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Document ID: IK0800445

Availability: ISIS, Bus ISIS, FleetISIS, Body Builder, IsSIR

Major System: ELECTRICAL SYSTEM

Current Language: English

Other Languages: NONE

Viewed: 6006

Revision: 5

Created: 8/19/2013

Last Modified: 10/16/2018

Author: Charles Schroeder

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Coding Information

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Title: Body Controller Updates for 500k Baud

Applies To: All vehicles with 500k baud data link

Change Log

Please refer to the change log text box below for recent changes to this article:

10/16/2018 - Added steps under 'Programmed BCM Installed on Vehicle with a Different Baud Rate' to correct a BCM programmed to the incorrect baud rate

08/28/2017 - Updated Figure 11 - Programmed 500k BCM Installed on a 250k Vehicle, so the 'In Configuration' and 'Detected' tabs were clarified visually

06/16/2017 - Added information for Non-Multiplexed 500k vehicles. Feature 0508096 (Figures 9-10)

03/13/2017 - Added additional information for the different wiring information at the BCM for both 500k feature codes. Features: 0508095 and 0508097 (Figures 5-8)

Description

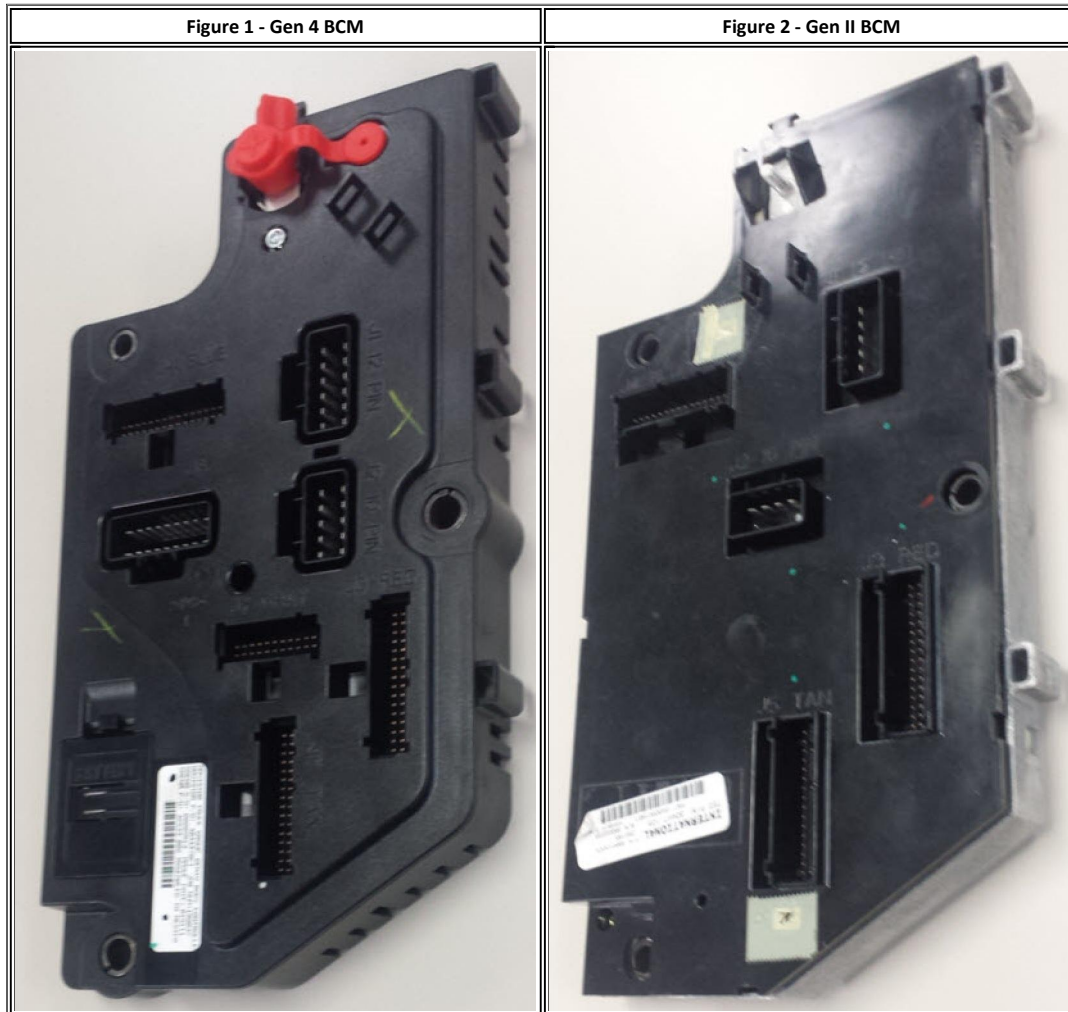
Overview of the recent updates to the Body Controller (BCM) on 500k baud data link equipped vehicles.

- [Basic Overview](#)
- [Data Link Terminal Information](#)
 - [500k baud programmed BCM installed in 250k baud vehicle](#)
- [Grid Control Information](#)
- [Real Time Clock \(RTC\) Battery](#)

Special Tools / Software

Tool Description	Tool Number	Comments	Instructions
EZ-Tech® or Electronic Service Tool (EST) with Diamond Logic Builder (DLB) Software			
Harness, Body Control Programming	12-999-12	Used to bench program / re-flash 250K and 500K Body Control. Must be used in combination with ECM Programming Station 12-801-01-01 and EZ-Tech computer with Diamond Logic Builder (DLB) software loaded.	
Programming Station with PCB	12-801-01-01	Control Module Programming Station. Part of 12-801-01. This kit includes: x1 pc of p/n: 12-801-01-08 (12 Amp Power Supply), x1 pc of p/n: 12-801-01-09 (Cigarette Power Adapter) x1 pc of p/n: 12-801-01-10 (Battery Terminal Power Adapter).	

Basic Overview

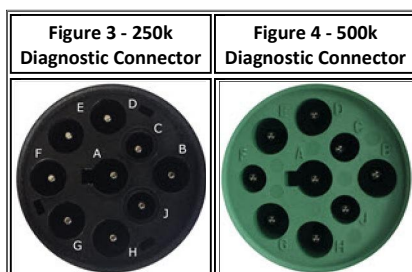


- The Gen 4 BCM is the correct service part for all vehicles equipped with a Body Controller. The Gen 4 BCM is backwards compatible with trucks that were built with Gen II BCMs
 - There is no Gen 3 BCM
- The same diagnostics are used on a Gen 4 BCM
- [IK2600008](#) - How to Diagnose Electrical Problems with Diamond Logic® Builder using a Session
- [IK0800092](#) - The First Check to Make When Troubleshooting Any Body Controller or ESC Issue
- [IK2600007](#) - How to Program a Blank/New BCM or ESC

([Return to Top](#))

Data Link Information

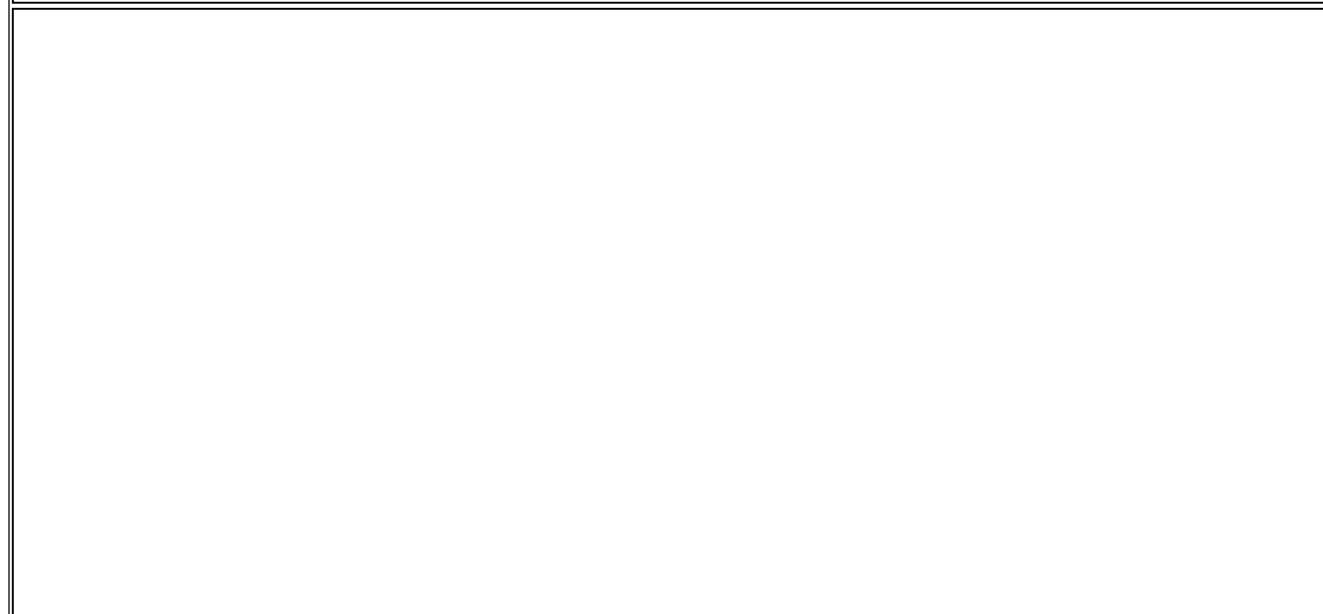
500k Baud Vehicles will have a GREEN diagnostic connector. The green connector has 500k and 250k data link wiring present.

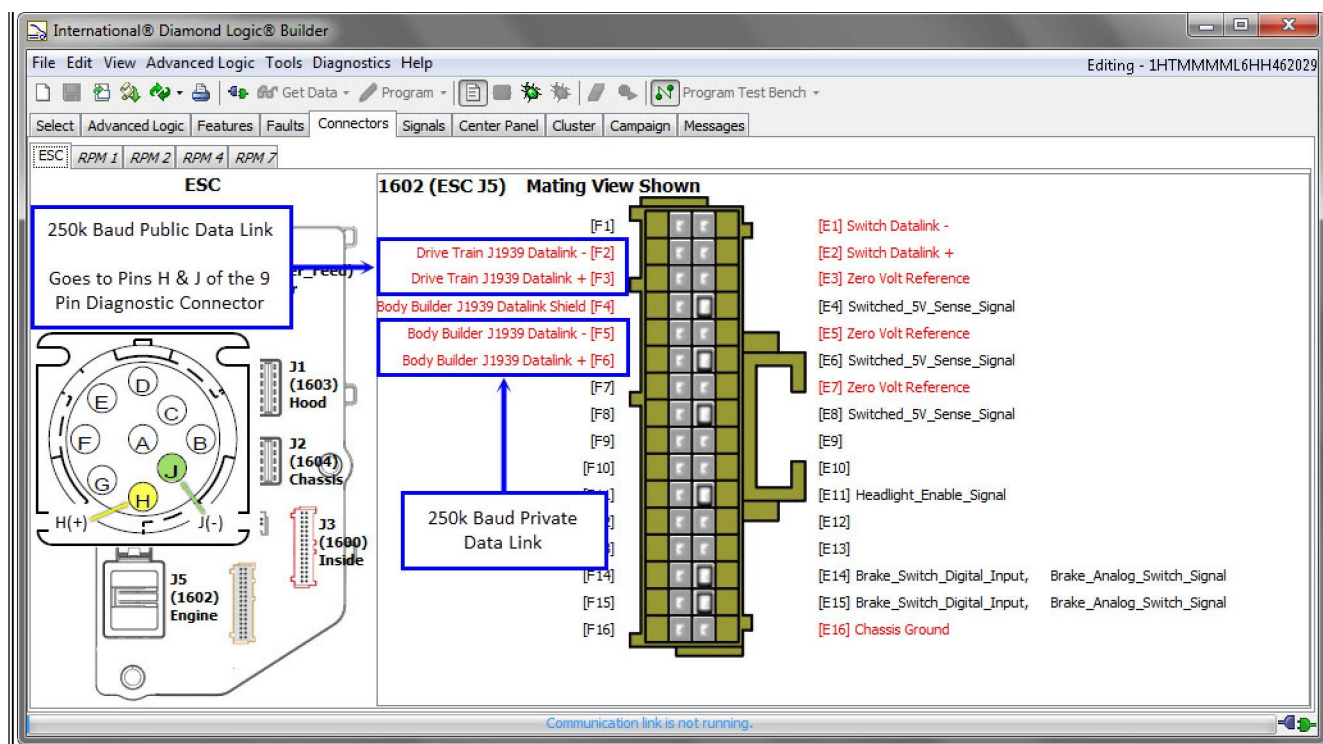


- There are identifying feature codes for 500k - Phase 1, 500k - Phase 2, and Non Multiplexed vehicles

500k Phase 1 Vehicles - Feature 0508095:

Figure 6 - 250k Baud Data Link Connector at the BCM on a 500k Phase 1 Vehicle (Feature 0508095)





500k Phase 2 Vehicles - Feature 0508097:

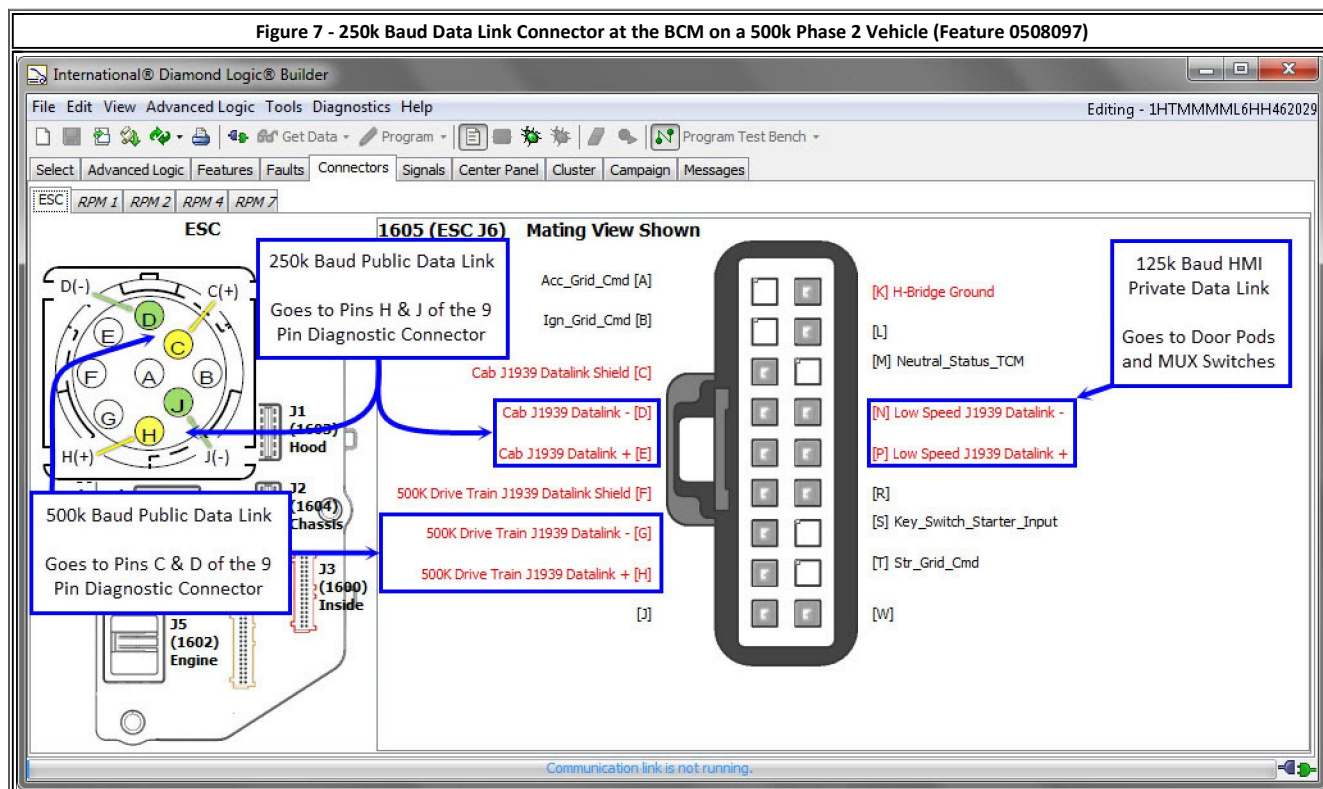
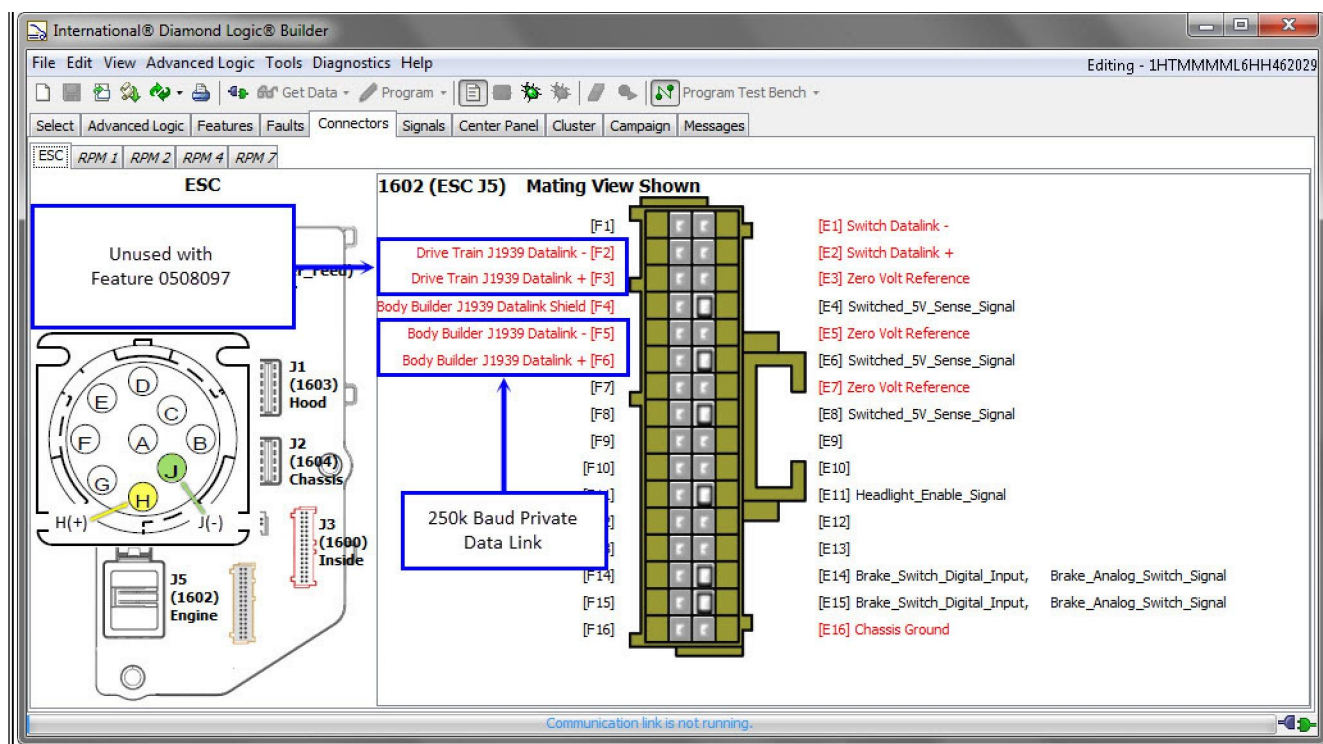


Figure 8 - 250k Baud Data Link Connector at the BCM on a 500k Phase 2 Vehicle (Feature 0508097)



500k Non Multiplex Vehicles - Feature 0508096:

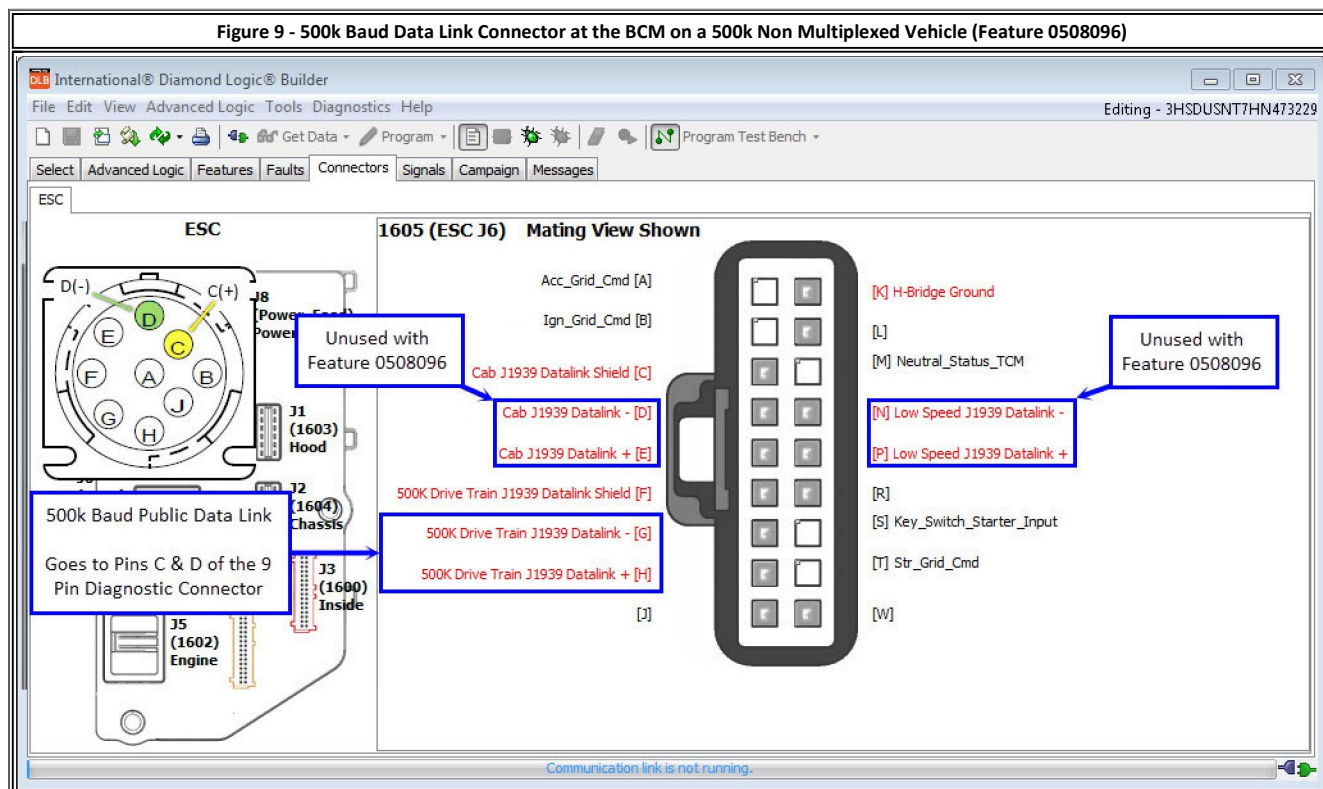
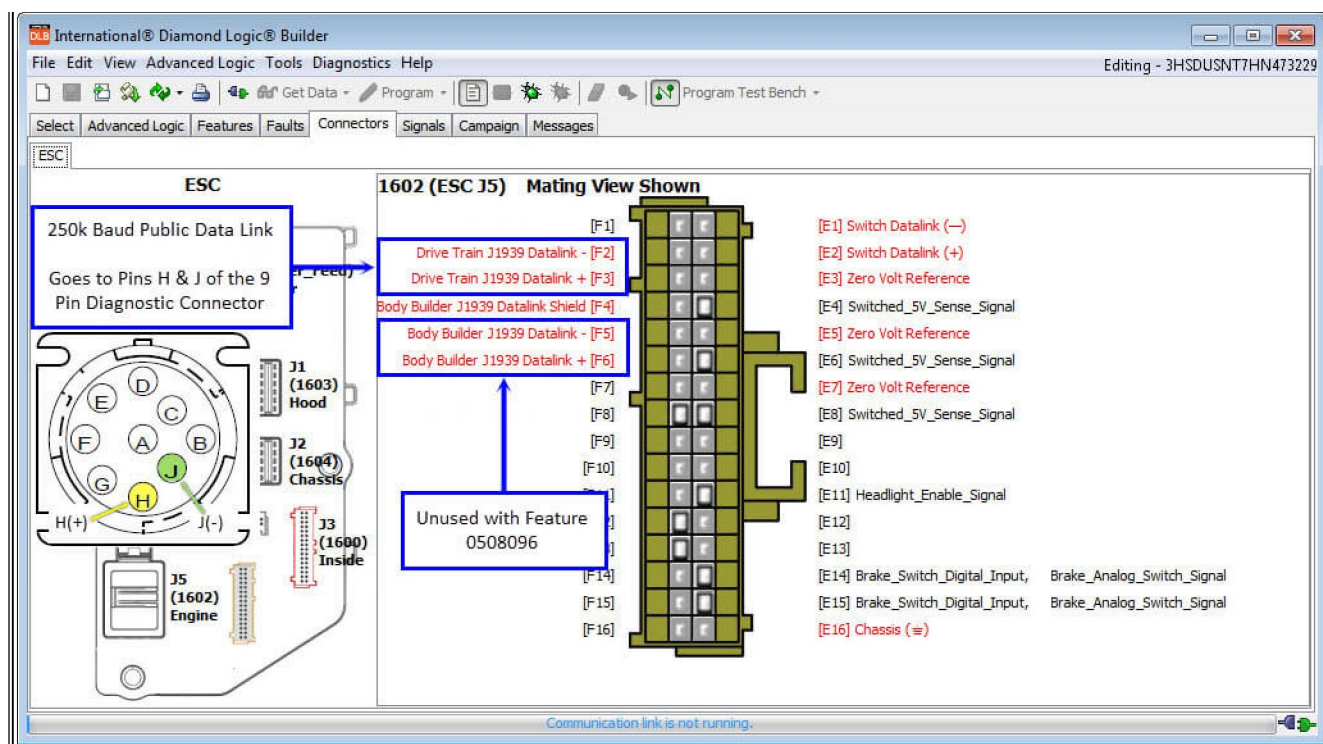


Figure 10 - 250k Baud Data Link Connector at the BCM on a 500k Non Multiplexed Vehicle (Feature 0508096)



Programmed BCM Installed on Vehicle with a Different Baud Rate:

Figure 11 - Programmed 500k BCM Installed on a 250k Vehicle

This is the result of installing a BCM that is programmed at 500k into a 250k baud vehicle

- DLB was able to connect
- Red X is shown on ESC
- No module information is detected

Module	Address	Data Link	In Configuration	Detected
Instrument Cluster	23	Drivetrain J1939	✓	✓
ESC	33	Drivetrain J1939	✓	✗

Selected Vehicle: 3H5CTAPR1BN235328

Selected Module: ESC

Detected: 38193595

Hardware: 202

Configuration: 2

Kernel: 242

Data Version: 224

State:

Module detection complete

- All Body Controllers are shipped blank and can be programmed to 500k or 250k.
- This issue would only occur if you are using a module that was already programmed.

1. You can use the BCM programming harness 12-999-12 along with the programming station 12-801-01-01 to correct the issue in figure 11.
 - Connect to the BCM, you will most likely find it is already programmed with a VIN.
 - Once connected, program the BCM to the desired VIN.
 - Reinstall the BCM into the desired vehicle.
 - Connect with DLB and verify operation in vehicle.
2. Alternatively to step 4, you can also install the BCM into a different baud rate vehicle, and reprogram to correct the issue in figure 11.
 - If you cannot connect to the BCM in a 250k baud rate vehicle, install the BCM into a 500k baud rate vehicle
 - If you cannot connect to the BCM in a 500k baud rate vehicle, install the BCM into a 250k baud rate vehicle
 - Attempt to connect to the BCM with the key off, you will most likely find it is already programmed with a VIN.
 - Once connected, program the BCM to the desired VIN.
 - Remove the BCM, and install it back into the desired vehicle.
 - Connect with DLB and verify operation in vehicle.

([Return to Top](#))

Grid Control

The BCM controls the power circuits for Ignition, Accessory and Cranking.

Accessory Grid Control output:	1605-A	Maximum Current: 20 Amps
Ignition Grid Control output:	1605-B	Maximum Current: 10 Amps
Starter Grid Control output:	1605-T	Maximum Current: 10 Amps

Select	Advanced Logic	Features	Faults	Connectors	Signals	Center Panel	Cluster	Campaign	Messages
ESC Signals	Master List	J1939	Detected J1939	Watched	Graph	Session: 0595KAG			
T	Signal	Pins	Unit	Signal Type	Description				
	Acc_Grid_Cmd	1605-A	On/Off	Digital Output	Accessory Grid Power Output Command signal. (Output of Virtual F...				
	Ign_Grid_Cmd	1605-B	On/Off	Digital Output	Ignition Grid Power Output Command signal. (Output of Virtual Fu...				
	Str_Grid_Cmd	1605-T	On/Off	Digital Output	Starter Grid Power Output Command signal. (Output of Virtual Fus...				

Below are the only conditions the Body Controller should observe for Key_Switch_State:

- Accessory Only
- Ignition and Accessory (Key on Engine Off or Key On Engine Running)
- Ignition and Starter input (Crank) - (Accessory signal is removed during cranking)

If any other combinations of key switch state are observed a fault will be set. If the Accessory circuits are undercurrent or overcurrent a fault will be set. The Body Controller will not supply power to the output when overcurrent or undercurrent faults are active. You must troubleshoot the output wiring.

NOTE:

Do not diagnose these faults when *INACTIVE* without a driver complaint

Faults apply to Gen 4 Body Controllers with 500k Baud Only			
SPN	FMI	Module and Source Address (SA)	Description
520981	14	Body Controller (33)	Only Ignition input is being detected (status of Key_Switch_State = 1)
520982	5	Body Controller (33)	Accessory Grid Undercurrent
520982	6	Body Controller (33)	Accessory Grid Overcurrent
520983	14	Body Controller (33)	Only Starter input is being detected (status of Key_Switch_State = 4)
520984	14	Body Controller (33)	Starter input and Accessory input are detected (status of Key_Switch_State = 6)
520985	14	Body Controller (33)	Starter input, Accessory input, and Ignition input are detected (status of Key_Switch_State = 7)

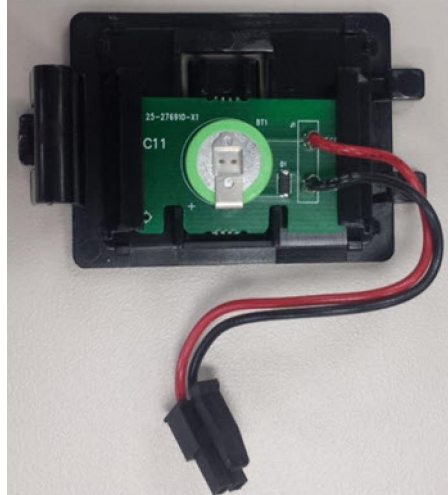
([Return to Top](#))

Real Time Clock (RTC) Battery

500k baud vehicles utilize the BCM for Real Time Clock (RTC) functionality.

- The RTC battery is integrated in the circuit board and cannot be removed
- If the RTC battery fails, it will set fault code 516824-1 and a service battery will need to be installed
- The service battery plugs into the circuit board
- The RTC battery part number is 2514328C91

Figure 12 - Service Battery



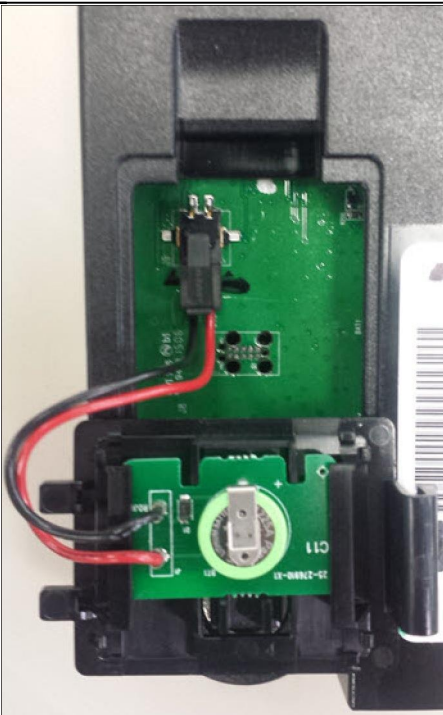
- RTC Service Battery

Figure 13 - Battery Cover Removed



- If the battery needs to be serviced, remove the battery cover to locate the connector the service battery plugs into.

Figure 14 - Service Battery Installed



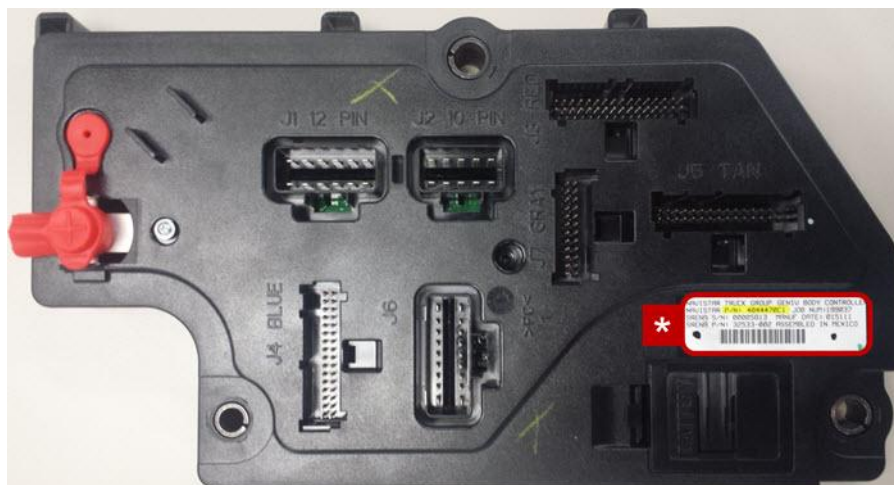
- The service battery plugs into the circuit board as shown.

BODY CONTROLLER REFERENCE

GENERATION

4

THERE ARE TWO VERSIONS OF THE GENERATION 4 BODY CONTROLLER. HERE'S HOW TO IDENTIFY THEM:



NAVISTAR TRUCK GROUP GENIV BODY CONTROLLER

NAVISTAR P/N: 4044470C1 JOB NUM:
SRENA S/N: 00000000 MANUF DATE: 000000
SRENA P/N: 00000-0000 ASSEMBLED IN MEXICO
SERVICE PART *

4044470C1

- Early release, installed on early 2015 vehicles.
- Communicates at 250k baud
- Capable of communicating with 2015 model year vehicles and older.

COMMUNICATION BAUD RATE



250k



500k

NAVISTAR TRUCK GROUP GENIV BODY CONTROLLER

NAVISTAR P/N: 4044470C4 JOB NUM:
SRENA S/N: 00000000 MANUF DATE: 000000
SRENA P/N: 00000-0000 ASSEMBLED IN MEXICO
SERVICE PART *

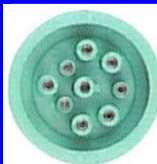
4044470C4

- Current version of Generation 4 Body Controller.
- Can communicate with 250k baud and 500k baud data links.
- Can be installed on current model year and older vehicles.

COMMUNICATION BAUD RATE



PLUG

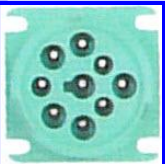


A vehicle with a **BLACK** receptacle can communicate at **250k baud**.

A vehicle with a **GREEN** receptacle can communicate at both **250k / 500k baud** (when properly programmed).

When connecting an *Electronic Service Tool* (EST) to the vehicle:

R
E
C

E P T A C L E			
			
		250k	250k 500k

- A **BLACK** plug on an interface cable will only connect with a **BLACK** receptacle.
- The **GREEN** plug on an interface cable will connect to both **BLACK** and **GREEN** receptacles.

([Return to Top](#))

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