Ford Immobilizer Programming Manual

(Created Date: 20220420)

Introduction to Immobilizer Programming

It can be used to perform immobilizer functions without passwords, such as adding keys, losing all keys, resetting/initializing parameters after replacing immobilizer modules such as the engine and body module, and online programming of the engine. The immobilizer module of Ford is related to the model, and the immobilizer modules of different models are different, mainly including ABS, BCM (body), IC (instrument cluster), PCM (engine), and RFA (remote control function actuator) module. Module programming: programmable module installation (support the acquisition of code data from the original car module, by manual input, or in online mode), module reprogramming, programmable parameters
During the use of the X-431 device, in most cases, immobilizer matching, programming, and other diagnostic functions can be performed without passwords simply by automatically identifying the model.

Immobilizer Operating Instructions

Immobilizer system functions (expert edition (recommended to use first))
Support adding, clearing, and rental mode key management of mechanical and smart keys. If the module that stores key information such as the body is replaced, and the key is lost or damaged, this function needs to be performed.
After replacing the immobilizer module, reset/initialized the immobilizer parameters.

When the immobilizer related module is replaced, the immobilizer indicator of the vehicle instrument flashes and the vehicle cannot be started, or when the immobilizer DTCs such as P161B "incorrect response of the secondary immobilizer system holder module", B10DA "PATS target identifier", P1260 "theft is detected, the vehicle is prohibited from starting", and U2047 "data obtained from VSM is invalid" appear in different immobilizer modules, it is necessary to reset the immobilizer module parameters.

Model Coverage (only domestic Ford Lincolns are listed)

Make	Model	Year
Lincoln	Aviator	2019-
	Corsair	2019-
Ford	All New Focus	2018-
	New Focus	2011-2019
	Focus Classic	2004-2016
	Escort	2014-
	Fiesta	2008-
	Taurus	2015-
	C-MAX、S-MAX	2006-
	New Mondeo	2012-2020
	All New Mondeo	2020-
	Mondeo	2003-2008
	Mondeo(zhisheng)	2007-2016
	Escape	2019-
	Edge	2014-2020
	Explorer	2019-
	EcoSport	2011-2019
	Kuga/Escape	2013-2020
Jiangling Ford	Everest	2014-2019
	Transit	2006-2020

Requirements

Launch X-431 PRO immobilizer matching tool. Communication is normal, battery voltage is between 12 and 15 volts, and network connection is normal.
For key programming, it should be noted that generally at most 8 and at least 2 keys are stored. The key model and quality meet requirements, and the vehicle does not have related faults, such as the fault of the induction coil and the antenna module.
For immobilizer parameter reset/initialization, at least 2 programmed keys are required.
Failure to meet these conditions may result in failure of key programming or parameter reset.

Procedure

Take FORD 2019 Kuga/Escape as an example: [Parameter Reset] and [Relearn Vehicle Data]

1. Choose [Anti-Theft System Detection] > [Automatically Search]. See Figure 1, Figure 2, and Figure 3.

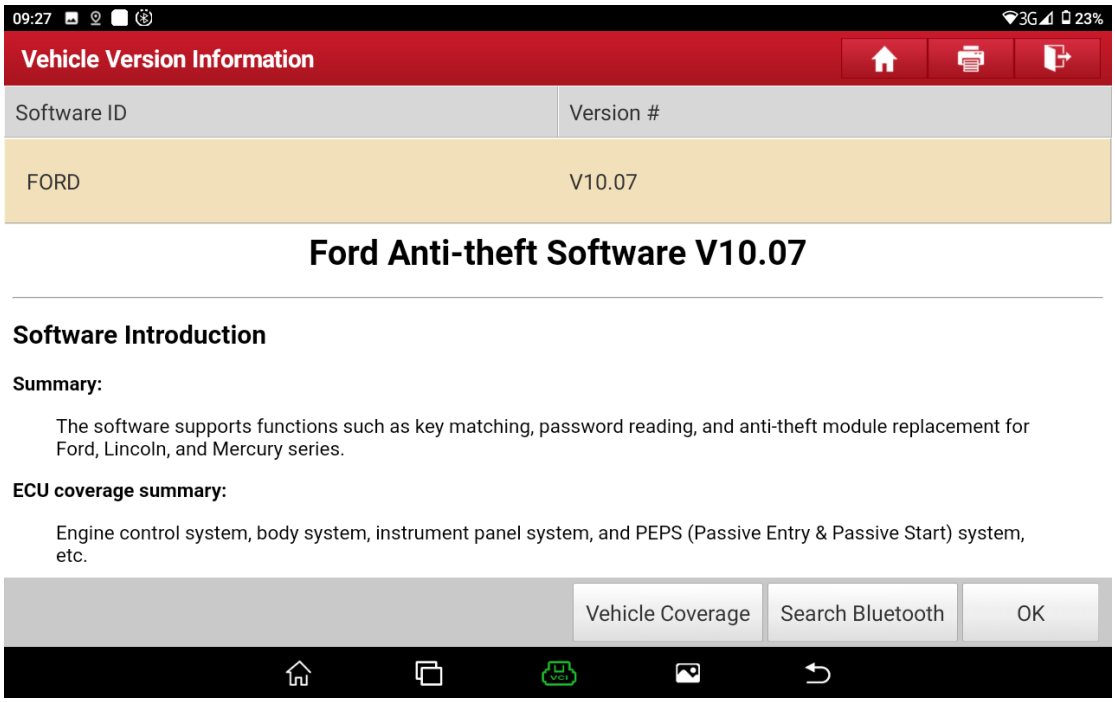

Figure 1

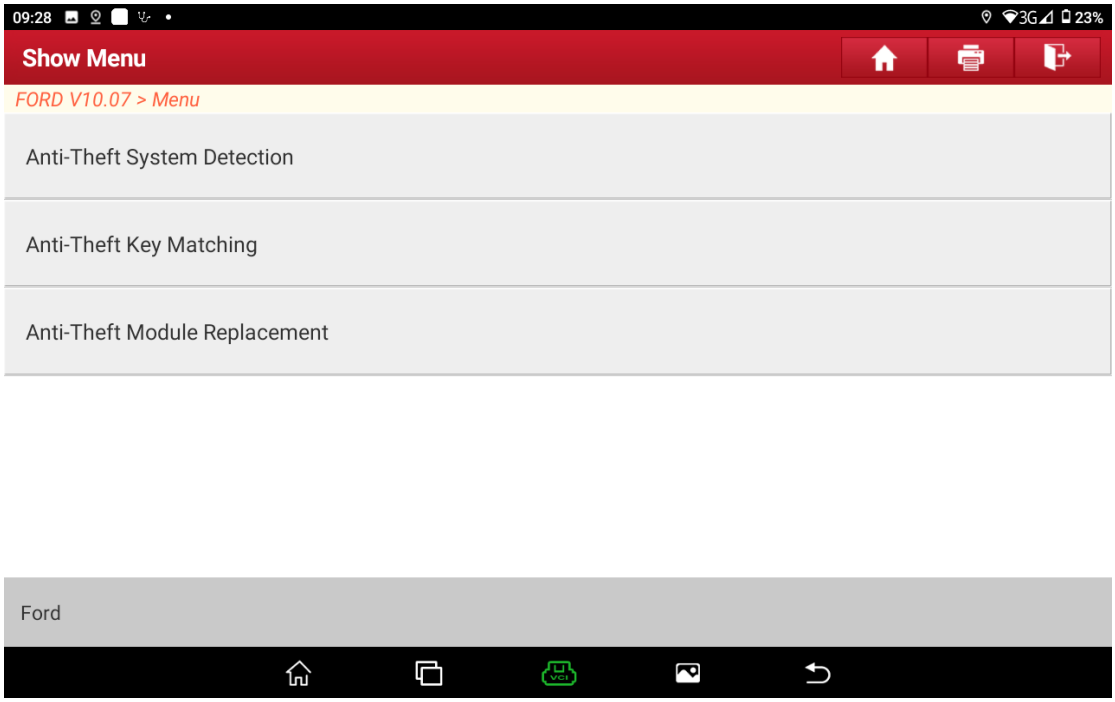

Figure 2

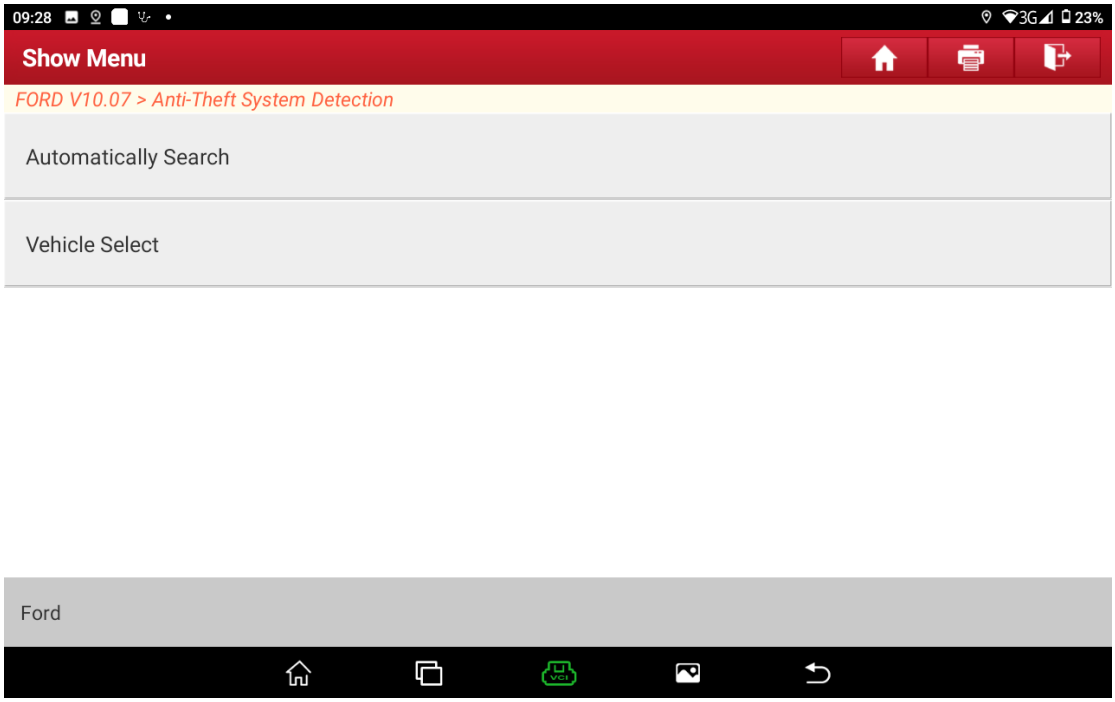

Figure 3

2. Turn on the ignition switch. See Figure 4.

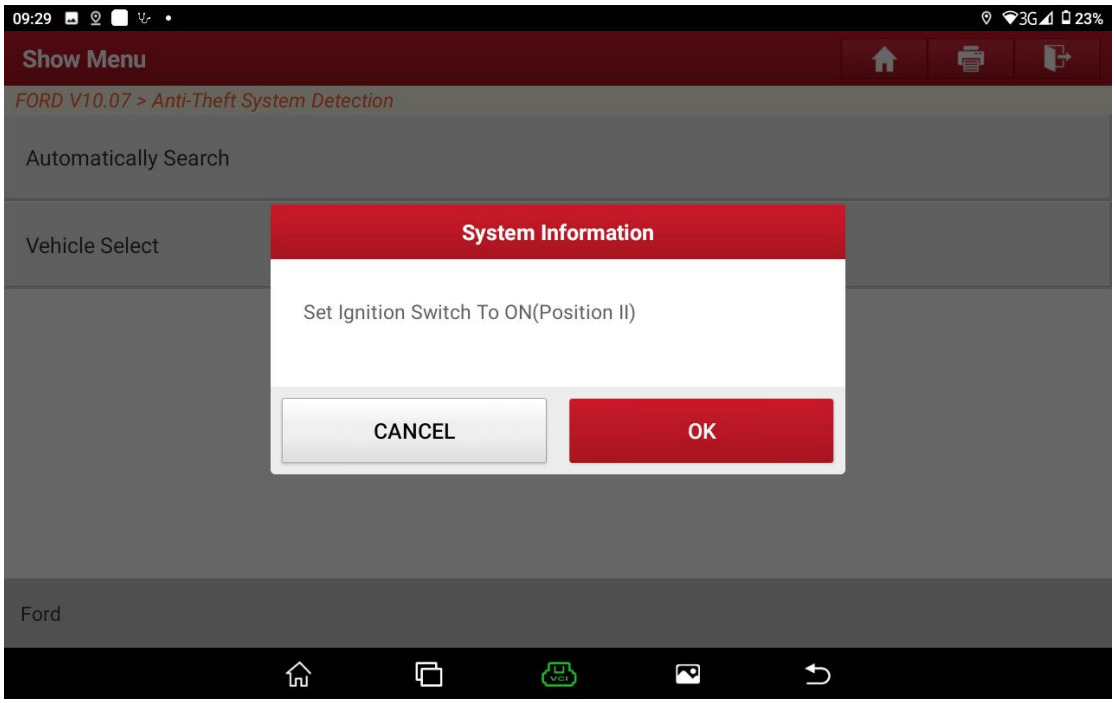

图 4

3. Confirm whether the VIN is correct. Choose [No] to manually input the correct VIN or choose [Yes] to access the next step. See Figure 5.

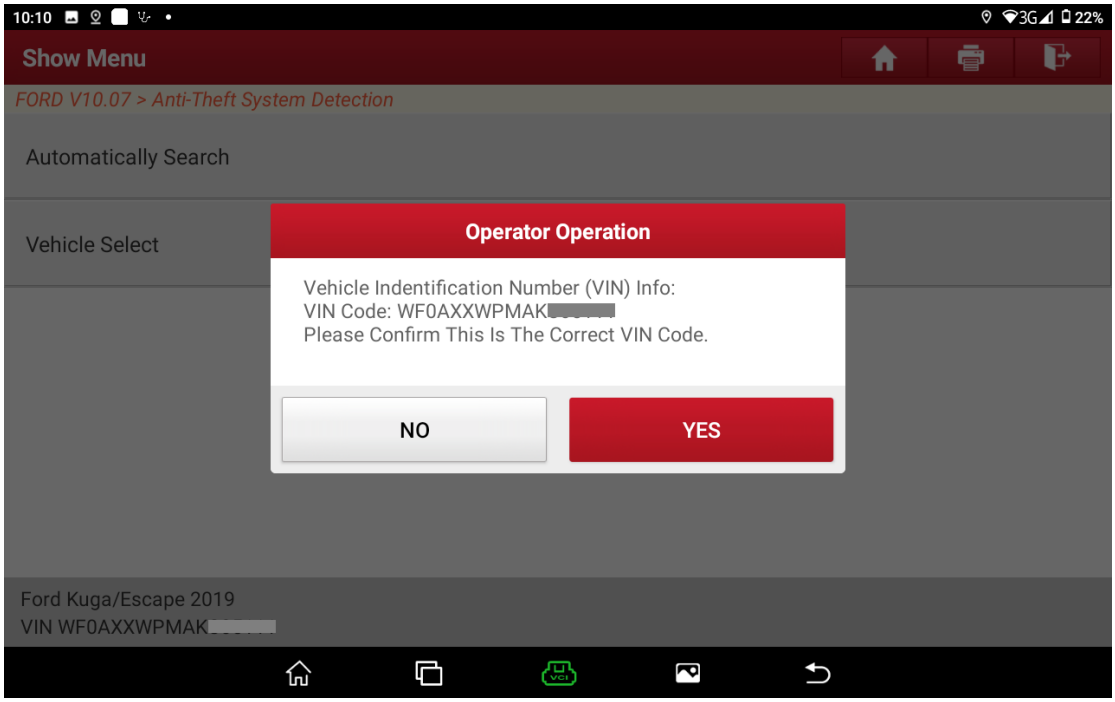

图 5

4. Choose [Immobilizer System Function (Expert Edition)]. See Figure 6.

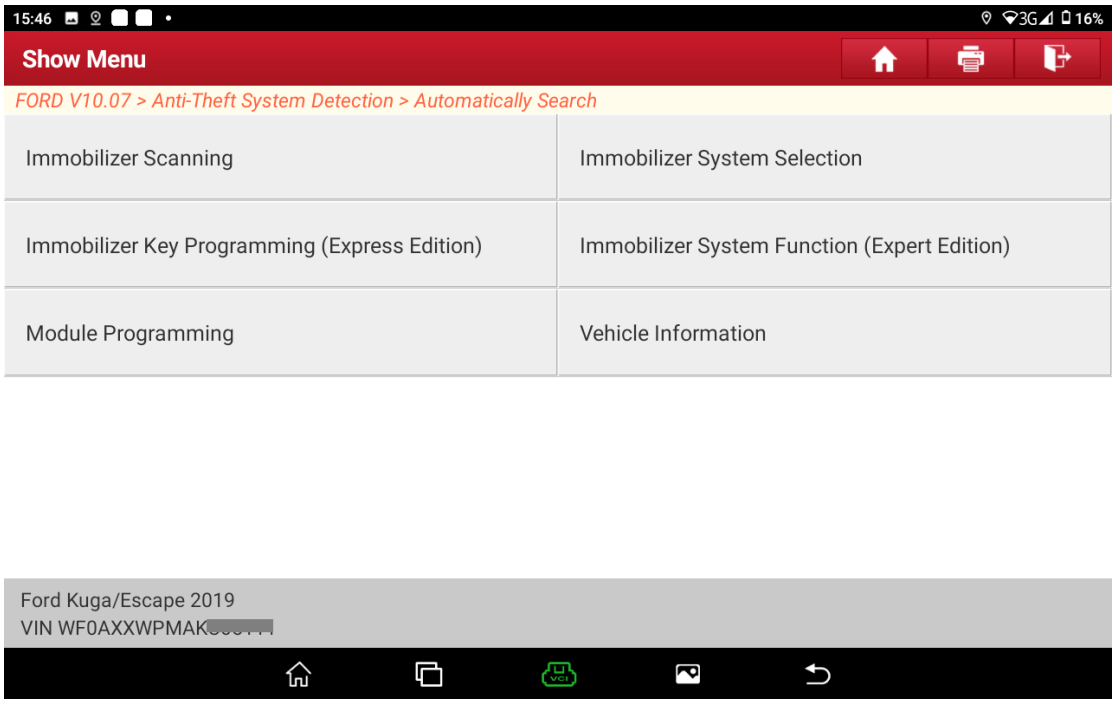

Figure 6

5. Choose [PATS (Passive Anti-Theft System) Functions]. See Figure 7.

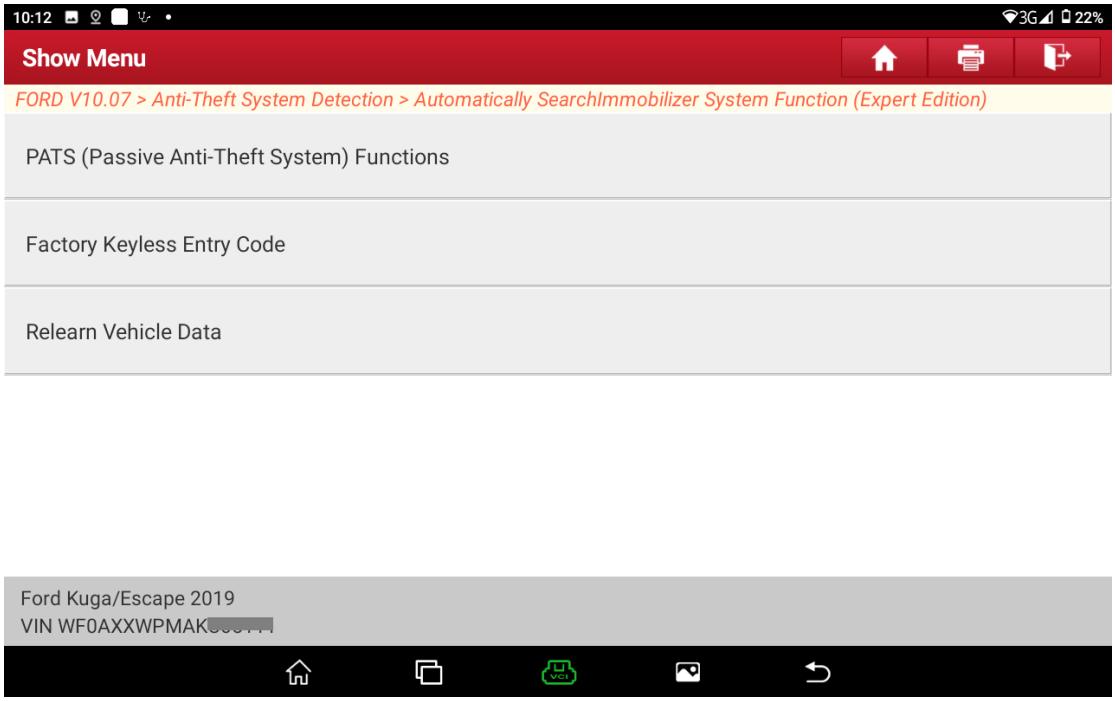

Figure 7

6. Prompt to turn on the ignition. If the vehicle is equipped with a pushbutton start, continue the test even if the ignition is turned off. See Figure 8.

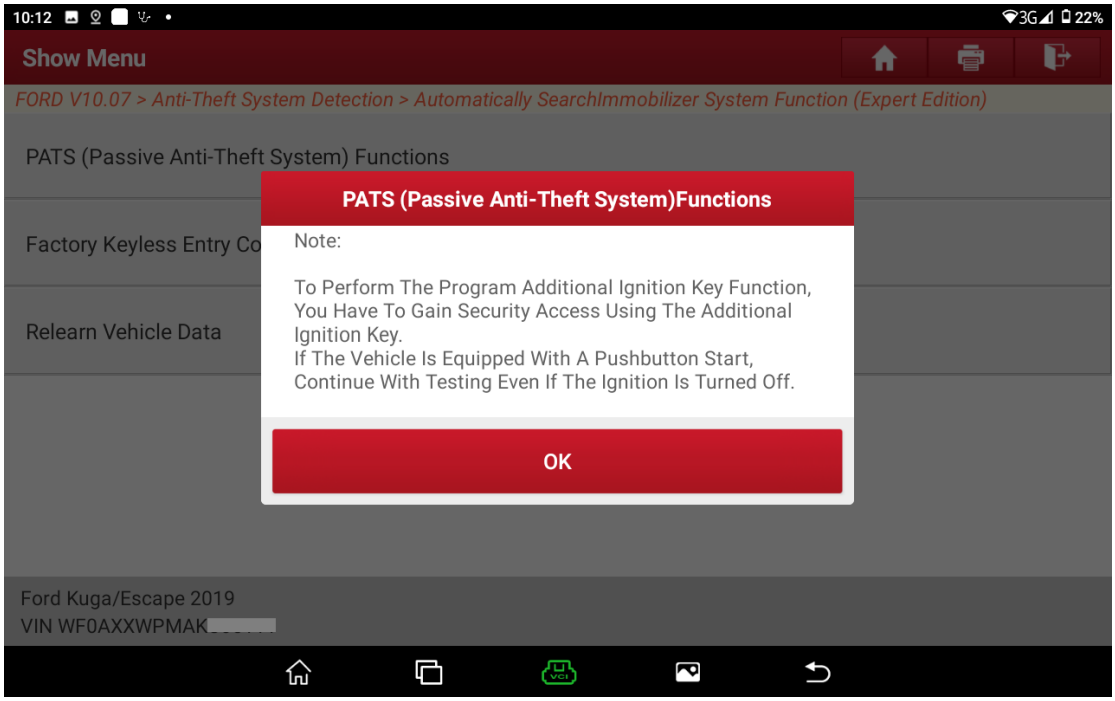

Figure 8

7. Confirm whether the VIN is correct. Choose [No] to exit the function or choose [Yes] to access the next step. See Figure 9.

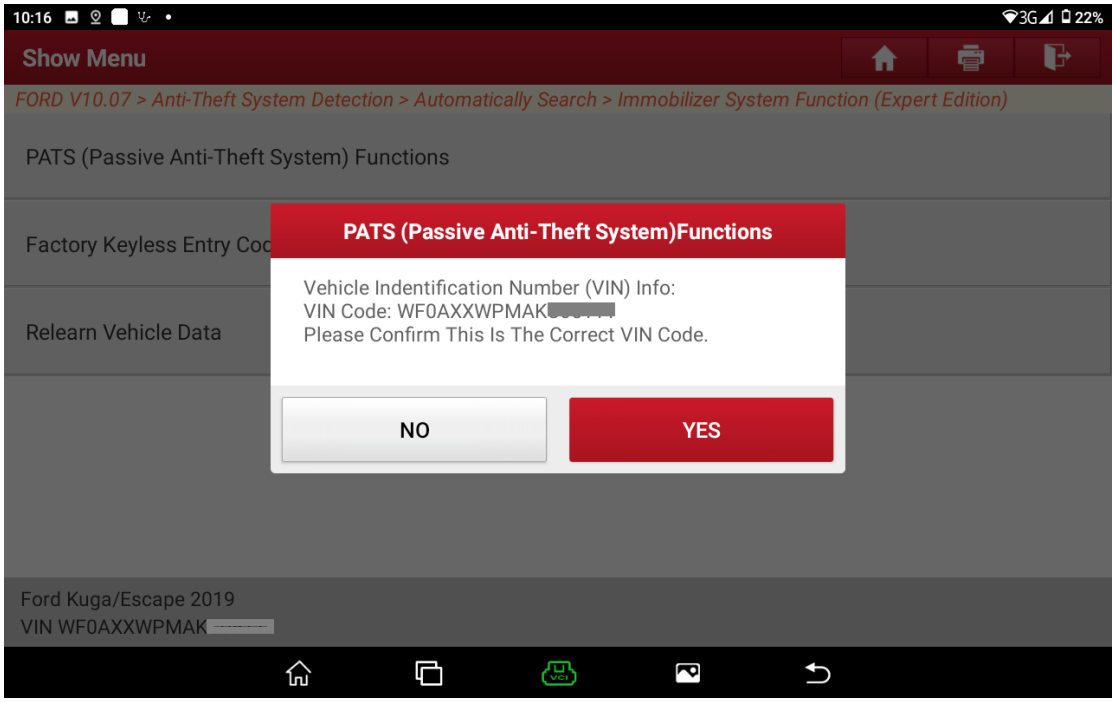

Figure 9

8. Choose [Parameter Reset (BCM/RFA/PCM/ABS) Ignition On]. See Figure 10.

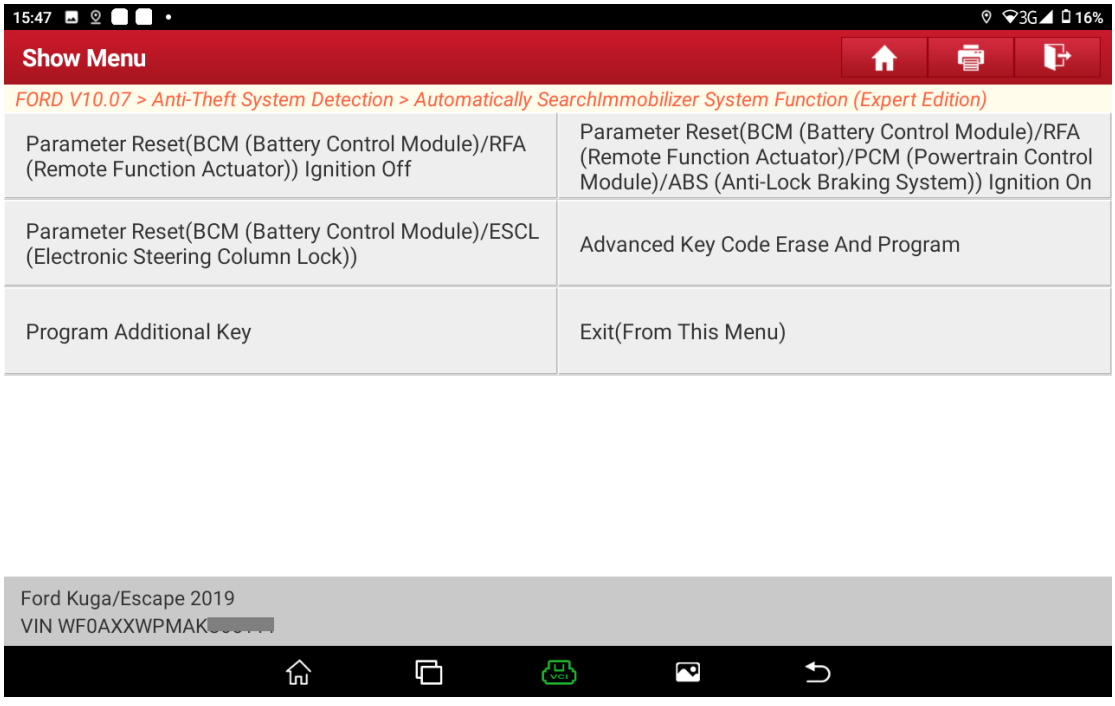

Figure 10

9. Prompt to turn on the ignition switch. See Figure 11.

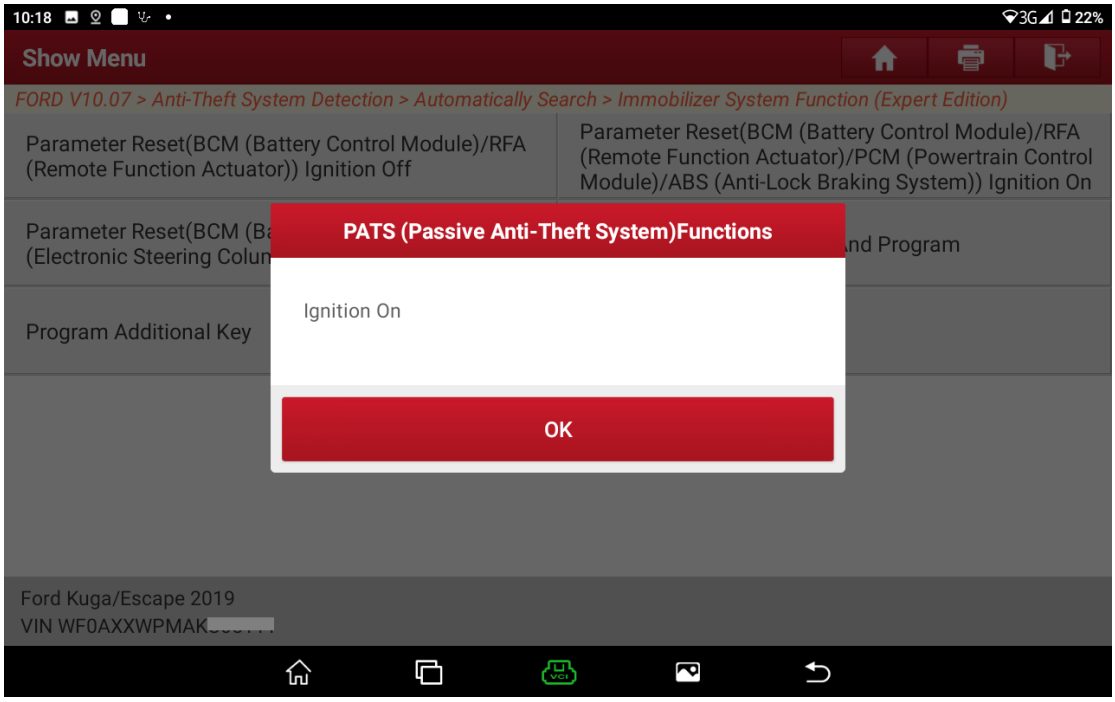

Figure 11

10. Prompt that parameter reset is about to be performed. See Figure 12.

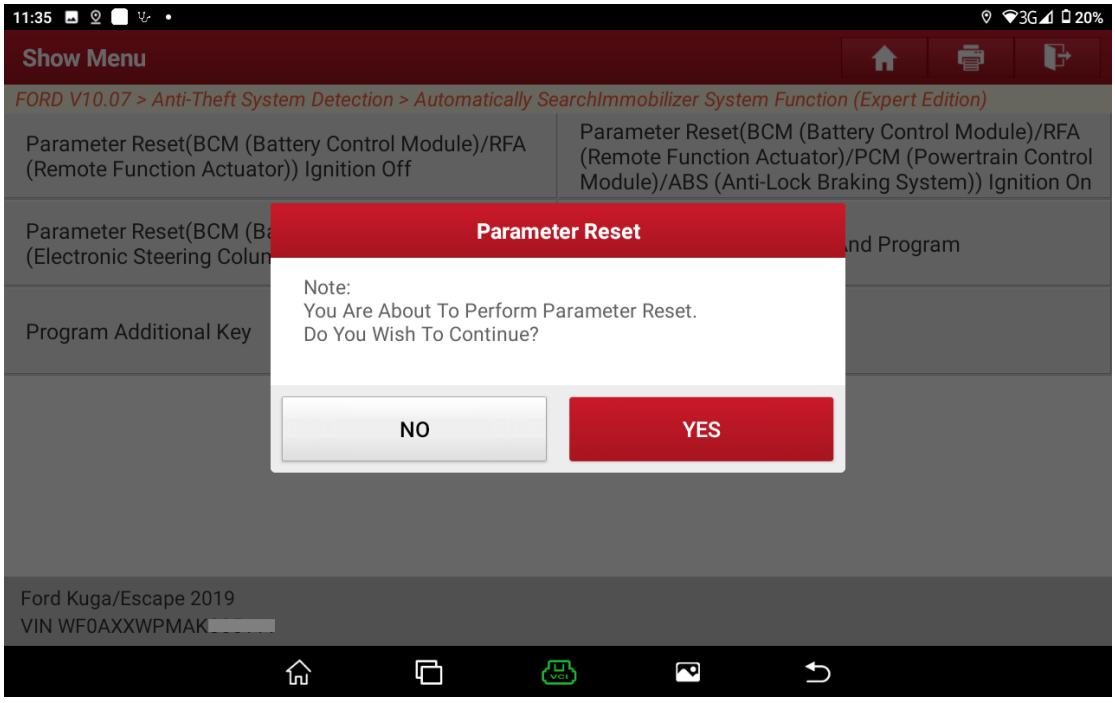

Figure 12

11. Prompt to wait for 6 seconds. See Figure 13.

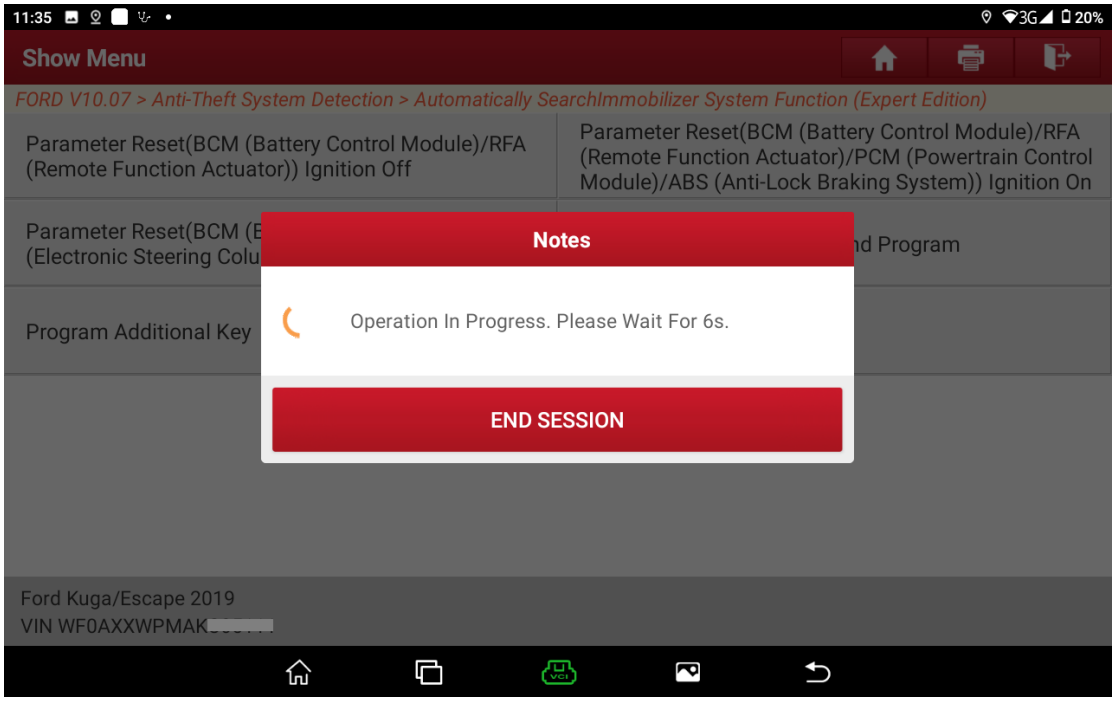

Figure 13

12. Prompt to turn off the ignition switch. See Figure 14.

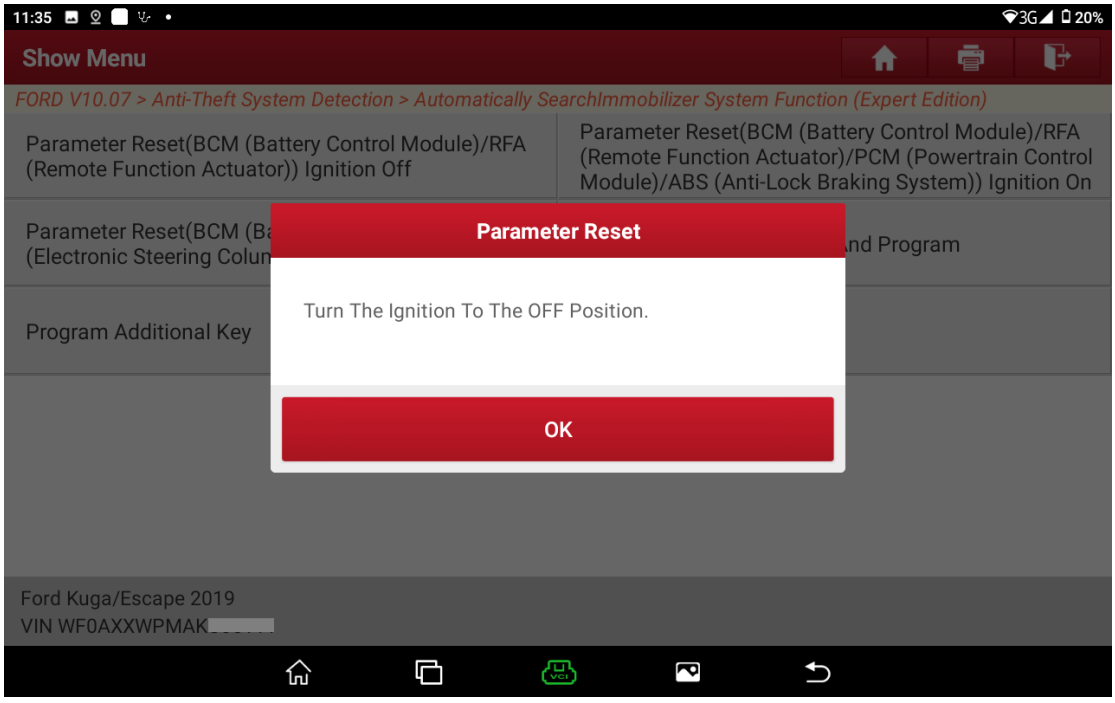

Figure 14

13. Count down from 600s. See Figure 15.

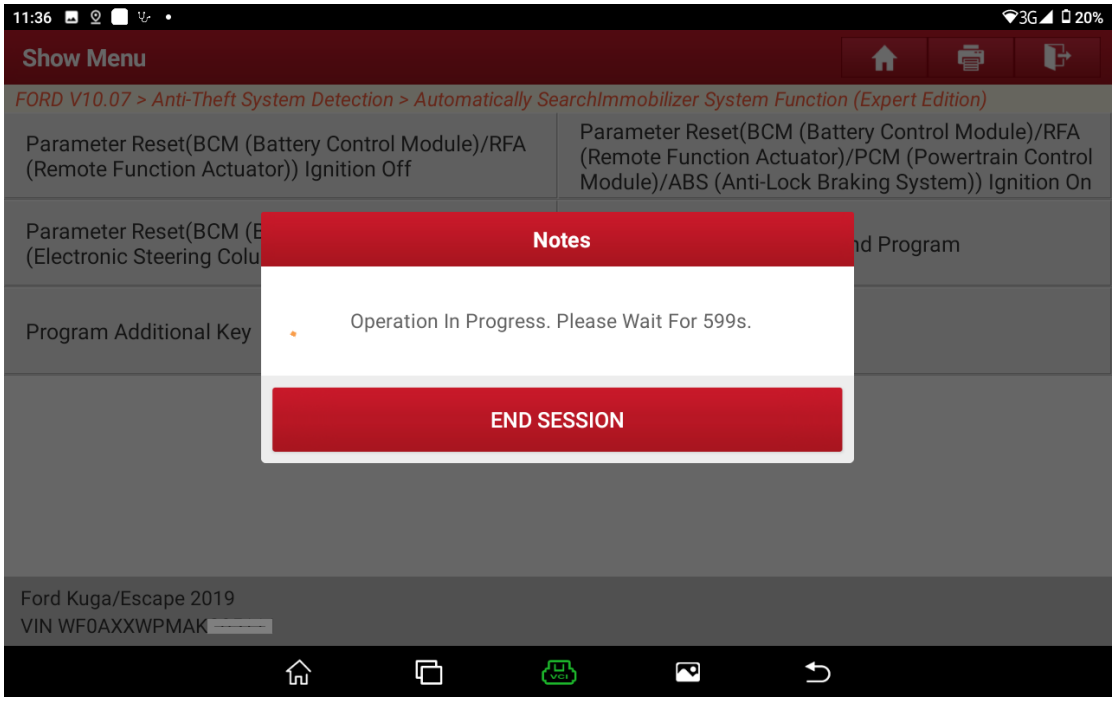

Figure 15

14. Prompt to turn on the ignition switch. See Figure 16.

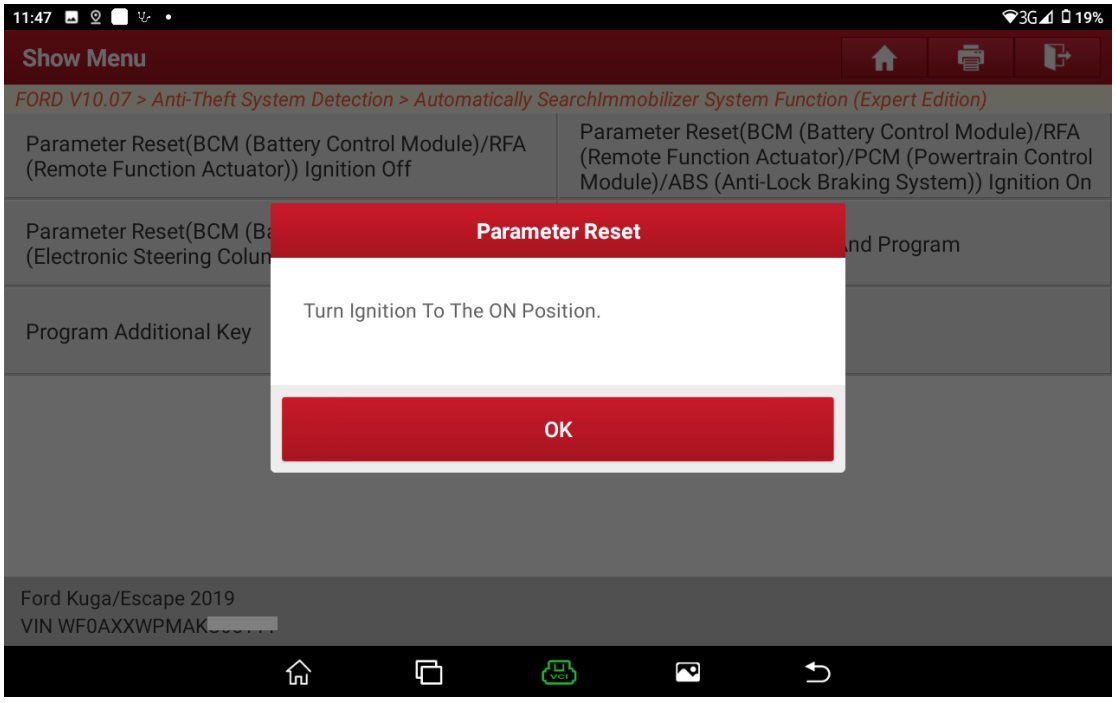

Figure 16

15. Count down from 10s. See Figure 17.

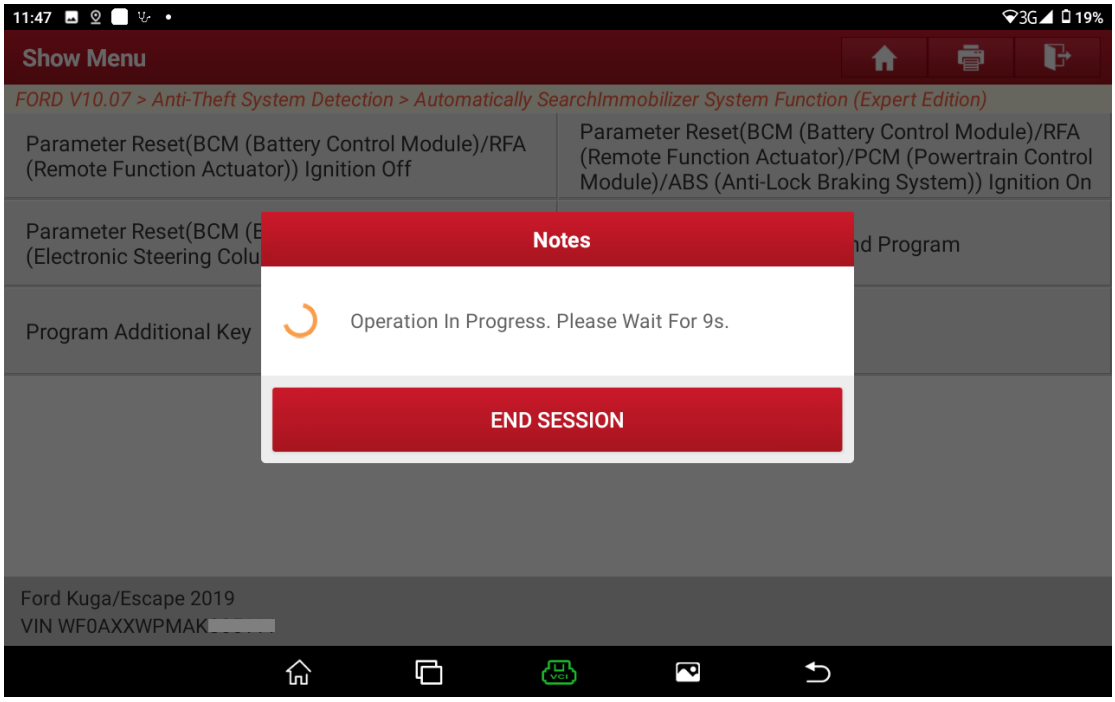

Figure 17

16. Execution is successful. See Figure 18.

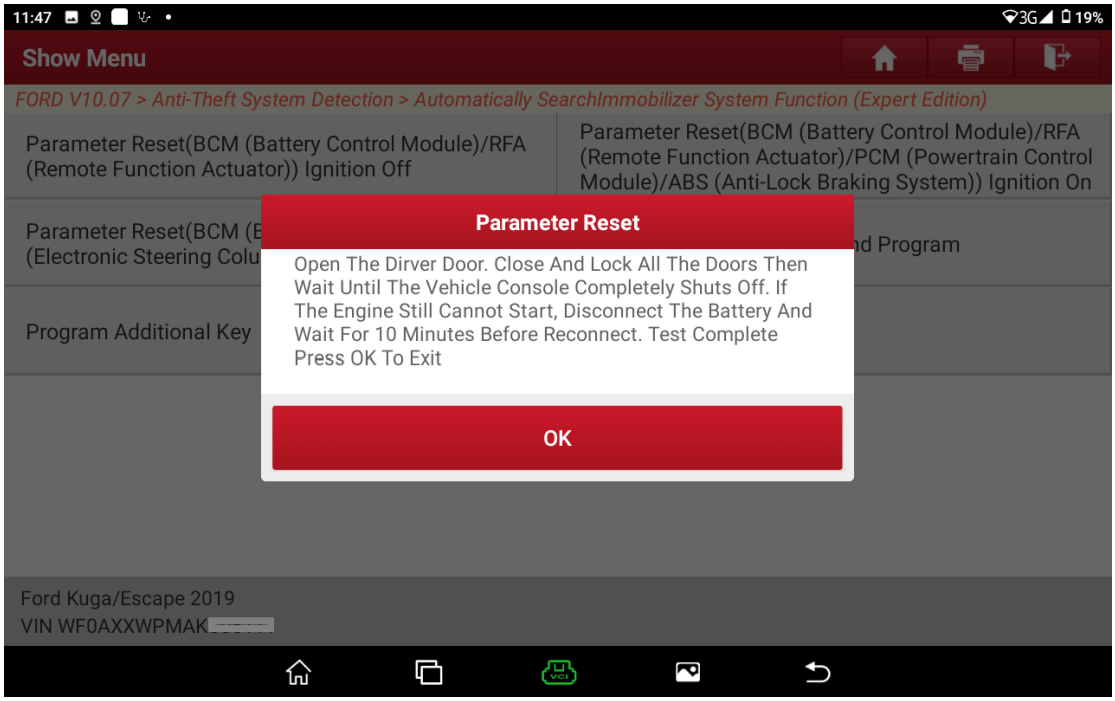

Figure 18

17. After [Parameter Reset (BCM/RFA/PCM/ABS) Ignition On] is successfully performed, return to the previous menu and perform the [Relearn Vehicle Data] function. See Figure 19.

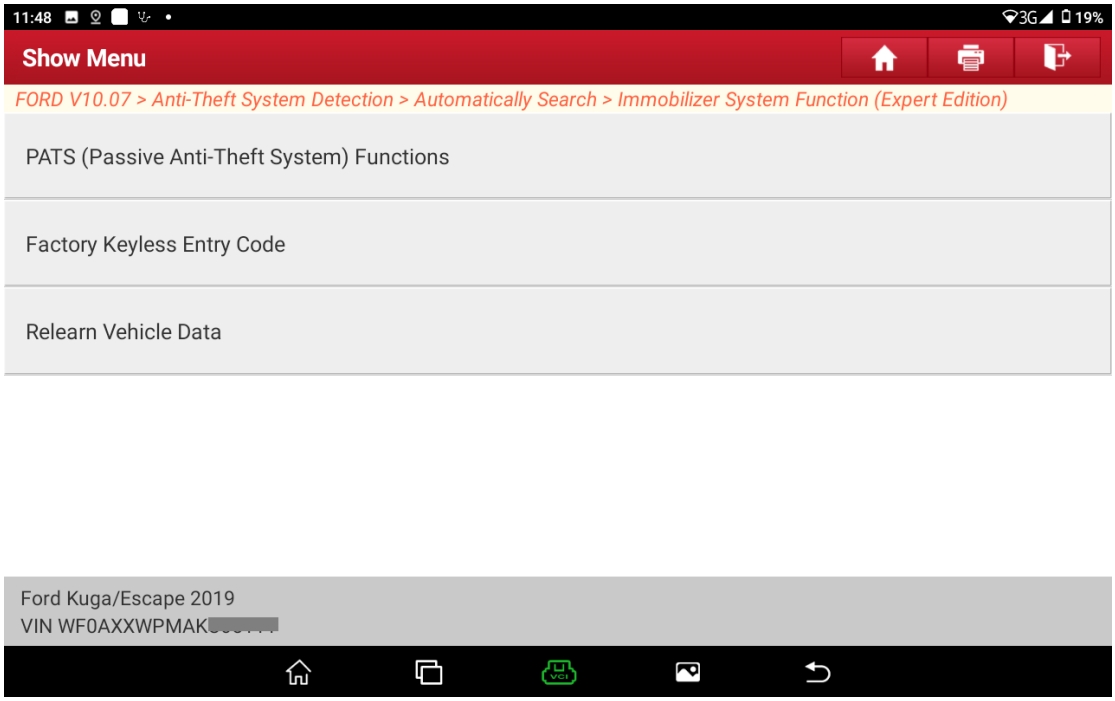

Figure 19

18. Prompt the function execution conditions and precautions. See Figure 20.

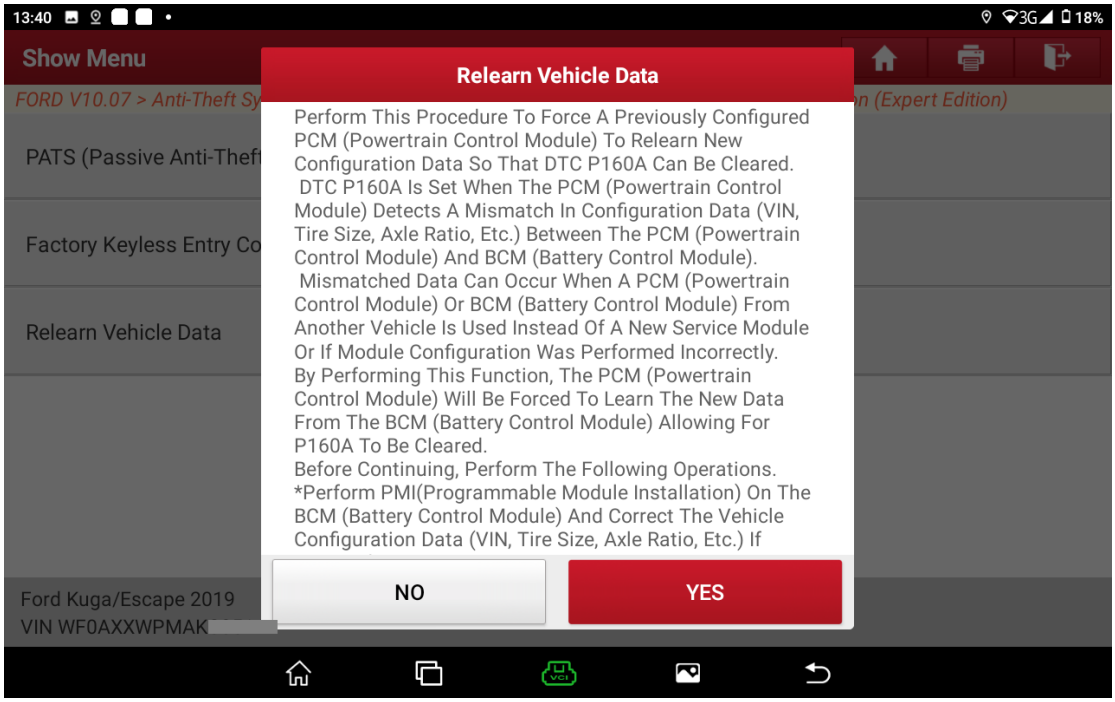

Figure 20

19. Prompt to turn on the ignition switch. See Figure 21.

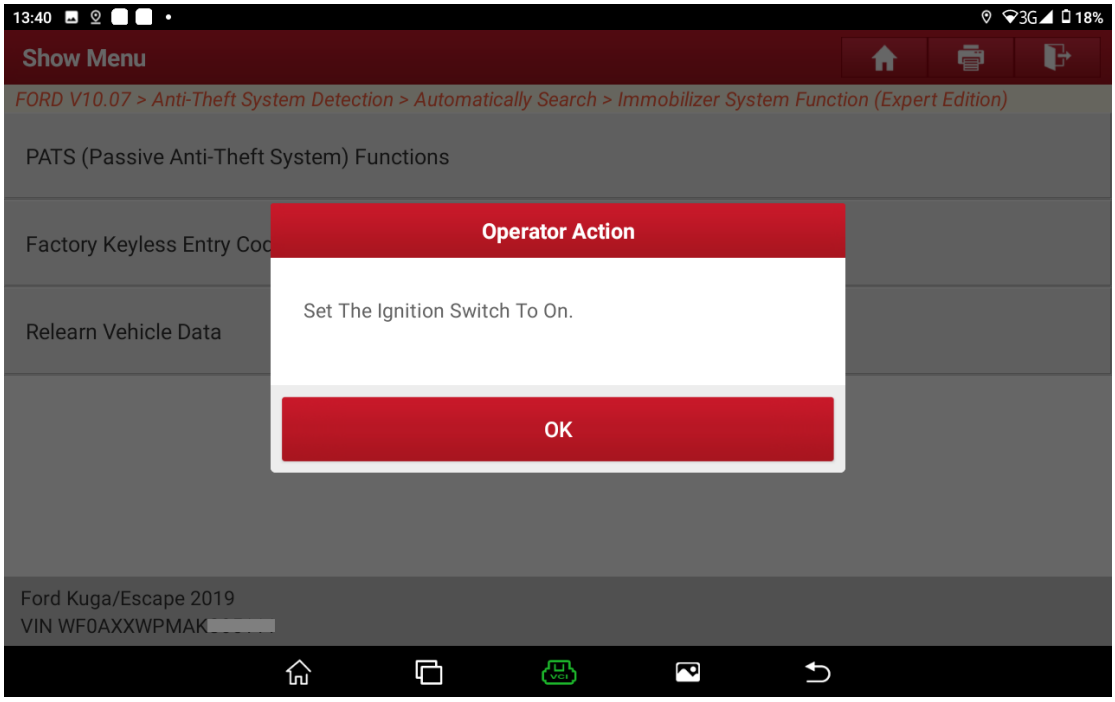

Figure 21

20. Execution is successful. See Figure 22.

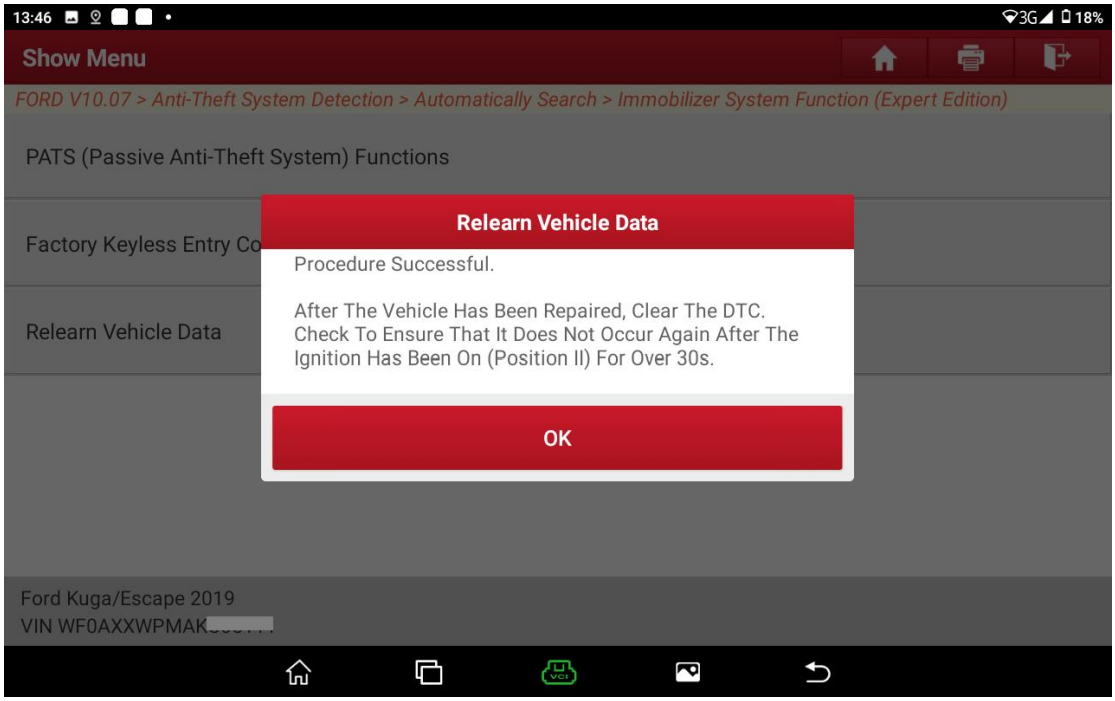

Figure 22

21. Prompt to turn off the ignition switch. See Figure 23.

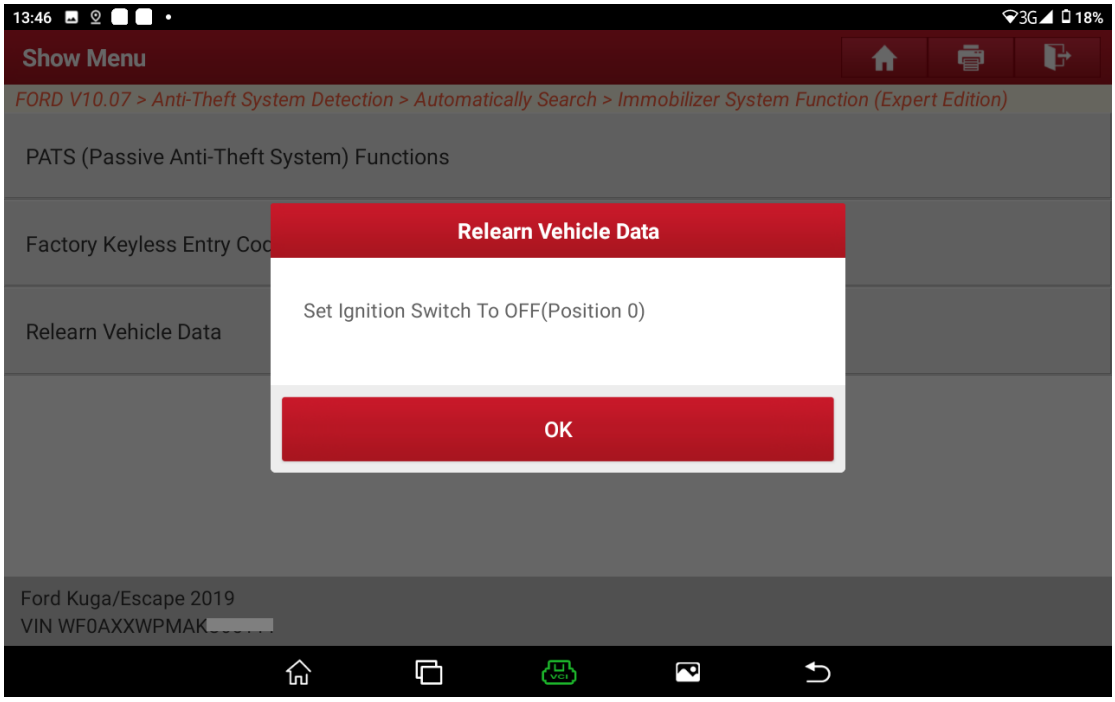

Figure 23

22. Click OK. Function execution is successful.

Take FORD 2018 Mondeo as an example: [adding ignition keys]

1. Choose [Anti-Theft System Detection] > [Automatically Search]. See Figure A1, Figure A2, and Figure A3.

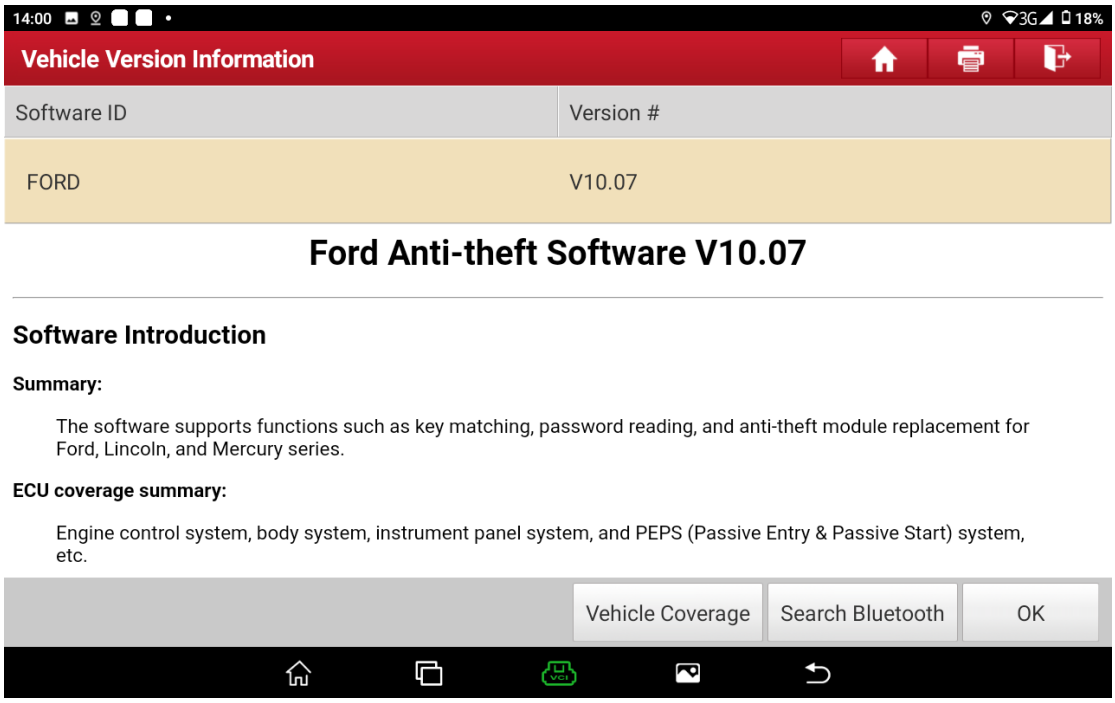

Figure A1

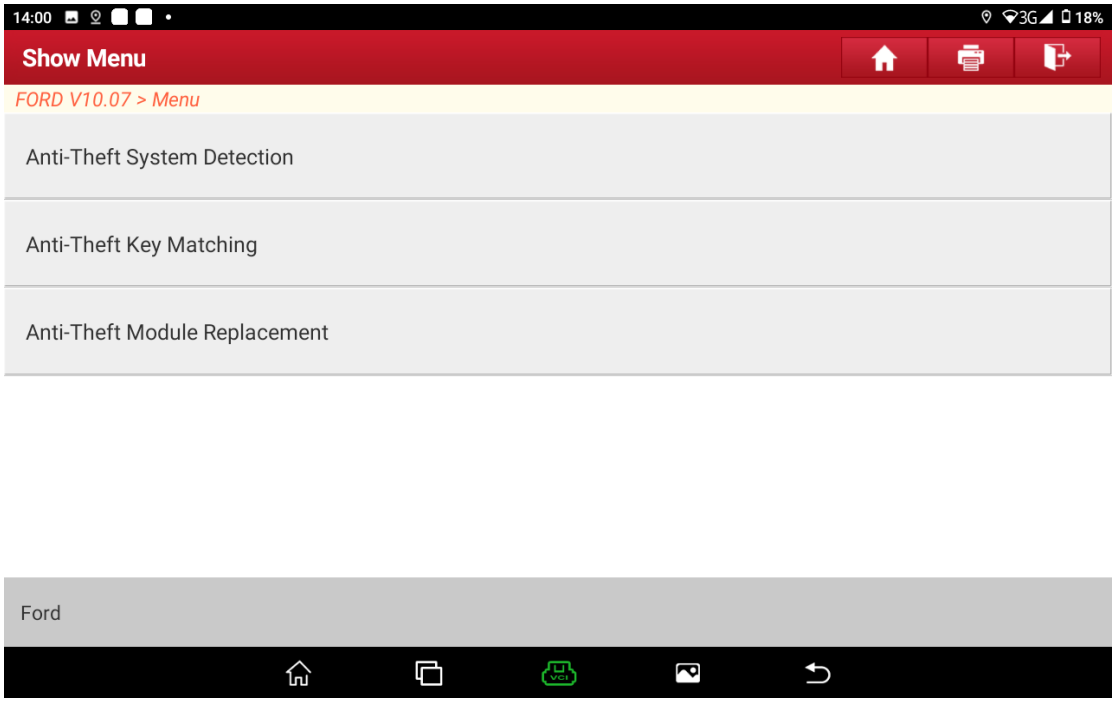

Figure A2

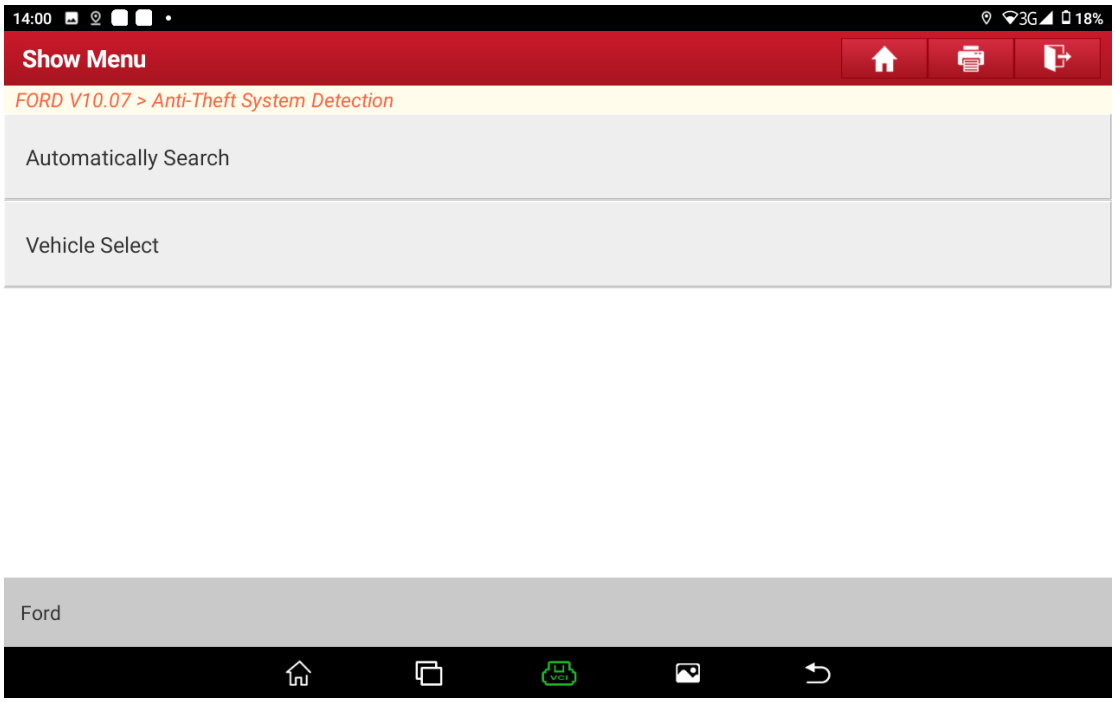

Figure A3

2. Turn on the ignition switch. See Figure A4.

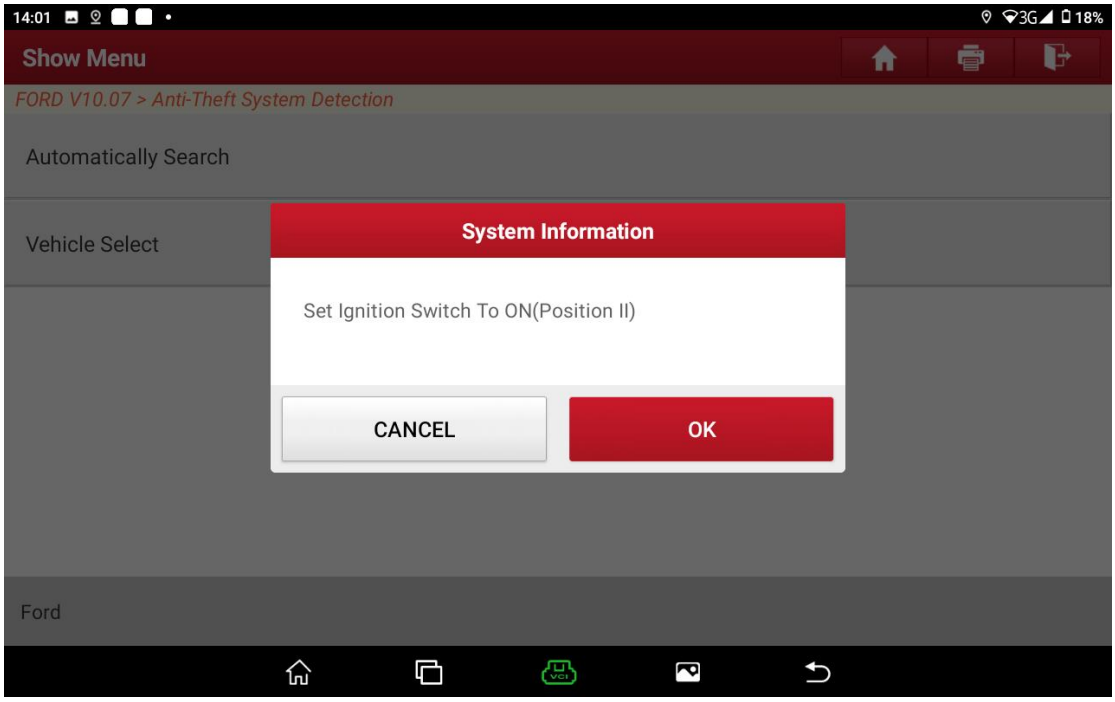

Figure A4

3. Confirm whether the VIN is correct. Choose [No] to manually input the correct VIN or choose [Yes] to access the next step. See Figure A5.

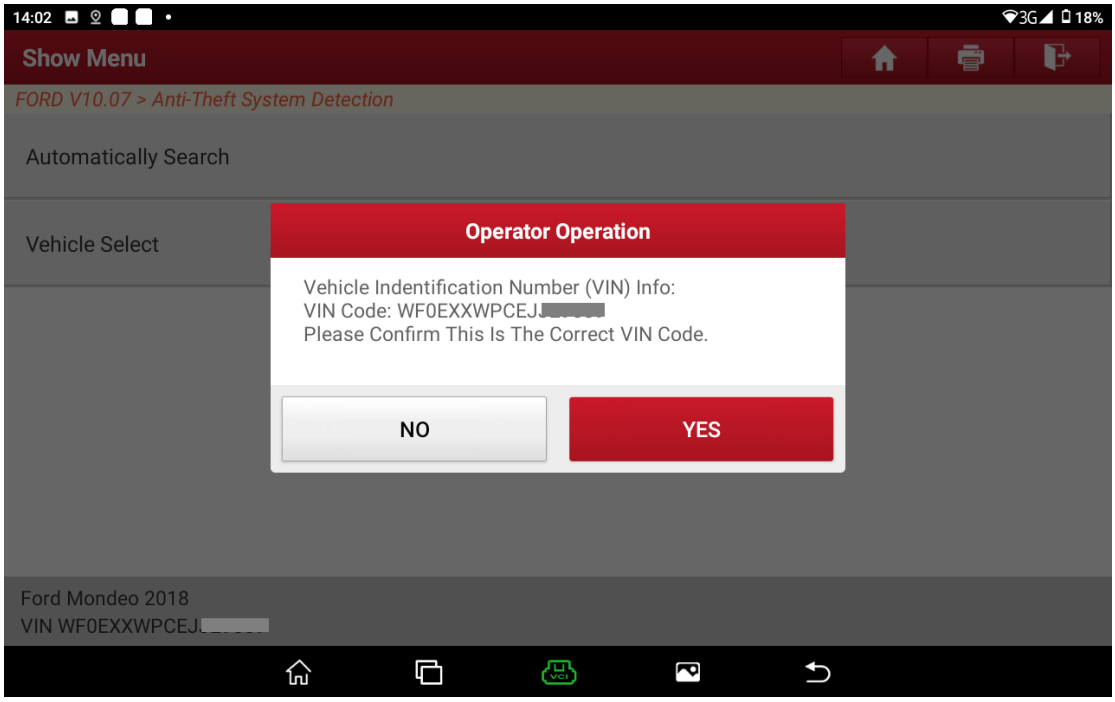

Figure A5

4. Choose [Immobilizer System Function (Expert Edition)]. See Figure A6.

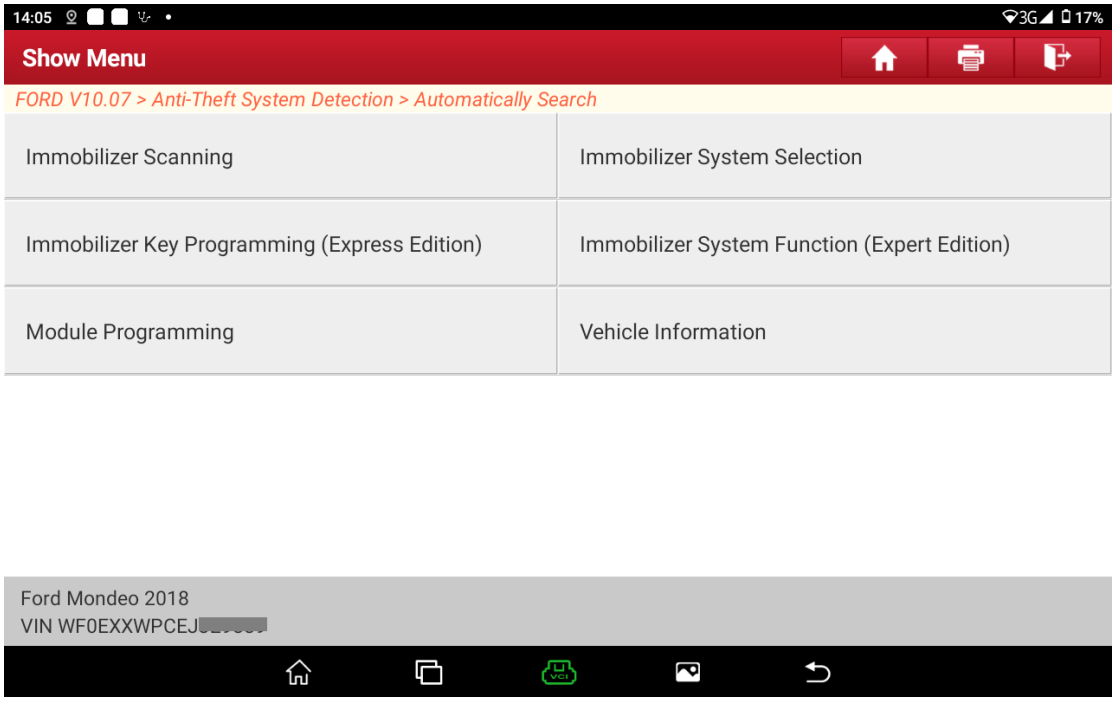

Figure A6

5. Choose [PATS (Passive Anti-Theft System) Functions]. See Figure A7.

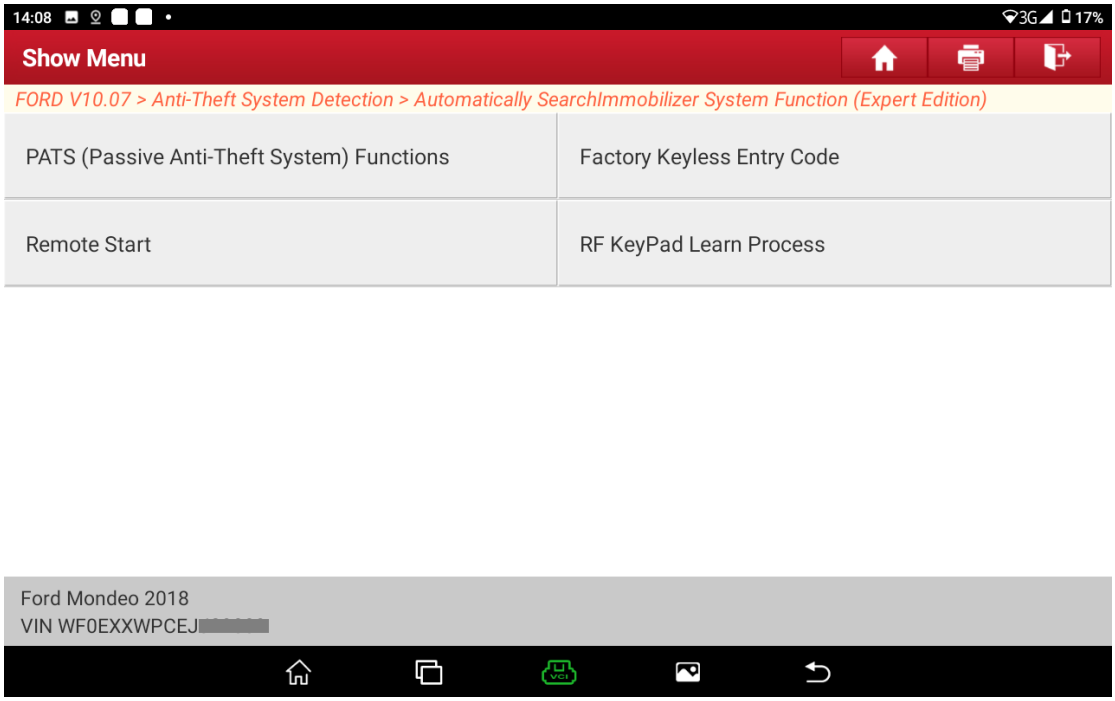

Figure A7

6. Prompt to turn on the ignition switch. See Figure A8.

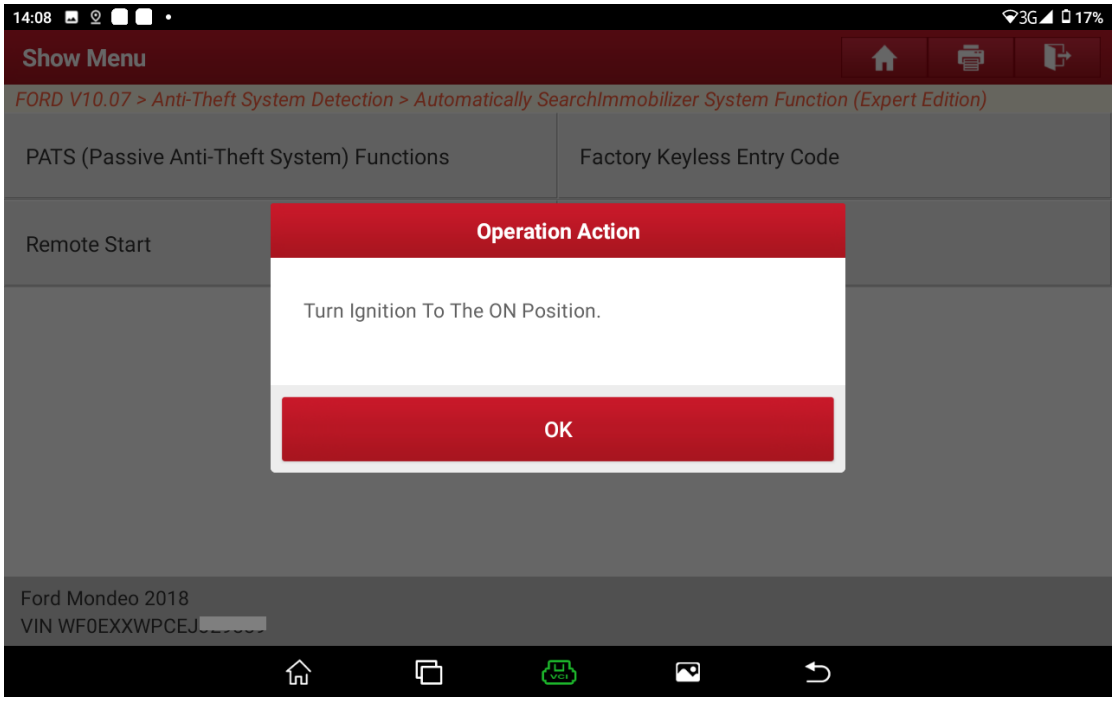

Figure A8

7. Prompt to wait for 20s. See Figure A9.

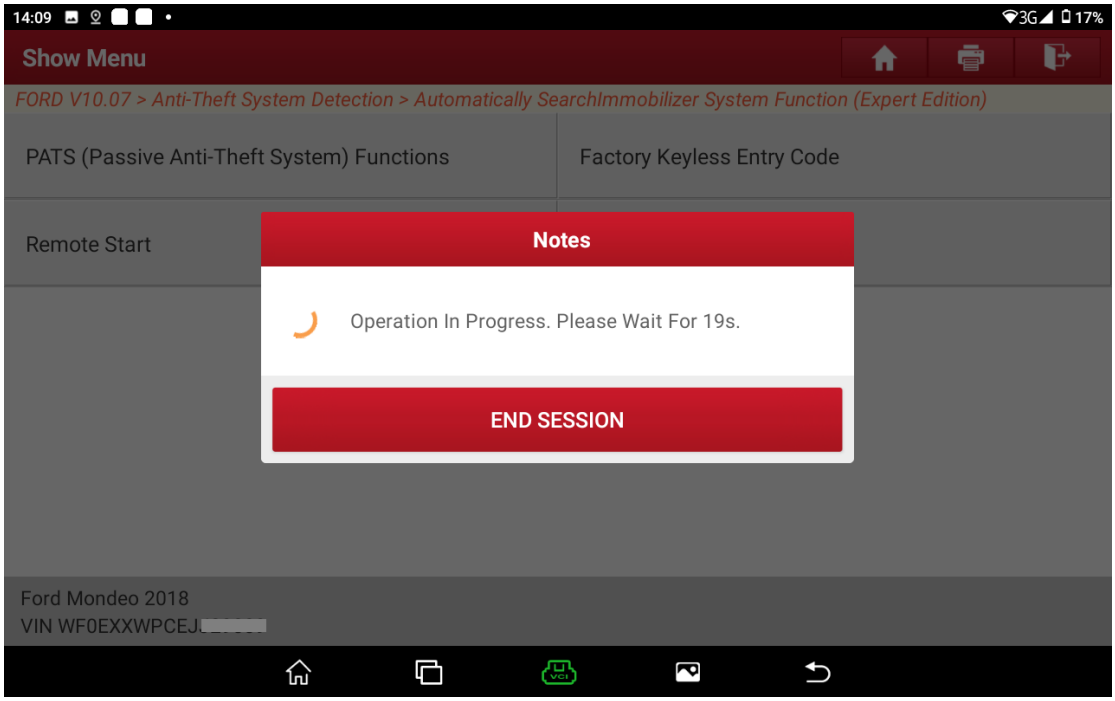

Figure A9

8. Choose [Program Addition Key]. See Figure A10.

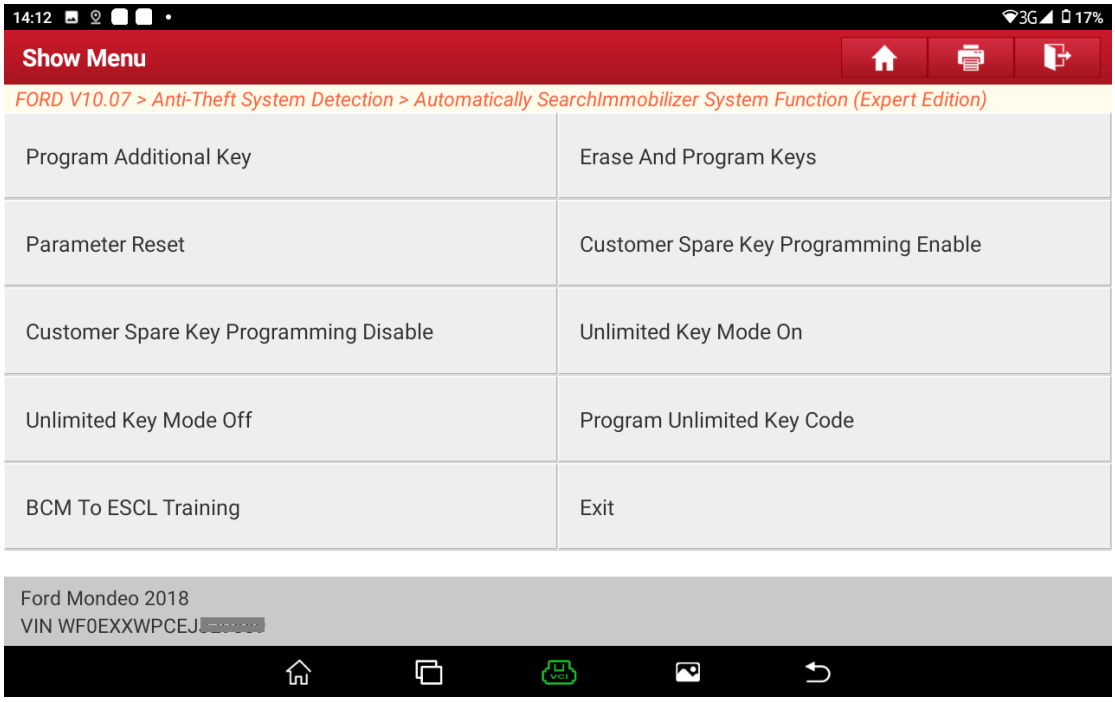

Figure A10

9. Obtain the security access permission. See Figure A11.

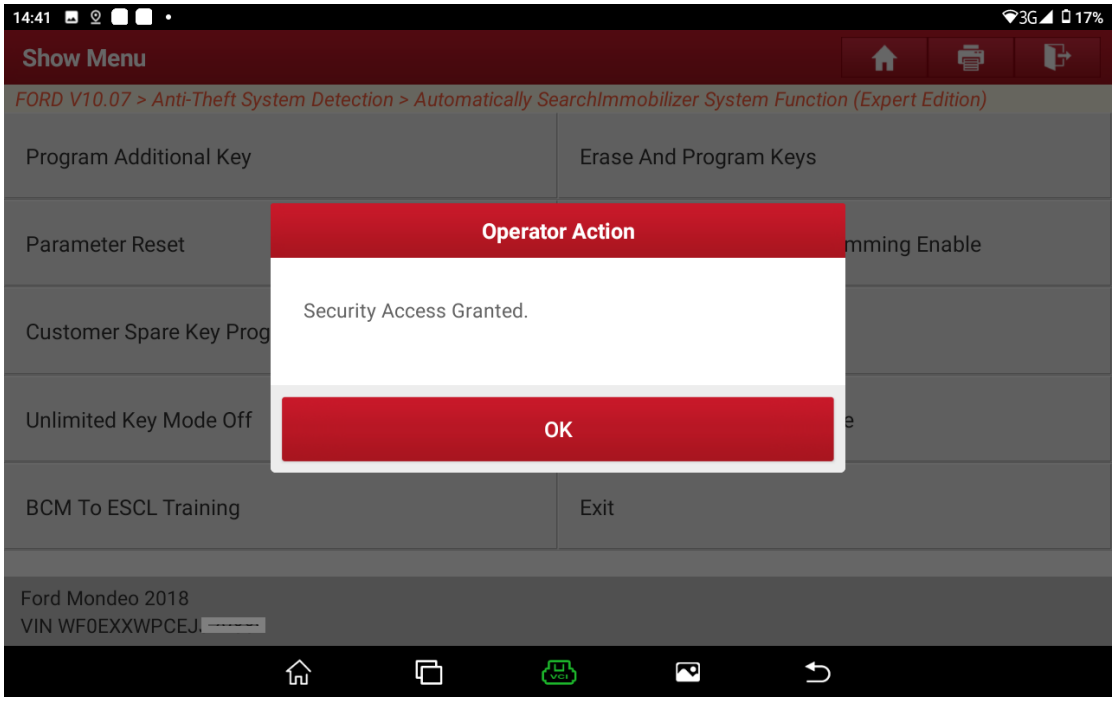

Figure A11

10. Prompt the precautions for adding keys and the corresponding operations. See Figure A12.

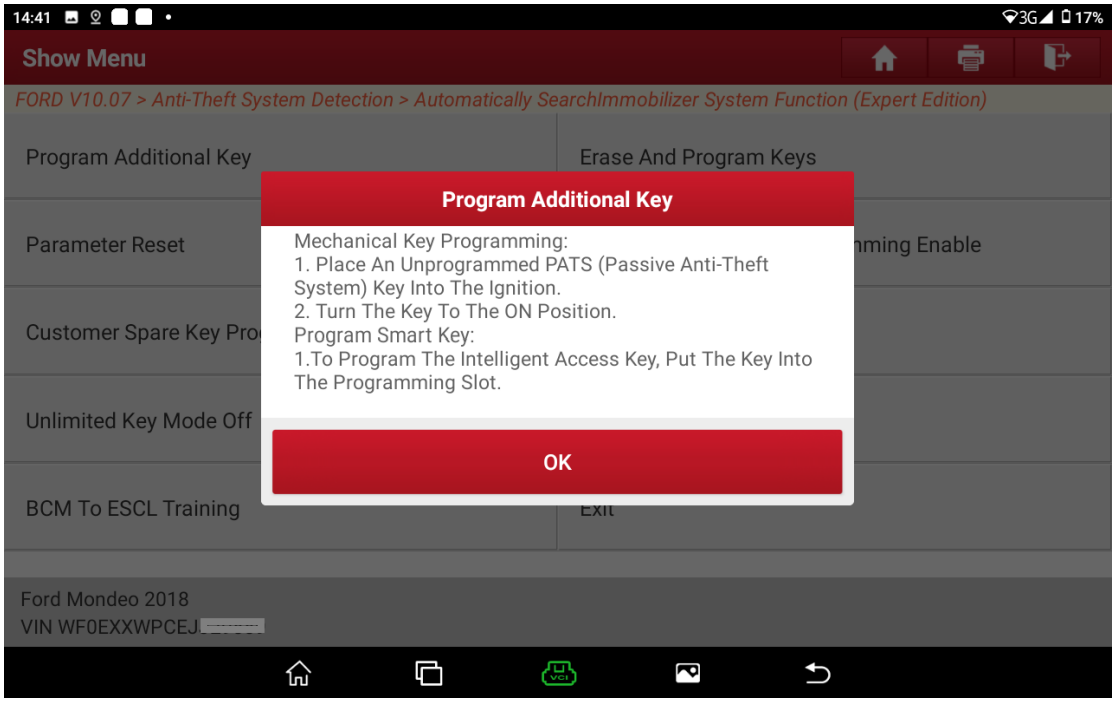

Figure A12

11. Prompt to wait for 15s. See Figure A13.

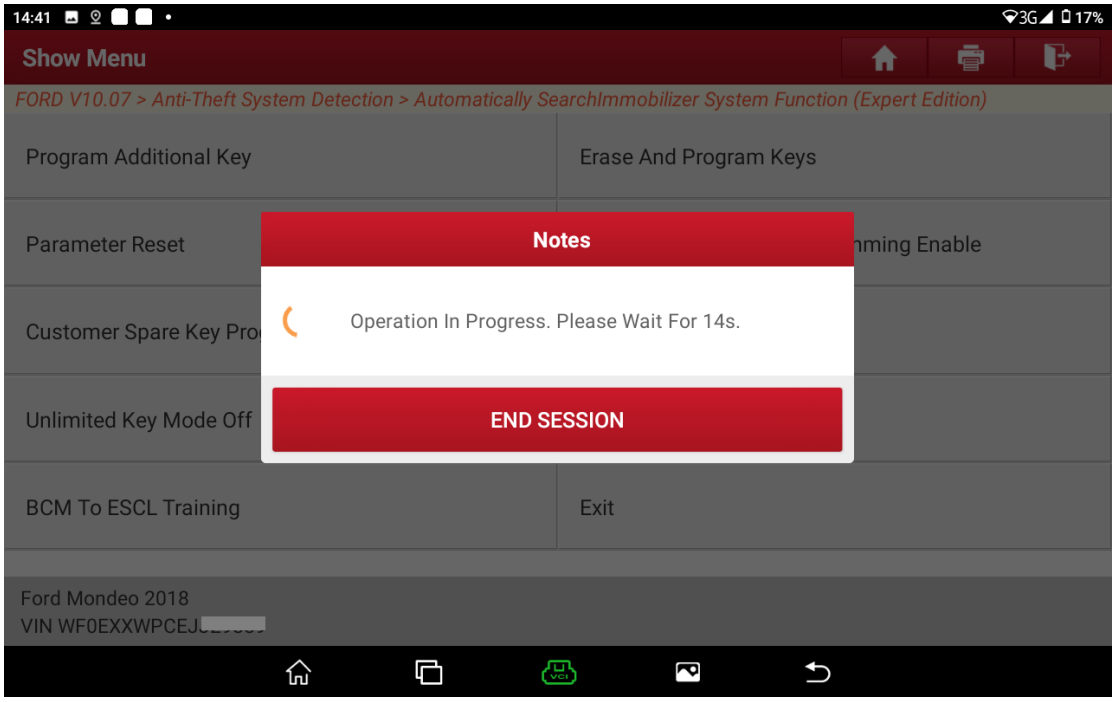

Figure A13

12. Adding the key is successful. Prompt whether to continue to add another key. Choose [No] to exit or choose [Yes] to go to step 10. See Figure A14.

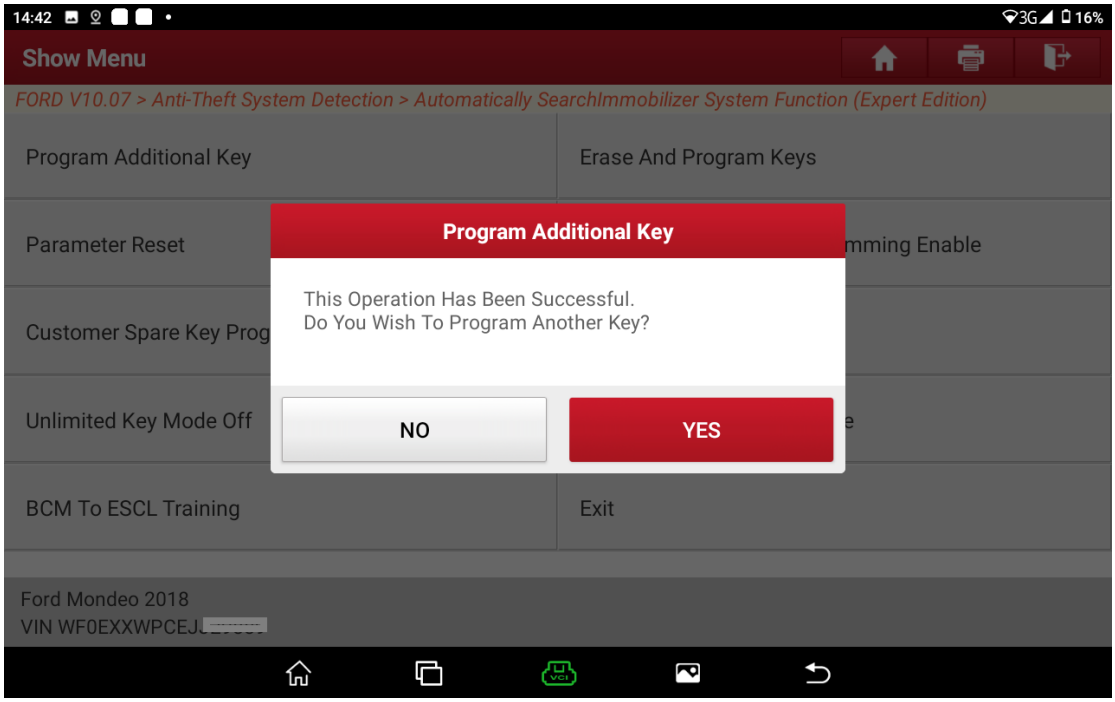

Figure A14

13. Function execution is successful.

Immobilizer key programming (express edition)
The functions of adding and losing all mechanical keys and smart keys can be performed.

Manually select to access detection

Select and display the corresponding function menu according to the vehicle brand, model, displacement, engine type, model year and other information. There is no module reprogramming (online) function menu in this menu.

Programming Operation Instructions

Model Coverage

Make	Model	Year
Ford	New Focus	2011-2019
	Focus Classic	2004-2016
	Escort	2014-2020
	Fiesta	2008-2015
	Taurus	2015-2020
	C-MAX、S-MAX	2006-2014
	New Mondeo	2012-2020
	Mondeo	2003-2008

	Mondeo(zhisheng)	2007-2016
	Edge	2014-2020
	EcoSport	2011-2019
	Kuga/Escape	2013-2020
Jiangling Ford	Everest	2014-2019
	Transit	2006-2020

Requirements

Module programming will not resolve known issues unless a new module is installed or it is required for DTCs and repairs.

Use Launch PAD series comprehensive diagnostic equipment, Launch X-431 PRO immobilizer matching tool. Make sure that the device network connection is normal, and the vehicle battery voltage is between 12 and 15 volts. During programming, it is not allowed to disconnect the diagnostic device connector or turn off the ignition key unless prompted by the software.

The replacement of immobilizer modules is recommended in the following order: programmable installation (module reprogramming), PATS (key programming, parameter reset), related special functions. It is operated in combination with the actual DTCs. When there is no DTC that needs to be programmed (such as U2100, U2101, U3000, U3002), the programming can be skipped to see if there is an immobilizer DTC to perform the immobilizer function. Finally, it is determined whether the corresponding special function needs to be executed according to the module DTC.

For example, after the ABS is replaced, it is necessary to perform the IVD or longitudinal, lateral or acceleration sensor calibration. After the BCM is replaced, it is necessary to perform the immobilizer key programming, LIN bus, and CEI (Configurable Engine Immobilizer). After the PCM engine is replaced, it is necessary to perform the vehicle data learning function. The special functions that need to be performed by different models are slightly different. Refer to the relevant tips in the software.

Procedure

Programmable Module Installation

When replacing a new module, execute the programmable module installation function to correctly configure the system parameters.

For example, when the PCM engine module has P1639:00 "Vehicle ID module is not programmed", or when there are B2477 "Module configuration failure", U2100, U2101, U2200, U3000, U3002 and other DTCs, the programmable module installation should also be performed. After the programmable installation function is performed, if the above DTCs still exist, the module reprogramming (online) should be performed.

It can be performed in the following 3 methods.

Read from old module

The original car module needs to be able to communicate normally. If the original car module is damaged and cannot communicate, you can choose the other two methods. The engines and body modules of some models (new Mondeo, Escort, etc.) only support this method, and do not support manual and online methods.
The new module needs to be installed after the software prompts. If the new module is installed first, it is recommended to install the original car module back and then perform this function.

Manual input

Through the manually inputted parameters, you can query the factory parameters of the vehicle based on the VIN on Ford's official website.
Enter the corresponding query parameters according to the pages in the software, and then the programmable module installation can be completed.

Get it online

To obtain the corresponding configuration parameters of the system online, you need to connect to the Internet.

Take 2019 Everest PSCM [Programmable Module Installation] X431 PAD III as an example.

1. Choose Automatically Search. See Figure C1 and Figure C2.

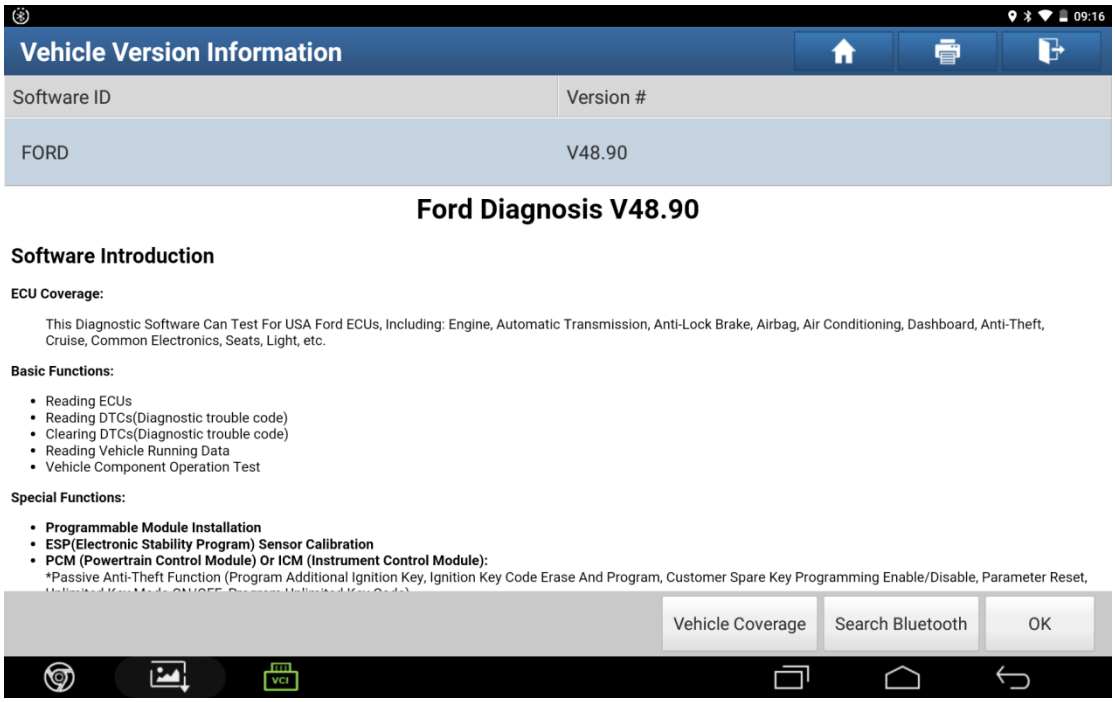

Figure C1

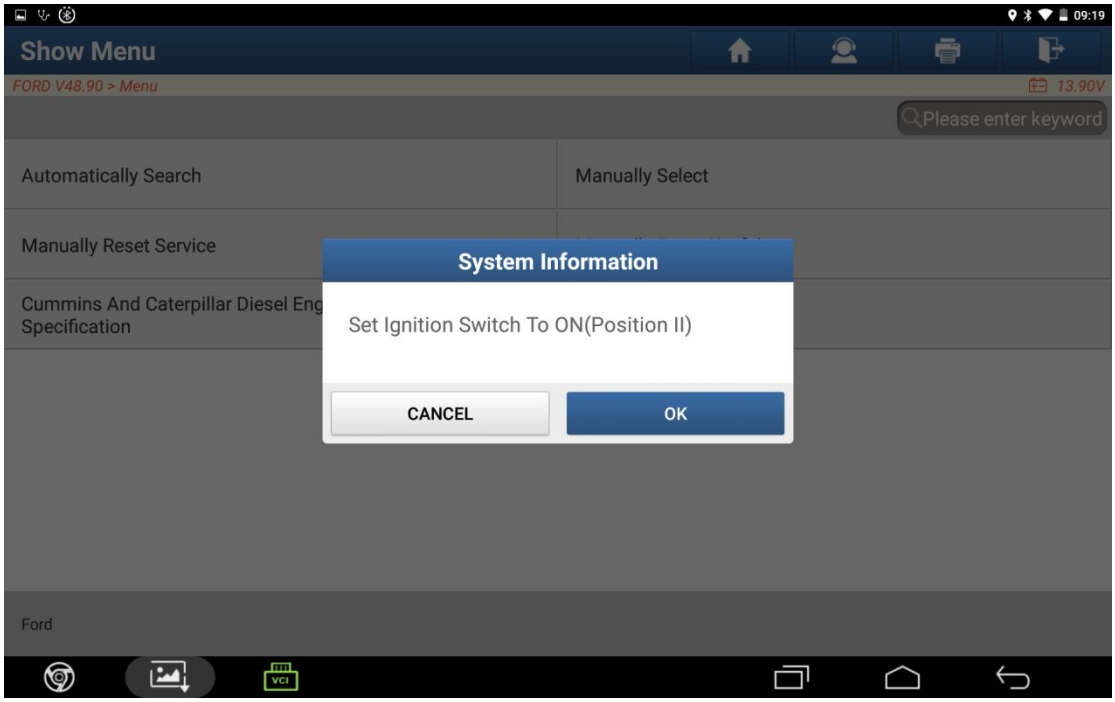

Figure C2

2. Check the current identified vehicle information. See Figure C3.

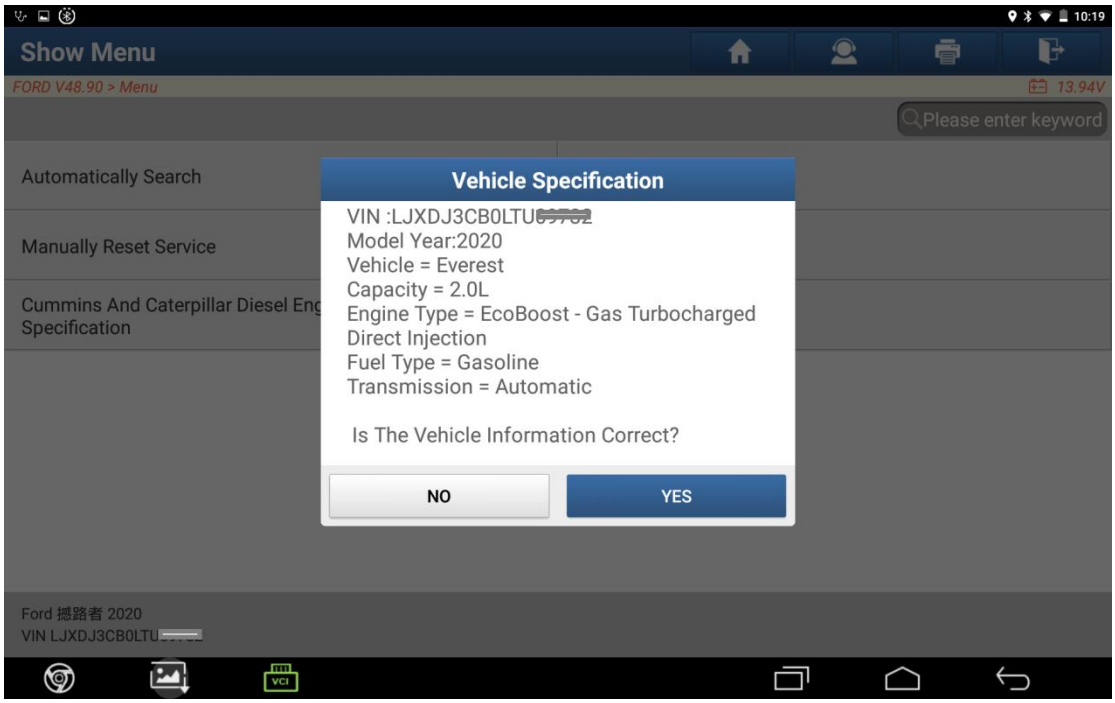

Figure C3

3. Choose Module Programming. See Figure C4.

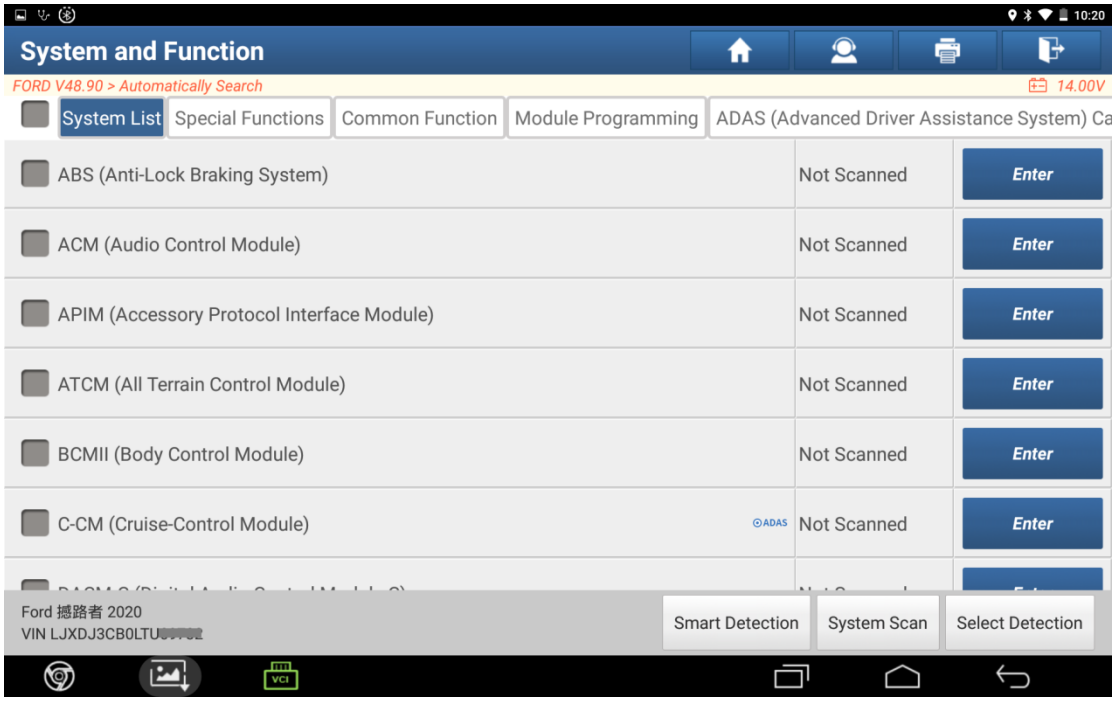

Figure C4

4. Choose Programmable Module Installation. See Figure C5.

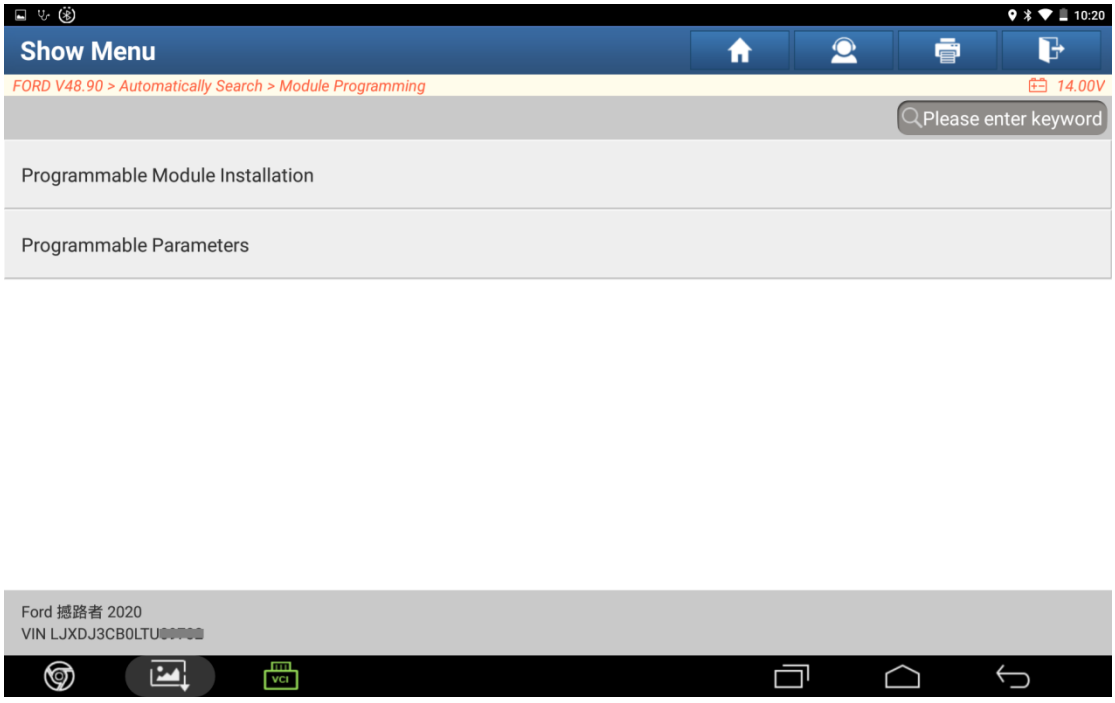

Figure C5

5. Choose PSCM (Power Steering Control Module). See Figure C6.

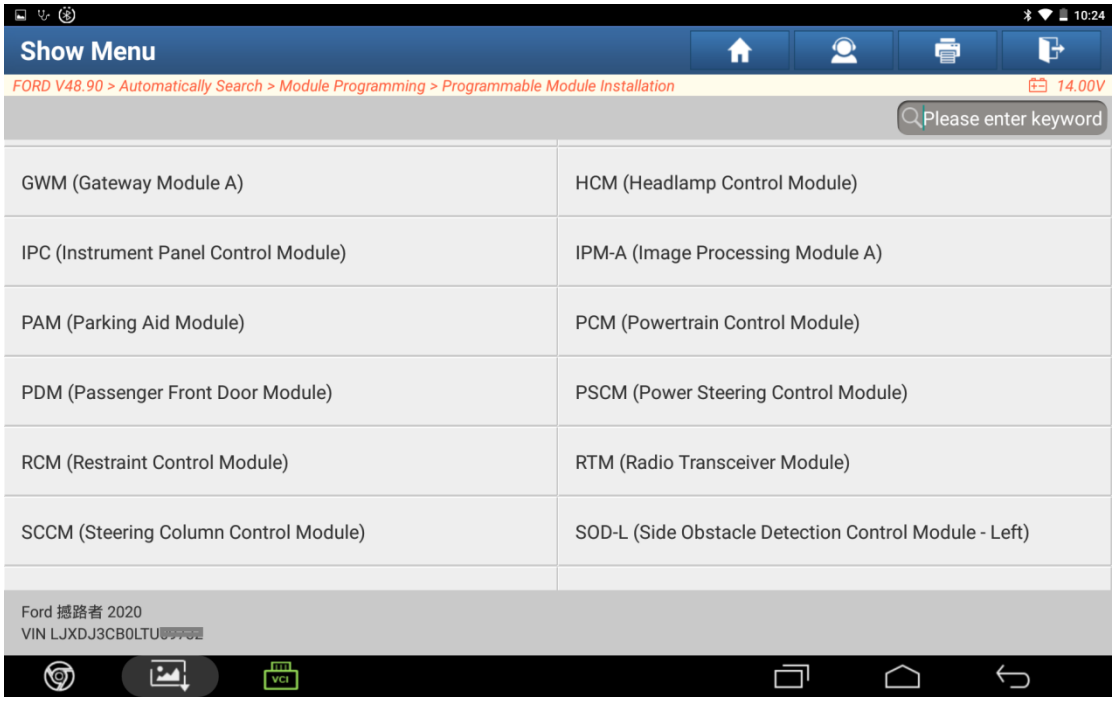

Figure C6

6. The module installed on the current car is the old module of the original car, the module is available, and the communication is normal. See Figure C7. Click Yes to go to step 7.
   If the original module is damaged, does not exist, or cannot communicate, click No to go to step 9.

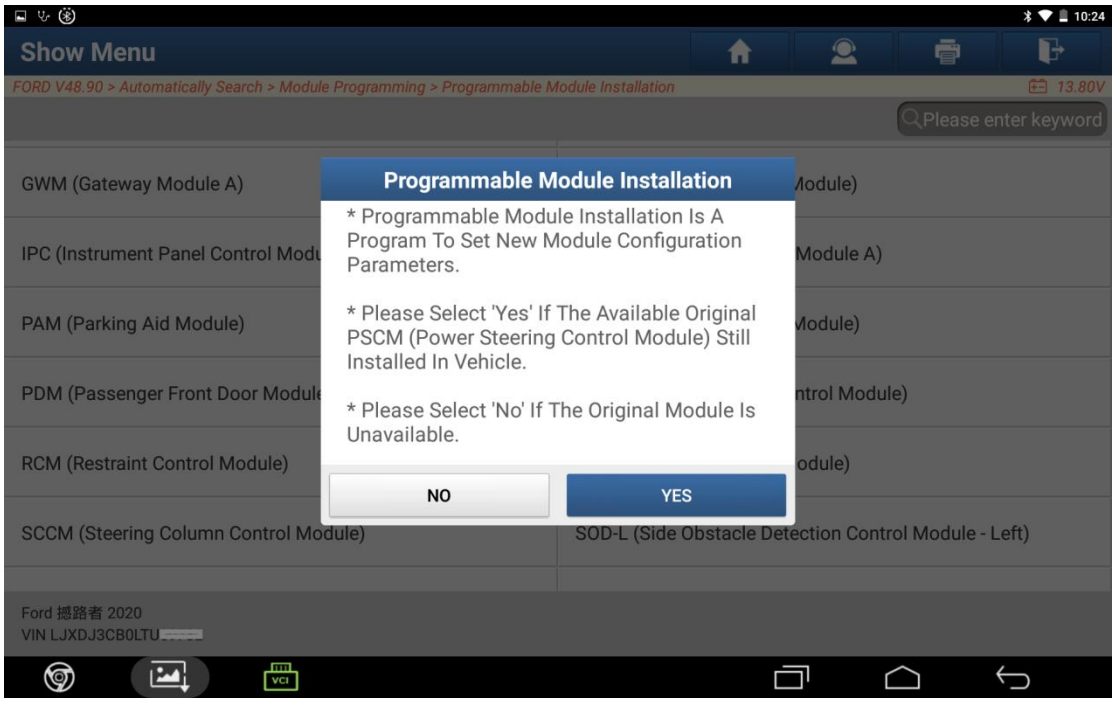

Figure C7

7. Prompt to ensure that the module on the current car is the old module to be replaced. If not, turn off the ignition switch, replace it with the module of the original car, and click OK to read the PSCM module data of the original car. See Figure C8.

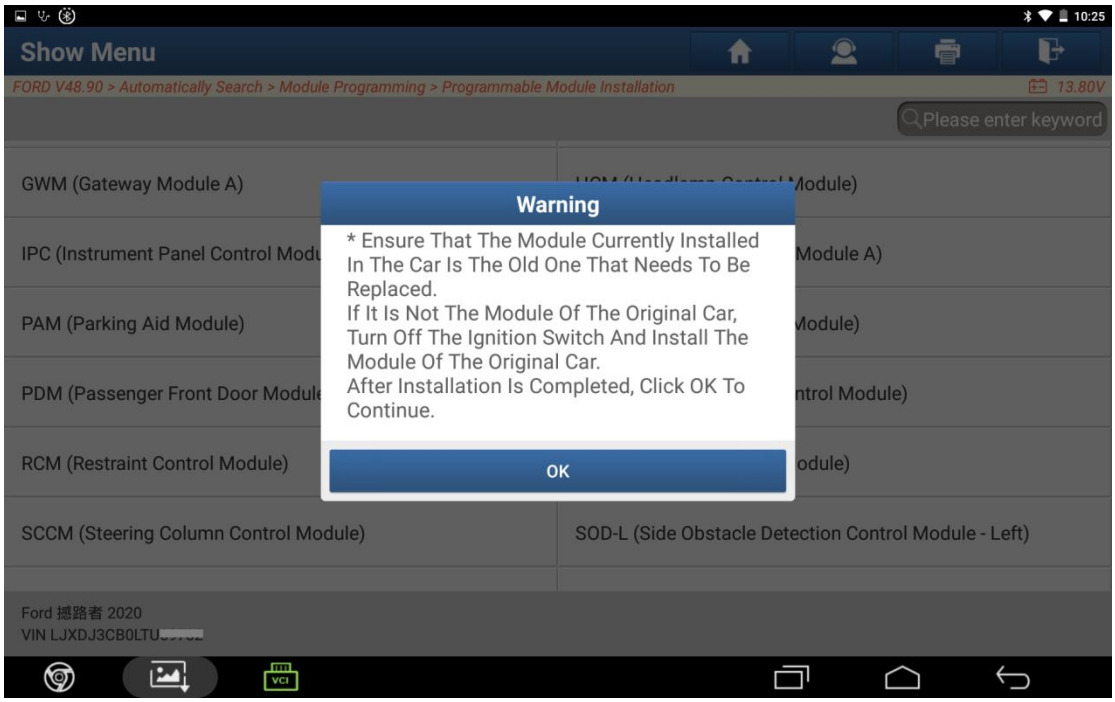

Figure C8

8. Prompt to turn on the ignition switch. Click OK to read the original module data (see Figure C9) and go to step 11.

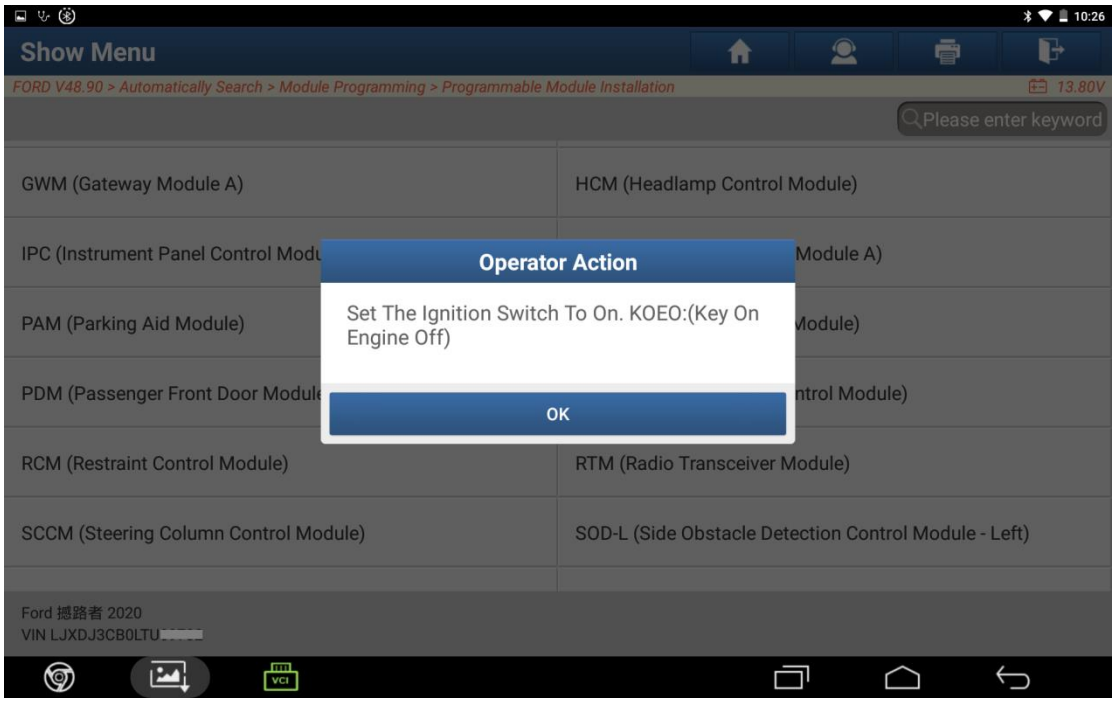

Figure C9

9. The original car has been equipped with a new PSCM module or the original car module is unavailable, and data needs to be entered manually. See Figure C10. Choose Manual to go to step 10.

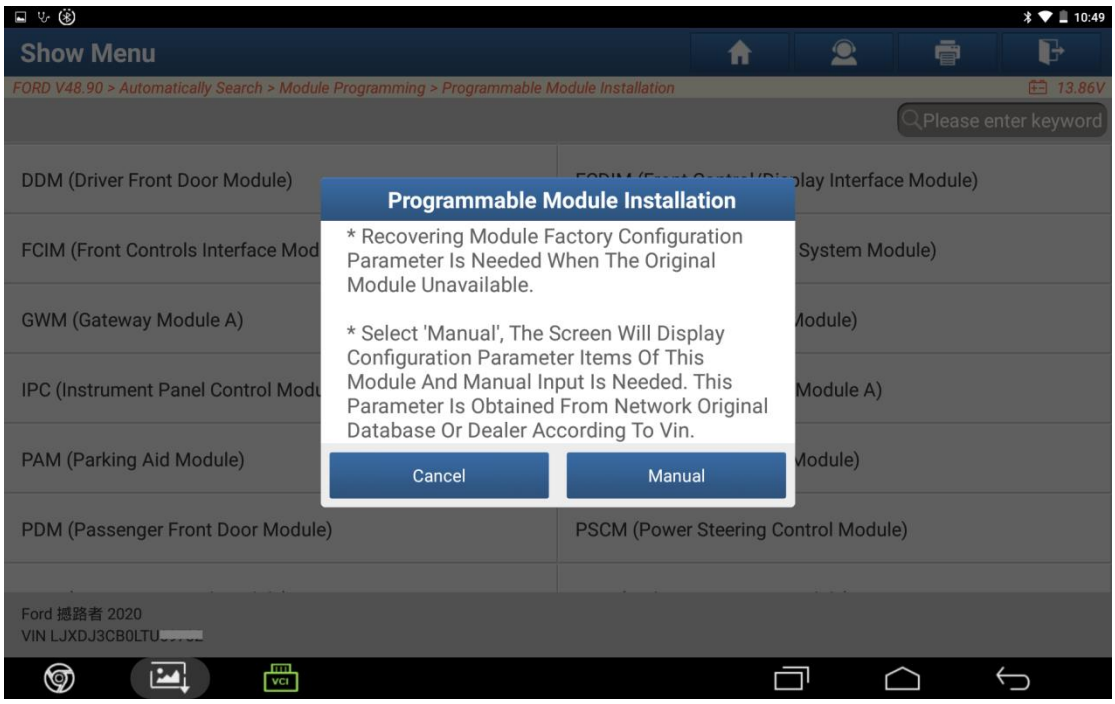

Figure C10

10. Enter the VIN (frame number) through the Ford OEM website to query the factory original data (Figure C11), find the corresponding segment of '730-01-01' and manually enter the data in sequence (Figure C11-1, Figure C11-2, Figure C11-3). Click OK to go to step 11.

730-01-01	0100	0000	003A
730-01-02	0001	0101	003D
730-01-03	0000	0000	0843
730-01-04	0000	0000	003C
730-01-05	0000	0000	3D
730-02-01	0100	0000	003B
730-02-02	0000	0000	003B
730-02-03	0000	0000	003C
730-02-04	0000	0000	003D
730-02-05	0000	0000	3E

Figure C11

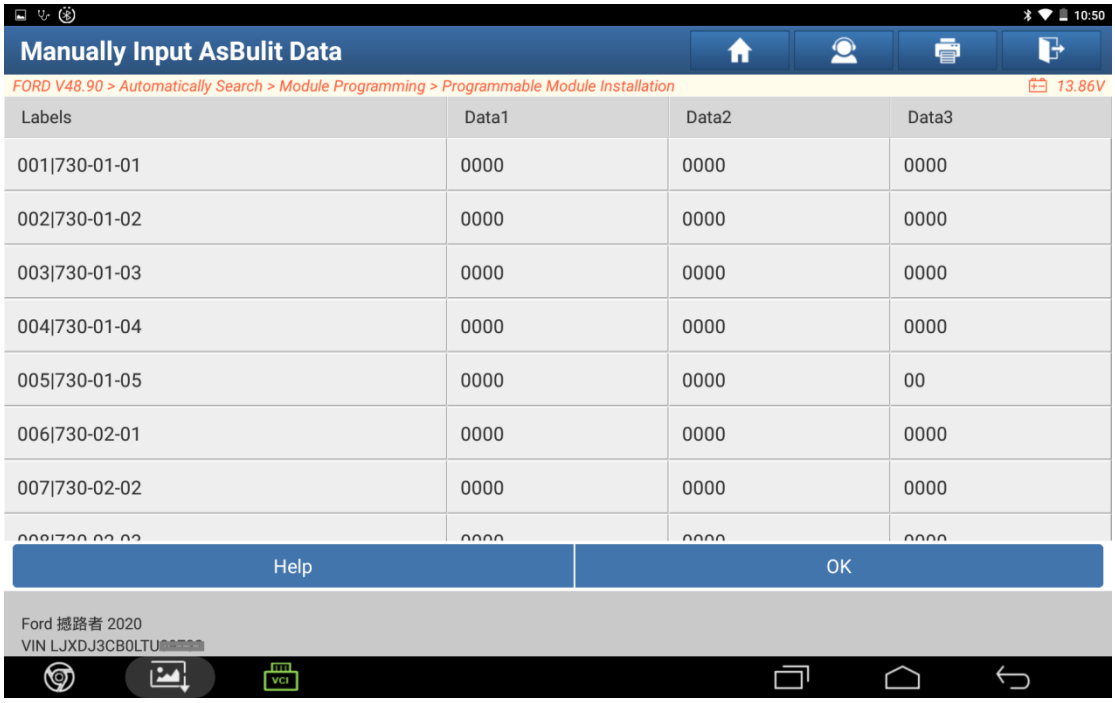

Figure C11-1

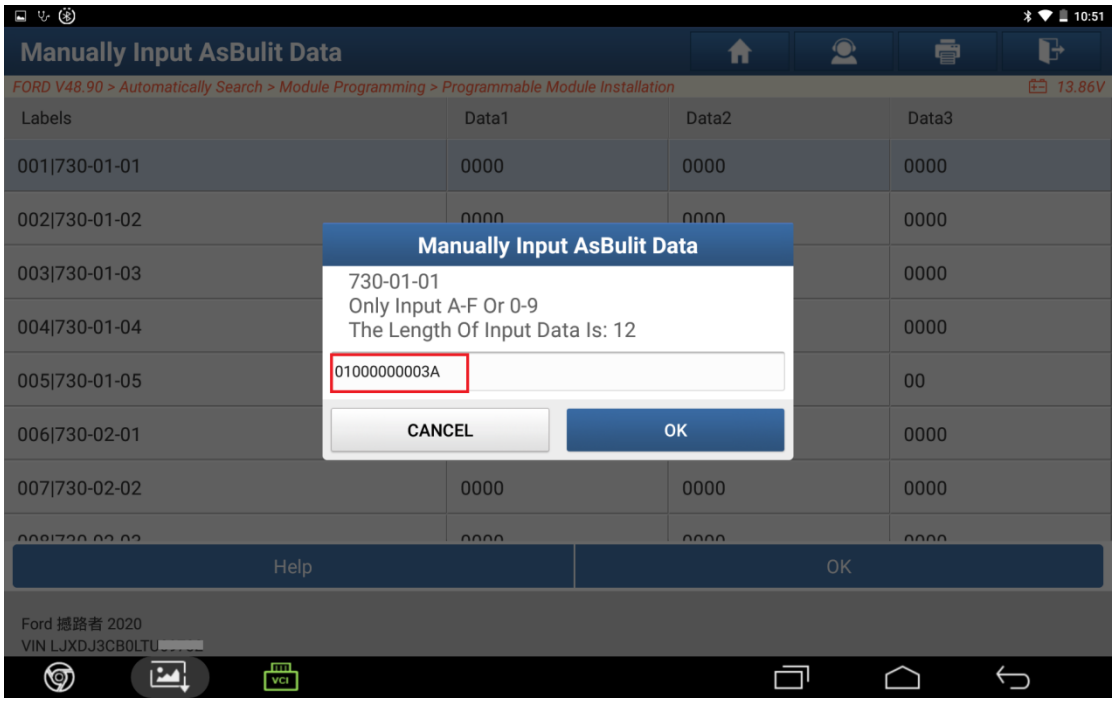

Figure C11-2

Figure C11-3

11. Turn the ignition switch to OFF and install a new PSCM module. See Figure C12 and Figure C13.

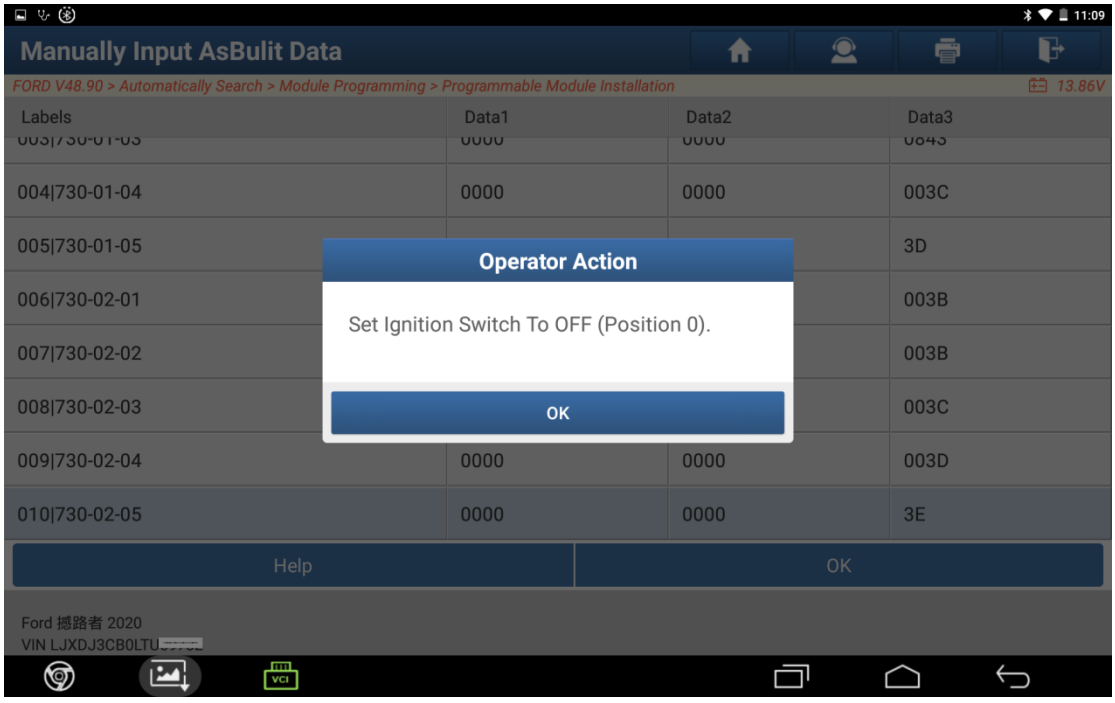

Figure C12

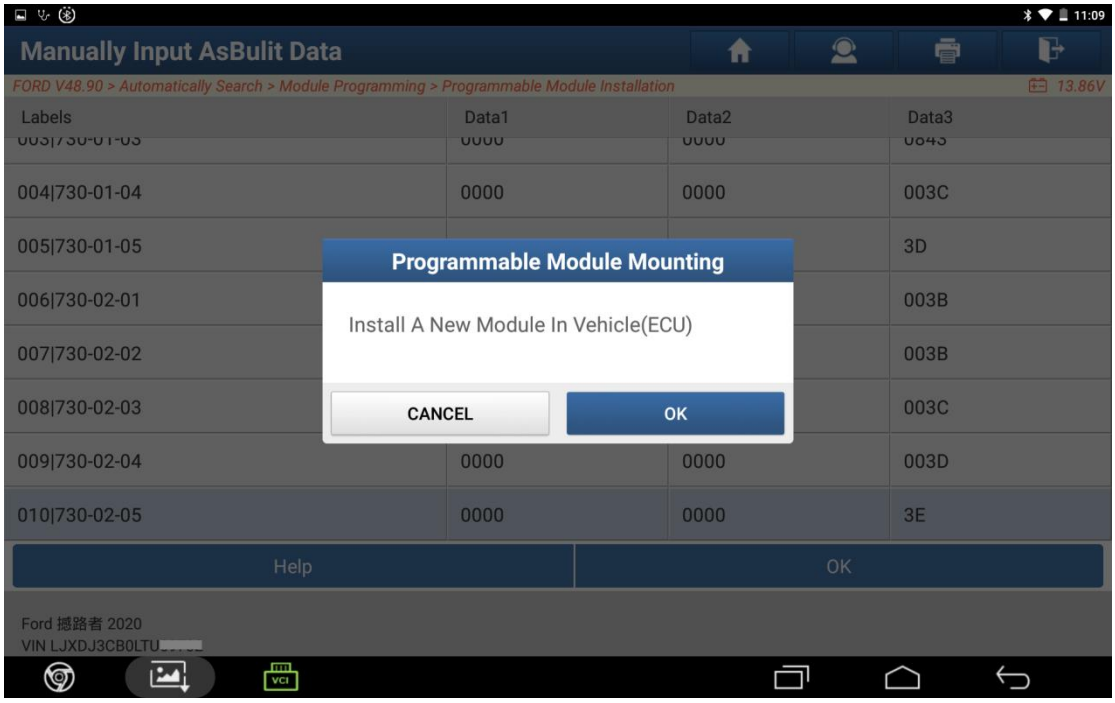

Figure C13

12. Turn the ignition switch to ON and write data. Function execution is successful. See Figure C14 and Figure C15.

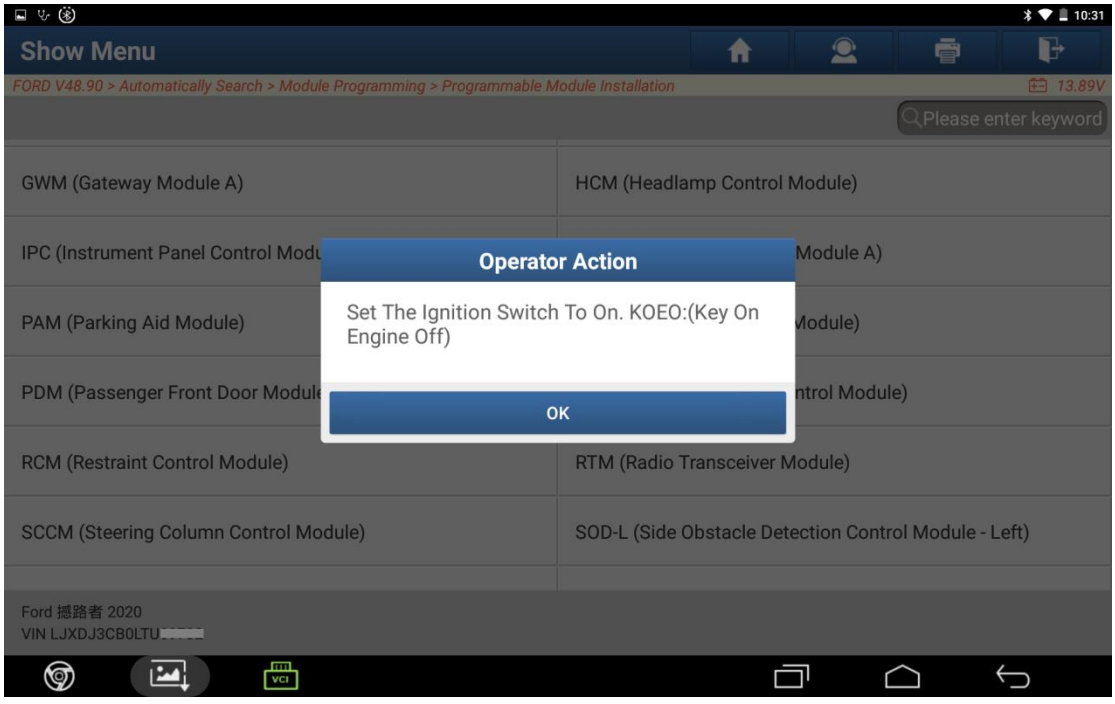

Figure C14

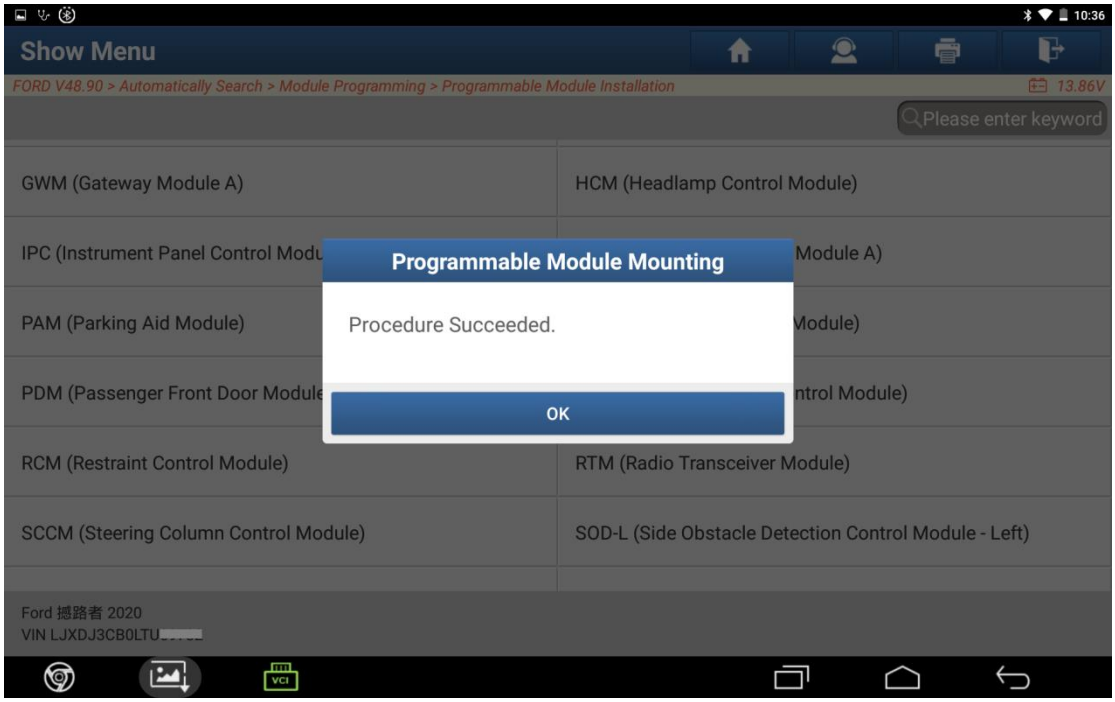

Figure C15

13. Prompt to turn off the ignition switch. Click OK to exit the function and return to the main menu. See Figure C16.

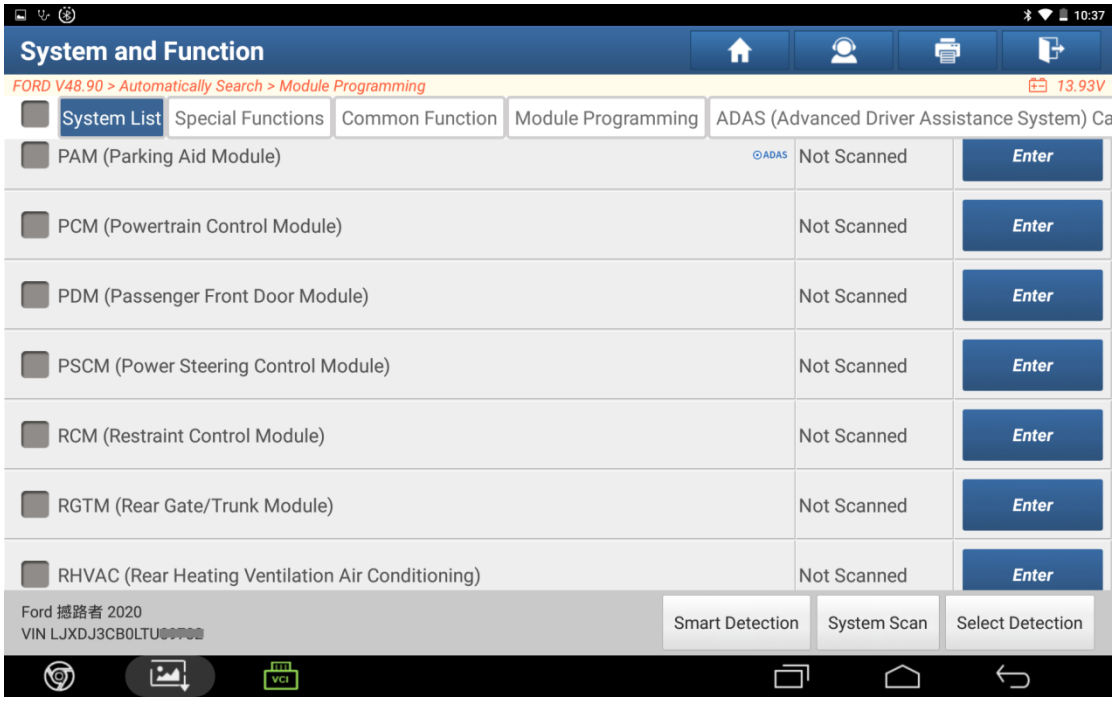

Figure C16

14. Return to the page, click Enter to access PSCM (Power Steering Control Module), and choose Clear Fault Memory. See Figure C17.

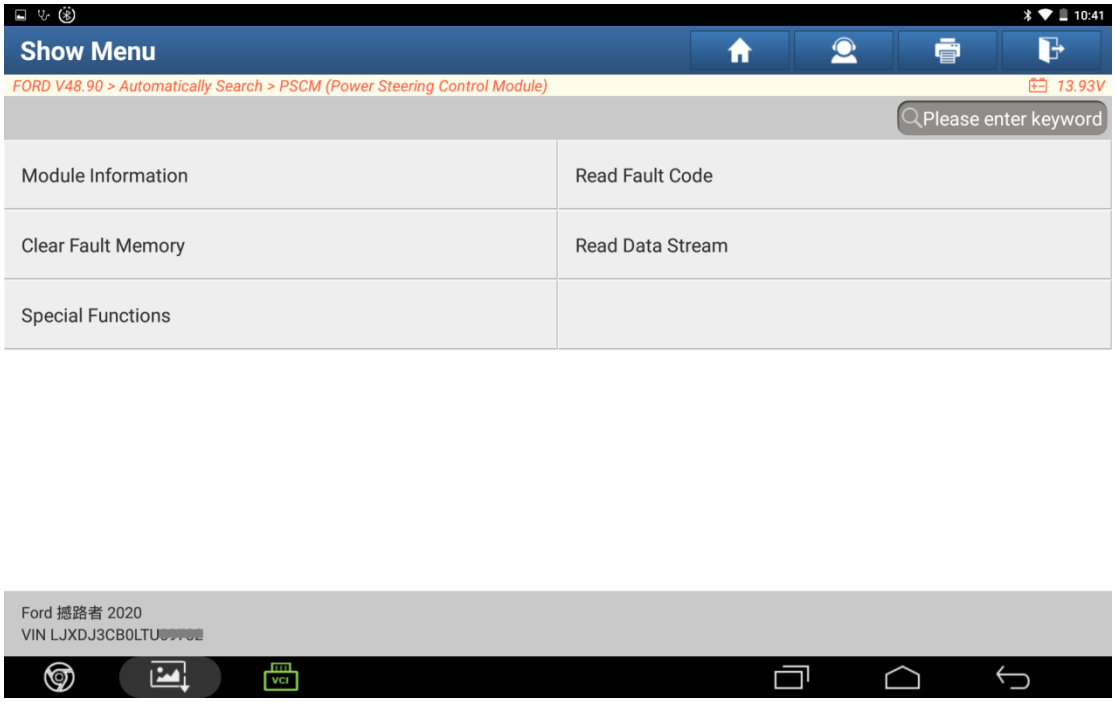

Figure C17

15. After clearing the DTC, return to perform the DTC reading function to check whether the DTC U2100 exists. See Figure C18.

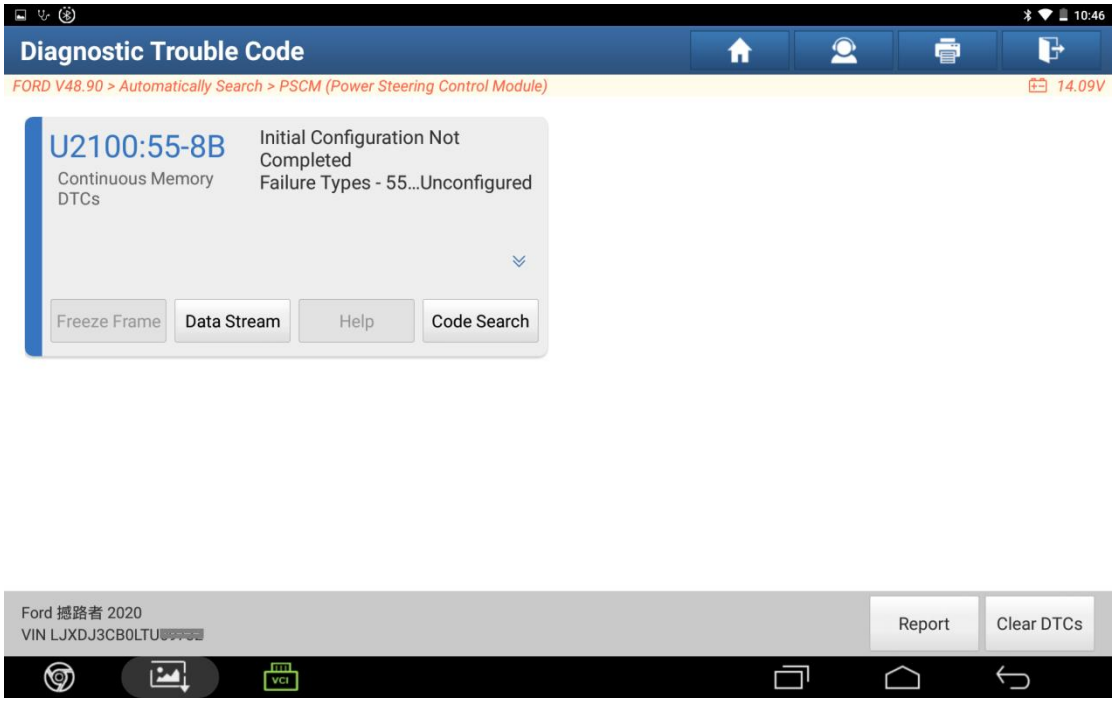

Figure C18

16. If the DTC U2100 exists, return to the main menu to perform PSCM module reprogramming.

Appendix:

- After BCM replacement, diagnostic function operation sequence (mainly divided into three categories):
- New Focus (2011-2018), Fiesta (2013-2015), Escape (2012-2019): PMI programmable module installation >> CCC car setting parameters >> PATS (key configuration, parameter reset)
- Mondeo (2011-2020), Edge (2015-2020), Escort (2015-2020), Taurus (2016-2020): PMI programmable module installation >> reprogramming (online) (currently not supported) >> PATS (key configuration, parameter reset) >> special functions (CEI, LIN initialization, tire pressure learning, remote control setting or BMS reset)
- EcoSport (2012-2017): PMI programmable module installation >> PATS (key configuration, parameter reset)
- Note: After performing the above steps and clearing module DTCs, if there are still U2100, U2101, U3000, U3002 DTCs, try to program again (online).
- When the modules storing key information such as the car body are replaced, or the key is damaged and lost, it is necessary to perform key programming.
- The PATS function supports immobilizer module parameter matching/initialization/reset/synchronization. When the immobilizer related module is replaced, the immobilizer indicator of the vehicle instrument flashes and the vehicle cannot be started, or when the immobilizer DTCs such as P161B "incorrect response of the secondary immobilizer system holder module", B10DA "PATS target identifier", P1260 "theft is detected, the vehicle is prohibited from starting", and U0427 "data obtained from VSM is invalid" appear in the modules, it is necessary to perform the immobilizer module parameter matching.
- At most 8 and at least 2 Ford keys can be stored.
- To successfully perform the immobilizer module parameter matching, at least 2 keys need to be stored.
- The possibility of key programming failure:
- 1. Failure to detect the key (close to the sensing area, remove the case, model mismatch, damage, etc.);
- 2. The key is programmed (stored into the current body module);
- 3. Exceed the maximum number of keys (8);
- 4. There is a fault (the induction coil or the antenna module is faulty, etc.)
- The possibility of key deletion failure: there is a fault
- The possibility of immobilizer matching failure: the number of stored keys is less than 2

Statement: