

Diagnostic Procedure

Blue iQ® Fault Codes 7292 & 7293



FC	SPN	FMI	Description
7292	8420	3	Fuel Storage Compartment 1 Temperature - Voltage above normal or shorted to a high source - Most Severe Level
7293	8420	4	Fuel Storage Compartment 1 Temperature - Voltage below normal or shorted to a low source - Most Severe Level

Part(s) Affected Thermistor 1 – called “Fuel Storage Compartment Temperature Sensor 1” in Cummins® INSITE™

Diagnostic Overview

The Blue iQ® Fuel System Control Module (FSCM) monitors fuel storage compartment(s) internal temperature by checking two temperature sensors (called “thermistors” by Hexagon Agility®) for any abnormal temperature values. When the **FSCM detects sensor voltage below normal, above normal, or shorted** on one or more of the temperature sensors, it sets a fault code. In some cases, the FSCM also may send a signal to the Blue iQ gauge causing the indicator LED to blink red and the gauge display to show a fuel system over temperature warning.

Warning Statements Used in this Procedure

NOTICE

NOTICE is used to address practices not related to physical injury, such as best practices or tips to help an operation or procedure go smoothly and prevent equipment damage.

Tools Required

Item	Purpose
digital multimeter (DMM)	resistance and voltage measurements
J1939 OBD-II diagnostic interface	connect vehicle to Cummins® INSITE™ on PC
Cummins® INSITE™	diagnostic software
test lead kit	properly test and back probe circuit terminals and connectors
infrared non-contact thermometer	accurately measure SSV coil temperature

NOTICE

Never probe an electrical connection with anything other than a properly sized and shaped test lead; doing so may result in damage to terminals.

Circuit / Sensor Description

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

Refer to **Thermistor Circuit Diagram** (below) for wiring details.

Refer to **Thermistors** section of **DSM.0001** for component locations in various fuel system configurations.

Diagnostic Aids

During normal operation, the temperature inside the fuel system cabinet should not exceed 165°F (73.8°C); if the temperature exceeds this value, a **Fuel System Over Temp** warning screen on the Blue iQ® gauge will notify the operator.

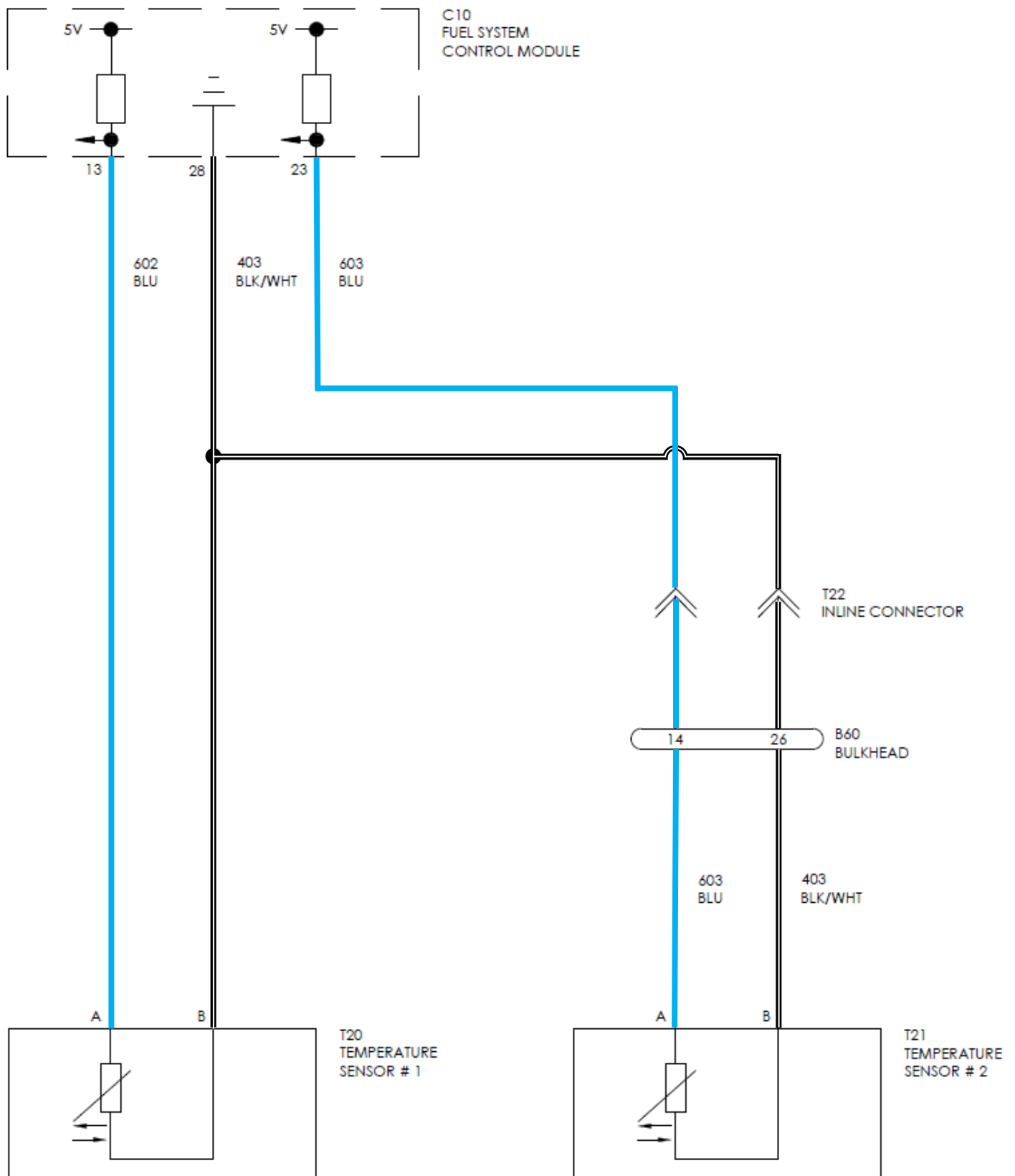
NOTICE

Perform Initial Vehicle Check procedure (*refer to DSM.0009*) prior to performing diagnostic instructions listed below.

Circuit / System Verification

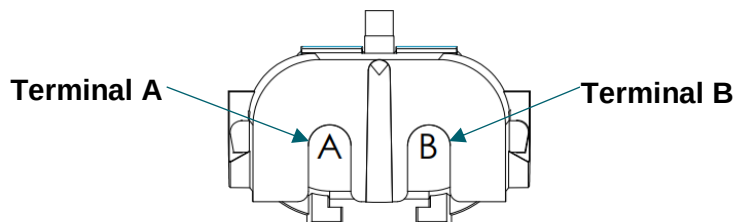
1. Connect diagnostic tool to the vehicle and navigate to the “Agility® Fuel Delivery System, CM1881 AFS(18)” in Cummins® INSITE™.
2. Record all active and stored fault codes and parameters prior to clearing fault codes using INSITE™.
3. Observe and record **Fuel Storage Compartment Temperature Sensor 1** 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.
4. Operate the vehicle in the same conditions for enabling the fault code or within the same conditions that triggered the fault code based on recorded data.
5. Verify that the fault code does not set. **If any fault code sets** proceed to **Circuit/System Testing**.
6. While observing **Fuel Storage Compartment Temperature Sensor 1** parameters in INSITE™ perform a wiggle test on the FSCM and Thermistor 1 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.
7. Review **Circuit Schematic and Connector End Views** to locate test points (*refer to DSM.0001*).

Thermistor 1 & 2 (Fuel Storage Compartment Temperature Sensor #1 & #2) Circuit Diagram



Circuit / System Testing

- Step 1**
- Ignition Off, Engine Off.
 - Disconnect Thermistor 1 from Blue iQ chassis harness.
 - Use a DMM and appropriate test leads to measure resistance across **Terminal A** and **Terminal B** of Thermistor 1 connector and **record the value**.



thermistor connector end view

- Use a non-contact infrared thermometer to measure temperature at Thermistor 1; **record the value**.

According to **TABLE 1** below, **is the measured resistance value within the specified resistance range?**

TABLE 1.
Thermistor Resistance* vs. Temperature.

Temp		Resistance Range (ohms)		
°F	°C			
-40	-40	32277	to	35177
-22	-30	17083	to	18359
-4	-20	9413	to	10015
14	-10	5397	to	5673
32	0	3197	to	3335
50	10	1954	to	2026
77	25	989	to	1011
86	30	796	to	816
104	40	524	to	542
122	50	352	to	368
140	60	243	to	255
158	70	170	to	180
176	80	122	to	130
194	90	89	to	95
212	100	66	to	70

*Resistance must be within tolerance range shown.

Yes

↳ **Proceed to Step 2.**

No

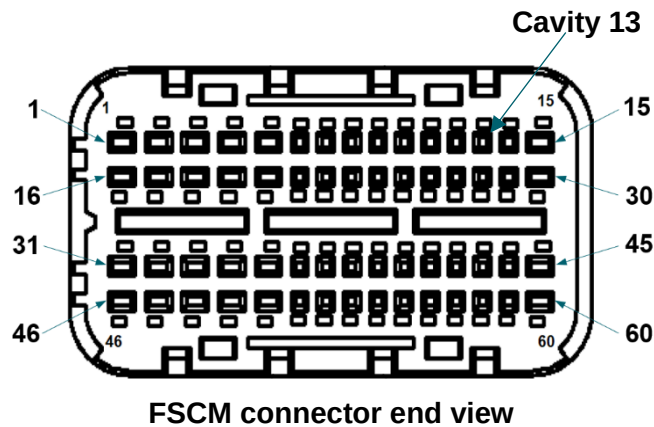
↳ **Replace Thermistor 1; refer to *Thermistor Replacement Procedure* in *DSM.0001*.**

↳ **Proceed to Reassembly and Validation.**

Step 2	</
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Step 4

- Ignition Off.
- Disconnect FSCM Blue iQ harness connector.
- Use a DMM and appropriate test leads to test for infinite resistance between FSCM harness connector **Cavity 13** and a known **good ground**.



Infinite resistance?

Yes

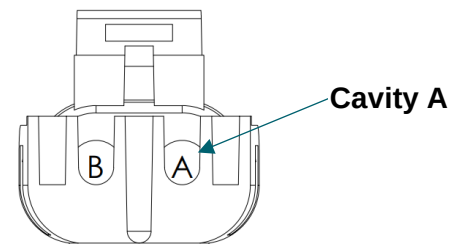
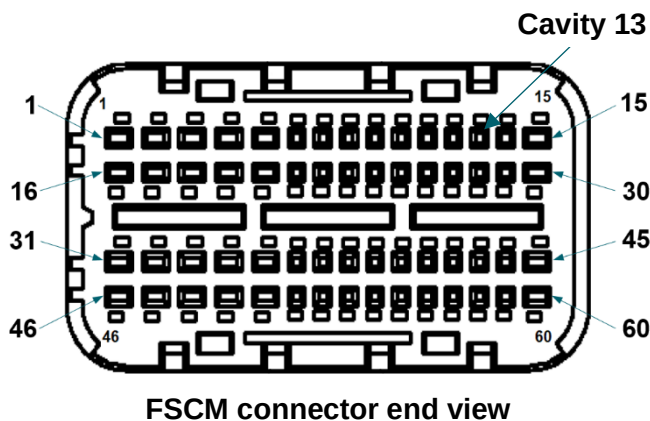
- ↳ Short to ground; repair 5V Signal circuit.
- ↳ Proceed to Reassembly and Validation.

No

- ↳ Proceed to Step 5.

Step 5

- Ignition Off.
- Use a DMM and appropriate test leads to test for less than 2 ohms of resistance in the 5V Signal circuit from FSCM harness connector **Cavity 13** to Thermistor 1 harness connector **Cavity A**.



Resistance between zero and 2 ohms?

Yes

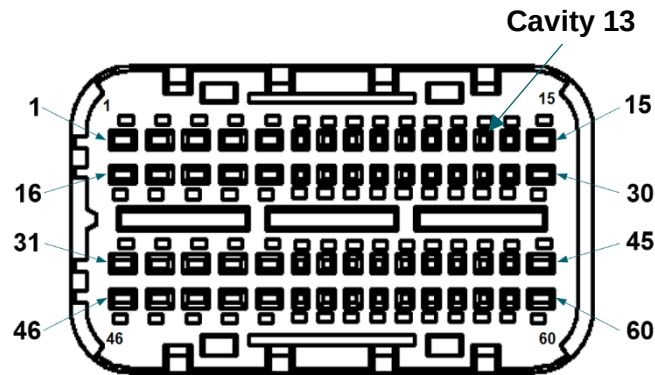
- ↳ Circuit is good; FSCM issue indicated.
- ↳ Contact Hexagon Agility® Technical Support.

No

- ↳ Open circuit or high resistance; repair 5V Signal circuit.
- ↳ Proceed to Reassembly and Validation.

Step 6

- Ignition Off.
- Disconnect FSCM Blue iQ harness connector.
- Ignition On.
- Use a DMM and appropriate test leads to test for less than 1 V between the FSCM harness connector **Cavity 13** and known **good ground**.



FSCM connector end view

Voltage between zero and 1 volts?

Yes

- ↳ Circuit is good; FSCM issue indicated.
- ↳ **Contact Hexagon Agility® Technical Support.**

No

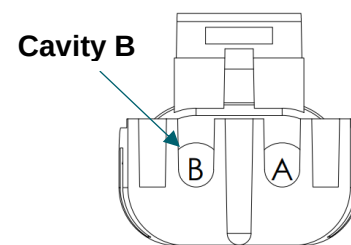
- ↳ Short to voltage; **repair 5V Signal circuit.**
- ↳ **Proceed to Reassembly and Validation.**

Step 7

- Ignition Off.
- Disconnect FSCM connector.
- Use a DMM and appropriate test leads to test for less than 2 ohms of resistance between FSCM harness connector **Cavity 28** and Thermistor 1 harness connector **Cavity B**.



FSCM connector end view



thermistor harness connector end view

Resistance between zero and 2 ohms?

Yes

- ↳ Circuit is good; FSCM issue indicated.
- ↳ **Contact Hexagon Agility® Technical Support.**

No

- ↳ Open circuit or high resistance; **repair Low Reference circuit.**
- ↳ **Proceed to Reassembly and Validation.**

Reassembly and Validation

After completing all repairs, always perform the following steps to confirm the issue is fixed:

1. Reconnect all connectors and verify connections are secure.
2. Reattach any enclosure covers and close any fuel system doors.
3. Clear fault codes using Cummins® INSITE™ tool.
4. Run vehicle until it reaches normal operating temperature. *Refer to OEM instructions.*
5. If fault is cleared, return vehicle to duty.
6. If fault is not cleared, contact Hexagon Agility® Technical Support.

Hexagon Agility® Customer Care and Technical Services

Fuel system warranty or non-warranty product support may be obtained by calling or emailing Hexagon Agility® Customer Care and Technical Services (CCTS).

Please provide **your name, phone number, email address, and complete vehicle information: VIN, year, make, model, mileage, unit number vehicle owner, and current vehicle location.** A service advisor will contact you to arrange vehicle repair or ship a part.

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