

SECTION **PCS**

POWER CONTROL SYSTEM

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HOW TO USE THIS MANUAL

APPLICATION NOTICE

Information

INFOID:000000007802986

In this manual, "Idling Stop System" is referred to as "Stop / Start System".

PRECAUTION

PRECAUTIONS

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

INFOID:000000007024593

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.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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.

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

WARNING:

Always observe the following items for preventing accidental activation.

- 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.

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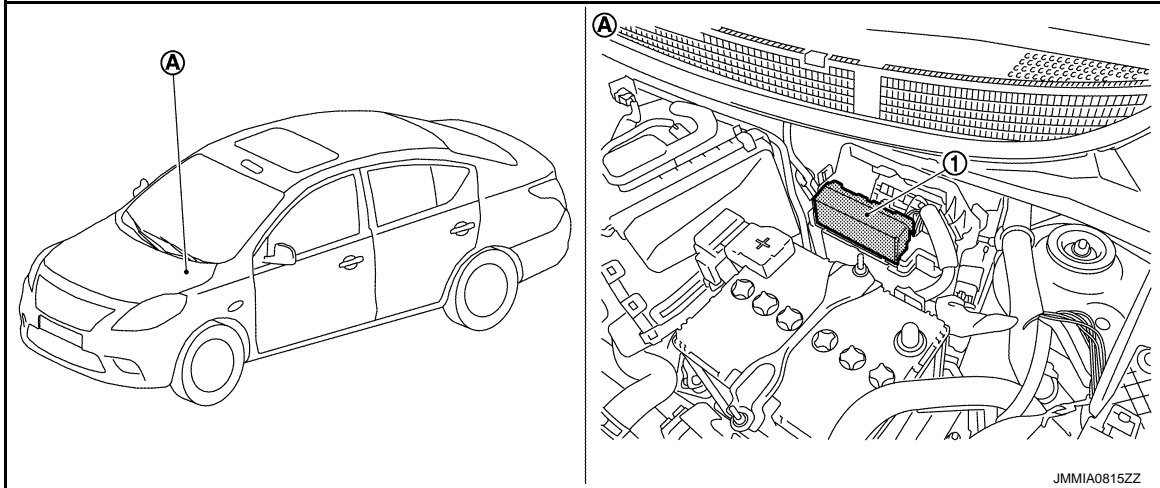
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SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:000000006658047



- 1. IPDM E/R
- A. Engine room

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

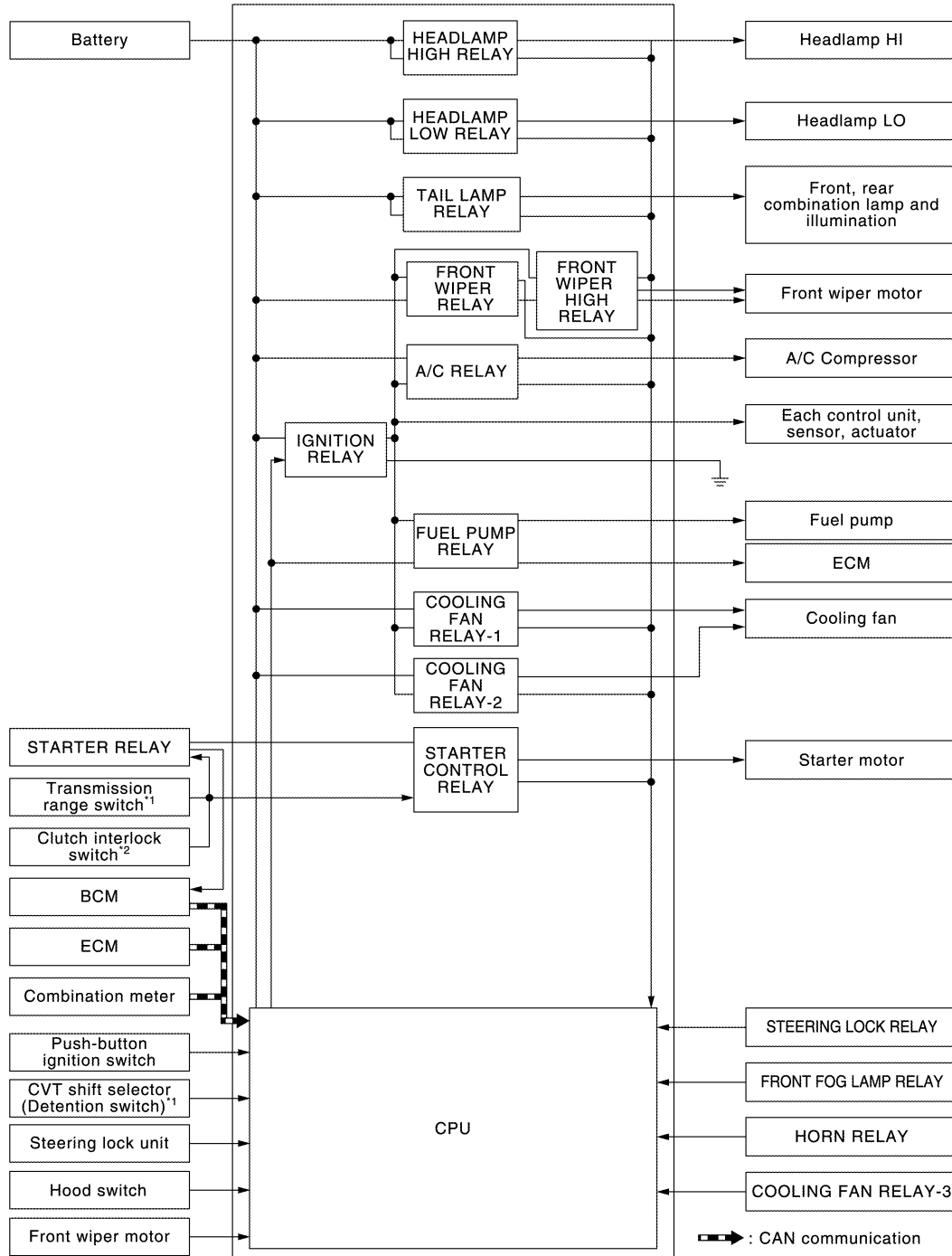
SYSTEM

RELAY CONTROL SYSTEM

RELAY CONTROL SYSTEM : System Description

INFOID:0000000006658049

SYSTEM DIAGRAM



JMMA0808GB

*1: CVT models

*2: M/T models

DESCRIPTION

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:

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

To prevent damage to the parts, IPDM E/R integrated relays cannot be removed.

Control relay	Input/output	Transmit unit	Control part	Reference page
<ul style="list-style-type: none"> Headlamp low relay Headlamp high relay 	<ul style="list-style-type: none"> Low beam request signal High beam request signal 	BCM (CAN)	<ul style="list-style-type: none"> Headlamp LO Headlamp HI 	EXL-12
Front fog lamp relay	Front fog light request signal	BCM (CAN)	Front fog lamp	EXL-19
Tail lamp relay	Position light request signal	BCM (CAN)	<ul style="list-style-type: none"> Parking lamp License plate lamp Tail lamp 	EXL-17
			Illuminations	INL-8
<ul style="list-style-type: none"> Front wiper relay Front wiper high relay 	Front wiper request signal	BCM (CAN)	Front wiper motor	WW-8
	Front wiper stop position signal	Front wiper motor		
Horn relay	Theft warning horn request signal	BCM (CAN)	Horn	SEC-29
Starter control relay	Starter control relay signal	BCM (CAN)	Starter motor	SEC-13
	Steering lock unit condition signal	Steering lock unit		
	Transmission range switch signal (CVT models)	Transmission range switch		
	Clutch interlock switch signal (M/T models)	Clutch interlock switch		
Steering lock relay	Steering lock relay signal	BCM (CAN)	Steering lock unit	SEC-13
	Steering lock unit condition signal	Steering lock unit		
	CVT shift selector (detention switch) signal	CVT shift selector (detention switch)		
<ul style="list-style-type: none"> Cooling fan relay-1 Cooling fan relay-2 Cooling fan relay-3 	Cooling fan speed request signal	ECM (CAN)	Cooling fan	EC-474
A/C relay	A/C compressor request signal	ECM (CAN)	A/C compressor (Magnet clutch)	<ul style="list-style-type: none"> HAC-18 (Automatic air conditioning) HAC-107 (Manual air conditioning)
Ignition relay	Ignition switch ON signal	BCM (CAN)	Each control unit, sensor, actuator and relay (Ignition power supply)	PCS-36
	Vehicle speed signal (Meter)	Combination meter (CAN)		
	Push-button ignition switch signal	Push-button ignition switch		

RELAY CONTROL SYSTEM : Fail-safe

INFOID:000000007024595

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	<ul style="list-style-type: none"> The cooling fan relay turn ON when the ignition switch is turned ON (Cooling fan HI operation) The cooling fan relay 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

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

Control part	Fail-safe operation
Headlamp	<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Parking lamp • License plate lamp • Illumination • Tail lamp 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.
Front fog lamp	Front fog lamp 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	<ul style="list-style-type: none"> • 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

SYSTEM

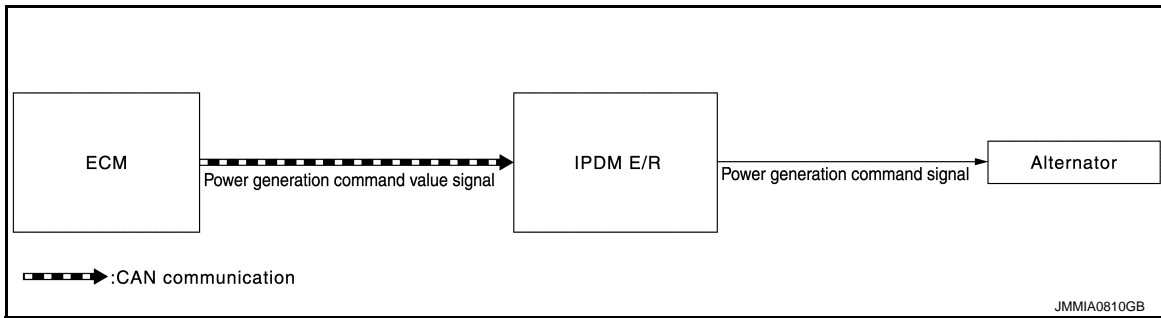
< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

POWER CONTROL SYSTEM : System Description

INFOID:000000006658052

SYSTEM DIAGRAM



DESCRIPTION

Alternator Control

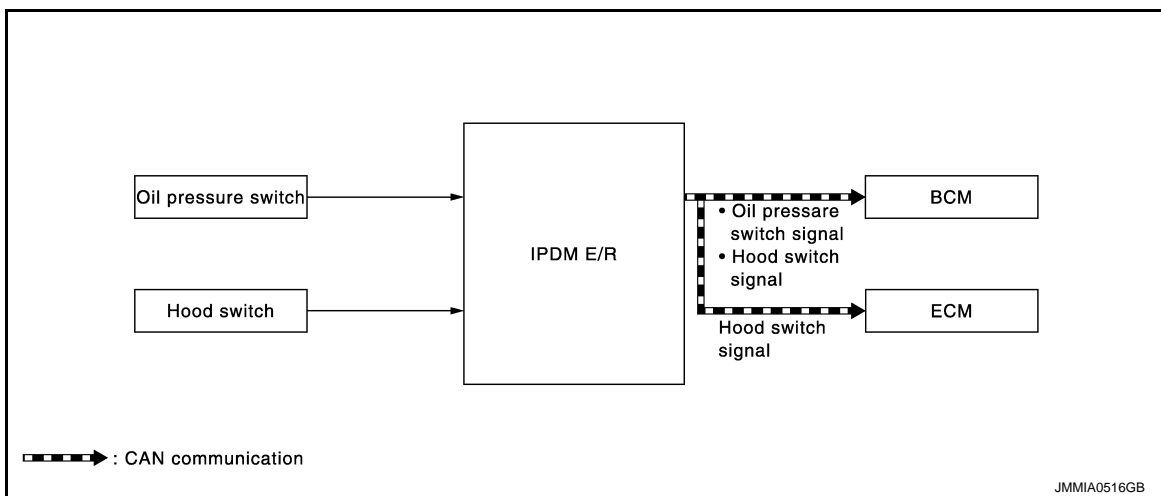
IPDM E/R outputs power generation command signal (PWM signal) to the alternator according to the status of the power generation command value signal received from ECM via CAN communication. Refer to [CHG-10, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM : System Diagram"](#).

SIGNAL BUFFER SYSTEM

SIGNAL BUFFER SYSTEM : System Description

INFOID:000000006658054

SYSTEM DIAGRAM



DESCRIPTION

- IPDM E/R reads the status of the oil pressure switch and transmits the oil pressure switch signal to BCM via CAN communication. (Only for HR12DE engine models) Refer to [MWI-15, "WARNING LAMPS/INDICATOR LAMPS : System Description"](#) (TYPE A) or [MWI-74, "WARNING LAMPS/INDICATOR LAMPS : System Description"](#) (TYPE B).
- IPDM E/R reads the status of the hood switch and transmits the hood switch signal to BCM and ECM via CAN communication. Refer to [EC-72, "STOP/START SYSTEM : System Description \(For Thailand\)"](#) (Stop/Start system) or [SEC-29, "VEHICLE SECURITY SYSTEM : System Diagram"](#) (vehicle security system).

POWER CONSUMPTION CONTROL SYSTEM

SYSTEM

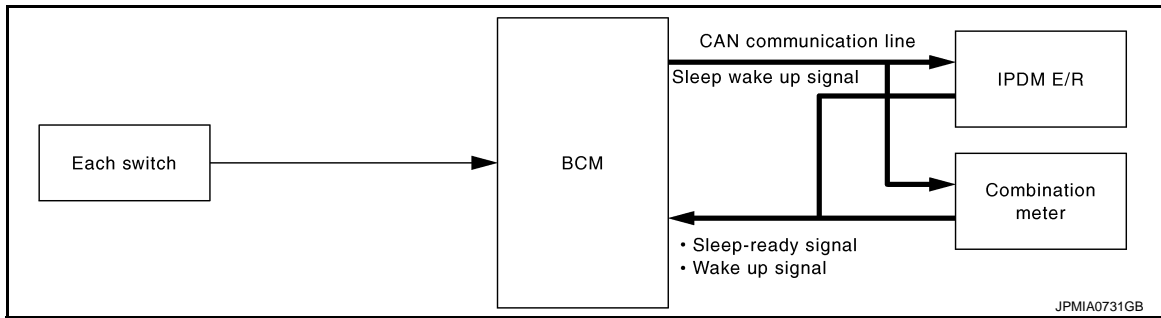
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[IPDM E/R (WITH I-KEY)]

POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:000000006658056

SYSTEM DIAGRAM



DESCRIPTION

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
 - Hood switch status changes. (With vehicle security system or Stop/Start system)
 - An output request is received from a control unit via CAN communication.

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DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000006658057

AUTO ACTIVE TEST

Description

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

- Oil pressure warning lamp (only for HR12DE engine models)
- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

NOTE:

Never perform auto active test in the following conditions.

- Passenger door is open
- CONSULT is connected

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.

NOTE:

Engine starts when ignition switch is turned ON while brake pedal is depressed.

5. Oil pressure warning lamp starts blinking when the auto active test starts. (only for HR12DE engine models)
6. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test 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-84, "Component Function Check"](#).

Inspection in Auto Active Test

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

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blink continuously during operation of auto active test NOTE: Except for HR12DE engine models, turn ON continuously during of auto active test.
2	Front wiper	LO for 5 seconds → HI for 5 seconds
3	<ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Front fog lamp 	10 seconds
4	Headlamp	LO for 10 seconds → HI ON ↔ OFF 5 times

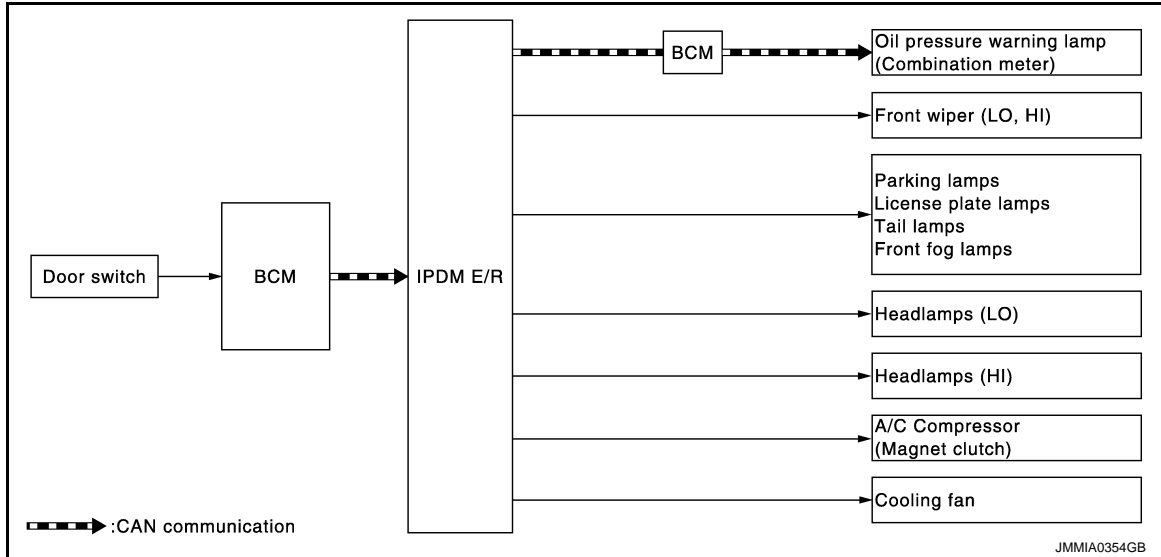
DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

Operation sequence	Inspection location	Operation
5	A/C compressor (magnet clutch)	ON ⇔ OFF 5 times
6	Cooling fan	LO for 5 seconds → MID for 3 seconds → HI for 2 seconds

Concept of Auto Active Test



- 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

Symptom	Inspection contents		Possible cause
Any of the following components do not operate <ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO) 	Perform auto active test. Does the applicable system operate?	YES	BCM signal input circuit
		NO	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • BCM signal input circuit • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	<ul style="list-style-type: none"> • Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Oil pressure warning lamp does not operate (Only for HR12DE engine models)	Perform auto active test. Does the oil pressure warning lamp blink?	YES	<ul style="list-style-type: none"> • Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	<ul style="list-style-type: none"> • CAN communication signal between BCM and IPDM E/R • CAN communication signal between BCM and combination meter • Combination meter

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

Symptom	Inspection contents		Possible cause
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	<ul style="list-style-type: none"> • ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	<ul style="list-style-type: none"> • Cooling fan motor • Harness or connector between IPDM E/R and cooling fan motor • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:000000006658058

APPLICATION ITEM

CONSULT 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-23, "DTC Index"](#).

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication.
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 stop position 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.

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R (WITH I-KEY)]

Monitor Item [Unit]	MAIN SIG- NALS	Description
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]		NOTE: This item is indicated, but not monitored.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R. NOTE: This item is monitored only for HR12DE engine models.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R. NOTE: This item is monitored only for vehicle with the vehicle security system or Stop/Start system.
HL WASHER REQ [Off/On]		NOTE: This item is indicated, but not monitored.
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.
CRNRNG LMP REQ [Off/On]		NOTE: This item is indicated, but not monitored.

ACTIVE TEST

Test item	Operation	Description
HORN	On	Operates horn relay for 20 ms.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	1	OFF
	2	Operates the cooling fan relay (LO operation).
	3	Operates the cooling fan relay (MID operation).
	4	Operates the cooling fan relay (HI operation).
HEAD LAMP WASHER	Off	NOTE: This item is indicated, but cannot be tested.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates simultaneously the headlamp low relay and the headlamp high relay at 1 second ON/OFF intervals.
	Fog	Operates the front fog lamp relay.

ECU DIAGNOSIS INFORMATION

IPDM E/R

Reference Value

INFOID:000000006658059

VALUES ON THE DIAGNOSIS TOOL

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	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 or 2ND		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND		On
HL HI REQ	Lighting switch 2ND	Lighting switch other than HI and PASS	Off
		Lighting switch HI or PASS	On
FR FOG REQ	Lighting switch 2ND	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
INTER/NP SW	Ignition switch ON	Selector lever in any position other than P or N (CVT models)	Off
		Release clutch pedal (M/T models)	
		Selector lever in P or N position (CVT models)	On
		Depress clutch pedal (M/T models)	

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

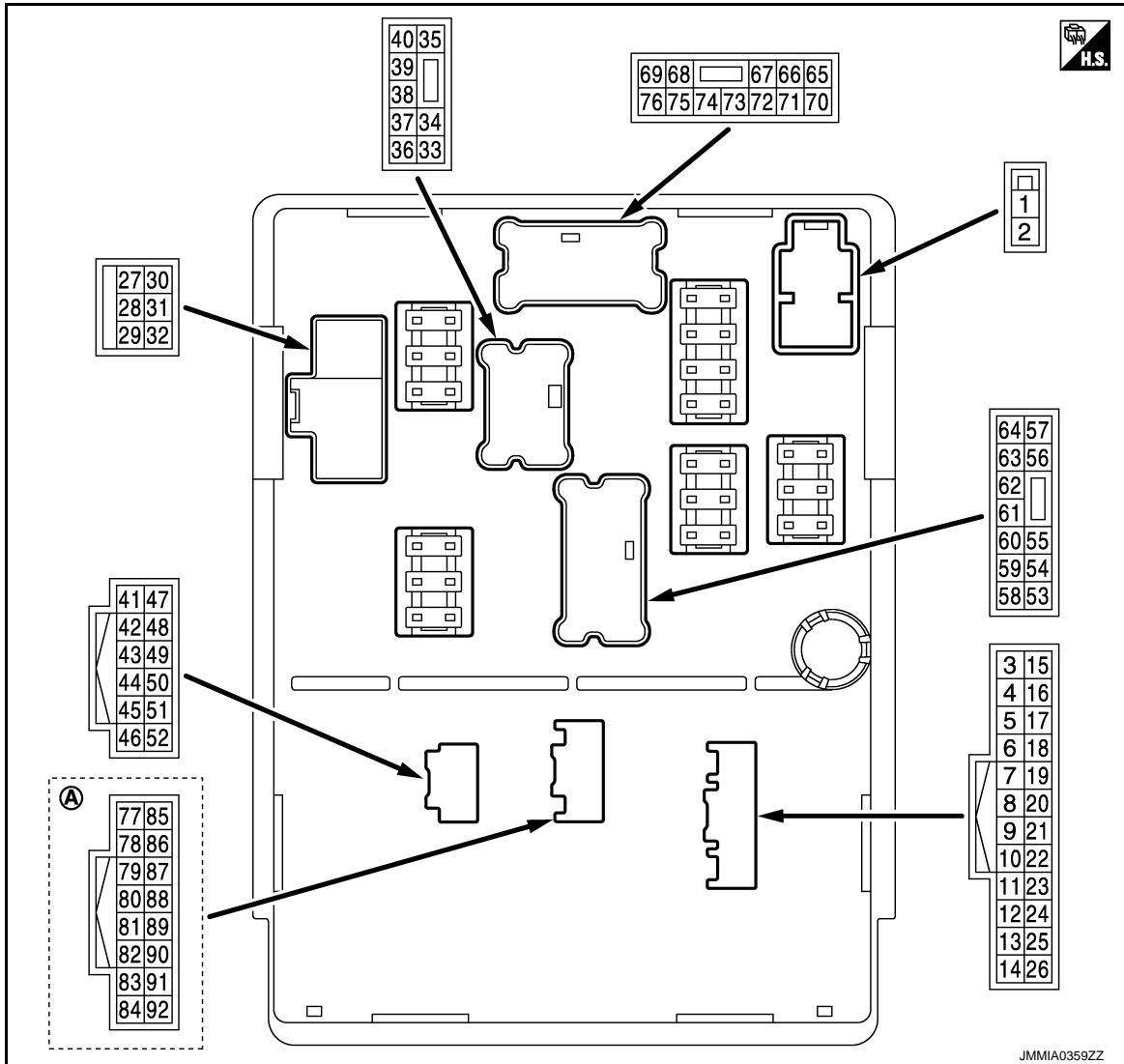
[IPDM E/R (WITH I-KEY)]

Monitor Item	Condition	Value/Status
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	Off
	Release the selector button with selector lever in P position.	On
S/L RLY -REQ	None of the conditions below are present.	Off
	<ul style="list-style-type: none"> • 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	NOTE: This item is indicated, but not monitored.	Off
OIL P SW NOTE: This item is monitored only for HR12DE engine models.	Ignition switch OFF, ACC or engine running	Open
	Ignition switch ON	Close
HOOD SW NOTE: This item is monitored only for vehicle with the vehicle security system or Stop/Start system.	Close the hood	Off
	Open the hood	On
HL WASHER REQ	NOTE: This item is indicated, but not monitored.	Off
THFT HRN REQ	Not operation	Off
	<ul style="list-style-type: none"> • Panic alarm is activated • Theft warning alarm is activated 	On
HORN CHIRP	NOTE: This item is indicated, but not monitored.	Off
CRNRNG LMP REQ	NOTE: This item is indicated, but not monitored	Off

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PCS

TERMINAL LAYOUT



A: For models with Intelligent Key system only

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 (Y)	Ground	Battery power supply	Input	Ignition switch OFF	6 – 16 V
9 (Y)	Ground	Cooling fan relay-3 control	Output	Cooling fan OFF or LO operated	9 – 16 V
				Cooling fan MID or HI operated	0 – 1 V
10 (B)	Ground	Ground	—	Ignition switch ON	0 – 1 V
11 (P)	Ground	CAN-L	Input/ Output	—	—
12 (L)	Ground	CAN-H	Input/ Output	—	—
14 (LG)	Ground	Hood switch	Input	Close the hood	9 – 16 V
				Open the hood	0 – 1 V

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITH I-KEY)]

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
15 (BR)	Ground	Cooling fan relay-3 power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	9 – 16 V
21 (P)	Ground	Front fog lamp relay control	Output	Lighting switch 2ND Front fog lamp switch OFF	9 – 16 V
				Front fog lamp switch ON	0 – 1 V
23 (SB)	Ground	Horn relay control	Output	The horn is deactivated	9 – 16 V
				The horn is activated	0 – 1 V
24 (V)	Ground	Front wiper stop position	Input	Ignition switch ON Front wiper stop position	0 – 1 V
				Any position other than front wiper stop position	9 – 16 V
27 (SB)	Ground	Ignition relay power supply	Output	Other than at engine cranking	0 – 1 V
				At engine cranking	6 – 16 V
29 (Y)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan OFF	0 – 1 V
				Cooling fan LO	4 – 8 V
				Cooling fan MID or HI	9 – 16 V
30 (R)	Ground	Starter motor	Output	Ignition switch ON	0 – 1 V
				At engine cranking	6 – 16 V
31 (P)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan OFF	0 – 1 V
				Cooling fan LO	9 – 16 V
				Cooling fan MID	4 – 8 V
				Cooling fan HI	9 – 16 V
32 (G)	Ground	Battery power supply	Input	Ignition switch OFF	6 – 16 V
				Ignition switch ON	0 – 1 V
33 (BR)	Ground	Fuel pump	Output	<ul style="list-style-type: none"> • Approximately 1 second after turning the ignition switch ON • Engine running 	6 – 16 V
				Approximately 1 second or more after turning the ignition switch ON	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
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 – 16 V
37*1 (GR)*7 (BR)*8 (L)*9	Ground	Clutch interlock switch	Input	Depress the clutch pedal	9 – 16 V
				Release the clutch pedal	0 – 1 V
37*2 (L)*9	Ground	Ignition power supply No.2	Input	At engine cranking	0 – 1 V
				Ignition switch ON	9 – 16 V
				Engine running	
				Stop/Start system operated	
38*5 (LG)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF	0 – 1 V
				Lighting switch 2ND	9 – 16 V

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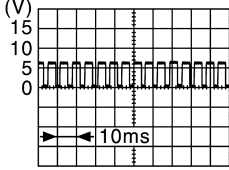
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IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITH I-KEY)]

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
		Signal name	Input/ Output		
+	-				
38*6 (L)	Ground	Starter relay	Output	Ignition switch ON	0 – 1 V
				At engine cranking	6 – 16 V
39*9 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF	0 – 1 V
				Lighting switch 2ND	9 – 16 V
39*10 (LG)	Ground	Starter relay	Output	Ignition switch ON	0 – 1 V
				At engine cranking	6 – 16 V
40 (P)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF	0 – 1 V
				Lighting switch 2ND	9 – 16 V
42 (LG)	Ground	Oil pressure switch	Input	Engine stopped	0 – 1 V
				Engine running	9 – 16 V
43 (GR)	Ground	Fuel pump relay control	Output	<ul style="list-style-type: none"> • 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
47 (R/W)	Ground	Ignition relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 – 16 V
48 (O)	Ground	Alternator output	Output	Ignition switch OFF and ACC	0 – 1 V
				Ignition switch ON	 <p style="text-align: right; font-size: small;">JMMIA0842GB</p>
50 (P)*3 (BR)*4	Ground	ECM relay control	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 – 16 V
53 (LG)	Ground	Front wiper LO	Output	Ignition switch ON	<ul style="list-style-type: none"> Front wiper switch OFF Front wiper switch LO
				<ul style="list-style-type: none"> 0 – 1 V 9 – 16 V 	
54 (GR)	Ground	Front wiper HI	Output	Ignition switch ON	<ul style="list-style-type: none"> Front wiper switch OFF Front wiper switch HI
				<ul style="list-style-type: none"> 0 – 1 V 9 – 16 V 	
55 (B)	Ground	Ground	—	Ignition switch ON	0 – 1 V
56 (BR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V
57 (R)*3 (O)*4	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITH I-KEY)]

Terminal NO. (Wire color)		Description		Condition		Value (Approx.)	
58 (P)	Ground	Illuminations	Output	Lighting switch OFF		0 – 1 V	A
				Lighting switch 1ST		9 – 16 V	B
59 (R)	Ground	Rear combination lamp	Output	Lighting switch OFF		0 – 1 V	C
				Lighting switch 1ST		9 – 16 V	
61 (G)	Ground	Headlamp HI (LH)	Output	Lighting switch other than HI and PASS		0 – 1 V	D
				<ul style="list-style-type: none"> • Lighting switch HI • Lighting switch PASS 		9 – 16 V	
63 (Y)	Ground	Headlamp HI (RH)	Output	Lighting switch other than HI and PASS		0 – 1 V	E
				<ul style="list-style-type: none"> • Lighting switch HI • Lighting switch PASS 		9 – 16 V	
64 (V)	Ground	A/C relay power supply	Output	Engine running	A/C switch OFF	0 – 1 V	F
					A/C switch ON (A/C compressor is operating)	9 – 16 V	G
65 (L/W)	Ground	Throttle control motor relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V	H
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 		6 – 16 V	
68 (G/W)	Ground	Throttle control motor relay control	Output	Ignition switch ON → OFF		0 – 1.0 V ↓ 9 – 16 V ↓ 0 – 1 V	J
				Ignition switch ON		0 – 1 V	
70 (Y)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 – 1 V	K
				Ignition switch ON		6 – 16 V	
71 (BR)	Ground	ECM power supply	Output	Ignition switch OFF		6 – 16 V	L
72 (SB)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 – 1 V	PCS
				Ignition switch ON		6 – 16 V	
75 (L)*3 (G)*4	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 – 1 V	N
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 		6 – 16 V	
76*2 (BR)	Ground	Transmission range switch	Input	Ignition switch ON	Selector lever in any position other than P or N	0 – 1 V	P
					Selector lever P or N	9 – 16 V	
80*2 (R)	Ground	CVT shift selector (Detention switch)	Input	Ignition switch ON	Selector lever P	0 – 1 V	
					Selector lever in any position other than P	9 – 16 V	

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITH I-KEY)]

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
		Signal name	Input/ Output		
+	-				
81 (SB)*8 (BR)*11	Ground	Push-button ignition switch	Input	Press the push-button ignition switch	0 – 1 V
				Release the push-button ignition switch	9 – 16 V
82 (SB)	Ground	Steering lock relay control	Output	Steering lock is unlocked	9 – 16 V
				Steering lock is locked	0 – 1 V
87 (O)*8 (BG)*11	Ground	Steering lock unit power supply	Input	LOCK condition	9 – 16 V (For a few seconds after LOCK operation) ↓ 0 – 1 V
				During operation	9 – 16 V
				UNLOCK condition	0 – 1 V
88 (GR)	Ground	Steering lock unit condition-1	Input	UNLOCK condition	9 – 16 V
				LOCK condition	0 – 1 V
89 (P)	Ground	Steering lock unit condition-2	Input	UNLOCK condition	0 – 1 V
				LOCK condition	9 – 16 V
90 (L)	Ground	Ignition relay power supply	Input	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V

- *1: M/T models
- *2: CVT models
- *3: Gasoline engine models
- *4: Diesel engine models
- *5: With Stop/Start system
- *6: Without Stop/Start system
- *7: For China and Australia
- *8: For India
- *9: For Thailand and Hong Kong
- *10: Except for Thailand and Hong Kong
- *11: For China, Hong Kong and Australia

Fail-safe

INFOID:00000000658060

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	<ul style="list-style-type: none"> • The cooling fan relay turn ON when the ignition switch is turned ON (Cooling fan HI operation) • The cooling fan relay 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	<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Parking lamp • License plate lamp • Illumination • Tail lamp 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.
Front fog lamp	Front fog lamp 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	<ul style="list-style-type: none"> • 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:000000006658061

NOTE:

< ECU DIAGNOSIS INFORMATION >

- 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-35
B2098: IGN RELAY ON	×	PCS-36
B2099: IGN RELAY OFF	—	PCS-37
B2108: S/L RELAY ON	—	SEC-129
B2109: S/L RELAY OFF	—	SEC-132
B210A: S/L STATE SW	—	SEC-135
B210B: START CONT RLY ON	—	SEC-137
B210C: START CONT RLY OFF	—	SEC-139
B210D: STARTER RELAY ON	—	SEC-141
B210E: STARTER RELAY OFF	—	SEC-143
B210F: INTRLCK/PNP SW ON	—	SEC-146
B2110: INTRLCK/PNP SW OFF	—	SEC-148

WIRING DIAGRAM

IPDM E/R

Application Notice

INFOID:000000007774254

Wiring diagram type	Destination
TYPE A	Except for Thailand
TYPE B	For Thailand (without stop/start system)
TYPE C	For Thailand (with stop/start system)

TYPE A


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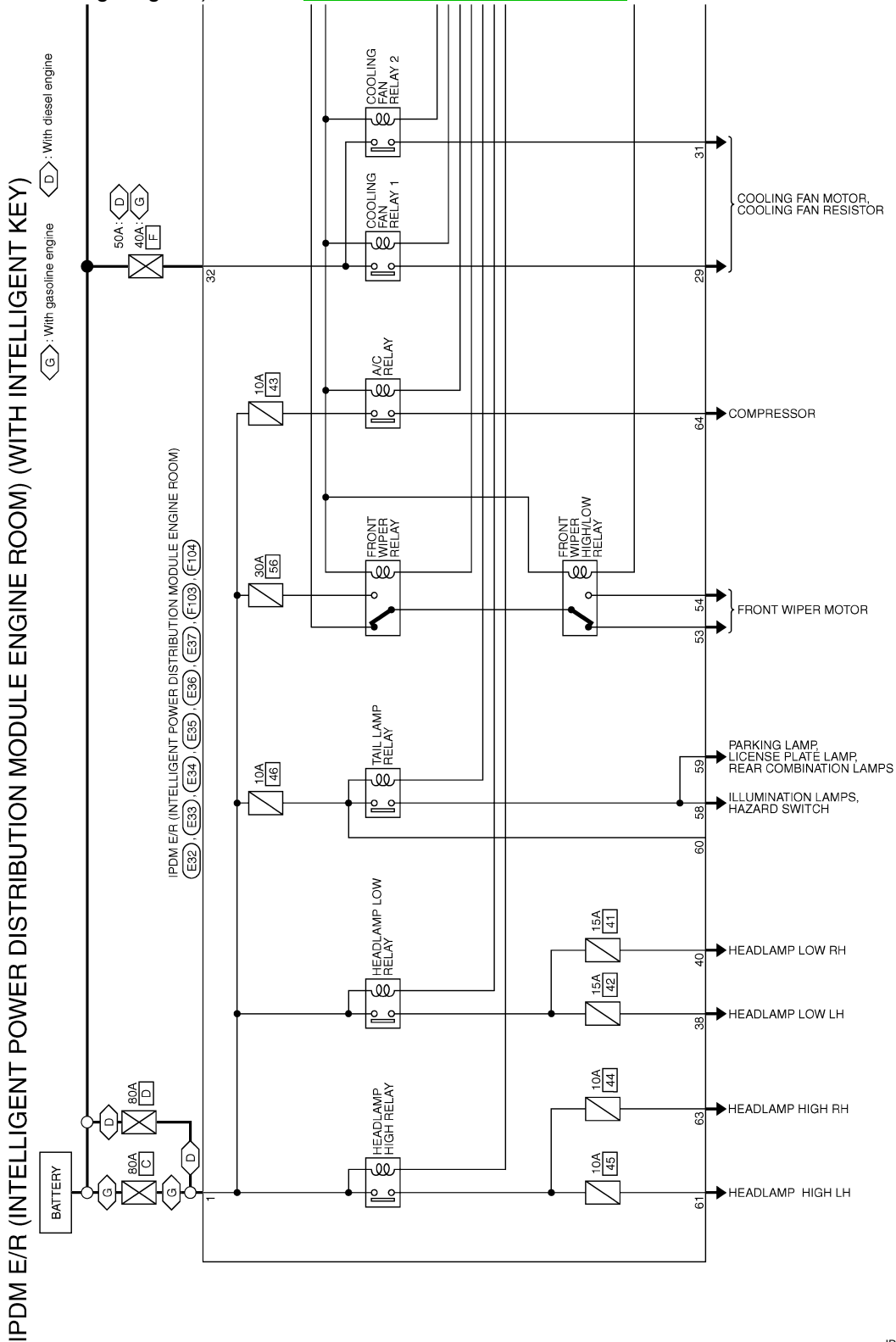
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TYPE A : Wiring Diagram

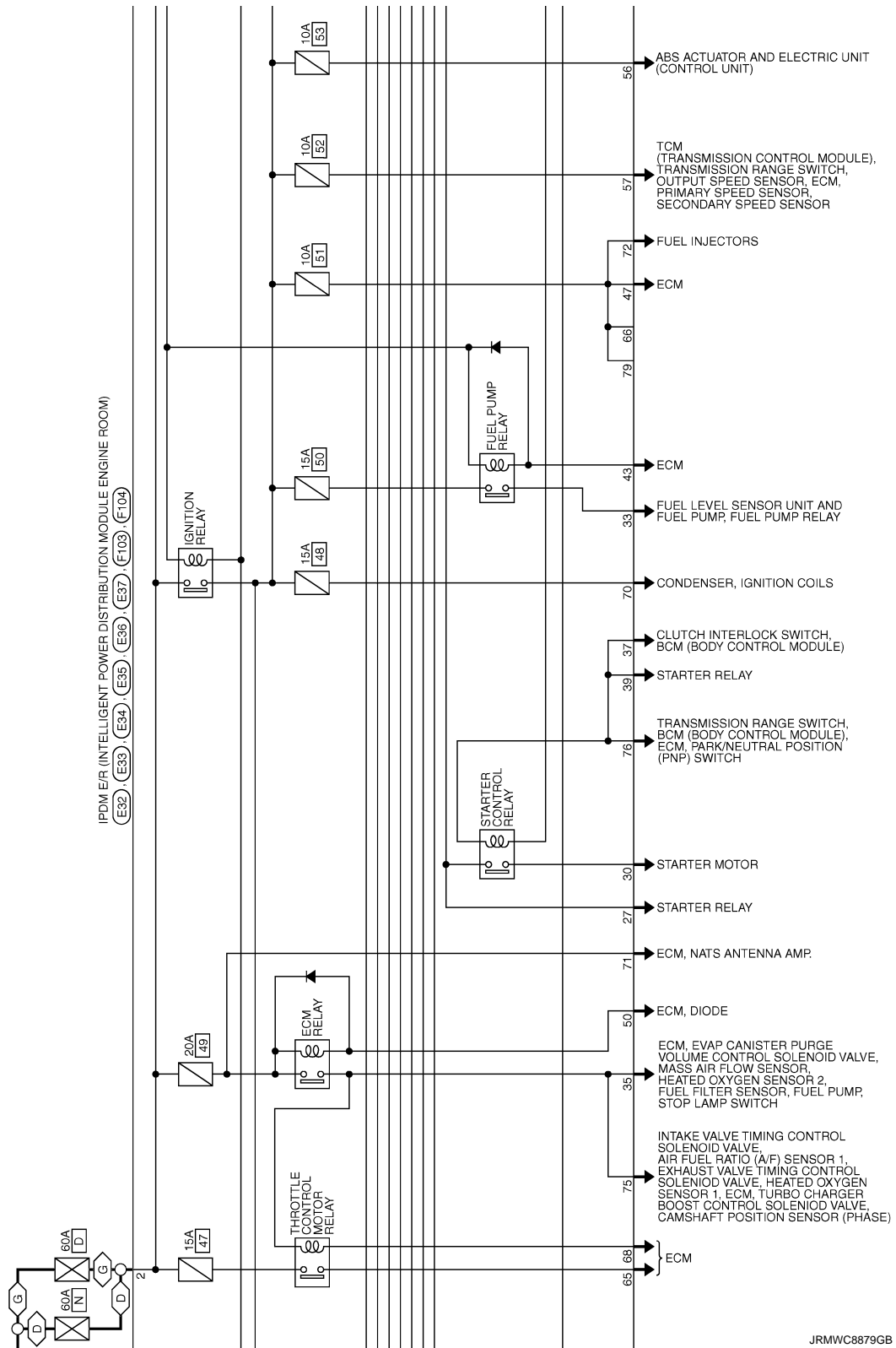
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For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).



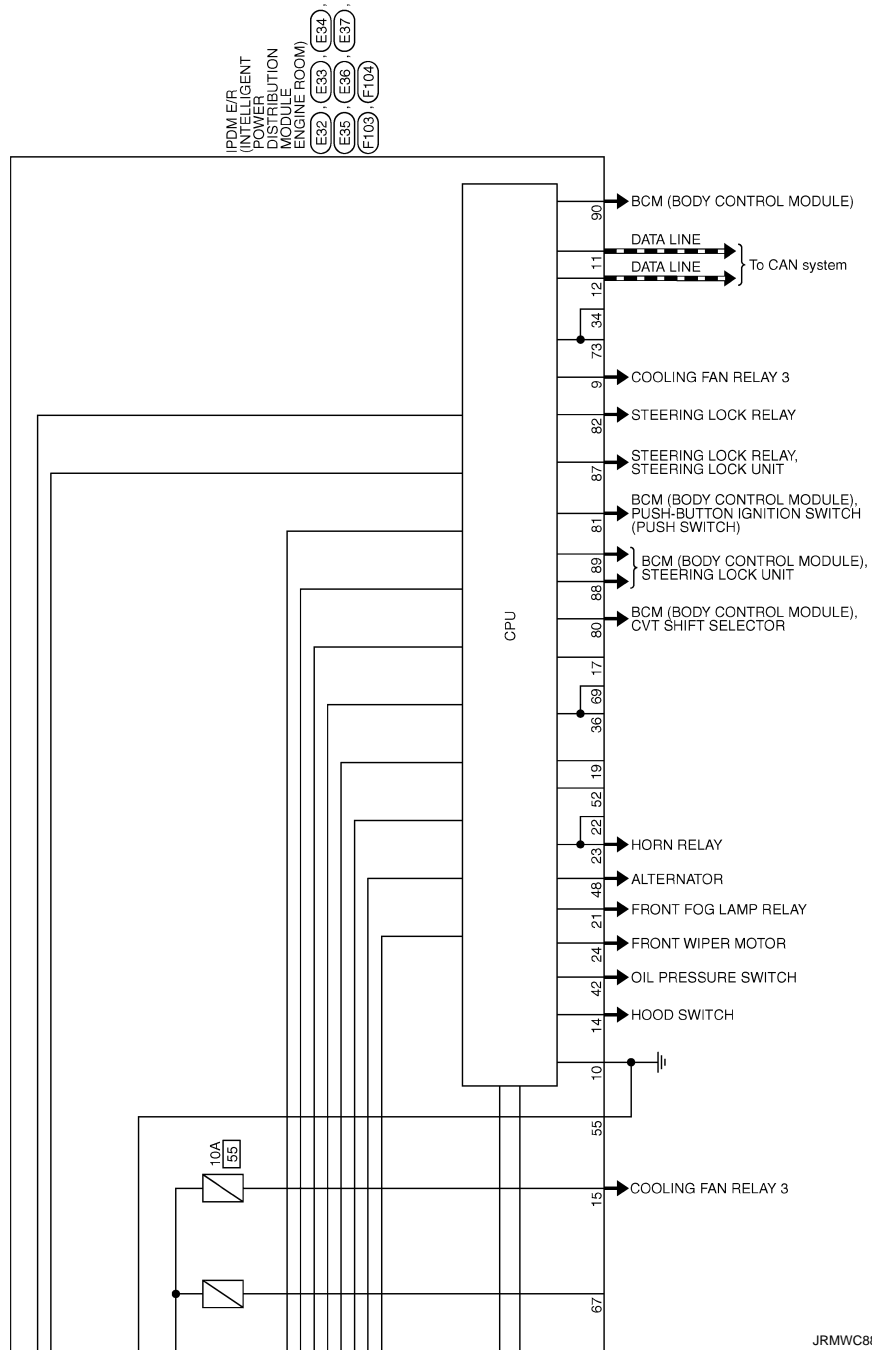
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
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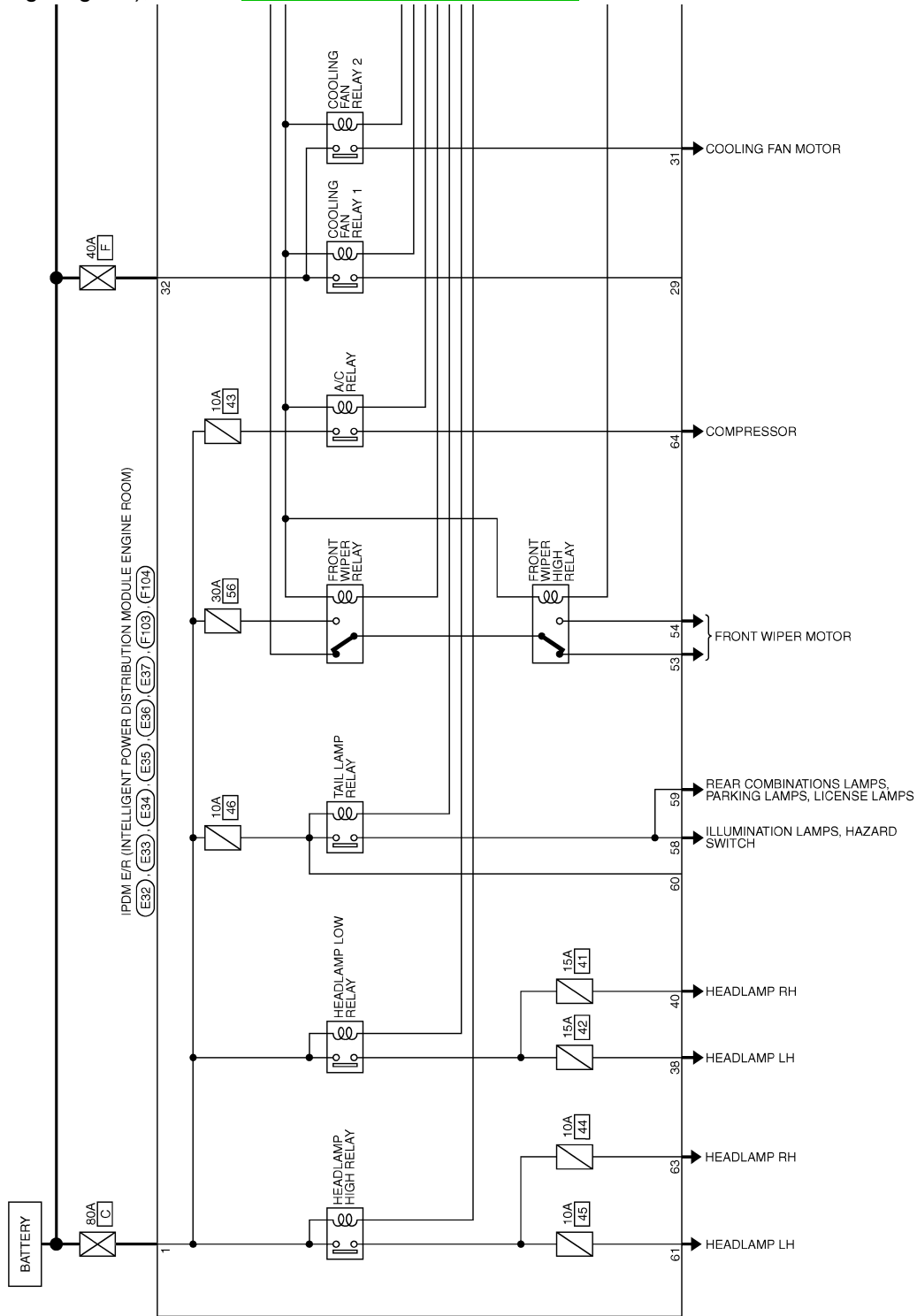
TYPE B

TYPE B : Wiring Diagram

INFOID:000000007774259

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
(RHD MODELS WITHOUT STOP/START SYSTEM)



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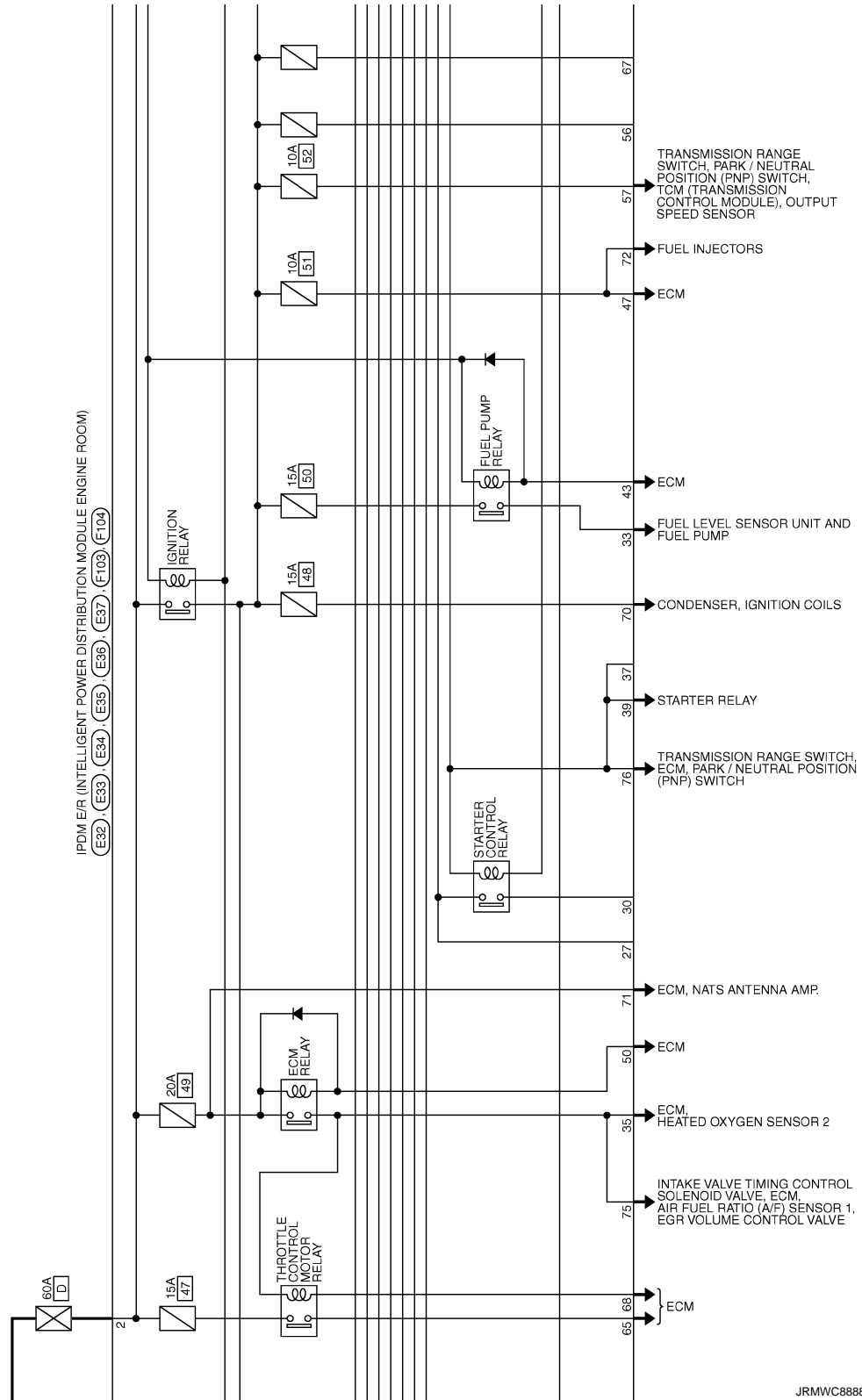
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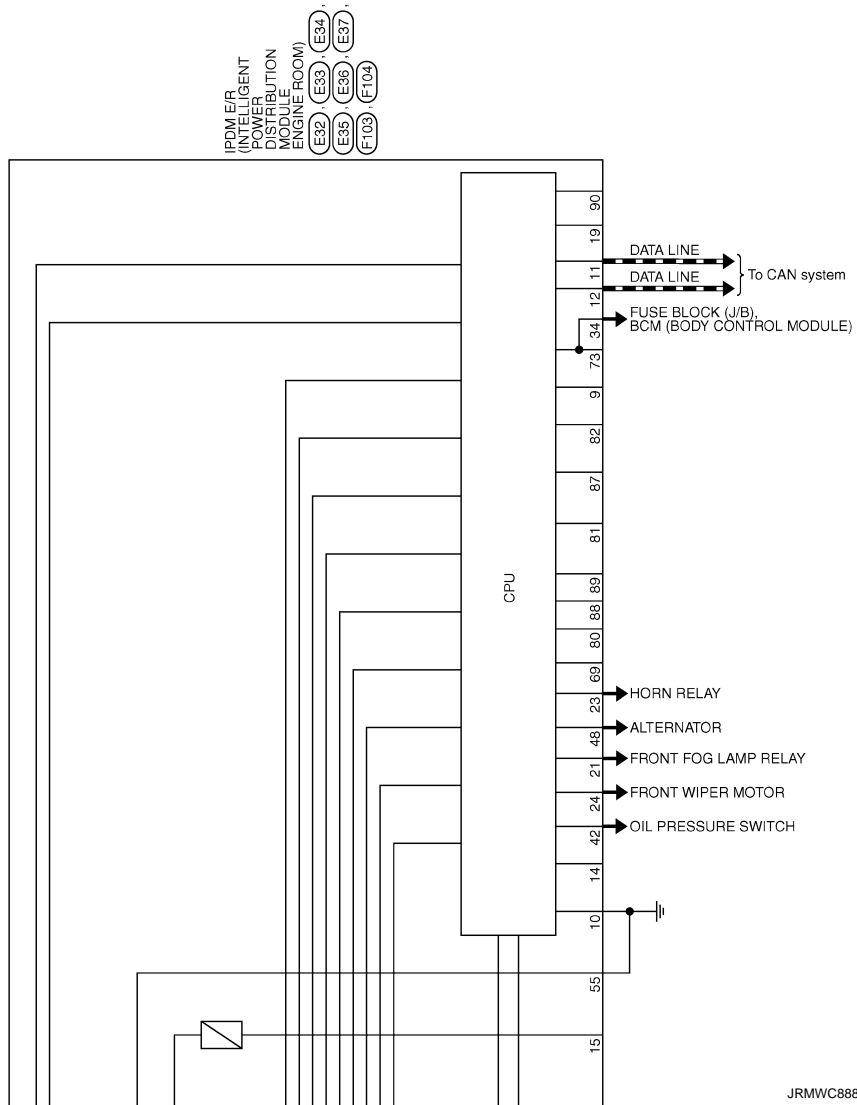
< WIRING DIAGRAM >

[IPDM E/R (WITH I-KEY)]



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


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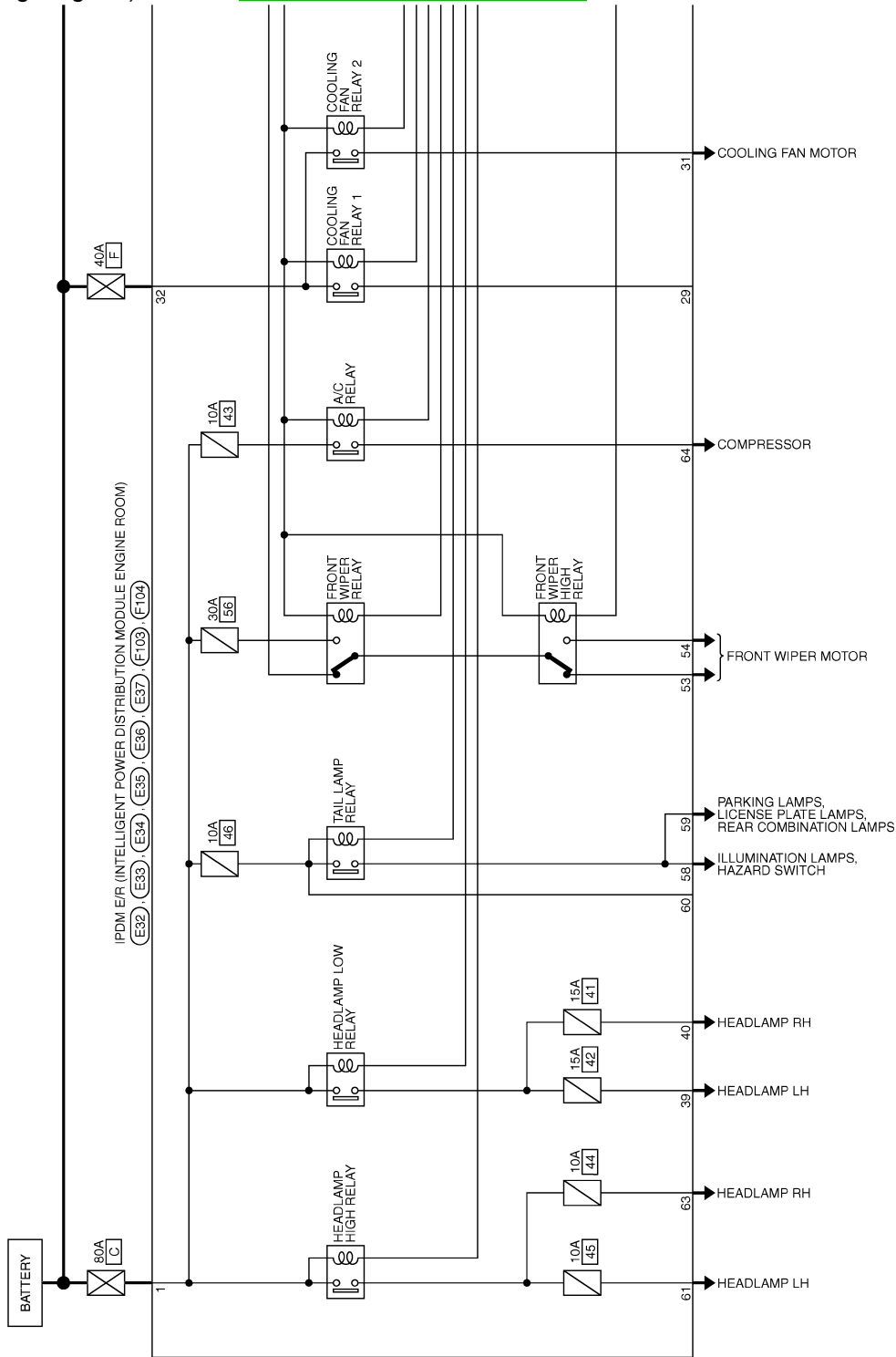
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TYPE C

TYPE C : Wiring Diagram

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
(RHD MODELS WITH STOP/START SYSTEM)



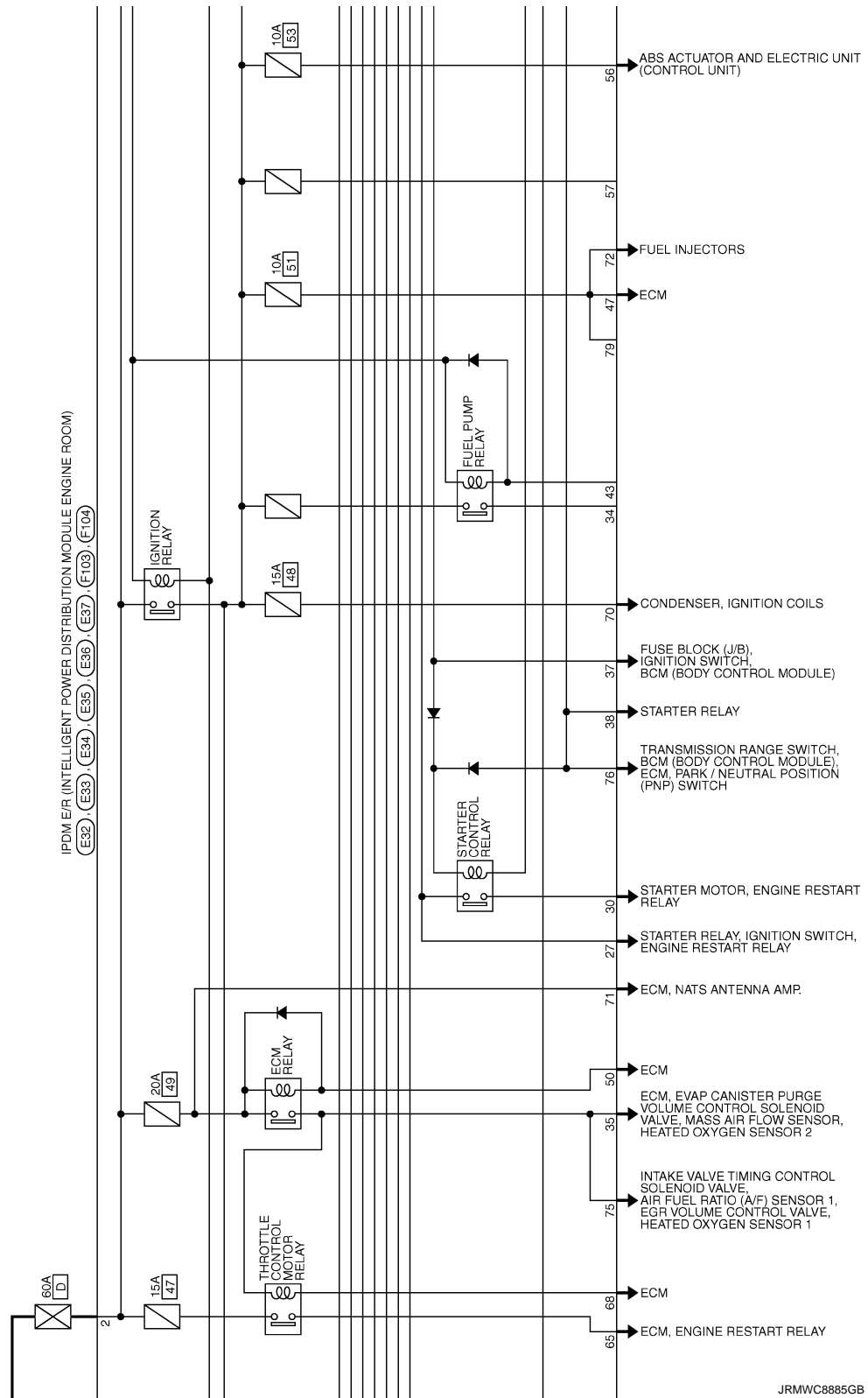
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IPDM E/R

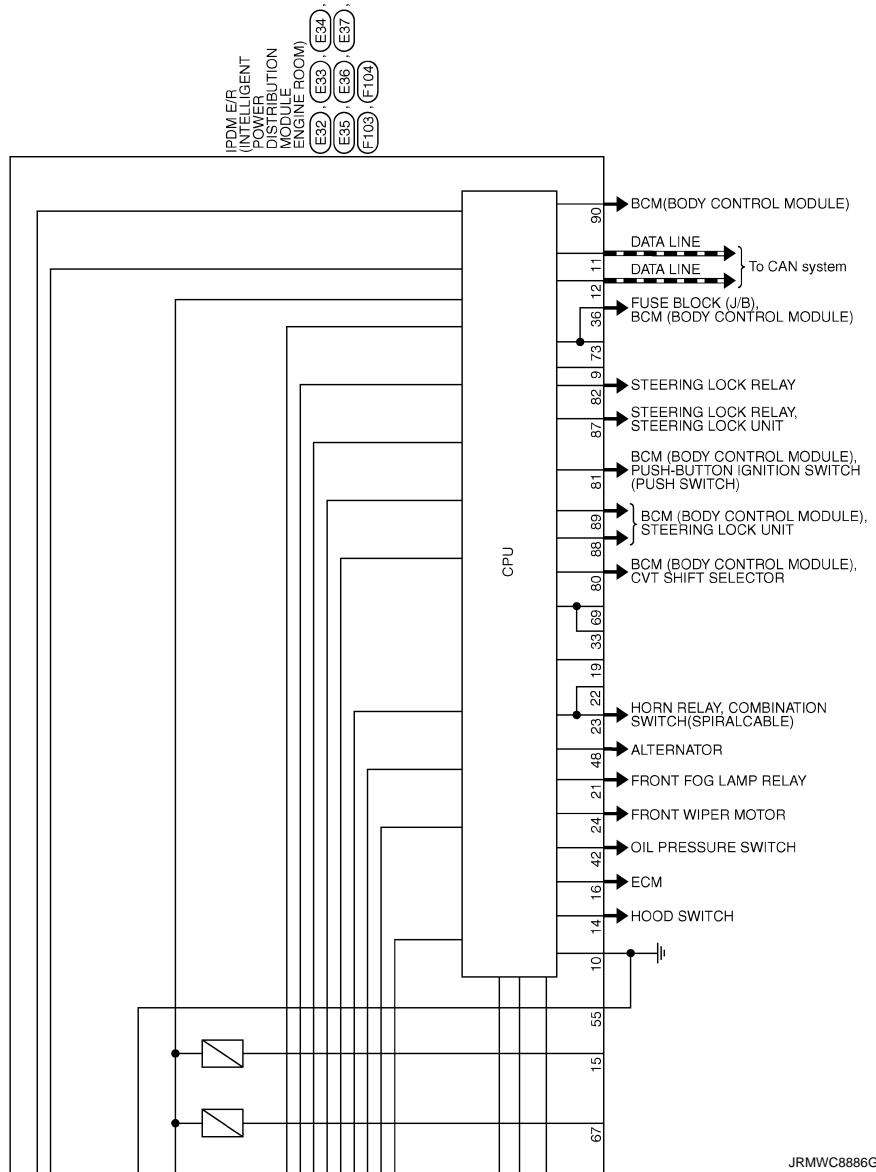
< WIRING DIAGRAM >

[IPDM E/R (WITH I-KEY)]



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DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006658064

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-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#).

DTC Logic

INFOID:0000000006658065

DTC DETECTION LOGIC

DTC	CONSULT 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:0000000006658066

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

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITH I-KEY)]

B2098 IGNITION RELAY ON STUCK

Description

INFOID:000000006658067

- 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:

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

DTC Logic

INFOID:000000006658068

DTC DETECTION LOGIC

DTC	CONSULT 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

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

- YES >> Refer to [PCS-36, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006658069

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-39, "Removal and Installation"](#).
- NO >> Refer to [GI-42, "Intermittent Incident"](#).

B2099 IGNITION RELAY OFF STUCK

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITH I-KEY)]

B2099 IGNITION RELAY OFF STUCK

Description

INFOID:000000006658070

- 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:

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

DTC Logic

INFOID:000000006658071

DTC DETECTION LOGIC

DTC	CONSULT 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.

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

- YES >> Refer to [PCS-37, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006658072

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-39, "Removal and Installation"](#).
- NO >> Refer to [GI-42, "Intermittent Incident"](#).

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITH I-KEY)]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000006658073

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	Gasoline engine models	C (80 A)
		D (60 A)
		F (40 A)
	Diesel engine models	D (80 A)
		N (60 A)
		F (50 A)

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	Ground	6 – 16 V
E37	1		
	2		
E33	32		

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		Existed
E34	10		
E35	55		

Does continuity exist?

YES >> INSPECTION END

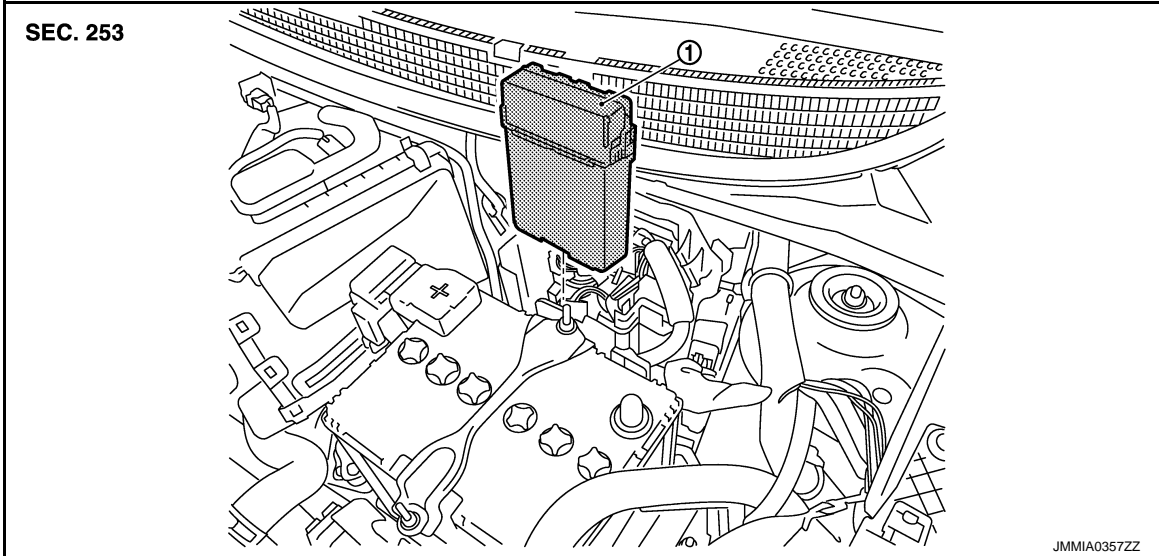
NO >> Repair the harness or connector.

REMOVAL AND INSTALLATION

IPDM E/R

Exploded View

INFOID:000000006658074



1. IPDM E/R

Removal and Installation

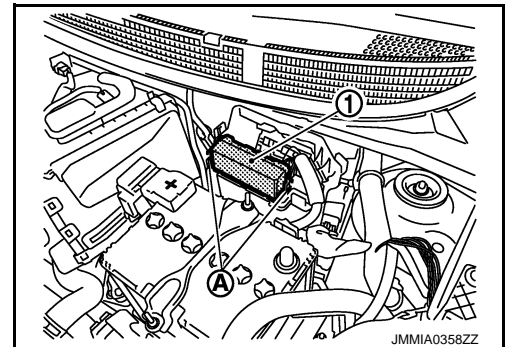
INFOID:000000006658075

CAUTION:

To prevent damage to the parts, IPDM E/R integrated relays cannot be moved.

REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Remove the IPDM E/R (1) while disengaging both pawls (A) by spreading them.
3. Disconnect the harness connector and then remove the IPDM E/R.



INSTALLATION

Install in the reverse order of removal.

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PCS

HOW TO USE THIS MANUAL

APPLICATION NOTICE

Information

INFOID:000000007802987

In this manual, "Idling Stop System" is referred to as "Stop / Start System".

PRECAUTION

PRECAUTIONS

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

INFOID:000000007024594

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.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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.

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

WARNING:

Always observe the following items for preventing accidental activation.

- 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.

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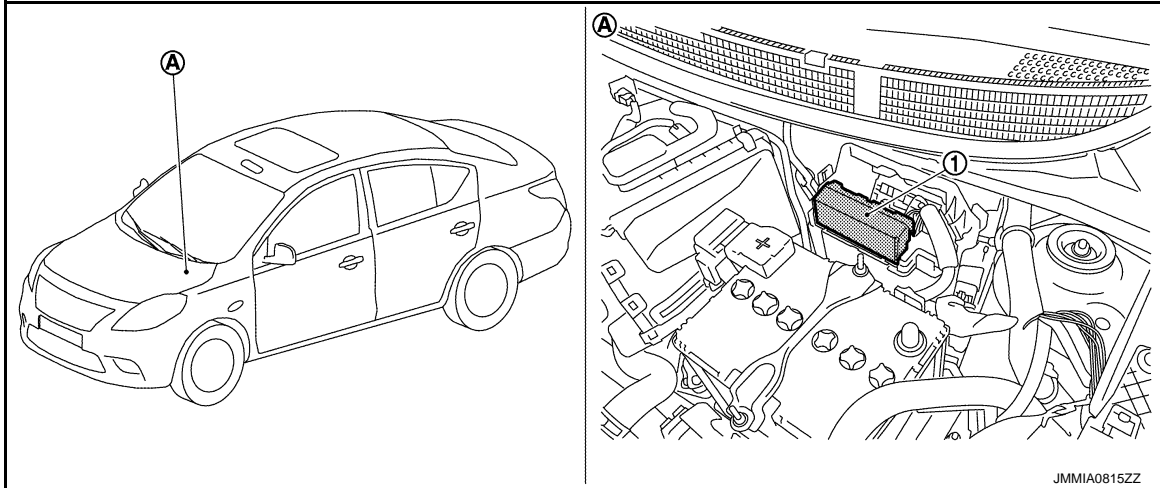
< SYSTEM DESCRIPTION >

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:000000007024597



- 1. IPDM E/R
- A. Engine room

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITHOUT I-KEY)]

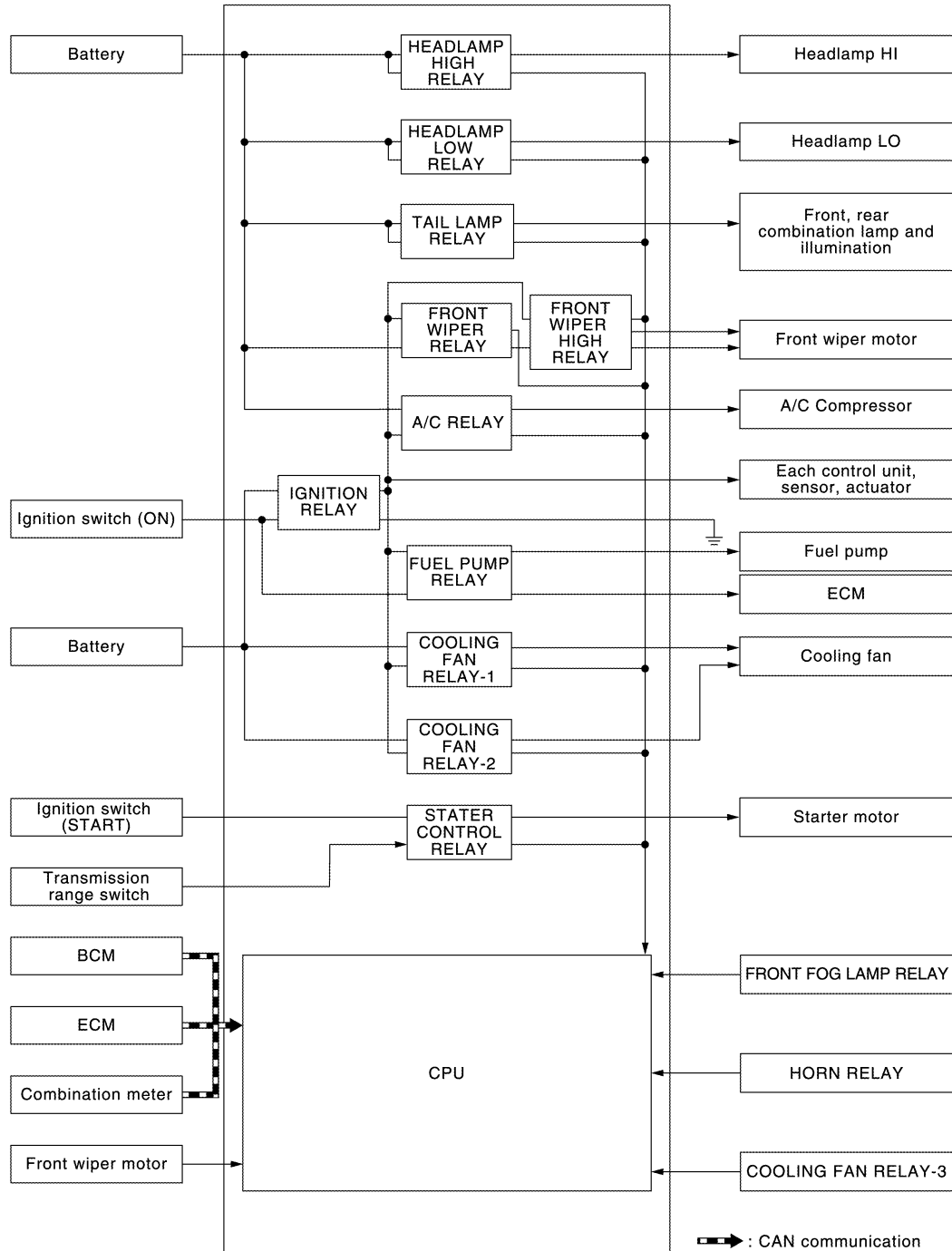
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RELAY CONTROL SYSTEM

RELAY CONTROL SYSTEM : System Description

INFOID:000000000658080

SYSTEM DIAGRAM



JMMA0809GB

DESCRIPTION

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:

To prevent damage to the parts, IPDM E/R integrated relays cannot be removed.

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITHOUT I-KEY)]

Control relay	Input/output	Transmit unit	Control part	Reference page
<ul style="list-style-type: none"> Headlamp low relay Headlamp high relay 	<ul style="list-style-type: none"> Low beam request signal High beam request signal 	BCM (CAN)	<ul style="list-style-type: none"> Headlamp LO Headlamp HI 	EXL-12
Front fog lamp relay	Front fog light request signal	BCM (CAN)	Front fog lamp	EXL-19
Tail lamp relay	Position light request signal	BCM (CAN)	<ul style="list-style-type: none"> Parking lamp License plate lamp Tail lamp 	EXL-17
			Illuminations	INL-8
<ul style="list-style-type: none"> Front wiper relay Front wiper high relay 	Front wiper request signal	BCM (CAN)	Front wiper motor	WW-8
	Front wiper stop position signal	Front wiper motor		
Starter control relay	Starter control relay signal	BCM (CAN)	Starter motor	STR-11
	Transmission range switch signal (CVT models)	Transmission range switch		
<ul style="list-style-type: none"> Cooling fan relay-1 Cooling fan relay-2 Cooling fan relay-3 	Cooling fan speed request signal	ECM (CAN)	Cooling fan	EC-474
A/C relay	A/C compressor request signal	ECM (CAN)	A/C compressor (Magnet clutch)	HAC-107
Ignition relay	Ignition switch ON signal	Ignition switch	Each control unit, sensor, actuator and relay (Ignition power supply)	PCS-70

RELAY CONTROL SYSTEM : Fail-safe

INFOID:000000007024596

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	<ul style="list-style-type: none"> The cooling fan relay turn ON when the ignition switch is turned ON (Cooling fan HI operation) The cooling fan relay 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	<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Parking lamp License plate lamp Illumination Tail lamp 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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.

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITHOUT I-KEY)]

Control part	Fail-safe operation
Front fog lamp	Front fog lamp relay OFF
Horn	Horn OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit of the ignition relay inside and ignition switch status from BCM via CAN communication.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the ignition switch status from BCM via CAN communication.
- 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 switch status from BCM		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	<ul style="list-style-type: none"> • 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:

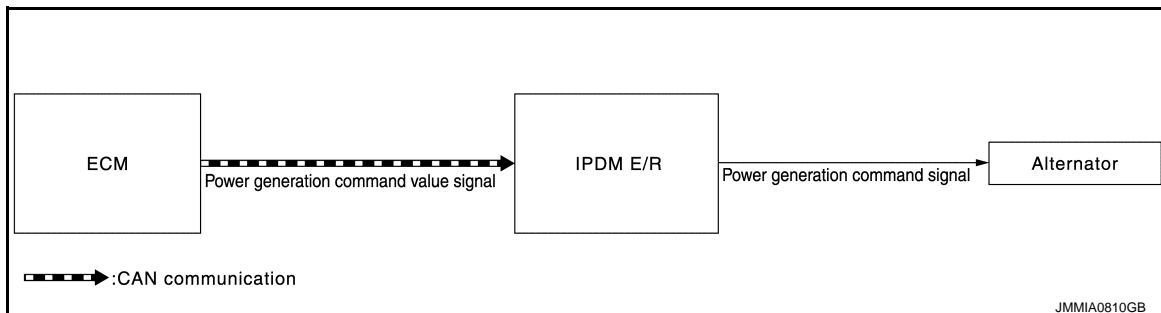
This operation status can be confirmed on the IPDM E/R "Data Monitor" that displays "BLOCK" for the item "WIP PROT" while the wiper is stopped.

POWER CONTROL SYSTEM

POWER CONTROL SYSTEM : System Description

INFOID:000000007024637

SYSTEM DIAGRAM



DESCRIPTION

Alternator Control

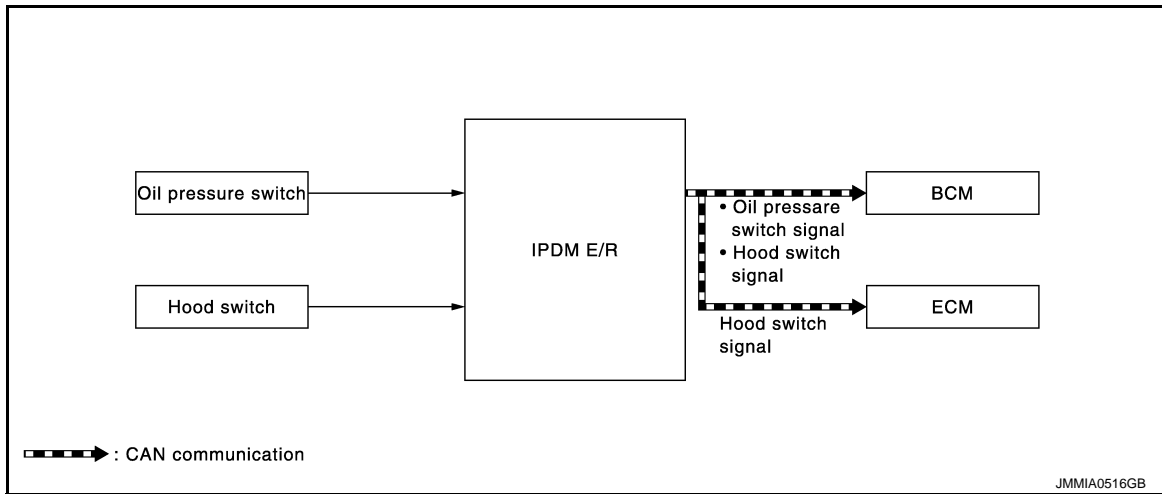
IPDM E/R outputs power generation command signal (PWM signal) to the alternator according to the status of the power generation command value signal received from ECM via CAN communication. Refer to [CHG-10, "POWER GENERATION VOLTAGE VARIABLE CONTROL SYSTEM : System Diagram"](#).

SIGNAL BUFFER SYSTEM

SIGNAL BUFFER SYSTEM : System Description

INFOID:000000007801207

SYSTEM DIAGRAM



DESCRIPTION

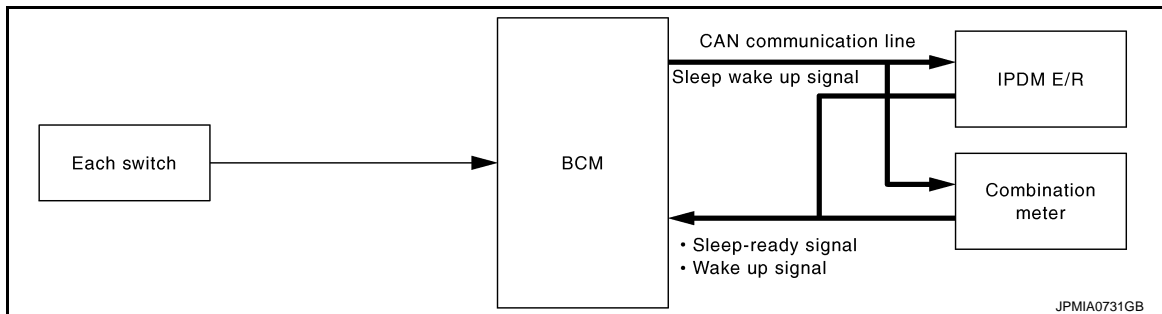
- IPDM E/R reads the status of the oil pressure switch and transmits the oil pressure switch signal to BCM via CAN communication. (Only for HR12DE engine models) Refer to [MWI-15. "WARNING LAMPS/INDICATOR LAMPS : System Description"](#) (TYPE A) or [MWI-74. "WARNING LAMPS/INDICATOR LAMPS : System Description"](#) (TYPE B).
- IPDM E/R reads the status of the hood switch and transmits the hood switch signal to BCM and ECM via CAN communication. Refer to [EC-72. "STOP/START SYSTEM : System Description \(For Thailand\)"](#) (Stop/Start system) or [SEC-29. "VEHICLE SECURITY SYSTEM : System Diagram"](#) (vehicle security system).

POWER CONSUMPTION CONTROL SYSTEM

POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:000000006658087

SYSTEM DIAGRAM



DESCRIPTION

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

SYSTEM

< SYSTEM DESCRIPTION >

[IPDM E/R (WITHOUT I-KEY)]

- 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. A
- Outputting signals to actuators
- Switches or relays operating B
- 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. C

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. D
- Ignition switch ON
- Hood switch status changes. (With Stop/Start system)
- An output request is received from a control unit via CAN communication. E

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DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000007024841

AUTO ACTIVE TEST

Description

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

- Oil pressure warning lamp (only for HR12DE engine models)
- Front wiper (LO, HI)
- Parking lamp
- License plate lamp
- Tail lamp
- Front fog lamp
- Headlamp (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

Operation Procedure

NOTE:

Never perform auto active test in the following conditions.

- Passenger door is open
- CONSULT is connected

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

2. Turn the ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
5. Oil pressure warning lamp starts blinking when the auto active test starts. (only for HR12DE engine models)
6. After a series of the following operations is repeated 3 times, auto active test is completed.

NOTE:

- When auto active test 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-247](#), "[Component Function Check](#)".

Inspection in Auto Active Test

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

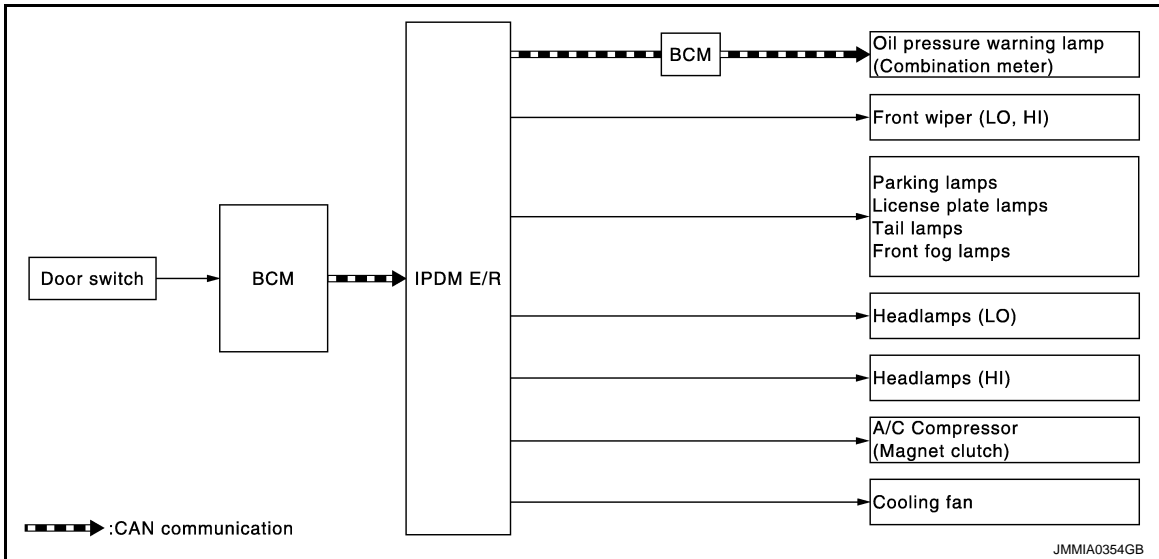
Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blink continuously during operation of auto active test NOTE: Except for HR12DE engine models, turn ON continuously during of auto active test.
2	Front wiper	LO for 5 seconds → HI for 5 seconds
3	<ul style="list-style-type: none"> • Parking lamp • License plate lamp • Tail lamp • Front fog lamp 	10 seconds
4	Headlamp	LO for 10 seconds → HI ON ↔ OFF 5 times
5	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
6	Cooling fan	LO for 5 seconds → MID for 3 seconds → HI for 2 seconds

DIAGNOSIS SYSTEM (IPDM E/R)

[IPDM E/R (WITHOUT I-KEY)]

< SYSTEM DESCRIPTION >

Concept of Auto Active Test



- 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

Symptom	Inspection contents	Possible cause
Any of the following components do not operate • Parking lamp • License plate lamp • Tail lamp • Front fog lamp • Headlamp (HI, LO) • Front wiper (HI, LO)	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 • BCM signal input circuit • CAN communication signal between BCM 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
Oil pressure warning lamp does not operate (Only for HR12DE 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 BCM and IPDM E/R • 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 • Cooling fan motor • Harness or connector between IPDM E/R and cooling fan motor • IPDM E/R

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R (WITHOUT I-KEY)]

CONSULT Function (IPDM E/R)

INFOID:000000006658089

APPLICATION ITEM

CONSULT 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-58. "DTC Index"](#).

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item [Unit]	MAIN SIG- NALS	Description
MOTOR FAN REQ [1/2/3/4]	×	Displays the value of the cooling fan speed request signal received from ECM via CAN communication.
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 stop position 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 judged by IPDM E/R.
ST RLY REQ [Off/On]		Displays the status of the starter control relay signal received from BCM via CAN communication.
DTRL REQ [Off/On]		NOTE: This item is indicated, but not monitored.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R. NOTE: This item is monitored only for HR12DE engine models.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R. NOTE: This item is monitored only for vehicle with the Stop/Start system.

DIAGNOSIS SYSTEM (IPDM E/R)

< SYSTEM DESCRIPTION >

[IPDM E/R (WITHOUT I-KEY)]

Monitor Item [Unit]	MAIN SIG- NALS	Description
HL WASHER REQ [Off/On]		NOTE: This item is indicated, but not monitored.
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.
CRNRNG LMP REQ [Off/On]		NOTE: This item is indicated, but not monitored.

ACTIVE TEST

Test item	Operation	Description
HORN	On	Operates horn relay for 20 ms.
	Off	OFF
FRONT WIPER	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.
MOTOR FAN	1	OFF
	2	Operates the cooling fan relay (LO operation).
	3	Operates the cooling fan relay (MID operation).
	4	Operates the cooling fan relay (HI operation).
HEAD LAMP WASHER	Off	NOTE: This item is indicated, but cannot be tested.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates simultaneously the headlamp low relay and the headlamp high relay at 1 second ON/OFF intervals.
	Fog	Operates the front fog lamp relay.

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ECU DIAGNOSIS INFORMATION

IPDM E/R

Reference Value

INFOID:000000006658090

VALUES ON THE DIAGNOSIS TOOL

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	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 or 2ND		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND		On
HL HI REQ	Lighting switch 2ND	Lighting switch other than HI and PASS	Off
		Lighting switch HI or PASS	On
FR FOG REQ	Lighting switch 2ND	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	Selector lever in any position other than P or N	Off
		Selector lever in P or N position	On
ST RLY REQ	NOTE: This item is indicated, but not monitored		Off
DTRL REQ	NOTE: This item is indicated, but not monitored		Off
OIL P SW NOTE: This item is monitored only for HR12DE engine models.	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close

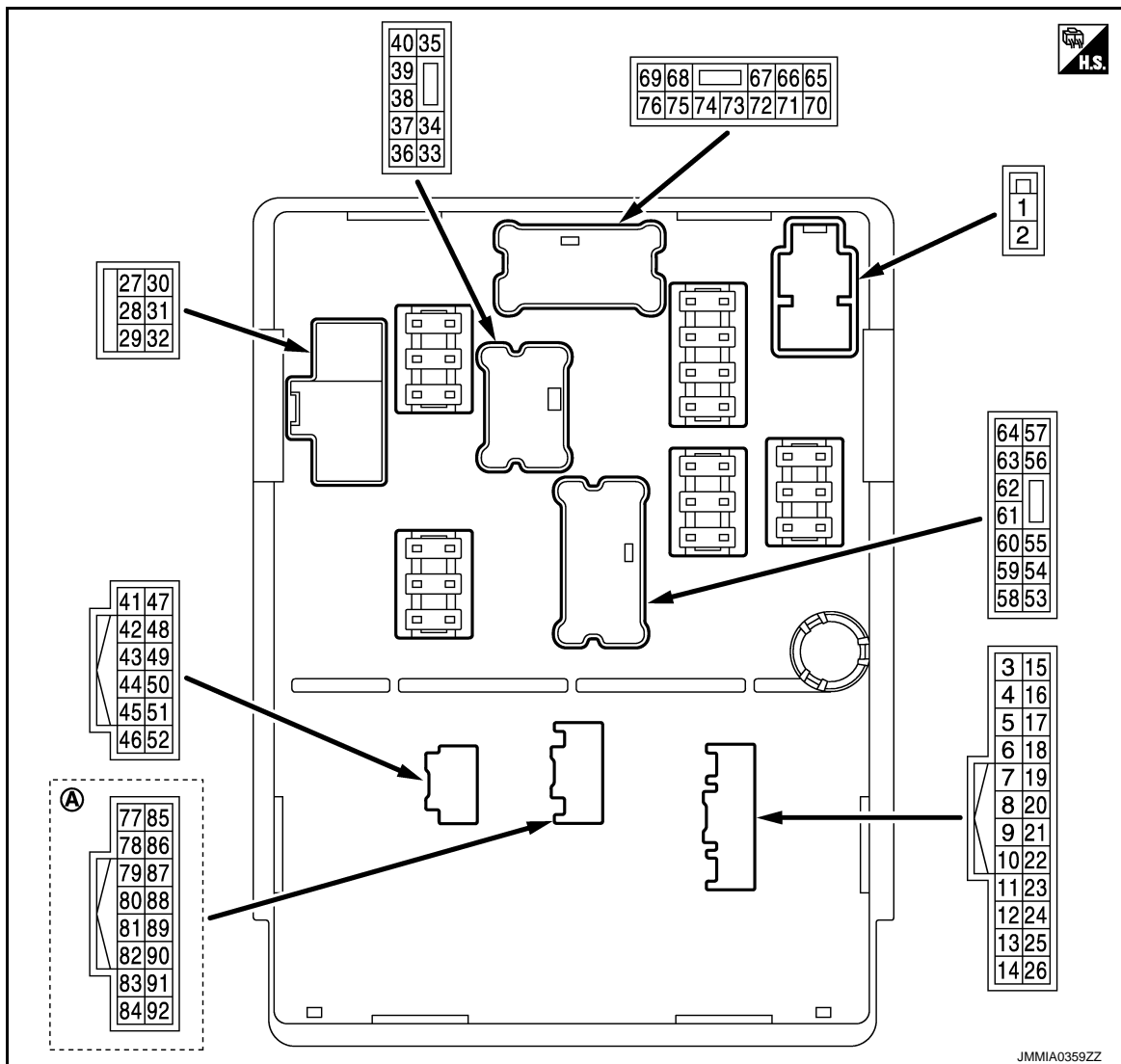
IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITHOUT I-KEY)]

Monitor Item	Condition	Value/Status
HOOD SW NOTE: This item is monitored only for the vehicle with the Stop/Start system.	Close the hood	Off
	Open the hood	On
HL WASHER REQ	NOTE: This item is indicated, but not monitored	Off
THFT HRN REQ	Not operation	Off
	Panic alarm is activated	On
HORN CHIRP	NOTE: This item is indicated, but not monitored	Off
CRNRNG LMP REQ	NOTE: This item is indicated, but not monitored	Off

TERMINAL LAYOUT



A: For models with Intelligent Key system only

PHYSICAL VALUES

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

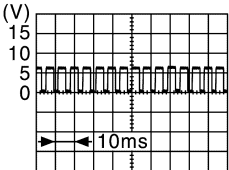
[IPDM E/R (WITHOUT I-KEY)]

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 (Y)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V	
9 (Y)	Ground	Cooling fan relay-3 control	Output	Cooling fan OFF or LO operated		9 – 16 V	
				Cooling fan MID or HI operated		0 – 1 V	
10 (B)	Ground	Ground	—	Ignition switch ON		0 – 1 V	
11 (P)	Ground	CAN-L	Input/ Output	—		—	
12 (L)	Ground	CAN-H	Input/ Output	—		—	
14 (LG)	Ground	Hood switch	Input	Close the hood		9 – 16 V	
				Open the hood		0 – 1 V	
15 (BR)	Ground	Cooling fan relay-3 power supply	Output	Ignition switch OFF or ACC		0 – 1 V	
				Ignition switch ON		9 – 16 V	
16*1 (SB)	Ground	Cranking enable	Input	Ignition switch ON		0 – 1 V	
				Engine running	Stop/Start system enable condition: Non-formation		11 – 14 V
					Stop/Start system enable condition: Formation		0 – 1 V
21 (P)	Ground	Front fog lamp relay control	Output	Lighting switch 2ND	Front fog lamp switch OFF	9 – 16 V	
					Front fog lamp switch ON	0 – 1 V	
23 (SB)	Ground	Horn relay control	Output	The horn is deactivated		9 – 16 V	
				The horn is activated		0 – 1 V	
24 (V)	Ground	Front wiper stop position	Input	Ignition switch ON	Front wiper stop position	0 – 1 V	
					Any position other than front wiper stop position		9 – 16 V
27 (W)	Ground	Ignition relay power supply	Output	Other than at engine cranking		0 – 1 V	
				At engine cranking		6 – 16 V	
29 (Y)	Ground	Cooling fan relay-2 power supply	Output	Cooling fan OFF		0 – 1 V	
				Cooling fan LO		4 – 8 V	
				Cooling fan MID or HI		9 – 16 V	
30 (R)	Ground	Starter motor	Output	Ignition switch ON		0 – 1 V	
				At engine cranking		6 – 16 V	
31 (P)	Ground	Cooling fan relay-1 power supply	Output	Cooling fan OFF		0 – 1 V	
				Cooling fan LO		9 – 16 V	
				Cooling fan MID		4 – 8 V	
				Cooling fan HI		9 – 16 V	
32 (G)	Ground	Battery power supply	Input	Ignition switch OFF		6 – 16 V	

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITHOUT I-KEY)]

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
33 (BR)	Ground	Fuel pump	Output	<ul style="list-style-type: none"> Approximately 1 second after turning the ignition switch ON Engine running 	6 - 16 V
				Approximately 1 second or more after turning the ignition switch ON	0 - 1 V
34 (L)	Ground	Ignition relay power supply	Input	Ignition switch OFF or ACC	0 - 1 V
				Ignition switch ON	6 - 16 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
				<ul style="list-style-type: none"> Ignition switch ON Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 - 16 V
36 (L)	Ground	Ignition relay power supply	Input	Ignition switch OFF or ACC	0 - 1 V
				Ignition switch ON	6 - 16 V
37*1 (Y)*6	Ground	Ignition power supply No. 2	Input	At engine cranking	0 - 1 V
				Ignition switch ON	9 - 16 V
				Engine running	
				Stop/Start system operated	
38*2 (LG)*7	Ground	Headlamp LO (LH)	Output	Lighting switch OFF	0 - 1 V
				Lighting switch 2ND	9 - 16 V
39*1 (L)*6	Ground	Headlamp LO (LH)	Output	Lighting switch OFF	0 - 1 V
				Lighting switch 2ND	9 - 16 V
40 (P)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF	0 - 1 V
				Lighting switch 2ND	9 - 16 V
43 (GR)	Ground	Fuel pump relay control	Output	<ul style="list-style-type: none"> 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
47 (R/W)	Ground	Ignition relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 - 1 V
				<ul style="list-style-type: none"> Ignition switch ON Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 - 16 V
48 (O)	Ground	Alternator output	Output	Ignition switch OFF and ACC	0 - 1 V
				Ignition switch ON	

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IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITHOUT I-KEY)]

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
		Signal name	Input/ Output		
+	-				
50 (P)*4 (BR)*5	Ground	ECM relay control	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 – 16 V
53 (LG)	Ground	Front wiper LO	Output	Ignition switch OFF	0 – 1 V
				Ignition switch ON	9 – 16 V
54 (GR)	Ground	Front wiper HI	Output	Ignition switch OFF	0 – 1 V
				Ignition switch ON	9 – 16 V
55 (B)	Ground	Ground	—	Ignition switch ON	0 – 1 V
56 (BR)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V
57 (R)*4 (O)*5	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V
58 (P)	Ground	Illumination	Output	Lighting switch OFF	0 – 1 V
				Lighting switch 1ST	9 – 16 V
59 (R)	Ground	Rear combination lamp	Output	Lighting switch OFF	0 – 1 V
				Lighting switch 1ST	9 – 16 V
61 (G)	Ground	Headlamp HI (LH)	Output	Lighting switch other than HI and PASSF	0 – 1 V
				<ul style="list-style-type: none"> • Lighting switch HI • Lighting switch PASS 	9 – 16 V
63 (Y)	Ground	Headlamp HI (RH)	Output	Lighting switch other than HI and PASS	0 – 1 V
				<ul style="list-style-type: none"> • Lighting switch HI • Lighting switch PASS 	9 – 16 V
64 (V)	Ground	A/C relay power supply	Output	Engine running	0 – 1 V
				A/C switch ON (A/C compressor is operating)	9 – 16 V
65 (L/W)	Ground	Throttle control motor relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 – 16 V
68 (G/W)	Ground	Throttle control motor relay control	Output	Ignition switch ON → OFF	0 – 1 V ↓ 9 – 16 V ↓ 0 – 1 V
				Ignition switch ON	0 – 1 V
70 (Y)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITHOUT I-KEY)]

Terminal NO. (Wire color)		Description		Condition	Value (Approx.)
		Signal name	Input/ Output		
+	-				
71 (BR)	Ground	ECM power supply	Output	Ignition switch OFF	6 – 16 V
72 (SB)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC	0 – 1 V
				Ignition switch ON	6 – 16 V
75 (L) ^{*4} (G) ^{*5}	Ground	ECM relay power supply	Output	Ignition switch OFF (More than a few seconds after turning ignition switch OFF)	0 – 1 V
				<ul style="list-style-type: none"> • Ignition switch ON • Ignition switch OFF (For a few seconds after turning ignition switch OFF) 	6 – 16 V
76 ^{*3} (BR)	Ground	Transmission range switch	Input	Ignition switch ON	Select lever in any position other than P or N
					Select lever P or N

- *1: With Stop/Start system
- *2: Without Stop/Start system
- *3: CVT or A/T models
- *4: Gasoline engine models
- *5: Diesel engine models
- *6: For Thailand and Hong Kong
- *7: Except for Thailand and Hong Kong

Fail-safe

INFOID:000000006658091

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	<ul style="list-style-type: none"> • The cooling fan relay turn ON when the ignition switch is turned ON (Cooling fan HI operation) • The cooling fan relay 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	<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Parking lamp • License plate lamp • Illumination • Tail lamp 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

IPDM E/R

< ECU DIAGNOSIS INFORMATION >

[IPDM E/R (WITHOUT I-KEY)]

Control part	Fail-safe operation
Front fog lamp	Front fog lamp relay OFF
Horn	Horn OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit of the ignition relay inside and ignition switch status from BCM via CAN communication.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the ignition switch status from BCM via CAN communication.
- 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 switch status from BCM		
ON	ON	Ignition relay ON normal	—
OFF	OFF	Ignition relay OFF normal	—
ON	OFF	Ignition relay ON stuck	<ul style="list-style-type: none"> • 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.

DTC Index

INFOID:000000006658092

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-69
B2098: IGN RELAY ON	×	PCS-70
B2099: IGN RELAY OFF	—	PCS-71

WIRING DIAGRAM

IPDM E/R

Application Notice

INFOID:000000007774258

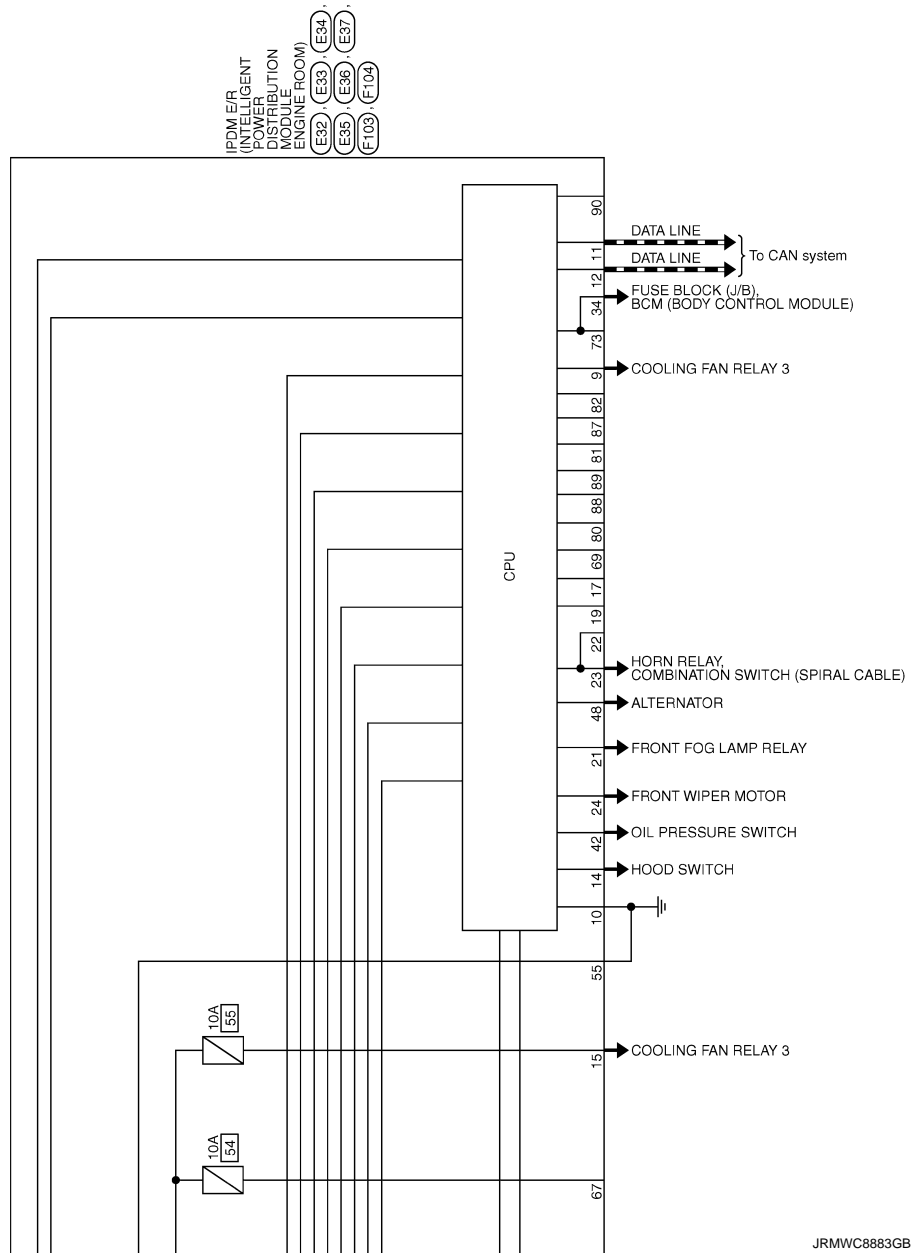
Wiring diagram type	Destination
TYPE A	Except for Thailand
TYPE B	For Thailand (without stop/start system)
TYPE C	For Thailand (with stop/start system)

TYPE A

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


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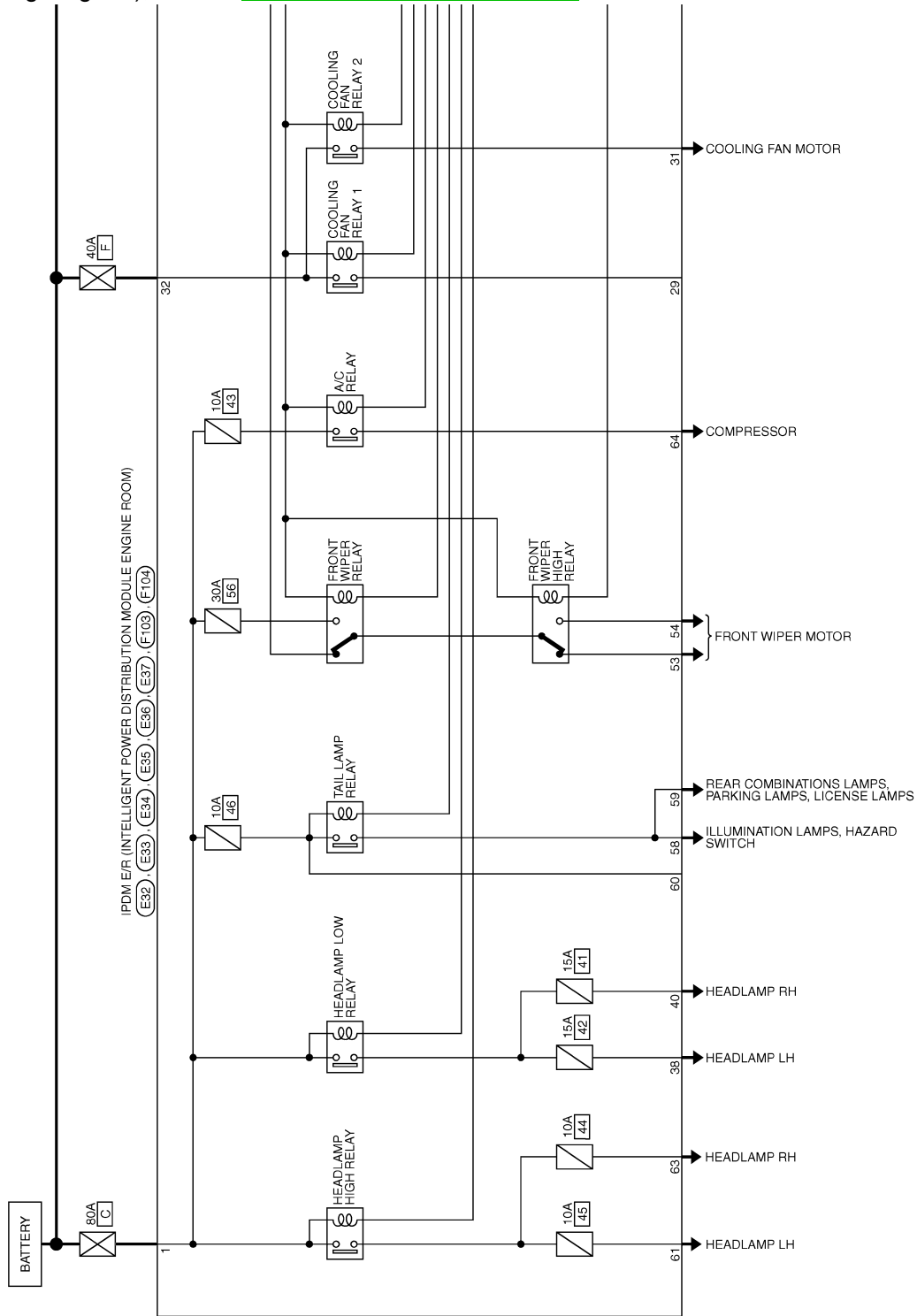
TYPE B

TYPE B : Wiring Diagram

INFOID:000000007774266

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
(RHD MODELS WITHOUT STOP/START SYSTEM)



2012/02/22

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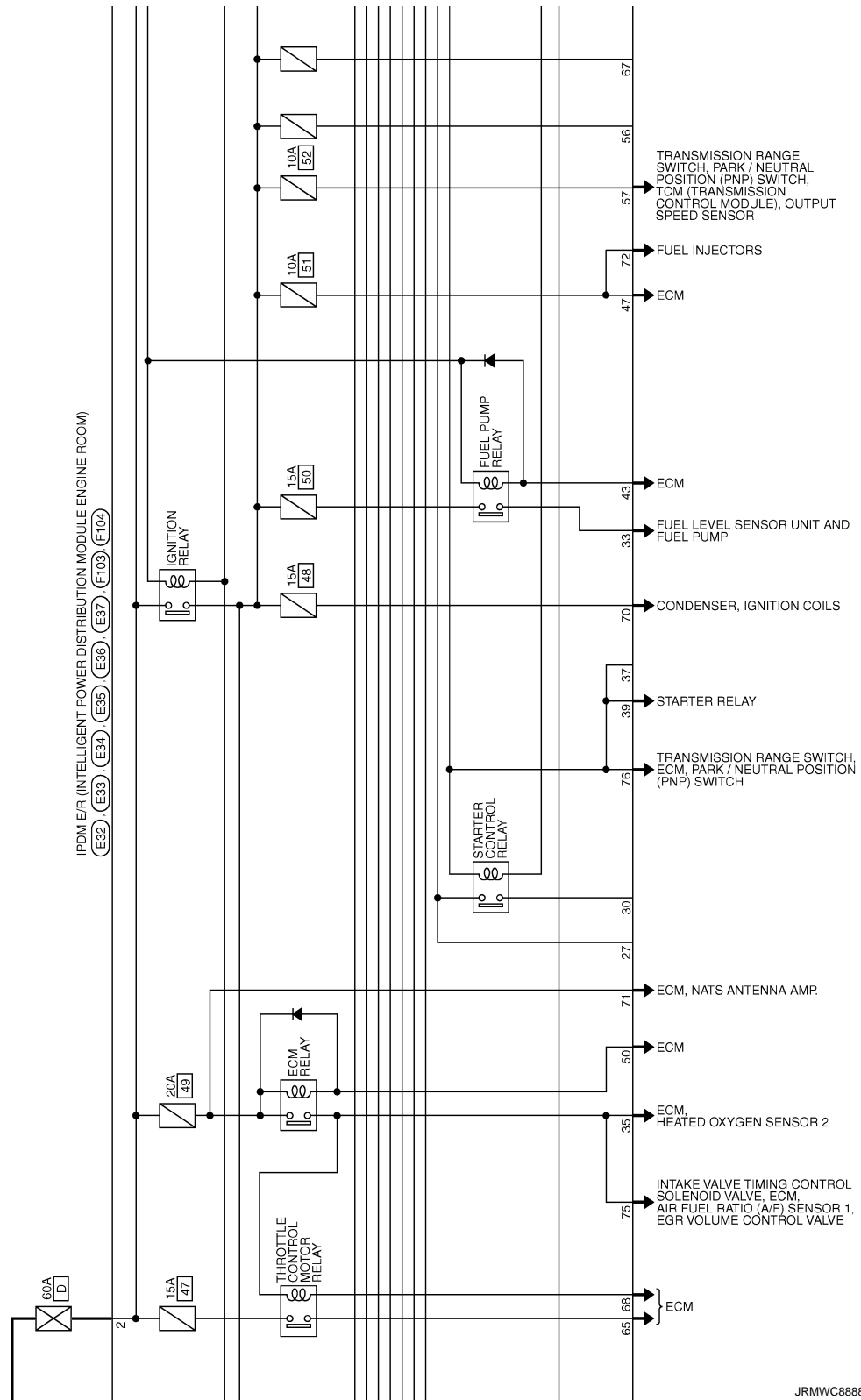
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IPDM E/R

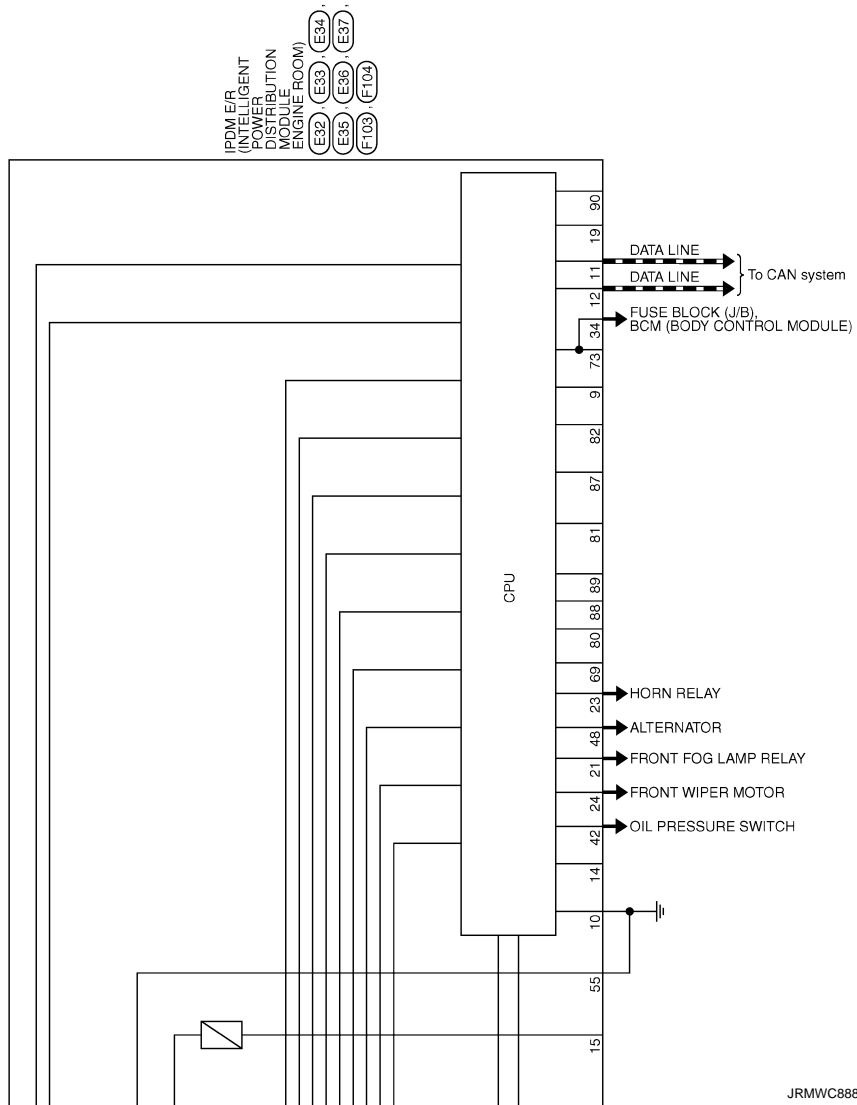
< WIRING DIAGRAM >

[IPDM E/R (WITHOUT I-KEY)]



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


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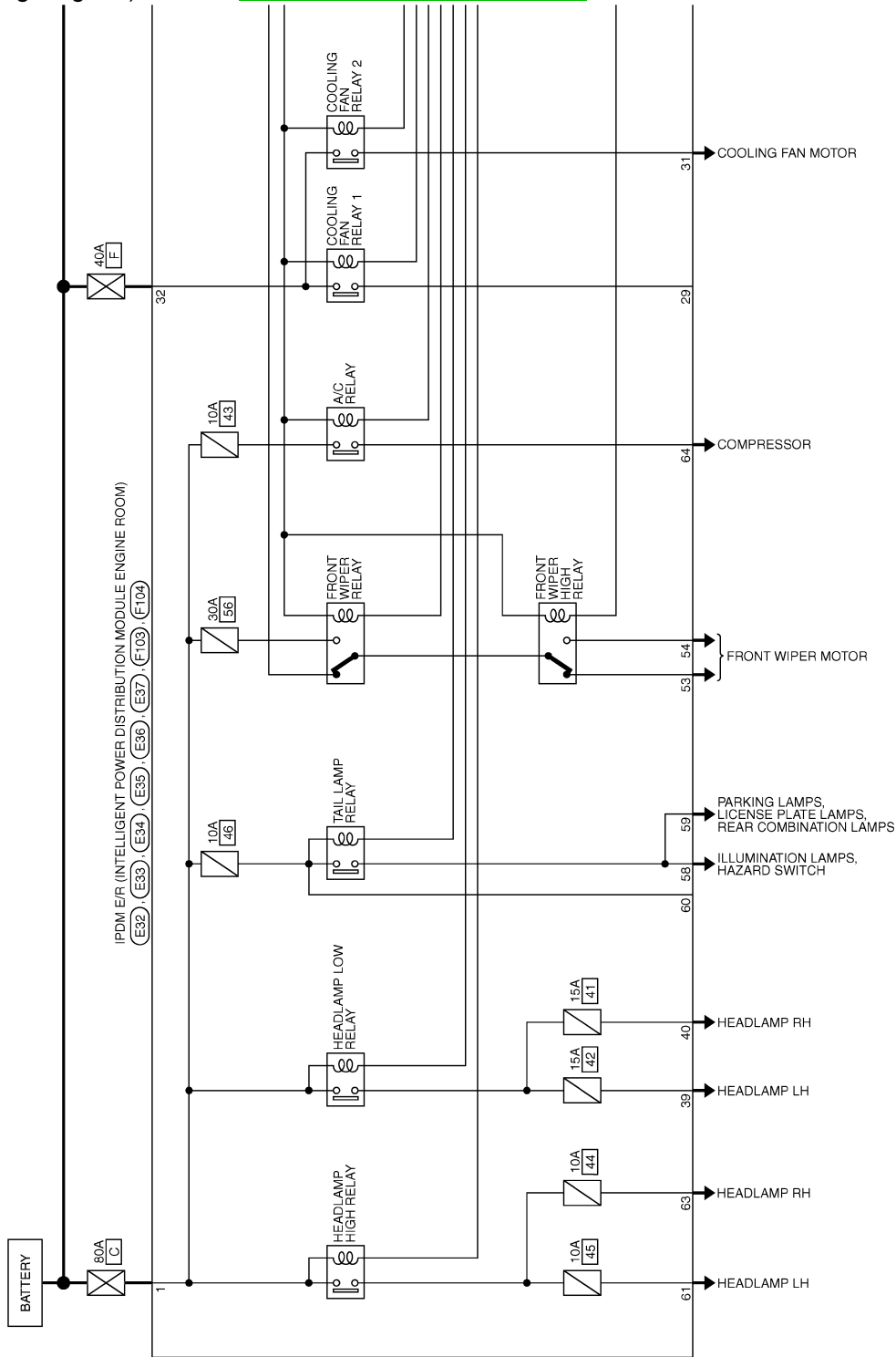
TYPE C

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TYPE C : Wiring Diagram

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12, "Connector Information"](#).

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
(RHD MODELS WITH STOP/START SYSTEM)



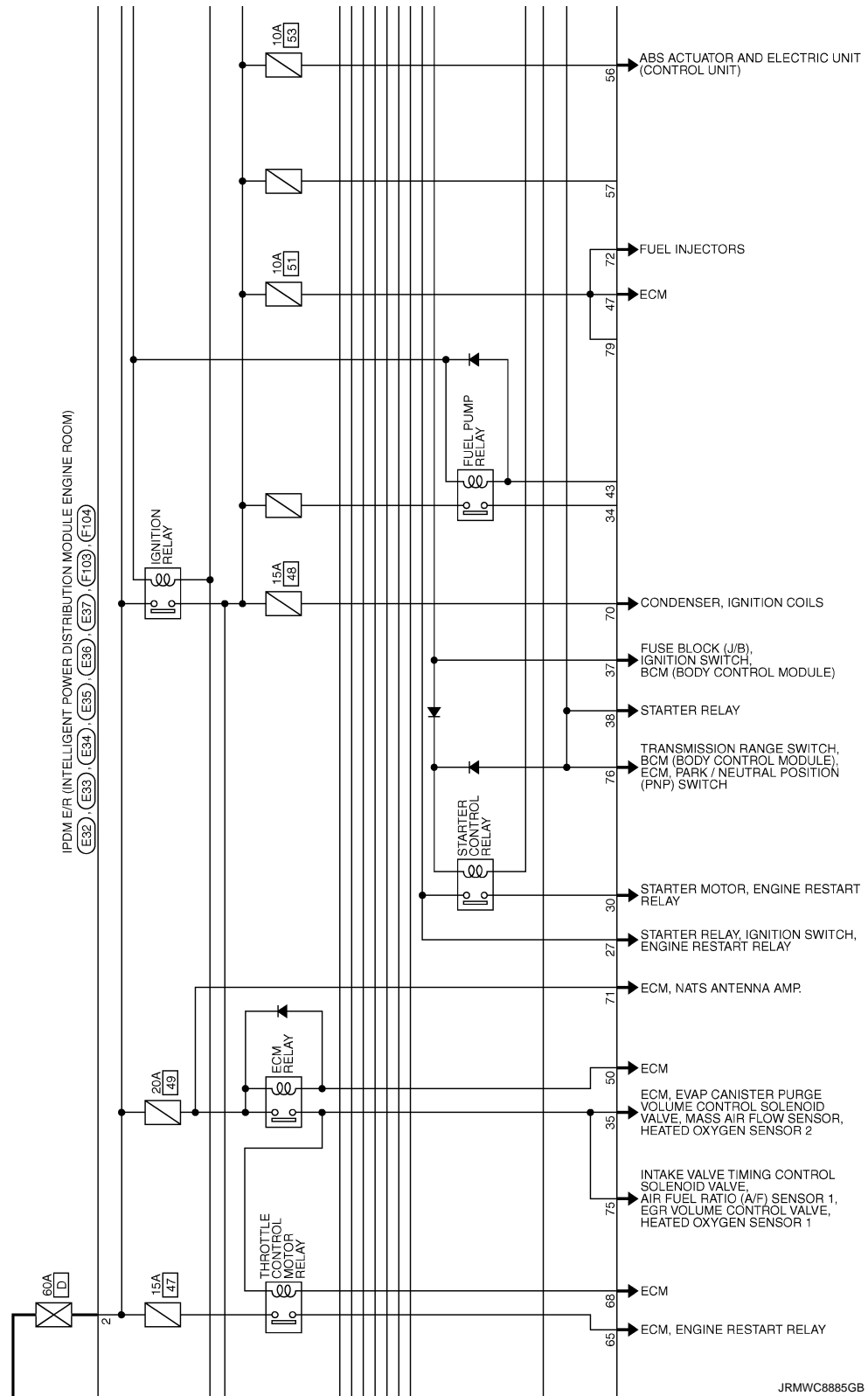
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IPDM E/R

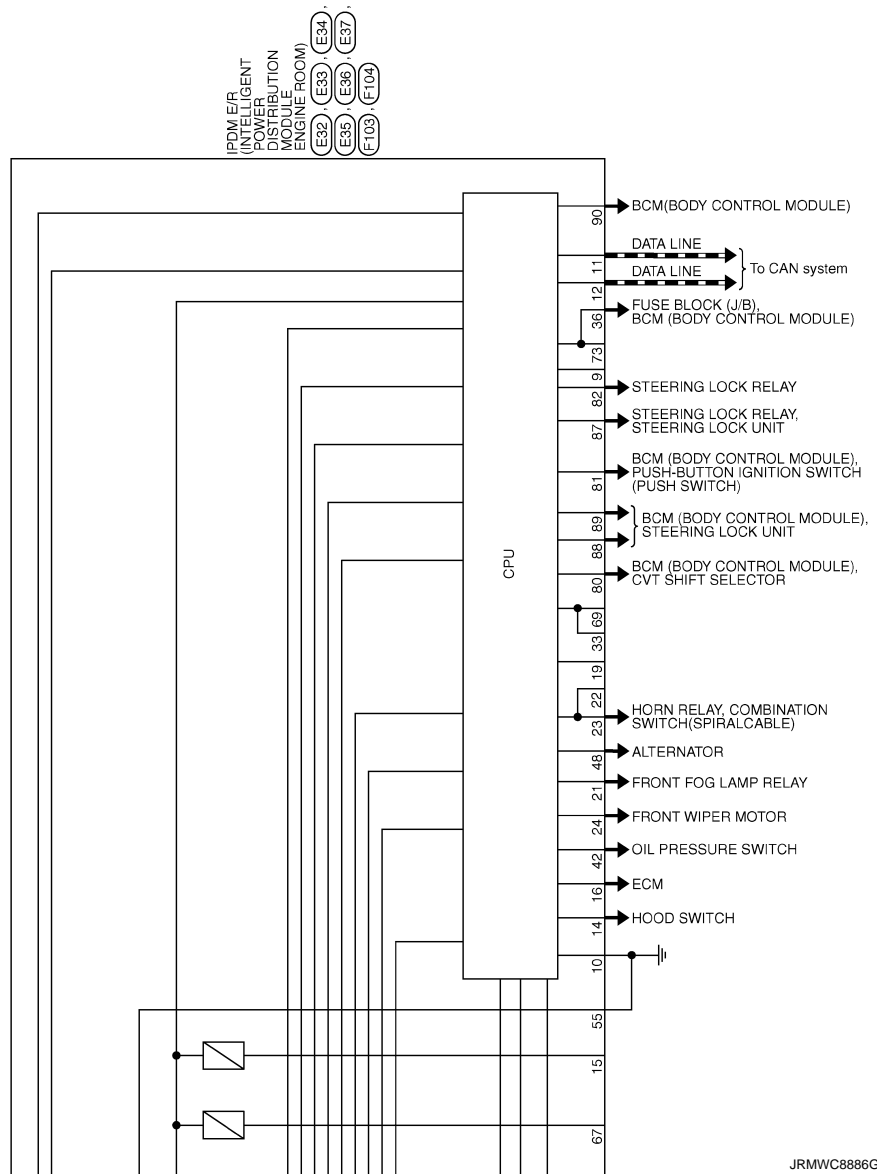
< WIRING DIAGRAM >

[IPDM E/R (WITHOUT I-KEY)]



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U1000 CAN COMM CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITHOUT I-KEY)]

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006658095

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-32, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart"](#).

DTC Logic

INFOID:0000000006658096

DTC DETECTION LOGIC

DTC	CONSULT 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:0000000006658097

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"](#).

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B2098 IGNITION RELAY ON STUCK

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITHOUT I-KEY)]

B2098 IGNITION RELAY ON STUCK

Description

INFOID:000000006658098

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

DTC Logic

INFOID:000000006658099

DTC DETECTION LOGIC

DTC	CONSULT 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

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

- YES >> Refer to [PCS-70. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006658100

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-73. "Removal and Installation"](#).
NO >> Refer to [GI-42. "Intermittent Incident"](#).

B2099 IGNITION RELAY OFF STUCK

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITHOUT I-KEY)]

B2099 IGNITION RELAY OFF STUCK

Description

INFOID:000000006658101

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

DTC Logic

INFOID:000000006658102

DTC DETECTION LOGIC

DTC	CONSULT 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.

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC detected?

- YES >> Refer to [PCS-71, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006658103

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-73, "Removal and Installation"](#).
- NO >> Refer to [GI-42, "Intermittent Incident"](#).

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PCS

POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[IPDM E/R (WITHOUT I-KEY)]

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:000000006658104

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	Gasoline engine models	C (80 A)
		D (60 A)
		F (40 A)
	Diesel engine models	D (80 A)
		N (60 A)
		F (50 A)

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	Ground	6 – 16 V
E37	1		
	2		
E33	32		

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		Existed
E34	10		
E35	55		

Does continuity exist?

YES >> INSPECTION END

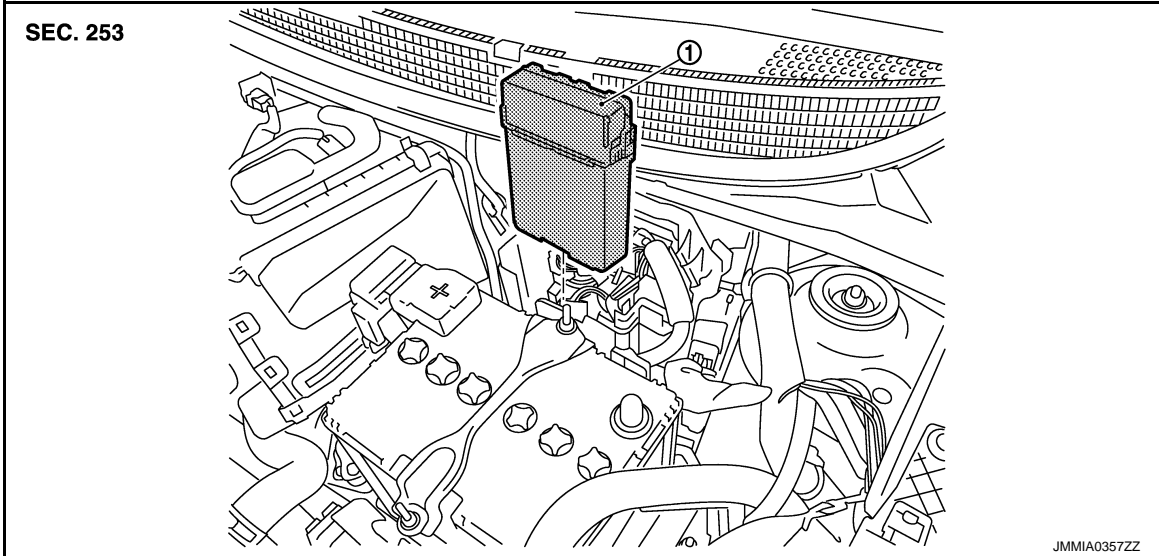
NO >> Repair the harness or connector.

REMOVAL AND INSTALLATION

IPDM E/R

Exploded View

INFOID:000000007024842



1. IPDM E/R

Removal and Installation

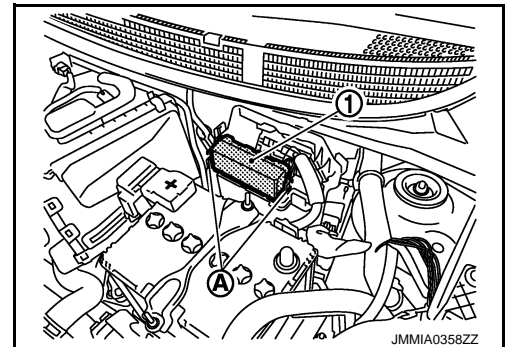
INFOID:000000007024843

CAUTION:

To prevent damage to the parts, IPDM E/R integrated relays cannot be moved.

REMOVAL

1. Disconnect the battery cable from the negative terminal.
2. Remove the IPDM E/R (1) while disengaging both pawls (A) by spreading them.
3. Disconnect the harness connector and then remove the IPDM E/R.



INSTALLATION

Install in the reverse order of removal.

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PCS

PRECAUTION

PRECAUTIONS

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

INFOID:000000006658108

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.

WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that 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.

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

WARNING:

Always observe the following items for preventing accidental activation.

- 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.

Precautions Necessary for Steering Wheel Rotation After Battery Disconnection

INFOID:000000006658109

CAUTION:

Comply with the following cautions to prevent any error and malfunction.

- 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 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.

PRECAUTIONS

< PRECAUTION >

[POWER DISTRIBUTION SYSTEM]

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.

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COMPONENT PARTS

< SYSTEM DESCRIPTION >

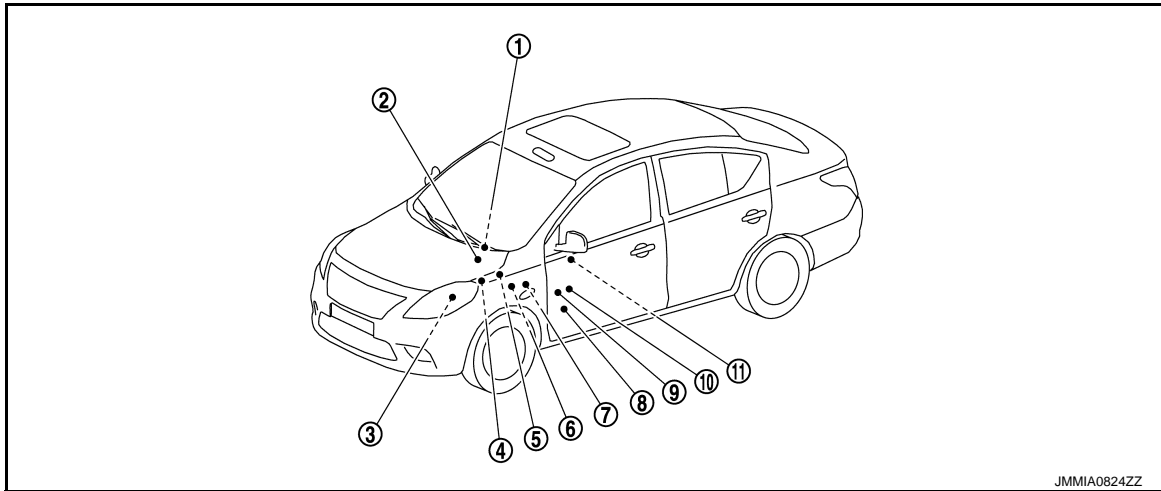
[POWER DISTRIBUTION SYSTEM]

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:000000006658110



JMMIA0824ZZ

No.	Component	Description
1.	Push-button ignition switch	Refer to PCS-77, "Push-button Ignition Switch" .
2.	IPDM E/R	<ul style="list-style-type: none"> IPDM E/R detects push-button ignition switch (push switch) status, and transmits push-button ignition switch status signal (CAN) to BCM. IPDM E/R receives ignition relay (IPDM E/R) control signal and ignition switch ON signal (CAN) from BCM, and controls ignition relay (built in IPDM E/R) Refer to PCS-6, "Component Parts Location" for detailed installation location.
3.	Transmission range switch	Transmission range switch detects shift position P or N, transmits P/N position signal to BCM. Refer to TM-352, "CVT CONTROL SYSTEM : Component Parts Location (LHD)" (LHD models) or TM-354, "CVT CONTROL SYSTEM : Component Parts Location (RHD)" (RHD models) for detailed installation location.
4.	Stop lamp switch	Stop lamp switch detects that brake pedal is depressed, and transmits the signal to BCM. Refer to BRC-19, "Component Parts Location" for detailed installation location.
5.	Clutch pedal position switch	Clutch pedal position switch detects that clutch pedal is depressed, and transmits the signal to BCM. Refer to EC-29, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
6.	Clutch interlock switch	Clutch interlock switch detects that clutch pedal is depressed, and transmits the signal to BCM. Refer to EC-29, "ENGINE CONTROL SYSTEM : Component Parts Location" for detailed installation location.
7.	BCM	<ul style="list-style-type: none"> BCM controls power distribution system. BCM judges ignition switch position by push-button ignition switch (push switch) and vehicle condition BCM checks the ignition switch position internally. Refer to BCS-6, "BODY CONTROL SYSTEM : Component Parts Location" for detailed installation location.
8.	Blower relay (built in fuse block)	<ul style="list-style-type: none"> Blower relay is controlled by BCM. Blower relay supplies the ignition switch ON power supply or the ignition switch ON signal to air conditioning system when ignition switch is turned ON. BCM compares status of blower relay control signal and ignition switch position judged by BCM.
9.	Accessory relay (built in fuse block)	<ul style="list-style-type: none"> Accessory relay is controlled by BCM. Accessory relay supplies the accessory power supply or the ignition switch ACC signal to each ECU when ignition switch is turned ACC or ON. BCM compares status of accessory relay control signal, and ignition switch position judged by BCM.

COMPONENT PARTS

< SYSTEM DESCRIPTION >

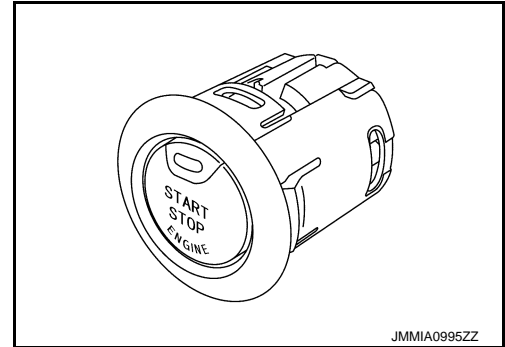
[POWER DISTRIBUTION SYSTEM]

No.	Component	Description
10.	Ignition relay (built in fuse block)	<ul style="list-style-type: none"> Ignition relay is controlled by BCM. Ignition relay supplies the ignition switch ON power supply or the ignition switch ON signal to each ECU and system when ignition switch is turned ON. BCM compares status of ignition relay control signal and ignition switch position judged by BCM. BCM monitors the ignition relay operating status by the ignition relay feedback signal.
11.	CVT shift selector (detention switch)	<p>CVT shift selector (detention switch) detects shift lever status, transmits detention switch signal to BCM.</p> <p>Refer to TM-362, "SHIFT LOCK SYSTEM : Component Parts Location" for detailed installation location.</p>

Push-button Ignition Switch

INFOID:000000007775516

Push-button ignition switch (push switch) is pressed, and transmits the status signal to BCM and IPDM E/R.



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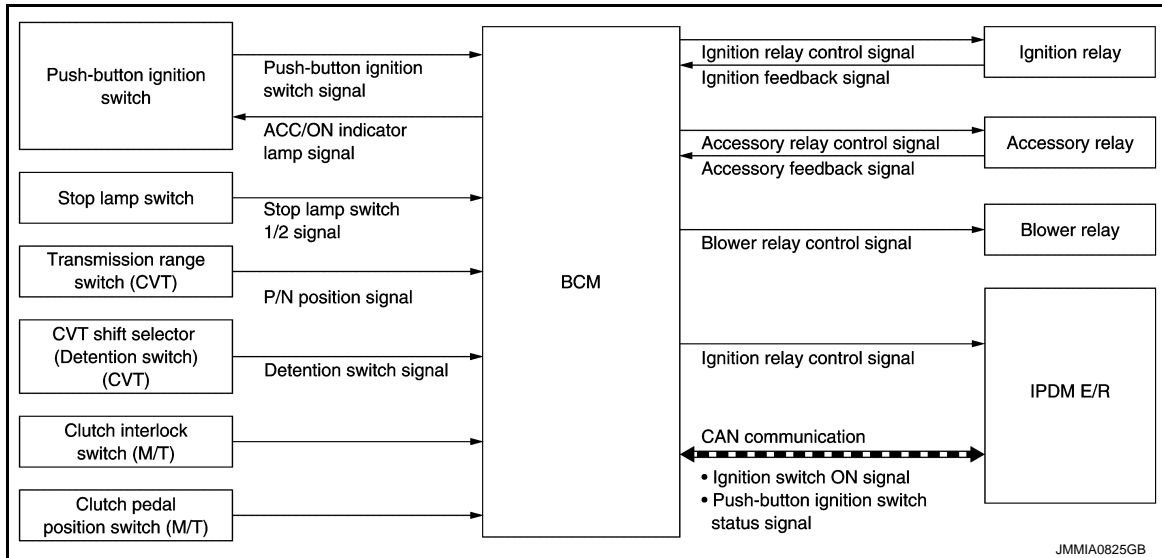
SYSTEM

POWER DISTRIBUTION SYSTEM

POWER DISTRIBUTION SYSTEM : System Description

INFOID:000000006658122

SYSTEM DIADRAM



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.
 - Intelligent Key is in the detection area of the inside key 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 ignition switch 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 (J/B)]
 - Accessory relay
 - Blower relay
- The ignition switch position can be confirmed with the lighting of the ACC/ON indicator lamp 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 (ignition switch position ACC → OFF) to prevent battery discharge.

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

Reset Condition of Battery Saver System

If any of the following conditions are met the battery saver system is released, and the steering will change automatically to LOCK from OFF.

- Change steering status to LOCK from UNLOCK. depending on the following condition.
 - Opening any door
 - Operating with door request switch on door lock
 - Operating with Intelligent Key on door lock
- Change ignition switch position to ACC position from OFF position by pressing push-button ignition switch.

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

Refer to [SEC-17. "INTELLIGENT KEY SYSTEM/ENGINE START FUNCTION : System Description"](#).

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000007064119

APPLICATION ITEM

CONSULT 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.
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	<ul style="list-style-type: none"> 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	×	×	×
<ul style="list-style-type: none"> Automatic air conditioner Manual air conditioner 	AIR CONDITONER		×	
<ul style="list-style-type: none"> Intelligent Key system Engine start system 	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
NATS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Trunk lid open	TRUNK		×	
Theft warning alarm	THEFT ALM	×	×	×
—	RETAINED PWR*		×	
Signal buffer system	SIGNAL BUFFER		×	×

*: This item is displayed, but 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.

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

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 supply 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".
	OFF		Power supply position is "OFF".
	ACC		Power supply position is "ACC".
	ON		Power supply position is "IGN"
ENGINE RUN	Power supply position is "RUN".		
CRANKING	Power supply position is "CRANKING".		
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected <ul style="list-style-type: none"> • 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. 	

NOTE:

*: Refer to the following fir details at the power supply position.

- LOCK: Ignition switch OFF with steering is locked.
- OFF: Ignition switch OFF with steering is unlocked.
- ACC: Ignition switch ACC
- IGN: Ignition switch ON with engine stopped
- RUN: Ignition switch ON with engine running
- CRANKING: At engine cranking

INTELLIGENT KEY

INTELLIGENT KEY : CONSULT Function (BCM - INTELLIGENT KEY)

INFOID:000000007064122

WORK SUPPORT

DIAGNOSIS SYSTEM (BCM)

[POWER DISTRIBUTION SYSTEM]

< SYSTEM DESCRIPTION >

Monitor item	Description	
INSIDE ANT DIAGNOSIS	This function allows inside key antenna self-diagnosis	A
LOCK/UNLOCK BY I-KEY	Door lock/unlock function by door request switch mode can be changed to operation in this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation 	B
ENGINE START BY I-KEY	Engine start function mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation 	C
TRUNK/GLASS HATCH OPEN	Buzzer reminder function mode by trunk lid opener request switch and Intelligent Key can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation 	D
PANIC ALARM SET	Panic alarm button pressing time on Intelligent Key remote control button can be selected from the following with this mode <ul style="list-style-type: none"> • MODE 1: 0.5 sec • MODE 2: Non-operation • MODE 3: 1.5 sec 	E
TRUNK OPEN DELAY	Trunk button pressing on Intelligent Key can be selected as per the following in this mode. <ul style="list-style-type: none"> • MODE 1: Press and hold • MODE 2: Press twice • MODE 3: Press and hold and press twice 	F
LO- BATT OF KEY FOB WARN	Intelligent Key low battery warning mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation 	G
ANTI KEY LOCK IN FUNCTI	Key reminder function mode can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation 	H
HAZARD ANSWER BACK	Hazard reminder function mode by door request switch and Intelligent Key button can be selected from the following with this mode <ul style="list-style-type: none"> • Lock Only: Door lock operation only • Unlock Only: Door unlock operation only • Lock/Unlock: Lock and unlock operation • Off: Non-operation 	I
ANS BACK I-KEY LOCK	Buzzer reminder function (lock operation) mode by door request switch can be selected from the following with this mode <ul style="list-style-type: none"> • Horn Chirp: Sound horn • Buzzer: Sound Intelligent Key warning buzzer • Off: Non-operation 	J
ANS BACK I-KEY UNLOCK	Buzzer reminder function (unlock operation) mode by door request switch can be changed to operation with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation 	K
SHORT CRANKING OUTPUT	Starter motor can operate during the times below <ul style="list-style-type: none"> • 70 msec • 100 msec • 200 msec 	L
CONFIRM KEY FOB ID	It can be checked whether Intelligent Key ID code is registered or not in this mode	PCS
AUTO LOCK SET	Auto door lock operation time can be changed in this mode <ul style="list-style-type: none"> • 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 	N
		O
		P

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

[POWER DISTRIBUTION SYSTEM]

Monitor item	Description
ANSWER BACK FUNCTION	Buzzer reminder function mode by Intelligent Key button can be selected from the following with this mode <ul style="list-style-type: none"> • On: Operate • Off: Non-operation
RETRACTABLE MIRROR SET	NOTE: This item is indicated, but not used

DATA MONITOR

NOTE:

The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.

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	NOTE: This item is indicated, but not monitored
PUSH SW	Indicates [On/Off] condition of push-button ignition switch
CLUTCH SW	NOTE: This item is indicated, but not monitored
BRAKE SW 1	Indicates [On/Off] condition of stop lamp switch
BRAKE SW 2	Indicates [On/Off]* condition of stop lamp switch power supply
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 indicated, but not monitored
TRNK/HAT MNTR	Indicates [On/Off] condition of trunk room lamp switch
RKE OPE COUN1	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

[POWER DISTRIBUTION SYSTEM]

Monitor Item	Condition
RKE OPE COUN2	NOTE: This item is indicated, but not 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	Indicates [On/Off] condition of trunk open signal from Intelligent Key
RKE-PANIC	Indicates [On/Off] condition of PANIC button of Intelligent Key (Except for models for India) NOTE: For models for India, this item is indicated, but not monitored
RKE-MODE CHG	NOTE: This item is indicated, but not monitored

*: 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 <ul style="list-style-type: none"> • On: Operate • Off: Non-operation
INSIDE BUZZER	This test is able to check warning chime in combination meter operation <ul style="list-style-type: none"> • Take Out: Take away warning chime sounds when CONSULT screen is touched • Key: Key warning chime sounds when CONSULT screen is touched • Knob: OFF position warning chime sounds when CONSULT screen is touched • Off: Non-operation
INDICATOR	This test is able to check warning lamp operation <ul style="list-style-type: none"> • KEY ON: "KEY" Warning lamp illuminates when CONSULT screen is touched • KEY IND: "KEY" Warning lamp blinks when CONSULT screen is touched • Off: Non-operation
INT LAMP	This test is able to check interior room lamp operation <ul style="list-style-type: none"> • On: Operate • Off: Non-operation
LCD	This test is able to check combination meter indicator lamp information <ul style="list-style-type: none"> • BP N: Engine start operation indicator lamp indicates when CONSULT screen is touched • BP I: Engine start operation indicator lamp indicates when CONSULT screen is touched • ID NG: This item is displayed, but cannot be used • ROTAT: This item is displayed, but cannot be used • SFT P: Shift P warning lamp indicates when CONSULT screen is touched • INSRT: This item is displayed, but cannot be used • BATT: Key warning lamp indicates when CONSULT screen is touched • NO KY: Key warning lamp indicates when CONSULT screen is touched • OUTKEY: Engine start operation indicator lamp indicates when CONSULT screen is touched • LK WN: Engine start operation indicator lamp indicates when CONSULT 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 screen is touched
P RANGE	This test is able to check CVT shift selector or A/T shift selector power supply <ul style="list-style-type: none"> • On: Operate • Off: Non-operation
ENGINE SW ILLUMI	This test is able to check push-button ignition switch illumination operation Push-button ignition switch illumination illuminates when "ON" on CONSULT screen is touched
PUSH SWITCH INDICATOR	This test is able to check ACC/ON indicator in push-button ignition switch operation ACC/ON indicator in push-button ignition switch illuminates when "ON" on CONSULT screen is touched
TRUNK/BACK DOOR	This test is able to check trunk lid open operation <ul style="list-style-type: none"> • Open: Operate
RETRACTABLE MIRROR	NOTE: This item is indicated, but not used

ECU DIAGNOSIS INFORMATION

BCM

List of ECU Reference

INFOID:000000006658126

ECU	Reference
BCM	BCS-36. "Reference Value"
	BCS-58. "Fail-safe"
	BCS-60. "DTC Inspection Priority Chart"
	BCS-61. "DTC Index"

POWER DISTRIBUTION SYSTEM

[POWER DISTRIBUTION SYSTEM]


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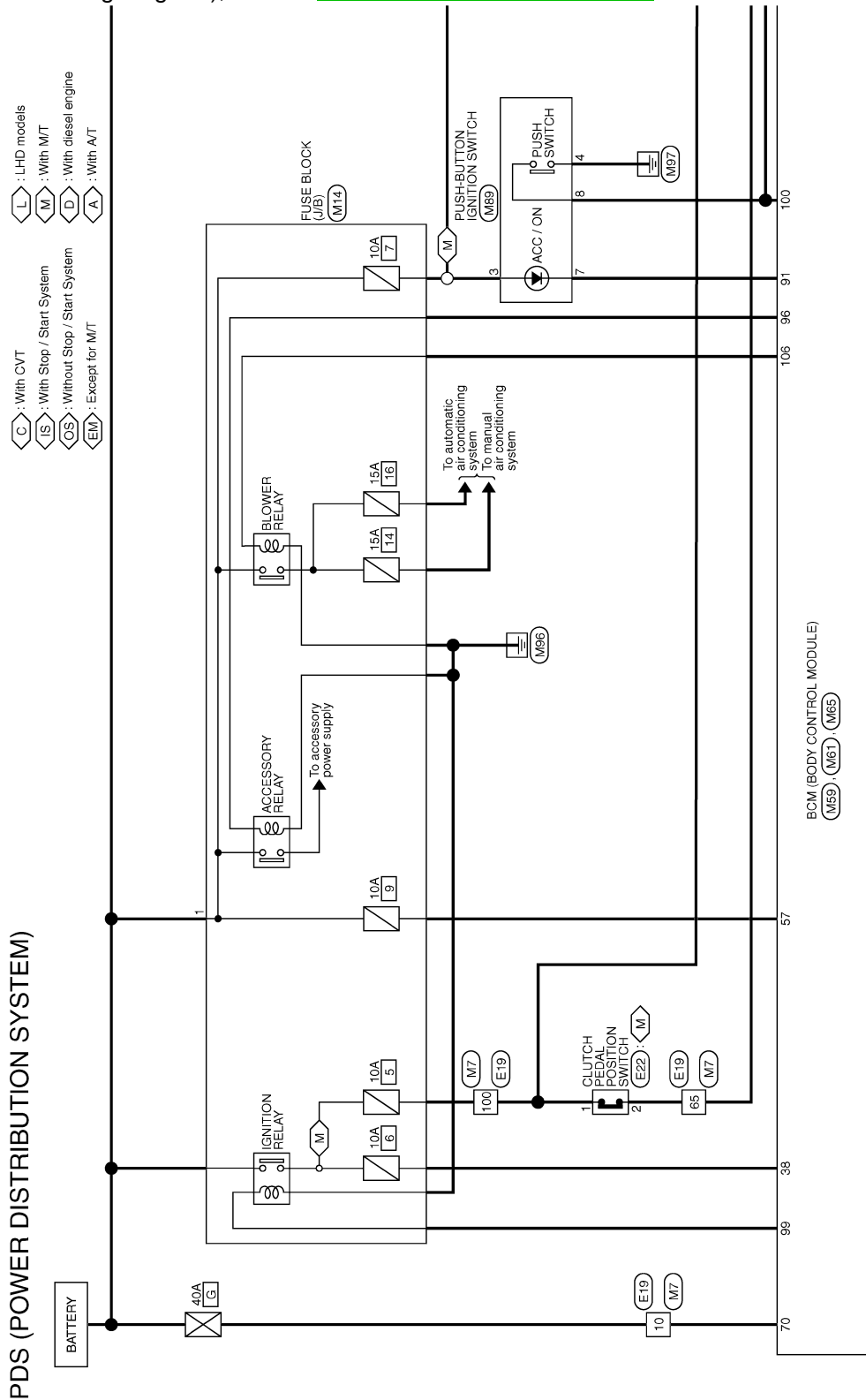
WIRING DIAGRAM

POWER DISTRIBUTION SYSTEM

Wiring Diagram

INFOID:000000006658127

For connector terminal arrangements, harness layouts, and alphabets in a  (option abbreviation; if not described in wiring diagram), refer to [GI-12. "Connector Information"](#).



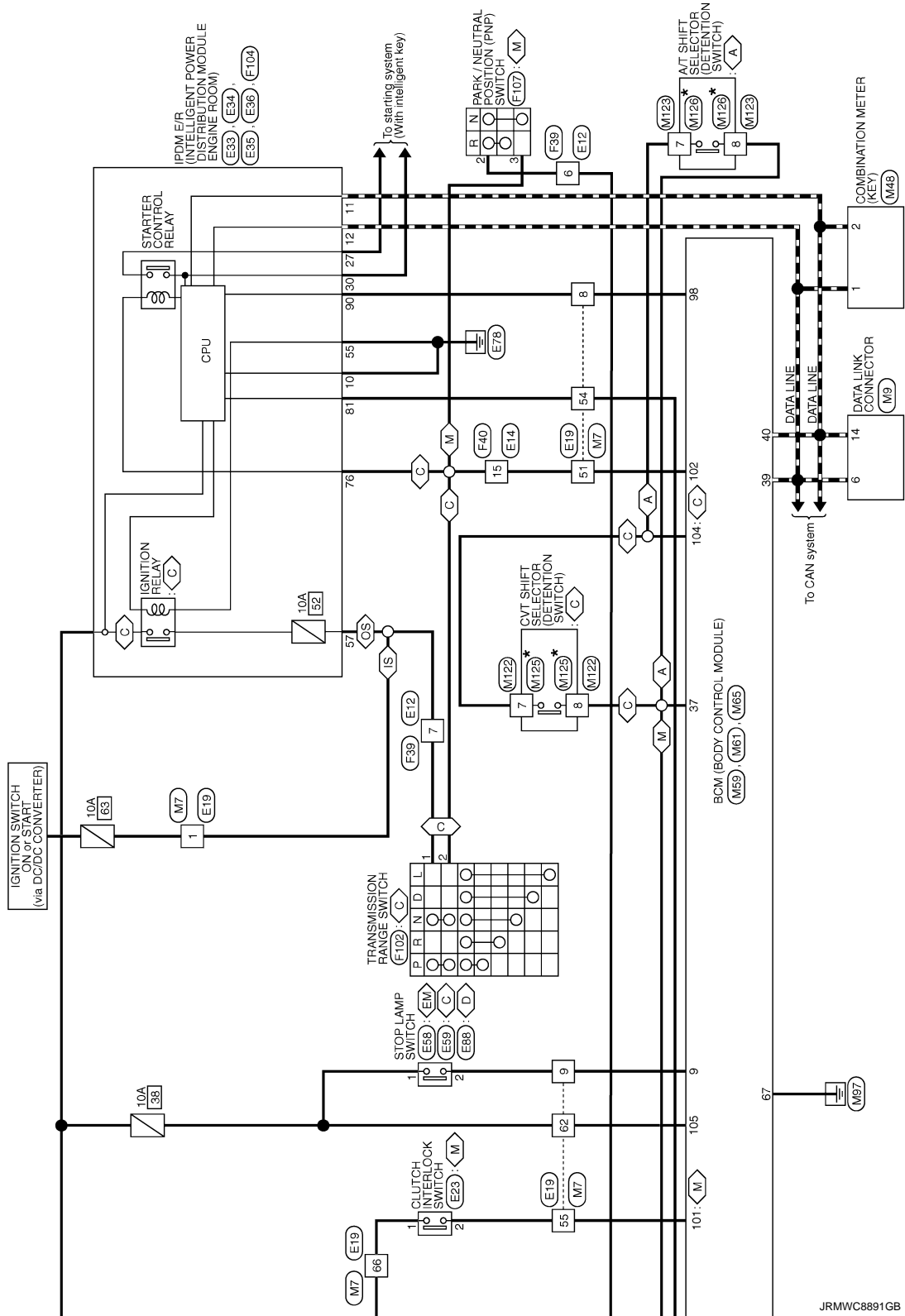
*: This connector is not shown in "Harness Layout".

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POWER DISTRIBUTION SYSTEM

< WIRING DIAGRAM >

[POWER DISTRIBUTION SYSTEM]



DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION >

[POWER DISTRIBUTION SYSTEM]

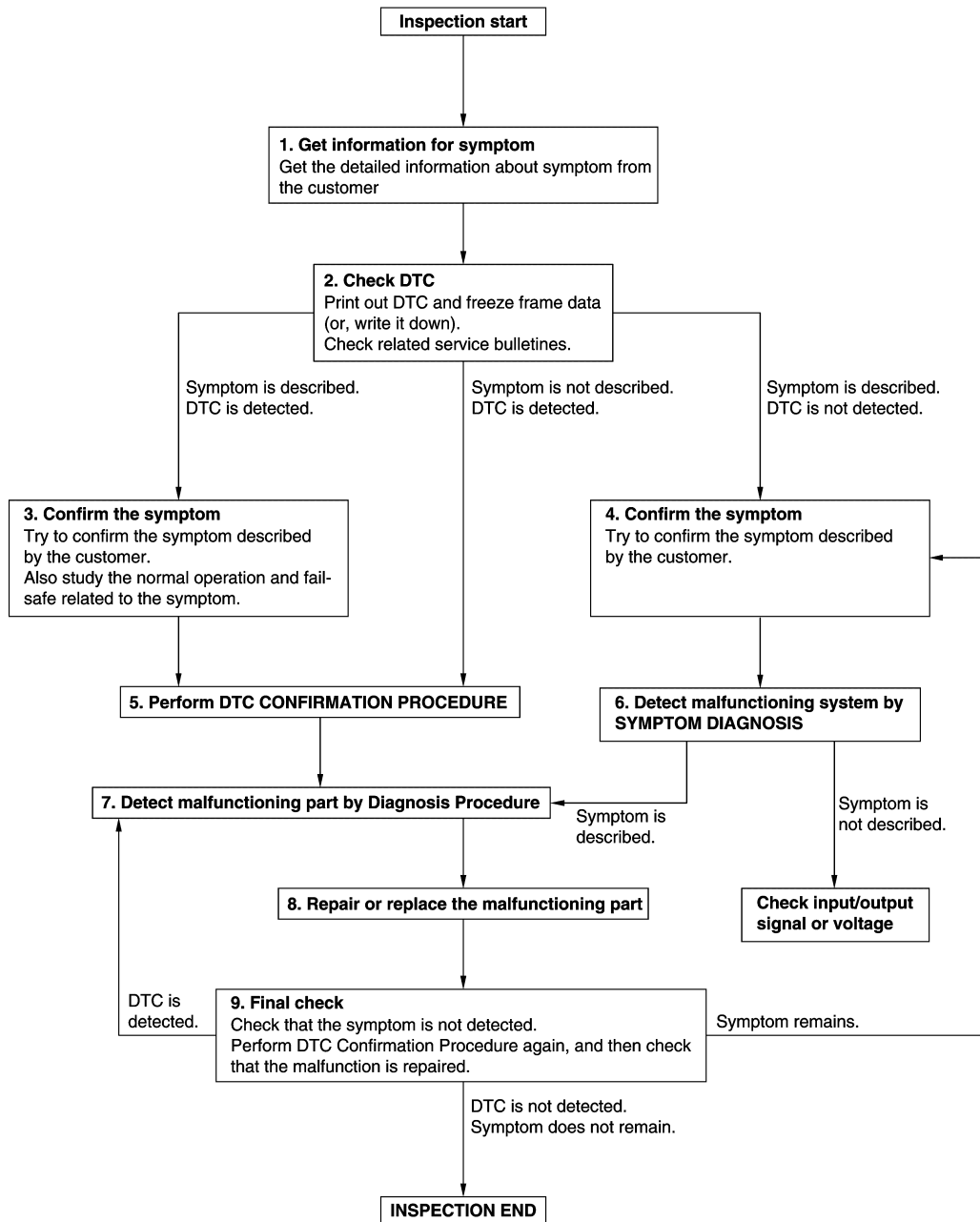
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:000000007774263

OVERALL SEQUENCE



DETAILED FLOW

JMKIA8652GB

DIAGNOSIS AND REPAIR WORK FLOW

[POWER DISTRIBUTION SYSTEM]

< BASIC INSPECTION >

1. GET INFORMATION FOR SYMPTOM

1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
2. Check operation condition of the function that is malfunctioning.

>> GO TO 2.

2. CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.
 - Record DTC and freeze frame data (Print them out using CONSULT.)
 - 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 detected>>GO TO 3.

Symptom is described, DTC is not detected>>GO TO 4.

Symptom is not described, DTC is detected>>GO TO 5.

3. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

Also study the normal operation and fail-safe related to the symptom.

Verify relation between the symptom and the condition when the symptom is detected.

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer.

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 detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time.

If two or more DTCs are detected, refer to [BCS-60. "DTC Inspection Priority Chart"](#) and determine trouble diagnosis order.

NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though 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 >> Check according 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.

Is the symptom described?

YES >> GO TO 7.

NO >> Monitor input data from related sensors or check voltage of related module terminals using CONSULT.

7. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

DIAGNOSIS AND REPAIR WORK FLOW

[POWER DISTRIBUTION SYSTEM]

< BASIC INSPECTION >

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.

NO >> Check according to [GI-42. "Intermittent Incident"](#).

8. REPAIR OR REPLACE THE MALFUNCTIONING PART

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

>> GO TO 9.

9. FINAL CHECK

When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.

When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the symptom is not detected.

Is DTC detected and does symptom remain?

YES-1 >> DTC is detected: GO TO 7.

YES-2 >> Symptom remains: GO TO 4.

NO >> Before returning the vehicle to the customer, always erase DTC.

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PCS

B2553 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

DTC/CIRCUIT DIAGNOSIS

B2553 IGNITION RELAY

DTC Logic

INFOID:000000006658129

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2553	IGNITION RELAY	When ignition relay [fuse block (J/B)] control signal status that BCM controls is ON, BCM receives ignition relay feedback signal (OFF: 0 - 1 V) for 2 seconds or more.	<ul style="list-style-type: none"> • Harness or connectors (Ignition relay feedback signal circuit) • BCM • Fuse

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON, and wait for 2 seconds or more.
2. Check "Self-diagnosis result" with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-90. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000006658130

1.CHECK FUSE

Check that the No. 6 (10 A) fuse is not blown.

Is the fuse fusing?

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

2.CHECK IGNITION RELAY FEEDBACK CIRCUIT

1. Disconnect ignition relay and BCM connector.
2. Check continuity between BCM harness connector and ignition relay harness connector.

BCM		Fuse block (J/B)	Continuity
Connector	Terminal		
M65	38	Ignition relay (switch side)	Existed

3. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M65	38		Not existed

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace harness.

3.CHECK IGNITION RELAY

Refer to [PCS-91. "Component Inspection"](#).

Is the inspection result normal?

- YES >> GO TO 4.
 NO >> Replace ignition relay.

4.CHECK IGNITION RELAY FEEDBACK SIGNAL

B2553 IGNITION RELAY

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

1. Connect BCM connector and ignition relay.
2. Check voltage between BCM harness connector and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)
BCM				
Connector	Terminal			
M65	38	Ground	Ignition switch	OFF or ACC
				ON
				0 - 1
				9 - 16

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
 NO >> GO TO 5.

5.CHECK INTERMITTENT INCIDENT

Refer to [GI-42. "Intermittent Incident"](#).

>> INSPECTION END

Component Inspection

INFOID:000000006658131

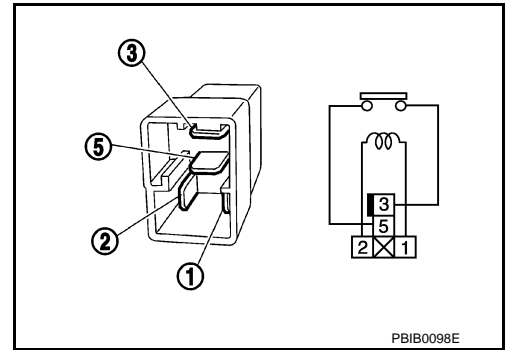
1.CHECK IGNITION RELAY

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.



PBIB0098E

PCS

B2614 ACC RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B2614 ACC RELAY CIRCUIT

DTC Logic

INFOID:000000007095112

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2614	BCM	The following status are compared, and it does not agree for 1 second or more. <ul style="list-style-type: none"> State of accessory relay control judgment in BCM State of accessory relay control signal 	<ul style="list-style-type: none"> Harness or connectors (Accessory relay control signal circuit) BCM Accessory relay

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch to ACC, and wait for 1 second or more.
- Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-92. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095113

1. CHECK ACCESSORY RELAY CONTROL SIGNAL

Check voltage between BCM harness connector and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)	
BCM					
Connector	Terminal				
M61	96	Ground	Ignition switch	OFF	0 - 0.5
				ACC or ON	9 - 16

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
 NO >> GO TO 2.

2. CHECK ACCESSORY RELAY CONTROL SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect BCM connector and accessory relay.
- Check continuity between BCM harness connector and accessory relay harness connector.

BCM		Accessory relay	Continuity
Connector	Terminal	Terminal	
M61	96	Coil upstream side	Existed

- Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M61	96		Not existed

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace harness.

3. CHECK ACCESSORY RELAY

Refer to [PCS-93. "Component Inspection"](#).

B2614 ACC RELAY CIRCUIT

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).

NO >> Replace accessory relay.

Component Inspection

INFOID:000000007095114

1. CHECK ACCESSORY RELAY

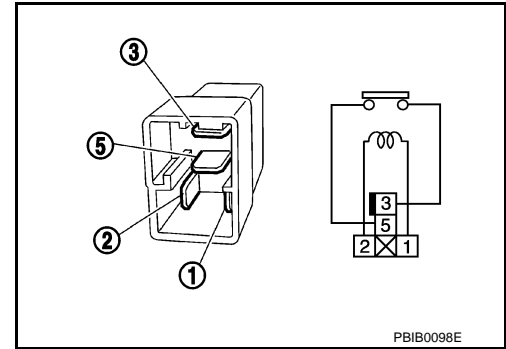
1. Turn ignition switch OFF.
2. Remove accessory relay.
3. Check the continuity between accessory relay terminals.

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



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PCS

B2615 BLOWER RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B2615 BLOWER RELAY CIRCUIT

DTC Logic

INFOID:000000007095115

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2616	BCM	The following status are compared, and it does not agree for 1 second or more. <ul style="list-style-type: none"> State of blower relay control judgment in BCM State of blower relay control signal 	<ul style="list-style-type: none"> Harness or connectors (Blower relay control signal circuit) BCM Blower relay

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON, and wait for 1 second or more.
- Check "Self-diagnosis result" with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-96. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095116

1. CHECK BLOWER RELAY CONTROL SIGNAL

Check voltage between BCM harness connector and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)	
BCM					
Connector	Terminal				
M61	106	Ground	Ignition switch	OFF or ACC	0 - 0.5
				ON	9 - 16

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
NO >> GO TO 2.

2. CHECK BLOWER RELAY CONTROL SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect BCM connector and blower relay.
- Check continuity between BCM harness connector and blower relay harness connector.

BCM		Blower relay	Continuity
Connector	Terminal	Terminal	
M61	106	Coil upstream side	Existed

- Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M61	106		Not existed

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Repair or replace harness.

3. CHECK BLOWER RELAY

Refer to [PCS-93. "Component Inspection"](#).

B2615 BLOWER RELAY CIRCUIT

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).

NO >> Replace blower relay.

Component Inspection

INFOID:000000007095117

1. CHECK BLOWER RELAY

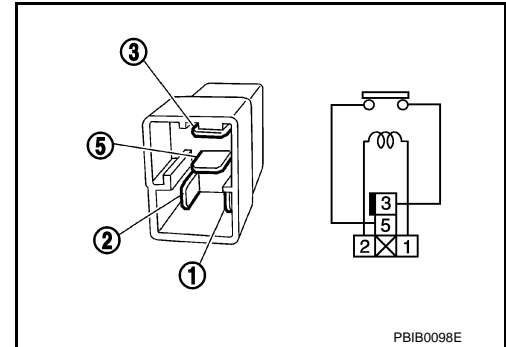
1. Turn blower switch OFF.
2. Remove blower relay.
3. Check the continuity between blower relay terminals.

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



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PCS

B2616 IGNITION RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B2616 IGNITION RELAY CIRCUIT

DTC Logic

INFOID:000000007095118

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2616	BCM	The following status are compared, and it does not agree for 1 second or more. <ul style="list-style-type: none"> State of ignition relay (fuse block) control judgment in BCM State of ignition relay (fuse block) control signal 	<ul style="list-style-type: none"> Harness or connectors [Ignition relay (fuse block) control signal circuit] BCM Ignition relay (fuse block)

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON, and wait for 1 second or more.
- Check "Self-diagnosis result" with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-96. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095119

1. CHECK IGNITION RELAY (FUSE BLOCK) CONTROL SIGNAL

Check voltage between BCM harness connector and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)	
BCM					
Connector	Terminal				
M61	99	Ground	Ignition switch	OFF or ACC	0 - 0.5
				ON	9 - 16

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
 NO >> GO TO 2.

2. CHECK IGNITION RELAY (FUSE BLOCK) CONTROL SIGNAL CIRCUIT

- Turn ignition switch OFF.
- Disconnect BCM connector and ignition relay (fuse block).
- Check continuity between BCM harness connector and ignition relay (fuse block) harness connector.

BCM		Ignition relay (fuse block)	Continuity
Connector	Terminal	Terminal	
M61	99	Coil upstream side	Existed

- Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M61	99		Not existed

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace harness.

3. CHECK IGNITION RELAY (FUSE BLOCK)

B2616 IGNITION RELAY CIRCUIT

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

Refer to [PCS-93. "Component Inspection"](#).

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
- NO >> Replace ignition relay (fuse block).

Component Inspection

INFOID:000000007095120

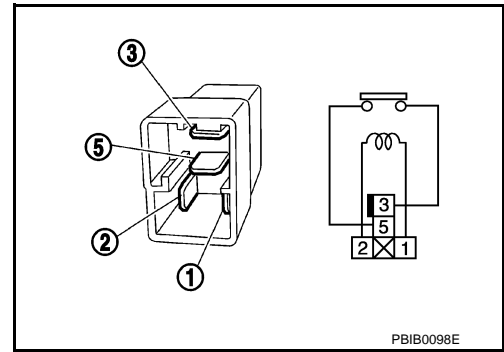
1. CHECK IGNITION RELAY

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



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B2618 BCM

DTC Logic

INFOID:000000007095121

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2618	BCM	The following status are compared, and it does not agree for 1 second or more. <ul style="list-style-type: none"> State of ignition relay (IPDM E/R) control judgment in BCM State of ignition relay (IPDM E/R) control signal 	<ul style="list-style-type: none"> Harness or connectors [Ignition relay (IPDM E/R) control signal circuit] BCM IPDM E/R

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON, and wait for 1 second or more.
- Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-98. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095122

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

Check voltage between BCM harness connector and ground.

(+)		(-)	Condition	Voltage (V) (Approx.)	
BCM					
Connector	Terminal				
M61	98	Ground	Ignition switch	OFF or ACC	9 - 16
				ON	0 - 0.5

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
 NO >> GO TO 2.

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

- Turn ignition switch OFF.
- Disconnect BCM connector and IPDM E/R.
- Check continuity between BCM harness connector and IPDM E/R harness connector.

BCM		IPDM E/R		Continuity
Connector	Terminal	Connector	Terminal	
M61	98	E36	90	Existed

- Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M61	98		Not existed

Is the inspection result normal?

- YES >> GO TO 3.
 NO >> Repair or replace harness.

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

B2618 BCM

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

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

(+)		(-)	Condition		Voltage (V) (Approx.)
IPDM E/R					
Connector	Terminal				
E36	90	Ground	Ignition switch	OFF	9 - 16

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#).
- NO >> Replace IPDM E/R.

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B261A PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B261A PUSH-BUTTON IGNITION SWITCH

DTC Logic

INFOID:000000007095123

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B261A	PUSH-BTN IGN SW	The following signal status that BCM receives are compared, and it does not agree for 1 second or more. <ul style="list-style-type: none">• Push-button Ignition switch (push switch) signal• Push-button Ignition switch (push switch) status signal (CAN)	<ul style="list-style-type: none">• Harness or connectors [Push-button Ignition switch (push switch) circuit]• BCM• IPDM E/R

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Press push-button ignition switch (push switch) under the following conditions, and wait for 1 second or more.
 - Shift position is in the P position
 - Do not depress brake pedal
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-100. "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095124

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

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		
M89	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	
M61	100	M89	8	Existed

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

Push-button Ignition switch		Ground	Continuity
Connector	Terminal		
M89	8		Not existed

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).

B261A PUSH-BUTTON IGNITION SWITCH

[POWER DISTRIBUTION SYSTEM]

< DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace harness.

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

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

(+)		(-)	Voltage (V) (Approx.)
IPDM E/R			
Connector	Terminal	Ground	12
E36	81		

Is the inspection result normal?

YES >> Replace IPDM E/R.

NO >> GO TO 4.

4. CHECK PUSH-BUTTON IGNITION SWITCH (PUSH 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	
E36	81	M89	8	Existed

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

Push-button Ignition switch		Ground	Continuity
Connector	Terminal		
M89	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

PCS

B26F1 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B26F1 IGNITION RELAY

DTC Logic

INFOID:000000007095125

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.	<ul style="list-style-type: none">• 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, and wait for 2 seconds or more.
2. Check "Self-diagnosis result" with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-102, "Diagnosis Procedure"](#).
NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095126

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-23, "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	Ground	Ignition switch	ON	0 - 0.5
M61	98				

Is the inspection result normal?

- YES >> GO TO 3.
NO >> Replace BCM. Refer to [BCS-82, "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	
M61	98	E36	90	Existed

Is the inspection result normal?

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

B26F2 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

B26F2 IGNITION RELAY

DTC Logic

INFOID:000000007095127

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.	<ul style="list-style-type: none"> • 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, and wait for 2 seconds or more.
2. Check "Self-diagnosis result" with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-103. "Diagnosis Procedure"](#).
 NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095128

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-23. "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	Ground	Ignition switch	OFF or ACC	9 - 16
E36	90				

PCS

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		
E36	90		Not existed

Is the inspection result normal?

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

B26F2 IGNITION RELAY

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

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				
E36	90	Ground	Ignition switch	OFF or ACC	9 - 16

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "Removal and Installation"](#).
NO >> Replace IPDM E/R.

B26F6 BCM

DTC Logic

INFOID:000000007095129

DTC DETECTION LOGIC

NOTE:

- If DTC B26F6 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [BCS-72, "DTC Logic"](#).
- If DTC B26F6 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [BCS-73, "DTC Logic"](#).

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B26F6	BCM	Ignition switch ON signal (CAN) (ON) is not transmitted from IPDM E/R, when BCM turns ignition relay ON [Transmit ignition switch ON signal (CAN) (ON)].	BCM

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON, and wait for 0.5 seconds or more.
2. Check "Self-diagnosis result" of BCM with CONSULT.

Is DTC detected?

- YES >> Go to [PCS-105, "Diagnosis Procedure"](#).
- NO >> INSPECTION END

Diagnosis Procedure

INFOID:000000007095130

1. INSPECTION START

1. Turn ignition switch ON.
2. Select "Self-diagnosis result" of BCM with CONSULT.
3. Touch "ERASE".
4. Perform DTC Confirmation Procedure.
See [PCS-105, "DTC Logic"](#).

Is DTC detected?

- YES >> Replace BCM. Refer to [BCS-82, "Removal and Installation"](#)
- NO >> INSPECTION END

PCS

PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

PUSH-BUTTON IGNITION SWITCH

Component Function Check

INFOID:000000006658151

1.CHECK FUNCTION

1. Select "PUSH SW" in "Data Monitor" mode with CONSULT.
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-106. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006658152

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.)
Connector	Terminal		
M89	8	Ground	Battery voltage

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	
M61	100	M89	8	Existed

3. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M61	100		Not existed

Is the inspection result normal?

- YES >> Replace BCM. Refer to [BCS-82. "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.

PUSH-BUTTON IGNITION SWITCH

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

(+)		(-)	Voltage (V) (Approx.)
IPDM E/R			
Connector	Terminal		
E36	81	Ground	Battery voltage

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	
E36	81	M89	8	Existed

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E36	81		Not existed

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to [PCS-39. "Removal and Installation"](#).

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		
M89	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-107. "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:000000006658153

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

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

Push-button ignition switch		Condition	Continuity
Terminal			
4	8	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

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR

Description

INFOID:000000006658154

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

Component Function Check

INFOID:000000006658155

1.CHECK FUNCTION

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

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-109, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000006658156

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	Ground	Battery voltage
M89	3		

Is the inspection normal?

- YES >> GO TO 2.
- NO-1 >> Check 10 A fuse [No.7, 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	Ground	Battery voltage
M61	91		

Is the inspection normal?

- YES >> Replace BCM. Refer to [BCS-82, "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.

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D
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L
N
O
P

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR

< DTC/CIRCUIT DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M61	91	M89	7	Existed

3. Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M61	91		Not existed

Is the inspection normal?

YES >> Replace push-button ignition switch.

NO >> Repair or replace harness.

PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

SYMPTOM DIAGNOSIS

PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

Description

INFOID:000000006658157

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.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:000000006658158

1.PERFORM WORK SUPPORT

Perform “INSIDE ANT DIAGNOSIS” on Work Support of “INTELLIGENT KEY”.
Refer to [DLK-40, "DOOR LOCK : CONSULT Function \(BCM - DOOR LOCK\)"](#).

>> GO TO 2.

2.PERFORM SELF-DIAGNOSIS RESULT

Perform Self-Diagnosis Result of “BCM”.

Is DTC detected?

- YES >> Refer to [BCS-61, "DTC Index"](#).
- NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH

Check push-button ignition switch.

Refer to [PCS-106, "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.

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PCS

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

< SYMPTOM DIAGNOSIS >

[POWER DISTRIBUTION SYSTEM]

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

Description

INFOID:000000006658159

- Before performing the diagnosis in the following table, check “Work Flow”. Refer to [PCS-87. "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.
- One or more of Intelligent Keys with registered Intelligent Key ID is in the vehicle.

Diagnosis Procedure

INFOID:000000006658160

1. CHECK PUSH-BUTTON IGNITION SWITCH INDICATOR

Check push-button ignition switch indicator.

Refer to [PCS-109. "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.