2008 Nissan-Datsun Sentra L4-2.0L (MR20DE)
Vehicle > ALL Diagnostic Trouble Codes (DTC) > Testing and Inspection > P Code Charts

P0032

DTC P0031, P0032 A/F SENSOR 1 HEATER

Description

SYSTEM DESCRIPTION

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Sensor	Input Signal to ECM	ECM function	Actuator
Camshaft position sensor (PHASE) Crankshaft position sensor (POS)	Engine speed	Air fuel ratio (A/F) sensor 1 heater control	Air fuel ratio (A/F) sensor 1 heater
Mass air flow sensor	Amount of intake air		

The ECM performs ON/OFF duty control of the A/F sensor 1 heater corresponding to the engine operating condition to keep the temperature of A/F sensor 1 element at the specified range.

CONSULT-III Reference Value in Data Monitor Mode

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INFOID:0000000001849794

Specification data are reference values.

MONITOR ITEM	CONDITION	SPECIFICATION
A/F S1 HTR (B1)	• Engine: After warming up, idle the engine (More than 140 seconds after starting engine)	4 - 100%

On Board Diagnosis Logic

On Board Diagnosis Logic

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DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0031 0031	Air fuel ratio (A/F) sensor 1 heater control circuit low	The current amperage in the air fuel ratio (A/F) sensor 1 heater circuit is out of the normal range. [An excessively low voltage signal is sent to ECM through the air fuel ratio (A/F) sensor 1 heater.]	• Harness or connectors [Air fuel ratio (A/F) sensor 1 heater circuit is open or shorted.] • Air fuel ratio (A/F) sensor 1 heater
P0032 0032	Air fuel ratio (A/F) sensor 1 heater control circuit high	The current amperage in the air fuel ratio (A/F) sensor 1 heater circuit is out of the normal range. [An excessively high voltage signal is sent to ECM through the air fuel ratio (A/F) sensor 1 heater.]	• Harness or connectors [Air fuel ratio (A/F) sensor 1 heater circuit is shorted.] • Air fuel ratio (A/F) sensor 1 heater

DTC Confirmation Procedure

NOTE: If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait a least **10 seconds** before conducting the next test.

TESTING CONDITION:
Before performing the following procedure, confirm that battery voltage is **11 V** at idle.

1. Start engine and run it for at least **10 seconds** at idle speed.
2. Check 1st trip DTC.
3. If 1st trip DTC is detected, go to "Diagnostic Procedure" below.

Wiring Diagram

EC-A/FH-01

Wiring Diagram

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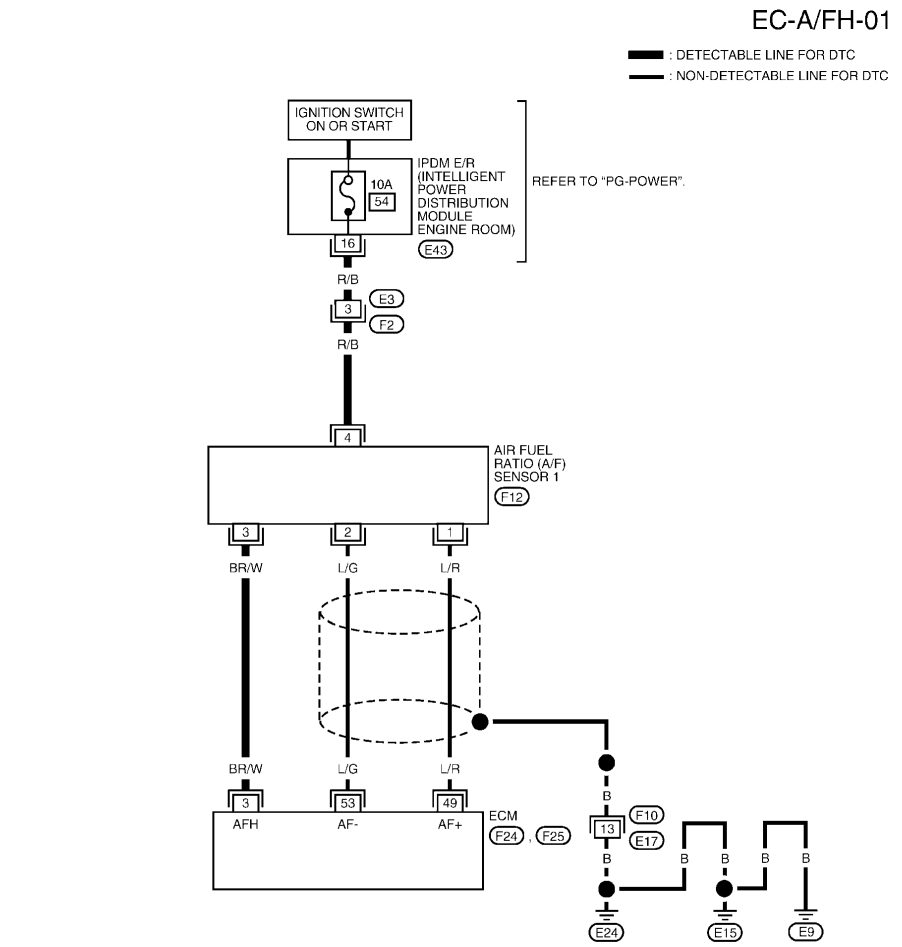
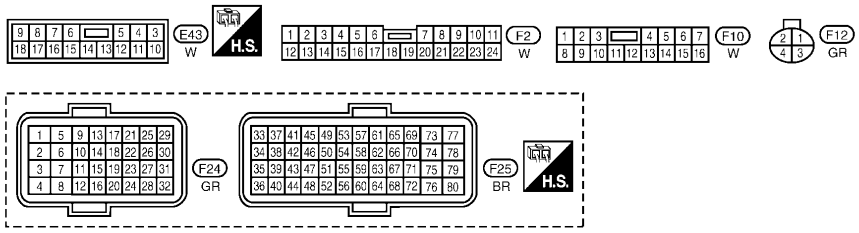
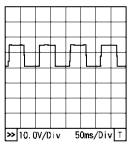
EC-A/FH-01





BBWA2871E

Specification data are reference values and are measured between each terminal and ground.
Pulse signal is measured by CONSULT-III.
CAUTION:
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECM's transistor. Use a ground other than ECM terminals, such as the ground.

TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
3	BR/W	A/F sensor 1 heater	**[Engine is running]** • **Warm-up condition** • Idle speed (More than 140 seconds after starting engine)	Approximately 2.9 - 8.8V★  PBIA8148J
49	L/R	A/F sensor 1	**[Engine is running]** • **Warm-up condition** • Engine speed: 2,000 rpm	Approximately 1.8V Output voltage varies with air fuel ratio.
53	L/G	A/F sensor 1	**[Ignition switch: ON]**	Approximately 2.2V

★: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

Diagnostic Procedure

Step 1-2

Diagnosis Procedure

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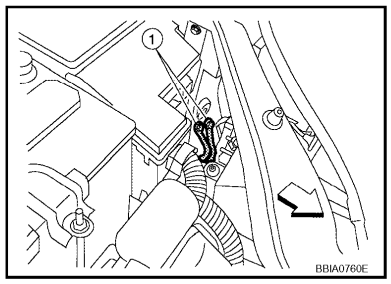
1.CHECK GROUND CONNECTIONS

1. Turn ignition switch OFF.
2. Loosen and retighten ground screws on the body.
   Refer to EC-140, "Ground Inspection".

- ⇦: Vehicle front
- Body ground (1)



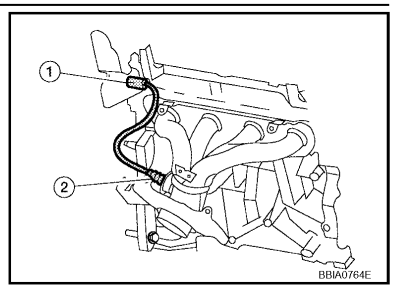
OK or NG

OK >> GO TO 2.
NG >> Repair or replace ground connections.

2.CHECK AIR FUEL RATIO (A/F) SENSOR 1 POWER SUPPLY CIRCUIT

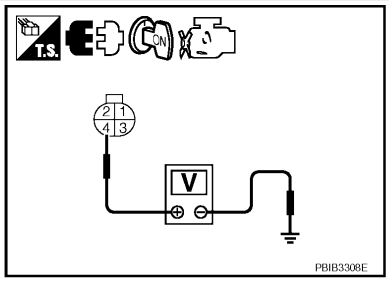
1. Disconnect air fuel ratio (A/F) sensor 1 harness connector (1).
2. Turn ignition switch ON.

- Air fuel ratio (A/F) sensor 1 (2)



Step 2 (Continued)-6

3. Check voltage between A/F sensor 1 terminal 4 and ground with CONSULT-III or tester.



Voltage: Battery voltage

OK or NG

OK >> GO TO 4.
NG >> GO TO 3.

3. DETECT MALFUNCTIONING PART

Check the following.
- Harness connectors E3, F2
- 10A fuse
- Harness for open or short between A/F sensor 1 and fuse

>> Repair or replace harness or connectors.

4. CHECK A/F SENSOR 1 HEATER OUTPUT SIGNAL CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between ECM terminal 3 and A/F sensor 1 terminal 3. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK A/F SENSOR 1 HEATER

Refer to "Component Inspection".

OK or NG

OK >> GO TO 6.
NG >> Replace air fuel ratio (A/F) sensor 1.

6. CHECK INTERMITTENT INCIDENT

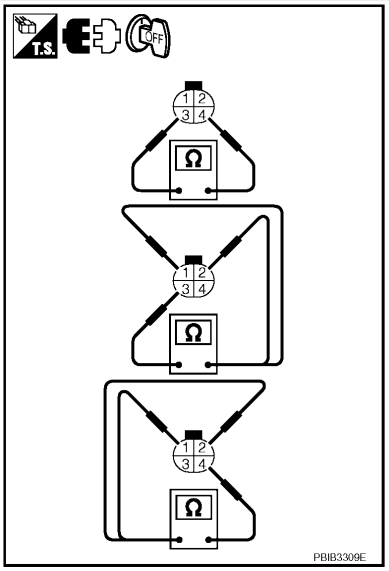
Perform EC-135.

>> **INSPECTION END**

Component Inspection

AIR FUEL RATIO (A/F) SENSOR 1 HEATER

Terminal No.	Resistance
3 and 4	1.8 - 2.44 Ω [at 25°C (77°F)]
3 and 1, 2	∞ Ω (Continuity should not exist)
4 and 1, 2	



1. Check resistance between A/F sensor 1 terminals as follows.
2. If NG, replace air fuel ratio (A/F) sensor 1.

CAUTION:

- Discard any A/F sensor which has been dropped from a height of more than 0.5 m (19.7 in) onto a hard surface such as a concrete floor; use a new one.

- Before installing new A/F sensor, clean exhaust system threads using Heated Oxygen Sensor Thread Cleaner tool J-43897-18 or J-43897-12 and approved anti-seize lubricant.