P3951

Fault code description

CAN communication - Hardware or software malfunction on A-CAN

Possible cause

1. Loss of power supply before key switch to the EAS-3 ECU.
2. Loss of power supply after key switch to the EAS-3 ECU.
3. Loss of battery ground to the EAS-3 ECU.
4. Shorted or open CAN communication wire to the EAS-3 ECU.
5. Failed EAS-3 ECU.
6. Blown or missing fuses on the battery voltage before or after key switch.

Additional information

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Set condition of fault code

This diagnostic runs continuously when the key switch is in the ON position.

The EAS-3 ECU detects that the CAN communication has been erratic or lost.

Reset condition of fault code

This fault code will change to inactive immediately after the diagnostic runs and passes.

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P3951 Diagnostic information

Technical data

"Power supply and earth of EAS-3 unit (D374)"

"CAN connection, EAS-3 unit (D374)"

Location of component(s)

"Location information, EAS-3"

Electrical diagram(s)

Refer to the OEM service manual for more information.

Description of component(s)

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Block diagram

"Block diagram EAS-3"

Step by step troubleshooting

Please perform the troubleshooting steps below by utilising the breakout harness if necessary to check electrical components such as sensors, electrical control units or harnesses. Back probing is not recommended as it could damage the harness. The ignition should always be in the OFF position when connecting or disconnecting electrical components to reduce the likelihood of damage to electrical components.

- Disconnecting the EAS connectors during the troubleshooting process will result in multiple errors.
- For specific electrical component information and pin out locations, always refer to the technical data.
- It is necessary to exit the fault

code menu in DAVIE and run the diagnostic test again to identify a change in errors.

- Remember that the truck's operational or mechanical issues may be the root cause of both active and inactive fault codes. Refer to the 'possible causes' section.

Step by step 1: Check fault codes

Step 1A: Check for fault codes

Troubleshooting steps

1. Turn the key switch ON.
2. Use DAVIE to check for fault codes.

Is fault code P3951 active?

- Yes – Proceed to step 1B
- No – Proceed to step 5A

Step 1B: Check for fault codes

Troubleshooting steps

1. Turn the key switch ON.
2. Use DAVIE to check for fault codes.

Are there other CAN related faults active?

- Yes – Proceed to step 4A
- No – Proceed to step 2A

Step by step 2: Check the EAS-3 unit and the circuit

Step 2A: Inspect the EAS-3 unit and connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Inspect the EAS-3 unit harness and connector for:

1. corroded or dirty pins
2. damaged pins
3. pushed back or expanded pins
4. loose connector
5. moisture in or on the connector
6. connector shell damaged
7. missing or damaged connector seals
8. wire insulation damage

Dirty or damaged pins/connector?

- Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 5A
- No – Proceed to step 2B

Step 2B: Check the voltage before key switch to the EAS-3 unit

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Check the power supply and return circuit to the EAS-3 unit.
4. Measure the voltage between the EAS-3 unit battery supply circuit and return circuit at the EAS-3 connector.

Check the voltage at key ON, while cranking the engine and with the engine running at idle.

Is the voltage within 1 VDC of the battery voltage?

- Yes – Proceed to step 2C
- No – Proceed to step 3A

Step 2C: Check the voltage after key switch to the EAS-3 unit

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Turn the key switch ON.
4. Check the key switch power supply and return circuit to the EAS-3 unit.
5. Measure the voltage between the EAS-3 unit key switch supply circuit and return circuit at the EAS-3 connector.

Check the voltage at key ON, while cranking the engine and with the engine running at idle.

Is the voltage within 1 VDC of the battery voltage?

- Yes – Proceed to step 4A
- No – An open circuit has been detected in the EAS-3 unit supply circuit. Check for an open circuit, short circuit or blown fuses in the power supply after key switch circuit. Repair or replace the wiring/fuse. Proceed to step 5A

Step by step 3: Check the battery and the harness

Step 3A: Check the battery connections

Troubleshooting steps

1. Turn the key switch OFF.
2. Check the positive and negative battery terminals.

Are the connections tight and corrosion-free?

- Yes – Proceed to step 3B
- No – Tighten and/or clean the connections. Refer to the OEM manual. Proceed to step 5A

Step 3B: Check for an open circuit in the battery voltage supply

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Check for an open circuit.
4. Measure the voltage between the EAS-3 unit battery supply pin and the engine block ground.

Check the voltage at key ON, while cranking the engine and with the engine running at idle.

Is the voltage within 1 VDC of the battery voltage?

- Yes – An open circuit has been detected in the EAS-3 unit ground circuit. Repair or replace the wiring. Proceed to step 5A
- No – An open circuit has been detected in the EAS-3 unit supply circuit. Check for an open circuit, short circuit or blown fuses in the power supply circuit. Repair or replace the wiring/fuse. Proceed to step 5A

Step by step 4: Check the CAN data wiring

Step 4A: Inspect the EAS-3 unit and the harness connector pins

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Inspect the harness and EAS-3 unit connector for:
    1. corroded or dirty pins
    2. damaged pins
    3. pushed back or expanded pins
    4. loose connector
    5. moisture in or on the connector
    6. connector shell damaged
    7. missing or damaged connector

seals

8. wire insulation damage

Dirty or damaged pins/connector?

- Yes – A dirty or damaged connection has been detected. Clean, repair or replace the damaged connection or harness if possible - Proceed to step 5A
- No – Proceed to step 4B

Step 4B: Check for an open circuit in the harness

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Disconnect the EAS-3 actuator from the harness.
4. Check for an open circuit in the CAN wiring
5. Measure the resistance of the CAN high wire between the EAS-3 unit connector pin and the EAS-3 actuator connector pin.
6. Measure the resistance of the CAN low wire between the EAS-3 unit connector pin and the EAS-3 actuator connector pin.

Is the resistance less than 10 ohms?

- Yes – Proceed to step 4C
- No – An open circuit has been detected in the harness. Troubleshoot the wiring harness and all interconnects. Repair or replace the harness - Proceed to step 5A

Step 4C: Check for a pin-to-pin short circuit in the harness

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the

harness.

3. Disconnect the EAS-3 actuator from the harness.
4. Disconnect the NOx sensor before the catalyst.
5. Disconnect the NOx sensor after the catalyst.
6. Disconnect the engine management ECU.
7. Check for a pin to pin short circuit in the CAN wiring.
8. Measure the resistance of the CAN high wire between the EAS-3 unit connector pin and all other connector pins in the harness.
9. Measure the resistance of the CAN low wire between the EAS-3 unit connector pin and all other connector pins in the harness.

Is the resistance greater than 100k ohms?

- Yes – Proceed to step 4D
- No – A short circuit has been detected in the harness. Troubleshoot the wiring harness and all interconnects. Repair or replace the harness - Proceed to step 5A

Step 4D: Check for a short circuit to ground in the harness

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit from the harness.
3. Disconnect the EAS-3 actuator from the harness.
4. Disconnect the NOx sensor before the catalyst.
5. Disconnect the NOx sensor after the catalyst.
6. Disconnect the engine management

ECU.

7. Check for a short circuit to ground in the CAN wiring.
8. Measure the resistance of the CAN high wire between the EAS-3 unit connector pin and ground.
9. Measure the resistance of the CAN low wire between the EAS-3 unit connector pin and ground.

Is the resistance greater than 100k ohms?

- Yes – Proceed to step 4E
- No – A short circuit to ground been detected in the harness. Troubleshoot the wiring harness and all interconnects. Repair or replace the harness - Proceed to step 5A

Step 4E: Check the CAN terminating resistance

Troubleshooting steps

1. Turn the key switch OFF.
2. Disconnect the EAS-3 unit.
3. Connect all other components.
4. Check the terminating resistance.
5. Measure the resistance between the CAN high pin and the CAN low pin on the EAS-3 unit connector.

Is the resistance 50 to 70 ohms?

- Yes – Return to the troubleshooting steps - Proceed to step 1A

  If all the steps have been completed and checked again, contact the Engine Support Center for further instructions.
- No – Proceed to step 4F

Step 4F: Check the CAN terminating resistance

Troubleshooting steps

1. Turn the key switch OFF.

2. Disconnect the EAS-3 actuator from the harness.
3. Disconnect the EAS-3 unit.
4. Connect all other components.
5. Check the terminating resistance.
6. Measure the resistance between the CAN high pin and the CAN low pin on the EAS-3 unit connector.

Is the resistance 110 to 130 ohms?

- Yes – Return to the troubleshooting steps - Proceed to step 1A

  If all the steps have been completed and checked again, contact the Engine Support Center for further instructions on replacement of the EAS-3 actuator.
- No – End resistance or CAN wiring engine management system not correct. Troubleshoot the engine management system. Proceed to step 5A

Step by step 5: Clear the fault code

Step 5A: Disable the fault code

Troubleshooting steps

1. Connect all components.
2. Operate the system within the 'reset condition of the fault code' found in the fault code information.
3. Use DAVIE to verify if the fault codes are inactive.

Is fault code P3951 inactive?

- Yes – Proceed to step 5B
- No – Return to the troubleshooting steps. Proceed to step 1A

  If all the steps have been completed and checked again, contact the Engine Support Center for further instructions.

Step 5B: Clear the inactive fault codes

Troubleshooting steps

1. Connect all components
2. Turn the key switch ON.
3. Use DAVIE to clear the inactive fault codes.

Have all the fault codes been cleared?

- Yes – Repair complete
- No – Troubleshoot any remaining active fault codes

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