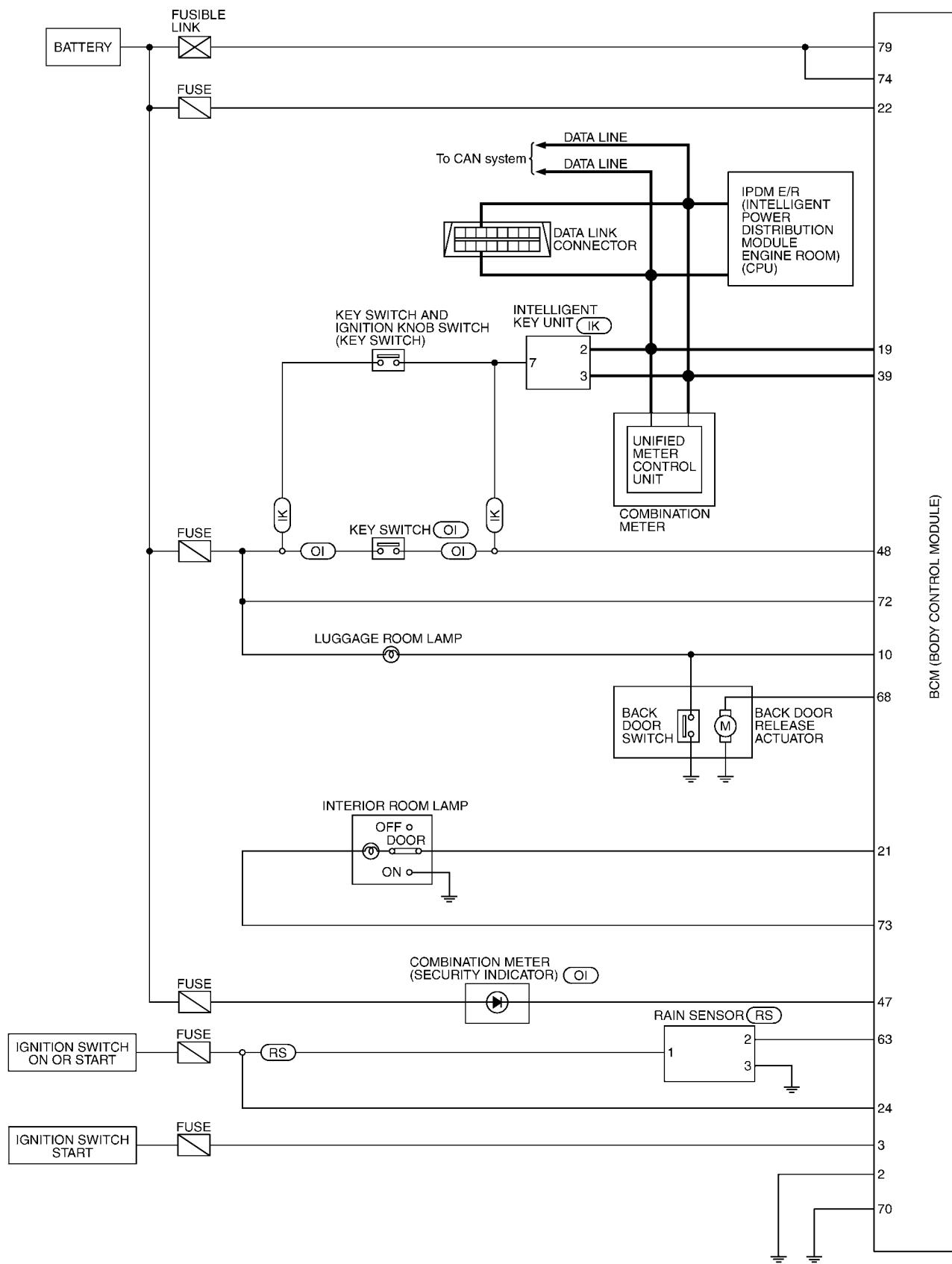
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# BCM (BODY CONTROL MODULE)

## Schematic

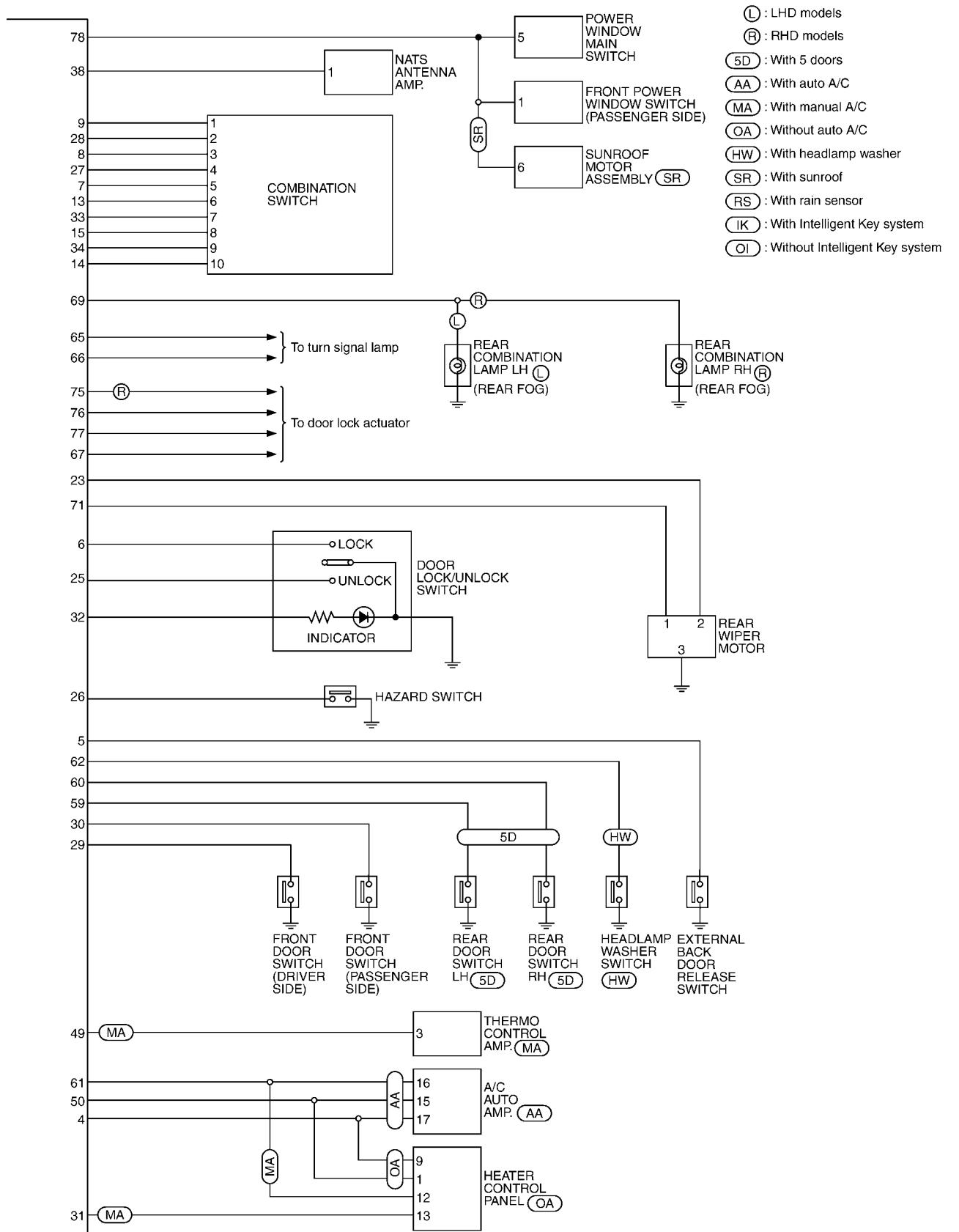
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BCM (BODY CONTROL MODULE)

MKWA1371E

# BCM (BODY CONTROL MODULE)



MKWA1372E

# BCM (BODY CONTROL MODULE)

## CONSULT-II

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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.

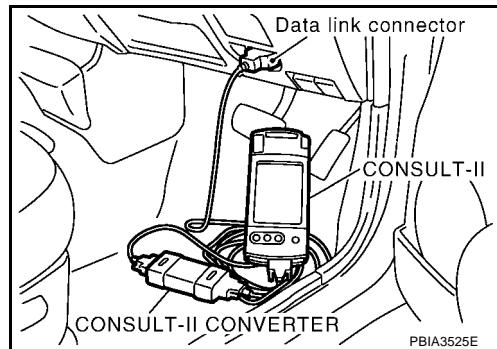
BCM diagnostic test item	Check item, diagnostic test mode	Content
Inspection by part	WORK SUPPORT	Changes setting of each function.
	SELF-DIAGNOSTIC RESULTS	BCM performs self-diagnosis of CAN communication.
	DATA MONITOR	Displays the input data of BCM in real time.
	ACTIVE TEST	Gives a drive signal to a load to check the operation.
	ECM PART NUMBER	Displays BCM parts number

## CONSULT-II INSPECTION PROCEDURE

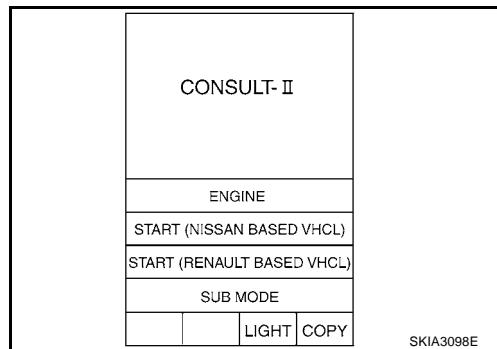
### CAUTION:

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.

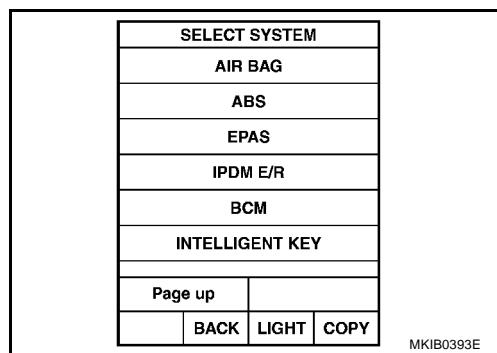


2. Touch "START (NISSAN BASED VHCL)".



3. Touch "BCM" on "SELECT SYSTEM" screen.

If "BCM" is not indicated, go to [GI-36, "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.

SELECT SYSTEM			
HEADLAMP			
WIPER			
FLASHER			
AIR CONDITIONER			
COMB SW			
BCM			
Page up			
	BACK	LIGHT	COPY

MKIB0394E

## ITEMS OF EACH PART

x:Applicable

System and item	"TEST ITEM" screen	Diagnostic test mode (Inspection by part)				
		WORK SUPPORT	SELF-DIAG RESULTS	DATA MONITOR	ACTIVE TEST	ECU PARTS NUMBER
Power door lock system	DOOR LOCK	×		×		
Rear window defogger	REAR DEFOGGER			×	×	
Ignition key warning chime	BUZZER	IGN KEY WARN ALM		×	×	
Light warning chime		LIGHT WARN ALM		×	×	
Reverse warning chime		REVERSE WARNING		×	×	
Interior room lamp timer	INT LAMP	×		×	×	
Multi-remote control system	MULTI REMOTE ENT	×		×	×	
Headlamp	HEAD LAMP			×	×	
Front wiper	WIPER	FR WIPER		×	×	
Rear wiper		RR WIPER		×	×	
Turn signal lamp Hazard warning lamp	FLASHER			×		
A/C switch signal Blower fan switch signal	AIR CONDITIONER			×	×	
Intelligent Key system	INTELLIGENT			×		
Combination switch	COMB SW			×		
BCM	BCM		×	×		x
NATS	IMMU			×	×	

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

EKS007T0

### 1. CHECK SELF-DIAGNOSTIC RESULT

#### 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 DIAG MODE" screen, and select "SELF-DIAG RESULTS".
3. Check display content in self-diagnostic results.

CONSULT-II display code	Diagnosis item
U1000	CAN CIRC 1
	CAN CIRC 2
	CAN CIRC 3
	CAN CIRC 4
	CAN CIRC 5

#### Contents displayed

No malfunction>>INSPECTION END

Malfunction in CAN communication system>>GO TO 2.

### 2. CHECK SYMPTOM

1. Select "CAN diagnosis support monitor" in data monitor.
2. Select "START" and check display content.

Diagnosis item	Self-diagnostic result content	
	Normal conditions	Malfunction condition (Example)
CAN CIRC 1	OK	UNKWN
CAN CIRC 2	OK	UNKWN
CAN CIRC 3	OK	UNKWN
CAN CIRC 4	OK	UNKWN
CAN CIRC 5	OK	UNKWN

>> After printing the monitor items, go to "CAN System". Refer to [LAN-3, "Precautions When Using CONSULT-II"](#).

## Removal and Installation of BCM

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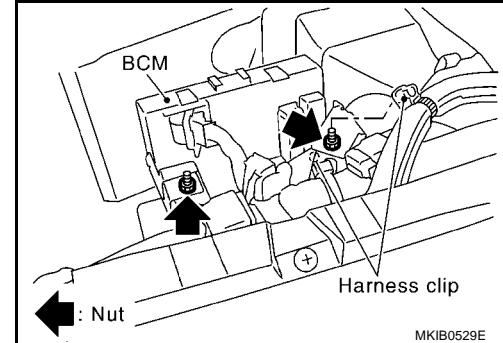
### CAUTION:

Always replace with new\* BCM when the BCM replacement is required.

\*: New one means virgin control unit that has never been energized on-board.

### REMOVAL

1. Remove instrument upper panel. Refer to [IP-4, "INSTRUMENT PANEL ASSEMBLY"](#) in "IP INSTRUMENT PANEL."
2. Remove harness clip.
3. Remove screws to remove BCM.



### INSTALLATION

- Install in the reverse order of removal.

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## **BCM (BODY CONTROL MODULE)**

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