



Allison DTC U0010 CAN 1 Bus Counter Overrun Instructions

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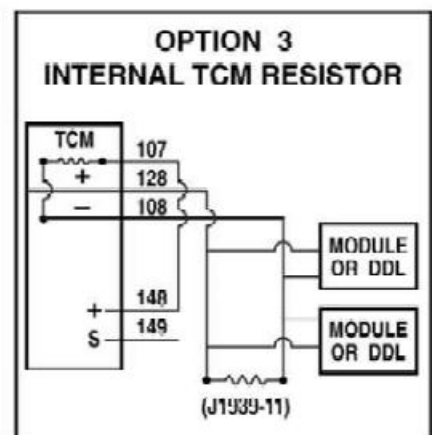
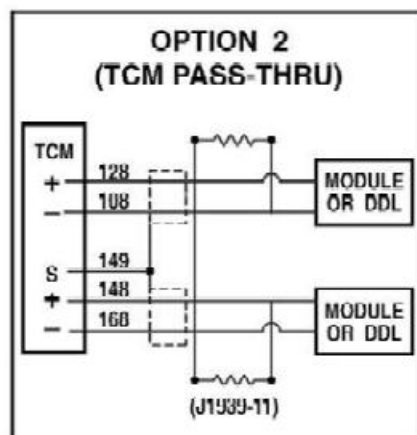
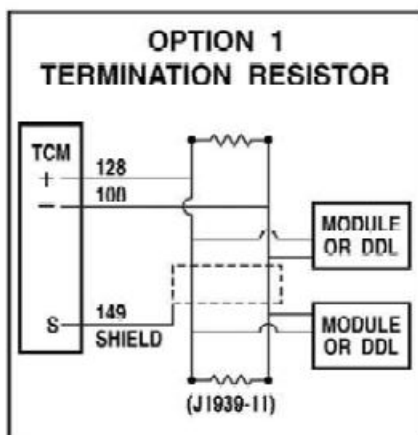
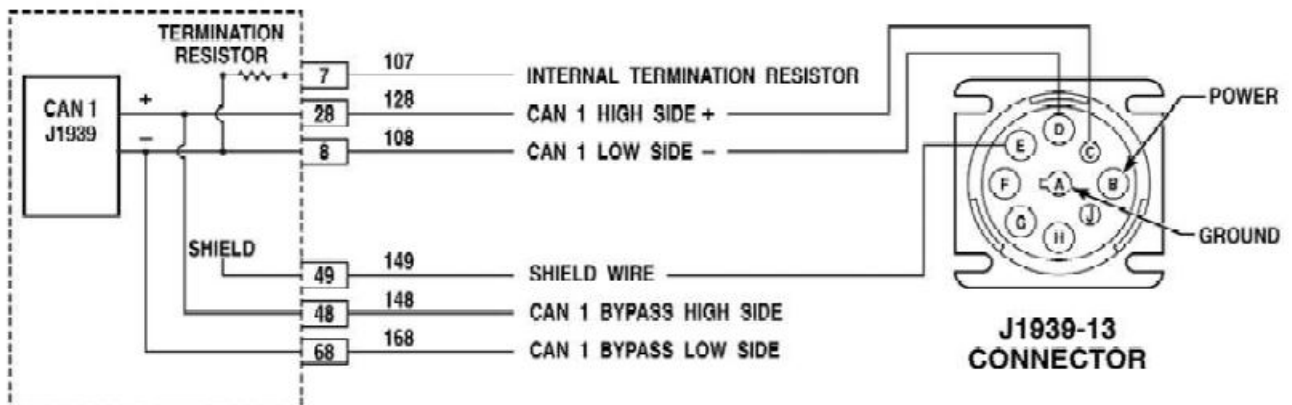


Allison DTC U0010 CAN 1 Bus Counter Overrun



DIAGNOSTIC TROUBLE CODES (DTC)

DTC U0010 CAN 1 Bus Reset Counter Overrun



Circuit Description

The Controller Area Network (CAN) defined by SAE J1939 allows the integration of various vehicle components into an overall vehicle system by providing a standard way of exchanging information between the various

modules used in a vehicle. Use of a J1939 network, or data link, for on-vehicle communication reduces the amount of wiring in a vehicle, and allows the many different components and subsystems access to a wider range of information. Allison utilizes the J1939 communication link for vehicle operation controls, power train interaction, and conveying vehicle management information.

Conditions for Running the DTC

- The components are powered and ignition voltage is greater than 9 volts and less than 18 volts (12 volts TCM) or greater than 18 volts and less than 32 volts (24 volts TCM).
- Engine speed is greater than 200 rpm and less than 7500 rpm for 5 seconds.

Conditions for Setting the DTC

DTC U001 O sets when the Transmission Control Module (TCM) detects no communication on the CAN backbone harness for 3 seconds or more. This indicates that the CAN communication has reset due to a short-to-ground or power on wire 108 or 128.

Actions Taken When the DTC Sets

- The TCM does not illuminate the CHECK TRANS light (non-OBD II strategy).
- The MIL illuminates (OBD II strategy).
- The OTC is stored in the TCM history.
- The TCM freezes shift adapts (DNA).
- TCM defaults to last used adaptive shift values and engine throttle percentage is calculated from torque converter slip speed.

Conditions for Clearing the OTC/CHECK TRANS Light

Use the Allison DOC® For PC-Service Tool to clear the OTC from the TCM history. The TCM automatically clears the OTC from the TCM history if the vehicle completes 40 warm-up cycles without the OTC recurring.

Diagnostic Aids

- If an active OTC U0010 is present, Allison DOC® For PC-Service Tool communication is not possible.
- If only intermittent communication is possible at the 9-pin vehicle diagnostic connector, install J- 47276 “T” Breakout and TCM Reflashing Harness at the TCM 80-way connector (do not reconnect vehicle harness 80-way harness).
 - Connect J-42455 Load Box at J-47276 “T” Breakout and TCM Reflashing Harness 37-pin AMP connector.
 - Supply 12 volts at J-42455 Load Box to power up the TCM.
 - Connect Allison DOC® For PC-Service Tool interface device at J-4 7276 ‘T’ Breakout and TCM Reflashing Harness 9-pin connector.

This setup allows communication directly to TCM. If no communication is available replace the TCM with a known good module. Test again (refer to Figure 5-5 for complete ‘T’ harness hook-up information).

1. Install J-47276 “T” Breakout and TCM Reflashing Harness at the TCM 80 way connector.
2. Connect J-42455 Load Box at J-4 7276 ‘T’ Breakout and TCM Reflashing Harness 37-pin AMP connector.
3. Supply 12 volts at J-42455 Load Box to power up the TCM.

4. Connect Allison DOC® For PC-Service Tool interface device at J-42455 Load Box.
5. This configuration should allow communication directly with the TCM, if no communication is available replace the TCM with a known good module. Test again. Refer to Figure 5-5 for complete 'T' harness hook-up information.
 - Systematically disconnecting modules on the CAN data bus until communication is established with Allison DOC® For PC-Service Tool may be useful in determining that an individual module is causing a short on the CAN data bus.
 - A short between wires 108 and 128 within the CAN harness could allow this OTC to set.
 - A short between wires 128 and 149 within the CAN harness could allow this OTC to set.
 - A short to a vehicle ground and wire 128 could allow this OTC to set.
 - A short to vehicle power and wire 108 or 128 could allow this OTC to set.
 - For proper data communications it is necessary to have two 120 Ohms resistors installed in parallel at the J1939 CAN backbone harness ends, this can be done externally or internally at the control module or TCM, depending on the OEM configuration. The CAN backbone harness can be configured in one of three different ways:
 1. Traditional Stub Interface, in this set-up the terminating resistors are located externally at the end stubs of the CAN backbone harness.
 2. Pass Through Interface, in this set-up the OEM can eliminate the TCM stub connection. This setup allows the CAN wiring to enter the TCM on one set of pins and continues out through a second set of pins, eliminating the TCM stub connector. Two terminating resistors are still located externally on the end stubs.
 3. Backbone termination, this set-up allows the elimination of one of the two external termination resistors. By the addition of a jumper wire between the TCM terminals 107 and 148 an internal TCM 120 Ohm resistor is wired in parallel between the CAN high and low wires

Temporary Backbone

If available, to determine who “owns” the problem, and after receiving the proper authorization from the OEM. Connecting a temporary backbone between the engine and the transmission can be used to identify the source of the concern. This procedure is not covered under Allison warranty and must be authorized and covered by the vehicle or engine OEM.

NOTE: This procedure is not covered under Allison warranty and must be authorized and covered by the vehicle or engine OEM.

- Inspect the wiring for poor electrical connections at the TCM. Look for the following conditions:
 - A bent terminal
 - A backed-out terminal
 - A damaged terminal
 - Poor terminal tension
 - A chafed wire
 - A broken wire inside the insulation
- When diagnosing for an intermittent short-to-ground or power, massage the wiring harness while watching the test equipment for a change. It may be necessary to check for shorts at individual wires within a harness to isolate an intermittent condition. Refer to Section 4. WIRE CHECK PROCEDURES.

- You may have to drive the vehicle on rough roads to determine if the problem occurs with vibration or under specific driving conditions, left or right hand turns, etc.
- Use the data obtained from failure records to determine transmission range and/or certain vehicle operating variables such as temperature, run time etc. This data can be useful in reproducing failures mode where DTC was set.
- If this OTC is present in a new vehicle, harsh shifting may occur due to adaptive (DNA) function inhibit.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

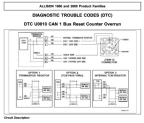
3. This step inspects the CAN backbone harness for shorts-to-ground or power. 5. This step checks TCM function.

Step	Action	Value(s)	Yes	No
1	Was 5-4. BEGINNING THE TROUBLESHOOTING PROCESS performed?		Go to Step 2	Go to 5-4. BEGINNING THE TROUBLESHOOTING PROCESS
2	1. Install Allison DOC® For PC-Service Tool. 2. Turn ignition on with the engine off. Is Allison DOC® For PC-Service Tool communication possible at the diagnostic connector?		Go to Diagnostic Aids	Go to Step 3
3	Inspect wires 128 (Positive), 108 (Negative), 149 (Shield) at engine and transmission connectors for a possible shorting condition or terminal damage. NOTE: No Allison DOC® For PC-Service Tool communication is possible when this DTC is active. This DTC indicates that a CAN bus hardware error has occurred. This may indicate a short-to-power or ground has occurred at the CAN bus wiring harness. Was a wiring problem found?		Go to Step 4	Go to Step 5
4	NOTE: The vehicle OEM has responsibility for all external wiring harness repairs. Harness repairs performed by Allison Transmission distributors and dealers are not covered under Allison Transmission warranty. Coordinate with the vehicle OEM to repair or replace the chassis harness. Is the repair complete?		Go to Step 6	

5	Substitute TCM with a known good unit. Check for proper communication. If this repairs the condition, reinstall the "defective" TCM to verify the TCM failure. Then install a new TCM. Is replacement complete?		Go to Step 6	
6	To verify the repair: 1. Establish TCM communication with Allison DOC® For PC-Service Tool, clear the DTC. 2. Check Allison DOC® For PC-Service Tool test passed section to make sure the diagnostic test was run. Did the DTC return?		Begin the diagnosis again. Go to Step 1	System OK

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Documents / Resources

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