A·B·R·I·T·E·S
automotive solutions

ABRITES DIAGNOSTICS FOR HYUNDAI/KIA ONLINE

User manual
version 1.4

Important notes

The Abrites software and hardware products are developed, designed and manufactured by Abrites Ltd. During the production process we comply to all safety and quality regulations and standards, aiming at highest production quality. The Abrites hardware and software products are designed to build a coherent ecosystem, which effectively solves a wide range of vehicle-related tasks, such as:

    Diagnostic scanning;
    Key programming;
    Module replacement,
    ECU programming;
    Configuration and coding.

All software and hardware products by Abrites Ltd. are copyrighted. Permission is granted to copy Abrites software files for your own back-up purposes only. Should you wish to copy this manual or parts of it, you are granted permission only in case it is used with Abrites products, has "Abrites Ltd." written on all copies, and is used for actions that comply to respective local law and regulations.

Warranty

You, as a purchaser of Abrites hardware products, are entitled of a two-year warranty. If the hardware product you have purchased has been properly connected, and used according to its respective instructions, it should function correctly. In case the product does not function as expected, you are able to claim warranty within the stated terms. Abrites Ltd. is entitled to require evidence of the defect or malfunction, upon which the decision to repair or substitute the product shall be made.

There are certain conditions, upon which the warranty cannot be applied. The warranty shall not apply to damages and defects caused by natural disaster, misuse, improper use, unusual use, negligence, failure to observe the instructions for use issued by Abrites, modifications of the device, repair works performed by unauthorized persons. For example, when the damage of the hardware has occurred due to incompatible electricity supply, mechanical or water damage, as well as fire, flood or thunder storm, the warranty does not apply.

Each warranty claim is inspected individually by our team and the decision is based upon thorough case consideration.

Read the full hardware warranty terms on our website.

Copyright information

Copyright:

All material herein is Copyrighted ©2005-2021 Abrites, Ltd.
Abrites software, hardware, and firmware are also copyrighted
Users are given permission to copy any part of this manual provided that the copy is used with Abrites products and the "Copyright © Abrites, Ltd." statement remains on all copies
"Abrites" as used in this manual synonymous with "Abrites, Ltd." And all it's affiliates
The "Abrites" logo is a registered trademark of Abrites, Ltd.

Notices:

The information contained in this document is subject to change without prior notice. Abrites shall not be held liable for technical/editorial errors, or omissions herein.
Warranties for Abrites products and services are set forth in the express written warranty statements accompanying the product. Nothing herein should be construed as constituting any additional warranty.
Abrites assumes no responsibility for any damage resulting from the use, misuse, or negligent use of the hardware or any software application.

Safety information

The Abrites products are to be used by trained and experienced users in diagnostics and reprogramming of vehicles and equipment. The user is assumed to have a good understanding of vehicle electronic systems, as well as potential hazards while working around vehicles. There are numerous safety situations that cannot be foreseen, thus we recommend that the user read and follow all safety messages in the available manual, on all equipment they use, including vehicle manuals, as well as internal shop documents and operating procedures.

Some important points:
Block all wheels of the vehicle when testing. Be cautious when working around electricity.
Do not ignore the risk of shock from vehicle and building-level voltages.
Do not smoke, or allow sparks/flame near any part of the vehicle fuel system or batteries.
Always work in an adequately ventilated area, vehicle exhaust fumes should be directed towards the exit of the shop.
Do not use this product where fuel, fuel vapours, or other combustibles could ignite.

In case any technical difficulties occur, please contact the
Abrites Support Team by email at support@abrites.com.

List of revisions

Date	Chapter	Description	Revision
2021	ALL	Document Created	1
09.05.2022	3	Chapter Added	1.2
23.11.2022	2	Added Diagnostics	1.3
23.11.2022	3	Updated section	1.3
23.11.2022	ALL	Structural Revision	1.3
17.10.2023	10	VIN Calibration	1.4

Table of contents

1. Introduction

ABRITES Diagnostics for Hyundai/KIA Online is a professional diagnostic software, which works together with the Abrites Vehicle Diagnostic Interface (AVDI).

In order to operate, the software requires you to have an AVDI interface, a Windows based PC with a minimum of 1024MB RAM, 64GB of free hard drive space and at least Windows 7 64bit Service Pack 1 or later version to operate. For optimal operation, it is always recomended to have the latest software version installed, active AMS, and a stable Internet connection.

The tool's purpose is to allow you to perform standard and advanced vehicle diagnostics, starting with module identification, reading and clearing diagnostic trouble codes (DTCs), live data monitoring, actuator testing, as well as to perform special functions - PIN reading, key learning and module neutralization.

AVDI should be used with ABRITES software produced by Abrites Ltd.

ABRITES is a trade mark of Abrites Ltd.

The tool's purpose is to allow you to perform PIN reading, key learning and module neutralization.

2. Abrites Diagnostics for Hyundai/KIA Online:

The Abrites software for Hyundai/KIA is an Online application and requires your computer to be con-
nected to the Internet. We can suggest a connection to the Internet via 3G/ 4G from a mobile device as
well as a WI-FI network. Please ensure to have port 8443 allowed by your Internet Service Provider in
order to ensure the correct functionality of your Abrites diagnostics for Hyundai/KIA Online.
Using the icon in the top right of your software screen you will be able to see the Internet connectivity
and signal strength and the three horizontal lines will allow you to choose a language in which the soft-
ware to operate:

When you open the Abrites Quick Start you can select the Abrites software for Hyundai/KIA Icon, once
you choose it you will have the option to pick the Hyundai Online icon
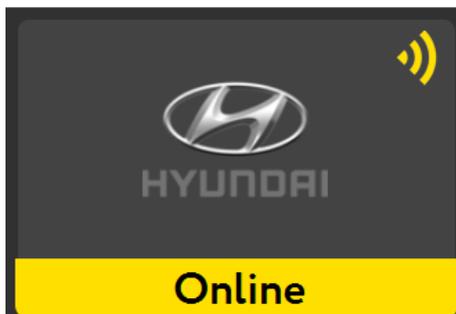
After clicking the Abrites software for Hyundai Icon you will see the software start up. The software will automatically check if your AVDI is connected, and will check for updates.

Then follow the vehicle detection options, and there are two:

1.   Enter the VIN of the vehicle, or read it from the car you are connected to
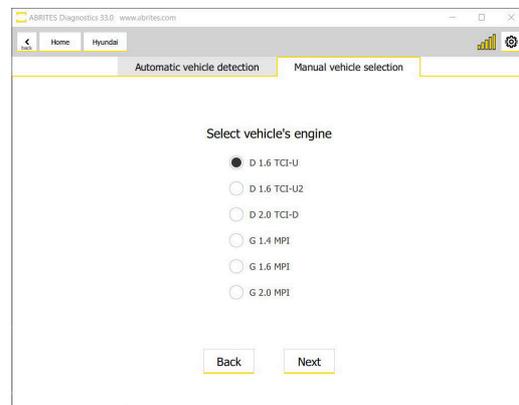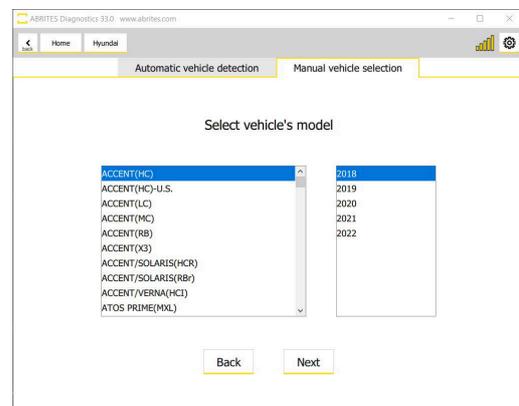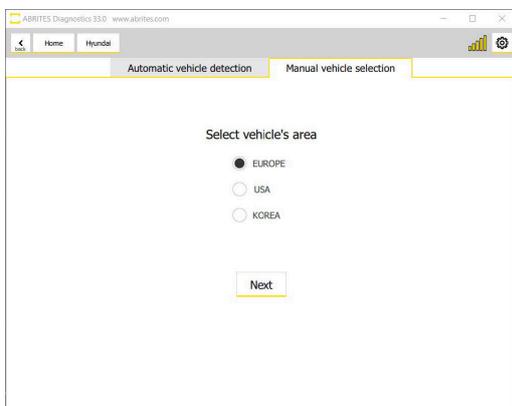2.   Manually choose the model you are working on

The model selection goes in few other steps:

1. Select vehicle's area
2. Select vehicle's model (here you select vehicle model and year or production)
3. Confirm the selection

(When applicable, you would have to Select vehicle's engine)

4. Select vehicle's key

The steps can be seen in the pictures below:
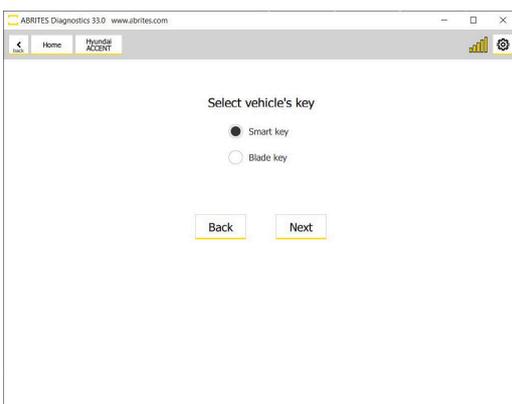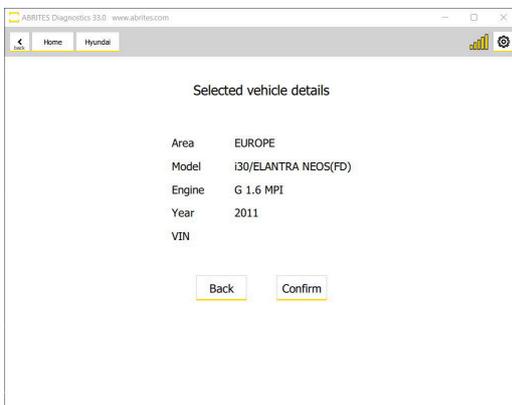
3. Standard diagnostic functionalities

Diagnostic functionalities let you scan all modules in the vehicle, read and clear DTCs, monitor Live Data in modules, perform actuator testing and simultaneously monitor measured values.

4. Special Functions

Once the vehicle selection is complete, you will be able to start using the special functions of the Abrites software for Hyundai/KIA Online. It has the following functionalities depending on the model:

- Read PIN Code
- Learn Keys
- Program Remotes (for vehicles with mechanical keys)
- Module Neutralisation
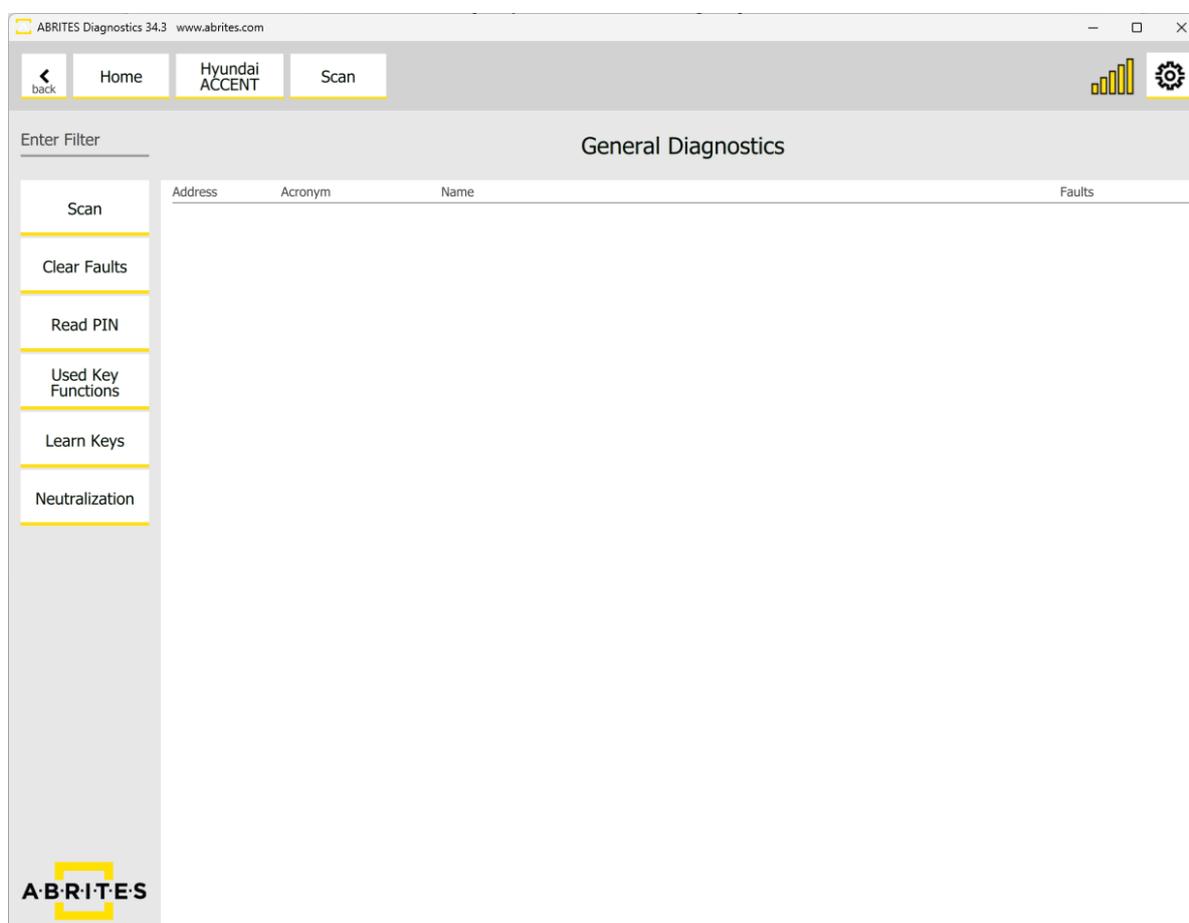
5. Read PIN Special Function

With the use of this special function you are able to read the PIN Code of Hyundai/KIA vehicle. The software works in wizard mode, in other words, it is a guided function and there are informative messages on what needs to be done.

Once you press and hold the START button the procedure begins and it guides you trough the process.
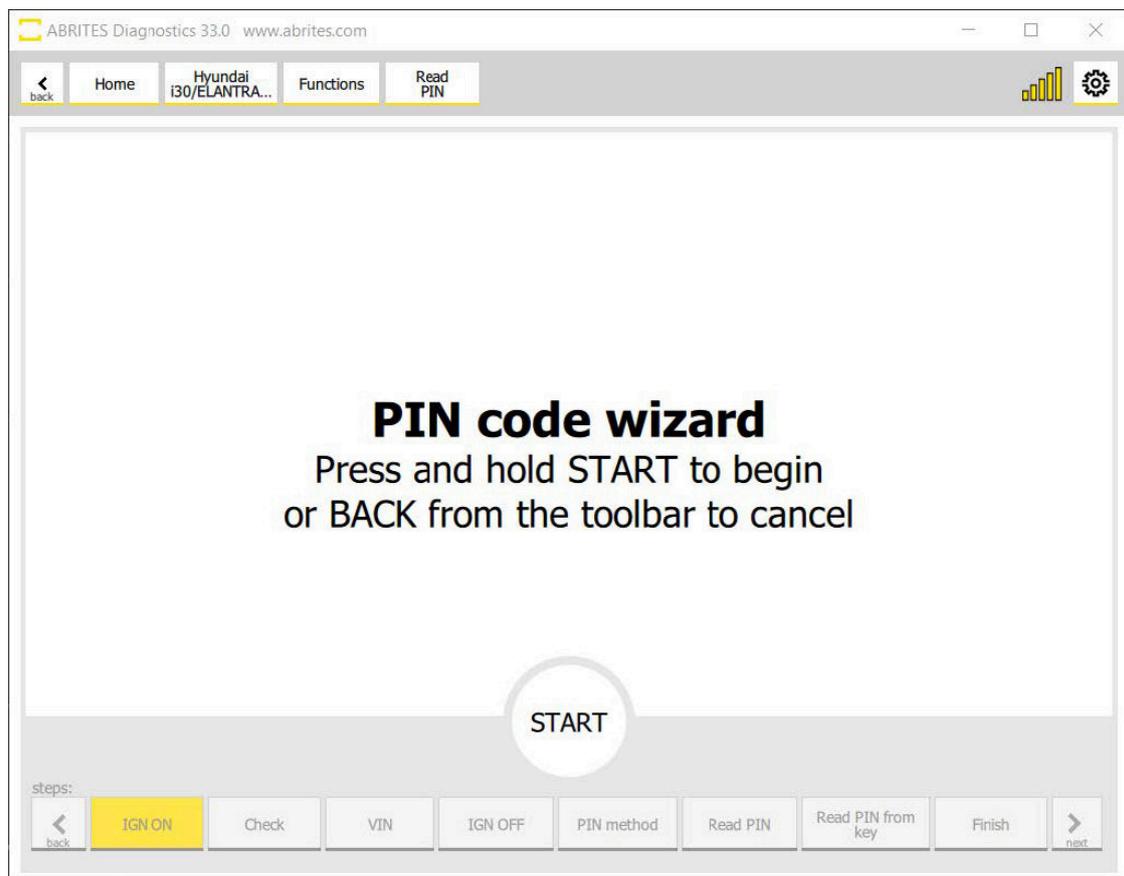
There are 3 options how to read the PIN:

1. Read PIN code from vehicle
This option is used when there are no available keys for the car.
2. Read PIN code from working key (requires PROTAG programmer)
This option is used whenever there is a working blade key with DST80 transponder or HITAG2 for the vehicle. The software lets you know when the PROTAG needs to be connected.
3. Calculate PIN code from VIN (for vehicles manufactured until 09/2007)
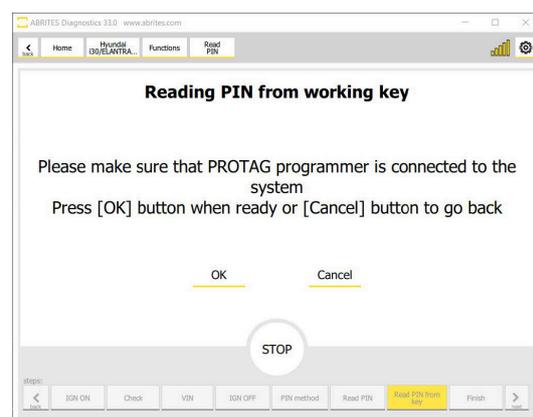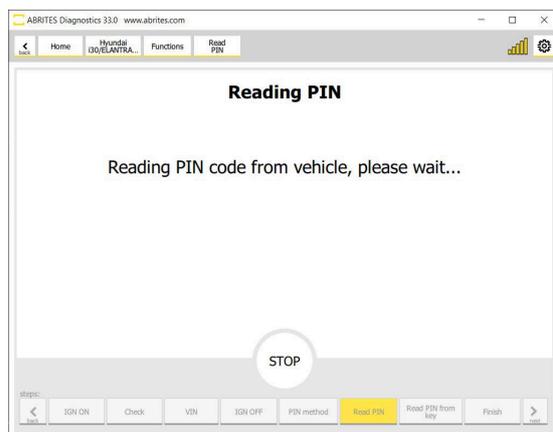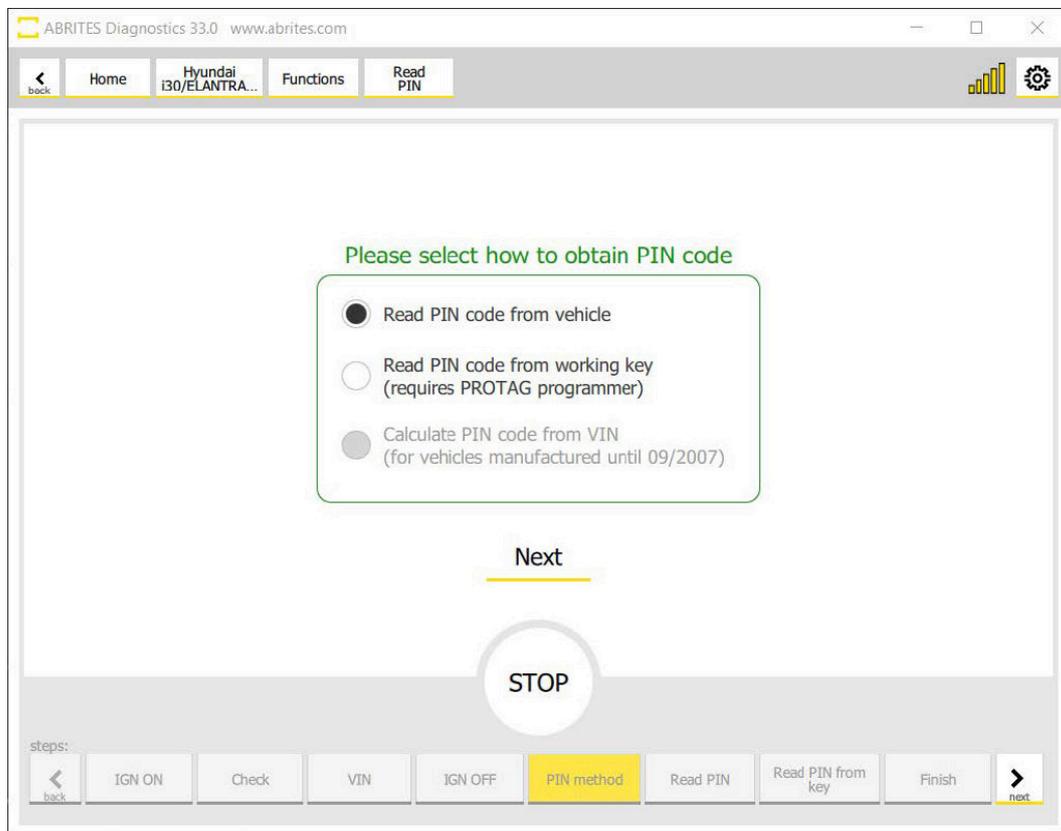
6. Learn Keys Special Function

This special function lets you program mechanical and smart keys to Hyundai vehicles. It is a wizard function, which guides you trough the process and provides informative messages on what needs to be done
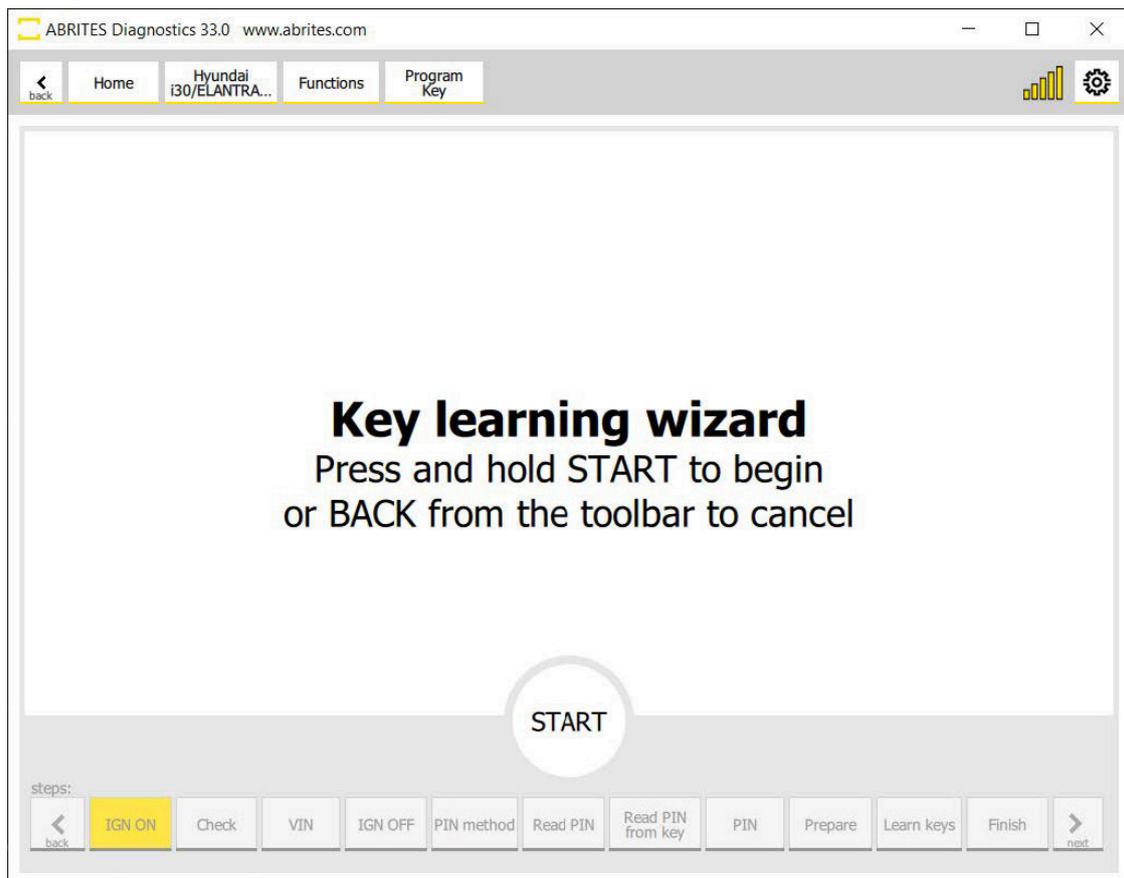
Following the on screen directions, procedure comes to the point where PIN code is needed. If the PIN is already known, there is an option to manually input it, if not, the procedure would continue with the PIN code reading. There are also two options for that - read it from the vehicle, or read it with the use of a working key and a PROTAG programmer, just as in the Read PIN code special function.
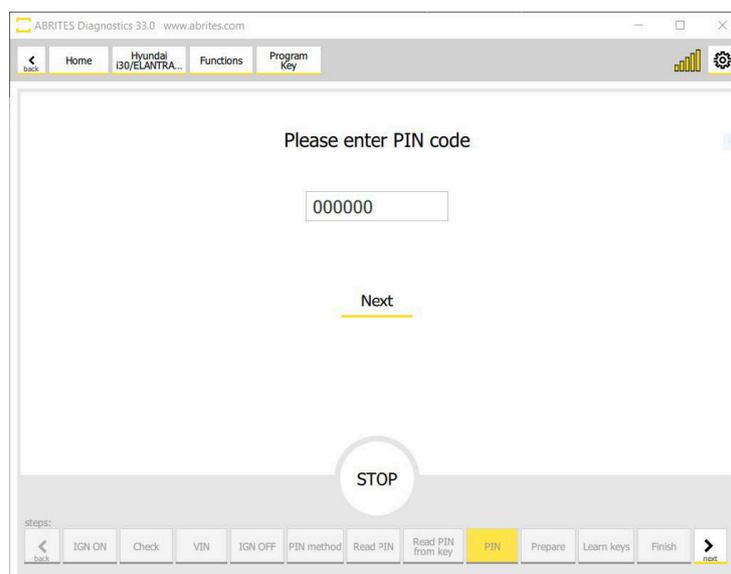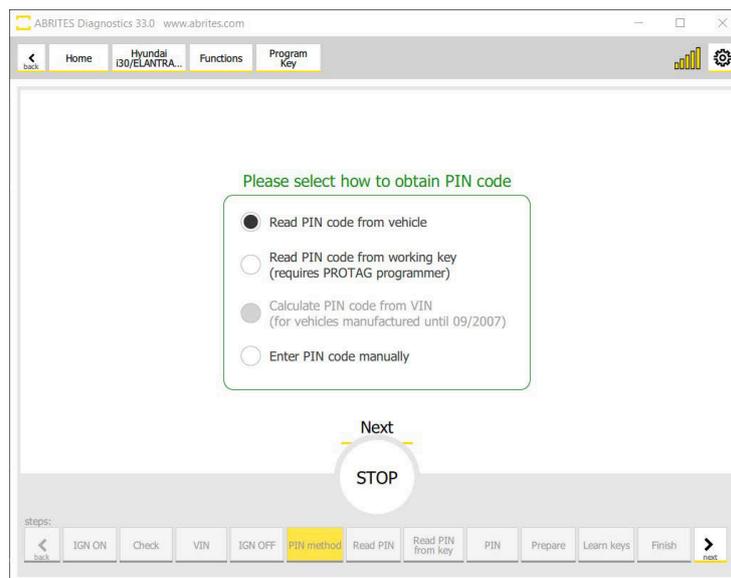
Once the PIN code is present, the wizard function will guide you trough the whole procedure until it is finished.
Key learning serves as module synchronization when a used module is neutralised or new modules are installed in the car.

7. Read PIN from working key Special Function

This special function is another guided function, dedicated to reading the PIN code from a working mechanical or smart key of Hyundai/Kia for vehicles with the following transponder types:

> HITAG 3 smart and mechanical key (procedure may take up to 70 min)
> HITAG AES smart and mechanical key (procedure may take up to 70 min)
> DST AES mechanical key
> DST 80 mechanical key
> HITAG 2 mechanical key (TA31 required)

In order to use this special function, HK011 license is required.

Here are the steps of the procedure:

1. Select "Read PIN from working key" from the menu
2. Press "Start"
3. Turn IGN ON and press "Next"
4. Turn IGN OFF
5. Connect your PROTAG and press "OK" or "Cancel" to go back
6. Insert the working key in the PROTAG programmer (for HITAG 3 and HITAG AES the procedure may take up tp 70 min)
7. Finish

8. Program Remotes Special Function

This special function is another guided function, dedicated to saving transmitter codes for vehicles equipped with mechanical keys. In other words, it lets you program the remote of a vehicle equipped with a mechanical key, after the key learning procedure is complete, because the remote for mechanical keys is not automatically programmed with the key learning.
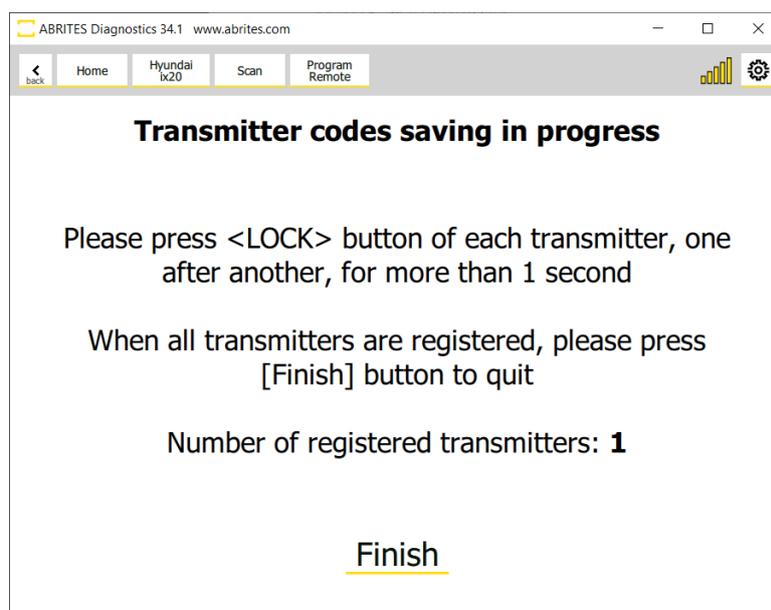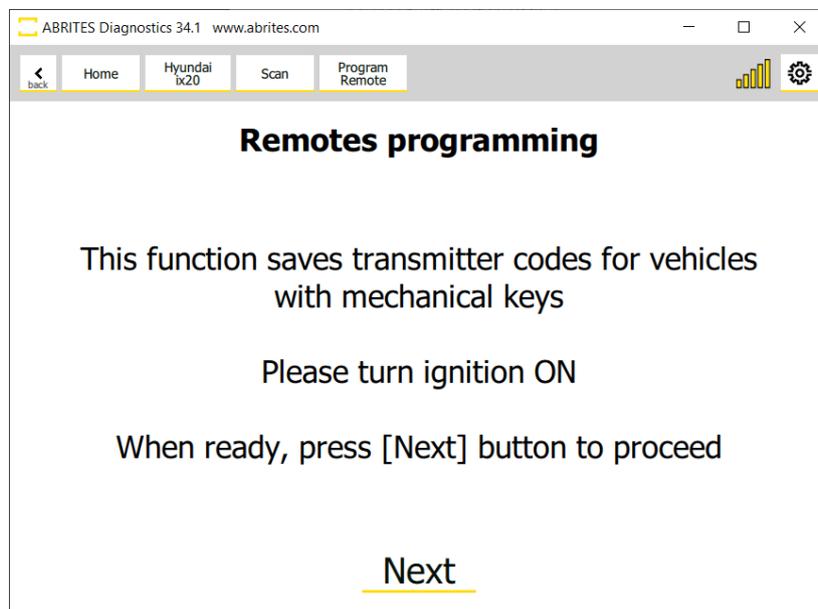
9. Neutralization Special Function

When module neutralization is already chosen, you would have to pick the desired option. There are currently two neutralization methods, which are explained below.
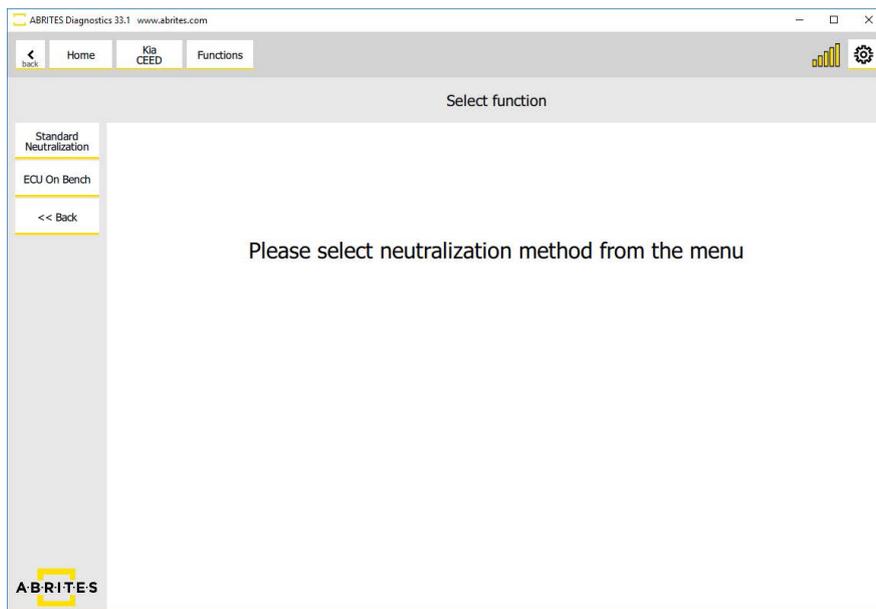
9.1 Standard Neutralization

The Hyundai Online software is able to do module neutralization, which is very useful functionality when it comes to module exchange and adaptation. In order for a second hand (donor) module to be adapted to a car, it needs to be neutralized. Modules that can be neutralized with the use of Abrites Online software for Hyundai are ECU, immobilizer, and smart system. HK009 license is required.
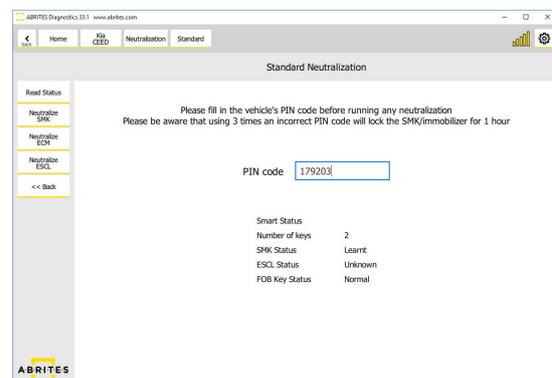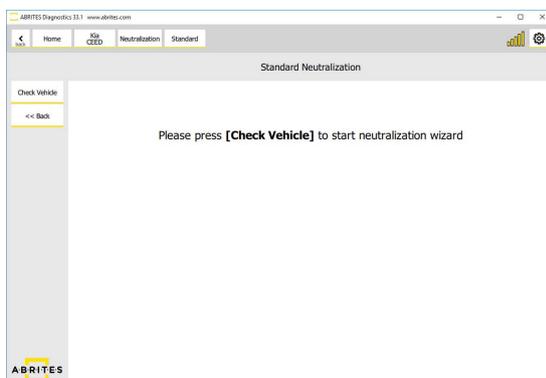
The Neutralization function allows the use of second-hand modules in Hyundai/Kia vehicles.

For vehicles with a smart key:
    neutralization (allowing adaptation in other vehicles) of the smart system
    neutralization (allowing adaptation in other vehicles) of the ECU
    neutralization (allowing adaptation in other vehicles) of the ESCL
    neutralization (allowing adaptation in other vehicles) of the PDM (for vehicles equipped with PDM)

For vehicles with a mechanical key:
    neutralization (allowing adaptation in other vehicles) of the immobilizer
    neutralization (allowing adaptation in other vehicles) of the Smart module (for vehicles that are equipped with one)

Neutralization is done in the vehicle that the module belongs to, because for ECU neutralization the PIN code is required. If a second hand ECU is purchased off the Internet, the task would be more difficult. Our new development (HK010 special function) comes very handy in such cases. Please check the next page for details.

9.2 Best prictices and advise:

The following sequence of neutralization of modules needs to be followed! First you neutralize all of the modules you are changing except the SMART SYSTEM, and then neutralize the SMART SYSTEM with a new procedure. (or in the case of mechanical key cars - the Immobilizer). If the vehicle is left with neutralized smart system, but the rest of the modules are not neutralized, this might cause a problem for the vehicle.

Another very important thing is that the state of the module you are working with can be checked by viewing the live data values or from the process of neutralization.

When working in a donor car you have to know the pin code of the donor. If you od not know it, you can read it using the key programming function.

If workinfg on bench (HK010) you do not need the pin, but there are risks for the unit.

If the key comes from the same car you can re-program it and reuse it.

9.3 ECU Neutralization on bench (HK010)

ECU Neutralization without the need of PIN code. It requires the HK010 license.

Our new development for Hyundai/KIA lets you neutralize an ECU with bench connection without the need of PIN code (The PIN code will be required for the adaptation only). This function works for all ECUs (excluding those with integrated immobilizer). HK010 license is required.
In case the immobilizer is integrated in the ECU, PIN code needs to be read and this is done with the other neutralization method explained above.
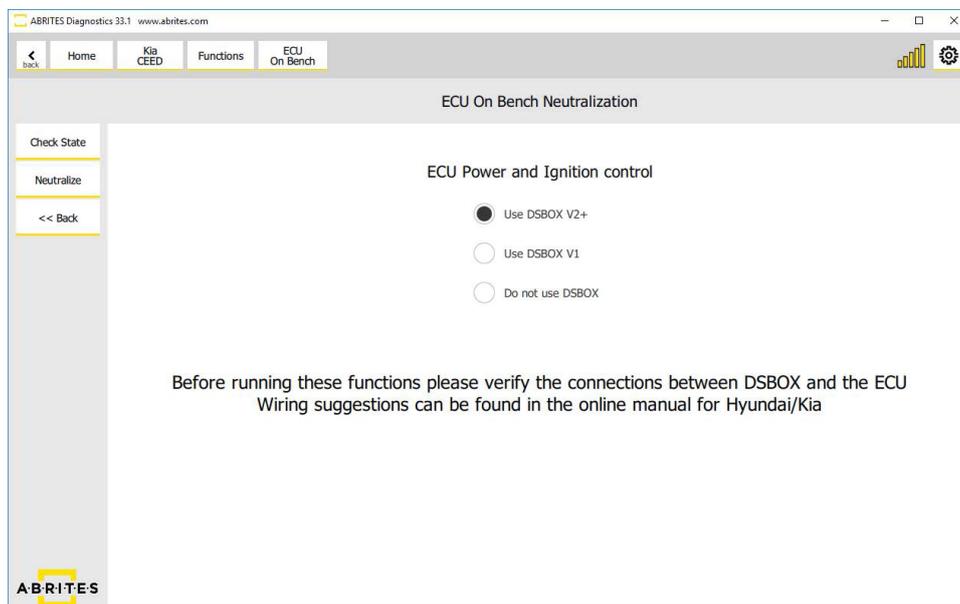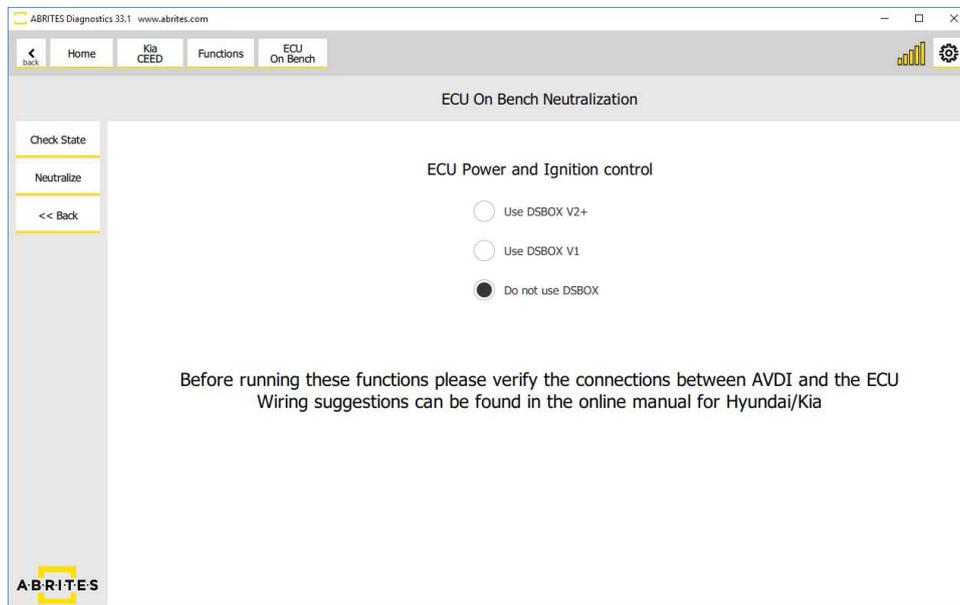
9.3.1 Wiring

There are two connection methods - one is using the DS box and the other is direct connection to the ECU, without the use of DS box. An option for the older version of DSbox is also included. The software gives warning messages to remind you to check the connections, and where connection diagrams can be found.

9.3.1.1 Wiring with ZN051 DS Box

When using ZN051 for connection to the ECU, the following connections should be made:
CB401 Yellow cable (B+) < - > B+ of the ECU
CB401 Orange cable (IGN) < - > IGN of the ECU
CB401 Black cable (GND) < - > GND of the ECU
K7 socket (green cable from the ZN051 set) <-> K-Line of the ECU (also called Data signal cable)

9.3.1.2 Wiring without ZN051 DS Box

12V (external power supply) < - > B+ of the ECU as well as the AVDI (pin 17 of the DB25<male> or pin 16 of the CB100 OBD cable)
12V (external power supply) < - > key switch < - > IGN of the ECU (a key switch should be connected between 12V power supply and IGN pin of the ECU)
GND (external power supply) < - > GND of the ECU and GND as well as the AVDI(pin 5 of the DB25<-male> or pin 6 of the CB100 OBD cable).
K-Line of the AVDI (PIN 7) < - > K-Line of the ECU(also called Data signal cable)

A key switch (sometimes called a lock switch) is a key-operated switch. Key switches are used in situations where access needs to be restricted to the switch's functions.

10. VIN Calibration Special Function

VIN calibration for Hyundai and KIA vehicles is the latest development of the Hyundai/KIA Online software, which is a great addition to the Neutralization, as it completes the task of unit exchange, and works by OBDII.

VIN calibration by OBDII for the following modules:
- ECM (engine control unit) in standard vehicles
- VCU (engine control unit) in electric vehicles
- Digital Dashboard (if the module contains VIN)

This functionality lets you change the VIN in both new or used units, which is unmatched functionality yet, as competitor products, including official Hyundai/KIA manufacturer diagnostics, only allow setting VIN on brand new units.

The software is very user-friendly. The procedure is started from the main screen of the software, on the left side there is a button "VIN Calibration" once you open it, you will see a list of modules that would have the VIN. You need to select each module that you want to read the VIN from.
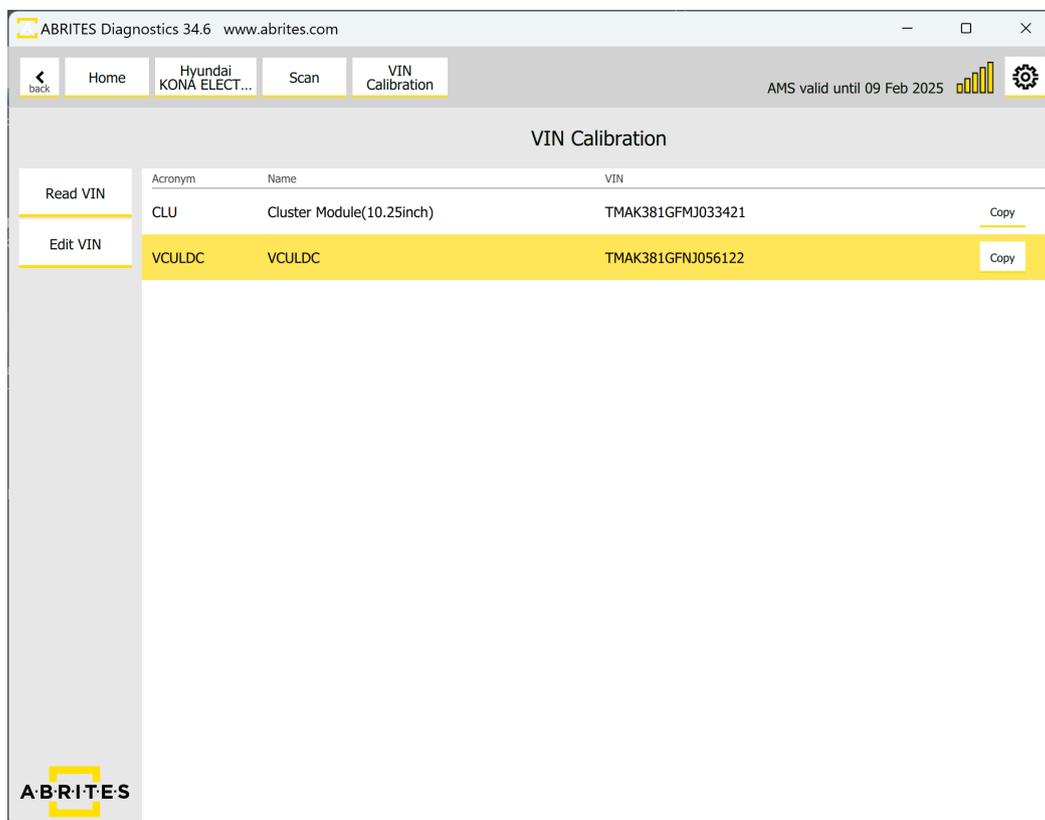
In the example we have, the ECU has a different VIN. The procedure goes as follows:

- Select the Dashboard (CLU) and read the VIN trough the "Read VIN" button
- Press the "copy" option on the right side, which will copy the VIN into the clipboard
- Select the Engine Control Unit (VCU)
- Select "Edit VIN" and a pop-up window will appear
- Paste the VIN from the clipboard (already copied in the 2nd step
- Press "Write VIN" and the procedure will be complete.
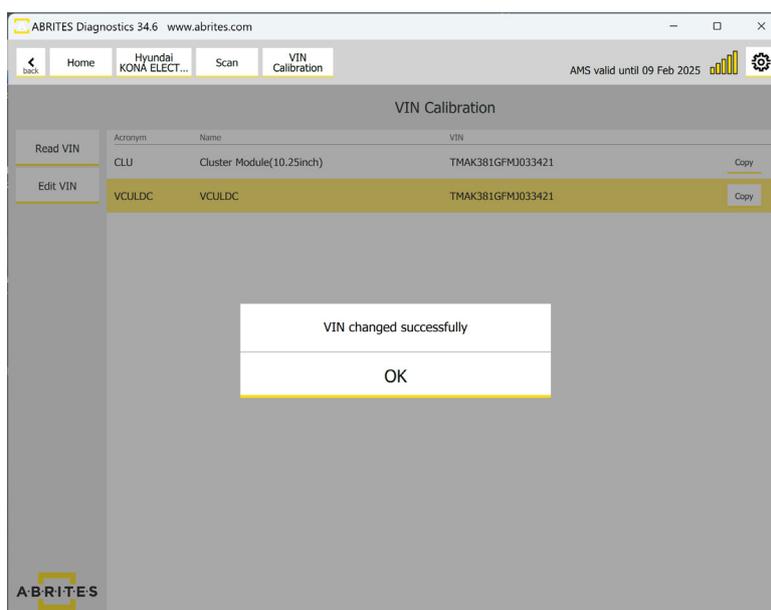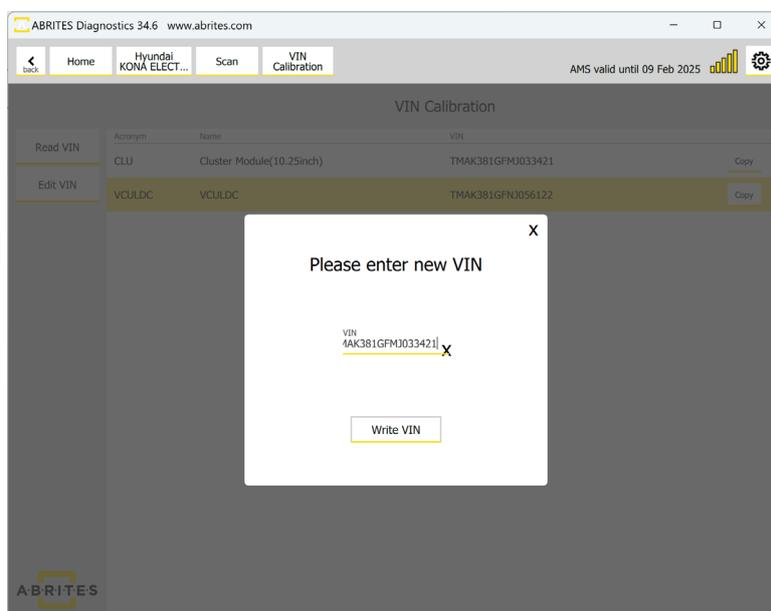
11. Reset of Used Keys

With the new 34.3 software version, you will be able to reset used keys, programmed to Hyundai/KIA vehicles.

Supported Transponder Types:
- HITAG 3
- HITAG AES
- DST AES
- DST 80

The procedure is safe and user-friendly. It may take up to 70 min for HITAG 3 and HITAG AES, and about a minute for DST AES and DST 80. After that, you will be able to reprogram the key and use it on another vehicle.

This functionality is accessible for all users with the HK011 PIN and Key Manager license and an active AMS. ZN002 or ZN003 ProTag is also required.

It is recomended that the procedure is executed in the vehicle as suggested in the main screen. The software is guided and you just need to follow the on-screen messages.

Steps:
1. From the main screen in the diagnostic menu select "Used Key Functions"
2. Select "Reset Used Key"
3. Follow the instructions provided on the screen
- ProTag Programmer is required
- Procedure may take up to 70 min for HITAG 3 or HITAG AES transponder types.
- Key needs to be inserted in the programmer when the software suggests is.

Below you can see screenshots from the procedure - it is a wizard (guided) software and you only need to follow the instructions on the screen: