HYUNDAI NEW THINKING. NEW POSSIBILITIES. **Technical Service Bulletin**	GROUP **ENGINE ELECTRICAL**	NUMBER **17-EE-002**
	DATE **FEBRUARY 2017**	MODEL **IONIQ HEV**
SUBJECT:	IONIQ HEV 12V INTEGRATED LITHIUM ION POLYMER BATTERY SYSTEM	

This bulletin provides the service information for the Ioniq HEV 12V integrated Lithium Ion Polymer (LiPO) battery system:

A. 12V Integrated LiPO Battery System Description.

B. Reviving a vehicle with a discharged 12V integrated LiPO battery.

- "12V BATT RESET" switch.
- Jump starting a vehicle that does not respond to the "12V BATT RESET" switch.

NOTE: Contact Hyundai TECHLINE for assistance if neither of the above revives the vehicle.

C. Monitoring state of charge %SOC of 12V integrated LiPO battery and other parameters.

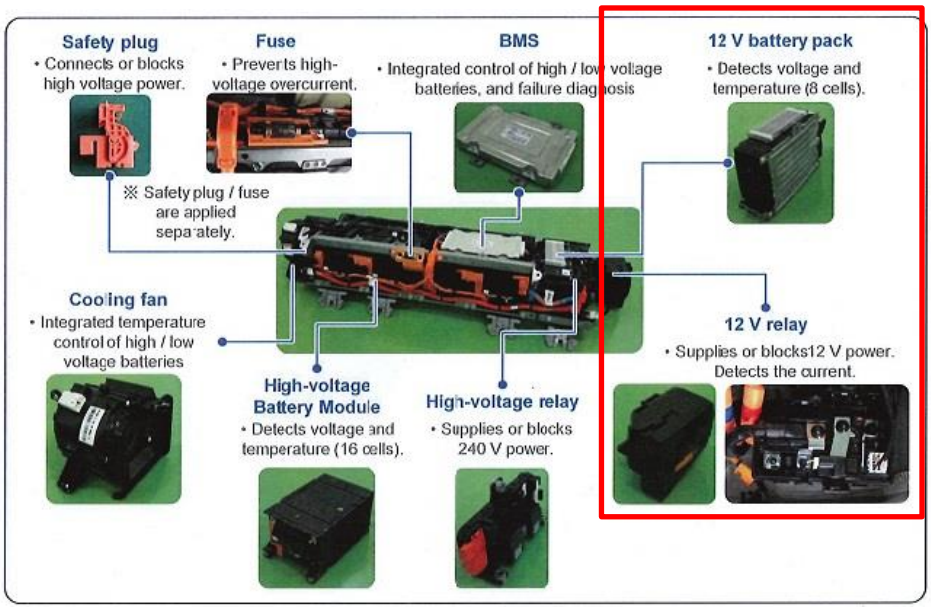
D. Vehicle storage lot battery maintenance for the 12V integrated LiPO battery.

E. Vehicle service disconnect from the 12V integrated LiPO battery.

Applicable Vehicle:	Ioniq HEV (AE HEV) 2017MY and forward

A. 12V Integrated LiPO Battery System Description:

The Ioniq HEV features a unique 12 volt 4-cell Lithium Ion Polymer battery integrated with the HEV's high voltage battery system, that are controlled by the Battery Management System (BMS). The benefits of this new 12V system are performance, durability and discharge protection. (It does not have an auxiliary 12V lead acid battery). The complete battery system is located under the rear seat.



The 12V integrated LiPO battery system has automatic severe discharge protection. When battery discharge occurs down to 10% SOC, a 12V power relay deactivates electrical power to the vehicle. The vehicle will not have power door locks, interior lights, and the dash will not illuminate.

B. Reviving a Vehicle With A Discharged 12V Integrated LiPO Battery:

- **"12V BATT RESET" switch:**

1. Skip to step-2 if the door is already unlocked.

   If the door is locked you will need to use the manual key to enter the vehicle after removing the lock access cover.

   a) Use the manual key from the FOB to push up the tab under the driver's side handle as shown. Make sure the tab stays up. If it does not you will need to keep it pressed up while performing the next step.

   b) While holding the handle out, pull off the access cover to expose the manual lock cylinder.

   c) Open the door with the manual key.

2. Locate the "12V BATT RESET" switch to the right of the fuel door switch under the dash and behind the left of the steering wheel.

   - Momentarily press the switch for a second or two.

   - The dash should illuminate.

3. Press the Start/Stop button with foot on the brake to operate in Ready mode. The engine will turn on after a delay to charge the battery.

   Operate the vehicle for 30 minutes at Ready mode with car stopped in a well ventilated area or while driving before you turn off the vehicle. This will assure the integrated LiPO 12V battery is adequately charged to be able to restart the vehicle in the normal manner.

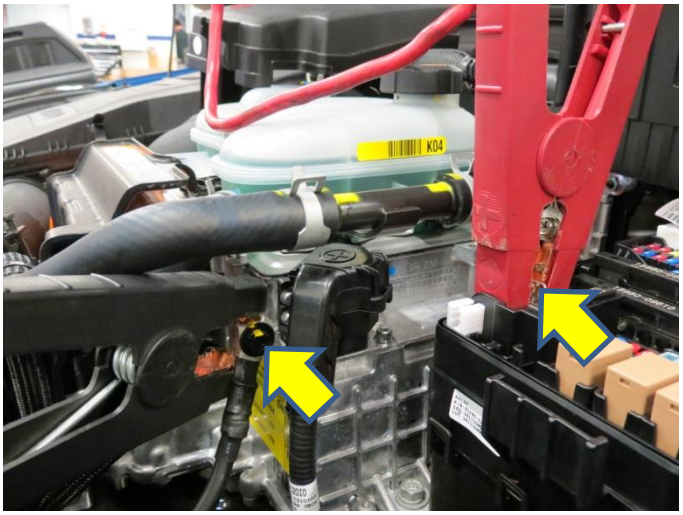
- **Jump starting a vehicle that does not respond to the "12V BATT RESET" switch (dash did not illuminate):**

4. Remove the engine under hood junction box cover that has the red "**+**" symbol to be able to connect a 12V jumper booster box as follows:

   a) Connect the red "**+**" jumper box clamp to the shiny metal tab facing up with the "+" sign on it at the front left side.

   b) Connect the black "**-**" jumper box clamp to the point where the ground wire is bolted to the right front corner of the HPCU hybrid controller unit as shown.

   c) Press the vehicle's start/stop button with foot on the brake and operate the vehicle 30 mins in a well ventilated area to charge the 12V integrated LiPO battery.

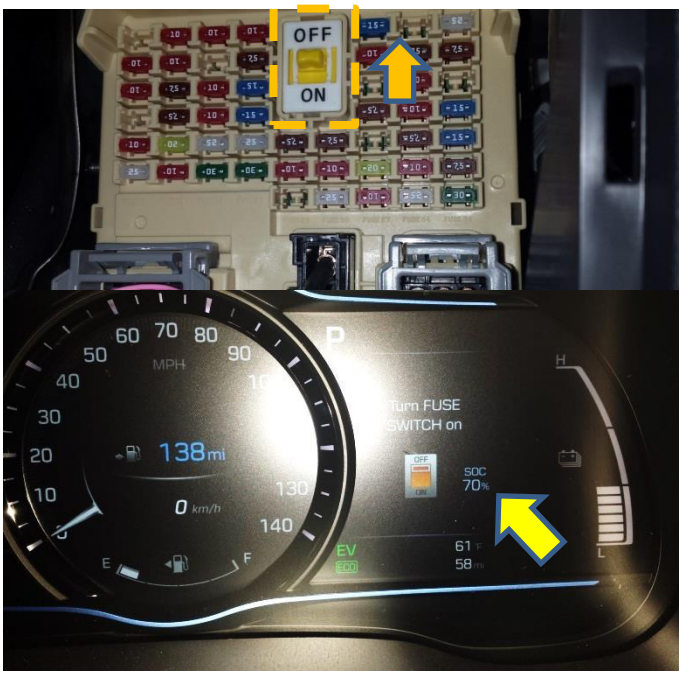


C. Monitoring State of Charge %SOC and Other Parameters of 12V Integrated LiPO Battery:

There are 2 different ways to view the 12V integrated LiPO battery state of charge **%SOC**:

1) **Instrument Cluster on the Dash**:

- Turn OFF the power fuse switch in the underdash fuse box.

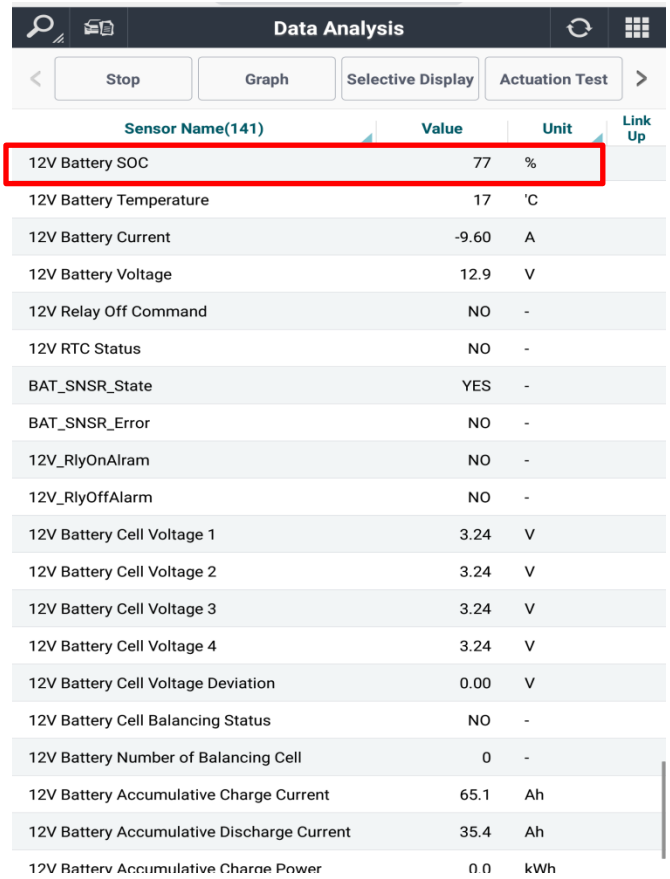


- The SOC is displayed in the instrument cluster at ignition on or in Ready mode while the power fuse is OFF.

NOTE: As the instrument cluster shows turn the power fuse switch back ON after monitoring a Dealer or Customer vehicle's 12V battery SOC.

2) **GDS Mobile**:

- "Auto VIN" or manual select "AE HEV" for vehicle.
- Select "Data Analysis".
- Select the "BMS' system.
- Scroll down towards the end of the parameter listing and you will find the various 12V battery parameters beginning with "**12V Battery SOC".**



Sensor Name(141)	Value	Unit	Link Up
12V Battery SOC	77	%	
12V Battery Temperature	17	'C	
12V Battery Current	-9.60	A	
12V Battery Voltage	12.9	V	
12V Relay Off Command	NO	-	
12V RTC Status	NO	-	
BAT_SNSR_State	YES	-	
BAT_SNSR_Error	NO	-	
12V_RlyOnAlram	NO	-	
12V_RlyOffAlarm	NO	-	
12V Battery Cell Voltage 1	3.24	V	
12V Battery Cell Voltage 2	3.24	V	
12V Battery Cell Voltage 3	3.24	V	
12V Battery Cell Voltage 4	3.24	V	
12V Battery Cell Voltage Deviation	0.00	V	
12V Battery Cell Balancing Status	NO	-	
12V Battery Number of Balancing Cell	0	-	
12V Battery Accumulative Charge Current	65.1	Ah	
12V Battery Accumulative Discharge Current	35.4	Ah	
12V Battery Accumulative Charge Power	0.0	kWh	

NOTE: The parameters at the top of the first page of the GDS BMS Data Analysis screen including SOC are for the HEV high voltage battery. All 12V battery parameters are in later pages towards the end and must begin with "**12V"**.

D. Vehicle Storage Lot Battery Maintenance for the 12V integrated LiPO battery:

1. As per instructions of section-C, monitor the %SOC with the power fuse switch OFF.

2. Operate the vehicle in Ready mode for 20 minutes in a well ventilated area and be sure that the 12V battery to is charged to **70%** SOC or above.

NOTE: After viewing the 12V battery SOC display in the instrument cluster, turn the power fuse switch back ON.

E. Disconnecting the 12V Integrated LiPO Battery Service Connector:

CAUTION: The HEV battery high voltage safety switch will not disconnect the 12V battery. The 12V battery is a separate electrical system despite its integration with the high voltage battery system. Follow these instructions when performing service that requires the 12V battery to be disconnected (similar to when the ground terminal is disconnected from a regular auxiliary battery).

1. Pull forward the driver's side rear seat to locate the 12V battery service disconnect plastic panel as shown.

2. Pull out the panel by prying up the tab opening to reveal the following cable and connector.

3. Press thumb on the release tab and pull up to disconnect the service connector.

This photo shows the 12V service connector disconnected from the vehicle.