SECTION PCS
POWER CONTROL SYSTEM

CONTENTS

PRECAUTION

PRECAUTIONS

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

INFOID:0000000012875121

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 SR and SB section of this Service Manual.

WARNING:

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

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

WARNING:

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

Precaution for Work

INFOID:0000000012875123

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:

- Water soluble dirt:

- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

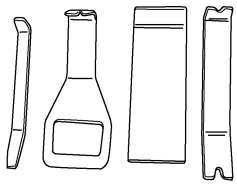
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000012875124

The actual shape of the tools may differ from those illustrated here.

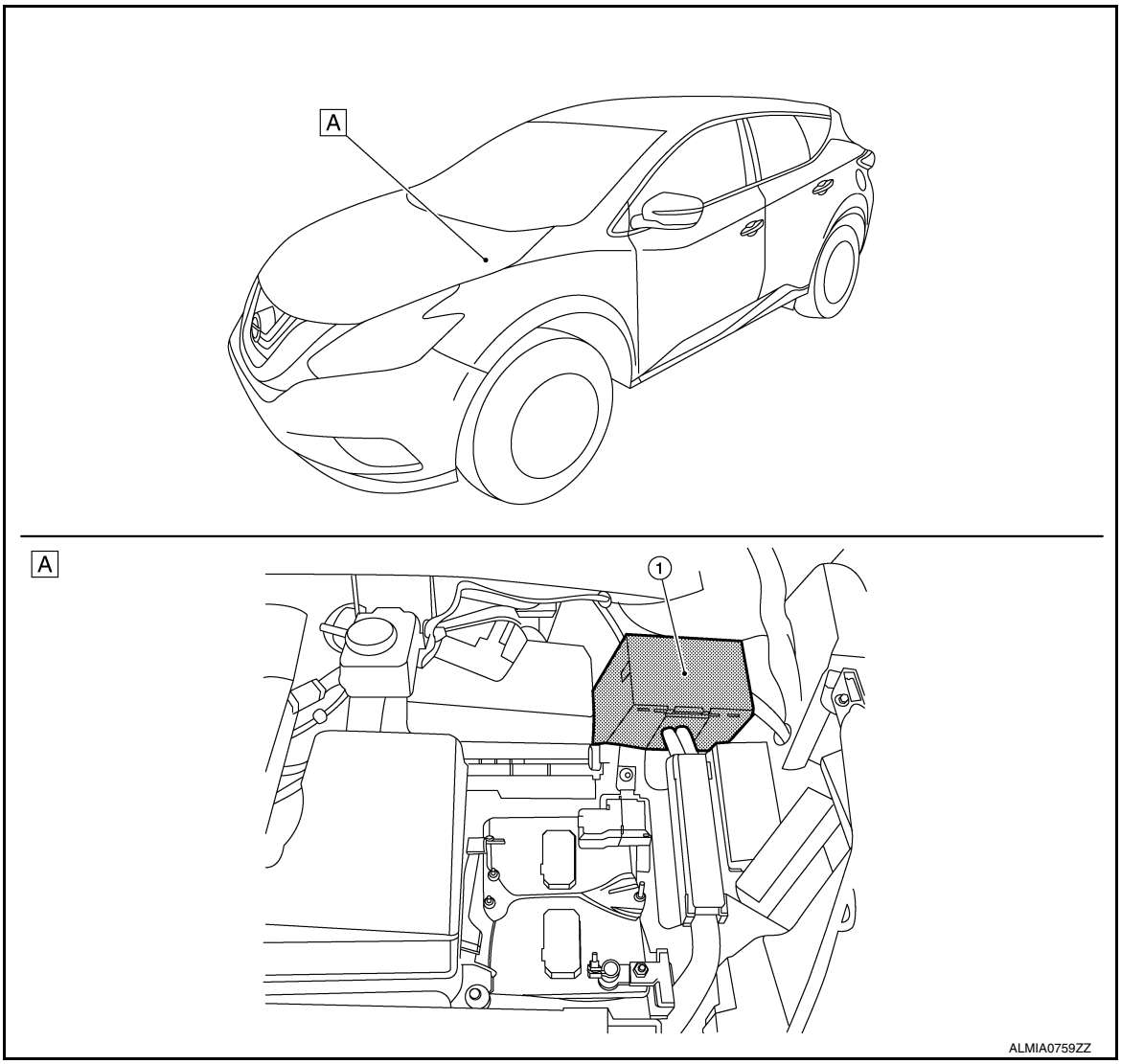
Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

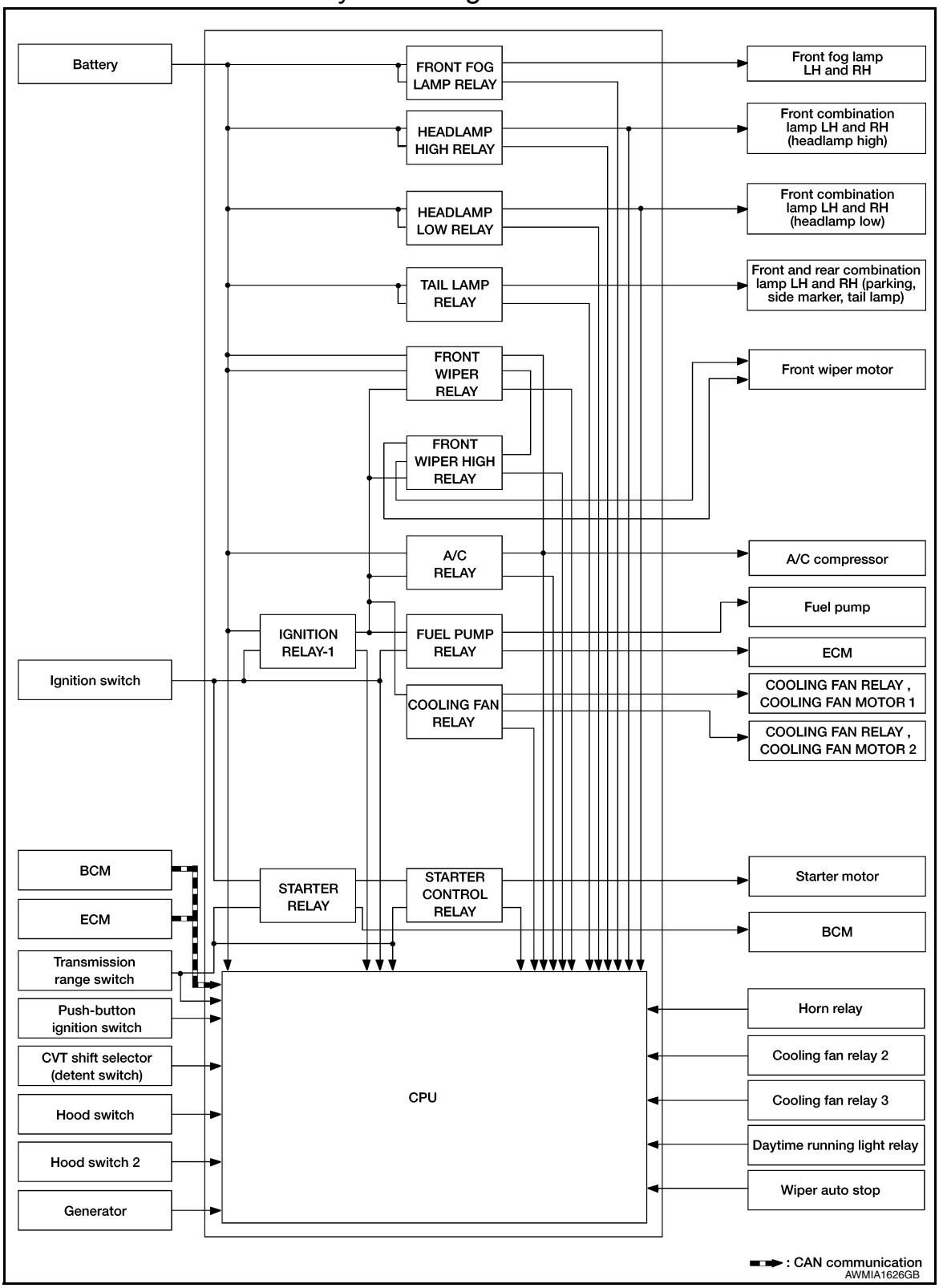
INFOID:0000000012875125



A Engine room left side
1. IPDM E/R

SYSTEM
RELAY CONTROL SYSTEM
RELAY CONTROL SYSTEM : System Diagram

INFOID:0000000012875126



RELAY CONTROL SYSTEM : System Description

INFOID:0000000012875127

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

CAUTION:

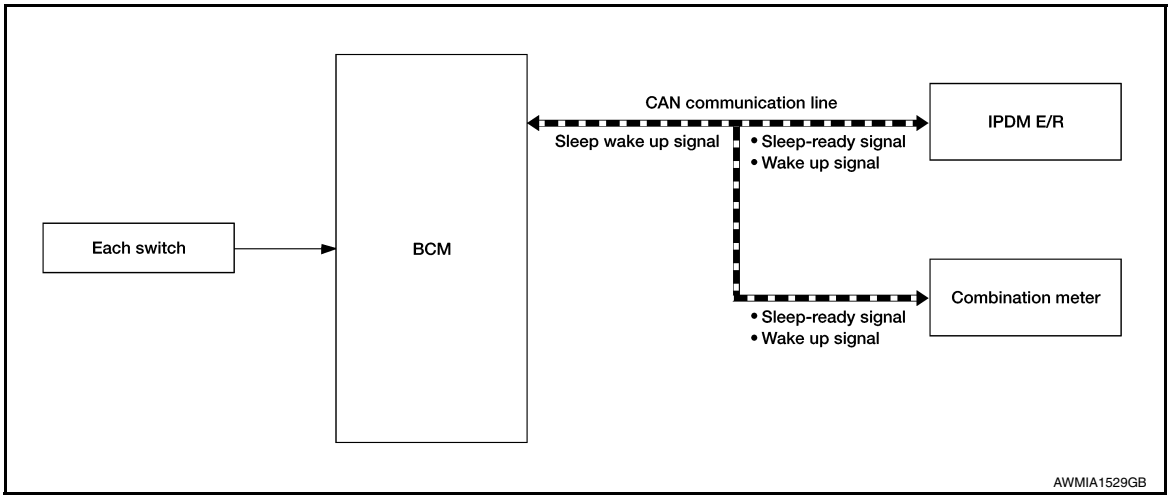
IPDM E/R integrated relays cannot be removed.

Control relay	Input/output	Transmit unit	Control part	Reference page
Front fog lamp relay	Front fog lamp request signal	BCM (CAN)	Front fog lamp	EXL-16 (LED headlamp) EXL-139 (Halogen headlamp)
• Headlamp low relay • Headlamp high relay	• Low beam request signal • High beam request signal	BCM (CAN)	• Headlamp low • Headlamp High	EXL-11 (LED headlamp) EXL-134 (Halogen headlamp)
Tail lamp relay	Position light request signal	BCM (CAN)	• Parking lamp • Side marker lamp • License plate lamp • Tail lamp	EXL-15 (LED headlamp) EXL-137 (Halogen headlamp)
• Front wiper relay • Front wiper high relay	Front wiper request signal	BCM (CAN)	Front wiper	WW-50
	Front wiper auto stop signal	Front wiper motor		
Ignition relay-1	Ignition switch ON signal	BCM (CAN)	Ignition relay-1	PCS-62
	Vehicle speed signal	Combination meter (CAN)		
	Push-button ignition switch	Push-button ignition switch		
Fuel pump relay	Fuel pump request signal	ECM	Fuel pump	EC-446
Cooling fan relay	Cooling fan request signal	ECM	Cooling fan motor	EC-533
A/C relay	A/C compressor request signal	ECM (CAN)	A/C compressor	HAC-81

POWER CONSUMPTION CONTROL SYSTEM

POWER CONSUMPTION CONTROL SYSTEM : System Diagram

INFOID:0000000012875128



POWER CONSUMPTION CONTROL SYSTEM : System Description

INFOID:0000000012875129

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.
- Front wiper fail-safe operation
- Outputting signals to actuators
- Switches or relays operating
- Auto active test is starting
- Emergency OFF
- Output requests are being received from control units via CAN communication.
- IPDM E/R stops CAN communication and enters the low power consumption mode when it receives a sleep wake up signal (sleep) from BCM and the sleep-ready conditions are fulfilled.

WAKE-UP OPERATION

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

IGNITION BATTERY SAVER LOGIC

If the ignition is ON for a period of time with the engine OFF, the IPDM E/R and BCM turn OFF to save the battery.

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:0000000012875130

AUTO ACTIVE TEST

Description

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

- Front wiper (LO, HI)
- Front fog lamps
- Parking lamps
- Side marker lamps
- Tail lamps
- License plate lamps
- Daytime running lamps
- Headlamps (LO, HI)
- A/C compressor
- Cooling fans (LO, HI)

Operation Procedure

CAUTION:

Do not start the engine.

NOTE:

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

NOTE:

- If auto active test mode cannot be actuated, check door switch system. Refer to DLK-202, "Component Function Check".
- When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)
2. Turn ignition switch OFF.
3. Turn the ignition switch ON, and within 20 seconds, press the front door switch LH 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. After a series of the following operations is repeated 3 times, auto active test is completed.

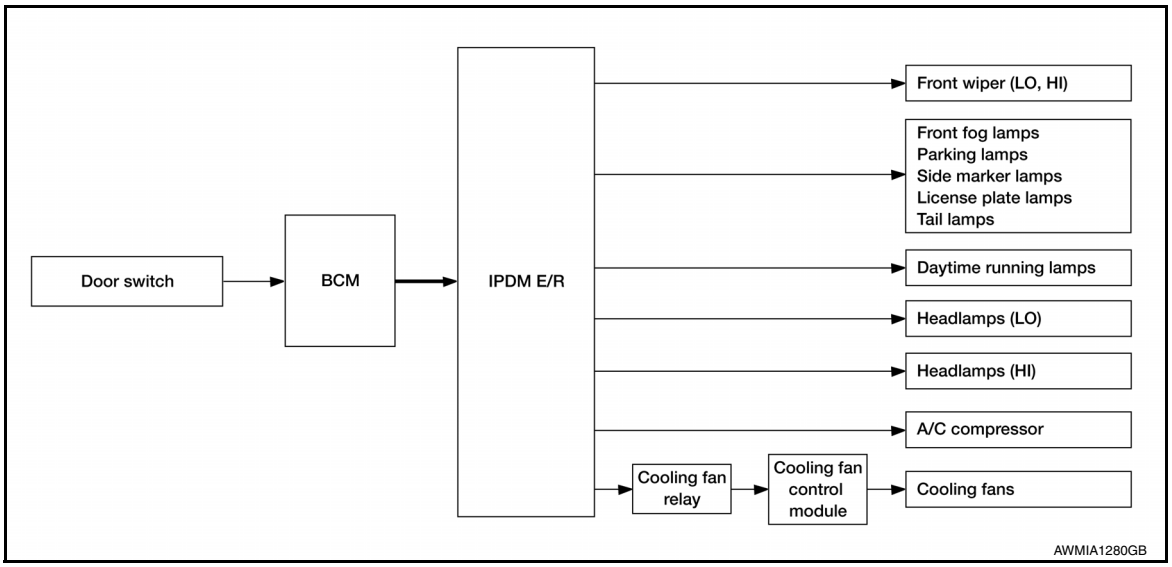
Inspection in Auto Active Test Mode

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

Operation sequence	Inspection Location	Operation
1	Front wiper	LO for 3 seconds → HI for 3 seconds
2	• Front fog lamps • Parking lamps • Side marker lamps • Tail lamps • License plate lamps	10 seconds
3	Daytime running lamps	10 seconds
4	Headlamps	LO ⇔ HI 5 times
5	A/C compressor	ON ⇔ OFF 5 times
6*	Cooling fans	LO for 5 seconds → HI for 5 seconds

*: Outputs duty ratio of 50% for 5 seconds → duty ratio of 100% for 5 seconds on the cooling fan control module.

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 mode

Symptom	Inspection contents		Possible cause
Any of the following components do not operate • Front fog lamps • Parking lamps • Side marker lamps • License plate lamps • Tail lamps • Daytime running lamps • Headlamp (HI, LO) • Front wiper	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
Cooling fans do not operate	Perform auto active test. Do the cooling fans operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Cooling fans • Harness or connectors between cooling fans and cooling fan control module • Cooling fan control module • Harness or connectors between cooling fan relay and cooling fan control module • Cooling fan relay • Harness or connectors between IPDM E/R and cooling fan relay • IPDM E/R

CONSULT Function (IPDM E/R)

INFOID:0000000012875131

CAUTION:

After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF → ON (for at least 5 seconds) → OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and a no-start condition.

APPLICATION ITEM

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

Direct Diagnostic Mode	Description
ECU Identification	The IPDM E/R part number is displayed.
Self Diagnostic Result	The IPDM E/R self diagnostic results are displayed.
Data Monitor	The IPDM E/R input/output data is displayed in real time.
Active Test	The IPDM E/R activates outputs to test components.

ECU IDENTIFICATION

The IPDM E/R part number is displayed.

SELF DIAGNOSTIC RESULT

Refer to PCS-21, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [%]	×	Indicates cooling fan speed signal received from ECM on CAN communication line.
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line.
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line.
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line.
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line.
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line.
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal.
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation.
IGN RLY1 -REQ [On/Off]		Indicates ignition switch ON signal received from BCM on CAN communication line.
IGN RLY [On/Off]	×	Indicates condition of ignition relay.
PUSH SW [On/Off]		Indicates condition of push-button ignition switch.
INTER/NP SW [On/Off]		Indicates condition of CVT shift position.
ST RLY CONT [On/Off]		Indicates starter relay status signal received from BCM on CAN communication line.
IHBT RLY -REQ [On/Off]		Indicates starter control relay signal received from BCM on CAN communication line.
ST/INHI RLY [Off/ ST /INHI]		Indicates condition of starter relay and starter control relay.
DETENT SW [On/Off]		Indicates condition of CVT shift selector (park position switch).
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line.
HOOD SW [On/Off]		Indicates condition of hood switch.
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line.
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line.
HOOD SW 2 [On/Off]		Indicates condition of hood switch 2.

ACTIVE TEST

Test item	Description
HORN	This test is able to check horn operation [On].
FRONT WIPER	This test is able to check wiper motor operation [Hi/Lo/Off].
MOTOR FAN	This test is able to check cooling fan operation [4/3/2/1].
EXTERNAL LAMPS	This test is able to check external lamp operation [Fog/Hi/Lo/Tail/Off].

ECU DIAGNOSIS INFORMATION

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Reference Value

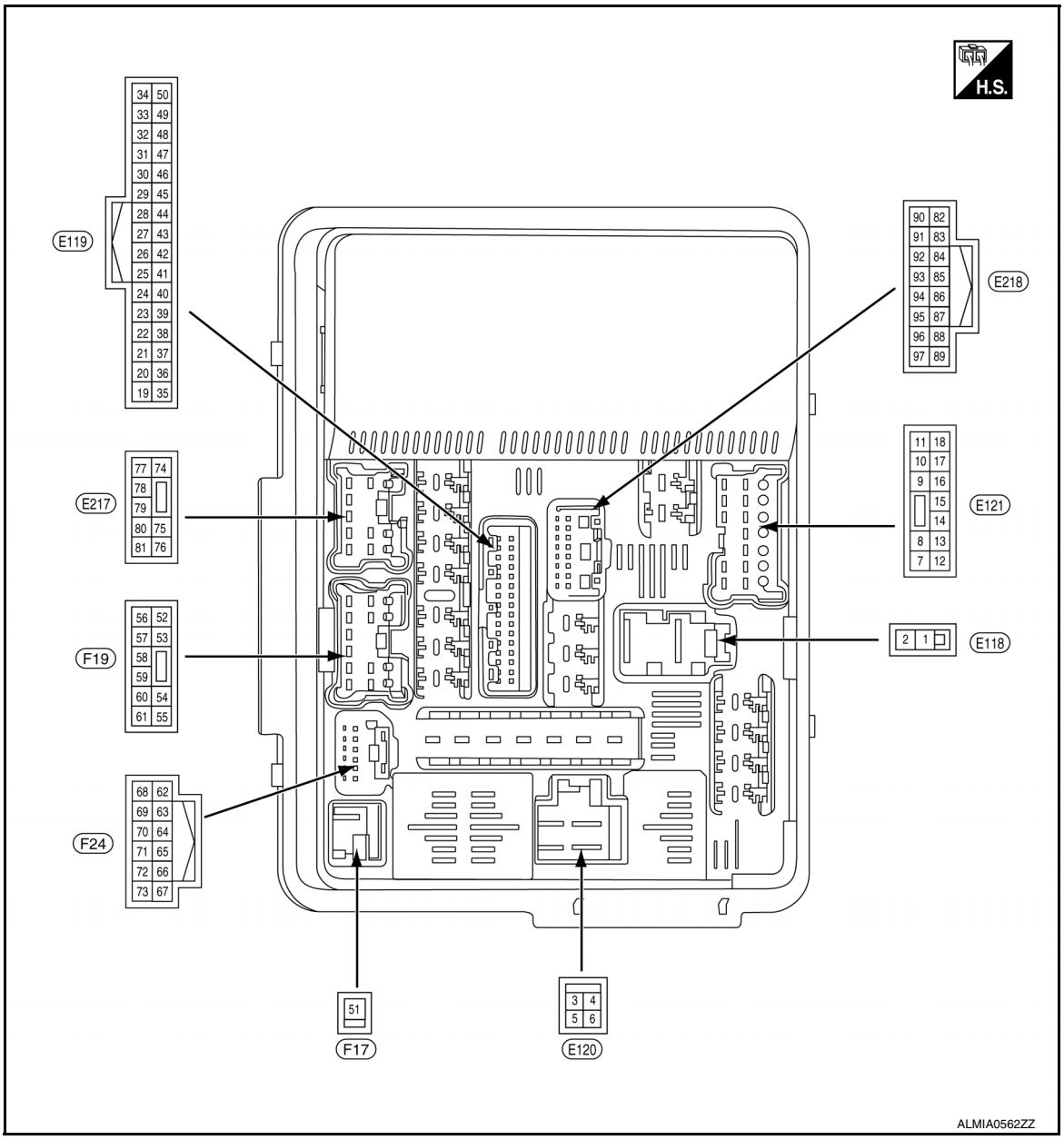
INFOID:0000000012875132

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
RAD FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	0 - 100 %
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND HI or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		• Front fog lamp switch ON • Daytime running light activated (Only for Canada models)	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	CVT selector lever in any position other than P or N	Off
		CVT selector lever in P or N position	On
ST RLY CONT	Ignition switch ON		Off
	At engine cranking		On
IHBT RLY -REQ	Ignition switch ON		Off
	At engine cranking		On

Monitor Item	Condition		Value/Status
ST/INHI RLY	Ignition switch ON		Off
	At engine cranking		ST →INHI
	The status of starter relay or starter control relay cannot be recognized by the battery voltage malfunction, etc. when the starter relay is ON and the starter control relay is OFF		UNKWN
DETENT SW	Ignition switch ON	• Press the selector button with CVT selector lever in P position • CVT selector lever in any position other than P	Off
	Release the CVT selector button with CVT selector lever in P position		On
DTRL REQ	DTRL OFF		Off
	DTRL ON		On
HOOD SW	Hood closed		Off
	Hood open		On
THFT HRN REQ	Not operated		Off
	• Panic alarm is activated • Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM		On
HORN CHIRP	Not operated		Off
	Door locking with Intelligent Key (horn chirp mode)		On
HOOD SW 2	Hood closed		Off
	Hood open		On

TERMINAL LAYOUT



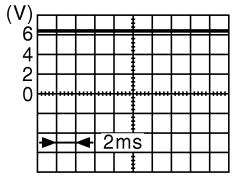
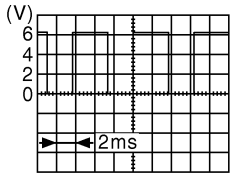
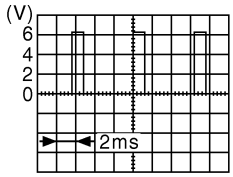
PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	–	Signal name	Input/ Output		
1 (R)	Ground	Fusible link main	Input	Ignition switch OFF	Battery voltage
2 (L)	Ground	Fusible link IPDM E/R	Input	Ignition switch OFF	Battery voltage
3 (G)	Ground	Fusible link ignition switch	Input	Ignition switch ON	Battery voltage
4 (P)	Ground	Motor fan 1	Output	Ignition switch OFF	0V
				Ignition switch ON	Battery voltage
6 (R)	Ground	Fusible link motor fan	Input	Ignition switch OFF	0V
				Ignition switch ON	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	−	Signal name	Input/ Output			
7 (B)	Ground	Ground (Power)	—	Ignition switch ON		0V
9 (G)	Ground	Tail RH	Output	Ignition switch ON	Lighting switch OFF	0V
					Lighting switch 1ST	Battery voltage
10 (L)	Ground	Tail LH	Output	Ignition switch ON	Lighting switch OFF	0V
					Lighting switch 1ST	Battery voltage
11 (Y)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0V
					Front wiper switch LO	Battery voltage
13 (L)	Ground	ECM battery	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
14 (LG)	Ground	Daytime running lamps	Output	Ignition switch OFF		Battery voltage
15 (R)	Ground	Fuel pump	Output	Approximately 1 second or more after turning the ignition switch ON		0V
				• Approximately 1 second after turning the ignition switch ON • Engine running		Battery voltage
18 (L)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0V
					Front wiper switch HI	Battery voltage
19 (SB)	Ground	Power steering control unit	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
21 (L)	Ground	BCM ignition switch	Output	Ignition switch ON		Battery voltage
22 (Y)	Ground	Horn relay	Input	The horn is deactivated		Battery voltage
				The horn is activated		0V
23 (Y)	Ground	Horn switch	Input	The horn is deactivated		Battery voltage
				The horn is activated		0V
27 (BG)	Ground	Fan motor relay mid	Input	Ignition switch OFF or ACC		0V
				Ignition switch ON		0.7V
28 (P)	—	CAN-low	Input/ Output	—		—
29 (L)	—	CAN-high	Input/ Output	—		—
31 (BG)	Ground	Detent switch	Input	Ignition switch ON	Press the CVT selector button (CVT selector lever P)	Battery voltage
					• CVT selector lever in any position other than P • Release the CVT selector button (CVT selector lever P)	0V
33 (R)	Ground	Starter control	Input	Ignition switch ON	CVT selector lever in any position other than P or N	0V
					CVT selector lever P or N	Battery voltage
34 (BR)	Ground	Wiper autostop	Input	Ignition switch ON	Front wiper stop position	0V
					Any position other than front wiper stop position	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
35 (BR)	Ground	ABS actuator and electric unit (control unit)	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
36 (W)	Ground	Cooling fan relay -2, 3	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
37 (W)	Ground	Transmission range switch signal	Input	Ignition switch ON	CVT selector lever in any position other than P or N position	0V
					CVT selector lever in P or N position	Battery voltage
38 (P)	Ground	Push start switch	Input	Press the push-button ignition switch		0V
				Release the push-button ignition switch		Battery voltage
41 (B)	Ground	Ground (signal)	—	Ignition switch ON		0V
43 (L)	Ground	Ignition signal*	Input	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		0V
45 (LG)	Ground	Power distribution sensor signal-E/R	—	• Ignition switch ON (READY) • Both A/C switch and blower motor switch ON (A/C compressor operates)		1.0 - 4.0V
47 (Y)	Ground	Power distribution sensor power-E/R	—	Ignition switch ON		5V
48 (V)	Ground	Power distribution sensor ground-E/R	—	Ignition switch ON		0V
49 (BG)	Ground	Ambient sensor signal-E/R	—	Ignition switch ON		5V
50 (G)	Ground	Ambient sensor ground-E/R	—	Ignition switch ON		0V
51 (W)	Ground	Starter motor	Output	At engine cranking		5V
52 (W)	Ground	O2 sensor #2	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
53 (W)	Ground	O2 sensor #1	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
54 (L)	Ground	Injector #1	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
55 (W)	Ground	Ignition coil	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0V
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		Battery voltage
56 (P)	Ground	A/C compressor	Output	Engine running	A/C compressor OFF	0V
					A/C compressor ON (A/C compressor is operating)	Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
57 (R)	Ground	Electronic throttle control	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0V
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		Battery voltage
58 (GR)	Ground	ECM battery	Output	Ignition switch OFF		Battery voltage
59 (L)	Ground	Engine solenoid	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0V
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		Battery voltage
60 (LG)	Ground	Injector #2	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
61 (Y)	Ground	Transmission control module	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
63 (L)	Ground	Inhibit switch	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
64 (LG)	Ground	Ignition relay power supply	Output	Ignition switch OFF		0V
				Ignition switch ON		Battery voltage
65 (G)	Ground	Throttle control motor relay	Output	Ignition switch ON → OFF		0 -1.0V ↓ Battery voltage ↓ 0V
				Ignition switch ON		0 - 1.0V
66 (G)	Ground	N/P switch	Input	Ignition switch ON	CVT selector lever in P or N position	Battery voltage
					CVT selector lever in any position other than P or N position	0V
69 (W)	Ground	Fuel pump relay	Output	• Approximately 1 second after turning the ignition switch ON • Engine running		0 - 1.0V
				Approximately 1 second or more after turning the ignition switch ON		Battery voltage

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
71 (LG)	Ground	Alternator C	Output	Ignition switch ON		 JPMIA0001GB 6.3V
				40% is set on “Active test”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0002GB 3.8V
				80% is set on “Active test”, “ALTERNATOR DUTY” of “ENGINE”		 JPMIA0003GB 1.4V
72 (V)	Ground	ECM relay (Self shut-off)	Output	Ignition switch OFF (For a few seconds after turning ignition switch OFF)		Battery voltage
				• Ignition switch ON • Ignition switch OFF (More than a few seconds after turning ignition switch OFF)		0 - 1.5V
74 (W)	Ground	Washer motor	Output	Ignition switch ON		Battery voltage
75[1] (L/W)	Ground	Headlamp LO RH	Output	Ignition switch ON	Lighting switch OFF	0V
					Lighting switch 2ND	Battery voltage
75[2] (SB)	Ground	Headlamp LO RH	Output	Ignition switch ON	Lighting switch OFF	0V
					Lighting switch 2ND	Battery voltage
76 (L)	Ground	Headlamp LO LH	Output	Ignition switch ON	Lighting switch OFF	0V
					Lighting switch 2ND	Battery voltage
78 (W)	Ground	Front fog lamp RH	Output	Ignition switch ON	Fog lamp switch OFF	0V
					Fog lamp switch ON	Battery voltage
79 (L)	Ground	Front fog lamp LH	Output	Ignition switch ON	Fog lamp switch OFF	0V
					Fog lamp switch ON	Battery voltage
80[1] (G/W)	Ground	Headlamp HI RH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0V
80[2] (LG)	Ground	Headlamp HI RH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/ Output			
81 (G)	Ground	Headlamp HI LH	Output	Ignition switch ON	• Lighting switch HI • Lighting switch PASS	Battery voltage
					Lighting switch OFF	0V
82 (W)	Ground	Power distribution sensor signal-fem	—	• Ignition switch ON (READY) • Both A/C switch and blower motor switch ON (electric compressor operates)		1.0 - 4.0V
83 (G)	Ground	Power distribution sensor power-fem	—	Ignition switch ON		5V
85 (Y/V)	Ground	Daytime running lamps relay	Output	Ignition switch ON	Daytime light system active	Battery voltage
				Ignition switch ON	Daytime light system inactive	0V
86 (B)	Ground	Power distribution sensor ground-fem	—	Ignition switch ON		0V
87 (BR)	Ground	Ambient sensor signal-fem	—	Ignition switch ON		5V
90 (GR)	Ground	Clearance lamps	Output	Ignition switch ON	Lighting switch 1ST	Battery voltage
					Lighting switch OFF	0V
94 (GW)	Ground	Hood switch 2	Input	Ignition switch ON	Hood closed	0V
					Hood open	Battery voltage
95 (O)	Ground	Ambient sensor ground-fem	—	Ignition switch ON		0V
96 (R)	Ground	Hood switch	Input	Ignition switch ON	Hood closed	0V
					Hood open	Battery voltage

*: Ignition battery saver logic turns OFF the IPDM E/R and BCM if the ignition is ON for a period of time with the engine OFF.

1: With halogen headlamps.

2:With LED headlamps.

Fail Safe

INFOID:0000000012875133

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	• Outputs the pulse duty signal (PWM signal) 100% when the ignition switch is turned ON. • Outputs the pulse duty signal (PWM signal) 0% 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 in operation
Headlamp	• Turns ON the headlamp low relay when the ignition switch is turned ON. • Turns OFF the headlamp low relay when the ignition switch is turned OFF. • Headlamp high relay OFF
• Parking lamps • Side marker lamps • License plate lamps • Tail lamps	• 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	• 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.
Horn	Horn OFF
Ignition relay	The status just before activation of fail-safe is maintained.

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.

DTC	Ignition switch	Ignition relay	Tail lamp relay
—	ON	ON	—
—	OFF	OFF	—
B2098: IGN RELAY ON	OFF	ON	ON (10 minutes)
B2099: IGN RELAY OFF	ON	OFF	—

NOTE:

The tail lamp turns OFF when the ignition switch is turned ON.

FRONT WIPER CONTROL

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

Ignition switch	Front wiper switch	Auto stop signal
ON	OFF	Front wiper stop position signal cannot be input 10 seconds.
	ON	The 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:0000000012875134

CONSULT display	Fail-safe	TIME[NOTE]		Refer to
No DTC is detected. Further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39	PCS-28
U1010: CONTROL UNIT (CAN)	×	CRNT	1 – 39	PCS-30

CONSULT display	Fail-safe	TIME[NOTE]		Refer to
B2098: IGN RELAY ON	×	CRNT	1 – 39	PCS-31
B2099: IGN RELAY OFF	—	CRNT	1 – 39	PCS-33
B210B: INHIBIT relay ON stuck failure	—	CRNT	1 – 39	SEC-67
B210C: INHIBIT relay OFF stuck failure	—	CRNT	1 – 39	SEC-68
B210D: STARTER relay ON stuck failure	—	CRNT	1 – 39	SEC-69
B210E: STARTER relay OFF stuck failure	—	CRNT	1 – 39	SEC-71
B210F: Interlock/NP switch ON stuck failure	—	CRNT	1 – 39	SEC-73
B2110: Interlock/NP switch OFF stuck failure	—	CRNT	1 – 39	SEC-76

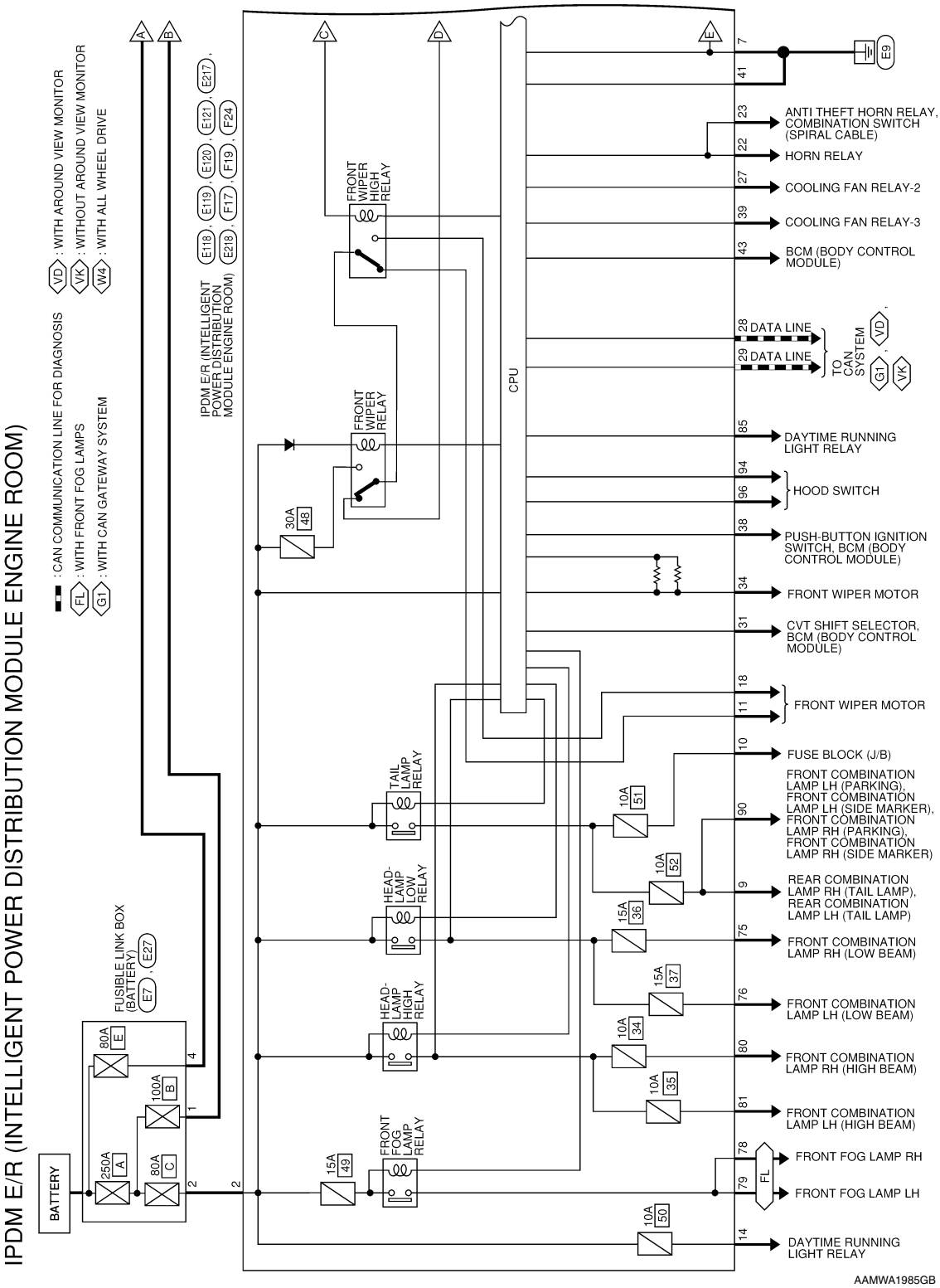
NOTE:
The details of TIME display are as follows.
- CRNT: The malfunctions that are detected now
- 1 - 39: The number is indicated when it is normal at present and a malfunction was detected in the past. It increases like 0 → 1 → 2 ··· 38 → 39 after returning to the normal condition whenever IGN OFF → ON. It is fixed to 39 until the self-diagnosis results are erased if it is over 39. It returns to 0 when a malfunction is detected again in the process.

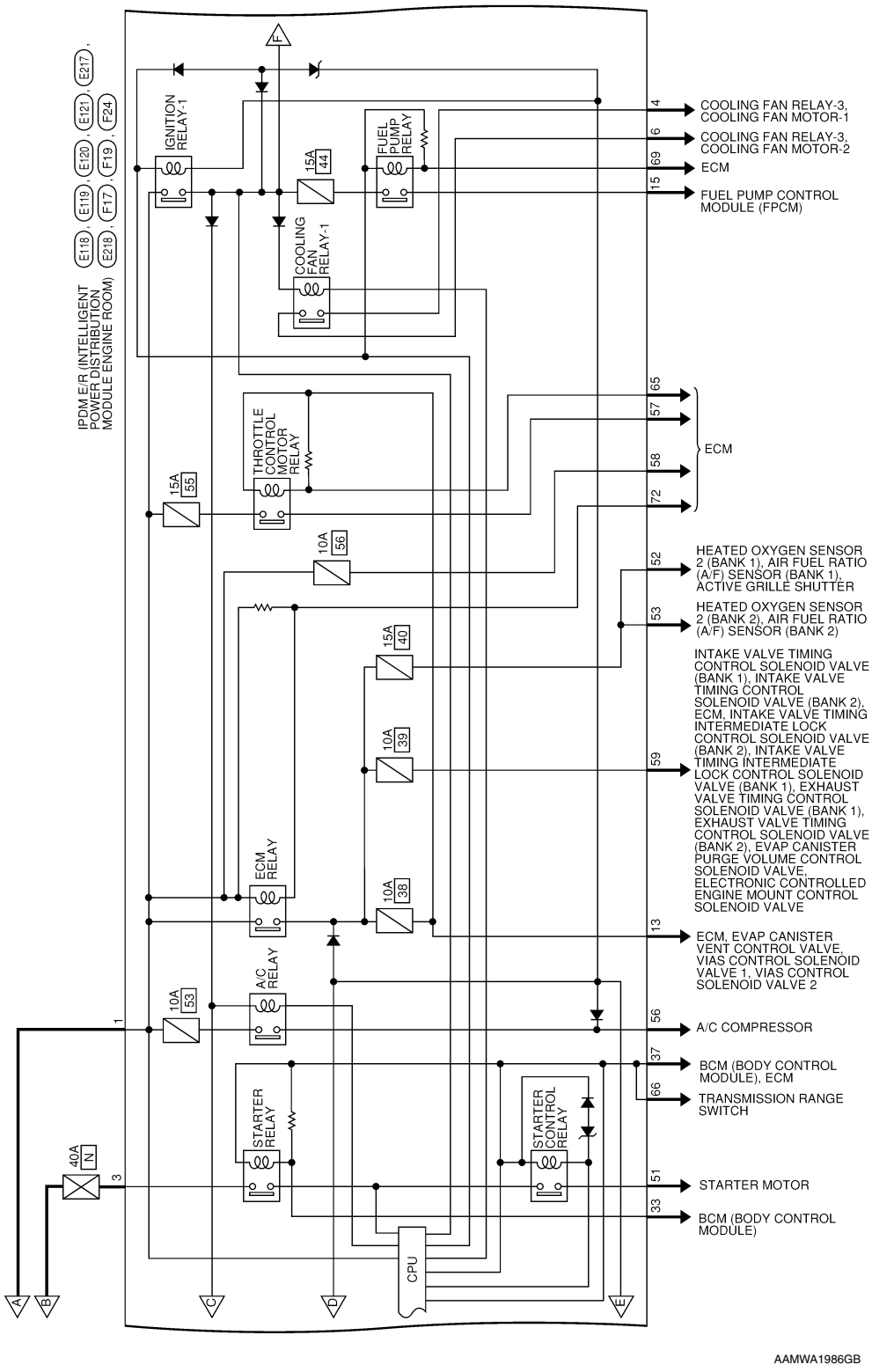
WIRING DIAGRAM

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Wiring Diagram

INFOID:0000000012875135





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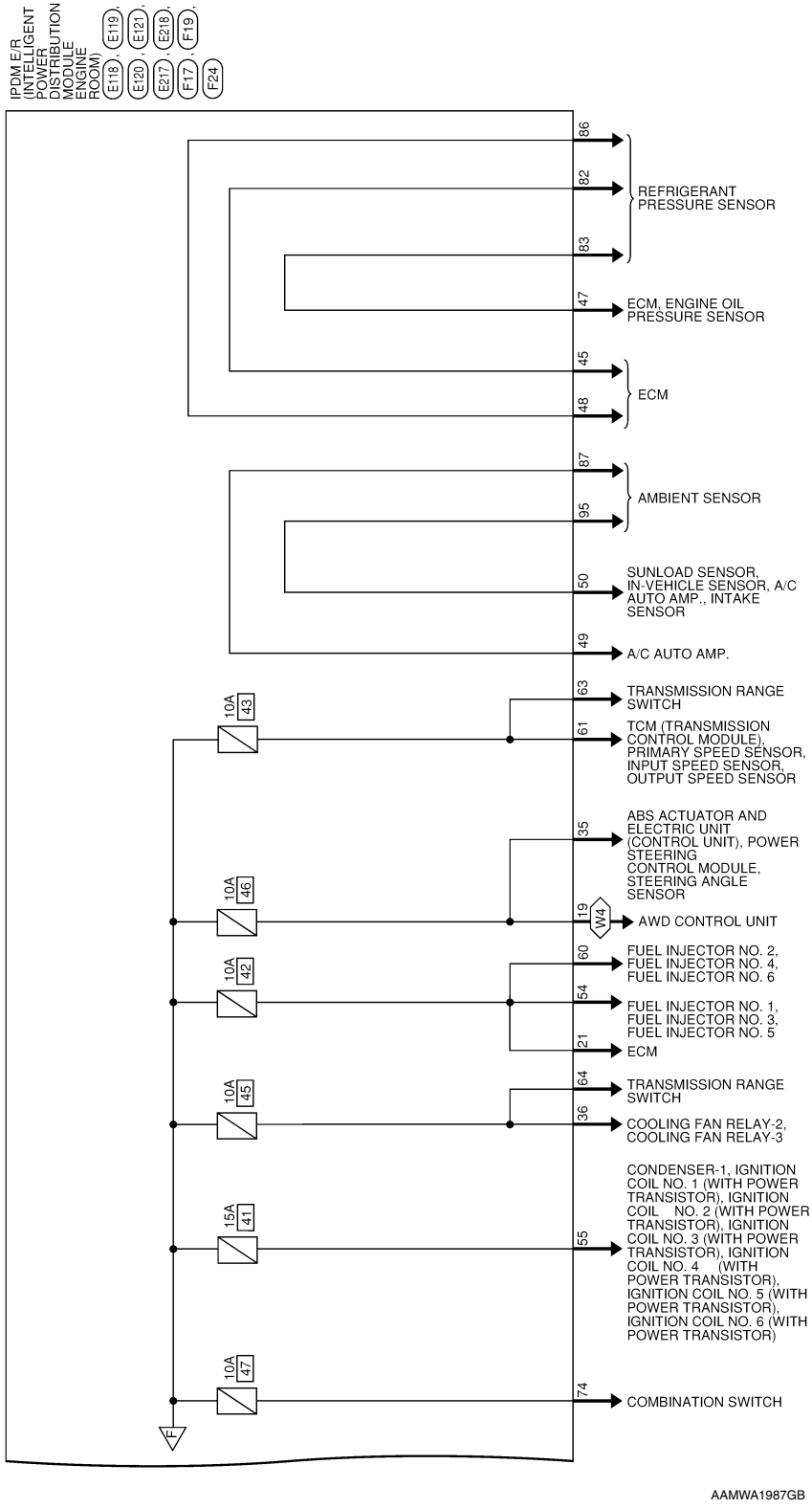

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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) CONNECTORS

Connector No.	E7
Connector Name	FUSIBLE LINK BOX (BATTERY)
Connector Type	L02FGY-MC
Connector Color	GRAY

Terminal No.	Color of Wire	Signal Name
4	R	–

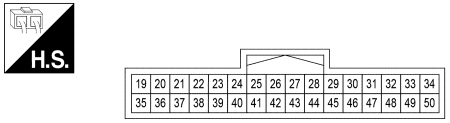
Connector No.	E27
Connector Name	FUSIBLE LINK BOX (BATTERY)
Connector Type	L02FBR-MC-B
Connector Color	BROWN

Terminal No.	Color of Wire	Signal Name
1	W	–
2	L	–

Connector No.	E118
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	L02FB-MC
Connector Color	BLACK

Terminal No.	Color of Wire	Signal Name
1	R	F/L MAIN
2	L	F/L USM

Connector No.	E119
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH32FW-NH
Connector Color	WHITE

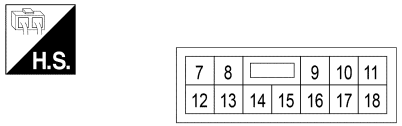


Terminal No.	Color of Wire	Signal Name
19	SB	SUB ECU
20	–	–
21	L	BCM IGNSW
22	Y	HORN RLY
23	Y	HORN SW
24	–	–
25	–	–
26	–	–
27	BG	MOTOR FAN RLY MID
28	P	CAN-L
29	L	CAN-H
30	–	–
31	BG	DETENT SW
32	–	–
33	R	START CONT
34	BR	WIPER AUTOSTOP
35	BR	ABS ECU
36	W	START IG-E/R
37	W	CLUTCH I/L SW
38	P	PUSH START SW
39	G	MOTOR FAN RLY HI
40	–	–
41	B	S-GND
42	–	–
43	L	IGN SIGNAL
44	–	–
45	LG	PD SENS SIG-E/R
46	–	–
47	Y	PD SENS PWR-E/R
48	V	PD SENS GND-E/R
49	BG	AMB SENS SIG-E/R
50	G	AMB SENS GND-E/R

Connector No.	E120
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M04FW-LC
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
3	G	F/L IGNSW
4	P	MOTOR FAN 1
5	–	–
6	R	F/L MOTOR FAN

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
7	B	P-GND
8	–	–
9	G	TAIL RH
10	L	TAIL LH
11	Y	FR WIPER LO
12	–	–
13	L	ECM VB
14	LG	DTRL
15	R	FUEL PUMP
16	–	–
17	–	–
18	L	FR WIPER HI

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Connector No.	E217
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS08FW-CS
Connector Color	WHITE

H.S.

74		75	76
77	78	79	80	81

Terminal No.	Color of Wire	Signal Name
74	W	WASH MTR
75	L/W	HEADLAMP LO RH (WITH HALOGEN HEADLAMPS)
75	SB	HEADLAMP LO RH (WITH LED HEADLAMPS)
76	L	HEADLAMP LO LH
77	–	–
78	W	FR FOG LAMP RH
79	L	FR FOG LAMP LH
80	G/W	HEADLAMP HI RH (WITH HALOGEN HEADLAMPS)
80	LG	HEADLAMP HI RH (WITH LED HEADLAMPS)
81	G	HEADLAMP HI LH

Connector No.	E218
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH16FW-NH
Connector Color	WHITE

H.S.

82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97

Terminal No.	Color of Wire	Signal Name
82	W	PD SENS SIG-FEM
83	G	PD SENS PWR-FEM
84	–	–
85	Y/V	DTRL RLY
86	B	PD SENS GND-FEM
87	BR	AMB SENS SIG-FEM
88	–	–
89	–	–
90	GR	CLEARANCE
91	–	–
92	–	–

93	–	–
94	G/W	HOODSW 2
95	O	AMB SENS GND-FEM
96	G/O	HOODSW
97	–	–

Connector No.	F17
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M01FB-LC
Connector Color	BLACK

H.S.

51

Terminal No.	Color of Wire	Signal Name
51	W	STARTER MOTOR

Connector No.	F19
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS10FW-CS
Connector Color	WHITE

H.S.

52	53		54	55
56	57	58	59	60	61

Terminal No.	Color of Wire	Signal Name
52	W	O2SENS #2
53	W	O2SENS #1
54	L	INJECTOR #1
55	W	IGN COIL
56	P	A/C COMP
57	R	ETC
58	GR	ECM BAT
59	L	ENG SOL
60	LG	INJECTOR #2
61	Y	AT ECU

Connector No.	F24
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH12FW-NH
Connector Color	WHITE

H.S.

62	63	64	65	66	67
68	69	70	71	72	73

Terminal No.	Color of Wire	Signal Name
62	–	–
63	L	INHIBIT SW
64	LG	START IG-EGI
65	G	ETC RLY CONT
66	G	NPSW
67	–	–
68	–	–
69	W	FPR
70	–	–
71	–	–
72	V	SSOFF
73	–	–

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DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000012875136

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 units, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-37, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

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	• Outputs the pulse duty signal (PWM signal) 100%when the ignition switch is turned ON. • Outputs the pulse duty signal (PWM signal) 0%when the ignition switch is turned OFF.
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%.

If No CAN Communication Is Available With BCM

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

Control part	Fail-safe operation
Horn	Horn relay OFF
Ignition relay	The status just before activation of fail-safe is maintained.
Starter motor	Starter control relay OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC “U1000” displayed?

YES >> Refer to PCS-29, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-42, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000012875137

1.PERFORM SELF DIAGNOSIS

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

Is DTC “U1000” displayed?

YES >> Refer to LAN-21, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-42, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000012875138

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1010	CONTROL UNIT (Control unit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- IPDM E/R

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC “U1000” displayed?

YES >> Refer to PCS-30, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-42, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000012875139

1.REPLACE IPDM E/R

Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".

>> Inspection End.

B2098 IGNITION RELAY ON STUCK

DTC Description

INFOID:0000000012875140

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

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

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

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B2098	IGN RELAY ON CIRC (Ignition relay ON circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	–
		Threshold	–
		Diagnosis delay time	1 second or more

Possible Cause

- IPDM E/R.
- Harness or connectors (ignition relay circuit short).

FAIL-SAFE

Turns ON the tail lamp relay for 10 minutes.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Turn ignition switch ON.
2. Turn ignition switch OFF and wait 1 second or more.
3. Check DTC in “Self Diagnostic Result” mode of “IPDM E/R”.

Is DTC detected?

YES >> Refer to PCS-31, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-42, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000012875141

1.SELF DIAGNOSTIC RESULT

CONSULT
1. Check “Self Diagnostic Result” mode of “IPDM E/R”.

What is the display history of DTC “B2098”?

“CRNT”>> GO TO 2.
“PAST” >> GO TO 5.

2.CHECK IGNITION RELAY CONTROL CIRCUIT VOLTAGE 1

1. Turn ignition switch ON.
2. Check voltage between IPDM E/R harness connector E119 and ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E119	43	Ground	0 V

Is the inspection result normal?

YES >> GO TO 4.
NO >> GO TO 3.

3. CHECK IGNITION RELAY CONTROL CIRCUIT VOLTAGE 2

1. Disconnect IPDM E/R connector.
2. Turn ignition switch ON.
3. Check voltage between IPDM E/R harness connector E119 and ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E119	43	Ground	0 V

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> Repair or replace harness.

4. CHECK IGNITION RELAY CONTROL CIRCUIT

1. Disconnect IPDM E/R connector.
2. Check continuity between IPDM E/R harness connector E119 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E119	43		No

Is the inspection result normal?

YES >> Perform the diagnosis procedure for DTC B26F2. Refer to PCS-31, "DTC Description".
NO >> Repair or replace harness.

5. CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> Inspection End.

B2099 IGNITION RELAY OFF STUCK

DTC Description

INFOID:0000000012875142

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B2099	IGN RELAY OFF CIRC (Ignition relay OFF circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	IPDM E/R circuit (Terminals 1 and 7)
		Threshold	Less than 8.8V
		Diagnosis delay time	1 second or more

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

POSSIBLE CAUSE

- IPDM E/R
- Fuse
- Battery

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT
1. Turn ignition switch ON.
2. Select “Self Diagnostic Result” mode of “IPDM E/R”.
3. Check DTC.

Is DTC detected?

YES >> Refer to PCS-33, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-42, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000012875143

1.CHECK FUSE

Check that all of the fuses installed on the downstream of the contact point side circuit of the ignition relay in IPDM E/R are not blown.

Is the inspection result normal?

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

2.CHECK IGNITION RELAY CONTROL CIRCUIT VOLTAGE

1. Turn ignition switch ON
2. Check voltage between IPDM E/R harness connector E119 and ground.

(+)		(–)	Voltage (Approx.)
IPDM E/R			
Connector	Terminal		
E119	43	Ground	0V

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".

3.CHECK BATTERY VOLTAGE

Check battery voltage.

Which is the measurement result?

More than 12.4 V>>GO TO 4.
Less than 12.4 V>>Perform battery inspection. Refer to PG-103, "How to Handle Battery".

4.CHECK INTERMITTENT INCIDENT

Refer to GI-42, "Intermittent Incident".

>> Inspection End.

POWER SUPPLY AND GROUND CIRCUIT

Diagnosis Procedure

INFOID:0000000012875144

Regarding Wiring Diagram information, refer to PCS-23, "Wiring Diagram".

1. CHECK FUSIBLE LINKS

Check that the following fusible links are not blown.

Signal name	Fusible link No.
Battery power supply	E (80A)
	A (250A), C (80A)
	A (250A), B (100A), N (40A)

Is the fusible link blown?

YES >> Replace the blown fusible link after repairing the affected circuit.
NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect IPDM E/R connectors E118 and E120.
2. Check voltage between IPDM E/R connectors and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E118	1	—	Battery voltage
	2		
E120	3		

Is the inspection result normal?

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

3. CHECK GROUND CIRCUIT

1. Disconnect IPDM E/R connectors E119 and E121.
2. Check continuity between IPDM E/R connectors and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E121	7	—	Yes
E119	41		

Is the inspection result normal?

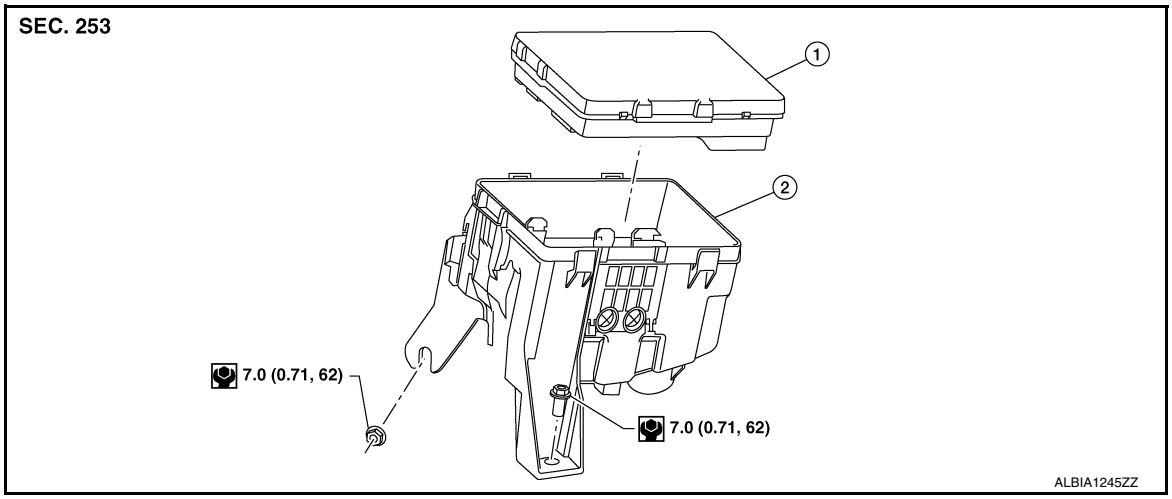
YES >> Inspection End.
NO >> Repair or replace harness or connectors.

REMOVAL AND INSTALLATION

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

Exploded View

INFOID:0000000012875145



1. IPDM E/R
2. IPDM E/R Case

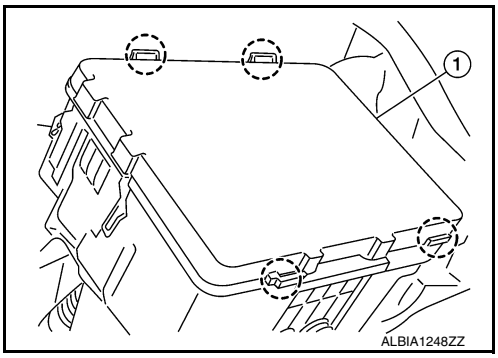
Removal and Installation

INFOID:0000000012875146

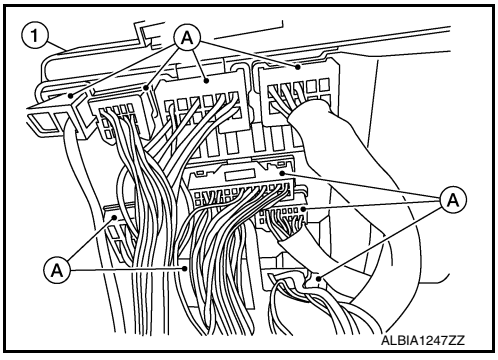
CAUTION:
- **IPDM E/R integrated relays are not serviceable parts, and must not be removed from the unit.**
- **Do not use a unit which has been dropped.**

REMOVAL

1. Disconnect the negative battery terminal. Refer to PG-112, "Removal and Installation".
2. Release the pawls and separate the IPDM E/R (1) from the case.
   ◌: Pawl



3. Disconnect all harness connectors (A) from the IPDM E/R (1).



INSTALLATION

Installation is in the reverse order of removal.

PRECAUTION

PRECAUTIONS

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

INFOID:0000000012875147

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 SR and SB section of this Service Manual.

WARNING:

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

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

WARNING:

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

Precaution for Work

INFOID:0000000012875148

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:

- Water soluble dirt:

- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

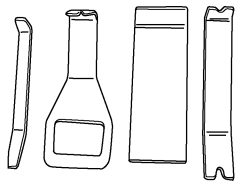
PREPARATION

PREPARATION

Special Service Tool

INFOID:0000000012875149

The actual shape of the tools may differ from those illustrated here.

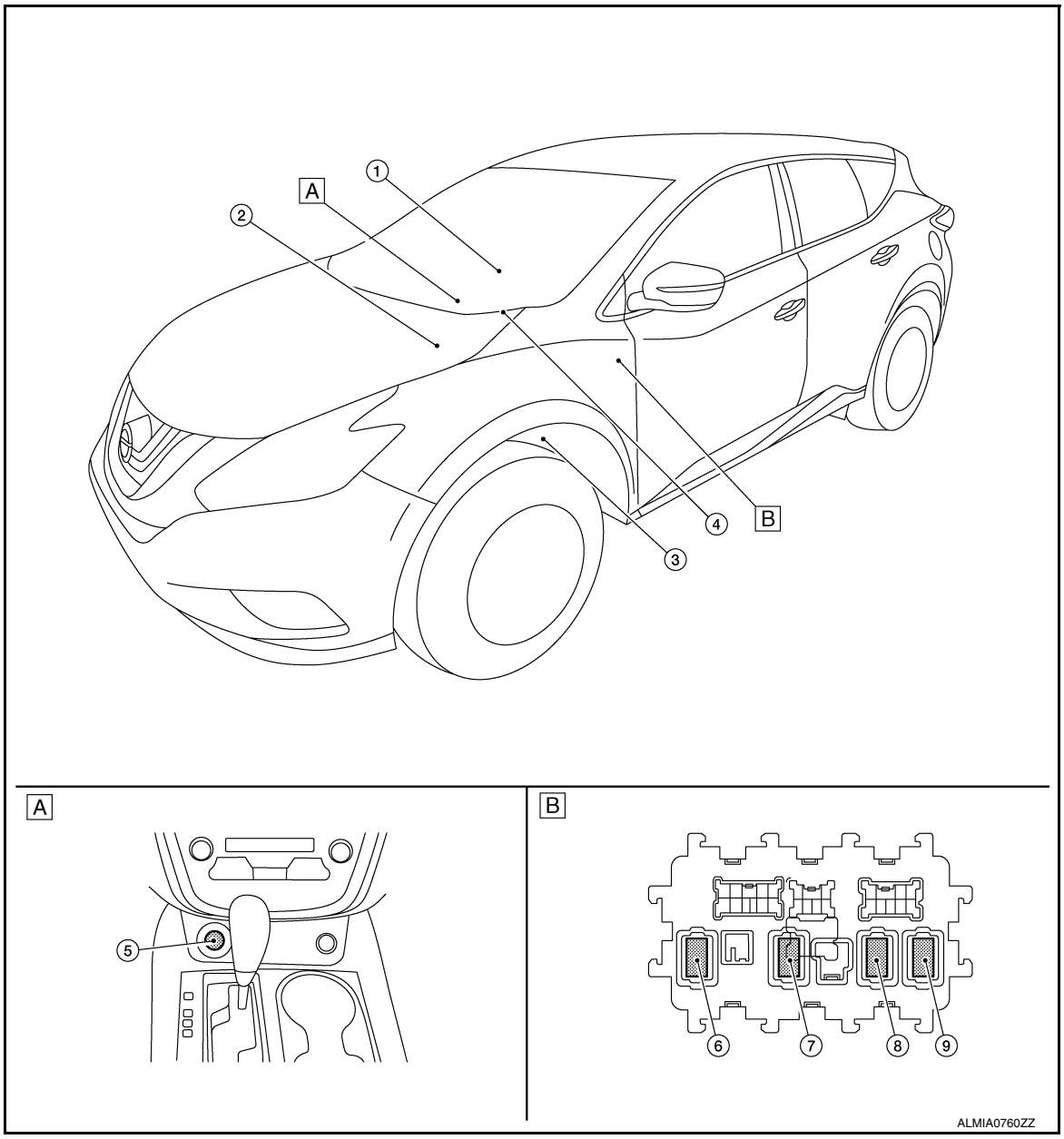
Tool number (TechMate No.) Tool name	Description
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:0000000012875150



A. Front of center console

B. Instrument lower panel LH

No.	Component	Function
1.	Push-button ignition switch	Refer to PCS-41, "Push-button Ignition Switch".
2.	IPDM E/R	• 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-5, "Component Parts Location" for detailed installation location.

No.	Component	Function
3.	BCM	• 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-4, "BODY CONTROL SYSTEM : Component Parts Location" 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-183, "Stop Lamp Switch".
5.	CVT shift selector	CVT shift selector detects shift lever status, transmits detention switch signal to BCM. Refer to TM-19, "SHIFT LOCK SYSTEM : Component Parts Location" for detailed installation location.
6.	Ignition relay-2 (in fuse block)	• Ignition relay-2 is controlled by BCM. • Ignition relay-2 supplies ignition ON power supply or ignition ON signal to each ECU and system when ignition is turned ON. • BCM compares status of ignition relay-2 control signal and ignition position judged by BCM. • BCM monitors ignition relay-2 operating status by ignition relay-2 feedback signal.
7.	Front blower motor relay (in fuse block)	• Front blower motor relay is controlled by BCM. • Front blower motor supplies ignition ON power supply or ignition ON signal to air conditioning system when ignition is turned ON. • BCM compares status of front blower motor relay control signal and ignition position judged by BCM.
8.	Accessory relay-1 (in fuse block)	• Accessory relay-1 is controlled by BCM. • Accessory relay-1 supplies accessory power supply or ignition ON signal to each ECU when ignition is turned ON. • BCM compares status of accessory relay-1 control signal, and ignition position judged by BCM.
9.	Rear window defogger relay (in fuse block)	Refer to DEF-4, "Component Parts Location".

Push-button Ignition Switch

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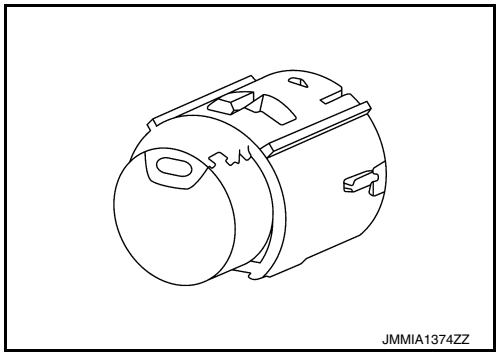
Push-button ignition switch is pressed, and transmits the status signal to BCM and IPDM E/R.



SYSTEM
POWER DISTRIBUTION SYSTEM
POWER DISTRIBUTION SYSTEM : System Diagram

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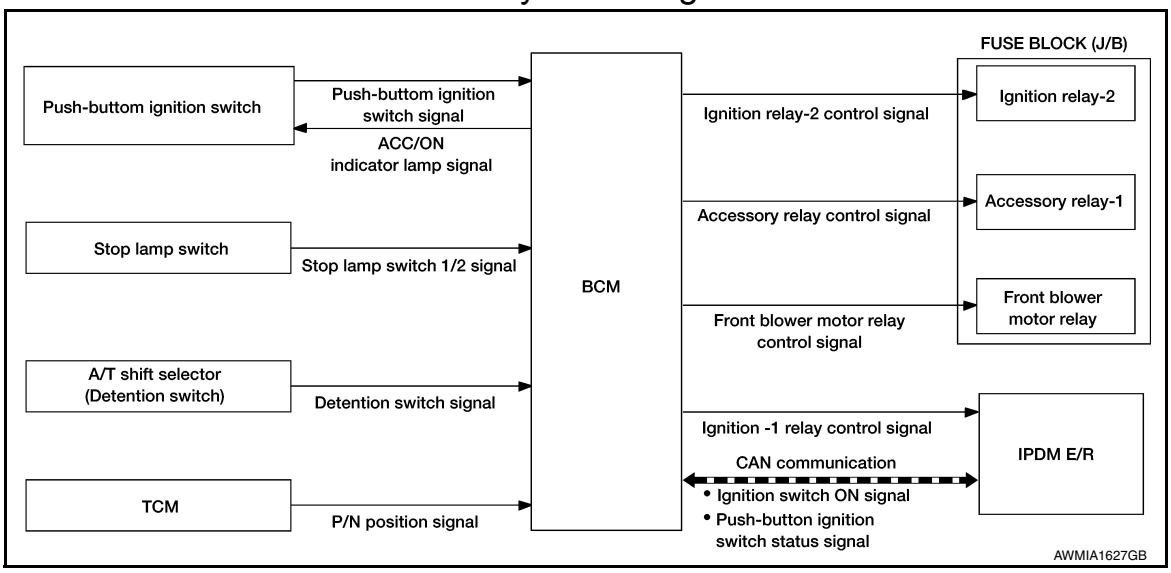


POWER DISTRIBUTION SYSTEM : System Description

INFOID:0000000012875153

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 power supply position according to the status and operates the following relays to supply power to each power circuit:

- Ignition relay-1
- Ignition relay-2
- Accessory relay-1
- Front blower motor relay

NOTE:
The engine switch operation changes due to the conditions of brake pedal, selector lever and vehicle speed.

- The power supply position can be confirmed with the lighting of the indicators in the push-button ignition switch.

IGNITION BATTERY SAVER SYSTEM

When all the following conditions are met for a period of time, the battery saver system will turn off the power supply (ignition switch ON/ACC → OFF) to prevent battery discharge.

- Ignition switch is in the ACC or ON position
- Turn signal lamp is not in operation
- Selector lever is in the P (park) position

Reset Condition of Ignition Battery Saver System

If any of the following conditions are met, the battery saver system is released.

- Ignition switch is not in the ACC or ON position
- Turn signal lamp is in operation
- Selector lever is not in the P (park) position

NOTE:
The ignition battery saver system can be temporarily disabled, without using CONSULT, to prevent it from functioning when performing trouble diagnosis. Refer to BCS-63, "CONFIGURATION (BCM) : Work Procedure".

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

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

NOTE:

- When an Intelligent Key is within the detection area of inside key antenna and when Intelligent Key backside is contacted to push-button ignition switch, it is equivalent to the operations below.
- When starting the engine, the BCM monitors under the engine start conditions:
- Brake pedal operating condition
- Selector lever position
- Vehicle speed

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

Power supply position	Engine start/stop condition		Push-button ignition switch operation frequency
	Selector lever position	Brake pedal operation condition	
OFF → ACC	—	Not depressed	1
OFF → ACC → ON	—	Not depressed	2
OFF → ACC → ON → OFF	—	Not depressed	3
OFF → START ACC → START ON → START	P or N position	Depressed	1
Engine is running → OFF	—	—	1

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

Power supply position	Engine start/stop condition		Push-button ignition switch operation frequency
	Selector lever position	Brake pedal operation condition	
Engine is running → ACC	—	—	Emergency stop operation
Engine stall return operation while driving	N position	Not depressed	1

Emergency stop operation

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

DIAGNOSIS SYSTEM (BCM)
COMMON ITEM
COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000013412995

APPLICATION ITEM
CONSULT performs the following functions via CAN communication with BCM.

Direct Diagnostic Mode	Description
ECU Identification	The BCM part number is displayed.
Self Diagnostic Result	The BCM self diagnostic results are displayed.
Data Monitor	The BCM input/output data is displayed in real time.
Active Test	The BCM activates outputs to test components.
Work support	The settings for BCM functions can be changed.
Configuration	• The vehicle specification can be read and saved. • The vehicle specification can be written when replacing BCM.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

SYSTEM APPLICATION
BCM can perform the following functions:

System	Sub System	Direct Diagnostic Mode						
		ECU Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK		×	×	×	×		
Rear window defogger	REAR DEFOGGER			×	×	×		
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
Exterior lamp	HEADLAMP			×	×	×		
Wiper and washer	WIPER			×	×	×		
Turn signal and hazard warning lamps	FLASHER			×	×	×		
Air conditioner	AIR CONDITIONER			×				
Intelligent Key system	INTELLIGENT KEY		×	×	×	×		
Combination switch	COMB SW			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×			
Back door open	TRUNK			×				
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×				
Signal buffer system	SIGNAL BUFFER			×	×			
TPMS	AIR PRESSURE MONITOR		×	×	×			

FREEZE FRAME DATA (FFD)

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

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

NOTE:
*: Power supply position shifts to “LOCK” from “OFF”, when ignition switch is in the OFF position, selector lever is in the P position, and any of the following conditions are met:
- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power supply position shifts to “ACC” when the push-button ignition switch (push switch) is pushed at “LOCK”.

INTELLIGENT KEY

INTELLIGENT KEY : CONSULT Function (BCM - INTELLIGENT KEY)

INFOID:0000000013413115

SELF DIAGNOSTIC RESULT

Refer to BCS-52, "DTC Index".

DATA MONITOR

Monitor Item [Unit]	Main	Description
REQ SW -DR [On/Off]	×	Indicates condition of door request switch LH.
REQ SW -AS [On/Off]	×	Indicates condition of door request switch RH.
REQ SW -BD/TR [On/Off]	×	Indicates condition of back door request switch.
PUSH SW [On/Off]		Indicates condition of push-button ignition switch.
SHIFTLOCK SOLENOID PWR SUPPLY [On/Off]	×	Indicates condition of power supply to shiftlock solenoid.
BRAKE SW 1 [On/Off]	×	Indicates condition of brake switch.
BRAKE SW 2 [On/Off]		Indicates condition of brake switch.
DETE/CANCL SW [On/Off]	×	Indicates condition of P (park) position.
SFT PN/N SW [On/Off]	×	Indicates condition of P (park) or N (neutral) position.
UNLK SEN -DR [On/Off]	×	Indicates condition of door unlock sensor.
PUSH SW -IPDM [On/Off]		Indicates condition of push-button ignition switch received from IPDM E/R on CAN communication line.
IGN RLY1 -F/B [On/Off]		Indicates condition of ignition relay 1 received from IPDM E/R on CAN communication line.
DETE SW -IPDM [On/Off]		Indicates condition of park position switch received from TCM on CAN communication line.
SFT PN -IPDM [On/Off]		Indicates condition of P (park) or N (neutral) position from TCM on CAN communication line.
SFT P -MET [On/Off]		Indicates condition of P (park) position from TCM on CAN communication line.
SFT N -MET [On/Off]		Indicates condition of N (neutral) position from IPDM E/R on CAN communication line.
ENGINE STATE [Stop/Start/Crank/Run]	×	Indicates condition of engine state from ECM on CAN communication line.
VEH SPEED 1 [mph/km/h]	×	Indicates condition of vehicle speed signal received from ABS on CAN communication line.
VEH SPEED 2 [mph/km/h]	×	Indicates condition of vehicle speed signal received from combination meter on CAN communication line.
DOOR STAT -DR [LOCK/READY/UNLK]	×	Indicates condition of driver side door status.
DOOR STAT -AS [LOCK/READY/UNLK]	×	Indicates condition of passenger side door status.
DOOR STAT -RR [LOCK/READY/UNLK]	×	Indicates condition of rear right side door status.
DOOR STAT -RL [LOCK/READY/UNLK]	×	Indicates condition of rear left side door status.
BK DOOR STATE [LOCK/READY/UNLK]	×	Indicates condition of back door status.
ID OK FLAG [Set/Reset]		Indicates condition of Intelligent Key ID.
PRMT ENG STRT [Set/Reset]		Indicates condition of engine start possibility.
PRMT RKE STRT [Set/Reset]		Indicates condition of engine start possibility from Intelligent Key.
I-KEY OK FLAG [Key ON/Key OFF]	×	Indicates condition of Intelligent Key OK flag.
PRBT ENG STRT [Set/Reset]		Indicates condition of engine start prohibit.
ID AUTHENTICATION CANCEL TIMER [under a stop]		Indicates condition of Intelligent Key ID authentication.
ACC BATTERY SAVER [under a stop]		Indicates condition of battery saver.
CRNK PRBT TMR [On/Off]		Indicates condition of crank prohibit timer.
AUT CRNK TMR [On/Off]		Indicates condition of automatic engine crank timer from Intelligent Key.
CRANKING TME [sec]		Indicates condition of engine cranking time from Intelligent Key.
ST RLY -REQ		Indicates condition of starter relay.
IGN RLY 1 -REQ		Indicates condition of ignition 1 relay.
IGN RLY 2 -REQ		Indicates condition of ignition 2 relay.

Monitor Item [Unit]	Main	Description
DETE SW PWR [On/Off]		Indicates condition of park position switch voltage.
ACC RLY -REQ [On/Off]		Indicates condition of accessory relay control request.
RKE OPE COUN1 [0-19]	×	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing.
RKE OPE COUN2 [0-19]	×	When remote keyless entry receiver receives the signal transmitted while operating on Intelligent Key, the numerical value start changing.
TRNK/HAT MNTR [On/Off]		Indicates condition of luggage room lamp switch.
RKE-LOCK [On/Off]		Indicates condition of lock signal from Intelligent Key.
RKE-UNLOCK [On/Off]		Indicates condition of unlock signal from Intelligent Key.
RKE-TR/BD [On/Off]		Indicates condition of back door open signal from Intelligent Key.
RKE-PANIC [On/Off]		Indicates condition of panic signal from Intelligent Key.
RKE-MODE CHG [On/Off]		Indicates condition of mode change signal from Intelligent Key.
RKE PBD		Indicates condition of power back door signal from Intelligent Key.

ACTIVE TEST

Test Item	Description
INTELLIGENT KEY LINK (CAN)	This test is able to check Intelligent Key identification number [Off/ID No1/ID No2/ID No3/ID No4/ID No5].
INT LAMP	This test is able to check interior room lamp operation [On/Off].
FLASHER	This test is able to check hazard lamp operation [LH/RH/Off].
HORN	This test is able to check horn operation [On].
BATTERY SAVER	This test is able to check battery saver operation [On/Off].
TRUNK/BACK DOOR	This test is able to check back door actuator operation [Open].
OUTSIDE BUZZER	This test is able to check Intelligent Key warning buzzer operation [On/Off].
INSIDE BUZZER	This test is able to check combination meter warning chime operation [Take Out/Knob/Key/Off].
INDICATOR	This test is able to check combination meter warning lamp operation [KEY ON/KEY IND/Off].
IGN CONT2	This test is able to check ignition relay-2 control operation [On/Off].
ENGINE SW ILLUMI	This test is able to check push-button ignition switch START indicator operation [On/Off].
PUSH SWITCH INDICATOR	This test is able to check push-button ignition switch indicator operation [On/Off].
ACC CONT	This test is able to check accessory relay control operation [On/Off].
IGN CONT1	This test is able to check ignition relay-1 control operation [On/Off].
ST CONT LOW	This test is able to check starter control relay operation [On/Off].
IGNITION RELAY	This test is able to check ignition relay operation [On/Off].
REVERSE LAMP TEST	This test is able to check reverse lamp illumination operation [On/Off].
DOOR HANDLE LAMP TEST	This test is able to check door handle lamp illumination operation [On/Off].
TRUNK/LUGGAGE LAMP TEST	This test is able to check cargo lamp illumination operation [On/Off].
KEYFOB PW TEST	This test is able to check power window operation using the Intelligent Key [P/W up/down OFF/Send P/W down ON/Send P/W up ON].
SHIFTLOCK SOLENOID TEST	This test is able to check shift lock solenoid operation [On/Off].
DR SEAT LAMP TEST	This test is able to check driver seat lamp illumination operation [On/Off].
AS SEAT LAMP TEST	This test is able to check passenger seat lamp illumination operation [On/Off].
SHIFT SPOT LAMP TEST	This test is able to check shift spot lamp illumination operation [On/Off].

WORK SUPPORT

Support Item	Setting		Description
IGN/ACC BATTERY SAVER	On*		Battery saver function ON.
	Off		Battery saver function OFF.
REMOTE ENGINE STARTER	On*		Remote engine start function ON.
	Off		Remote engine start function OFF.
ANSWERBACK I-KEY LOCK UNLOCK	BUZZER*		Buzzer reminder function by door lock/unlock request switch ON.
	HORN		Horn chirp reminder function by door lock request switch ON.
	Off		No reminder function by door lock/unlock request switch.
	INVALID		This mode is not used.
ANSWERBACK KEYLESS LOCK UNLOCK	On*		Buzzer or horn chirp reminder when doors are locked/unlocked with Intelligent Key.
	Off		No buzzer or horn chirp reminder when doors are locked/unlocked with Intelligent Key.
ANSWER BACK	On*		Horn chirp reminder when doors are locked with Intelligent Key.
	Off		No horn chirp reminder when doors are locked with Intelligent Key.
RETRACTABLE MIRROR SET	On		Retractable mirror set ON.
	Off*		Retractable mirror set OFF.
LOCK/UNLOCK BY I-KEY	On*		Door lock/unlock function from Intelligent Key ON.
	Off		Door lock/unlock function from Intelligent Key OFF.
ENGINE START BY I-KEY	On*		Engine start function from Intelligent Key ON.
	Off		Engine start function from Intelligent Key OFF.
TRUNK/GLASS HATCH OPEN	On*		Buzzer reminder function by back door request switch ON.
	Off		Buzzer reminder function by back door request switch OFF.
CONFIRM KEY FOB ID	—		Intelligent Key ID code can be checked.
SHORT CRANKING OUTPUT	Start	70 msec	Starter motor operation duration times.
		100 msec	
		200 msec	
	End		—
INSIDE ANT DIAGNOSIS	—		This function allows inside key antenna self-diagnosis.
AUTO LOCK SET	MODE7	5 min	Auto door lock time can be set in this mode.
	MODE6	4 min	
	MODE5	3 min	
	MODE4	2 min	
	MODE3*	1 min	
	MODE2	30 sec	
	MODE1	Off	

*: Initial Setting

ECU DIAGNOSIS INFORMATION

BCM, IPDM E/R

List of ECU Reference

INFOID:0000000012875156

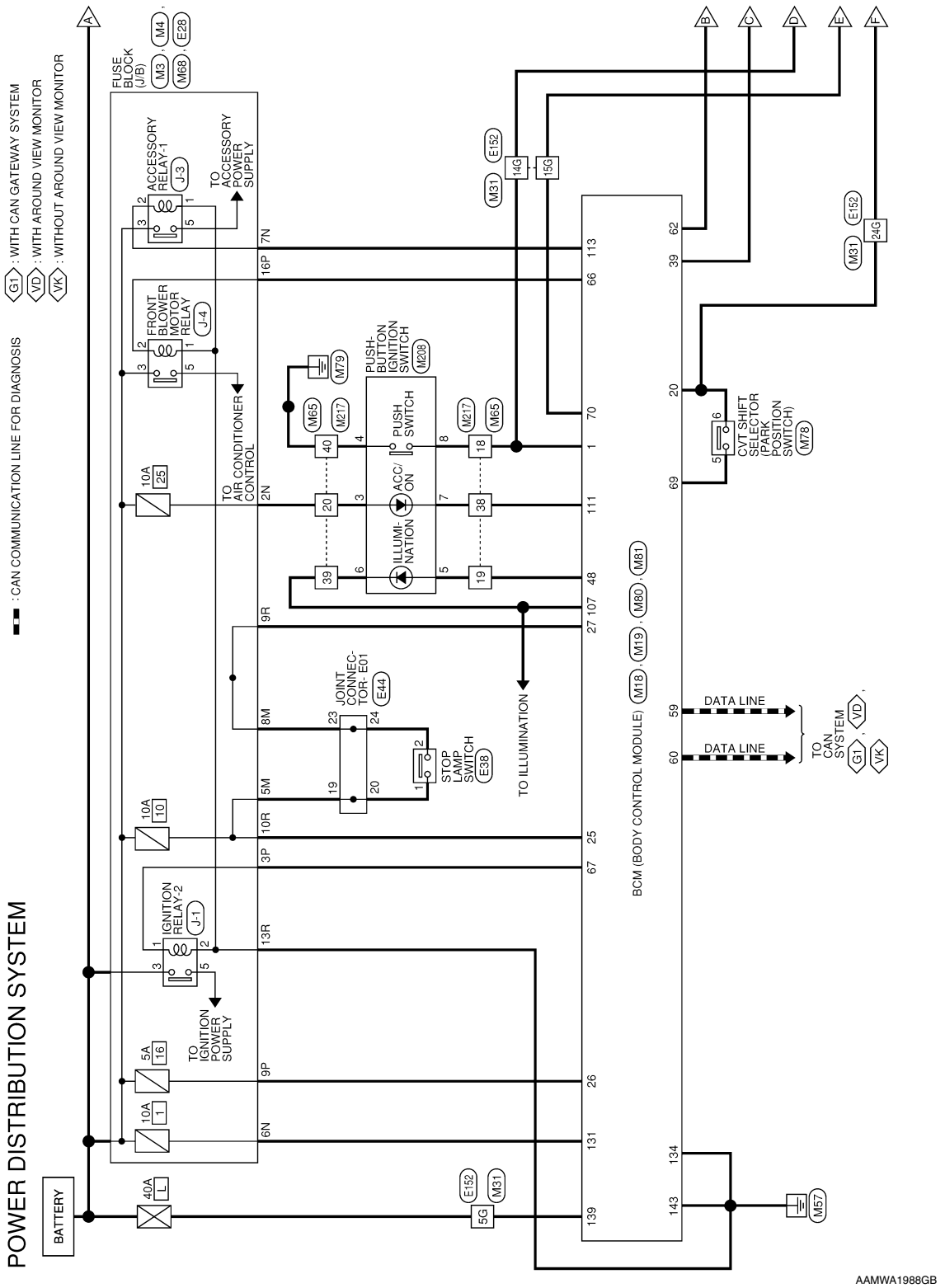
ECU	Reference
BCM	BCS-30, "Reference Value"
	BCS-50, "Fail Safe"
	BCS-51, "DTC Inspection Priority Chart"
	BCS-52, "DTC Index"
IPDM E/R	PCS-13, "Reference Value"
	PCS-20, "Fail Safe"
	PCS-21, "DTC Index"

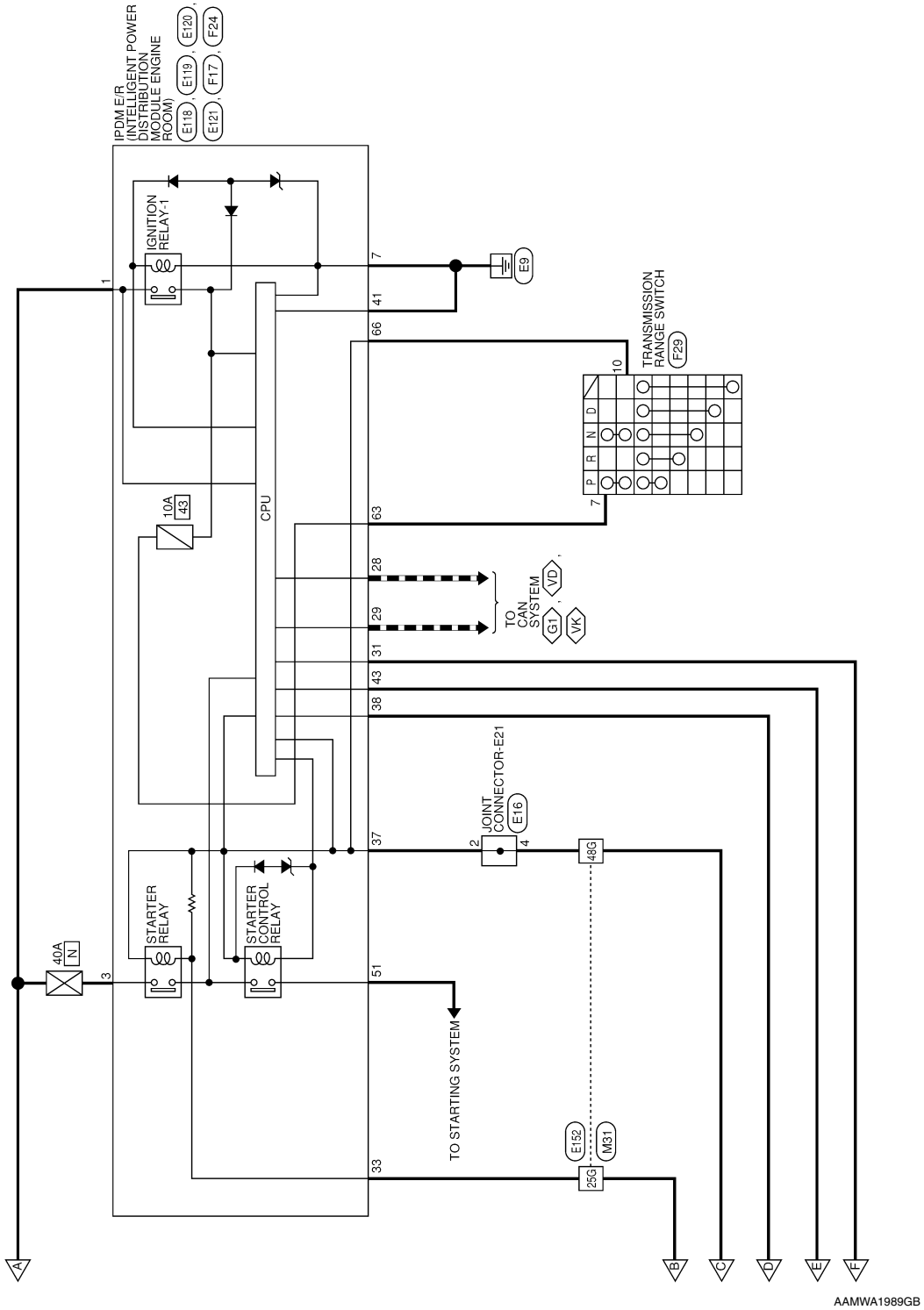
WIRING DIAGRAM

POWER DISTRIBUTION SYSTEM

Wiring Diagram

INFOID:0000000012875157

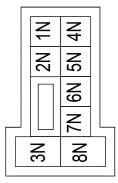



IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
E118, E119, E120, E121, F17, F24
IGNITION RELAY-1
E9
TRANSMISSION RANGE SWITCH
F29
P R N D
10A 43
CPU
TO CAN SYSTEM
VD, G1, VK
JOINT CONNECTOR-E21
E16
48G
STARTER RELAY
STARTER CONTROL RELAY
40A N
TO STARTING SYSTEM
E152
M31
25G
A B C D E F
AAMWA1989GB

POWER DISTRIBUTION SYSTEM CONNECTORS

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	CS06FW-M2
Connector Color	WHITE

H.S.



Terminal No.	Color of Wire	Signal Name
2N	BG	-
6N	W	-
7N	L	-

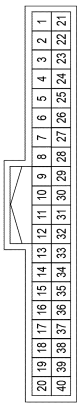
Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS
Connector Color	WHITE

H.S.

Terminal No.	Color of Wire	Signal Name
3P	G	-
9P	L	-
16P	W	-

Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FG-NH
Connector Color	GREEN

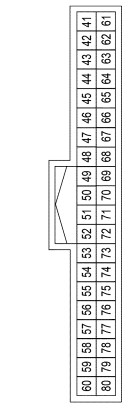
H.S.



Terminal No.	Color of Wire	Signal Name
1	G	ENG START SW NO ESCL
20	W	SHIFT P
25	W	BRAKE SW FUSE
26	L	SHORTING INPUT
27	G	BRAKE SW LAMP
39	G	SHIFT N/P

Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	TH40FB-NH
Connector Color	BLACK

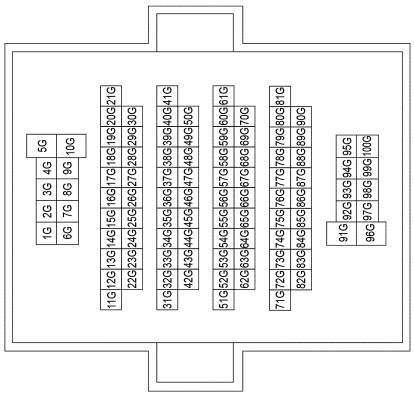
H.S.



Terminal No.	Color of Wire	Signal Name
48	P	HIGH SIDE START SW LED
59	P	CAN-L
60	L	CAN-H
62	W	STARTER RELAY OUT
66	W	BLOWER FAN RELAY OUT
67	G	IGN ELEC RELAY OUT 2
69	G	AT DEVICE OUT
70	P	IGN USM OUT 1

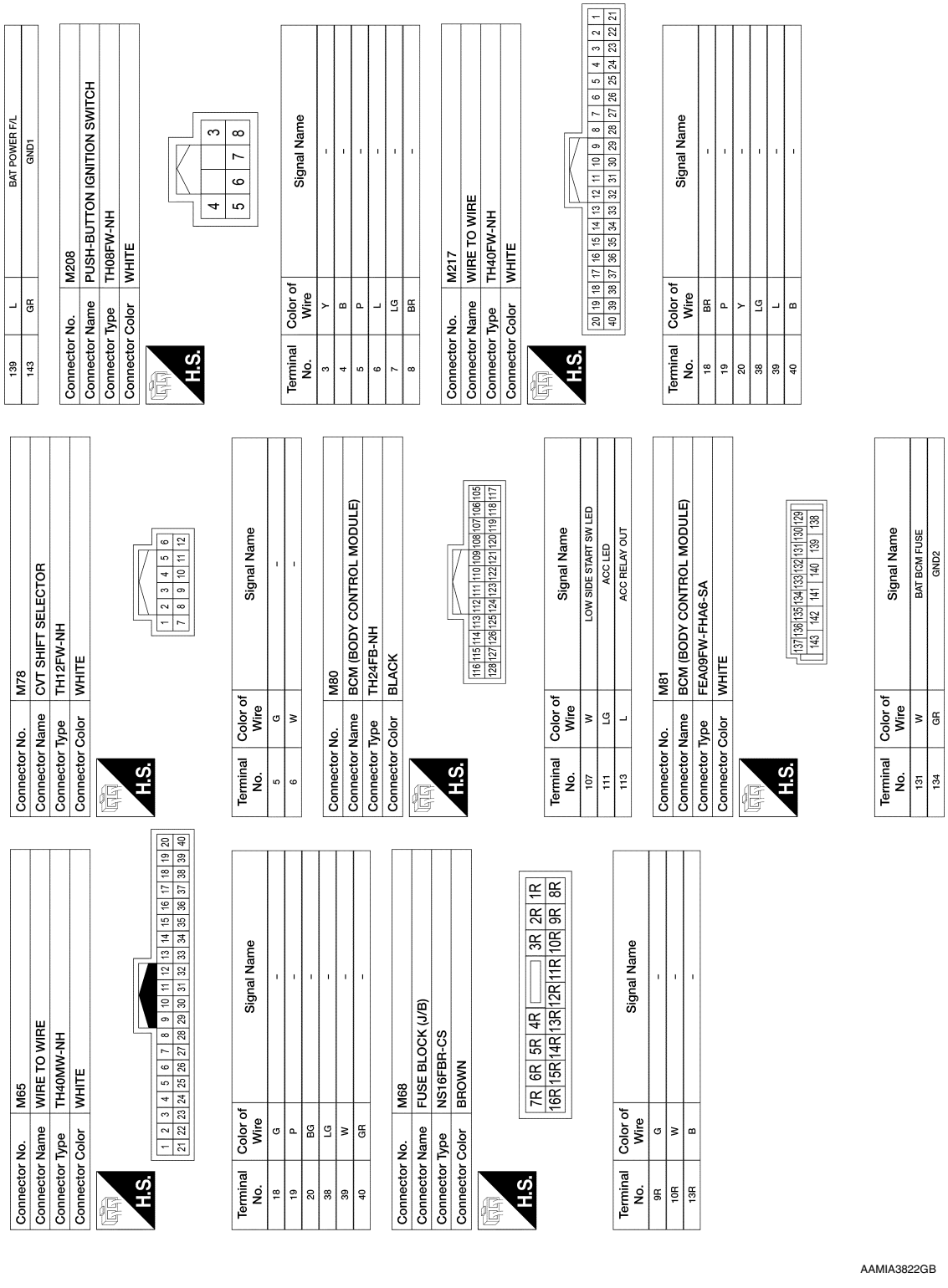
Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4
Connector Color	WHITE

H.S.



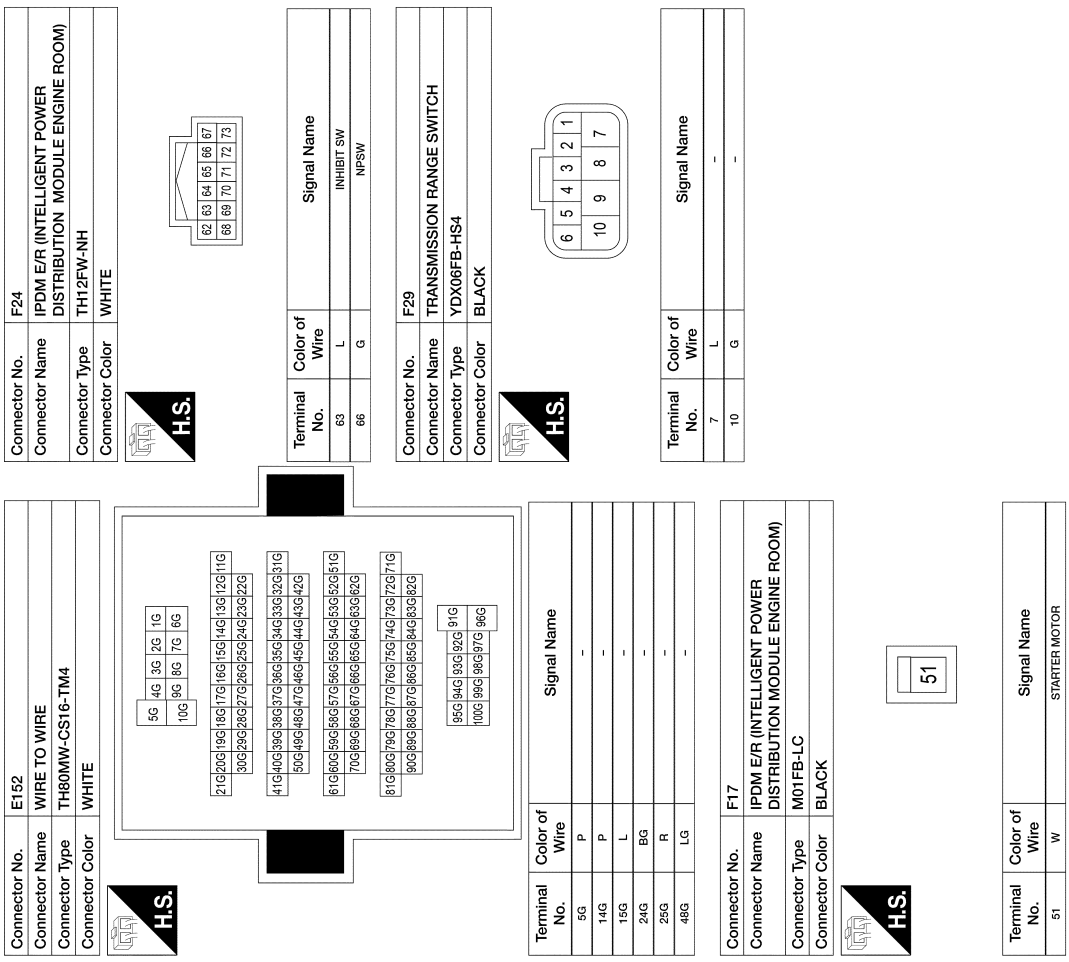
Terminal No.	Color of Wire	Signal Name
5G	L	-
14G	G	-
15G	P	-
24G	W	-
25G	W	-
48G	G	-

AAMIA3821GB



AAMIA3822GB

AAMIA3823GB



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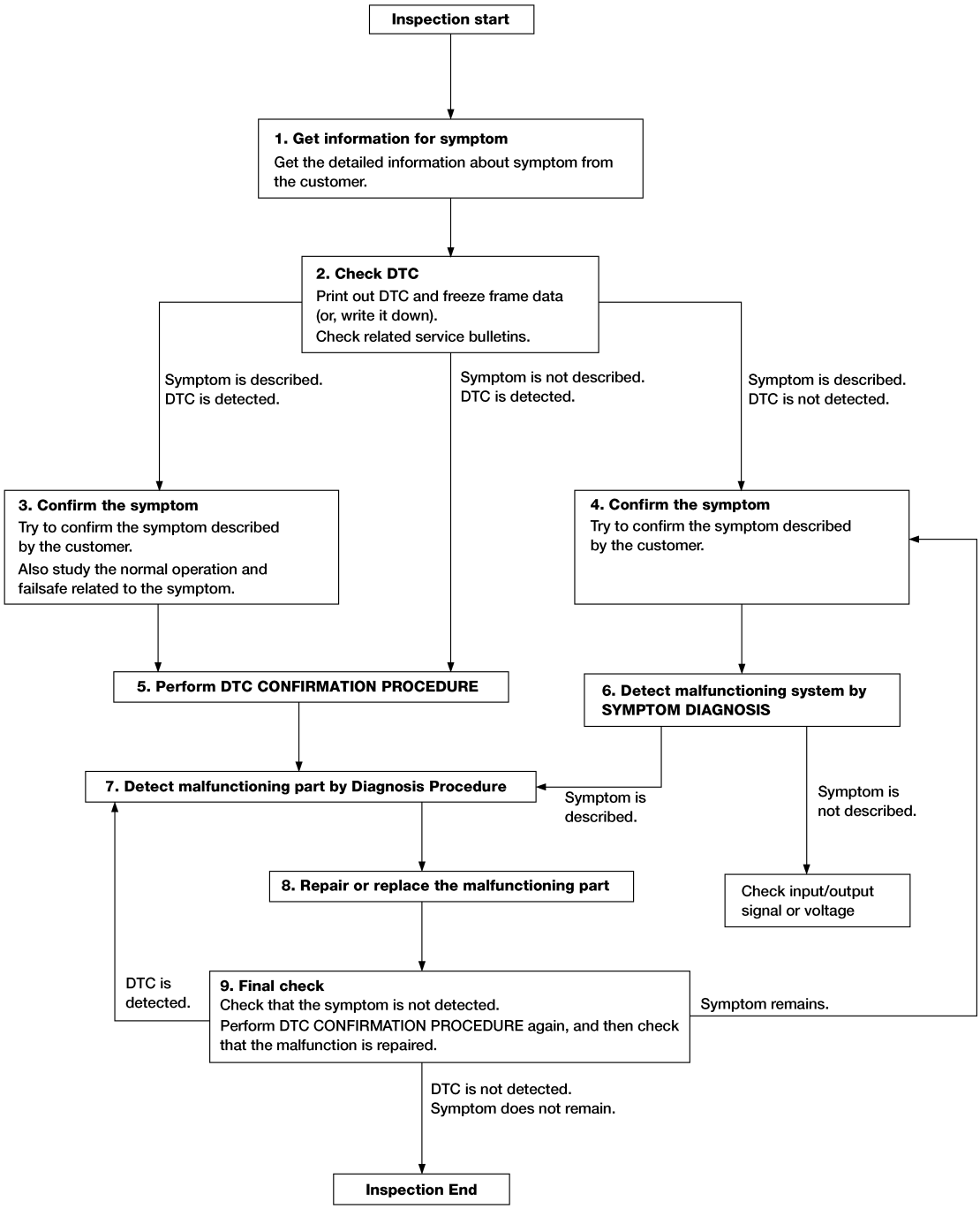
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

INFOID:0000000012875158

OVERALL SEQUENCE



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DETAILED FLOW

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 component or system 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.
NOTE:
Freeze frame data is useful if the DTC is not 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-51, "DTC Inspection Priority Chart", and determine trouble diagnosis order.

Is DTC detected?

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

6.DETECT MALFUNCTIONING SYSTEM BY SYMPTOM DIAGNOSIS

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

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

Inspect according to Diagnosis Procedure of the system.

Is malfunctioning part detected?

YES >> GO TO 8.
NO >> Refer 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 >> Inspection End.

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

DTC Description

INFOID:0000000013413548

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 units, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.
CAN Communication Signal Chart. Refer to LAN-37, "CAN COMMUNICATION SYSTEM : CAN Communication Signal Chart".

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1000	CAN COMM CIRCUIT (CAN communication circuit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

CAN communication system

FAIL-SAFE

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	• Outputs the pulse duty signal (PWM signal) 100%when the ignition switch is turned ON. • Outputs the pulse duty signal (PWM signal) 0%when the ignition switch is turned OFF.
A/C compressor	A/C relay OFF
Alternator	Outputs the power generation command signal (PWM signal) 0%.

If No CAN Communication Is Available With BCM

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

Control part	Fail-safe operation
Horn	Horn relay OFF
Ignition relay	The status just before activation of fail-safe is maintained.
Starter motor	Starter control relay OFF

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

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

Is DTC “U1000” displayed?

YES >> Refer to PCS-60, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-42, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000013413549

1.PERFORM SELF DIAGNOSIS

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

Is DTC “U1000” displayed?

YES >> Refer to LAN-21, "Trouble Diagnosis Flow Chart".
NO >> Refer to GI-42, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

DTC Description

INFOID:0000000013413551

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
U1010	CONTROL UNIT (Control unit)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- IPDM E/R

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

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

Is DTC “U1000” displayed?

YES >> Refer to PCS-61, "Diagnosis Procedure".
NO-1 >> To check malfunction symptom before repair: Refer to GI-42, "Intermittent Incident".
NO-2 >> Confirmation after repair: Inspection End.

Diagnosis Procedure

INFOID:0000000013413552

1.REPLACE IPDM E/R

Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".

>> Inspection End.

B260A IGNITION RELAY

DTC Description

INFOID:0000000012875163

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B260A	IGNITION RELAY	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	—
		Threshold	—
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connectors
- BCM
- IPDM E/R

FAIL SAFE

—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions and wait for at least 2 seconds:
- CVT selector lever is in the P (park) or N (neutral) position.
- Release the brake pedal.
2. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Is DTC B260A detected?

YES >> Refer to PCS-62, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012875164

Regarding Wiring Diagram information, refer to PCS-50, "Wiring Diagram".

1. SELF DIAGNOSTIC RESULT

CONSULT

Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-21, "DTC Index".
NO >> GO TO 2.

2. CHECK IGNITION RELAY-1 POWER SUPPLY (IPDM E/R)

Check voltage between IPDM E/R connector E119 terminal 43 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E119	43	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> GO TO 3.

3. CHECK IGNITION RELAY-1 POWER SUPPLY (BCM)

Check voltage between BCM connector M19 terminal 70 and ground.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M19	70	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Refer to GI-42, "Intermittent Incident".
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

B261A PUSH-BUTTON IGNITION SWITCH

DTC Description

INFOID:0000000012875165

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B261A	PUSH-BTN IGN SW (Push-button ignition switch)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	Push-button ignition switch (Terminals 4 and 8)
		Threshold	Less than 8.8V or more than 16.5V
		Diagnosis delay time	1 second or more

POSSIBLE CAUSE

- Harness or connectors
  [Push-button ignition switch circuit is open or shorted]
- BCM
- IPDM E/R

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Press the push-button ignition switch under the following conditions, and wait for at least 1 second.
- CVT selector lever is in the P (park) or N (neutral) position.
- Release the brake pedal.
2. Perform “Self Diagnostic Result” mode.

Is DTC B261A detected?

YES >> Refer to PCS-64, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012875166

Regarding Wiring Diagram information, refer to PCS-50, "Wiring Diagram".

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

1. Disconnect push-button ignition switch connector.
2. Check voltage between push-button ignition switch connector M208 terminal 8 and ground.

Push-button ignition switch		Ground	Voltage (Approx.)
Connector	Terminal		
M208	8	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> GO TO 4.

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

Check voltage between IPDM E/R connector E119 terminal 38 and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E119	38	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".

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

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E119 and BCM connector M18.
3. Check continuity between IPDM E/R connector E119 terminal 38 and push-button ignition switch connector M208 terminal 8.

IPDM E/R		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
E119	38	M208	8	Yes

4. Check continuity between IPDM E/R connector E119 terminal 38 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E119	38	—	No

Is the inspection result normal?

YES >> Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace harness or connectors.

4. CHECK IGNITION SWITCH OUTPUT SIGNAL (BCM)

Check voltage between BCM connector M18 terminal 1 and ground.

BCM		Ground	Voltage (Approx.)
Connector	Terminal		
M18	1	—	Battery voltage

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

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

1. Turn ignition switch OFF.
2. Disconnect BCM connector M18 and IPDM E/R connector E119.
3. Check continuity between BCM connector M18 terminal 1 and push-button ignition switch connector M208 terminal 8.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M18	1	M208	8	Yes

4. Check continuity between BCM connector M18 terminal 1 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M18	1	—	No

Is the inspection result normal?

YES >> Refer to GI-42, "Intermittent Incident".
NO >> Repair or replace harness or connectors.

B26F1 IGNITION RELAY

DTC Description

INFOID:0000000012875167

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B26F1	IGN RELAY OFF (Ignition relay off)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	IPDM E/R (Terminals 43 and 7)
		Threshold	Less than 8.8V or more than 16.5V
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connectors
  (Ignition relay circuit is open)
- BCM
- IPDM E/R

FAIL-SAFE

Inhibit engine cranking.

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more:
- CVT selector lever is in the P (park) or N (neutral) position.
- Do not depress brake pedal.
2. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Is DTC B26F1detected?

YES >> Go to PCS-67, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012875168

Regarding Wiring Diagram information, refer to PCS-50, "Wiring Diagram".

1.SELF DIAGNOSTIC RESULT

CONSULT

1. Perform “Self Diagnostic Result” mode of “IPDM E/R”.
2. Erase DTCs.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-21, "DTC Index".
NO >> GO TO 2.

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

Check voltage between BCM connector M19 terminal 70 and ground.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal			

M19	70	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

3.CHECK IGNITION RELAY-1 CONTROL SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E119 and BCM connector M19.
3. Check continuity between IPDM E/R connector E119 terminal 43 and BCM connector M19 terminal 70.

IPDM E/R		BCM		Continuity
Connector	Terminal	Connector	Terminal	
E119	43	M19	70	Yes

4. Check continuity between IPDM E/R connector E119 terminal 43 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E119	43	—	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> Repair or replace harness or connectors.

B26F2 IGNITION RELAY

DTC Description

INFOID:0000000012875169

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B26F2	IGN RELAY ON (Ignition relay on)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	Push-button ignition switch (Terminals 4 and 8)
		Threshold	Less than 8.8V or more than 16.5V
		Diagnosis delay time	2 seconds or more

POSSIBLE CAUSE

- Harness or connectors
  (Ignition relay circuit is shorted)
- BCM
- IPDM E/R

FAIL-SAFE

Inhibit engine cranking

DTC CONFIRMATION PROCEDURE

1.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions, and wait for 2 seconds or more:
- CVT selector lever is in the P (park) or N (neutral) position.
- Do not depress brake pedal.
2. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Is DTC B26F2 detected?

YES >> Go to PCS-69, "Diagnosis Procedure".
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012875170

Regarding Wiring Diagram information, refer to PCS-50, "Wiring Diagram".

1. SELF DIAGNOSTIC RESULT

CONSULT

1. Perform “Self Diagnostic Result” mode of “IPDM E/R”.
2. Erase DTCs.
3. Turn ignition switch OFF.
4. Turn ignition switch ON.
5. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-21, "DTC Index".
NO >> GO TO 2.

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

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector E119.
3. Check voltage between IPDM E/R connector E119 terminal 43 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E119	43	—	Ignition: OFF	0V

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> GO TO 3.

3. CHECK IGNITION RELAY-1 CONTROL SIGNAL CIRCUIT

1. Disconnect BCM connector M19.
2. Check voltage between IPDM E/R connector E119 terminal 43 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E119	43	—	Ignition: OFF	0V

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-79, "Removal and Installation".
NO >> Repair or replace harness or connectors.

B26F6 BCM

DTC Description

INFOID:0000000012875171

DTC DETECTION LOGIC

DTC No.	CONSULT screen terms (Trouble diagnosis content)	DTC Detection Condition	
B26F6	BCM (Body control module)	Diagnosis condition	When ignition switch is ON.
		Signal (terminal)	Push-button ignition switch (Terminals 4 and 8)
		Threshold	Less than 8.8V or more than 16.5V
		Diagnosis delay time	.5 seconds or more

POSSIBLE CAUSE

- BCM

FAIL-SAFE

—

DTC CONFIRMATION PROCEDURE

1.CHECK DTC PRIORITY

If DTC B26F6 is displayed with DTC U1000 or U1010, first perform the trouble diagnosis for the DTC U1000 or U1010.

Is applicable DTC detected?

YES >> Perform diagnosis of applicable. U1000: Refer to PCS-28, "DTC Description". U1010: Refer to BCS-67, "DTC Description".

NO >> GO TO 2.

2.PERFORM DTC CONFIRMATION PROCEDURE

CONSULT

1. Turn ignition switch ON under the following conditions, and wait for .5 seconds or more:
- CVT selector lever is in the P (park) or N (neutral) position.
- Do not depress brake pedal.
2. Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Is DTC B26F6 detected?

YES >> Go to PCS-71, "Diagnosis Procedure".

NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000012875172

Regarding Wiring Diagram information, refer to PCS-50, "Wiring Diagram".

1. SELF DIAGNOSTIC RESULT

CONSULT

Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to PCS-21, "DTC Index".

NO >> GO TO 2.

2. CHECK IGNITION RELAY-1 POWER SUPPLY (IPDM E/R)

Check voltage between IPDM E/R connector E119 terminal 43 and ground.

IPDM E/R		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
E119	43	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> GO TO 3.

3. CHECK IGNITION RELAY-1 POWER SUPPLY (BCM)

Check voltage between BCM connector M19 terminal 70 and ground.

BCM		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M19	70	—	Ignition: OFF	0V
			Ignition: ON	Battery voltage

Is the inspection result normal?

YES >> Refer to GI-42, "Intermittent Incident".
NO >> Replace BCM. Refer to BCS-79, "Removal and Installation".

PUSH-BUTTON IGNITION SWITCH

Component Function Check

INFOID:0000000012875173

1.CHECK FUNCTION

CONSULT
1. Select “PUSH SW” in “Data Monitor” mode of BCM.
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-73, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000012875174

Regarding Wiring Diagram information, refer to PCS-50, "Wiring Diagram".

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

1. Turn ignition switch OFF.
2. Disconnect push-button ignition switch connector M208 and IPDM E/R connector E119.
3. Check voltage between push-button ignition switch connector M17 terminal 8 and ground.

Push-button ignition switch		Ground	Voltage (Approx.)
Connector	Terminal		
M208	8	—	Battery voltage

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 M18.
2. Check continuity between BCM connector M18 terminal 1 and push-button ignition switch connector M208 terminal 8.

BCM		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
M18	1	M208	8	Yes

3. Check continuity between BCM connector M18 terminal 1 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M18	1	—	No

Is the inspection result normal?

YES >> Replace BCM. Refer to BCS-79, "Removal and Installation".
NO >> Repair or replace harness or connectors.

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

Check voltage between IPDM E/R connector E119 terminal 38 and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E119	38	—	Battery voltage

Is the inspection result normal?

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

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

1. Disconnect BCM connector M18.
2. Check continuity between IPDM E/R connector E119 terminal 38 and push-button ignition switch connector M208 terminal 8.

IPDM E/R		Push-button ignition switch		Continuity
Connector	Terminal	Connector	Terminal	
E119	38	M208	8	Yes

3. Check continuity between IPDM E/R connector E119 terminal 38 and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E119	38	—	No

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-36, "Removal and Installation".
NO >> Repair or replace harness or connectors.

5. CHECK PUSH-BUTTON IGNITION SWITCH GROUND CIRCUIT

Check continuity between push-button ignition switch connector M208 terminal 4 and ground.

Push-button ignition switch		Ground	Continuity
Connector	Terminal		
M208	4	—	Yes

Is the inspection result normal?

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

6. CHECK PUSH-BUTTON IGNITION SWITCH

Refer to PCS-74, "Component Inspection".

Is the inspection result normal?

YES >> Refer to GI-42, "Intermittent Incident".
NO >> Replace push-button ignition switch. Refer to SEC-139, "Removal and Installation".

Component Inspection

INFOID:0000000012875175

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 terminals	Condition	Continuity
4 – 8	Pressed	Yes
	Not pressed	No

Is the inspection result normal?

YES >> Inspection End.
NO >> Replace push-button ignition switch. Refer to SEC-139, "Removal and Installation".

POWER SUPPLY AND GROUND CIRCUIT

BCM

BCM : Diagnosis Procedure

INFOID:0000000013413554

Regarding Wiring Diagram information, refer to BCS-55, "Wiring Diagram".

1. CHECK FUSE AND FUSIBLE LINK

Check that the following fuse and fusible link are not blown.

Signal name	Fuse and fusible link No.
Fusible link battery power	L (40A)
BCM battery fuse	1 (10A)

Is the fuse or fusible link blown?

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

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect BCM connector M81.
2. Check voltage between BCM connector M81 terminals 131, 139 and ground.

BCM		Ground	Voltage (Approx.)
Connector	Terminal		
M81	131	—	Battery voltage
	139		

Is the inspection result normal?

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

3. CHECK GROUND CIRCUIT

Check continuity between BCM connector M81 terminals 134, 143 and ground.

BCM		Ground	Continuity
Connector	Terminal		
M81	134	—	Yes
	143		

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace harness or connectors.

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) : Diagnosis Procedure

INFOID:0000000013413555

Regarding Wiring Diagram information, refer to PCS-23, "Wiring Diagram".

1. CHECK FUSIBLE LINKS

Check that the following fusible links are not blown.

Signal name	Fusible link No.
Battery power supply	E (80A)
	A (250A), C (80A)
	A (250A), B (100A), N (40A)

Is the fusible link blown?

YES >> Replace the blown fusible link after repairing the affected circuit.
NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Disconnect IPDM E/R connectors E118 and E120.
2. Check voltage between IPDM E/R connectors and ground.

IPDM E/R		Ground	Voltage (Approx.)
Connector	Terminal		
E118	1	—	Battery voltage
	2		
E120	3		

Is the inspection result normal?

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

3. CHECK GROUND CIRCUIT

1. Disconnect IPDM E/R connectors E119 and E121.
2. Check continuity between IPDM E/R connectors and ground.

IPDM E/R		Ground	Continuity
Connector	Terminal		
E121	7	—	Yes
E119	41		

Is the inspection result normal?

YES >> Inspection End.
NO >> Repair or replace harness or connectors.

SYMPTOM DIAGNOSIS

PUSH-BUTTON IGNITION SWITCH DOES NOT OPERATE

Description

INFOID:0000000012875178

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 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:0000000012875179

1.PERFORM WORK SUPPORT

CONSULT

Perform “INSIDE ANT DIAGNOSIS” in “Work support” mode of “INTELLIGENT KEY”.

Refer to BCS-22, "INTELLIGENT KEY : CONSULT Function (BCM - INTELLIGENT KEY)".

>> GO TO 2.

2.SELF DIAGNOSTIC RESULT

CONSULT

Perform “Self Diagnostic Result” mode of “IPDM E/R”.

Are any DTCs detected?

YES >> Refer to BCS-52, "DTC Index".

NO >> GO TO 3.

3.CHECK PUSH-BUTTON IGNITION SWITCH

Check push-button ignition switch.

Refer to PCS-73, "Component Function Check".

Is the operation normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

4.CONFIRM THE OPERATION

Confirm the operation again.

Is the inspection normal?

YES >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

NO >> GO TO 1.

PUSH-BUTTON IGNITION SWITCH POSITION INDICATOR DOES NOT ILLUMINATE

Diagnosis Procedure

INFOID:0000000012875180

1.CHECK PUSH-BUTTON IGNITION SWITCH INDICATOR

Check push-button ignition switch indicator.
Refer to PCS-73, "Component Function Check".

Is the inspection result normal?

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

2.REPLACE BCM

Replace BCM. Refer to BCS-79, "Removal and Installation"

Is the inspection result normal?

YES >> Inspection End.
NO >> Check intermittent incident. Refer to GI-42, "Intermittent Incident".

REMOVAL AND INSTALLATION

BCM (BODY CONTROL MODULE)

Removal and Installation

INFOID:0000000012875181

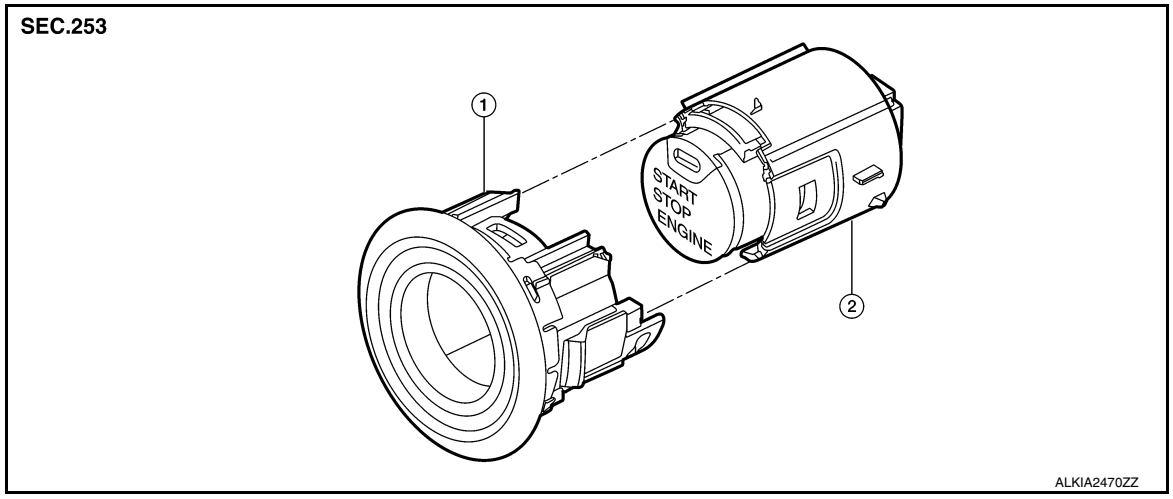
For removal and installation of the BCM (Body Control Module), refer to BCS-79, "Removal and Installation".

PUSH-BUTTON IGNITION SWITCH

Exploded View

INFOID:0000000012875182

SEC.253



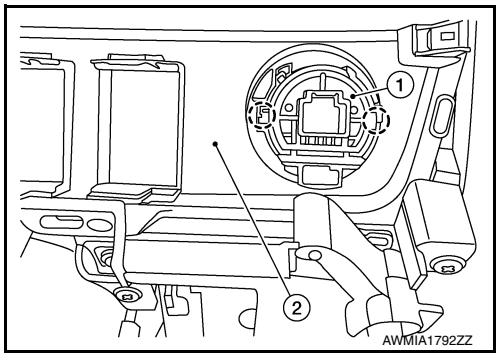
1. NATS antenna amp.
2. Push-button ignition switch

Removal and Installation

INFOID:0000000012875183

REMOVAL

1. Remove the shift selector finisher. Refer to TM-196, "Exploded View".
2. Release the pawl on each side of the push-button ignition switch (1) and remove from the shift selector finisher (2).
   ◌: Pawl



3. Release the pawl on each side and remove the push-button ignition switch from the NATS antenna amp.

INSTALLATION

Installation is in the reverse order of removal.