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# **CONTENTS**

DASIC INSPECTION		
DIAGNOSIS AND REPAIR WORKFLOW	Component Description	19
Work Flow		20
	System Diagram	20
SYSTEM DESCRIPTION	7 System Description	20
	Component Parts Location	21
HEADLAMP		21 <sup> </sup>
System Diagram		
System Description		
Component Parts Location		22
Component Description	,	
DAYTIME RUNNING LIGHT SYSTEM	9 System Description	
System Diagram	9	25
System Description		26
Component Parts Location	10	
Component Description	10 COMMON ITEM	26
ALITO LIGHT OVOTEM	COMMON ITEM: CONSULT Function (BCM -	
AUTO LIGHT SYSTEM	,	26
System Diagram		26 🖹
System Description  Component Parts Location	IZ	
Component Description	10	
Component Description	14	
FRONT FOG LAMP	15 FLASHER	28
System Diagram	FLASHER : CONSULT Function (BCM - FLASH-	
System Description	15 ER)	28
Component Parts Location	15 COMB SW	28
Component Description	15 COMB SW : CONSULT Function (BCM - COMB	
TUDN CICNAL AND HAZADD WADNING	SW)	28
TURN SIGNAL AND HAZARD WARNING	,	
LAMPS		
System Diagram	g	
System Description		31
Component Parts Location  Component Description		22
Component Description		
PARKING, LICENSE PLATE AND TAIL	POWER SUPPLY AND GROUND CIRCUIT	33
LAMPS	18	
System Diagram	18 BCM (BODY CONTROL MODULE)	33
System Description		

BCM (BODY CONTROL MODULE) : Diagnosis Procedure		WIRING DIAGRAM	72
	33	HEADLAMP	72
IPDM E/R (INTELLIGENT POWER DISTRIBU- TION MODULE ENGINE ROOM)	34	Wiring Diagram	
IPDM E/R (INTELLIGENT POWER DISTRIBU-		DAYTIME LIGHT SYSTEM	76
TION MODULE ENGINE ROOM): Diagnosis Pr	ro-	Wiring Diagram	76
cedure	34	AUTO LIGHT SYSTEM	9.4
HEADLAMP (HI) CIRCUIT	36	Wiring Diagram	
Description			
Component Function Check		FRONT FOG LAMP	
Diagnosis Procedure		Wiring Diagram	92
HEADLAMP (LO) CIRCUIT	20	TURN SIGNAL AND HAZARD WARNING	
Description		LAMP SYSTEM	96
Component Function Check		Wiring Diagram	
Diagnosis Procedure			
Component Inspection		PARKING, LICENSE PLATE AND TAIL	
DAYTIME LIGHT DELAY CIDCUIT	40	LAMPS SYSTEM	
Description		Wiring Diagram	. 102
Diagnosis Procedure		STOP LAMP	108
Component Inspection		Wiring Diagram	. 108
·		BACK-UP LAMP	442
FRONT FOG LAMP CIRCUIT		Wiring Diagram	
Description		Willing Diagram	. 113
Component Function Check		TRAILER TOW	117
Diagnosis Procedure	45	Wiring Diagram	. 117
PARKING LAMP CIRCUIT	47	SYMPTOM DIAGNOSIS	126
Description		OTMI TOM DIAGNOSIS	. 120
Component Function Check		EXTERIOR LIGHTING SYSTEM SYMPTOMS	i.126
Diagnosis Procedure	47	Symptom Table	. 126
TURN SIGNAL LAMP CIRCUIT	50	NORMAL OPERATING CONDITION	120
Description		Description	
Component Function Check		·	
Diagnosis Procedure	50	BOTH SIDE HEADLAMPS DO NOT SWITCH	
OPTICAL SENSOR	<b>5</b> 2	TO HIGH BEAM	
Description		Description	
Diagnosis Procedure		Diagnosis Procedure	. 129
-		DAYTIME LIGHT SYSTEM INOPERATIVE	130
ECU DIAGNOSIS INFORMATION	54	Description	. 130
BCM (BODY CONTROL MODULE)	54	Diagnosis Procedure	. 130
Reference Value		BOTH SIDE HEADLAMPS (LO) ARE NOT	
Terminal Layout		TURNED ON	131
Physical Values	57	Description	
Fail Safe		Diagnosis Procedure	
DTC Inspection Priority Chart		•	
DTC Index	63	PARKING, LICENSE PLATE AND TAIL	
IPDM E/R (INTELLIGENT POWER DISTRI-		LAMPS ARE NOT TURNED ON	
BUTION MODULE ENGINE ROOM)		Description	
Reference Value		Diagnosis Procedure	. 132
Terminal Layout		BOTH SIDE FRONT FOG LAMPS ARE NOT	
Physical Values		TURNED ON	133
Fail Safe		Description	
DTC Index	71	Diagnosis Procedure	. 133

PRECAUTION	134
PRECAUTIONS  Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TEN-SIONER"  Precaution for Work  General precautions for service operations	. 134 . 134
PREPARATION	136
PREPARATION	
PERIODIC MAINTENANCE	137
HEADLAMPAiming Adjustment	
FRONT FOG LAMP	
REMOVAL AND INSTALLATION	141
HEADLAMP  Bulb Replacement  Removal and Installation  Disassembly and Assembly	. 141 . 141
FRONT FOG LAMP	. 143

Bulb Replacement	
STOP LAMP144	
Bulb Replacement	
Removal and installation144	
LICENSE PLATE LAMP145	
Bulb Replacement	
Removal and Installation145	
REAR COMBINATION LAMP146	
Bulb Replacement146	
Removal and Installation146	
LIGHTING & TURN SIGNAL SWITCH147	
Removal and Installation147	
HAZARD SWITCH148	
Removal and Installation148	
OPTICAL SENSOR149	
Removal and Installation149	
SERVICE DATA AND SPECIFICATIONS	
(SDS)150	
SERVICE DATA AND SPECIFICATIONS	
(SDS)	
Bulb Specifications150	

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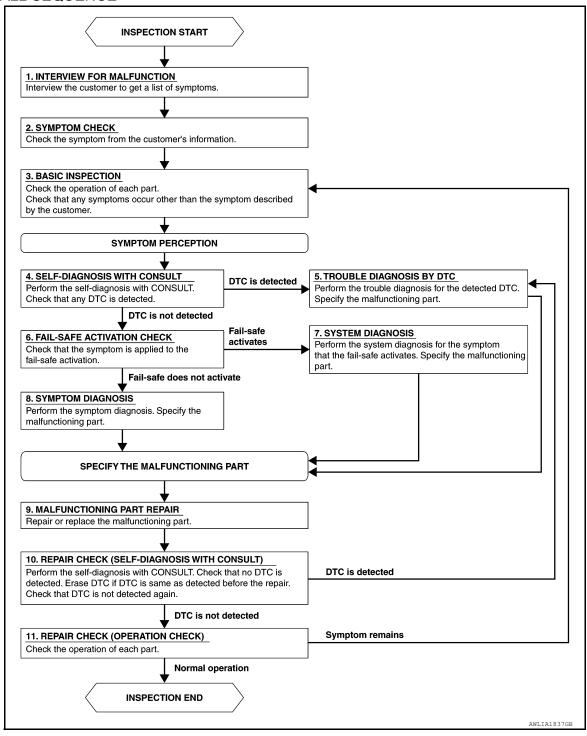
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# **BASIC INSPECTION**

# DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

### **OVERALL SEQUENCE**



# **DIAGNOSIS AND REPAIR WORKFLOW**

< BASIC INSPECTION >
DETAILED FLOW
1.INTERVIEW FOR MALFUNCTION
Find out what the customer's concerns are.
>> GO TO 2.
2.symptom check
Verify the symptom from the customer's information.
>> GO TO 3.
3.BASIC INSPECTION
Check the operation of each part. Check that any concerns occur other than those mentioned in the custome interview.
>> GO TO 4.
4.self-diagnosis with consult
Perform the self diagnosis with CONSULT. Check that any DTC is detected.
Is any DTC detected?
YES >> GO TO 5. NO >> GO TO 6.
5. TROUBLE DIAGNOSIS BY DTC
Perform the trouble diagnosis for the detected DTC. Specify the malfunctioning part.
>> GO TO 9.
6. FAIL-SAFE ACTIVATION CHECK
Determine if the customer's concern is related to fail-safe activation.  Does the fail-safe activate?
YES >> GO TO 7.
NO >> GO TO 8.
7.SYSTEM DIAGNOSIS
Perform the system diagnosis for the system in which the fail-safe activates. Specify the malfunctioning part.
>> GO TO 9.
8.SYMPTOM DIAGNOSIS
Perform the symptom diagnosis. Specify the malfunctioning part.
>> GO TO 9.
9.MALFUNCTION PART REPAIR
Repair or replace the malfunctioning part.

Revision: May 2014 EXL-5 2014 Frontier

Is any DTC detected?

### **DIAGNOSIS AND REPAIR WORKFLOW**

### < BASIC INSPECTION >

YES >> GO TO 5. NO >> GO TO 11.

11. REPAIR CHECK (OPERATION CHECK)

Check the operation of each part.

### Does it operate normally?

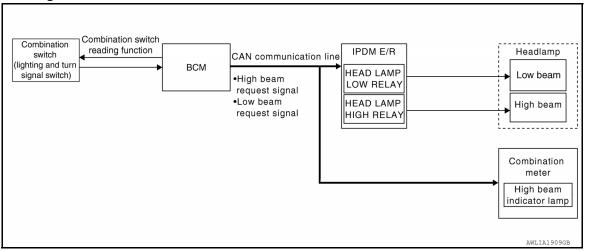
YES >> Inspection End.

NO >> GO TO 3.

# SYSTEM DESCRIPTION

### **HEADLAMP**

System Diagram



# System Description

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INFOID:0000000009478425

Control of the headlamp system operation is dependent upon the position of the combination switch (lighting and turn signal switch). When the combination switch (lighting and turn signal switch) is placed in the 2nd position, the BCM (body control module) receives input requesting the headlamps and park lamps to illuminate. This input is communicated to the IPDM E/R (intelligent power distribution module engine room) via the CAN communication lines. The CPU (central processing unit) of the IPDM E/R controls the headlamp high and headlamp low relay coils. When energized, these relays direct power to the respective headlamps, which then illuminate.

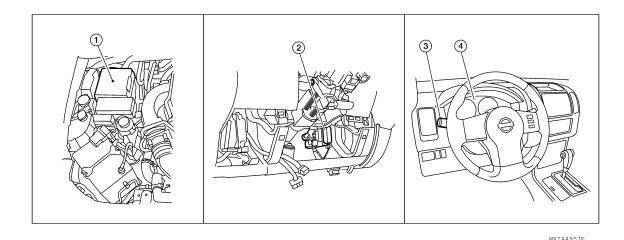
### HIGH BEAM OPERATION/FLASH-TO-PASS OPERATION

With the combination switch (lighting and turn signal switch) in the 2ND position and placed in HIGH position, the BCM receives input requesting the headlamp high beams to illuminate. The flash to pass feature can be used any time and also sends a signal to the BCM. This input is communicated to the IPDM E/R via the CAN communication lines. The CPU of the combination meter controls the ON/OFF status off the HIGH BEAM indicator. The CPU of the IPDM E/R controls the headlamp high relay coil which supplies power to the high beam headlamps.

The combination meter receives a high beam request signal (ON) via the CAN communication lines and turns the high beam indicator lamp ON.

# **Component Parts Location**

INFOID:0000000009478427



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### **HEADLAMP**

### < SYSTEM DESCRIPTION >

- 1. IPDM E/R E122, E123, E124
- BCM M18, M20 (view with lower instru- 3. ment panel LH removed)
- Combination switch (lighting and turn signal switch) M28

4. Combination meter M24

# **Component Description**

INFOID:0000000009478428

Part name	Description
BCM	<ul> <li>Receives combination switch (lighting and turn signal switch) request via BCM combination switch reading function.</li> <li>Sends headlamp high/low request signal to the IPDM E/R.</li> </ul>
IPDM E/R	Activates the headlamp high and headlamp low relays upon request from the BCM.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.

### **DAYTIME RUNNING LIGHT SYSTEM**

< SYSTEM DESCRIPTION >

### DAYTIME RUNNING LIGHT SYSTEM

System Diagram

INFOID:0000000009478429 Combination switch reading function Headlamp high Combination CAN communication line switch (lighting IPDM E/R Daytime light request signal and turn signal Headlamp high switch) LH Daytime CAN communication line **FCM** light Engine status signal всм relay1 switch Combination Parking brake switch meter signal AWI.TA2079GF

# System Description

The headlamp system for Canada vehicles is equipped with a daytime light control that activates the high beam headlamps at approximately half illumination whenever the engine is operating. If the parking brake is applied before the engine is started the daytime lights will not be illuminated. The daytime lights will illuminate once the parking brake is released. Thereafter, the daytime lights will continue to operate when the parking brake is applied.

### **OPERATION**

The BCM monitors inputs from the parking brake switch and the combination switch (lighting and turn signal switch) to determine when to activate the daytime light system. The BCM sends a daytime light request to the IPDM E/R via the CAN communication lines. The IPDM E/R grounds the daytime light relay 1 which in turn, provides power to the ground side of the LH high beam lamp. Power flows backward through the LH high beam lamp to the IPDM E/R, through the high beam fuses, through the RH high beam lamp circuit to the RH high beam lamp and on to ground. The high beam lamps are wired in series which causes them to illuminate at a reduced intensity.

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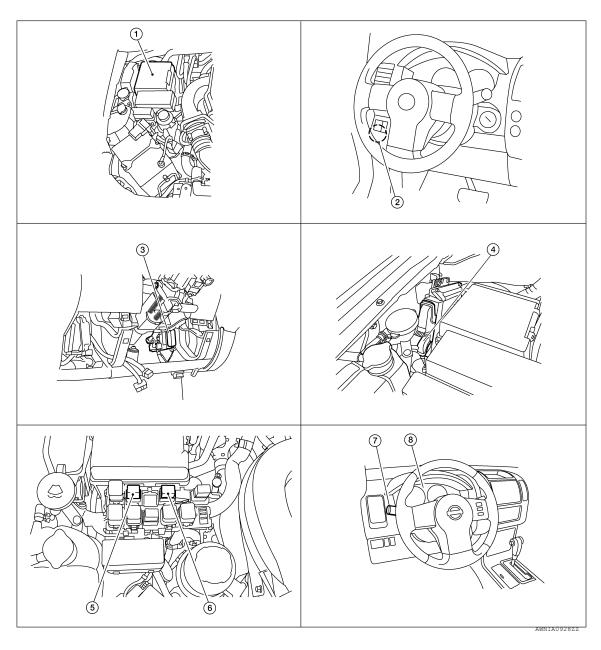
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# **Component Parts Location**

INFOID:0000000009478431



- 1. IPDM E/R E119, E122, E123, E124
- 4. ECM (view with ECM cover removed) 5.
- 7. Combination switch (lighting and turn 8. signal switch) M28
- Parking brake switch B84
- Daytime light relay 1 E103
  - Combination meter M24
- 3. BCM M18, M20 (view with lower instrument panel LH removed)
- 6. Daytime light relay 2 E104

# **Component Description**

INFOID:0000000009478432

Part name	Description
ВСМ	<ul> <li>Receives combination switch (lighting and turn signal switch) inputs via BCM combination switch reading function.</li> <li>Receives park brake applied input from the park brake switch.</li> <li>Receives engine running status from the ECM via CAN communication.</li> </ul>

# **DAYTIME RUNNING LIGHT SYSTEM**

### < SYSTEM DESCRIPTION >

IPDM E/R	Receives daytime light request from the BCM and activates the daytime light relay.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.
Parking brake switch	Outputs parking brake status to the combination meter which forwards that information to the BCM via CAN communication.
ECM	Outputs engine running status to the BCM.

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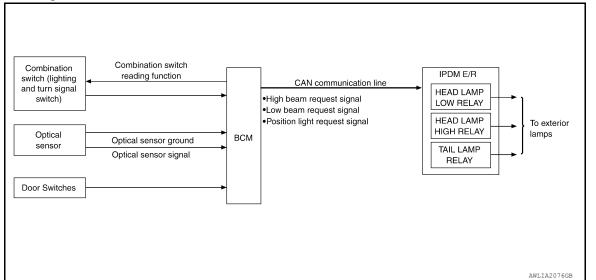
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### **AUTO LIGHT SYSTEM**

### System Diagram

INFOID:0000000009478433



# System Description

INFOID:0000000009478434

The auto light control system has an optical sensor that detects outside brightness.

When the combination switch (lighting and turn signal switch) is in AUTO position, it automatically turns ON/ OFF the parking, license plate, tail and headlamps in accordance with the ambient light. Sensitivity can be adjusted in four steps. For the details, refer to <a href="https://example.com/BCS-18">BCS-18</a>, "HEADLAMP: CONSULT Function (BCM - HEADLAMP)".

### **AUTO LIGHT OPERATION**

The auto light system operates the low beam and high beam headlamps, parking lamps, tail lamps and license plate lamps. The BCM monitors the combination switch (lighting and turn signal switch) position as a part of the BCM combination switch reading function. When the combination switch (lighting and turn signal switch) is in the AUTO position, the BCM automatically turns the lamps ON/OFF according to ambient light brightness. When the key is turned OFF and all doors are closed, the auto light system keeps the headlamps ON for 45 seconds.

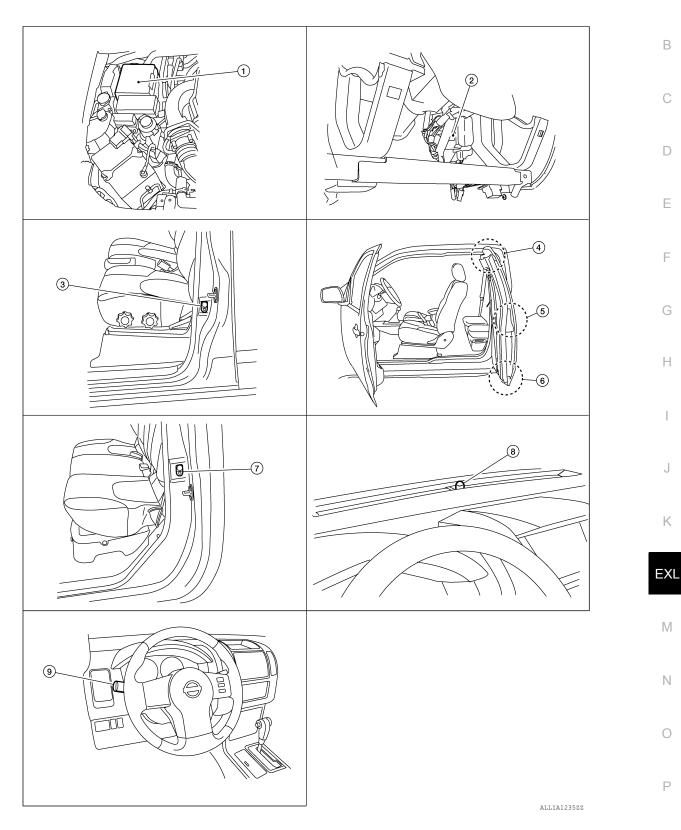
### NOTE:

Timing for when lamps turn ON/OFF can be changed by the CONSULT. Refer to <u>BCS-18</u>, "<u>HEADLAMP</u>."

# **Component Parts Location**

INFOID:0000000009478435

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1. IPDM E/R

2. BCM (view with lower instrument panel 3. LH removed)

Front door switch LH (Crew Cab) (RH similar)

Revision: May 2014 EXL-13 2014 Frontier

### **AUTO LIGHT SYSTEM**

### < SYSTEM DESCRIPTION >

- Rear door switch upper LH (King Cab) 5. (RH similar)
- Front door switch LH (King Cab) (RH similiar)
- 6. Rear door switch lower LH (King Cab)

- 7. Rear door switch LH (Crew Cab) (RH 8. similar)
  - 8. Optical Sensor

9. Combination switch

# **Component Description**

INFOID:0000000009478436

Part name	Description
BCM	BCM (Body Control Module) controls auto light operation according to signals from optical sensor, lighting switch and ignition switch.
IPDM E/R	IPDM E/R (Intelligent Power Distribution Module Engine Room) operates parking, license plate, tail and headlamps according to CAN communication signals from BCM.
Combination switch (lighting and turn signal switch)	The lighting switch outputs lighting requests to the BCM.
Optical sensor	Optical sensor detects ambient brightness and converts light (lux) to voltage, then sends the optical sensor signal to BCM.
Door switches	Detects door open/closed status and forwards that status to the BCM.

# FRONT FOG LAMP

# System Diagram

INFOID:0000000009478437

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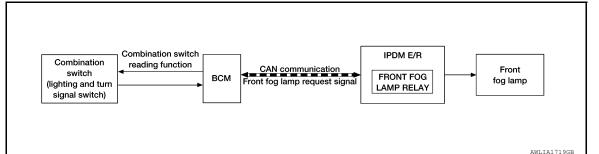
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# **System Description**

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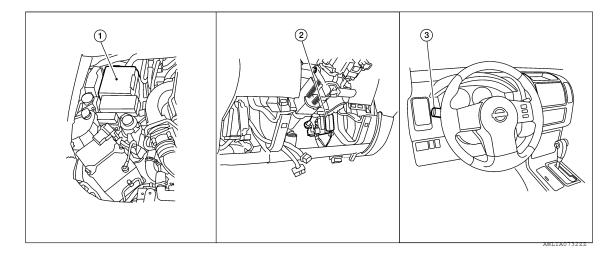
The front fog lamps are activated with the combination switch (lighting and turn signal switch). The combination switch (lighting and turn signal switch) signal to the BCM is monitored with the BCM combination switch reading function. When the fog lamps are turned ON with the combination switch (lighting and turn signal switch), the BCM sends a front fog lamp request signal via CAN communication lines to the IPDM E/R. The IPDM E/R grounds the front fog lamp relay coil to activate the front fog lamps.

### FRONT FOG LAMP OPERATION

When the combination switch (lighting and turn signal switch) is in front fog lamp ON position and also in 1ST or 2ND position or AUTO (if equipped) position (headlamp is ON), the BCM detects FR FOG ON and the HEAD LAMP1 or 2 ON. The BCM sends a front fog lamp request ON signal via the CAN communication lines to the IPDM E/R. The IPDM E/R then turns ON the front fog lamp relay sending power to the front fog lamps.

### **Component Parts Location**

INFOID:0000000009478439



- IPDM E/R E122, E123, E124
- BCM M18, M20 (view with lower instru- 3. ment panel LH removed)
- Combination switch (lighting and turn signal switch) M28

# Component Description

INFOID:0000000009478440

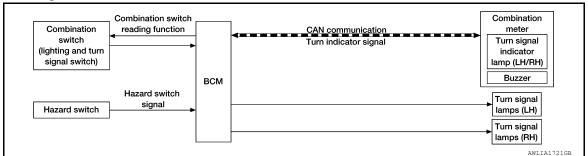
Part name	Description
ВСМ	<ul> <li>Receives lighting switch requests via BCM combination switch reading function.</li> <li>Sends headlamp high/low request signal to the IPDM E/R.</li> </ul>
IPDM E/R	Activates the front fog lamp relay upon request from the BCM.
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.

Revision: May 2014 EXL-15 2014 Frontier

### TURN SIGNAL AND HAZARD WARNING LAMPS

### System Diagram

INFOID:0000000009478441



# System Description

INFOID:0000000009478442

### TURN SIGNAL OPERATION

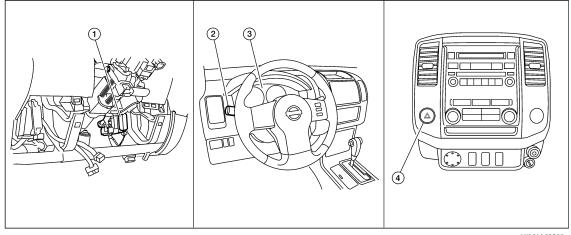
When the combination switch (lighting and turn signal switch) is in LH or RH position with the ignition switch in ON position, the BCM detects the TURN RH or TURN LH ON request. The BCM outputs the flasher signal to the respective turn signal lamp. The BCM also sends a turn indicator signal ON request via the CAN communication lines to the combination meter. The combination meter then activates the appropriate turn signal indicator and audible buzzer.

### HAZARD LAMP OPERATION

When the hazard switch is in ON position, the BCM detects the hazard switch signal ON. The BCM outputs the flasher signal (right and left). The BCM sends a hazard indicator signal ON request via the CAN communication lines to the combination meter. The combination meter then activates the hazard indicator and audible buzzer.

# Component Parts Location

INFOID:0000000009478443



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- BCM M18, M20 (view with lower in
  - strument panel LH removed)
- Hazard switch M55

Combination switch (lighting and turn Combination meter M24 signal switch) M28

# Component Description

INFOID:0000000009478444

Part name	Description
BCM	Controls turn signal and hazard flasher operation.

# **TURN SIGNAL AND HAZARD WARNING LAMPS**

### < SYSTEM DESCRIPTION >

Combination switch (lighting and turn signal switch)	Lighting and turn signal switch requests are output to the BCM.
Hazard switch	Hazard flasher request signal is output to the BCM.
Combination meter	Outputs turn and hazard indicator as requested by the BCM.

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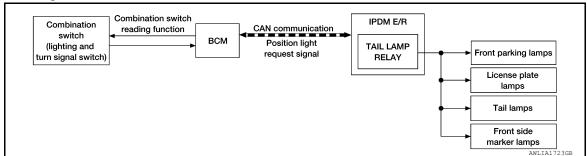
### PARKING, LICENSE PLATE AND TAIL LAMPS

< SYSTEM DESCRIPTION >

# PARKING, LICENSE PLATE AND TAIL LAMPS

System Diagram

INFOID:0000000009478445



# System Description

INFOID:0000000009478446

### PARKING, LICENCE PLATE AND TAIL LAMPS OPERATION

When the combination switch (lighting and turn signal switch) is in 1ST position, BCM detects the LIGHTING SWITCH 1ST POSITION ON. The BCM sends a parking light ON request via the CAN communication lines to the IPDM E/R. The IPDM E/R then activates the tail lamp relay which sends power to the parking and instrument illumination circuits.

### EXTERIOR LAMP BATTERY SAVER CONTROL

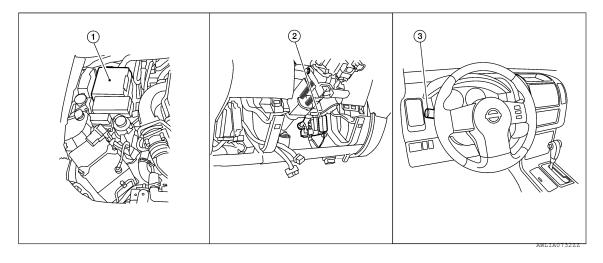
With the combination switch (lighting and turn signal switch) in the 2ND position and the ignition switch is turned from ON or ACC to OFF, the battery saver feature is activated.

Under this condition, the headlamps remain illuminated for 5 minutes unless the combination switch (lighting and turn signal switch) position is changed. If the combination switch (lighting and turn signal switch) position is changed, then the headlamps are turned off.

This setting can be changed by CONSULT. Refer to <u>BCS-18</u>, "<u>HEADLAMP</u>: <u>CONSULT Function (BCM - HEADLAMP</u>)".

# Component Parts Location

INFOID:0000000009478447



- 1. IPDM E/R E121, E122, E123, E124
- BCM M18, M20 (view with lower instru- 3. ment panel LH removed)
- Combination switch (lighting and turn signal switch) M28

# PARKING, LICENSE PLATE AND TAIL LAMPS

# < SYSTEM DESCRIPTION >

# **Component Description**

INFOID:0000000009478448

Part name	Description		
BCM	<ul> <li>Receives combination switch (lighting and turn signal switch) requests via BCM combination switch reading function.</li> <li>Sends parking light request signal to the IPDM E/R.</li> </ul>		
IPDM E/R	Activates the tail lamp relay upon request of the BCM.		
Combination switch (lighting and turn signal switch)	Outputs lighting requests to the BCM.		

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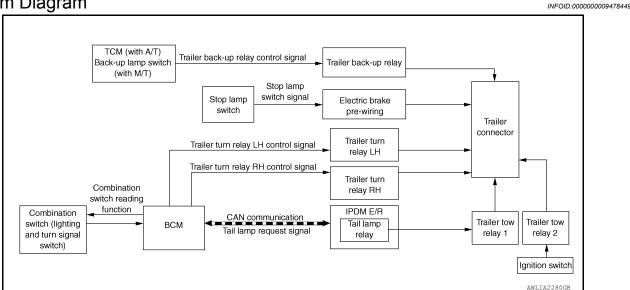
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### TRAILER TOW

System Diagram



# System Description

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### TRAILER TAIL LAMP OPERATION

The trailer tail lamps are controlled by the trailer tow relay 1 that is located on the front of the IPDM E/R. With the combination switch (lighting and turn signal switch) in the 1st position, the BCM detects the LIGHTING SWITCH 1ST POSITION ON. The BCM sends a parking light ON request via the CAN communication lines to the IPDM E/R. The IPDM E/R then activates the tail lamp relay which activates the trailer tow relay 1 and sends power to the trailer connector.

### TRAILER TURN SIGNAL LAMP OPERATION

The trailer turn signal lamps are controlled by the BCM. When the combination switch (lighting and turn signal switch) is in the LH or RH position with the ignition switch ON, the combination switch (lighting and turn signal switch) sends a signal to the BCM. The BCM detects the TURN RH or TURN LH ON request. The BCM sends a control signal to the respective trailer turn relay which sends power to the trailer connector.

### TRAILER HAZARD LAMP OPERATION

The trailer hazard lamps are controlled by the BCM. When the hazard switch is pressed, the BCM detects the the hazard ON request. The BCM then sends a control signal to both trailer turn relays which sends power to the trailer connector.

### TRAILER BRAKE LAMP OPERATION

The trailer brake lamps operate when the brake pedal is pressed sending the stop lamp switch signal to the-trailer connector.

# **Component Parts Location**

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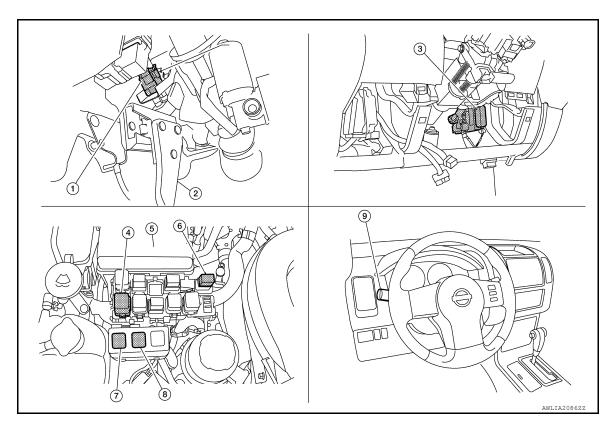
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- Stop lamp switch E38 (with M/T) or E39 (with A/T) (view with lower instrument panel LH removed)
- 4. Trailer turn relay LH E164
- 7. Trailer tow relay 2 E228
- 2. Brake pedal
- 5. IPDM E/R E121, E122, E124
- 8. Trailer tow relay 1 E227
- 3. BCM, M18, M19, M20 (view with lower instrument panel LH removed)
- 6. Trailer turn relay RH E165
- 9. Combination switch (lighting and turn signal switch) M28

**Component Description** 

INFOID:0000000009478452

Part name	Description
BCM	<ul> <li>Receives lighting and turn signal requests from combination switch (lighting and turn signal switch).</li> <li>Sends lighting signal request to the IPDM E/R to control the tail lamp relay via CAN communication.</li> <li>Sends turn/hazard/brake control signal to the trailer turn relays.</li> </ul>
IPDM E/R	Activates the tail lamp relay upon request from the BCM via CAN communication.
Combination switch (lighting and turn signal switch)	Outputs lighting and turn signal requests to the BCM.

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Revision: May 2014 EXL-21 2014 Frontier

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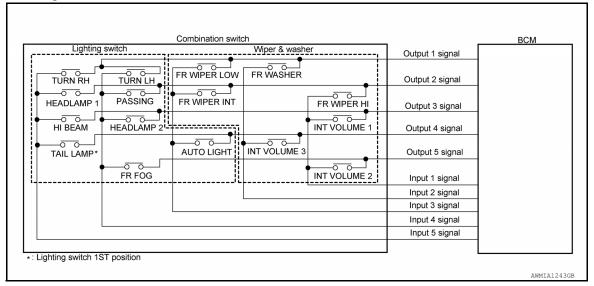
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### System Diagram

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# **System Description**

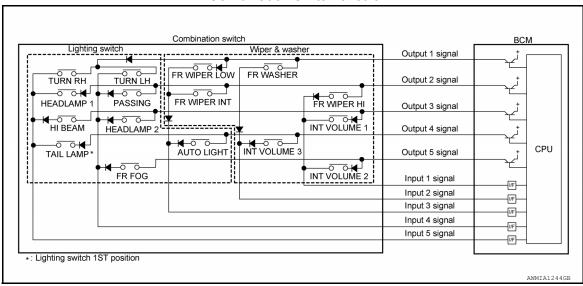
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### **OUTLINE**

- BCM reads the status of the combination switch (light, turn signal, wiper and washer) and recognizes the status of each switch.
- BCM has a combination of 5 output terminals (OUTPUT 1 5) and 5 input terminals (INPUT 1 5) and reads a maximum of 20 switch states.

### **COMBINATION SWITCH MATRIX**

### Combination switch circuit



### Combination switch INPUT-OUTPUT system list

System	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
OUTPUT 1	_	FR WASHER	FR WIPER LOW	TURN LH	TURN RH
OUTPUT 2	FR WIPER HI	_	FR WIPER INT	PASSING	HEADLAMP 1
OUTPUT 3	INT VOLUME 1	_	_	HEADLAMP 2	HI BEAM

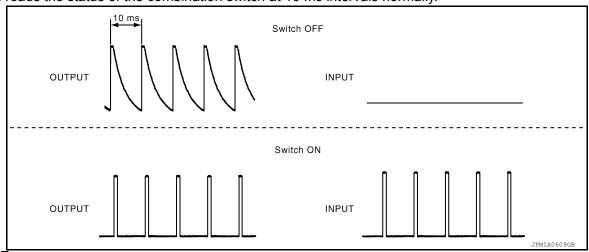
### < SYSTEM DESCRIPTION >

System	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
OUTPUT 4	_	INT VOLUME 3	AUTO LIGHT	_	TAIL LAMP
OUTPUT 5	INT VOLUME 2	_	_	FR FOG	_

### COMBINATION SWITCH READING FUNCTION

### Description

BCM reads the status of the combination switch at 10 ms intervals normally.



### NOTE:

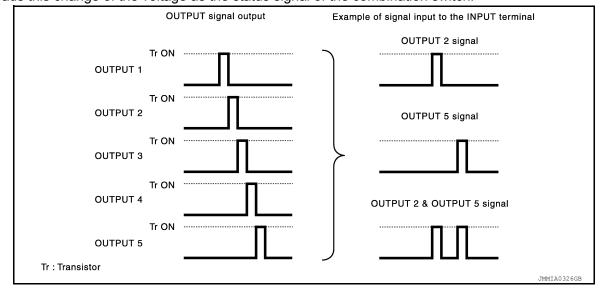
BCM reads the status of the combination switch at 60 ms intervals when BCM is controlled at low power consumption control mode.

• BCM operates as follows and judges the status of the combination switch.

- It operates the transistor on OUTPUT side in the following order: OUTPUT 1  $\rightarrow$  2  $\rightarrow$  3  $\rightarrow$  4  $\rightarrow$  5, and outputs voltage waveform.

- The voltage waveform of OUTPUT corresponding to the formed circuit is input into the interface on INPUT side if any (1 or more) switches are ON.

- It reads this change of the voltage as the status signal of the combination switch.



### Operation Example

In the following operation example, the combination of the status signals of the combination switch is replaced as follows: INPUT 1 - 5 to "1 - 5" and OUTPUT 1 - 5 to "A - E".

Example 1: When a switch (TAIL LAMP) is turned ON

Revision: May 2014 EXL-23 2014 Frontier

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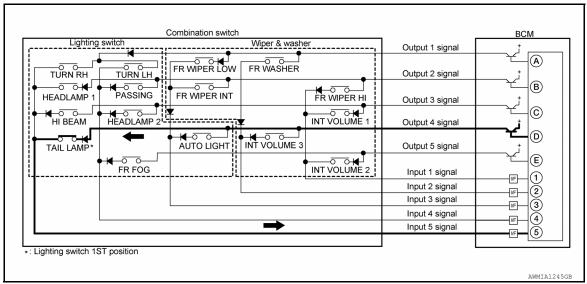
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### < SYSTEM DESCRIPTION >

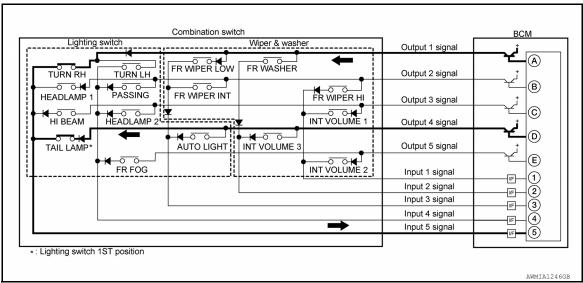
• The circuit between OUTPUT 4 and INPUT 5 is formed when the TAIL LAMP switch is turned ON.



- BCM detects the combination switch status signal "5D" when the signal of OUTPUT 4 is input to INPUT 5.
- BCM judges that the TAIL LAMP switch is ON when the signal "5D" is detected.

Example 2: When some switches (TURN RH, TAIL LAMP) are turned ON

 The circuits between OUTPUT 1 and INPUT 5 and between OUTPUT 4 and INPUT 5 are formed when the TURN RH switch and TAIL LAMP switch are turned ON.



- BCM detects the combination switch status signal "5AD" when the signals of OUTPUT 1 and OUTPUT 4 are input to INPUT 5.
- BCM judges that the TURN RH switch and TAIL LAMP switch are ON when the signal "5AD" is detected.

WIPER INTERMITTENT DIAL POSITION SETTING (FRONT WIPER INTERMITTENT OPERATION) BCM judges the wiper intermittent dial 1 - 7 by the status of INT VOLUME 1, 2, and 3 switches.

# < SYSTEM DESCRIPTION >

Wiper intermittent	Intermittent	INT	VOLUME switch ON/OFF st	atus
dial position	operation delay interval	INT VOLUME 1	INT VOLUME 2	INT VOLUME 3
1	Short	ON	ON	ON
2	1	ON	ON	OFF
3		ON	OFF	OFF
4		OFF	OFF	OFF
5		OFF	OFF	ON
6	<b></b>	OFF	ON	ON
7	Long	OFF	ON	OFF

# **Component Parts Location**

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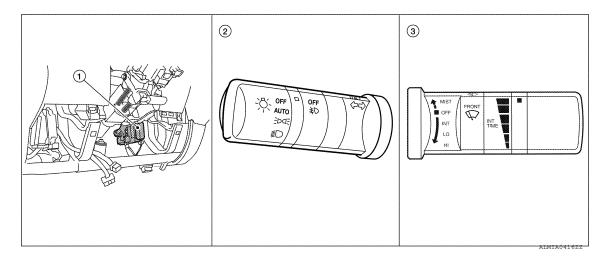
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- 1. BCM M18, M19, M20 (view with low- 2. er instrument panel LH removed)
- Combination switch (lighting and turn signal switch) M28
- 3. Combination switch (wiper and washer switch) M28

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# **DIAGNOSIS SYSTEM (BCM)**

### < SYSTEM DESCRIPTION >

# **DIAGNOSIS SYSTEM (BCM)**

**COMMON ITEM** 

COMMON ITEM: CONSULT Function (BCM - COMMON ITEM)

INFOID:0000000010227889

### **APPLICATION ITEM**

CONSULT performs the following functions via CAN communication with BCM.

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

### SYSTEM APPLICATION

BCM can perform the following functions.

				Direct D	Diagnosti	c Mode		
System	Sub System	ECU Identification	Self Diagnostic Result	Data Monitor	Active Test	Work support	Configuration	CAN Diag Support Mntr
Door lock	DOOR LOCK			×	×	×		
Rear window defogger	REAR DEFOGGER			×	×			
Warning chime	BUZZER			×	×			
Interior room lamp timer	INT LAMP			×	×	×		
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			×				
BCM	BCM	×	×			×	×	×
Immobilizer	IMMU		×	×	×			
Interior room lamp battery saver	BATTERY SAVER			×	×	×		
Vehicle security system	THEFT ALM			×	×	×		
RAP system	RETAINED PWR			×	×	×		
Signal buffer system	SIGNAL BUFFER			×	×			
TPMS	AIR PRESSURE MONITOR		×	×	×	×		
Panic alarm system	PANIC ALARM				×			

**HEADLAMP** 

# **DIAGNOSIS SYSTEM (BCM)**

# < SYSTEM DESCRIPTION >

# HEADLAMP : CONSULT Function (BCM - HEADLAMP)

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### **DATA MONITOR**

Monitor Item [Unit]	Description
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.
ACC ON SW [On/Off]	Indicates condition of ignition switch ACC position.
HI BEAM SW [On/Off]	
HEAD LAMP SW 1 [On/Off]	
HEAD LAMP SW 2 [On/Off]	
LIGHT SW 1ST [On/Off]	Indicates condition of combination switch.
AUTO LIGHT SW [On/Off]	
PASSING SW [On/Off]	
FR FOG SW [On/Off]	
DOOR SW-DR [On/Off]	Indicates condition of front door switch LH.
DOOR SW-AS [On/Off]	Indicates condition of front door switch RH.
DOOR SW-RR [On/Off]	Indicates condition of rear door switch RH.
DOOR SW-RL [On/Off]	Indicates condition of rear door switch LH.
TURN SIGNAL R [On/Off]	Indicates condition of combination switch.
TURN SIGNAL L [On/Off]	indicates condition of combination switch.
CARGO LAMP SW [On/Off]	Indicates condition of cargo lamp switch.
OPTICAL SENSOR [V]	Indicates voltage signal from optical sensor.

# **ACTIVE TEST**

Test Item	Description
TAIL LAMP	This test is able to check tail lamp operation [Off/On].
HEAD LAMP	This test is able to check head lamp operation [Off/Lo/Hi].
FR FOG LAMP	This test is able to check front fog lamp operation [Off/On].
CARGO LAMP	This test is able to check cargo lamp operation [Off/On].

### **WORK SUPPORT**

Support Item	Setting	Description
BATTERY SAVER SET	Off	Exterior lamp battery saver function OFF.
BATTERT SAVER SET	On*	Exterior lamp battery saver function ON.
CUSTOM A/LIGHT SETTING	MODE4	Less sensitive setting than normal setting (Turns ON later than normal operation).
	MODE3	More sensitive setting than MODE 2 (Turns ON earlier than MODE 2).
	MODE2	More sensitive setting than normal setting (Turns ON earlier than normal operation).
	MODE1*	Normal.

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# **DIAGNOSIS SYSTEM (BCM)**

### < SYSTEM DESCRIPTION >

Support Item	Setting		Description
	MODE8	180 sec	
	MODE7	150 sec	
	MODE6	120 sec	
ILL DELAY SET	MODE5	90 sec	Sets delay timer function operation time
ILL DELAT SET	MODE4	60 sec	(All doors closed).
	MODE3	30 sec	
	MODE2	OFF	
	MODE1*	45 sec	

<sup>\*:</sup> Initial setting

# **FLASHER**

FLASHER: CONSULT Function (BCM - FLASHER)

INFOID:0000000010227891

### **DATA MONITOR**

Monitor Item [Unit]	Description		
IGN ON SW [On/Off]	Indicates condition of ignition switch ON position.		
HAZARD SW [On/Off]	Indicates condition of hazard switch.		
TURN SIGNAL R [On/Off]	Indicates condition of turn signal function of combination quitab		
TURN SIGNAL L [On/Off]	Indicates condition of turn signal function of combination switch.		
BRAKE SW [On/Off]	Indicates condition of brake switch.		

### **ACTIVE TEST**

Test Item	Description
FLASHER	This test is able to check turn signal lamp operation [Off/LH/RH].

# **COMB SW**

COMB SW: CONSULT Function (BCM - COMB SW)

INFOID:0000000010227892

### **DATA MONITOR**

Monitor Item [Unit]	Description
TURN SIGNAL R [On/Off]	Indicates condition of turn signal energtion of combination quitab
TURN SIGNAL L [On/Off]	Indicates condition of turn signal operation of combination switch.
HI BEAM SW [On/Off]	Indicates condition of hi beam operation of combination switch.
HEAD LAMP SW 1 [On/Off]	Indicates condition of headlamp operation of combination switch.
HEAD LAMP SW 2 [On/Off]	indicates condition of neadamp operation of combination switch.
LIGHT SW 1ST [On/Off]	Indicates condition of lighting operation of combination switch.
PASSING SW [On/Off]	Indicates condition of passing switch operation of combination switch.
AUTO LIGHT SW [On/Off]	Indicates condition of auto light operation of combination switch.
FR FOG SW [On/Off]	Indicates condition of front fog light operation of combination switch.
FR WIPER HI [On/Off]	
FR WIPER LOW [On/Off]	Indicates condition of front wiper operation of combination switch.
FR WIPER INT [On/Off]	
FR WASHER SW [On/Off]	Indicates condition of front washer operation of combination switch.
INT VOLUME [1 - 7]	Indicates condition of intermittent wiper operation of combination switch.

### < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (IPDM E/R)

# **Diagnosis Description**

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### **AUTO ACTIVE TEST**

### Description

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

- Oil pressure low warning indicator
- Oil pressure gauge (if equipped)
- Rear window defogger (if equipped)
- Front wipers
- · Tail, license and parking lamps
- Front fog lamps (if equipped)
- Headlamps (Hi, Lo)
- A/C compressor (magnetic clutch)
- Cooling fan (if equipped)

### Operation Procedure

1. Close the hood and front door RH, and lift the wiper arms from the windshield (to prevent windshield damage due to wiper operation).

### NOTE:

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

- 2. Turn ignition switch OFF.
- Turn the ignition switch ON and, within 20 seconds, press the front door switch LH 10 times. Then turn the ignition switch OFF.
- 4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
- 5. After a series of the following operations is repeated 3 times, auto active test is completed.

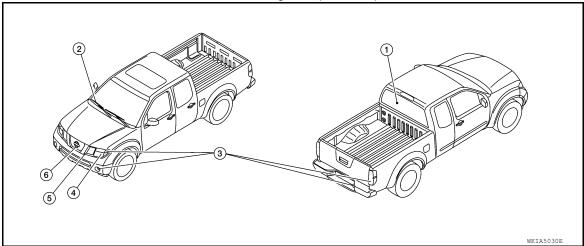
### NOTE:

When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF. **CAUTION**:

- If auto active test mode cannot be actuated, check door switch system. Refer to <u>DLK-27</u>, "<u>KING CAB</u> : <u>Description</u>" (king cab) or <u>DLK-29</u>, "<u>CREW CAB</u> : <u>Description</u>" (crew cab).
- Do not start the engine.

Inspection in Auto Active Test Mode

When auto active test mode is actuated, the following 7 steps are repeated 3 times.



Item Number	Test Item	Operation Time/Frequency	
1	Rear window defogger (if equipped)	10 seconds	
2	Front wipers	LOW 5 seconds then HIGH 5 seconds	
3	Tail, license plate, front fog and parking lamps	10 seconds	

Revision: May 2014 EXL-29 2014 Frontier

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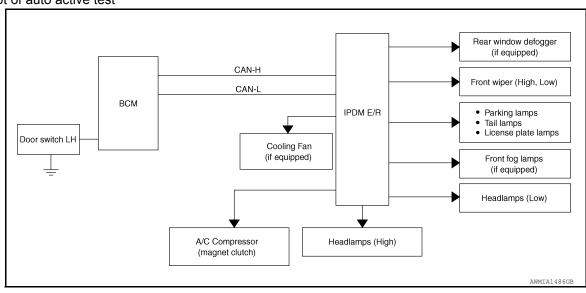
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### < SYSTEM DESCRIPTION >

Item Number	Test Item	Operation Time/Frequency	
4	Headlamps	Low ON for 10 seconds, then High ON-OFF five times.	
5	A/C compressor (magnet clutch)	ON-OFF 5 times	
6	Cooling fan (if equipped)	LOW 5 seconds then HIGH 5 seconds	

Concept of auto active test



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

Diagnosis chart in auto active test mode

Symptom	Inspection contents		Possible cause
Oil pressure low warning indicator does not operate	Perform auto active test. Does the oil pressure low warning indicator operate?	YES	IPDM E/R signal input circuit     ECM signal input circuit     CAN communication signal between ECM and combination meter
		NO	CAN communication signal between IPDM E/R, BCM and combination meter
	Perform auto active test	YES	IPDM E/R signal input circuit
Oil pressure gauge does not operate	Does the oil pressure gauge operate?	NO	CAN communication signal between IPDM E/R, BCM and combination meter
		YES	BCM signal input circuit
Rear window defogger does not operate	Perform auto active test.  Does the rear window defogger operate?	NO	Harness or connector between front air control and BCM     CAN communication signal between BCM and IPDM E/R

### < SYSTEM DESCRIPTION >

Symptom	Inspection contents	Inspection contents	
		YES	BCM signal input system
Any of the following components do not operate Front wipers Tail lamps License plate lamps Parking lamps Front fog lamps (if equipped) Headlamps (Hi, Lo)	Perform auto active test. Does the applicable system operate?	NO	Lamp or front wiper motor malfunction     Lamp or front wiper motor ground circuit     Harness or connector between IPDM E/R and applicable system     IPDM E/R (integrated relay malfunction)
	Perform auto active test.	YES	BCM signal input circuit     CAN communication signal between BCM and ECM     CAN communication signal between ECM and IPDM E/R
A/C compressor does not operate	Does the A/C compressor operate?		Magnetic clutch malfunction     Harness or connector between IPDM E/R and magnetic clutch     IPDM E/R (integrated relay malfunction)
		YES	ECM signal input circuit     CAN communication signal between ECM and IPDM E/ R
Cooling fan does not operate (if equipped)	Perform auto active test.  Does the cooling fan operate?	NO	Cooling fan motor malfunction     Harness or connector between IPDM E/R and cooling fan     IPDM E/R (integrated relay malfunction)

# CONSULT Function (IPDM E/R)

INFOID:0000000010227894

### APPLICATION ITEM

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

Direct Diagnostic Mode	Description
Self Diagnostic Result	The IPDM E/R self diagnostic results are displayed.
Data Monitor	The IPDM E/R input/output data is displayed in real time.
Active Test	The IPDM E/R activates outputs to test components.
CAN Diag Support Mntr	The result of transmit/receive diagnosis of CAN communication is displayed.

# SELF DIAGNOSTIC RESULT

Refer to PCS-21, "DTC Index".

### DATA MONITOR

Monitor Item [Unit]	Main Signals	Description
MOTOR FAN REQ [1/2/3/4]	×	Indicates cooling fan speed signal received from ECM on CAN communication line
AC COMP REQ [On/Off]	×	Indicates A/C compressor request signal received from ECM on CAN communication line

Revision: May 2014 EXL-31 2014 Frontier

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### < SYSTEM DESCRIPTION >

Monitor Item [Unit]	Main Signals	Description
TAIL&CLR REQ [On/Off]	×	Indicates position light request signal received from BCM on CAN communication line
HL LO REQ [On/Off]	×	Indicates low beam request signal received from BCM on CAN communication line
HL HI REQ [On/Off]	×	Indicates high beam request signal received from BCM on CAN communication line
FR FOG REQ [On/Off]	×	Indicates front fog light request signal received from BCM on CAN communication line
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Indicates front wiper request signal received from BCM on CAN communication line
WIP AUTO STOP [STOP P/ACT P]	×	Indicates condition of front wiper auto stop signal
WIP PROT [Off/BLOCK]	×	Indicates condition of front wiper fail-safe operation
ST RLY REQ [On/Off]		Indicates starter request signal received from ECM on CAN communication line
IGN RLY [On/Off]	×	Indicates condition of ignition relay
RR DEF REQ [On/Off]	×	Indicates rear defogger request signal received from BCM on CAN communication line
OIL P SW [Open/Close]		Indicates condition of oil pressure switch
DTRL REQ [Off]		Indicates daytime light request signal received from BCM on CAN communication line
THFT HRN REQ [On/Off]		Indicates theft warning horn request signal received from BCM on CAN communication line
HORN CHIRP [On/Off]		Indicates horn reminder signal received from BCM on CAN communication line

# **ACTIVE TEST**

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

### POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

# DTC/CIRCUIT DIAGNOSIS

# POWER SUPPLY AND GROUND CIRCUIT BCM (BODY CONTROL MODULE)

BCM (BODY CONTROL MODULE): Diagnosis Procedure

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Regarding Wiring Diagram information, refer to BCS-43, "Wiring Diagram".

### 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	Pottony newer supply	21 (10A)
70	Battery power supply	G (50A)
11	Ignition ACC or ON	4 (10A)
38	Ignition ON or START	1 (10A)

### Is the fuse blown?

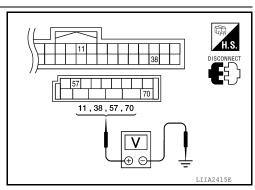
YES >> Replace the blown fuse or fusible link after repairing the affected circuit.

NO >> GO TO 2

# 2. CHECK POWER SUPPLY CIRCUIT

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

Connector	Terminals		Power	Condition	Voltage (V) (Ap-	
Connector	(+)	(-)	source	Condition	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	
IVIZU	70	Ground	Battery power supply	Ignition switch OFF	Battery voltage	
Is the measurement value normal?						



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3. CHECK GROUND CIRCUIT

>> Repair or replace harness.

>> GO TO 3

YES

NO

Revision: May 2014 EXL-33 2014 Frontier

### POWER SUPPLY AND GROUND CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

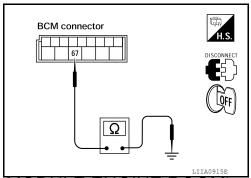
Check continuity between BCM harness connector and ground.

BCM			Continuity	
Connector	Terminal	Ground	Continuity	
M20	67		Yes	

### Does continuity exist?

YES >> Inspection End.

NO >> Repair or replace harness.



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

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

Regarding Wiring Diagram information, refer to PCS-22. "Wiring Diagram".

# 1. CHECK FUSIBLE LINKS

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

Terminal No.	Signal name	Fusible link No.
1		A, D
2	Battery	С
22		A, E, I

### Is the fusible link blown?

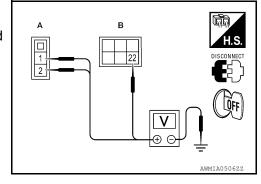
YES >> Replace the blown fusible link after repairing the affected circuit.

NO >> GO TO 2

# 2. CHECK BATTERY POWER SUPPLY CIRCUIT

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

Terminals			Ignition	) /- II () ()	
(+)		(-)	switch posi-	Voltage (V) (Approx.)	
Connector	Terminal	( )	tion	(11 /	
E118 (A)	1		OFF	Battery voltage	
	2	Ground			
E120 (B)	22			, age	



### Is there voltage on all pins?

YES >> GO TO 3

NO >> Repair or replace harness.

# 3. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.

### **POWER SUPPLY AND GROUND CIRCUIT**

# < DTC/CIRCUIT DIAGNOSIS >

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

IPDM E/R			Continuity	
Connector	Terminal	Ground	Continuity	
E122 (A)	38		Yes	
E124 (B)	59		res	

# A DISCONNECT OFF AWMIA00242Z

### Does continuity exist?

YES >> Inspection End.

NO >> Repair or replace harness.

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### **HEADLAMP (HI) CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

# HEADLAMP (HI) CIRCUIT

Description INFOID:0000000009478464

The IPDM E/R (intelligent power distribution module engine room) controls the headlamp high relay based on inputs from the BCM via the CAN communication lines. When the headlamp high relay is energized, power flows through fuses 34 and 35, located in the IPDM E/R. Power then flows to the front combination lamps to the headlamp high beam.

### Component Function Check

INFOID:0000000009478465

# 1. CHECK HEADLAMP (HI) OPERATION

### **NWITHOUT CONSULT**

- 1. Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
- 2. Check that the headlamp switches to the high beam.

### NOTE:

HI/LO is repeated 1 second each when using the IPDM E/R auto active test.

### (P)WITH CONSULT

- Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- With the test item operating, check that the headlamp switches to high beam.

HI: Headlamp switches to the high beam.

OFF : Headlamp OFF

### Does the headlamp switch to high beam?

YES >> Headlamp (HI) circuit is normal.

NO >> Refer to EXL-36, "Diagnosis Procedure".

### Diagnosis Procedure

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Regarding Wiring Diagram information, refer to <u>EXL-72</u>, "Wiring <u>Diagram"</u>(without DTRL) or <u>EXL-76</u>, "Wiring <u>Diagram"</u>(with DTRL).

# 1. CHECK HEADLAMP (HI) FUSES

- Turn the ignition switch OFF.
- Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Headlamp HI (LH)	IPDM E/R	35	10A
Headlamp HI (RH)	IPDM E/R	34	10A

### Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

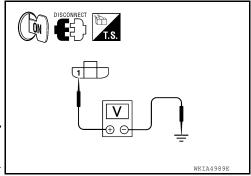
NO >> GO TO 2

# 2.CHECK HEADLAMP (HI) OUTPUT VOLTAGE

### < DTC/CIRCUIT DIAGNOSIS >

- Turn the ignition switch OFF.
- Disconnect the front combination lamp connector E7 (with 2. DTRL), E11 (without DTRL) or E107.
- Turn the ignition switch ON.
- Turn the high beam headlamps ON.
- 5. With the high beam headlamps ON, check the voltage between the front combination lamp connector and ground.

	(+)		(-)	Voltage
	Connector	Terminal		voltage
LH	E7 (with DTRL)			
LII	E11 (without DTRL)	1	Ground	Battery voltage
RH	E107			



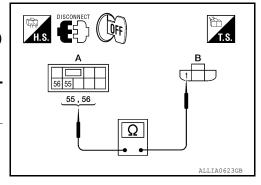
### Is battery voltage present?

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

# 3.check headlamp (HI) circuit for open

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123.
- Check continuity between the IPDM E/R harness connector (A) and the front headlamp harness connector (B).

	Α		В		Continuity
Conr	nector	Terminal	Connector	Terminal	Continuity
LH		55	E7 (with DTRL)		
LII	E123	33	E11(without DTRL)	1	Yes
RH		56	E107		



### Does continuity exist?

>> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R". YES

NO >> Repair the harnesses or connectors.

# f 4.CHECK FRONT HEADLAMP (HI) GROUND CIRCUIT

Check continuity between the front headlamp harness connector terminal and ground.

	Connector	Terminal	_	Continuity
LH	E7 (with DTRL)			
LII	E11 (without DTRL)	2	Ground	Yes
RH	E107			

# 

### Does continuity exist?

>> Inspect the headlamp bulb.

NO (Except LH with DTRL)>> Repair the harness.

NO (LH with DTRL)>> GO TO 5.

# 5.CHECK CONTINUITY BETWEEN FRONT HEADLAMP LH (HI) AND DAYTIME LIGHT RELAY 1

- Disconnect daytime light relay 1 connector.
- Check continuity between front headlamp LH harness connector and daytime light relay 1 harness connector.

Front hea	ıdlamp LH	Daytime li	ght relay 1	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E7	2	E103	3	Yes

**EXL-37** Revision: May 2014 2014 Frontier K

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### < DTC/CIRCUIT DIAGNOSIS >

### Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harness or connector.

# 6. CHECK DAYTIME LIGHT RELAY 1 GROUND CIRCUIT

Check continuity between daytime light relay 1 harness connector and ground.

Daytime li	ght relay 1		Continuity
Connector	Terminal	Ground	Continuity
E103	4		Yes

### Does continuity exist?

YES >> GO TO 7.

NO >> Repair the harness or connector.

# 7.CHECK DAYTIME LIGHT RELAY 1

Check daytime light relay 1. Refer to EXL-44, "Component Inspection"

### Is the inspection result normal?

YES >> Inspect the headlamp bulb.

NO >> Replace daytime light relay 1.

### < DTC/CIRCUIT DIAGNOSIS >

# HEADLAMP (LO) CIRCUIT

Description INFOID:0000000009478467

The IPDM E/R (intelligent power distribution module engine room) controls the headlamp low relay based on inputs from the BCM via the CAN communication lines. When the headlamp low relay is energized, power flows through fuses 40 and 41, located in the IPDM E/R. Power then flows to the front combination lamps to the headlamp low beam.

### Component Function Check

INFOID:0000000009478468

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# 1. CHECK HEADLAMP (LO) OPERATION

### **NWITHOUT CONSULT**

- Start IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
- 2. Check that the headlamp is turned ON.

### NOTE:

HI/LO is repeated 1 second each when using the IPDM E/R auto active test.

### (P)WITH CONSULT

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With the test items operating, check that the headlamp is turned ON.

LO : Headlamp ON OFF : Headlamp OFF

### Is the headlamp turned ON?

YES >> Headlamp (LO) is normal.

NO >> Refer to <u>EXL-39</u>, "<u>Diagnosis Procedure</u>".

### Diagnosis Procedure

INFOID:0000000009478469

Regarding Wiring Diagram information, refer to <u>EXL-72, "Wiring Diagram"</u> (without DTRL) or <u>EXL-76, "Wiring Diagram"</u> (with DTRL).

# 1. CHECK HEADLAMP (LO) FUSES

Turn the ignition switch OFF.

2. Check that the following fuses are not open.

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Unit	Location	Fuse No.	Capacity
Headlamp LO (LH)	IPDM E/R	40	15A
Headlamp LO (RH)	IPDM E/R	41	15A

### Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

# 2.CHECK HEADLAMP (LO) OUTPUT VOLTAGE

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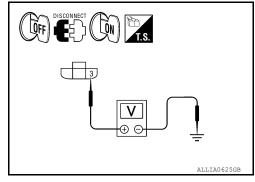
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Revision: May 2014 EXL-39 2014 Frontier

### < DTC/CIRCUIT DIAGNOSIS >

- 1. Turn the ignition switch OFF.
- Disconnect the front headlamp connector.
- 3. Turn the ignition switch ON.
- 4. Turn the low beam headlamps ON.
- 5. With the low beam headlamps ON, check the voltage between the headlamp connector and ground.

	(+)		(-)	Voltage	
	Connector	Terminal		voltage	
LH	E7 (with DTRL)				
LII	E11 (without DTRL)	3	Ground	Battery voltage	
RH	E107				



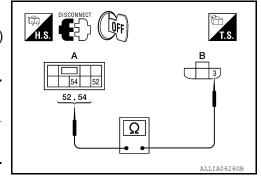
### Is battery voltage present?

YES >> GO TO 8

NO (Except LH with DTRL)>>CHECK HEADLAMP (LO) CIRCUIT FOR OPEN GO TO 3 NO (LH with DTRL)>>CHECK HEADLAMP (LO) CIRCUIT FOR OPEN (LH WITH DTRL) GO TO 4

- 3.CHECK HEADLAMP (LO) CIRCUIT FOR OPEN (EXCEPT LH WITH DTRL)
- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123.
- Check continuity between the IPDM E/R harness connector (A) and the front headlamp harness connector (B).

	Α		В		Continuity
Conr	nector	Terminal	Connector	Terminal	Continuity
LH	E123	52	E11	3	Yes
RH	L123	54	E107	3	162



### Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

4. CHECK HEADLAMP (LO) CIRCUIT FOR OPEN (LH WITH DTRL)

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123 and daytime light relay 2 connector.
- Check continuity between the IPDM E/R harness connector and the daytime light relay 2 harness connector.

IPDM E/I	₹	Daytime light r	elay 2	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E123	52	E104	5	Yes
E123	52	E 104	2	165

### Does continuity exist?

YES >> GO TO 5

NO >> Repair the harnesses or connectors.

# 5. CHECK DAYTIME LIGHT RELAY 2 CIRCUIT (LH WITH DTRL)

1. Check continuity between the daytime light relay 2 harness connector and the front headlamp LH harness connector.

Daytime light i	elay 2	Front headlam	np LH	Continuity
Connector	Terminal	Connector	Terminal	Continuity
E104	3	E7	3	Yes

2. Check continuity between the daytime light relay 2 harness connector and ground.

### < DTC/CIRCUIT DIAGNOSIS >

Daytime li	ght relay 2		Continuity
Connector	Terminal	Ground	Continuity
E104	3		No

### Is the measurement value normal?

YES >> GO TO 6

NO >> Repair the harnesses or connectors.

# 6.CHECK DAYTIME LIGHT RELAY 2 GROUND CIRCUIT

Check continuity between daytime light relay 2 harness connector and ground.

Daytime light relay 2			Continuity
Connector	Terminal	Ground	Continuity
E104	1		Yes

### Does continuity exist?

YES >> GO TO 7.

NO >> Repair the harness or connector.

### 7.CHECK DAYTIME LIGHT RELAY $^{ m 2}$

Check daytime light relay 2. Refer to EXL-42, "Component Inspection".

### Is the inspection result normal?

>> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R", YES

NO >> Replace daytime light relay 2.

# 8.CHECK FRONT HEADLAMP (LO) GROUND CIRCUIT

Check continuity between the front headlamp harness connector terminal 2 and ground.

	Connector	Terminal	_	Continuity
LH	E7 (with DTRL)			
	E11 (without DTRL)	2	Ground	Yes
RH	E107			

# 

### Does continuity exist?

>> Inspect the headlamp bulb.

NO (Except LH with DTRL)>> Repair the harness.

NO (LH with DTRL)>> GO TO 9

# 9.CHECK CONTINUITY BETWEEN FRONT HEADLAMP LH (HI) AND DAYTIME LIGHT RELAY 1

Disconnect daytime light relay 1 connector.

Check continuity between front headlamp LH harness connector and daytime light relay 1 harness connector.

Front headlamp LH		Daytime light relay 1		Continuity
Connector	Terminal	Connector Terminal		Continuity
E7	2	E103	3	Yes

### Does continuity exist?

YES >> GO TO 10

NO >> Repair the harness or connector.

# 10.CHECK DAYTIME LIGHT RELAY 1 GROUND CIRCUIT

Check continuity between daytime light relay 1 harness connector and ground.

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### < DTC/CIRCUIT DIAGNOSIS >

Daytime light relay 1			Continuity
Connector	Terminal	Ground	
E103	4		Yes

### Does continuity exist?

YES >> GO TO 11

NO >> Repair the harness or connector.

11. CHECK DAYTIME LIGHT RELAY 1

Check daytime light relay 1. Refer to EXL-44, "Component Inspection"

### Is the inspection result normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Replace daytime light relay 1.

### Component Inspection

INFOID:0000000009478470

# 1. CHECK DAYTIME LIGHT RELAY 2

- 1. Turn ignition switch OFF.
- 2. Remove daytime light relay 2.
- 3. Check the continuity between daytime light relay 2 terminals under the following conditions.

Terminals	Condition	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Yes
J and J	No current supply	No

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace daytime light relay 2.

### **DAYTIME LIGHT RELAY CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

### DAYTIME LIGHT RELAY CIRCUIT

Description INFOID:0000000009478471

The BCM sends a daytime light request to the IPDM E/R via the CAN communication lines. The power flows backward through fuse 45 located in IPDM E/R to daytime light relay 1 and LH high beam lamp to IPDM E/R, through the high beam fuses, through the RH high beam lamp and on to ground. The high beam lamps are wired in series which causes them to illuminate at a reduced intensity.

Diagnosis Procedure

INFOID:0000000009478472

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Regarding Wiring Diagram information, refer to EXL-76, "Wiring Diagram".

# 1. CHECK DAYTIME LIGHT RELAY 1 FUSE

- 1. Turn the ignition switch OFF.
- 2. Check that the following fuse is not open.

Unit	Location	Fuse No.	Capacity
Daytime light relay 1	IPDM E/R	45	10A

### Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

# 2.CHECK IPDM E/R OUTPUT SIGNAL

- Turn the ignition switch OFF.
- Disconnect the daytime light relay 1 connector.
- Turn the ignition switch ON.
- 4. Check the voltage between the daytime light relay 1 harness connector and ground.

(+)		(-)	Voltage	
Connector	Terminal	(-)	voilage	
E103	2	Ground	Battery voltage	
L103	5	Ground	Dattery voltage	

### Is battery voltage present?

YES >> GO TO 3

NO >> GO TO 5

# 3.CHECK DAYTIME LIGHT RELAY 1 CIRCUIT

- 1. Turn the ignition switch OFF.
- Disconnect IPDM E/R connector E122.
- 3. Check continuity between the IPDM E/R harness connector and the daytime light relay 1 harness connector.

IPDM E/R		Daytime light relay 1		Continuity
Connector	Terminal	Connector Terminal		Continuity
E122	44	E103	1	Yes

4. Check continuity between the daytime light relay 1 harness connector and ground.

Connector	Terminal	_	Continuity
E103	1	Ground	No

### Is the measurement value normal?

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### DAYTIME LIGHT RELAY CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 4

NO >> Repair the harnesses or connectors.

### f 4.CHECK DAYTIME LIGHT RELAY 1

Check daytime light relay 1. Refer to EXL-44, "Component Inspection".

### Is the inspection result normal?

YES >> Check headlamp (HI) circuit. If OK, replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R". If NG, refer to EXL-36, "Diagnosis Procedure".

NO >> Replace daytime light relay1.

# 5.CHECK DAYTIME LIGHT RELAY CIRCUIT FOR OPEN

- 1. Turn the ignition switch OFF.
- Disconnect IPDM E/R connector E119.
- Check continuity between the IPDM E/R harness connector and the daytime light relay 1 harness connector.

IPDN	IPDM E/R		Daytime light relay 1	
Connector	Terminal	Connector	Terminal	
E119	10	10 E103		Yes
E119	10	E 103	5	165

### Does continuity exist?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

# Component Inspection

INFOID:0000000009478473

# 1. CHECK DAYTIME LIGHT RELAY 1

- 1. Turn ignition switch OFF.
- 2. Remove daytime light relay 1.
- 3. Check the continuity between daytime light relay 1 terminals under the following conditions.

Terminals	Condition	Continuity
3 and 5	12V direct current supply between terminals 1 and 2	Yes
3 and 3	No current supply	No
3 and 4	12V direct current supply between terminals 1 and 2	No
5 and 4	No current supply	Yes

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace daytime light relay 1

### FRONT FOG LAMP CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

### FRONT FOG LAMP CIRCUIT

Description INFOID:0000000009478474

The IPDM E/R (intelligent power distribution module engine room) controls the front fog lamp relay based on inputs from the BCM via the CAN communication lines. When the front fog lamp relay is energized, power flows from the front fog lamp relay in the IPDM E/R to the front fog lamps.

# Component Function Check

# 1. CHECK FRONT FOG LAMP OPERATION

### ®WITHOUT CONSULT

- 1. Activate IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
- Check that the front fog lamp is turned ON.

### (P)WITH CONSULT

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, Check that the front fog lamp is turned ON.

FOG: Front fog lamp ON
OFF: Front fog lamp OFF

### Is the front fog lamp turned ON?

YES >> Front fog lamp circuit is normal.

NO >> Refer to EXL-45, "Diagnosis Procedure".

### Diagnosis Procedure

Regarding Wiring Diagram information, refer to EXL-92, "Wiring Diagram".

# 1. CHECK FRONT FOG LAMP FUSE

- 1. Turn the ignition switch OFF.
- Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Front fog lamp	IPDM E/R	56	20A

### Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

# 2.CHECK FRONT FOG LAMP OUTPUT VOLTAGE

- 1. Turn the ignition switch OFF.
- 2. Disconnect the front fog lamp connector.
- 3. Turn the ignition switch ON.
- 4. Turn the front fog lamps ON.
- Check the voltage between the fog lamp connector and ground.

(+)			(-)	Voltage	
Со	nnector	Terminal	(-)	voitage	
LH	E101	1	Ground	Battery voltage	
RH	E102	1	Ground	Battery voitage	

# DISCONNECT ON T.S. ALLIA0627GB

### Is battery voltage present?

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

Revision: May 2014 EXL-45 2014 Frontier

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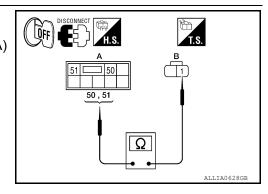
### FRONT FOG LAMP CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

# 3.CHECK FRONT FOG LAMP OPEN CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E123.
- Check continuity between the IPDM E/R harness connector (A) and the front fog lamp harness connector (B).

А			В	Continuity	
Con	nector	Terminal	Connector Terminal		Continuity
LH	E123	50	E101	1	Yes
RH	L123	51	E102	1	163



### Does continuity exist?

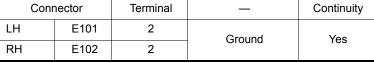
>> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

# 4. CHECK FRONT FOG LAMP GROUND CIRCUIT

- Disconnect the front fog lamp connector.
- Check continuity between the front fog lamp harness connector terminal and ground.

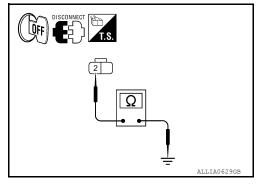
Connector		Connector Terminal		Continuity
LH	E101	2	Ground	Yes
RH	E102	2	Ground	



### Does continuity exist?

YES >> Inspect the fog lamp bulb.

NO >> Repair the harness.



### PARKING LAMP CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

### PARKING LAMP CIRCUIT

Description INFOID:000000009478477

The IPDM E/R (intelligent power distribution module engine room) controls the tail lamp relay based on inputs from the BCM via the CAN communication lines. When the tail lamp relay is energized, power flows through fuse 36 and 37, located in the IPDM E/R. Power then flows to the front and rear combination lamps, license plate lamps.

### Component Function Check

INFOID:0000000009478478

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# 1. CHECK PARKING LAMP OPERATION

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- Activate IPDM E/R auto active test. Refer to PCS-9, "Diagnosis Description".
- Check that the parking lamp is turned ON.

### (P)WITH CONSULT

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- With operating the test items, check that the parking lamp is turned ON.

**TAIL** : Parking lamp ON **OFF** : Parking lamp OFF

### Is the parking lamp turned ON?

YES >> Parking lamp circuit is normal.

>> Refer to EXL-47, "Diagnosis Procedure". NO

### Diagnosis Procedure

INFOID:0000000009478479

Regarding Wiring Diagram information, refer to EXL-102, "Wiring Diagram".

# 1. CHECK PARKING LAMP FUSES

- Turn the ignition switch OFF.
- Check that the following fuses are not open.

Unit	Location	Fuse No.	Capacity
Parking lamps	IPDM E/R	36	10A
r arking lamps	IF DIVI L/IX	37	10A

### Is the fuse open?

YES >> Replace the fuse after repairing the affected circuit.

NO >> GO TO 2

# 2.CHECK TAIL LAMP RELAY OUTPUT (VOLTAGE)

- Turn the ignition switch OFF.
- Disconnect the front combination lamp connectors, front side marker lamp connectors, rear combination lamp connectors and license plate lamp connectors.
- Turn the ignition switch ON.
- Turn the parking lamps ON.
- With the parking lamps ON, check voltage between the front combination lamp connector and ground.

(+)			( )	Voltage	
-	Connector	Terminal	(–)	Voltage	
LH	E27	5	Ground	Battery voltage	
RH	E111	5	Ground	Dattery Voltage	

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### **PARKING LAMP CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

6. With the parking lamps ON, check voltage between the front side marker lamp connector and ground.

(+)			(-)	Voltage	
	Connector	Terminal	(-)	voltage	
LH	E17	7	Ground	Rattery voltage	
RH	E108	,	Ground	Battery voltage	

7. With the parking lamps ON, check voltage between the rear combination lamp connector and ground.

(+)			(-)	Voltage	
	Connector	Terminal	(-)	Voltage	
LH	C201	3	Ground	Pattory voltage	
RH	C202	3	Ground	Battery voltage	

8. With the parking lamps ON, check voltage between the license plate lamp connector and ground

	(+)		(-)	Voltage	
	Connector	Terminal	(-)		
LH	C203	1	Ground	Pattory voltage	
RH	C204	1	Ground	Battery voltage	

### Are voltage readings as specified?

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

# 3.check parking, license plate and tail lamp circuit (open)

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector E121, E123 and E124.
- Check continuity between the IPDM E/R harness connector and the front combination lamp harness connector.

Co	onnector	Terminal	Connector	Terminal	Continuity
LH	E121	28	E27	- 5	Yes
RH	E123	49	E111		103

4. Check continuity between the IPDM E/R harness connector and the front side marker lamp harness connector.

C	onnector	Terminal	Connector	Terminal	Continuity
LH	E121	28	E17	7	Yes
RH	E123	49	E108	,	163

5. Check continuity between the IPDM E/R harness connector and the rear combination lamp harness connector.

	IPDM E/R		Rear comb	ination lamp	Continuity
Co	onnector	Terminal	Connector Terminal		Continuity
LH	F124	57	C201	3	Yes
RH	L12 <del>4</del>	31	C202	3	163

6. Check continuity between the IPDM E/R harness connector and license plate lamp connector.

### **PARKING LAMP CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

	IPDM E/F	?	License plate lamp		Continuity	
Co	onnector	Terminal	Connector Terminal		Continuity	
LH	E124	57	C203	1	Yes	
RH	L12 <del>4</del>	31	C204	, , , , , , , , , , , , , , , , , , ,	162	

Are continuity results as specified?

>> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair the harnesses or connectors.

# 4. CHECK PARKING, LICENSE AND TAIL LAMP GROUND CIRCUITS

1. Check continuity between the front combination lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	E27	4	Ground	Yes
RH	E111		Ground	105

2. Check continuity between the front side marker lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	E17	Q	Ground	Yes
RH	E108	8	Ground	

3. Check continuity between the rear combination lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	C201	2	Ground	Yes
RH	C202	2	Glound	165

4. Check continuity between the license plate lamp harness connector and ground.

Connector		Terminal	_	Continuity
LH	C203	2	Ground	Yes
RH	C204	2	Ground	

### Are continuity results as specified?

YES >> Inspect the parking lamp bulb.

NO >> Repair the harness. EXL

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**EXL-49** Revision: May 2014 2014 Frontier

### TURN SIGNAL LAMP CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

### TURN SIGNAL LAMP CIRCUIT

Description INFOID:000000009478480

The BCM monitors inputs from the combination switch (lighting and turn signal switch) to determine when to activate the turn signals. The BCM outputs voltage direction to the left and right turn signals during turn signal operation or both during hazard warning operation. The BCM sends a turn signal indicator request to the combination meter via the CAN communication lines.

The BCM performs the fast flasher operation (fail-safe) if any bulb or harness of the turn signal lamp circuit is open.

### NOTE:

Turn signal lamp blinks at normal speed when using the hazard warning lamp.

### Component Function Check

INFOID:0000000009478481

# 1. CHECK TURN SIGNAL LAMP

### (E)WITH CONSULT

- 1. Select "FLASHER" of BCM (FLASHER) active test item.
- 2. With operating the test items, check that the turn signal lamp blinks.

LH: Turn signal lamp LH blinking
RH: Turn signal lamp RH blinking
OFF: The turn signal lamp OFF

### Does the turn signal lamp blink?

YES >> Turn signal lamp circuit is normal.

NO >> Refer to EXL-50, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000009478482

Regarding Wiring Diagram information, refer to <a>EXL-96</a>, "Wiring Diagram"</a>.

# 1. CHECK TURN SIGNAL LAMP BULB

Check the applicable lamp bulb to be sure the proper bulb standard is in use and the bulb is not open.

### Is the bulb OK?

YES >> GO TO 2

NO >> Replace the bulb.

# 2.CHECK TURN SIGNAL LAMP OUTPUT VOLTAGE

- Turn the ignition switch OFF.
- 2. Disconnect the front combination lamp connector and the rear combination lamp connector.
- Turn the ignition switch ON.
- With turn signal switch operating, check the voltage between the front combination lamp harness connector and ground.

(+)		(-)	Voltage	
Con	nector	Terminal	( )	voluge
E27	LH			
E111	RH	6	Ground	(V) 15 10 5 0 1 s

### **TURN SIGNAL LAMP CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

5. With turn signal switch operating, check the voltage between the rear combination lamp harness connector and ground.

	(+)		(-)	Voltage
Con	nector	Terminal	( )	voluge
C207	LH			
C208	RH	4	Ground	(V) 15 10 5 0 1 s PKID0926E

### Is voltage reading as specified?

YES >> GO TO 5 NO >> GO TO 3

# 3.CHECK TURN SIGNAL LAMP CIRCUIT FOR OPEN

- Turn the ignition switch OFF.
- Disconnect BCM connector M20.
- Check continuity between the BCM harness connector and the front combination lamps harness connector.

всм			Front comb	ination lamp	Continuity
Con	nector	Terminal	Connector Terminal		Continuity
Front LH	M20	60	E27	6	Yes
Front RH	IVIZU	61	E111	O	res

4. Check continuity between the BCM harness connector and the rear combination lamp harness connector.

ВСМ		Rear combination lamp		Continuity	
Con	nector	Terminal	Connector	Terminal	Continuity
Rear LH	M20	60	C207	4	Yes
Rear RH	IVIZU	61	C208	4	165

### Are continuity results as specified?

YES >> GO TO 4

NO >> Repair the harnesses or connectors.

### 4. CHECK TURN SIGNAL LAMP SHORT CIRCUIT

Check continuity between the BCM harness connector and ground.

С	Connector		_	Continuity
LH	M20	60	Ground	No
RH		61		

### Does continuity exist?

YES >> Repair the harnesses or connectors.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

# 5. CHECK TURN SIGNAL LAMP GROUND CIRCUIT

1. Check continuity between the front combination lamp harness connector and ground.

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### **TURN SIGNAL LAMP CIRCUIT**

### < DTC/CIRCUIT DIAGNOSIS >

Connector		Terminal	_	Continuity
Front LH	E27	4	Ground	Yes
Front RH	E111	<b>-</b>	Ground	163

2. Check continuity between the rear combination lamp harness connector and ground.

Connector		Terminal	_	Continuity
Rear LH	C207	F	Ground	Yes
Rear RH	C208	3	Ground	163

### Are continuity results as specified?

YES >> Replace the malfunctioning lamp.

NO >> Repair the harnesses or connectors.

### **OPTICAL SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

### **OPTICAL SENSOR**

Description INFOID:000000000478483

The optical sensor converts the outside brightness (lux) to voltage and transmits the optical sensor signal to the BCM.

Diagnosis Procedure

INFOID:0000000009478484

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Regarding Wiring Diagram information, refer to EXL-84, "Wiring Diagram".

# 1. CHECK OPTICAL SENSOR GROUND CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect BCM connector M18 and optical sensor connector M14.
- 3. Check continuity between BCM harness connector and optical sensor harness connector.

BCM		Optical	Continuity		
Connector	Terminal	Connector	Terminal	Continuity	
M18	18	M14	3	Yes	

4. Check continuity between BCM harness connector and ground.

В	CM	_	Continuity
Connector	Terminal		Continuity
M18	18	Ground	No

### Are continuity results as specified?

YES >> GO TO 2

NO >> Repair harness or connector.

# 2.CHECK OPTICAL SENSOR SIGNAL CIRCUIT

1. Check continuity between BCM harness connector and optical sensor harness connector.

ВС	CM	Optical	Continuity	
Connector	Terminal	nal Connector Terminal		
M20	58	M14	4	Yes

2. Check continuity between BCM harness connector and ground.

В	CM	_	Continuity
Connector	Terminal		Continuity
M20	58	Ground	No

### Are the continuity results as specified?

YES >> Replace the optical sensor. Refer to <a>EXL-149</a>, "Removal and Installation"</a>.

NO >> Repair harness or connector.

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Revision: May 2014 EXL-53 2014 Frontier

< ECU DIAGNOSIS INFORMATION >

# **ECU DIAGNOSIS INFORMATION**

# BCM (BODY CONTROL MODULE)

Reference Value

### NOTE:

The Signal Tech II Tool (J-50190) can be used to perform the following functions. Refer to the Signal Tech II User Guide for additional information.

- Activate and display TPMS transmitter IDs
- Display tire pressure reported by the TPMS transmitter
- Read TPMS DTCs
- · Register TPMS transmitter IDs
- · Test remote keyless entry keyfob relative signal strength

### VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition	Value/Status
ACC ON SW	Ignition switch OFF or ON	Off
ACC ON 3W	Ignition switch ACC	On
AIR COND SW	A/C switch OFF	Off
AIR COND 3W	A/C switch ON	On
AIR PRESS FL	Front left tire air pressure value	kPa, kg/cm <sup>2</sup> , psi
AIR PRESS FR	Front right tire air pressure value	kPa, kg/cm <sup>2</sup> , psi
AIR PRESS RL	Rear left tire air pressure value	kPa, kg/cm <sup>2</sup> , psi
AIR PRESS RR	Rear right tire air pressure value	kPa, kg/cm <sup>2</sup> , psi
AUTO LIGHT SW	Lighting switch OFF	Off
AUTO LIGHT SW	Lighting switch AUTO	On
BRAKE SW	Brake pedal released	Off
DRAKE SW	Brake pedal applied	On
BUCKLE SW	Seat belt buckle unfastened	Off
BUCKLE SVV	Seat belt buckle fastened	On
BUZZER	Buzzer in combination meter OFF	Off
BUZZEK	Buzzer in combination meter ON	On
CARGO LAMP SW	Cargo lamp switch OFF	Off
CARGO LAIVIF 3VV	Cargo lamp switch ON	On
CDL LOCK SW	Door lock/unlock switch does not operate	Off
ODL LOCK SW	Press door lock/unlock switch to the LOCK side	On
CDL UNLOCK SW	Door lock/unlock switch does not operate	Off
CDL UNLOCK 3W	Press door lock/unlock switch to the UNLOCK side	On
DOOR SW-AS	Front door RH closed	Off
DOOR SW-AS	Front door RH opened	On
DOOR SW-DR	Front door LH closed	Off
DOOK SW-DIX	Front door LH opened	On
DOOR SW-RL	Rear door LH closed	Off
DOOR SW-RL	Rear door LH opened	On
DOOR SW-RR	Rear door RH closed	Off
DOOK GW-KK	Rear door RH opened	On

# < ECU DIAGNOSIS INFORMATION >

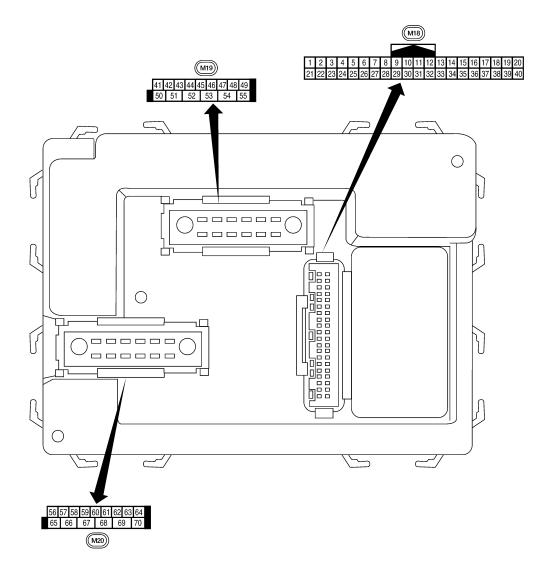
Monitor Item	Condition	Value/Status
FAN ON SIG	Blower motor fan switch OFF	Off
FAN ON SIG	Blower motor fan switch ON	On
FR FOG SW	Front fog lamp switch OFF	Off
FR FOG SW	Front fog lamp switch ON	On
	Front washer switch OFF	Off
FR WASHER SW	Front washer switch ON	On
ED WIDED LOW	Front wiper switch OFF	Off
FR WIPER LOW	Front wiper switch LO	On
ED WIDED III	Front wiper switch OFF	Off
FR WIPER HI	Front wiper switch HI	On
	Front wiper switch OFF	Off
FR WIPER INT	Front wiper switch INT	On
ED WIDED OTOD	Any position other than front wiper stop position	Off
FR WIPER STOP	Front wiper stop position	On
LIAZADD OM	When hazard switch is not pressed	Off
HAZARD SW	When hazard switch is pressed	On
IEAD LAMB CVA 4	Headlamp switch OFF	Off
HEAD LAMP SW 1	Headlamp switch 1st	On
JEAR LAMB 014/ 0	Headlamp switch OFF	Off
HEAD LAMP SW 2	Headlamp switch 1st	On
II DE AM CVA	High beam switch OFF	Off
HI BEAM SW	High beam switch HI	On
ID DECOT EL 4	ID registration of front left tire incomplete	YET
D REGST FL1	ID registration of front left tire complete	DONE
D DECOT 5D4	ID registration of front right tire incomplete	YET
D REGST FR1	ID registration of front right tire complete	DONE
D DECOT DI 4	ID registration of rear left tire incomplete	YET
D REGST RL1	ID registration of rear left tire complete	DONE
D DECOT DD:	ID registration of rear right tire incomplete	YET
D REGST RR1	ID registration of rear right tire complete	DONE
CNI ONI CVA	Ignition switch OFF or ACC	Off
GN ON SW	Ignition switch ON	On
ON CW CAN	Ignition switch OFF or ACC	Off
GN SW CAN	Ignition switch ON	On
NT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7
VEV OVELLY OVE	Door key cylinder LOCK position	Off
KEY CYL LK-SW	Door key cylinder other than LOCK position	On
VEV OVI TIN OW	Door key cylinder UNLOCK position	Off
KEY CYL UN-SW	Door key cylinder other than UNLOCK position	On
VEV ON OW	Mechanical key is removed from key cylinder	Off
KEY ON SW	Mechanical key is inserted to key cylinder	On
(/E)// E00   00:	LOCK button of key fob is not pressed	Off
KEYLESS LOCK	LOCK button of key fob is pressed	On

**EXL-55** Revision: May 2014 2014 Frontier

### < ECU DIAGNOSIS INFORMATION >

Monitor Item	Condition	Value/Status
KEYLESS PANIC	PANIC button of key fob is not pressed	Off
RETLESS PAINIC	PANIC button of key fob is pressed	On
KEYLESS UNLOCK	UNLOCK button of key fob is not pressed	Off
RETLESS UNLOCK	UNLOCK button of key fob is pressed	On
LIGHT SW 1ST	Lighting switch OFF	Off
LIGHT SW 131	Lighting switch 1st	On
OIL PRESS SW	Ignition switch OFF or ACC     Engine running	Off
	Ignition switch ON	On
OPTICAL SENSOR	Bright outside of the vehicle	Close to 5V
OF HOAL SENSON	Dark outside of the vehicle	Close to 0V
PASSING SW	Other than lighting switch PASS	Off
FAGGING GW	Lighting switch PASS	On
REAR DEF SW	Rear window defogger switch OFF	Off
NEAN DEI 3W	Rear window defogger switch ON	On
TURN SIGNAL L	Turn signal switch OFF	Off
TOTAL C	Turn signal switch LH	On
TURN SIGNAL R	Turn signal switch OFF	Off
TOTAL ORGINAL IX	Turn signal switch RH	On
VEHICLE SPEED	While driving	Equivalent to speedometer reading
WARNING LAMP	Low tire pressure warning lamp in combination meter OFF	Off
WAINING LAWF	Low tire pressure warning lamp in combination meter ON	On

Terminal Layout



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Physical Values

			Signal		Measuring condition	
Terminal	Wire color	Item	input/ output	Ignition switch	Operation or condition	Reference value or waveform (Approx.)
1	BR	Ignition keyhole illumi-	Output	OFF	Door is locked (SW OFF)	Battery voltage
	ЬK	nation	Output	OFF	Door is unlocked (SW ON)	0V
2	Р	Combination switch input 5	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 5ms
3	SB	Combination switch input 4	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 ***5ms
4	V	Combination switch input 3	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 **5ms SKIA5291E
6	L R	Combination switch input 2  Combination switch input 1	Input	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 +-5ms SKIA5292E
_	0.0	Front door lock as-			ON (open, 2nd turn)	Momentary 1.5V
7	GR	sembly LH (key cylin- der switch) unlock	Input	055	OFF (closed)	0V
		Front door lock as-		OFF	On (open)	Momentary 1.5V
8	SB	sembly LH (key cylin- der switch) lock	Input		OFF (closed)	0V
9	LG	Brake sw	Input	OFF	OFF (brake pedal is not depressed)	OV
J			mput	011	ON (brake pedal is depressed)	Battery voltage
11	G/B	Ignition switch (ACC or ON)	Input	ACC or ON	Ignition switch ACC or ON	Battery voltage
		Front door switch RH (All)			ON (open)	0V
12	LG	Rear door switch up- per RH (King Cab)  Rear door switch low- er RH (King Cab)	Input	OFF	OFF (closed)	Battery voltage

# < ECU DIAGNOSIS INFORMATION >

	Wire		Signal		Measuring condition	Reference value or waveform						
Terminal	color	Item	input/ output	Ignition switch	Operation or condition	(Approx.)						
13	L	Rear door switch RH	Input	OFF	ON (open)	0V						
10	١	(Crew Cab)	mpat	011	OFF (closed)	Battery voltage						
15	V	Tire pressure warning check connector	Input	OFF	_	5V						
18	BR	Remote keyless entry receiver and optical sensor (Ground)	Output	OFF	_	OV						
19	V	Remote keyless entry receiver (power sup- ply)	Output	OFF	Ignition switch OFF	(V) 6 4 2 0 + 50 ms						
20	G	Remote keyless entry receiver signal (Sig-	Input	OFF	Stand-by (keyfob buttons released)	(V) 6 4 2 0 ***50 ms						
20	g	nal)	при	mput	pat	mput		·	mput	input Oi i	When remote keyless entry receiver receives signal from keyfob (keyfob buttons pressed)	(V) 6 4 2 0 
21	GR	NATS antenna amp.	Input	OFF → ON	Ignition switch (OFF $\rightarrow$ ON)	Just after turning ignition switch ON: Pointer of tester should move.						
23	G	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 $\rightarrow$ ON)	Just after turning ignition switch ON: Pointer of tester should move.						
27	W	Compressor ON sig-	Input	ON	A/C switch OFF	5V						
	**	nal	input	J.1	A/C switch ON	0V						
28	R	Front blower monitor	Input	ON	Front blower motor OFF	Battery voltage						
		The state of the s		3.,	Front blower motor ON	0V						
29	G	Hazard switch	Input	OFF	ON	0V						
	_		r		OFF	5V						
31	GR	Cargo lamp switch	Input	OFF	ON	0V						
- •		J	r		OFF	Battery voltage						

**EXL-59** Revision: May 2014 2014 Frontier

# < ECU DIAGNOSIS INFORMATION >

	\\/:ro		Signal		Measuring condition	Deference value or waveform	
Terminal	Wire color	Item	input/ output	Ignition switch	Operation or condition	Reference value or waveform (Approx.)	
32	BG	Combination switch output 5	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 64 20 • • • 5ms SKIA5291E	
33	GR	Combination switch output 4	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 **5ms skia5292E	
34	G	Combination switch output 3	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	(V) 6 4 2 0 **5ms	
35	BR	Combination switch output 2				(V)	
36	LG	Combination switch output 1	Output	ON	Lighting, turn, wiper OFF Wiper dial position 4	**5ms	
				055	Key inserted	Battery voltage	
37	В	Key switch	Input	OFF	Key removed	0V	
38	W/R	Ignition switch (ON)	Input	ON	_	Battery voltage	
39	L	CAN-H		_	_		
40	P	CAN-L  Rear window defogger	— Input	ON	Rear window defogger switch ON		
	•	switch			Rear window defogger switch OFF	5V	
45	V	Lock switch	Input	OFF	ON (lock)	0V	
					OFF ON (unlock)	Battery voltage  0V	
46	LG	Unlock switch	Input	OFF	OFF OFF	Battery voltage	
		Front door switch LH (All)			ON (open)	0V	
47	GR	Rear door switch up- per LH (King Cab)	Input	OFF	OFF (closed)	Battery voltage	
		Rear door switch low- er LH (King Cab)			(disseq)	battery voltage	

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# < ECU DIAGNOSIS INFORMATION >

			Signal		Measuring cond	dition	
Terminal	Wire color	Item	input/ output	Ignition switch		or condition	Reference value or waveform (Approx.)
	_	Rear door switch LH		2==	ON (open)		0V
48	Р	(Crew Cab)	Input	OFF	OFF (closed)		Battery voltage
	-	0	0.1.1	OFF	Any door open	(ON)	0V
50	Р	Cargo lamp	Output	OFF	All doors close	d (OFF)	Battery voltage
51	BG	Trailer turn signal (right)	Output	ON	Turn right ON		(V) 15 10 5 0 500 ms
52	LG	Trailer turn signal (left)	Output	ON	Turn left ON		(V) 15 10 50 500 ms SKIA3009J
56	R/Y	Battery saver output	Output	OFF	10 minutes after switch is turned		0V
				ON	ON —		Battery voltage
57	R/Y	Battery power supply	Input	_	_		Battery voltage
58	w	Optical sensor	Input	ON	When optical s nated	ensor is illumi-	3.1V or more
	**	Option correct	трас	011	When optical s minated	ensor is not illu-	0.6V or less
59	GR	Front door lock as-	Output	OFF	OFF (neutral)		0V
	OI C	sembly LH (unlock)	Output	011	ON (unlock)		Battery voltage
60	LG	Turn signal (left)	Output	ON	Turn left ON		(V) 15 10 500 ms SKIA3009J
61	G	Turn signal (right)	Output	ON	Turn right ON		(V) 15 10 5 0 500 ms
63	BR	Interior room/map	Output	OFF	Any door switch	ON (open)	0V
					OFF (neutral)	OFF (closed)	Battery voltage 0V
65	V	All door lock actuators (lock)	Output	OFF	OFF (neutral) ON (lock)		Battery voltage
		(IUCK)			ON (IOCK)		Dattery Voltage

### < ECU DIAGNOSIS INFORMATION >

	Wire		Signal		Measuring condition	Reference value or waveform												
Terminal	color	Item	input/ output	Ignition switch	Operation or condition	(Approx.)												
		Front door lock actua-			OFF (neutral)	0V												
66	L	tor RH, rear door lock actuators LH/RH (un- lock)	Output	OFF	ON (unlock)	Battery voltage												
67	В	Ground	Input	ON	_	0V												
					Ignition switch ON	Battery voltage												
				utput —	Within 45 seconds after ignition switch OFF	Battery voltage												
68 <sup>1</sup>	601 ()	Power window power supply (RAP)	Output		More than 45 seconds after ignition switch OFF	0V												
						When front door LH or RH is open or power window timer operates	0V											
					Ignition switch ON	Battery voltage												
																	Within 45 seconds after ignition switch OFF	Battery voltage
68 <sup>2</sup>	SB	Power window power supply (RAP)	Output	Output —	_	More than 45 seconds after ignition switch OFF	0V											
					When front door LH or RH is open or power window timer operates	0V												
69	Р	Power window power supply (BAT)	Output	OFF	_	Battery voltage												
70	W	Battery power supply	Input	OFF		Battery voltage												

<sup>1:</sup> King cab

Fail Safe

### Fail-safe index

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

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:0000000010227901

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

Priority	DTC
1	U1000: CAN COMM CIRCUIT
2	B2190: NATS ANTENNA AMP     B2191: DIFFERENCE OF KEY     B2192: ID DISCORD BCM-ECM     B2193: CHAIN OF BCM-ECM

<sup>2:</sup> Crew cab

### < ECU DIAGNOSIS INFORMATION >

Priority	DTC	
3	C1729: VHCL SPEED SIG ERR     C1735: IGNITION SIGNAL	
	C1704: LOW PRESSURE FL C1705: LOW PRESSURE FR C1706: LOW PRESSURE RR C1707: LOW PRESSURE RL C1708: [NO DATA] FL C1709: [NO DATA] FR	_
4	C1710: [NO DATA] RR  C1711: [NO DATA] RL  C1712: [CHECKSUM ERR] FL  C1713: [CHECKSUM ERR] FR  C1714: [CHECKSUM ERR] RR  C1715: [CHECKSUM ERR] RL	
4	C1716: [PRESSDATA ERR] FL C1717: [PRESSDATA ERR] FR C1718: [PRESSDATA ERR] RR C1719: [PRESSDATA ERR] RL	
	<ul> <li>C1720: [CODE ERR] FL</li> <li>C1721: [CODE ERR] FR</li> <li>C1722: [CODE ERR] RR</li> <li>C1723: [CODE ERR] RL</li> </ul>	
	C1724: [BATT VOLT LOW] FL  C1725: [BATT VOLT LOW] FR  C1726: [BATT VOLT LOW] RR  C1727: [BATT VOLT LOW] RL	

DTC Index

### 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	Low tire pressure warning lamp ON	Reference page
No DTC is detected. further testing may be required.	_	_	_
U1000: CAN COMM CIRCUIT	_	_	BCS-26
B2190: NATS ANTTENA AMP	_	_	<u>SEC-18</u>
B2191: DIFFERENCE OF KEY	_	_	<u>SEC-21</u>
B2192: ID DISCORD BCM-ECM	_	_	SEC-22
B2193: CHAIN OF BCM-ECM	_	_	<u>SEC-24</u>
C1708: [NO DATA] FL	_	X	<u>WT-15</u>
C1709: [NO DATA] FR	_	Х	<u>WT-15</u>
C1710: [NO DATA] RR	_	X	<u>WT-15</u>
C1711: [NO DATA] RL	_	X	<u>WT-15</u>
C1712: [CHECKSUM ERR] FL	_	X	<u>WT-17</u>
C1713: [CHECKSUM ERR] FR	_	Х	<u>WT-17</u>
C1714: [CHECKSUM ERR] RR	_	X	<u>WT-17</u>
C1715: [CHECKSUM ERR] RL	_	Х	<u>WT-17</u>

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Revision: May 2014 EXL-63 2014 Frontier

# < ECU DIAGNOSIS INFORMATION >

CONSULT display	Fail-safe	Low tire pressure warning lamp ON	Reference page
C1716: [PRESSDATA ERR] FL	_	Х	<u>WT-19</u>
C1717: [PRESSDATA ERR] FR	_	X	<u>WT-19</u>
C1718: [PRESSDATA ERR] RR	_	X	<u>WT-19</u>
C1719: [PRESSDATA ERR] RL	_	X	<u>WT-19</u>
C1720: [CODE ERR] FL	_	X	<u>WT-17</u>
C1721: [CODE ERR] FR	_	X	<u>WT-17</u>
C1722: [CODE ERR] RR	_	X	<u>WT-17</u>
C1723: [CODE ERR] RL	_	X	<u>WT-17</u>
C1724: [BATT VOLT LOW] FL	_	X	<u>WT-17</u>
C1725: [BATT VOLT LOW] FR	_	X	<u>WT-17</u>
C1726: [BATT VOLT LOW] RR	_	X	<u>WT-17</u>
C1727: [BATT VOLT LOW] RL	_	X	<u>WT-17</u>
C1729: VHCL SPEED SIG ERR	_	X	<u>WT-21</u>
C1735: IGNITION SIGNAL	_	X	<u>WT-22</u>

< ECU DIAGNOSIS INFORMATION >

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

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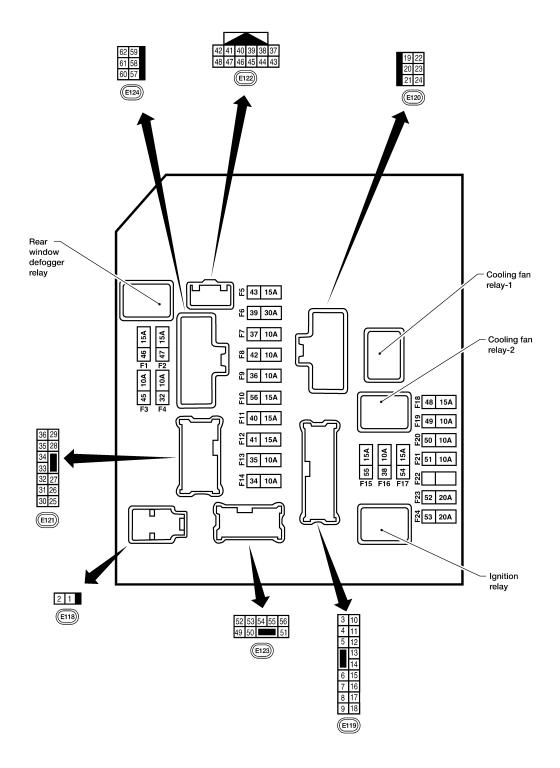
Reference Value

### VALUES ON THE DIAGNOSIS TOOL

Monitor Item		Condition	Value/Status			
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1, 2, 3, 4			
A/C COMP DEC	A/C switch OFF	A/C switch OFF				
A/C COMP REQ	A/C switch ON		On			
TAIL&CLR REQ	Lighting switch OFF		Off			
IAIL&CLR REQ	Lighting switch 1ST, 2ND, HI or	AUTO (Light is illuminated)	On			
HL LO REQ	Lighting switch OFF		Off			
nl lo req	Lighting switch 2ND HI or AUT	O (Light is illuminated)	On			
UL ULDEO	Lighting switch OFF		Off			
HL HI REQ	Lighting switch HI		On			
	Linking and the OND	Front fog lamp switch OFF	Off			
FR FOG REQ	Lighting switch 2ND	Front fog lamp switch ON	On			
		Front wiper switch OFF	Stop			
ED WID DEO	lamitima avvitala ONI	Front wiper switch INT	1LOW			
FR WIP REQ	Ignition switch ON	Front wiper switch LO	Low			
		Front wiper switch HI	HI			
	Ignition switch ON	Front wiper stop position	STOP P			
WIP AUTO STOP		Any position other than front wiper stop position	ACT P			
		Front wiper operates normally	Off			
WIP PROT	Ignition switch ON	Front wiper stops at fail-safe operation	BLOCK			
OT DLV DEO	Ignition switch OFF or ACC	,	Off			
ST RLY REQ	Ignition switch START		On			
ION DLV	Ignition switch OFF or ACC		Off			
IGN RLY	Ignition switch ON	Ignition switch ON				
	Rear defogger switch OFF		Off			
RR DEF REQ	Rear defogger switch ON	Rear defogger switch ON				
OIL D CW	Ignition switch OFF, ACC or en	Open				
OIL P SW	Ignition switch ON		Close			
DTDL DEO	Daytime light system requested	Off				
DTRL REQ	Daytime light system requested	On				
	Not operated	Off				
THFT HRN REQ	Panic alarm is activated     Horn is activated with VEHIC TEM	On				
HODN CHIDD	Not operated		Off			
HORN CHIRP	Door locking with keyfob (horn	On				

Revision: May 2014 EXL-65 2014 Frontier

Terminal Layout



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**Physical Values** 

PHYSICAL VALUES

Revision: May 2014 EXL-66 2014 Frontier

< ECU DIAGNOSIS INFORMATION >

			Cianal		Measuring condition		
Terminal	Wire color	Signal name	Signal input/ output	Igni- tion switch	Operation or condition	Reference value (Approx.)	
1	W	Battery power supply	Input	OFF	_	Battery voltage	
2	R	Battery power supply	Input	OFF	_	Battery voltage	
3	G	ECM relay	Output		Ignition switch ON or START	Battery voltage	
3	O	Low relay	Output	_	Ignition switch OFF or ACC	0V	
4	$P^1$	ECM relay	Output	_	Ignition switch ON or START	Battery voltage	
7	$R^2$	20W Toldy	σαιραί		Ignition switch OFF or ACC	0V	
6	V	Throttle control motor	Output	_	Ignition switch ON or START	Battery voltage	
o l	V	relay	σαιραί		Ignition switch OFF or ACC	0V	
7	BR	ECM relay control	Input		Ignition switch ON or START	0V	·
,		Low relay control	прис		Ignition switch OFF or ACC	Battery voltage	_
8	W/R	Fuse 54	Output		Ignition switch ON or START	Battery voltage	_
ŏ	V V / I \	1 436 04	Output		Ignition switch OFF or ACC	0V	
10	R/B	Fuse 45	Output	ON	Daytime light system active	0V	
10	TV/D	1 436 43	Output	ON	Daytime light system inactive	Battery voltage	·
11	Y	A/C compressor	()utput	ON or	A/C switch ON or defrost A/C switch	Battery voltage	
11	·	1 2 0 00p. 00001		Juipui	START	A/C switch OFF or defrost A/C switch	0V
12	W/G	Ignition switch supplied power	Input		OFF or ACC	0V	
12			iriput	Input	_	ON or START	Battery voltage
13	R	Fuel pump relay	Output		Ignition switch ON or START	Battery voltage	
13	IX.		Output	_	Ignition switch OFF or ACC	0V	
14	W/G	Fuse 49	Output		Ignition switch ON or START	Battery voltage	
14	W/G	Fuse 49	Output	_	Ignition switch OFF or ACC	0V	
15	W/R	Fuse 50 (ABS)	Output		Ignition switch ON or START	Battery voltage	_
10	V V / I \	1 use ou (ADO)	Output		Ignition switch OFF or ACC	0V	
16	W/G	Fuse 51	Output	_	Ignition switch ON or START	Battery voltage	
10	VV/G	1 435 31	Ουιρυι		Ignition switch OFF or ACC	0V	
17	W/G	Fuse 55	Output		Ignition switch ON or START	Battery voltage	
17	VV/G	1 use 55	Ουιρυι		Ignition switch OFF or ACC	0V	
19	W	Starter motor	Output	START	_	Battery voltage	
20	BR	Cooling fan motor (low)	Output	ON or START	_	Battery voltage	_
21	GR	Ignition switch sup-	Innut		OFF or ACC	0V	
21	GK	plied power	Input		START	Battery voltage	_
22	G	Battery power supply	Output	OFF	_	Battery voltage	_
23	LG	Door mirror defogger	Output	_	When rear defogger switch is ON	Battery voltage	_
20	LG	output signal	σαιραί		When raker defogger switch is OFF	0V	_

Revision: May 2014 EXL-67 2014 Frontier

< ECU DIAGNOSIS INFORMATION >

			Signal		Measuring con	dition										
Terminal	Wire color	Signal name	input/ output	Igni- tion switch	tion Operation of condition		Reference value (Approx.)									
24	Р	Cooling fan motor	Output		Conditions correct for cooling fan operation		Battery voltage									
24	Р	(high)	Output	_	Conditions not cooling fan ope		0V									
27	W/G	Fuse 38	Output		Ignition switch	ON or START	Battery voltage									
21	W/O	1 436 30	Output		Ignition switch	OFF or ACC	0V									
00	<b>-</b>	LH front parking and	0 1- 1	055	Lighting	OFF	0V									
28	R	front side marker lamp	Output	OFF	switch 1st po- sition	ON	Battery voltage									
					Lighting	OFF	0V									
29	G	Trailer tow relay	Output	ON	switch 1st po- sition	ON	Battery voltage									
20	D/D	F::00 F2	Outout		Ignition switch	ON or START	Battery voltage									
30	R/B	Fuse 53	Output	_	Ignition switch	OFF or ACC	0V									
32	GR	Wiper low speed sig-	Output	ON or	Wiper switch	OFF	Battery voltage									
32	GK	nal	Output	START	wiper switch	LO or INT	0V									
35	L	Wiper high speed sig-	Output	ON or	Wiper switch	OFF, LO, INT	Battery voltage									
		nal		START		HI	0V									
					Ignition switch	ON	(V) 6 4 2 0 2 ms 1 ms 6.3 V									
37	Y	Power generation command signal	Output	Output	Output	Output	Output	Output	Output	_	_	_	_	40% is set on ' "ALTERNATOF "ENGINE"		(V) 6 4 2 0 
					40% is set on ' "ALTERNATOF "ENGINE"		(V) 6 4 2 0 → 2ms JPMIA0003GB									
38	В	Ground	Input	_	_	_	0V									
39	L	CAN-H	_	ON	-	_	_									
40	Р	CAN-L		ON	_		_									
42	GR	Oil pressure switch	Input	_	Engine running	9	Battery voltage									
	J. C	on processo owner	put		Engine stoppe	d	0V									

< ECU DIAGNOSIS INFORMATION >

			Signal		Measuring con	dition	
Terminal	Wire color	Signal name	input/ output	Igni- tion switch	Operation	or condition	Reference value (Approx.)
43	G	Wiper auto stop signal	Input	ON or START	Wiper switch	OFF, LO, INT	Battery voltage
44	R	Daytime light relay	Input	ON	Daytime light s	system active	0V
-1-1		control (Canada only)	прис	011	Daytime light s	system inactive	Battery voltage
45	LG	Horn relay control	Input	ON	When door loc using keyfob (	ks are operated OFF $\rightarrow$ ON) <sup>3</sup>	Battery voltage → 0V
40	.,	Fuel pump relay con-	1		Ignition switch	ON or START	0V
46	V	trol	Input	_	Ignition switch	OFF or ACC	Battery voltage
	W <sup>1</sup>	Throttle control motor			Ignition switch	ON or START	0V
47	BG <sup>2</sup>	relay control	Input	_	Ignition switch		Battery voltage
					Selector lever		0V
48	R	Starter relay (inhibit switch)	Input	ON or START		any other posi-	Battery voltage
46	65	Front RH parking and	0 / /	055	Lighting	OFF	0V
49	GR	front side marker lamp	Output	OFF	switch 1st po- sition	ON	Battery voltage
50	W	Front fog lamp (LH)	Output	ON or START	Lighting switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	OFF	0V  Battery voltage
					Lighting	OFF	0V
51	V	Front fog lamp (RH)	Output	ON or START	switch must be in the 2nd position (LOW beam is ON) and the front fog lamp switch	ON	Battery voltage
52	Р	LH low beam head- lamp	Output	_	Lighting switch	in 2nd position	Battery voltage
54	R	RH low beam head- lamp	Output	_	Lighting switch	in 2nd position	Battery voltage
55	G	LH high beam head- lamp	Output	_	Lighting switch and placed in l position	in 2nd position HIGH or PASS	Battery voltage
56	L	RH high beam head- lamp	Output	_	Lighting switch in 2nd position and placed in HIGH or PASS position		Battery voltage
	-	Parking, license, and	_		Lighting	OFF	0V
57	GR	tail lamp	Output	ON	switch 1st po- sition	ON	Battery voltage
59	В	Ground	Input	_	-	_	0V
	2-	Rear window defog-		ON or	Rear defogger	switch ON	Battery voltage
60	GR	ger relay	Output	START	Rear defogger switch OFF		0V
61	R/B	Fuse 32	Output	OFF	-	_	Battery voltage

<sup>1:</sup> For Mexico

Revision: May 2014 EXL-69 2014 Frontier

### < ECU DIAGNOSIS INFORMATION >

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 ECM

Control part	Fail-safe in operation	
Cooling fan (if equipped)	<ul> <li>Turns ON the cooling fan relay when the ignition switch is turned ON</li> <li>Turns OFF the cooling fan relay when the ignition switch is turned OFF</li> </ul>	

### If No CAN Communication Is Available With BCM

Control part	Fail-safe in operation
Headlamp	<ul> <li>Turns ON the headlamp low relay when the ignition switch is turned ON</li> <li>Turns OFF the headlamp low relay when the ignition switch is turned OFF</li> <li>Headlamp (LH/RH) high relays OFF</li> </ul>
<ul><li>Parking lamps</li><li>License plate lamps</li><li>Tail lamps</li></ul>	<ul> <li>Turns ON the tail lamp relay when the ignition switch is turned ON</li> <li>Turns OFF the tail lamp relay when the ignition switch is turned OFF</li> </ul>
Front wiper	<ul> <li>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.</li> <li>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.</li> </ul>
Rear window defogger	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:

<sup>&</sup>lt;sup>2</sup>: Except for Mexico

<sup>3:</sup> When horn reminder is ON

### < ECU DIAGNOSIS INFORMATION >

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

CONSULT display	Fail-safe	TIME <sup>NOTE</sup>		Refer to
No DTC is detected. further testing may be required.	_	_	_	_
U1000: CAN COMM CIRCUIT	×	CRNT	1 – 39	PCS-13

### NOTE:

The details of TIME display are as follows.

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

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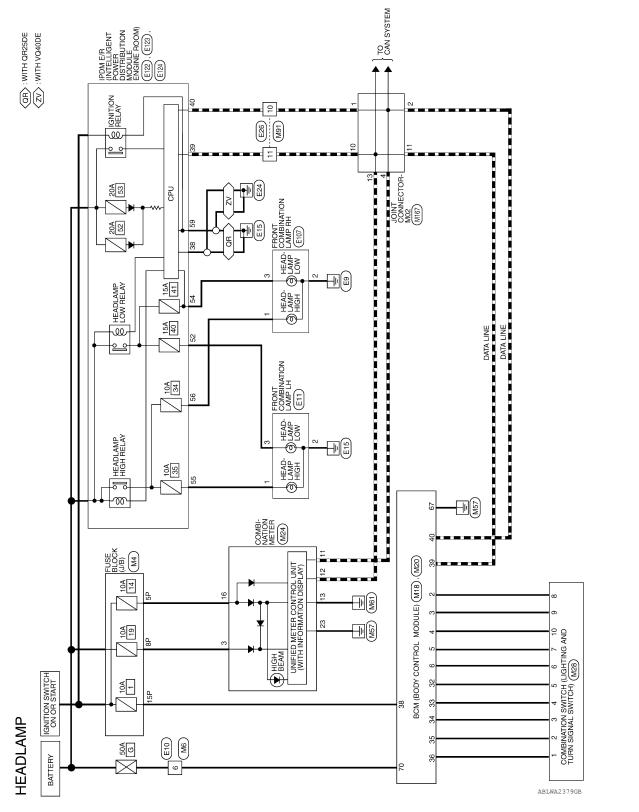
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Revision: May 2014 EXL-71 2014 Frontier

# WIRING DIAGRAM

# **HEADLAMP**

Wiring Diagram



### HEADLAMP CONNECTORS

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

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE





Signal Name	ı	-	-	
Color of Wire	M/G	R/Y	W/R	
Terminal No.	5P	8P	15P	

Signal Name

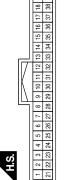
Terminal No.

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Connector No.	. M20	0
Connector Name		BCM (BODY CONTROL MODULE)
Connector Color		BLACK
H.S.	56 57 58	56 57 88 59 00 61 82 03 64  65 66 67 68 69 70
Terminal No.	Color of Wire	Signal Name
29	В	GND (POWER)
20	8	BAT (F/L)

Signal Name	INPUT 2	INPUT 1	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	L	Ж	BG	GR	G	BR	LG	W/R	٦	Ь
Terminal No.	5	9	32	33	34	35	36	38	39	40

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



Signal Name	INPUT 5	INPUT 4	INPUT 3	
Color of Wire	Ь	SB	۸	
Terminal No.	2	3	4	

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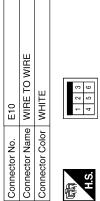
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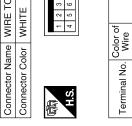
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Signal Name	ı	ı	1	1	_	_	1
Color of Wire	GR	BG	œ	ـــــــــــــــــــــــــــــــــــــــ	А	SB	>
Terminal No. Wire	4	5	9	7	8	6	10



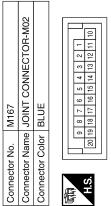


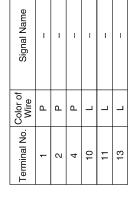
Signal Name

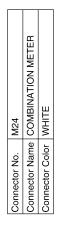
≥

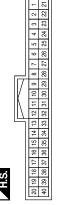
Connector No.	M28
Connector Name	Connector Name COMBINATION SWITCH
Connector Color	WHITE
	12 13 10 0 9 8 7
S II	14 11 1 2 3 4 5 6

Signal Name	ı	ı	I
Color of Wire	FG	BR	В
Terminal No.	г	2	3



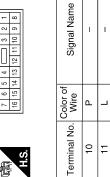






Signal Name	BATTERY	CAN-L	CAN-H	GROUND	RUN START	POWER GND
Color of Wire	R/Y	Ь	_	GR	M/G	В
Terminal No.	8	11	12	13	16	23

Connector No. M91  Connector Name WIRE TO WIRE  Connector Color WHITE	16 15 14 13 12 11 10 9 8
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### **HEADLAMP**

Connector No.	E107
Connector Name	Connector Name FRONT COMBINATION
30,000	LAMP KH
COIIIIECTOI COIOI   BLACK	BLACK
原 H.S.	3 2 1

Signal Name	_	_	-
Color of Wire	٦	В	œ
Terminal No. Wire	-	2	3

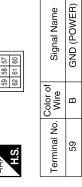
Signal Name

Color of Wre 凸

Terminal No. 9

Signal Name	
Color of Wire L L B	:
Terminal No.	,

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



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Signal Name	H/LAMP LO LH	H/LAMP LO RH	H/LAMP HI LH	H/LAMP HI RH
Solor of Wire	Ф	ж	ŋ	٦

Connector No.	E123
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color BROWN	BROWN
SH.	51 50 49 86 55 54 53 52



Terminal No.	Color of Wire	Signal
52	Ь	H/LAMF
54	В	H/LAMP
55	9	H/LAMF
56	٦	H/LAMF

E11	Connector Name LAMP LH (WITHOUT DAYTIME LIGHT SYSTEM)	3LACK	
Connector No.	Connector Name	Connector Color BLACK	

Connector Name WIRE TO WIRE

E26

Connector No.

Connector Color WHITE



Signal Name	_	ı	_
Color of Wire	В	В	Ь
Terminal No.	-	2	3

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



Signal Name	GND (SIGNAL)	CAN-H	CAN-L	
Color of Wire	В	_	Ь	
Terminal No.	38	39	40	

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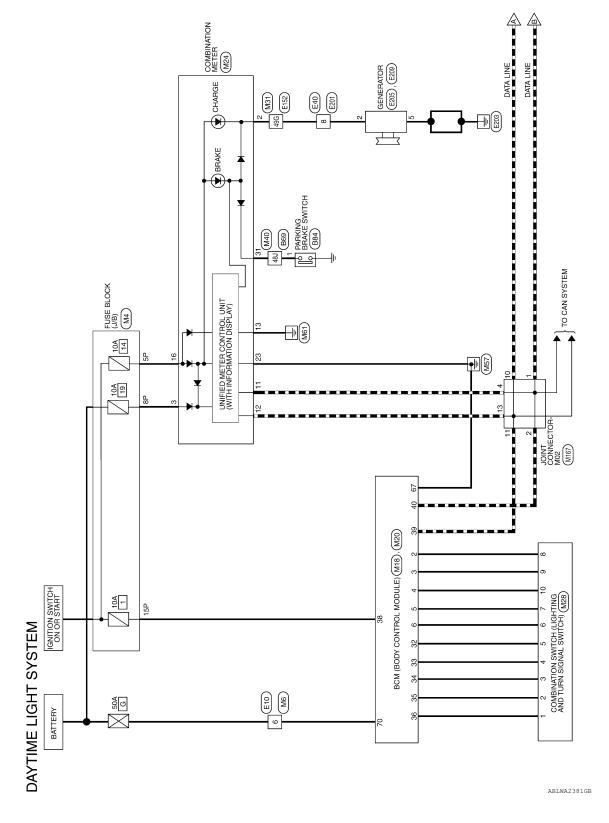
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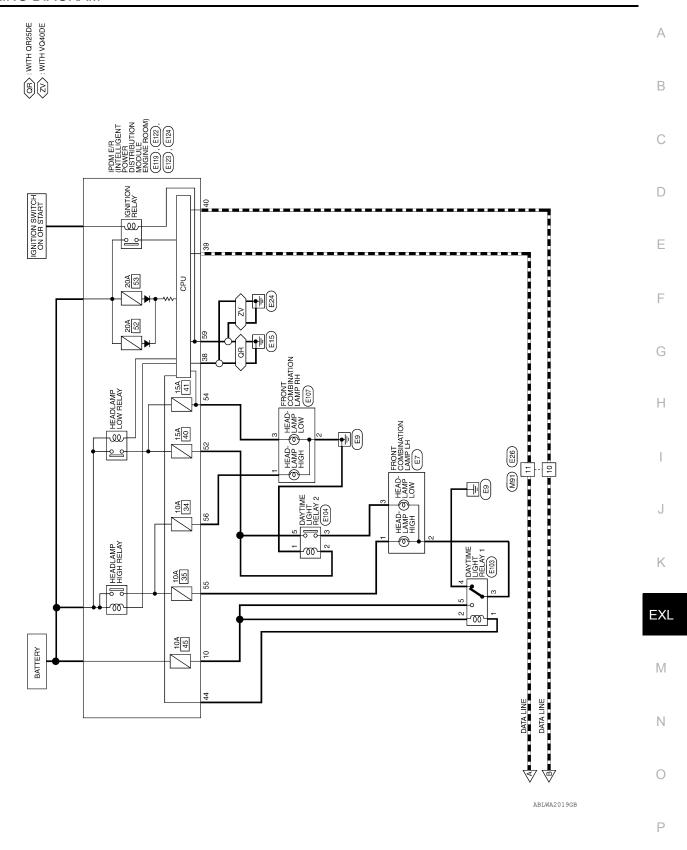
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Wiring Diagram





Connector Name BCM (BODY CONTROL MODULE)

M20

Connector No.

Connector Color BLACK

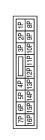
| 56|57|58|59|60|61|62|63|64 | 65| 66| 67| 68| 69| 70

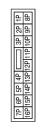
### DAYTIME LIGHT SYSTEM CONNECTORS

Connector Name WIRE TO WIRE

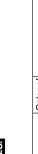
Connector No.

Connector Color WHITE

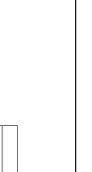




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Signal Name	1	1	1	
Color of Wire	M/G	R/Y	W/R	
Terminal No.	2b	48	15P	



Signal Name

Color of Wire ≥

Terminal No. 9

Signal Name	INPUT 2	INPUT 1	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1
Color of Wire	٦	æ	BG	GR	g	BR	Pl
Terminal No.	5	9	32	33	34	35	36

Signal Name	INPUT 2	INPUT 1	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	_	æ	BG	GR	g	BR	LG	W/R	٦	Ь
Terminal No.	5	9	32	33	34	35	36	38	39	40

Signal Name	INPUT 2	INPUT 1	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	_	œ	BG	GR	g	BR	LG	W/R	7	Ь
Terminal No.	5	9	32	33	34	38	36	38	39	40

Signal Name

Color of Wire Д SB >

Terminal No. N က 4

INPUT 3 INPUT 4 INPUT 5

GND (POWER) Signal Name

Color of Wire

Terminal No. 67

BAT (F/L)

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Connector Name BCM (BODY CONTROL MODULE)

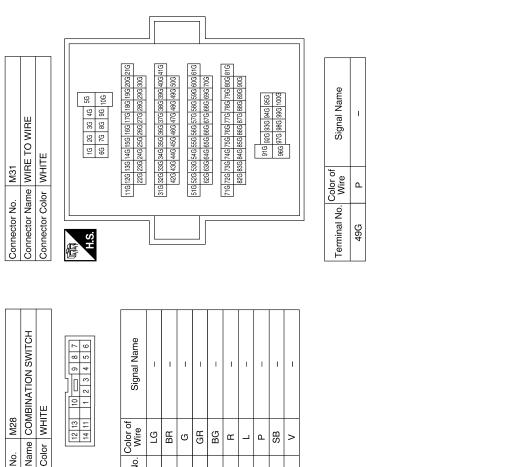
M18

Connector No.

Connector Color WHITE

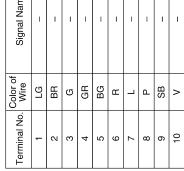
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### < WIRING DIAGRAM >



Connector Connector	Connector	Connector		V
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Connector No.



ပိ	Connector No.	e	₫	Z	<u>o</u>		_	M24	4											_
ပိ	Connector Name COMBINATION METER	<u>e</u>	اقِ	=	a	e	$\vdash$	읹	ੋ	冒	≰	ا≓ا	lá.	≥	ш	쁘	l œ l			
ပိ	Connector Color WHITE	<u> </u>	후	5	<del> </del>	5		₹	╘	ш										$\overline{}$
雪	H.S.	(i)							I IN	I IV	l 107	_								
8	19	19 18 17 16 15 14 13 12 11 10	1 =	16	5	1 2	٦	7	Ξ	9	6	]	~	9	2	4	60	~	II-	_
9	40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21	38	37	36	35	34	88	32	31	30	53	28	27	92	55	24	23	22	21	
		ı	I	ı	I	I		ı											I	_

Signal Name	CHARGE (ALT) INPUT	BATTERY	CAN-L	CAN-H	GROUND	RUN START	POWER GND	PARK BRAKE SW
Color of Wire	۵	₽/A	۵	٦	GR	W/G	В	ŋ
Terminal No. Wire	2	က	=	12	13	16	23	31

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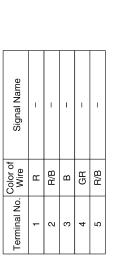
Connector No. M167  Connector Name JOINT CONNECTOR-M02  Connector Color BLUE  2	Connector No.   E26
Connector No.   M91	Connector No. E10 Connector Name WIRE TO WIRE Connector Color WHITE  Terminal No. Color of Signal Name  6 W -
Connector No.   M40	Connector No. E7 Connector Name LAMP LH (WITH DAYTIME LIGHT SYSTEM) Connector Color BLACK  Terminal No. Wire Signal Name  1 G

### < WIRING DIAGRAM >

iii	Connector No. E103	Connector No. E104	E104
	Connector Name DAYTIME LIGHT RELAY 1	Connector Nar	Connector Name DAYTIME LIGHT RELAY 2
	Connector Color BLACK	Connector Color BLUE	or BLUE
	N	H.S.	9 9 0
	Terminal No. Wire Signal Name	Terminal No. Wire	Solor of Signal Name

Connector No. E40

Color	В	ឲ	SB	Д	
Terminal No. Wire	-	2	3	2	
ф					
Signal Name	ı	ı	1	1	1
lor of Vire	æ	%B/	В	ЗR	3/B



N loaning	olgriai Narrie	_	I	_	I	I
Color of	Wire	В	R/B	В	GR	R/B
Color of	lerriinai No.	1	2	3	4	5

TO WIRE		0 r 4 0 0 0	Signal Name	_
me WIRE	lor GRAY	1 0 5	Color of Wire	Ь
Connector Name   WIRE TO WIRE	Connector Color GRAY	H.S.	Terminal No.	8

7	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	믵	40 39 88 37 46 45 44 43	Signal Name	GND (SIGNAL)	CAN-H	CAN-L	TINOS V IO IOTO
. E122		lor WHITE	42 41	Color of Wire	В	٦	Д	α
Connector No.	Connector Name	Connector Color	原 H.S.	Terminal No.	38	39	40	44

6	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	ТЕ	9 8 7 6 <del>                                    </del>	Signal Name	DTRL RLY SUPPLY	
E119		or WH	6 8	Color of Wire	R/B	
Connector No.	Connector Name	Connector Color WHITE	雨 H.S.	Terminal No.	10	

70	FRONT COMBINATION LAMP RH	BLACK		Signal Name	ı	-	ı
. E107				Color of Wire	_	В	æ
Connector No.	Connector Name	Connector Color	E.S.	Terminal No.	-	2	3

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**EXL-81** Revision: May 2014 2014 Frontier Α

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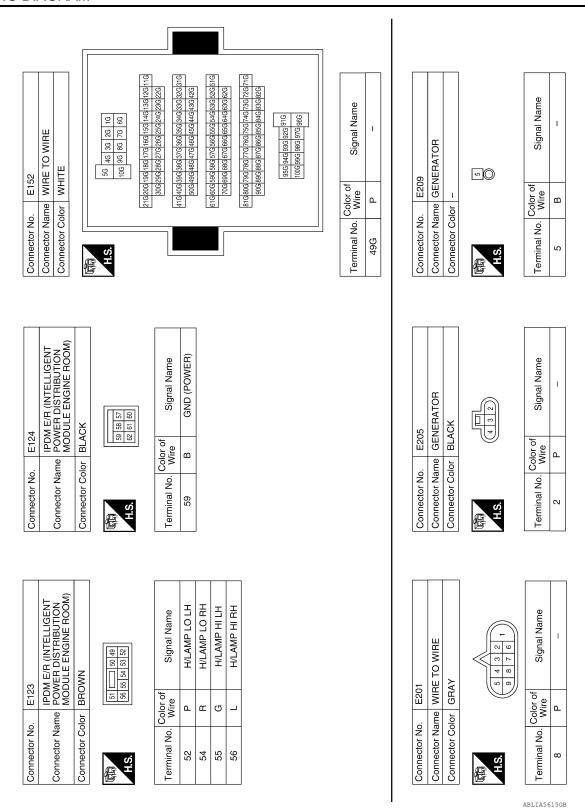
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Connector No.	. B69		Connector No.	B84	
Connector Name WIRE TO WIRE	me WIRE	TO WIRE	Connector Name	ne PARKING	PARKING BRAKE SWITCH
Connector Color WHITE	lor WHITE		Connector Color BLACK	or BLACK	
H.S.	101	4, 3, 2, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	H.S.	-	
	21J 20J 19J 1	21.1 20.1 19.1 18.1 17.7 16.1 15.1 14.1 13.1 12.1 11.1 30.1 20.1 25.1 25.1 25.1 25.1 22.1	Terminal No.	Color of	Signal Name
	503 493 493	41.1 40.1 39.1 38.1 37.1 36.1 35.1 34.1 33.1 32.1 31.1 50.1 48.1 48.1 45.1 44.1 43.1 42.1		5 5	I
	61,1 60,1 59,1 5	613 [604] 584] 584] 574] 563   554] 584] 533   523] 574] 704] 684] 675] 665] 655] 654] 654] 655] 657]			
	813 803 793 7	LTG   LGT   LTG   TSL   TSL   TSL   TSL   LGT   LGT			
	95J	95J 94J 93J 92J 91J 100J 99J 98J 97J 96J			
Terminal No.	Color of Wire	Signal Name			
48J	G	ı			

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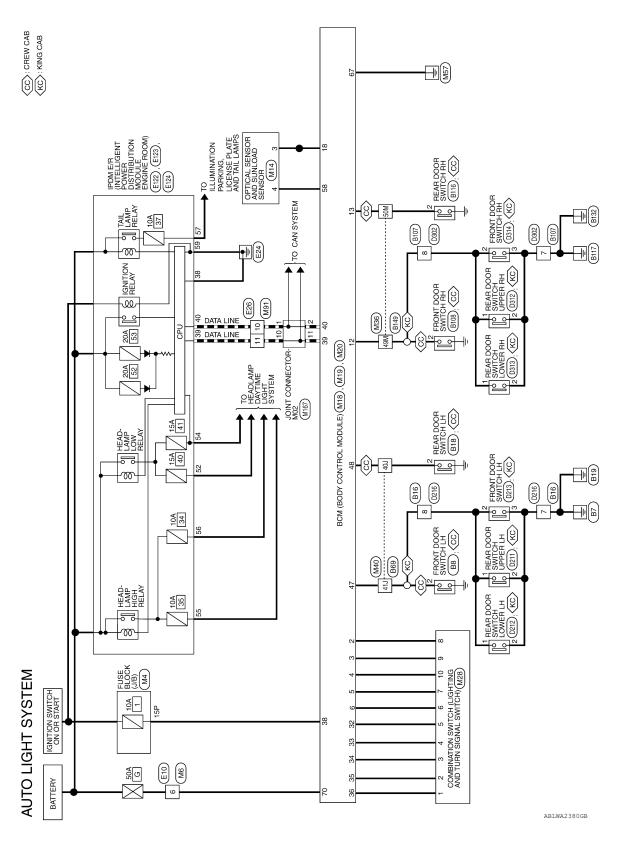
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Wiring Diagram



Connector Name OPTICAL SENSOR AND SUNLOAD SENSOR

M14

Connector No.

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE

BLACK

Connector Color

IECTORS	
M CONN	
<b>AUTO LIGHT SYSTE</b>	

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



Signal Name	1	
Color of Wire	W/R	
Terminal No.	15P	

Signal Name	I	I	
Color of Wire	Ь	Α	
Terminal No. Wire	3	4	

Signal Name	1	
Color of Wire	Μ	

		l
Color of Wire	Μ	
Terminal No.	9	
		•

Coloi Wir	<b>^</b>	
Terminal No.	9	

Signal Name	I	
Color of Wire	W/R	
erminal No.	15P	

Connector No.	M19
Connector Name	Connector Name   BCM (BODY CONTROL   MODULE)
Connector Color WHITE	WHITE
H.S.	41   42   43   44   45   46   47   48   49

Signal Name	S TUPUT 2	I TUANI	DOOR SW (AS)	DOOR SW (RR)	KEYLESS & AUTO LIGHT SENSOR GND	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	1 TUATUO	IGN SW	CAN-H	CAN-L
Color of Wire	٦	Я	LG	٦	BB	BG	GR	U	BB	ГG	W/R	_	Ь
Terminal No. Wire	5	9	12	13	18	32	33	34	35	36	38	39	40

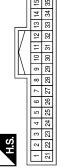
DOOR SW (DR) DOOR SW (RL)

GR ۵

Signal Name

Terminal No. 47 48

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



9 40

	П	9	33				
		2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	38 39				
		17	37				
		16	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	Φ			
		15	35	ᇤ	12	4	က
		14	34	Signal Name	INPUT 5	INPUT 4	INPUT 3
	I	13	33	nal	<u> </u>	틸	Ē
T		12	32	Sig	=	=	=
		Ξ	31	0,			
		10	30				
١		6	29				
Ì	l	8	28	e C		_	
	Ш	7	27	응흥	□	SB	>
	Ш	9	26	ŭ_			
	Ш	5	25	<u>o</u>			
	Ш	4	24	=			
	Ш	3	23	<u>a</u> .	N	က	4
		7	22	Ē			
		-	21	Terminal No. Wire			

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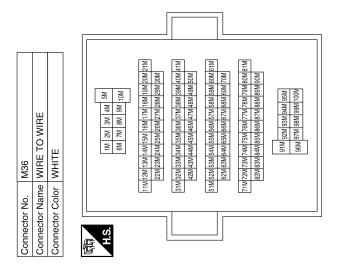
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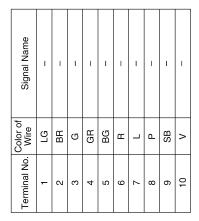
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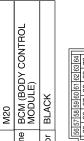
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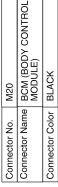
Signal Name	-	I
Color of Wire	ГВ	_
Terminal No.	49M	50M

Connector No.	M28
Connector Name	Connector Name   COMBINATION SWITCH
Connector Color WHITE	WHITE
III III.S.	12 13 10 9 8 7 14 11 1 2 3 4 5 6





Signal Name	AUTO LIGHT SENSOR INPUT 2	GND (POWER)	BAT (F/L)
Color of Wire	*	В	M
Terminal No.	58	29	20



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Connector No.   M91	Connector No.	A B C D
		F
Signal Name	E10 WIRE TO WIRE WHITE  I 2 3 I 5 6 I C Signal Name  V	G
Color of Wire GR P	I	11
400   410   410   410	Connector No. Connector Name Connector Color H.S.  Ferminal No.  6	J
		K
M40   WIRE TO WIRE   10   20   30   40   50   10   10   10   10   10   10   1	Connector No. M167  Connector Name JOINT CONNECTOR-M02  Connector Color BLUE  Log 19 18 17 16 15 14 13 12 11 10  Terminal No. Wire  1 P	EXL
0. M40 ame WIRE To olor WHITE  11.1 12.1 13.1 14.1 15. 12.2 123.2 124.1 125. 13.1 32.3 13.3 13.4 135. 14.3 14.3 14.1 14.1 15. 17.1 72.1 73.1 73.1 73.1 73.1 73.1 73.1 73.1 73	M167   M167   Solor BLUE   Solor of   Wire   P   P   P   P   P   P   P   P   P	N
Connector No.   M40	Connector No. Connector Name Connector Color H.S. H.S. 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0
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Revision: May 2014 EXL-87 2014 Frontier

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

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

Connector Name Connector Color

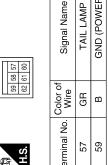
E123

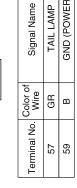
Connector No.

BROWN

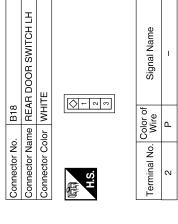
H.S. 偃

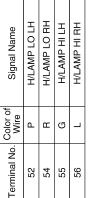










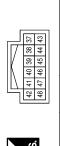


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Signal Name	GND (SIGNAL)	CAN-H	CAN-L	
Color of Wire	В	_	Ь	
Terminal No.	38	39	40	

Connector No.	. B8	
Connector Name		FRONT DOOR SWITCH LH (CREW CAB)
Connector Color	lor WHITE	ITE
S. H.	Q-00	
Terminal No.	Color of Wire	Signal Name
2	GR	1

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		А
Signal Name		В
MHRE TO W WHE TO W WHITE Or of of a state of		С
tor No.  Stor No.  All No. Color  L		D
Connec Connec Termin 7 7 8		Е
		F
Signal Name	Connector No. B116 Connector Name REAR DOOR SWITCH RH Connector Color WHITE  Terminal No. Wire Signal Name 2 L -	G
	B116  REAR DOO WHITE  arof  a  a  a  a  a  a  a  a  a  a  a  a  a	Н
No. Wire GR	r No. B11 r Name RE, Color WH No. Wire	I
40J 41J	Connector No. Connector Color H.S. H.S.  Z	J
		K
B69   WIRE TO WIRE   WIRE TO WIRE   WHITE	FRONT DOOR SWITCH RH (CREW CAB) WHITE	EXL
Connector No. B69  Connector Name WIRE TO WIRE  Connector Color WHITE  SJ 44 33 21  100 90 80 80 80 77 80 80 80 80 80 80 80 80 80 80 80 80 80	Solor of Wire LG	M
Connector No. Connector No. Connector Name Connector Color 1413.		N
Connector Na.	Connector No. Connector Col	0
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Revision: May 2014 EXL-89 2014 Frontier

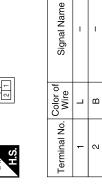
Connector No.		B149 WIRE TO WIRE	Terminal No.	Color of Wire	Signal Name	Connector No.	ع	WITCH
Connector Color	_	1 L	M64	LG	ı		UPPER LH	
	_	1	50M	٦	1	Connector Color	olor BLACK	
H.S.	5M 10N	5M 4M 3M 2M 1M 1M 10M 9M 8M 7M 6M				H.S.	[2]	
	21M20M19M1 30M29M2	21M20M19M18M17M16M15M14M13M2ZM 30M29W28M27M26M25M24M23M2ZM				Terminal No.	Color of Wire	Signal Name
	41M40M39M5 50M49M4	41M40M39MJ88M37M36M35M38M33M32M31M 50M49MJ48M47M46MJ45M44M43M42M				1 2	В Г	
	61M60M59ME 70M69M6	61M60M59M58M57M56M55M54M53M62M51M 70M69M68M67M66M65M64M63M62M						
	81M80M79M7 90M89M8	811M80M79M78M77M76M75M74M73M72M71M 90M89M88M87M86M85M84M83M82M						
	1001	95M  94M  95M  95M  91M  95M  96M  97M  96M						
Connector No.	o. D212	12	Connector No.	D213		Connector No.	o. D216	
Connector Name	e	REAR DOOR SWITCH	Connector Name		FRONT DOOR SWITCH LH	Connector Name	ame WIRE TO WIRE	
Connector Color		LOWER LA BLACK	Connector Color	_	G CAB)	Connector Color	olor WHITE	
						原 H.S.	m r	
H.S.		an an	H.S.		<u> </u>		٥	
Terminal No.	Color of Wire	Signal Name	Terminal No.	Color of Wire	Signal Name	Terminal No.	Color of Wire	Signal Name
-	_	ı	2	LG	1	7	В	ı
2	В	1	ဇ	В	I	8	.   FG	_

Revision: May 2014 EXL-90 2014 Frontier

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Connector No.	D313	13
Connector Name		REAR DOOR SWITCH LOWER RH
Connector Color	_	BLACK
所 H.S.		
Terminal No.	Color of Wire	Signal Name

Connector No.	D312
Connector Name	REAR DOOR SWITCH UPPER RH
Connector Color	BLACK



)2	WIRE TO WIRE	WHITE	2 % 7 % 8 % 7 % 9 % 9 % 9 % 9 % 9 % 9 % 9 % 9 % 9	Signal Name	I	1
. D302				Color of Wire	В	LG
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	7	8

Connector No.	D314
Connector Name	Connector Name FRONT DOOR SWITCH RH (KING CAB)
Connector Color WHITE	WHITE

4	FRONT DOOR SWITCH RH (KING CAB)	ITE		Signal Name	ı	1
. D314		lor WHITE		Color of Wire	ГG	В
Connector No.	Connector Name	Connector Color	原动 H.S.	Terminal No.	2	8

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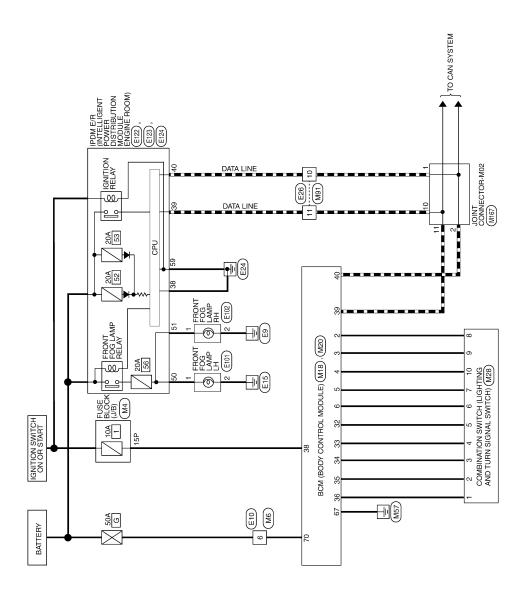
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### FRONT FOG LAMP

Wiring Diagram

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FRONT FOG LAMP

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Revision: May 2014

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE

Connector No.	. M4	
Connector Na	me FUS	Connector Name   FUSE BLOCK (J/B)
Connector Color WHITE	lor WHI	TE
原 H.S.	7P 6P 5P 4P (	4P   3P   2P   1P   4P   3P   2P   1P   4P   4P   4P   4P   4P   4P   4
Terminal No.	Color of Wire	Signal Name
15P	W/R	ı

Signal Name

Color of Wire W

Terminal No.

	OF			Ф	Œ	
	BCM (BODY CONTROL MODULE)	X	S6  57  58  59  60  61  62  63  64	Signal Name	GND (POWER)	BAT (F/I)
. M20		lor BLACK	56 57 58 56	Color of Wire	В	M
Connector No.	Connector Name	Connector Color	斯斯 H.S.	Terminal No.	29	20

Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	BG	GR	G	BR	ГG	W/R	Г	Р
Terminal No.	32	33	34	32	98	38	39	40

				19 20 39 40					
8	BCM (BODY CONTROL MODULE)	WHITE		9 10 11 12 13 14 15 16 17 18 29 30 31 32 33 34 35 36 37 38	Signal Name	INPUT 5	INPUT 4	INPUT 3	INPUT 2
M18		_	<u> </u> 	7 8 27 28	Color of Wire	۵	SB	>	_
Connector No.	Connector Name	Connector Color	H.S.	1 2 3 4 5 6 21 22 23 24 25 26	Terminal No.	2	က	4	2

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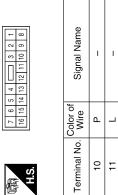
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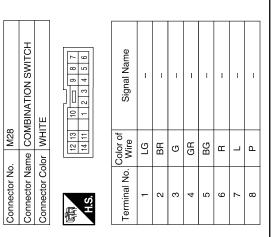
### **FRONT FOG LAMP**

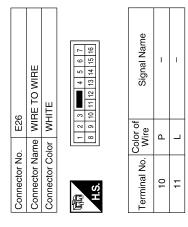
Connector No.	M91
Connector Name WIRE TO WIRE	WIRE TO WIRE
Connector Color WHITE	WHITE

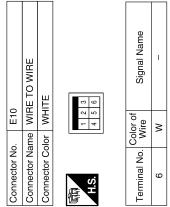




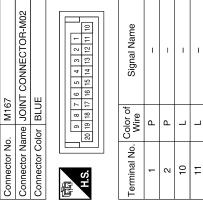
Signal Name	ı	-
Color of Wire	SB	^
Terminal No.	6	10







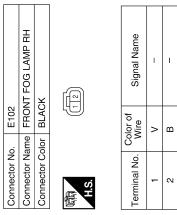
nector No.	M167	67								
nector Name JOINT CONNECTOR-M02	or	Z		ō	$\geq$	Е	ΙĶ	.H	.M02	
nector Color BLUE	BL	삥	l							
Ŀ		Ш	Ш	Ш	Ш	Ш	Ш	Ш	F	
	8	7	9	ß	4	က	2	-		
20 16	20 19 18 17 16 15 14 13 12 11 10	17	91	15	14	55	12	=	0	
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### FRONT FOG LAMP

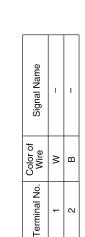
Signal Name	GND (SIGNAL)	CAN-H	CAN-L	
Color of Wire	В	٦	Ь	
Terminal No.	38	39	40	

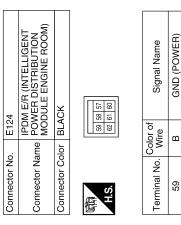


Connector Name FRONT FOG LAMP LH

Connector No. E101

Connector Color BLACK





IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	NA	55 54 53 52	Signal Name
PDW POWE MODU	BROV	51 56 55	Color of Wire
те	ō		3
Connector Name	Connector Color BROWN	所 H.S.	Terminal No.

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FR FOG LAMP LH FR FOG LAMP RH

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Revision: May 2014 EXL-95 2014 Frontier

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Connector No.

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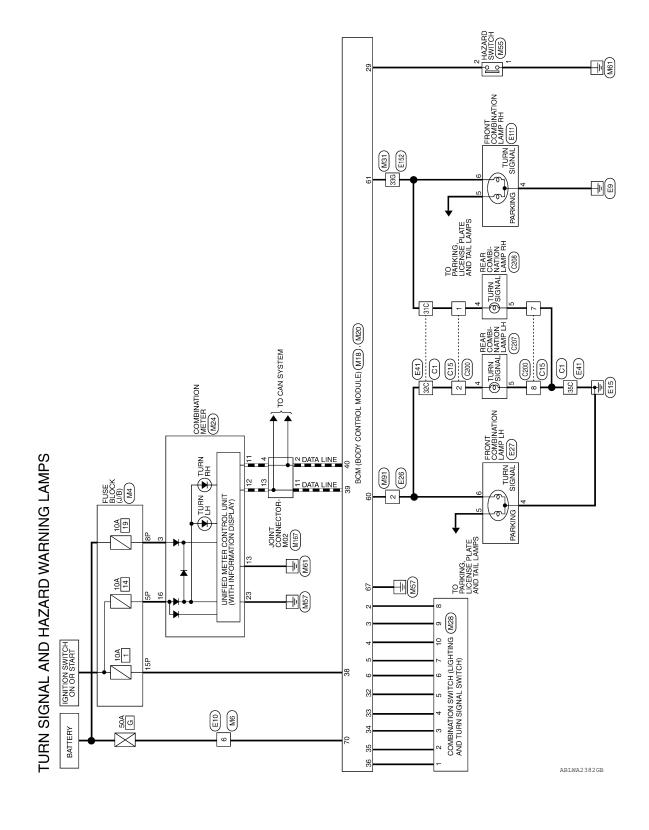
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Wiring Diagram



# TURN SIGNAL AND HAZARD WARNING LAMPS CONNECTORS

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

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE

			= 8	
	<u>@</u>		3P 2P 1P 10P 9P 8P	
	]		38	
	Š		12P 11P 10P	
	2		12 <u>P</u>	
	Ш	Ш	4P 13P 1	
4	ls(	눌	5F 4F	
 ₹	Ē	8	7P 6P 5P 4P	
tor No.	tor Name FUSE BLOCK (J/B)	tor Color WHITE	7P 16P	



Signal Name

Terminal No. 9

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Signal Name	_	1	1	
Color of Wire	M/G	R/Y	W/R	
erminal No.	5P	8P	15P	

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



	BCM (BODY CONTROL MODULE)	ÇK	S6  57  58  59  60  61  62  63  64    65  65  65  65  65  65  65  65  65	Signal Name	FLASHER OUTPUT (LEFT)	FLASHER OUTPUT (RIGHT)	GND (POWER)	BAT (F/L)
. M20		lor BLACK	9	Color of Wire	ГG	Э	В	Μ
Connector No.	Connector Name	Connector Color	H.S.	Terminal No.	09	61	29	70

Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
Color of Wire	BG	GR	ŋ	BB	LG	M/R	_	۵
Terminal No.	32	33	34	35	36	38	39	40

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ပိ	Connector No.	ect	ō	2			M18	<u>∞</u>										
ပိ	Connector Name	ect	or	Na	m	d)	$\mathbb{R}^{\mathbb{N}}$	BCM (BODY CONTROL MODULE)	<b>®</b> ∃	<u>2</u> (i)	≿	$\ddot{\circ}$	N	TR	Ы			
ပိ	Connector Color WHITE	ect	or	ပိ	lor	_	⋝	Ę	Щ									
 ""	H.S.						<u> </u>				l 17							.
-	2	3	4	5	9	7	8	6	9	Ξ	12	13	14	9 10 11 12 13 14 15 16 17 18 19	16	17	18	5
21	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39	23	24	25	26	27	28	29	30	31	32	33	8	35	36	37	38	39
l	ı		l			l	l		l	l	l		l		l	l		Ш

Signal Name	INPUT 5	INPUT 4	INPUT 3	INPUT 2	INPUT 1	HAZARD SW
Color of Wire	Ь	SB	۸	٦	В	В
Terminal No.	2	3	4	5	9	59

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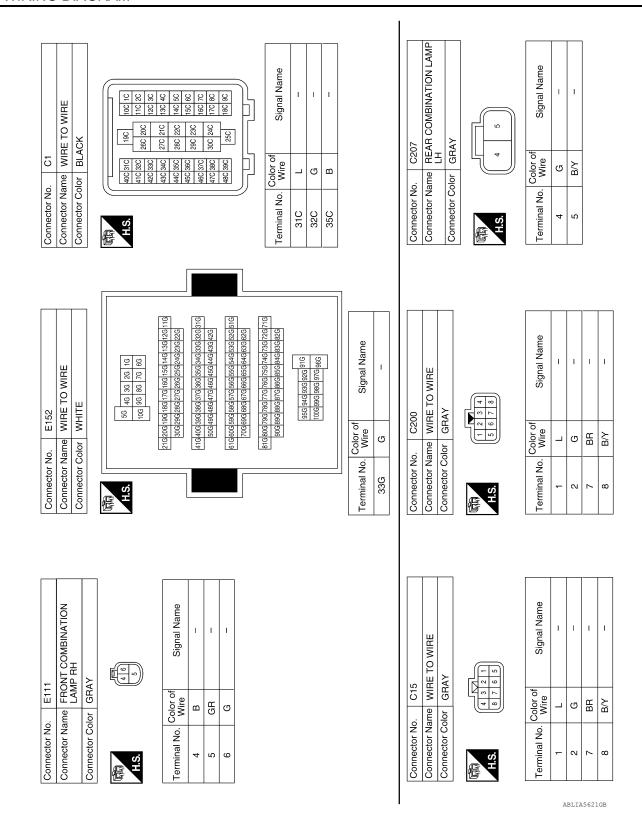
### < WIRING DIAGRAM >

TERY	21 82	Connector Color WHITE    A	Connector Name Connector Color 原動	lor WHITE	Connector Name COMBINATION SWITCH  Connector Color WHITE	Terminal No. 7 7 8 8 9 9 10	Wire SB V	Signal Name
1   LG   -     2   BR   -     3   G   -     4   GR   -     5   BG   -     6   R   -     6   R   -     6   R   -     7   Connector No     7   Connector No     8   -     9   9   9   9     9   9   9     9   9	Sign	62 62 62 62 62 62 62 62 62 62 62 62 62 6		Color of Wire	Signal Name			
NN-L   3 G	B/B	TTERY	-	Pl	1			
START   STAR		J-NAC	2	BR	ı			
START   START   S		AN-H	က	ŋ	ı			
START   5   BG   -	9	JOUND	4	GR	1			
Signal Name   Connector No.   Wire   Signal Name   Connector No.   Wire   Signal Name   Connector No.   Wire   Signal Name   Connector No.   Connector No.   Signal No.   Si	RU	N START	5	BG	1			
Terminal No.   Color of   Signal Name   Connector No.   Wire   Signal Name   Connector No.	POV	VER GND	9	æ	1			
Terminal No. Wire   Signal Name   Connector Name   Conn	M34			30,00		oly rotocono	MEE	
Sag   G   -	AE TO WIE	Ц	Terminal No.	Wire	Signal Name	Connector Na	me HAZA	HAZARD SWITCH
Terminal No.	WHITE		33G	5	1	Connector Co	olor WHITE	
Terminal No.								
Terminal No.	16 26 36 66 76 86	24 28				H.S.	6	2 4
	3G 14G 15G 16G 3G 24G 25G 26G	77G 18G 19G 20G 21G					Color of Wire	Signal Name
	3G 34G 35G 36G 3G 44G 45G 46G	77G 38G 39G 40G 41G						
55G 756 776 776 776 776 776 776 776 776 776	3G 54G 55G 56G 3G 64G 65G 66G	7.05 58.05 59.05 61.05 7.05 68.05 69.05 70.05				N.	5	1
	G 74G 75G 76G G 84G 85G 86G	77G 78G 79G 80G 81G						
Don   Bos   Bos	91G 92G 93G 94G 95G 96G 97G 98G 99G 100G	94G 95G 99G 100G						

### < WIRING DIAGRAM >

Connector Name WIRE TO WIRE  Connector Color WHITE	[原] H.S.	Terminal No. Wire Signal Name 6 W –	ACK 19C 20C 26C	4C   13C   27C   34C   43C   14C   13C   14C   13C   24C   34C   43C   14C   14C	
M02		Φ	Z	<u> </u>	
Connector No. M167 Connector Name JOINT CONNECTOR-M02 Connector Color BLUE	12 1 1 1 1	Signal Name	E27 FRONT COMBINATION GRAY	Signal Name	
ame JOINT (	9 8 7 6 5 4 3 20 19 18 17 16 15 14 13	Color of Wire P		Color of Wire B B B LG	
Connector No. M167 Connector Name JOINT Connector Color BLUE	原 H.S.	Terminal No. 2 4 4 11 13	Connector No. Connector Color Connector Color	Terminal No. 5 6	
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Vame	15 16	Signal Name	
Connector No. M91 Connector Name WIRE TO WIRE Connector Color WHITE	4   3   13   11   10	Signal Name	WIRE TO WIRE WHITE 1 2 3	Signal	
Connector No. M91 Connector Name WIRE To	7 6 5 14 14 14	Terminal No. Color of Wire 2 LG	Connector No.   E26 Connector Name   WIR Connector Color   WHI	Vo. Wire	
Z Z U		inal N	nector nector	Terminal No.	

Revision: May 2014 EXL-99 2014 Frontier



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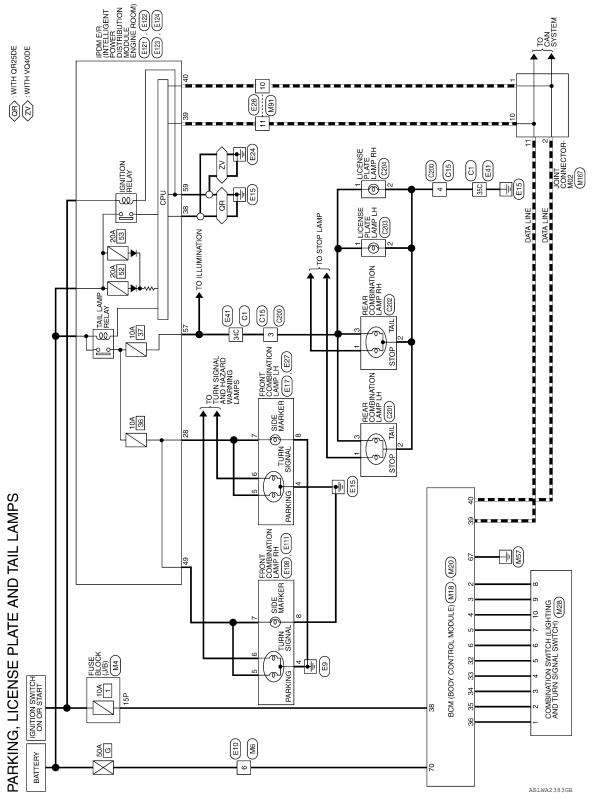
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Connector No.	. C208	
Connector Name		REAR COMBINATION LAMP
Connector Color	lor GRAY	
赋 H.S.	4	2
Terminal No.	Color of Wire	Signal Name
4	٦	ı
5	BB	_

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Wiring Diagram



Connector Name BCM (BODY CONTROL MODULE)

M20

Connector No.

BLACK

Connector Color

GND (POWER)

BAT (F/L)

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Signal Name

Color of Wire

Terminal No. 67

## PARKING, LICENSE PLATE AND TAIL LAMPS CONNECTORS

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

Г	_	ا ما	1
	Ξ	፟	
	2Ρ	96	
	36	10P	
	П	11P	
	Ш	12P	
	4	13P	
	SP	14P	
	99	15P	
	7P	16P	
-		Ī	,





	RE TO WIRE	TE	2 1 1 4 1	Signal Na	I
). M6	me WIF	olor WH	8 9	Color of Wire	*
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	原理 H.S.	Terminal No. Wire	9
	-USE BLOCK (J/B)	VHITE	5P 4P	Signal Name	ı
4	💥	¥	2 4	o d	٦

Signal Name	l	
Color of Wire	W	
Terminal No.	9	

I		Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	IGN SW	CAN-H	CAN-L
>		Color of Wire	BG	GR	g	BR	ГG	W/R	٦	Ь
9		Terminal No.	32	33	34	35	36	38	36	40
			Color of Wire	Color of Wire BG	Color of Wire BG	Color of Wire BG GR	Color of Wire BG GR GR BR	Mire BG GR GR BB	Color of Wire BG GR GR BR LG	Color of Wire GR GR BG CA BR BR LG W/R W/R W/R

Connector Name BCM (BODY CONTROL MODULE)

M18

Connector No.

WHITE

Connector Color

	_	_	_		_
Signal Name	INPUT 5	INPUT 4	INPUT 3	INPUT 2	INPUT 1
Color of Wire	Ь	SB	>	٦	ш
Color of Wire	2	3	4	5	9

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### < WIRING DIAGRAM >

M91
or Name or Color or Name or Color or Name or Color or Col
ect ect 10 lina

Signal Name	1	_	
Color of Wire	Ь	٦	
Terminal No.	10	11	

Connector No. M91	Connector Name   WIRE   O WIRE   Connector Color   WHITE		T 6 5 4 ( ) 3 2 1 1 16 15 14 13 12 11 10 9 8	Terminal No. Wire Signal Name	10 P	 Connector No. E17 Connector Name FRONT COMBINATION	Connector Color   GRAY	_	_	Terminal No. Wire Signal Name	7 R –
Signal Name	ı	ı				E10 WIRE TO WIRE		5 6 3		Signal Name	1
Color of Wire	SB	۸					$\overline{}$	- 4		Color of Wire	*
Terminal No.	6	10				Connector No.	Connector Color	H.S.		Terminal No.	9

	COMBINATION SWITCH	ITE	10 9 8 7	Signal Name	I	_	I	_	_	I	-	-
. M28		lor WHITE	12 13	Color of Wire	LG	BR	σ	GR	BG	œ	_	Ь
Connector No.	Connector Name	Connector Color	语 语	Terminal No.	F	2	က	4	5	9	7	8

					_	
7 6 5 4 3 2 1	20 19 118 117 19 119 119 119 110 1	Signal Name	-	_	I	_
8 9	1 81 61 02	Color of Wire	Ь	Ь	٦	7
O I		Terminal No. Wire	1	2	10	11

Connector Name JOINT CONNECTOR-M02
Connector Color BLUE

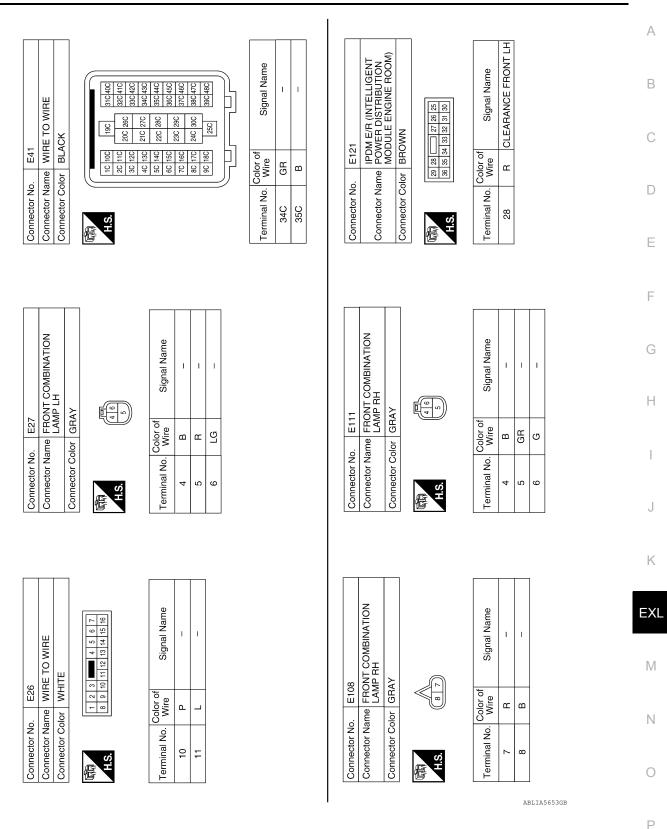
Connector No. M167

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### < WIRING DIAGRAM >



Revision: May 2014 EXL-105 2014 Frontier

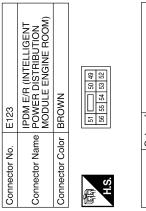
### < WIRING DIAGRAM >

	Connector No.   E124	E124
TELLIGENT FRIBUTION GINE BOOM	Connector Name	Connector Name   POWER DISTRIBUTION   MODILI F FIGURE ROOM
GINE HOOM)		MODOLL LINGHINE HOOM)
	Connector Color   BLACK	BLACK

Signal Name	TAIL LAMP	GND (POWER)	
	TA	GND	
Color of Wire	GR	В	
rminal No.	22	69	



90	WIRE TO WIRE	ΑY	8 F	Signal Name	-	1
. C200		lor   GRAY	2 9	Color of Wire	GR	В
Connector No.	Connector Name	Connector Color	副 H.S.	Terminal No.	3	7



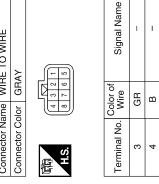


of Signal	CLEARAN	
Color of Wire	GR	
Terminal No.	49	

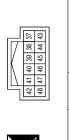
CLEAF	GR	49
Į Si	Color of Wire	Terminal No.

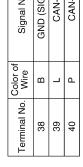
Signal Name	GND (SIGNAL)	CAN-H	CAN-L
Color of Wire	В	٦	d
erminal No.	38	39	40

Connector No.	C15
Connector Name	WIRE TO WIRE
Connector Color	GRAY
	3 2 1
۵.	2 2



Connector No.	E122
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color WHITE	WHITE
惛	
S F	42 41 40 39 38 37
2	48 47 46 45 44 43





Щ	BLACK		00 10	1C 2C	12C 3C	13C 4C	14C 5C	15C 6C	16C 7C	17C 8C	
WIRE TO WIRE		4CK	190	280	200	27C 21C	28C 22C	200	767	30C 24C	]
			40C 31C	41C 32C	42C 33C	43C 34C	44C 35C	45C 36C	46C 37C	47C 38C	
Connector Name	Connector Color		HS								

2	28C 20C 11C 2C	12C 3C	27C 21C 13C 4C	28C 22C 14C 5C	29C 23C 15C 6C		30C 24C 17C 8C	25C 18C 9C		Signal Name	_	ı
200	41C 32C	42C 33C	43C 34C	44C 35C	45C 36C	46C 37C	47C 38C	48C 39C	別	Color of Wire	GR	В
Ö								-		Terminal No.	34C	35C

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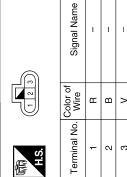
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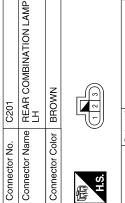
Connector No.

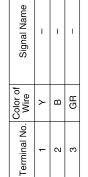
### < WIRING DIAGRAM >

LICENSE PLATE LAMP LH			Signal Name	1	I
Je J	lor GRAY	1 2	Color of Wire	>	В
Connector No. Connector Name	Connector Color	明.S.	Terminal No.	-	2

lo. C202	Connector Name REAR COMBINATION LAMP	Connector Color BROWN
Connector No.	Connector N	Connector C







No. C204	Connector Name LICENSE PLATE LAMP R	Color GRAY	
Connector No.	Connector N	Connector Color	斯 H.S.

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-0	Signal Name	1	1
	Color of Wire	>	В
赋 H.S.	Terminal No.	-	2

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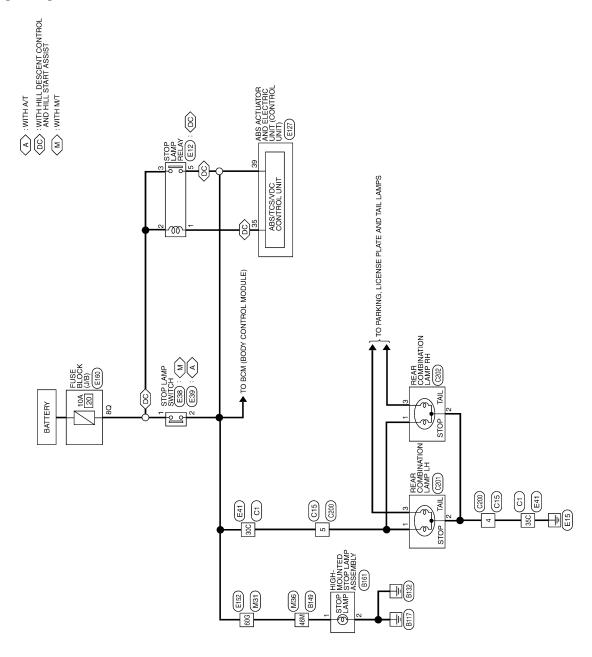
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**EXL-107** Revision: May 2014 2014 Frontier

### STOP LAMP

### Wiring Diagram

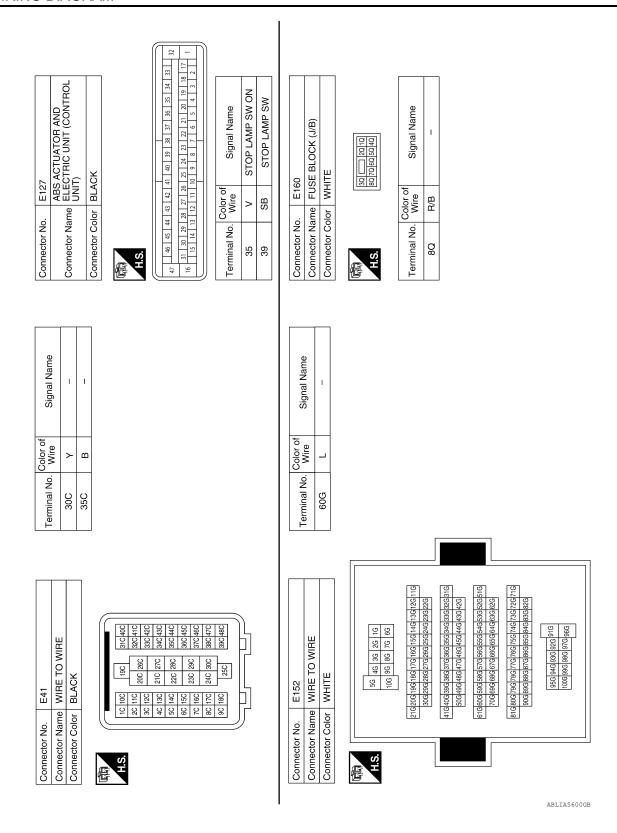


STOP LAMP

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	1	Α
Connector Name STOP LAMP RELAY Connector Color BLUE  ALS  Terminal No. Wire Signal Name  1		В
Color of Wire R/B		С
Connector No.  Connector Name Connector Color Terminal No. W  1 1 2 R 3 8 3 8		D
Connector No. Connector Collector Co		E
WI WI WI WI		F
11M T2M T3M T4M T5M T1M T2M T3M T4M T5M T5M T5M T5M T5M T5M T5M T5M T5M T5	Signal Name  AP SWITCH  Signal Name	G
WIRE TO WIRE WHITE  WHITE  WHITE  THE 2M 3M 4M 5M  TOM  TAM 12M 13M 14M 13M 10M  TAM 13M 14M 13M 14M 13M 10M  TAM 13M 14M 13M 13M 13M 13M 13M 13M 13M 13M 13M 13		Н
M36  WIRE T  WHITE  WHI		
Connector No. Connector Name Connector Color H.S.	Connector No. Connector Name Connector Color H.S. 1 Ry 1 Ry	I
Conne	Terminal No.  46M Connector No. Connector Connector No. Terminal No.	J
		K
81G 44G 81G		IX
96 1009 816 816 816 816 816 816 816 816 816 816	Signal Name  NP SWITCH	EXI
M31   M831   M		M
Connector No. M31  Connector Name WIRE TO WIRE  Connector Color WHITE  To 126 126 146 156 166 177  226 236 246 256 566 577  116 126 135 146 156 166 177  226 236 246 256 566 577  117 16 126 135 146 156 166 177  117 16 126 135 146 156 166 177  117 16 126 135 146 156 166 177  117 16 126 135 146 156 166 177  117 16 126 135 146 156 166 177  118 126 135 136 136 136 136 136 136 136 136 136 136		
tor No.	Connector No. Connector Name Connector Color Terminal No. Wii	Ν
Connector No.   M31	Connector No. Connector Col	0
Ţ	ABLIA5599GB	_
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Revision: May 2014 EXL-109 2014 Frontier



VIRE		Signal Name	ı	1				
Connector No. C200  Connector Name WIRE TO WIRE  Connector Color GRAY	1 S C C C C C C C C C C C C C C C C C C	Color of Wire	В	Α				
Connector No. Connector Name Connector Color	用.S.	Terminal No.	4	5				
TO WIRE	8 2 1	Signal Name	1	-				
time WIRE	4 8	Color of Wire	В	<b>\</b>				
Connector No. C15 Connector Name WIRE TO WIRE Connector Color GRAY	H.S.	Terminal No.	4	5				
TO WIRE	19C   10C   1C   20C   2	27C 21C 13C 4C 28C 29C 14C 5C	333	300 240 170 90	_	Signal Name	ı	-
Connector No. C1  Connector Name WIRE TO WIRE  Connector Color BLACK	40C 31C 15	•			48C 39C	Color of Wire	>	В
Connector No. Connector Color	S. H					Terminal No.	30C	35C

	REAR COMBINATION LAMP RH	WN		Signal Name	ı	ı	ı
C202		or BROWN		Color of Wire	Œ	В	>
Connector No.	Connector Name	Connector Color	南 H.S.	Terminal No.	-	2	8

Connector No. C201 Connector Name REAR C Connector Color BROWN  Terminal No. Color of  Terminal No. Wire  2 B  3 GR		REAR COMBINATION LAMP	7		Signal Name	ı	ı	ı
Connector Nan Connector Cold Connector Cold Terminal No.			or BROWN		Color of Wire	λ	В	GR
	Connector No.	Connector Nan	Connector Colo	(京) H.S.	Terminal No.	1	2	8

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**EXL-111** Revision: May 2014 2014 Frontier Α

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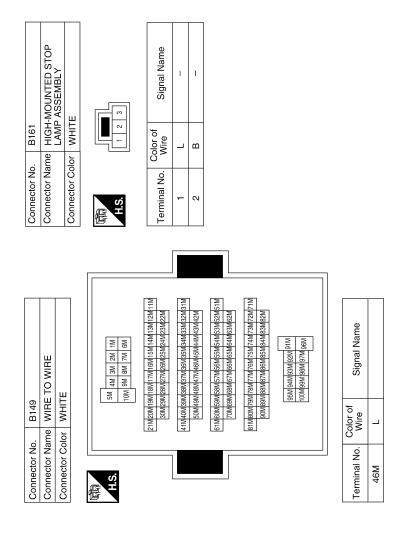
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# < WIRING DIAGRAM > **BACK-UP LAMP** Α Wiring Diagram INFOID:0000000009478503 A S: WITH A√T M S: WITH M/T В С $\mathsf{D}$ TO TRAILER TOW Е F G Н BACK-UP 33C E41 C15 C15 35 E41 C1 J IGNITION SWITCH ON OR START 10A A/T ASSEMBLY (F9): (A) \* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION. Κ EXL M Ν **BACK-UP LAMP** 0

**EXL-113 Revision: May 2014** 2014 Frontier Р

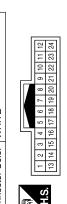
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# BACK-UP LAMP CONNECTORS

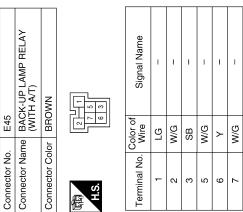
E5	/IRE TO WIRE	/HITE
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE

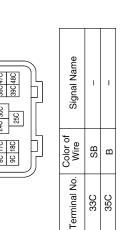
Connector Name WIRE TO WIRE Connector Color BLACK

Connector No. E41



5 6 7 8 9 10 11 12	14 15 16 17 18 19 20 21 22 23 24	Signal Name	I	I	-
2 3 4 5	4 15 16 1	Color of Wire	LG	M/G	SB
-	13	Terminal No.	6	10	11

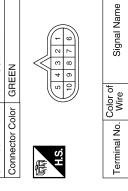












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-	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	NWC	29 28 77 26 25 36 35 34 39 32 31 30	Signal Name	T TOW REV LAMP
E121		or BR(	29 28 36 35 3	Color of Wire	W/G
Connector No.	Connector Name	Connector Color BROWN	赋利 H.S.	Terminal No.	27

	. 6				
6	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	TE	6 6 6 7 14 13 12 11 10	Signal Name	REVERSE LAMP
E119		or WHI	9 8 7 6 0	Color of Wire	W/G
Connector No.	Connector Name	Connector Color WHITE	同意 H.S.	Terminal No.	16

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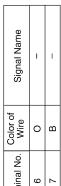
## **BACK-UP LAMP**

		А
Connector Name TCM (TRANSMISSION Connector Color GRAY  Los Italia In Italia Italia In Italia Itali	Signal Name	В
F502 TCM (TRAN) GRAY  B 7 1 6 5 4 1  n of Signer	Or of fire BB	С
Connector Name TCN Connector Color GRA Connector Color GRA H.S. Terminal No. Wire 7 0		D
Connector No. Connector Cold	Connector No. Connector Col Terminal No. 6	Е
		F
Connector No. F69 Connector Name BACK-UP LAMP SWITCH Connector Color WHITE  H.S.  Terminal No. Wire Signal Name  1 W/G - 2 SB -	Signal Name	G
PEG9 BACK-UP LA WHITE  or of Sig ire B B B	AA	Н
Connector No. F69 Connector Name BACK-L Connector Color WHITE H.S.  Terminal No. Color of 1 W/G 2 SB	Or No. C10 Or Name WIII	I
Connector No. Connector Cold Connector Cold Terminal No.	Connector No. Connector Color Terminal No. Www.  4 E E S	J
		K
WIRE 17 16 15 14 13 2 1 1 17 16 15 14 13	MIRE 1100 100 1100 1100 1100 1100 1100 110	EXL
TE TE TO 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	WIRE TO WIR BLACK BLACK 1940 270 210 111 1940 270 210 111 1940 270 210 111 1940 270 210 111 1940 270 270 111 1940 270 270 111 1950 280 280 280 280 111 1950 280 111 1	M
No.   F14   No.   F14   No.   Color   WHI   No.   Color of   No.   Wire   LG   No.		Ν
Connector No. Connector Name Connector Color H.S.  Terminal No. Wife 9 LC W// 10 W// 11 SF	Connector No. Connector Name Connector Name Connector Name Solution of the state of	0

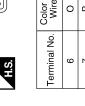
Revision: May 2014 EXL-115 2014 Frontier

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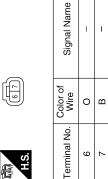
Connector No.	C209
Connector Name	Connector Name REAR COMBINATION LAMP RH (WITH M/T)
Connector Color GRAY	GRAY



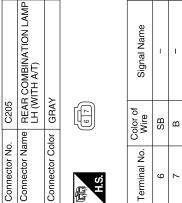




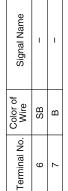
















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#### TRAILER TOW Α Wiring Diagram INFOID:0000000009478504 SWITCH SWITCH (E38): (M) TO BACK-UP LAMP QB : WITH QR25DE ⟨ZV⟩ : WITH VQ40DE M31 E152 В 10A 20 BACK-UP LAMP RELAY (E26) ELECTRIC BRAKE (PRE-WIRING) С E152 : WITH A/T D TRAILER C126 C150 C125 C51 15A 60 Е -S E41 [5] 30A 8 5 TRAILER OF TURN OF RELAY 3 (E165) TRAILER RECEPTACLE TRAILER TOW RELAY 2 (E228) F IPDM E/R (INTELLGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (E121), (E122), (E124) 210 6 (C125) Н TRAILER TOW RELAY 1 (E227) TAIL LAMP J ₩-K 52G IGNITION RELAY M31 IGNITION SWITCH ON OR START ₹ DATA LINE , M20 W EXL M91 BCM (BODY CONTROL MODULE) (M18), (M19) B DATA LINE 20A 53 COMBINATION SWITCH (LIGHTING M28) AND TURN SIGNAL SWITCH) M 20A 52 BATTERY TO CAN SYSTEM Ν FUSE BLOCK (J/B) (M4) TRAILER TOW ₽[-0 M6 g S0A Р - Lil

# TRAILER TOW CONNECTORS

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

Connector No. M6
Connector Name WIRE TO WIRE

Connector Color WHITE



4	В	
2P	96	
3P	10P	
	12P 11P	
4P	13P	
SP	14P	
99	15P	
7P	16P	
		ı
	(	ń

	Signal Name	-
	Color of Wire	W/B
Σ.	Terminal No. Color of Wire	15P

Signal Name

Terminal No. Color of Wire

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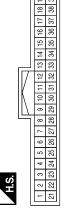




Signal Name	TRAILER FLASHER OUTPUT (RIGHT)	TRAILER FLASHER OUTPUT (LEFT)
Color of Wire	BG	re
Terminal No. Wire	51	52

Signal Name	OUTPUT 5	OUTPUT 4	OUTPUT 3	OUTPUT 2	OUTPUT 1	MS NÐI	CAN-H	CAN-L
Color of Wire	BG	GR	G	BB	ГG	W/R	٦	Ь
Terminal No. Color of Wire	32	33	34	35	36	38	39	40

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



Signal Name	S TUANI	NPUT 4	INPUT 3	INPUT 2	INPUT 1
Color of Wire	Ь	SB	۸	٦	В
Terminal No. Wire	2	3	4	5	9

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	А
Name	В
M76 ELECTRIC BRAKE (PRE-WIRING) WHITE  A 3 4 5 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	С
	D
Terminal No.   Cold   W   V   V   V   V   V   V   V   V   V	Е
	F
Connector No.   M28  Connector Name   COMBINATION SWITCH  Connector Color   WHITE  Terminal No.   Color of   Signal Name   Color of   Signal Name	G
M28 COMBINATION OF O	Н
No. No. Mame CON No. Mire GR GR GR GR R BBG R BB	I
Connector No.   M28     Connector Name   COMBII     Connector Color   WHITE     Terminal No.   Color of     5	J
	K
MAZO   MODULE)	EXL
Connector No.   M20	N
Connector No.  I.S.	0
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**EXL-119** Revision: May 2014 2014 Frontier

0	WIRE TO WIRE	IITE	1 2 8	Signal Name	1
. E10		lor W		Color of Wire	>
Connector No.	Connector Name	Connector Color WHITE	扇 H.S.	Terminal No. Wire	9

Signal Name

Color of Wire

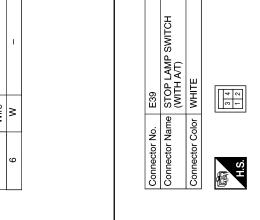
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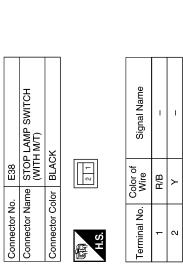
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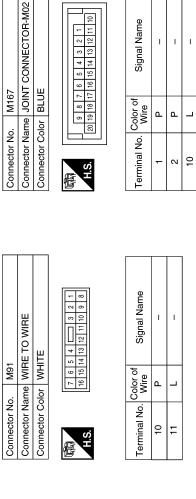
Signal Name

Color of Wire B/B |>

Terminal No.

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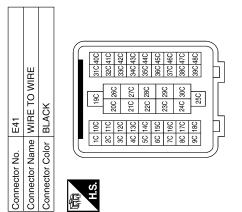
	WIRE TO WIRE	Щ	4 5 6 7 11 12 13 14 15 16	Signal Name	I	ı
. E26		lor WHITE	8 9 10	Color of Wire	۵	٦
Connector No.	Connector Name	Connector Color	咸动 H.S.	Terminal No.	10	11

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Connector No.	E121
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color BROWN	BROWN
[編] [28] [38] [38] [4] [4] [4] [4] [4] [4] [4] [4] [4] [4	29 28 27 28 25 36 38 34 33 32 31 30

Signal Name	T TOW REV LAMP	TRAILER RLY CONT	
Color of Wire	M/G	g	
Terminal No. Wire	27	29	

Signal Name	I	I	I	-	I	I	I
Color of Wire	ŋ	>	>	>	В	ш	BR
Terminal No. Wire	2C	30	4C	19C	20C	21C	22C



Connector No.	E124
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color BLACK	BLACK
原南 H.S.	29 88 57 88 65 77
Terminal No. Color of	or of Signal Name

IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	) SCK	193 19 28 82 22 193 194 195 195 195 195 195 195 195 195 195 195	Signal Name	TAIL LAMP	GND (POWER)	TRAIL RLY SUPPLY
	lor BLACK	29 8	Color of Wire	GR	В	R/B
Connector Name	Connector Color	H.S.	Terminal No. Wire	25	29	61

	±z© WO				î		
5	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	TE	40 39 38 37 46 43	Signal Name	GND (SIGNAL)	CAN-H	CAN-L
. E122		lor WHITE	42 41 4	Color of Wire	В	٦	۵
Connector No.	Connector Name	Connector Color	H.S.	Terminal No. Wire	38	39	40

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Connector No.   E152   Connector No.   E152   Connector No.   E152   Connector No.   Color of Signal Name	Connector No. E160 Connector Name E1ISE BLOCK (J/R)			[30] [2010]	0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			Terminal No. Wire Signal Name 8Q R/B –									
State   Stat	Signal Name	1	ı	ı	ı	1	1			ER TURN RELAY RH			Signal Name	ı	ı	ı	_
State	Color of Wire	Œ	BG	FG	_	BB	>			+ . +	_	2 2	Color of Wire	0	В	ŋ	٦
State   Signal   Name   Name	Terminal No.	42G	51G	52G	60G	94G	95G		Connector No	Connector Na	Connector Co	卓动 H.S.	Terminal No.	-	2	3	5
1	Connector No. E152 Connector Name WIRE TO WIRE	Connector Color WHITE	_			36 36	50	210   200   190   190   170   150   140   130   170		TRAILER TURN R		<u> </u>	Color of Wire	97	В	^	

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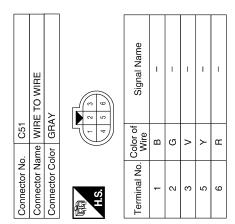
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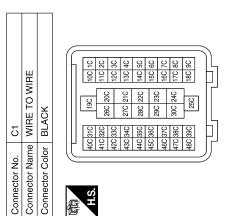
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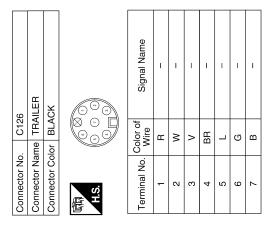
Connector Name   WIRE TO WIRE   Connector Name   Connector Name	WHE TO WIRE  WHITE  String   8   7   6    Signal Name    C						
Signal Name	Signal Name	Connector Na	ume WIR	E TO WIRE	Connector N	ame BACK (WITH	(-UP LAMP RELAY 1 M/T)
Signal Name	Signal Name  Signal Name  NG	DO IODALINECTO	ID NO	ш	Connector C	-	
Signal Name   Signal Name   Signal Name   Signal Name   Signal Name   Signal Name   Terminal No. Color of   Signal Name   Terminal No. Color of   Signal Name   Signal N	Signal Name	H.S.	2 3 7 8	4 =	(国)	ω n X	
1   B	S	Terminal No.	Color of Wire	Signal Name		<del> </del>	ה ה
Connector Name   Signat Name	/G	-	В	-	Terminal No	Color of Wire	Signal Name
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Harrow   Fig.   Fig.   Harrow   Fig.   Harrow   Fig.   Harrow   Fig.   Harrow   Fig.   Harrow   Fig.   Fi	R	က	B/B	ı	2	BR	1
Connector Name   Signal Name	C	4	GR	ı	e	W/G	1
G	C	5	Μ	1	2	SB	1
Connector No.   Connector No.   Connector Name   Connector No.   Connector Name   Connector No.   Connector Name   Connector Color of Signal Name   Color of	G	9	BB	1			
Signal Name	##	7	M/G	ı			
10   R	-   -   -   -   -   -   -   -	8	SB	ı			
10   R       11   O       12   G       12   Connector No.   E228     Connector Name   TRAILER TOW RELAY     Connector Name   TRAILER TOW RELAY     Connector No.   E228     Connector No.   E228     Connector Name   TRAILER TOW RELAY     Connector Name   TRAILER	2   -	6	١	ı			
11   O       12   G       12   G       12   Connector No.   E228     Connector Name   TRAILER TOW RELAY     Connector Color   BROWN     Connector Color   BROWN     Connector Name   TRAILER TOW RELAY     Connector Color   BROWN     Connector Name   TRAILER TOW RELAY     Connector Name   TRAILER TOW RELAY     Connector Name   TRAILER TOW RELAY     Connector Color   BROWN     Terminal No.   Color of   Signal Name     Terminal No.   Wire       Signal Name	E227 TRAILER TOW RELAY 1 BLUE    Signal Name   Signal Name	10	ш	1			
12   G   — — — — — — — — — — — — — — — — —	E227 TRAILER TOW RELAY 1 BLUE	£	0	ı			
Connector No.   E228   Connector Name   TRAILER TOW RELAY	E227 TRAILER TOW RELAY 1 BLUE  Strip  or of Signal Name  B	12	ဗ	ı			
Signal Name   Connector Name   TRAILER TOW RELAY	TRAILER TOW RELAY 1  BLUE  Strip  or of Signal Name  B	Copperator No					
Signal Name	BLUE    Signal Name   Signal N	Connector Na	T D D				
Terminal No. Color of Fig. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	or of Signal Name	Connector No					
Saminal No. Color of Signal Name   1   W/G	Minal No. Color of Signal Name  1	O IOIDALIIIOO					
Color of Wire         Signal Name         Terminal No. Wire           G         -         1         W/G           B         -         2         B           R/B         -         3         GR           R/B         -         5         L           R         -         5         L           F         0         W	Color of Signal Name G = - B =	H.S.		7117			
Color of Wire         Signal Name         Terminal No. Wire           G         -         1         W/G           B         -         2         B         B           R/B         -         3         GR         L           R         -         5         L         C           F         -         5         L         C	Color of Signal Name G — B — B/R — B		1				
G         -         1         W/G           B         -         2         B           R/B         -         3         GR           R         -         5         L           6         W         7         0	G 8/8 R		Color of Wire	Signal Name			
B         -         2         B           R/B         -         3         GR           R         -         5         L           6         W           7         0	B R/B R	1	W/G	_			
R/B         -         3         GR           R         -         5         L           6         W           7         0	R/B	2	В	ı			
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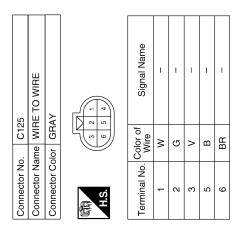
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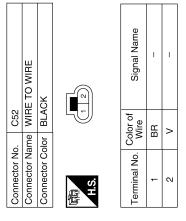


Signal Name	I	ı	_	I	_	_	ı
Color of Wire	ŋ	>	Y	>	В	Н	BR
Terminal No. Wire	2C	30	4C	19C	20C	21C	22C





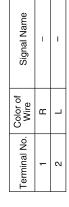


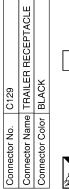


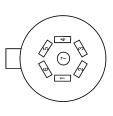
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Signal Name	STOP/TURN LH	GROUND	ELECTRIC BRAKE	STOP/TURN RH	BATTERY	RUNNING LAMPS	BACK-UP LAMPS
Color of Wire	-	_	_	-	_	-	-
Terminal No. Wire	-	2	3	4	5	9	7

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## **EXTERIOR LIGHTING SYSTEM SYMPTOMS**

< SYMPTOM DIAGNOSIS >

# SYMPTOM DIAGNOSIS

## EXTERIOR LIGHTING SYSTEM SYMPTOMS

Symptom Table

#### **CAUTION:**

Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

Symp	otom	Possible cause	Inspection item		
Headlamp does not switch to the high beam.	One side	Fuse     Harness between IPDM E/R and the front combination lamp     Front combination lamp     IPDM E/R	Headlamp (HI) circuit Refer to <u>EXL-36</u> .		
	Both sides	Symptom diagnosis "BOTH SIDE HEADLAMPS DO N Refer to EXL-129, "Diagnosis Prod			
High beam indicator lamp (Headlamp switches to the		Combination meter     BCM	Combination meter.     Data monitor "HI-BEAM IND"     BCM (HEAD LAMP)     Active test "HEADLAMP"		
	One side	<ul> <li>Daytime light relay 2</li> <li>Harness between IPDM, daytime light relay 2 and front combination lamp LH.</li> <li>Front combination lamp (Low beam)</li> </ul>	Headlamp (LO) circuit Refer to EXL-39.		
Headlamp does not switch to the low beam.	Both sides	Combination switch (lighting and turn signal switch)     Harness between the combination switch (lighting and turn signal switch) and BCM     BCM	Combination switch (lighting and turn signal switch) Refer to BCS-47.		
		High beam request signal  BCM IPDM E/R  IPDM E/R	IPDM E/R Data monitor "HL HI REQ"		
Headlamp does not turn ON.	One side	Fuse     Bulb     Harness between IPDM E/R and the front combination lamp     Front combination lamp     IPDM E/R	Headlamp (LO) circuit Refer to EXL-39.		
	Both sides	Symptom diagnosis "BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON" Refer to EXL-131, "Diagnosis Procedure".			
Headlamp does not turn OFF.	When the ignition switch is turned ON	BCM     Combination switch (lighting and turn signal switch)	Combination switch (lighting and turn signal switch) Refer to BCS-47.		

## **EXTERIOR LIGHTING SYSTEM SYMPTOMS**

# < SYMPTOM DIAGNOSIS >

Symp	otom	Possible cause	Inspection item	
Headlamp is not turned Ol switch AUTO.	N/OFF with the lighting	Combination switch (lighting and turn signal switch) Harness between the combination switch (lighting and turn signal switch) and BCM BCM IPDM E/R	Combination switch (lighting and turn signal switch) Refer to <u>BCS-47</u> .	
		Optical sensor     Harness between the optical sensor and BCM     BCM	Optical sensor Refer to <u>EXL-53</u> .	
Daytime light system does	not activate.	<ul> <li>Either high beam bulb</li> <li>Parking brake switch</li> <li>Combination switch (lighting and turn signal switch)</li> <li>BCM</li> <li>IPDM E/R</li> <li>Daytime light relay 1</li> <li>Harness between IPDM E/R and daytime light relay 1.</li> </ul>	Daytime light system description. Refer to EXL-9. "System Description".	
Front fog lamp is not turned ON.	One side	Front fog lamp bulb     Harness between IPDM E/R and the front combination lamp     Front combination lamp     IPDM E/R	Front fog lamp circuit Refer to EXL-45.	
urned ON.	Both side	Symptom diagnosis "BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON" Refer to EXL-133, "Diagnosis Procedure".		
Parking lamp is not turned ON.	One side	Fuse     Parking lamp bulb     Harness between IPDM E/R and the front/rear combination lamp     Front/rear combination lamp     IPDM E/R	Parking lamp circuit Refer to EXL-47.	
	Both sides	Symptom diagnosis "PARKING, LICENSE PLATE AND ON" Refer to EXL-132, "Diagnosis Proc		
Turn signal lamp does not blink.	Indicator lamp is normal. (The applicable side performs the high flasher activation).	Harness between BCM and each turn signal lamp     Turn signal lamp bulb	Turn signal lamp circuit Refer to EXL-50.	
	One side	Combination meter		
Turn signal indicator lamp	Both sides (Always)	Turn signal indicator lamp signal Combination meter BCM	Combination meter.     Data monitor "TURN IND"     BCM (FLASHER)     Active test "FLASHER"	
does not blink.	Both sides (Does blink when activating the hazard warning lamp with the ignition switch OFF)	The combination meter power supply and the ground circuit Combination meter	Power supply and the ground circuit Refer to MWI-31.	

Revision: May 2014 EXL-127 2014 Frontier

## **NORMAL OPERATING CONDITION**

< SYMPTOM DIAGNOSIS >

## NORMAL OPERATING CONDITION

Description INFOID:000000009478506

#### **AUTO LIGHT SYSTEM**

The auto light system may not turn the headlamp ON/OFF immediately after passing a dark area or a bright area (short tunnel, sky bridge, shadowed area etc.). This is normal.

#### BOTH SIDE HEADLAMPS DO NOT SWITCH TO HIGH BEAM

< SYMPTOM DIAGNOSIS >

## BOTH SIDE HEADLAMPS DO NOT SWITCH TO HIGH BEAM

Description INFOID:000000009478507

The headlamps (both sides) do not switch to high beam when the combination switch (lighting and turn signal switch) is in the HI or PASS setting.

## Diagnosis Procedure

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# 1.combination switch (lighting and turn signal switch) inspection

Check the combination switch (lighting and turn signal switch). Refer to BCS-47, "Symptom Table".

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

#### **WITH CONSULT DATA MONITOR**

- Select "HL HI REQ" of IPDM E/R DATA MONITOR item.
- 2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
	Combination switch (lighting	HI or PASS	ON
HL HI REQ	and turn signal switch) (2ND position)	Except for HI or PASS	OFF

#### Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

## 3. HEADLAMP (HI) CIRCUIT INSPECTION

Check the headlamp (HI) circuit. Refer to EXL-36, "Description".

#### Is the headlamp (HI) circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

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Revision: May 2014 EXL-129 2014 Frontier

#### DAYTIME LIGHT SYSTEM INOPERATIVE

#### < SYMPTOM DIAGNOSIS >

## DAYTIME LIGHT SYSTEM INOPERATIVE

Description INFOID:000000009478509

The daytime light system is inoperative even though the combination switch (lighting and turn signal switch) and parking brake switch are in the normal setting, also whenever engine is operating.

## Diagnosis Procedure

INFOID:0000000009478510

#### NOTE:

Before performing the diagnosis, check that the following is normal.

- High beam lamp function
- · Parking brake warning lamp
- Engine operation status

## 1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to <u>BCS-47, "Symptom Table"</u>.

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

## 2.CHECK DAYTIME LIGHT REQUEST SIGNAL INPUT

#### (P) WITH CONSULT DATA MONITOR

- Parking brake switch is released.
- 2. Start engine.
- Select "DTRL REQ" of IPDM E/R DATA MONITOR item.
- 4. While operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
	combination switch (lighting and turn	1ST or OFF	ON
DTRL REQ	signal switch)	Except for 1ST or OFF	OFF

#### Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

# 3.DAYTIME LIGHT RELAY CIRCUIT INSPECTION

Check the daytime light relay circuit. Refer to EXL-43, "Diagnosis Procedure".

#### Is the daytime light relay circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

## **BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON**

#### < SYMPTOM DIAGNOSIS >

## BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

Description INFOID:0000000009478511

The headlamps (both sides) do not turn ON in any combination switch (lighting and turn signal switch) setting.

## Diagnosis Procedure

1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to <a href="BCS-47">BCS-47</a>, "Symptom Table".

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2. CHECK HEADLAMP (LO) REQUEST SIGNAL INPUT

#### **WITH CONSULT DATA MONITOR**

1. Select "HL LO REQ" of IPDM E/R DATA MONITOR item.

2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Monitor item Condition					
HL LO REQ	Combination switch (lighting	2ND	ON			
TIE EO NEQ	and turn signal switch)	OFF	OFF			

#### Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

# 3.HEADLAMP (LO) CIRCUIT INSPECTION

Check the headlamp (LO) circuit. Refer to EXL-39, "Description".

#### Is the headlamp (LO) circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

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Revision: May 2014 EXL-131 2014 Frontier

#### PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

## PARKING, LICENSE PLATE AND TAIL LAMPS ARE NOT TURNED ON

Description INFOID:000000009478513

The parking, license plate and tail lamps do not turn ON in with any combination switch (lighting and turn signal switch) setting.

## Diagnosis Procedure

INFOID:0000000009478514

# 1.combination switch (lighting and turn signal switch) inspection

Check the combination switch (lighting and turn signal switch). Refer to BCS-47, "Symptom Table".

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

#### (F) WITH CONSULT DATA MONITOR

- Select "TAIL & CLR REQ" of IPDM E/R DATA MONITOR item.
- 2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
TAIL & CLR	Combination switch (lighting and turn	1ST	ON
REQ	signal switch)	OFF	OFF

#### Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

## ${f 3.}$ PARK LAMP CIRCUIT INSPECTION

Check the parking lamp circuit. Refer to EXL-47, "Description".

#### Is the tail lamp circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

Revision: May 2014 EXL-132 2014 Frontier

#### BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

## BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

Description INFOID:0000000009478515

The front fog lamps do not turn ON in any combination switch (lighting and turn signal switch) setting.

Diagnosis Procedure

1. COMBINATION SWITCH (LIGHTING AND TURN SIGNAL SWITCH) INSPECTION

Check the combination switch (lighting and turn signal switch). Refer to BCS-47, "Symptom Table"

Is the combination switch (lighting and turn signal switch) normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK FRONT FOG LAMP REQUEST SIGNAL INPUT

(P)WITH CONSULT DATA MONITOR

1. Select "FR FOG REQ" of IPDM E/R DATA MONITOR item.

2. With operating the combination switch (lighting and turn signal switch), check the monitor status.

Monitor item	Condition		Monitor status
FR FOG REQ	Combination switch (lighting and turn signal switch) (2ND)	ON	ON
		OFF	OFF

#### Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to BCS-49, "Removal and Installation".

## 3.FRONT FOG LAMP CIRCUIT INSPECTION

Check the front fog lamp circuit. Refer to EXL-45, "Description".

Is the front fog lamp circuit normal?

YES >> Replace IPDM E/R. Refer to PCS-28, "Removal and Installation of IPDM E/R".

NO >> Repair or replace the malfunctioning part.

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Revision: May 2014 EXL-133 2014 Frontier

# **PRECAUTION**

## **PRECAUTIONS**

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

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 three minutes before performing any service.

Precaution for Work

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:
- Water soluble dirt:
- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.
- Oily dirt:
- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.
- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

## General precautions for service operations

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- Never work with wet hands.
- Turn the lighting switch OFF before disconnecting and connecting the connector.

Revision: May 2014 EXL-134 2014 Frontier

#### **PRECAUTIONS**

#### < PRECAUTION >

- When checking the headlamp on/off operation, check it on vehicle and with the power connected to the vehicle-side connector.
- Do not touch the headlamp bulb glass surface with bare hands or allow oil or grease to get on it. Do not touch the headlamp bulb just after the headlamp is turned off, because it is very hot.
- When the bulb has burned out, wrap it in a thick vinyl bag and discard. Do not break the bulb.
- Leaving the bulb removed from the headlamp housing for a long period of time can deteriorate the performance of the lens and reflector (dirt, clouding). Always prepare a new bulb and have it on hand when replacing the bulb.
- Do not use organic solvent (paint thinner or gasoline) to clean lamps and to remove old sealant.

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## **PREPARATION**

## < PREPARATION >

# **PREPARATION**

## **PREPARATION**

Special Service Tool

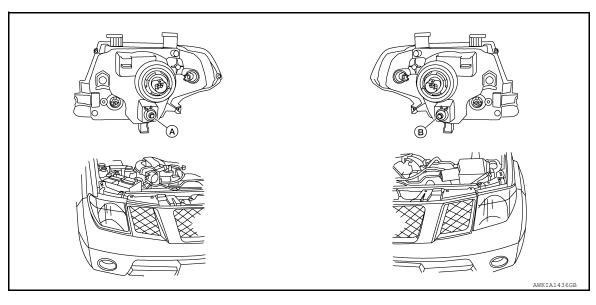
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Tool number	Description
(TechMate No.) Tool name	
	Removing trim components
(J-46534) Trim Tool Set	

## PERIODIC MAINTENANCE

#### **HEADLAMP**

Aiming Adjustment



A. Headlamp (RH) adjustment screw

B. Headlamp (LH) adjustment screw

#### NOTE:

For headlamp aiming details, refer to the regulations in your area.

- If vehicle front body has been repaired or the front combination lamp has been replaced, check headlamp aiming.
- Before performing aiming adjustment, check the following:
- Confirm headlamp aiming switch is set to "0" (zero) position.
- Ensure all tires are inflated to correct pressure.
- Place vehicle and screen on level surface.
- Ensure there is no load in vehicle other than the driver (or equivalent weight placed in driver's position). Coolant and engine oil filled to correct level, and fuel tank full.
- Confirm spare tire, jack and tools are properly stowed.
- Aim each headlamp individually and ensure other headlamp beam pattern is blocked from screen.
- Use adjusting screw to perform aiming adjustment

#### LOW BEAM AND HIGH BEAM

#### **CAUTION:**

Do not tighten adjustment screw beyond a torque of 1.67 N·m (17 kg-cm, 15 in-lb) or damage may occur.

#### NOTE:

By regulation, no means for horizontal aim adjustment is provided from the factory; only vertical aim is adjustable.

- 1. Turn headlamp low beam on.
- 2. Use adjustment screw to perform aiming adjustment.
- Adjust beam pattern until cut-off line (top edge of illumination area) is positioned at same height off ground as bulb center (on H-line). Measure cut-off line within distance A on H-line. See aiming chart below.
  - Basic illuminating area for adjustment should be within the range shown on the aiming chart. Adjust headlamps accordingly.

Headlamp Aiming

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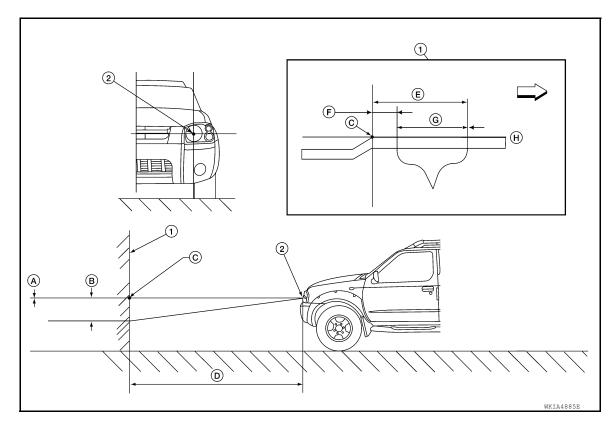
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Revision: May 2014 EXL-137 2014 Frontier



- 1 Adjustment screen
- B Maximum acceptable vertical aim dimension (see aiming chart)
- E Maximum aim evaluation distance F from vertical center on aiming screen 399 mm (3° R).
- H Horizontal aiming evaluation line
- 2 Headlamp bulb center (HV point)
- C H-V point
  - Minimum aim evaluation distance from vertical center on aiming screen 133 mm (1°R)
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- Minimum acceptable vertical aim dimension (see aiming chart)
- D Distance of headlamp aiming screen from vehicle 7.62 m (25 ft)
- Aim evaluation area

#### Aiming Chart

A (Minimum acceptable vertical aim dimension)	-3.3 mm (0.13 in)	0.025° up
B (Maximum acceptable vertical aim dimension)	36.6 mm (1.44 in)	0.275° down

#### FRONT FOG LAMP

#### < PERIODIC MAINTENANCE >

## FRONT FOG LAMP

## Aiming Adjustment

The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb. Before performing aiming

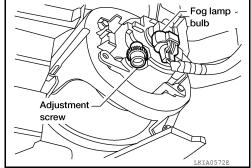
adjustment, make sure of the following.

- Keep all tires inflated to correct pressure.
- · Place vehicle on level ground.
- See that vehicle is unloaded (except for full levels of coolant, engine oil and fuel, and spare tire, jack, and tools). Have the driver or equivalent weight placed in driver seat.

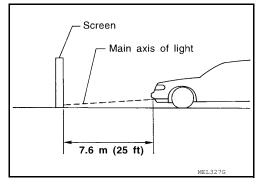
Adjust aiming in the vertical direction by turning the adjustment screw.

#### NOTE:

Use a Phillips screwdriver to adjust. Turn screw clockwise to raise pattern and counterclockwise to lower pattern.



1. Set the distance between the screen and the center of the fog lamp lens as shown.



- 2. Turn front fog lamps ON.
- Remove front portion of fender protector(s) for adjustment screw access. Refer to <u>EXT-25</u>, "Removal and <u>Installation"</u>.

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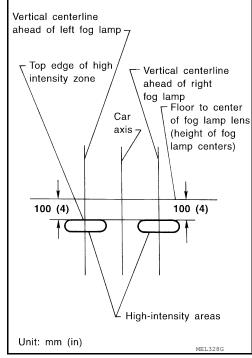
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#### FRONT FOG LAMP

#### < PERIODIC MAINTENANCE >

- 4. Adjust front fog lamps using adjustment screw so that the top edge of the high intensity zone is 100 mm (4 in) below the height of the fog lamp centers as shown.
  - When performing adjustment, if necessary, cover the headlamps and opposite fog lamp.



## REMOVAL AND INSTALLATION

#### **HEADLAMP**

Bulb Replacement

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#### WARNING:

Do not touch bulb with your hand while it is on or right after being turned off. Burning may result. **CAUTION:** 

Do not touch the glass surface of the bulb with bare hands or allow oil or grease to get on it to prevent damage to the bulb.Do not leave bulb out of lamp reflector for a long time because dust, moisture,

smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

#### HEADLAMP

#### Removal

- 1. Turn front headlamp switch OFF.
- Disconnect the harness connector from the headlamp.
- Rotate the headlamp bulb retaining ring counterclockwise and remove.
- Pull the headlamp bulb straight out from the headlamp assembly.

## **CAUTION:**

Grasp only the plastic base when handling headlamp bulb. Do not touch the glass envelope.

#### Installation

Installation is in the reverse order of removal.

#### **CAUTION:**

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

#### FRONT TURN SIGNAL/PARKING LAMP

#### Removal

- Turn the bulb socket counterclockwise and remove.
- Pull the bulb to remove it from the socket.

#### Installation

Installation is in the reverse order of removal.

#### **CAUTION:**

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

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#### FRONT SIDE MARKER LAMP

#### Removal

- Turn the bulb socket counterclockwise and remove.
- Pull the bulb to remove it from the socket.

#### Installation

Installation is in the reverse order of removal.

#### **CAUTION:**

After installing bulb, be sure to install the bulb socket securely for watertightness.

#### Removal and Installation

#### INFOID:0000000009478524

#### FRONT COMBINATION LAMP

#### Removal

- Position front fender protector aside. Refer to EXT-27, "Removal and Installation of Front Fender Protec-
- For steel bumper, remove the front bumper upper valance. Refer to EXT-15, "Removal and Installation".
- For plastic bumper, remove the front bumper assembly. Refer to EXT-15, "Removal and Installation".

**EXL-141** Revision: May 2014 2014 Frontier **EXL** 

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#### **HEADLAMP**

#### < REMOVAL AND INSTALLATION >

- Remove the front combination lamp bolts.
- 5. Disconnect the harness connector from the front combination lamp and remove.

Installation

Installation is in the reverse order of removal.

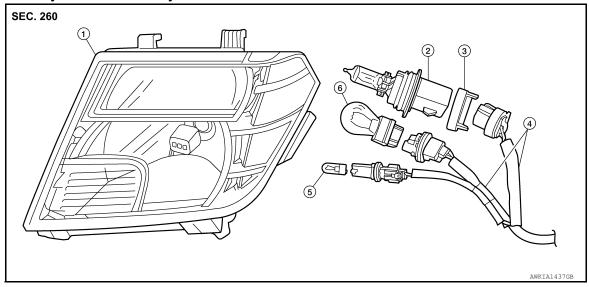
#### NOTE:

After installation, perform headlamp aiming adjustment. Refer to EXL-137, "Aiming Adjustment".

Front combination lamp bolt : 6.0 N·m (0.61 kg-m, 53 in-lb)

## Disassembly and Assembly

INFOID:0000000009478525



1. Front combination lamp

4. Harness assembly

- 2. Headlamp bulb
- 5. Front side marker lamp bulb
- 3. Headlamp bulb retaining ring
- 6. Front turn signal/parking lamp bulb

#### DISASSEMBLY

#### **WARNING:**

Do not touch bulb with your hand while it is on or right after being turned off. Burning may result. CAUTION:

Do not touch the glass surface of the bulb with bare hands or allow oil or grease to get on it to prevent damage to the bulb.Do not leave bulb out of lamp reflector for a long time because dust, moisture, smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

- 1. Rotate headlamp bulb retaining ring counterclockwise and remove.
- 2. Turn front turn signal/parking lamp bulb socket counterclockwise to unlock and remove.
- 3. Turn front side marker lamp bulb socket counterclockwise to unlock and remove.

#### **ASSEMBLY**

Installation is in the reverse order of removal.

#### CAUTION:

After installing bulb, be sure to install the bulb socket and plastic cap securely to ensure watertightness.

## FRONT FOG LAMP

## **Bulb Replacement**

REMOVAL

1. Position front fender protector aside. Refer to <u>EXT-27</u>, "Removal and Installation of Front Fender Protector".

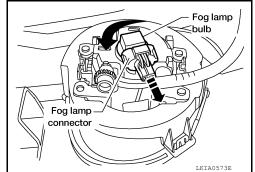
- Disconnect the harness connector from the fog lamp.
- Turn the bulb counterclockwise to remove it.

#### **WARNING:**

Do not touch bulb by hand while it is lit or right after being turned off. Burning may result.

#### **CAUTION:**

- Do not touch the glass of bulb directly by hand. Keep grease and other oily substances away from it.
- Do not leave bulb out of fog lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of fog lamp. When replacing bulb, be sure to replace it with new one.



#### INSTALLATION

Installation is in the reverse order of removal.

#### Removal and Installation

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#### **REMOVAL**

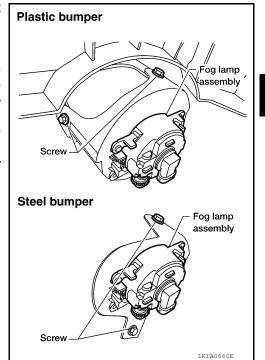
#### Note:

The fog lamp is a semi-sealed beam type which uses a replaceable halogen bulb.

- 1. Position front fender protector aside. Refer to <u>EXT-27</u>, "Removal and Installation of Front Fender Protector"
- 2. Disconnect the harness connector from the fog lamp.
- 3. Remove fog lamp screws and pull fog lamp rearward out of front bumper.

#### **CAUTION:**

- Do not leave fog lamp assembly without bulb for a long period of time. Dust, moisture, smoke, etc. entering the fog lamp body may affect the performance. Remove the bulb from the headlamp assembly just before replacement bulb is installed.
- Grasp only the plastic base when handling the bulb. Do not touch the glass envelope. Touching the glass could significantly affect the bulb life and/or fog lamp performance.



#### INSTALLATION

Installation is in the reverse order of removal.

#### NOTE:

After installation, perform front fog lamp aiming adjustment. Refer to EXL-139, "Aiming Adjustment".

Revision: May 2014 EXL-143 2014 Frontier

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## STOP LAMP

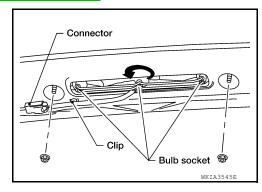
## **Bulb Replacement**

#### INFOID:0000000009478528

## HIGH-MOUNTED STOP LAMP

#### Removal

- Remove high-mounted stop lamp. Refer to <u>EXL-144, "Removal and Installation"</u>.
- 2. Rotate the center bulb socket counterclockwise and remove.
- 3. Pull bulb straight out from bulb socket.



#### Installation

Installation is in the reverse order of removal.

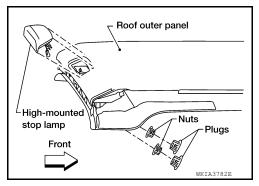
#### Removal and Installation

INFOID:0000000009478529

#### HIGH-MOUNTED STOP LAMP

#### Removal

- 1. Remove plugs on headlining.
- Remove the nuts and remove high-mounted stop lamp from outside of roof outer panel.
- Rotate the bulb sockets counterclockwise and remove the highmounted stop lamp assembly.



#### Installation

Installation is in the reverse order of removal.

High-mounted stop lamp nuts : 3.38 N·m (0.34 kg-m, 30 in-lb)

#### LICENSE PLATE LAMP

## < REMOVAL AND INSTALLATION > LICENSE PLATE LAMP Α **Bulb Replacement** INFOID:0000000009478530 **REMOVAL** В Turn bulb socket counterclockwise to unlock bulb socket. 2. Pull bulb to remove from bulb socket. **INSTALLATION** Installation is in the reverse order of removal. D Removal and Installation INFOID:0000000009478531 **REMOVAL** Е 1. Disconnect the harness connector from the license plate lamp. 2. Depress tab to remove license plate lamp from rear bumper. F **INSTALLATION**

Installation is in the reverse order of removal.

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Revision: May 2014 EXL-145 2014 Frontier

#### **REAR COMBINATION LAMP**

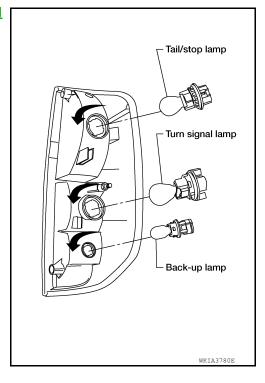
#### < REMOVAL AND INSTALLATION >

## **REAR COMBINATION LAMP**

## Bulb Replacement

#### **REMOVAL**

- 1. Remove rear combination lamp. Refer to <u>EXL-146</u>, "Removal and Installation".
- 2. Turn bulb socket counterclockwise to remove..
- 3. Pull bulb straight out away from socket.



#### INSTALLATION

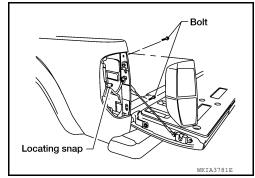
Installation is in the reverse order of removal.

#### Removal and Installation

INFOID:0000000009478533

#### **REMOVAL**

- 1. Open tail gate and remove rear combination lamp bolts.
- 2. Pull combination lamp housing rearward to release locating snap.
- 3. Rotate each bulb socket counterclockwise and remove.



#### **INSTALLATION**

Installation is in the reverse order of removal.

#### NOTE:

During installation, align locating snap on body prior to installing bolts.

Rear combination lamp bolts : 2.4 Nm (0.24 kg-m, 21 in-lb)

#### **LIGHTING & TURN SIGNAL SWITCH**

#### < REMOVAL AND INSTALLATION >

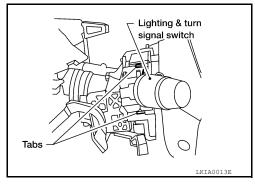
## **LIGHTING & TURN SIGNAL SWITCH**

#### Removal and Installation

#### INFOID:0000000009478534

#### **REMOVAL**

- 1. Remove instrument lower panel LH. Refer to IP-18, "Removal and Installation".
- 2. Remove steering column covers.
- 3. Disconnect the harness connector from the lighting and turn signal switch.
- 4. While pressing tabs, pull lighting and turn signal switch toward driver door and release from the steering column.



#### **INSTALLATION**

Installation is in the reverse order of removal.

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#### **HAZARD SWITCH**

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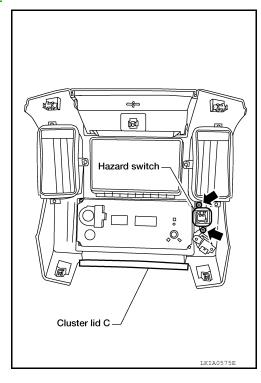
## HAZARD SWITCH

## Removal and Installation

#### INFOID:0000000009478535

#### **REMOVAL**

- 1. Remove cluster lid C. Refer to IP-19, "Removal and Installation".
- 2. Remove the screws and the hazard switch.



#### **INSTALLATION**

Installation is in the reverse order of removal.

## **OPTICAL SENSOR**

#### < REMOVAL AND INSTALLATION >

## **OPTICAL SENSOR**

## Removal and Installation

INFOID:0000000009478536

#### **REMOVAL**

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- 1. Insert a suitable tool between the optical sensor and the instrument panel, then lift the optical sensor upward.
- 2. Disconnect the harness connector from the optical sensor and remove.

## **INSTALLATION**

Installation is in the reverse order of removal.

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# **SERVICE DATA AND SPECIFICATIONS (SDS)**

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## **Bulb Specifications**

INFOID:0000000009478537

Item		Wattage (W)*	
Front combination lamp	Headlamp (Halogen low beam)	55	
	Headlamp (Halogen high beam)	60	
	Park/Turn lamp	8/28	
	Front side marker lamp	5	
Rear combination lamp	Stop/Tail lamp	27/8	
	Rear turn signal lamp	27	
	Back-up lamp	18	
Fog lamp		55	
License plate lamp		5	
High-mounted stop lamp		12.8	
Cargo lamp (in high-mounted stop lamp)		12.8	

<sup>\*:</sup> Always check with the Parts Department for the latest parts information.