SECTION PCS
POWER CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006634122

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 AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 AIR BAG”.**
- **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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

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

WARNING:

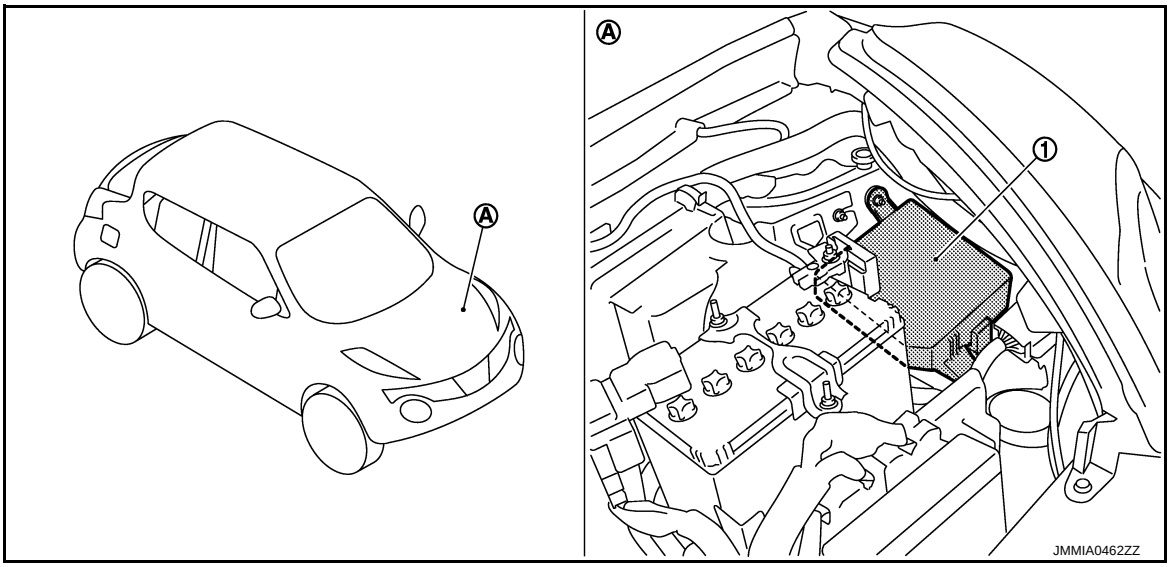
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious 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.**

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000006597894



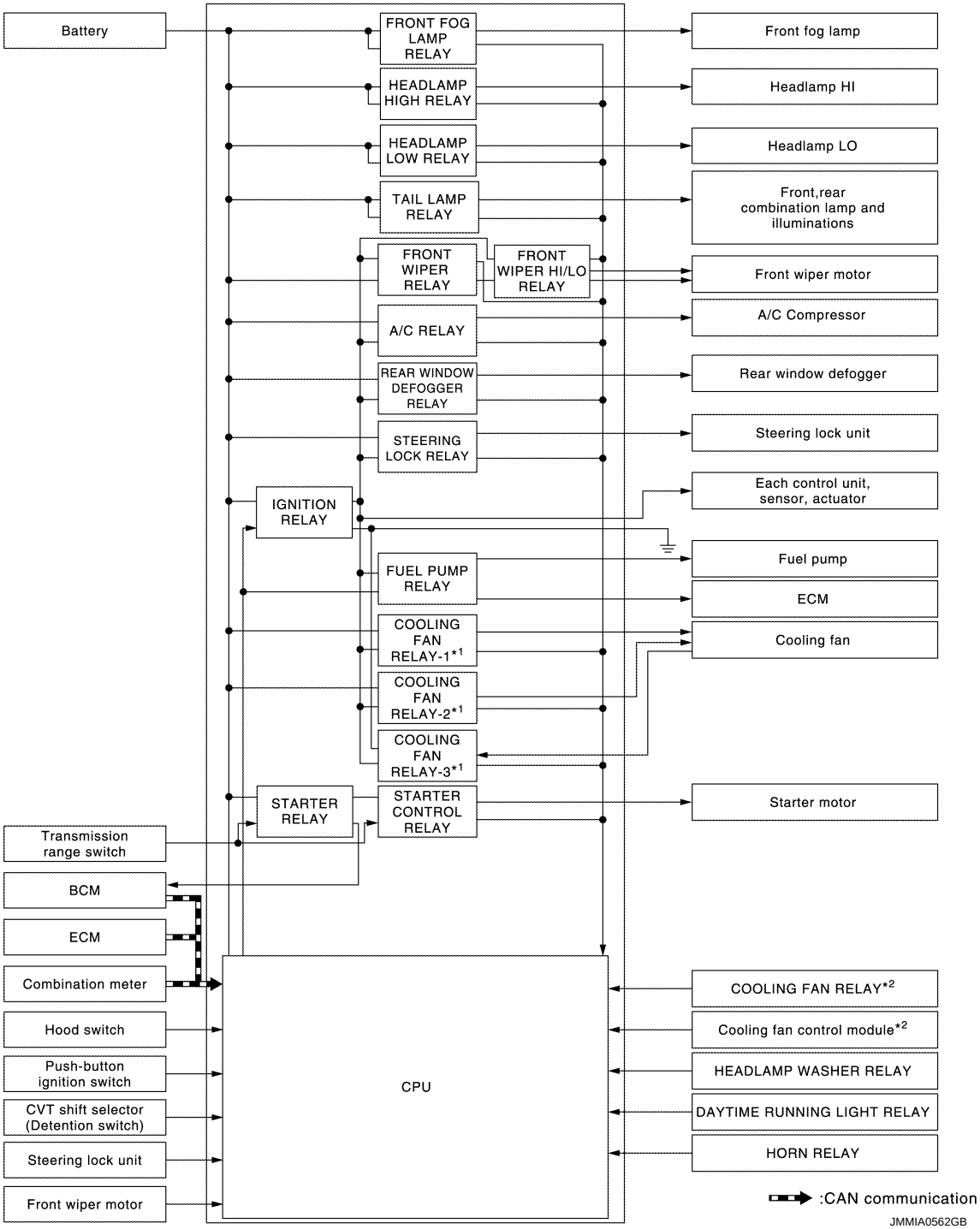
1. IPDM E/R
A. Engine room (LH)

SYSTEM

RELAY CONTROL SYSTEM

RELAY CONTROL SYSTEM : System Diagram

INFOID:0000000006597895



*1: Except for MR16DDT engine models

*2: For MR16DDT engine models

RELAY CONTROL SYSTEM : System Description

INFOID:0000000006597896

IPDM E/R activates the internal control circuit to perform the relay ON-OFF control according to the input signals from various sensors and the request signals received from control units via CAN communication.

CAUTION:

IPDM E/R integrated relays cannot be removed.

Control relay	Input/output	Transmit unit	Control part	Reference page
• Headlamp low relay • Headlamp high relay	• Low beam request signal • High beam request signal	BCM (CAN)	• Headlamp (LO) • Headlamp (HI)	EXL-9
Front fog lamp relay	Front fog light request signal	BCM (CAN)	Front fog lamp	EXL-13
Tail lamp relay	Position light request signal	BCM (CAN)	• Parking lamp • License plate lamp • Tail lamp	• EXL-15 (without DTRL) • EXL-16 (with DTRL)
			Illumination	INL-6
• Front wiper relay • Front wiper high relay	Front wiper request signal	BCM (CAN)	Front wiper motor	• WW-8 (with light & rain sensor) • WW-11 (without light & rain sensor)
	Front wiper stop position signal	Front wiper motor		
Rear window defogger	Rear window defogger switch signal	BCM (CAN)	Rear window defogger	• DEF-7 (with AUTO A/C) • DEF-7 (without AUTO A/C)
Horn relay	Theft warning horn request signal	BCM (CAN)	Horn	SEC-20
• Starter relay[NOTE] • Starter control relay	Starter control relay signal	BCM (CAN)	Starter motor	SEC-12, SEC-12
	Steering lock unit condition signal	Steering lock unit		
	Starter relay control signal	Transmission range switch		
Steering lock relay	Steering lock relay signal	BCM (CAN)	Steering lock unit	SEC-12
	Steering lock unit condition signal	Steering lock unit		
	CVT shift selector (Detention switch) signal	CVT shift selector (Detention switch)		
• Cooling fan relay-1 • Cooling fan relay-2 • Cooling fan relay-3	Cooling fan speed request signal	ECM (CAN)	Cooling fan	• EC-479 (HR16DE) • EC-827 (K9K)
A/C relay	A/C compressor request signal	ECM (CAN)	A/C compressor (Magnet clutch)	HAC-20
Daytime running light relay	• Daytime running light request signal • Low beam request signal	BCM (CAN)	• Headlamp (LO) • Parking lamp • License plate lamp • Tail lamp	EXL-12
Headlamp washer relay	Headlamp washer request signal	BCM (CAN)	Headlamp washer pump	WW-16
Ignition relay	Ignition switch ON signal	BCM (CAN)	Each control unit, sensor, actuator and relay (Ignition power supply)	PCS-31
	Vehicle speed signal (Meter)	Combination meter (CAN)		
	Push-button ignition switch signal	Push-button ignition switch		

NOTE:
BCM controls the starter relay.

RELAY CONTROL SYSTEM : Fail-Safe

INFOID:0000000006626136

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe operation
Cooling fan	• For MR16DDT engine - Transmits the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. - Transmits the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF. • Except for MR16DDT engine - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn ON when the ignition switch is turned ON (Cooling fan HI operation) - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn OFF when the ignition switch is turned OFF
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamp • License plate lamp • Illumination • Tail lamp	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper motor	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Returns automatically wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stop in the other position than stop position. • The status is held at service position if the fail-safe control is activated while the service position function is operating.
Front fog lamp	Front fog lamp relay OFF
Rear window defogger	Rear window defogger relay OFF
Horn	Horn OFF
Ignition relay	The status just before activation of fail-safe is maintained.
Starter motor	Starter control relay OFF
Steering lock unit	Steering lock relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Voltage judgment		IPDM E/R judgment	Operation
Ignition relay contact side	Ignition relay excitation coil side		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	• Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes
OFF	ON	Ignition relay OFF stuck	Detects DTC “B2099: IGN RELAY OFF”

FRONT WIPER PROTECTION FUNCTION

IPDM E/R detects front wiper stop position by a front wiper stop position signal.

When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop.

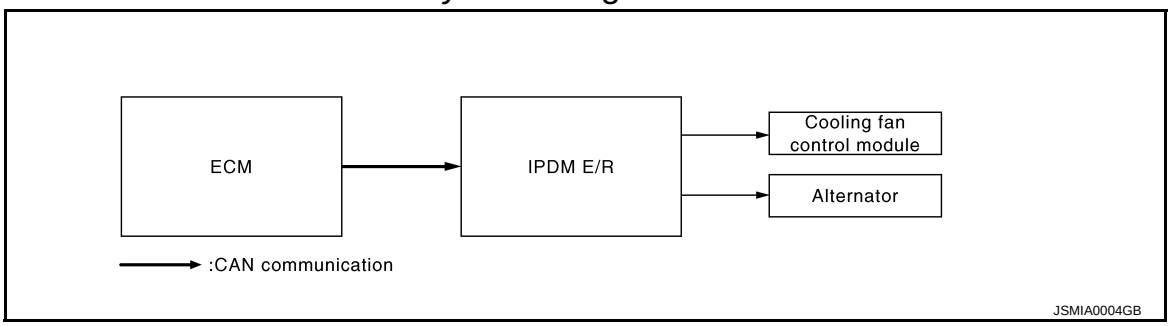
Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION
IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

POWER CONTROL SYSTEM

POWER CONTROL SYSTEM : System Diagram
INFOID:0000000006626154



POWER CONTROL SYSTEM : System Description
INFOID:0000000006626155

COOLING FAN CONTROL (ONLY FOR MODELS WITH MR16DDT ENGINE)
IPDM E/R outputs pulse duty signal (PWM signal) to the cooling fan control module according to the status of the cooling fan speed request signal received from ECM via CAN communication. Refer to EC-61, "COOLING FAN CONTROL : System Diagram".

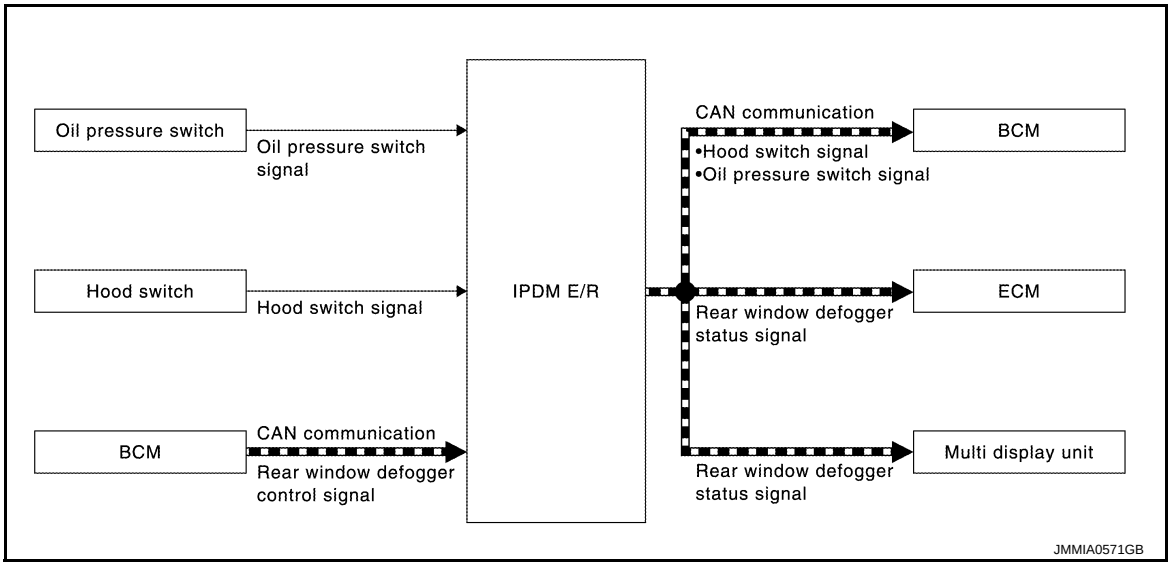
NOTE:
After ignition switch OFF, IPDM E/R turn the cooling fan relay ON and outputs pulse duty signal (PWM signal) to the cooling fan control module according to the request signal from ECM for cooling the engine according to the situation.

ALTERNATOR CONTROL
IPDM E/R outputs power generation command signal (PWM signal) to the alternator according to the status of the power generation command value signal received from ECM via CAN communication. Refer to CHG-9, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM : System Diagram (Gasoline Engine Models)".

SIGNAL BUFFER SYSTEM

SIGNAL BUFFER SYSTEM : System Diagram

INFOID:0000000006597898



SIGNAL BUFFER SYSTEM : System Description

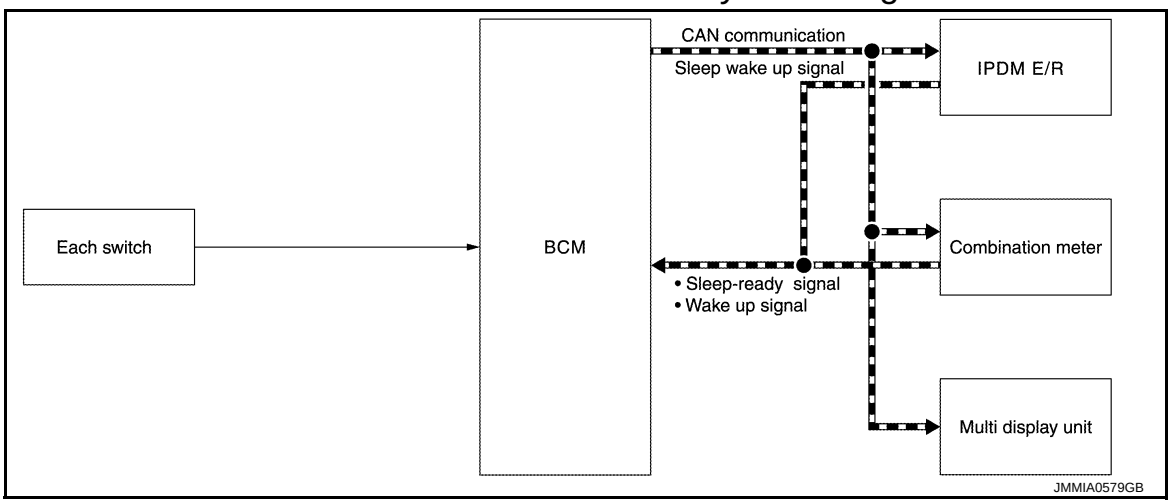
INFOID:0000000006597899

- **NOTE:**
  Only for K9K engine models
  IPDM E/R reads the status of the oil pressure switch and transmits the oil pressure switch signal to BCM via CAN communication. Refer to MWI-12, "OIL PRESSURE WARNING LAMP : System Diagram".
- IPDM E/R reads the status of the hood switch and transmits the hood switch signal to BCM via CAN communication. Refer to SEC-20, "VEHICLE SECURITY SYSTEM : System Diagram".
- IPDM E/R receives the rear window defogger control signal from BCM via CAN communication and transmits the rear window defogger status signal to ECM and multi display unit via CAN communication. Refer to DEF-7, "WITH AUTO A/C : System Diagram" (with AUTO A/C) or DEF-7, "WITHOUT AUTO A/C : System Diagram" (without AUTO A/C).

POWER CONSUMPTION CONTROL SYSTEM

POWER CONSUMPTION CONTROL SYSTEM : System Diagram

INFOID:0000000006634105



POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:0000000006597901

OUTLINE

- IPDM E/R incorporates a power consumption control function that reduces the power consumption according to the vehicle status.
- IPDM E/R changes its status (control mode) with the sleep wake up signal received from BCM via CAN communication.

Normal mode (wake-up)
- CAN communication is normally performed with other control units.
- Individual unit control by IPDM E/R is normally performed.

Low power consumption mode (sleep)
- Low power consumption control is active.
- CAN transmission is stopped.

SLEEP MODE ACTIVATION

- IPDM E/R judges that the sleep-ready conditions are fulfilled when the ignition switch is OFF and none of the conditions below are present. Then it transmits a sleep-ready signal (ready) to BCM via CAN communication.
  - Outputting signals to actuators
  - Switches or relays operating
  - Output requests are being received from control units via CAN communication.
- IPDM E/R stops CAN communication and enters the low power consumption mode when it receives a sleep wake up signal (sleep) from BCM and the sleep-ready conditions are fulfilled.

WAKE-UP OPERATION

- IPDM E/R changes from the low power consumption mode to the normal mode when it receives a sleep wake-up signal (wake up) from BCM or any of the following conditions is fulfilled. In addition, it transmits a sleep-ready signal (not-ready) to BCM via CAN communication to report the CAN communication start.
  - Ignition switch ON
  - An output request is received from a control unit via CAN communication.

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000006597902

AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp (only for K9K engine models)
- Rear window defogger
- Front wiper motor
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

CAUTION:

Wiper arm interferes with food when wiper is operated while wiper arm is in the raised position. Always perform auto active test without setting wiper arm in the raised position. Always pour water on front windshield glass in advance to auto active test so that damage on front windshield glass surface is prevented.

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
   CAUTION:
   Close passenger door.
3. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
   CAUTION:
   Engine starts when ignition switch is turned ON while brake pedal is depressed.
4. Oil pressure warning lamp starts blinking when the auto active test starts*. (only for K9K engine models)
   *: Except for K9K engine models, oil pressure warning lamp turn ON when auto active test start.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to DLK-87, "Component Function Check" (with super lock) or DLK-258, "Component Function Check" (without super lock).

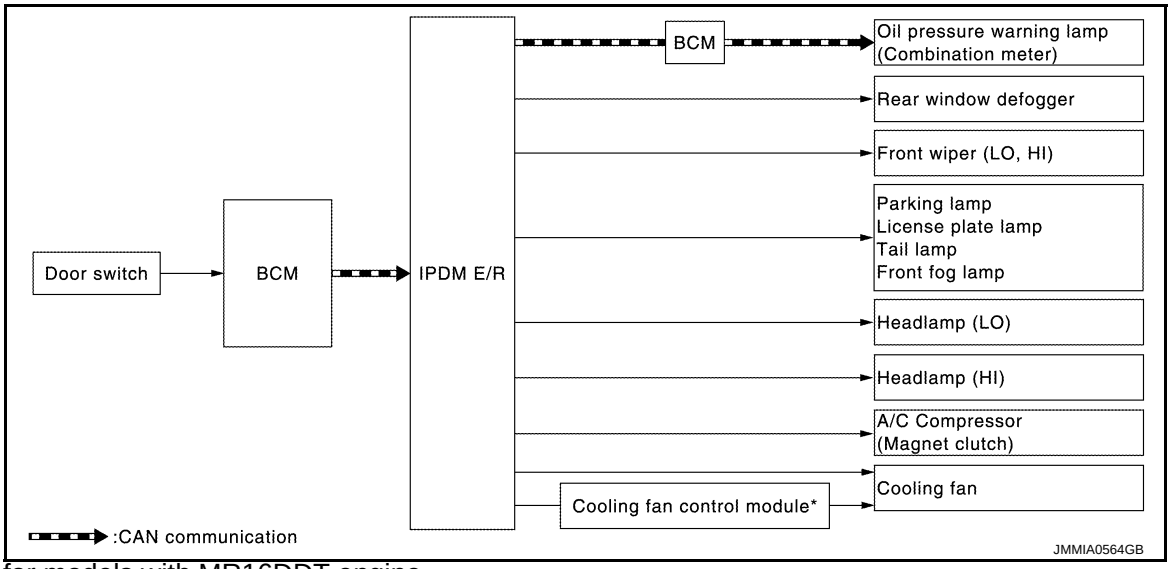
Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following operation sequence is repeated 3 times.

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test **NOTE:** Except for K9K engine models, turn ON continuously during operation of auto active test.
2	Rear window defogger	10 seconds
3	Front wiper motor	LO for 5 seconds → HI for 5 seconds
4	• Parking lamp • License plate lamp • Tail lamp • Front fog lamp	10 seconds
5	Headlamp	LO for 10 seconds →HI ON ⇔ OFF 5 times

Operation sequence	Inspection location	Operation
6	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
7	Cooling fan	• LO for 5 seconds → HI for 5 seconds (Except for MR16DDT models) • 50% duty for 5 seconds → 100% duty for 5 seconds (For MR16DDT models)

Concept of auto active test



*: Only for models with MR16DDT engine

- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES	BCM signal input circuit
		NO	• Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper motor	Perform auto active test. Does the applicable system operate?	YES	BCM signal input circuit
		NO	• Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• A/C amp. signal input circuit • CAN communication signal between A/C amp. and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R

Symptom	Inspection contents		Possible cause
Oil pressure warning lamp does not operate (only for K9K engine models)	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Harness or connector between IPDM E/R and cooling fan motor • Harness or connector between IPDM E/R and cooling fan control module. (Only for models with MR16DDT engine) • Harness or connector between cooling fan control module and cooling fan motor (Only for models with MR16DDT engine) • Cooling fan motor • Cooling fan control module (Only for models with MR16DDT engine) • IPDM E/R

CONSULT-III Function (IPDM E/R)

INFOID:0000000006597903

APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with IPDM E/R.

Diagnosis mode	Description
Ecu Identification	Allows confirmation of IPDM E/R part number.
Self Diagnostic Result	Displays the diagnosis results judged by IPDM E/R.
Data Monitor	Displays the real-time input/output data from IPDM E/R input/output data.
Active Test	IPDM E/R can provide a drive signal to electronic components to check their operations.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.

SELF DIAGNOSTIC RESULT

Refer to PCS-25, "DTC Index".

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
RAD FAN REQ [%]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. **NOTE:** This item is displayed only for vehicle with MR16DDT engine.
MOTOR FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. **NOTE:** This item is displayed only for vehicle without MR16DDT engine.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY1 -REQ [Off/On]		Displays the status of the ignition switch ON signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
PUSH SW [Off/On]		Displays the status of the push-button ignition switch judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the ignition power supply (M/T models) or shift position (CVT models) judged by IPDM E/R.
ST RLY CONT [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
IHBT RLY -REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
ST/INHI RLY [Off/ ST ON/INHI ON/UNKWN]		Displays the status of the starter relay and starter control relay judged by IPDM E/R.
DETENT SW [Off/On]		Displays the status of the CVT shift selector (detention switch) judged by IPDM E/R.
S/L RLY -REQ [Off/On]		Displays the status of the steering lock relay signal received from BCM via CAN communication.
S/L STATE [LOCK/UNLK/UNKWN]		Displays the status of the steering lock judged by IPDM E/R.
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R. **NOTE:** This item is monitored only K9K engine models.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R.

Monitor Item [Unit]	MAIN SIGNALS	Description
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		**NOTE:** The item is indicated, but not monitored.

ACTIVE TEST

Test item

Test item		Operation	Description
HORN		On	Operates horn relay for 20 ms.
REAR DEFOGGER		Off	OFF
		On	Operates the rear window defogger relay.
FRONT WIPER		Off	OFF
		Lo	Operates the front wiper relay.
		Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	For MR16DDT engine	1	OFF
		2	Transmits 50% pulse duty signal (PWM signal) to the cooling fan control module.
		3	Transmits 75% pulse duty signal (PWM signal) to the cooling fan control module.
		4	Transmits 100% pulse duty signal (PWM signal) to the cooling fan control module.
	Except for MR16DDT engine	1	OFF
		2	Operates the cooling fan relay (LO operation).
		3	Operates the cooling fan relay (HI operation).
		4	
HEAD LAMP WASHER		On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS		Off	OFF
		TAIL	Operates the tail lamp relay.
		Lo	Operates the headlamp low relay.
		Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
		Fog	Operates the front fog lamp relay.

ECU DIAGNOSIS INFORMATION

IPDM E/R

Reference Value

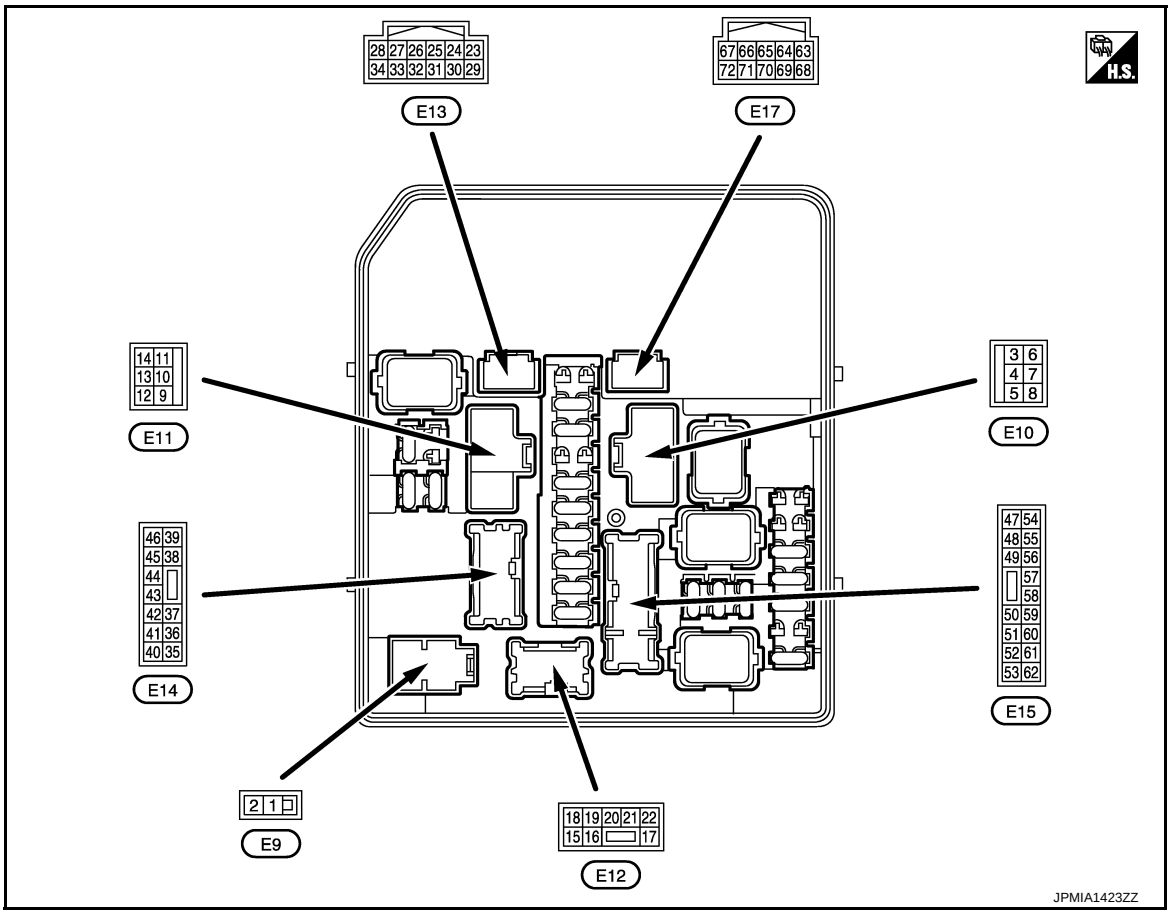
INFOID:0000000006597904

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
RAD FAN REQ **NOTE:** This item is displayed only for vehicle with MR16DDT engine.	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	0 – 100%
MOTOR FAN REQ **NOTE:** This item is displayed only for vehicle without MR16DDT engine.	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1/2/3/4
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	• Lighting switch 1ST, 2ND or AUTO (Light is illuminated) • Daytime running light system operated		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch 2ND or AUTO (light is illuminated)	Lighting switch other than HI and PASS	Off
		Lighting switch HI or PASS	On
FR FOG REQ	Lighting switch 1ST, 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally.	Off
		Front wiper stops at fail-safe operation.	BLOCK
IGN RLY1 -REQ	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
PUSH SW	Release the push-button ignition switch		Off
	Press the push-button ignition switch		On

Monitor Item	Condition		Value/Status
INTER/NP SW	Ignition switch ON (CVT models)	Selector lever in any position other than P or N	Off
		Selector lever in P or N position	On
	Ignition switch OFF or ACC (M/T models)		Off
	Ignition switch ON (M/T models)		On
ST RLY CONT	Ignition switch ON		Off
	At engine cranking		On
IHBT RLY -REQ	Ignition switch ON		Off
	At engine cranking		On
ST/INHI RLY	Ignition switch ON		Off
	At engine cranking		INHI ON → ST ON
	The status of starter relay or starter control relay cannot be recognized by the battery voltage malfunction, etc. when the starter relay is ON and the starter control relay is OFF.		UNKWN
DETENT SW	Ignition switch ON	• Press the selector button with selector lever in P position. • Selector lever in any position other than P.	Off
	Release the selector button with selector lever in P position. **NOTE:** Status fixed to On for M/T models		On
S/L RLY -REQ	None of the conditions below are present.		Off
	• Open the driver door after the ignition switch is turned OFF (for a few seconds). • Press the push-button ignition switch when the steering lock is activated.		On
S/L STATE	Steering lock is locked.		LOCK
	Steering lock is unlocked.		UNLK
	[DTC: B210A] is detected.		UNKWN
DTRL REQ	Daytime running light system is not operated with ignition switch OFF		Off
	Any of the condition below • Daytime running light system is operated • Light switch 2ND or AUTO (light is illuminated)		On
OIL P SW **NOTE:** This item is monitored only for vehicle with K9K engine.	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close
HOOD SW	Close the hood		Off
	Open the hood		On
HL WASHER REQ	Not operating		Off
	Headlamp washer operating		On
THFT HRN REQ	Not operation		Off
	Theft warning alarm is activated		On
HORN CHIRP	**NOTE:** The item is indicated, but not monitored.		Off

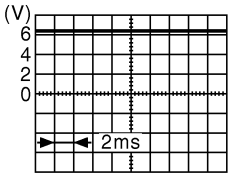
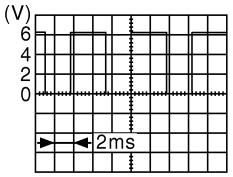
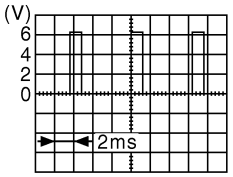
TERMINAL LAYOUT

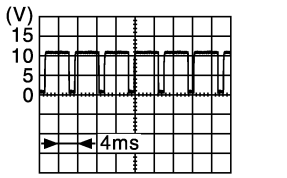


PHYSICAL VALUES

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (R)	Ground	Battery power supply	Input	Ignition switch OFF	6 – 16 V
2 (G)	Ground	Battery power supply	Input	Ignition switch OFF	6 – 16 V
3 (R)	Ground	Starter motor	Output	Other than engine cranking	0 – 1 V
				At engine cranking	6 – 16 V
4 (P)	Ground	Battery power supply	Input	Ignition switch OFF	9 – 16 V
5*2 (LG)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan OFF	0 – 1 V
				Cooling fan operated	9 – 16 V
7*2 (Y)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan OFF	0 – 1 V
				Cooling fan LO operated	4 – 8 V
				Cooling fan HI operated	9 – 16 V
8 (V)	Ground	Battery power supply	Input	Ignition switch OFF	6 – 16 V
9 (B/Y)	Ground	Ground	—	Ignition switch ON	0 – 1 V
10*2 (L)	Ground	Cooling fan motor ground	Output	Cooling fan OFF	0 – 1 V
				Cooling fan LO operated	4 – 8 V
				Cooling fan HI operated	9 – 16 V

Terminal NO. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
14 (R)	Ground	Rear window defogger	Output	Ignition switch ON	Rear window defogger switch OFF	0 – 1 V
					Rear window defogger switch ON	9 – 16 V
18 (B/Y)	Ground	Ground	—	Ignition switch ON		0 – 1 V
19 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 1ST, 2ND or AUTO	Front fog lamp switch OFF	0 – 1 V
					Front fog lamp switch ON	9 – 16 V
20 (V)	Ground	Front fog lamp (LH)	Output	Lighting switch 1ST, 2ND or AUTO	Front fog lamp switch OFF	0 – 1 V
					Front fog lamp switch ON	9 – 16 V
21 (Y)	Ground	Headlamp washer relay control	Output	Ignition switch ON	Headlamp washer deactivated	9 – 16 V
					Headlamp washer activated	0 – 1 V
23 (SB)	Ground	Cranking request	Output	Ignition switch OFF		0 – 1 V
				Ignition switch ON	Select lever P or N	
					Select lever in any position other than P or N	9 – 16 V
				Engine running		
24*7 (R)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 – 1 V
					Engine running	9 – 16 V
25 (BR)	Ground	Front wiper stop position	Input	Ignition switch ON	Front wiper stop position	0 – 1.5 V
					Any position other than front wiper stop position	9 – 16 V
26 (P)	Ground	CAN-L	Input/ Output	—		—
27 (L)	Ground	CAN-H	Input/ Output	—		—
28 (Y)	Ground	Daytime running light relay control	Output	Daytime running light deactivated		9 – 16 V
				Daytime running light activated		0 – 1 V
30 (V)	Ground	Starter relay control	Output	Ignition switch ON	Select lever P or N	6 – 16 V
					Select lever in any position other than P or N	0 – 1 V
31 (Y)	Ground	Fuel pump relay control	Output	• Approximately 1 second after turning the ignition switch ON • Engine running		0 – 1 V
				Approximately 1 second or more after turning the ignition switch ON		6 – 16 V
32 (SB)	Ground	Hood switch	Input	Close the hood		9 – 16 V
				Open the hood		0 – 1 V

Terminal NO. (Wire color) +	Terminal NO. (Wire color) –	Description Signal name	Description Input/ Output	Condition		Value (Approx.)
33 (G)	Ground	Power generation command signal	Output	Ignition switch ON		 JPMIA0001GB 6.3 V
				40% is set on “ACTIVE TEST”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0002GB 3.8 V
				80% is set on “ACTIVE TEST”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0003GB 1.4 V
34 (L)	Ground	Horn relay control	Output	The horn is deactivated		9 – 16 V
				The horn is activated		0 – 1 V
35 (G)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		6 – 16 V
36 (P)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		6 – 16 V
37 (L)	Ground	Parking lamp	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
38 (R)	Ground	Rear combination lamp RH	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
39 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 – 1 V
					Front wiper switch HI	9 – 16 V

Terminal NO. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
41 (BR)	Ground	ECM relay control	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		6 – 16 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 – 1 V
42 (Y)	Ground	ECM power supply	Output	Ignition switch OFF		6 – 16 V
43 (V)*5 (R)*6	Ground	Illuminations	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
44 (GR)	Ground	Rear combination lamp LH	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
45 (W)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 – 1 V
					Front wiper switch LO	9 – 16 V
46 (LG)	Ground	Steering lock unit power supply	Output	Ignition switch ACC or ON		0 – 1 V
				Ignition switch OFF	A few seconds after opening the driver door	9 – 16 V
				Ignition switch LOCK	Press the push-button ignition switch	9 – 16 V
47 (V)	Ground	Alternator input	Input	Ignition switch OFF or ACC		0 – 1 V
				Ignition switch ON		 JMMIA0260GB
48 (BR)	Ground	Transmission range switch*3	Input	Select lever in any position other than P or N (Ignition switch ON)		0 – 1 V
				Select lever P or N (Ignition switch ON)		9 – 16 V
		Ignition relay power supply*4		Ignition switch OFF		0 – 1 V
				Ignition switch ON		9 – 16 V
49 (Y)	Ground	Headlamp HI (RH)	Output	Ignition switch 2ND or AUTO	Lighting switch OFF	0 – 1 V
					• Lighting switch HI • Lighting switch PASS	9 – 16 V
50 (G)	Ground	Headlamp HI (LH)	Output	Ignition switch 2ND or AUTO	Lighting switch OFF	0 – 1 V
					• Lighting switch HI • Lighting switch PASS	9 – 16 V
51 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 2ND		9 – 16 V
52 (P)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 2ND		9 – 16 V

Terminal NO. (Wire color)		Description		Condition			Value (Approx.)
+	–	Signal name	Input/ Output				
54 (P)	Ground	Fuel pump power supply	Output	Approximately 1 second or more than after turning the ignition switch ON			0 – 1 V
				• Approximately 1 second after turning the ignition switch ON • Engine running			6 – 16 V
55 (GR)	Ground	Throttle control motor relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)			0 – 1 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)			6 – 16 V
56 (SB)	Ground	A/C relay power supply	Output	Engine running	A/C switch OFF		0 – 1 V
					A/C switch ON (A/C compressor is operating)		9 – 16 V
57 (O)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC			0 – 1 V
				Ignition switch ON			6 – 16 V
58 (BR)*3 (LG)*4	Ground	Ignition relay power supply	Output	Ignition switch OFF			0 – 1 V
				Ignition switch ON			6 – 16 V
59 (V)	Ground	Ignition relay power supply	Output	Ignition switch OFF			0 – 1 V
				Ignition switch ON			6 – 16 V
60 (SB)	Ground	Throttle control motor relay control	Output	Ignition switch OFF or ACC			6 – 16 V
				Ignition switch ON			0 – 1 V
61 (LG)	Ground	Ignition relay power supply	Output	Ignition switch OFF			0 – 1 V
				Ignition switch ON			6 – 16 V
62 (O)	Ground	Ignition relay power supply	Output	Ignition switch OFF			0 – 1 V
				Ignition switch ON			6 – 16 V
63 (P)	Ground	Steering lock unit condition-2	Input	Steering lock is locked			9 – 16 V
				Steering lock is unlocked			0 – 1 V
64*3 (Y)	Ground	CVT shift selector (Detention switch)	Input	Ignition switch ON	Select lever P	Release select button	0 – 1 V
						Press select button	9 – 16 V
				Select lever in any position other than P			
65 (W)	Ground	Steering lock unit condition-1	Input	Steering lock is locked			0 – 1 V
				Steering lock is unlocked			6 – 16 V
66 (L)	Ground	Push-button ignition switch	Input	Press the push-button ignition switch			0 – 1 V
				Release the push-button ignition switch			6 – 16 V
67*2 (L)	Ground	Cooling fan relay control	Output	Ignition switch OFF or ACC			9 – 16 V
				Ignition switch ON			0 – 1 V
				Cooling fan operated			0 – 1 V
68 (O)	Ground	Ignition relay control	Input	Ignition switch OFF or ACC			6 – 16 V
				Ignition switch ON			0 – 1 V

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
		Signal name	Input/ Output		
+	–				
69 (BR)	Ground	Ignition power supply No. 2*3	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V
		Clutch interlock switch*4		Release the clutch pedal	0 – 1 V
				Depress the clutch pedal	6 – 16 V
72*1 (W)	Ground	Cooling fan control	Output	Engine idling	0 – 5 V

*1: MR16DDT engine models
*2: Except MR16DDT engine models
*3: CVT models
*4: M/T models
*5: With daytime running light system
*6: Without daytime running light system
*7: K9K engine models

Fail-Safe

INFOID:0000000006597905

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe operation
Cooling fan	• For MR16DDT engine - Transmits the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. - Transmits the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF. • Except for MR16DDT engine - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn ON when the ignition switch is turned ON (Cooling fan HI operation) - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn OFF when the ignition switch is turned OFF
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamp • License plate lamp • Illumination • Tail lamp	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper motor	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Returns automatically wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stop in the other position than stop position. • The status is held at service position if the fail-safe control is activated while the service position function is operating.
Front fog lamp	Front fog lamp relay OFF

Control part	Fail-safe operation
Rear window defogger	Rear window defogger relay OFF
Horn	Horn OFF
Ignition relay	The status just before activation of fail-safe is maintained.
Starter motor	Starter control relay OFF
Steering lock unit	Steering lock relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Voltage judgment		IPDM E/R judgment	Operation
Ignition relay contact side	Ignition relay excitation coil side		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	• Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes
OFF	ON	Ignition relay OFF stuck	Detects DTC “B2099: IGN RELAY OFF”

FRONT WIPER PROTECTION FUNCTION

IPDM E/R detects front wiper stop position by a front wiper stop position signal.
When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop.

Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

INFOID:0000000006597906

NOTE:
- The details of time display are as follows.
- CRNT: A malfunction is detected now.
- PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame Data).
- The number is 0 when is detected now.
- The number increases like 1 → 2 ··· 38 → 39 after returning to the normal condition whenever IGN OFF → ON.
- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

×: Applicable

CONSULT display	Fail-safe	Refer to
No DTC is detected. further testing may be required.	—	—
U1000: CAN COMM CIRCUIT	×	PCS-30

CONSULT display	Fail-safe	Refer to
B2098: IGN RELAY ON	×	PCS-31
B2099: IGN RELAY OFF	—	PCS-32
B209F: STR CUT OFF OPEN	—	SEC-134
B20A0: STR CUT OFF SHORT	—	SEC-136
B2108: S/L RELAY ON	—	SEC-138
B2109: S/L RELAY OFF	—	SEC-139
B210A: S/L STATE SW	—	SEC-140
B210B: PNP RLY ON	—	SEC-142
B210C: PNP RLY OFF	—	SEC-144
B210D: STARTER RELAY ON	—	SEC-146
B210E: STARTER RELAY OFF	—	SEC-148
B210F: INTRLCK/PNP SW ON	—	SEC-151
B2110: INTRLCK/PNP SW OFF	—	SEC-153

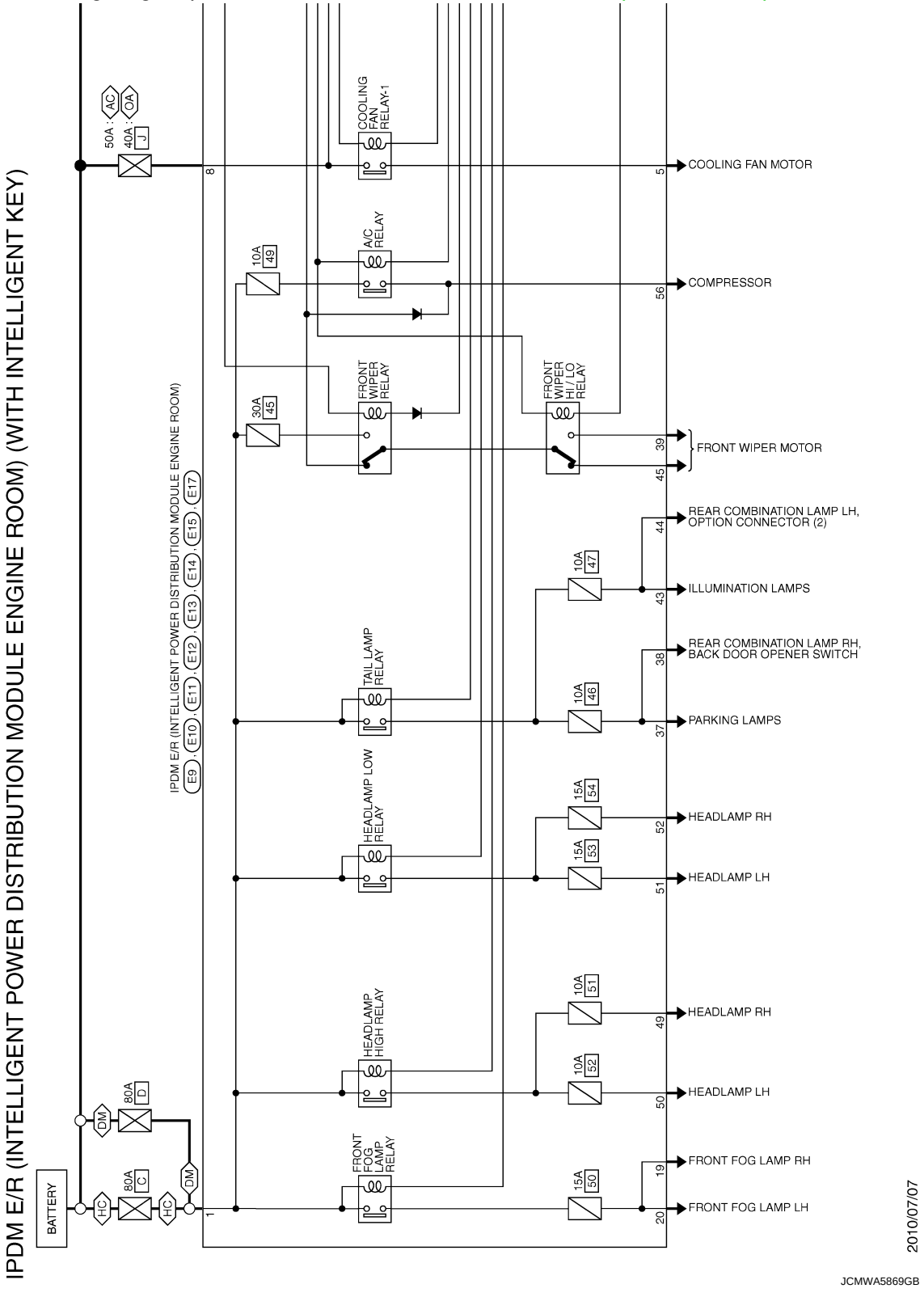
WIRING DIAGRAM

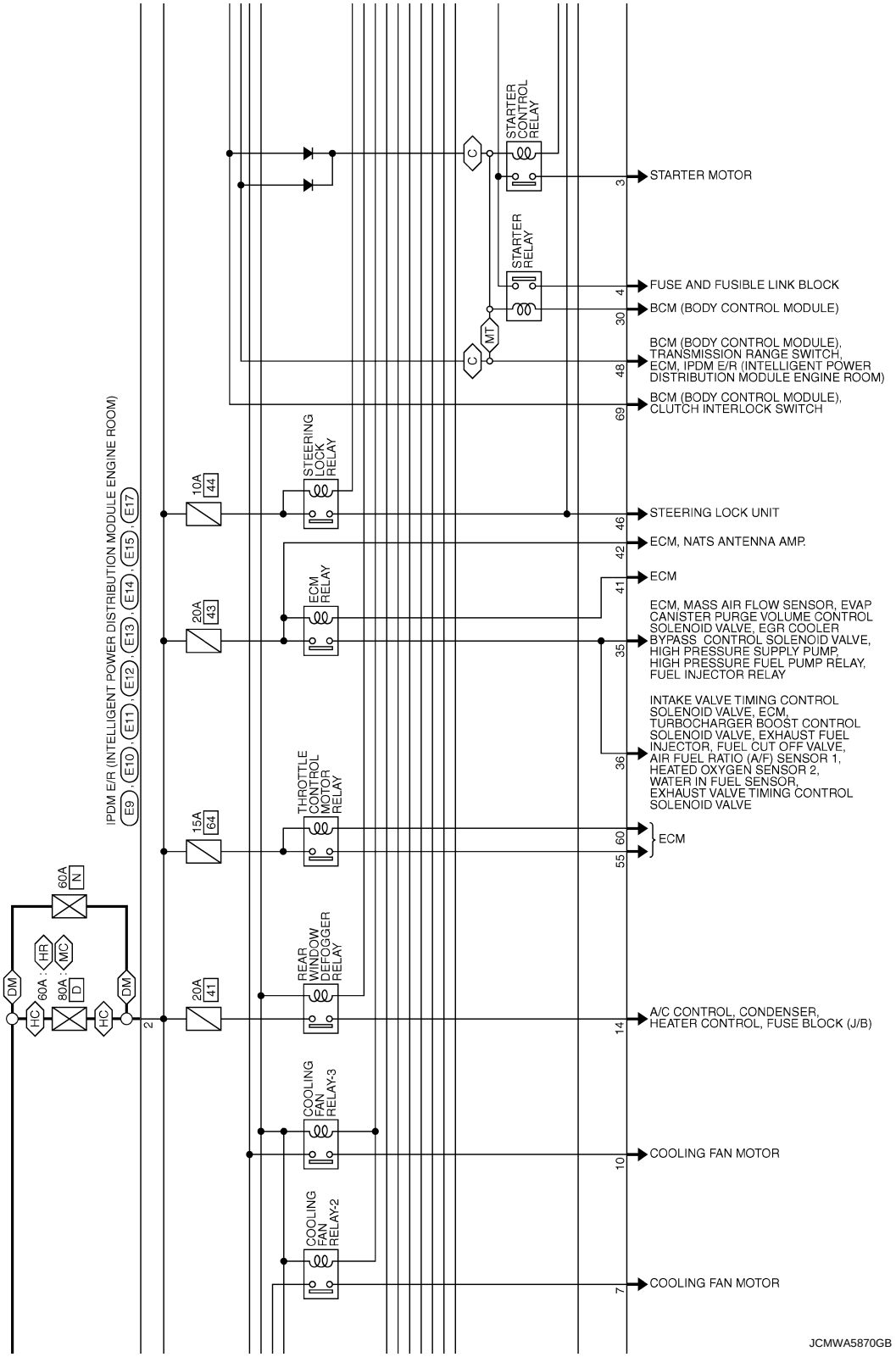
IPDM E/R

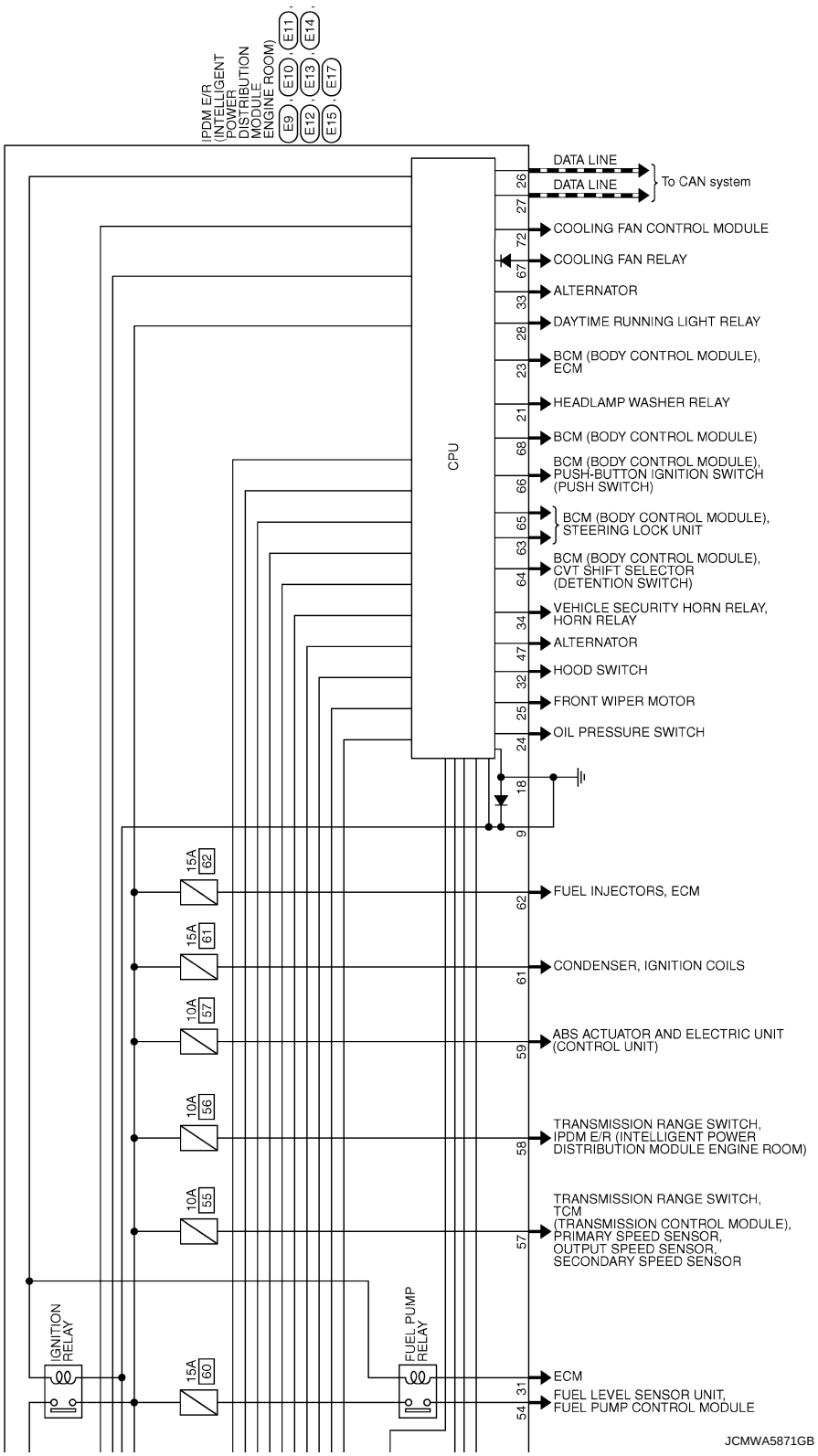
Wiring Diagram

INFOID:0000000006597907

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".




IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E9, E10, E11, E12, E13, E14, E15, E17
60A N
60A HR
80A MC
60A D
DM
HC
2
10A 44
20A 43
15A 64
20A 41
STEERING LOCK RELAY
ECM RELAY
THROTTLE CONTROL MOTOR RELAY
REAR WINDOW DEFOGGER RELAY
COOLING FAN RELAY-3
COOLING FAN RELAY-2
STARTER CONTROL RELAY
STARTER RELAY
C
MT
3 STARTER MOTOR
4 FUSE AND FUSIBLE LINK BLOCK
30 BCM (BODY CONTROL MODULE)
48 BCM (BODY CONTROL MODULE), TRANSMISSION RANGE SWITCH, ECM, IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
69 BCM (BODY CONTROL MODULE), CLUTCH INTERLOCK SWITCH
46 STEERING LOCK UNIT
42 ECM, NATS ANTENNA AMP.
41 ECM
35 ECM, MASS AIR FLOW SENSOR, EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE, EGR COOLER BYPASS CONTROL SOLENOID VALVE, HIGH PRESSURE SUPPLY PUMP, HIGH PRESSURE FUEL PUMP RELAY, FUEL INJECTOR RELAY
36 INTAKE VALVE TIMING CONTROL SOLENOID VALVE, ECM, TURBOCHARGER BOOST CONTROL SOLENOID VALVE, EXHAUST FUEL INJECTOR, FUEL CUT OFF VALVE, AIR FUEL RATIO (A/F) SENSOR 1, HEATED OXYGEN SENSOR 2, WATER IN FUEL SENSOR, EXHAUST VALVE TIMING CONTROL SOLENOID VALVE
60, 55 ECM
14 A/C CONTROL, CONDENSER, HEATER CONTROL, FUSE BLOCK (J/B)
10 COOLING FAN MOTOR
7 COOLING FAN MOTOR
JCMWA5870GB


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E9, E10, E11, E12, E13, E14, E15, E17
CPU
DATA LINE
DATA LINE
To CAN system
COOLING FAN CONTROL MODULE
COOLING FAN RELAY
ALTERNATOR
DAYTIME RUNNING LIGHT RELAY
BCM (BODY CONTROL MODULE), ECM
HEADLAMP WASHER RELAY
BCM (BODY CONTROL MODULE)
BCM (BODY CONTROL MODULE), PUSH-BUTTON IGNITION SWITCH (PUSH SWITCH)
BCM (BODY CONTROL MODULE), STEERING LOCK UNIT
BCM (BODY CONTROL MODULE), CVT SHIFT SELECTOR (DETENTION SWITCH)
VEHICLE SECURITY HORN RELAY, HORN RELAY
ALTERNATOR
HOOD SWITCH
FRONT WIPER MOTOR
OIL PRESSURE SWITCH
FUEL INJECTORS, ECM
CONDENSER, IGNITION COILS
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
TRANSMISSION RANGE SWITCH, IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
TRANSMISSION RANGE SWITCH, TCM (TRANSMISSION CONTROL MODULE), PRIMARY SPEED SENSOR, OUTPUT SPEED SENSOR, SECONDARY SPEED SENSOR
ECM
FUEL LEVEL SENSOR UNIT, FUEL PUMP CONTROL MODULE
IGNITION RELAY
FUEL PUMP RELAY
15A 62
15A 61
10A 57
10A 56
10A 55
15A 60
JCMWA5871GB

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006597908

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control unit, 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.
CAN Communication Signal Chart. Refer to LAN-31, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC Logic

INFOID:0000000006597909

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible cause
U1000	CAN COMM CIRCUIT	When IPDM E/R cannot communicate CAN communication signal continuously for 2 seconds or more	CAN communication system

Diagnosis Procedure

INFOID:0000000006597910

1.PERFORM SELF DIAGNOSTIC

1. Turn the ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” of IPDM E/R.

Is DTC “U1000” displayed?

YES >> Refer to LAN-17, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-42, "Intermittent Incident".

B2098 IGNITION RELAY ON STUCK

Description

INFOID:0000000006597911

- IPDM E/R operates the ignition relay when it receives an ignition switch ON signal from BCM via CAN communication.
- Turn the ignition relay OFF by pressing the push-button ignition switch once when the vehicle speed is 4 km/h (2.5 MPH) or less.
- Turn the ignition relay OFF with the following operation when the vehicle speed is more than 4 km/h (2.5 MPH) or when an abnormal condition occurs in CAN communication from the combination meter (Emergency OFF)

- Press and hold the push-button ignition switch for 2 seconds or more.
- Press the push-button ignition switch 3 times within 1.5 seconds.

NOTE:
The ignition relay does not turn ON for 3 seconds after emergency OFF even if the push-button ignition switch is pressed.

DTC Logic

INFOID:0000000006597912

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible causes
B2098	IGN RELAY ON	The ignition relay ON is detected for 1 second at ignition switch OFF (CPU monitors the status at the contact and excitation coil circuits of the ignition relay inside it)	Ignition relay malfunction

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check DTC in “Self Diagnostic Result” mode of “IPDM E/R” using CONSULT-III.

Is DTC detected?

YES >> Refer to PCS-31, "Diagnosis Procedure".
NO >> INSPECTION END.

Diagnosis Procedure

INFOID:0000000006597913

1.PERFORM SELF DIAGNOSIS

1. Turn the ignition switch ON.
2. Erase “Self Diagnostic Result” of IPDM E/R.
3. Turn the ignition switch OFF, and wait for 1 second or more.
4. Turn the ignition switch ON. Check “Self Diagnostic Result” again.

Is DTC “B2098” displayed?

YES >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".
NO >> Refer to GI-42, "Intermittent Incident".

B2099 IGNITION RELAY OFF STUCK

Description

INFOID:0000000006597914

- IPDM E/R operates the ignition relay when it receives an ignition switch ON signal from BCM via CAN communication.
- Turn the ignition relay OFF by pressing the push-button ignition switch once when the vehicle speed is 4 km/h (2.5 MPH) or less.
- Turn the ignition relay OFF with the following operation when the vehicle speed is more than 4 km/h (2.5 MPH) or when an abnormal condition occurs in CAN communication from the combination meter (Emergency OFF)

- Press and hold the push-button ignition switch for 2 seconds or more.
- Press the push-button ignition switch 3 times within 1.5 seconds.

NOTE:
The ignition relay does not turn ON for 3 seconds after emergency OFF even if the push-button ignition switch is pressed.

DTC Logic

INFOID:0000000006597915

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible causes
B2099	IGN RELAY OFF	The ignition relay OFF is detected for 1 second at ignition switch ON (CPU monitors the status at the contact and excitation coil circuits of the ignition relay inside it)	Ignition relay malfunction

NOTE:
When IPDM E/R power supply voltage is low (Approx. 7 - 8 V for about 1 second), the “DTC: B2099” may be detected.

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check DTC in “Self Diagnostic Result” mode of “IPDM E/R” using CONSULT-III.

Is DTC detected?

YES >> Refer to PCS-32, "Diagnosis Procedure".
NO >> INSPECTION END.

Diagnosis Procedure

INFOID:0000000006597916

1.PERFORM SELF DIAGNOSIS

1. Turn the ignition switch ON.
2. Erase “Self Diagnostic Result”.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON. Check “Self Diagnostic Result” again.

Is DTC “B2099” displayed?

YES >> Replace IPDM E/R. Refer to PCS-34, "Removal and Installation".
NO >> Refer to GI-42, "Intermittent Incident".

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000006597917

1.CHECK FUSES AND FUSIBLE LINK

Check that the following IPDM E/R fuses or fusible links are not blown.

Signal name	Fuses and fusible link No.
Battery power supply	C
	D
	J
	N

Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.
NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check voltage between IPDM E/R harness connector and the ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E9	1	Ground	6 – 16 V
	2		
E10	8		

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E11	9		Existed
E12	18		

Does continuity exist?

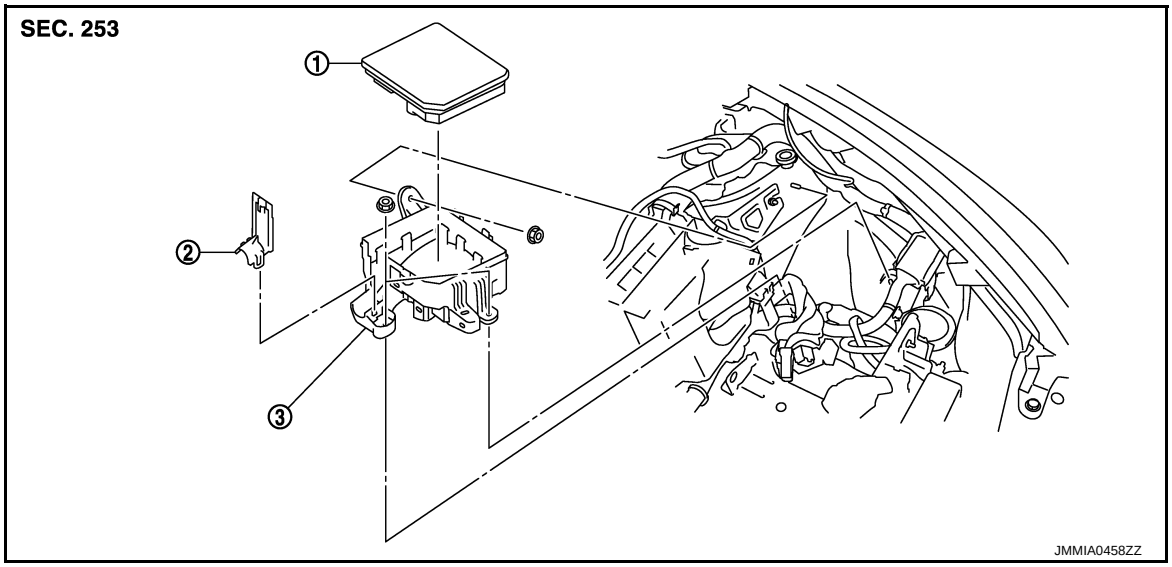
YES >> INSPECTION END
NO >> Repair the harness or connector.

REMOVAL AND INSTALLATION

IPDM E/R

Exploded View

INFOID:0000000006597918



1. IPDM E/R cover A
2. IPDM E/R
3. IPDM E/R cover B

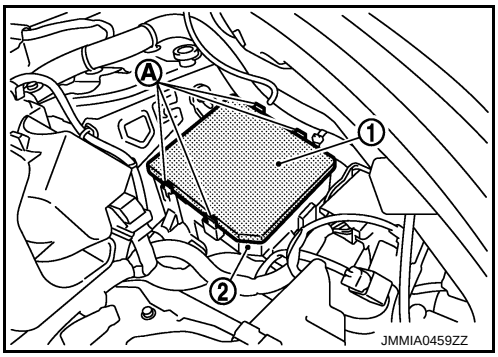
Removal and Installation

INFOID:0000000006597919

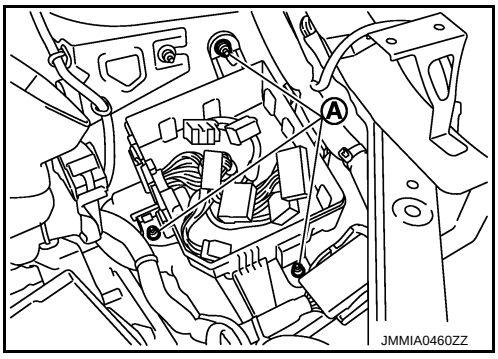
CAUTION:
IPDM E/R integrated relays are not serviceable parts, and must not be removed from the unit.

REMOVAL

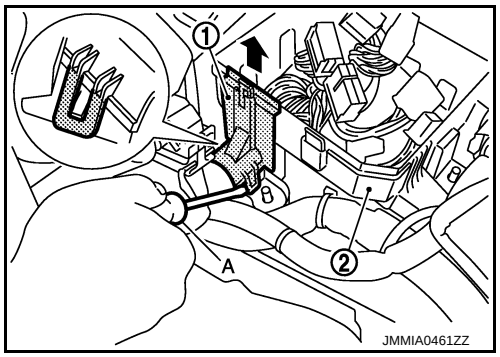
1. Remove battery.
2. Press and expand pawls (A) on lateral side of IPDM E/R cover and remove IPDM E/R (1) from IPDM E/R cover B (2).
3. Disconnect the harness connector and then remove the IPDM E/R.



4. Remove IPDM E/R cover B mounting nuts (A).



5. Insert a flat-bladed screwdriver between IPDM E/R cover A (1) and IPDM E/R cover B (2), disengage pawls, and remove IPDM E/R cover A.



6. Remove IPDM E/R cover B.

INSTALLATION

Install in the reverse order of removal.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006634121

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 AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. Because no rear seat exists where a rear-facing child restraint can be placed, the switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and will not inflate. A passenger air bag OFF indicator on the instrument panel lights up when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 AIR BAG”.**
- **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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and will not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, make sure the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

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

WARNING:

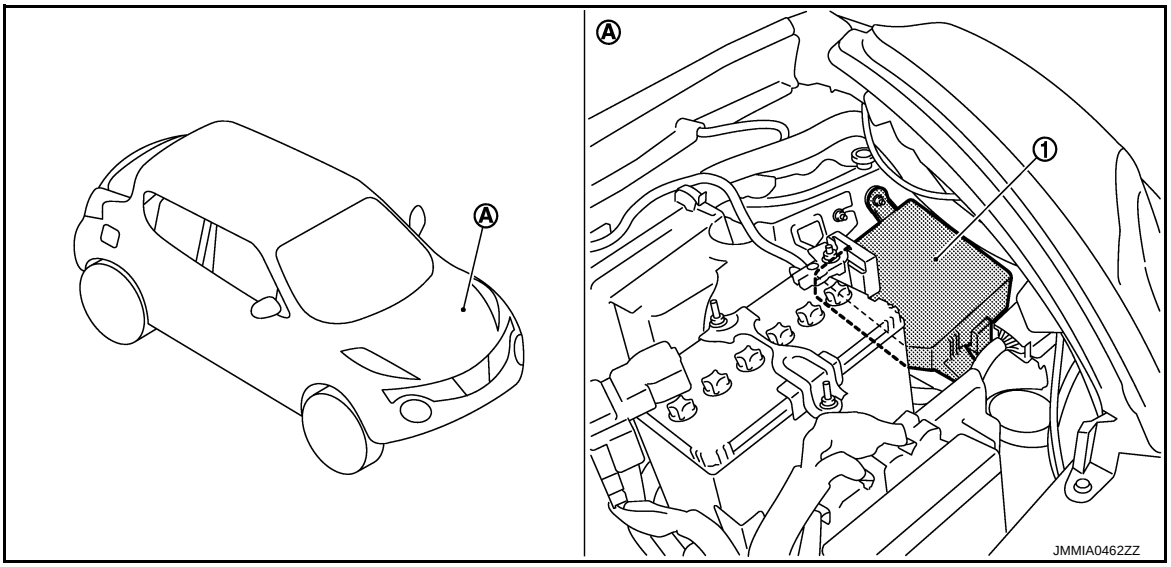
- **When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious 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.**

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000006634100



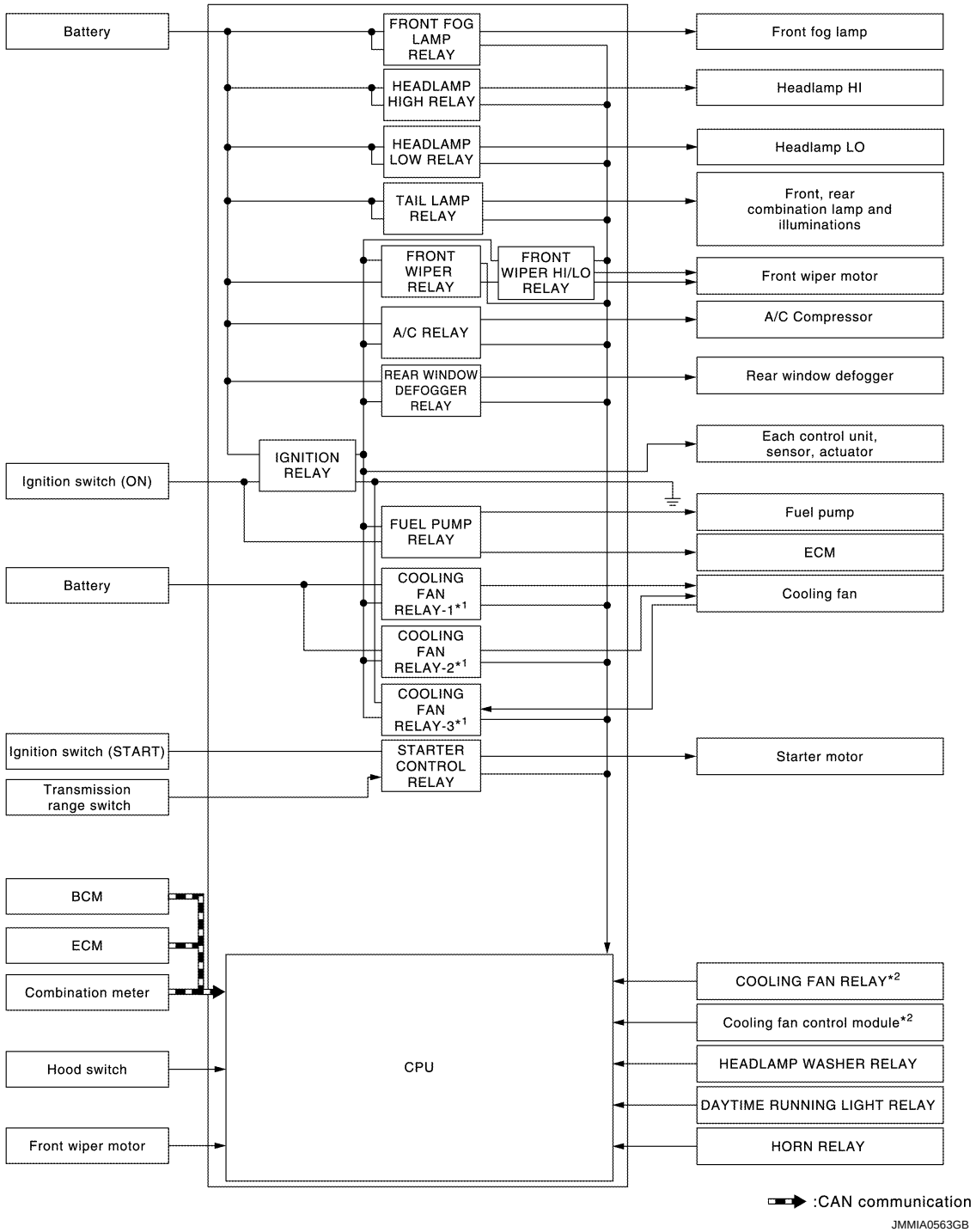
1. IPDM E/R
A. Engine room (LH)

SYSTEM

RELAY CONTROL SYSTEM

RELAY CONTROL SYSTEM : System Diagram

INFOID:0000000006597922



*1: Except for MR16DDT engine models
*2: For MR16DDT engine models

RELAY CONTROL SYSTEM : System Description

INFOID:0000000006597923

IPDM E/R activates the internal control circuit to perform the relay ON-OFF control according to the input signals from various sensors and the request signals received from control units via CAN communication.

CAUTION:
IPDM E/R integrated relays cannot be removed.

Control relay	Input/output	Transmit unit	Control part	Reference page
• Headlamp low relay • Headlamp high relay	• Low beam request signal • High beam request signal	BCM (CAN)	• Headlamp (LO) • Headlamp (HI)	EXL-9
Front fog lamp relay	Front fog light request signal	BCM (CAN)	Front fog lamp	EXL-13
Tail lamp relay	Position light request signal	BCM (CAN)	• Parking lamp • License plate lamp • Tail lamp	• EXL-15 (without DTRL) • EXL-16 (with DTRL)
			Illumination	INL-6
• Front wiper relay • Front wiper high relay	Front wiper request signal	BCM (CAN)	Front wiper motor	• WW-8 (with light & rain sensor) • WW-11 (without light & rain sensor)
	Front wiper stop position signal	Front wiper motor		
Rear window defogger relay	Rear window defogger control signal	BCM (CAN)	Rear window defogger	• DEF-7 (with AUTO A/C) • DEF-7 (without AUTO A/C)
Starter control relay	Starter control relay signal	BCM (CAN)	Starter motor	—
• Cooling fan relay-1 • Cooling fan relay-2 • Cooling fan relay-3	Cooling fan speed request signal	ECM (CAN)	Cooling fan	• EC-479 (HR16DE) • EC-827 (K9K)
A/C relay	A/C compressor request signal	ECM (CAN)	A/C compressor (Magnet clutch)	HAC-20
Daytime running light relay	• Daytime running light request signal • Low beam request signal	BCM (CAN)	• Headlamp (LO) • Parking lamp • License plate lamp • Tail lamp	EXL-12
Headlamp washer relay	Headlamp washer request signal	BCM (CAN)	Headlamp washer pump	WW-16
Ignition relay	Ignition switch ON signal	Ignition switch	Each control unit, sensor, actuator and relay (Ignition power supply)	PCS-60

RELAY CONTROL SYSTEM : Fail-Safe

INFOID:0000000006634177

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe operation
Cooling fan	• For MR16DDT engine - Transmits the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. - Transmits the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF. • Except for MR16DDT engine - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn ON when the ignition switch is turned ON (Cooling fan HI operation) - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn OFF when the ignition switch is turned OFF
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamp • License plate lamp • Illumination • Tail lamp	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper motor	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Returns automatically wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stop in the other position than stop position. • The status is held at service position if the fail-safe control is activated while the service position function is operating.
Front fog lamp	Front fog lamp relay OFF
Rear window defogger	Rear window defogger relay OFF
Horn	Horn OFF
Starter motor	Starter control relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Voltage judgment		IPDM E/R judgment	Operation
Ignition relay contact side	Ignition relay excitation coil side		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	• Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes
OFF	ON	Ignition relay OFF stuck	Detects DTC “B2099: IGN RELAY OFF”

FRONT WIPER PROTECTION FUNCTION

IPDM E/R detects front wiper stop position by a front wiper stop position signal.
When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop.

Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

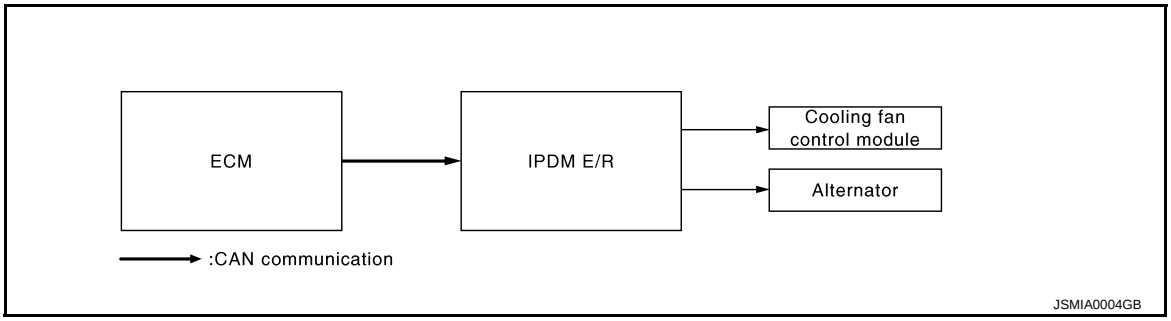
STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

POWER CONTROL SYSTEM

POWER CONTROL SYSTEM : System Diagram

INFOID:0000000006634101



POWER CONTROL SYSTEM : System Description

INFOID:0000000006634102

COOLING FAN CONTROL (ONLY FOR MODELS WITH MR16DDT ENGINE)

IPDM E/R outputs pulse duty signal (PWM signal) to the cooling fan control module according to the status of the cooling fan speed request signal received from ECM via CAN communication. Refer to EC-61, "COOLING FAN CONTROL : System Diagram".

NOTE:

After ignition switch OFF, IPDM E/R turn the cooling fan relay ON and outputs pulse duty signal (PWM signal) to the cooling fan control module according to the request signal from ECM for cooling the engine according to the situation.

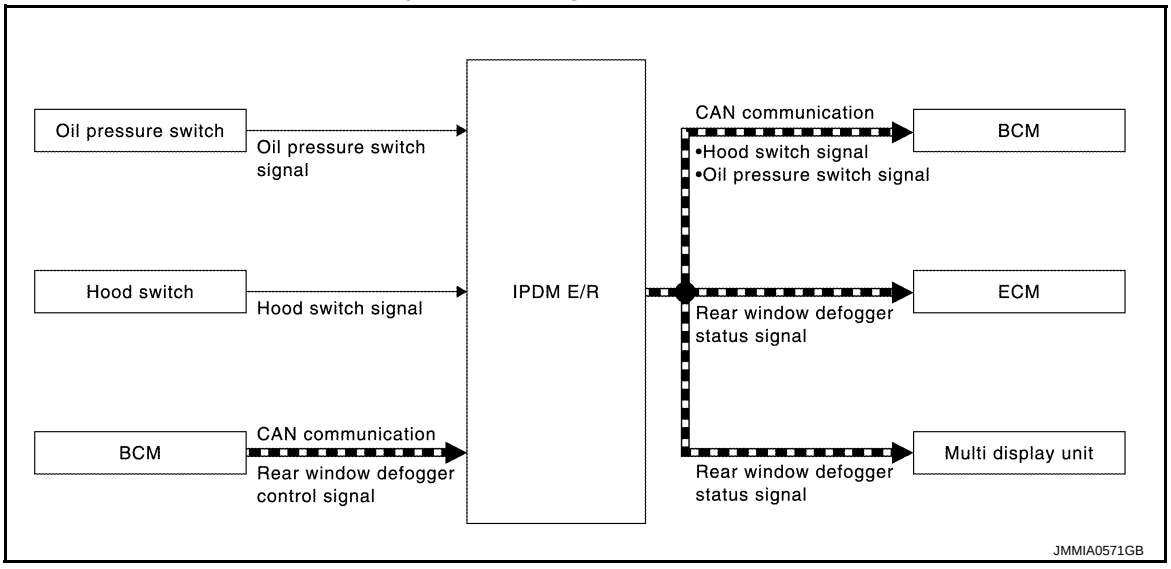
ALTERNATOR CONTROL

IPDM E/R outputs power generation command signal (PWM signal) to the alternator according to the status of the power generation command value signal received from ECM via CAN communication. Refer to CHG-9, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM : System Diagram (Gasoline Engine Models)".

SIGNAL BUFFER SYSTEM

SIGNAL BUFFER SYSTEM : System Diagram

INFOID:0000000006634103



SIGNAL BUFFER SYSTEM : System Description

INFOID:0000000006634104

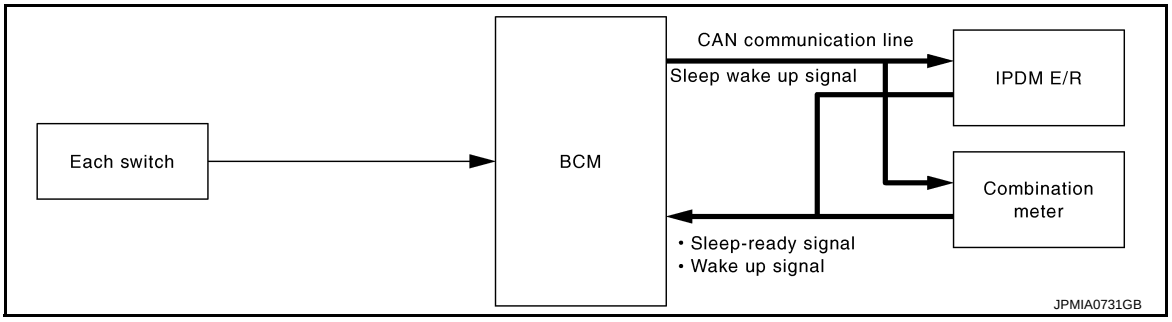
- **NOTE:**
  Only for K9K engine models
  IPDM E/R reads the status of the oil pressure switch and transmits the oil pressure switch signal to BCM via CAN communication. Refer to MWI-12, "OIL PRESSURE WARNING LAMP : System Diagram".
- IPDM E/R reads the status of the hood switch and transmits the hood switch signal to BCM via CAN communication. Refer to SEC-174, "VEHICLE SECURITY SYSTEM : System Diagram".

- IPDM E/R receives the rear window defogger control signal from BCM via CAN communication and transmits the rear window defogger status signal to ECM and multi display unit via CAN communication. Refer to DEF-7, "WITH AUTO A/C : System Diagram" (with AUTO A/C) or DEF-7, "WITHOUT AUTO A/C : System Diagram" (without AUTO A/C).

POWER CONSUMPTION CONTROL SYSTEM

POWER CONSUMPTION CONTROL SYSTEM : System Diagram

INFOID:0000000006634106



POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:0000000006597928

OUTLINE

- IPDM E/R incorporates a power consumption control function that reduces the power consumption according to the vehicle status.
- IPDM E/R changes its status (control mode) with the sleep wake up signal received from BCM via CAN communication.

Normal mode (wake-up)
- CAN communication is normally performed with other control units.
- Individual unit control by IPDM E/R is normally performed.

Low power consumption mode (sleep)
- Low power consumption control is active.
- CAN transmission is stopped.

SLEEP MODE ACTIVATION

- IPDM E/R judges that the sleep-ready conditions are fulfilled when the ignition switch is OFF and none of the conditions below are present. Then it transmits a sleep-ready signal (ready) to BCM via CAN communication.
  - Outputting signals to actuators
  - Switches or relays operating
  - Output requests are being received from control units via CAN communication.
- IPDM E/R stops CAN communication and enters the low power consumption mode when it receives a sleep wake up signal (sleep) from BCM and the sleep-ready conditions are fulfilled.

WAKE-UP OPERATION

- IPDM E/R changes from the low power consumption mode to the normal mode when it receives a sleep wake-up signal (wake up) from BCM or any of the following conditions is fulfilled. In addition, it transmits a sleep-ready signal (not-ready) to BCM via CAN communication to report the CAN communication start.
  - Ignition switch ON
  - An output request is received from a control unit via CAN communication.

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000006597929

AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp (only for K9K engine models)
- Rear window defogger
- Front wiper motor
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

CAUTION:

Wiper arm interferes with food when wiper is operated while wiper arm is in the raised position. Always perform auto active test without setting wiper arm in the raised position. Always pour water on front windshield glass in advance to auto active test so that damage on front windshield glass surface is prevented.

1. Turn the ignition switch OFF.
2. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
   CAUTION:
   Close passenger door.
3. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
   CAUTION:
   Engine starts when ignition switch is turned ON while brake pedal is depressed.
4. Oil pressure warning lamp starts blinking when the auto active test starts*. (only for K9K engine models)
   *: Except for K9K engine models, oil pressure warning lamp turn ON when auto active test start.
5. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF.
- When auto active test is not activated, door switch may be the cause. Check door switch. Refer to DLK-397, "Component Function Check" (with super lock) or DLK-522, "Component Function Check" (without super lock).

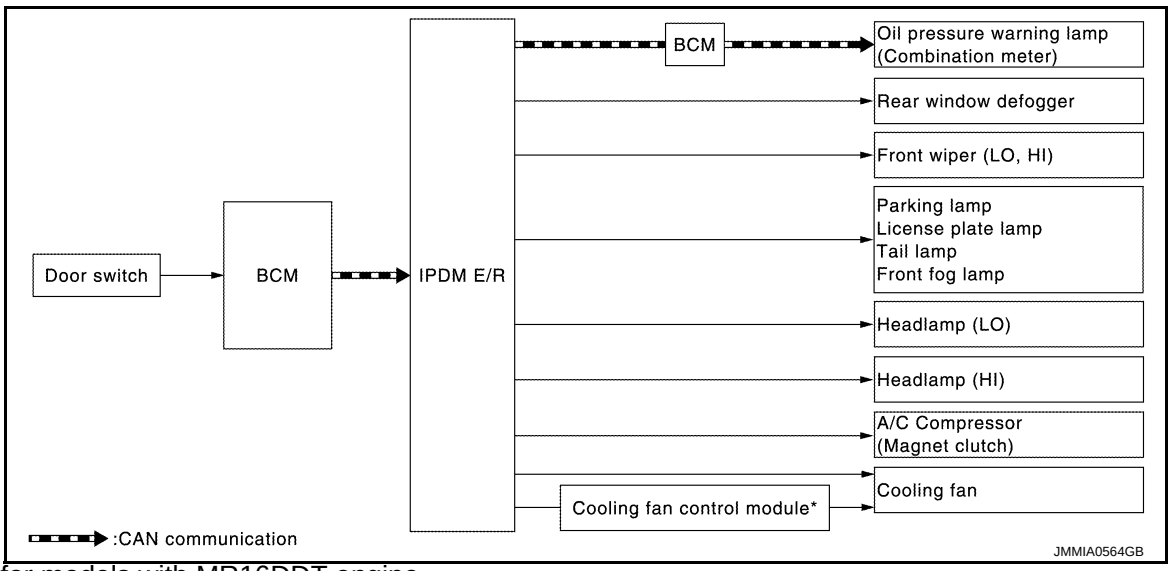
Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following operation sequence is repeated 3 times.

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test **NOTE:** Except for K9K engine models, turn ON continuously during operation of auto active test.
2	Rear window defogger	10 seconds
3	Front wiper motor	LO for 5 seconds → HI for 5 seconds
4	• Parking lamp • License plate lamp • Tail lamp • Front fog lamp	10 seconds
5	Headlamp	LO for 10 seconds →HI ON ⇔ OFF 5 times

Operation sequence	Inspection location	Operation
6	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
7	Cooling fan	• LO for 5 seconds → HI for 5 seconds (Except for MR16DDT models) • 50% duty for 5 seconds → 100% duty for 5 seconds (For MR16DDT models)

Concept of auto active test



*: Only for models with MR16DDT engine

- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES	BCM signal input circuit
		NO	• Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper motor	Perform auto active test. Does the applicable system operate?	YES	BCM signal input circuit
		NO	• Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• A/C amp. signal input circuit • CAN communication signal between A/C amp. and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R

Symptom	Inspection contents		Possible cause
Oil pressure warning lamp does not operate (only for K9K engine models)	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Harness or connector between IPDM E/R and cooling fan motor • Harness or connector between IPDM E/R and cooling fan control module. (Only for model with MR16DDT engine) • Harness or connector between cooling fan control module and cooling fan motor (Only for model with MR16DDT engine) • Cooling fan motor • Cooling fan control module (Only for model with MR16DDT engine) • IPDM E/R

CONSULT-III Function (IPDM E/R)

INFOID:0000000006597930

APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with IPDM E/R.

Diagnosis mode	Description
Ecu Identification	Allows confirmation of IPDM E/R part number.
Self Diagnostic Result	Displays the diagnosis results judged by IPDM E/R.
Data Monitor	Displays the real-time input/output data from IPDM E/R input/output data.
Active Test	IPDM E/R can provide a drive signal to electronic components to check their operations.
CAN Diag Support Monitor	The results of transmit/receive diagnosis of CAN communication can be read.

SELF DIAGNOSTIC RESULT

Refer to PCS-55, "DTC Index".

DATA MONITOR

Monitor item

Monitor Item [Unit]	MAIN SIGNALS	Description
RAD FAN REQ [%]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. **NOTE:** This item is displayed only for vehicle with MR16DDT engine
MOTOR FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication. **NOTE:** This item is displayed only for vehicle without MR16DDT engine
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
INTER/NP SW [Off/On]		Displays the status of the shift position (CVT models) judged by IPDM E/R.
ST RLY REQ [Off/On]		Displays the status of the starter relay status signal received from BCM via CAN communication.
DTRL REQ [Off/On]		Displays the status of the daytime running light request signal received from BCM via CAN communication.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R. **NOTE:** This item is monitored only K9K engine models.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R.
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication.
HORN CHIRP [Off/On]		**NOTE:** This item is indicated, but not monitored.

ACTIVE TEST

Test item

Test item	Operation	Description
HORN	On	Operates horn relay for 20 ms.
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.

Test item		Operation	Description
FRONT WIPER		Off	OFF
		Lo	Operates the front wiper relay.
		Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	For MR16DDT engine	1	OFF
		2	Transmits 50% pulse duty signal (PWM signal) to the cooling fan control module.
		3	Transmits 75% pulse duty signal (PWM signal) to the cooling fan control module.
		4	Transmits 100% pulse duty signal (PWM signal) to the cooling fan control module.
	Except for MR16DDT engine	1	OFF
		2	Operates the cooling fan relay (LO operation).
		3	Operates the cooling fan relay (HI operation).
		4	
HEAD LAMP WASHER		On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS		Off	OFF
		TAIL	Operates the tail lamp relay.
		Lo	Operates the headlamp low relay.
		Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
		Fog	Operates the front fog lamp relay.

ECU DIAGNOSIS INFORMATION

IPDM E/R

Reference Value

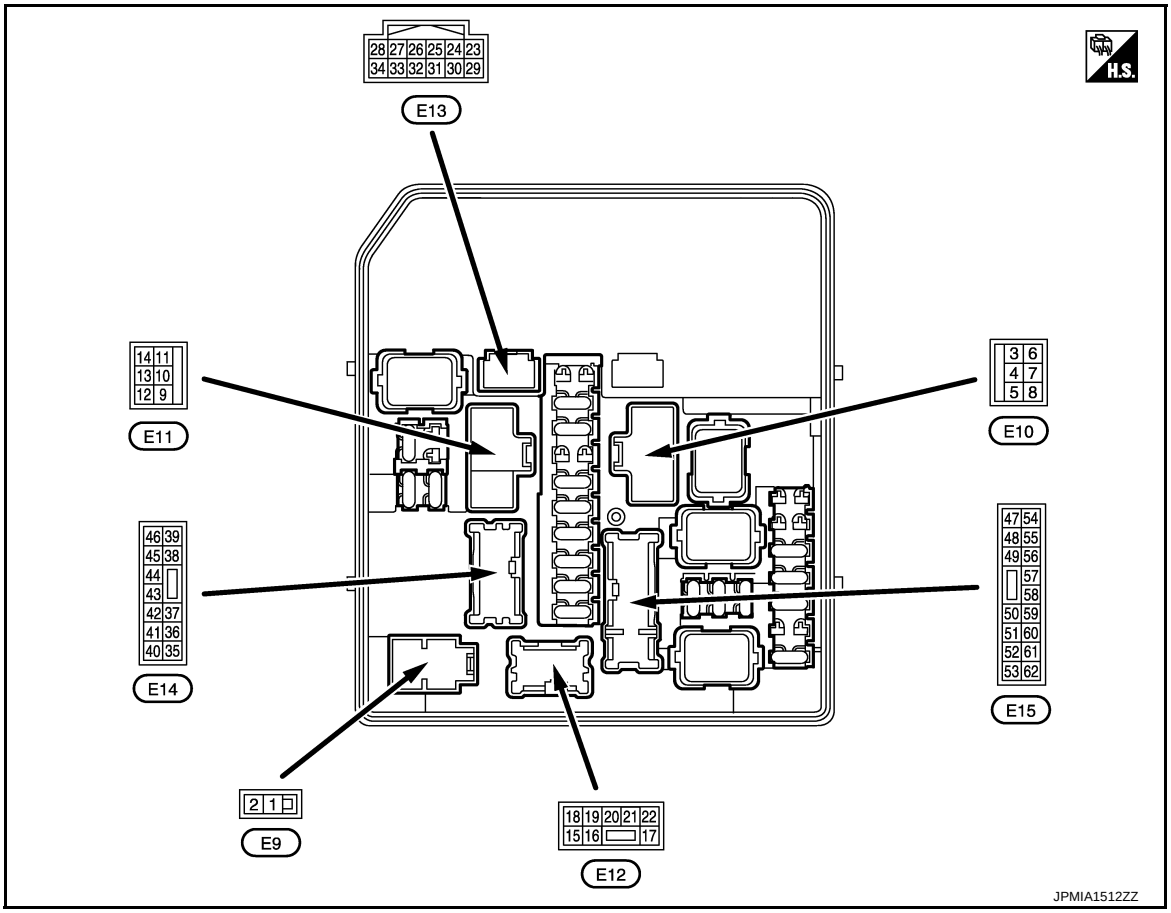
INFOID:0000000006597931

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
RAD FAN REQ **NOTE:** This item is displayed only for vehicle with MR16DDT engine.	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	0 – 100%
MOTOR FAN REQ **NOTE:** This item is displayed only for vehicle without MR16DDT engine.	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1/2/3/4
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	• Lighting switch 1ST, 2ND or AUTO (Light is illuminated) • Daytime running light system operated		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch 2ND or AUTO (light is illuminated)	Lighting switch other than HI and PASS	Off
		Lighting switch HI or PASS	On
FR FOG REQ	Lighting switch 1ST, 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	Stop
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally.	Off
		Front wiper stops at fail-safe operation.	BLOCK
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
INTER/NP SW	Ignition switch ON (CVT models)	Selector lever in any position other than P or N	Off
		Selector lever in P or N position	On
	Ignition switch OFF or ACC (M/T models)		Off
	Ignition switch ON (M/T models)		On
ST RLY REQ	Ignition switch OFF or ACC		Off
	Ignition switch ON		On

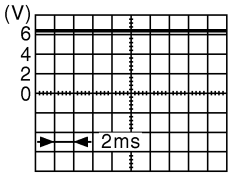
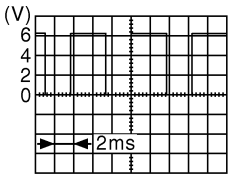
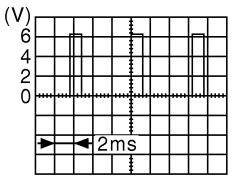
Monitor Item	Condition	Value/Status
DTRL REQ	Daytime running light system is not operated with ignition switch OFF	Off
	Any of the condition below • Daytime running light system is operated • Light switch 2ND or AUTO (light is illuminated)	On
OIL P SW **NOTE:** This item is monitored only for vehicle without K9K engine.	Ignition switch OFF, ACC or engine running	Open
	Ignition switch ON	Close
HOOD SW	Close the hood	Off
	Open the hood	On
HL WASHER REQ	Not operating	Off
	Headlamp washer operating	On
THFT HRN REQ	Not operation	Off
	Theft warning alarm is activated	On
HORN CHIRP	**NOTE:** The item is indicated, but not monitored	Off

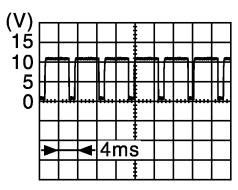
TERMINAL LAYOUT



PHYSICAL VALUES

Terminal NO. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
1 (R)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V
2 (G)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V
3 (R)	Ground	Starter motor	Output	Other than engine cranking		0 – 1 V
				At engine cranking		6 – 16 V
4 (P)	Ground	Battery power supply	Input	Ignition switch OFF		9 – 16 V
5*2 (LG)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan OFF		0 – 1 V
				Cooling fan operated		9 – 16 V
6 (GR)	Ground	Ignition switch START	Output	Any position other ignition switch START		0 – 1 V
				Ignition switch START		6 – 16 V
7*2 (Y)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan OFF		0 – 1 V
				Cooling fan LO operated		4 – 8 V
				Cooling fan HI operated		9 – 16 V
8 (V)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V
9 (B/Y)	Ground	Ground	—	Ignition switch ON		0 – 1 V
10*2 (L)	Ground	Cooling fan motor ground	Output	Cooling fan OFF		0 – 1 V
				Cooling fan LO operated		4 – 8 V
				Cooling fan HI operated		9 – 16 V
14 (R)	Ground	Rear window defogger	Output	Ignition switch ON	Rear window defogger switch OFF	0 – 1 V
					Rear window defogger switch ON	9 – 16 V
18 (B/Y)	Ground	Ground	—	Ignition switch ON		0 – 1 V
19 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 1ST, 2ND or AUTO	Front fog lamp switch OFF	0 – 1 V
					Front fog lamp switch ON	9 – 16 V
20 (V)	Ground	Front fog lamp (LH)	Output	Lighting switch 1ST, 2ND or AUTO	Front fog lamp switch OFF	0 – 1 V
					Front fog lamp switch ON	9 – 16 V
21 (Y)	Ground	Headlamp washer relay control	Output	Ignition switch ON	Headlamp washer deactivated	9 – 16 V
					Headlamp washer activated	0 – 1 V
22 (G)	Ground	Ignition switch	Output	Ignition switch OFF or ACC		0 – 1 V
				Ignition switch ON		6 – 16 V
23 (SB)	Ground	Cranking request	Output	Ignition switch OFF		0 – 1 V
				Ignition switch ON	Select lever P or N	
					Select lever in any position other than P or N	9 – 16 V
				Engine running		

Terminal NO. (Wire color) +	Terminal NO. (Wire color) –	Description Signal name	Description Input/ Output	Condition		Value (Approx.)
24*7 (R)	Ground	Oil pressure switch	Input	Ignition switch ON	Engine stopped	0 – 1 V
					Engine running	9 – 16 V
25 (BR)	Ground	Front wiper stop position	Input	Ignition switch ON	Front wiper stop position	0 – 1.5 V
					Any position other than front wiper stop position	9 – 16 V
26 (P)	Ground	CAN-L	Input/ Output	—		—
27 (L)	Ground	CAN-H	Input/ Output	—		—
28 (Y)	Ground	Daytime running light relay control	Output	Daytime running light deactivated		0 – 1 V
				Daytime running light activated		9 – 16 V
30 (V)	Ground	Starter relay control	Output	At engine cranking		0 – 1 V
				Other than engine cranking		6 – 16 V
31 (Y)	Ground	Fuel pump relay control	Output	• Approximately 1 second after turning the ignition switch ON • Engine running		0 – 1 V
				Approximately 1 second or more after turning the ignition switch ON		6 – 16 V
32 (SB)	Ground	Hood switch	Input	Close the hood		9 – 16 V
				Open the hood		0 – 1 V
33 (G)	Ground	Power generation command signal	Output	Ignition switch ON		 JPMIA0001GB 6.3 V
				40% is set on “ACTIVE TEST”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0002GB 3.8 V
				80% is set on “ACTIVE TEST”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0003GB 1.4 V
34 (L)	Ground	Horn relay control	Output	The horn is deactivated		9 – 16 V
				The horn is activated		0 – 1 V

Terminal NO. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
35 (G)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		6 – 16 V
36 (P)	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		6 – 16 V
37 (L)	Ground	Parking lamp	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
38 (R)	Ground	Rear combination lamp RH	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
39 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 – 1 V
					Front wiper switch HI	9 – 16 V
41 (BR)	Ground	ECM relay control	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		6 – 16 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 – 1 V
42 (Y)	Ground	ECM power supply	Output	Ignition switch OFF		6 – 16 V
43 (V)*5 (R)*6	Ground	Illuminations	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
44 (GR)	Ground	Rear combination lamp LH	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 1ST		9 – 16 V
45 (W)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 – 1 V
					Front wiper switch LO	9 – 16 V
47 (V)	Ground	Alternator input	Input	Ignition switch OFF or ACC		0 – 1 V
				Ignition switch ON		 JMMIA0260GB
48 (BR)	Ground	Transmission range switch*3	Input	Select lever in any position other than P or N (Ignition switch ON)		0 – 1 V
				Select lever P or N (Ignition switch ON)		9 – 16 V
		Ignition relay power supply*4		Ignition switch OFF		0 – 1 V
				Ignition switch ON		9 – 16 V

Terminal NO. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
49 (Y)	Ground	Headlamp HI (RH)	Output	Ignition switch 2ND or AUTO	Lighting switch OFF	0 – 1 V
					• Lighting switch HI • Lighting switch PASS	9 – 16 V
50 (G)	Ground	Headlamp HI (LH)	Output	Ignition switch 2ND or AUTO	Lighting switch OFF	0 – 1 V
					• Lighting switch HI • Lighting switch PASS	9 – 16 V
51 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 2ND		9 – 16 V
52 (P)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF		0 – 1 V
				Lighting switch 2ND		9 – 16 V
54 (P)	Ground	Fuel pump power supply	Output	Approximately 1 second or more than after turning the ignition switch ON		0 – 1 V
				• Approximately 1 second after turning the ignition switch ON • Engine running		6 – 16 V
55 (GR)	Ground	Throttle control motor relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V
				• Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF)		6 – 16 V
56 (SB)	Ground	A/C relay power supply	Output	Engine running	A/C switch OFF	0 – 1 V
					A/C switch ON (A/C compressor is operating)	9 – 16 V
57 (O)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 – 1 V
				Ignition switch ON		6 – 16 V
58 (BR)*3 (LG)*4	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 – 1 V
				Ignition switch ON		6 – 16 V
59 (V)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 – 1 V
				Ignition switch ON		6 – 16 V
60 (SB)	Ground	Throttle control motor relay control	Output	Ignition switch OFF or ACC		6 – 16 V
				Ignition switch ON		0 – 1 V
61 (LG)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 – 1 V
				Ignition switch ON		6 – 16 V
62 (O)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0 – 1 V
				Ignition switch ON		6 – 16 V
67*2 (L)	Ground	Cooling fan relay control	Output	Ignition switch OFF or ACC		9 – 16 V
				Ignition switch ON		0 – 1 V
69 (BR)	Ground	Ignition power supply No. 2	Output	Ignition switch OFF or ACC		0 – 1 V
				Ignition switch ON		6 – 16 V
72*1 (W)	Ground	Cooling fan control	Output	Engine idling		0 – 5 V

*1: MR16DDT engine models
*2: Except MR16DDT engine models

*3: CVT models
*4: M/T models
*5: With daytime running light system
*6: Without daytime running light system
*7: K9K engine models

Fail-Safe

INFOID:0000000006634119

CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

Control part	Fail-safe operation
Cooling fan	• For MR16DDT engine - Transmits the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. - Transmits the pulse duty signal (PWM signal) 0% when the ignition switch is turned OFF. • Except for MR16DDT engine - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn ON when the ignition switch is turned ON (Cooling fan HI operation) - The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn OFF when the ignition switch is turned OFF
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%

If No CAN Communication Is Available With BCM

Control part	Fail-safe operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high relay OFF
• Parking lamp • License plate lamp • Illumination • Tail lamp	• Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper motor	• The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating. • Returns automatically wiper to stop position when ignition switch is turned ON if fail-safe control is activated while front wiper motor is operated and wiper stop in the other position than stop position. • The status is held at service position if the fail-safe control is activated while the service position function is operating.
Front fog lamp	Front fog lamp relay OFF
Rear window defogger	Rear window defogger relay OFF
Horn	Horn OFF
Starter motor	Starter control relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

Voltage judgment		IPDM E/R judgment	Operation
Ignition relay contact side	Ignition relay excitation coil side		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	• Detects DTC “B2098: IGN RELAY ON” • Turns ON the tail lamp relay for 10 minutes
OFF	ON	Ignition relay OFF stuck	Detects DTC “B2099: IGN RELAY OFF”

FRONT WIPER PROTECTION FUNCTION

IPDM E/R detects front wiper stop position by a front wiper stop position signal.
When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop.

Ignition switch	Front wiper switch	Front wiper stop position signal
ON	OFF	The front wiper stop position signal (stop position) cannot be input for 10 seconds.
	ON	The front wiper stop position signal does not change for 10 seconds.

NOTE:
This operation status can be confirmed on the IPDM E/R “Data Monitor” that displays “BLOCK” for the item “WIP PROT” while the wiper is stopped.

STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

DTC Index

INFOID:0000000006634120

NOTE:
- The details of time display are as follows.
- CRNT: A malfunction is detected now.
- PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame Data).
- The number is 0 when is detected now.
- The number increases like 1 → 2 ··· 38 → 39 after returning to the normal condition whenever IGN OFF → ON.
- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

×: Applicable

CONSULT display	Fail-safe	Refer to
No DTC is detected. further testing may be required.	—	—
U1000: CAN COMM CIRCUIT	×	PCS-59
B2098: IGN RELAY ON	×	PCS-60
B2099: IGN RELAY OFF	—	PCS-61
B209F: STR CUT OFF OPEN	—	SEC-209
B20A0: STR CUT OFF SHORT	—	SEC-211
B210B: PNP RLY ON	—	SEC-213
B210C: PNP RLY OFF	—	SEC-215
B210D: STARTER RELAY ON	—	SEC-218
B210E: STARTER RELAY OFF	—	SEC-220

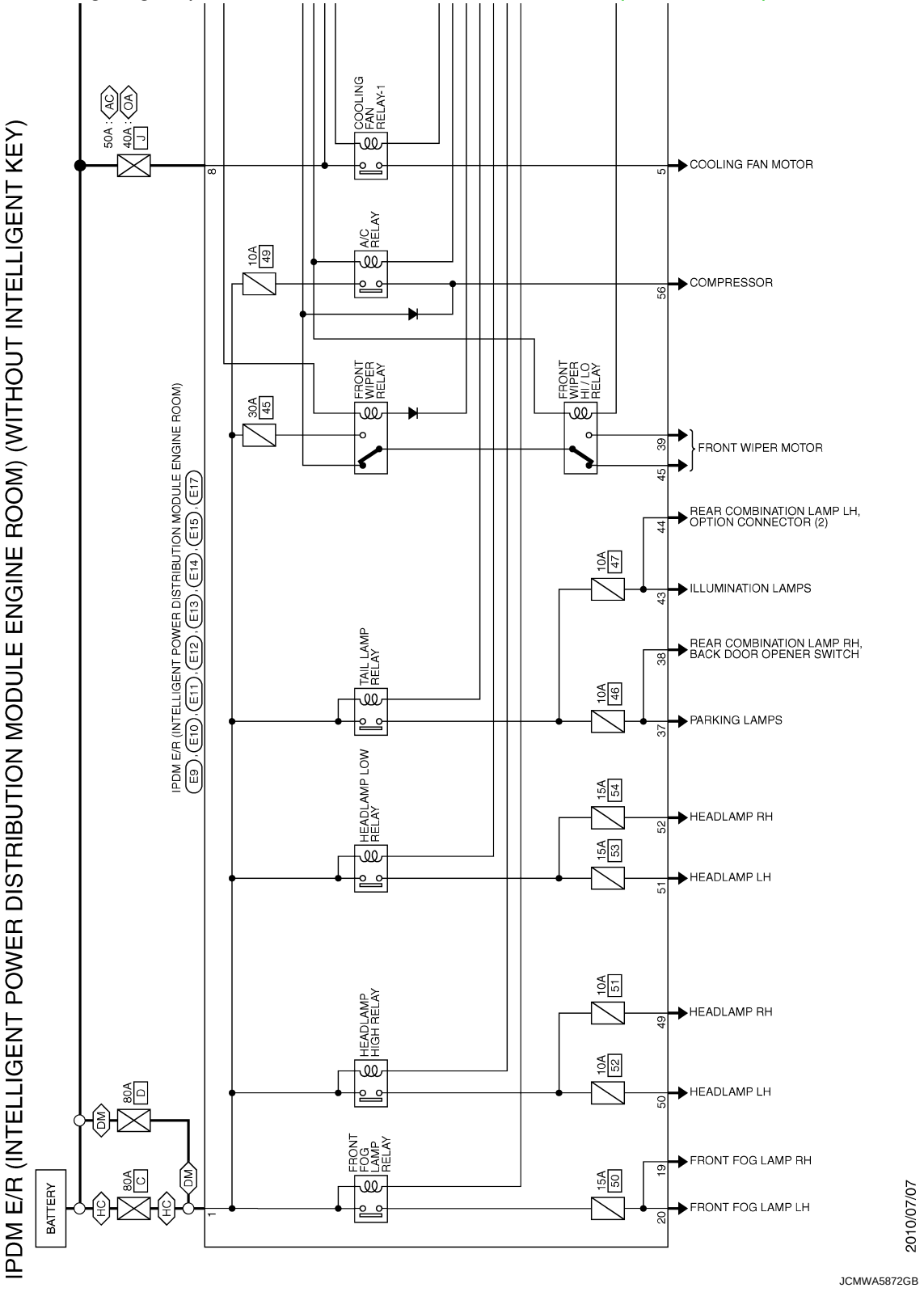
WIRING DIAGRAM

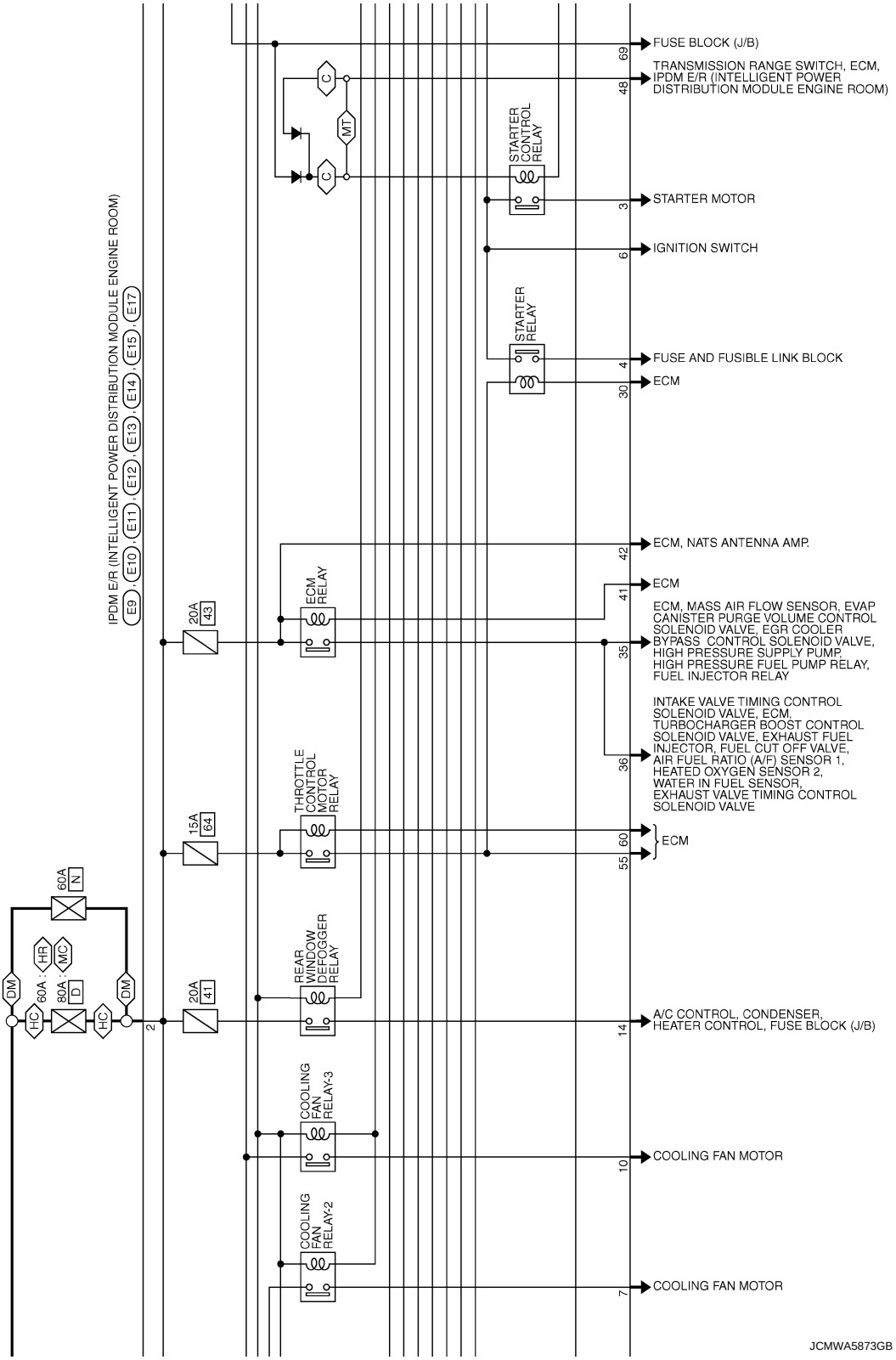
IPDM E/R

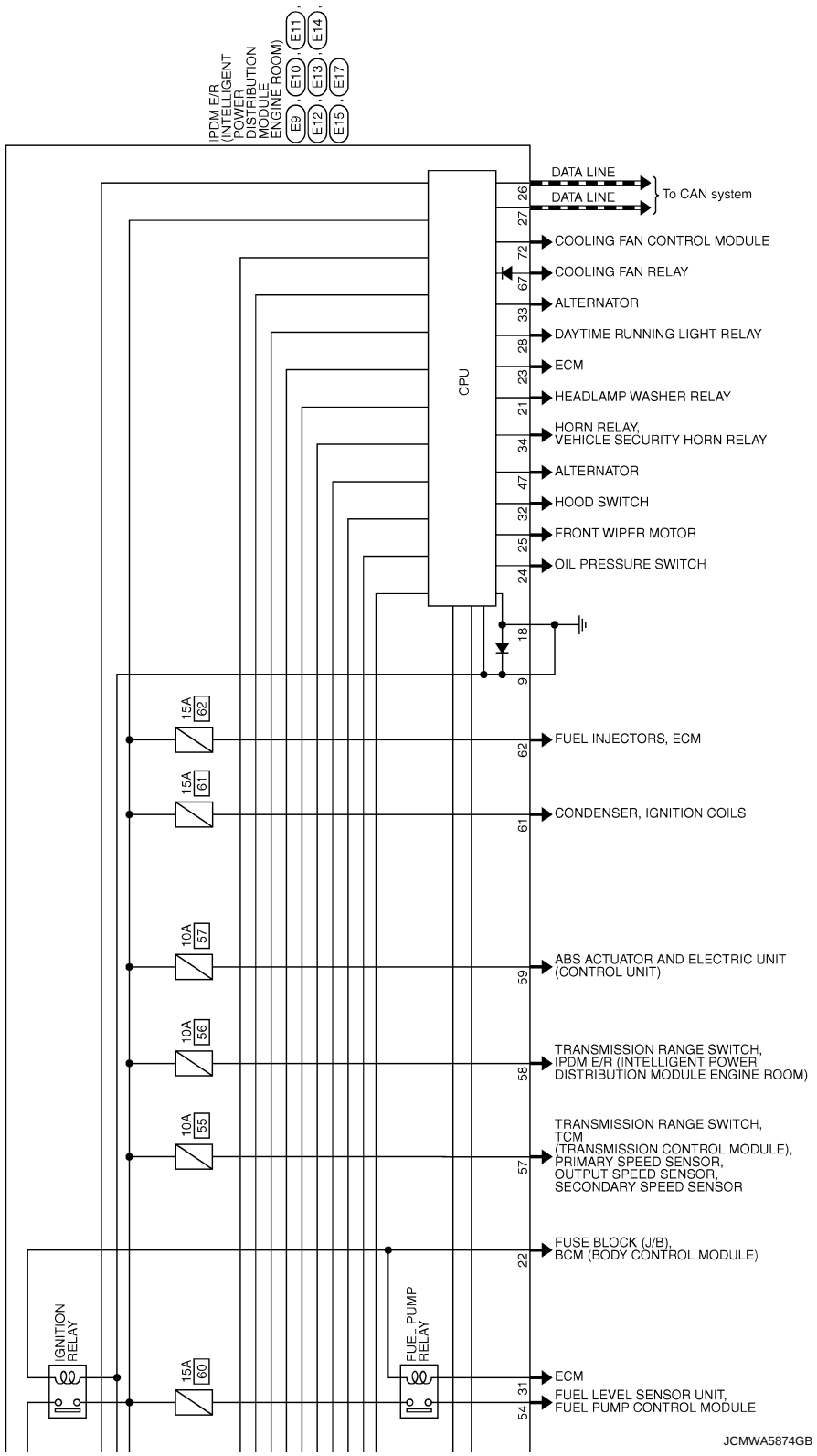
Wiring Diagram

INFOID:0000000006597934

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".




IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E9 E10 E11 E12 E13 E14 E15 E17
FUSE BLOCK (J/B)
TRANSMISSION RANGE SWITCH, ECM, IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
STARTER CONTROL RELAY
STARTER MOTOR
IGNITION SWITCH
STARTER RELAY
FUSE AND FUSIBLE LINK BLOCK
ECM
ECM, NATS ANTENNA AMP.
ECM
ECM, MASS AIR FLOW SENSOR, EVAP CANISTER PURGE VOLUME CONTROL SOLENOID VALVE, EGR COOLER BYPASS CONTROL SOLENOID VALVE, HIGH PRESSURE SUPPLY PUMP, HIGH PRESSURE FUEL PUMP RELAY, FUEL INJECTOR RELAY
INTAKE VALVE TIMING CONTROL SOLENOID VALVE, ECM, TURBOCHARGER BOOST CONTROL SOLENOID VALVE, EXHAUST FUEL INJECTOR, FUEL CUT OFF VALVE, AIR FUEL RATIO (A/F) SENSOR 1, HEATED OXYGEN SENSOR 2, WATER IN FUEL SENSOR, EXHAUST VALVE TIMING CONTROL SOLENOID VALVE
ECM
A/C CONTROL, CONDENSER, HEATER CONTROL, FUSE BLOCK (J/B)
COOLING FAN MOTOR
COOLING FAN MOTOR
ECM RELAY
THROTTLE CONTROL MOTOR RELAY
REAR WINDOW DEFOGGER RELAY
COOLING FAN RELAY-3
COOLING FAN RELAY-2
20A 43
15A 64
20A 41
60A N
60A 80A D
69
48
3
6
4
30
42
41
35
36
60
55
14
10
7
2
JCMWA5873GB


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E9 E10 E11 E12 E13 E14 E15 E17
CPU
DATA LINE
DATA LINE
To CAN system
COOLING FAN CONTROL MODULE
COOLING FAN RELAY
ALTERNATOR
DAYTIME RUNNING LIGHT RELAY
ECM
HEADLAMP WASHER RELAY
HORN RELAY,
VEHICLE SECURITY HORN RELAY
ALTERNATOR
HOOD SWITCH
FRONT WIPER MOTOR
OIL PRESSURE SWITCH
15A 62
15A 61
10A 57
10A 56
10A 55
15A 60
IGNITION RELAY
FUEL PUMP RELAY
FUEL INJECTORS, ECM
CONDENSER, IGNITION COILS
ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)
TRANSMISSION RANGE SWITCH,
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
TRANSMISSION RANGE SWITCH,
TCM
(TRANSMISSION CONTROL MODULE),
PRIMARY SPEED SENSOR,
OUTPUT SPEED SENSOR,
SECONDARY SPEED SENSOR
FUSE BLOCK (J/B),
BCM (BODY CONTROL MODULE)
ECM
FUEL LEVEL SENSOR UNIT,
FUEL PUMP CONTROL MODULE
JCMWA5874GB

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006634109

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control unit, 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.
CAN Communication Signal Chart. Refer to LAN-31, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC Logic

INFOID:0000000006634110

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible cause
U1000	CAN COMM CIRCUIT	When IPDM E/R cannot communicate CAN communication signal continuously for 2 seconds or more	CAN communication system

Diagnosis Procedure

INFOID:0000000006634111

1.PERFORM SELF DIAGNOSTIC

1. Turn the ignition switch ON and wait for 2 seconds or more.
2. Check “Self Diagnostic Result” of IPDM E/R.

Is DTC “U1000” displayed?

YES >> Refer to LAN-17, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-42, "Intermittent Incident".

B2098 IGNITION RELAY ON STUCK

Description

INFOID:0000000006634112

The ignition relay integrated in IPDM E/R is operated with ignition switch ON signal from the ignition switch.

DTC Logic

INFOID:0000000006634113

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible causes
B2098	IGN RELAY ON	The ignition relay ON is detected for 1 second at ignition switch OFF (CPU monitors the status at the contact circuits of the ignition relay inside and ignition switch status from BCM via CAN communication)	• IPDM E/R • BCM • Harness or connector (Ignition relay circuit)

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check DTC in “Self Diagnostic Result” mode of “IPDM E/R” using CONSULT-III.

Is DTC detected?

YES >> Refer to PCS-60, "Diagnosis Procedure".
NO >> INSPECTION END.

Diagnosis Procedure

INFOID:0000000006634114

1.CHECK IGNITION SWITCH ON SIGNAL

Check voltage between BCM harness connectors and the ground.

(+)		(–)	Condition		Voltage (Approx.)
BCM					
Connector	Terminal				
M65	38	Ground	Ignition switch	ON	Battery voltage
				OFF	0 V

Is the measurement value normal?

YES >> Replace BCM. Refer to BCS-161, "Removal and Installation".
NO >> GO TO 2.

2.CHECK IGNITION SWITCH ON SIGNAL CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R harness connectors.
3. Check continuity between IPDM E/R harness connectors and BCM harness connectors.

IPDM E/R		BCM		Continuity
Connector	Terminal	Connector	Terminal	
E12	22	M65	38	Existed

Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-63, "Removal and Installation".
NO >> Repair the harness or connector.

B2099 IGNITION RELAY OFF STUCK

Description

INFOID:0000000006634115

The ignition relay integrated in IPDM E/R is operated with ignition switch ON signal from the ignition switch.

DTC Logic

INFOID:0000000006634116

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible causes
B2099	IGN RELAY OFF	The ignition relay OFF is detected for 1 second at ignition switch ON (CPU monitors the status at the contact circuits of the ignition relay inside and ignition switch status from BCM via CAN communication)	• IPDM E/R • Harness or connector (Ignition relay circuit)

NOTE:

When IPDM E/R power supply voltage is low (Approx. 7 - 8 V for about 1 second), the “DTC: B2099” may be detected.

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check DTC in “Self Diagnostic Result” mode of “IPDM E/R” using CONSULT-III.

Is DTC detected?

YES >> Refer to PCS-61, "Diagnosis Procedure".
NO >> INSPECTION END.

Diagnosis Procedure

INFOID:0000000006634117

1.CHECK IGNITION SWITCH ON SIGNAL CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R harness connector and BCM harness connector.
3. Check continuity between IPDM E/R harness connectors and BCM harness connectors.

IPDM E/R		BCM		Continuity
Connector	Terminal	Connector	Terminal	
E12	22	M65	38	Existed

Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-63, "Removal and Installation".
NO >> Repair the harness or connector.

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000006634118

1.CHECK FUSES AND FUSIBLE LINK

Check that the following IPDM E/R fuses or fusible links are not blown.

Signal name	Fuses and fusible link No.
Battery power supply	C
	D
	J
	N

Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.
NO >> GO TO 2.

2.CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check voltage between IPDM E/R harness connector and the ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E9	1	Ground	6 – 16 V
	2		
E10	8		

Is the measurement value normal?

YES >> GO TO 3.
NO >> Repair the harness or connector.

3.CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E11	9		Existed
E12	18		

Does continuity exist?

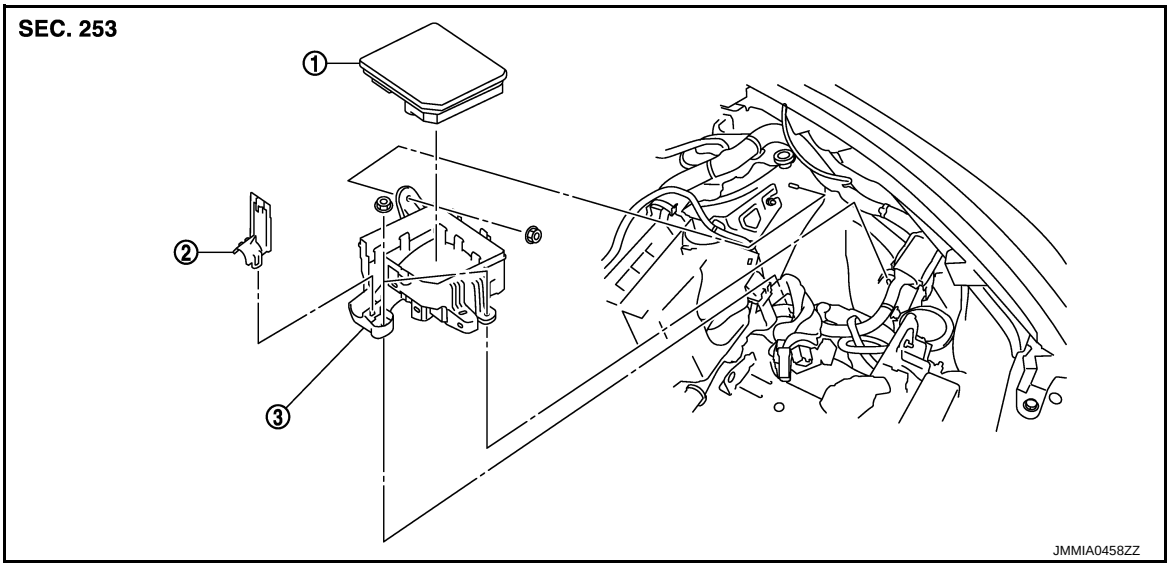
YES >> INSPECTION END
NO >> Repair the harness or connector.

REMOVAL AND INSTALLATION

IPDM E/R

Exploded View

INFOID:0000000006634107



1. IPDM E/R cover A
2. IPDM E/R
3. IPDM E/R cover B

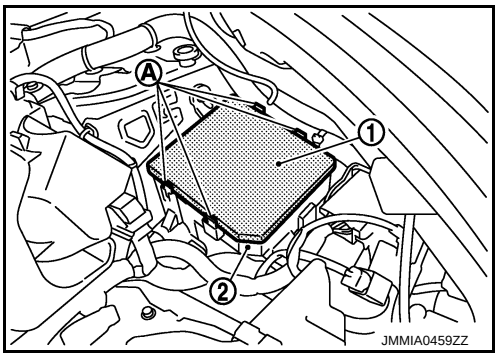
Removal and Installation

INFOID:0000000006634108

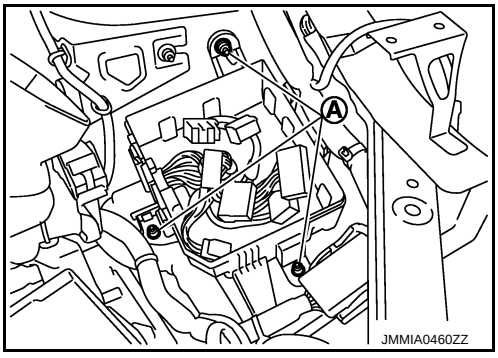
CAUTION:
IPDM E/R integrated relays are not serviceable parts, and must not be removed from the unit.

REMOVAL

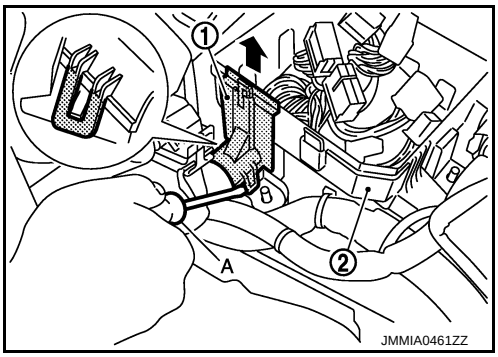
1. Remove battery.
2. Press and expand pawls (A) on lateral side of IPDM E/R cover and remove IPDM E/R (1) from IPDM E/R cover B (2).
3. Disconnect the harness connector and then remove the IPDM E/R.



4. Remove IPDM E/R cover B mounting nuts (A).



5. Insert a flat-bladed screwdriver between IPDM E/R cover A (1) and IPDM E/R cover B (2), disengage pawls, and remove IPDM E/R cover A.



6. Remove IPDM E/R cover B.

INSTALLATION

Install in the reverse order of removal.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000006598079

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 AIR BAG” and “SEAT BELT” of this Service Manual.

The vehicle may be equipped with a passenger air bag deactivation switch. The switch is designed to turn off the passenger air bag so that a rear-facing child restraint can be used in the front passenger seat, since no rear seat exists where a rear-facing child restraint can be placed. The switch is located in the center of the instrument panel, near the ashtray. When the switch is turned to the ON position, the passenger air bag is enabled and could inflate for certain types of collision. When the switch is turned to the OFF position, the passenger air bag is disabled and does not inflate. A passenger air bag OFF indicator on the instrument panel illuminates when the passenger air bag is switched OFF. The driver air bag always remains enabled and is not affected by the passenger air bag deactivation switch.

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 “SRS AIR BAG”.**
- **Never 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.**
- **The vehicle may be equipped with a passenger air bag deactivation switch which can be operated by the customer. When the passenger air bag is switched OFF, the passenger air bag is disabled and does not inflate. When the passenger air bag is switched ON, the passenger air bag is enabled and could inflate for certain types of collision. After SRS maintenance or repair, check that the passenger air bag deactivation switch is in the same position (ON or OFF) as when the vehicle arrived for service.**

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, never 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.**

Precaution Necessary for Steering Wheel Rotation after Battery Disconnect

INFOID:0000000006598080

NOTE:

- Before removing and installing any control units, first turn the ignition switch to the LOCK position, then disconnect both battery cables.
- After finishing work, confirm that all control unit connectors are connected properly, then re-connect both battery cables.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If a DTC is detected, perform trouble diagnosis according to self-diagnosis results.

For vehicle with steering lock unit, if the battery is disconnected or discharged, the steering wheel will lock and cannot be turned.
If turning the steering wheel is required with the battery disconnected or discharged, follow the operation procedure below before starting the repair operation.

OPERATION PROCEDURE

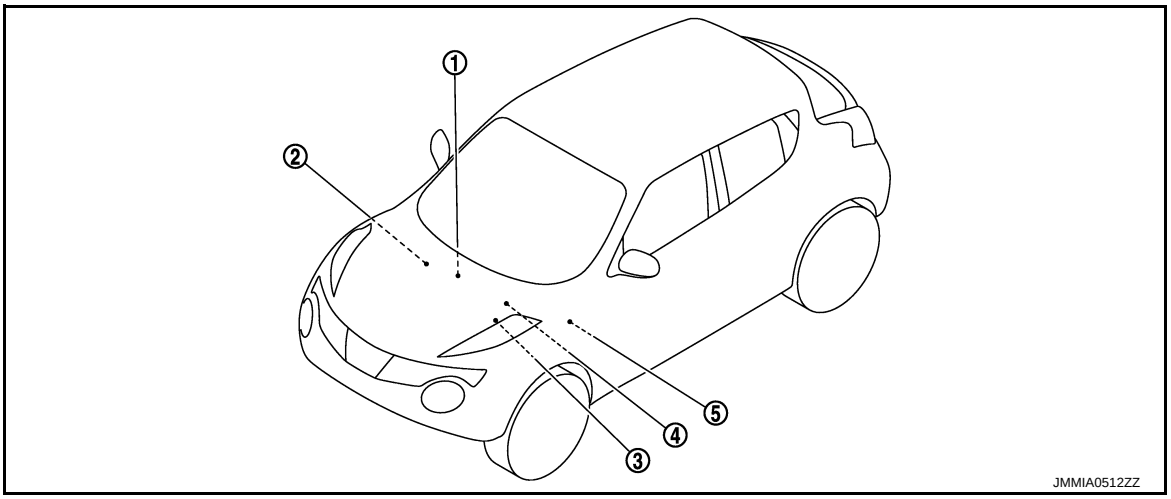
1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Turn the ignition switch to ACC position.
   (At this time, the steering lock will be released.)
3. Disconnect both battery cables. The steering lock will remain released with both battery cables disconnected and the steering wheel can be turned.
4. Perform the necessary repair operation.
5. When the repair work is completed, re-connect both battery cables. With the brake pedal released, turn the ignition switch from ACC position to ON position, then to LOCK position. (The steering wheel will lock when the ignition switch is turned to LOCK position.)
6. Perform self-diagnosis check of all control units using CONSULT-III.

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000006598084



1. Push-button ignition switch
2. Stop lamp switch
   Refer to BRC-9, "Component Parts Location" (without EPS), BRC-97, "Component Parts Location" (with EPS)
3. IPDM E/R
   Refer to PCS-5, "Component Parts Location"
4. Transmission range switch
   Refer to TM-131, "CVT CONTROL SYSTEM : Component Parts Location" (RE0F10B), TM-314, "CVT CONTROL SYSTEM : Component Parts Location" (RE0F11A)
5. BCM
   Refer to BCS-6, "BODY CONTROL SYSTEM : Component Parts Location"

Component Description

INFOID:0000000006598085

BCM	Reference
BCM	PCS-67
Ignition relay	PCS-68
Accessory relay	PCS-68
Blower relay	PCS-68
Push-button ignition switch	PCS-68
Stop lamp switch	PCS-68
Transmission range switch	PCS-68
Clutch interlock switch	PCS-68
Park/neutral position switch	PCS-68

BCM

INFOID:0000000006598086

BCM controls the various electrical components and simultaneously supplies power according to the power supply position.
BCM checks the power supply position internally.

Ignition Relay

INFOID:0000000006598087

BCM turns ON the following relays to supply ignition power supply or ignition switch ON signal to each ECU when the ignition switch is turned ON.
- Ignition relay (fuse block)
- Ignition relay (IPDM E/R)
- Blower relay

BCM compares following status comparing.
- Ignition relay (fuse block) control signal, and power supply position judged by BCM
- Ignition relay (IPDM E/R) control request, and Ignition relay (IPDM E/R) status

Accessory Relay

INFOID:0000000006598088

BCM turns ON the accessory relays to supply accessory power supply or ignition switch ACC signal to each ECU when the ignition switch is turned ACC or ON.
BCM compares status of accessory relay control signal, and power supply position judged by BCM.

Blower Relay

INFOID:0000000006598089

BCM turns ON the following relays to supply ignition power supply or ignition switch ON signal to each ECU when the ignition switch is turned ON.
- Ignition relay (fuse block)
- Ignition relay (IPDM E/R)
- Blower relay

BCM compares status of blower relay control signal, and power supply position judged by BCM.

Push-Button Ignition Switch

INFOID:0000000006598090

BCM transmits the change in the power supply position with the push-button ignition switch to IPDM E/R via CAN communication line. IPDM E/R transmits the power supply position status via CAN communication line to BCM.

Stop Lamp Switch

INFOID:0000000006598092

Stop lamp switch detects that brake pedal is depressed, and then transmits the signal to BCM.

Transmission Range Switch

INFOID:0000000006748140

Transmission range switch is integrated in CVT assembly, and detects the CVT shift selector position.
Transmission range switch detects selector lever position (P/N position), and transmits the P/N position signal to BCM and IPDM E/R.

Clutch Interlock Switch

INFOID:0000000006748141

Clutch interlock switch detects that clutch pedal is depressed, and transmits ON/OFF signal to BCM.

Park/Neutral Position Switch

INFOID:0000000006748142

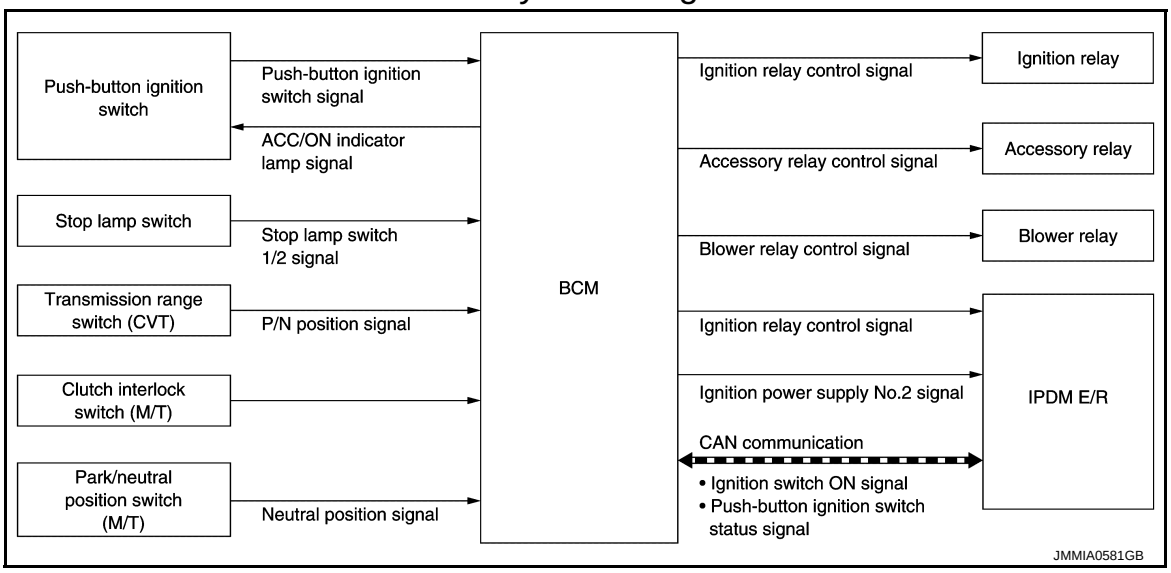
Park/neutral position switch detects that control lever is in the neutral position, and then transmits neutral potision signal to BCM.

SYSTEM

POWER DISTRIBUTION SYSTEM

POWER DISTRIBUTION SYSTEM : System Diagram

INFOID:0000000006598093



POWER DISTRIBUTION SYSTEM : System Description

INFOID:0000000006598094

SYSTEM DESCRIPTION

- PDS (POWER DISTRIBUTION SYSTEM) is the system that BCM controls with the operation of the push-button ignition switch and performs the power distribution to each power circuit. This system is used instead of the mechanical power supply changing mechanism with the operation of the conventional key cylinder.
- The push-button ignition switch can be operated when Intelligent Key is in the following condition. Refer to Engine Start Function for details.
  - Intelligent Key is in the detection area of the interior antenna.
  - Intelligent Key backside is contacted to push-button ignition switch.
- The push-button ignition switch operation is input to BCM as a signal. BCM changes the power supply position according to the status and operates the following relays to supply power to each power circuit.
  - Ignition relay (IPDM E/R)
  - Ignition relay (fuse block)
  - ACC relay
  - Blower fan relay

  NOTE:
  The engine switch operation changes due to the conditions of brake pedal, selector lever and vehicle speed.
- The power supply position can be confirmed with the lighting of ACC/ON indicator in the push-button ignition switch.

BATTERY SAVER SYSTEM

When all the following conditions are met for 60 minutes, the battery saver system will cut off the power supply to prevent battery discharge.

- The ignition switch is in the ACC position
- All doors are closed
- Selector lever is in the P position

Reset Condition of Battery Saver System

CVT models

In order to prevent the battery from discharging, the battery saver system will cut off the power supply when all doors are closed, the selector lever is on P position and the ignition switch is left on ACC position for 60 minutes. If any of the following conditions are met the battery saver system is released and the steering will change automatically to lock position from OFF position.

- Opening any door
- Operating with request switch on door lock
- Operating with Intelligent Key on door lock

Press push-button ignition switch and ignition switch will change to ACC position from OFF position.

M/T models

If any of the conditions above is met the battery saver system is released but the steering will not lock.
In this case, the steering operation OFF to LOCK is prohibited.

STEERING LOCK OPERATION

Steering is locked by steering lock unit when ignition switch is in the OFF position, selector lever is in the P position and any of the following conditions are met.

- Opening door
- Closing door
- Door is locked with door request switch
- Door is locked with Intelligent Key

POWER SUPPLY POSITION CHANGE TABLE BY PUSH-BUTTON IGNITION SWITCH OPERATION

The power supply position changing operation can be performed with the following operations.

NOTE:

- When an Intelligent Key is within the detection area of inside key antenna and when Intelligent Key backside is contacted to push-button ignition switch, it is equivalent to the operations below.
- When starting the engine, the BCM monitors under the engine start conditions,

CVT models

- Brake pedal operating condition
- Selector lever position
- Vehicle speed

M/T models

- Clutch pedal operating condition
- Brake pedal operating condition
- Control lever position
- Vehicle speed

Vehicle speed: less than 4 km/h (2.5 MPH)

Power supply position	Engine start/stop condition						Push-button ignition switch operation frequency
	CVT models		M/T models				
			Normal condition		Special condition		
	Selector lever position	Brake pedal operation condition	Control lever position	Clutch pedal operation condition	Control lever position	Brake pedal operation condition	
LOCK → ACC	—	Not depressed	—	Not depressed	—	Not depressed	1
LOCK → ACC → ON	—	Not depressed	—	Not depressed	—	Not depressed	2
LOCK → ACC → ON → OFF	—	Not depressed	—	Not depressed	—	Not depressed	3
LOCK → START ACC → START ON → START	P or N position	Depressed	—	Depressed	Neutral	Depressed	1
Engine is running → OFF	—	—	—	—	—	—	1

Vehicle speed: 4 km/h (2.5 MPH) or more

Power supply position	Engine start/stop condition						Push-button ignition switch operation frequency
	CVT models		M/T models				
			Normal condition		Special condition		
	Selector lever position	Brake pedal operation condition	Control lever position	Clutch pedal operation condition	Control lever position	Brake pedal operation condition	
Engine is running → ACC	—	—	—	—	—	—	Emergency stop operation
Engine stall return operation while driving	N position	Not depressed	—	Depressed	Neutral	—	1

Emergency stop operation

- Press and hold the push-button ignition switch for 2 seconds or more.
- Press the push-button ignition switch 3 times or more within 1.5 seconds.

Fail-safe

INFOID:0000000006659786

FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC are detected.

Display contents of CONSULT	Fail-safe	Cancellation
B2013: ID DISCORD BCM-S/L	Inhibit engine cranking	When communication between BCM and steering lock unit are communicated normally.
B2014: CHAIN OF S/L-BCM	Inhibit engine cranking	When communication between BCM and steering lock unit are communicated normally.
B2192: ID DISCORD BCM-ECM	Inhibit engine cranking	Erase DTC
B2193: CHAIN OF BCM-ECM	Inhibit engine cranking	Erase DTC
B2195: ANTI-SCANNING	Inhibit engine cranking	Ignition switch ON → OFF
B2196: DONGLE NG	Inhibit engine cranking	Erase DTC
B2198: NATS ANTENNA AMP	Inhibit engine cranking	Erase DTC
B2557: VEHICLE SPEED	Inhibit steering lock	When the following CAN signal status (vehicle speed signal) becomes consistent • Vehicle speed signal (ABS) • Vehicle speed signal (Meter)
B2601: SHIFT POSITION	Inhibit steering lock	500 ms after the following signal reception status becomes consistent • Detention switch signal • P range signal (CAN)
B2602: SHIFT POSITION	Inhibit steering lock	5 seconds after the following BCM recognition conditions are fulfilled • Ignition switch is in the ON position • Detention switch signal: P position (push selector button) or except P position (12 V) • Vehicle speed: 4 km/h (2.5 MPH) or more
B2603: SHIFT POSI STATUS	Inhibit steering lock	500 ms after any of the following BCM recognition conditions are fulfilled • Status 1 - Ignition switch is in the ON position - Detention switch signal: P position (push selector button) or except P position (12 V) - P/N position signal: Except P and N positions (0 V) • Status 2 - Ignition switch is in the ON position - Detention switch signal: P position (release selector button) (0 V) - P/N position signal: P or N positions (12 V)

Display contents of CONSULT	Fail-safe	Cancellation
B2604: PNP/CLUTCH SW	Inhibit steering lock	500 ms after any of the following BCM recognition conditions are fulfilled • Status 1 - Ignition switch is in the ON position - P/N position signal: P or N position (12 V) - Shift position signal (CAN): P or N position • Status 2 - Ignition switch is in the ON position - P/N position signal: Except P and N positions (0 V) - Shift position signal (CAN): Except P and N position
B2605: PNP/CLUTCH SW	Inhibit steering lock	500 ms after any of the following BCM recognition conditions are fulfilled • Status 1 - Power position: IGN - P/N position signal: Except P and N positions (0 V) - Interlock/PNP switch signal (CAN): OFF • Status 2 - Ignition switch is in the ON position - P/N position signal: P or N position (12 V) - Interlock/PNP switch signal (CAN): ON
B2608: STARTER RELAY	Inhibit engine cranking	500 ms after the following signal communication status becomes consistent • Starter motor relay control signal • Starter relay status signal (CAN)
B2609: S/L STATUS	• Inhibit engine cranking • Inhibit steering lock	When the following steering lock conditions agree • BCM steering lock control status • Steering lock condition No. 1 signal status • Steering lock condition No. 2 signal status
B260B: STEERING LOCK UNIT	Inhibit steering lock	Erase DTC
B260D: STEERING LOCK UNIT	Inhibit steering lock	Erase DTC
B260F: ENG STATE SIG LOST	Inhibit engine cranking	When any of the following conditions are fulfilled • Power position changes to ACC • Receives engine status signal (CAN)
B2612: S/L STATUS	• Inhibit engine cranking • Inhibit steering lock	When any of the following conditions are fulfilled • Steering lock unit status signal (CAN) is received normally • The BCM steering lock control status matches the steering lock status recognized by the steering lock unit status signal (CAN from IPDM E/R)
B2619: BCM	Inhibit engine cranking	1 second after the steering lock unit power supply output control inside BCM becomes normal
B26EF: STRG LCK RELAY OFF	Inhibit engine cranking	When the following conditions are fulfilled • Steering lock relay signal (CAN): ON • Steering lock unit status signal (CAN): ON
B26F0: STRG LCK RELAY ON	Inhibit engine cranking	When the following conditions are fulfilled • Steering lock relay signal (CAN): OFF • Steering lock unit status signal (CAN): OFF
B26F1: IGN RELAY OFF	Inhibit engine cranking	When the following conditions are fulfilled • Ignition switch ON signal (CAN: Transmitted from BCM): ON • Ignition switch ON signal (CAN: Transmitted from IPDM E/R): ON
B26F2: IGN RELAY ON	Inhibit engine cranking	When the following conditions are fulfilled • Ignition switch ON signal (CAN: Transmitted from BCM): OFF • Ignition switch ON signal (CAN: Transmitted from IPDM E/R): OFF
B26F3: START CONT RLY ON	Inhibit engine cranking	When the following conditions are fulfilled • Starter control relay signal (CAN: Transmitted from BCM): OFF • Starter control relay signal (CAN: Transmitted from IPDM E/R): OFF
B26F4: START CONT RLY OFF	Inhibit engine cranking	When the following conditions are fulfilled • Starter control relay signal (CAN: Transmitted from BCM): ON • Starter control relay signal (CAN: Transmitted from IPDM E/R): ON

Display contents of CONSULT	Fail-safe	Cancellation
B26F7: BCM	Inhibit engine cranking by Intelligent Key system	When room antenna and luggage room antenna functions normally
U0415: VEHICLE SPEED	Inhibit steering lock	When vehicle speed signal (Meter) (CAN) is received normally

REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper stop position signal.
When the rear wiper stop position signal does not change for more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

Condition of cancellation
1. More than 1 minute is passed after the rear wiper stop.
2. Turn rear wiper switch OFF.
3. Operate the rear wiper switch or rear washer switch.

FAIL-SAFE CONTROL BY LIGHT AND RAIN SENSOR MALFUNCTION

BCM detects the light and rain sensor serial link error and the light and rain sensor malfunction.
BCM controls the following fail-safe when light and rain sensor has a malfunction.

Fail-safe Control
- Auto light control: Headlamp low beam, parking lamp, license plate lamp and tail lamp are turned ON.
- Front wiper control
  - Front wiper switch AUTO and sensing rain drop: The condition just before the activation of fail-safe is maintained until the front wiper switch is turned OFF.
  - Front wiper switch AUTO and not sensing rain drop: Front wiper is LO operation until the front wiper switch is turned off.

FAIL-SAFE CONTROL OF COMBINATION SWITCH READING FUNCTION CAUSED BY LOW POWER SUPPLY VOLTAGE

If voltage of battery power supply lower, BCM maintains combination switch reading to the status when input voltage is less than approximately 9 V.

NOTE:
When voltage of battery power supply is approximately 9 V or more, combination switch reading function returns to normal operation.

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT-III Function (BCM - COMMON ITEM)

INFOID:0000000006747512

APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM. Refer to CONSULT-III operation manual.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	• Read and save the vehicle specification. • Write the vehicle specification when replacing BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

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

×: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
• Automatic A/C • Manual A/C	AIR CONDITONER		×	×*2
• Intelligent Key system • Engine start system	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NVIS - NATS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Back door open	TRUNK		×	
Theft warning alarm	THEFT ALM	×	×	×
—	RETAINED PWR*1		×	
Signal buffer system	SIGNAL BUFFER		×	×

NOTE:

- *1: This item is displayed, but not used.
- *2: For models with automatic A/C, this diagnosis mode is not used.

FREEZE FRAME DATA (FFD)

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT-III.

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status of the moment a particular DTC is detected	While turning BCM status from low power consumption mode to normal mode (Power supply position is “LOCK”)
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode (Power supply position is “OFF”.)
	LOCK>ACC		While turning power supply position from “LOCK” to “ACC”
	ACC>ON		While turning power supply position from “ACC” to “IGN”
	RUN>ACC		While turning power supply position from “RUN” to “ACC” (Vehicle is stopping and selector lever is except P position.)
	CRANK>RUN		While turning power supply position from “CRANKING” to “RUN” (From cranking up the engine to run it)
	RUN>URGENT		While turning power supply position from “RUN“ to “ACC” (Emergency stop operation)
	ACC>OFF		While turning power supply position from “ACC” to “OFF”
	OFF>LOCK		While turning power supply position from “OFF” to “LOCK”
	OFF>ACC		While turning power supply position from “OFF” to “ACC”
	ON>CRANK		While turning power supply position from “IGN” to “CRANKING”
	OFF>SLEEP		While turning BCM status from normal mode (Power supply position is “OFF”.) to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is “LOCK”.) to low power consumption mode
	LOCK		Power supply position is “LOCK” (Ignition switch OFF with steering is locked.)
	OFF		Power supply position is “OFF” (Ignition switch OFF with steering is unlocked.)
	ACC		Power supply position is “ACC” (Ignition switch ACC)
	ON		Power supply position is “IGN” (Ignition switch ON with engine stopped)
	ENGINE RUN		Power supply position is “RUN” (Ignition switch ON with engine running)
	CRANKING		Power supply position is “CRANKING” (At engine cranking)
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.	

INTELLIGENT KEY

INTELLIGENT KEY : CONSULT-III Function (BCM - INTELLIGENT KEY) (With Super Lock)

INFOID:0000000006747513

WORK SUPPORT

Monitor item	Description
INSIDE ANT DIAGNOSIS	This function allows inside key antenna self-diagnosis
LOCK/UNLOCK BY I-KEY	Door lock/unlock function by door request switch mode can be changed to operation in this mode • On: Operate • Off: Non-operation
ENGINE START BY I-KEY	Engine start function mode can be changed to operation with this mode • On: Operate • Off: Non-operation
TRUNK/GLASS HATCH OPEN	**NOTE:** This item is displayed, but cannot be monitored
PANIC ALARM SET	**NOTE:** This item is displayed, but cannot be monitored
TRUNK OPEN DELAY	**NOTE:** This item is displayed, but cannot be monitored
LO- BATT OF KEY FOB WARN	Intelligent Key low battery warning mode can be changed to operation with this mode • On: Operate • Off: Non-operation
ANTI KEY LOCK IN FUNCTI	Key reminder function mode can be changed to operation with this mode • On: Operate • Off: Non-operation
HAZARD ANSWER BACK	Hazard reminder function mode by door request switch and Intelligent Key button can be selected from the following with this mode • Lock Only: Door lock operation only • Unlock Only: Door unlock operation only • Lock/Unlock: Lock and unlock operation • Off: Non-operation
ANS BACK I-KEY LOCK	Buzzer reminder function (lock operation) mode by door request switch can be selected from the following with this mode • Horn Chirp: Sound horn • Buzzer: Sound Intelligent Key warning buzzer • Off: Non-operation
ANS BACK I-KEY UNLOCK	Buzzer reminder function (unlock operation) mode by door request switch can be changed to operation with this mode • On: Operate • Off: Non-operation
SHORT CRANKING OUTPUT	Starter motor can operate during the times below • 70 msec • 100 msec • 200 msec
CONFIRM KEY FOB ID	It can be checked whether Intelligent Key ID code is registered or not in this mode
AUTO LOCK SET	Auto door lock operation time can be changed in this mode • MODE 1: OFF • MODE 2: 30 sec • MODE 3: 1 minute • MODE 4: 2 minutes • MODE 5: 3 minutes • MODE 6: 4 minutes • MODE 7: 5 minutes
ANSWER BACK FUNCTION	Buzzer reminder function mode by Intelligent Key button can be selected from the following with this mode • On: Operate • Off: Non-operation
TAKE OUT FROM WIN WARN SET	**NOTE:** This item is indicated, but not used
RETRACTABLE MIRROR SET	Auto retractable door mirror function mode can be changed to operation with this mode • On: Operate • Off: Non-operation

SELF-DIAG RESULT

Refer to BCS-67, "DTC Index".

DATA MONITOR

Monitor Item	Condition
REQ SW -DR	Indicates [On/Off] condition of door request switch (driver side)
REQ SW -AS	Indicates [On/Off] condition of door request switch (passenger side)
REQ SW -BD/TR	Indicates [On/Off] condition of back door request switch
PUSH SW	Indicates [On/Off] condition of push-button ignition switch
CLUTCH SW*1	Indicates [On/Off] condition of clutch interlock switch
BRAKE SW 1	Indicates [On/Off]*2 condition of stop lamp switch power supply
BRAKE SW 2	Indicates [On/Off] condition of stop lamp switch
DETE/CANCL SW	Indicates [On/Off] condition of P position
SFT PN/N SW	Indicates [On/Off] condition of P or N position
S/L -LOCK	Indicates [On/Off] condition of steering lock unit (LOCK)
S/L -UNLOCK	Indicates [On/Off] condition of steering lock unit (UNLOCK)
S/L RELAY -F/B	Indicates [On/Off] condition of steering lock relay
UNLK SEN -DR	Indicates [On/Off] condition of driver door UNLOCK status
PUSH SW -IPDM	Indicates [On/Off] condition of push-button ignition switch
IGN RLY1 -F/B	Indicates [On/Off] condition of ignition relay 1
DETE SW -IPDM	Indicates [On/Off] condition of P position
SFT PN -IPDM	Indicates [On/Off] condition of P or N position
SFT P -MET	Indicates [On/Off] condition of P position
SFT N -MET	Indicates [On/Off] condition of N position
ENGINE STATE	Indicates [Stop/Stall/Crank/Run] condition of engine states
S/L LOCK-IPDM	Indicates [On/Off] condition of steering lock unit (LOCK)
S/L UNLK-IPDM	Indicates [On/Off] condition of steering lock unit (UNLOCK)
S/L RELAY-REQ	Indicates [On/Off] condition of steering lock relay
VEH SPEED 1	Display the vehicle speed signal received from combination meter by numerical value [Km/h]
VEH SPEED 2	Display the vehicle speed signal received from ABS or VDC or TCM by numerical value [Km/h]
DOOR STAT-DR	Indicates [LOCK/READY/UNLK] condition of driver side door status
DOOR STAT-AS	Indicates [LOCK/READY/UNLK] condition of passenger side door status
ID OK FLAG	Indicates [Set/Reset] condition of key ID
PRMT ENG STRT	Indicates [Set/Reset] condition of engine start possibility
PRMT RKE STRT	**NOTE:** This item is displayed, but cannot be monitored
TRNK/HAT MNTR	**NOTE:** This item is displayed, but cannot be monitored
RKE-LOCK	Indicates [On/Off] condition of LOCK signal from Intelligent Key
RKE-UNLOCK	Indicates [On/Off] condition of UNLOCK signal from Intelligent Key
RKE-TR/BD	**NOTE:** This item is displayed, but cannot be monitored
RKE-PANIC	**NOTE:** This item is displayed, but cannot be monitored
RKE-MODE CHG	Indicates [On/Off] condition of MODE CHANGE signal from Intelligent Key

Monitor Item	Condition
RKE OPE COUN1	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing
RKE OPE COUN2	**NOTE:** This item is displayed, but cannot be monitored

*1: It is displayed but does not operate on CVT models.

*2: OFF is displayed when brake pedal is depressed while brake switch power supply is OFF.

ACTIVE TEST

Test item	Description
OUTSIDE BUZZER	This test is able to check Intelligent Key warning buzzer operation • On: Operate • Off: Non-operation
INSIDE BUZZER	This test is able to check warning chime in combination meter operation • Take Out: Take away warning chime sounds when CONSULT-III screen is touched • Key: Key warning chime sounds when CONSULT-III screen is touched • Knob: OFF position warning chime sounds when CONSULT-III screen is touched • Off: Non-operation
INDICATOR	This test is able to check warning lamp operation • KEY ON: “KEY” Warning lamp illuminates when CONSULT-III screen is touched • KEY IND: “KEY” Warning lamp blinks when CONSULT-III screen is touched • Off: Non-operation
INT LAMP	This test is able to check interior room lamp operation • On: Operate • Off: Non-operation
LCD	This test is able to check meter display information • BP N: Engine start operation indicator lamp indicate when CONSULT-III screen is touched • BP I: Engine start operation indicator lamp indicate when CONSULT-III screen is touched • ID NG: This item is displayed, but cannot be monitored • ROTAT: This item is displayed, but cannot be monitored • SFT P: Shift P warning lamp indicate when CONSULT-III screen is touched • INSRT: This item is displayed, but cannot be monitored • BATT: Key warning lamp indicator when CONSULT-III screen is touched • NO KY: Key warning lamp indicator when CONSULT-III screen is touched • OUTKEY: Engine start operation indicator lamp indicate when CONSULT-III screen is touched • LK WN: Engine start operation indicator lamp indicate when CONSULT-III screen is touched
FLASHER	This test is able to check security hazard lamp operation The hazard lamps are activated after “LH/RH/Off” on CONSULT-III screen is touched
P RANGE	This test is able to check CVT shift selector power supply • On: Operate • Off: Non-operation
ENGINE SW ILLUMI	This test is able to check push-ignition switch illumination operation Push-ignition switch illumination illuminates when “ON” on CONSULT-III screen is touched
PUSH SWITCH INDICATOR	This test is able to check LOCK indicator in push-ignition switch operation LOCK indicator in push-ignition switch illuminates when “ON” on CONSULT-III screen is touched
BATTERY SAVER	This test is able to check interior room lamp operation. The interior room lamp will be activated after “ON” on CONSULT-III screen is touched.
TRUNK/BACK DOOR	This test is able to check back door opener actuator open operation. This actuator opens when “Open” on CONSULT-III screen is touched.
RETRACTABLE MIRROR	This test is able to check auto retractable door mirror operation • On: Operate • Off: Non-operation

INTELLIGENT KEY : CONSULT-III Function (BCM - INTELLIGENT KEY) (Without Su-

per Lock)

INFOID:0000000006747514

WORK SUPPORT

Monitor item	Description
INSIDE ANT DIAGNOSIS	This function allows inside key antenna self-diagnosis
LOCK/UNLOCK BY I-KEY	Door lock/unlock function by door request switch mode can be changed to operation in this mode • On: Operate • Off: Non-operation
ENGINE START BY I-KEY	Engine start function mode can be changed to operation with this mode • On: Operate • Off: Non-operation
TRUNK/GLASS HATCH OPEN	**NOTE:** This item is displayed, but cannot be monitored
PANIC ALARM SET	**NOTE:** This item is displayed, but cannot be monitored
TRUNK OPEN DELAY	**NOTE:** This item is displayed, but cannot be monitored
LO- BATT OF KEY FOB WARN	Intelligent Key low battery warning mode can be changed to operation with this mode • On: Operate • Off: Non-operation
ANTI KEY LOCK IN FUNCTI	Key reminder function mode can be changed to operation with this mode • On: Operate • Off: Non-operation
HAZARD ANSWER BACK	Hazard reminder function mode by door request switch and Intelligent Key button can be selected from the following with this mode • Lock Only: Door lock operation only • Unlock Only: Door unlock operation only • Lock/Unlock: Lock and unlock operation • Off: Non-operation
ANS BACK I-KEY LOCK	Buzzer reminder function (lock operation) mode by door request switch can be selected from the following with this mode • Horn Chirp: Sound horn • Buzzer: Sound Intelligent Key warning buzzer • Off: Non-operation
ANS BACK I-KEY UNLOCK	Buzzer reminder function (unlock operation) mode by door request switch can be changed to operation with this mode • On: Operate • Off: Non-operation
SHORT CRANKING OUTPUT	Starter motor can operate during the times below • 70 msec • 100 msec • 200 msec
CONFIRM KEY FOB ID	It can be checked whether Intelligent Key ID code is registered or not in this mode
AUTO LOCK SET	Auto door lock operation time can be changed in this mode • MODE 1: OFF • MODE 2: 30 sec • MODE 3: 1 minute • MODE 4: 2 minutes • MODE 5: 3 minutes • MODE 6: 4 minutes • MODE 7: 5 minutes
ANSWER BACK FUNCTION	Buzzer reminder function mode by Intelligent Key button can be selected from the following with this mode • On: Operate • Off: Non-operation

Monitor item	Description
TAKE OUT FROM WIN WARN SET	**NOTE:** This item is indicated, but not used
RETRACTABLE MIRROR SET	Auto retractable door mirror function mode can be changed to operation with this mode • On: Operate • Off: Non-operation

SELF-DIAG RESULT

Refer to BCS-67, "DTC Index".

DATA MONITOR

Monitor Item	Condition
REQ SW -DR	Indicates [On/Off] condition of door request switch (driver side)
REQ SW -AS	Indicates [On/Off] condition of door request switch (passenger side)
REQ SW -BD/TR	Indicates [On/Off] condition of back door request switch
PUSH SW	Indicates [On/Off] condition of push-button ignition switch
CLUTCH SW*1	Indicates [On/Off] condition of clutch interlock switch
BRAKE SW 1	Indicates [On/Off]*2 condition of stop lamp switch power supply
BRAKE SW 2	Indicates [On/Off] condition of stop lamp switch
DETE/CANCL SW	Indicates [On/Off] condition of P position
SFT PN/N SW	Indicates [On/Off] condition of P or N position
S/L -LOCK	Indicates [On/Off] condition of steering lock unit (LOCK)
S/L -UNLOCK	Indicates [On/Off] condition of steering lock unit (UNLOCK)
S/L RELAY -F/B	Indicates [On/Off] condition of steering lock relay
UNLK SEN -DR	Indicates [On/Off] condition of driver door UNLOCK status
PUSH SW -IPDM	Indicates [On/Off] condition of push-button ignition switch
IGN RLY1 -F/B	Indicates [On/Off] condition of ignition relay 1
DETE SW -IPDM	Indicates [On/Off] condition of P position
SFT PN -IPDM	Indicates [On/Off] condition of P or N position
SFT P -MET	Indicates [On/Off] condition of P position
SFT N -MET	Indicates [On/Off] condition of N position
ENGINE STATE	Indicates [Stop/Stall/Crank/Run] condition of engine states
S/L LOCK-IPDM	Indicates [On/Off] condition of steering lock unit (LOCK)
S/L UNLK-IPDM	Indicates [On/Off] condition of steering lock unit (UNLOCK)
S/L RELAY-REQ	Indicates [On/Off] condition of steering lock relay
VEH SPEED 1	Display the vehicle speed signal received from combination meter by numerical value [Km/h]
VEH SPEED 2	Display the vehicle speed signal received from ABS or VDC or TCM by numerical value [Km/h]
DOOR STAT-DR	Indicates [LOCK/READY/UNLK] condition of driver side door status
DOOR STAT-AS	Indicates [LOCK/READY/UNLK] condition of passenger side door status
ID OK FLAG	Indicates [Set/Reset] condition of key ID
PRMT ENG STRT	Indicates [Set/Reset] condition of engine start possibility
PRMT RKE STRT	**NOTE:** This item is displayed, but cannot be monitored
TRNK/HAT MNTR	**NOTE:** This item is displayed, but cannot be monitored
RKE-LOCK	Indicates [On/Off] condition of LOCK signal from Intelligent Key
RKE-UNLOCK	Indicates [On/Off] condition of UNLOCK signal from Intelligent Key

Monitor Item	Condition
RKE-TR/BD	**NOTE:** This item is displayed, but cannot be monitored
RKE-PANIC	**NOTE:** This item is displayed, but cannot be monitored
RKE-MODE CHG	Indicates [On/Off] condition of MODE CHANGE signal from Intelligent Key
RKE OPE COUN1	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing
RKE OPE COUN2	**NOTE:** This item is displayed, but cannot be monitored

*1: It is displayed but does not operate on CVT models.

*2: OFF is displayed when brake pedal is depressed while brake switch power supply is OFF.

ACTIVE TEST

Test item	Description
OUTSIDE BUZZER	This test is able to check Intelligent Key warning buzzer operation • On: Operate • Off: Non-operation
INSIDE BUZZER	This test is able to check warning chime in combination meter operation • Take Out: Take away warning chime sounds when CONSULT-III screen is touched • Key: Key warning chime sounds when CONSULT-III screen is touched • Knob: OFF position warning chime sounds when CONSULT-III screen is touched • Off: Non-operation
INDICATOR	This test is able to check warning lamp operation • KEY ON: “KEY” Warning lamp illuminates when CONSULT-III screen is touched • KEY IND: “KEY” Warning lamp blinks when CONSULT-III screen is touched • Off: Non-operation
INT LAMP	This test is able to check interior room lamp operation • On: Operate • Off: Non-operation
LCD	This test is able to check meter display information • BP N: Engine start operation indicator lamp indicate when CONSULT-III screen is touched • BP I: Engine start operation indicator lamp indicate when CONSULT-III screen is touched • ID NG: This item is displayed, but cannot be monitored • ROTAT: This item is displayed, but cannot be monitored • SFT P: Shift P warning lamp indicate when CONSULT-III screen is touched • INSRT: This item is displayed, but cannot be monitored • BATT: Key warning lamp indicator when CONSULT-III screen is touched • NO KY: Key warning lamp indicator when CONSULT-III screen is touched • OUTKEY: Engine start operation indicator lamp indicate when CONSULT-III screen is touched • LK WN: Engine start operation indicator lamp indicate when CONSULT-III screen is touched
FLASHER	This test is able to check security hazard lamp operation The hazard lamps are activated after “LH/RH/Off” on CONSULT-III screen is touched
P RANGE	This test is able to check CVT shift selector power supply • On: Operate • Off: Non-operation
ENGINE SW ILLUMI	This test is able to check push-ignition switch illumination operation Push-ignition switch illumination illuminates when “ON” on CONSULT-III screen is touched
PUSH SWITCH INDICATOR	This test is able to check LOCK indicator in push-ignition switch operation LOCK indicator in push-ignition switch illuminates when “ON” on CONSULT-III screen is touched
BATTERY SAVER	This test is able to check interior room lamp operation. The interior room lamp will be activated after “ON” on CONSULT-III screen is touched.

Test item	Description
TRUNK/BACK DOOR	This test is able to check back door opener actuator open operation. This actuator opens when “Open” on CONSULT-III screen is touched.
RETRACTABLE MIRROR	This test is able to check auto retractable door mirror operation • On: Operate • Off: Non-operation

ECU DIAGNOSIS INFORMATION

BCM

List of ECU Reference

INFOID:0000000006598100

ECU	Reference
BCM	BCS-41, "Reference Value"
	BCS-64, "Fail-safe"
	BCS-66, "DTC Inspection Priority Chart"
	BCS-67, "DTC Index"

WIRING DIAGRAM

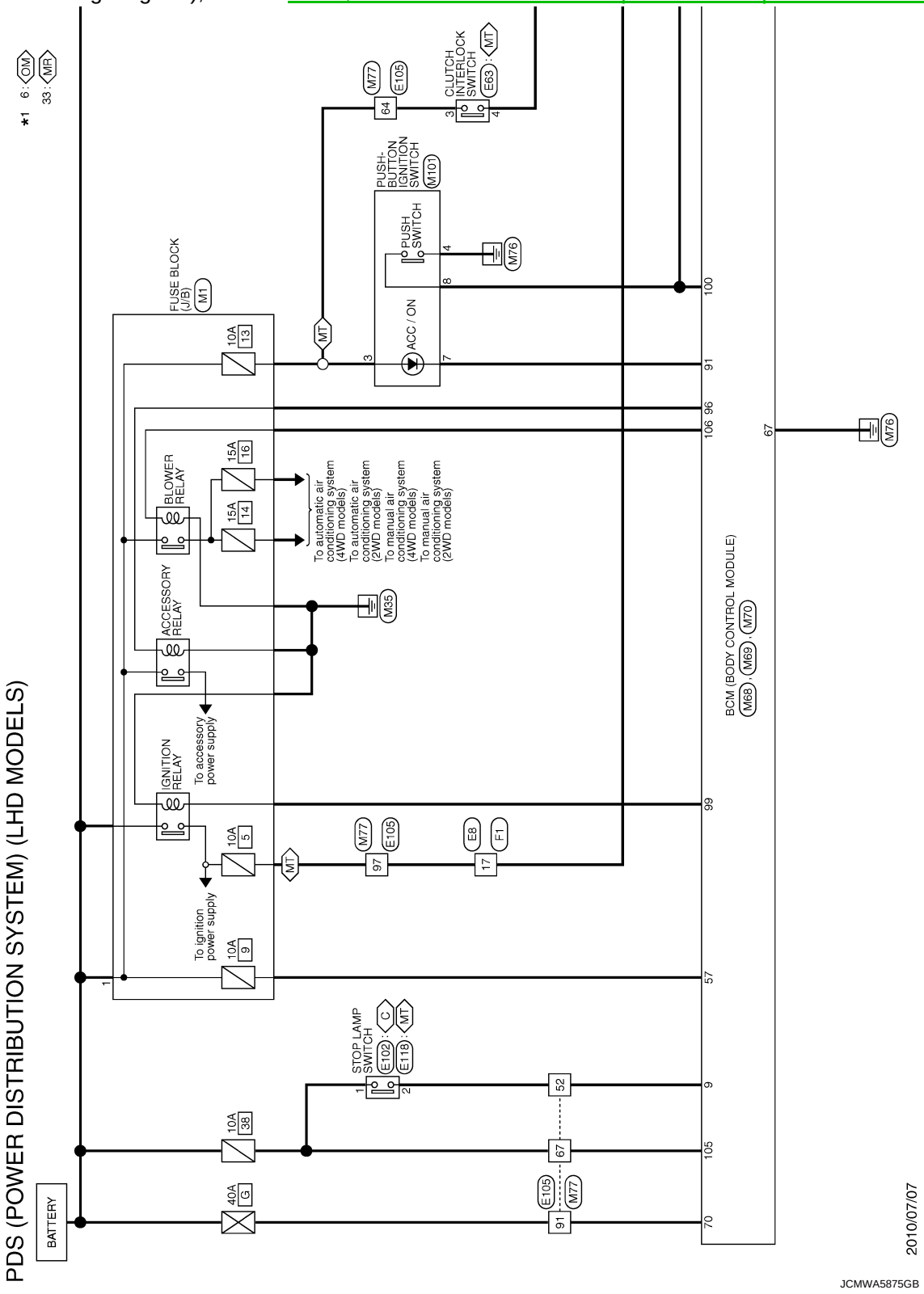
POWER DISTRIBUTION SYSTEM

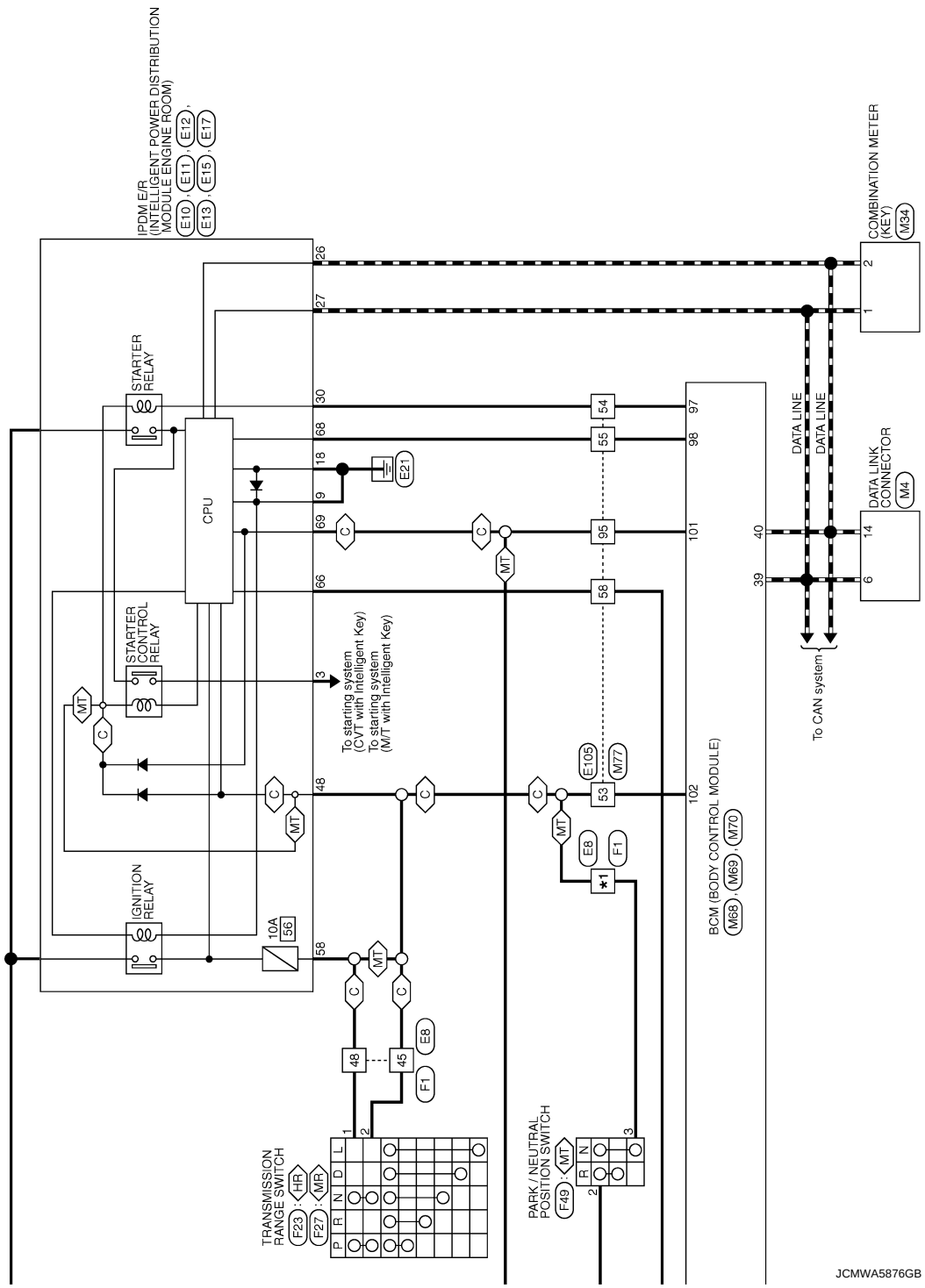
LHD

LHD : Wiring Diagram

INFOID:0000000006598101

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".



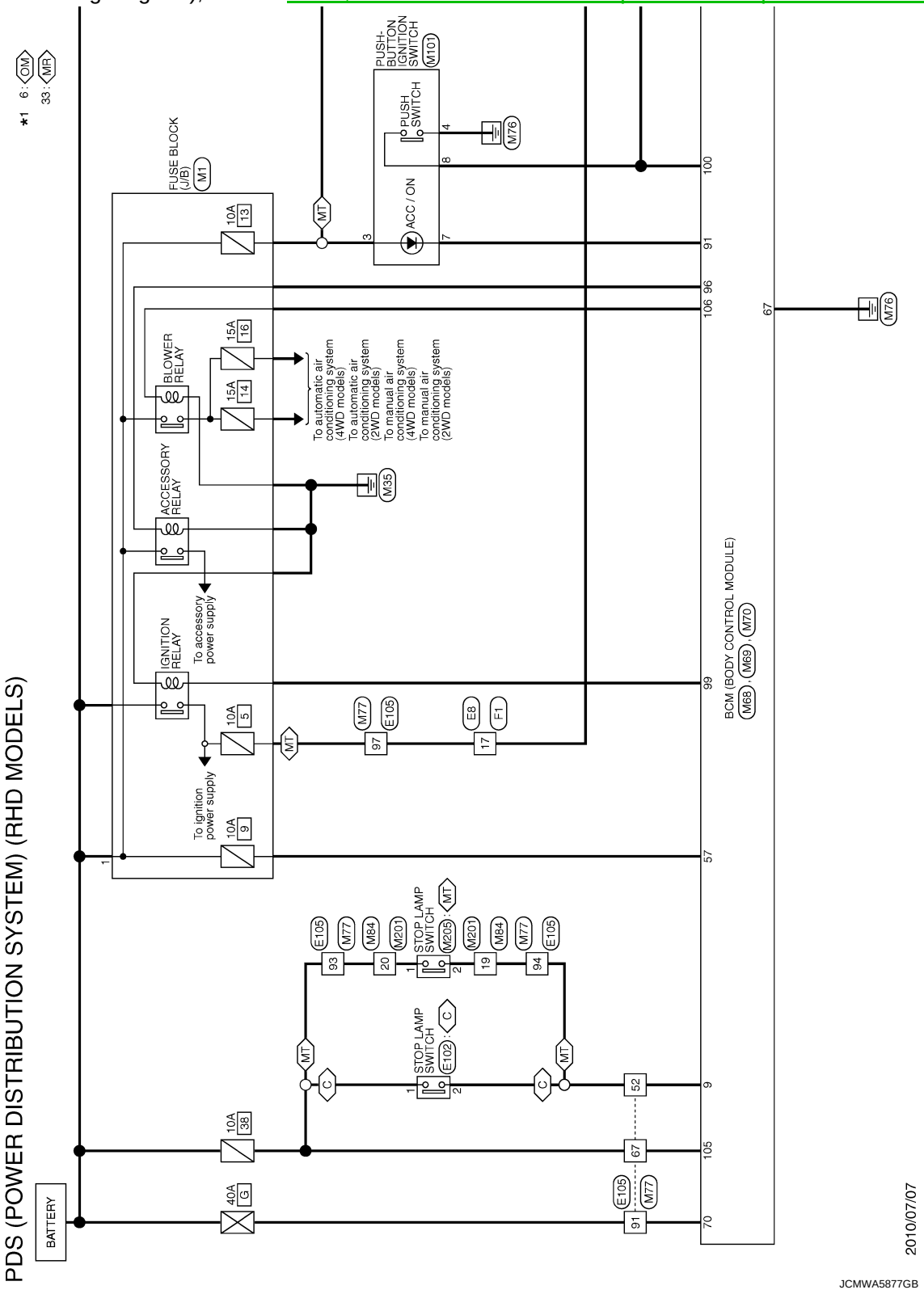

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E10, E11, E12, E13, E15, E17
STARTER RELAY
STARTER CONTROL RELAY
IGNITION RELAY
CPU
10A 56
E21
To starting system (CVT with Intelligent Key)
To starting system (M/T with Intelligent Key)
COMBINATION METER (KEY) M34
DATA LINK CONNECTOR M4
DATA LINE
DATA LINE
To CAN system
BCM (BODY CONTROL MODULE) M68, M69, M70
E105 M77
E8 F1
*1
TRANSMISSION RANGE SWITCH HR F23, MR F27
PARK / NEUTRAL POSITION SWITCH MT F49
JCMWA5876GB

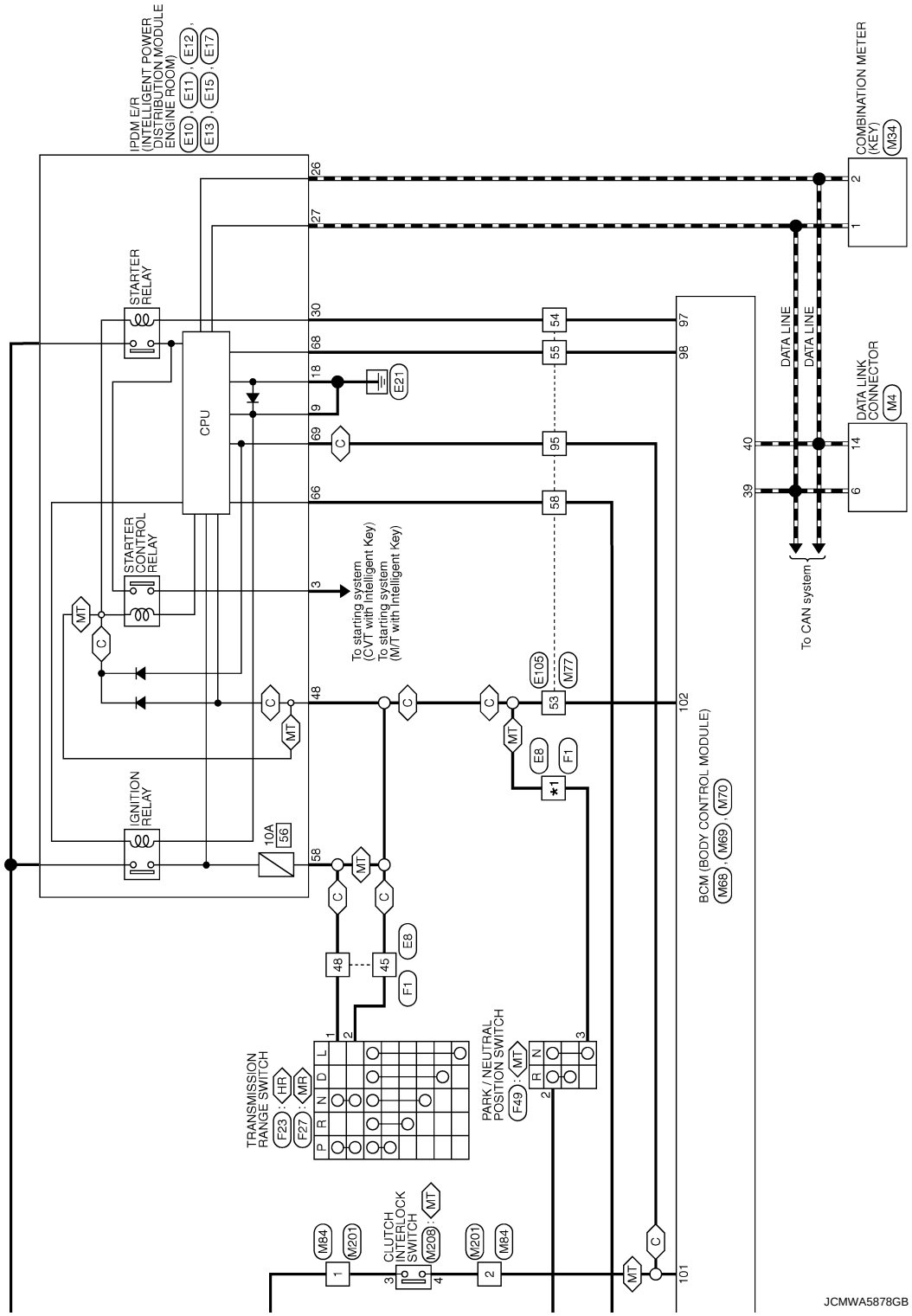
RHD

RHD : Wiring Diagram

INFOID:0000000006598104

For connector terminal arrangements, harness layouts, and alphabets in a ⬡ (option abbreviation; if not described in wiring diagram), refer to GI-12, "Connector Information/Explanation of Option Abbreviation".




IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E10, E11, E12, E13, E15, E17
COMBINATION METER (KEY) M34
STARTER RELAY
CPU
STARTER CONTROL RELAY
IGNITION RELAY
10A 56
E21
DATA LINK CONNECTOR M4
DATA LINE
DATA LINE
To CAN system
To starting system (CVT with Intelligent Key)
To starting system (M/T with Intelligent Key)
BCM (BODY CONTROL MODULE) M68, M69, M70
TRANSMISSION RANGE SWITCH HR F23, MR F27
PARK / NEUTRAL POSITION SWITCH MT F49
CLUTCH INTERLOCK SWITCH M208 : MT
M84
M201
JCMWA5878GB

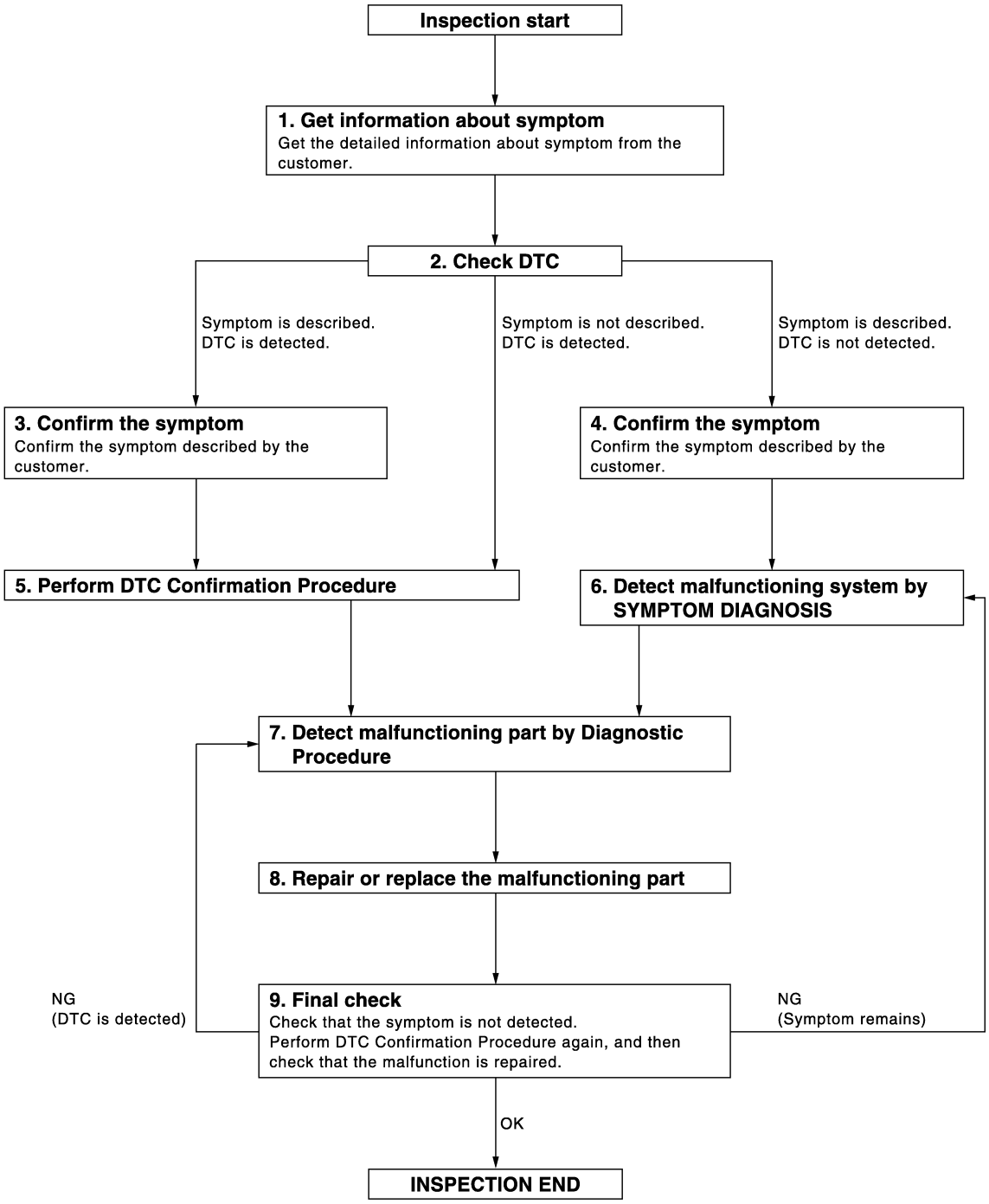
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000006598105

OVERALL SEQUENCE



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DETAILED FLOW

1.GET INFORMATION ABOUT SYMPTOM

Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).

>> GO TO 2.

2.CHECK DTC

1. Check DTC for BCM and IPDM E/R.
2. Perform the following procedure if DTC is displayed.
- Record DTC and freeze frame data (Print them out with CONSULT-III.)
- Erase DTC.
- Study the relationship between the cause detected by DTC and the symptom described by the customer.
3. Check related service bulletins for information.

Are any symptoms described and any DTC detected?

Symptom is described, DTC is displayed>>GO TO 3.
Symptom is described, DTC is not displayed>>GO TO 4.
Symptom is not described, DTC is displayed>>GO TO 5.

3.CONFIRM THE SYMPTOM

Confirm the symptom described by the customer.
Connect CONSULT-III to the vehicle in the “DATA MONITOR” mode and check real time diagnosis results.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4.CONFIRM THE SYMPTOM

Confirm the symptom described by the customer.
Connect CONSULT-III to the vehicle in the “DATA MONITOR ” mode and check real time diagnosis results.
Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 6.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC Confirmation Procedure for the displayed DTC, and then check that DTC is detected again.
At this time, always connect CONSULT-III to the vehicle, and check diagnostic results in real time.
If two or more DTCs are detected, refer to BCS-66, "DTC Inspection Priority Chart", and determine trouble diagnosis order.

NOTE:
Perform Component Function Check if DTC Confirmation Procedure is not included in Service Manual. This simplified check procedure is an effective alternative, although DTC cannot be detected during this check.
If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC Confirmation Procedure.

Is DTC detected?

YES >> GO TO 7.
NO >> Refer to GI-42, "Intermittent Incident".

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

>> GO TO 7.

7.DETECT MALFUNCTIONING PART BY DIAGNOSTIC PROCEDURE

Inspect according to Diagnostic Procedure of the system.

NOTE:
The Diagnostic Procedure described based on open circuit inspection. A short circuit inspection is also required for the circuit check in the Diagnostic Procedure.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Check voltage of related BCM terminals using CONSULT-III.

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

1. Repair or replace the malfunctioning part.
2. Reconnect parts or connectors disconnected during Diagnostic Procedure again after repair and replacement.
3. Check DTC. If DTC is displayed, erase it.

>> GO TO 9.

9. FINAL CHECK

When DTC was detected in step 2, perform DTC Confirmation Procedure or Component Function Check again, and then check that the malfunction is repaired securely.
When symptom was described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Does the symptom reappear?

YES (DTC is detected)>>GO TO 7.
YES (Symptom remains)>>GO TO 6.
NO >> INSPECTION END

DTC/CIRCUIT DIAGNOSIS

B2614 ACC RELAY CIRCUIT

DTC Logic

INFOID:0000000006598106

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2614	BCM	An immediate operation of accessory relay is requested by BCM, but there is no response for more than 2 second.	• Harness or connectors (Accessory relay circuit is open or shorted) • BCM • Accessory relay

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn the power supply position to ACC under the following conditions, and wait for 2 second or more.

CVT models
- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models
- Do not depress clutch pedal

2. Check “Self-diagnosis result” of BCM with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-91, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598107

1.CHECK ACCESSORY RELAY POWER SUPPLY-1

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

(+) Accessory relay Terminal	(–)	Condition		Voltage (V) (Approx.)
1	Ground	Ignition switch	OFF	0
			ACC or ON	12

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK ACCESSORY RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between accessory relay harness connector and BCM harness connector.

Accessory relay	BCM		Continuity
Terminal	Connector	Terminal	
1	M70	96	Existed

4. Check continuity between accessory relay harness connector and ground.

Accessory relay	Ground	Continuity
Terminal		
1		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation".
NO >> Repair or replace harness.

3.CHECK ACCESSORY RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between accessory relay harness connector and ground.

Accessory relay	Ground	Continuity
Terminal		
2		Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair accessory relay ground circuit.

4.CHECK ACCESSORY RELAY POWER SUPPLY CIRCUIT-2

1. Turn ignition switch ACC.
2. Check voltage between accessory relay harness connector and ground.

(+)	(–)	Voltage (V) (Approx.)
Accessory relay		
Terminal		
5	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check continuity open or short between accessory relay and battery.

5.CHECK ACCESSORY RELAY

Refer to PCS-92, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace accessory relay.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

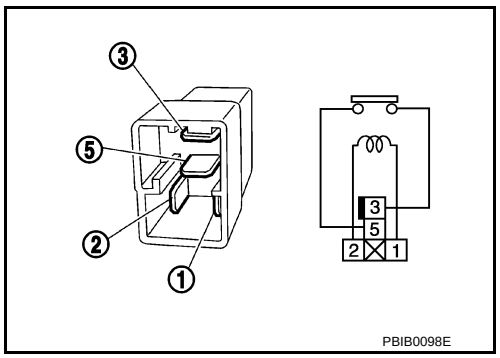
INFOID:0000000006598108

1.CHECK ACCESSORY RELAY

1. Turn ignition switch OFF.
2. Remove accessory relay.

3. Check the continuity between accessory relay terminals.

Terminals	Condition	Continuity
3 and 5	12 V direct current supply between terminals 1 and 2	Existed
	No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace accessory relay

B2615 BLOWER RELAY CIRCUIT

DTC Logic

INFOID:0000000006598109

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2615	BCM	BCM detects a difference of signal for 1 second or more between the following items. • Blower relay ON/OFF request • Blower relay feedback	• Harness or connectors (Blower relay circuit is open or shorted) • BCM • Blower relay

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 1 second or more.

CVT models
- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models
- Do not depress clutch pedal

2. Check “Self-diagnosis result” of BCM with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-94, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598110

1.CHECK BLOWER RELAY POWER SUPPLY

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

(+) Blower relay Terminal	(–)	Condition		Voltage (V) (Approx.)
1	Ground	Ignition switch	OFF or ACC	0
			ON	12

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK BLOWER RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between blower relay harness connector and BCM harness connector.

Blower relay	BCM		Continuity
Terminal	Connector	Terminal	
1	M70	106	Existed

4. Check continuity between blower relay harness connector and ground.

Blower relay	Ground	Continuity
Terminal		
1		Not existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace harness.

3.CHECK BLOWER RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between blower relay harness connector and ground.

Blower relay	Ground	Continuity
Terminal		
2		Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair blower relay ground circuit.

4.CHECK BLOWER RELAY POWER SUPPLY CIRCUIT-2

1. Turn ignition switch ON.
2. Check voltage between blower relay harness connector and ground.

(+)	(–)	Voltage (V) (Approx.)
Blower relay		
Terminal		
5	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check continuity open or short between blower relay and battery.

5.CHECK BLOWER RELAY

Refer to PCS-95, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace blower relay.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

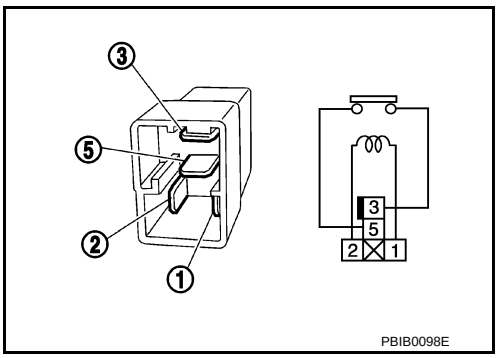
INFOID:0000000006598111

1.CHECK BLOWER RELAY

1. Turn ignition switch OFF.
2. Remove blower relay.

3. Check the continuity between blower relay terminals.

Terminals	Condition	Continuity
3 and 5	12 V direct current supply between terminals 1 and 2	Existed
	No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace blower relay

B2616 IGNITION RELAY CIRCUIT

DTC Logic

INFOID:0000000006598112

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2616	BCM	An immediate operation of ignition relay is requested by BCM, but there is no response for more than 1 second	• Harness or connectors (Ignition relay circuit is open or shorted) • BCM • Ignition relay

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 1 second or more.

CVT models
- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models
- Do not depress clutch pedal

2. Check “Self-diagnosis result” with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-97, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598113

1.CHECK IGNITION RELAY POWER SUPPLY

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

(+) Ignition relay Terminal	(–)	Condition		Voltage (V) (Approx.)
2	Ground	Ignition switch	OFF or ACC	0
			ON	12

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK IGNITION RELAY POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM connector.
3. Check continuity between ignition relay harness connector and BCM harness connector.

Ignition relay	BCM		Continuity
Terminal	Connector	Terminal	
2	M70	99	Existed

4. Check continuity between ignition relay harness connector and ground.

Ignition relay	Ground	Continuity
Terminal		
2		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation".
NO >> Repair or replace harness.

3.CHECK IGNITION RELAY GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between ignition relay harness connector and ground.

Ignition relay	Ground	Continuity
Terminal		
1		Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair ignition relay ground circuit.

4.CHECK IGNITION RELAY POWER SUPPLY CIRCUIT-2

1. Turn ignition switch ON.
2. Check voltage between ignition relay harness connector and ground.

(+)	(–)	Voltage (V) (Approx.)
Ignition relay		
Terminal		
5	Ground	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> Check continuity open or short between ignition relay and battery.

5.CHECK IGNITION RELAY

Refer to PCS-98, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace ignition relay.

6.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

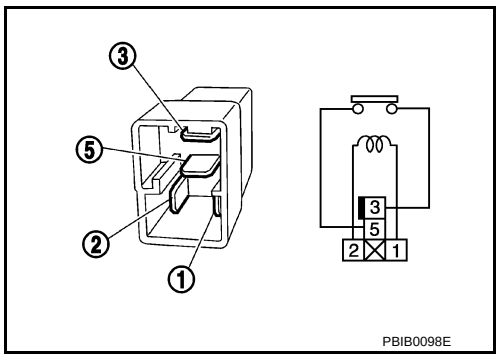
INFOID:0000000006598114

1.CHECK IGNITION RELAY

1. Turn ignition switch OFF.
2. Remove ignition relay.

3. Check the continuity between ignition relay terminals.

Terminals	Condition	Continuity
3 and 5	12 V direct current supply between terminals 1 and 2	Existed
	No current supply	Not existed



Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace Ignition relay

B2618 BCM

DTC Logic

INFOID:0000000006598115

DTC DETECTION LOGIC

NOTE:

- If DTC B2618 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to BCS-83, "DTC Logic".
- If DTC B2618 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to BCS-84, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2618	BCM	An immediate operation of ignition relay (IPDM E/R) is requested by BCM, but there is no response for more than 1 second	BCM

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 1 second or more.

CVT models

- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models

- Do not depress clutch pedal

2. Check “Self-diagnosis result” of BCM with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-100, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598116

1.INSPECTION START

1. Turn ignition switch ON.
2. Select “Self-diagnosis result” of BCM with CONSULT-III.
3. Touch “ERASE”.
4. Perform DTC Confirmation Procedure.
   See PCS-100, "DTC Logic".

Is the 1st trip DTC B2618 displayed again?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation"
NO >> INSPECTION END

B261A PUSH-BUTTON IGNITION SWITCH

DTC Logic

INFOID:0000000006598117

DTC DETECTION LOGIC

NOTE:

- If DTC B261A is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to BCS-83, "DTC Logic".
- If DTC B261A is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to BCS-84, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B261A	PUSH-BTN IGN SW	BCM detects a difference of signal for 1 second or more between the following items. • Push-button ignition switch signal • Push-button ignition switch status signal (CAN)	• Harness or connectors (Push-button ignition switch circuit is open or shorted.) • BCM • IPDM E/R

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Press the push-button ignition switch under the following conditions, and wait for 1 second or more.

CVT models

- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models

- Do not depress clutch pedal

2. Check “Self-diagnosis result” of BCM with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-101, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598118

1.CHECK IGNITION SWITCH OUTPUT SIGNAL (PUSH-BUTTON IGNITION SWITCH)

1. Disconnect push-button ignition switch connector and IPDM E/R connector.
2. Check voltage between push-button ignition switch harness connector and ground.

(+)		(–)	Voltage (V) (Approx.)
Push-button ignition switch			
Connector	Terminal		
M101	8	Ground	12

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (BCM)

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector and push-button ignition switch harness connector.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M70	100	M101	8	Existed

3. Check continuity between push-button ignition switch harness connector and ground.

Push-button ignition switch		Ground	Continuity
Connector	Terminal		
M101	8		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation".
NO >> Repair or replace harness.

3.CHECK IGNITION SWITCH OUTPUT SIGNAL (IPDM E/R)

Check voltage between IPDM E/R harness connector and ground.

(+)		(–)	Voltage (V) (Approx.)
IPDM E/R			
Connector	Terminal		
E17	66	Ground	12

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> GO TO 4.

4.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT (IPDM E/R)

1. Disconnect BCM connector.
2. Check continuity between IPDM E/R harness connector and push-button ignition switch harness connector.

IPDM E/R		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
E17	66	M101	8	Existed

3. Check continuity between push-button ignition switch harness connector and ground.

Push-button ignition switch		Ground	Continuity
Connector	Terminal		
M101	8		Not existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace harness.

5.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

B26F1 IGNITION RELAY

DTC Logic

INFOID:0000000006598119

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B26F1	IGN RELAY OFF	BCM transmits the ignition relay control signal (ON: 0 V) or ignition switch ON signal (ON) (CAN), but does not receives ignition switch ON signal (ON) (CAN) from IPDM E/R.	• Harness or connectors (ignition relay circuit is open) • BCM • IPDM E/R

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more.

CVT models
- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models
- Do not depress clutch pedal

2. Check “Self-diagnosis result” with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-103, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598120

1.CHECK IPDM E/R SELF-DIAGNOSTIC RESULT

1. Turn ignition switch ON.
2. Erase the DTC of IPDM E/R.
3. Turn ignition switch OFF.
4. Turn ignition switch ON and check the DTC again.

Is DTC detected?

YES >> Repair or replace the malfunctioning part. Refer to PCS-25, "DTC Index".
NO >> GO TO 2.

2.CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL

Check voltage between BCM harness connector and ground.

(+)		(–)	Condition		Voltage (V) (Approx.)
BCM					
Connector	Terminal				
M70	98	Ground	Ignition switch	ON	0

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-93, "Removal and Installation".

3.CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect BCM and IPDM connectors.
3. Check continuity between BCM harness connector and IPDM E/R harness connector.

BCM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
M70	98	E17	68	Existed

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace harness.

B26F2 IGNITION RELAY

DTC Logic

INFOID:0000000006598121

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B26F2	IGN RELAY ON	BCM transmits the ignition relay control signal (OFF: 12 V) or ignition switch ON signal (OFF) (CAN), but does not receives ignition switch ON signal (OFF) (CAN) from IPDM E/R.	• Harness or connectors (ignition relay circuit is short) • BCM • IPDM E/R

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more.

CVT models
- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models
- Do not depress clutch pedal

2. Check “Self-diagnosis result” with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-105, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598122

1.CHECK IPDM E/R SELF-DIAGNOSTIC RESULT

1. Turn ignition switch ON.
2. Erase the DTC of IPDM E/R.
3. Turn ignition switch OFF.
4. Turn ignition switch ON and check the DTC again.

Is DTC detected?

YES >> Repair or replace the malfunctioning part. Refer to PCS-25, "DTC Index".
NO >> GO TO 2.

2.CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL

1. Turn ignition switch OFF.
2. Check voltage between IPDM E/R harness connector and ground.

(+)		(–)	Condition		Voltage (V) (Approx.)
IPDM E/R					
Connector	Terminal				
E17	68	Ground	Ignition switch	OFF or ACC	12

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> GO TO 3.

3.CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL CIRCUIT - 1

1. Turn ignition switch OFF.
2. Disconnect BCM and IPDM E/R connectors.
3. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E17	68		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace harness.

4. CHECK IGNITION RELAY (IPDM E/R) CONTROL SIGNAL CIRCUIT - 2

1. Connect IPDM E/R connectors.
2. Check voltage between IPDM E/R harness connector and ground.

(+)		(–)	Condition		Voltage (V) (Approx.)
IPDM E/R					
Connector	Terminal				
E17	68	Ground	Ignition switch	OFF or ACC	12

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation".
NO >> Replace IPDM E/R.

B26F6 BCM

DTC Logic

INFOID:0000000006598123

DTC DETECTION LOGIC

NOTE:

- If DTC B26F6 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to BCS-83, "DTC Logic".
- If DTC B26F6 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to BCS-84, "DTC Logic".

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B26F6	BCM	Ignition relay ON signal is not transmitted from IPDM E/R when BCM turns ignition relay ON.	BCM

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON under the following conditions, and wait for 1 second or more.

CVT models

- Selector lever is in the P or N position
- Do not depress brake pedal

M/T models

- Do not depress clutch pedal

2. Check “Self-diagnosis result” of BCM with CONSULT-III.

Is DTC detected?

YES >> Go to PCS-107, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000006598124

1.INSPECTION START

1. Turn ignition switch ON.
2. Select “Self-diagnosis result” of BCM with CONSULT-III.
3. Touch “ERASE”.
4. Perform DTC Confirmation Procedure.
   See PCS-107, "DTC Logic".

Is DTC detected?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation"
NO >> INSPECTION END

PUSH-BUTTON IGNITION SWITCH

Component Function Check

INFOID:0000000006598125

1.CHECK FUNCTION

1. Select “PUSH SW” in “Data Monitor” mode with CONSULT-III.
2. Check the push-button ignition switch signal under the following conditions.

Test item	Condition	Status
PUSH SW	Push-button ignition switch is pressed	ON
	Push-button ignition switch is not pressed	OFF

Is the indication normal?

YES >> INSPECTION END.
NO >> Go to PCS-108, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006598126

1.CHECK PUSH-BUTTON IGNITION SWITCH OUTPUT SIGNAL 1

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector and IPDM E/R connector.
3. Check voltage between push-button ignition switch harness connector and ground.

(+)		(–)	Voltage (V) (Approx.)
Push-button ignition switch			
Connector	Terminal		
M101	8	Ground	12 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 2.

2.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT 1

1. Disconnect BCM connector.
2. Check continuity between BCM harness connector and push-button ignition switch harness connector.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M70	100	M101	8	Existed

3. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M70	100		Not existed

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation".
NO >> Repair or replace harness.

3.CHECK PUSH-BUTTON IGNITION SWITCH OUTPUT SIGNAL 2

Check voltage between IPDM E/R harness connector and ground.

(+)		(–)	Voltage (V) (Approx.)
IPDM E/R			
Connector	Terminal		
E17	66	Ground	12 V

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 4.

4. CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT 2

1. Disconnect BCM connector.
2. Check continuity between IPDM E/R harness connector and push-button ignition switch harness connector.

IPDM E/R		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
E17	66	M101	8	Existed

3. Check continuity between IPDM E/R harness connector and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E17	66		Not existed

Is the inspection result normal?

YES >> Replace IPDM E/R.
NO >> Repair or replace harness.

5. CHECK PUSH-BUTTON IGNITION SWITCH GROUND CIRCUIT

Check continuity between push-button ignition switch harness connector and ground.

Push-button ignition switch		Ground	Continuity
Connector	Terminal		
M101	4		Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace harness.

6. CHECK PUSH-BUTTON IGNITION SWITCH

Refer to PCS-109, "Component Inspection".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Replace push-button ignition switch.

7. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> INSPECTION END

Component Inspection

INFOID:0000000006598127

1. CHECK PUSH-BUTTON IGNITION SWITCH

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector.
3. Check continuity between push-button ignition switch terminals.

Push-button ignition switch		Condition	Continuity
Terminal			
8	4	Pressed	Existed
		Not pressed	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace push-button ignition switch.

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR

Description

INFOID:0000000006598128

Push-button ignition switch changes the power supply position.
BCM maintains the power supply position status.
BCM changes the power supply position with the operation of the push-button ignition switch.

Component Function Check

INFOID:0000000006598129

1.CHECK FUNCTION

Check push-button ignition switch (“PUSH SWITCH INDICATOR”) in Active Test Mode with CONSULT-III.

Test item		Description	
PUSH SWITCH INDICATOR	ON	Position indicator	Illuminates
	OFF		Does not illuminate

Is the inspection result normal?

YES >> INSPECTION END
NO >> Refer to PCS-111, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006598130

1.CHECK PUSH-BUTTON IGNITION SWITCH INPUT SIGNAL

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

(+)		(–)	Voltage (V) (Approx.)
Push-button ignition switch			
Connector	Terminal		
M101	3	Ground	Battery voltage

Is the inspection normal?

YES >> GO TO 2.
NO-1 >> Check 10 A fuse [No.13, located in fuse block (J/B)].
NO-2 >> Check harness for open or short between push-button ignition switch and fuse.

2.CHECK BCM INPUT

1. Connect push-button ignition switch connector.
2. Disconnect BCM connector.
3. Check voltage between BCM connector and ground.

(+)		(–)	Voltage (V) (Approx.)
BCM			
Connector	Terminal		
M70	91	Ground	Battery voltage

Is the inspection normal?

YES >> Replace BCM. Refer to BCS-93, "Removal and Installation".
NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH CIRCUIT

1. Disconnect push-button ignition switch connector.
2. Check continuity between BCM harness connector and push-button ignition switch harness connector.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M70	91	M101	7	Existed

3. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M70	91		Not existed

Is the inspection normal?

YES >> Replace push-button ignition switch.
NO >> Repair or replace harness.

SYMPTOM DIAGNOSIS

PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

Description

INFOID:0000000006598131

Check that vehicle is under the condition shown in “Conditions of vehicle” before starting diagnosis, and check each symptom.

NOTE:

The engine start function, door lock function, power distribution system, and NATS-IVIS/NVIS in the Intelligent Key system are closely related to each other regarding control. The vehicle security function can operate only when the door lock and power distribution system are operating normally.

Conditions of Vehicle (Operating Conditions)

- “ENGINE START BY I-KEY” in “WORK SUPPORT” is ON when setting on CONSULT-III.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:0000000006598132

1.PERFORM WORK SUPPORT

Perform “INSIDE ANT DIAGNOSIS” on Work Support of “INTELLIGENT KEY”.

Refer to DLK-41, "DOOR LOCK : CONSULT-III Function (BCM - DOOR LOCK) (With Super Lock)", DLK-217, "DOOR LOCK : CONSULT-III Function (BCM - DOOR LOCK) (Without Super Lock)".

>> GO TO 2.

2.PERFORM SELF-DIAGNOSIS RESULT

Perform Self-Diagnosis Result of “BCM”.

Is DTC detected?

YES >> Refer to BCS-67, "DTC Index".
NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH

Check push-button ignition switch.

Refer to PCS-108, "Component Function Check".

Is the operation normal?

YES >> GO TO 4.
NO >> Repair or replace malfunctioning parts.

4.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> GO TO 1.

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

Description

INFOID:0000000006598133

- Before performing the diagnosis in the following table, check “Work Flow”. Refer to PCS-88, "Work Flow".
- Check that vehicle is under the condition shown in “Conditions of vehicle” before starting diagnosis, and check each symptom.

Conditions of Vehicle (Operating Conditions)

- “ENGINE START BY I-KEY” in “WORK SUPPORT” is ON when setting on CONSULT-III.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:0000000006598134

1.CHECK PUSH-BUTTON IGNITION SWITCH INDICATOR

Check push-button ignition switch indicator.
Refer to PCS-111, "Component Function Check".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace the malfunctioning parts.

2.CONFIRM THE OPERATION

Confirm the operation again.

Is the result normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".
NO >> GO TO 1.

REMOVAL AND INSTALLATION

PUSH-BUTTON IGNITION SWITCH

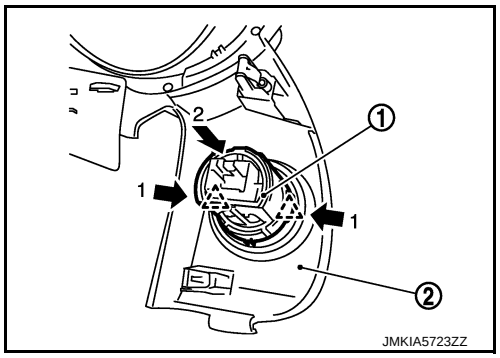
Removal and Installation

INFOID:0000000006706102

REMOVAL

1. Remove the NATS antenna amp. Refer to SEC-167, "Removal and Installation".
2. Remove the push-button ignition switch.
   1. Disengage the push-button ignition switch fixing pawls using minus driver etc.
   2. Press the push-button ignition switch to remove it from cluster lid A (2).

: Pawl



INSTALLATION

Install in the reverse order of removal.