smart ed - Update of Tesla Diagnosis Tool
for update of BMS + on-board charger

Topic number	LI00.30-P-053003
Version	4
Design group	00.30 Vehicle diagnosis system (FDS)
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Validity	451ev2 (smart electric drive Phase 2)
Reason for change	New software 1.3.9
Reason for block	

Complaint:

To update the BMS (HV battery) + on-board charger (OBL/OBC) with the latest version, some updates to the Tesla Diagnosis Tool must be performed first.

The description below covers the update procedure for the Tesla Diagnosis Tool and the updates for the BMS + OBL in the vehicle.

Important: This document is only valid for smart electric drive 2nd Generation (451.391 + 451.491)

Breakdown (see "Remedy" for contents)

1. System requirements

2. Basic requirements for installation

2.1 Preparation for installation

2.2 Installation of "LabVIEW Runtime Engine"

2.3 Installation of "PCAN" driver

3. Installation of "Tesla Battery & Charger Firmware Update Tool"

4 Preparation of firmware files for OBL/OBC and BMS/BMB on diagnosis computer

5. Check/correct connection settings

6. Update of BMS/BMB in the vehicle

7. Update of on-board charger (OBL/OBC) in the vehicle

8. Annex - Charging current variants for selected countries

Note:

- Steps 1 - 3 are to be performed once only on the Tesla Diagnosis Tool in preparation if the update to Tesla Update Tool 2.0.8.81 has not yet been performed (available since 12/2011)
- Steps 4 - 5 are to be performed once only on the Tesla Diagnosis Tool in preparation (new since 11/2012)
- Steps 6 - 8 concern the updates on the vehicle in question and are applicable for each vehicle.

Cause:

Due to changes to the Tesla Diagnosis Tool, some adjustments must be made to the Tesla Diagnosis Tool once before performing the actual update in the vehicle.

The necessary data is available on smart Tekinfo and can be downloaded directly (see also the Annex and TIPS LI00.30-P-051650).

The steps below (see "Remedy") must be strictly adhered to.

Please be sure to observe the new items in step 4 (remedy)

Remedy:

1. System requirements

The following requirements for the diagnostic computer must be satisfied in order to install the program:

- Windows XP Service Pack 2
- A free USB connector (USB 1.1 or USB 2.0)

2. Basic requirements for installation

2.1 Preparation for installation

- Create a temporary folder (e.g. "SW-Temp") on the desktop of the workshop computer
- Extract the file "Tesla Battery & Charger Update Tool Support.zip" into the folder "SW-Temp" you just created
- The folder now contains the following subfolders: LabVIEW, PCAN

2.2 Installation of "LabVIEW Runtime Engine"

- Open the folder "LabVIEW" in folder "SW-Temp" on the desktop
- The folder contains the file "LVRTE2011min.exe"
- Run the file "LVRTE2011min.exe"
- The installation program is now executed
- When the installation has finished, you will be asked to restart the computer - please confirm this message

2.3 Installation of "PCAN" driver

- Open the folder "PCAN" in folder "SW-Temp" on the desktop
- This folder has the following folder structure: PCAN --> usb.zip --> Disk
- Open the folder "Disk"
- Run the file "PeakOemDrv.exe"
- Confirm the subsequent window with "Extract all"
- The "Extraction Wizard" then starts

Note: In the last window of the "Extraction Wizard" set a check mark by the option "Show extracted files" and finish the extraction by clicking on "Finish".

- Run the file "PeakOemDrv.exe" again
- The installation program for the "PEAK OEM driver" now runs

Important: In the window "Select components" set a check mark for the option beside "PCAN-USB, PCAN-USB Hub"

3. Installation of "Tesla Battery & Charger Firmware Update Tool"

- Open the file "Tesla Battery & Charger Firmware Update Tool 2.0.8.81.zip" and again extract the contents into the temporary folder "SW-Temp" on the desktop
- In the folder "SW-Temp" run the file "setup.exe"
- The installation program for the "Tesla Battery & Charger FW Update Tool" now starts - please follow the instructions given by the program

- When it finishes, the "Tesla Battery & Charger Firmware Update Tool Version 2.0.8.81" has been successfully installed and can be found under the following path:

  C:\Program Files\Tesla Battery & Charger FW Update Tool
- This folder contains the file "Metro Firmware Update Tool.exe", with which the program is opened.
- For simplicity, create a shortcut on the desktop. To do this, proceed as follows:

  - Right-click on the file "Metro Firmware Update Tool.exe"

  - Select "Create shortcut"

  - Use the mouse to drag (move) the newly created shortcut onto the desktop

4. Preparations for firmware files on the diagnostic computer:
The following steps must be performed in sequence prior to the actual update procedure

- Open the folder "ESS firmware update" (desktop)
- Delete all the contents is each of the subfolders "Battery" and "Charger"
- Extract the ZIP file "OBL **A V02xx Teslaupdate.zip" and move it to the subfolder "Charger"
- In the folder "Battery" on the diagnostic computer create a subfolder "1.3.9" and extract the file "Metro BMS_1.3.9.80 BMB_HW2_1.6.0.43.teslaupdate.zip" to this subfolder "Battery/1.3.9"

Important: When selecting the file, make sure you choose the correct charging current variant!
For the above data ** the charging current variants 08, 12 and 13 are available.
These numbers stand for 8A, 12A and 13A. Validities by country are listed under 8. Contact your workshop support department if you are unable to determine the correct current variant.

Notes:

- The folder "Battery" now contains a subfolder named "1.3.9"
- The folder "Charger" now contains a subfolder named "02xx Teslaupdate"

5. Check/correct connection settings

After updating the Tesla Tool, call up and check the settings (see attachment "Connection settings"):

- Adapter selection = Peak USB

- Baud rate =500K

- USB port =Port 1

The one-off preparations for the Tesla Diagnosis Tool are now complete.

The next two steps (steps 6+7) describe how to update the BMS + OBL/OBC to the latest version in an affected vehicle.

6. Update of BMS/BMB

The following steps are to be performed on the affected vehicle:

- Ignition off and make sure that the charging cable is not plugged in.
- Unplug the low-voltage connector of the control unit from the SCCU (A) and the on-board charger (B) (see picture)
- Run the "Tesla Battery & Charger FW Update Tool v2.0.8.81" from the shortcut on the desktop (see step 3 to create the shortcut)

- Switch the ignition OFF
- Make sure that the charging cable is NOT plugged in

If all the conditions are met, this is shown by a green indicator in the top right corner of the program window.

a) Select "Select Firmware" from the program's user interface

Note:The firmware must now be selected manually
Path:Desktop\ESS firmware update\Battery\1.3.9
File: "Metro BMS_1.3.9.80 BMB_HW2_1.6.0.43.teslaupdate"
Confirm with "OK"

b) Click on the button "Update Firmware" in the user interface

The update process starts automatically (identifiable by the "Progress" column on the left side of the user interface)

To check whether the update was successful, verify the information for the firmware versions for the BMS + BMB after the update.

Current BMS version: 1.3.9.80

Current BMB version: 1.6.0.43

Then reconnect the low-voltage (12V) connector of the control unit to the SCCU and the on-board charger.

7. Update of on-board charger (OBL/OBC)

The following steps are to be performed on the affected vehicle.

- Run the "Tesla Battery & Charger FW Update Tool v2.0.8.81" from the shortcut on the desktop (see step 3 to create the shortcut)
- Plug in the charging cable
- Switch the ignition ON

If all the conditions are met, this is shown by a green indicator in the top right corner of the program window.

a) Select "Select Firmware" from the program's user interface

Note: The firmware must now be selected manually.

Path: Desktop\ESS firmware update\Charger\02xx Teslaupdate\

File: CHG Metro xxx-xxx v15.00-02.**.teslaupdate

Confirm with "OK"

Important: When selecting the file, make sure you choose the correct charging current variant!
For the above data ** the charging current variants 08, 12 and 13 are available.
These numbers stand for 8A, 12A and 13A. Validities by country are listed under 8. Contact your workshop support department if you are unable to determine the correct current variant.
Please note that selecting the wrong charging current can result in damage to the vehicle or the infrastructure.

b) Select "Update Firmware" from the program's user interface

The automatic update process starts (identifiable by the "Progress" column on the left side of the user interface)

To check whether the update was successful, verify the information for the firmware versions and currents for CHG 1 + CHG 2:

Current CHG 1 version: 15.00

Current CHG 2 version: 02.**

** stands for the relevant country-specific version (**A charging current) - see step 8 "Annex - Charging current variants for selected countries"

8. Annex - Charging current variants for selected countries

Due to the different charging currents, the relevant folder with the appropriate file must be selected according to the country of use.

Filename: CHG Metro xxx-xxx v15.00-2.**.teslaupdate

The relevant charging current appears instead of "**".

Three different variants for the charging current are available (8A, 12A, 13A), and the correct one for the country of use must be selected!

Variant 13A is valid for the following countries:

Belgium, China, Denmark, Indonesia, Germany, Netherlands, Austria, Portugal, Singapore, Japan, Czech Republic, Switzerland

Variant 12A is valid for the following countries:

Canada/USA

Variant 8A is valid for the following countries:

Spain, Italy

Attachments	
File	Designation
connection settings.jpg	Check/correct connection settings (step 5)
OBL-SCCU.jpg	SCCU OBC low-voltage connectors

Symptoms
Power generation / Engine management / Engine management, display message / Displays fault code
Overall vehicle / Power supply / Battery/On-board electrical system / Battery/on-board electrical system indicator lamp / Battery charge indicator/consumer shutoff / Illuminates red
Power generation / Engine management / Engine management indicator lamp / Engine diagnosis / lit
Overall vehicle / Power supply / Battery/On-board electrical system / Battery function / Battery cannot be charged
Power generation / Engine management / Engine start/stop / Does not start
Power generation / Engine management / Engine performance / Goes into limp-home mode

Validity		
Vehicle	Engine	Transmission
451.391	*	*
451.491	*	*