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Title

Volvo Chassis - Battery Sensor Diagnostic, Calibration, and Configuration Procedure - VN (4)

Abstract

This CBR solution provides guidelines for ensuring the correct position of battery sensor modules and battery sensor harnesses on the Volvo VN(4) chassis, as well as the Battery Sensor Diagnostic, Calibration, and Configuration Procedure.

Content

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Valid For

Volvo model - VN (4)
 Model Year 2024 to current

This CBR solution provides guidelines for ensuring the correct position of battery sensor modules and battery sensor harnesses on the Volvo VN(4) chassis, as well as the Battery Sensor Diagnostic and Calibration Procedure.

Note: The preferred tool to use is Workshop Toolbox

Battery Sensor Concerns

Problem Observed	What Is Seen In Tech Tool
Battery Sensor Sub-HW mismatch in Control Unit Data after VMCU campaign	Calibration Failure / Programming I with x54 and/or x56 and/or x57 fault
Missing calibration	x54 - Fault codes – e.g.: C1184-54, C11854, etc.
Invalid / Incompatible Configuration	x56 - Fault codes – e.g.: C1180-56, C11856, etc.
Invalid / Incompatible Software Component	x57 - Fault codes – e.g.: C1180-57, C11857, etc.



io 1: Battery Sensor 24696834 Issues Before/After VMCU Campaign

Preliminary Checks

- Ensure battery voltage is above 20V.
- Disconnect any battery charger from the unit before performing battery sensor calibration.
- Inspect all wiring, connectors, PINs, LIN11, and the 3A fuse connected to the battery sensors before proceeding with further steps.

Procedure

1. **Update CCIOM Software:**
 - Ensure the CCIOM program is updated to the latest version.
2. **Program and Calibrate Sensor:**
 - Program and then calibrate the existing battery sensor (PN: 24696834).
3. **Troubleshoot Calibration Errors:**
 - If a programming or calibration error occurs in Tech Tool:
 - Disconnect and reconnect the sensor module connector.
 - Retry programming/calibration.
4. **Sensor Replacement (If Necessary):**
 - If Step 3 fails, replace the battery sensor.
 - Order and install a new battery sensor (PN: 24787102).
 - If new parts are installed ensure you perform **replace hardware operation (#1700-22-03-12)** for CCIOM in PTT. This Ensures correct part numbers are reported to back office systems and prevent data mismatch.
5. **Final Calibration:**
 - Calibrate the new battery sensor.
 - **Note: Battery Sensor Programming is not required for PN: 24787102.**

Scenario 2: Battery Sensor 24787102 Issues Before/After VMCU Campaign

Preliminary Checks

- Ensure battery voltage is above 20V.
- Disconnect any battery charger from the unit before performing battery sensor calibration.
- Inspect all wiring, connectors, PINs, LIN11, and the 3A fuse connected to the battery sensors before proceeding with further steps.

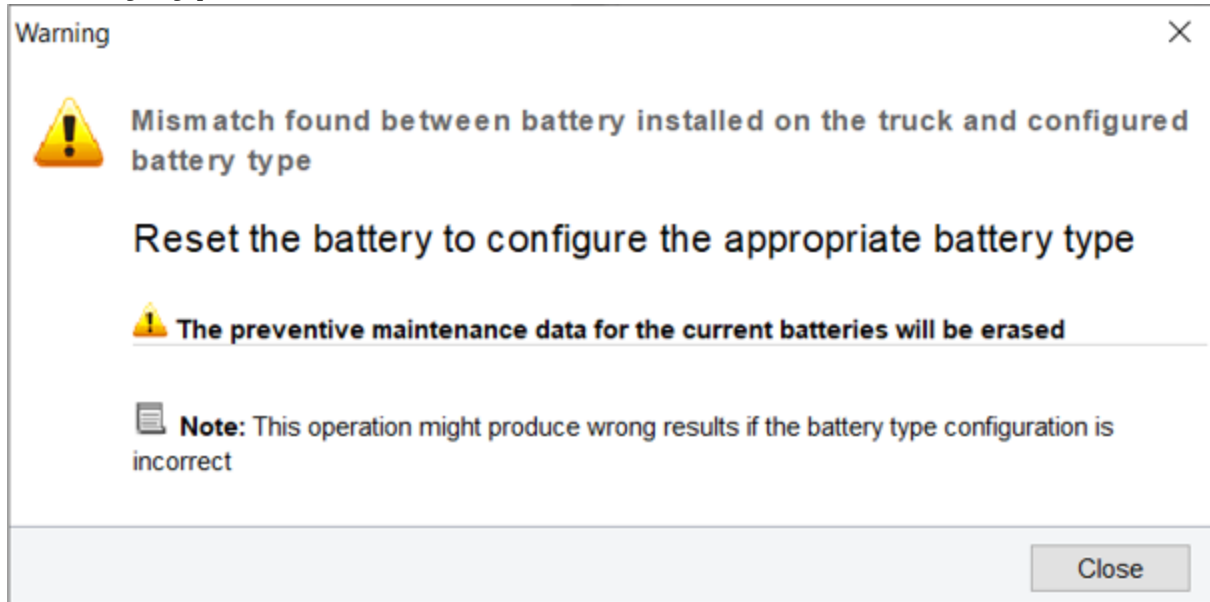
Procedure

1. **Update and Calibrate:**
 - Update the CCIOM program to the latest version.
 - Calibrate the battery sensor.
2. **Troubleshoot Calibration Errors:**
 - If a calibration error occurs in Tech Tool:
 - Disconnect and reconnect the sensor module connector.
 - Retry calibration.
3. **Sensor Programming (Only when an incompatible SW component DTC is active):**
 - If Step 2 fails, program the battery sensor and recalibrate.
4. **Sensor Replacement (If Necessary):**
 - If Step 3 fails, replace the battery sensor.
 - Order and install a new battery sensor (PN: 24787102).
5. **Final Calibration:**
 - Calibrate the new battery sensor.

- **Note: Battery Sensor Programming is not required for PN: 24787102.**
- Currently programming PN 24787102 will cause calibration to fail. Do not program until further notice

Note: If you see the examples below

Battery type mismatch:



Fault Codes:

Center Chassis I/O Module (CCIOM)	C117F54: Battery Sensor Module 1, Sensor 1A, Missing calibration	Active	1
Center Chassis I/O Module (CCIOM)	C117F56: Battery Sensor Module 1, Sensor 1A, Invalid / Incompatible Configuration	Active	1
Center Chassis I/O Module (CCIOM)	C118054: Battery Sensor Module 1, Sensor 1B, Missing calibration	Active	1
Center Chassis I/O Module (CCIOM)	C118056: Battery Sensor Module 1, Sensor 1B, Invalid / Incompatible Configuration	Active	1
Center Chassis I/O Module (CCIOM)	C118154: Battery Sensor Module 2, Sensor 2A, Missing calibration	Active	1
Center Chassis I/O Module (CCIOM)	C118156: Battery Sensor Module 2, Sensor 2A, Invalid / Incompatible Configuration	Active	1
Center Chassis I/O Module (CCIOM)	C118254: Battery Sensor Module 2, Sensor 2B, Missing calibration	Active	1
Center Chassis I/O Module (CCIOM)	C118256: Battery Sensor Module 2, Sensor 2B, Invalid / Incompatible Configuration	Active	1
Center Chassis I/O Module (CCIOM)	C118354: Battery Sensor Module 3, Sensor 3A, Missing calibration	Active	1
Center Chassis I/O Module (CCIOM)	C118356: Battery Sensor Module 3, Sensor 3A, Invalid / Incompatible Configuration	Active	1
Center Chassis I/O Module (CCIOM)	C118454: Battery Sensor Module 3, Sensor 3B, Missing calibration	Active	1
Center Chassis I/O Module (CCIOM)	C118456: Battery Sensor Module 3, Sensor 3B, Invalid / Incompatible Configuration	Active	1

Please follow the steps below before trying to configure the battery sensors.

Note: The preferred tool to use is Workshop Toolbox

The battery type configuration operation in TechTool was removed with version 2.8.360.

Should the battery type need to be manually changed from AGM to Flooded or Flooded to AGM, please utilize the following accessory kits using PTT or Workshop Toolbox to make this change.

Note: Setting the battery type in the cluster when the message appears following disconnecting the battery sensors **is not sufficient** to change all the needed parameters on the vehicle. These accessory kits must be used:

85171461 (**AGM to Flooded, 2 or 4 batteries only**)

85171462 (**Flooded to AGM, 2 or 4 batteries only**)

26104675 (**Other to Flooded or AGM, based on current configured vehicle specification**)

Volvo Trucks does not support a Flooded 6 battery configuration. If the battery type had been set to flooded in a previous version of PTT and it must be changed to AGM, use the 6 battery kit:

26104675 (Convert to AGM)

Following the change in battery type, please ensure to perform **1700-08-03-33 Function Parameters** operation in PTT or Workshop Toolbox for **Battery and Battery Sensor Module**.

If you see "Other" in operation 1700-08-03-33 and "Invalid/Incompatible Configuration" fault codes (see pictures below) use kit number 26104675

The screenshot shows a diagnostic tool interface with a navigation bar at the top containing 'Product', 'Product History', 'Diagnose', 'Test', 'Calibrate', 'Program', and 'Impact'. The main area displays a green checkmark icon. On the right, a panel titled '1700-08-03-33 Function Parameters Reset' shows a breadcrumb trail: 'Information >> Conditions >> Execution >> Result'. Below this, it states 'Reset successful' and lists 'Battery' with a radio button. A red arrow points from the 'Others' field in the 'Additional information' table to the 'Battery type' label.

Additional information	
Others	Battery type
128 %	State of health
128 %	State of charge

✕


Battery type

Select the battery installed on the truck

Dual Purpose Flooded 730 CCA (100 Ah)

AGM 825 CCA (100 Ah)

Others



Mismatch found between battery installed on the truck and configured battery type

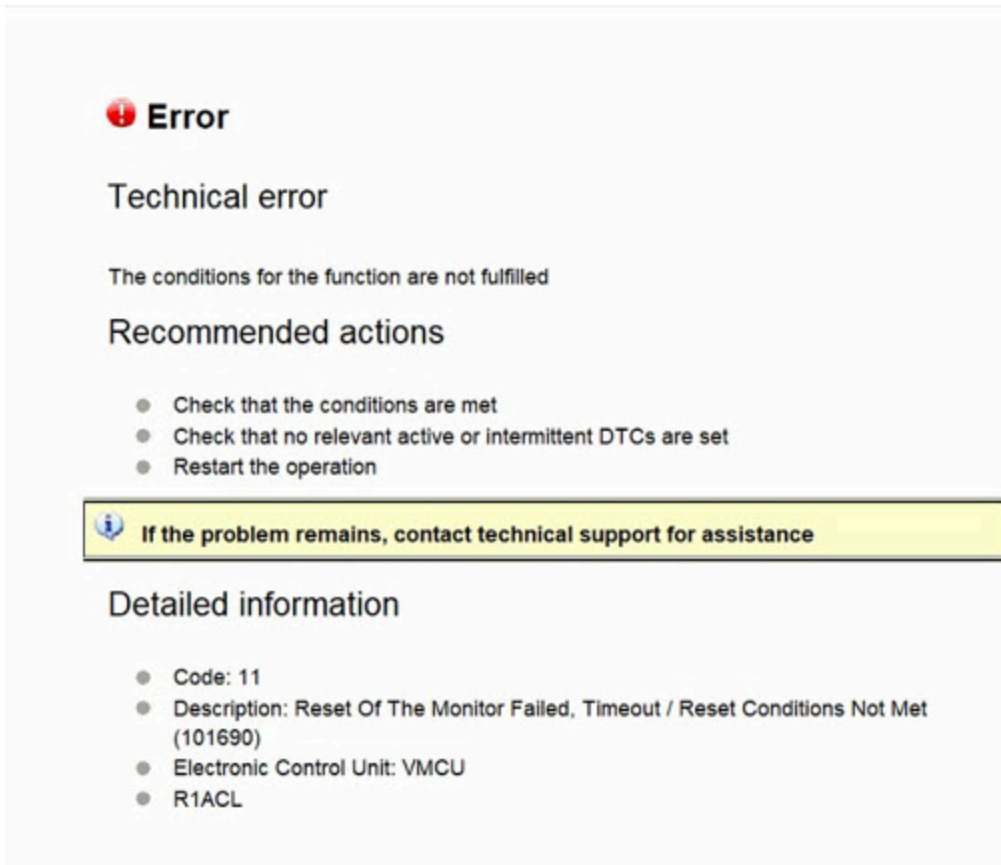
Perform 1700-08-03-33 Function Parameters Reset and select battery to reset

Note: This operation might produce wrong results if the battery type configuration is incorrect

Continue >

Cancel

If you receive an error code 11 while performing battery calibration please utilize the concern report option within the diagnostic tool.



Error

Technical error

The conditions for the function are not fulfilled

Recommended actions

- Check that the conditions are met
- Check that no relevant active or intermittent DTCs are set
- Restart the operation

If the problem remains, contact technical support for assistance

Detailed information

- Code: 11
- Description: Reset Of The Monitor Failed, Timeout / Reset Conditions Not Met (101690)
- Electronic Control Unit: VMCU
- R1ACL

NOTE: If errors keep occurring in PTT please use WSTB

Additional Battery Sensor Information Below:

Battery Sensor Module Position

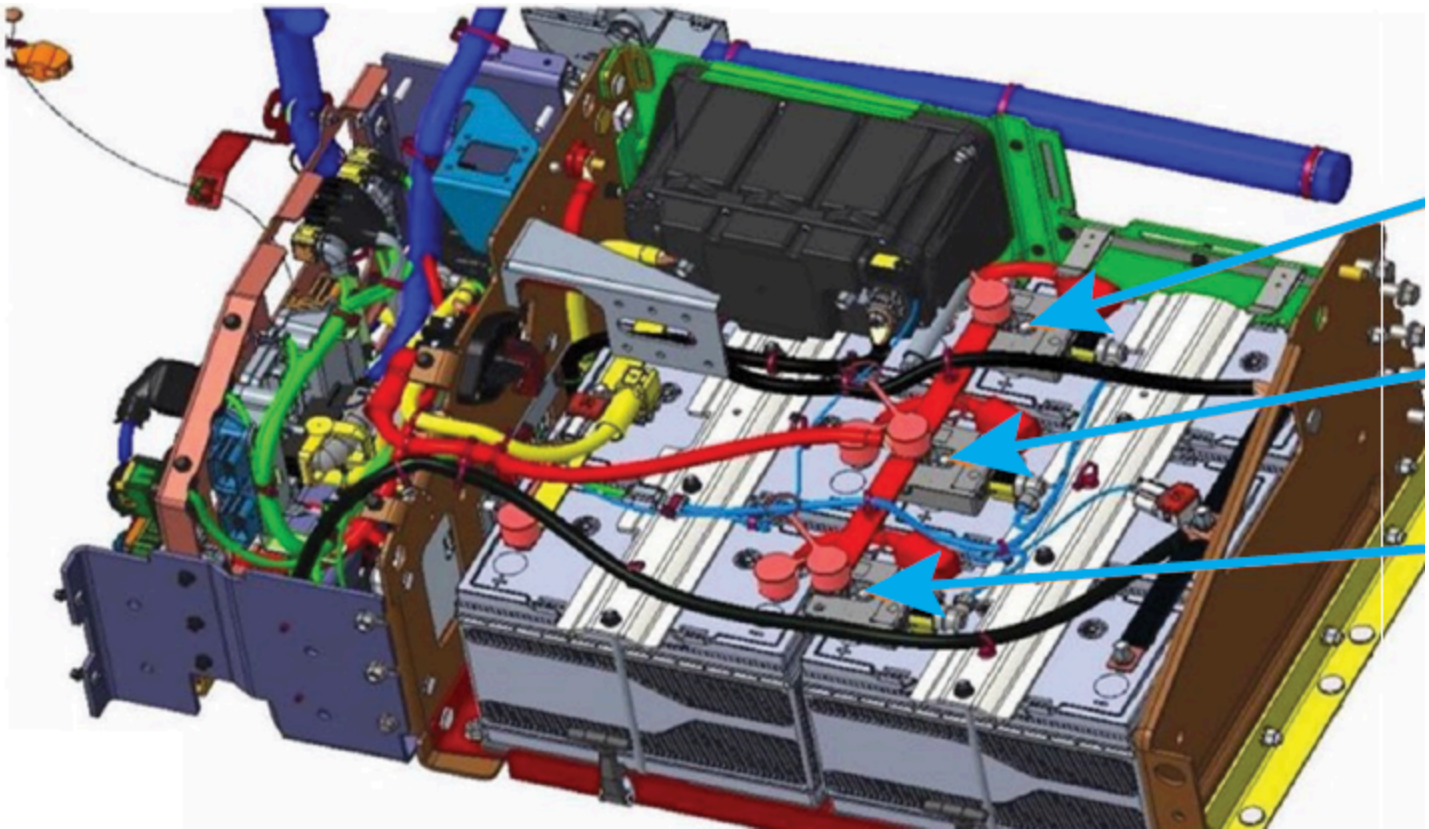
4-Battery Configuration:

- **Battery Sensor Module 1:** Install on the inboard-most set of batteries.
- **Battery Sensor Module 2:** Install on the outboard-most set of batteries.

6-Battery Configuration:

- **Battery Sensor Module 1:** Install on the inboard-most set of batteries.
- **Battery Sensor Module 2:** Install on the middle set of batteries.
- **Battery Sensor Module 3:** Install on the outboard-most set of batteries.

Refer to the image below for detailed positioning of battery sensor modules.



Battery Sensor Identification

PTT Identification	Actual Identification
Battery Sensor Module 3, Sensor 1	Battery Sensor Module 1, Sensor 1
Battery Sensor Module 3, Sensor 2	Battery Sensor Module 1, Sensor 2
Battery Sensor Module 3, Sensor 3	Battery Sensor Module 2, Sensor 3
Battery Sensor Module 3, Sensor 4	Battery Sensor Module 2, Sensor 4
Battery Sensor Module 3, Sensor 5	Battery Sensor Module 3, Sensor 5
Battery Sensor Module 3, Sensor 6	Battery Sensor Module 3, Sensor 6

Post-Correction Operations

After performing any corrections to the battery sensors or their harnesses, the following operations must be completed:

1. **Operation 3113-22-03-01:** Programming for all battery sensors (**only** when an invalid SW component DTC is active).
2. **Operation 1700-08-03-33:** Calibration for all battery sensors.

Ensure both operations are performed to maintain system integrity and performance.

Harness Label Issues

If harness labels are:

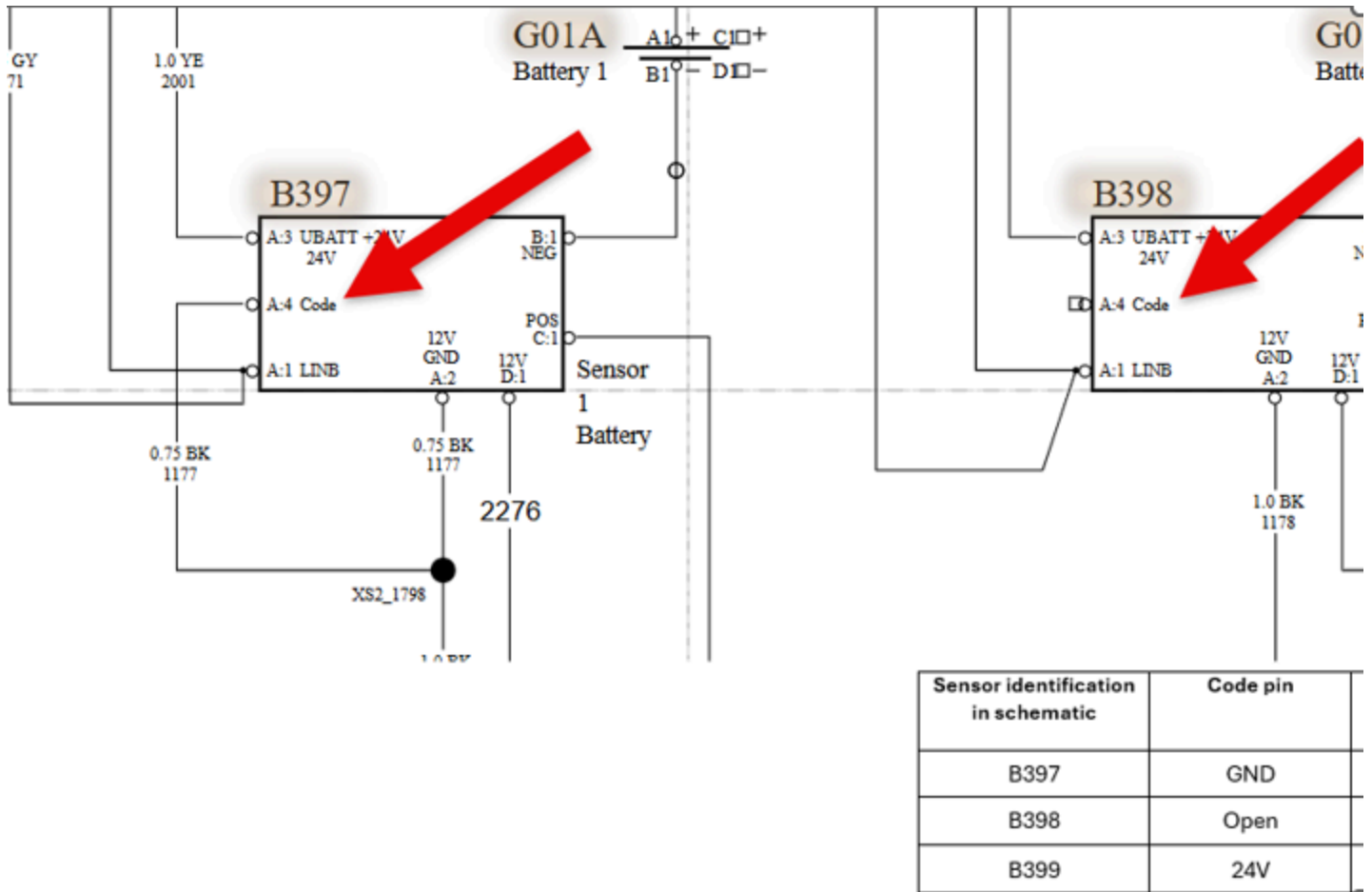
- Damaged
- Missing
- Illegible



Use the following method to determine the correct harness positioning:

1. Use a Multimeter:

- Measure the voltage to the code pin of each harness.
- Cross-reference the voltage readings with the vehicle's electrical schematic to confirm the correct harness position.



Scenario 3: Battery Sensor Modules and/or CCIOM offline.

Control Unit Data Mismatch

The product data and central systems data do not match.

- There is sub hardware registered in central systems that are missing in the product.
- There are control units that are locked for software download.

Blocking mismatch detected. Resolve the mismatch to get the full list of programming operations. Select an item in the table to view details about the control unit.

Readout Time: 2/24/2025 12:24 PM

Control Unit	Product Data	Central Data	Hardware	Sub hardware	Software
Forward Looking Camera (FLC)	✔	✔	✔	✔	✔
Vehicle Master Control Unit (VMCU)	✔	✔	✔	✖	✔
Living Environment Control Module (LECM)	✔	✔	✔	✔	✔
Rear Chassis I/O Module (RCIOM)	✔	✔	✔	✔	✔
Instrument Cluster (IC)	✔	✔	✔	✔	✔
Center Chassis I/O Module (CCIOM)	✔	✔	✔	✖	✔
Forward Looking Radar (FLR)	✔	✔	✔	✔	✔

Details (Center Chassis I/O Module (CCIOM))

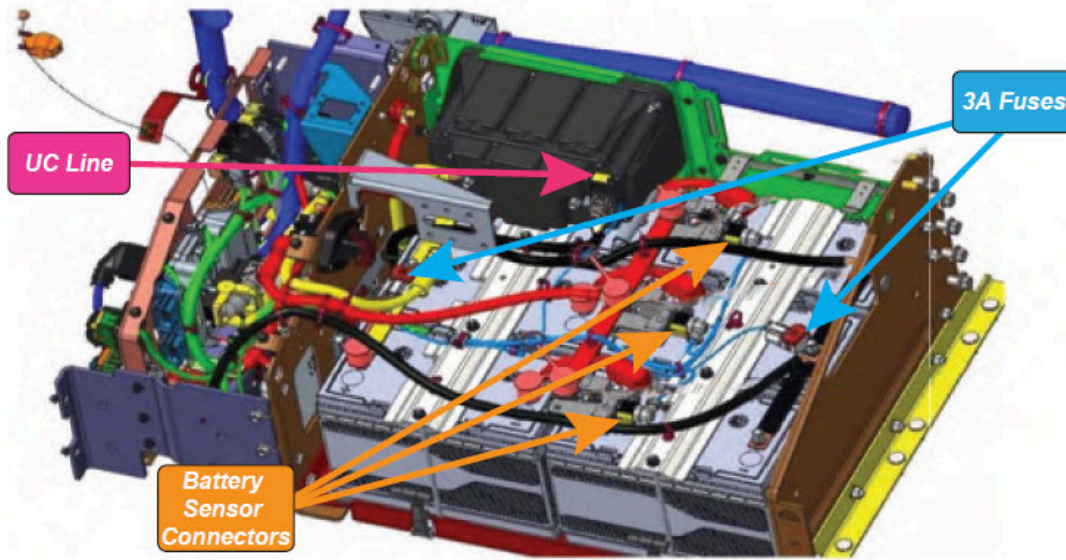
- Sub hardware

	Part Number	Serial Number		
	Product Data	Central Data	Product Data	Central Data
✖ Sub hardware	-	23360304	-	66161803
✖ Battery Sensor, SOC/SOH	-	24696834	-	22358253
✖ Battery Sensor, SOC/SOH	-	24696834	-	22356373
✖ Battery Sensor, SOC/SOH	-	24696834	-	22351453
- Software ✔

Close

• **Battery Sensor Modules and/or CCIOM Offline**

1. Turn the **Maintenance Disconnect Switch (MDS)** off.
2. Unplug each individual battery sensor. (pictured below)
3. Unplug the communication line from the UltraCapacitor. (pictured below)
4. Wait 3 minutes.
5. While waiting, inspect the 3A fuses mounted on the 24V and Ground bus bars.(pictured below)
6. Reconnect the UltraCapacitor communication line.
7. Ensure ground wire is installed. Reference impact operation **3111-16-02-01 - Battery Sensor, replace.**
8. Reconnect the battery sensors.
9. Turn the **MDS** on.
10. Run truck for 30 seconds, turn truck off, then return to on pre-run mode. Check DTC's.



Tags

24584129	24584130	24696834	24787102	agm	battery sensor
c117f54	c117f57	c118054	c118057	c118156	c118157
c118257	c118354	c118357	c118454	c118457	flooded
u114187	vn4	vn 4	volvo		

Categories *

Make and Model > Volvo > VN (4)

Vehicle System > Battery Electric Systems

Select one to three Electronic Control Unit. Press Program to continue.

<input type="checkbox"/>	<input type="checkbox"/>	Control Unit
<input type="checkbox"/>	<input type="checkbox"/>	Aftertreatment Control Module (ACM)
<input type="checkbox"/>	<input type="checkbox"/>	Air Production Modulator (APM)
<input type="checkbox"/>		Battery Power Management Unit (BPMU)
<input type="checkbox"/>	<input type="checkbox"/>	Center Chassis I/O Module (CCIOM)
<input type="checkbox"/>	<input type="checkbox"/>	Climate Control Module (CCM)
<input type="checkbox"/>		Driver Assistance Control Unit (DACU)
<input type="checkbox"/>	<input type="checkbox"/>	Driver Door Module (DDM)
<input type="checkbox"/>		Driver Environment Control Module (DECM)
<input type="checkbox"/>		Electronic Brake System (EBS)
<input type="checkbox"/>		Engine Control Module (EMS)
<input type="checkbox"/>		Front Active Steering (FAS)
<input type="checkbox"/>		Front Chassis I/O Module (FCIOM)
<input type="checkbox"/>		Forward Looking Camera (FLC)
<input type="checkbox"/>		Forward Looking Radar (FLR)
<input type="checkbox"/>	<input type="checkbox"/>	Instrument Cluster (IC)
<input type="checkbox"/>		Instrument Cluster Graphics (IC_GFX)
<input type="checkbox"/>		Living Environment Control Module (LECM)
<input type="checkbox"/>	<input type="checkbox"/>	Passenger Door Module (PDM)
<input type="checkbox"/>		Rear Chassis I/O Module (RCIOM)
<input type="checkbox"/>	<input type="checkbox"/>	Security and Cab Interface Module (SCIM)

1700-22-03-12 Replace Hardware

Simulation

Information:

The left view displays a list of control units and its connected sub hardware. Electronic Control Units with connected sub hardware are expandable by clicking on the "+" symbol.

A sub hardware is a component that is connected to an Electronic Control Unit. An example of a sub hardware is a flexible switch panel.

Note: Malfunctioning Electronic Control Units or sub hardware may not be displayed in the list.

- Select Electronic Control Units that shall be replaced.
To replace a sub hardware, select the Electronic Control Unit that the sub hardware is connected to.

Program >

Cancel