

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

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Valid For

Volvo model VN(4)
Model Year 2025 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.

Battery Sensor Concerns

Problem Observed	What Is Seen In
Battery Sensor Sub-HW mismatch in Control Unit Data after VMCU campaign	Calibration Failure / Pro with x54 and/or x56 and,
Missing calibration	x54 - Fault codes – e.g.: C118 54, etc
Invalid / Incompatible Configuration	x56 - Fault codes – e.g.: C118 56, etc
Invalid / Incompatible Software Component	x57 - Fault codes – e.g.: C118 57, etc

Scenario 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 (If Necessary):**
 - 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.**

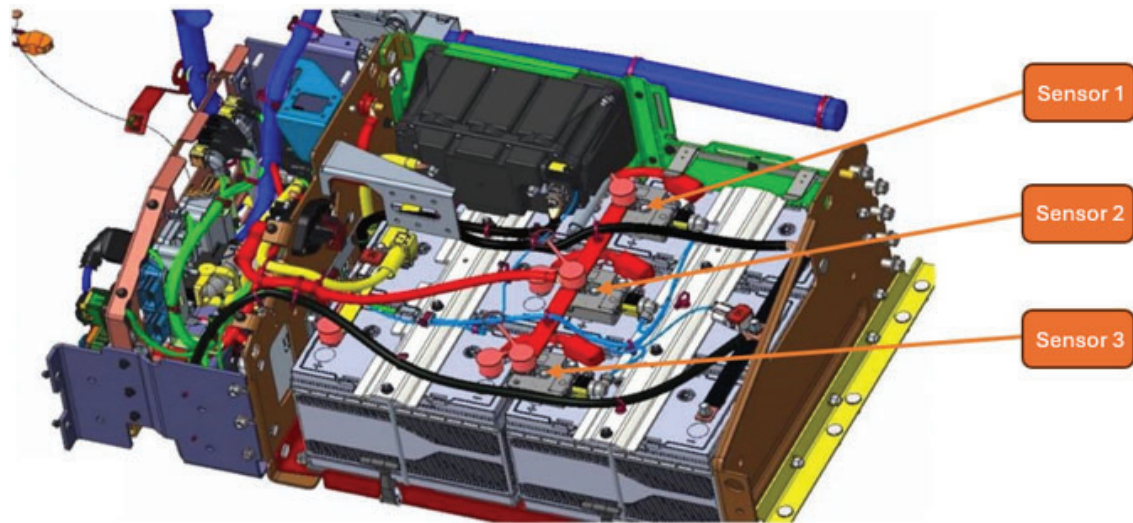
4-Battery Configuration:

- **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.

**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.
2. **Operation 1700-08-03-33:** Calibration for all battery sensors.

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

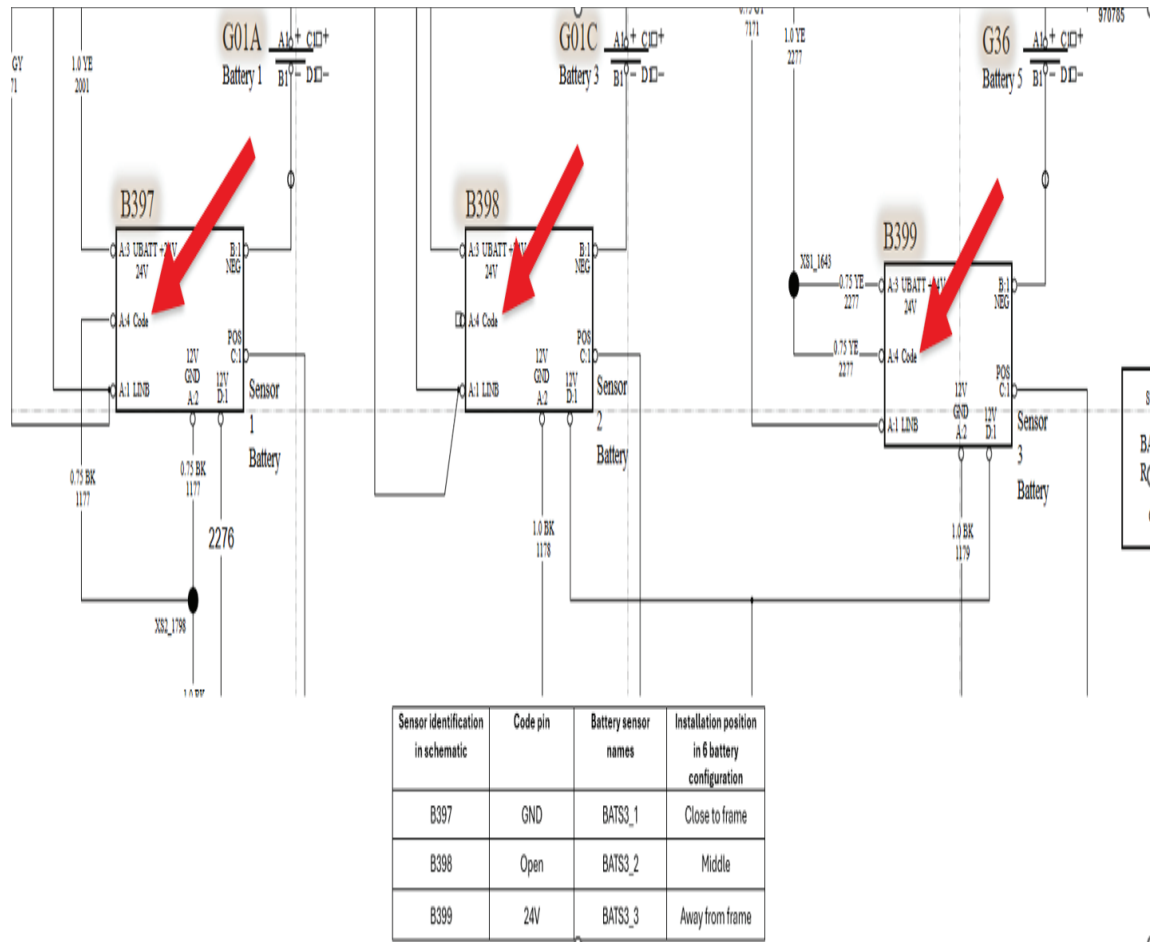
Harness Label Issues

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 ✗

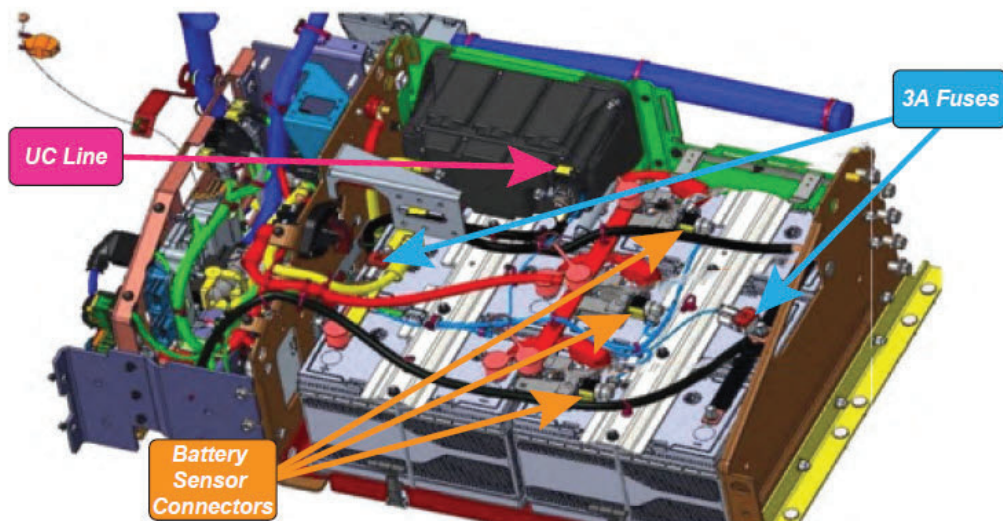
	Part Number	Serial Number
Sub hardware	-	-
Battery Sensor, SOC/SOH	-	-
Battery Sensor, SOC/SOH	-	-
Battery Sensor, SOC/SOH	-	-

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. Reconnect the battery sensors.
8. Turn the **MDS** on.
9. Run truck for 30 seconds, turn truck off, then return to on pre-run mode. Check DTC's.



Related links and attachments

No links or attachments available



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Replaced components

- ☐ Aftertreatment Hydrocarbon Doser
- ☐ Aftertreatment Diesel Particulate Filter (DPF)
- ☐ Aftertreatment selective catalytic reduction (SCR) system
- ☐ Battery
- ☐ Battery sensor module
- ☐ DPF differential pressure sensor
- ☐ Electrical steering column lock
- ☐ Engine oil
- ☐ Exhaust pressure sensor
- ☐ Fuel Injectors
- ☐ Intake Manifold Pressure/Temperature Sensor
- ☐ NOx sensor
- ☐ Turbocharger
- ☐ Venturi pipe

Serviced components

- ☐ Burner, Parking heater
- ☐ Burner motor, Parking heater
- ☐ Driver Assistance Control Unit (DACU)
- ☐ Fuel dosing pump, Parking heater
- ☐ Glow plug, Parking heater
- ☐ I-See
- ☐ Parking heater, All parameters will be reset

Inconsistent parameter values

- ☐ Total fuel consumption

1700-08-03-33 Function Parameters Reset

Simulation

Information >> Conditions >> Execution >> Result

Purpose

Reset of service parameters

Description

Perform reset based on the components replaced or cleaned

Note: Wait a few seconds after Battery sensor module Selection

No reset is needed on the NOx outlet sensor, reset is only needed on the NOx inlet sensor

Selections

Select which components in the list that has been replaced or serviced

Inconsistent parameter values

The product has been identified with inconsistent parameter values, each inconsistency is listed as a checkbox
Select relevant checkboxes to perform corrective actions on the product

Note: The installed Electrical Steering Column Lock (ESCL) is calibrated for a specific vehicle. It is not allowed to replace the defective ESCL with an ESCL from another vehicle

Continue >

Cancel

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

	Control Unit
☐	Aftertreatment Control Module (ACM)
☐	Air Production Modulator (APM)
☐	Battery Power Management Unit (BPMU)
☐	Center Chassis I/O Module (CCIOIM)
☐	Climate Control Module (CCM)
☐	Driver Assistance Control Unit (DACU)
☐	Driver Door Module (DDM)
☐	Driver Environment Control Module (DECM)
☐	Electronic Brake System (EBS)
☐	Engine Control Module (EMS)
☐	Front Active Steering (FAS)
☐	Front Chassis I/O Module (FCIOIM)
☐	Forward Looking Camera (FLC)
☐	Forward Looking Radar (FLR)
☐	Instrument Cluster (IC)
☐	Instrument Cluster Graphics (IC_GFX)
☐	Living Environment Control Module (LECM)
☐	Passenger Door Module (PDM)
☐	Rear Chassis I/O Module (RCIOIM)
☐	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.

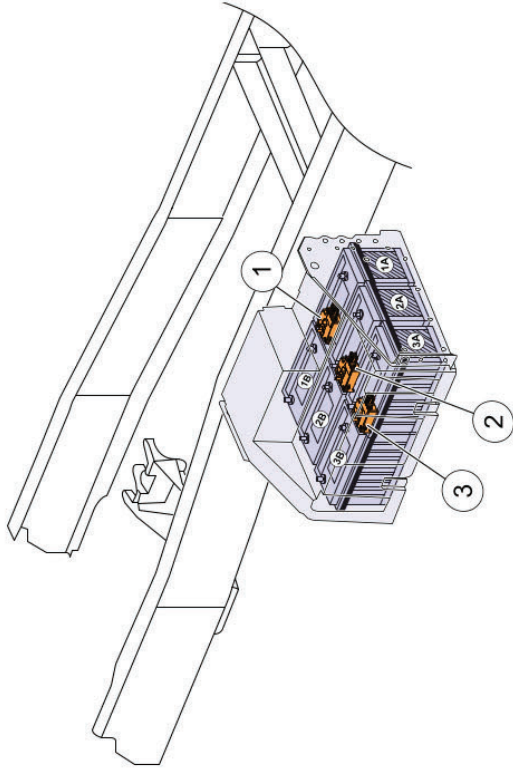
A sub hardware is a component that is connected to an Electronic Control Unit. An example of a sub hardware is a flexible switch panel.

 **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



3113-22-03-01 Battery sensor, Programming

 Simulation

Information >> Conditions >> Execution

Purpose

Program Battery sensor

Description

CCIOI determines if the battery sensor requires a software update and programs it with software stored in its memory

Programming must be carried out when the following DTCs are active

- Relevant DTCs : C1117F57, C118057, C118157, C118257, C118357, C118457

 Note: Before starting this operation ensure that the latest software is installed in CCIOI

Programming Options

Select one or more alternatives

Battery sensor module - 1

☐ Battery sensor 1

☐ Battery sensor 2

Battery sensor module - 2

☐ Battery sensor 3

☐ Battery sensor 4

Battery sensor module - 3

☐ Battery sensor 5

☐ Battery sensor 6

Continue >

Cancel