Vehicle Range Discrepancy – Voltage Difference of Cells too Great

Topic number	LI54.10-P-069138
Version	2
Function group	54.10 - Battery, power supply, voltage converter
Date	12/16/21
Validity	Model 453.#91 (smart electric drive)
Reason for change	Documents for transportability assessment removed as they are available in XENTRY

Complaint

Problem with electrical range:

- Displayed electrical range does not align with SOC during or after charging.
- Displayed electrical range reduces rapidly after short period of driving.
- High-voltage battery can no longer charge.

Cause

The voltage difference (maximum cell voltage minus minimum cell voltage) within the high-voltage battery is too great (> 100 mV). In an extreme case, no individual cell voltages are displayed in the Battery Management System (BMS) anymore (signal not available).

Remedy

Replace high-voltage battery.

Note on analysis for transportability:

- The transportability assessment should be conducted promptly, as the high self-discharge level means that an assessment at a later stage may no longer be possible.
- Conduct the transportability assessment using the diagnostic system, to do so, select menu item "Special procedures" -> see also WISnet AR54.10-P-1140SRE, operation step 2.
- The procedure, if no individual cell voltages can be read out (signal not available - SNA), is also described in the diagnosis procedure.
- If no cell voltages can be read out (signal not available - SNA), the transportability measurement for criterion C1 can be re-evaluated with the document located in the attachment.

WIS-References		
Document number	Title	Note
AR54.10-P-1140-SRE	Remove/install high-voltage battery	
OF54.10-P-3000-01F	Analysis sheet for transportability of high-voltage batteries	

Symptoms
Overall vehicle > Power supply > High-voltage on-board electrical system > High-voltage battery > Malfunction
Overall vehicle > Power supply > High-voltage on-board electrical system > High-voltage battery > Display message
Communication/information > Information display > Trip computer > Driving time is imprecisely/incorrectly displayed
Communication/information > Information display > Trip computer > Fuel consumption is imprecisely/incorrectly displayed

Parts

Part number	ES1	ES2	Designation	Quantity	Note	EPC
A7893400605			LI-ION BATTERY	1		X

Control unit/fault code

Control unit	Fault text
N82/2 - Battery management system (BMS)	P0DE616 - The cell voltages of the hybrid/high-voltage battery module are too low. The limit value for electrical voltage has not been attained. P0DE717 - The cell voltages of the hybrid/high-voltage battery module are too high. The limit value for electrical voltage has been exceeded.

Operation numbers/damage codes

Op. no.	Operation text	Time	Damage code	Note
541153	REPLACE HIGH-VOLTAGE BATTERY		540H0TQ	