Reviewers Note: Words/phrases in blue will be links to specific diagnostic procedures when this document is published in Freshdesk.

Blue iQ™ Fault Codes 7294 & 7295 Diagnostic Procedure

DSM.0030 Ver. 2.0 April 24, 2023

FC	SPN	FMI	Title
7294	8421	3	Fuel Storage Compartment 2 Temperature - Voltage below normal or shorted to a low source - Most Severe Level
7295	8421	4	Fuel Storage Compartment 2 Temperature - Voltage above normal or shorted to a high source - Most Severe Level

Parts Affected

- Thermistor 2 – *called "Fuel Storage Compartment Temperature Sensor 2" in Cummins INSITE™*

Diagnostic Overview

The Blue iQ Fuel System Control Module (FSCM) monitors fuel cabinet(s) internal temperature by checking two temperature sensors (thermistors) for any abnormal temperature values. When the FSCM detects sensor voltage below normal, above normal, or shorted to a high source on one or more of the temperature sensors, it sets the corresponding fault code.

In some cases, the FSCM also may send a signal to the Blue iQ™ Smart Gauge causing the indicator LED to blink red and the gauge display to show a fuel system over temperature warning.

NOTICE **Perform Initial Vehicle Check procedure prior to performing diagnostic instructions listed below**.

Diagnostic Links

Thermistor Circuit Diagram

Thermistor Resistance at Temperature Chart

Diagnostic Aids

During normal operation, the temperature inside the fuel system cabinet should not exceed 165°F; if the temperature exceeds this value a warning screen on the Blue iQ™ Smart Gauge will notify the vehicle operator.

Circuit / Sensor Description

Thermistor 2 has a 5V Signal circuit and a Low Reference circuit which are provided from the FSCM. The signal circuit in the FSCM monitors the 5V reference using a pull-up resistor; if there is an open circuit, the analog pin will default to the peak 5V reading.

The Thermistor 2 Low Reference circuit is shared with Thermistor 1.

Refer to Thermistor Circuit Diagram for wiring details.

Circuit / System Verification

Step 1

Connect Cummins® INSITE™ to vehicle using J1939 OBD-II diagnostic interface and PC and navigate to "Agility® Fuel Delivery System, CM1881 AFS(18)" module.

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Step 2

Record all active and stored fault codes and parameters prior to clearing fault codes using INSITE™.

Step 3

Observe and record **Fuel Storage Compartment Temperature Sensor 2** data from INSITE™—is data within reasonable operating range?

a. If not within range proceed to Circuit / System Testing.

b. If within range proceed to **Step 4**.

Step 4

Operate vehicle in the same conditions for enabling the fault code or within the same conditions that triggered the fault code based on recorded data.

Step 5

Verify the fault code does not set. If any fault code sets proceed to Circuit / System Testing.

Step 6

While observing **Fuel Storage Compartment Temperature Sensor 2** parameters in INSITE™ perform a wiggle test on Thermistor 2 and FSCM connectors and harness to test for poor or intermittent connections.

a. If any fault code sets, proceed to Circuit / System Testing.

b. If no fault code sets, system is functioning to design intent.

Step 7

Review Circuit Diagram and FSCM and Thermistor Connector End Views to locate test points.

Circuit / System Testing

Step 1

- Ignition **OFF**.
- Disconnect Thermistor 2 from Blue iQ chassis harness.
- Test for resistance across Terminal A and Terminal B of Thermistor 2 connector and record the value.
- Use the Thermistor Resistance at Temperature Chart to determine whether the thermistor is operating within design specifications.

  Resistance value within specified range at measured temperature?

  Yes – Proceed to **Step 2**.

  No – Replace Thermistor 2.

Step 2

- Ignition **ON**, Engine **ON**.
- Test for 4.8-5.2 V between Thermistor 2 harness connector 5V Signal Cavity A and Low Reference Cavity B.

Less than 4.8V? **–** Proceed to **Step 3**.

Between 4.8-5.2V? **–** Replace Thermistor 2.

Greater than 5.2V? **–** Proceed to **Step 6**.

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Step 3

- Ignition **ON,** Engine **ON**.
- Test for 4.8-5.2 V between Thermistor 2 harness connector 5V Signal Cavity A and a known good ground such as the chassis frame rail.

Voltage between 4.8V and 5.2V?

Yes – Proceed to **Step 7**.

No – Proceed to **Step 4**.

Step 4

- Ignition **OFF**.
- Disconnect FSCM Blue iQ harness connector.
- Test for infinite resistance between FSCM harness connector Cavity 23 and a known good ground.

Infinite resistance?

Yes – Repair 5V Signal circuit.

No – Proceed to **Step 5**.

Step 5

- Ignition **OFF**.
- Disconnect FSCM Blue iQ harness connector.
- Test resistance between FSCM harness connector Cavity 23 to Thermistor 2 harness connector Cavity A.

Resistance between 0 and 2 ohms?

Yes – Replace FSCM.

No – Repair 5V Signal circuit.

Step 6

- Ignition **OFF**.
- Disconnect FSCM Blue iQ harness connector.
- Ignition **ON**.
- Test for voltage between FSCM harness connector Cavity 23 and a known good ground.

Voltage between 0 and 1 V?

Yes – Replace FSCM.

No – Repair 5V Signal circuit.

Step 7

- Ignition **OFF**.
- Disconnect FSCM Blue iQ harness connector.
- Test resistance between FSCM harness connector Cavity 28 to Thermistor 2 harness connector Cavity B.

Yes – Replace FSCM.

No – Repair 5V Low Reference circuit.
