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**AURO**<sup>TM</sup>

BMW-A001

# TUTORIAL

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[www.norman-keys.com](http://www.norman-keys.com)



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## Safety Information

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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

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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.

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### **DANGER**

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

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### **WARNING**

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

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## Safety Instructions

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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.

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### **DANGER**

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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.

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## **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 key learning with Auro OtoSys IM100 Smart Mode and Expert Mode.

Two options are available when accessing the IMMO function:

- Smart Mode – the IM100 tablet will read the vehicle information and analyze the IMMO part information automatically.
- Expert Mode – user can make selections step by step to locate the IMMO part.

➤ **Procedures before getting started:**

1. Connect the IM100 tablet to the programmer UP200 via included mini USB cable.
2. Dismount the ECU module from the vehicle, refer to appendix on [page 30](#).
3. Connect the ECU module to the Emergency coil stretched out from COM7.
4. Connect one end of the included OBD cable to the IM100 tablet, while the other end needs to be connected to the wire harness stretched out from COM8 on the ECU module. The wire harness is not included, you could DIY, details in Appendix on [page 31](#).
5. Make sure the WiFi service is available in case the operation data needs to be sent.

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 **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.

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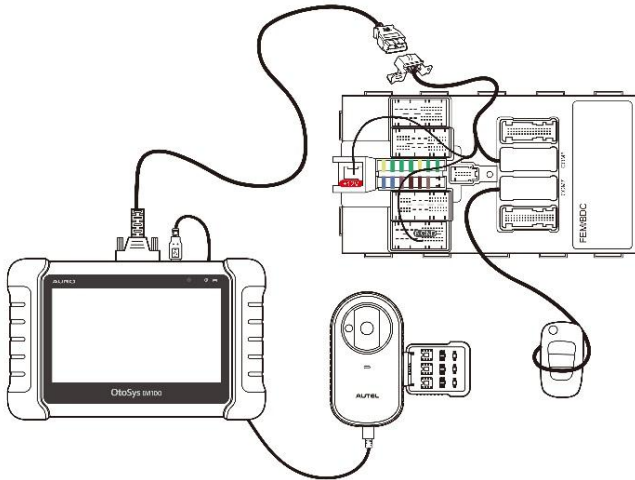


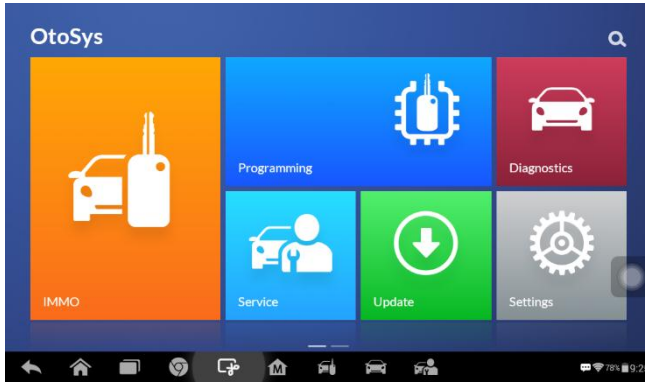
Figure 1 Sample Overall Structure

## Key Learning via Smart Mode

1. Turn on the IM100 tablet, tap **OtoSys** on the main interface screen, then **IMMO**. A vehicle menu displays and a disclaimer prompts up. Tap **Accept** to continue.



Figure 2 Sample Main Interface



**Figure 3 Sample OtoSys Screen**

2. Tap **BMW** on the vehicle menu, tap **Smart Mode** on the Mode Select interface. The Vehicle Information interface displays.

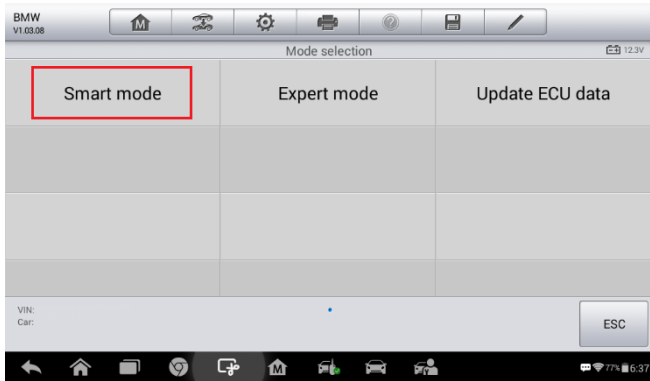
**NOTE**

You can click on the icon near the top-right corner to record the operation data. If you encounter any difficulties, click on the icon again to send us the data and problems, so that our engineers could help.

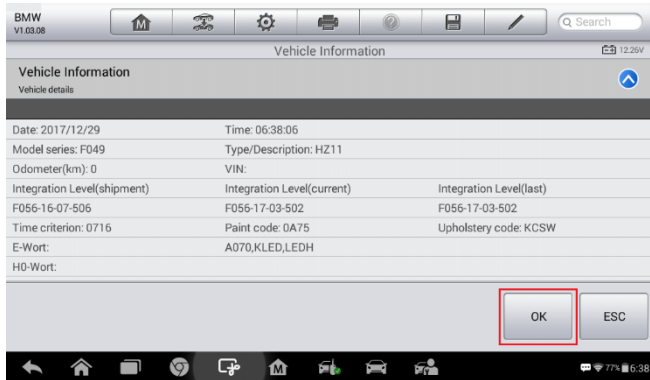


**Figure 4 Sample Vehicle Menu**



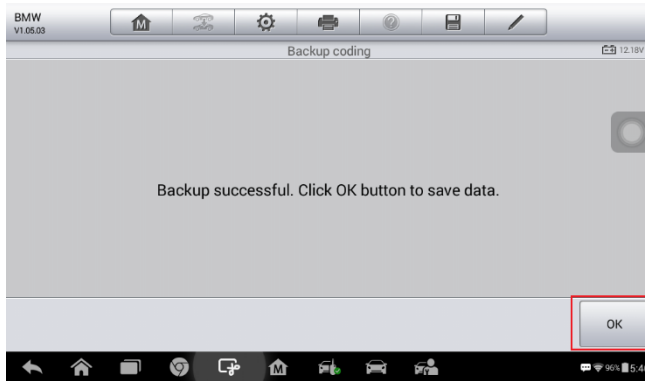


**Figure 5 Sample Mode Select Screen**

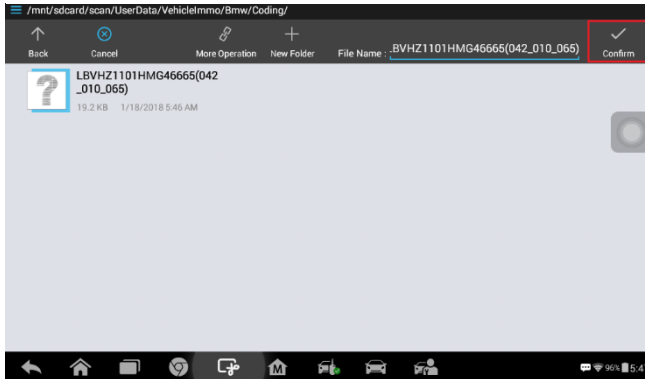


**Figure 6 Sample Vehicle Information Screen**

3. Tap **OK** on the vehicle information screen. Coding files will be backup automatically. Save the coding files



**Figure 7 Sample Saving Screen**

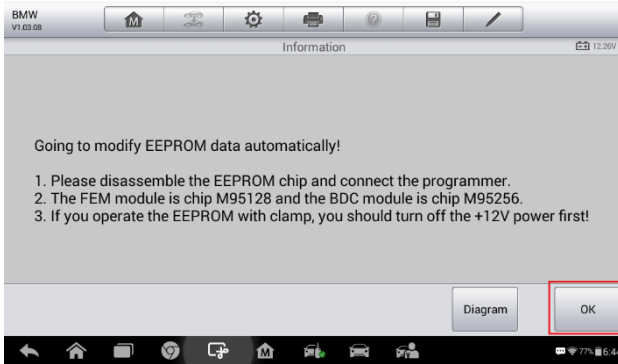


**Figure 8 Sample Saving File Screen**

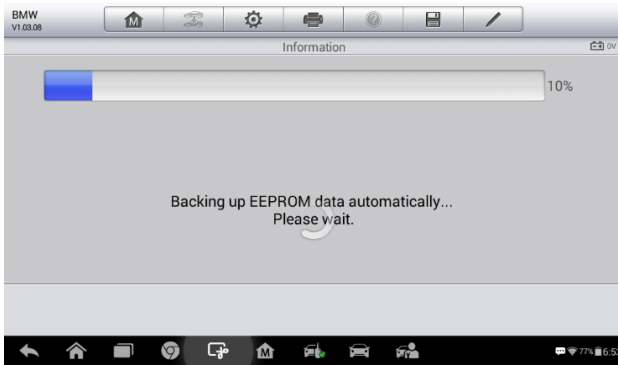
4. Disassemble the EEPROM chip and connect it to the programmer. Tap **OK** to modify EEPROM data automatically. Install the EEPROM chip back to the module when operation over.

**NOTE**

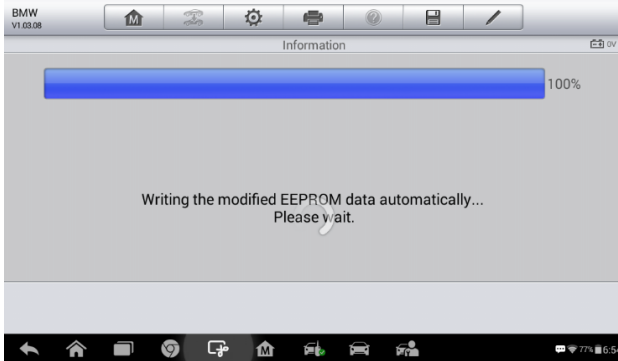
Tap **Diagram** for more details about disassembling the chip, or refer to Appendix on [page 33](#).



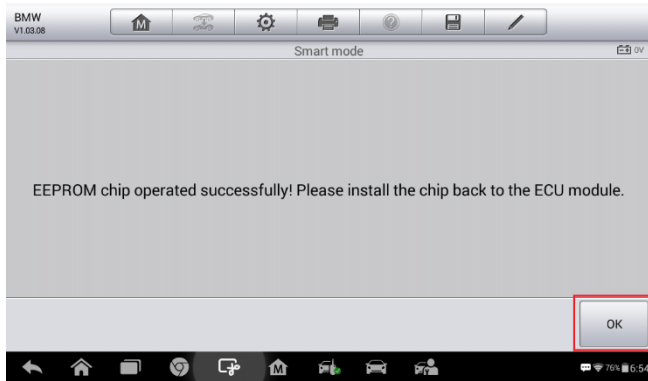
**Figure 9 Sample Information Screen**



**Figure 10 Sample Processing Screen**

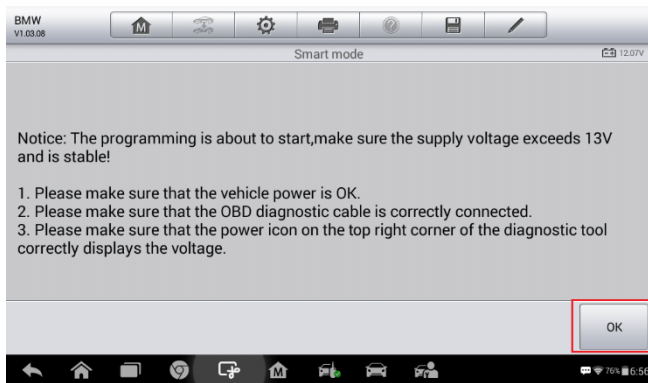


**Figure 11 Sample Processing Screen**

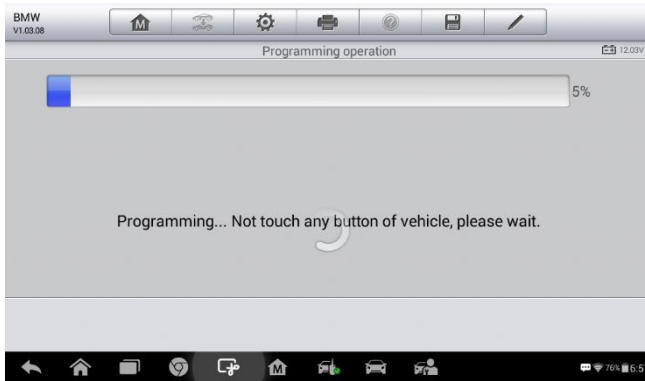


**Figure 12 Sample Information Screen**

5. Tap **OK** to program as information displayed.



**Figure 13 Sample Information Screen**

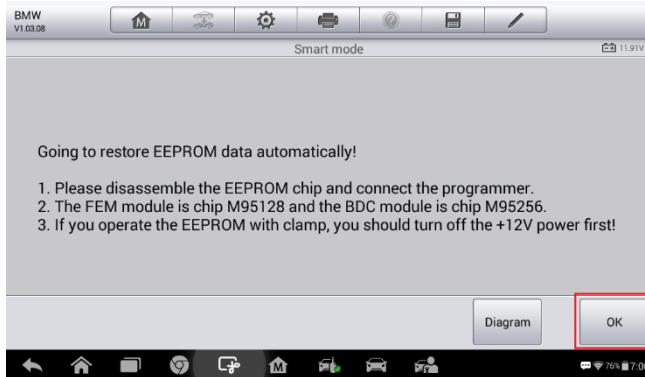


**Figure 14 Sample Programming Screen**

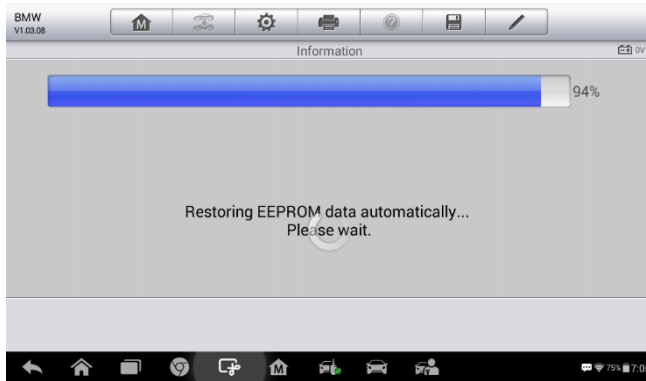
6. Tap **OK** to restore EEPROM data automatically. Disassemble the EEPROM chip and connect it to the programmer again.

**NOTE**

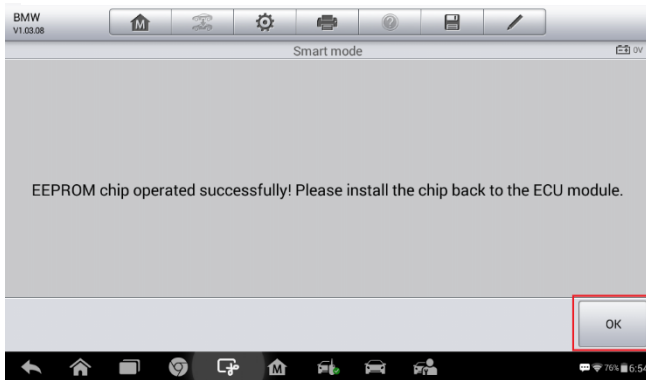
Tap **Diagram** for details of disassembling the EEPROM chip, or refer to [page 33](#).



**Figure 15 Sample Information Screen**

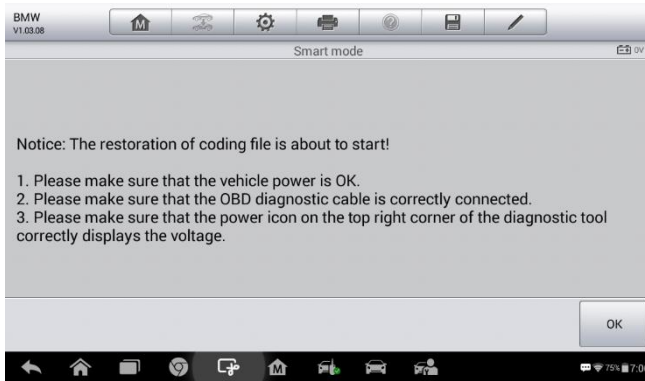


**Figure 16 Sample Processing Screen**

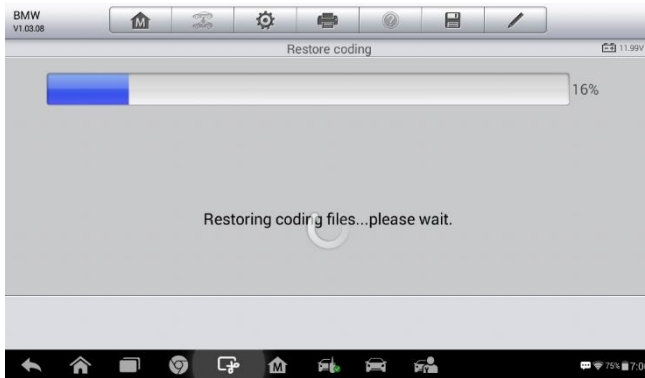


**Figure 17 Sample Information Screen**

7. Tap **OK** after setting back the EEPROM chip, proceed to restore coding files as displayed.

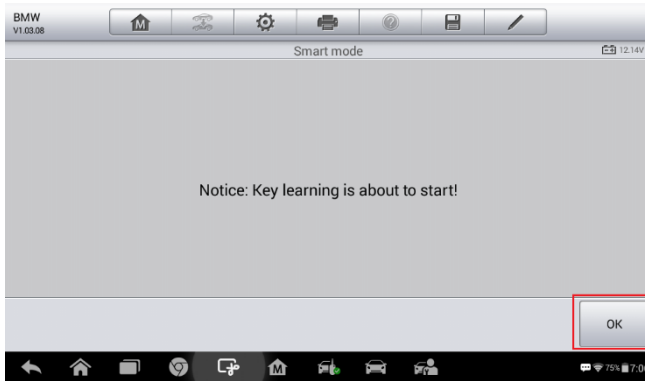


**Figure 18 Sample Information Screen**



**Figure 19 Sample Information Screen**

8. Tap **OK**, start Key learning after the coding file restoration. Proceed as information displayed.

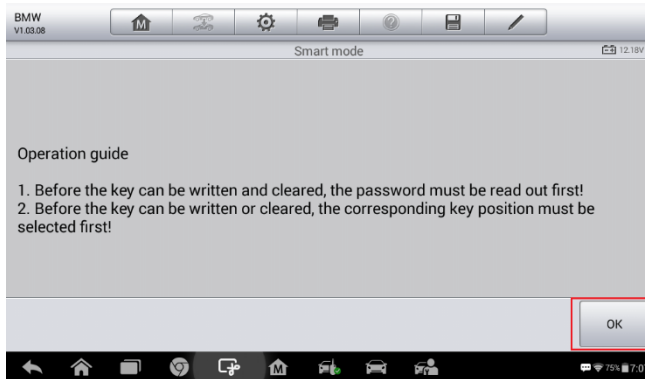


**Figure 20 Sample Notice Screen**

9. Tap **OK** to the Key Status interface, tap **Read password**. Proceed as information displayed.

**NOTE**

Without working key, you could conduct All-lost mode, the ISN code is needed.

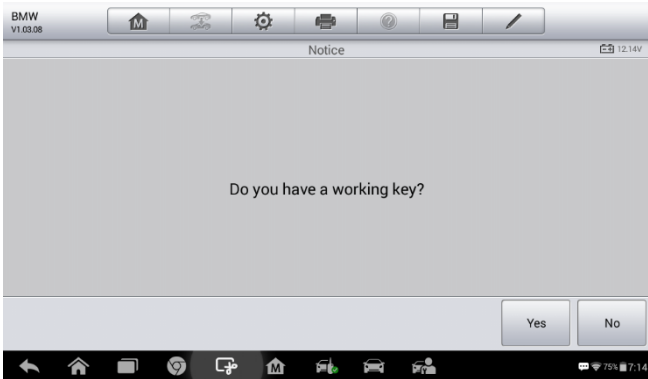


**Figure 21 Sample Information Screen**

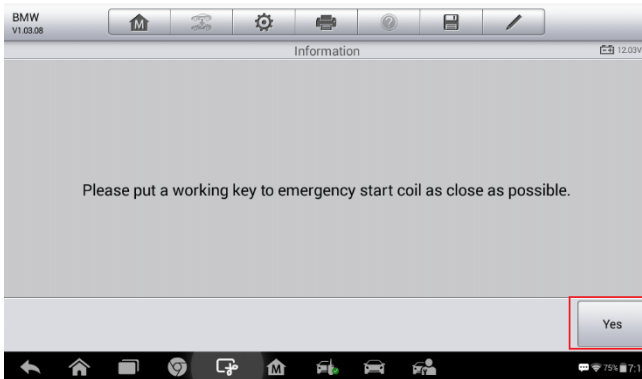


Key number	Key ID	Key ID status
Key1	C856B235	Used
Key2	7656B235	Used
Key3	FFFFFFFF	Free
Key4	FFFFFFFF	Free
Key5	FFFFFFFF	Free
Key6	FFFFFFFF	Free
Key7	FFFFFFFF	Free

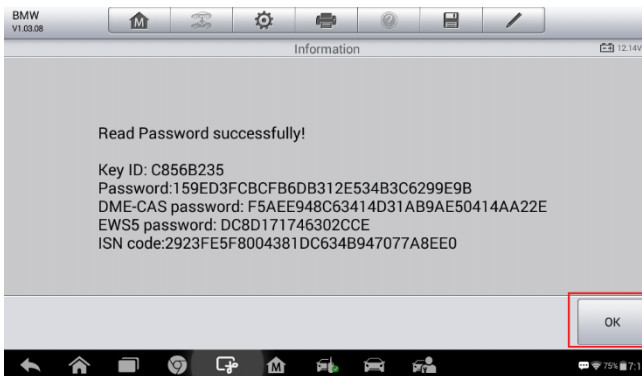
**Figure 22 Sample Key Status Screen**



**Figure 23 Sample Notice Screen**



**Figure 24 Sample Information Screen**



**Figure 25 Sample Information Screen**

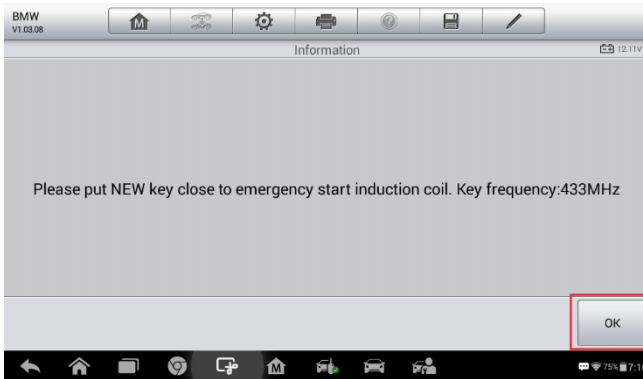
10. Tap **OK**, back to the Key Status interface, tap **Write key**. Proceed as information displayed until "Write key successful" displays. The key status of successfully learned key(s) would be "**Used**".

**NOTE**

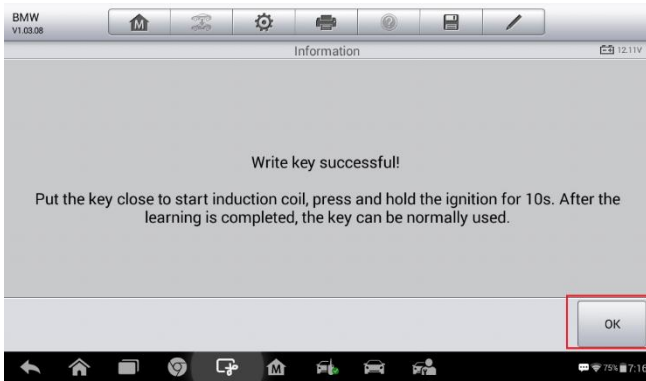
- The key frequency should be the same.
- Repeat "**Write key**" to get more than one key learned.
- Tap **Erase Key** to delete keys, just choose the corresponding key number and press Erase Key. Erased original keys cannot be learned.



**Figure 26 Sample Key Status Screen**



**Figure 27 Sample Information Screen**



**Figure 28 Sample Information Screen**



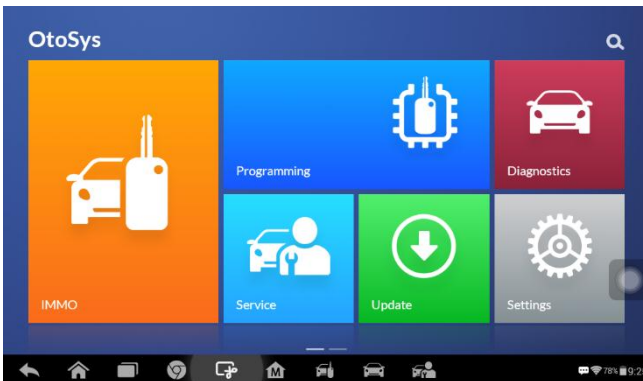
**Figure 29 Sample Key Status Screen**

## Key Learning via Expert Mode

1. Turn on the IM100 tablet, tap **OtoSys** on the main interface screen, then **IMMO**. A vehicle menu displays and a disclaimer prompts up. Tap **Accept** to continue.



**Figure 30 Sample Main Interface**



**Figure 31 Sample OtoSys Interface**

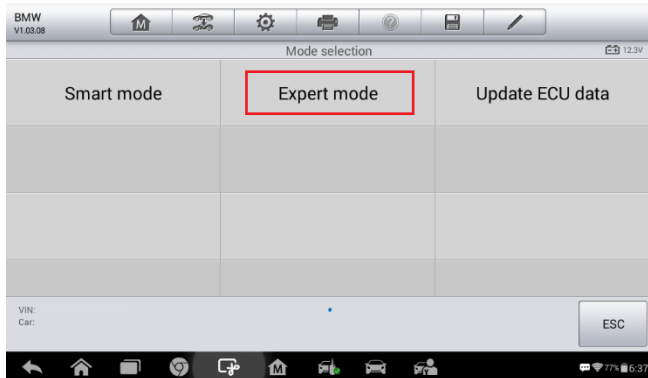
2. Tap **BMW** on the vehicle menu, then the Function Select screen displays. Tap **Expert Mode** and proceed as information displayed.

**NOTE**

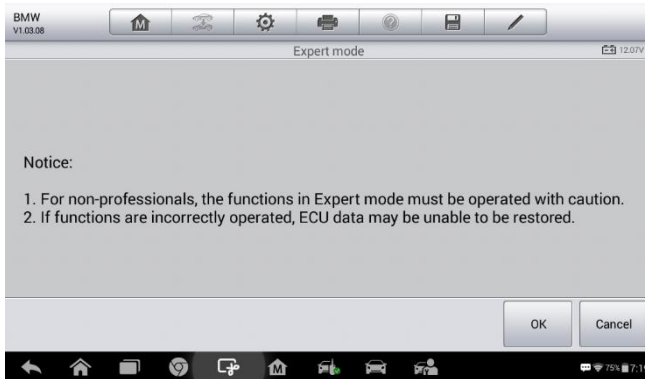
Turning on the data recording function is recommended. Click the pen icon on the top-right corner before operation, click it again to send the data for help.



**Figure 32 Sample Vehicle Menu**

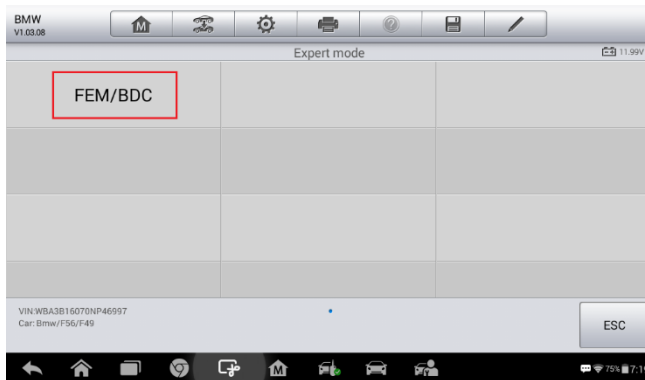


**Figure 33 Sample Model Select Screen**



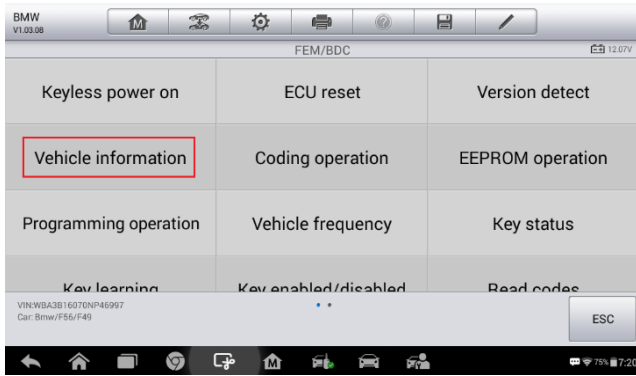
**Figure 34 Sample Information Screen**

3. Tap **FEM/BDC**, the Function Interface displays.

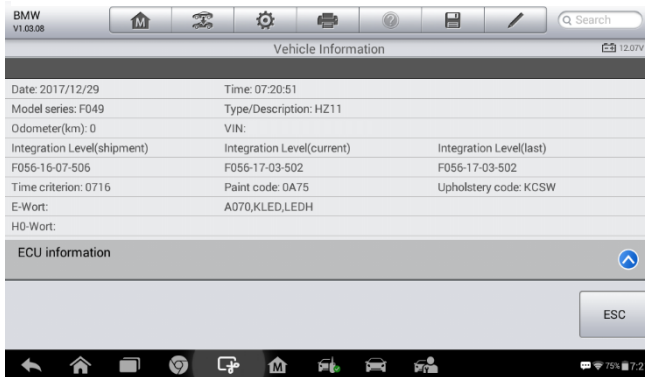


**Figure 35 Sample Expert Mode Screen**

4. Tap **Vehicle information** on the Function Interface. Read the vehicle information.



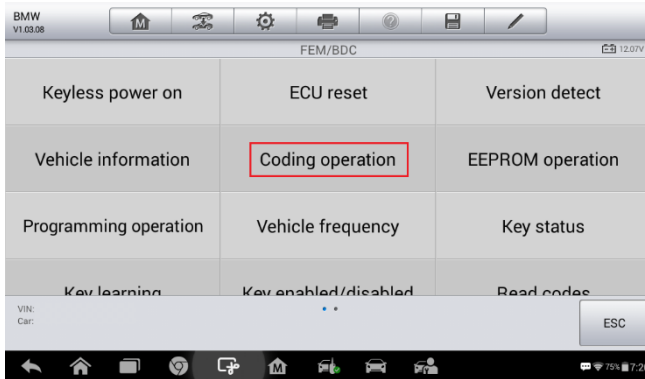
**Figure 36 Sample Function Screen**



**Figure 37 Sample Vehicle Information Screen**

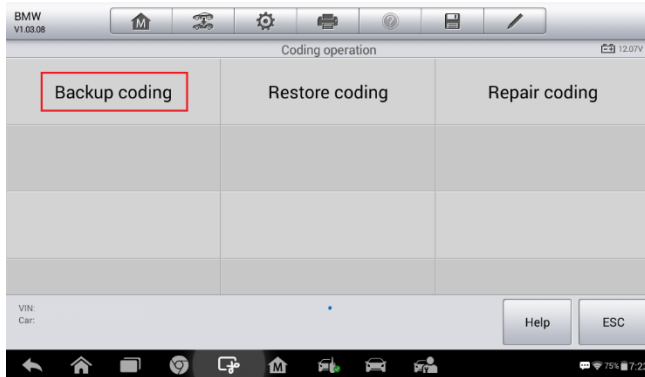
5. Go back to the Function Interface, tap **Coding operation** to coding operation interface.



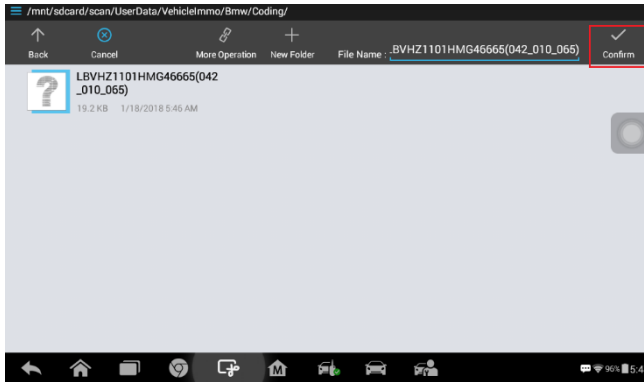


**Figure 38 Sample Function Screen**

6. Tap **Backup coding**. The backup proceeds automatically. Tap **Confirm** to save files when completed. Then tap **OK** to the Function interface.



**Figure 39 Sample Coding Operation Screen**

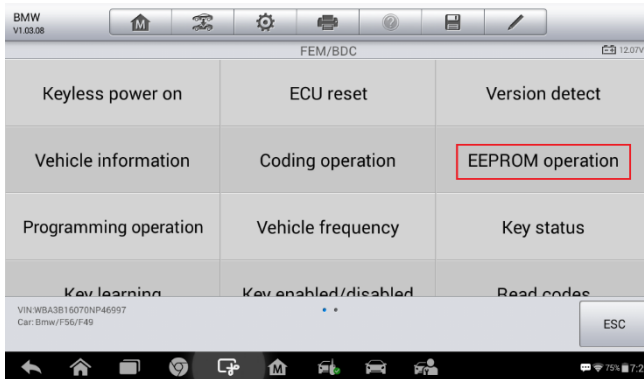


**Figure 40 Sample Saving File Screen**

7. Tap **EEPROM operation** to the Model Selection interface.

**NOTE**

Tap **Diagram** for more details about disassembling the EEPROM chip, or refer to [page 33](#) for more details.

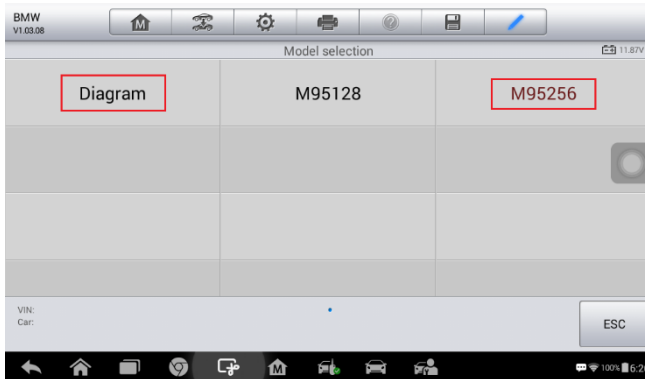


**Figure 41 Sample Function Screen**

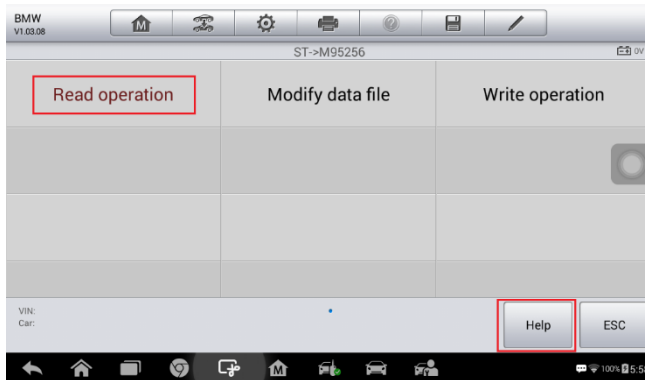
7.1 Tap M95128 or M95256 according to the ECU module. Take M95256 as an example here, tap **M95256 > Read operation**. Procedure completed, save the file, go back to the EEPROM data operation interface.

**NOTE**

Check the ECU module in ECU information at the bottom of the vehicle information interface.

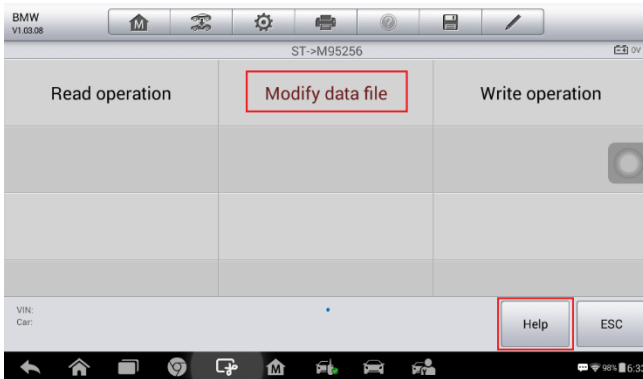


**Figure 42 Sample Model Select Screen**

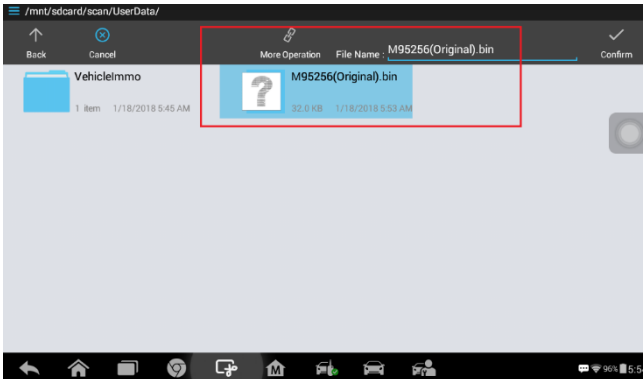


**Figure 43 Sample EEPROM Data Operation Screen**

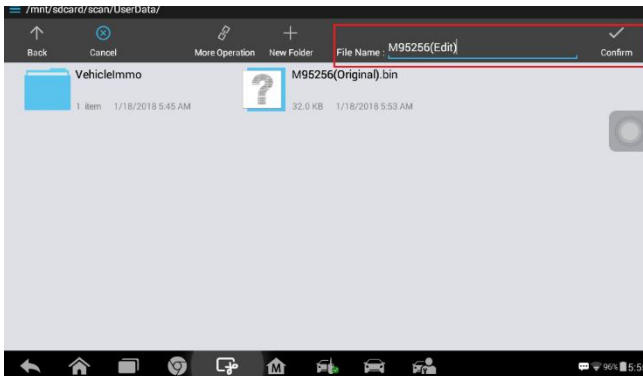
7.2 Tap **Modify data file**. Then select the original one to modify. Modified successfully, save and name the edited file. Go back to the EEPROM data operation interface.



**Figure 44 Sample EEPROM Data Operation Screen**

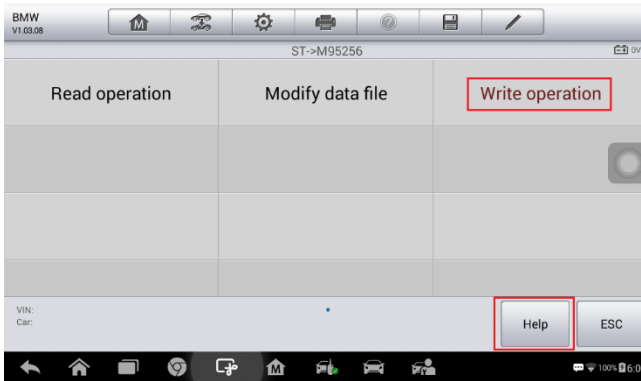


**Figure 45 Sample File Select Screen**

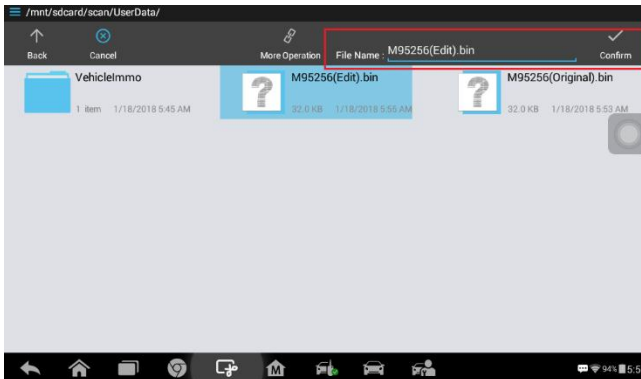


**Figure 46 Sample File Saving Screen**

7.3 Tap **Write operation** on the EEPROM data operation interface. Select the modified file in the last step. Written successfully, tap **OK**, back to the Function Interface.



**Figure 47 Sample EEPROM Data Operation Screen**



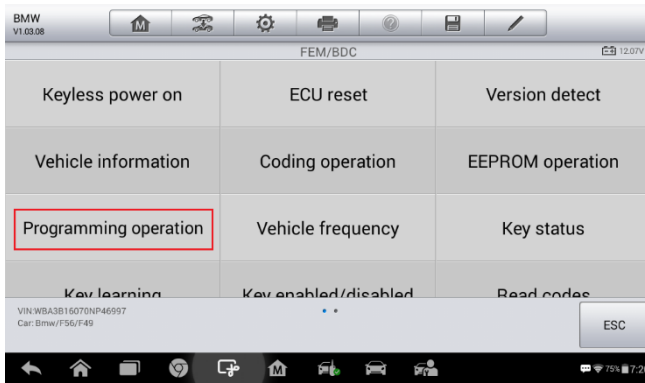
**Figure 48 Sample Information Screen**

8. Tap **Programming operation > ECU preprocessing**. The programming starts automatically.

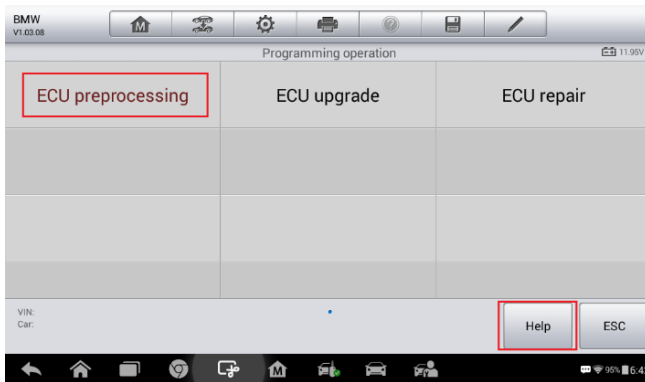


**NOTE**

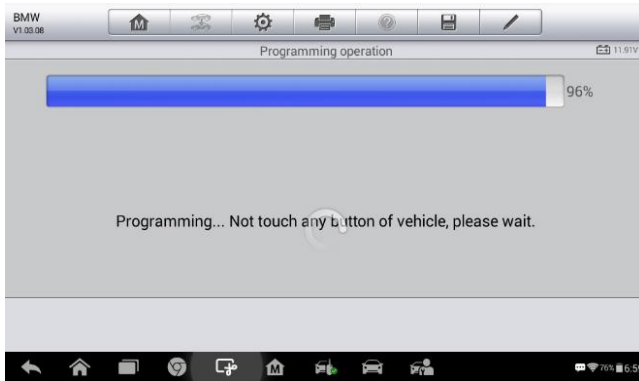
The options **ECU upgrade** and **ECU repair** are tapped only when needed.



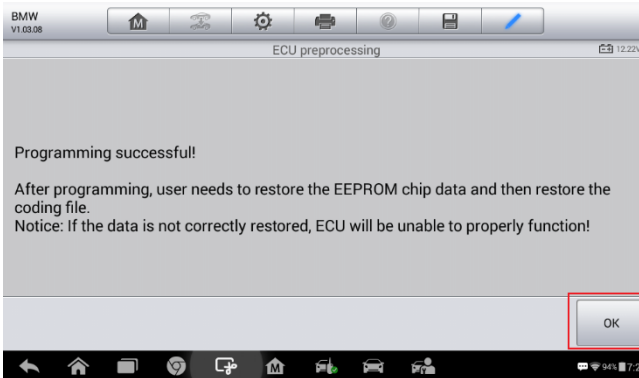
**Figure 49 Sample Function Screen**



**Figure 50 Sample ECU Programming Screen**

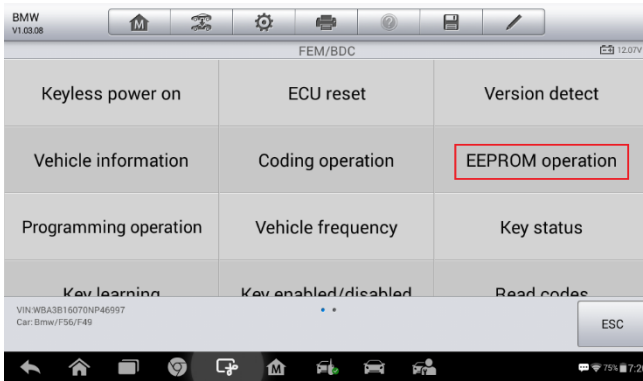


**Figure 51 Sample Programming Screen**

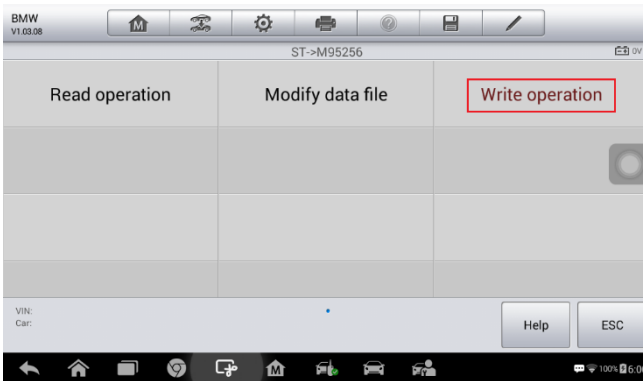


**Figure 52 Sample Information Screen**

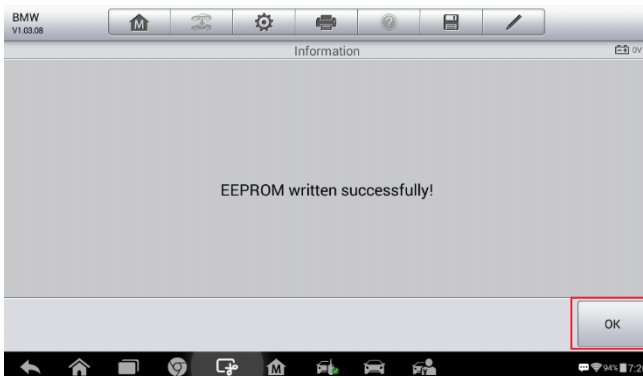
9. Tap **OK** on the programming successful interface to go back to the Function Interface. Tap **EEPROM operation > M95256 > Write operation**. Select the original file to write.



**Figure 53 Sample Function Screen**



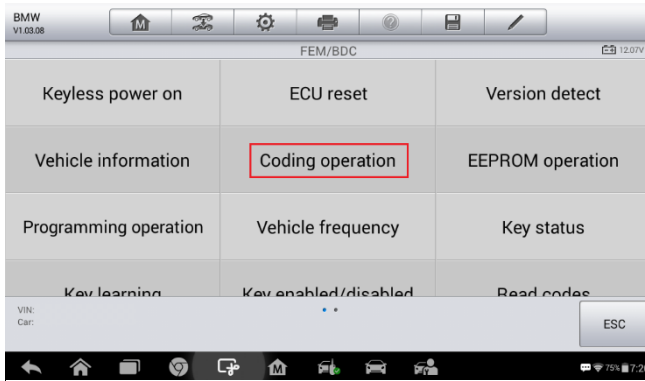
**Figure 54 Sample EEPROM Operation Screen**



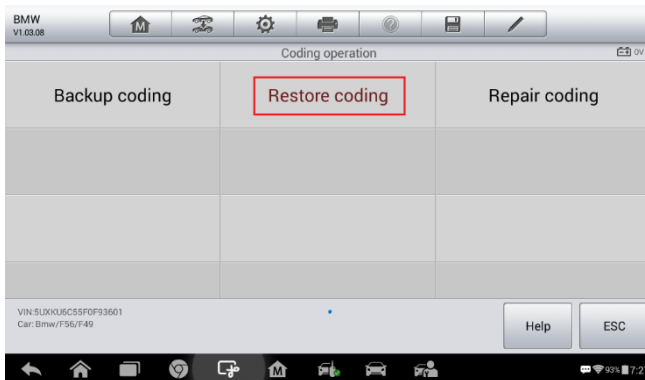
**Figure 55 Sample Information Screen**



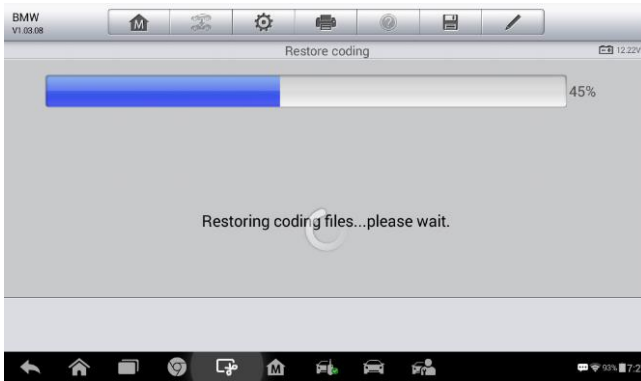
- Tap **OK** on the EEPROM written successfully interface, back to the Function interface. Tap **Coding operation > Restore coding**. The restoring starts automatically.



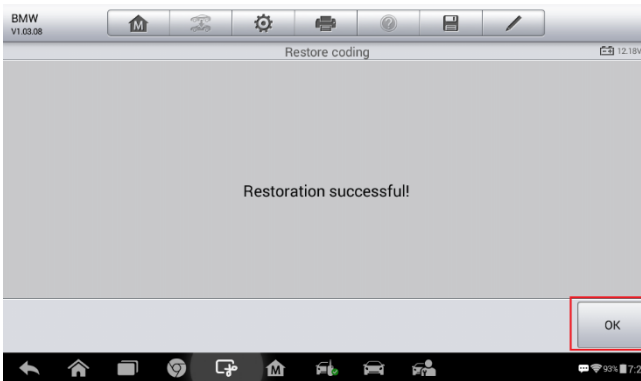
**Figure 56 Sample Function Screen**



**Figure 57 Sample Coding Operation Screen**



**Figure 58 Sample Restoring Screen**



**Figure 59 Sample Information Screen**

11. Tap **OK**, back to the **Coding operation interface** > **ESC**, go back to the Function Interface. Tap **Key learning**. The key learning process via Expert mode is the same as that via the Smart mode. Please refer to the Key learning part from [step 8](#) to [step 10](#) in Smart Mode.

# Appendix

## Disassemble the ECU Module

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

➤ **Procedures to disassemble the ECU module from the vehicle:**

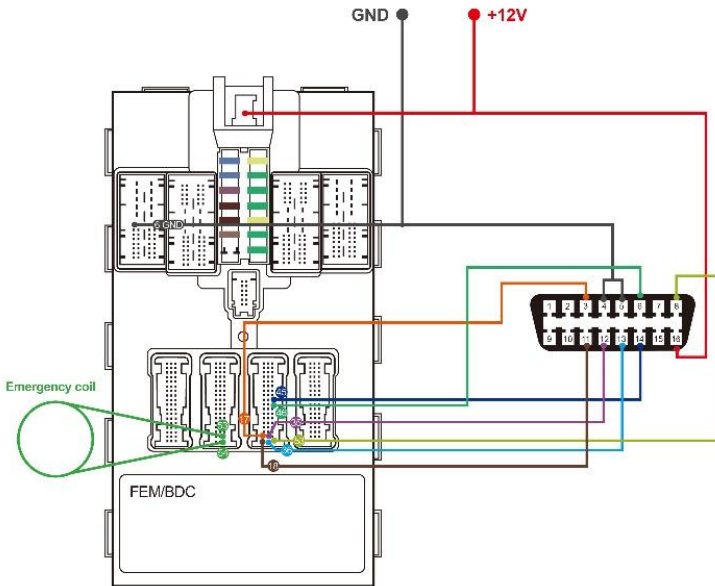
1. Unclip the front door sill cover strip at the passenger side.
2. Remove the bottom right instrument trim panel and disconnect plug connections behind it.
3. Remove the side trim panel at the passenger side.
4. Remove the cover at the lower part of the module.
5. Unlock the positive battery cable connector.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

## Connect the Test Wire Harness and OBD Cable

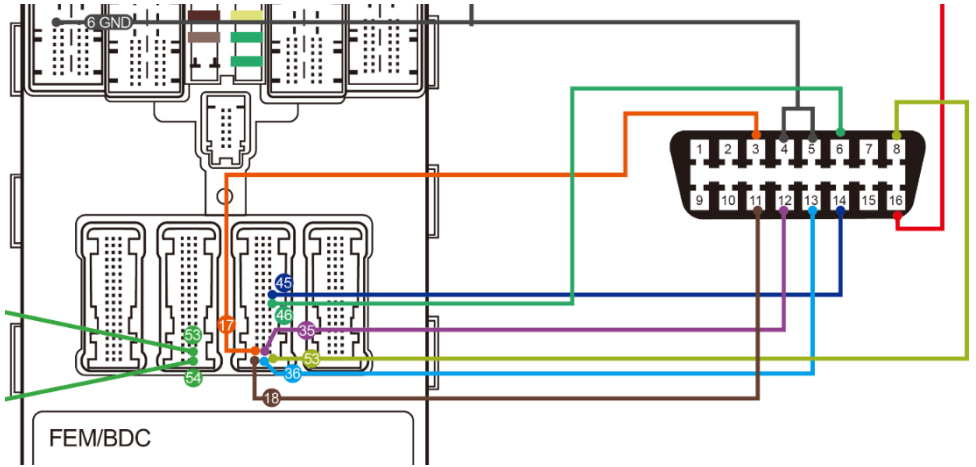
Details to connect the test wire harness and OBD cable are shown below. Make sure wires are connected to the right pins.

➤ **Procedures to connect the test wire harness and OBD cable:**

1. Connect cables to corresponding pins according to the number shown in the figure.
2. Connect another side of the wire harness of these cables to the OBD female adapter.
3. Connect the emergency coil to the corresponding pins according to the numbers.



**Figure 60 Sample Overall Connection**



**Figure 61 Sample Corresponding Numbers**

## Disassemble the EEPROM Chip

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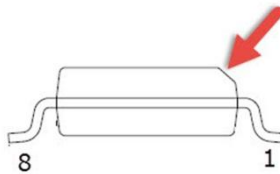
- **Procedures to disassemble the EEPROM chip are shown below:**
1. Find the chip in the ECU module.
  2. Disassemble the EEPROM chip and figure out the pin 1, the bevel side on the right, viewed from the cross section.
  3. Assemble the chip in the clamp, match the pin 1 of the chip with that on the clamp.



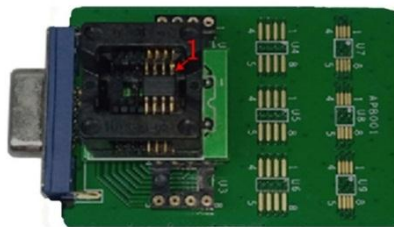
Picture 1: EEPROM position on FEM System



Picture 2: EEPROM position on BDC System



Picture 3: Pin 1 position



Picture 4: Pin 1 position on the clamp

**Figure 62 Sample EEPROM Chip Position**