	GROUP	MODEL
	SST	Applicable Models with Gen2 Battery Sensor (Refer to Chart, page 9)
	NUMBER	DATE
	073 (Rev 2, 02/23/2023)	August 2022

TECHNICAL SERVICE BULLETIN

SUBJECT: **KDS BATTERY DIAGNOSIS FEATURE**

NOTICE

This bulletin has been revised to include additional information. New/revised sections of this bulletin are indicated by a black bar in the margin area.

This bulletin outlines the KDS Battery Diagnosis function and diagnosis procedures. The Battery Diagnosis is an on-vehicle battery diagnosis system, utilizing the battery sensor data. The battery sensor which is located next to the battery negative (-) terminal, continuously stores, and saves various data shown below for the last 30 days, including the key off position.

- Max, Min, Last Battery State of Charge, SOC (%)
- Dark current average (Ah)
- Battery internal resistance (mΩ)
- Charging Amp Hour (Ah)
- Discharge Ah during IGN ON (Ah)
- Discharge Ah during IGN OFF (Ah)
- Temperature of battery

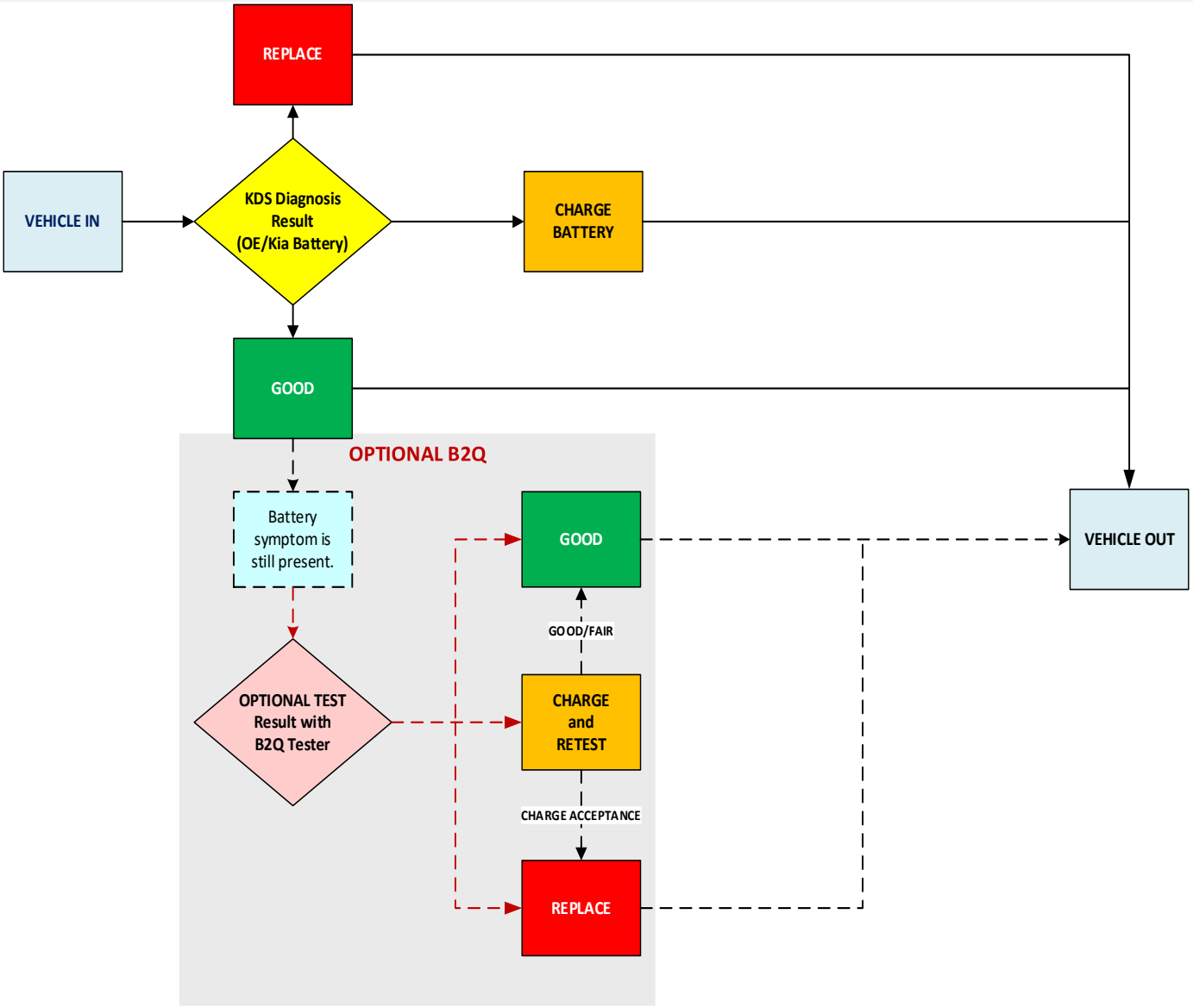
KDS Battery Diagnosis extracts stored vehicle battery sensor data and intelligently identifies a battery's condition from the following 7 possible categories. Diagnosis can be performed on the vehicle with either Key ON Engine OFF (KOEO) or Key ON Engine Running (KOER).

- R01: Battery internal fault condition identified
- R02: Battery deterioration condition identified
- R03: Abnormal Charging current detected
- D01: Excessive dark current draw condition identified
- D02: Current draw from aftermarket electronic component(s) detected
- D03: Over usage of electrical components detected while the engine is not running
- D04: Insufficient battery charge condition identified
- D00: Good battery condition identified (Do not file warranty claim)

Vehicles listed on page 9; These vehicles are equipped with a Gen2 battery sensor which gives **the technician the capability to perform the required KDS battery diagnosis.**

SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

Flowchart:



B2Q test allowance (Green Box): If KDS result is "GOOD", but the actual vehicle shows symptoms of dead battery, Optional B2Q test can be used.

NOTICE

If the correct attachment is not included in the warranty claim, it may be subject charged back.

DO NOT disconnect Battery Cable before performing KDS battery Diagnosis.

Refer to Battery Diagnosis Result Summary table on page 8 for details.

Click

For additional tips, information, click the icon or scan the QR code to watch KDS Battery Diagnosis Function w/SOC and Dark Current Information video.

Scan

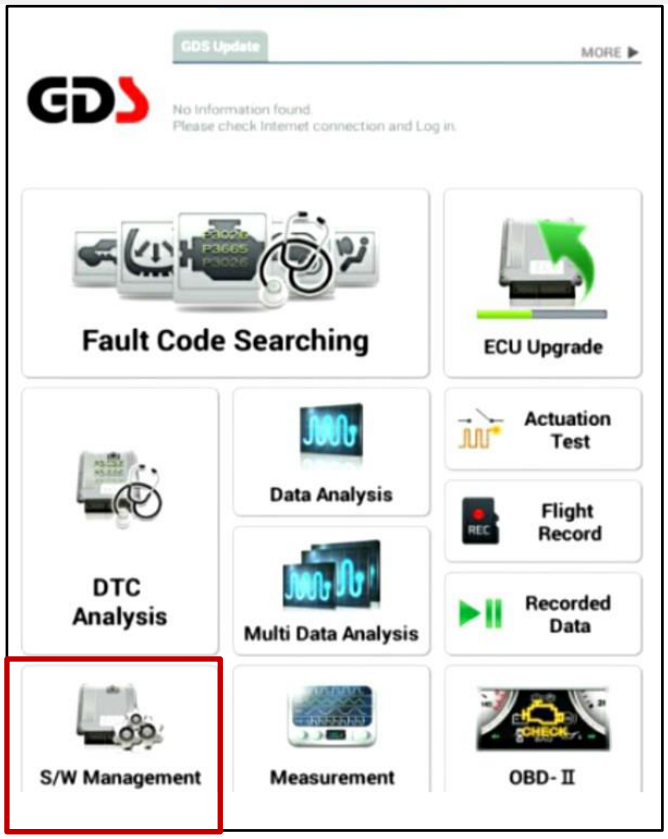
SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

Service Procedure:

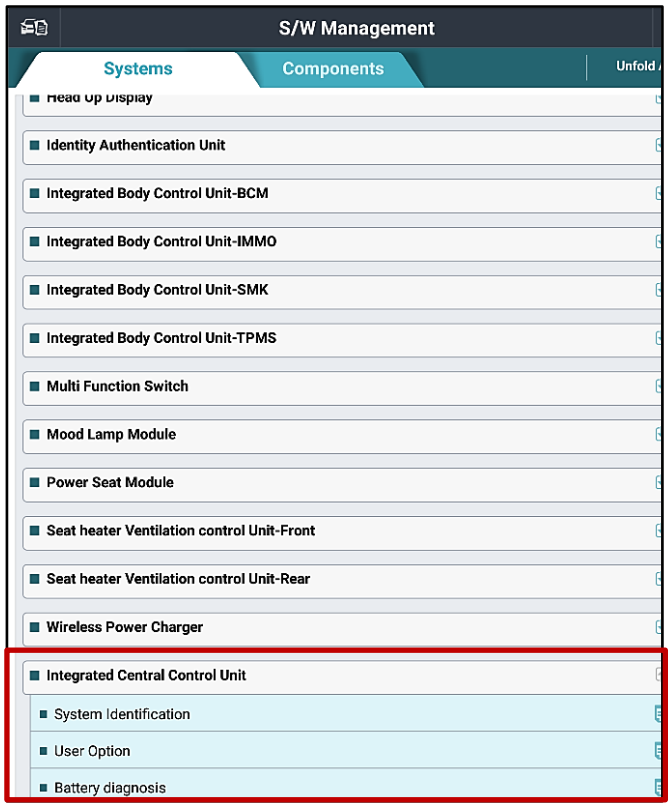
1. Turn the vehicle ignition key or press the Start/Stop Button to the ON position.

   Connect the wireless VCI to the vehicle DLC located under the driver's side dash.

   Access the KIA KDS-Mobile tablet.
   Select S/W Management.

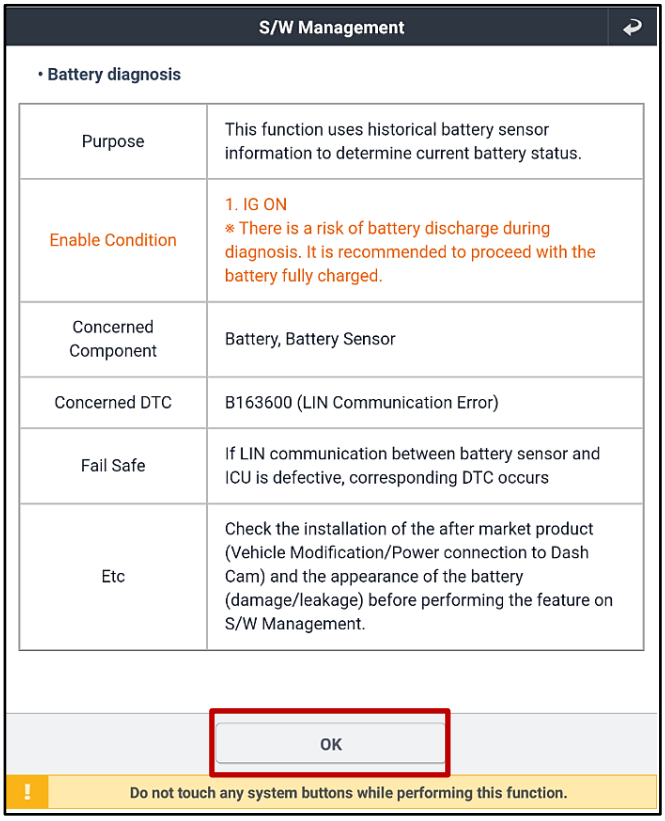


2. Scroll down and select the Integrated Central Control Unit (ICU) under the system selection, then select the Battery Diagnosis.

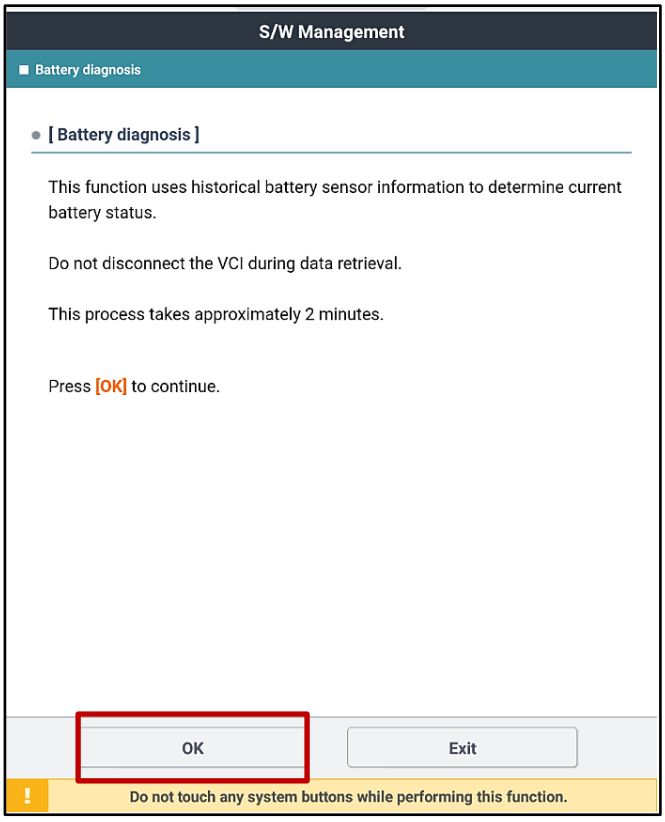


SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

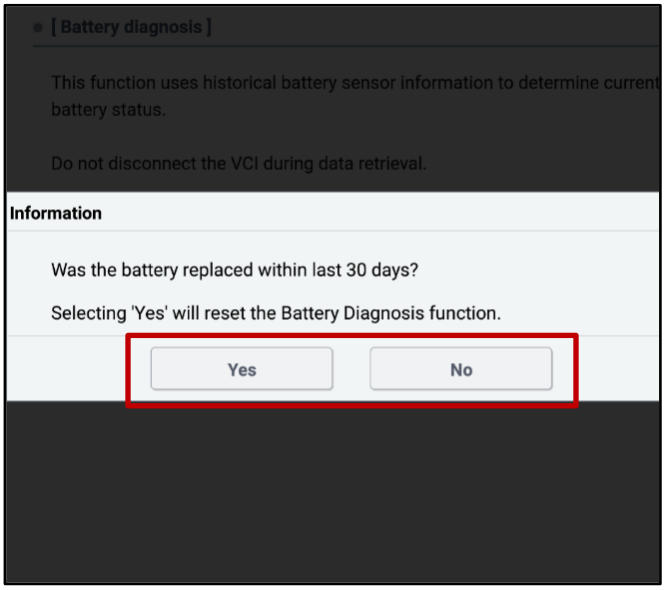
3. Follow the instruction on the KDS screen and select OK to continue.



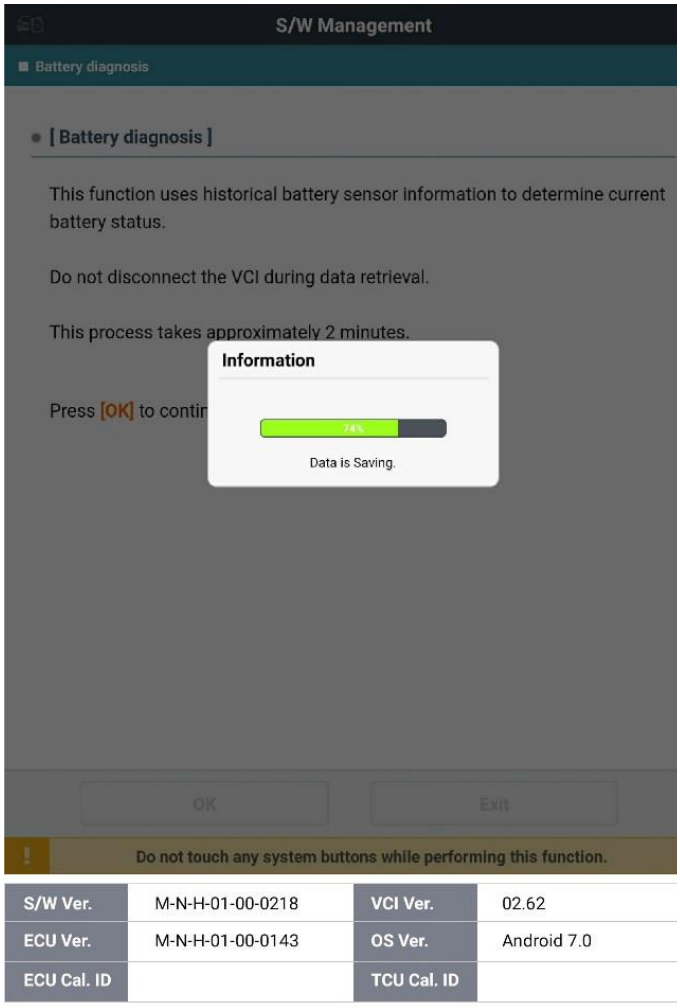
4. Click the OK to continue with Battery Diagnosis.



5. Check the Pop-Up screen (if applicable).

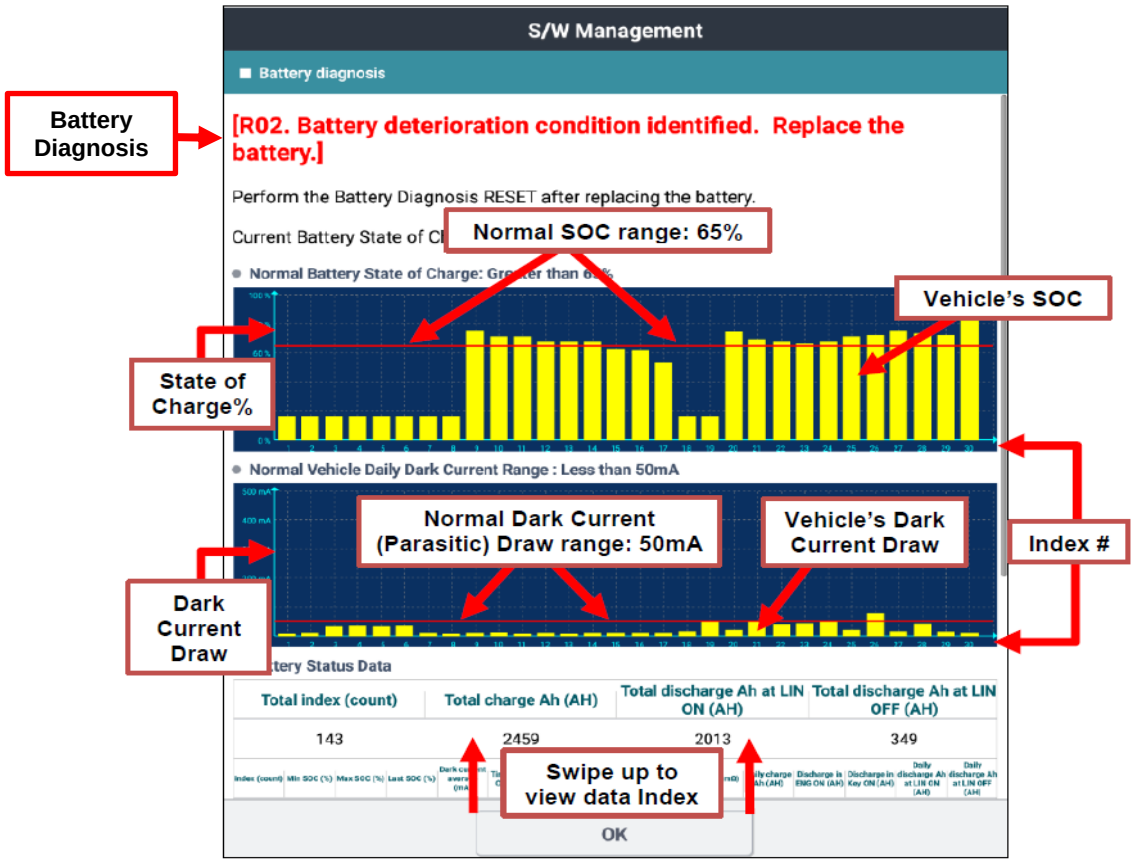


6. Data saving will take approximately 2 minutes and then the result will display.

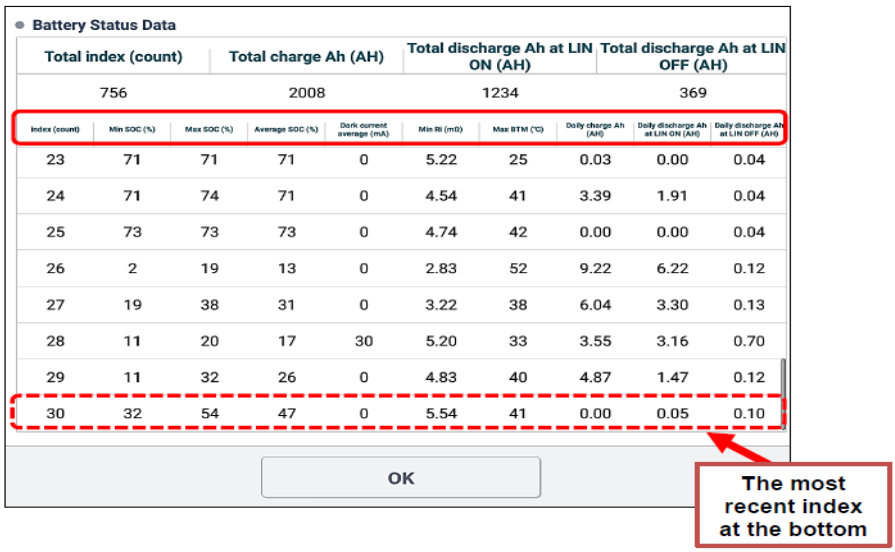


S/W Ver.	M-N-H-01-00-0218	VCI Ver.	02.62
ECU Ver.	M-N-H-01-00-0143	OS Ver.	Android 7.0
ECU Cal. ID		TCU Cal. ID	

7. The battery diagnosis result will display. Follow the instructions stated in the diagnosis results. Additional procedures or diagnostics may be required depending on the result.



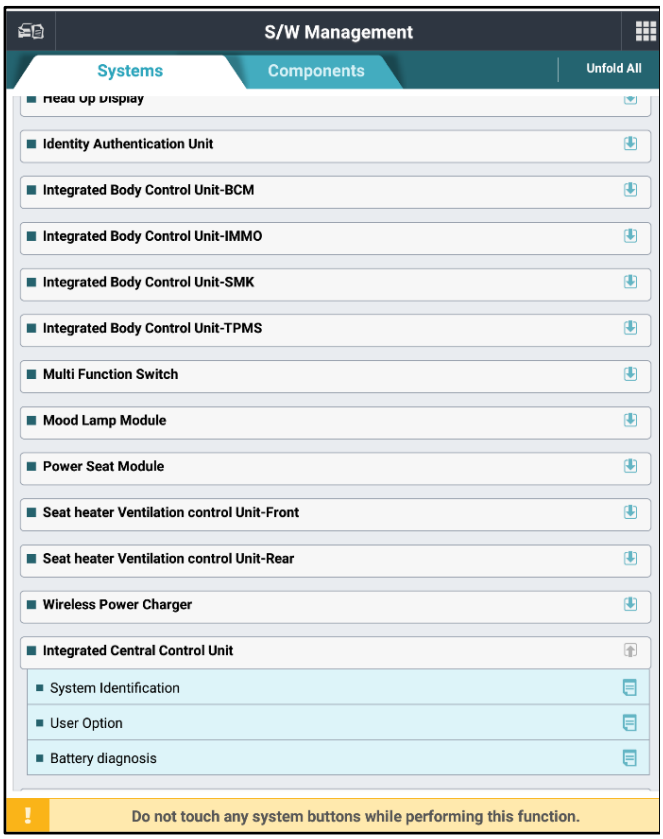
BATTERY STATUS DATA INDEX



Index (count)	Min SOC (%)	Max SOC (%)	Average SOC (%)	Dark current average (mA)	Min RI (mΩ)	Max BTM (°C)	Daily charge Ah (AH)	Daily discharge Ah at LIN ON (AH)	Daily discharge Ah at LIN OFF (AH)
23	71	71	71	0	5.22	25	0.03	0.00	0.04
24	71	74	71	0	4.54	41	3.39	1.91	0.04
25	73	73	73	0	4.74	42	0.00	0.00	0.04
26	2	19	13	0	2.83	52	9.22	6.22	0.12
27	19	38	31	0	3.22	38	6.04	3.30	0.13
28	11	20	17	30	5.20	33	3.55	3.16	0.70
29	11	32	26	0	4.83	40	4.87	1.47	0.12
30	32	54	47	0	5.54	41	0.00	0.05	0.10

The most recent data index is at the bottom. Swipe up to view and print available data indexes with the battery sensor data before closing and exiting the Battery Diagnosis. It is highly recommended to print a paper copy or save the battery diagnosis result using the Screen capture feature, including the Battery Status Data index #1 to #30 (or the most recent index) as a record. Follow the path below for Samsung tablet screen print procedures. *Refer to appendix for detailed explanation of field column definitions, page 11.*

8. After finishing the Battery Diagnosis click OK to exit from Battery Diagnosis result screen.

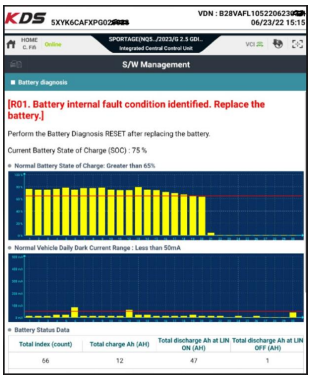


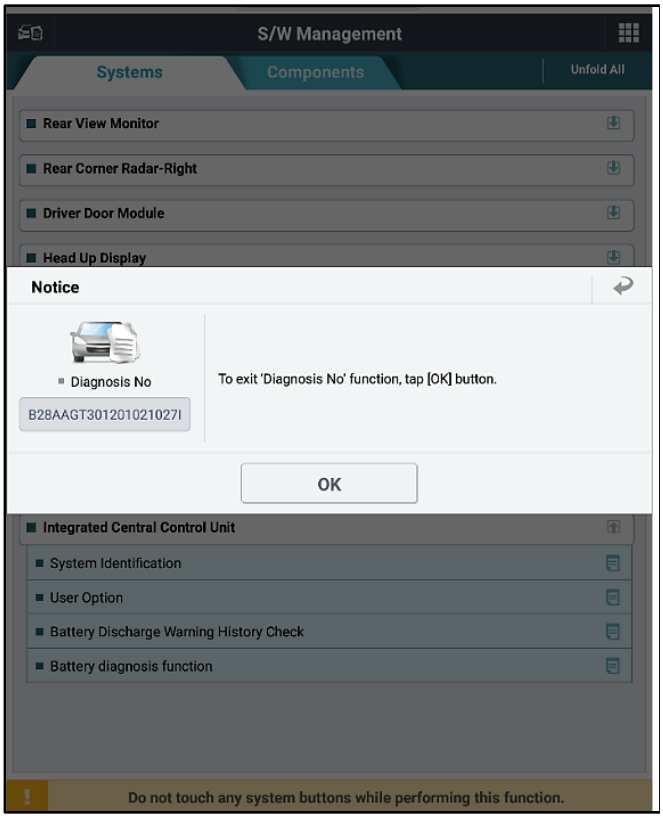
9. Print a paper copy or save a screen print of the Diagnosis Number to keep as a record.

Select **OK** (2) to transmit Battery Diagnosis result along with pertinent vehicle information and time stamp to the data server.

Note: User does not need to scan the result or type in the code for warranty submission. The Battery Diagnosis is complete.

Refer to page 11 for instructions.





SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

Item		Code	Description	Warrantable
Replace	Internal defect	R01	Battery internal fault condition identified. Replace the battery. Perform the Battery Diagnosis RESET after replacing the battery.	O
	Aging	R02	Battery deterioration condition identified. Replace the battery. Perform the Battery Diagnosis RESET after replacing the battery.	O
	Charging defect	R03	Abnormal charging current detected. Replace the battery. Perform the Battery Diagnosis RESET after replacing the battery.	O
Charge	Excess dark current	D01	Excessive dark current draw condition identified. Charging the battery and perform diagnosis on dark current draw. Refer to the Shop Manual and follow the dark current draw diagnostic procedure.	O
	Aftermarket electronic device	D02	Current draw from aftermarket electronic component(s) detected. Inspect and remove any aftermarket electronic component(s). Aftermarket electronic components constantly draw power, and rapidly reduce battery State of Charge (SOC). Charge the battery with a Kia approved charger or idle the engine with the headlights ON.	X
	Excess use	D03	Over usage of electrical components detected while the engine is not running. Charge the battery. Electrical components usage while the engine running draw battery current, and rapidly reduce battery State of Charge (SOC). Charge the battery with a Kia approved charger or idle the engine with the headlights ON.	X
	Lack of driving	D04	Insufficient battery charge condition identified. Charge the battery. Dark current draw amount is normal. ISG system may not activate due to insufficient battery State of Charge (SOC). Charge the battery with a Kia approved charger or idle the engine with the headlights ON.	X
Normal (OK)		D00	Good battery condition identified Do not file warranty claim	X

In case of D00 (Inactivate), You do not need to wait for 4 hours to make sensor activate. If there is no symptom such as no crank, you can send it out. If any symptom, please refer to page 2.

TECH TIP

The ISG system may not work until the battery sensor re-learns itself over a period of a few hours. This learning occurs with key 'ON' or 'OFF'.

SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

AFFECTED VEHICLE RANGE:

Model	Production Year
Carnival (KA4)	2022MY~
EV6 (CV)	2022MY~
K5 (DL3a)	2021MY~
Seltos (SP2)	2022MY~
Soul (SK3)	2023MY~
Sportage (NQ5a, NQ5 HEV)	2022MY~
Sorento (MQ4a, MQ4 P/HEV)	2021MY~
Telluride (ON)	2023MY~

REQUIRED TOOL:

Tool Name	Figure	Comments
Kia Diagnostic System / Kia Smart Battery Tester	 	Additional tools can be sourced at Snap-On Business Solutions at 1-888-542-1011

WARRANTY INFORMATION: (OE BATTERY CLAIM)

N Code: D21 C Code: ZZ3

Error Code	Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
R01 R02 R03	W	Refer to EPC	0	Battery Replacement with KDS Usage*	37110F02	0.4 M/H	Refer to Kia Battery Application Guide	1
D01 D02 D03 D04				Battery Recharge with KDS Usage*	37110F03	0.5 M/H	N/A	0
--				Battery Replacement with B2Q	37110F05	0.4 M/H	Refer to Kia Battery Application Guide	1
--				Battery Recharge with B2Q	37110F06	0.5 M/H	N/A	0
--				Power Jump* (Sub Op Code)	37110F04	0.1 M/H	N/A	0

*Power Jump: OBD cannot communicate with KDS. If the vehicle came in as towed in "fully battery drained" condition, technician needs to power jump to get voltage to the vehicle (No start needed, only IG ON without crank), to communicate with KDS to diagnose. Refer to Warranty Bulletin 2022-30 for claim submission procedures.

NOTICE

If the correct attachment is not included in the warranty claim, it may be subject charged back.

SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

WARRANTY INFORMATION: (GENUINE KIA BATTERY CLAIM)

N Code: D21 C Code: ZZ3

Error Code	Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
R01 R02 R03	S	Refer to EPC	0	Battery Replacement with KDS Usage*	37110F02	0.4 M/H	N/A	0
D01 D02 D03 D04				Battery Recharge with KDS Usage*	37110F03	0.5 M/H		
--				Battery Replacement with B2Q	37110F05	0.4 M/H		
--				Battery Recharge with B2Q	37110F06	0.5 M/H		
--				Power Jump* (Sub Op Code)	37110F04	0.1 M/H		

*Power Jump: OBD cannot communicate with KDS. If the vehicle came in as towed in "fully battery drained" condition, technician needs to power jump to get voltage to the vehicle (No start needed, only IG ON without crank), to communicate with KDS to diagnose. Refer to Warranty Bulletin 2022-30 for claim submission procedures.

NOTICE

If the correct attachment is not included in the warranty claim, it may be subject charged back.

SUBJECT: KDS BATTERY DIAGNOSIS FEATURE

APPENDIX:

Term	Description of Data
Total Index Count	Total day is based on production date. Replace the battery sensor if the reading is "0"
Total charge Ah (AH)	Total amperage (Ah) charge from battery sensor
Total discharge Ah at LIN ON (AH)	Total discharge (Ah) at LIN ON from battery sensor install at first.
Total discharge Ah at LIN OFF (AH)	Total discharge Ah at LIN OFF from battery sensor install at first.
Index(count)	Number of days ago (1 = 29 days ago, 30 = today)
Min SOC (%)	SOC value of daily minimum battery for 24 hours
Max SOC (%)	SOC value of daily maximum battery for 24 hours
Average SOC(%)	Daily average SOC value for 24 hours
Last SOC(%)	SOC value for the last 24 hours
Dark current average (mA)	Daily average dark current for 24 hours (Average consumption current in vehicle slip state)
Min Ri (mΩ)	Battery internal resistance minimum for 24 hours
Max BTM (℃)	Battery maximum temperature for 24 hours
Daily charge Ah (AH)	Daily charge current (Ah) for 24 hours
Daily discharge Ah at LIN ON (AH)	Sleep non-entry state (ACC, IGN ON, start-up power generation control): Daily discharge current for 24 hours
Daily discharge Ah at (AH)	Discharge current amount in sleep entry for 24 hours

Attachment Submission Instructions:

1. Print out battery diagnosis result and attach to RO or send the screen image by e-mail to your Warranty Administrator.

2. The Warranty Administrator should upload the attachment during claim entry.

3. This attachment will be required for battery replacement and battery recharge.