	GROUP	MODEL
	ELE	**2019-2022MY Niro EV (DE EV)**
	NUMBER	DATE
	293	**May 2023**

TECHNICAL SERVICE BULLETIN

SUBJECT: **BMS DTC JUDGEMENT LOGIC IMPROVEMENT**

This bulletin provides the procedure to update the software logic of the Battery Management System (BMS) on some 2019-2022MY Niro EV (DE EV) vehicles produced from December 5, 2018 through April 12, 2022. The BMS ECU monitors voltage deviation between battery cells, poor insulation, abnormal cell voltage changes after charging, abnormal current change during charging, over-voltage, temperature deviation or average cell deviation during driving is detected. These conditions can cause the BMU to set DTC P1AA600. The affected vehicles may exhibit a reduction in power and speed (limp home mode) and a MIL 'ON' with DTC P1AA600 stored. This BMS DTC logic improvement will expand DTC P1AA600 into multiple DTCs to aid in proper diagnosis, which reduces the required time and steps outlined in the 'DTC Inspection' on KGIS to determine the fault using 'freeze frame' data (refer to table below). Follow the procedure outlined in this publication to apply the improved logic to the 'BMS' system using the KDS ECU Upgrade function as described in this bulletin. For confirmation that the latest reflash has been applied to a vehicle you are working on, verify the ROM ID using the table on page 5 of this bulletin.

DTC Description:
P1AA600 - Hybrid/EV Battery Abnormal Performance Detection

ⓘ IMPORTANT

A Vehicle Diagnosis Number (VDN) must be created prior to updating the 'BMS' software. If a VDN is not created, Warranty claim submission issues WILL occur. This software update is not a remedy for DTC P1AA600. The DTC must be stored for this TSB to apply. Technicians are to save the freeze frame data for diagnosis purpose and applicable repair.

Current DTC	Info Code 1	Info Code 2	Expanded 'New' DTC(s)	Fault Description
P1AA600	1		P1AA700	Cell voltage deviation
	2		P1AA800	Insulation resistance breakdown
	4-64		P1AA900	Cell voltage movement
	128		P1AAA00	Cell voltage deviation while charging
		1	P1AAB00	Temperature too high
		2	P1AAC00	Cell voltage too high
		4	P1AAD00	Cell voltage too low
		8	P1AAE00	Temperature deviation
		16	P1AAF00	Abnormal voltage change detection logic issue

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ECU Upgrade Procedure:

To correct this condition, the ECU should be reprogrammed using the KDS download, as described in this bulletin.

Upgrade Event Name
642. DE EV BMS DTC JUDGMENT LOGIC IMPROVEMENT

NOTICE

- Confirm a fully charged battery (12.3 volts or higher is necessary) is used or utilize a fully charged jump starter box connected to the battery.
- Ensure the KDS GDS is sufficiently charged at 60% or higher prior to reflash.
- All ECU upgrades must be performed with the ignition set to the 'ON' position unless otherwise stated.
- Damaged VCI II units should not be used and promptly replaced.
- Be careful not to disconnect the VCI-II connected to the vehicle during the ECU upgrade procedure.
- DO NOT start the engine during ECU upgrade.
- DO NOT turn the ignition key 'OFF' or interrupt the power supply during ECU upgrade.
- When the ECU upgrade is completed, turn the ignition 'OFF' and wait 10 seconds before starting the engine.
- ONLY use approved ECU upgrade software designated for the correct application.

IMPORTANT

It is recommended to ALWAYS check the Electronic Parts Catalog (EPC) to locate the ECU Part Number respective to Auto/Manual Mode ROM IDs. DO NOT reference the parts label affixed to the ECU.

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NOTICE

Before attempting an ECU upgrade on any Kia model, make sure to first determine whether the applicable model is equipped with an immobilizer security system. Failure to follow proper procedures may cause the PCM to become inoperative after the upgrade and any claims associated with this repair may be subject to chargeback.

ROM ID INFORMATION TABLE:

Upgrade Event #642

Model	System	ECU P/No.	ROM ID	
			Previous	New
DE EV	BMS	375A0 K4052	6400, 6500, 6700, 6730, 6740, 6770, 6780, 6790, 6800, 6820, 6840, 6860, 6900	6880
		375A0 K4002	6402, 6502, 6702, 6732, 6742, 6772, 6782, 6792, 6802, 6822, 6842, 6862, 6902	6882
		375A0 K4452	6504, 6734, 6744, 6774, 6784, 6794, 6804, 6824, 6844, 6864, 6904	6884
		375A0 K4402	6506, 6736, 6746, 6776, 6786, 6796, 6806, 6826, 6846, 6866, 6906	6886
		375A0 K4053	6960, 6980, 7020, 7040, 7050, 7060, 7080	7100
		375A0 K4003	6962, 6982, 7022, 7042, 7052, 7062, 7082	7102
		375A0 K4453	6964, 6984, 7024, 7044, 7054, 7064, 7084	7104
		375A0 K4403	6966, 6986, 7026, 7046, 7056, 7066, 7086	7106

To verify the vehicle is affected, be sure to check the Calibration Identification of the vehicle's ECM ROM ID and reference the Information Table as necessary.

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NOTICE

Prior to performing the ECU upgrade, be sure to check that the KDS is fully charged.

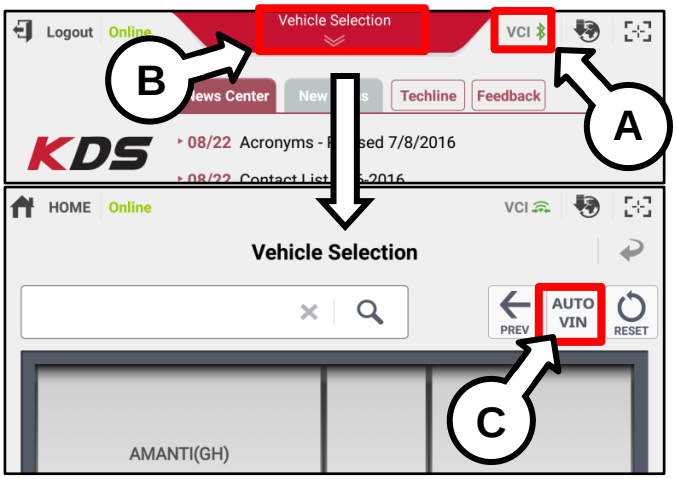
1. Connect the VCI-II to the OBD-II connector, located under the driver's side of the instrument panel.

NOTICE

The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.

2. With the ignition ON, turn ON the KDS tablet. Select 'KDS' from the home screen.

3. Confirm communication with VCI (A) and then configure the vehicle (B) using the 'AUTO VIN' (C) feature.



4. Select 'ECU Upgrade'.

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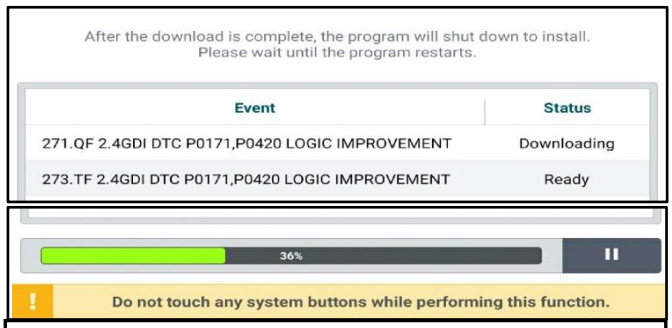
5. The KDS will check the server for recently uploaded Events and then automatically download Upgrade Event #642.

NOTICE

The vehicle must be identified in Vehicle Selection to download an Event for that vehicle.

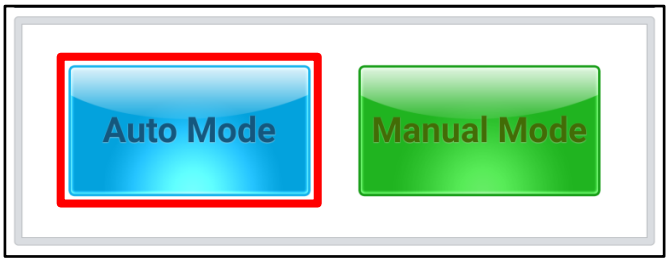


KDS screenshot shown above is for demonstration purposes only. Events shown in screenshot are not applicable to this bulletin.

6. Select Auto Mode.

CAUTION

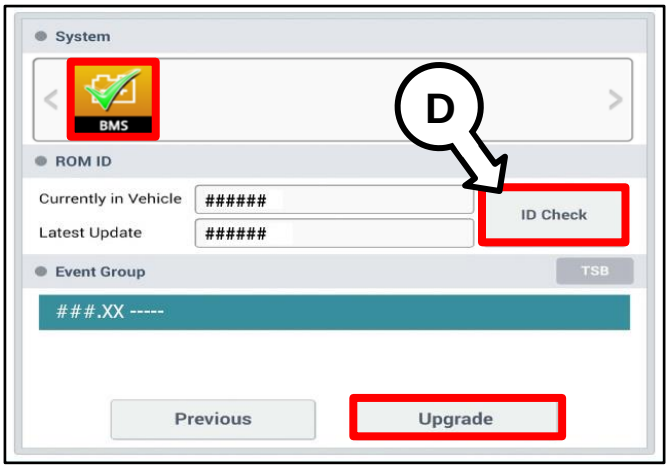
Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



7. Select the 'BMS' system(s) under the System selection menu.

Touch ID Check (D) and confirm that the latest update is available.

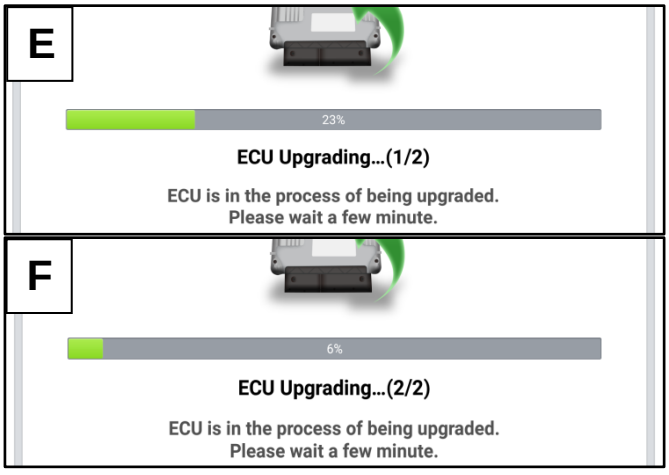
Select Upgrade Event #642. DE EV BMS DTC JUDGMENT LOGIC IMPROVEMENT and select Upgrade to continue.



8. The ECU upgrade will begin and the progress of the upgrade will appear on the bar graph. Upgrade part (1/2) (E) will download the upgrade event to the VCI-II. Upgrade part (2/2) (F) will upgrade the ECU.

CAUTION

Do not touch the system buttons (like 'Back', 'Home', 'etc.') while performing ECU Upgrade.

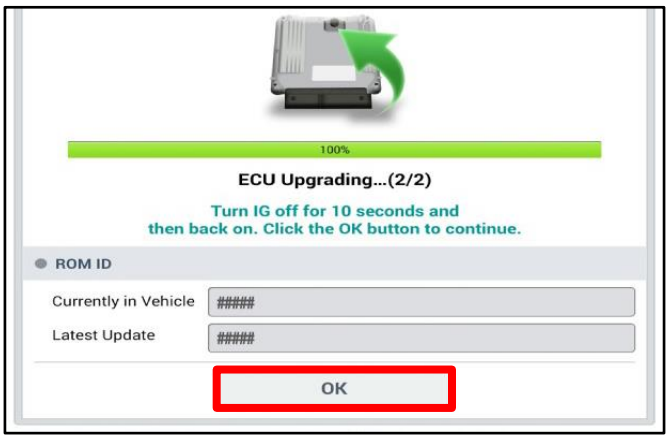


9. If a "Communication Fail" screen appears, verify that the VCI-II and KDS are communicating properly. Select **'OK'** and restart the from step 4.

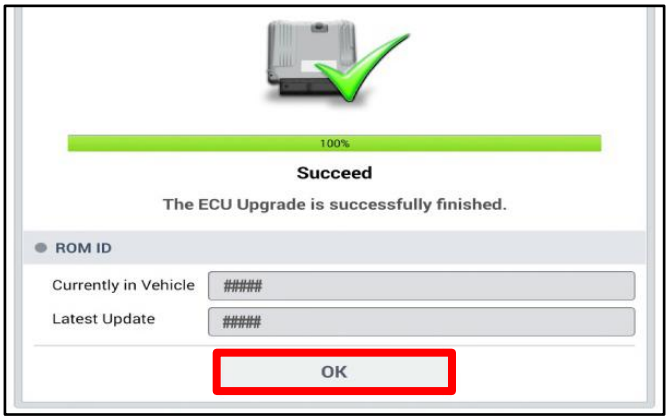
NOTICE

If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.

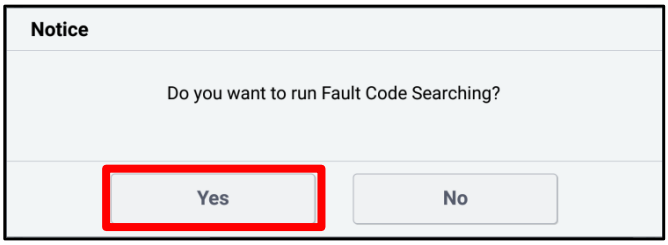
10. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Select **'OK'** to continue.



11. Once the upgrade is complete, select **'OK'** to finalize the procedure.



12. When prompted, select **'YES'** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.



13. Start the engine to confirm normal operation of the vehicle.

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Manual Upgrade Procedure:

NOTICE

The manual upgrade should ONLY be performed if the automatic upgrade fails.

If the automatic upgrade fails, turn the ignition 'OFF' for about 10 seconds then place it back in the 'ON' position to reset the control unit BEFORE performing manual upgrade.

See table below for 'Manual Mode' passwords.

Manual Mode ECU Upgrade Passwords

Menu	Password
DE EV BMS: 375A0-K4052	4052
DE EV BMS: 375A0-K4002	4002
DE EV BMS: 375A0-K4452	4452
DE EV BMS: 375A0-K4402	4402
DE EV BMS: 375A0-K4053	4053
DE EV BMS: 375A0-K4003	4003
DE EV BMS: 375A0-K4453	4453
DE EV BMS: 375A0-K4403	4403

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.
2. Select the **BMS** system under the System selection menu. Select **Upgrade Event #642** and select **Upgrade** to continue.
3. Select the appropriate control unit part number with reference to the ROM ID Information Table on page 3, and select **OK**.
4. Enter the appropriate password from the Manual Mode password table above and select **OK**.
5. The upgrade will begin and the progress of the upgrade will appear on the bar graph.
6. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Select **OK**.
7. Once the upgrade is complete, select **OK** to finalize the procedure.
8. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.
9. Start the engine to confirm proper operation of the vehicle.

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AFFECTED VEHICLE RANGE:

Model	Production Date Range
Niro EV (DE EV)	December 5, 2018 to April 12, 2022

REQUIRED TOOL:

Tool Name	Figure	Comments
KDS		Kia Diagnostic System

WARRANTY INFORMATION:

N Code: I3A C Code: ZZ5

Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
W	375A0 K4053	0	DE BMS Software Logic Improvement	375A0F09	0.3 M/H	N/A	0
			Diagnostic Tool Operation For VDN Submission*	375A0RQ0	0.2 M/H		

*Note: A Vehicle Diagnosis Number (VDN) must be created prior to updating the 'BMS' software. If a VDN is not created, Warranty claim submission issues WILL occur. Both Op Codes are required to be on the claim.