

TUTORIAL

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Safety Information

For your own safety and the safety of others, and to prevent damage to the device and vehicles upon which it is used, it is important that the safety instructions presented throughout the product user manual be read and understood by all persons operating or coming into contact with the device.

There are various procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the person doing the work. Because of the vast number of test applications and variations in the products that can be tested with this equipment, we cannot possibly anticipate or provide advice or safety messages to cover every circumstance. It is the automotive technician's responsibility to be knowledgeable of the system being tested. It is crucial to use proper service methods and test procedures. It is essential to perform tests in an appropriate and acceptable manner that does not endanger your safety, the safety of others in the work area, the device being used, or the vehicle being tested.

Before using the device, always refer to and follow the safety messages and applicable test procedures provided by the manufacturer of the vehicle or equipment being tested. Use the device only as described in this manual. Read, understand, and follow all safety messages and instructions in this manual.

Safety Messages

Safety messages are provided to help prevent personal injury and equipment damage. All safety messages are introduced by a signal word indicating the hazard level.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

Safety Instructions

The safety messages herein cover situations Auro is aware of. Auro cannot know, evaluate or advise you as to all of the possible hazards. You must be certain that any condition or service procedure encountered does not jeopardize your personal safety.

DANGER

When an engine is operating, keep the service area **WELL VENTILATED** or attach a building exhaust removal system to the engine exhaust system. Engines produce carbon monoxide, an odorless, poisonous gas that causes slower reaction time and can lead to serious personal injury or loss of life.

SAFETY WARNINGS

- Always perform automotive testing in a safe environment.
- Wear safety eye protection that meets ANSI standards.
- Keep clothing, hair, hands, tools, test equipment, etc. away from all moving or hot engine parts.
- Operate the vehicle in a well ventilated work area, for exhaust gases are poisonous.
- Put the transmission in PARK (for automatic transmission) or NEUTRAL (for manual transmission) and make sure the parking brake is engaged.
- Put blocks in front of the drive wheels and never leave the vehicle unattended while testing.
- Be extra cautious when working around the ignition coil, distributor cap, ignition wires and spark plugs. These components create hazardous voltages when the engine is running.
- Keep a fire extinguisher suitable for gasoline, chemical, and electrical fires nearby.
- Do not connect or disconnect any test equipment while the ignition is on or the engine is running.
- Keep the test equipment dry, clean, free from oil, water or grease. Use a mild detergent on a clean cloth to clean the outside of the equipment as necessary.
- Do not drive the vehicle and operate the test equipment at the same time. Any distraction may cause an accident.
- Refer to the service manual for the vehicle being serviced and adhere to all diagnostic procedures and precautions. Failure to do so may result in personal injury or damage to the test equipment.
- To avoid damaging the test equipment or generating false data, make sure the vehicle battery is fully charged and the connection to the vehicle DLC is clean and secure.
- Do not place the test equipment on the distributor of the vehicle. Strong electro-magnetic interference can damage the equipment.

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Introduction

This manual introduces how to conduct BMW FEM/BDC Renew on Auro OtoSys IM100.

Two options are available when accessing FEM/BDC Renew:

- Copy Data Update: When the immobilizer information of the vehicle can be read from the original FEM/BDC module, perform this function to read the information and write it into the replacing module.
- Calculate Data Update: When the immobilizer information of the vehicle cannot be read from the original FEM/BDC module, perform this function to generate the information via the input VIN code, vehicle frequency and engine ISN code and then write it into the replacing module.

NOTE

Illustrations used in this manual are samples, and the actual testing screens may vary by vehicle. Observe the menu titles and on-screen instructions to make correct selections and operations.

FEM/BDC Renew via Copy Data Update

● Preparation

1. Attention: If there's an ELV in the vehicle, the ELV may not be unlocked after performing FEM/BDC Renew. You'll need to solve the locked problem yourself, so please start the operation with careful consideration.
2. To perform the Copy Data Update function, a working key or the engine ISN code is needed.
3. The hardware version of the original and replacing modules can only vary slightly. Otherwise, the DTCs of the vehicle may not be cleared.
4. Remove the FEM/BDC module from the vehicle. (See [Appendix](#).)
5. Conduct ECU preprocessing on the replacing (used) module and the original module to make them able to learn keys. No ECU preprocessing is needed for the replacing module if it is a brand new one. (Please refer to [BMW-A001](#) for details on ECU preprocessing.)
6. Prepare a blank key.

● Procedures

1. Connect the IM100 tablet to the original FEM/BDC module via the included main cable.
2. Turn on the IM100 tablet and tap **OtoSys** > **IMMO**. A vehicle menu displays and a disclaimer prompts up. Tap **Accept** to continue.



Figure 1 Sample Main Interface

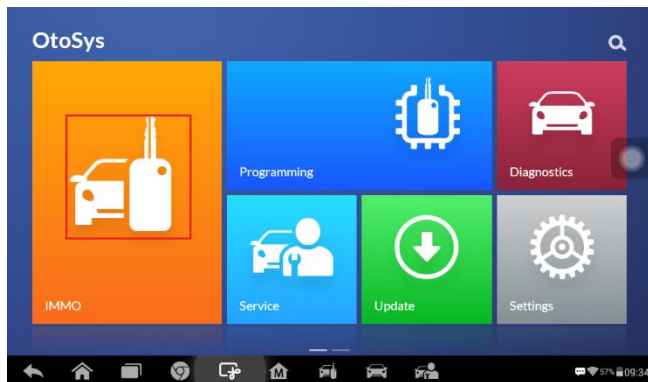


Figure 2 Sample OtoSys Job Menu

3. Tap **BMW** on the vehicle menu.



Figure 3 Sample Vehicle Menu

4. Tap **ECU Renew** > **FEM/BDC Renew (CAN)**.

NOTE

1. You can click the pen icon near the top-right corner to record the operation data. If you encounter any difficulties, click the icon again to send us the data and the problem, so that our engineers could help. The network should be connected when uploading the data.
2. Please make sure the engine is off before the operation gets started.

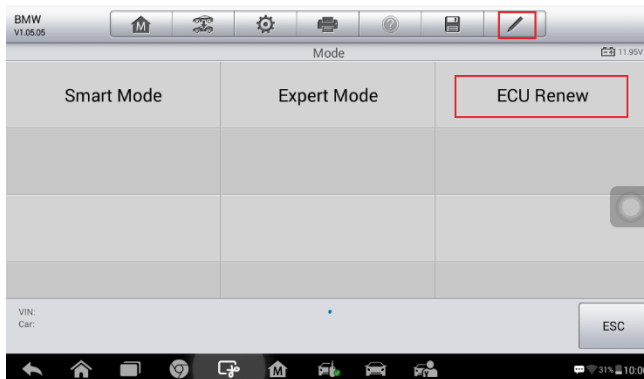


Figure 4 Sample Function Select Screen 1

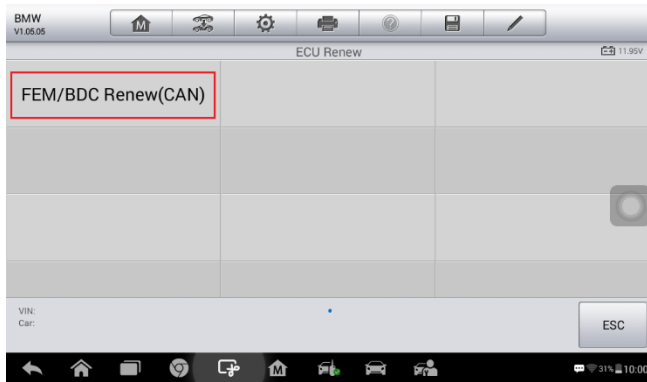


Figure 5 Sample Function Select Screen 2

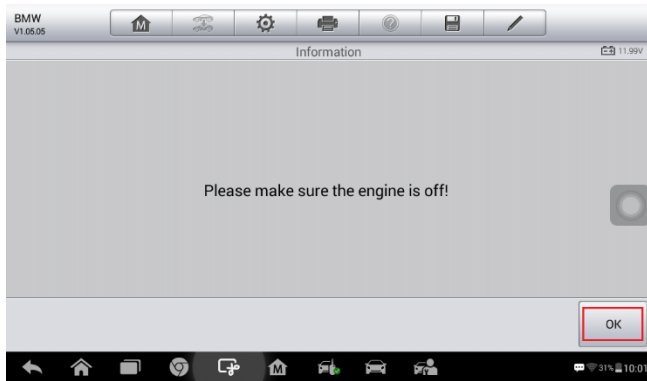


Figure 6 Sample Information Screen

5. Tap **Copy Data Update**, read the notes and procedures listed in the operation guide carefully, and then tap **OK** to continue.

NOTE

If you don't strictly follow the steps, the data may be lost or the FEM/BDC Renew operation may fail.

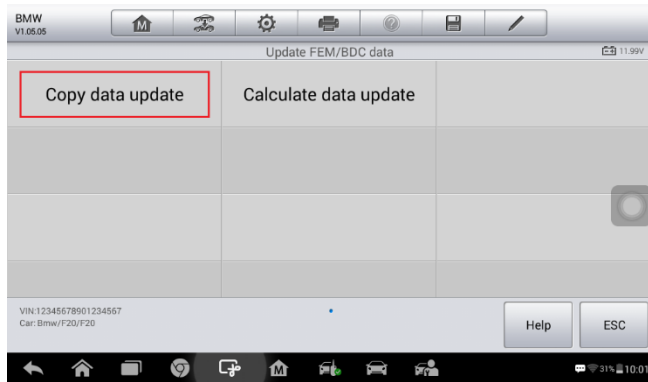


Figure 7 Sample Function Select Screen 3

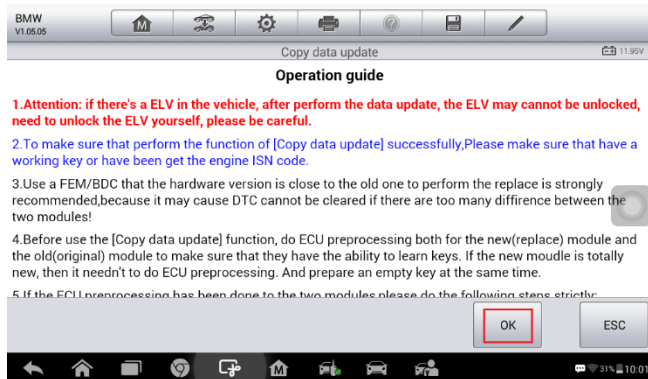


Figure 8 Sample Operation Guide Screen

- Tap **Backup FAFP** on the function menu to backup the FAFP data of the original FEM/BDC module. Read the function information and tap **OK** to continue.

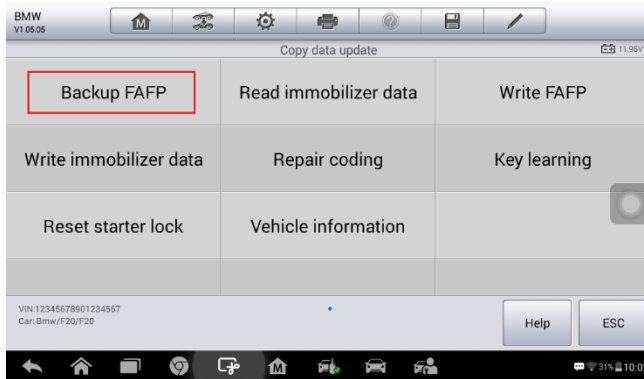


Figure 9 Sample Backup FAFP Screen 1

- Tap **OK** > **Confirm** to save the data. When a "File saved successfully!" message displays, tap **OK** and exit to the function menu.

NOTE

- The data file can be renamed.
- Memorize or note down the name and location of the file for later use.

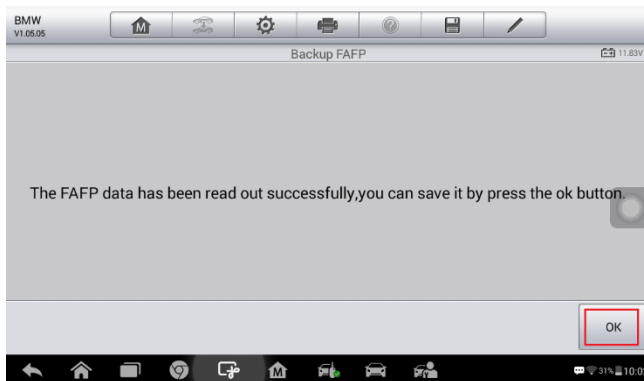


Figure 10 Sample Backup FAFP Screen 2

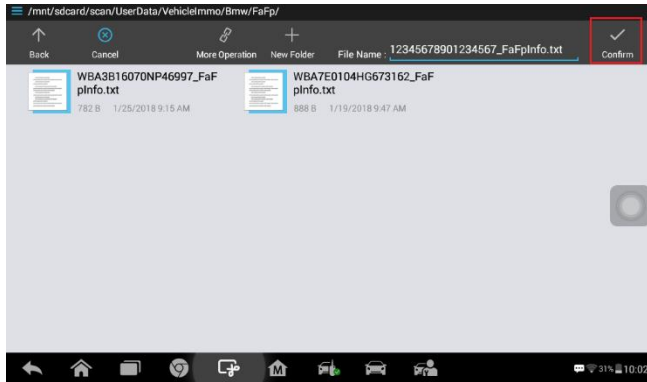


Figure 11 Sample Backup FAFP Screen 3

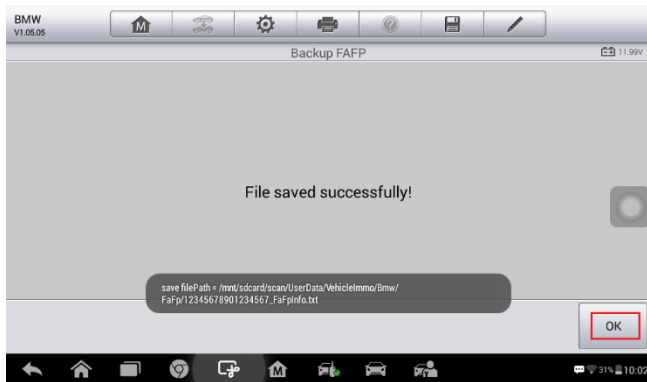


Figure 12 Sample Backup FAFP Screen 4

8. Tap **Read immobilizer data** to backup the immobilizer data of the original module. Read the function information and tap **OK** to continue.

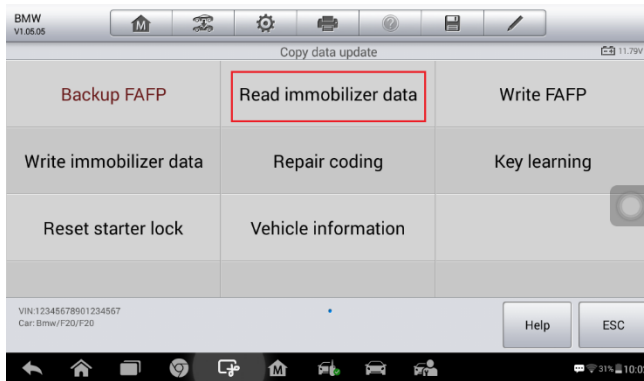


Figure 13 Sample Read Immobilizer Data Screen 1

9. When a “Do you have a working key?” message displays, make selection accordingly. Tap **Yes** and then put the working key close to the emergency start coil to read the password information, or tap **No** and move on to read the immobilizer data.

NOTE

If the working key is verified in this step, it can be directly used to start the engine when the FEM/BDC Renew is completed.

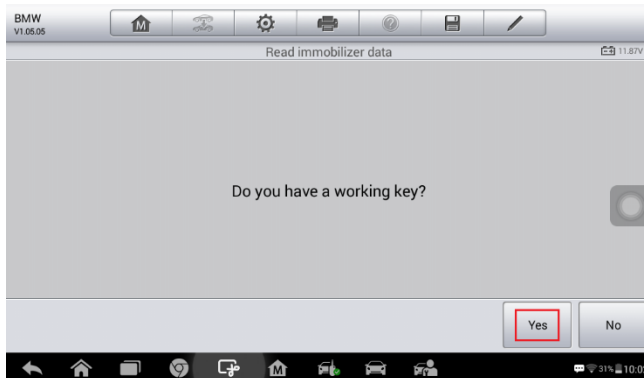


Figure 14 Sample Read Immobilizer Data Screen 2

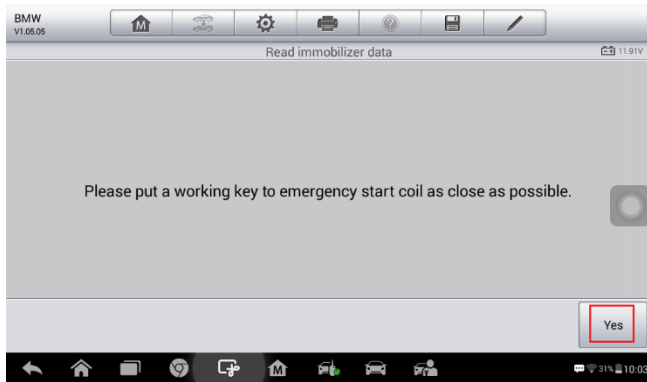


Figure 15 Sample Read Immobilizer Data Screen 3

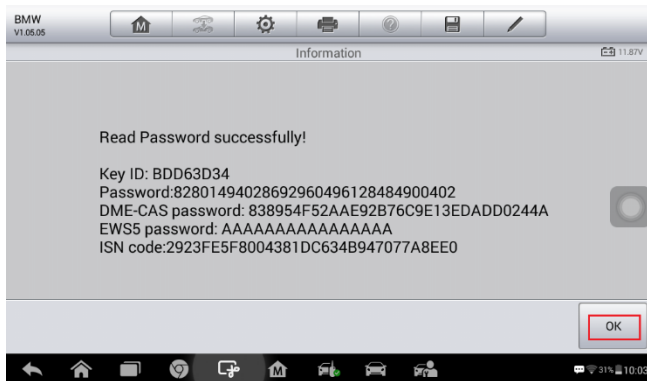


Figure 16 Sample Read Immobilizer Data Screen 4

10. When the immobilizer data is read successfully, tap **Save** > **Confirm** to save the data. When a "File saved successfully!" message displays, tap **OK** > **Close** and exit to the function menu.

NOTE

1. The data file can be renamed.
2. Memorize or note down the name and location of the file for later use.

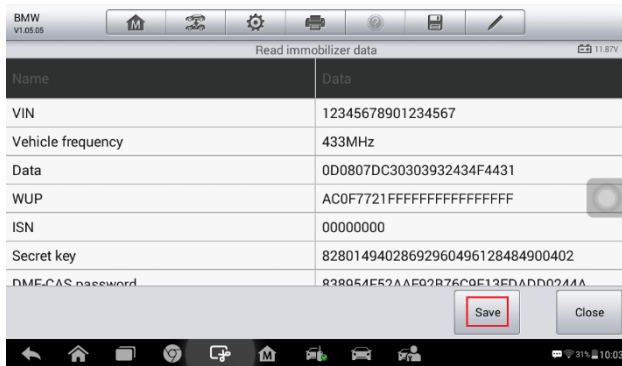


Figure 17 Sample Read Immobilizer Data Screen 5

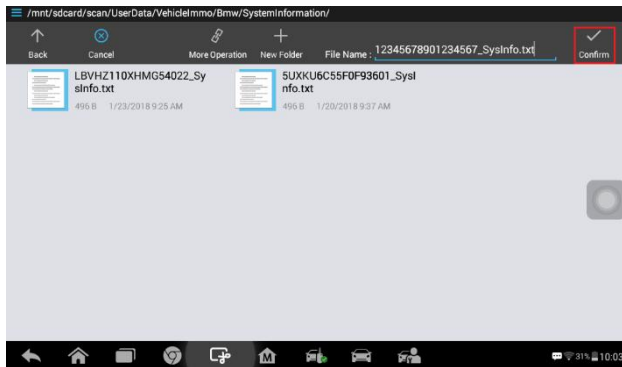


Figure 18 Sample Read Immobilizer Data Screen 6

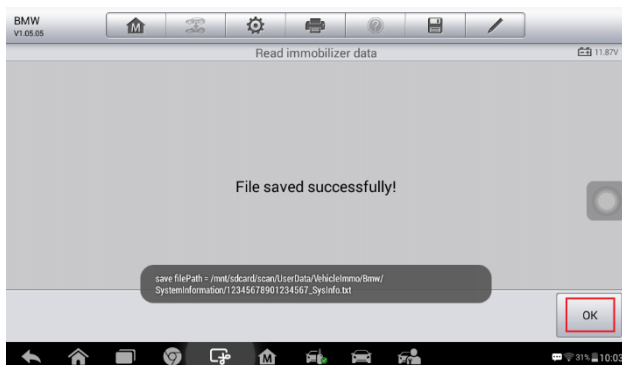


Figure 19 Sample Read Immobilizer Data Screen 7

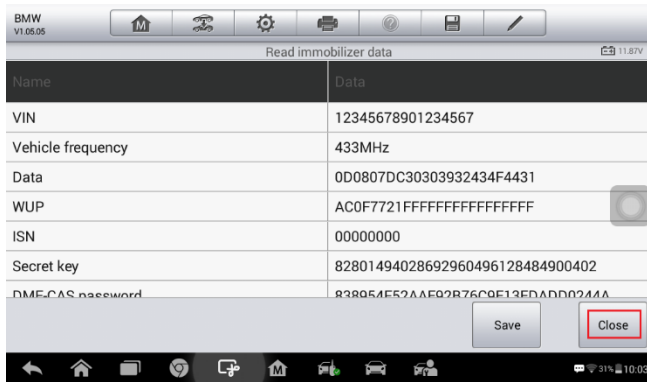


Figure 20 Sample Read Immobilizer Data Screen 8

11. When Read Immobilizer Data is completed, connect the IM100 tablet with the replacing module via the included main cable.
12. Then tap **Write FAFP** to write the saved FAFP data into the new FEM/BDC module. Read the function information and tap **OK** to continue.

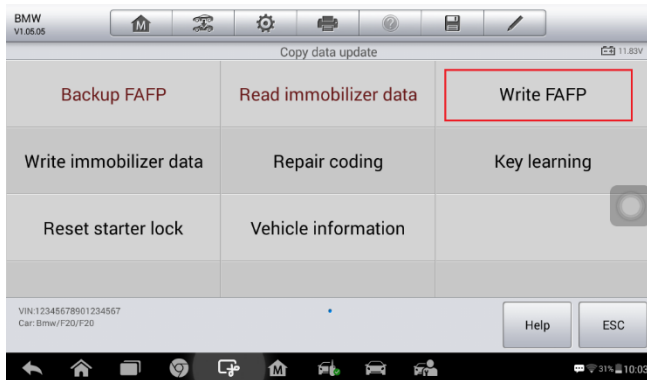


Figure 21 Sample Write FAFP Screen 1

13. Select the saved FAFP data file and tap **Confirm** to write the FAFP data. When Write Data is completed, tap **OK** and exit to the function menu.

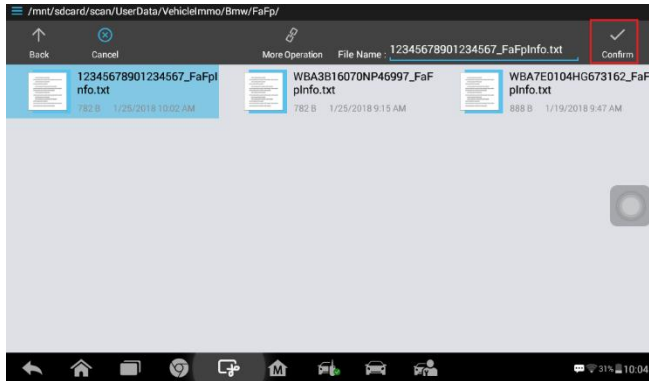


Figure 22 Sample Write FAFP Screen 2

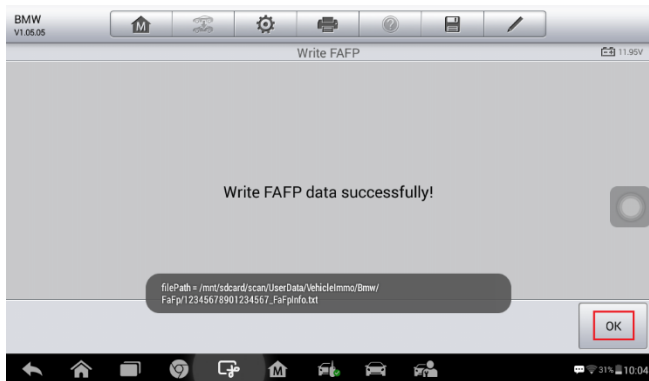


Figure 23 Sample Write FAFP Screen 3

14. Tap **Write immobilizer data** to write the saved immobilizer data into the replacing module. Read the function information and tap **OK** to continue.

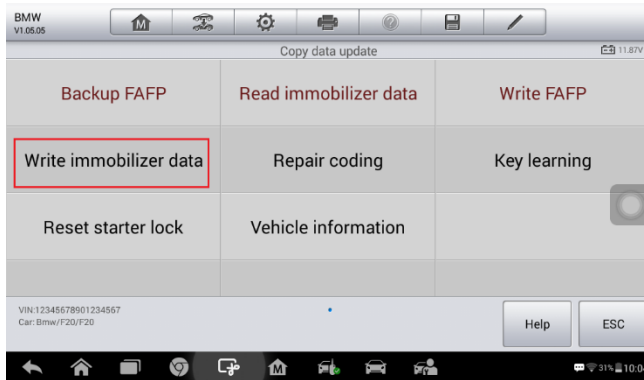


Figure 24 Sample Write Immobilizer Data Screen 1

15. When a module menu displays, make selection accordingly.

NOTE

- New Module: Perform this function if the replacing module is a brand new one.
- Used Module: Perform this function if the replacing module is a used one.

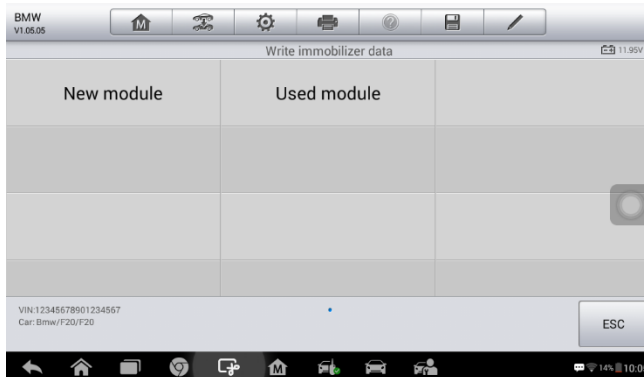


Figure 25 Sample Write Immobilizer Data Screen 2

16. Select the saved immobilizer data file and tap **Confirm** to continue.

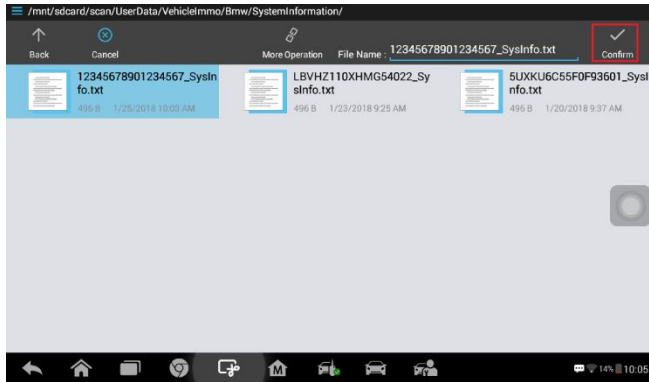


Figure 26 Sample Write Immobilizer Data Screen 3

17. Tap **Write data to ECU**. When Write Data to ECU is completed successfully, tap **Close** and exit to the function menu.

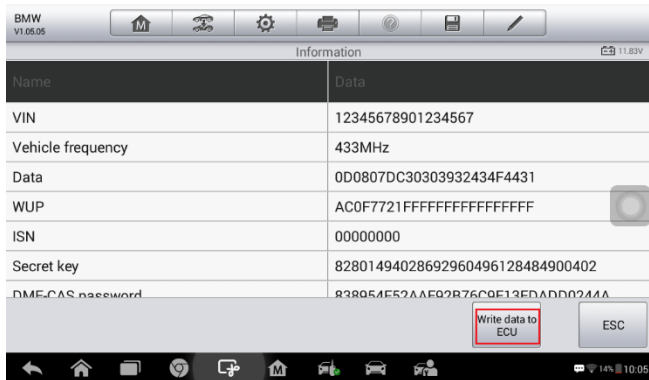


Figure 27 Sample Write Immobilizer Data Screen 4

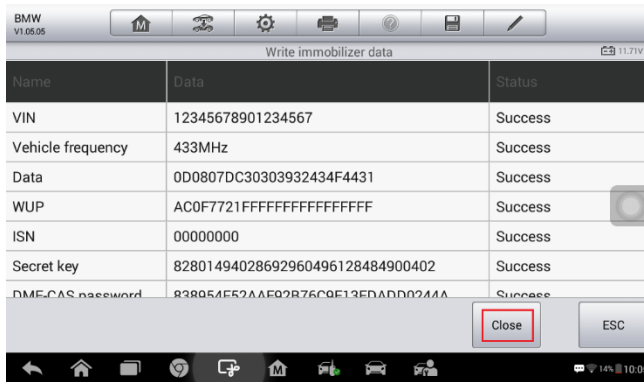


Figure 28 Sample Write Immobilizer Data Screen 5

18. Tap **Repair coding** to repair the coding of the new FEM/BDC module. Read the function information and tap **OK** to continue.

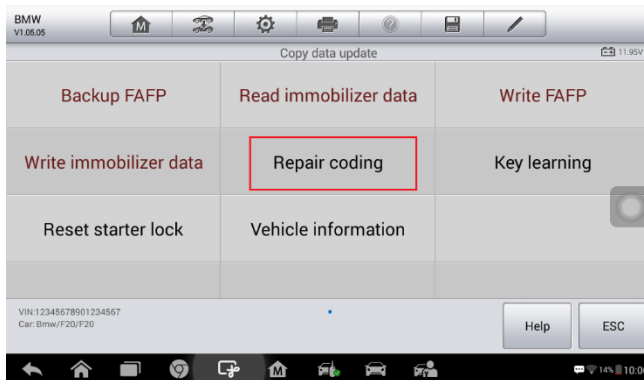


Figure 29 Sample Repair Coding Screen 1

19. Tap **Yes** to continue the coding operation. When Repair Coding is completed successfully, tap **OK** and exit to the function menu.

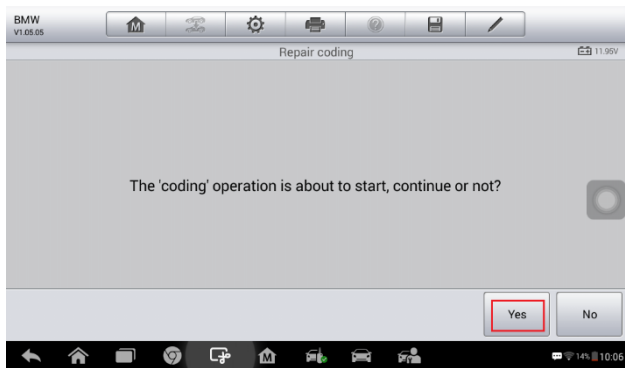


Figure 30 Sample Repair Coding Screen 2

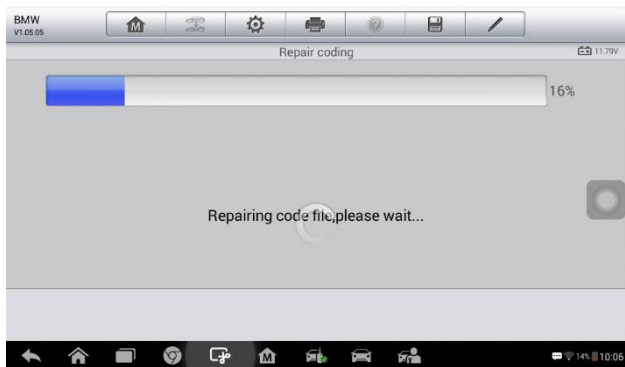


Figure 31 Sample Repair Coding Screen 3

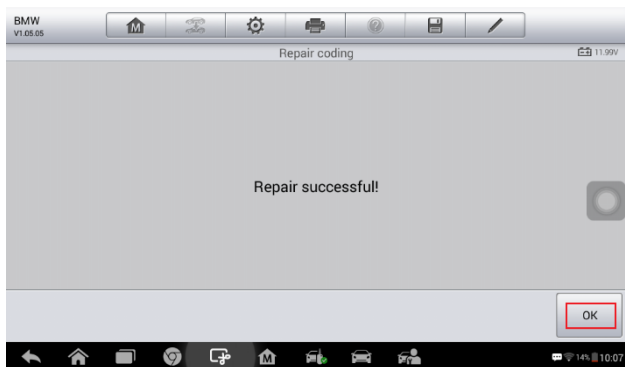


Figure 32 Sample Repair Coding Screen 4

20. Tap **Key learning** to add a key to the new FEM/BDC module. Read the function information and tap **OK** to continue.

NOTE

1. The password must be read out before the key can be written or cleared.
2. A key position must be selected before the key can be written or cleared.

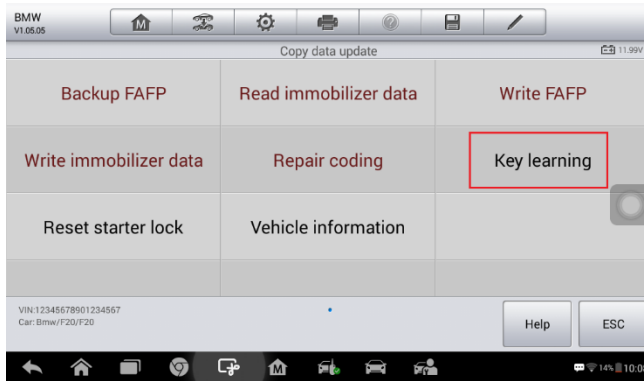


Figure 33 Sample Key Learning Screen 1

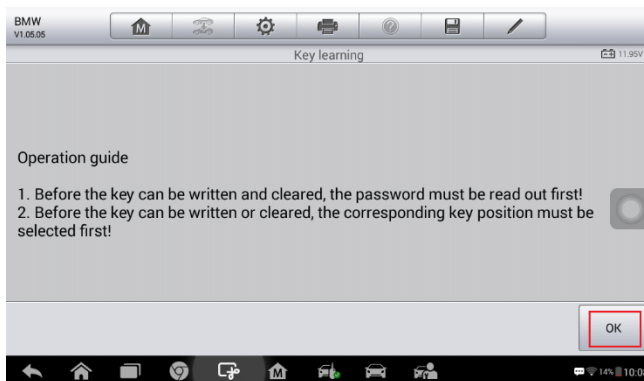


Figure 34 Sample Key Learning Screen 2

21. Tap **Read password** to read the password information of the key.



Figure 35 Sample Key Learning Screen 3

22. When a “Do you have a working key?” message displays, tap **Yes** and then put the original key close to the emergency start coil to read the password information, or tap **No** to input the engine ISN code.

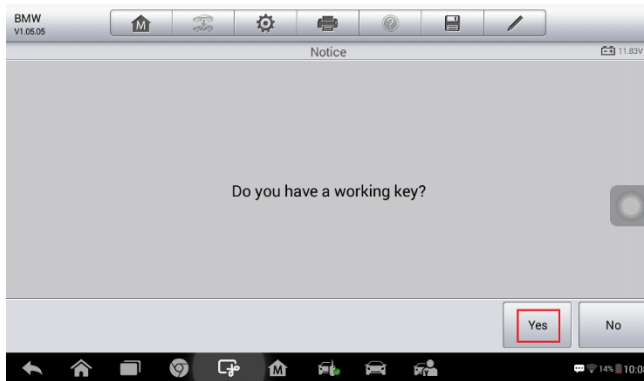


Figure 36 Sample Key Learning Screen 4

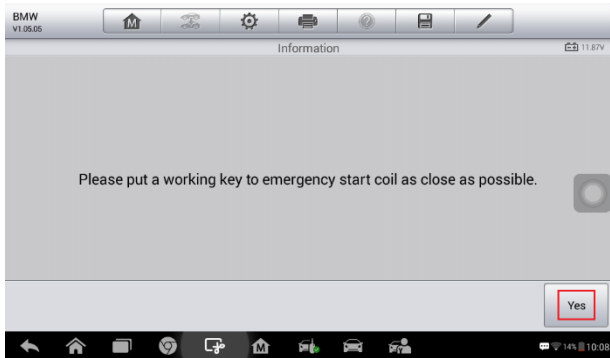


Figure 37 Sample Key Learning Screen 5

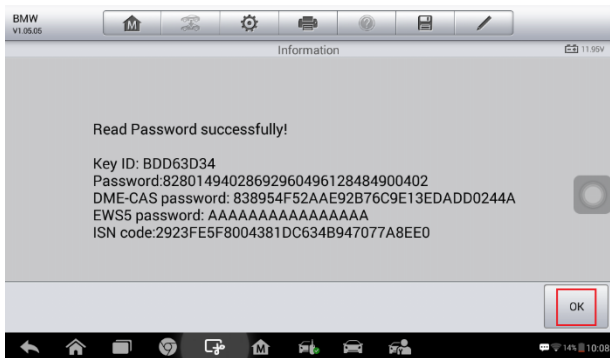


Figure 38 Sample Key Learning Screen 6

23. Select a FREE key position and then tap **Write key**.

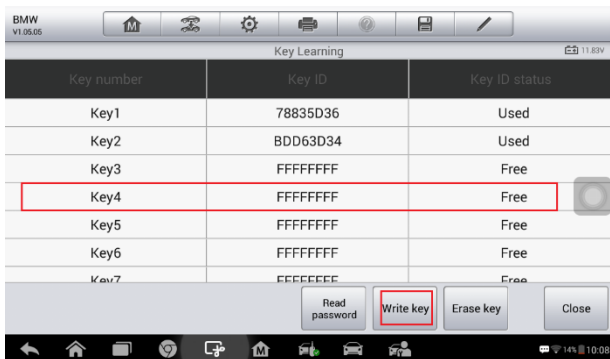


Figure 39 Sample Key Learning Screen 7

24. Follow the instruction to put the NEW key close to the emergency start coil and tap **OK** to start Key Learning.

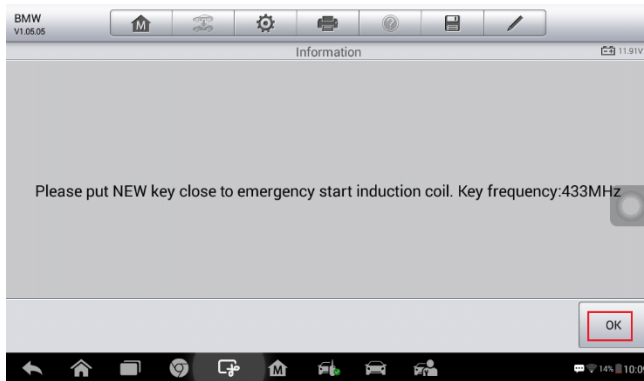


Figure 40 Sample Key Learning Screen 8

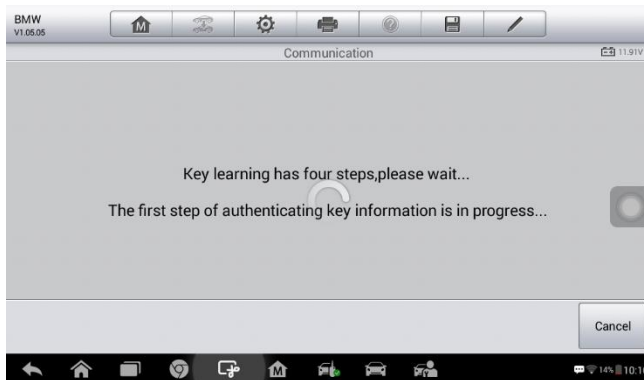


Figure 41 Sample Key Learning Screen 9

25. When a "Write Key successful!" message displays, tap **OK** to check the key ID status. Then tap **Close** to exit to the function menu.

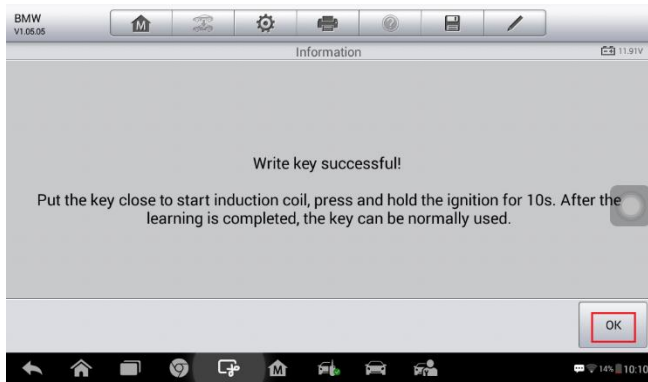


Figure 42 Sample Key Learning Screen 10



Figure 43 Sample Key Learning Screen 11

26. Tap **Reset starter lock** to reset the starter lock of the new FEM/BDC module. Read the function information and tap **OK** to continue. When this function is done successfully, Copy Data Update is completed.

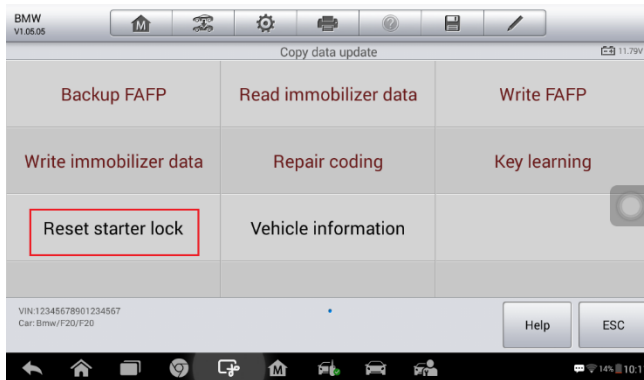


Figure 44 Sample Reset Starter Lock Screen 1

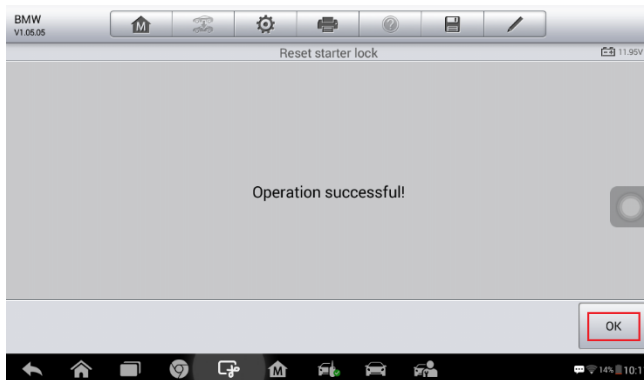


Figure 45 Sample Reset Starter Lock Screen 2

27. Install the replacing FEM/BDC module into the vehicle and check if the engine can be started.

NOTE

1. DTCs may be detected and specific machines are needed for programming, coding and clear DTC.
2. If the remote function of the original working key doesn't work after the operation, please disable the key first and then enable it via **Expert Mode > FEM/BDC > Key enabled/disabled**.
3. The newly added keys can be erased if you don't need them.

FEM/BDC Renew via Calculate Data Update

● Preparation

1. Attention: If there's an ELV in the vehicle, the ELV may not be unlocked after performing FEM/BDC Renew. You'll need to solve the locked problem yourself, so please start the operation with careful consideration.
2. Attention: All original keys won't be accepted when performing the Calculate Data Update function.
3. To perform the Calculate Data Update function, the VIN code, vehicle frequency and engine ISN code are needed. This information can be obtained via **Expert mode**.
4. The hardware version of the original and replacing modules can only vary slightly. Otherwise, the DTCs of the vehicle may not be cleared.
5. Remove the FEM/BDC module from the vehicle. (See [Appendix](#).)
6. Conduct ECU preprocessing on the replacing (used) module and the original module to make them able to learn keys. No ECU preprocessing is needed for the replacing module if it is a brand new one. (Please refer to [BMW-A001](#) for details on ECU preprocessing.)
7. Prepare two blank keys.

● Procedures

1. Connect the IM100 tablet to the replacing FEM/BDC module via the included main cable.
2. Turn on the IM100 tablet and tap **OtoSys > IMMO**. A vehicle menu displays and a disclaimer prompts up. Tap **Accept** to continue.



Figure 46 Sample Main Interface

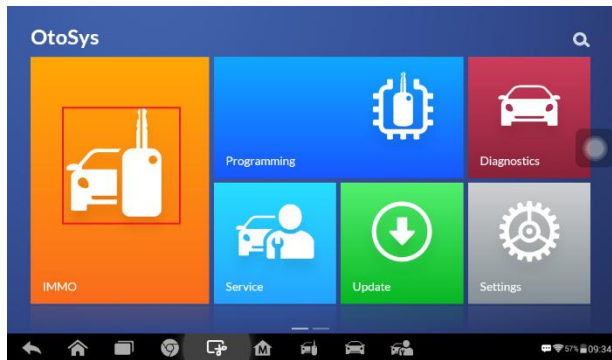


Figure 47 Sample OtoSys Job Menu

3. Tap **BMW** on the vehicle menu.



Figure 48 Sample Vehicle Menu

4. Tap **ECU Renew** > **FEM/BDC Renew (CAN)**.

NOTE

1. You can click the pen icon near the top-right corner to record the operation data. If you encounter any difficulties, click the icon again to send us the data and the problem, so that our engineers could help. The network should be connected when uploading the data.
2. Please make sure the engine is off before the operation gets started.

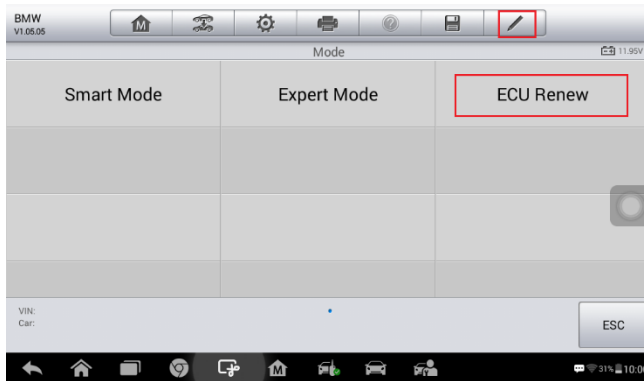


Figure 49 Sample Function Select Screen 1

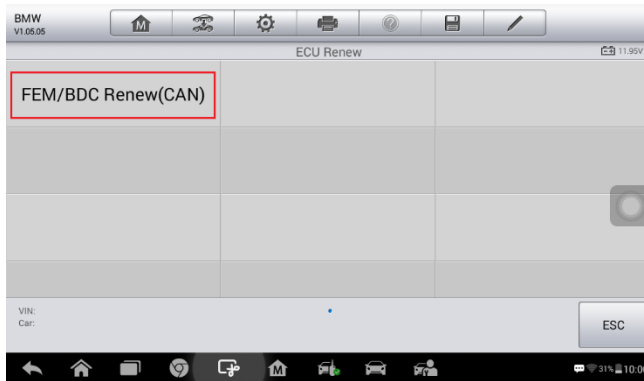


Figure 50 Sample Function Select Screen 2

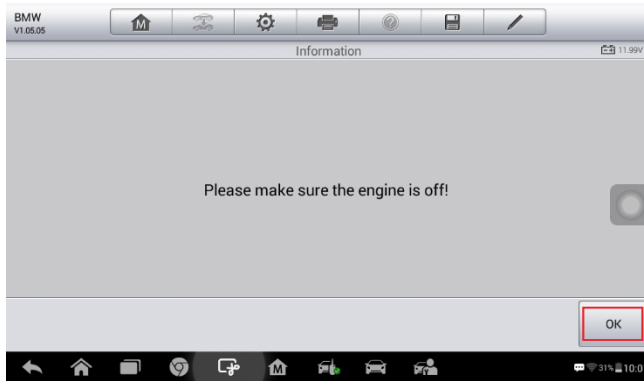


Figure 51 Sample Information Screen

5. Tap **Calculate Data Update**, read the notes and procedures listed in the operation guide carefully, and then tap **OK** to continue.

NOTE

If you don't strictly follow the steps, the data may be lost or the FEM/BDC Renew operation may fail.

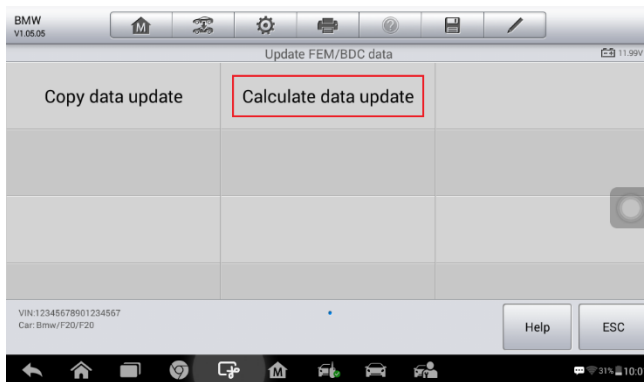


Figure 52 Sample Function Select Screen 3

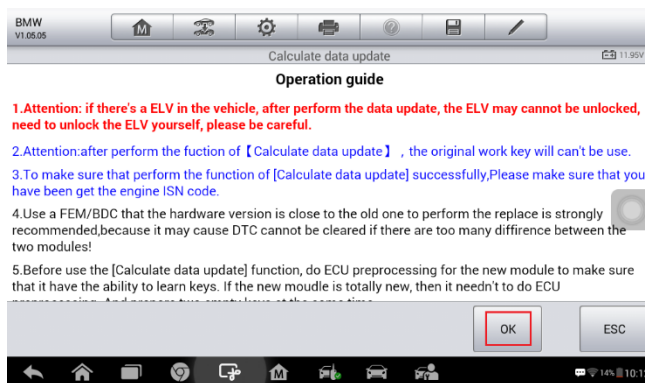


Figure 53 Sample Operation Guide Screen

6. Tap **Write Immobilizer data** on the function menu to generate the immobilizer information and write it into the replacing FEM/BDC module. Read the function information and tap **OK** to continue.

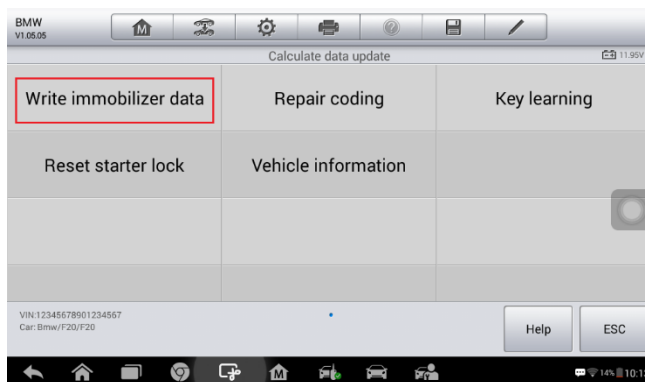


Figure 54 Sample Write Immobilizer Data Screen 1

7. When a module menu displays, make selection accordingly.

NOTE

- New Module: Perform this function if the replacing module is a brand new one.
- Used Module: Perform this function if the replacing module is a used one.

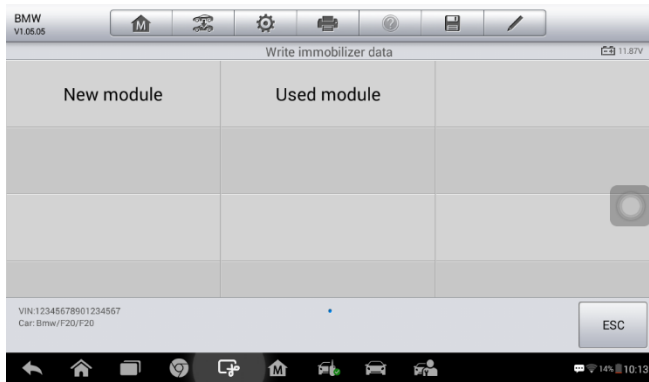


Figure 55 Sample Write Immobilizer Data Screen 2

8. Input the VIN code, vehicle frequency and engine ISN code. Then tap **OK** to continue.

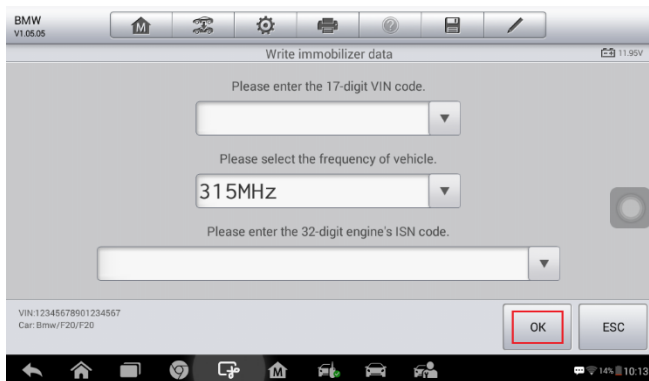


Figure 56 Sample Write Immobilizer Data Screen 3

9. When a "Write data to ECU success!" message displays, tap **OK** and exit to the function menu.

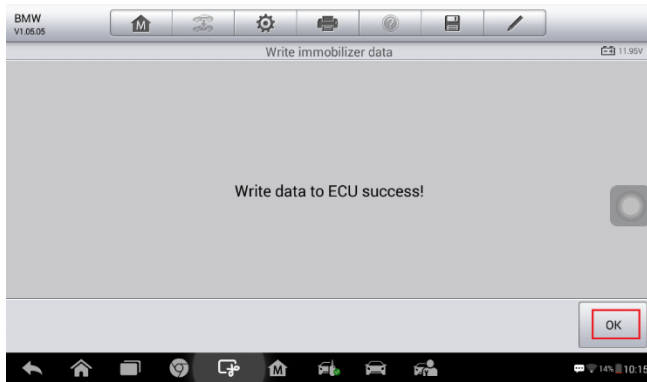


Figure 57 Sample Write Immobilizer Data Screen 4

10. Tap **Repair coding** on the function menu to repair coding of the new FEM/BDC module. Read the function information and tap **OK** to continue.

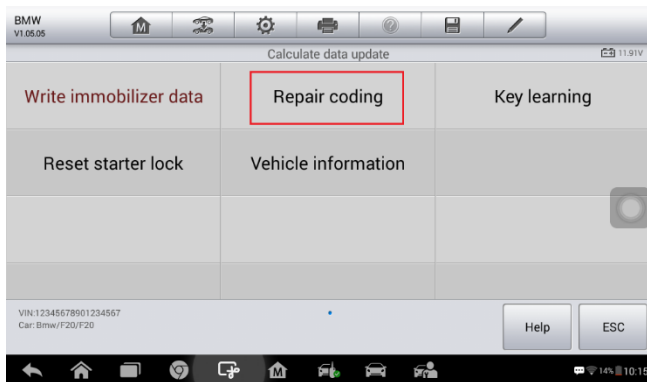


Figure 58 Sample Repair Coding Screen 1

11. Tap **Yes** to continue the coding operation. When Repair Coding is completed successfully, tap **OK** and exit to the function menu.

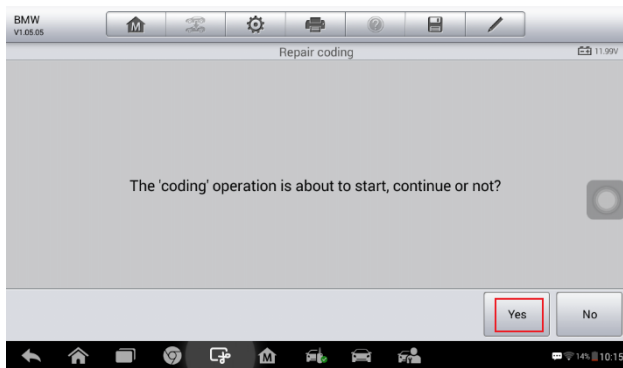


Figure 59 Sample Repair Coding Screen 2

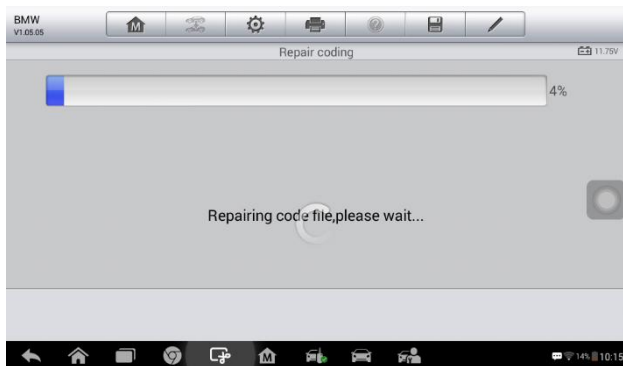


Figure 60 Sample Repair Coding Screen 3

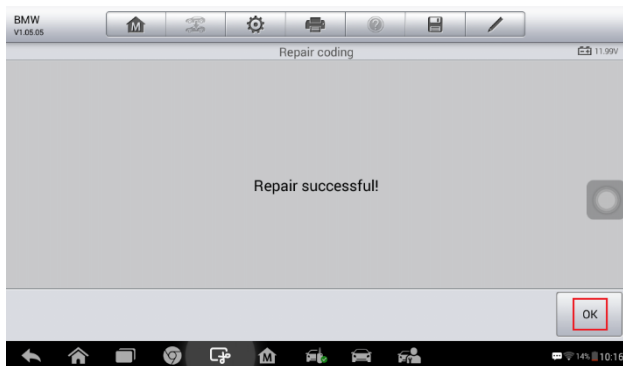


Figure 61 Sample Repair Coding Screen 4

12. Tap **Key Learning** to add keys to the new FEM/BDC module. Read the function information and tap **OK** to continue.

NOTE

1. The password must be read out before the key can be written or cleared.
2. A key position must be selected before the key can be written or cleared.

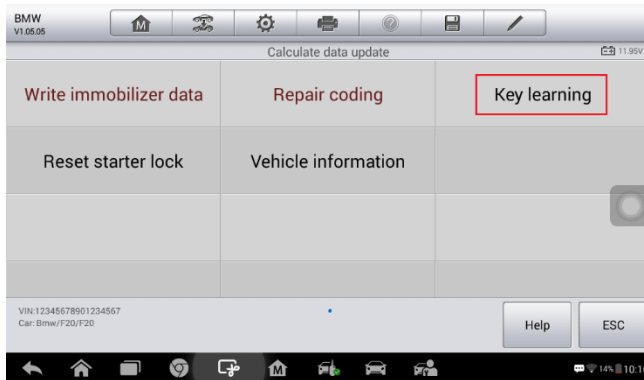


Figure 62 Sample Key Learning Screen 1

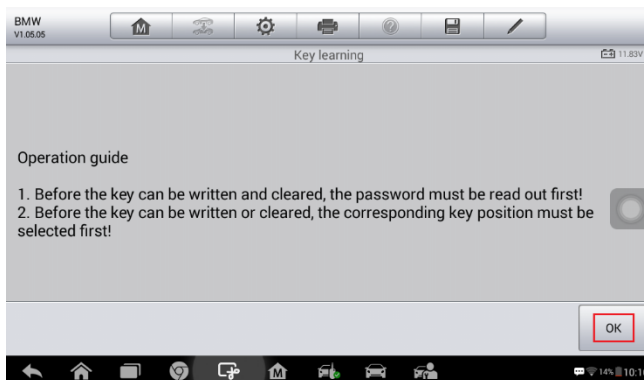


Figure 63 Sample Key Learning Screen 2

13. Tap **Read password** to read the password information of the key.

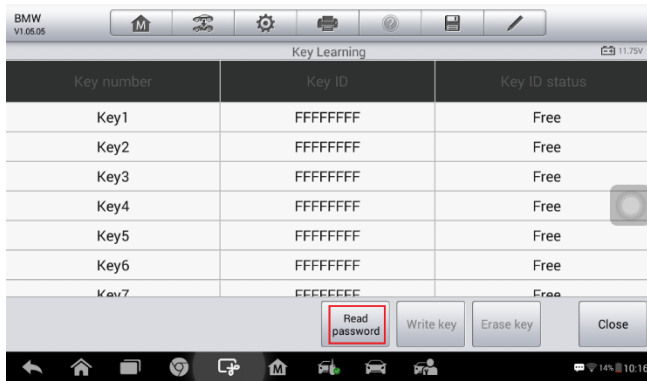


Figure 64 Sample Key Learning Screen 3

14. When a “Do you have a working key?” message displays, tap **No** and then input the engine ISN code to read the password information.

NOTE

All original keys can no longer be accepted.

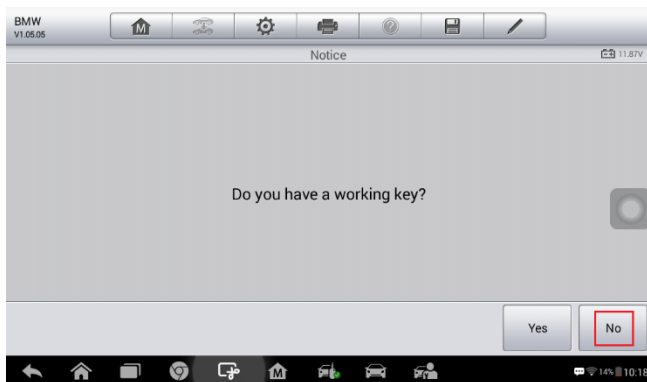


Figure 65 Sample Key Learning Screen 4

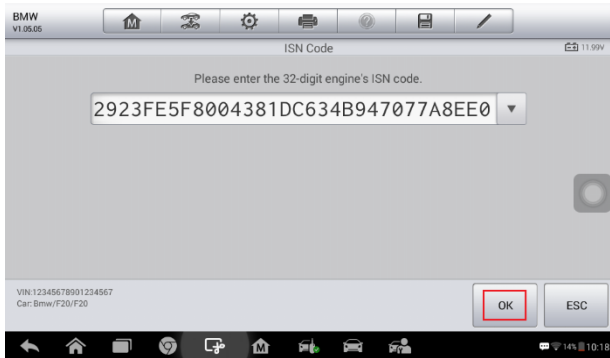


Figure 66 Sample Key Learning Screen 5

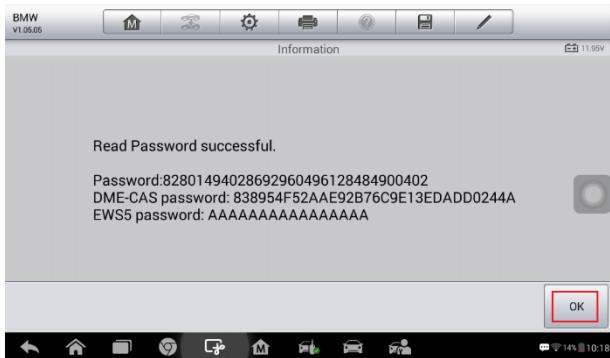


Figure 67 Sample Key Learning Screen 6

15. Select a FREE key position and then tap **Write key**.

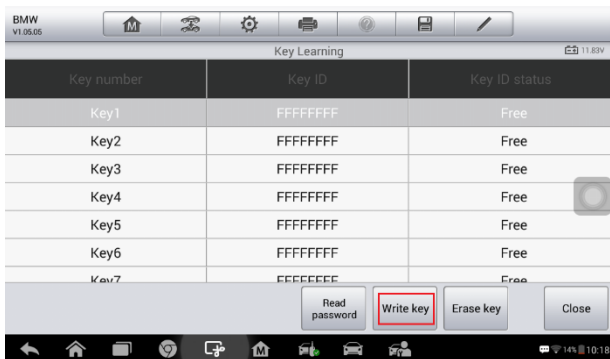


Figure 68 Sample Key Learning Screen 7

16. Follow the instruction to put the NEW key close to the emergency start coil and tap **OK** to start Key Learning.

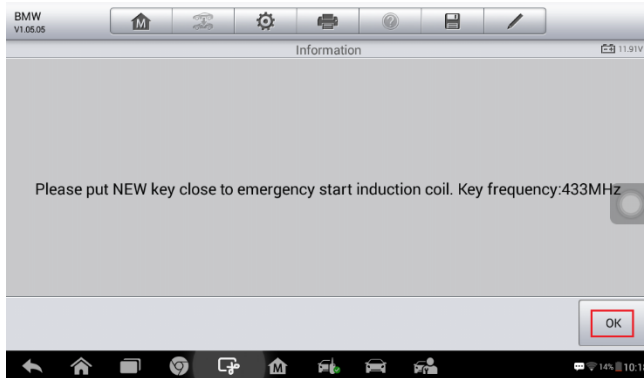


Figure 69 Sample Key Learning Screen 8

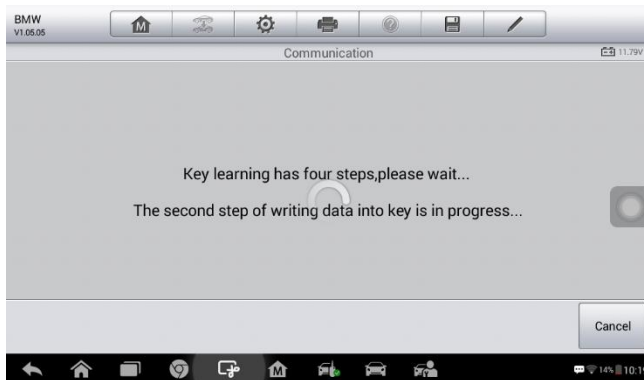


Figure 70 Sample Key Learning Screen 9

17. When a “Write Key successful!” message displays, tap **OK** to continue.

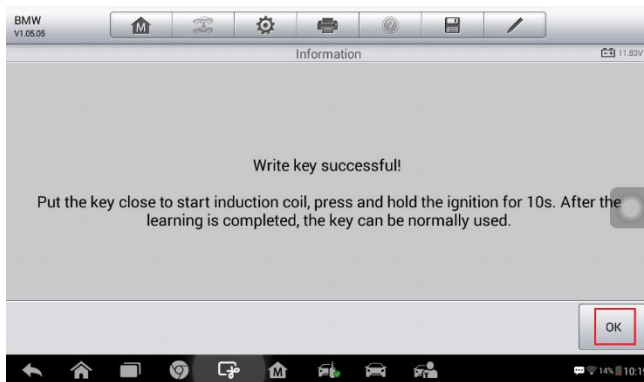


Figure 71 Sample Key Learning Screen 10

18. Repeat step 15-17 to learn the next key.
19. Check if two keys are successfully learned. Then tap **Close** to exit to the function menu.



Figure 72 Sample Key Learning Screen 11

20. Tap **Reset starter lock** to reset the starter lock of the new FEM/BDC module. Read the function information and tap **OK** to continue. When this function is done successfully, Copy Data Update is completed.

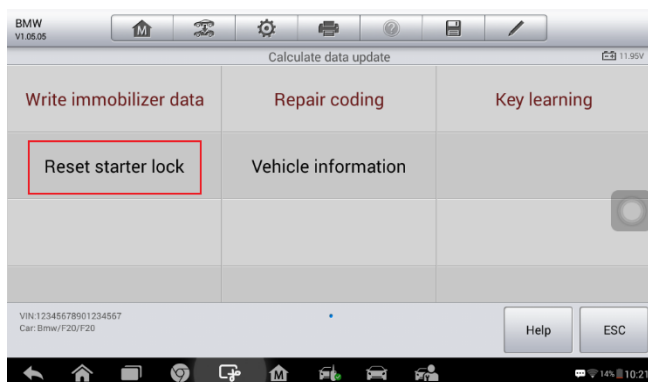


Figure 73 Sample Reset Starter Lock Screen 1

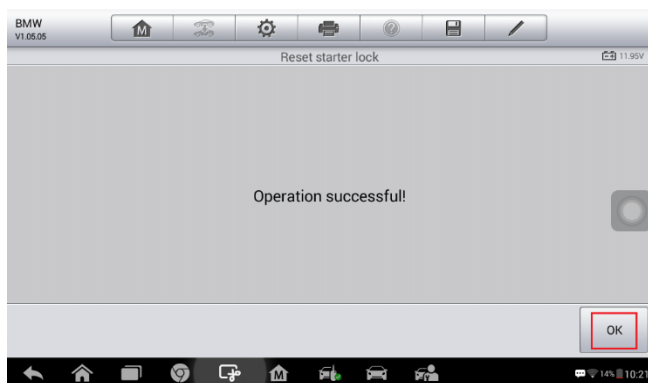


Figure 74 Sample Reset Starter Lock Screen 2

21. Install the new FEM/BDC module into the vehicle and check if the engine can be started.

NOTE

DTCs may be detected and specific machines are needed to modify vehicle information, such as FAFP and integration level, and then to perform programming, coding and clear DTC.

Appendix

Removing the FEM/BDC Module

The FEM/BDC module is located at the A-pillar of the front passenger side.

➤ **Procedures to remove the FEM/BDC module from the vehicle:**

1. Unclip the front door sill cover strip at the passenger side.
2. Remove the bottom right instrument trim panel and disconnect plug connections behind it.
3. Remove the side trim panel at the passenger side.
4. Remove the cover at the lower part of the module.
5. Unlock the positive battery cable connector.
6. Disconnect the plug connections to the module.
7. Release the bolt from the module.
8. Remove the module from the vehicle.