

SECTION **SEC**

SECURITY CONTROL SYSTEM

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DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

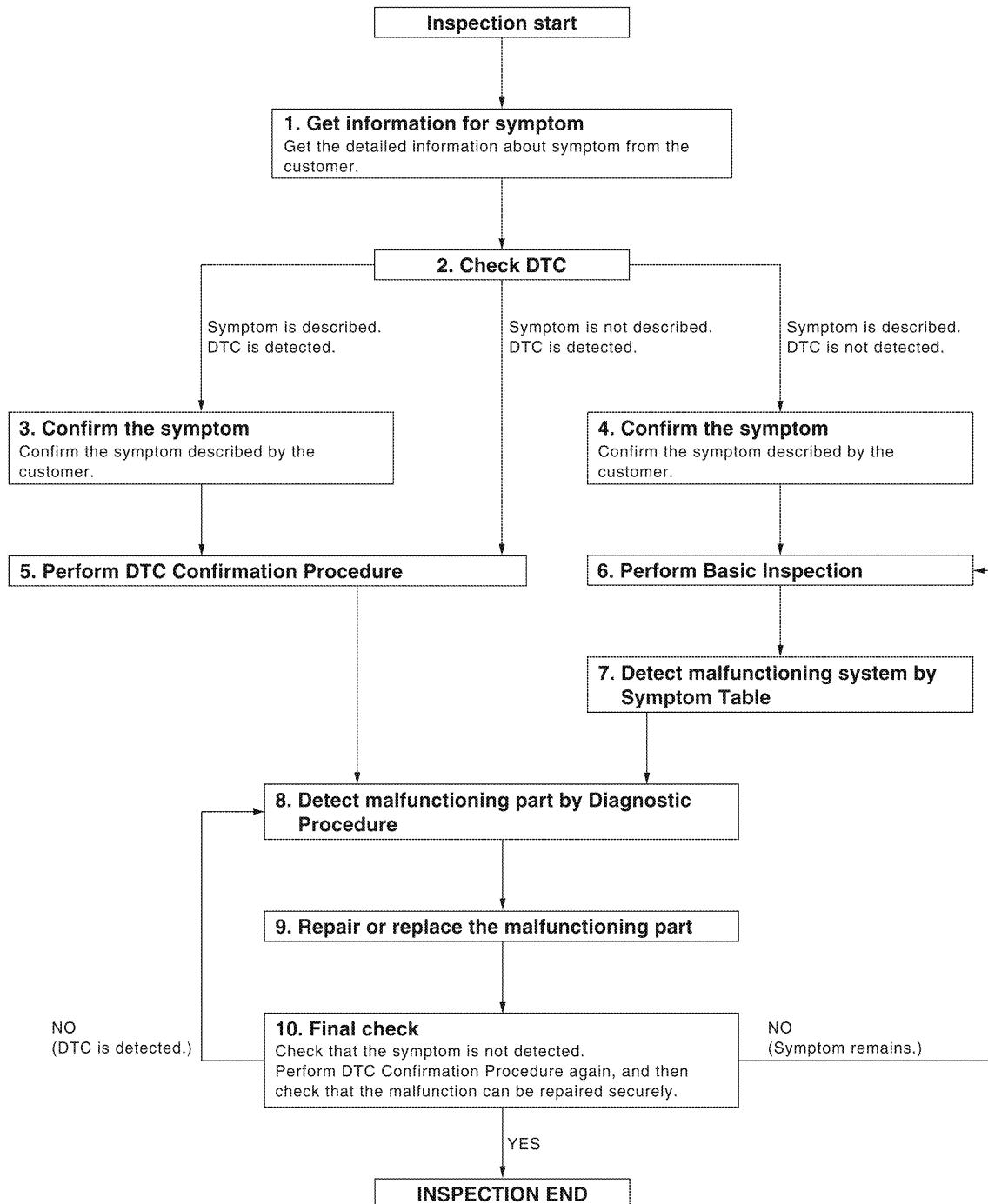
BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000005384683

OVERALL SEQUENCE



DETAILED FLOW

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

1. GET INFORMATION FOR SYMPTOM

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

>> GO TO 2.

2. CHECK DTC

1. Check BCM for DTCs.
2. Perform the following procedure if DTC is displayed.
 - 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.

Is any symptom described and any DTC detected?

Symptom is described, DTC is displayed>>GO TO 3.

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

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

3. CONFIRM THE SYMPTOM

Confirm the symptom described by the customer.

Connect CONSULT-III to the vehicle in "DATA MONITOR" mode and check real-time diagnosis results.

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

>> GO TO 5.

4. CONFIRM THE SYMPTOM

Confirm the symptom described by the customer.

Connect CONSULT-III to the vehicle in "DATA MONITOR" mode and check real-time diagnosis results.

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

>> GO TO 6.

5. PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC Confirmation Procedure for the displayed DTC, and then check that DTC is detected again.

If two or more DTCs are detected, refer to [SEC-56, "DTC Inspection Priority Chart"](#) (BCM) and determine trouble diagnosis order.

Is DTC detected?

YES >> GO TO 8.

NO >> Refer to [GI-38, "Intermittent Incident"](#).

6. PERFORM BASIC INSPECTION

Perform Basic Inspection. Refer to [SEC-6, "Basic Inspection"](#).

>> GO TO 7.

7. DETECT MALFUNCTIONING SYSTEM BY SYMPTOM TABLE

Detect malfunctioning system according to Symptom Table based on the confirmed symptom in step 4.

>> GO TO 8.

8. DETECT MALFUNCTIONING PART BY DIAGNOSTIC PROCEDURE

Inspect according to Diagnostic Procedure of the system.

NOTE:

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

>> GO TO 9.

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

9. REPAIR OR REPLACE THE MALFUNCTIONING PART

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

>> GO TO 10.

10. FINAL CHECK

When DTC was detected in step 9, perform DTC Confirmation Procedure or Component Function Check again, and then check that the malfunctions have been fully repaired.

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

Does the symptom reappear?

YES (DTC is detected)>>GO TO 8.

YES (Symptom remains)>>GO TO 6.

NO >> Inspection End.

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PRE-INSPECTION FOR DIAGNOSTIC

< BASIC INSPECTION >

PRE-INSPECTION FOR DIAGNOSTIC

Basic Inspection

INFOID:0000000005384748

1. INSPECTION START

Turn ignition switch "OFF".

NOTE:

Before starting operation check, open front windows.

>> GO TO 2.

2. CHECK SECURITY INDICATOR LAMP

1. Lock doors using keyfob or ignition key.
2. Check that security indicator lamp illuminates for 30 seconds.

Does security indicator lamp illuminate?

YES >> GO TO 3.

NO >> Perform diagnosis and repair. Refer to [SEC-34, "Component Function Check"](#).

3. CHECK ALARM FUNCTION

1. After 30 seconds, security indicator lamp will start to blink.
2. Open any door before unlocking with keyfob or ignition key.

Does the alarm function properly?

YES >> GO TO 4.

NO >> Check the following.

- The vehicle security system does not phase in alarm mode. Refer to [SEC-70, "Symptom Table"](#).
- Alarm (horn and headlamp do not operate. Refer to [SEC-70, "Symptom Table"](#).

4. CHECK ALARM CANCEL OPERATION

Unlock driver door using keyfob or ignition key.

Does the alarm (horn, headlamp and hazard lamp) stop?

YES >> Inspection End.

NO >> Check door lock function. Refer to [DLK-12, "DOOR LOCK AND UNLOCK SWITCH : System Description"](#).

INSPECTION AND ADJUSTMENT

< BASIC INSPECTION >

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Special Repair Requirement

INFOID:000000005384684

Refer to CONSULT-III Operation Manual.

ECM RE-COMMUNICATING FUNCTION

ECM RE-COMMUNICATING FUNCTION : Description

INFOID:000000005384685

Performing following procedure can automatically perform re-communication of ECM and BCM, but only when the ECM has been replaced with a new one (*1).

*1: New one means an ECM which has never been energized on-board.

(In this step, initialization procedure by CONSULT-III is not necessary)

NOTE:

- When registering new Key IDs or replacing the ECM that is not brand new, refer to CONSULT-III Operation Manual.
- If multiple keys are attached to the key holder, separate them before work.
- Distinguish keys with unregistered key ID from those with registered ID.

ECM RE-COMMUNICATING FUNCTION : Special Repair Requirement

INFOID:000000005384686

1 .PERFORM ECM RE-COMMUNICATING FUNCTION

1. Install ECM.
2. Using a registered key (*2), turn ignition switch to "ON".
*2: To perform this step, use the key that has been used before performing ECM replacement.
3. Maintain ignition switch in "ON" position for at least 5 seconds.
4. Turn ignition switch to "OFF".
5. Start engine.

Can engine be started?

YES >> Procedure is completed.

NO >> Initialize control unit. Refer to CONSULT-III Operation Manual.

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NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)

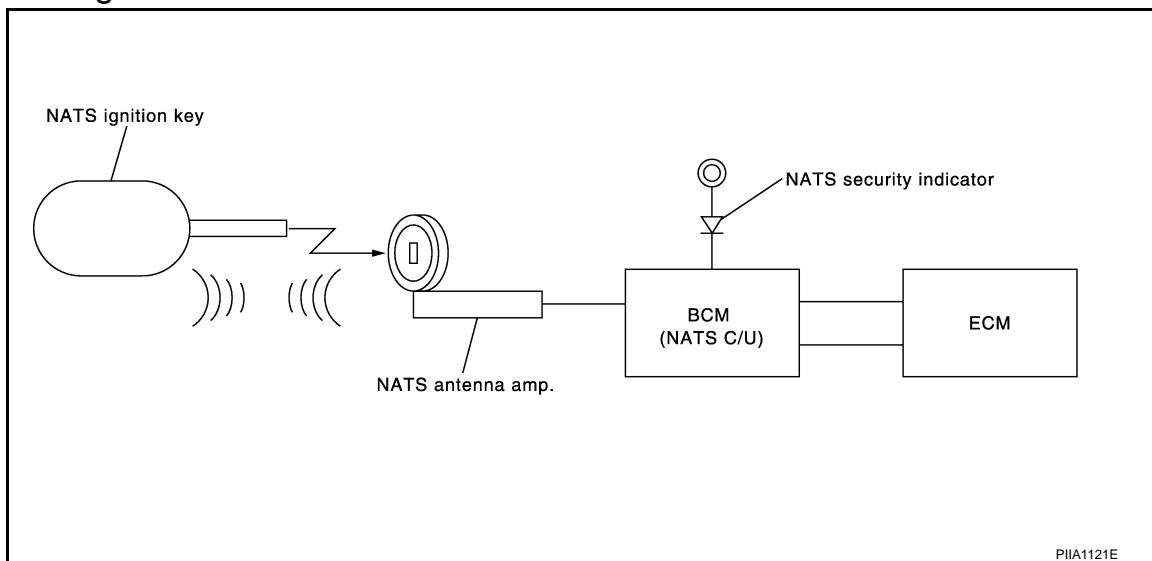
< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)

System Diagram

INFOID:0000000005384687



System Description

INFOID:0000000005384688

INPUT/OUTPUT SIGNAL CHART

BCM

Switch/Input signal	Input signal to BCM	BCM function	Actuator/Output signal
NATS antenna amp.	Key ID	NATS	• Security indicator lamp
ECM	Engine status signal		• Starter request

SYSTEM DESCRIPTION

NATS (Nissan Anti-Theft System) has the following immobilizer functions:

- Engine immobilizer shows high anti-theft performance to prevent engine from starting by other than the owner.
- Only a key with key ID registered in BCM and ECM can start engine, and shows high anti-theft performance to prevent key from being copied or stolen.
- Security indicator always flashes with mechanical key removed condition (key switch: OFF) and ignition knob released condition on LOCK position (ignition knob switch: OFF).
- Therefore, NATS warns outsiders that the vehicle is equipped with the anti-theft system. Refer to [SEC-11, "System Description"](#).
- If system detects malfunction, security indicator illuminates when ignition switch is turned to ON position.
- If the owner requires, ignition key ID or mechanical key ID can be registered for up to 5 keys.
- During trouble diagnosis or when the following parts have been replaced, and if ignition key is added, registration* is required.

*¹: All keys kept by the owner of the vehicle should be registered with mechanical key.

- ECM
- BCM
- Ignition key
- Remote keyless entry receiver

• NATS trouble diagnosis, system initialization and additional registration of other mechanical key IDs must be carried out using CONSULT-III.

When NATS initialization has been completed, the ID of the inserted mechanical key or mechanical key IDs can be carried out.

NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)

< FUNCTION DIAGNOSIS >

- Possible symptom of NATS malfunction is "Engine cannot start". Identify the possible causes according to "Work Flow", Refer to [SEC-3, "Work Flow"](#).
- If ECM other than Genuine NISSAN is installed, the engine cannot be started. For ECM replacement procedure, refer to [SEC-7, "ECM RE-COMMUNICATING FUNCTION : Description"](#).

PRECAUTIONS FOR KEY REGISTRATION

- The key registration is a procedure that erases the current NATS ID once, and then re-registers a new ID. Therefore the registered key is necessary for this procedure. Before starting the registration operation collect all registered Keys from the customer.
- The NATS ID registration is the procedure that registers the ID stored into the transponder (integrated in mechanical key) to BCM.
The key ID registration is the procedure that registers the ID to the BCM.
- When performing the key system registration only, the engine cannot be started by inserting the key into the key cylinder. When performing the NATS registration only, the engine cannot be started by using the ignition key.

SECURITY INDICATOR

- Always flashes with ignition key in the OFF position.

MAINTENANCE INFORMATION

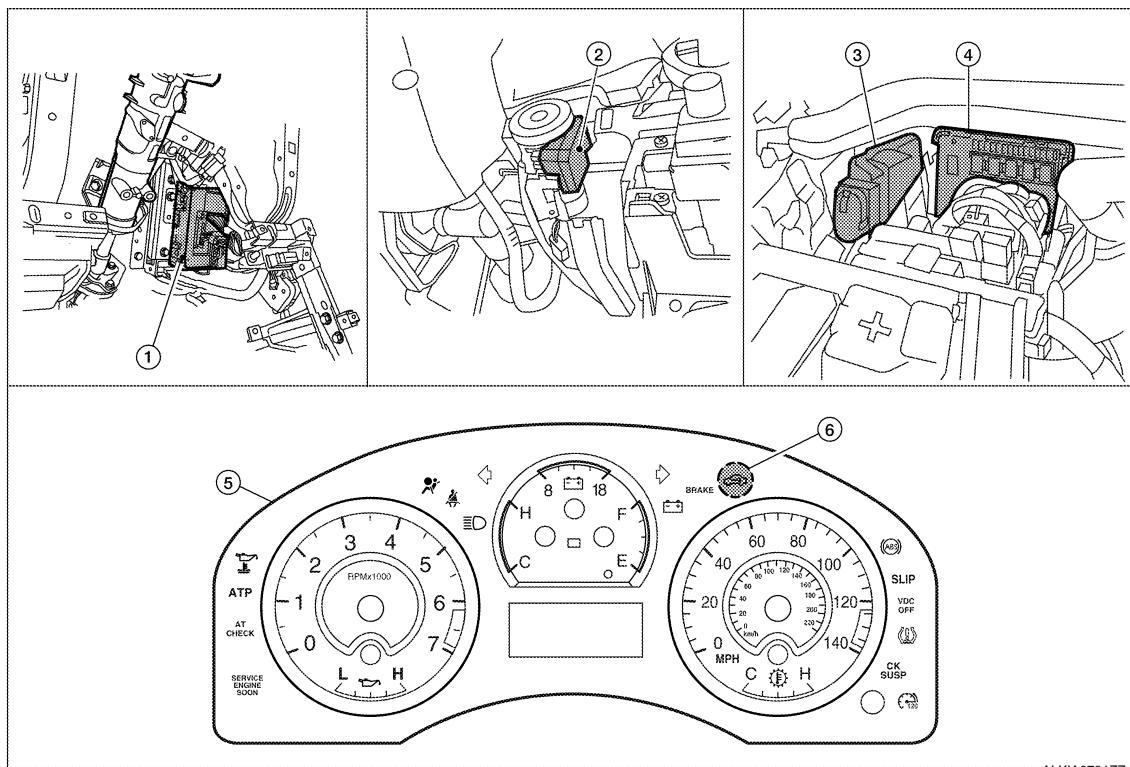
CAUTION:

**It is necessary to perform NATS ID registration when replacing any of the following part.
If it's not (or fail to do so), the electrical system may not operate properly.**

- BCM
- ECM
- IPDM E/R
- Ignition key
- NATS antenna amp.
- Combination meter

Component Parts Location

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NVIS (NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS)

< FUNCTION DIAGNOSIS >

1. BCM M18, M19, M20 (view with instrument panel LH removed)	2. NATS antenna amp. M21	3. ECM E16
4. IPDM E/R E119, E120, E122, E124 (view with cover removed)	5. Combination meter M24	6. Security indicator lamp

Component Description

INFOID:000000005384690

Item	Function
BCM	Verifies the received signal from the ignition key ID, then informs ECM whether to allow engine start.
Remote keyless entry receiver	Receives lock/unlock signal from the keyfob, and then transmits to the BCM.
A/T shift selector (detention key switch)	Detects whether the shift lever is in park.
NATS antenna amp.	Detects the ignition key presence in the ignition key cylinder.
Security indicator	Indicates the status of the security system.
IPDM E/R	Powers-up the horn and the headlamps in case of a security breach.

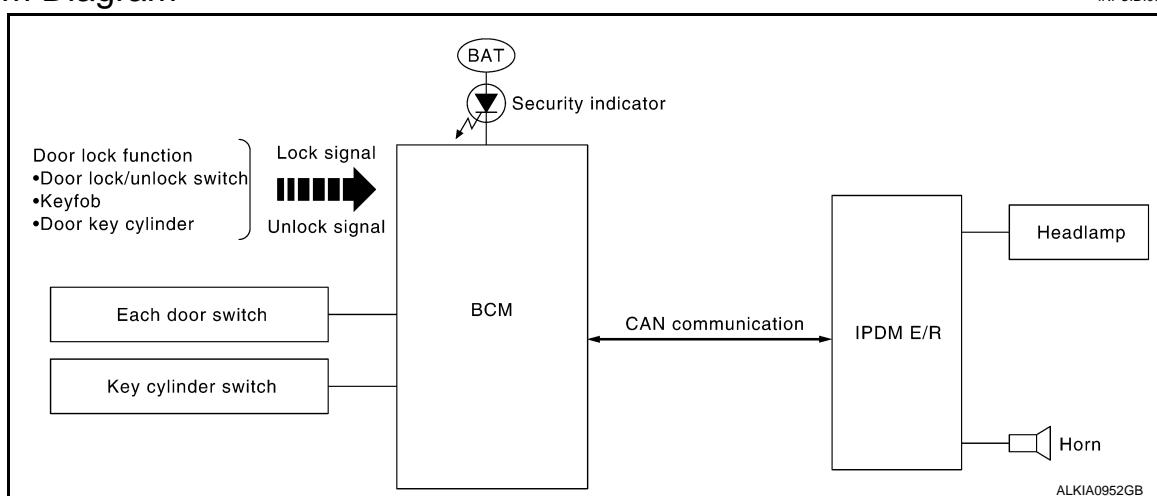
VEHICLE SECURITY SYSTEM

< FUNCTION DIAGNOSIS >

VEHICLE SECURITY SYSTEM

System Diagram

INFOID:0000000005384691



System Description

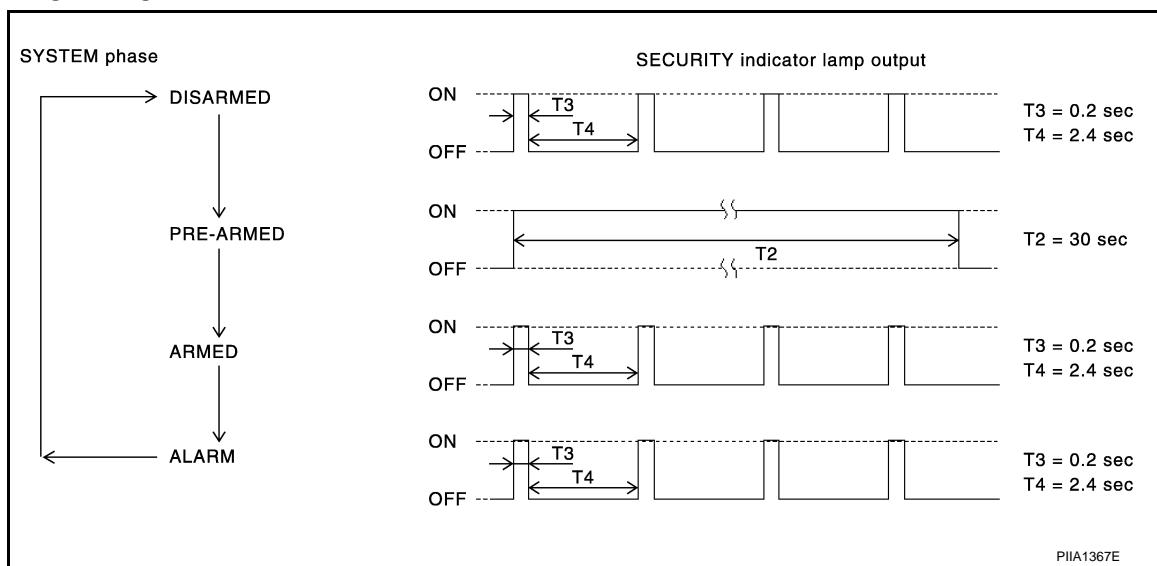
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DESCRIPTION

The security system provides an audible and visual alarm when an unauthorized access to the vehicle is detected while the system is in armed phase.

The security system consist of the BCM managing the audible alarm (horn) and the visual alarm (headlamps).

OPERATION FLOW



Disarmed Phase

When the vehicle is being driven or when doors are open, the theft warning system is set in the disarmed phase on the assumption that the owner is inside or near the vehicle.

Pre-Armed Phase And Armed Phase

The vehicle security system turns into the pre-armed phase when ignition switch is in OFF position, all doors are closed and locked (using keyfob, door lock/unlock switch, driver key cylinder or auto relock function). The system automatically shifts into the armed phase.

Condition of Activating The System

When the following condition is performed in armed phase, the system sounds the horns and flashes the headlamps for about 50 seconds.

- Any door is opened.

VEHICLE SECURITY SYSTEM

< FUNCTION DIAGNOSIS >

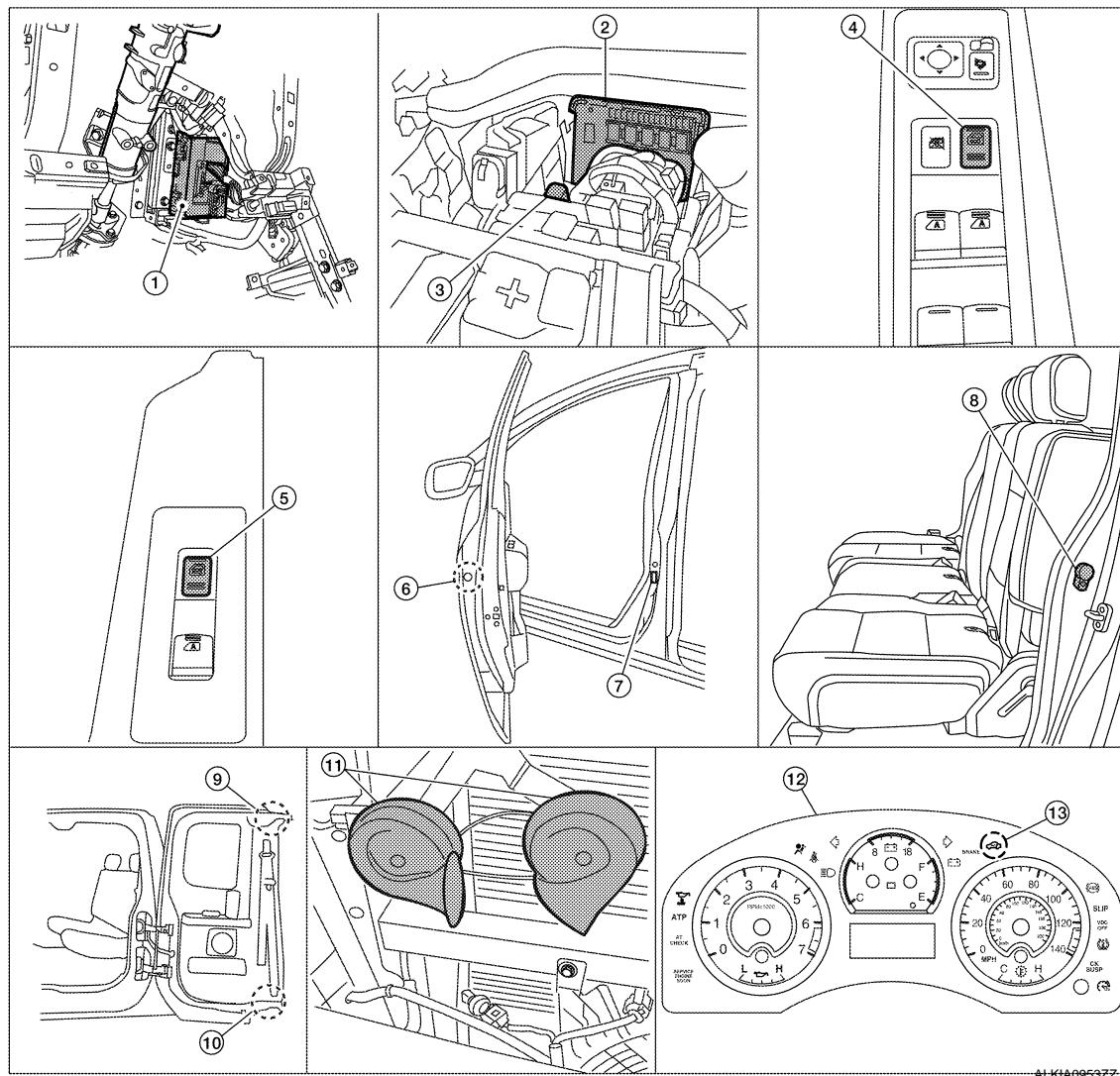
Condition of Deactivating The System

When one of the following operations is performed, the armed phase is canceled.

- Unlock the doors with keyfob.
- Use the mechanical key to unlock the driver door using the door key cylinder.

Component Parts Location

INFOID:000000005384693



1. BCM M18, M19, M20
(view with instrument panel LH removed)
2. IPDM E/R E122, E124
(view with cover removed)
3. Horn relay H-1
4. Main power window and door lock/ unlock switch
D7, D8 (crew cab)
D15 (king cab)
5. Power window and door lock/unlock switch RH D105
6. Front door lock assembly LH (key cylinder switch) D14
7. Front door switch LH B8
RH B108
8. Rear door switch (crew cab)
LH B18
RH B116
9. Rear door switch upper (king cab)
LH B73
RH B156
10. Rear door switch lower (king cab)
LH B74
RH B157
11. Horn E3
(view with front grille removed)
12. Combination meter M24
13. Security indicator lamp

VEHICLE SECURITY SYSTEM

< FUNCTION DIAGNOSIS >

Component Description

INFOID:000000005384694

Item	Function
BCM	Verifies the received signal from ignition key, then informs ECM whether to allow engine start.
Door switch	Provides the BCM with the status of each monitored door.
Security indicator	Indicates the status of the security system.
IPDM E/R	Controls the horn and headlamps operation.
Horn	Sounds when the vehicle security system is triggered.

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DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:000000005661240

APPLICATION ITEM

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

Diagnosis mode	Function Description
WORK SUPPORT	Changes the setting for each system function.
SELF DIAGNOSTIC RESULT	Displays the diagnosis results judged by BCM. Refer to SEC-56, "DTC Index" .
CAN DIAG SUPPORT MNTR	Monitors the reception status of CAN communication viewed from BCM.
DATA MONITOR	The BCM input/output signals are displayed.
ACTIVE TEST	The signals used to activate each device are forcibly supplied from BCM.
ECU IDENTIFICATION	The BCM part number is displayed.
CONFIGURATION	<ul style="list-style-type: none">Enables to read and save the vehicle specification.Enables to write the vehicle specification when replacing BCM.

SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

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

System	Sub system selection item	Diagnosis mode		
		WORK SUPPORT	DATA MONITOR	ACTIVE TEST
BCM	BCM	×		
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
Air conditioner	AIR CONDITIONER		×	
Combination switch	COMB SW		×	
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
RAP (retained accessory power)	RETAINED PWR	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
TPMS (tire pressure monitoring system)	AIR PRESSURE MONITOR	×	×	×
Vehicle security system	THEFT ALM	×	×	×

IMMU

IMMU : CONSULT-III Function (BCM - IMMU)

INFOID:000000005661241

DATA MONITOR

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

Monitor Item [Unit]	Description
IGN ON SW [ON/OFF]	Indicates condition of ignition switch in ON position.

ACTIVE TEST

Test Item	Description
THEFT IND	This test is able to check security indicator operation [ON/OFF].

THEFT ALM

THEFT ALM : CONSULT-III Function (BCM - THEFT ALM)

INFOID:000000005661242

WORK SUPPORT

Test Item	Description
SECURITY ALARM SET	This mode is able to confirm and change security alarm ON-OFF setting.
THEFT ALM TRG	The switch which triggered vehicle security alarm is recorded. This mode is able to confirm and erase the record of vehicle security alarm. The trigger data can be erased by touching "CLEAR" on CONSULT-III screen.

DATA MONITOR

Monitor Item [Unit]	Description
IGN ON SW [ON/OFF]	Indicates ignition switch (ON) status judged from IGN signal (ignition power supply)
ACC ON SW [ON/OFF]	Indicates ignition switch (ACC) status judged from ACC signal (accessory power supply)
KEYLESS LOCK [ON/OFF]	Indicates lock signal status received from remote keyless entry receiver (integrated in the BCM)
KEYLESS UNLOCK [ON/OFF]	Indicates unlock signal status received from remote keyless entry receiver (integrated in the BCM)
DOOR SW-DR [ON/OFF]	Indicates switch status input from front door switch LH
DOOR SW-AS [ON/OFF]	Indicates switch status input from front door switch RH
DOOR SW-RR [ON/OFF]	Indicates switch status input from rear door switch RH
DOOR SW-RL [ON/OFF]	Indicates switch status input from rear door switch LH
KEY CYL LK-SW [ON/OFF]	Indicates lock switch status from door key cylinder switch
KEY CYL UN-SW [ON/OFF]	Indicates unlock switch status from door key cylinder switch
CDL LOCK SW [ON/OFF]	Indicates lock switch status from door lock and unlock switch
CDL UNLOCK SW [ON/OFF]	Indicates unlock switch status from door lock and unlock switch

ACTIVE TEST

Test Item	Description
THEFT IND	This test is able to check security indicator lamp operation. The lamp will be turned on when "ON" on CONSULT-III screen is touched.
VEHICLE SECURITY HORN	This test is able to check vehicle security horn operation. The horns will be activated for 0.5 seconds after "ON" on CONSULT-III screen is touched.
HEAD LAMP(HI)	This test is able to check vehicle security lamp operation. The headlamps will be activated for 0.5 seconds after "ON" on CONSULT-III screen is touched.

< COMPONENT DIAGNOSIS >

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:000000005384698

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

CAN Communication Signal Chart, refer to [LAN-4, "System Description"](#).

DTC Logic

INFOID:000000005384699

DTCT DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible cause
U1000	CAN COMM CIRCUIT	When BCM cannot communicate CAN communication signal continuously for 2 seconds or more.	In CAN communication system, any item (or items) of the following listed below is malfunctioning. <ul style="list-style-type: none">• Receiving (TCM)• Receiving (ECM)• Receiving (METER/M&A)

Diagnosis Procedure

INFOID:000000005384700

1. PERFORM SELF DIAGNOSTIC

1. Turn ignition switch ON and wait for 2 seconds or more.
2. Check "Self Diagnostic Result".

Is "CAN COMM CIRCUIT" displayed?

YES >> Refer to [LAN-5, "CAN Communication Control Circuit"](#).

NO >> Refer to [GI-38, "Intermittent Incident"](#).

U1010 CONTROL UNIT (CAN)

< COMPONENT DIAGNOSIS >

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000005384701

CAN (Controller Area Network) is a serial communication line for real time applications. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Modern vehicle is equipped with many electronic control unit, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H line, CAN-L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. CAN Communication Signal Chart, refer to [LAN-4. "System Description"](#).

DTC Logic

INFOID:0000000005384702

DTC DETECTION LOGIC

DTC	CONSULT-III display description	DTC Detection Condition	Possible cause
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of BCM.	BCM

Diagnosis Procedure

INFOID:0000000005384703

1. REPLACE BCM

When DTC [U1010] is detected, replace BCM.

>> Replace BCM. Refer to [BCS-53. "Removal and Installation"](#).

Special Repair Requirement

INFOID:0000000005384704

1. REQUIRED WORK WHEN REPLACING BCM

Initialize BCM. Refer to CONSULT-III Operation Manual.

>> Inspection End.

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B2190, P1614 NATS ANTENNA AMP.

< COMPONENT DIAGNOSIS >

B2190, P1614 NATS ANTENNA AMP.

Description

INFOID:0000000005384705

Performs ID verification through BCM and NATS antenna amplifier when ignition key is inserted and ignition switch turned ON.

Prohibits the start of engine when an unregistered ID of ignition key is used.

DTC Logic

INFOID:0000000005384706

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2190			
P1614	NATS ANTENNA AMP	<ul style="list-style-type: none">• Inactive communication between NATS antenna amp. and BCM.• Ignition key is malfunctioning.	<ul style="list-style-type: none">• Harness or connectors (The NATS antenna amp. circuit is open or shorted)• Ignition key• NATS antenna amp.• BCM

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Insert ignition key into the key cylinder.
2. Turn ignition switch ON.
3. Check "Self diagnostic result" with CONSULT-III.

Is DTC detected?

YES >> Refer to [SEC-18, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000005384707

Regarding Wiring Diagram information, refer to [SEC-53, "Wiring Diagram - NVIS -"](#).

1. CHECK NATS ANTENNA AMP. INSTALLATION

Check NATS antenna amp. installation. Refer to [SEC-73, "Removal and Installation"](#).

Is the inspection result normal?

YES >> GO TO 2
NO >> Reinstall NATS antenna amp. correctly.

2. CHECK NVIS (NATS) IGNITION KEY ID CHIP

Start engine with another registered NATS ignition key.

Does the engine start?

YES >>

- Ignition key ID chip is malfunctioning.
- Replace the ignition key.
- Perform initialization with CONSULT-III.
For initialization, refer to "CONSULT-III Operation Manual".

NO >> GO TO 3

3. CHECK POWER SUPPLY FOR NATS ANTENNA AMP.

1. Turn ignition switch ON.
2. Check voltage between NATS antenna amp. connector M21 terminal 1 and ground.

B2190, P1614 NATS ANTENNA AMP.

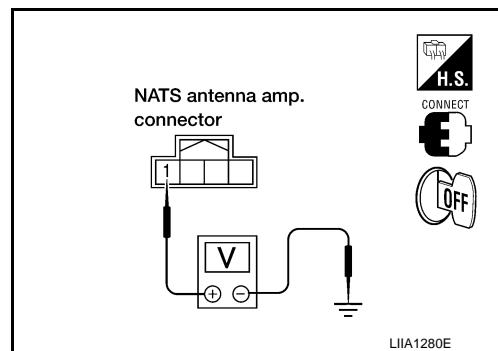
< COMPONENT DIAGNOSIS >

1 - Ground : Battery voltage

Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace fuse or harness.



4. CHECK NATS ANTENNA AMP. GROUND LINE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect NATS antenna amp. connector.
3. Check continuity between NATS antenna amp. connector M21 terminal 3 and ground.

3 - Ground : Continuity should exist.

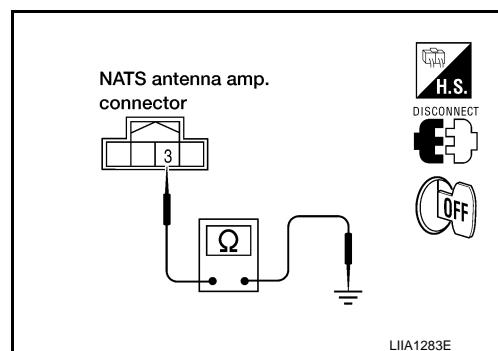
Is the inspection result normal?

YES >> GO TO 5

NO >> • Repair or replace harness.

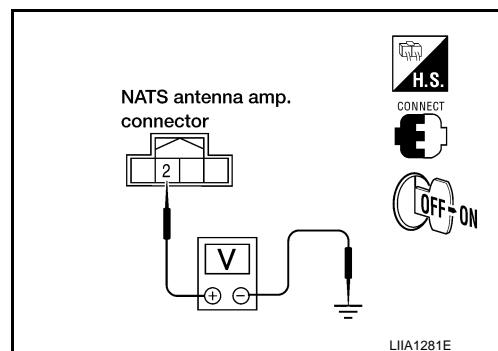
NOTE:

If harness is OK, replace BCM, perform initialization with CONSULT-III. For initialization, refer to "CONSULT-III Operation Manual".



5. CHECK NATS ANTENNA AMP. SIGNAL LINE- 1

1. Connect NATS antenna amp. connector.
2. Turn ignition switch ON.
3. Check voltage between NATS antenna amp. connector M21 terminal 2 and ground with analog tester.



Terminals		Position of ignition key cylinder	Voltage (V) (Approx.)
(+)	(-)		
2	Ground	Before inserting ignition key	Battery voltage
		After inserting ignition key	Pointer of tester should move for approx. 30 seconds, then return to battery voltage
		Just after turning ignition switch ON	Pointer of tester should move for approx. 1 second, then return to battery voltage

Is the inspection result normal?

YES >> GO TO 6

NO >> • Repair or replace harness.

NOTE:

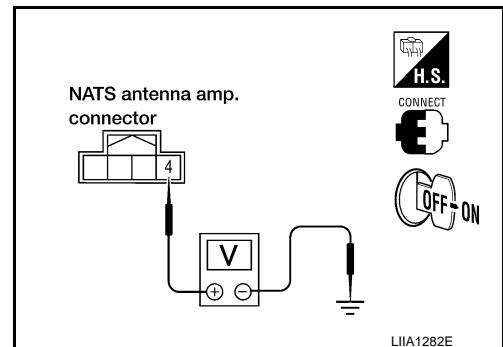
If harness is OK, replace BCM, perform initialization with CONSULT-III. For initialization, refer to "CONSULT-III Operation Manual".

B2190, P1614 NATS ANTENNA AMP.

< COMPONENT DIAGNOSIS >

6. CHECK NATS ANTENNA AMP. SIGNAL LINE- 2

Check voltage between NATS antenna amp. connector M21 terminal 4 and ground with analog tester.



Terminals		Position of ignition key cylinder	Voltage (V) (Approx.)
(+)	(-)		
4	Ground	Before inserting ignition key	Battery voltage
		After inserting ignition key	Pointer of tester should move for approx. 30 seconds, then return to battery voltage
		Just after turning ignition switch ON	Pointer of tester should move for approx. 1 second, then return to battery voltage

Is the inspection result normal?

YES >> NATS antenna amp. is malfunctioning.

NO >> • Repair or replace harness.

NOTE:

If harness is OK, replace BCM, refer to [BCS-53, "Removal and Installation"](#). Perform initialization with CONSULT-III. For initialization, refer to "CONSULT-III Operation Manual".

< COMPONENT DIAGNOSIS >

B2191, P1615 DIFFERENCE OF KEY

Description

INFOID:000000005384708

Performs ID verification through BCM when ignition knob switch is pressed.

Prohibits the release of steering lock or start of engine when an unregistered ID of mechanical key is used.

DTC Logic

INFOID:000000005384709

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2191	DIFFERENCE OF KEY	The ID verification results between BCM and mechanical key are NG. The registration is necessary.	Mechanical key
P1615			

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Insert mechanical key into the key cylinder.
2. Check "Self diagnostic result" with CONSULT-III.

Is DTC detected?

YES >> Refer to [SEC-21, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:000000005384710

1. PERFORM INITIALIZATION

Perform initialization with CONSULT-III. Re-register all mechanical keys.

For initialization and registration of mechanical key. Refer to "CONSULT-III Operation Manual".

Can the system be initialized and can the engine be started with re-registered mechanical key?

YES >> Mechanical key was unregistered.
NO >> BCM is malfunctioning.

- Replace BCM. Refer to [BCS-53, "Removal and Installation"](#).
- Perform initialization again

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< COMPONENT DIAGNOSIS >

B2192, P1611 ID DISCORD, IMMU-ECM

Description

INFOID:0000000005384711

BCM performs the ID verification with ECM that allows the engine to start. BCM starts the communication with ECM if ignition switch is turned ON and starts the engine if the ID is OK. ECM prevents the engine from starting if the ID is not registered.

DTC Logic

INFOID:0000000005384712

DTC DETECTION LOGIC

NOTE:

- If DTC B2192 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [SEC-16, "DTC Logic"](#).
- If DTC B2192 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [SEC-17, "DTC Logic"](#).

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2192	ID DISCORD BCM-ECM	The ID verification results between BCM and ECM are NG. The registration is necessary.	<ul style="list-style-type: none">• BCM• ECM
P1611			

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check "Self diagnostic result" with CONSULT-III.

Is DTC detected?

YES >> Refer to [SEC-22, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000005384713

1. PERFORM INITIALIZATION

Perform initialization with CONSULT-III. Re-register all mechanical keys.

For initialization and registration of mechanical key. Refer to "CONSULT-III Operation Manual".

Can the system be initialized and can the engine be started with re-registered mechanical key?

YES >> ID was unregistered.
NO >> GO TO 2

2. REPLACE BCM

1. Replace BCM. Refer to [BCS-53, "Removal and Installation"](#).
2. Perform initialization with CONSULT-III. Re-register all mechanical keys.
For initialization and registration of mechanical key. Refer to "CONSULT-III Operation Manual".

Can the system be initialized and can the engine be started with re-registered mechanical key?

YES >> BCM is malfunctioning.
NO >> GO TO 3

3. REPLACE ECM

1. Replace ECM. Refer to Removal and Installation.
2. Perform initialization with CONSULT-III. Re-register all mechanical keys.
For initialization and registration of mechanical key. Refer to "CONSULT-III Operation Manual".

Can the system be initialized and can the engine be started with re-registered mechanical key?

YES >> ECM is malfunctioning.
NO >> GO TO 4

4. CHECK INTERMITTENT INCIDENT

Refer to [GI-38, "Intermittent Incident"](#).

>> Inspection End.

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< COMPONENT DIAGNOSIS >

B2193, P1612 CHAIN OF ECM-IMMU

Description

INFOID:0000000005384714

BCM performs the ID verification with ECM that allows the engine to start. BCM starts the communication with ECM if ignition switch is turned ON and starts the engine if the ID is OK. ECM prevents the engine from starting if the ID is not registered.

DTC Logic

INFOID:0000000005384715

DTC DETECTION LOGIC

NOTE:

- If DTC B2193 is displayed with DTC U1000, first perform the trouble diagnosis for DTC U1000. Refer to [SEC-16, "DTC Logic"](#).
- If DTC B2193 is displayed with DTC U1010, first perform the trouble diagnosis for DTC U1010. Refer to [SEC-17, "DTC Logic"](#).

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
B2193			
P1612	CHAIN OF BCM-ECM	Inactive communication between ECM and BCM	<ul style="list-style-type: none">• Harness or connectors (The CAN communication line is open or short)• BCM• ECM

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check "Self diagnostic result" with CONSULT-III.

Is DTC detected?

YES >> Refer to [SEC-24, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000005384716

1. REPLACE BCM

1. Replace BCM. Refer to [BCS-53, "Removal and Installation"](#).
2. Perform initialization with CONSULT-III.
For initialization, refer to "CONSULT-III Operation Manual".

Does the engine start?

YES >> BCM was malfunctioning.
NO >> ECM is malfunctioning.

- Replace ECM.
- Perform ECM re-communicating function.

P1610 LOCK MODE

< COMPONENT DIAGNOSIS >

P1610 LOCK MODE

Description

INFOID:0000000005384717

When the starting operation is carried more than five times consecutively under the following conditions, NATS will shift to the mode which prevents the engine from being started.

- Unregistered mechanical key is used.
- BCM or ECM's malfunctioning.

DTC Logic

INFOID:0000000005384718

DTC DETECTION LOGIC

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P1610	LOCK MODE	When the starting operation is carried out five or more times consecutively under the following conditions. <ul style="list-style-type: none">• Unregistered mechanical key• BCM or ECM's malfunctioning.	—

DTC CONFIRMATION PROCEDURE

1. PERFORM DTC CONFIRMATION PROCEDURE

1. Turn ignition switch ON.
2. Check "Self diagnostic result" with CONSULT-III.

Is DTC detected?

YES >> Refer to [SEC-25, "Diagnosis Procedure"](#).
NO >> Inspection End.

Diagnosis Procedure

INFOID:0000000005384719

1. CHECK ENGINE START FUNCTION

1. Perform the check for DTC except DTC P1610.
2. Use CONSULT-III to erase DTC after fixing.
3. Check that engine can start with registered mechanical key.

Does the engine start?

YES >> Inspection End.
NO >> GO TO 2

2. CHECK INTERMITTENT INCIDENT

Refer to [GI-38, "Intermittent Incident"](#).

>> Inspection End.

POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

POWER SUPPLY AND GROUND CIRCUIT BCM

BCM : Diagnosis Procedure

INFOID:000000005661255

1. CHECK FUSES AND FUSIBLE LINK

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

Terminal No.	Signal name	Fuses and fusible link No.
57	Battery power supply	22 (15A)
70		F (50A)
11	Ignition ACC or ON	4 (10A)
38	Ignition ON or START	59 (10A)

Is the fuse blown?

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

2. CHECK POWER SUPPLY CIRCUIT

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

Connector	Terminals		Power source	Condition	Voltage (V) (Ap- prox.)
	(+)	(-)			
M18	11	Ground	ACC power supply	Ignition switch ACC or ON	Battery voltage
	38	Ground	Ignition power supply	Ignition switch ON or START	Battery voltage
M20	57	Ground	Battery power supply	Ignition switch OFF	Battery voltage
	70	Ground	Battery power supply	Ignition switch OFF	Battery voltage

Is the measurement value normal?

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

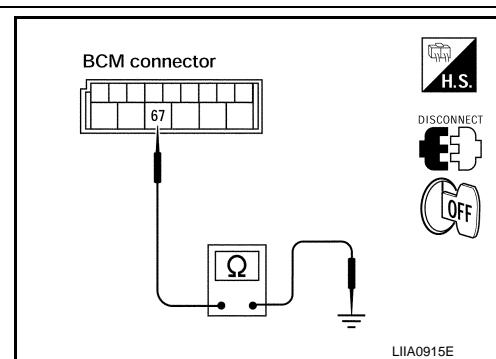
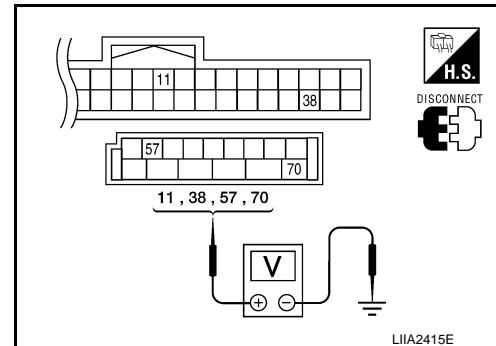
3. CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

BCM		Ground	Continuity
Connector	Terminal		
M20	67		Yes

Does continuity exist?

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



KEY CYLINDER SWITCH

< COMPONENT DIAGNOSIS >

KEY CYLINDER SWITCH

KING CAB

KING CAB : Description

INFOID:000000005384721

The main power window and door lock/unlock switch detects condition of the door key cylinder switch and transmits to BCM as the LOCK or UNLOCK signal.

KING CAB : Component Function Check

INFOID:000000005384722

1. CHECK DOOR KEY CYLINDER SWITCH INPUT SIGNAL

Check "KEY CYL LK-SW" AND "KEY CYL UN-SW" in DATA MONITOR mode for "POWER DOOR LOCK SYSTEM" with CONSULT-III.

Monitor item	Condition	
KEY CYL LK-SW	Lock	: ON
	Neutral / Unlock	: OFF
KEY CYL UN-SW	Unlock	: ON
	Neutral / Lock	: OFF

Is the inspection result normal?

YES >> Key cylinder switch is OK.

NO >> Refer to [SEC-27, "KING CAB : Diagnosis Procedure".](#)

KING CAB : Diagnosis Procedure

INFOID:000000005384723

Regarding Wiring Diagram information, refer to [SEC-44, "Wiring Diagram - VEHICLE SECURITY SYSTEM".](#)

1. CHECK DOOR KEY CYLINDER SWITCH LH

With CONSULT-III

Check front door lock assembly LH (key cylinder switch) ("KEY CYL LK-SW") and ("KEY CYL UN-SW") in DATA MONITOR mode with CONSULT-III. Refer to [DLK-19, "DOOR LOCK : CONSULT-III Function \(BCM - DOOR LOCK\)".](#)

- When key inserted in front key cylinder is turned to LOCK:

KEY CYL LK-SW : ON

- When key inserted in front key cylinder is turned to UNLOCK:

KEY CYL UN-SW : ON

Without CONSULT-III

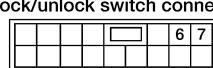
Check voltage between main power window and door lock/unlock switch connector D15 terminals 6, 7 and ground.

KEY CYLINDER SWITCH

< COMPONENT DIAGNOSIS >

Connector	Terminals		Condition	Voltage (V) (Approx.)	
	(+)	(-)			
D15	6	Ground	Neutral/Unlock	5	
			Lock	0	
	7		Neutral/Lock	5	
			Unlock	0	

Main power window and door lock/unlock switch connector



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Is the inspection result normal?

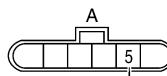
YES >> Front door lock assembly LH (key cylinder switch) signal is OK.

NO >> GO TO 2

2. CHECK DOOR KEY CYLINDER SWITCH LH GROUND HARNESS

1. Turn ignition switch OFF.
2. Disconnect front door lock assembly LH (key cylinder switch).
3. Check continuity between front door lock assembly LH (key cylinder switch) connector (A) D14 terminal 5 and body ground.

Connector	Terminals	Continuity
D14	5 – Ground	Yes



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Is the inspection result normal?

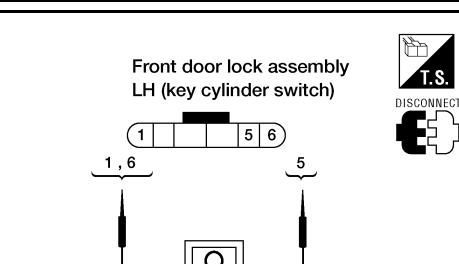
YES >> GO TO 3

NO >> Repair or replace harness.

3. CHECK DOOR KEY CYLINDER SWITCH LH

Check continuity between front door lock assembly LH (key cylinder switch) terminals.

Terminals	Condition	Continuity
1 – 5	Key is turned to UNLOCK or neutral.	No
	Key is turned to LOCK.	Yes
5 – 6	Key is turned to LOCK or neutral.	No
	Key is turned to UNLOCK.	Yes



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Is the inspection result normal?

YES >> GO TO 4

NO >> Replace front door lock assembly LH (key cylinder switch). Refer to [DLK-124, "Removal and Installation".](#)

4. CHECK DOOR KEY CYLINDER HARNESS

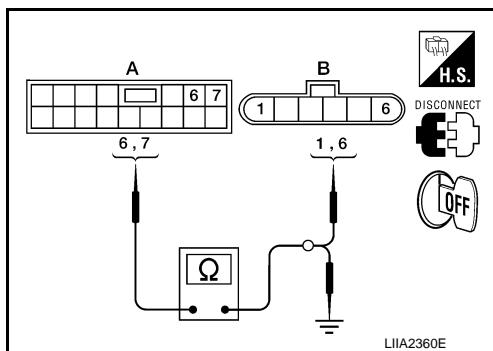
1. Disconnect main power window and door lock/unlock switch.

KEY CYLINDER SWITCH

< COMPONENT DIAGNOSIS >

2. Check continuity between main power window and door lock/ unlock switch connector (A) D15 terminals 6, 7 and front door lock assembly LH (key cylinder switch) connector (B) D14 terminals 1, 6 and body ground.

Connector	Terminals	Connector	Terminals	Continuity
A: Main power window and door lock/ unlock switch	6	B: Front door lock assembly LH (key cylinder switch)	1	Yes
	7		6	Yes
	6, 7	Ground		No



Is the inspection result normal?

YES >> Replace main power window and door lock/unlock switch.
NO >> Repair or replace harness.

CREW CAB

CREW CAB : Description

INFOID:0000000005384724

The main power window and door lock/unlock switch detects condition of the door key cylinder switch and transmits to BCM as the LOCK or UNLOCK signal.

CREW CAB : Component Function Check

INFOID:0000000005384725

1. CHECK DOOR KEY CYLINDER SWITCH INPUT SIGNAL

Check "KEY CYL LK-SW" AND "KEY CYL UN-SW" in DATA MONITOR mode for "POWER DOOR LOCK SYSTEM" with CONSULT-III.

Monitor item	Condition	
KEY CYL LK-SW	Lock	: ON
	Neutral / Unlock	: OFF
KEY CYL UN-SW	Unlock	: ON
	Neutral / Lock	: OFF

Is the inspection result normal?

YES >> Key cylinder switch is OK.
NO >> Refer to [SEC-29, "CREW CAB : Diagnosis Procedure"](#).

CREW CAB : Diagnosis Procedure

INFOID:0000000005384726

Regarding Wiring Diagram information, refer to [SEC-44, "Wiring Diagram - VEHICLE SECURITY SYSTEM"](#).

1. CHECK DOOR KEY CYLINDER SWITCH LH

With CONSULT-III

Check front door lock assembly LH (key cylinder switch) ("KEY CYL LK-SW") and ("KEY CYL UN-SW") in DATA MONITOR mode with CONSULT-III. Refer to [DLK-19, "DOOR LOCK : CONSULT-III Function \(BCM - DOOR LOCK\)"](#).

- When key inserted in front key cylinder is turned to LOCK:

KEY CYL LK-SW : ON

- When key inserted in front key cylinder is turned to UNLOCK:

KEY CYLINDER SWITCH

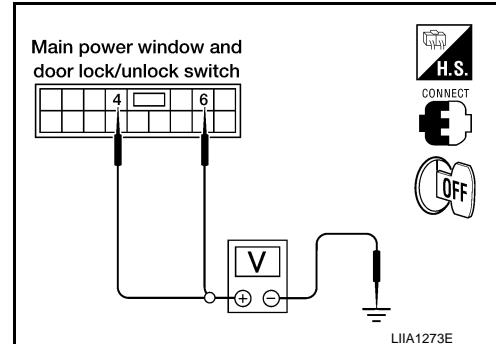
< COMPONENT DIAGNOSIS >

KEY CYL UN-SW : ON

Without CONSULT-III

Check voltage between main power window and door lock/unlock switch connector D7 terminals 4, 6 and ground.

Connector	Terminals		Condition	Voltage (V) (Approx.)	
	(+)	(-)			
D7	4	Ground	Neutral/Unlock	5	
			Lock	0	
	6		Neutral/Lock	5	
			Unlock	0	



Is the inspection result normal?

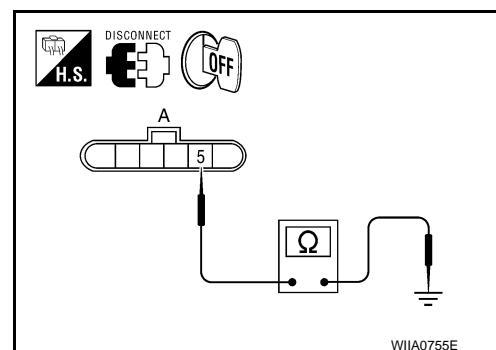
YES >> Front door lock assembly LH (key cylinder switch) signal is OK.

NO >> GO TO 2

2. CHECK DOOR KEY CYLINDER SWITCH LH GROUND HARNESS

1. Turn ignition switch OFF.
2. Disconnect front door lock assembly LH (key cylinder switch).
3. Check continuity between front door lock assembly LH (key cylinder switch) connector (A) D14 terminal 5 and body ground.

Connector	Terminals	Continuity
D14	5 – Ground	Yes



Is the inspection result normal?

YES >> GO TO 3

NO >> Repair or replace harness.

3. CHECK DOOR KEY CYLINDER SWITCH LH

Check continuity between front door lock assembly LH (key cylinder switch) terminals.

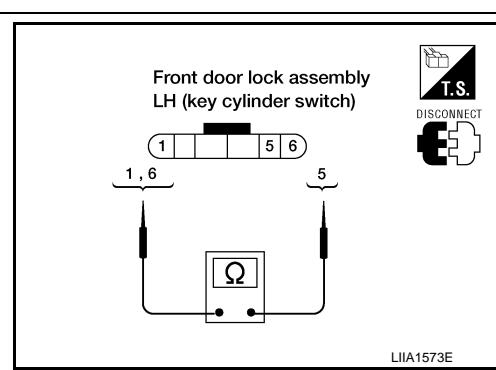
Terminals	Condition	Continuity
1 – 5	Key is turned to UNLOCK or neutral.	No
	Key is turned to LOCK.	Yes
5 – 6	Key is turned to LOCK or neutral.	No
	Key is turned to UNLOCK.	Yes

Is the inspection result normal?

YES >> GO TO 4

NO >> Replace front door lock assembly LH (key cylinder switch). Refer to [DLK-124, "Removal and Installation"](#).

4. CHECK DOOR KEY CYLINDER HARNESS

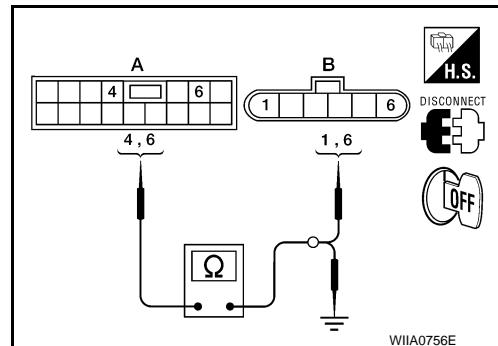


KEY CYLINDER SWITCH

< COMPONENT DIAGNOSIS >

1. Disconnect main power window and door lock/unlock switch.
2. Check continuity between main power window and door lock/ unlock switch connector (A) D7 terminals 4, 6 and front door lock assembly LH (key cylinder switch) connector (B) D14 terminals 1, 6 and body ground.

Connector	Terminals	Connector	Terminals	Continuity
A: Main power window and door lock/ unlock switch	4	B: Front door lock assembly LH (key cylinder switch)	1	Yes
	6		6	Yes
	4, 6	Ground		No



Is the inspection result normal?

YES >> Replace main power window and door lock/unlock switch.
 NO >> Repair or replace harness.

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HORN FUNCTION

< COMPONENT DIAGNOSIS >

HORN FUNCTION

Description

INFOID:0000000005384727

Perform answer-back for each operation with horn.

Component Function Check

INFOID:0000000005384728

1. CHECK FUNCTION

1. Select "VEHICLE SECURITY HORN" in "ACTIVE TEST" mode with CONSULT-III.
2. Check the horn (high/low) operation.

Test item		Description	
HORN	ON	Horn relay	ON (for 20 ms)

Is the operation normal?

YES >> Inspection End.

NO >> Go to [SEC-32, "Diagnosis Procedure".](#)

Diagnosis Procedure

INFOID:0000000005384729

Regarding Wiring Diagram information, refer to [SEC-44, "Wiring Diagram - VEHICLE SECURITY SYSTEM".](#)

1. CHECK HORN FUNCTION

Check horn function with horn switch

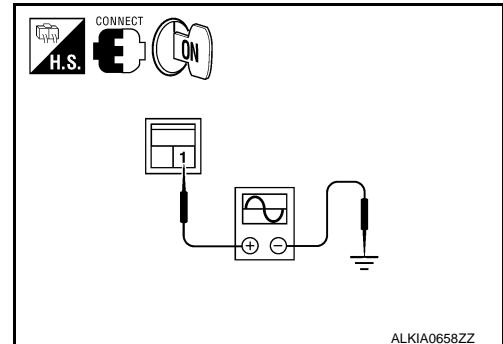
Do the horns sound?

YES >> GO TO 2

NO >> Go to [HRN-3, "Wiring Diagram".](#)

2. CHECK HORN RELAY POWER SUPPLY

1. Turn ignition switch ON.
2. Perform "ACTIVE TEST", "VEHICLE SECURITY HORN" with CONSULT-III.
3. Using an oscilloscope or analog voltmeter, check voltage between horn relay harness connector and ground.



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Horn relay		Ground	Test item		Voltage (V) (Approx.)
Connector	Terminal		HORN	ON	
H-1	1	Ground		ON	Battery voltage → 0 → Battery voltage
				Other than above	Battery voltage

Is the inspection result normal?

YES >> GO TO 4

NO >> GO TO 3

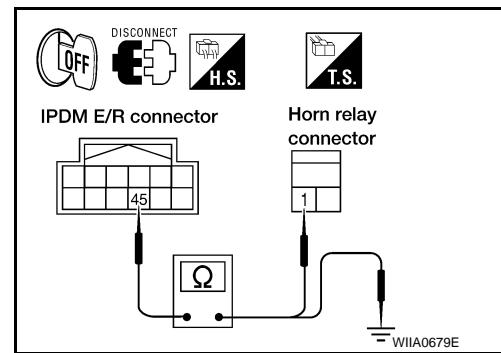
3. CHECK HORN RELAY CIRCUIT

1. Turn ignition switch OFF.

HORN FUNCTION

< COMPONENT DIAGNOSIS >

2. Disconnect IPDM E/R and horn relay connector.
3. Check continuity between IPDM E/R harness connector and horn relay harness connector.



IPDM E/R		Horn relay		Continuity	
Connector	Terminal	Connector	Terminal		
E122	45		H-1	1	Yes

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

IPDM E/R		Ground	Continuity
Connector	Terminal		
E122	45	Ground	No

Is the inspection result normal?

YES >> GO TO 4

NO >> Repair or replace harness.

4. CHECK INTERMITTENT INCIDENT

Refer to [GI-38, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to [PCS-30, "Removal and Installation of IPDM E/R"](#).

NO >> Repair or replace the malfunctioning part.

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VEHICLE SECURITY INDICATOR

< COMPONENT DIAGNOSIS >

3. Check continuity between BCM connector (A) M18 terminal 23 and security indicator lamp harness connector (B) M24 terminal 28.

23 - 28 : Continuity should exist.

4. Check continuity between BCM connector (A) M18 terminal 23 and ground.

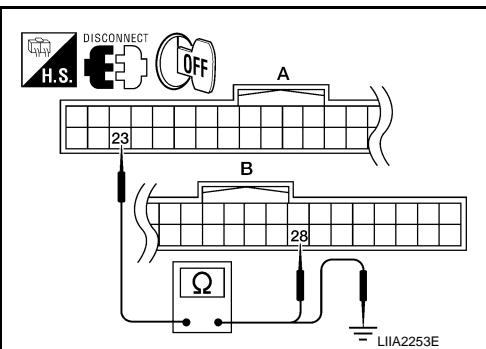
23 - Ground : Continuity should not exist.

Is the inspection result normal?

YES >> Check the following:

- 10A fuse [No. 19, located in fuse block (J/B)]
- Harness for open or short between security indicator lamp and fuse

NO >> Repair or replace harness.



BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

ECU DIAGNOSIS

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000005661243

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status
AIR COND SW	A/C switch OFF	OFF
	A/C switch ON	ON
AUT LIGHT SYS	Outside of the room is dark	OFF
	Outside of the room is bright	ON
AUTO LIGHT SW	Lighting switch OFF	OFF
	Lighting switch AUTO	ON
CDL LOCK SW	Door lock/unlock switch does not operate	OFF
	Press door lock/unlock switch to the LOCK side	ON
CDL UNLOCK SW	Door lock/unlock switch does not operate	OFF
	Press door lock/unlock switch to the UNLOCK side	ON
DOOR SW-AS	Front door RH closed	OFF
	Front door RH opened	ON
DOOR SW-DR	Front door LH closed	OFF
	Front door LH opened	ON
DOOR SW-RL	Rear door LH closed	OFF
	Rear door LH opened	ON
DOOR SW-RR	Rear door RH closed	OFF
	Rear door RH opened	ON
ENGINE RUN	Engine stopped	OFF
	Engine running	ON
FR FOG SW	Front fog lamp switch OFF	OFF
	Front fog lamp switch ON	ON
FR WASHER SW	Front washer switch OFF	OFF
	Front washer switch ON	ON
FR WIPER LOW	Front wiper switch OFF	OFF
	Front wiper switch LO	ON
FR WIPER HI	Front wiper switch OFF	OFF
	Front wiper switch HI	ON
FR WIPER INT	Front wiper switch OFF	OFF
	Front wiper switch INT	ON
FR WIPER STOP	Any position other than front wiper stop position	OFF
	Front wiper stop position	ON
HAZARD SW	When hazard switch is not pressed	OFF
	When hazard switch is pressed	ON
LIGHT SW 1ST	Lighting switch OFF	OFF
	Lighting switch 1st	ON
HEAD LAMP SW 1	Headlamp switch OFF	OFF
	Headlamp switch 1st	ON

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

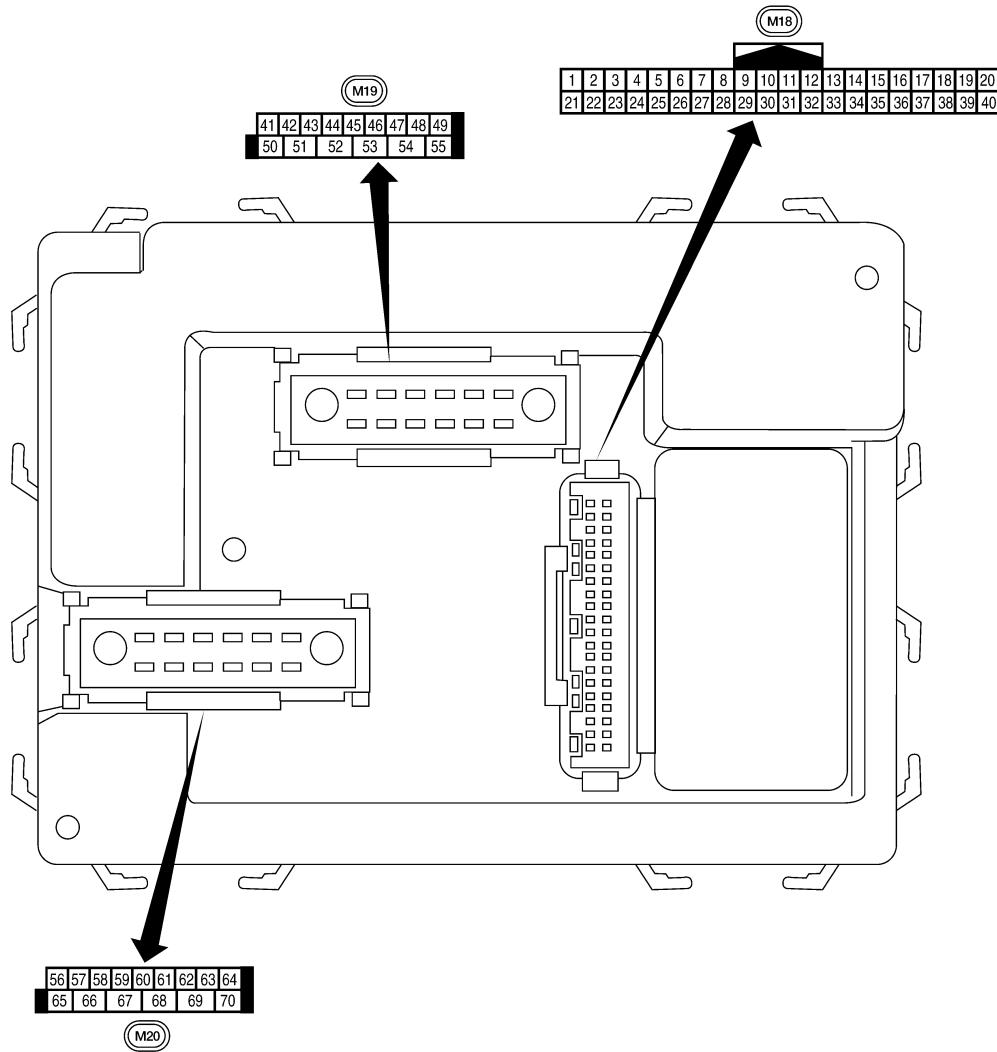
Monitor Item	Condition	Value/Status	
HEAD LAMP SW 2	Headlamp switch OFF	OFF	A
	Headlamp switch 1st	ON	
HI BEAM SW	High beam switch OFF	OFF	B
	High beam switch HI	ON	
IGN ON SW	Ignition switch OFF or ACC	OFF	C
	Ignition switch ON	ON	
IGN SW CAN	Ignition switch OFF or ACC	OFF	D
	Ignition switch ON	ON	
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7	
KEY ON SW	Key is removed from key cylinder	OFF	E
	Key is inserted to key cylinder	ON	
KEYLESS LOCK	LOCK button of key fob is not pressed	OFF	F
	LOCK button of key fob is pressed	ON	
KEYLESS UNLOCK	UNLOCK button of key fob is not pressed	OFF	G
	UNLOCK button of key fob is pressed	ON	
OIL PRESS SW	• Ignition switch OFF or ACC • Engine running	OFF	
	Ignition switch ON	ON	
PASSING SW	Other than lighting switch PASS	OFF	H
	Lighting switch PASS	ON	
REAR DEF SW	Rear window defogger switch OFF	OFF	I
	Rear window defogger switch ON	ON	
TAIL LAMP SW	Lighting switch OFF	OFF	J
	Lighting switch 1ST	ON	
TURN SIGNAL L	Turn signal switch OFF	OFF	
	Turn signal switch LH	ON	
TURN SIGNAL R	Turn signal switch OFF	OFF	
	Turn signal switch RH	ON	
VEHICLE SPEED	While driving	Equivalent to speedometer reading	L
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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal Layout

INFOID:000000005661244



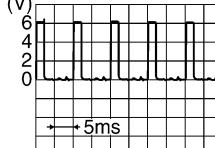
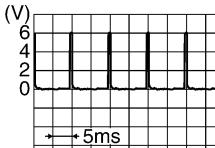
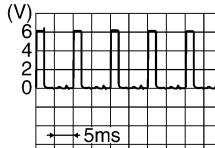
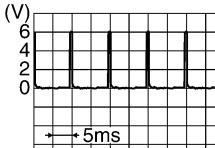
LIIA2443E

Physical Values

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BCM (BODY CONTROL MODULE)

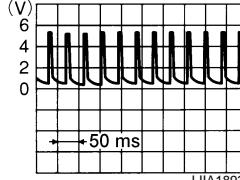
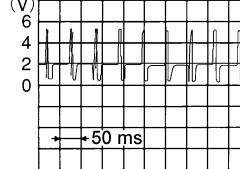
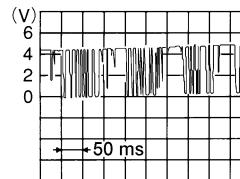
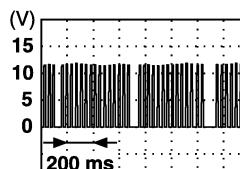
< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
1	BR/W	Ignition keyhole illumination	Output	OFF	Door is locked (SW OFF) Door is unlocked (SW OFF)	Battery voltage 0V
2	SB	Combination switch input 5	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
3	G/Y	Combination switch input 4	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
4	Y	Combination switch input 3	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
5	G/B	Combination switch input 2	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
6	V	Combination switch input 1				
9	Y/B	Rear window defogger switch (Crew Cab)	Input	ON	Rear window defogger switch ON Rear window defogger switch OFF	0V 5V
11	O	Ignition switch (ACC or ON)	Input	ACC or ON	Ignition switch ACC or ON	Battery voltage
12	R/L	Front door switch RH (All)	Input	OFF	ON (open)	0V
		Rear door switch lower RH (King Cab)			OFF (closed)	Battery voltage
13	GR	Rear door switch RH (Crew Cab)	Input	OFF	ON (open) OFF (closed)	0V Battery voltage
15	L/W	Tire pressure warning check connector	Input	OFF	—	5V

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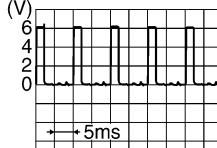
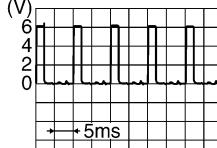
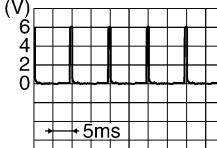
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
18	P	Remote keyless entry receiver and optical sensor (ground)	Output	OFF	—	0V
19	V/W	Remote keyless entry receiver (power supply)	Output	OFF	Ignition switch OFF	 LIIA1893E
20	G/W	Remote keyless entry receiver (signal)	Input	OFF	Stand-by (keyfob buttons released)	 LIIA1894E
					When remote keyless entry receiver receives signal from keyfob (keyfob buttons pressed)	 LIIA1895E
21	G	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move for approx. 1 second, then return to battery voltage.
22	G	BUS	—	—	Ignition switch ON or power window timer operates	 PIIA2344E
23	G/O	Security indicator lamp	Output	OFF	Goes OFF → illuminates (Every 2.4 seconds)	Battery voltage → 0V
25	BR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF → ON)	Just after turning ignition switch ON: Pointer of tester should move for approx. 1 second, then return to battery voltage.
27	W/R	Compressor ON signal	Input	ON	A/C switch OFF	5V
					A/C switch ON	0V
28	L/R	Front blower monitor	Input	ON	Front blower motor OFF	Battery voltage
					Front blower motor ON	0V
29	W/B	Hazard switch	Input	OFF	ON	0V
					OFF	5V
31	P/L	Cargo lamp switch	Input	OFF	Cargo lamp switch ON	0
					Cargo lamp switch OFF	Battery voltage

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
32	R/G	Combination switch output 5	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
33	R/Y	Combination switch output 4	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
34	L	Combination switch output 3	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5291E
35	O/B	Combination switch output 2	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	 SKIA5292E
36	R/W	Combination switch output 1				
37	B/R	Key switch and key lock solenoid	Input	OFF	Key inserted	Battery voltage
					Key inserted	0V
38	W/L	Ignition switch (ON)	Input	ON	—	Battery voltage
39	L	CAN-H	—	—	—	—
40	P	CAN-L	—	—	—	—
47	SB	Front door switch LH (All)	Input	OFF	ON (open)	0V
		Rear door switch lower LH (King Cab)				
		Rear door switch upper LH (King Cab)			OFF (closed)	Battery voltage
48	R/Y	Rear door switch LH (Crew Cab)	Input	OFF	ON (open)	0V
					OFF (closed)	Battery voltage
50	R/Y	Cargo bed lamp control	Output	OFF	Cargo lamp switch (ON)	0V
					Cargo lamp switch (OFF)	Battery voltage

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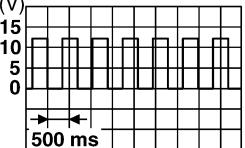
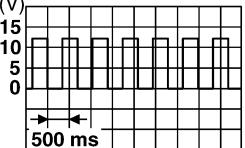
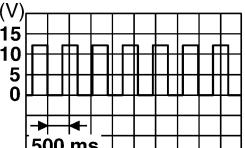
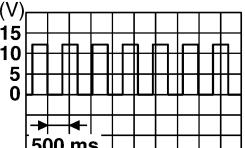
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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value or waveform (Approx.)		
				Ignition switch	Operation or condition			
51	G/Y	Trailer turn signal (right)	Output	ON	Turn right ON	 SKIA3009J		
52	G/B	Trailer turn signal (left)	Output	ON	Turn left ON	 SKIA3009J		
56	R/G	Battery saver output	Output	OFF	30 minutes after ignition switch is turned OFF	0V		
				ON	—	Battery voltage		
57	Y/R	Battery power supply	Input	OFF	—	Battery voltage		
58	W/R	Optical sensor	Input	ON	When optical sensor is illuminated	3.1V or more		
					When optical sensor is not illuminated	0.6V or less		
59	G	Front door lock assembly LH actuator (unlock)	Output	OFF	OFF (neutral)	0V		
					ON (unlock)	Battery voltage		
60	G/B	Turn signal (left)	Output	ON	Turn left ON	 SKIA3009J		
61	G/Y	Turn signal (right)	Output	ON	Turn right ON	 SKIA3009J		
62	R/W	Step lamp LH and RH	Output	OFF	ON (any door open)	0V		
					OFF (all doors closed)	Battery voltage		
63	L	Interior room/map lamp	Output	OFF	Any door switch	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>ON (open)</td> </tr> <tr> <td>OFF (closed)</td> </tr> </table>	ON (open)	OFF (closed)
ON (open)								
OFF (closed)								
ON (open)	0V							
65	V	All door lock actuators (lock)	Output	OFF	OFF (neutral)	0V		
					ON (lock)	Battery voltage		
66	G/Y	Front door lock actuator RH and rear door lock actuators LH/RH (unlock)	Output	OFF	OFF (neutral)	0V		
					ON (unlock)	Battery voltage		

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value or waveform (Approx.)
				Ignition switch	Operation or condition	
67	B	Ground	Input	ON	—	0V
68	W/L	Power window power supply (RAP)	Output	—	Ignition switch ON	Battery voltage
					Within 45 seconds after ignition switch OFF	Battery voltage
					More than 45 seconds after ignition switch OFF	0V
					When front door LH or RH is open or power window timer operates	0V
69	W/R	Power window power supply	Output	—	—	Battery voltage
70	W/B	Battery power supply	Input	OFF	—	Battery voltage

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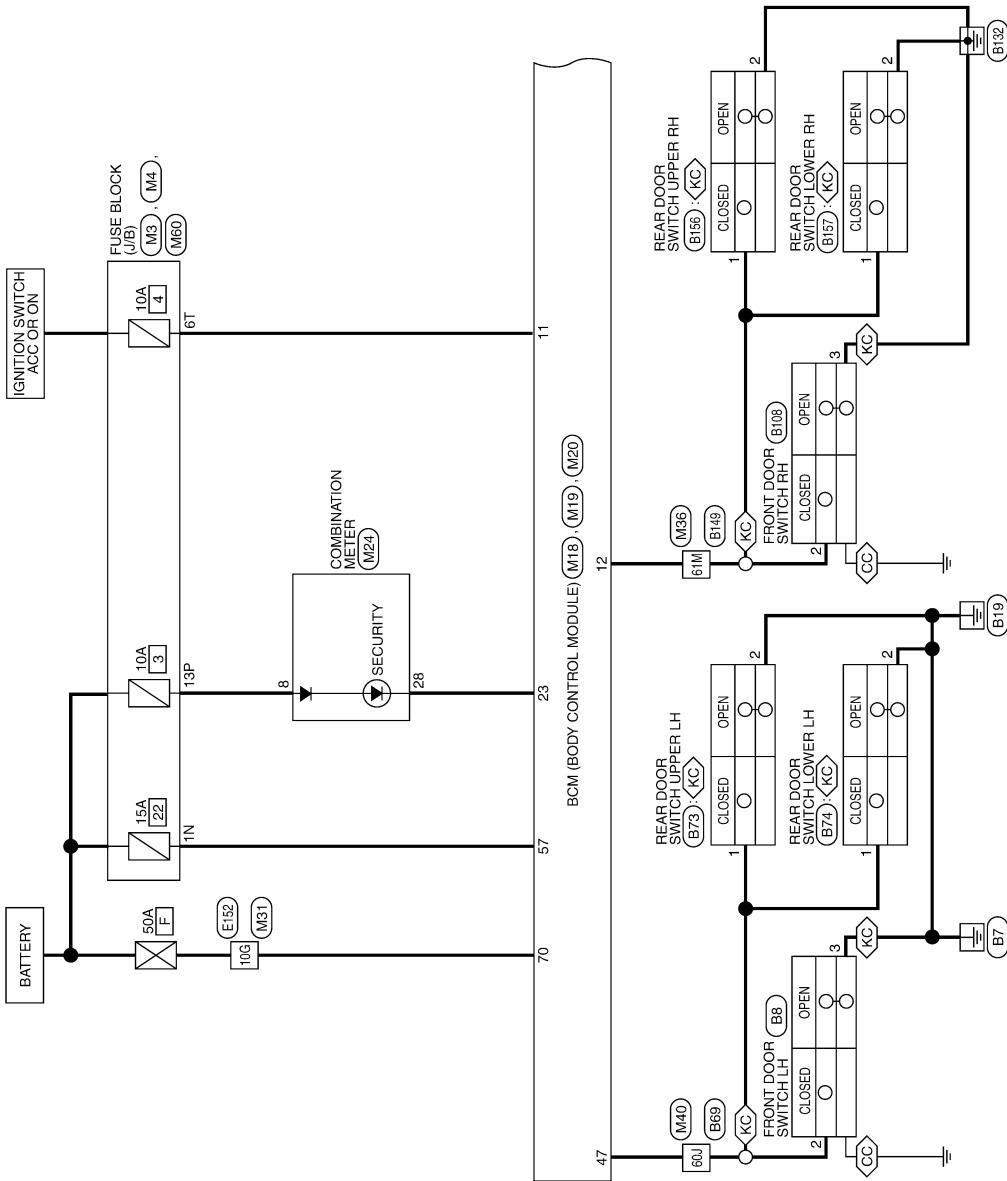
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Wiring Diagram - VEHICLE SECURITY SYSTEM

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KC : KING CAB

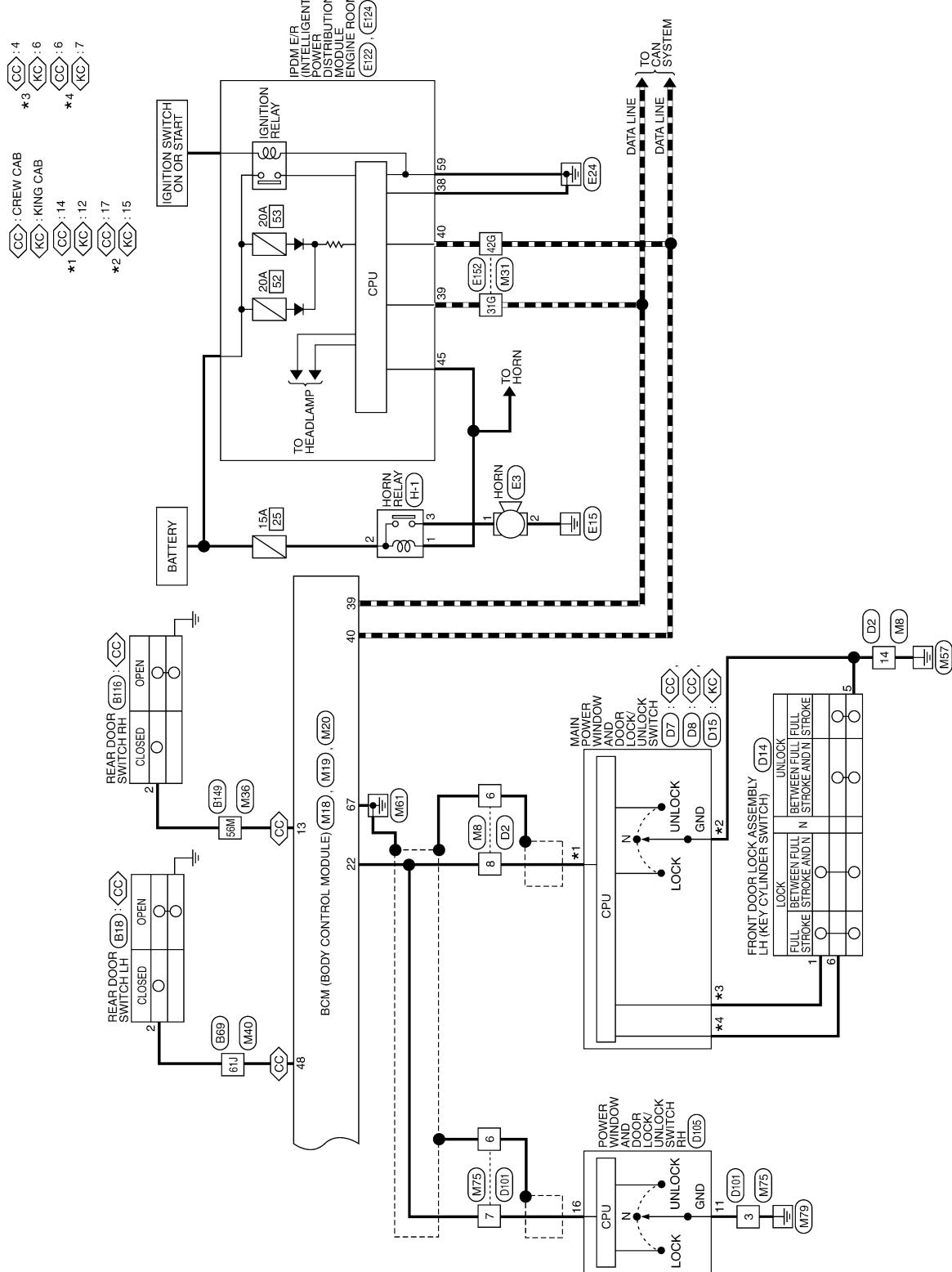


VEHICLE SECURITY SYSTEM

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BCM (BODY CONTROL MODULE)

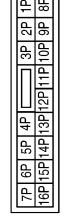
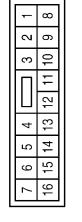
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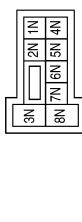
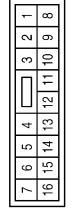
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

VEHICLE SECURITY SYSTEM CONNECTORS

Connector No.	M3	Connector No.	M4
Connector Name	FUSE BLOCK (J/B)	Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE	Connector Color	WHITE
			
			

Terminal No.	Color of Wire	Signal Name	Terminal No.	Color of Wire	Signal Name
1N	Y/R	—	13P	P	—

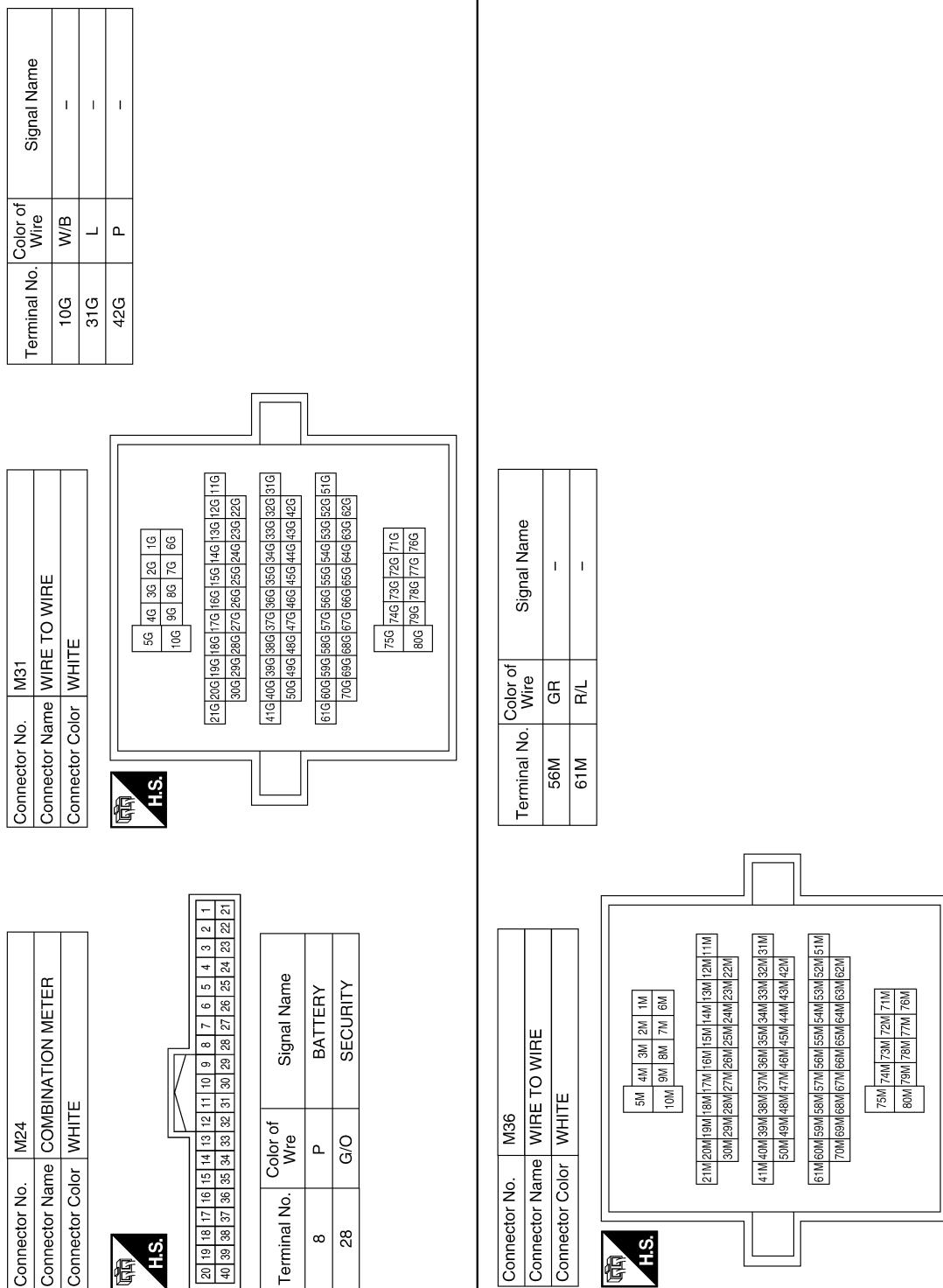
Connector No.	M18	Connector No.	M19
Connector Name	BCM (BODY CONTROL MODULE)	Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE	Connector Color	WHITE
			
			

Terminal No.	Color of Wire	Signal Name	Terminal No.	Color of Wire	Signal Name
11	O	ACC SW	47	SB	DOOR SW (DR)
12	R/L	DOOR SW (AS)	48	R/Y	DOOR SW (RL)
13	GR	DOOR SW (RR)			
22	G	ANTI-PINCH SERIAL LINK (RX,TX)			
23	G/O	SECURITY INDICATOR OUTPUT			
39	L	CAN-H			
40	P	CAN-L			

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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

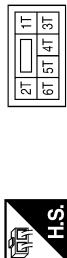


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BCM (BODY CONTROL MODULE)

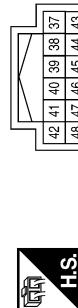
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Terminal No.	Color of Wire	Signal Name
60J	SB	—
61J	R/Y	—



Connector No.	M60
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE

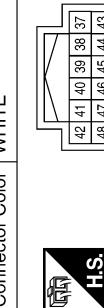
Terminal No.	Color of Wire	Signal Name
6T	O	—



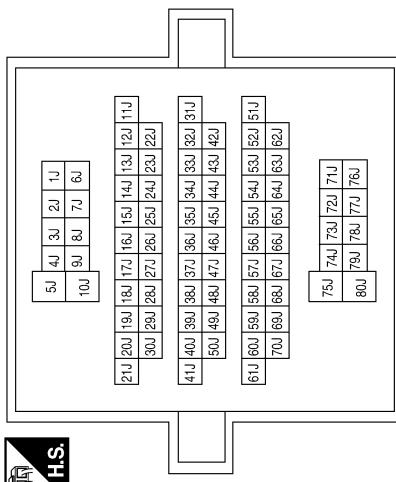
Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
6T	O	—



Connector No.	M40
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	M75
Connector Name	WIRE TO WIRE
Connector Color	WHITE



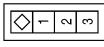
Terminal No.	Color of Wire	Signal Name
1	G	—
2	B	—

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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



Terminal No.	Color of Wire	Signal Name
59	B	GND (POWER)

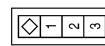
Terminal No.	Color of Wire	Signal Name
1	2G	3G
2	6G	7G
3	8G	9G
4	10G	

11G12G	13G14G	15G16G	17G18G	19G20G	21G
22G23G	24G25G	26G27G	28G29G	30G	
31G32G	33G34G	35G36G	37G38G	39G40G	41G
42G43G	44G45G	46G47G	48G49G	50G	
51G52G	53G54G	55G56G	57G58G	59G60G	61G
62G	63G	64G	65G	66G	67G
68G69G	70G	71G	72G	73G	74G
75G76G	77G	78G	79G	80G	

71G	72G	73G	74G	75G
76G	77G	78G	79G	80G

Terminal No.	Color of Wire	Signal Name
10G	W/B	—
31G	L	—
42G	P	—

Connector No.	B18
Connector Name	REAR DOOR SWITCH LH
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
2	R/Y	—

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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Connector No.	B69
Connector Name	WIRE TO WIRE
Connector Color	WHITE

Terminal No.	Color of Wire	Signal Name
60J	SB	—
61J	RY	—

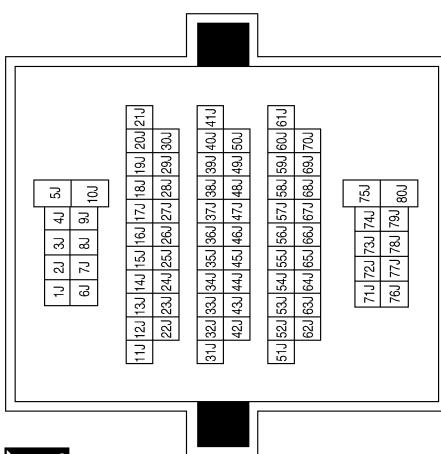


Terminal No.	Color of Wire	Signal Name
1	SB	—
2	—	—



Terminal No.	Color of Wire	Signal Name
1	SB	—
2	B	—

Connector No.	B74
Connector Name	REAR DOOR SWITCH LOWER LH
Connector Color	BLACK



Connector No.	B108
Connector Name	FRONT DOOR SWITCH RH
Connector Color	WHITE



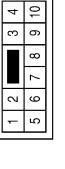
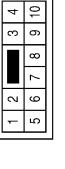
Terminal No.	Color of Wire	Signal Name
1	SB	—
2	B	—

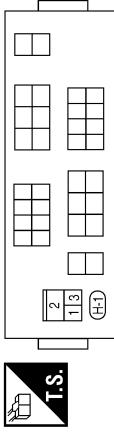
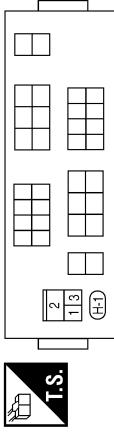
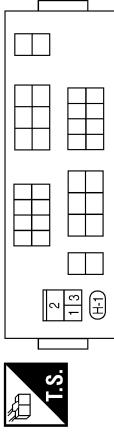
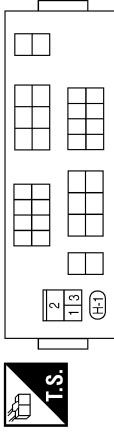


Terminal No.	Color of Wire	Signal Name
1	GR	—
2	—	—

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Connector No.	D14	Connector No.	D15
Connector Name	FRONT DOOR LOCK ASSEMBLY LH	Connector Name	MAIN POWER WINDOW AND DOOR LOCK/UNLOCK SWITCH (WITH KING CAB)
Connector Color	BLACK	Connector Color	WHITE
			
			
Terminal No.	Color of Wire	Signal Name	
1	L	LOCK	
5	B	GND	
6	R	UNLOCK	
11	B	GND	
16	LG/W	ANTI PINCH SERIAL LINK	
Terminal No.	Color of Wire	Signal Name	
6	L	LOCK	
7	R	UNLOCK	
12	LG/W	ANTI PINCH SERIAL LINK	
15	B	GND	
Terminal No.	Color of Wire	Signal Name	
3	B	-	
6	SHIELD	-	
7	LG/W	-	

Connector No.	H-1	Connector No.	H-1
Connector Name	FUSE AND FUSIBLE LINK BOX (HORN RELAY)	Connector Name	FUSE AND FUSIBLE LINK BOX (HORN RELAY)
Connector Color	-	Connector Color	-
			
			
Terminal No.	Color of Wire	Signal Name	
1	RW	-	
2	G/B	-	
3	G	-	
Terminal No.	Color of Wire	Signal Name	
11	B	GND	
16	LG/W	ANTI PINCH SERIAL LINK	

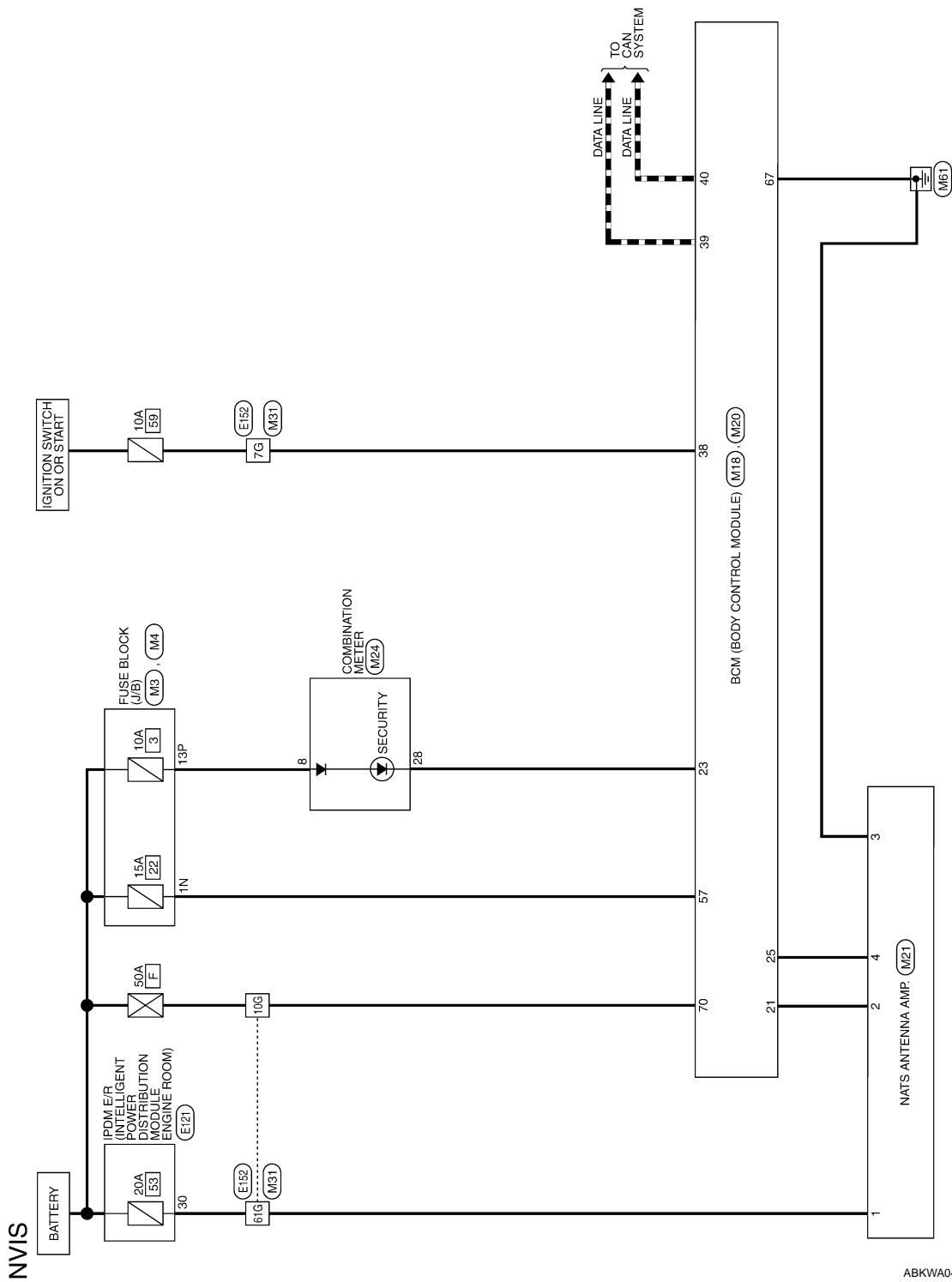
ABKIA1435GB

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Wiring Diagram - NVIS -

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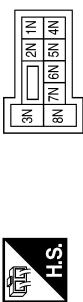
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BCM (BODY CONTROL MODULE)

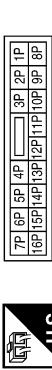
< ECU DIAGNOSIS >

NVIS CONNECTORS

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Connector No.	M4
Connector Name	FUSE BLOCK (J/B)
Connector Color	WHITE



Connector No.	M18
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	WHITE



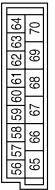
Terminal No.	Color of Wire	Signal Name	Terminal No.	Color of Wire	Signal Name
13P	P	—	21	G	IMMOBILIZER ANTENNA SIGNAL (CLOCK)
			23	GO	SECURITY INDICATOR OUTPUT
			25	BR	IMMOBILIZER ANTENNA SIGNAL (RX, TX)
			38	WL	IGN SW
			39	L	CAN-H
			40	P	CAN-L

Connector No.	M24
Connector Name	COMBINATION METER
Connector Color	WHITE

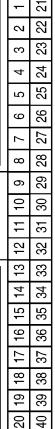


Terminal No.	Color of Wire	Signal Name
8	P	BATTERY
28	GO	SECURITY

Connector No.	M21
Connector Name	NATS ANTENNA AMP.
Connector Color	WHITE



Connector No.	M20
Connector Name	BCM (BODY CONTROL MODULE)
Connector Color	BLACK



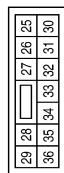
Terminal No.	Color of Wire	Signal Name
57	Y/R	BAT (FUSE)
67	B	GND (POWER)
70	W/B	BAT (FL)

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

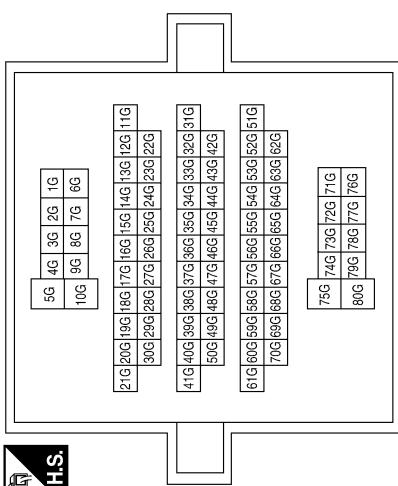
A B C D E F G H I J L M O P SEC

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Name	POWER DISTRIBUTION MODULE ENGINE ROOM
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
7G	W/L	-
10G	W/B	-
61G	W	-

Terminal No.	Color of Wire	Signal Name
7G	4G	3G
	2G	1G
10G	9G	8G
	7G	6G

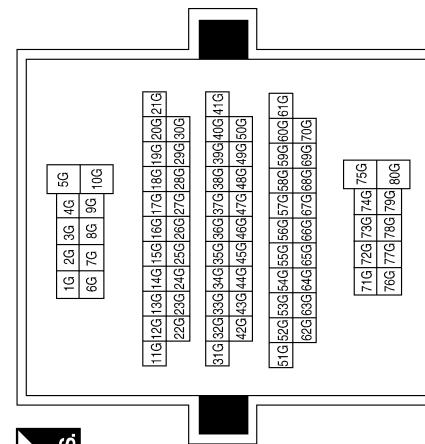


Connector No.	M31
Connector Name	WIRE TO WIRE
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
7G	W/L	-
10G	W/B	-
61G	W	-

Connector No.	E152
Connector Name	WIRE TO WIRE
Connector Color	WHITE



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Fail Safe

Fail-safe index

BCM performs fail-safe control when any DTC listed below is detected.

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Display contents of CONSULT	Fail-safe	Cancellation
U1000: CAN COMM CIRCUIT	Inhibit engine cranking	When the BCM re-establishes communication with the other modules.

DTC Inspection Priority Chart

INFOID:000000005661247

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

Priority	DTC
1	<ul style="list-style-type: none"> U1000: CAN COMM CIRCUIT
2	<ul style="list-style-type: none"> B2190: NATS ANTENNA AMP B2191: DIFFERENCE OF KEY B2192: ID DISCORD BCM-ECM B2193: CHAIN OF BCM-ECM
3	<ul style="list-style-type: none"> C1729: VHCL SPEED SIG ERR C1735: IGNITION SIGNAL
4	<ul style="list-style-type: none"> C1704: LOW PRESSURE FL C1705: LOW PRESSURE FR C1706: LOW PRESSURE RR C1707: LOW PRESSURE RL C1708: [NO DATA] FL C1709: [NO DATA] FR C1710: [NO DATA] RR C1711: [NO DATA] RL C1712: [CHECKSUM ERR] FL C1713: [CHECKSUM ERR] FR C1714: [CHECKSUM ERR] RR C1715: [CHECKSUM ERR] RL C1716: [PRESSDATA ERR] FL C1717: [PRESSDATA ERR] FR C1718: [PRESSDATA ERR] RR C1719: [PRESSDATA ERR] RL C1720: [CODE ERR] FL C1721: [CODE ERR] FR C1722: [CODE ERR] RR C1723: [CODE ERR] RL C1724: [BATT VOLT LOW] FL C1725: [BATT VOLT LOW] FR C1726: [BATT VOLT LOW] RR C1727: [BATT VOLT LOW] RL

DTC Index

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NOTE:

Details of time display

- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 - 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch OFF → ON after returning to the normal condition if the malfunction is detected again.

CONSULT display	Fail-safe	Tire pressure monitor warning lamp ON	Reference page
No DTC is detected. further testing may be required.	—	—	—
U1000: CAN COMM CIRCUIT	—	—	BCS-29

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

CONSULT display	Fail-safe	Tire pressure monitor warning lamp ON	Reference page
B2190: NATS ANTENNA AMP	—	—	SEC-18
B2191: DIFFERENCE OF KEY	—	—	SEC-21
B2192: ID DISCORD BCM-ECM	—	—	SEC-22
B2193: CHAIN OF BCM-ECM	—	—	SEC-24
C1708: [NO DATA] FL	—	—	WT-14
C1709: [NO DATA] FR	—	—	WT-14
C1710: [NO DATA] RR	—	—	WT-14
C1711: [NO DATA] RL	—	—	WT-14
C1712: [CHECKSUM ERR] FL	—	—	WT-16
C1713: [CHECKSUM ERR] FR	—	—	WT-16
C1714: [CHECKSUM ERR] RR	—	—	WT-16
C1715: [CHECKSUM ERR] RL	—	—	WT-16
C1716: [PRESSDATA ERR] FL	—	—	WT-18
C1717: [PRESSDATA ERR] FR	—	—	WT-18
C1718: [PRESSDATA ERR] RR	—	—	WT-18
C1719: [PRESSDATA ERR] RL	—	—	WT-18
C1720: [CODE ERR] FL	—	—	WT-16
C1721: [CODE ERR] FR	—	—	WT-16
C1722: [CODE ERR] RR	—	—	WT-16
C1723: [CODE ERR] RL	—	—	WT-16
C1724: [BATT VOLT LOW] FL	—	—	WT-16
C1725: [BATT VOLT LOW] FR	—	—	WT-16
C1726: [BATT VOLT LOW] RR	—	—	WT-16
C1727: [BATT VOLT LOW] RL	—	—	WT-16
C1729: VHCL SPEED SIG ERR	—	—	WT-19
C1735: IGNITION SIGNAL	—	—	WT-20

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SEC

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

< ECU DIAGNOSIS >

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

Reference Value

INFOID:000000005661249

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status
A/C COMP REQ	A/C switch OFF	OFF
	A/C switch ON	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
		• Front fog lamp switch ON • Daytime light activated (Canada only)
FR WIP REQ	Ignition switch ON	Front wiper switch OFF
		Front wiper switch INT
		Front wiper switch LO
		Front wiper switch HI
WIP AUTO STOP	Ignition switch ON	Front wiper stop position
		Any position other than front wiper stop position
WIP PROT	Ignition switch ON	Front wiper operates normally
		Front wiper stops at fail-safe operation
ST RLY REQ	Ignition switch OFF or ACC	OFF
		ON
IGN RLY	Ignition switch OFF or ACC	OFF
		ON
RR DEF REQ*	Rear defogger switch OFF	OFF
		ON
OIL P SW	Ignition switch OFF, ACC or engine running	OPEN
		CLOSE
DTRL REQ	Daytime light system requested OFF with CONSULT-III.	OFF
		ON
THFT HRN REQ	Not operated • Panic alarm is activated • Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM	OFF
		ON
HORN CHIRP	Not operated Door locking with keyfob (horn chirp mode)	OFF
		ON

*: If equipped

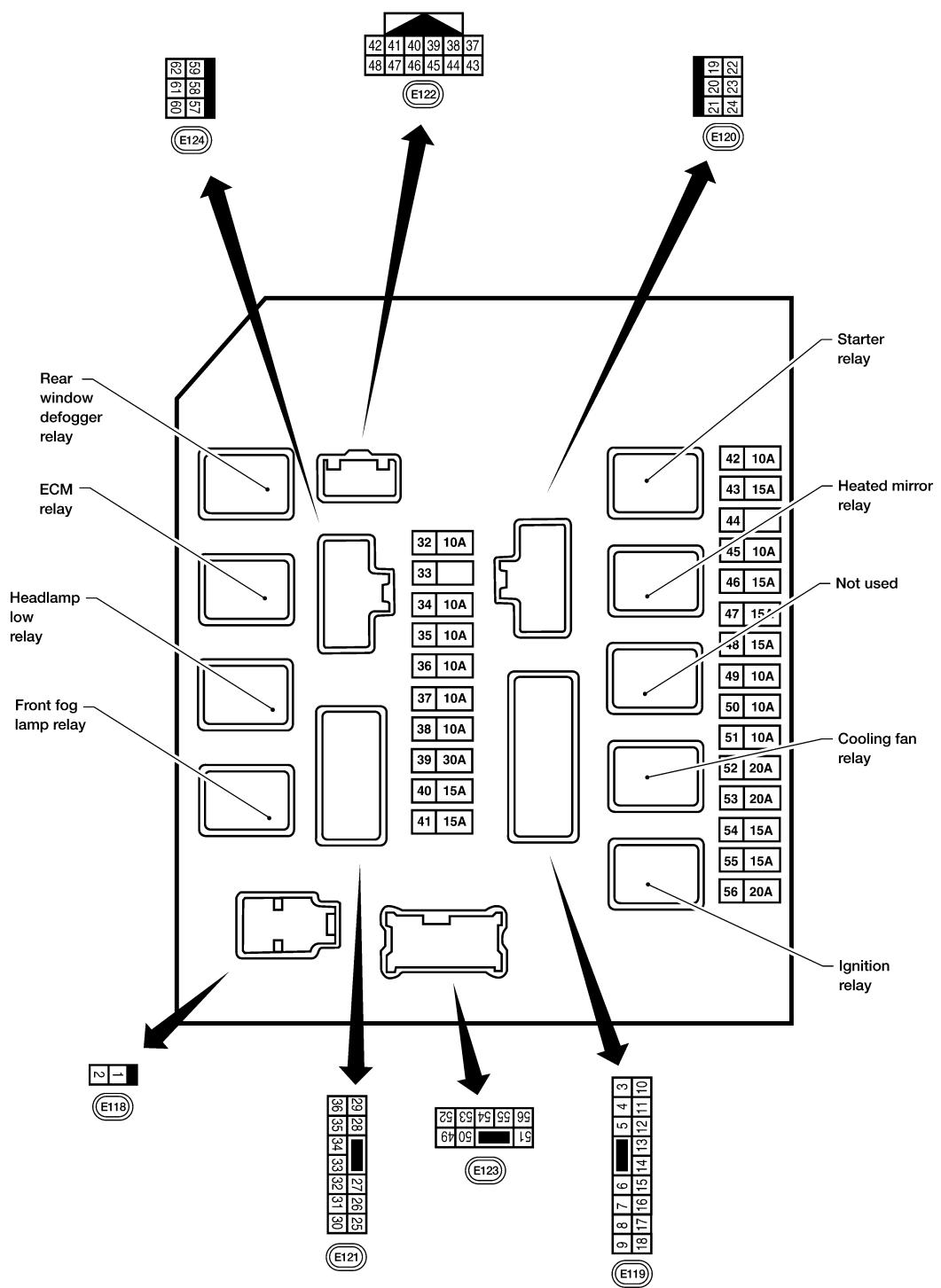
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

Terminal Layout

INFOID:000000005661250

TERMINAL LAYOUT —TYPE A



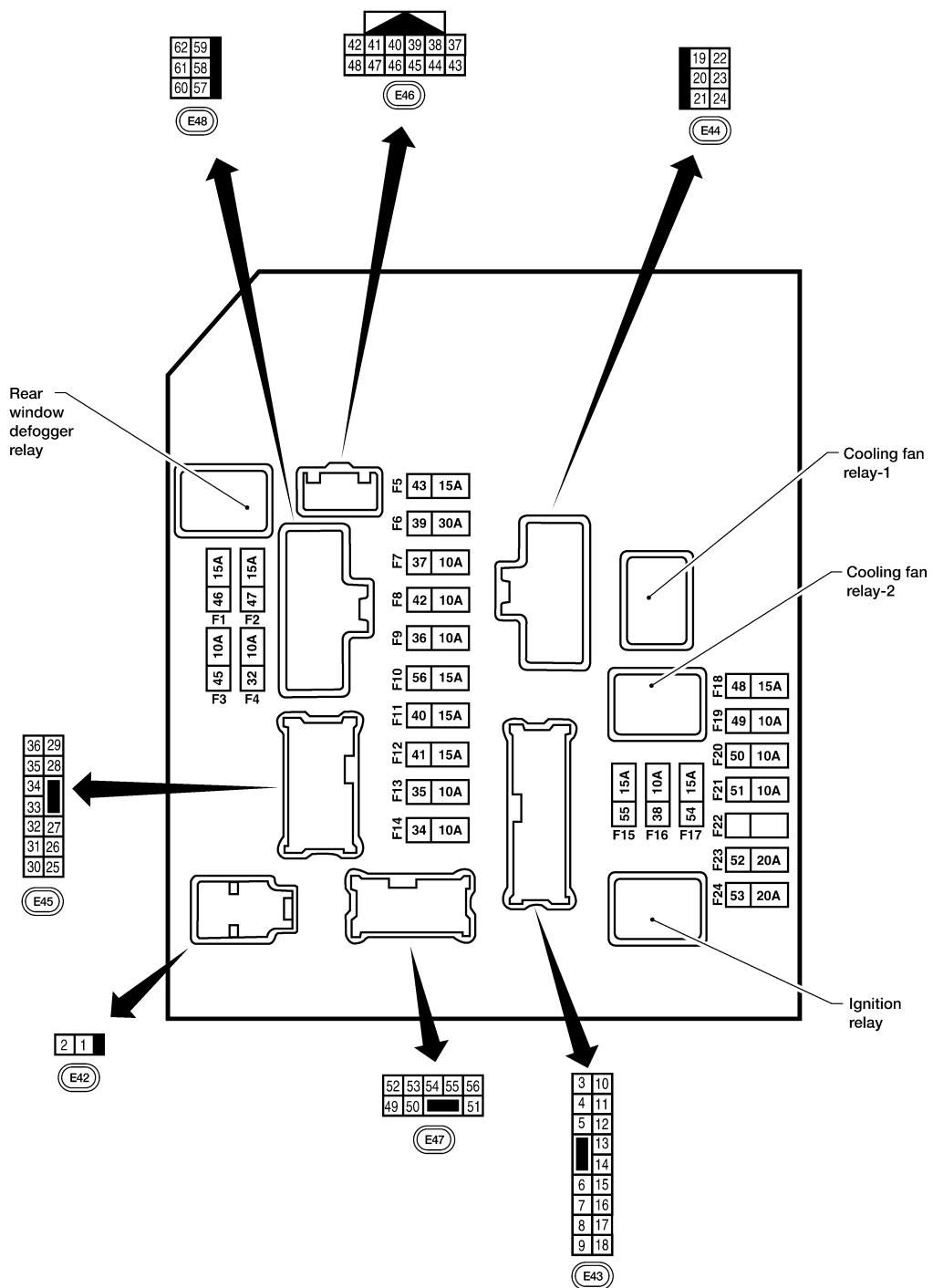
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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

TERMINAL LAYOUT — TYPE B



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Physical Values

INFOID:0000000005661251

PHYSICAL VALUES

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

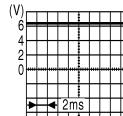
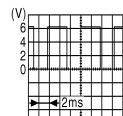
< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value (Approx.)
				Ignition switch	Operation or condition	
1	B/Y	Battery power supply	Input	OFF	—	Battery voltage
2	R	Battery power supply	Input	OFF	—	Battery voltage
3	BR	ECM relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
4	W/L	ECM relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
6	L	Throttle control motor relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
7	W/B	ECM relay control	Input	—	Ignition switch ON or START	0V
					Ignition switch OFF or ACC	Battery voltage
8	R/B	Fuse 54	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
10	G	Fuse 45 (Canada only)	Output	ON	Daytime light system active	0V
					Daytime light system inactive	Battery voltage
11	Y/B	A/C compressor	Output	ON or START	A/C switch ON or defrost A/C switch	Battery voltage
					A/C switch OFF or defrost A/C switch	0V
12	L/W	Ignition switch supplied power	Input	—	OFF or ACC	0V
					ON or START	Battery voltage
13	B/Y	Fuel pump relay	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
14	Y/R	Fuse 49	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
15	LG/B	Fuse 50	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
16	G	Fuse 51	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
17	W	Fuse 55	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
19	W/R	Starter motor	Output	START	—	Battery voltage
21	BR	Ignition switch supplied power	Input	—	OFF or ACC	0V
					START	Battery voltage
22	G	Battery power supply	Output	OFF	—	Battery voltage
23	GR/W	Door mirror defogger output signal (if equipped)	Output	—	When rear defogger switch is ON	Battery voltage
					When rear defogger switch is OFF	0V
27	W/B	Fuse 38 (With trailer tow)	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
30	W	Fuse 53	Output	—	Ignition switch ON or START	Battery voltage
					Ignition switch OFF or ACC	0V
32	L	Wiper low speed signal	Output	ON or START	Wiper switch	OFF
					LO or INT	0V

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

< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value (Approx.)
				Ignition switch	Operation or condition	
35	L/B	Wiper high speed signal	Output	ON or START	Wiper switch	Battery voltage
37	Y	Power generation command signal	Output	—	OFF, LO, INT	0V
					Ignition switch ON	 JPMIA0001GB 6.3 V
					40% is set on "Active test," "ALTERNATOR DUTY" of "ENGINE"	 JPMIA0002GB 3.8 V
38	B	Ground	Input	—	—	
					—	
39	L	CAN-H	—	ON	—	
40	P	CAN-L	—	ON	—	
42	GR	Oil pressure switch	Input	—	Engine running	
					Engine stopped	
43	L/Y	Wiper auto stop signal	Input	ON or START	Wiper switch	OFF, LO, INT
44	BR	Daytime light relay control (Canada only)	Input	ON	Daytime light system active	
					Daytime light system inactive	
45	G/W	Horn relay control	Input	ON	When door locks are operated using keyfob (OFF → ON)*	
46	GR	Fuel pump relay control	Input	—	Ignition switch ON or START	
					Ignition switch OFF or ACC	
47	O	Throttle control motor relay control	Input	—	Ignition switch ON or START	
					Ignition switch OFF or ACC	
48	B/R	Starter relay (inhibit switch)	Input	ON or START	Selector lever in "P" or "N"	
					Selector lever any other position	

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

< ECU DIAGNOSIS >

Terminal	Wire color	Signal name	Signal input/output	Measuring condition		Reference value (Approx.)	
				Ignition switch	Operation or condition		
49	R/L	Trailer tow relay (With trailer tow) Illumination (Without trailer tow)	Output	ON	Lighting switch must be in the 1st position	OFF 0V	
						ON Battery voltage	
50	W/R	Front fog lamp (LH) (if equipped)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF 0V	
						ON Battery voltage	
51	W/R	Front fog lamp (RH) (if equipped)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF 0V	
						ON Battery voltage	
52	L	LH low beam head-lamp	Output	—	Lighting switch in 2nd position		Battery voltage
54	R/Y	RH low beam head-lamp	Output	—	Lighting switch in 2nd position		Battery voltage
55	G	LH high beam head-lamp	Output	—	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
56	Y (With DTRL) L/W (Without DTRL)	RH high beam head-lamp	Output	—	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
57	R/L	Parking, license, tail lamp and rear audio remote control unit	Output	ON	Lighting switch 1st position	OFF 0V	
						ON Battery voltage	
59	B	Ground	Input	—	—		0V
60	B/W	Rear window defogger relay (if equipped)	Output	ON or START	Rear defogger switch ON		Battery voltage
					Rear defogger switch OFF		0V
61	BR	Fuse 32 (With trailer tow)	Output	OFF	—		Battery voltage

*: When horn reminder is ON

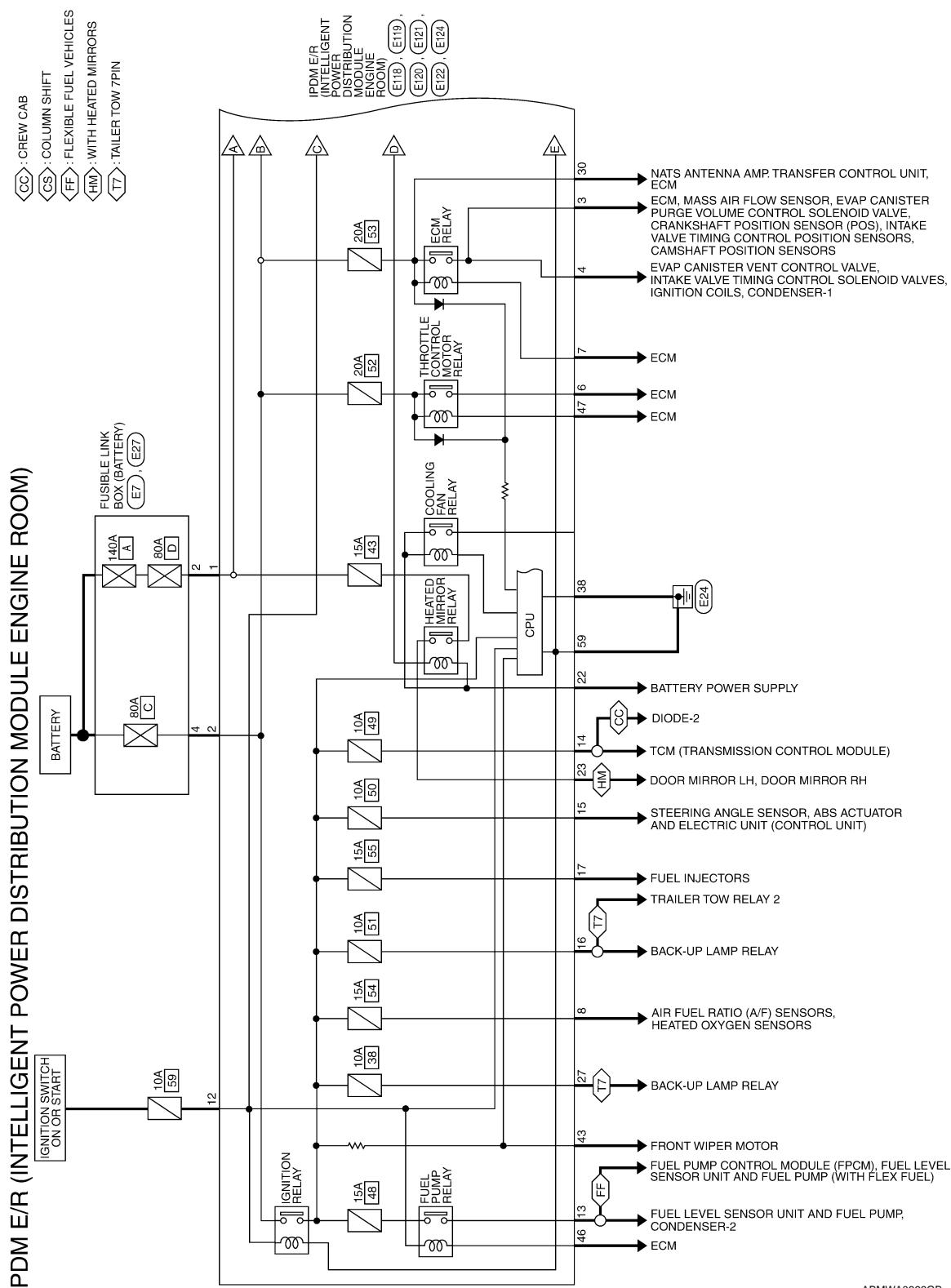
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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

Wiring Diagram

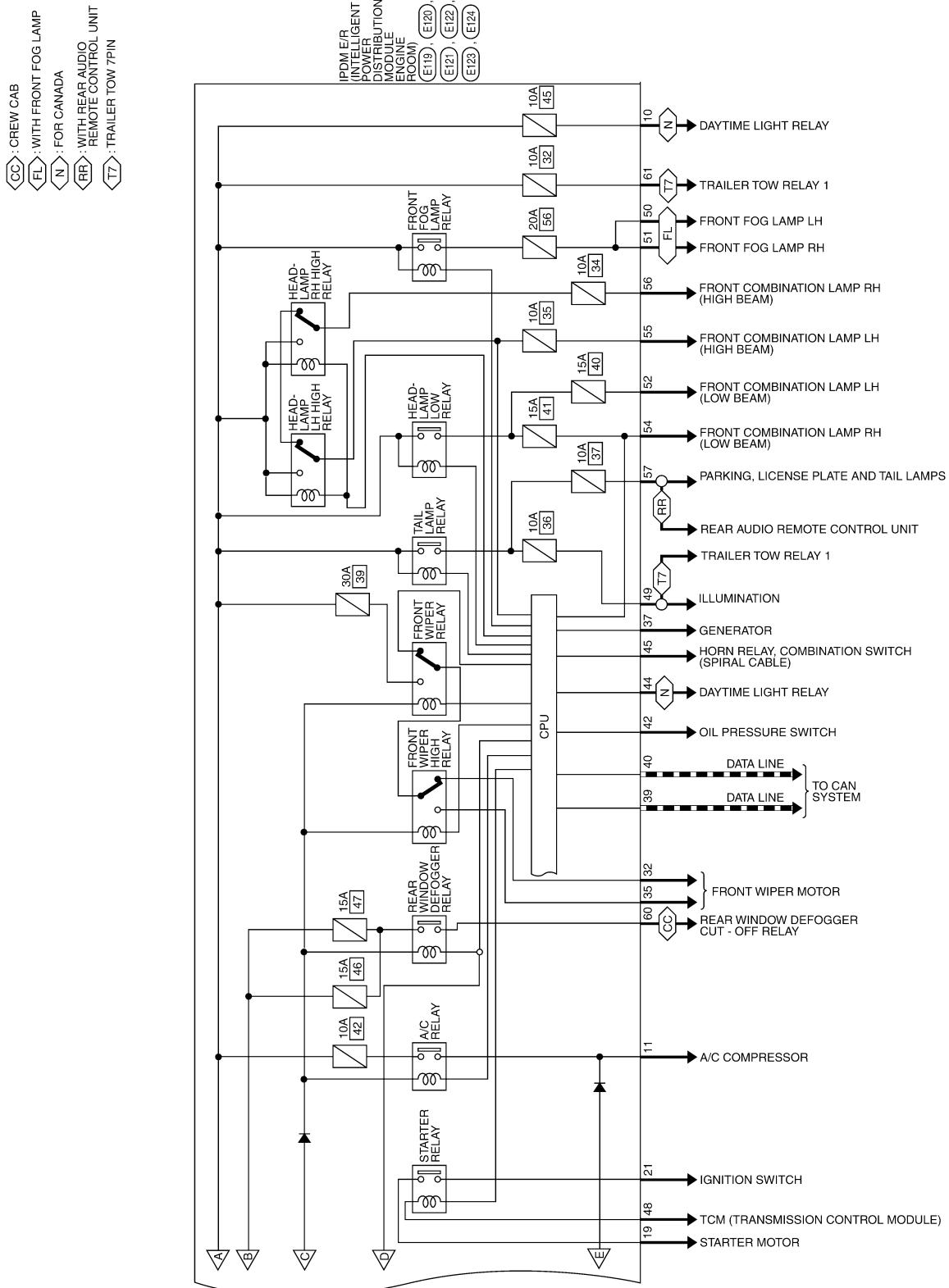
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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >



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

Connector No.	Color of Wire	Signal Name
4	R	—
4	R	—
4	R	—
4	R	—

Terminal No.	Color of Wire	Signal Name
2	B/Y	—
2	B/Y	—

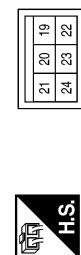
Connector No.	Color of Wire	Signal Name
27	B/Y	—
27	B/Y	—
27	B/Y	—

Terminal No.	Color of Wire	Signal Name
2	B/Y	—
2	B/Y	—

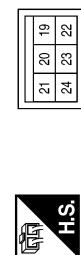
Terminal No.	Color of Wire	Signal Name
1	B/Y	F/L USM
2	R	F/L MAIN

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

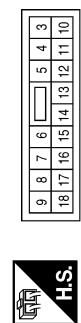
Terminal No.	Color of Wire	Signal Name
8	R/B	02 SENSOR
9	—	—
10	G	DTRL RLY SUPPLY
11	Y/B	A/C COMPRESSOR
12	L/W	IGN SW (IG)
13	B/Y	FUEL PUMP
14	Y/R	A/T CU IGN SUPPLY
15	L/G/B	ABS IGN SUPPLY
16	G	REVERSE LAMP
17	W	INJECTOR
18	—	—



Terminal No.	Color of Wire	Signal Name
21	20	19
24	23	22



Terminal No.	Color of Wire	Signal Name
15	IGN COIL	IGN COIL
16	ECM	ECM
17	—	—
18	—	—



Terminal No.	Color of Wire	Signal Name
19	W/R	STARTER MTR
20	—	—
21	BR	IGN SW(ST)
22	G	F/L MOTOR FAN
23	GR/W	HEATED MIRROR
24	—	—

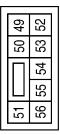
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IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

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Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BROWN

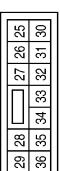


Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	WHITE



Terminal No.	Color of Wire	Signal Name
49	R/L	ILLUMINATION
50	W/R	FR FOG LAMP LH
51	W/R	FR FOG LAMP RH
52	L	H/LAMP LO LH
53	-	-
54	R/Y	H/LAMP LO RH
55	G	H/LAMP HI LH
56	L/W	H/LAMP HI RH (WITHOUT DAYTIME LIGHT)
56	Y	H/LAMP HI RH (WITH DAYTIME LIGHT)

Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BROWN



Terminal No.	Color of Wire	Signal Name
25	-	-
26	-	-
27	W/B	T TOW REV LAMP
28	-	-
29	-	-
30	W	ECM BAT
31	-	-
32	L	FR WIPER LO
33	-	-
34	-	-
35	L/B	FR WIPER HI
36	-	-

Terminal No.	Color of Wire	Signal Name
41	-	CAN-L
40	P	CAN-H
42	GR	OIL PRESSURE SW
43	L/Y	AUTO STOP SW
44	BR	DTRL RLY CONT
45	G/W	ANT THEFT HORN
46	GR	FUEL PUMP RLY CONT
47	O	ETC RLY CONT
48	B/R	INHIBIT SW

Terminal No.	Color of Wire	Signal Name
57	R/L	TAIL LAMP
58	-	-
59	B	GND (POWER)
60	B/W	RR DEF
61	BR	TRAIL RLY SUPPLY
62	-	-

Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color	BLACK



ABMIA1559GB

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Fail Safe

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 BCM

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

< ECU DIAGNOSIS >

Control part	Fail-safe in operation
Headlamp	<ul style="list-style-type: none"> • Turns ON the headlamp low relay when the ignition switch is turned ON • Turns OFF the headlamp low relay when the ignition switch is turned OFF • Headlamp high LH/RH relays OFF
• Parking lamps • License plate lamps • Tail lamps	<ul style="list-style-type: none"> • Turns ON the tail lamp relay when the ignition switch is turned ON • Turns OFF the tail lamp relay when the ignition switch is turned OFF
Front wiper	<ul style="list-style-type: none"> • The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed. • The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.
Rear window defogger (if equipped)	Rear window defogger relay OFF
A/C compressor	A/C relay OFF
Front fog lamps (if equipped)	Front fog lamp relay OFF

IGNITION RELAY MALFUNCTION DETECTION FUNCTION

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

Ignition switch	Ignition relay	Tail lamp relay
ON	ON	—
OFF	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:0000000005661254

CONSULT-III display	Fail-safe	TIME ^{NOTE}	Refer to
No DTC is detected. further testing may be required.	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39 PCS-15

NOTE:

The details of TIME display are as follows.

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

< ECU DIAGNOSIS >

- 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 $0 \rightarrow 1 \rightarrow 2 \dots 38 \rightarrow 39$ after returning to the normal condition whenever IGN OFF \rightarrow 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.

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SEC

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VEHICLE SECURITY SYSTEM SYMPTOMS

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

VEHICLE SECURITY SYSTEM SYMPTOMS

Symptom Table

INFOID:000000005384746

Procedure		Diagnostic procedure	Refer to page
Symptom			
1	Vehicle security system cannot be set by	Door switch	Check door switch (king cab)
			DLK-26
		Key cylinder switch	Check door switch (crew cab)
			DLK-27
		—	Check key cylinder switch (king cab)
			DLK-36
2	* Vehicle security system does not sound alarm when	Any door is opened.	Check key cylinder switch (crew cab)
			DLK-38
		—	Check Intermittent Incident
			GI-38
3	Vehicle security alarm does not activate.	Horn alarm	Check vehicle security indicator
			SEC-34
4	Vehicle security system cannot be canceled by	Key cylinder switch	Check Intermittent Incident
			GI-38
		—	Check door switch (king cab)
			DLK-26
		—	Check door switch (crew cab)
			DLK-27
		—	Check key cylinder switch (king cab)
			DLK-36
		—	Check key cylinder switch (crew cab)
			DLK-38
		—	Check Intermittent Incident
			GI-38

*: Check the system is in the armed phase.

NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS SYMPTOMS

< SYMPTOM DIAGNOSIS >

NISSAN VEHICLE IMMOBILIZER SYSTEM-NATS SYMPTOMS

Symptom Table

INFOID:0000000005384747

NOTE:

- Before performing the diagnosis in the following table, check “[SEC-3, "Work Flow"](#)”.
- Check that vehicle is under the condition shown in “Conditions of vehicle” before starting diagnosis, and check each symptom.
- If the following symptoms are detected, check systems shown in the “Diagnosis/service procedure” column in this order.

CONDITIONS OF VEHICLE (OPERATING CONDITIONS)

- Ignition switch is not turned ON.
- Ignition key is not inserted into key cylinder.

Symptom	Diagnosis/service procedure	Reference page
Security indicator does not turn ON or flash.	1. Check vehicle security indicator	SEC-34
	2. Check Intermittent Incident	GI-38

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< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:0000000005711122

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the 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, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the 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 Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

VEHICLE SECURITY SYSTEM

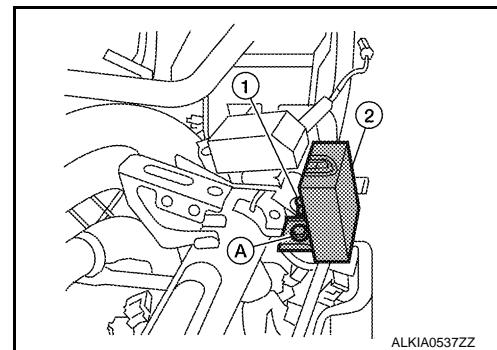
Removal and Installation

INFOID:000000005384750

REMOTE KEYLESS ENTRY RECEIVER

Removal

1. Remove the lower instrument panel RH. Refer to [IP-15, "Removal and Installation"](#).
2. Remove the side ventilator assembly RH. Refer to [IP-10, "Exploded View"](#).
3. Disconnect the wire harness (1), remove the bolt (A), and the RKE receiver (2).



Installation

Installation is in the reverse order of removal.

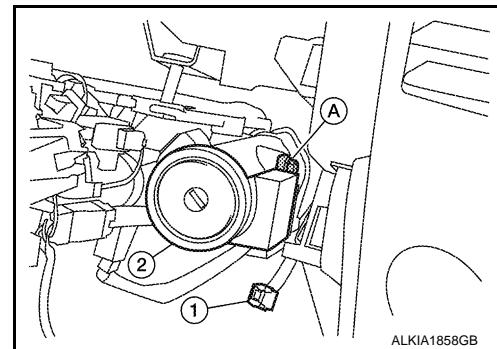
NATS ANTENNA AMP

NOTE:

- If NATS antenna amp. is not installed correctly, NVIS (NATS) system will not operate properly and "SELF-DIAG RESULTS" on CONSULT -III screen will show "LOCK MODE" or "CHAIN OF IMMU-KEY"
- Initialization is not necessary when only the NATS antenna amp. is replaced with a new one.

Removal

1. Disconnect the battery negative terminal.
2. Remove the lower instrument panel LH. Refer to [IP-10, "Exploded View"](#).
3. Remove the steering column covers.
4. Remove the knee bolster.
5. Lower the steering column assembly.
6. Remove cluster lid A.
7. Remove the bolt (A), disconnect the electrical connector (1), and remove the NATS antenna amp (2).



Installation

Installation is in the reverse order of removal.