## Introduction

This document provides instructions for third parties to use the Tesla Battery Shipping Tool application to retrieve Tesla-specific data (vitals) from End of Life High Voltage batteries for safety purposes.

The procedure described in this document applies to Tesla Model S, Model X, Model 3, and Model Y vehicles from start of production to date.

## Definitions and Abbreviations

| | |
|---|---|
| BMS | Battery Management System for the High Voltage battery |
| Brick | Group of battery cells, wired in parallel |
| CAN | Controller Area Network, an inter-module communications network |
| Logic Harness | Harness to connect between the Low Voltage Rapid Mate connector on the High Voltage battery and the PCAN-USB to CAN adapter connected to the laptop |
| Rapid Mate Connector | A quick connect/disconnect HV battery to vehicle interface for power and communications |
| SOC | Estimated State of Charge, displayed as a percentage (0% - 100%) |

## Parts Required

| Part Name | Tesla Part Number |
|---|---|
| PCAN-USB to CAN Adapter | 1016990-00-A |
| HV Battery Logic Harness (Model S and Model X) | 1014593-00-A |
| M3 Battery Communication Harness (Model 3 and Model Y) | 1138540-00-C |
| Adapter DC Power Supply 60W 12V | 1076919-01-B (Continental EU (Shuko plug) except for Switzerland)<br>1076919-02-B (UK/Ireland plug)<br>1076919-03-B (Switzerland plug) |

## Retrieving the HV Battery Vitals

1. Install the Tesla Battery Shipping Tool application onto the laptop:
   a. Download the “Battery Shipping Tool” application from the portal.
   b. Install the application onto the laptop.
   c. Click this link to download the PCAN-USB drivers: https://www.peak-system.com (Figure 1).

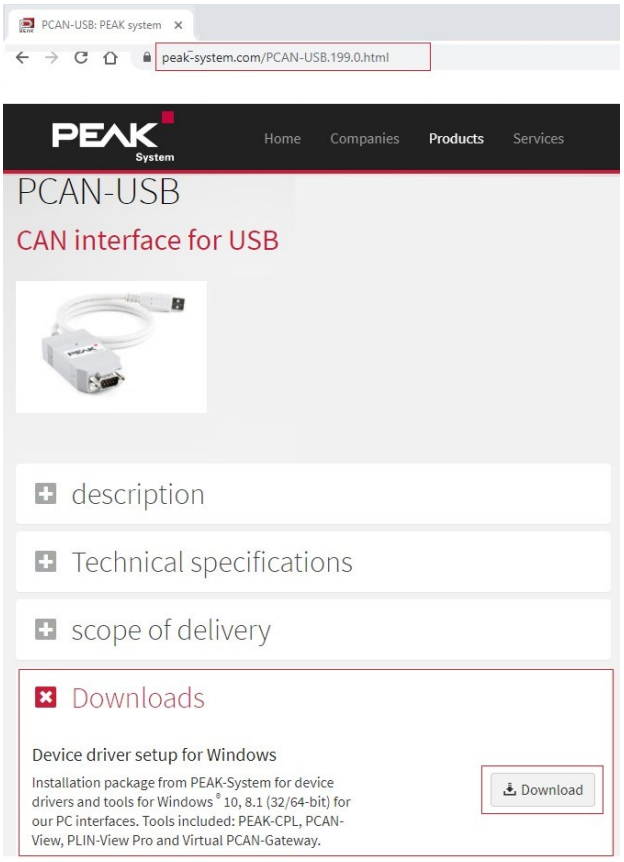


**Figure 1**

   d. After the drivers are downloaded, install them onto the laptop.

2. Connect the PCAN-USB adapter to a USB port on the laptop.

3. Locate the Low Voltage Rapid Mate connector on the Model S and Model X High Voltage battery (Figure 2), or the logic connector on the Model 3 and Model Y High Voltage battery (Figure 3).

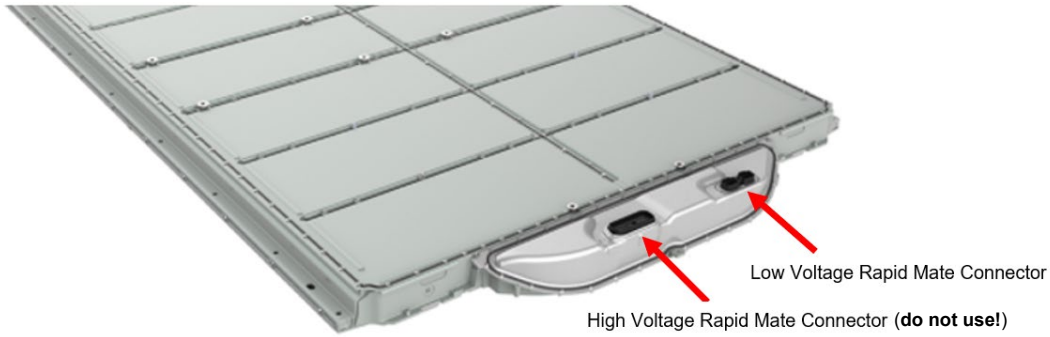


**Figure 2 - Rapid Mate connectors (Model S and Model X)**

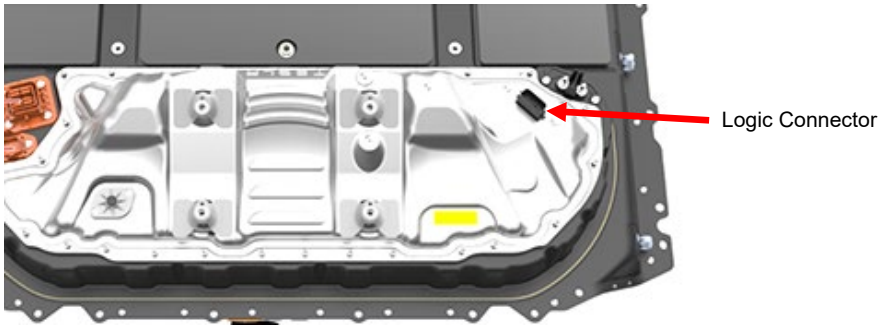


**Figure 3 – Logic Connector (Model 3 and Model Y)**

4. Connect the logic harness to the Low Voltage Rapid Mate/Logic connector on the HV battery and to the PCAN-USB adapter (Figures 4 and 5).

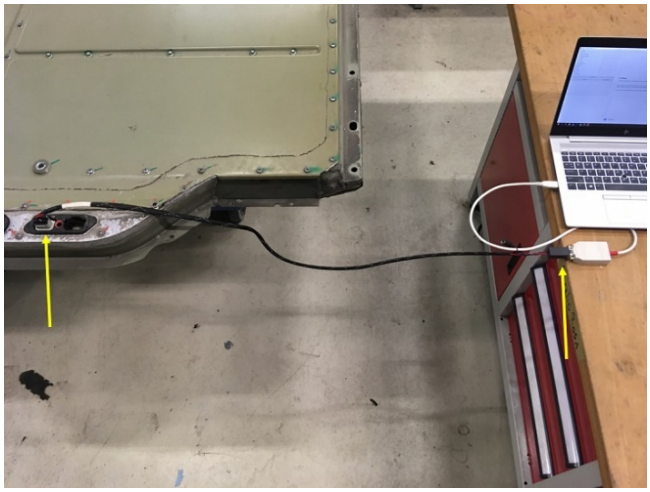

**Figure 4 - Connection to PCAN-USB adapter (Model S and Model X)**

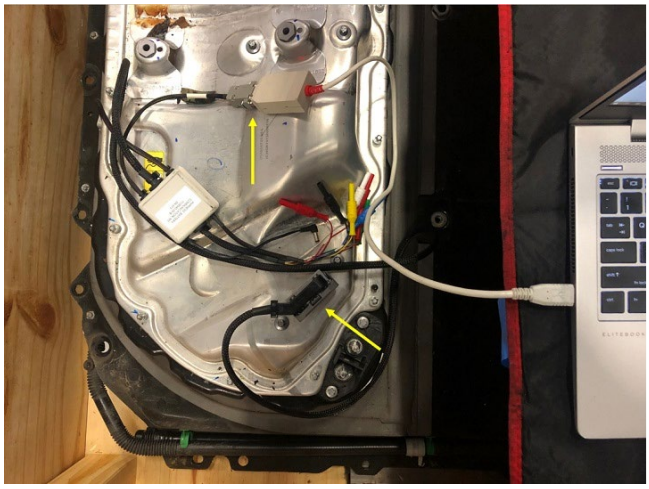

**Figure 5 - Connection to PCAN-USB adapter (Model 3 and Model Y)**

5. Connect the 12V power supply to the logic harness (Figure 6).

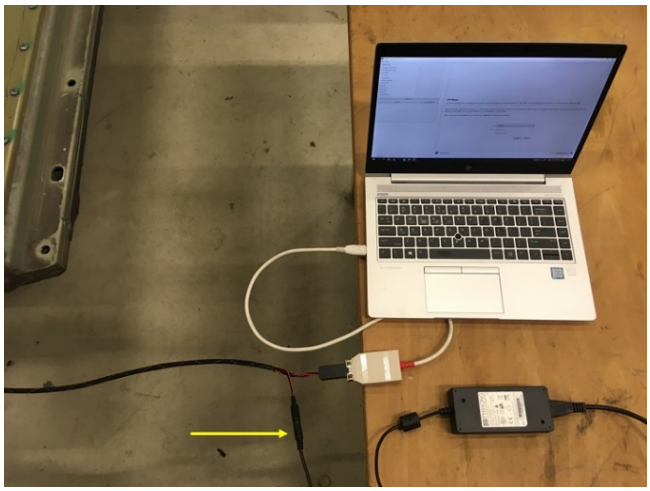

**Figure 6**

6. Open the Battery Shipping Tool application and connect to the HV battery pack (Figure 7):
   a. Choose the “Vehicle” model based on the battery that is connected.
   b. Make sure that the “BMB Keep-Alive” check box is checked.
   c. Click the “Enable” button.

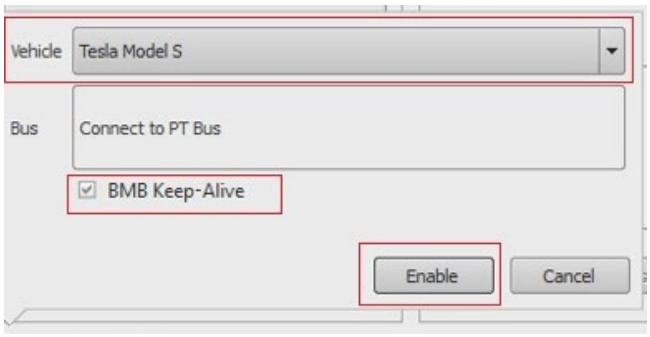


**Figure 7**

7. Make sure that the green dot in the left hand lower corner of the window is illuminated, and then click “Refresh Info” (Figure 8).

**NOTE:** If the green dot is not illuminated, check the 12V power supply and all connections to make sure that they are secure.

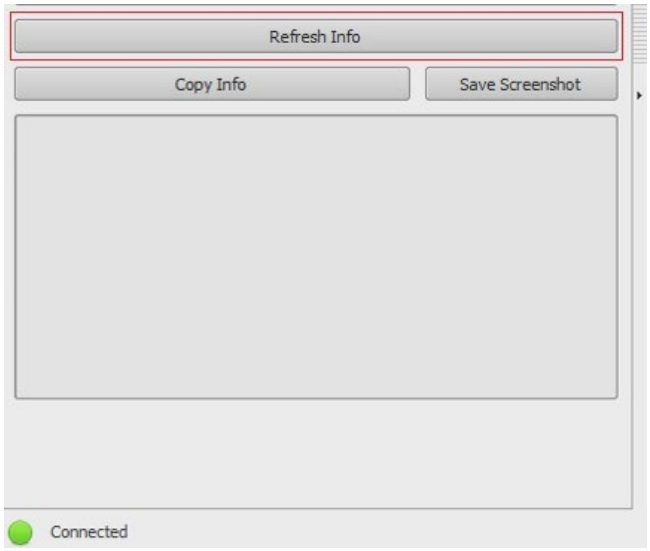


**Figure 8**

8. Read the battery vitals in the “Shipping Info” section (Figure 9).

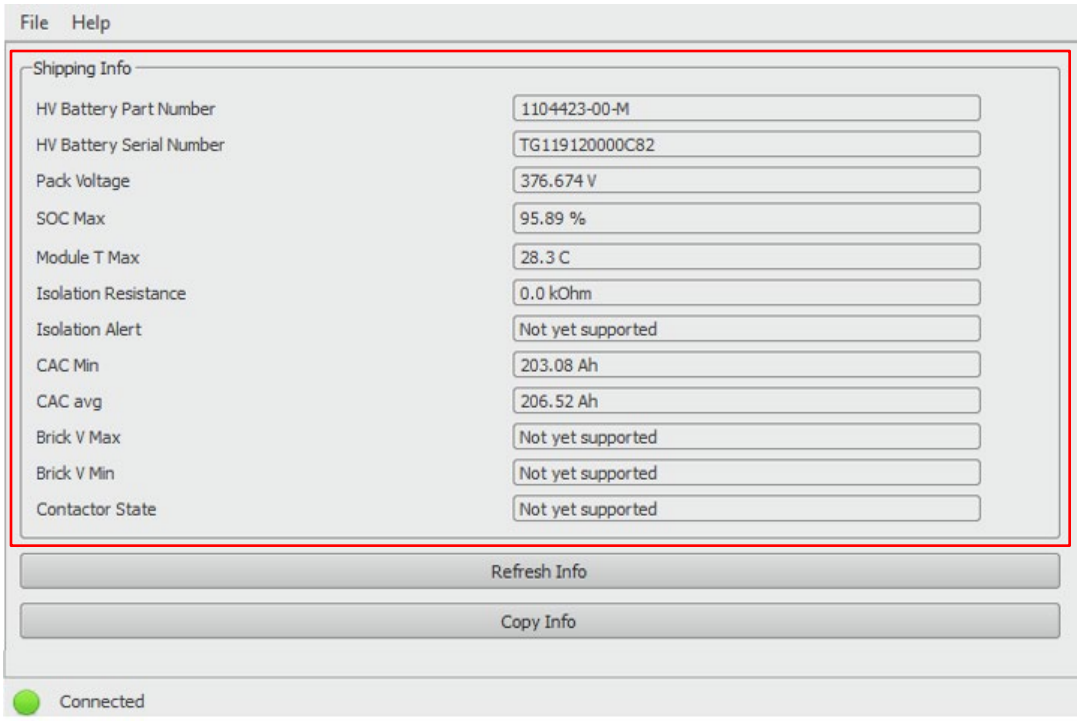


**Figure 9**

The table below explains the fields that are shown in the “Shipping Info” section.

| Field name | Remark |
|---|---|
| HV Battery Part Number | -- |
| HV Battery Serial Number | -- |
| Pack Voltage | Voltage of the High Voltage battery pack. If value is close to 0V, this might indicate that the fuse is blown, disconnected, or removed entirely. |
| SOC Max | Estimated State of Charge for the brick with the highest value. |
| Module T Max | Current highest measured internal battery temperature. |
| Isolation Resistance | Calculated electrical isolation resistance between the high voltage circuits and the enclosure. |
| Isolation Alert | Indicates if the Battery Management System detects an isolation resistance below 200 kOhm. |
| CAC Min | Calculated Amp-hour Capacity for the brick that has the lowest capacity. |
| CAC avg | Calculated Amp-hour Capacity average across all bricks. |

| Field name | Remark |
|---|---|
| Brick V Max | Measured brick voltage of the highest charged brick. |
| Brick V Min | Measured brick voltage of the lowest charged brick. |
| Contactor State | Reported state of the battery pack contactors. Contactors are high voltage, high current relays that route power between the HV battery and the vehicle (if battery is fitted to the vehicle). |