BMW TOOL User Manual

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1. Document Declaration

Please view the following declaration carefully:

- BMW TOOL User Manual can help you maintenance vehicles with BWM TOOL device. **Please DON'T used for illegal purpose, Please follow the national law**
- BMW TOOL User Manual is written by BMW TOOL, **please DON'T used for commercial purposes without authorize**
- BMW TOOL User Manual can help you use BMW software, please view carefully
- **Any illegal use BMW TOOL User Manual, illegal use BMW TOOL device, The user should take all risks, our company does not assume any responsibility**

2. Overview

Main functions currently support (PICTURE 2.1):

BMW TOOLFunction Support Table		○	NOT SUPPORT
		●	SUPPORT

system	FUNCITON	OBDII	CASPLUG	EEPROM
EWS1	Change KM	○	○	●
	IMMO	○	○	●
EWS2	Change KM	○	○	●
	IMMO	○	○	●
EWS3	KM	○	●	●
	IMMO	○	●	●
EWS4	Change KM	○	●	●
	IMMO	○	●	●
CAS1(0K50E)	KM	●	●	●
	IMMO	●	●	●
CAS2(2K79K)	Change KM	●	●	●
	IMMO	●	●	●
CAS3(0L01Y)	KM	●	●	●
	IMMO	●	●	●
CAS3+(0L01Y)(UNENCRYPTED)	Change KM	●	●	●
	IMMO	●	●	●
CAS3+(0L01Y,0M23S) (ENCRYPTED)	KM	●	●	●
	IMMO	●	○	●
CAS4(1L15Y,5M48H) (UNENCRYPTED)	Change KM	●	○	●
	IMMO	●	○	●
CAS4+(5M48H,1N35H) (ENCRYPTED)	KM	●	○	●
	IMMO	●	○	●
FEM/BDC	Change KM	●	○	○
	IMMO	●	○	○

(PICTURE 2.1)

2.1. Nouns explanation

- **BMW**: Bayerische Motoren Werke
- **EWS**: Immobox used in earlier BMW cars
- **CAS**: Car Access System(40 unit), mainly include CAS1(0K50E), used in latter BMW cars, CAS2(2K79X), CAS3(0L01Y), CAS3+(0L15Y, 0M23S), CAS4(1L15Y, 5M48H, 1N35H), this document will only use CAS1, 2, 3, 3+, 4, 4+ to express, don't use detail mask. If document have detail mask indicates the special explain to this type
- **CAS4+:** Immo system used in some F-Series
- **FEM/BDC**: Immobox used in part of new BMW models after 2014(F-Series)
- **OBDII method**: Connect BMW TOOL to car with standard OBD connector
- **CAS PLUG: It is not a standard device, need buy for extra. Communication with CAS through CANBUS 100Kbps.**
- **CAS3+ encrypt version: Sometimes we call CAS3++. When the car (not encrypt version) start, CAS will verify key, ECU will verify CAS. But for CAS3++ type, ECU will verify key in addition. So add key for this type need working key or ISN support. For this reason, the introduction for CAS3+ is also applicable for CAS3+ encrypt version. Expect write no applicable for CAS3+ encrypt version**
- **ISTAP Version: Strictly, ISTAP belong to CAS3+ encrypt version, the only different is that we cannot read CAS immodata by OBDII for ISTAP version. So the introduction for CAS3 encrypt version also applicable for ISTAP version, expect write not applicable for ISTAP. Fortunately, we can OBDII read ISTAP CAS immodata by update CAS flash. BMW TOOL update ISTAP version flash only need 10 minutes.**
- **ISN: Identification Serial Number, this value use to verify ECU with key. 16 bytes**
- **Known CAS3+ encrypt version(not ISTAP) SN:** 9226238, 9227053, 9237046, 9237047, 9389115, 9389116, 9395656, 9395657
- **Known ISTAP version SN:** 9262360, 9262361, 9278745, 9278746, 9287534, 9287535, 9267608, 9267609
- **All Key lost: The car lost all working key, there is big different from add key with working key. Note: before OBDII communication, you need open dangerous light, press on the brakes for several times to active OBD communication**

2.2. Options

Detail can be found in chapter 3 Options

- **Language**
- **Setting parameters：The default parameters are fine, and directories can be added when there is an offline database**
- **Network configuration information：** Disabled function! Not support anymore!
- **About**

2.3. EEPROM/KM/Sync Code (OBD) /ISN

Detail can be found in chapter 4 CAS/EWS Identification Information

- **Read EEPROM / Write EEPROM**
- **Read KM / Write KM**
- **Synchronize DME-CAS, CAS-ELV**

2.4. Key Learn

Detail can be found in chapter 5 Key Learn

- **Get Key Info**
- **Write Key Info**
- **Save Key Info / Load Key Info**
- **Prepare dealer key with programmer**
- **Prepare dealer key with ignition switch**
- **Add key**
- **Erase/Edit key Info**
- **Enable Key**
- **Disable Key**
- **Repair Keyless Key**
- **Clear DTC / Clear Shadow**

2.5. File Make Key

Detail can be found in chapter 5 File Make Key

- **EWS1/EWS2/EWS3/EWS4**
- **CAS1/CAS2/CAS3/CAS3+/CAS4/CAS4+**

2.6. Unlock Key

Detail can be found in chapter 11 Special function-Unlock Key

- **Unlock with key info file**

- **Unlock with CAS1/CAS2/CAS3/CAS3+ EEPROM**

2.7. File Change KM

Detail can be found in chapter 11 File Change KM

- **EWS3/EWS4**
- **CAS1/CAS2/CAS3/CAS3+ CAS4**
- **Instrument (E Series), M35080 EEPROM dump**
- **Instrument (F Series)**

2.8. CAS Repair

Detail can be found in chapter 11 CAS Repair

- **CAS1(0K50E) OBDII Repair**
- **ISTAP4* Version OBDII Repair**

2.9. CAS PLUG

Detail can be found in chapter 12 CAS PLUG

3. Options

3.1. Language

Support following languages:

- **Chinese (Simplified)**
- **English**
- **Italian**
- **Spanish**
- **German**
- **Hungarian**
- **Polish**

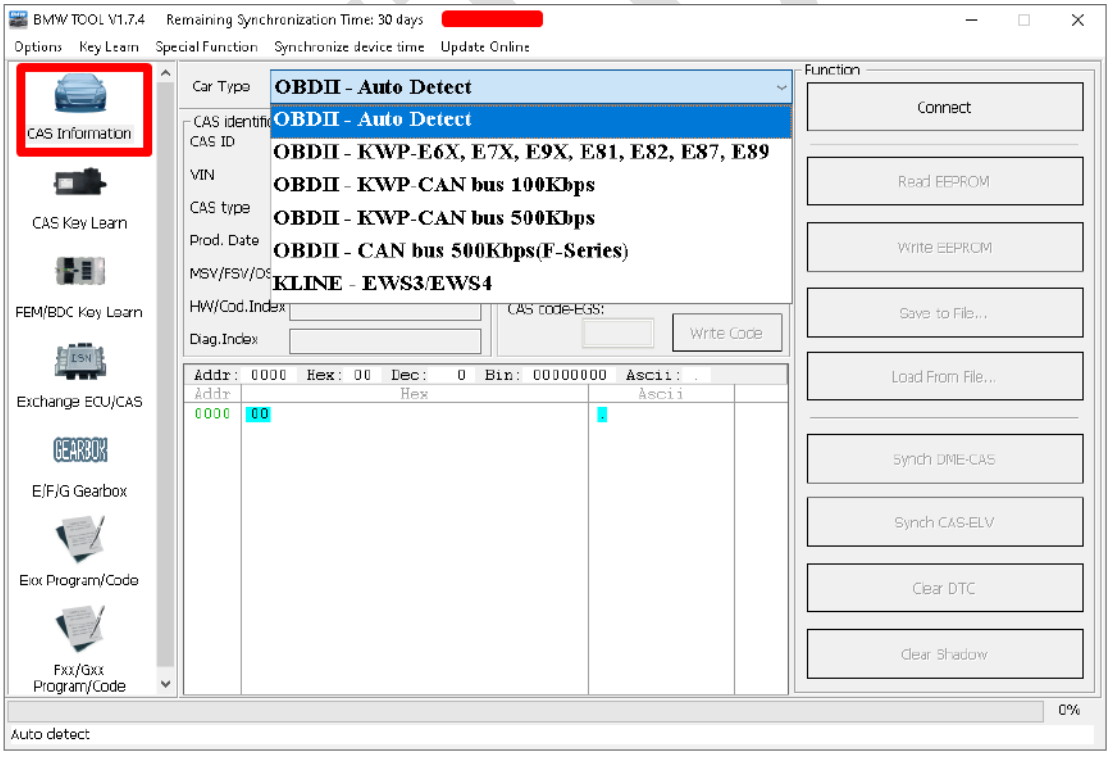
Please manual set user language at first time use software

4. CAS/EWS Identification

Information

CAS/EWS identification information (PICTURE 4. 1), Support following functions:

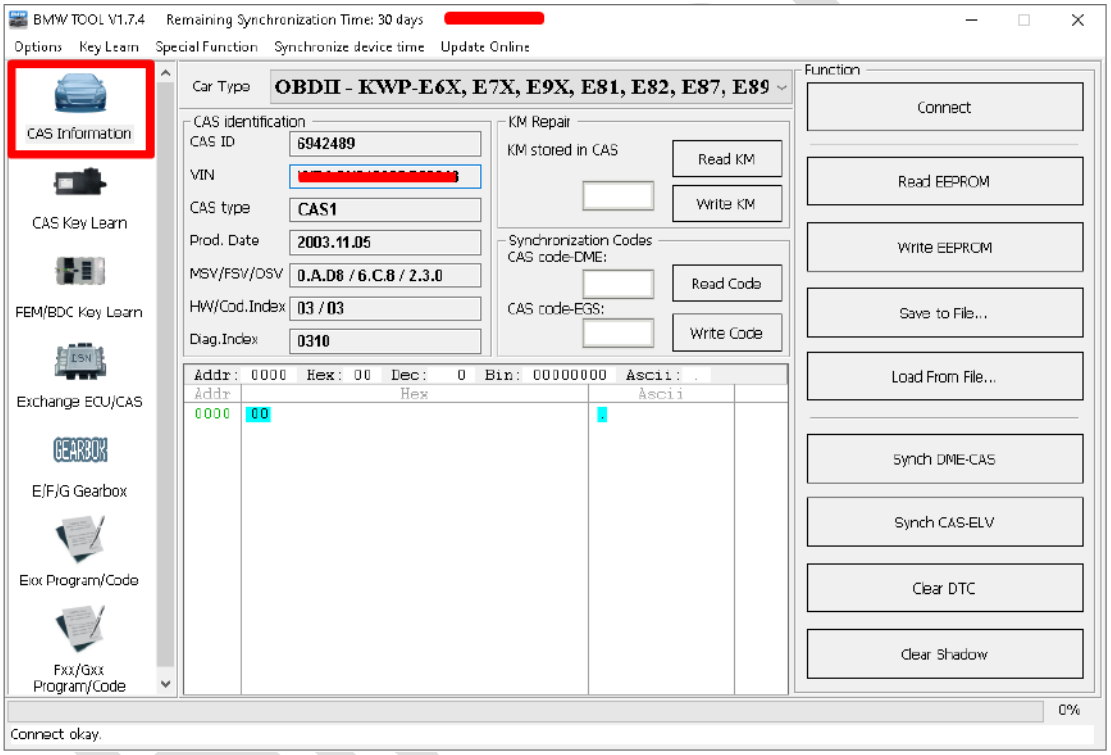
- **OBDII - Auto Detect**: Auto detection communication protocol, support KWP-E6X…, CAN bus 100Kbps, CAN bus 500Kbps. Other functions please choose manually
- **OBDII KWP – E6X, E7X, E9X, E81, E82, E87, E89**: Usually used in old cars with CAS1, CAS2 and some CAS3
- **OBDII - KWP – CAN bus 100Kbps**: This type will be used when you connect to CAS with CAS PLUG directly
- **OBDII - KWP – CAN bus 500Kbps**: This type will be used when connect to car with CAS3, CAS3+
- **OBDII - KWP – CAN bus 500Kbps(F-Series)** : This type will be used when connect to car with F-Series
- **KLINE – EWS3/EWS4**: This type will be used when connect EWS with CAS PLUG directly



(PICTURE 4. 1)

- **Connect**: Connect to CAS system. Attention: EWS don't support this function (see special note 1). There will display detail information in CAS identification after connect to CAS (PICTURE 4. 2). Auto Detect only support connect operate, you must choose a specific type before you do other operations.

- **CAS ID: CAS identification number**
- **CAS type: CAS type is very important, this type shown here is detected by BMW TOOL, If the type detect incorrect here，add new key may not work. Usually have the following types: CAS1, CAS2, CAS3/CAS3+, CAS3++, CAS3++ (ISTAP), CAS4 etc. CAS3/CAS3+means CAS should be CAS3 (0L01Y) or CAS3+(0L15Y) (unencrypt version). CAS3++ means detected CAS3+ encrypt version. CAS3++ (ISTAP) Means ISTAP version**
- **VIN: Vehicle identification number**
- **Prod. Date: CAS production date**
- **HW/Cod.Index: CAS hardware version and code version**
- **MSV/FSV/OSV: MSV version, software version(FSV) and system version(OSV) in CAS running**



(PICTURE 4.2)

- **Read EEPROM**: Support Read CAS1/CAS2/CAS3/CAS3+ (ISTAP version not support) EEPROM. For CAS1/CAS2/CAS3 type require CAS PLUG; CAS3+ can use OBDII or CAS PLUG. **Attention: the EEPROM dump read from CAS3+ is not the whole EEPROM dump, you can't write it to CAS with BDM programmer, it can use to prepare dealer key with File Make Key.**
- **Write EEPROM**: Support write CAS1/CAS2/CAS3 EEPROM dump, requires CAS PLUG
- **Save to File / Load From File**: Save the reading data / load EEPROM dump to buffer
- **Read KM**: Read KM stored in CAS system, support CAS1/CAS2/CAS3/CAS3+ (ISTAP version not support). CAS1, CAS2, CAS3 require CAS PLUG; CAS3+ can access by OBDII or CAS PLUG
- **Write KM**: Write new KM to CAS, support CAS1/CAS2/CAS3/CAS3+ (ISTAP version not support). CAS1, CAS2, CAS3 require CAS PLUG; CAS3+ can access by OBDII

or CAS PLUG

Attention: KM shown on instrument stored not only in instrument, but also in CAS system, it can synchronize CAS and instrument and choose the bigger one for standard. So, when you want change KM, you'd better take instrument away from car, set CAS KM to 0,then read EEPROM dump from instrument via BDM programmer, use File Change KM option to change instrument EEPROM KM to a new KM, write back the new EEPROM dump to instrument and install instrument on car

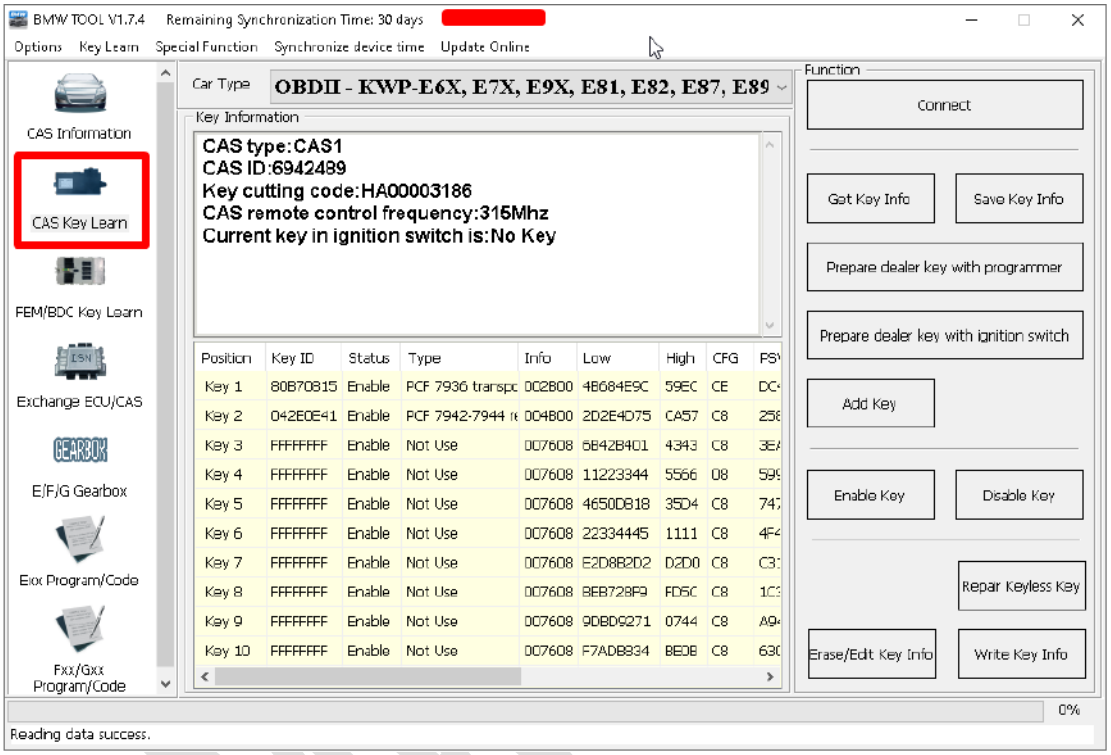
- **Read Code**: Read DME and EGS code from CAS
- **Write Code**: Write DME and EGS code to CAS system. **Attention: We don't recommend unprofessional user write this code, the car will stop working if write in error code**
- **Synch DME-CAS**: Synchronize DME and CAS. **Don't use this function if all key lost.** If sometimes add key for CAS1/CAS2/CAS3 by OBD cause cars not start, then you can use this function, refer Special Note 2
- **Synch CAS-ELV**: Synchronize CAS and ELV, This function can be used when ELV get error; Sometimes add new key for CAS1/CAS2/CAS3 will cause car not start, then you can use this function, refer Special Note 2
- **Clear DTC**: Clear error code in CAS system
- **Clear Shadow:** Clear Shadow error in CAS system

- **Special Note 1**: Read/Write function of EWS support 0D46J mask and 2D47J mask now. EWS support Read EEPROM, Write EEPROM, File Make Key, File Change KM etc.
- **Special Note 2**: Sometimes add key for CAS1/CAS2/CAS3 will cause car not start, **you need use these two functions: Synch DME and CAS, Synch CAS and ELV. Running these two Synch-functions one by one after insert original key to ignition switch, then take key off, insert again and try to start. If not start, insert again and running these two Synch-functions again. Repeat steps until car start**. If you get error in synchronize progress, just ignore it and continue steps.

5. Key Learn

5.1. OBD-CAS1/CAS2/CAS3/CAS3+ Function

Key Learn (PICTURE 5.1-1).



(PICTURE 5.1-1)

Mainly Function:

- **Key cutting code**: The code use for cut key, you can use CNC to cut original key out directly. It is very convenient for all key lost, avoid changing lock.
- **CAS remote control frequency**: You need select correct remote frequency accord this value when you add key. Of course you can detect frequency with Remote Frequency Detect (“F” button on BMW TOOL device) when you have remote control at hand.
- **CAS key in ignition switch is**: The position at immo system for ignition key.
- **Get Key Info**: OBD read key cutting code, remote control frequency, remote data and IMMO data etc. You must run this function before OBD prepare key.
- **Save Key Info**: After get key info success, please save key info
- **Prepare dealer key with programmer**: After get key info success, select a key position to prepare dealer key with BMW TOOL programmer.
- **Prepare dealer key with ignition switch**: After get key info success, select a key position to prepare dealer key with ignition switch

- **Add Key**: Add new key to CAS system. Most of car can start by insert prepare key to ignition switch directly without add key to CAS system; There's still a few car can't recognize new key automatically, at this situation, you need put key into BMW TOOL programmer and add it to CAS system.
- **Enable Key**: The function is use to enable the key that disabled before. You need a key that could start the car before run this function. **Specific operation:** First insert a key that can start the car, turn on the ignition switch and light up the dashboard, then read the disabled key position and select one that you want to enable, click on enable key. After enabled, the key at this position will work again. **Note: Only enable key does not require get key info.**
- **Disable Key**: The function is use to disable key when a work key lost. In other words, this function can invalidate a work key which one you want. You need a key that could start the car before run this function. **Specific operation:** First insert a key that can start the car and light up the dashboard, then select a work key position that you want to disable and click on disable key. **Note: The key that needs to be disabled cannot be the same as the key inserted into the ignition switch. After disabled, the key at this position will not be able to start the car, and add key at this position will not start the car either. Only disable key does not require get key info.**
- **Program Key Info**: After read key info or load key info, select a specify key that you want to program, the specific info interface like (PICTURE 5.1-2). **Attention: Select the corresponding key type, choose wrong type between smart and non-smart will cause the car to not start**

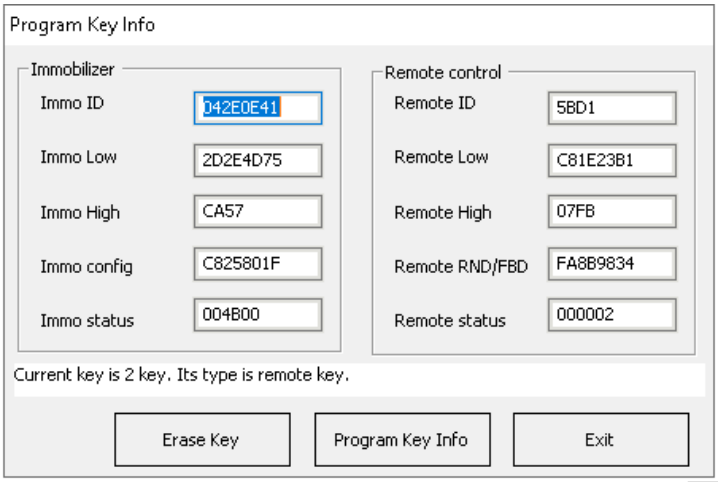
  Specific steps:

  Method 1（recommend）

  - **Click "Erase Key", follow the prompts, be sure to select the corresponding key type**

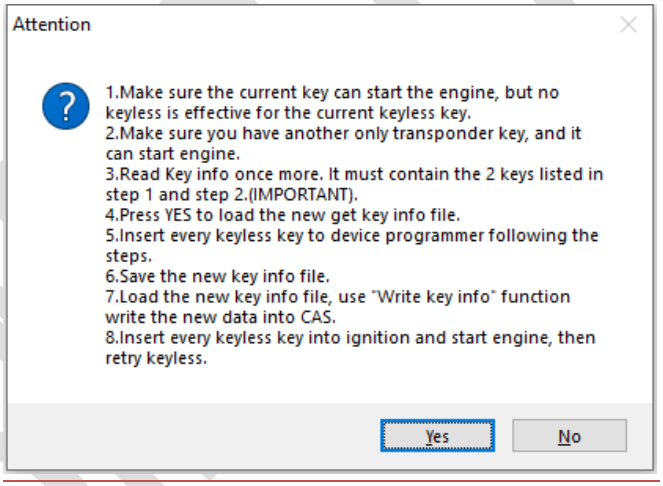
  Method 2

  - **Key info of Immo ID，all change to FFFFFFFF**
  - **Configure Immo status，smart key change to：F07608，non-smart keychange to：007608**
  - **Click "Program Key Info", you can use this key position to matchafter complete**



(PICTURE 5.1-2)

- **Write Key Info:** Load key info file that get from **Get Key Info,** then write the key information into CAS. When data is lost or restore the original data please use this function.
- **Repair Keyless Key:** After add smart key success, if the smart key doesn't have smart function about open door and start car, you can try this function to fix it. Detail operation can follow (PICTURE 5.1-3). Attention: You must have a non-smart key that can start car

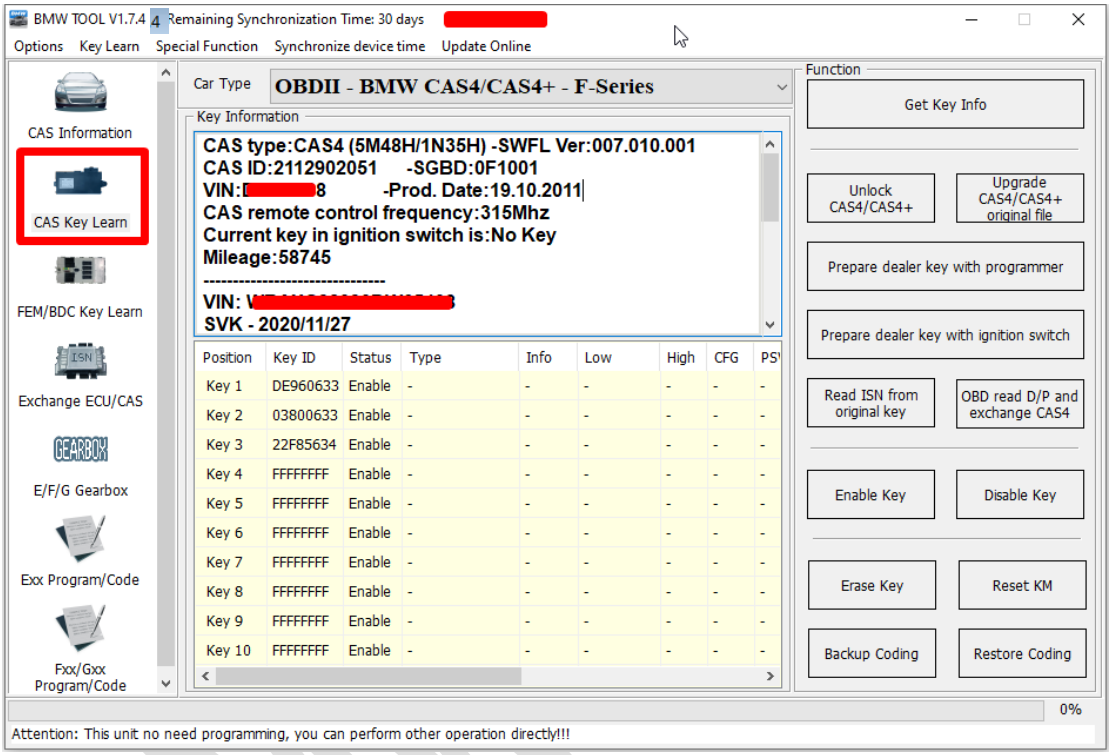


(PICTURE 5.1-3)

5.2. OBD-CAS/CAS4+ _F-Series Function

Function introduction:

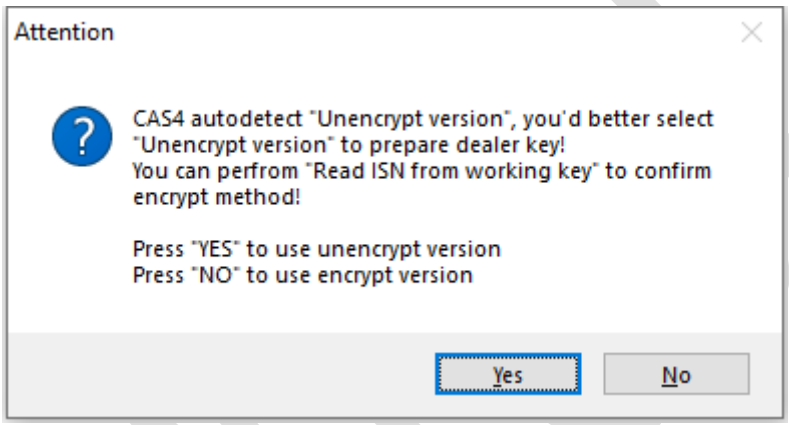
After get the key information, follow the prompts to determine whether unlock CAS4/CAS4+ is required. If unlock is not required, you can directly prepare the dealer key. CAS4 has encrypted version and unencrypted version. All key lost of encrypted version, you need to remove ECU to read ISN for prepare new key (PICTURE 5.2-1)



(PICTURE 5.2-1)

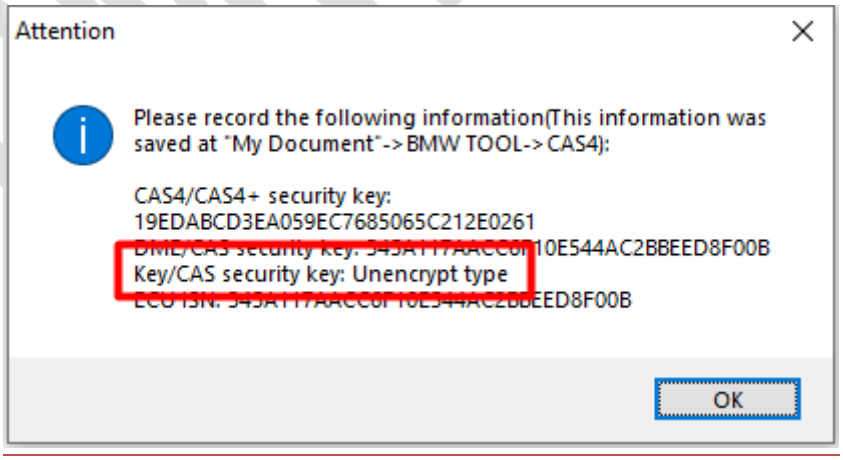
- **Get Key Info:** OBD read the key cutting code, CAS remote control frequency, remote control data, CAS type, CAS ID, and a part of code information, etc. You must use this function before prepare key by OBD. Follow the steps if system prompts need to unlock CAS (If system prompts not need to unlock CAS, you can directly select the key position to generate a dealer key, or use other function)
- **Unlock CAS4/CAS4+:** If the CAS version of the car does not support prepare dealer key directly, unlock CAS data through OBD. The Unlock CAS/CAS4+ function takes 2-3 minutes, please supply stable power before execute this function. If all key lost, you need to press the brakes a few times and turn on the double flashing lights to activate OBD communication. Attention: After the unlock CAS4/CAS4+ is completed, check whether the original key work. If it do not work, refer to the function in "OBD read D/P and exchange CAS4->>>CAS4(5M48H,1N35H)fix start " to repair it
- **Upgrade CAS4/CAS4+ original file:** The software match the same version of the CAS system automatically to write in and CAS restore working after write. **Attention: It is not recommended that unprofessional users use this function. When there is a abnormal condition, you can use this function to force programming before program/code. If failed, just go to program/code, please refer to Chapter 9 and 10 for details.**

- **Prepare dealer key with programmer:** After get key info successfully, select the key position and use the BMW TOOL programmer to prepare the dealer key. **Attention:** Without the original car key, the key generated by this function can only emergency start, without remote control and keyless. It is recommended to use **Prepare dealer key with ignition switch** if all lost.
- **Prepare dealer key with ignition switch:** After get key info successfully, select the key position and use the car ignition switch to prepare the dealer key. It is recommended to use this function to prepare dealer key. When all key lost, do it as unencrypted version first, and then if the remote control and keyless work, but the car do not start, do it accord to encrypted version, just need remove ECU and read ISN to prepare key (PICTURE 5.2-2)



(PICTURE 5.2-2)

- **Read ISN from original key:** Put the original key into device coil to read the original car ISN info. If you have the original key, just read original car key info and it will show whether CAS4 is encrypted version or unencrypted version. (PICTURE 5.2-3)



(PICTURE 5.2-3)

- **OBD read D/P and exchange CAS4** (PICTURE 5.2-4)

Function one: replace CAS4

First read and save the immo data of CAS4 and backup D-PLSH (EEPROM) and P-FLASH, and then connect to a new CAS4 to write.

If it is an encrypted version of CAS4, you need to modify the ISN, click "encrypt version" and then follow the prompts to modify

Function two: repair key function

- **The original key does not start**

  Original key not start issue almost belong to CAS4 encrypt version, unencrypt version have very little issue like this,

  The original car key is work normal before unlock CAS4/CAS4+, but after unlock or add key, the original key will not to start the car. Put the original key into the device coil and click on "**CAS4 (5M48H/1N35H) fix start**". (PICTURE 5.2-4)

  If the new key does not start, the original key is normal. If it is encrypted version check whether the ISN is correct, then change another key position and change a new key close to ignition switch to match again. If it is unencrypted version, change another key and another key position, put the key close to ignition switch to match again.

- **The original key remote/keyless not work**

  1. One of the original key or new key is not work:

  A) Erase the add key and check whether the original key work. After it is work, close the new key directly to the ignition switch to let the car learn automatically. After learning, all key and all function will work

  2. Both the original key and the new key are not work:

  A) Erase the new key, check whether the original key work, if not work perform next step

  B) Restore the code that was backed up before Unlock CAS4/CAS4+, back to the interface (PICTURE 5.2-4), click on **"Restore Coding"** to load the code that was saved before the unlock CAS4/CAS4+, after restore code, check whether it work, if not work perform the next step

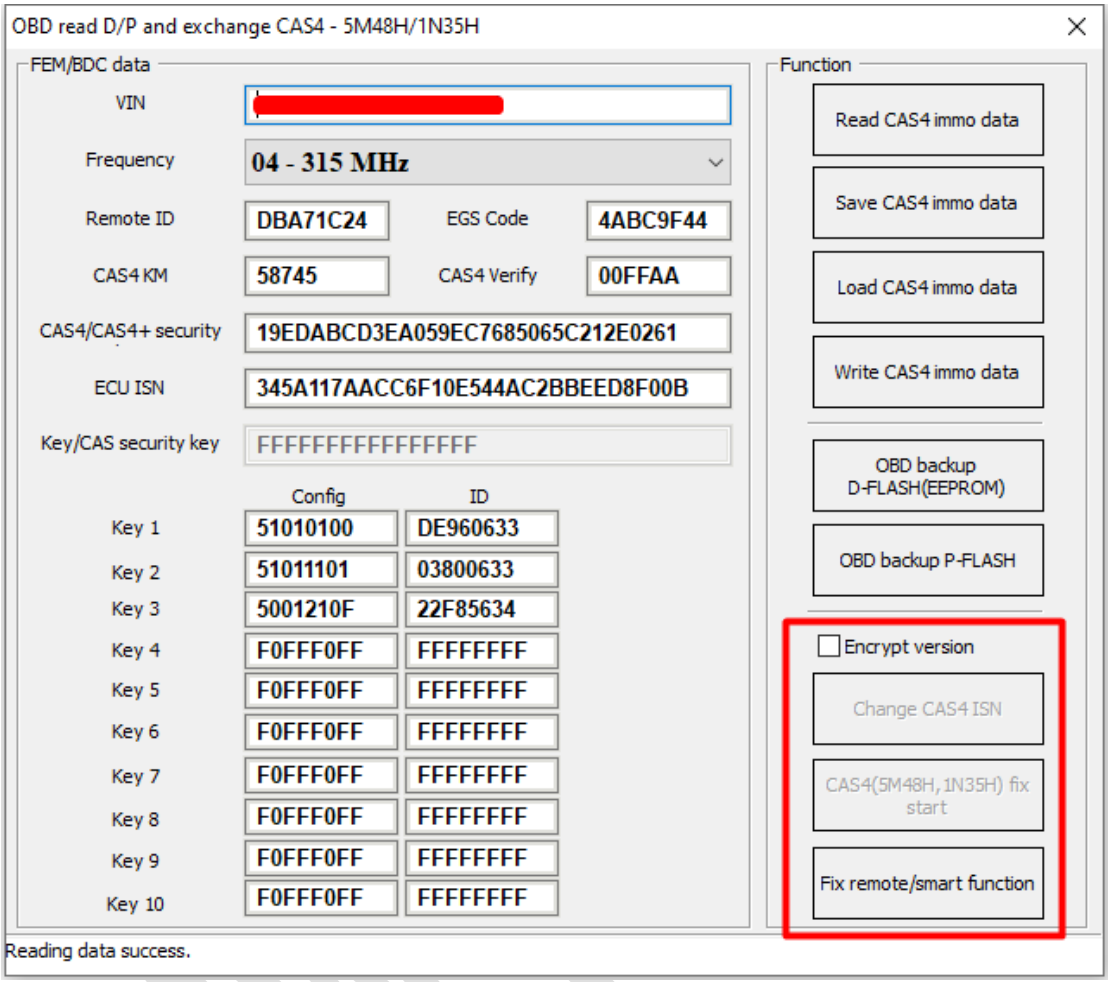
  C) Click on **"Fix remote/smart function"**. Put the original key into the device coil and accord to prompt click to fix, check whether it is work after fixed, and perform the next step if it not work

  D) If try above method all, it still doesn't work. Reconnect CAS4, read the key info, there will prompt that the remote ID and EGS code are lost. First click on **"Fix remote/smart function",** and check whether it is work after fix. If it is not work, **"Read CAS4 immo data"**, check whether the "**Remote ID"** and **"EGS Code"** are correct. If it shows all F, re-click on **"Fix remote/smart function"** to read again until it correct (not display all F). Click **"Write CAS4 immo data"** and write 10 times to check whether the key is work. If it is not work, Reconnect CAS, the key will work

  3. All key lost, the new key remote or keyless function not work:

  A) The most common situation is that the key version and frequency are incorrect. Erase the new key, replace the key with the corresponding version and frequency, and learn again

  B) If failed, follow step 2 ->>> D) to repair

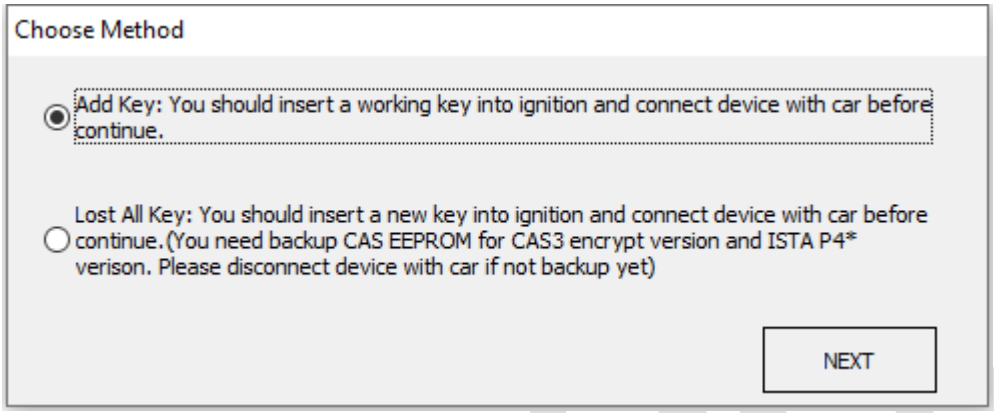


(PICTURE 5.2-4)

- **Enable Key:** This function need a key that can start the car, select a key position that you want to enabled, and click on enable key. The key at this position will work after enabled. This function can be completed without unlock CAS4/CAS4+
- **Disable Key:** This function need a key that can start the car, select the key position that you want to disabled, and click on disable key. The key that needs to be disabled cannot be the same as the key inserted into the ignition switch. After disabled, the key at this position will not be able to start the car, and add key at this position will not start the car either. This function can be completed without unlock CAS4/CAS4+
- **Erase Key:** Delete and refresh key position information
- **Reset KM:** Restore KM after replacing instrument
- **Backup Coding:** Back up the CAS code and save the code according to the prompts during unlock CAS4/CAS4+
- **Restore Coding:** When you need to restore code, load and write the previously code at Backup coding step, if the restore is not successful, you can program/code, refer Chapter 9 and 10 for details

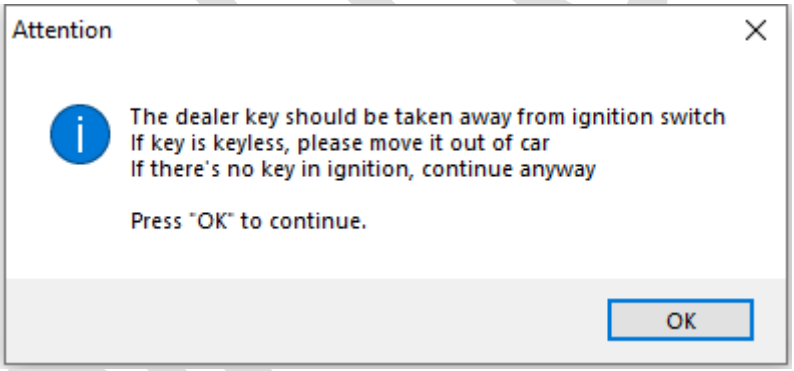
5.3. Special note in OBD operation **(Important!!!)**

- Under Get Key Info get window (PICTURE 5.3-1): For CAS3+ encrypt version, must select add key or all key lost correctly. Otherwise, the key generated later may not start the car. For other CAS version, this 2 method is same, they don't have difference between all key lost and add key



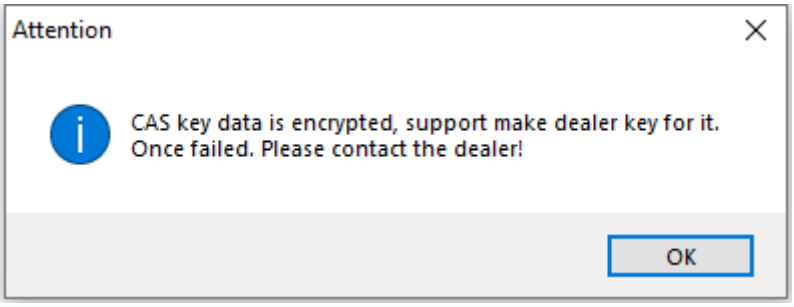
(PICTURE 5.3-1)

- Under OBD operation get window (PICTURE 5.3-2): If there's key in ignition switch, take away. If the key is keyless key, move it out of car. If there's no key in ignition when prompts appear, just press OK to continue



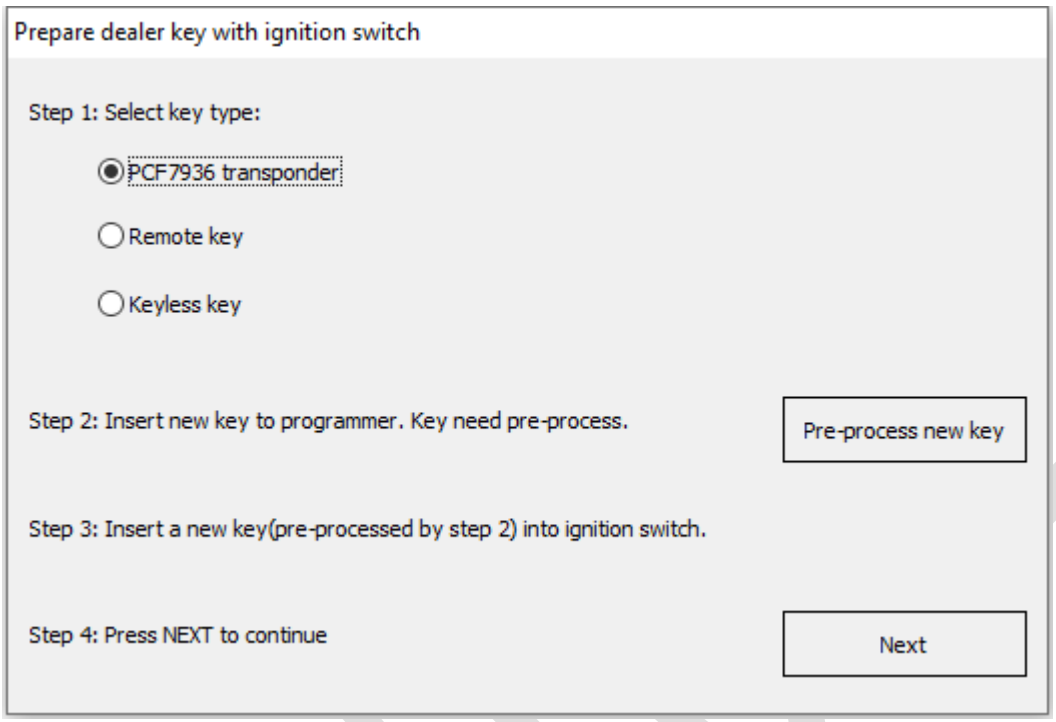
(PICTURE 5.3-2)

- Under prepare dealer key get window (PICTURE 5.3-3): Once you get this window, BMW TOOL detect this CAS is CAS3+ encrypt version. If you sure CAS is encrypt version, but there's no this window while prepare dealer key, the prepare key may not work. please choose "File Make Key" prepare key



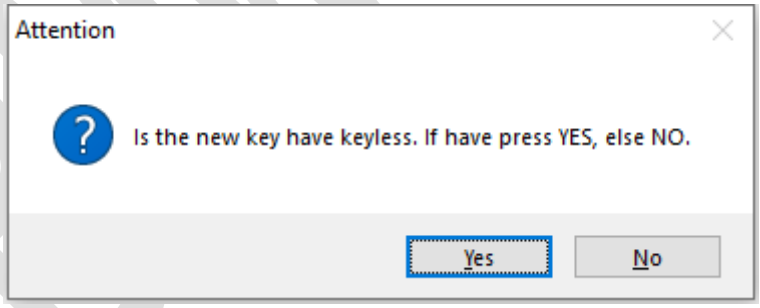
(PICTURE 5.3-3)

- Under prepare dealer key with ignition switch get window (PICTURE 5.3-4): Here we need unlock new key. Just follow step1 to step4. Attention: You must insert new key into ignition switch before NEXT



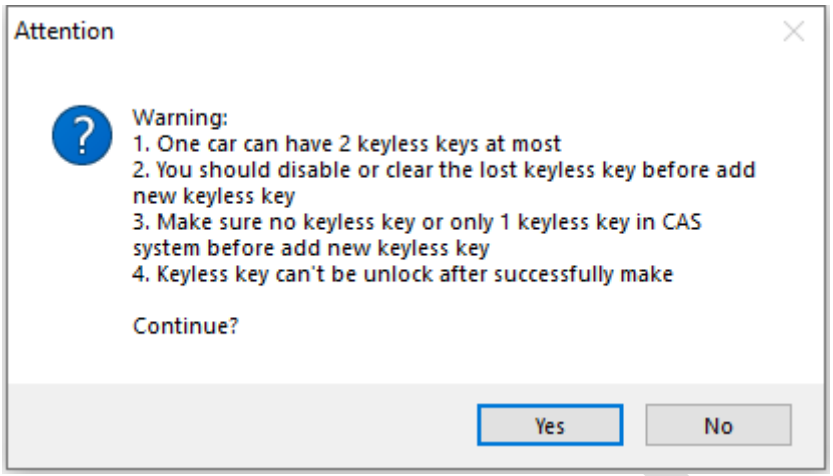
(PICTURE 5.3-4)

- Under prepare dealer key(**File Make Key also have this**) get window (PICTURE 5.3-5): Please select correct type, if it is smart key but you select NO, the keyless function will not work

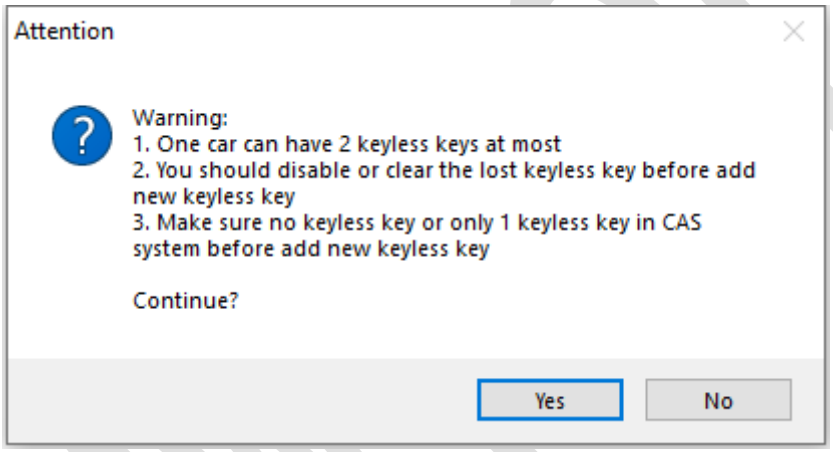


(PICTURE 5.3-5)

- Under prepare a keyless key (**File Make key also have this**) get window (PICTURE 5.3-6) or (PICTURE 5.3-7)： Make sure the car have 1 keyless key at most before add new keyless key. The lost keyless key should disabled or erased. **Attention:** (PICTURE 5.3-6) **will come with add key, this situation keyless key don't support unlock;** (PICTURE 5.3-7) **will come with all key lost , here the keyless key can unlock by BMW TOOL**

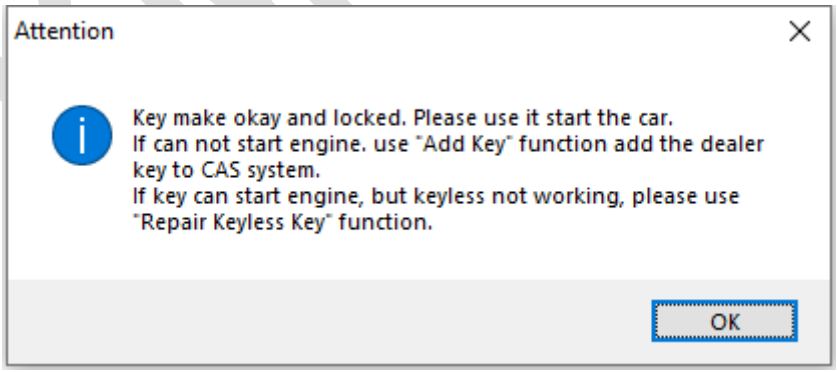


(PICTURE 5.3-6)



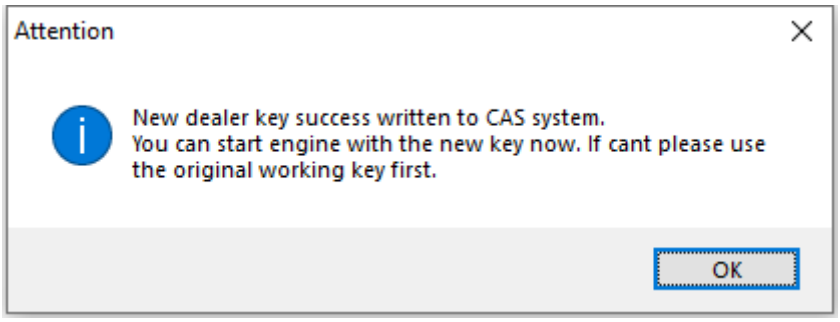
(PICTURE 5.3-7)

- After make dealer key get window (PICTURE 5.3-8): When you get this window, indicate the key was made successfully. You can try to start car directly. If not work, you need add this key to CAS system with Add Key or Keyless key can use Repair Keyless Key to repair keyless



(PICTURE 5.3-8)

- After add key to CAS get window (PICTURE 5.3-9): When you get this window, the key was add to CAS system successfully. Key can start car now. Sometimes add new key for CAS1/CAS2/CAS3 will cause car not start, you can refer chapter 4 Special Note 2

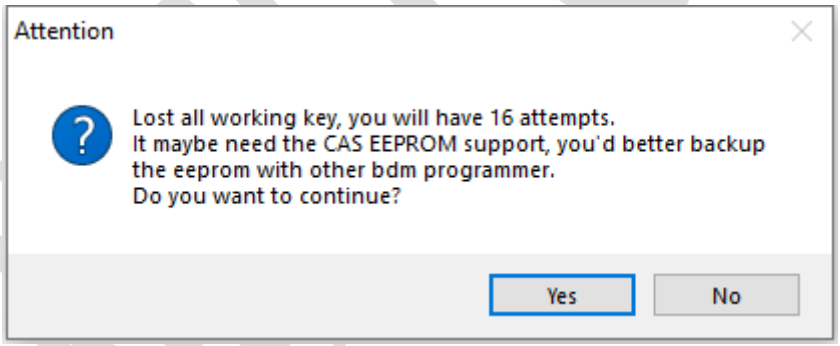


(PICTURE 5.3-9)

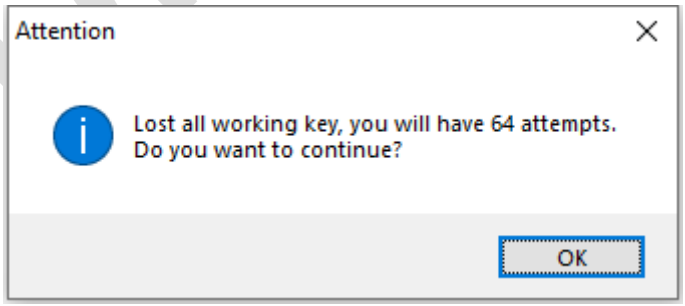
- Under all key lost for CAS3+ encrypt version (**File Make key also have this**) get window (PICTURE 5.3-10) or (PICTURE 5.3-11): For CAS3+ encrypt version, all key lost will have a special procedure to make working key (this procedure maybe need load EEPROM dump). By insert temp key to ignition and try start. (PICTURE 5.3-10) is CAS3+ encrypt version (not ISTAP) window, at most need 16 times try start. (PICTURE 5.3-11) is ISTAP version window, at most need 64 times try start

  Attention: For ISTAP version, There is a few car can't find useful combine data after 64 times try start, because the CAS lost some verify data, you need select File Make Key->Known ISN to prepare key

  Attention: If you press "Yes" and get prompt like "Cannot find useful combine data, please check the EEPROM file", means the CAS lost some verify data, you need select File Make Key->Known ISN to make working key



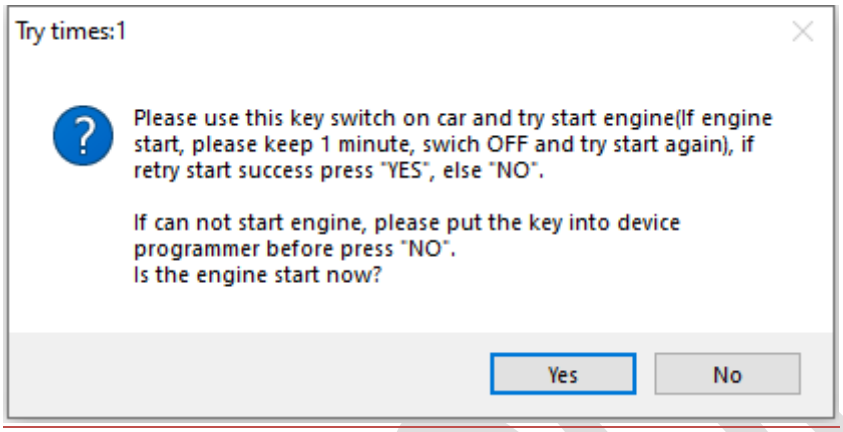
(PICTURE 5.3-10)



(PICTURE 5.3-11)

- Under lost all key for CAS3+ encrypt version (**File Make key also have this**) get window (PICTURE 5.3-12): In the tile you can find "Try times 5" means this is the fifth try start. If can start, press "YES", key made successfully. If cannot start, press "NO", continue next try start

For other reason cause car not start after all try, the temp key is locked, you need unlock the key with EEPROM or key info before next time test. **Attention: when you get this window, please try with this method: insert temp key to ignition switch, try start, if not start, take key off, then insert to ignition again, try start again, if still not start, take key off ignition and place temp key in programmer unlock it**



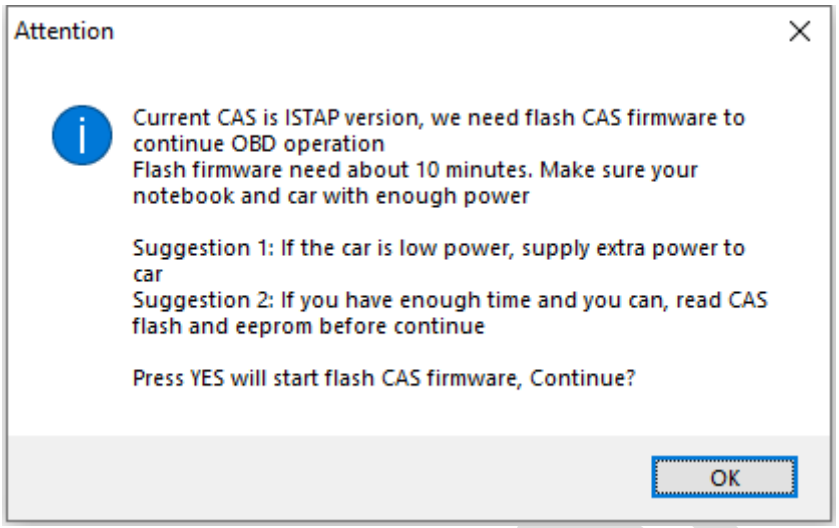
(PICTURE 5.3-12)

5.4. CAS3+ encrypt version (include ISTAP) make dealer key by OBDII

I Add key with working key

- **Attention: Details of this process, please refer to Chapter 5.3**
- **Method 1, step**: This method support CAS3+ encrypt version(not support ISTAP). you can follow method in chapter 5.6
- **Method 2, operation steps**:

1) **Insert a working key to car ignition and switch ON, light the instrument**
2) In (PICTURE 5.1-1), use **Get Key Info** read CAS immo data, key cutting code, CAS remote control frequency. (**Remember**: when you get window (PICTURE 5.3-1), you need choose Add Key)
   Attention: The key info can read directly if CAS isn't ISTAP version. **If CAS belongs to ISTAP version,** there will prompt update CAS flash when **the first time** read key info(PICTURE 5.4-1)**. Upgrade CAS flash only need 10 minutes**, after update flash turn to next step. **If the update CAS failed by some reasons, you can fix it with the function in Menu->Special Function->CAS Repair(EEPROMOBDII), choose type "OBDII-CAS3+ISTAP Version" , CAS Repair with OBD ->Enter CAS ID to repair. Detail can be found in chapter 11 CAS Repair**



(PICTURE 5.4-1)

3) In (PICTURE 5.1-1), use **Save Key Info** save the read key info
4) There's 2 methods for prepare dealer key:
   - Method 1: In (PICTURE 5.1-1), select **Prepare dealer key with programmer**
     a) Put a new blank key to BMW TOOL programmer
     b) Select a key position for new key (If the selected position have key already, you must use Add Key function)
     c) In (PICTURE 5.1-1), click on **Prepare dealer key with programmer** and wait prepare key complete
     d) After make dealer key successful, try start car directly. If it start, turn to step 5). If it not start, add the new key to CAS system with **Add Key** in (PICTURE 5.1-1)
     e) Trying to start the car and turn to step 5) if it could start. **Attention: As for CAS1/CAS2/CAS3 will cause car not start, you can follow chapter 4 Special Note 2**
   - Method 2: In (PICTURE 5.1-1), select **Prepare dealer key with ignition switch**, select key type and pre-process the blank key, insert to ignition switch again and wait for complete. After prepare dealer key, turn to step 5). If you get failure here, you need load key info to unlock the failed key via click **unlock key** before try again
5) Complete

Ⅱ All Key Lost

- **Attention: Details of this process, please refer to Chapter 5.2**
- **Steps:**

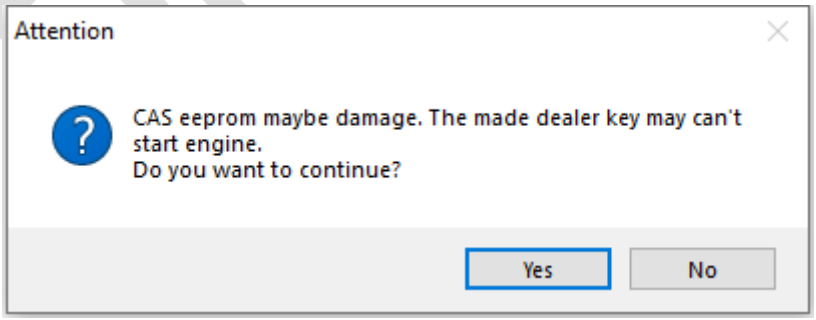
1) **Active OBD communication with all key lost method**
2) In (PICTURE 5.1-1), select **Connect** to detect CAS type and read CAS identification information
3) In (PICTURE 5.1-1), click on **Get Key Info** to read CAS immo data, key cutting code, CAS remote frequency. (**Remember**: You need choose All Key Lost when get a prompt during get key info) Attention: The key info can read directly if CAS isn't

ISTAP version. **If CAS belongs to ISTAP version,** there will prompt update CAS flash when **the first time** read key info (PICTURE 5.4-1). Upgrade CAS flash only need 10 minutes, after update flash turn to step 5). **Upgrade CAS flash only need 10 minutes**, after update flash turn to next step. **If the update CAS failed by some reasons, you can fix it with the function in Menu->Special Function->CAS Repair（EEPROMOBDII）, choose type "OBDII-CAS3+ISTAP Version" , CAS Repair with OBD ->Enter CAS ID to repair. Detail can be found in chapter 11 CAS Repair**

4) In (PICTURE 5.1-1), use **Save Key Info** to save the original key info
5) In (PICTURE 5.1-1), click on **Prepare dealer key with ignition switch**, select key type and unlock the blank key, insert key to ignition switch again and wait complete. The procedure will trying to prepare dealer key, if CAS belongs to ISTAP there will be at most 64 times trying start, while the not ISTAP version have at most 16 times trying start. Once the car start, turn to step 6). If you get failure here, you need **unlock key** with load key info before next try.
6) Complete

5.5. Special note in File Make Key (Important!!!)

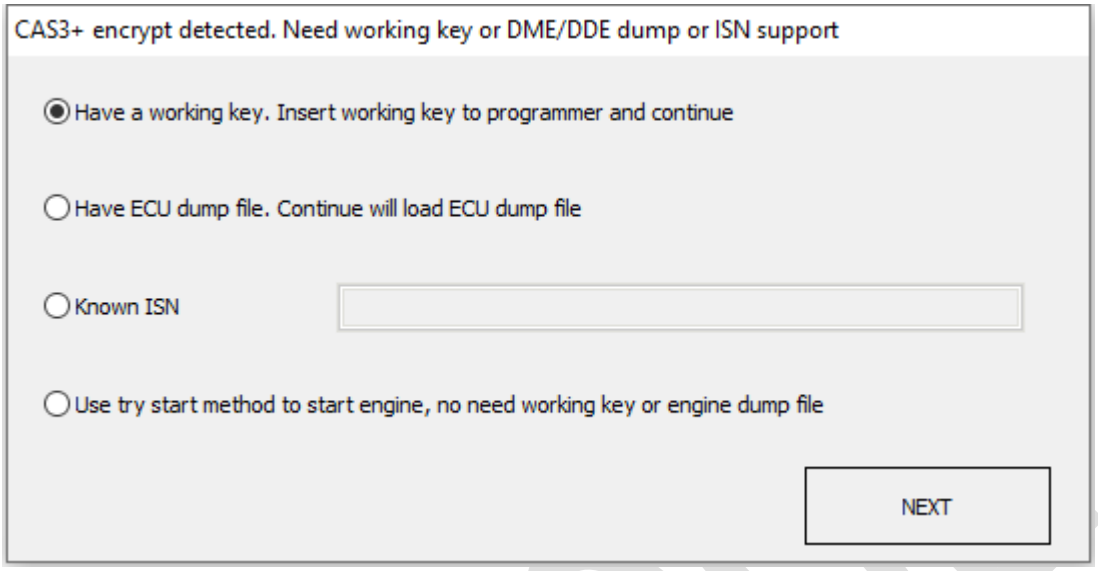
- Prepare dealer key, keyless key, all key lost for CAS3+ encrypt version have some note in **chapter 5. 3 Special note in OBD operation (Important!!!)**
- Load CAS EEPROM dump get window (PICTURE 5.5-1): You can ignore this window, it means the software detected verify error in CAS system. Usually CAS3+ encrypt version have this window



(PICTURE 5.5-1)

- Under prepare dealer key for CAS3+ encrypt version get (PICTURE 5.5-2):
  - Select have a working key. Add key with working key.
  - All key lost, there are 3 methods:
    1) Have ECU EEPROM dump file, load ECU EEPROM dump file to continue
    2) ISN was known , input 16 bytes ISN(32bits) to continue

3) **Use try start method, try start method don't need OBD communication, only require the original CAS EEPROM dump**



(PICTURE 5.5-2)

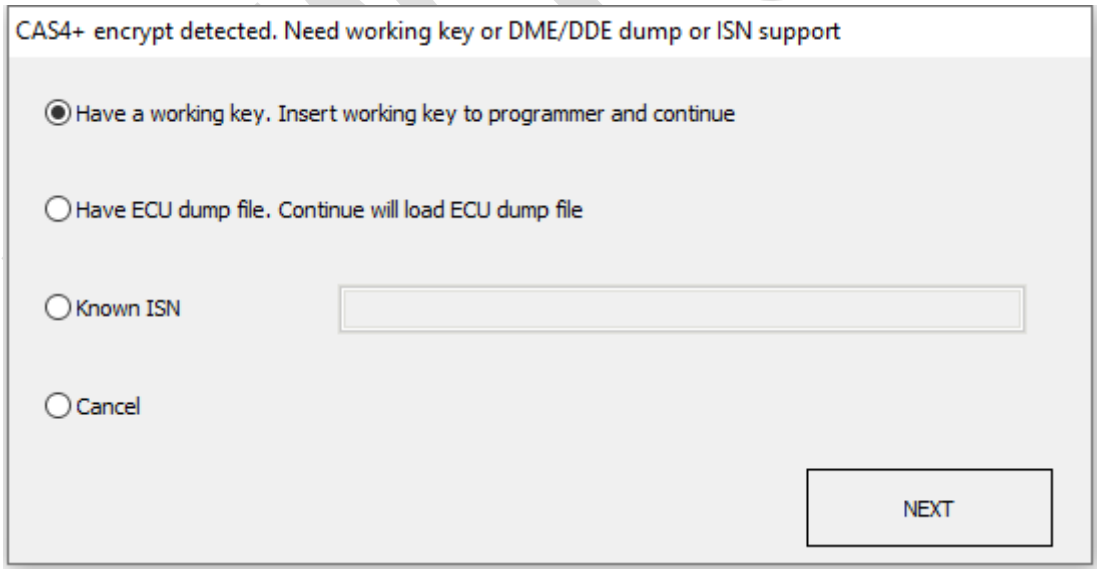
◆ Under prepare dealer key for CAS4 encrypt version get window (PICTURE 5.5-3):

➢ Add key with working key select Have a working key.

➢ Lost all working key, there are 3 methods:

1) Have ECU dump file, load ECU dump file to continue

2) Known ISN, input 16 bytes ISN to continue



(PICTURE 5.5-3)

◆ About remote not work in CAS1/CAS2/CAS3/CAS3+: Remote not work because synchronization codes not same between key and CAS, just need do the synchronize operation: **Press any button on new key, now remote function not work, start ECU with this key for several seconds, switch off ignition, use remote again, it works**

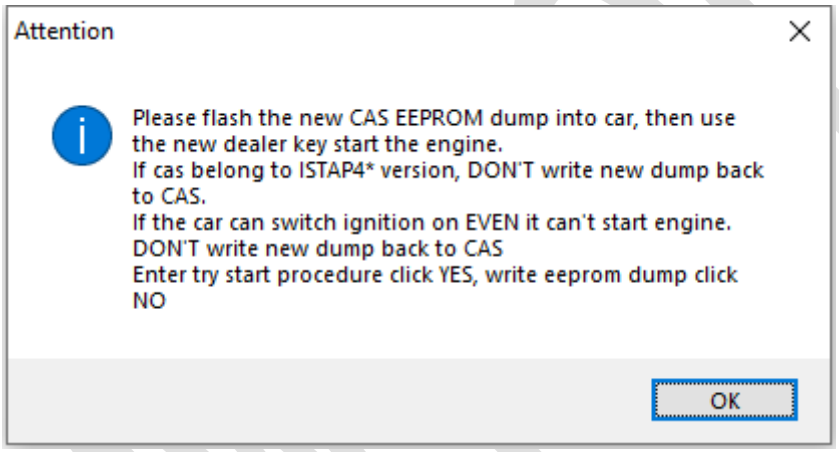
◆ About write new dump back to after make key for CAS1/CAS2/CAS3/CAS3+:

➢ File make key not detected the key is disabled or not. If your key not work, you'd

better enable the new key position with working key(Direct enable key without get key info)

- If select a blank position for new key, usually don't require write back new dump. If not work，test write back method
- If select a used position for new key, you must write new dump back to CAS

- Please don't choose 10th key position to prepare key for CAS3+ encrypt version
- Under all key lostofCAS3+ encrypt version get window (PICTURE 5.5-4): This window will come after first time prepare key before try start. When you get this window, first try data was written to temp key. Here will save a new dump contain temp key ID. Insert temp key if it can turn on instrument (you can try for twice), you needn't write new dump back (CAS3+ encrypt version with new key in blank position don't need write back).**If you try several times all prompt illegal key, you need write back new dump. Note: make sure the new key position is enable**

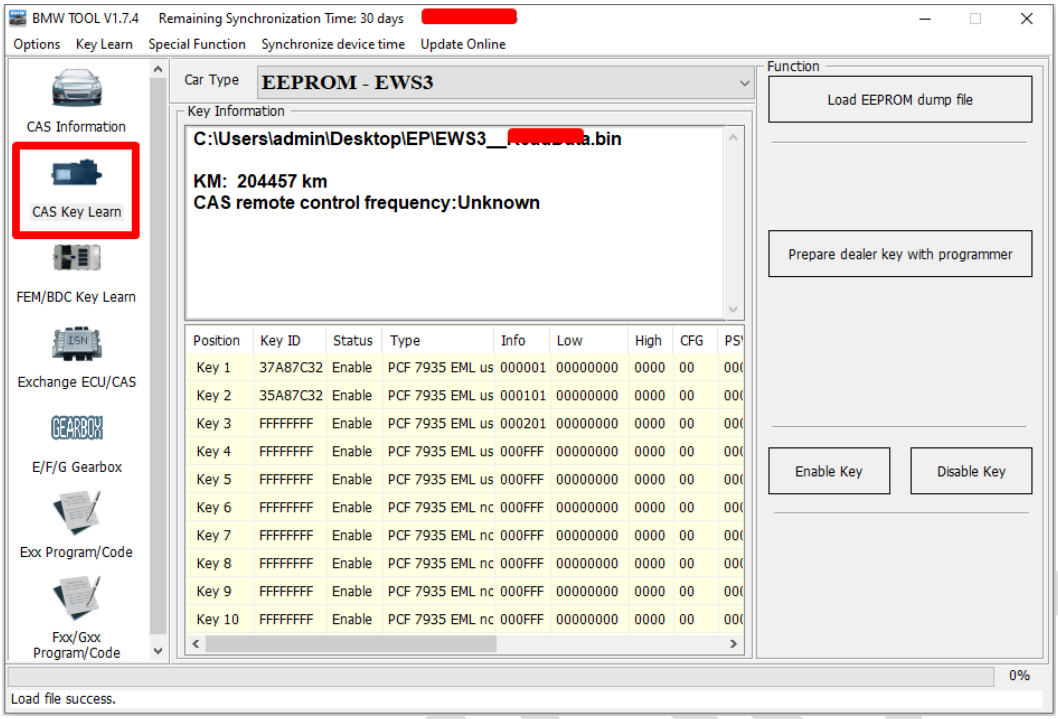


(PICTURE 5.5-4)

5.6. File Make Key

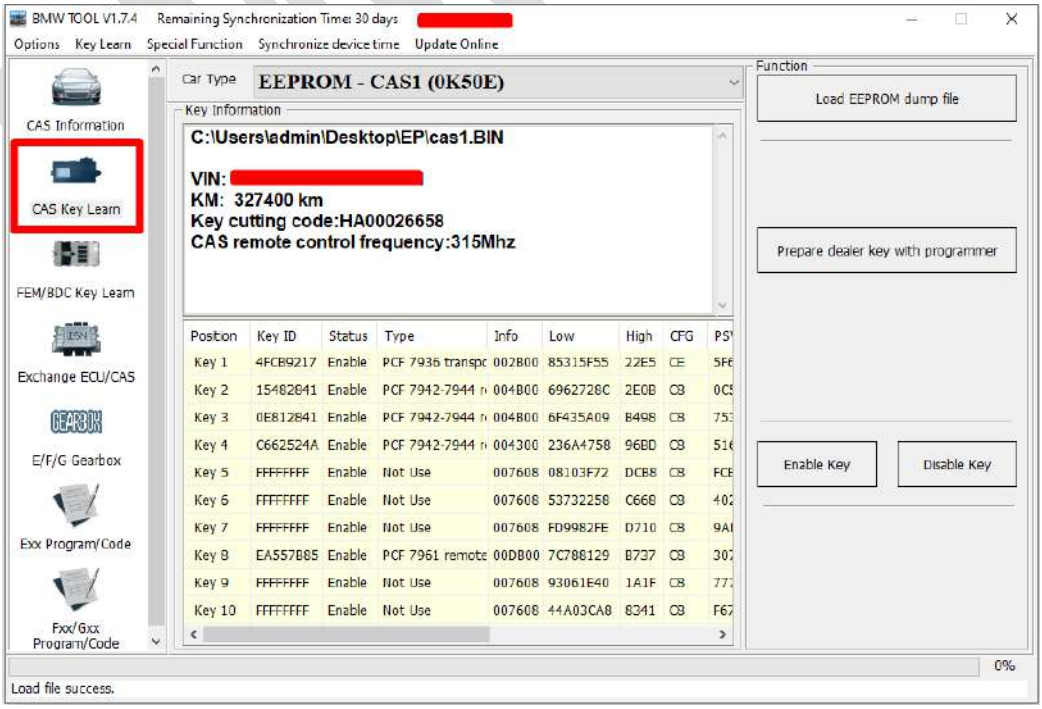
EEPROM-EWS1/EWS2/EWS3/EWS4/CAS1/CAS2/ CAS3 (include all key lost)

- **Attention: Details of this process, please refer to Chapter 5.1**
- **All key lost have same method with add key**
- Select right EWS/CAS type in main menu, load EEPROM dump file (BIN file), (PICTURE 5.6-1) is File Make Key window after load EWS3 EEPROM dump. Shown "PCF 7935 EML used" means there already have a key; Shown "PCF 7935 EML not use" mean this position doesn't have key. Select a key position, put blank PCF7935 transponder and wait it complete. Not need write back EEPROM dump



(PICTURE 5.6-1)

◆ (PICTURE 5.6-2) is the window after load CAS1 EEPROM dump (CAS2, CAS3 is same). Key ID show "FFFFFFFF" means this position not use, and show with other values mean there already have a key. Select a key position, put a blank7936 chip or Hitag2 (PCF7942-7944, PCF7945, PCF7946, PCF7953) chip, prepare dealer key accord to prompt and save new EEPROM dump. **About the write new dump file back you can refer chapter 5.1 about write back new dump after make key for CAS1/CAS2/CAS3/CAS3+**



(PICTURE 5.6-2)

5.7. File Make key for CAS3+ (include all key lost)

- **Note: Please refer to Chapter 5.1 for details of this process**
- Select the corresponding EEPROM-CAS3+(0L15Y) in the main menu interface, and load the EEPROM dump file (BIN file) according to the prompt. (PICTURE 5.7-1) is the interface after loading the EEPROM dump file, the key ID displays FFFFFFFF, indicating that this position is not used, and displaying other values means this key position is already used. BMW TOOL can automatically detect whether it is encrypt version. For the CAS3+ unencrypt version, please refer to Chapter 5.1 for prepare dealer key. If it is the CAS3+ encrypt version, the prompt (PICTURE 5.5-2) will appear when prepare the key. At this time, follow the step below to prepare key:
- Add key: Select a key position, put in a blank 7936 chip or Hitag2 (PCF7942-7944, PCF7945, PCF7946 and PCF7953) chip and generate a key according to the prompt (when the prompt (PICTURE 5.5-2) appears, choose with a working key) and save the new EEPROM dump. **About the write dump file back you can refer chapter 5.1 about write back new dump after make key for CAS1/CAS2/CAS3/CAS3+**
- All key lost: All key lost is a little different
  - **Select a blank key position, click Prepare dealer key,** a prompt (PICTURE 5.5-2) appears
  - If there is ECU EEPROM dump or known ISN, only need to load ECU EEPROM dump or input 16-byte (32-bit) ISN to prepare dealer key directly
  - Use the method of trying start, this method does not require OBD connect to the car, only require the original CAS EEPROM dump.

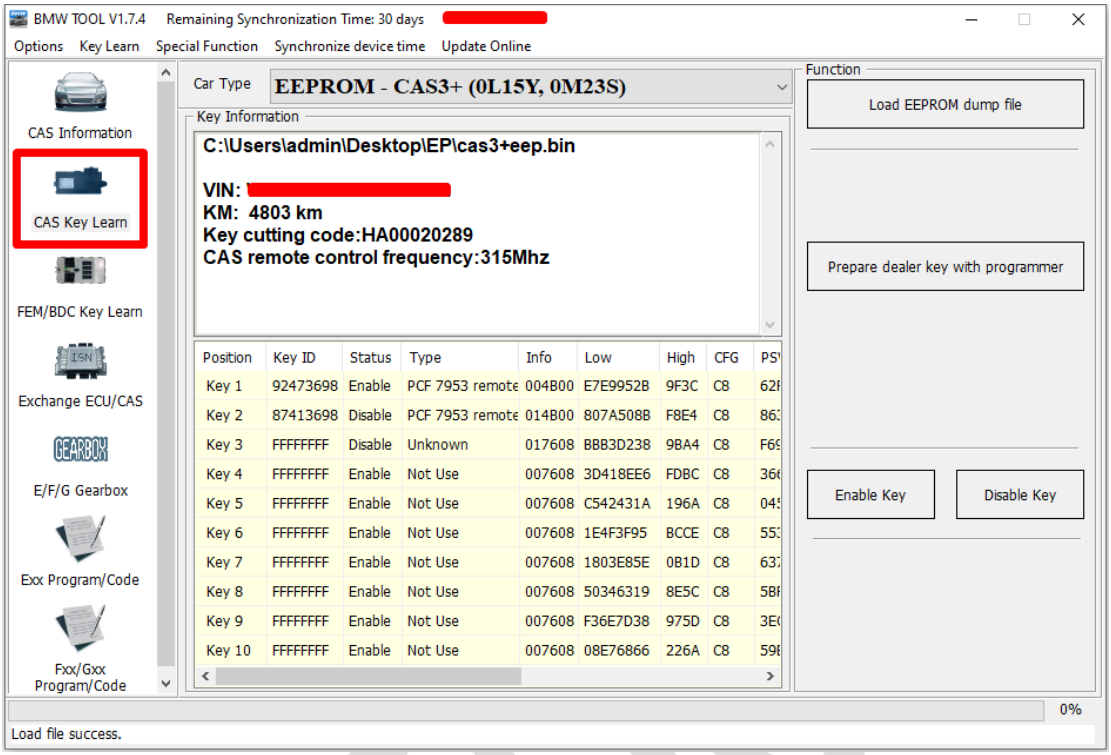
  1) First, the prompt (PICTURE 5.3-10) or (PICTURE 5.3-11) appears, click to enter the next step

  2) Put in a new key to generate a temp key and save new EEPROM data, appears (PICTURE 5.5-4), see the description of this picture

  3) Confirm CAS has install on car before clicking OK. Start step of trying start, see the description of the picture (PICTURE 5.3-12)

  4) Just keep inserting the key into the ignition switch and trying to start. If it not start, put it in the BMW TOOL programmer for reprocessing, and then trying to start again.

  5) If all trying to start are completed and still cannot start car, you need to restore the dump in the CAS to the original and unlock the key before the next trying to start.



(PICTURE 5.7-1)

5.8. File make key CAS4 (encrypted version)(include all key lost)

- **Attention: Please refer to Chapter 5.5 for the detailed description of this process**
- In the main menu interface, select the corresponding EEPROM-CAS4 or CAS4 (5M48H, 1N35H), select the corresponding type, and follow the prompts to load the EEPROM dump file (BIN file). (PICTURE 5.8-1) is the interface after loading the EEPROM dump, the key ID displaying FFFFFFFF means that this position is not used, and displaying other values means this position have been used
  CAS4 has two file types: 1L15Y and 5M48H
  - 1L15Y type: This type has no encryption version, except for "CAS4 ->XEP100 MCU (5M48H mask)" cannot be selected, other types can be loaded
  - 5M48H type: This type has encrypted version and unencrypted version. Select "CAS4 ->XEP100 MCU (5M48H mask)" or "CAS4+(5M48H)" to load, and BMW TOOL can detect whether it is an encrypted version automatically
  - **CAS4+ can select CAS4+ (5M48H, 1N35H) directly**
- **Choose a blank key position, put the blank key into the BMW TOOL programmer, and click Prepare Dealer Key.** The unencrypted version will directly prepare dealer key successfully. The encrypted version will appear (PICTURE 5.5-3) tips, there are two ways at this situation: add key and all key lost
  - **Add key:** When the prompt (PICTURE 5.5-3) appears, select have a working key
    1) Take the blank key out of the BMW TOOL programmer and putthe work key in

2) Click NEXT, BMW TOOL will try to read the ISN from the work key

3) After the reading success, following the prompts and take the work key out of the BMW TOOL programmer, then put in the blank key

4) Continue to prepare dealer key complete

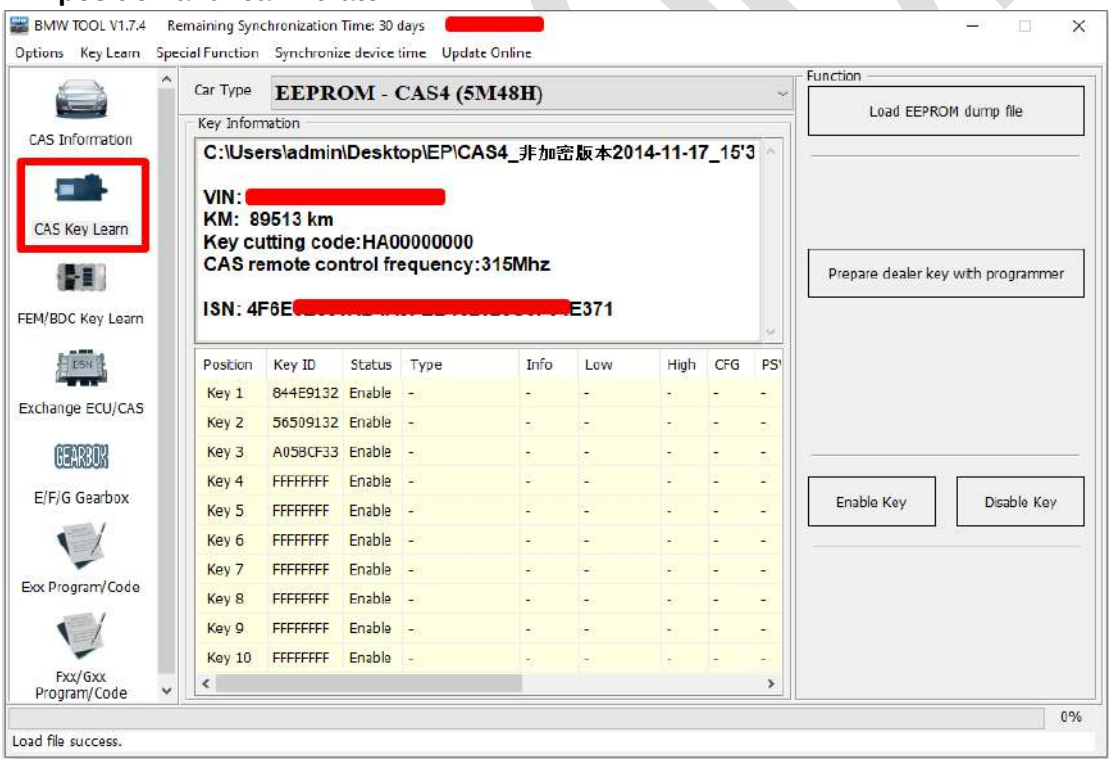
- **All keys lost:** (Only the 5M48H encrypted version have all key lost) When the prompt (PICTURE 5.5-3) appear:

1) If there is ECU EEPROM dump, load it directly and click next

2) If known ISN, enter 16-byte (32-bit) ISN and click next

3) If there is no ECU EEPROM dump and ISN, not support temporarily

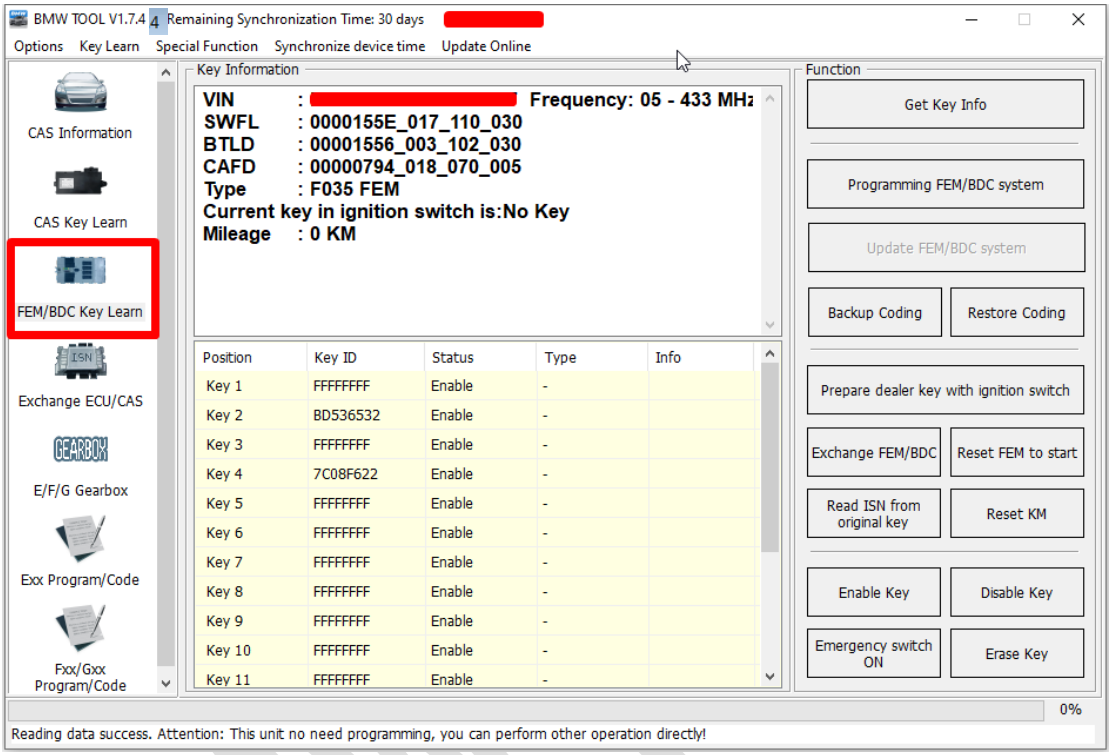
◆ **The prepare dealer key process will takes about 30 seconds and the interface may freeze during the process, please wait patiently for completion. It won't save new EEPROM dump and no data need to be write back. After prepare dealer key complete, you only need to paste the new key to the coil of the car and trying to start, sometimes you may need to try several times. If the key can't recognized by the car all the time, please enter the key learning and confirm whether the key position is disabled, if it is disabled, enable the key position and learn it later.**



(PICTURE 5.8-1)

6. FEM/BDC Key Learn

FEM/BDC is the immo system used in BMW **F-Series** after 2014. Support get key info and prepare dealer key by OBD, replace module etc. (PICTURE 6-1)



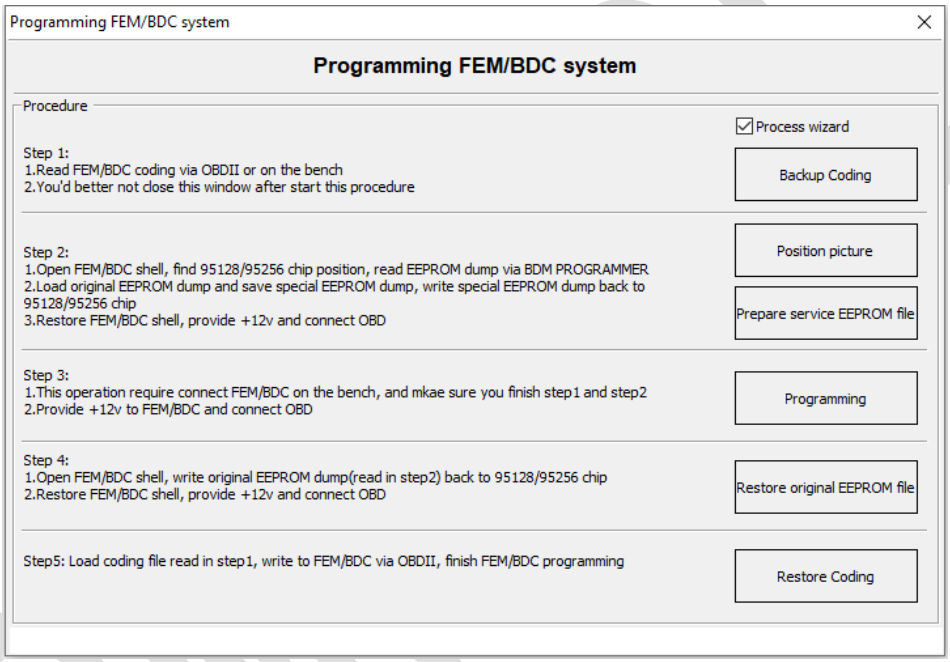
(PICTURE 6-1)

- **Get key info**: Get key info in the FEM/BDC system and accord to prompt whether need to Programming FEM/BDC system or Update FEM/BDC system
- **Programming FEM/BDC system:** Programming FEM/BDC system to make it support get key info by OBD. Whether add key or all key lost need to Programming FEM/BDC system before make a new key if prompt that it needs to Programming FEM/BDC system. (PICTURE 6-2)

  Step Instructions/Notes:

  - The steps : ①Backup the code file ->>>②Read the EEPROM dump file on the module chip ->>>③Load the EEPROM dump to generate the service mode data file ->>>④Write the service mode data file in step ④ back to the chip ->>>⑤ Connect the module to program ->>>⑥Restore the original EEPROM data file in step ② ->>>⑦Restore the code in step ①
  - Be careful to remove static electricity from your body before reading the chip. It is better to wear insulated gloves for operation. Please refer to the **"Location Map"** to find the position of the chip on the FEM/BDC module. It is recommended to use the VVDI Prog **"Free Clipping"** or **"MINI PROG"** for operation. Clean the insulators on the pins before operation. If it is the way of disassembling and reading the chip, pay attention to protect the surrounding components, the surrounding components are easily damaged by high temperature

- When reading the original EEPROM dump of the 95128/95256 chip on the FEM/BDC module, it is best to read it several times to compare whether the dump is same, if it all same, proceeding to the next step
- The process needs to read and write 95128/95256 chip on the FEM/BDC module. If this chip is improperly operated during the reading and writing process, it is easy to cause damage or loss data. The phenomenon after the loss: Abnormal noise of the car's electrical appliances after the data is restored or program failed. Replace the chip and write the original data will solve
- Power off when soldering or writing/reading chips, and restore power accord to prompt
- It is required to complete these steps before doing other operations, and do not exit to operate other operations during the Programming FEM/BDC system



(PICTURE 6-2)

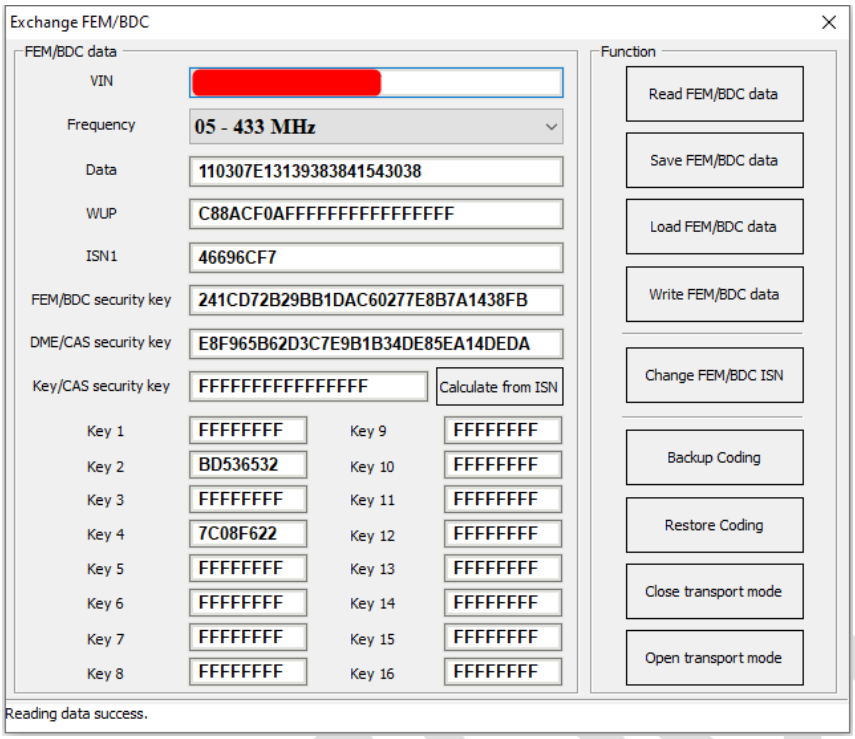
- **Upgrade FEM/BDC system:** Upgrade the FEM/BDC system that does not support Programming FEM/BDC system or Reset KM. After the upgrade, you can directly Programming FEM/BDC system and Reset KM. Attention: Most of them can be programmed successfully. Please process program/code when failed, refer Chapter 9 and 10 for details
- **Backup Coding:** Back up the FEM/BDC code, and you must Backup Coding before Programming FEM/BDC system
- **Restore Coding:** When the code needs to be restored, load and write the backup code in Backup Coding step
- **Prepare dealer key with ignition switch:** Prepare dealer key that can start the car via ignition switch. It is recommended to use a blank key position to generate a new key. Prepare dealer key needs ISN, get ISN from the original key when add key, and disassemble and read the ECU to get the ISN when all key lost
- **Exchange FEM/BDC:** Exchange the car module, it is required Programming FEM/BDC before run this function

Function introduction:

The Incorrect operation or unknown reasons during FEM/BDC system match key or under repaired, cause control unit damaged and need to change module, you can use this function. **Attention: It is recommended that unprofessional users do not use this function, and operate under the guidance of professionals.** (PICTURE 6-3)

Here are the specific replacement method:

- a) Needs to find a second-hand or brand new FEM/BDC module of the same model and year as the damaged FEM/BDC. The new module needs to Programming FEM/BDC system first, and proceeding to the following operations after prompt need not to Programming FEM/BDC system
- b) If you had saved the damaged FEM/BDC data, load the data and click on “Calculate from ISN” to get the key/CAS security key (read the ISN from original ECU), and go to step d) directly
- c) If there is no damaged FEM/BDC data, first "Read FEM/BDC Data", modify the following 4 options: ①Fill in the VIN of the original car ②Select the remote frequency consistent with the original car ③Modify ISN1 to 00000000④ "Calculate from ISN" to obtain the key/CAS security key (read the ISN from original ECU)
- d) After completing the above steps, click "Change FEM/BDC ISN", carefully read the prompts and after confirming, the next step prompts: "Does the new FEM/BDC system have a working key", and choose No. Enter the correct ISN of the original ECU
- e) After confirming that the above steps are completed and the data is correct, click on "Write FEM/BDC data". After done, you need to write the original car code and reset the ELV. For details on program/code, please refer to chapters 9 and 10

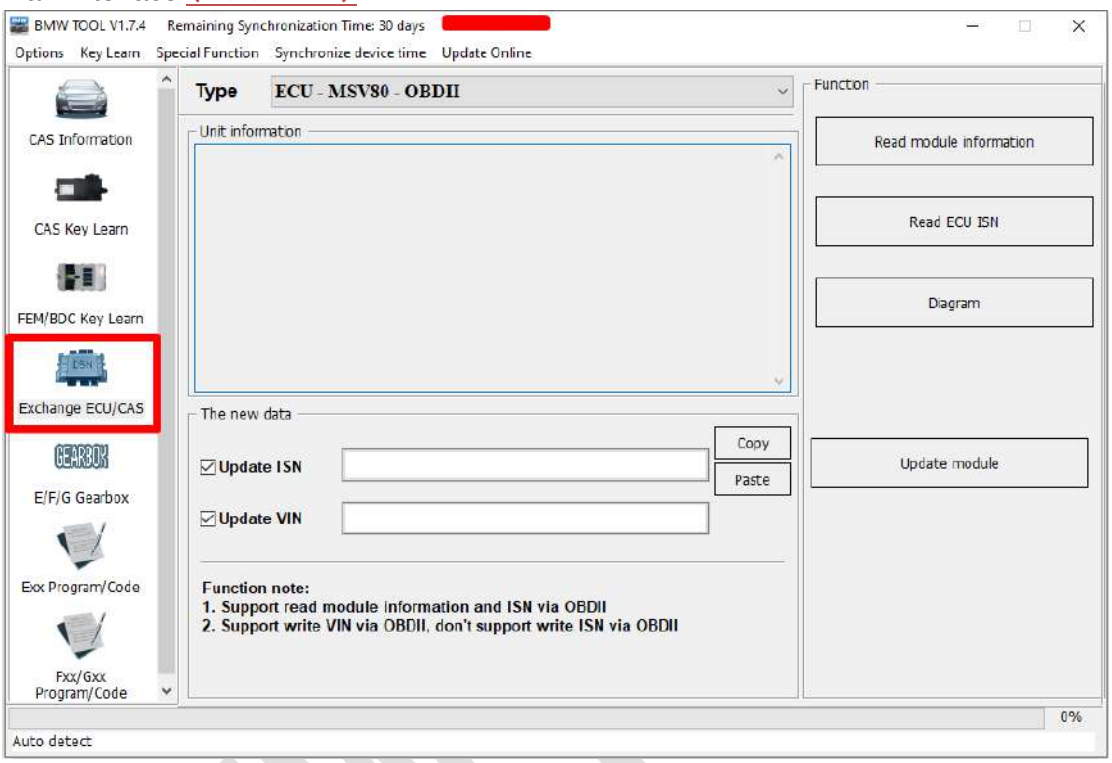


(PICTURE 6-3)

- **Reset FEM to start:** Reset the starter lock of the module
- **Read ISN from original key:** Read ISN from the original key
- **Reset KM:** Reset KM in the module, generally used to restore the original KM after replacing the module
- **Enable Key:** First insert a key that can start the car, turn on the ignition switch and light up the dashboard, then read the disabled key position and select one that you want to enable, click on enable key. After enabled, the key at this position will work again. **Attention: Only enable key does not require get key info**
- **Disable Key:** First insert a key that can start the car and light up the dashboard, then select a work key position that you want to disable and click on disable key. The disabled key cannot be the same as the key inserted into the ignition switch. The key at this position will not be able to start the car after disabled, and add key at this position will not start the car. **Attention: Only disable key does not require get key info**
- **Emergency switch ON:** When all key lost, turn on the ignition switch to activate communication
- **Erase Key:** Delete the key of the key position you choose

7. Exchange ECU/CAS

Main interface (PICTURE 7-1)



(PICTURE 7-1)

Function Introduction:

- **Support use OBD to read ISN from ECU/CAS:** MSV80, MSV801, MSD80, MSD81, MSD802, MSD812, MSD851, MED17xx, MVD17xx, MEVD17xx, MV1722, MED172, MEV17N46, MEV17N45, MEVD172Y, MEVD172, MEVD1725, X63TU, CAS3/CAS3+ etc.
- **Support load EEPROM/FLASH to read ISN:** MSV80, MSV801, MSD80, MSD81, MSD802, MSD812, MSD851, MED17xx, MVD17xx, MEVD17xx, MV1722, MED172, MEV17N46, MEV17N45, MEVD172Y, MEVD172, MEVD1725, X63TU, CAS3/CAS3+, CAS4/CAS4+ etc.
- **Update module:** Read the original module information at first, input in the new ISN and VIN, write data into the module via OBD, or save it in a new EEPROM

Special Notes:

Some CAS3+ types of cars such as the US X5 BMW, only support add key, not support all key lost. This type CAS use ECU synchronize code and gearbox synchronize code to work, don't use ISN to participate in immo certification

When all key lost, you need to replace the original EEPROM, and generate new EEPROM dump based on the loaded EEPROM dump, then write back the new EEOPROM to CAS->Prepare new key based on the new CAS data->Sync CAS and ELV->Sync CAS and DME

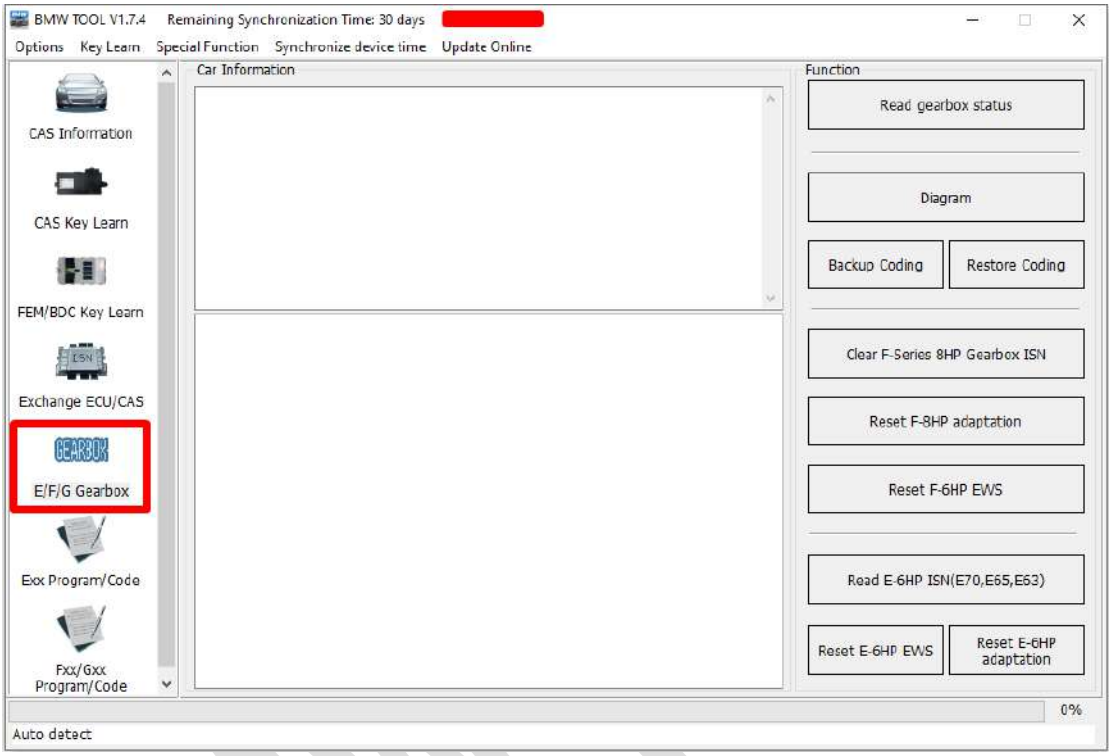
Make New EEPROM Steps:

- Input the two-byte gearbox sync code into the ISN box (usually it is the first two bytes of the gearbox ISN, if the gearbox does not have IMMO input 0000), and input original car VIN
- Load EPPROM file, choose Y(yes) save it
- Load file you save in previous to get ISN
- Select save new file, this is new EEPROM

Note: The gearbox ISN can be read through function "Read E series ISN (E70 E65 E63)"in Chapter 8. The ISN are 4 bytes, and the first 2 bytes are gearbox ISN

8. E/F/G Gearbox

Main interface (PICTURE 8-1)



(PICTURE 8-1)

Function Introduction:

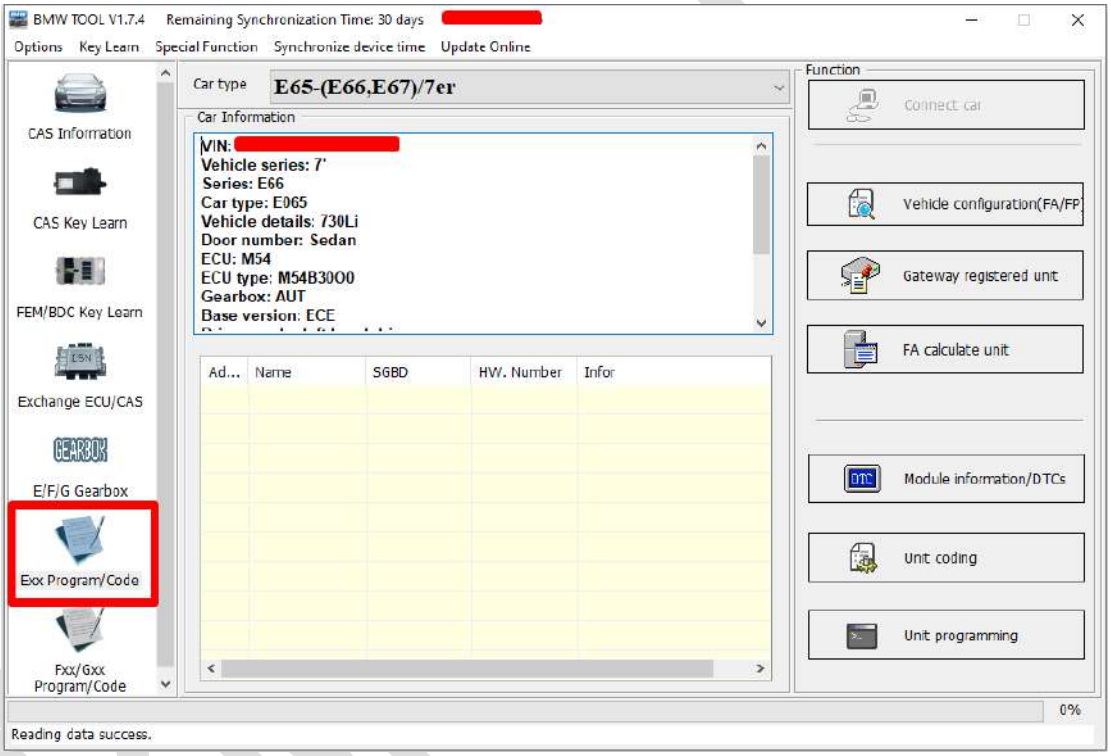
- **Read gearbox status:** Support to read 8HP gearbox status, whether it is a new, etc
- **Diagram:** OBD and gearbox connection diagram
- **Backup coding:** Back up the code in the gearbox
- **Restore coding:** Restore the code in the gearbox
- **Clear the F-Series 8HP Gearbox ISN:** Clear the internal information that have used which have been matched and make them to new part
- **Reset F-8HP adaptation:** Restore the adaptation information in the gearbox to the initial status
- **Reset F-6HP EWS:** Restore the immo information in the gearbox to the initial status
- **Read E-6HP ISN (E70, E65 and E63):** Read the ISN information from the gearbox, it is possible to get several ISN values, but only one is correct. **The ISN you get is 4 bytes, the first 2 bytes are the gearbox ISN, and the last 2 bytes are the DME ISN. The gearbox byte is encrypted, and the DME byte is not encrypted. If the ISN read from DME is same as last 2 bytes ISN read from gearbox, it is the correct ISN**
- **Reset E-6HP EWS:** Restore the IMMO data in the gearbox to the initial status
- **Reset E-6HP adaptation:** Restore the adaptation information in the gearbox to the initial state

9. Exx Program/Code

Main interface (PICTURE 9-1)

- Connect car:

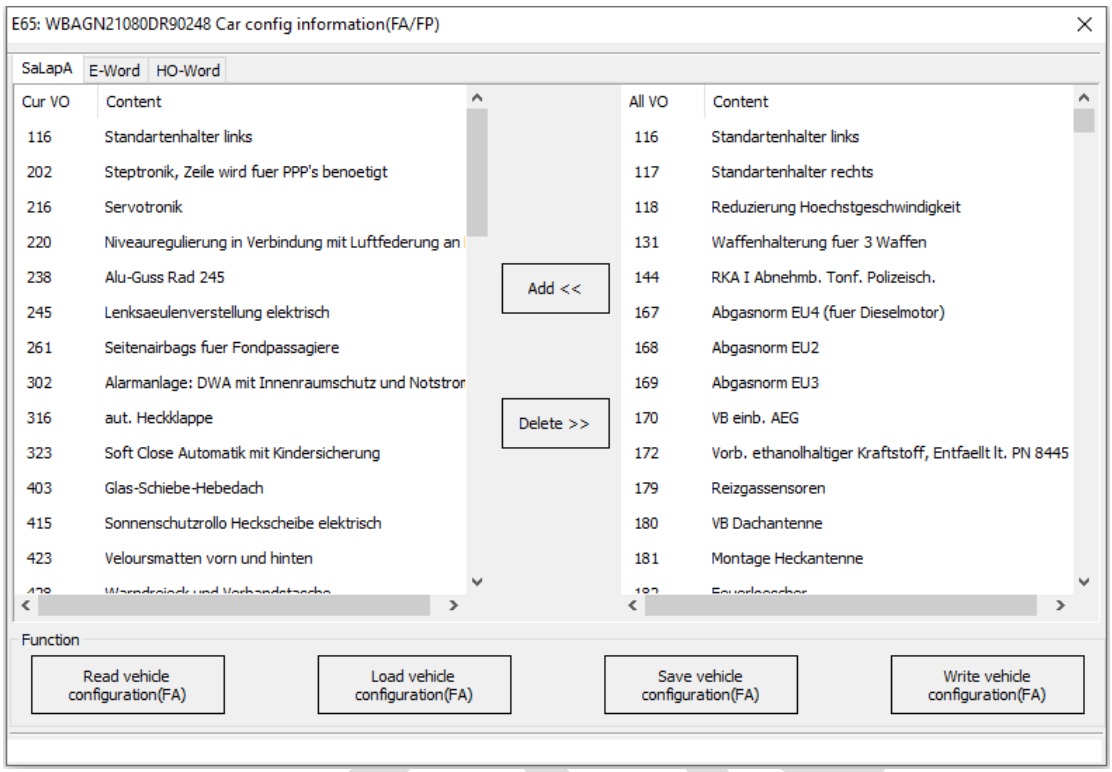
  Support automatic detect car type and read the information in the module, support series: E36, E38, E39, E46, E52, E53, E60, E63, E64, E65, E66, E67, E70, E71, E72, E83, E85, E86, E89, E90, E91, E92, E93, K1X, K24, KH2, R50, R52, R53, R55, R56, R57, RR1 etc.



(PICTURE 9-1)

- Vehicle configuration (FA/FP)

  Support read the vehicle configuration information in module, and change the vehicle configuration information for replacement (PICTURE 9-2). First read the configuration information of the vehicle, select the information at the right that needs to be added, and click "Add" to write the vehicle information. Please save car configuration information before you write it, when needs to be restored you can load and write it

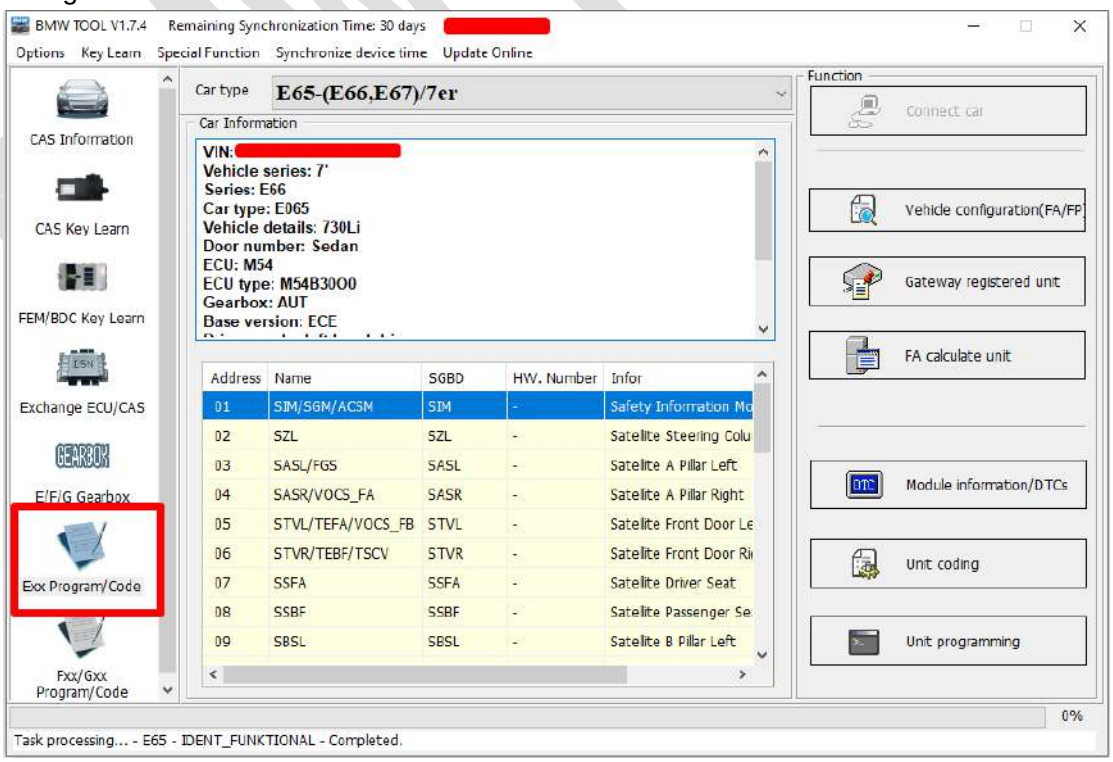


(PICTURE 9-2)

◆ Gateway registered unit.(PICTURE 9-3)

Read the registered control unit information in the gateway.

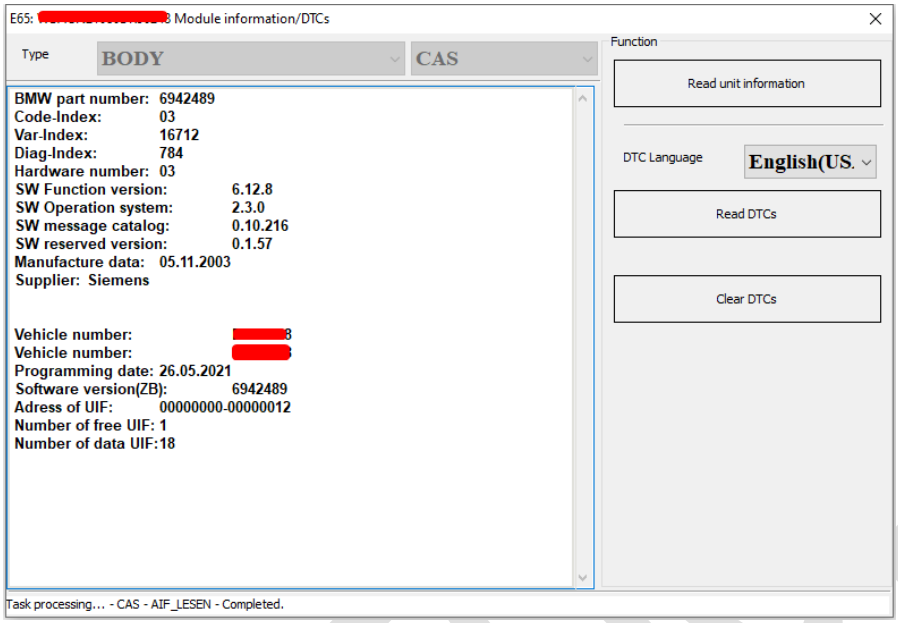
FA calculate unit: calculate all the control units of the current vehicle according to the configuration information



(PICTURE 9-3)

◆ Module information/DTCs

Read the specific information of the selected module, then read and clear the fault code information (PICTURE 9-4)

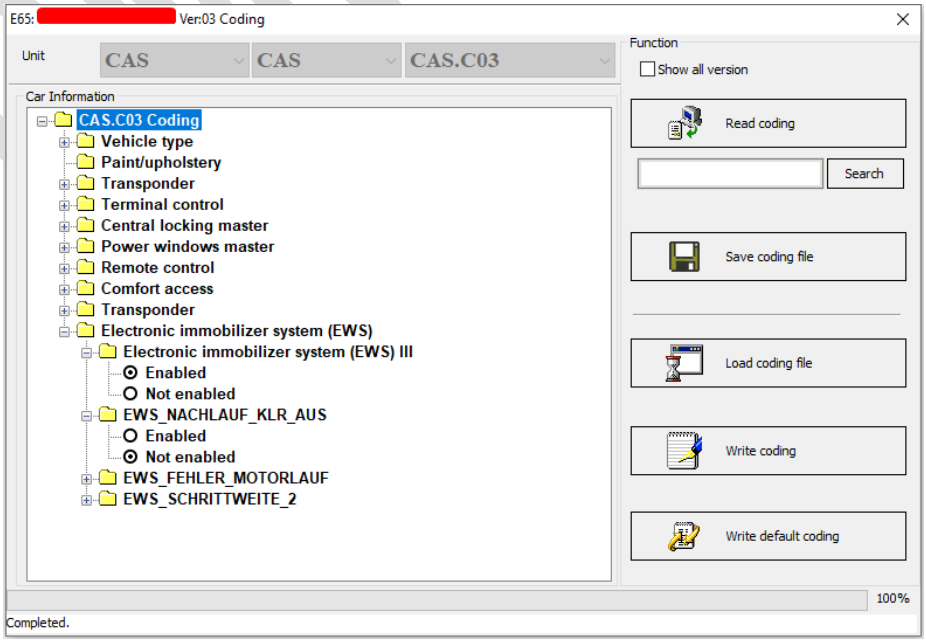


(PICTURE 9-4)

◆ Unit coding

Read the code information of the selected module, save code, load code, write code, and calculate the default code according to the vehicle configuration information (PICTURE 9-5)

After reading the code, you can save the backup code first, load it when you need to restore it. Select the vehicle information that needs to be modified, for example modifying the IMMO system. If it default Enabled choose not enabled, just need write coding. If the code is lost, click "write default coding"



(PICTURE 9-5)

◆ Unit programming

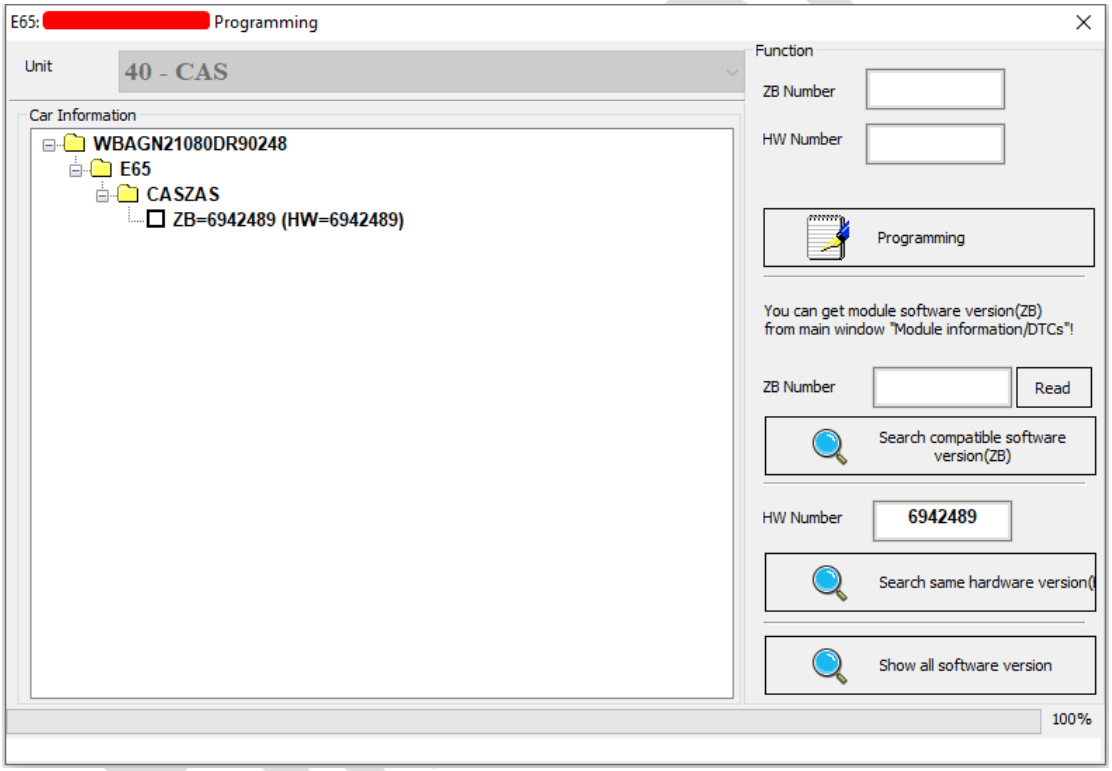
According to the hardware version and ZB version of the current module, search for the supported programming files and perform the programming function (PICTURE 9-6). Select the control unit that needs to be programmed, it is recommended to use "Search Compatible Software Version (ZB)", select the module that needs to be programmed, and click "Programming"

Programming: write data to the module

Search the compatible software version (ZB): Click "Read" to get the software version number, finds the firmware version of the software

Search the same hardware version (HW): search the same firmware version by hardware

Show all firmware version: Show all firmware version



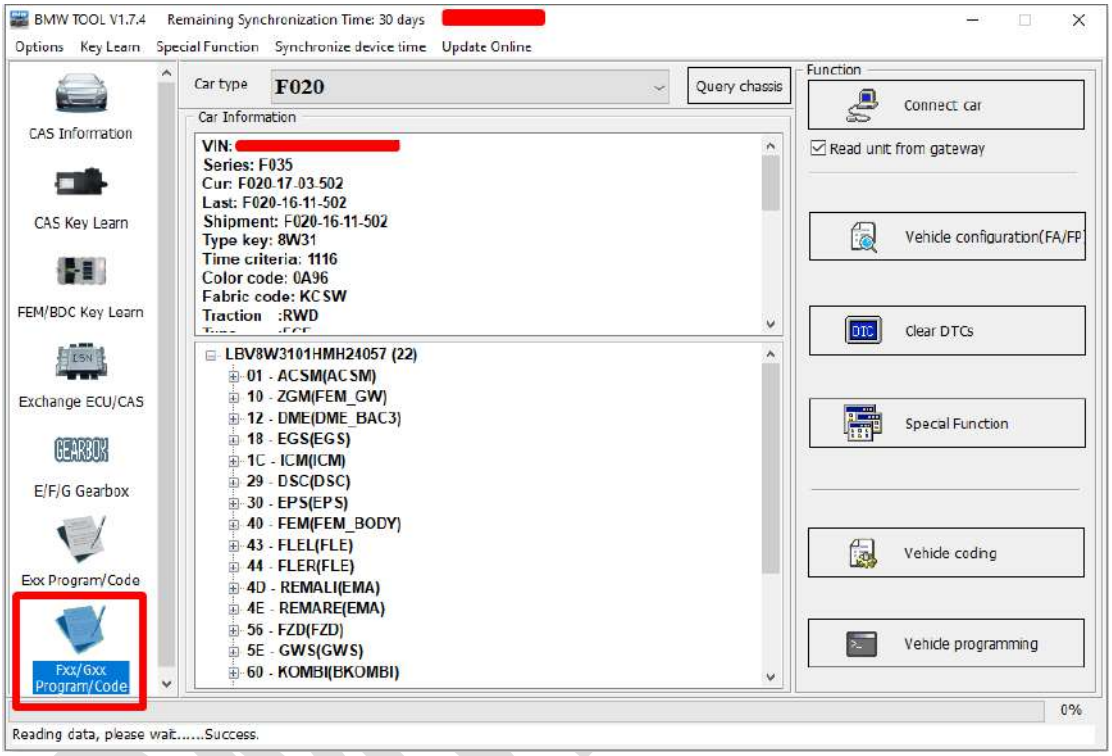
(PICTURE 9-6)

10. Fxx/Gxx Program/Code

Main interface（PICTURE10-1）

◆ Connect car

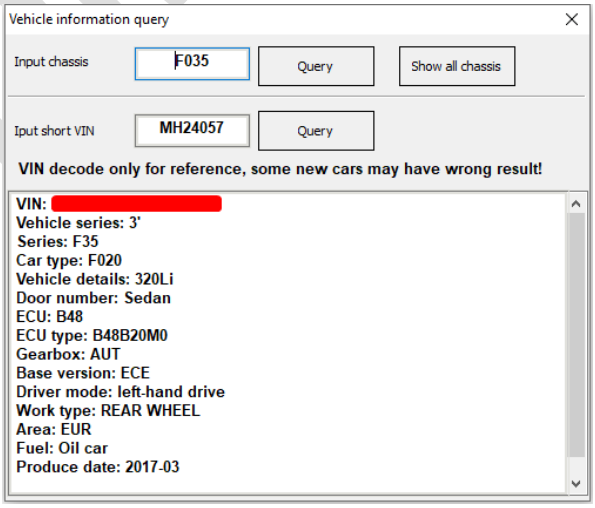
Support detect car type automatic, and read information in module, check Read unit from gateway could read all control unit from gateway, otherwise only read module that connected.



（PICTURE10-1）

◆ Query chassis

The car type support query interface（PICTURE10-2）

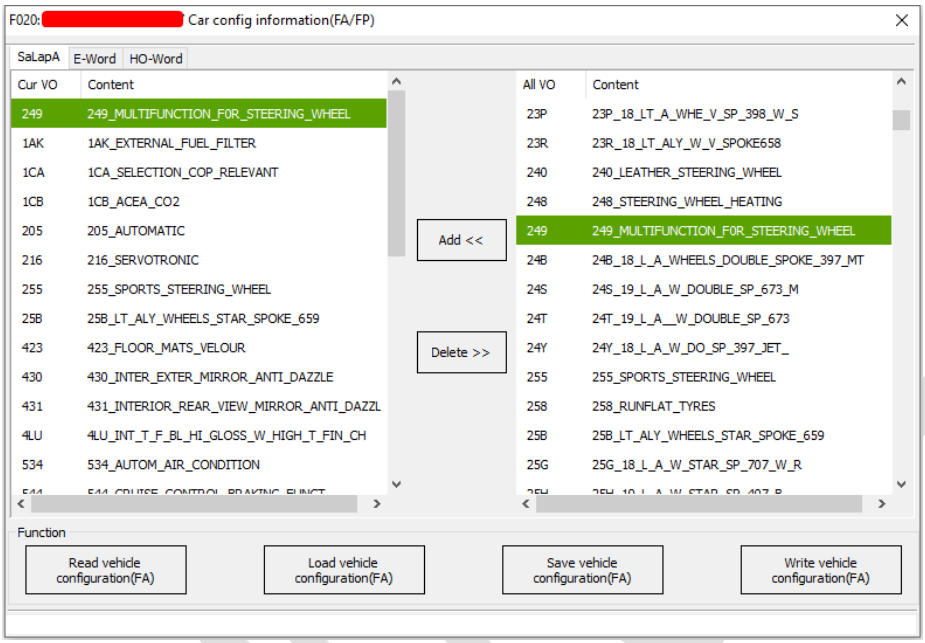


（PICTURE10-2）

◆ Vehicle configuration(FA/FP)（PICTURE10-3）

Support read car configure information in module, and modify car configure information for change car part

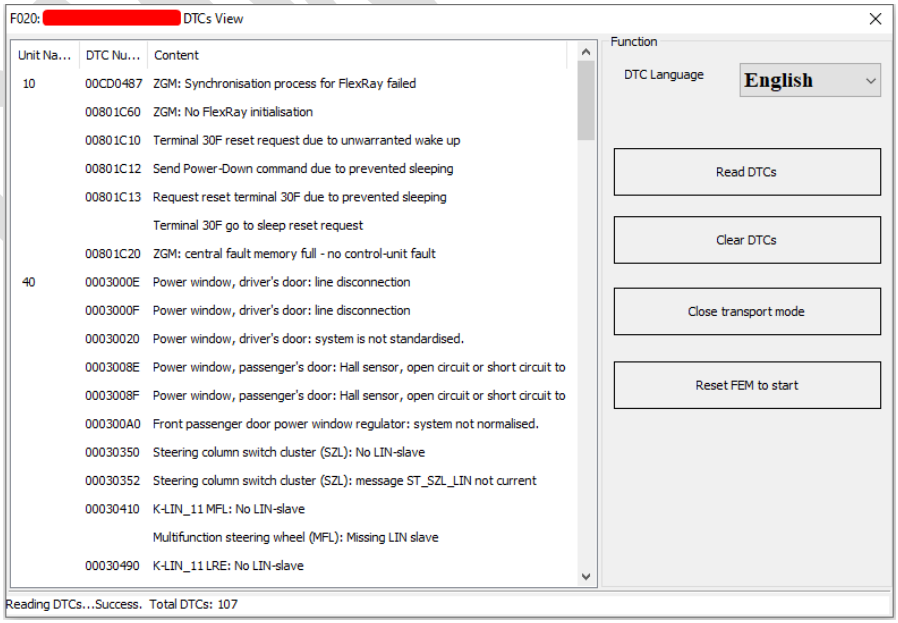
Read car configure information, select information you want add in right, press ‘add’, write car information. Please save car configuration information before you write it, when needs to be restored you can load and write it



（PICTURE10-3）

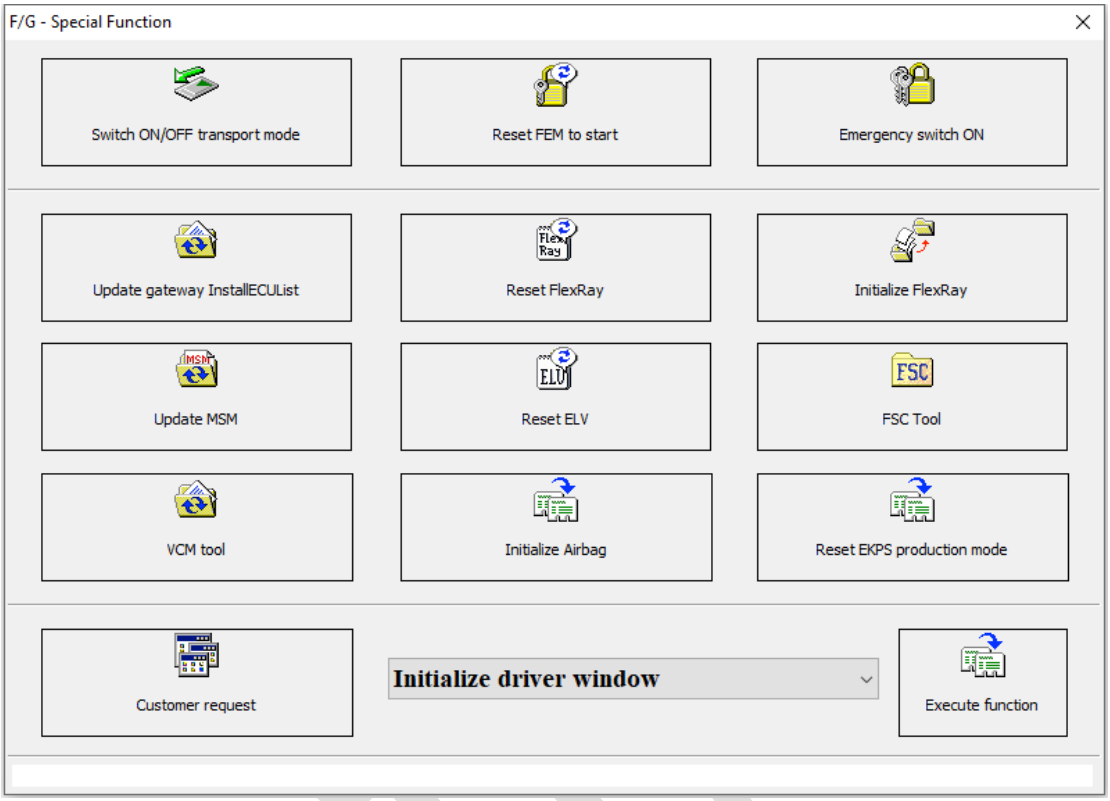
◆ Clear DTCs（PICTURE10-4）

Support read/clear DTCs for repair car.



（PICTURE10-4）

◆ Special function（PICTURE10-5）



（PICTURE10-5）

Function Introduction:

1. Switch ON/OFF transport mode: if in transport mode car not start, you can use this function

2. Reset FEM to start: change module, if after change configuration data can't start car because motor, you can use this function

3. Emergency switch ON: When all key lost or the ELV is off, the FEM/BDC/CAS4 system can be programmed after turning on the ignition switch ON

4. Update gateway InstallECUlist: Update gateway InstallECUlist

5. Reset FlexRay: Reset FlexRay will reset the internal FlexRay of the gateway. Attention: Before this operation, you need to write the gateway control unit list first and reset FlexRay then reinitialize FlexRay

6. Initialize FlexRay: Initializing FlexRay will reset the internal FlexRay of the gateway. Before performing this function, make sure that all modules have been installed on car and communicate normally! After initializing FlexRay, if error code of the vehicle appears, power off the vehicle for ten minutes it will work

7. Update MSM: MSM contains the SVT file information of all modules. Generally, this operation does not need to be performed. To perform this operation, you need to load the SVT file containing all the control unit information. The SVT file will be saved on the computer by default when the vehicle information is read. The default save path: My Computer>Documents>BMWTOOL>CARINFO_BACK>The VIN named folder

8. Reset ELV: This function is used to replace the FEM/BDC, and the ignition switch can be turned on after resetting the ELV

9. FSC Tool: Update the navigation file information （PICTURE10-6）

Calculate activate code: NBT host uses DE type FSC file to calculate activate code, CIC host uses 1B type FSC file to calculate activate code

Read: read "VIN", "Base Variant"

Read FSC information: read license information

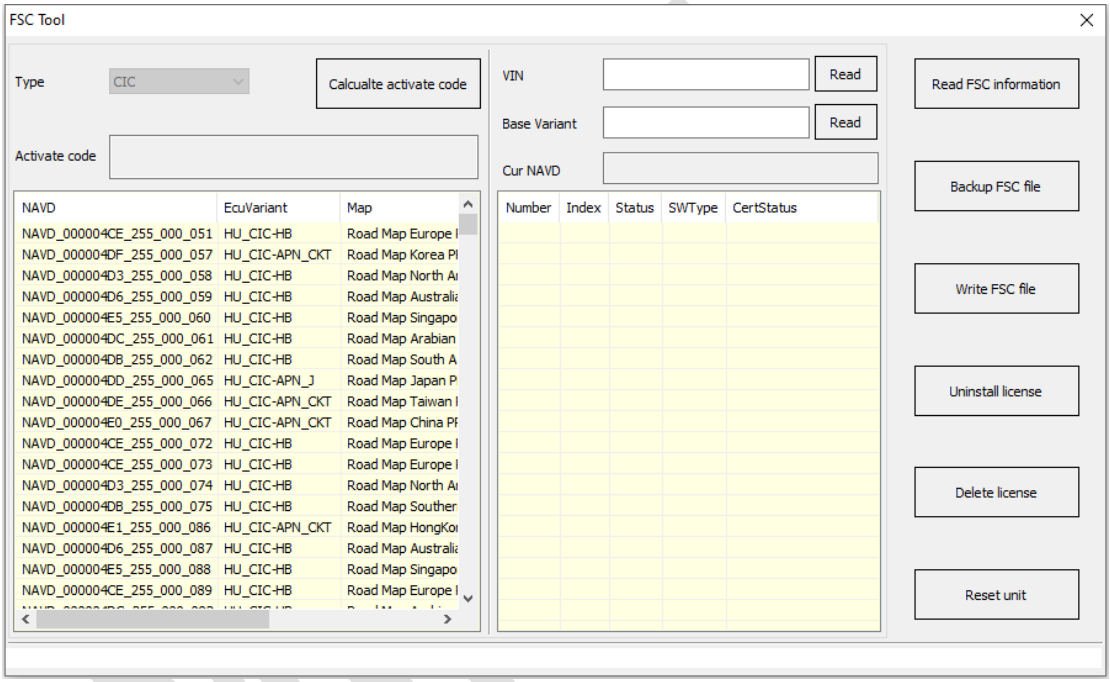
Backup FSC file: backup license information

Write FSC file: write license information

Uninstall license: Uninstall unnecessary license

Delete license: delete unnecessary license

Restart unit: Restart the navigation control unit module

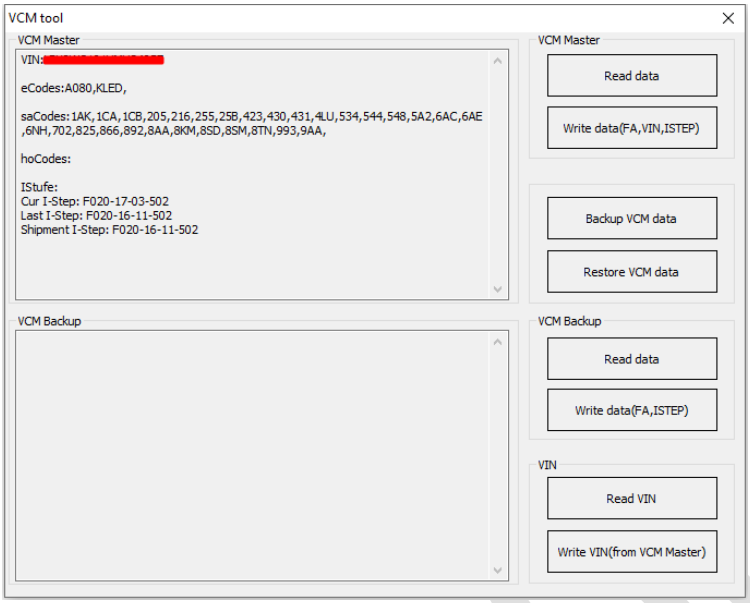


（PICTURE10-6）

10. VCM Tool: Mainly for read, write and backup VCM data （PICTURE10-7）

Main function introduction:

Read VCM data from the gateway, including the FA configuration information of the vehicle. For example: when a module containing FA information needs to be programmed separately on the bench, and the configuration information of the bench is different with the module, you can read the backup VCM information from other module of the original vehicle that has not lost information, and then write the information into the module. Other modules, such as instrumentation, FEM, foot space module. When the programming coding information of some modules of the vehicle is lost, you can get all the information from here, and loading this information can restore the programming and coding information of the lost module

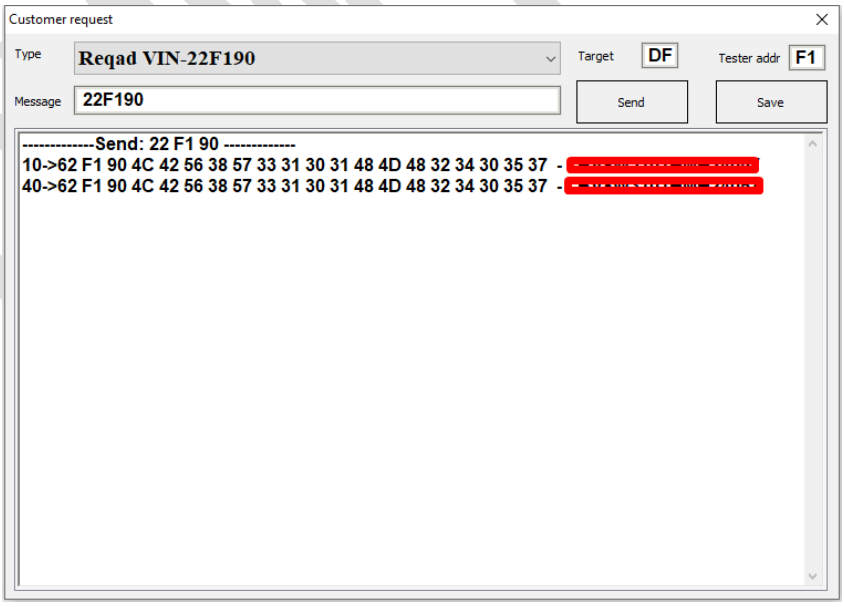


（PICTURE10-7）

11. Initialize Airbag: It needs to use this function after repairing or replacing the Airbag, otherwise the airbag will be abnormal

12. Reset EKPS production mode: Generally, after replacing the EKSP control unit need Reset EKPS Produce mode

13. Customer request: Send the code to the car, check the model information, and judge the problem through the vehicle's feedback. For example: send the message 22F190, you can get the VIN（PICTURE10-8）



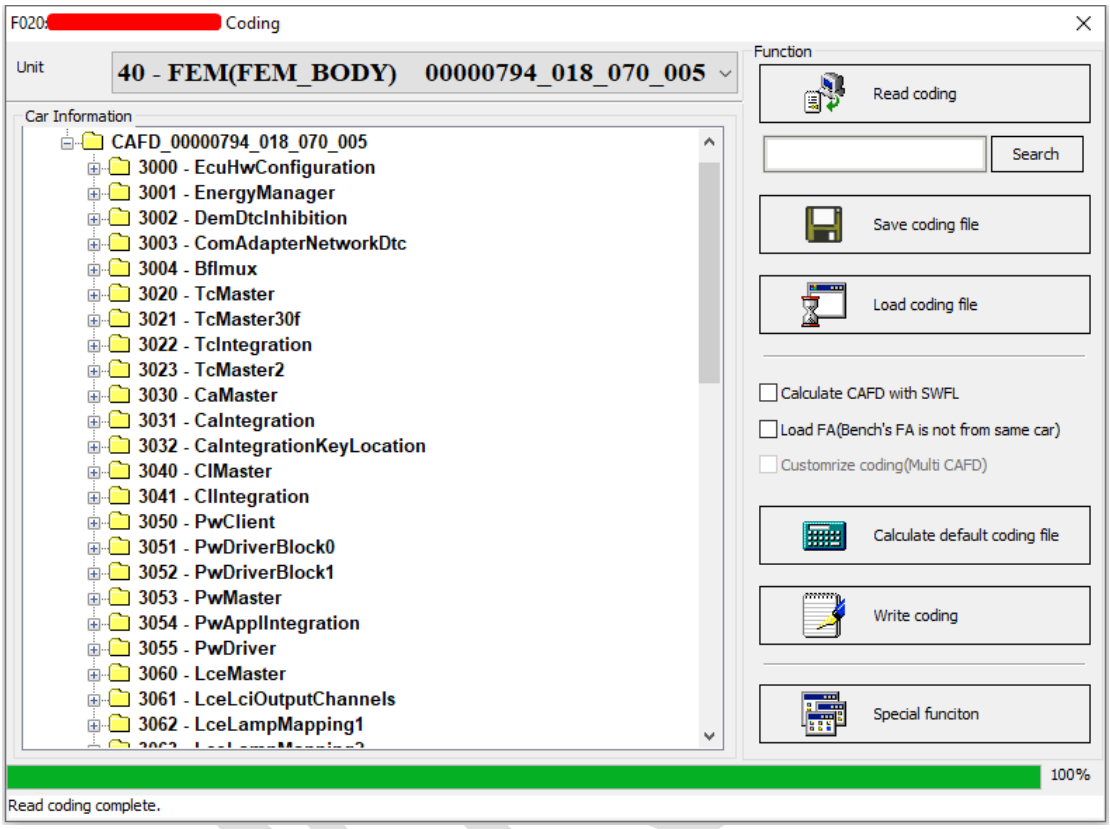
（PICTURE10-8）

14. Execute function: Select the corresponding position to perform when the window is abnormal, the window or sunroof will be opened or closed during the initialization process

◆ **Vehicle coding**

It supports reading the code information in the module, users can change the

corresponding value according to what they need to realize part of the configure function （PICTURE10-9）



（PICTURE10-9）

Function Introduction:

1. Read coding: read the code information in the module

2. Search: there are many different names in the coded information, input the resolved name to locate the information position

3. Save coding file: save the read coding information to a file

4. Load coding file: Load the code file that has been saved

5. Calculate CAFD with SWFL: All CAFD is calculated with SWFL. If CAFD does not have the correct ID or the ID does not match the vehicle needs to be replaced, this option will search for the code with the series number. Then calculate the correct code through FA

6. Load FA (Bench's FA is not from same car): When a module containing FA information is separately programmed on the bench, the configuration information of the bench and the module are different, you can be get the Backed up FA information from another module of the original vehicle which not missing FA information, and then write the information into the module. Other modules, such as instrumentation, FEM, foot space module. FA can be read from "Vehicle configuration" or "VCM Tool", the default save path of FA:

My Computer>Documents>BMWTOOL>CARINFO_BACK>Named folder of VIN

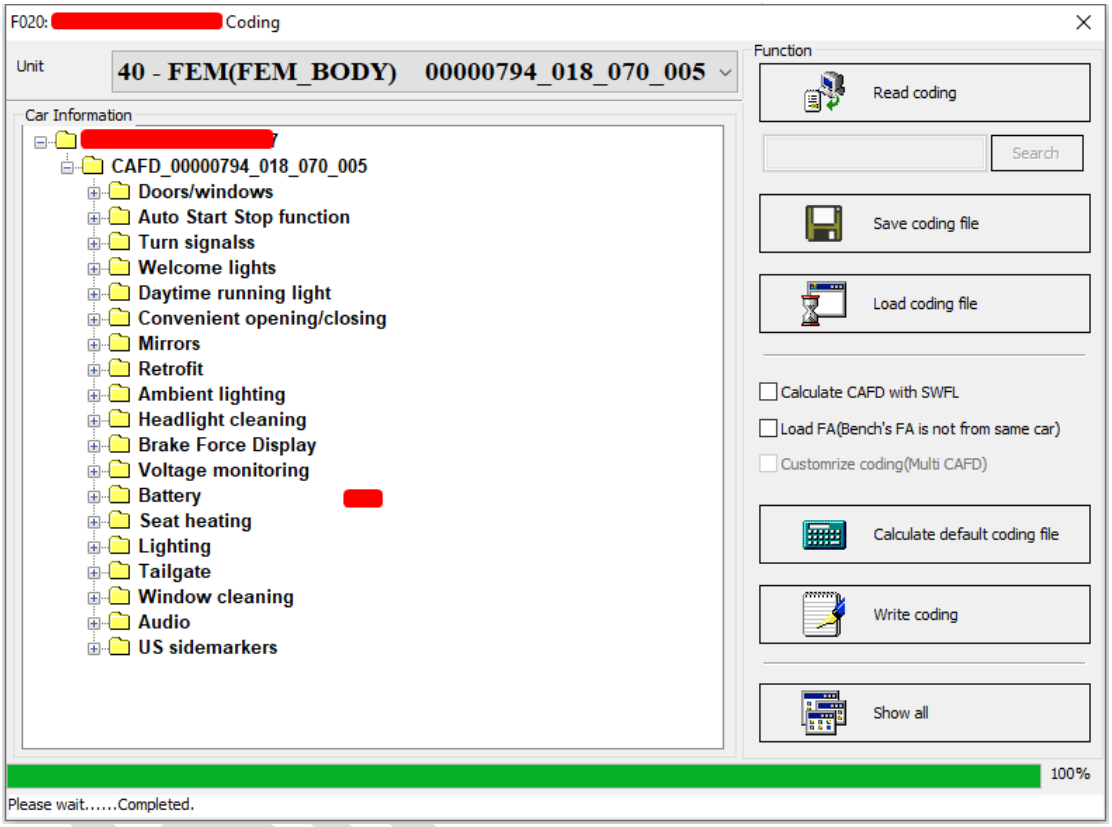
7. Customize coding (multi CAFD): This option will be light when there are multiple CAFDs in the module. All CAFD information will be written into the module by default,

when this option is checked, you can choose to write Information that you want write

8. Calculate default coding file: If the default code of the module had lost, the default code can be calculated according to the vehicle configuration information

9. Write coding: Write the code into the module, you need to input the correct VIN

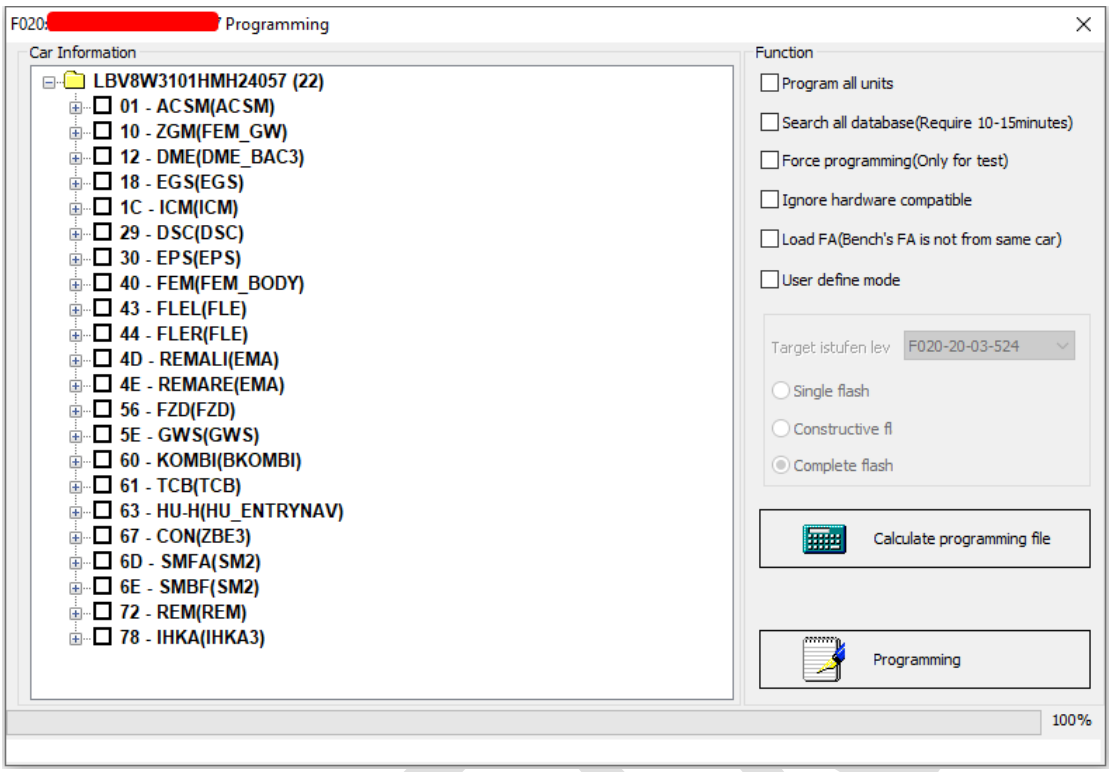
10. Special function: Some common functions have been sorted out, and frequently used change options are displayed. and the modification can be completed without configuring other hardware（PICTURE10-10）. First "Read coding", then click special function to show hidden information. Select the vehicle information that needs to be modified, for example, modify the "welcome lights", select "inactive", and just write coding



（PICTURE10-10）

◆ **Vehicle programming**

According to the vehicle configuration information, calculate the correct module FLASH information and write into the module（PICTURE10-11）



（PICTURE10-11）

Function Introduction:

1. Program all units: Calculate the programming information of vehicle control unit from the module configuration, can calculate vehicle control unit according to FA, there will display all control unit of vehicle

2. Search all database (Require 10-15minutes): Search all database, do not compare module integrated level information, cost littler longer time

3. Force programming (Only for test): force programming only calculate SWFL, do not calculate CAFD, it need separate coding to complete the programming

4. Ignore hardware compatible: do not consider hardware compatible, calculate the programming information that can be written

5. Load FA (Bench's FA is not from same car): When a module containing FA information is separately programmed on the bench, the configuration information of the bench and the module are different, you can get the Backed up FA information from another module of the original vehicle which not missing FA information, and then write the information into the module. Other modules, such as instrumentation, FEM, foot space module. FA can be read from "Vehicle configuration" or "VCM Tool", the default save path of FA:

My Computer>Documents>BMWTOOL>CARINFO_BACK>Named folder of VIN

6. User define mode: It is recommended to perform "search all database(Require 10-15minutes)" first, if search all database(Require 10-15minutes) can't search integrated level information, perform upgrade、downgrade and same level operations , and select the correct module integrated level. The integrated level shows the module series number and year information

7. Calculate programming file: Calculate the programming file of the module according to the module information, it takes about 10 seconds to several minutes

8. Programming: select the correct programming information to program the module

11. Special function

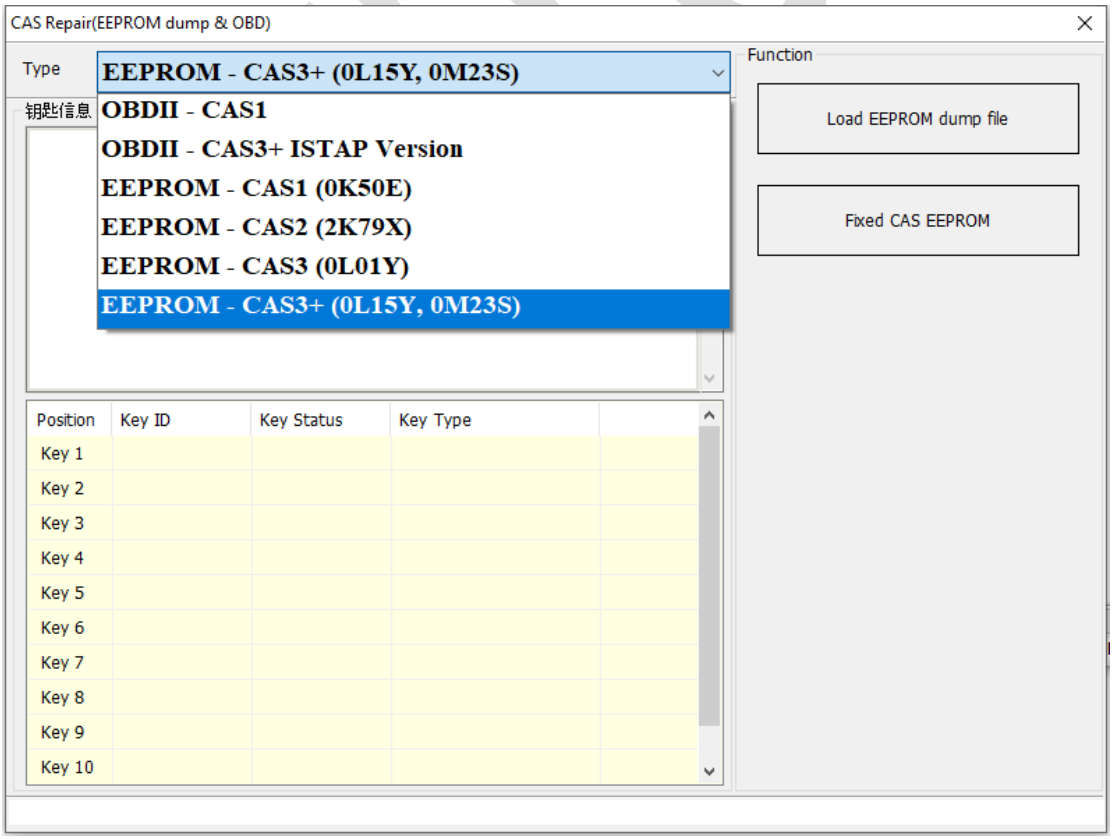
11.1. CAS Repair (EEPROM OBDII)

1. OBDII -CAS1 Repair

For suddenly condition cause CAS1 enter service mode while read CAS1 EEPROM via OBDII or CAS PLUG, you can select this option to repair

2. OBDII-CAS3+ ISTAP Repair

- For suddenly condition cause CAS enter service mode while update ISTAP*, select this type to repair (PICTURE 11.1)
- You need know CAS ID before continue. You can input the CAS ID or load EEPROM for read CAS ID
- Use the known CAS ID to repair: if you have record CAS ID before update CAS flash can use this way
- Use the CAS EEPROM to repair: If can't read CAS ID, you can use this way to repair, you need have the CAS EEPROM dump file



(PICTURE 11.1)

3. EEPROM Repair (CAS1, CAS2, CAS3, CAS3+)

- Support loading EEPROM dump file in service model, Then automatically repair the service mode status and save the new EEPROM dump file

  Step:

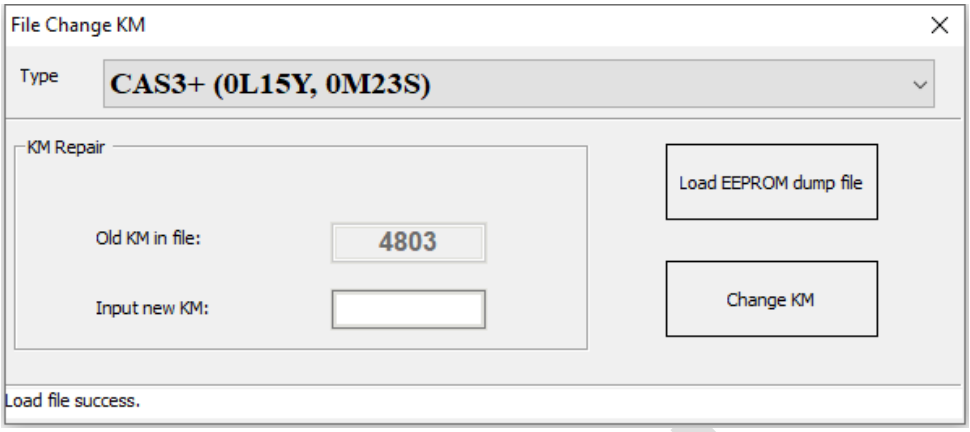
  Load the EEPROM dump file that needs to be repaired, and it prompts that you need to load the FLASH file. If you need to repair, you will be prompted to save the new EEPROM and FLASH files. After repair, it is recommended to load the new file to see whether it needs to be repaired. If it is still prompted file need to be repaired, it means there is a problem with the file you read, please read and repair it again

11.2. Unlock Key

- Unlock Key support unlock key that prepared for CAS1/CAS2/CAS3/CAS3+/CAS3+ encrypt version. Support load key info to unlock key
- Support load CAS1, CAS2, CAS3, CAS3+, CAS3+ encrypt version EEPROM to unlock key
- **Attention: After CAS4 key made successfully, don't support unlock**
- **Attention：About unlock keyless key**
  - File Make Key: Keyless key made by **add key with working key** don't support unlock
  - OBD Key Learn->Prepare dealer key with programmer: Keyless key made by add key with working key don't support unlock

11.3. File Change KM

- **Support type**：EWS1/EWS2 EWS3, EWS4, CAS1, CAS2, CAS3, CAS3+, CAS4 (0L15Y), CAS4 (5M48H). CAS3+ encrypt version select CAS3+ type
- **Change KM for EWS/CAS**: Load EEPROM dump, input new KM value, press button **Change KM** and save new EEPROM dump then write back it to EEPROM(PICTURE 11.2)



(PICTURE 11.2)

◆ **CAS1/CAS2/CAS3/CAS3+ change KM steps**:

1) Record the KM information displayed in instrument, take instrument away from car avoid synchronize KM with CAS automatically
2) Set CAS KM to 0 (you can do this via OBD or EEPROM dump, select correct CAS version)
3) Read instrument EEPROM dump by programmer then save EEPROM dump you read, usually it use M35080 chip
4) Select File Change KM ->M35080 (Instrument) and load EEPROM dump saved in step 3
   Attention: this type instrument have 2 algorithm for KM, Algorithm 1 and Algorithm 2, you need try different algorithm to check the **Old KM in file** value, which one is nearby the KM (write in step 1)), which is the right type. Change new KM with the right type
5) Input new KM
6) Press button “Change KM” and save new EEPROM dump
7) Write new EEPROM dump to M35080 chip
8) Put your instrument in car
9) Finished

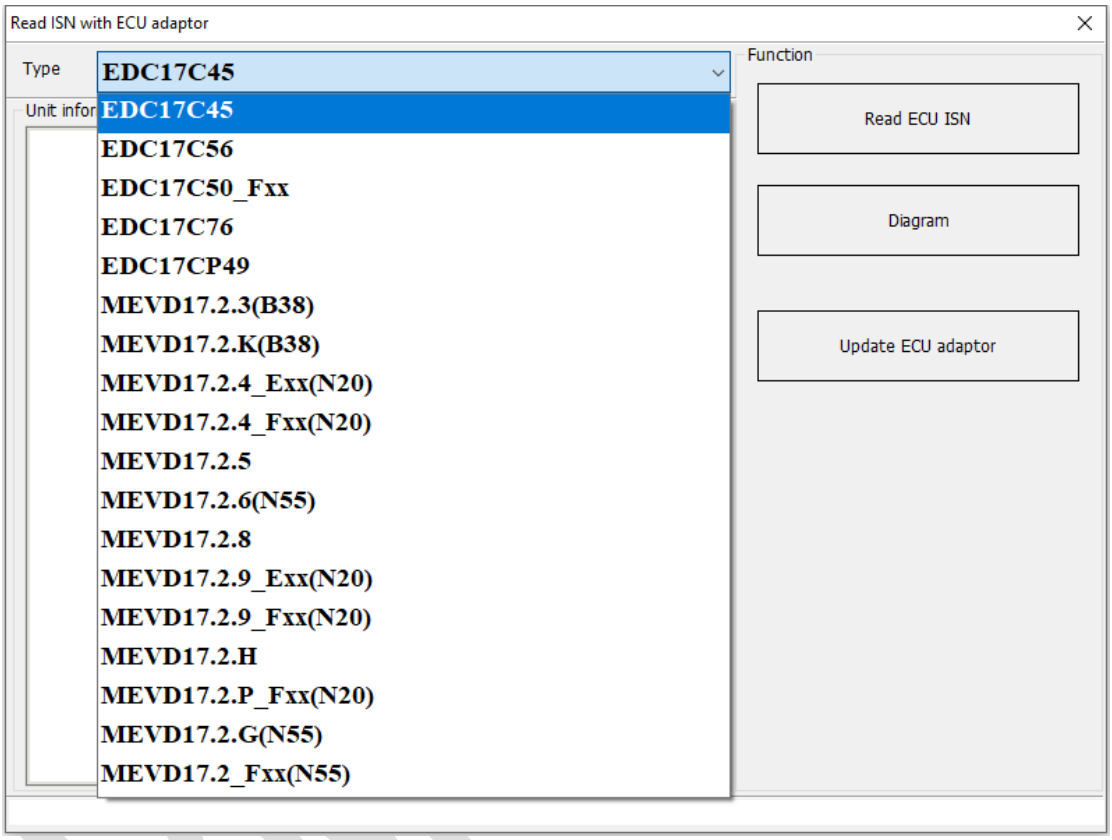
◆ **F-Series(CAS4 system) change KM steps**:

1) Record the KM information displayed in instrument, take instrument away from car avoid synchronize KM with CAS automatically
2) Set CAS KM to 0km (Change KM with File Change KM, select type accord chip mask, support 1L15Ymask and 5M48H mask)
3) Read instrument EEPROM dump by programmer
4) Select File Change KM ->F-Series Instrument and load EEPROM dump which saved in step 3)
5) Input new KM
6) Press button “Change KM” and save new EEPROM dump
7) Write new EEPROM dump to instrument
8) Put your instrument in car
9) Finished

11.4. Read ISN with ECU Adapter

- **The BMW Pro tools can directly read the EUC ISN, and support following types in**(PICTURE11.3)

  Select the correct type, connect as connection diagram, and click "Read ISN" to read it. If you can't read it, you can click "Upgrade ECU Adapter". If the adapter can be upgraded means it is normal, check whether the connection and option are correct, and try to read repeatedly.



(PICTURE11.3)

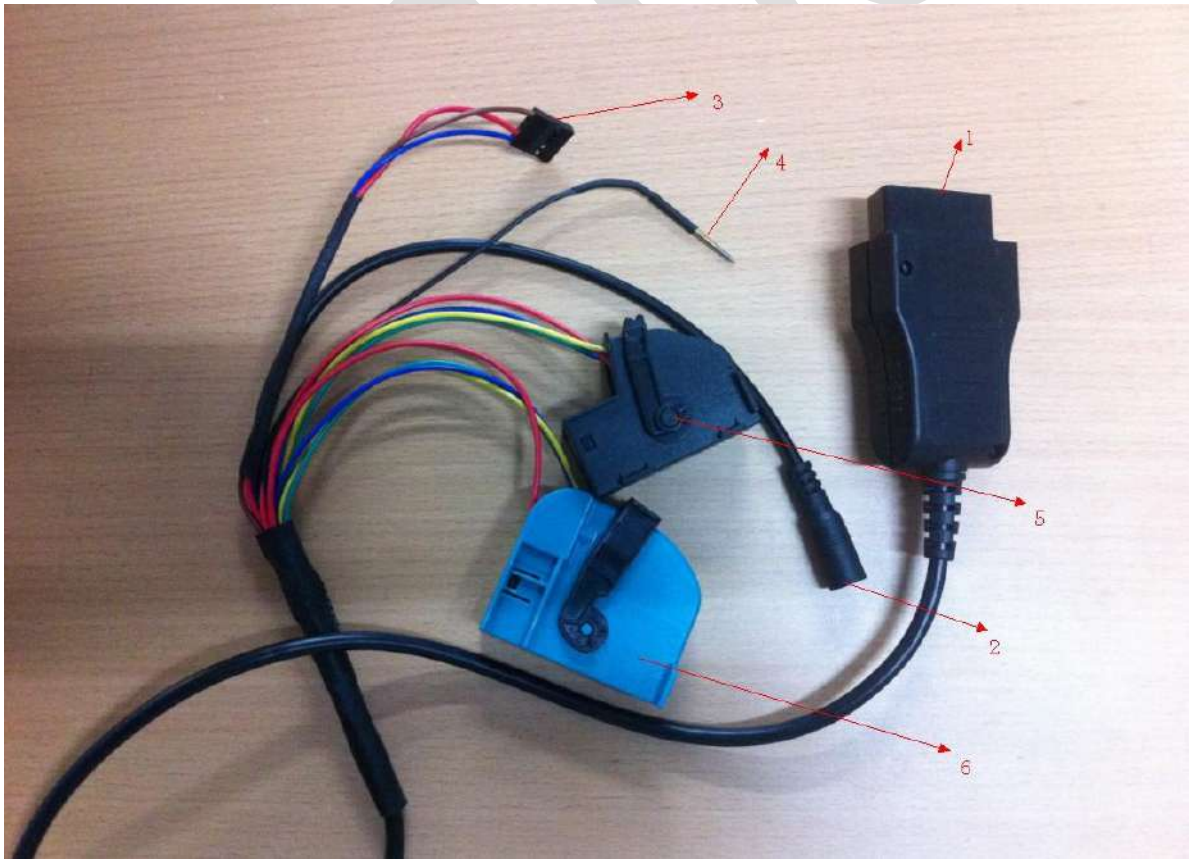
12. CAS PLUG

12.1. CAS PLUG Overview

CAS PLUS (PICTURE 12.1) is not a standard device, need buy for extra**.** You can connect your dealer for help. Also you can connect line manually to realize CAS PLUG, see chapter 12.3

CAS PLUG introduction:

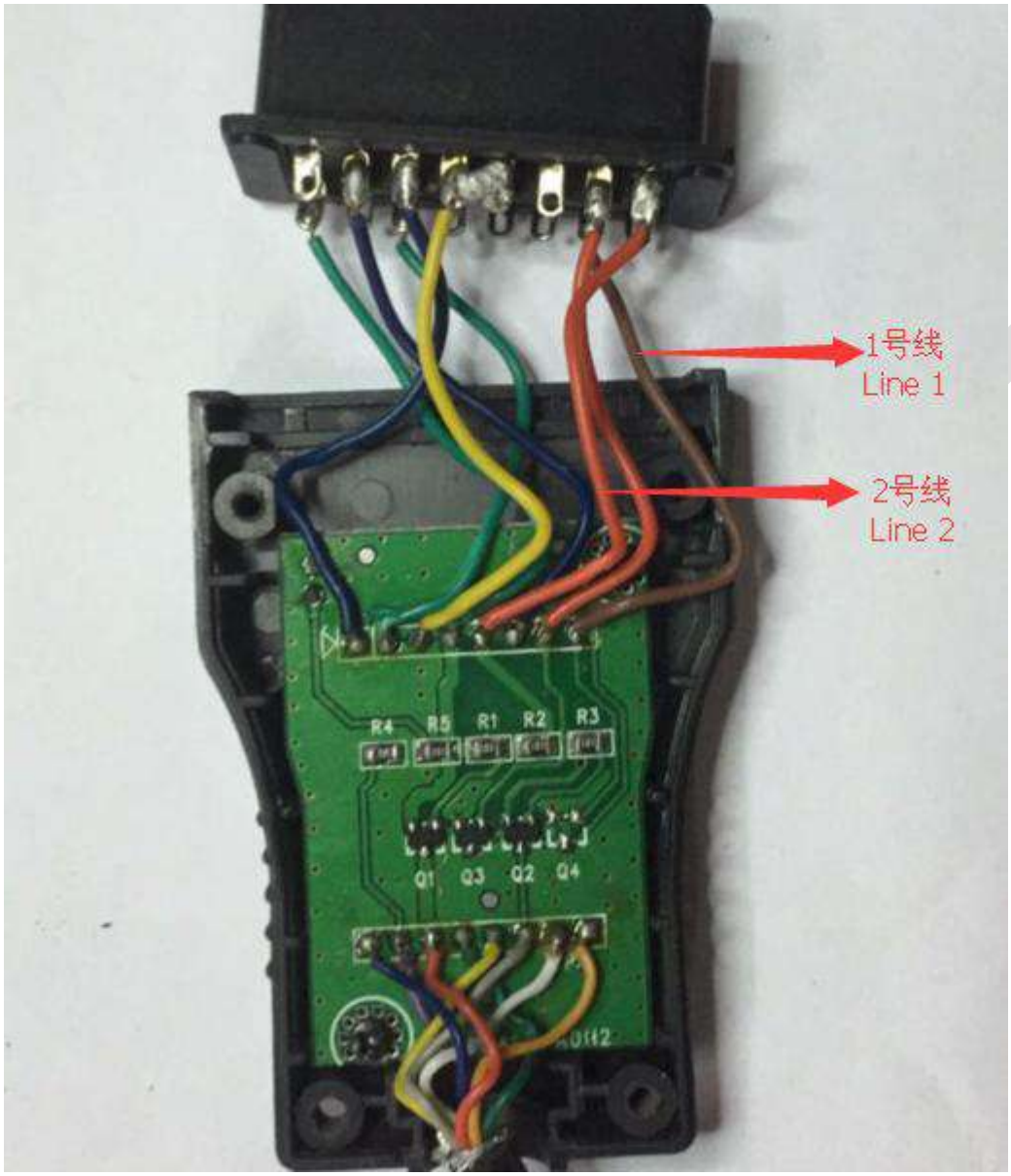
- (PICTURE 12.1) line 1: connect to VVDI2 OBDII
- (PICTURE 12.1) line 2: supply 12V power
- (PICTURE 12.1) line 3: EWS line3
- (PICTURE 12.1) line 4: EWS line 4
- (PICTURE 12.1) line 5: CAS1/CAS2 connector
- (PICTURE 12.1) line 6: CAS3/CAS3+ connector



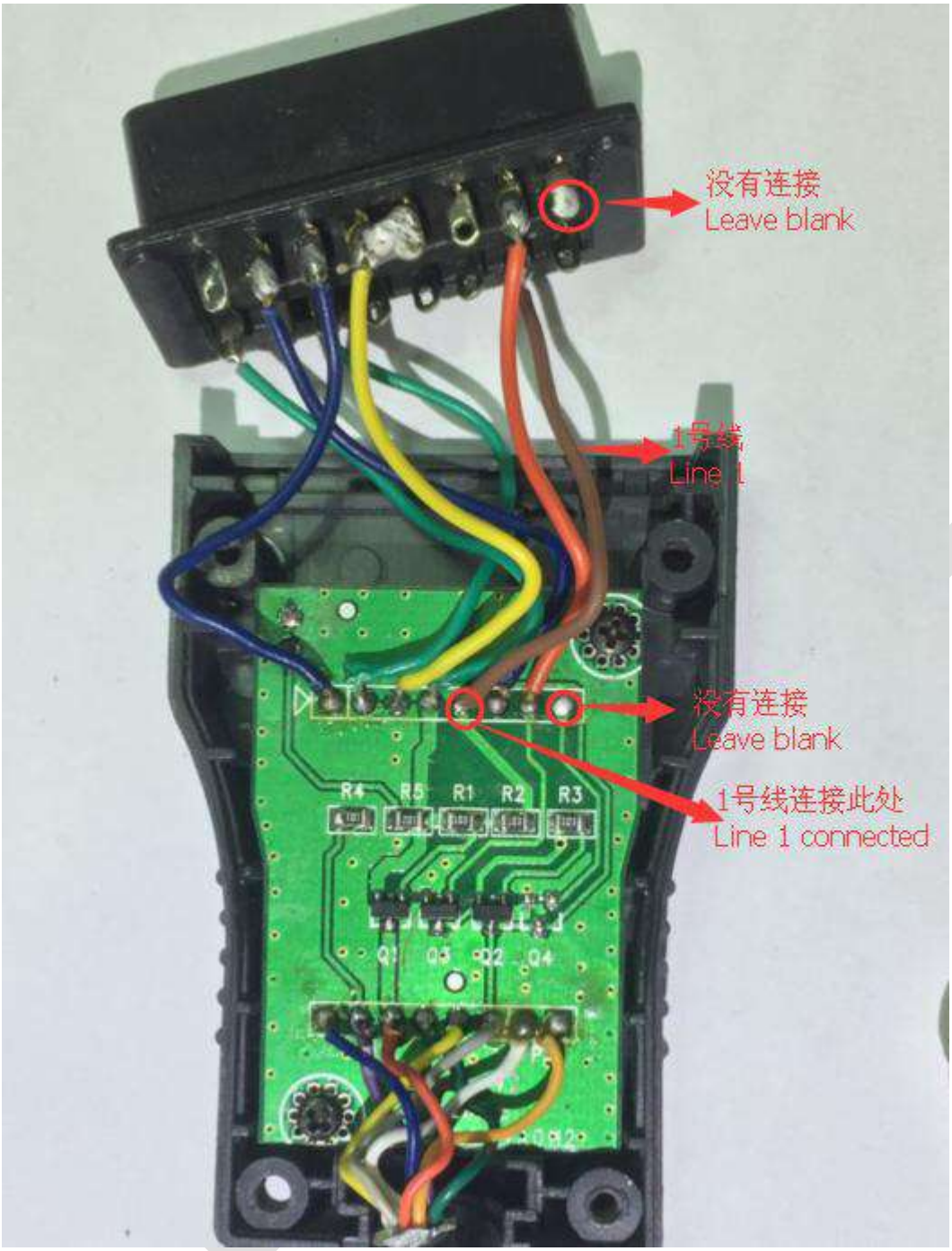
(PICTURE 12.1)

12.2. Make old CAS PLUG work on VVDI2

Old CAS PLUG can't use in VVDI2 directly. You need open OBD head in CAS PLUG (Unscrew four screws), change follow (PICTURE 12.2-1)(PICTURE 12.2-2), In (PICTURE 12.2-1), take line 2 off CAS PLUG, Line 1 PCB head connect to Line 2 PCB head After that, you can see (PICTURE 12.2-2)



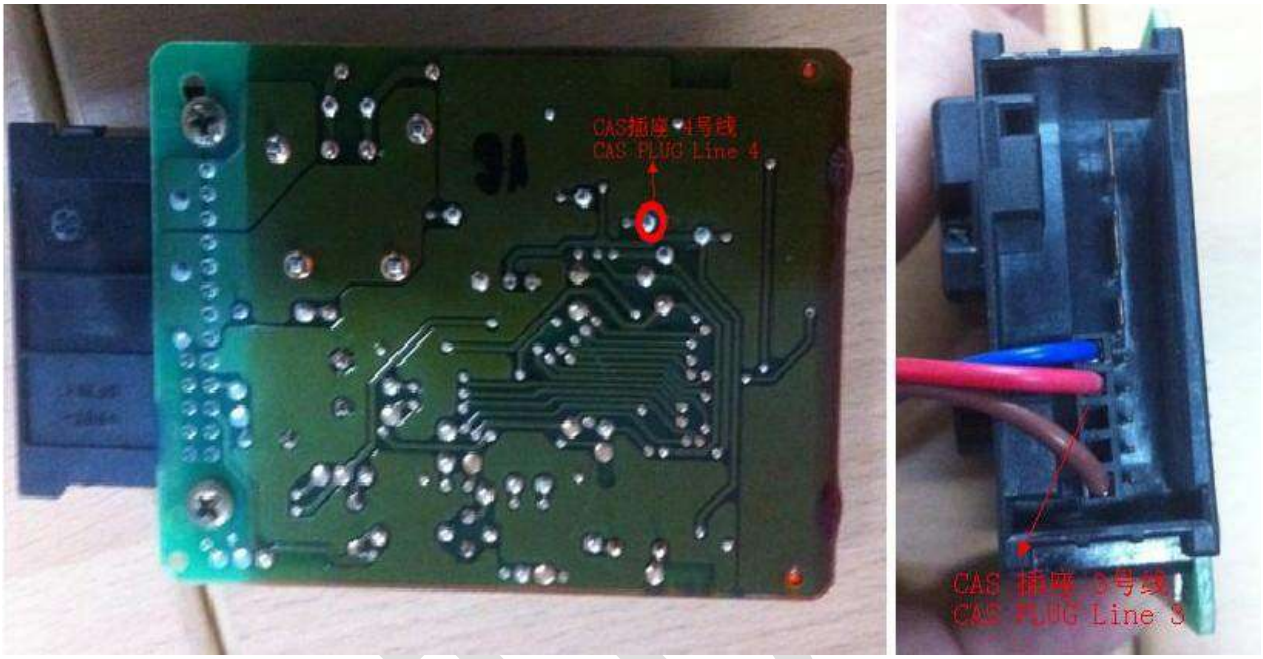
(PICTURE 12.2-1) original CAS PLUG



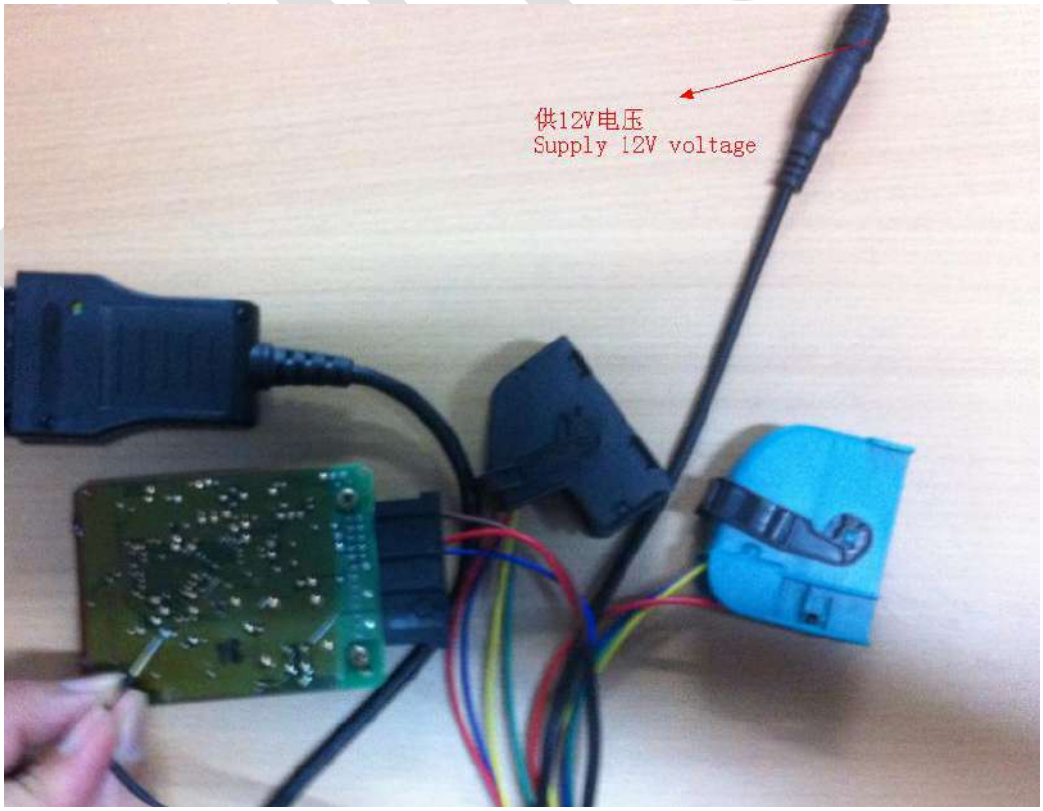
(PICTURE 12.2-2) CAS PLUG works on VVDI2

12.3. CAS PLUG connect to EWS/CAS

◆ **CAS PLUG connect to EWS** (PICTURE 12.3-1) and (PICTURE 12.3-2)

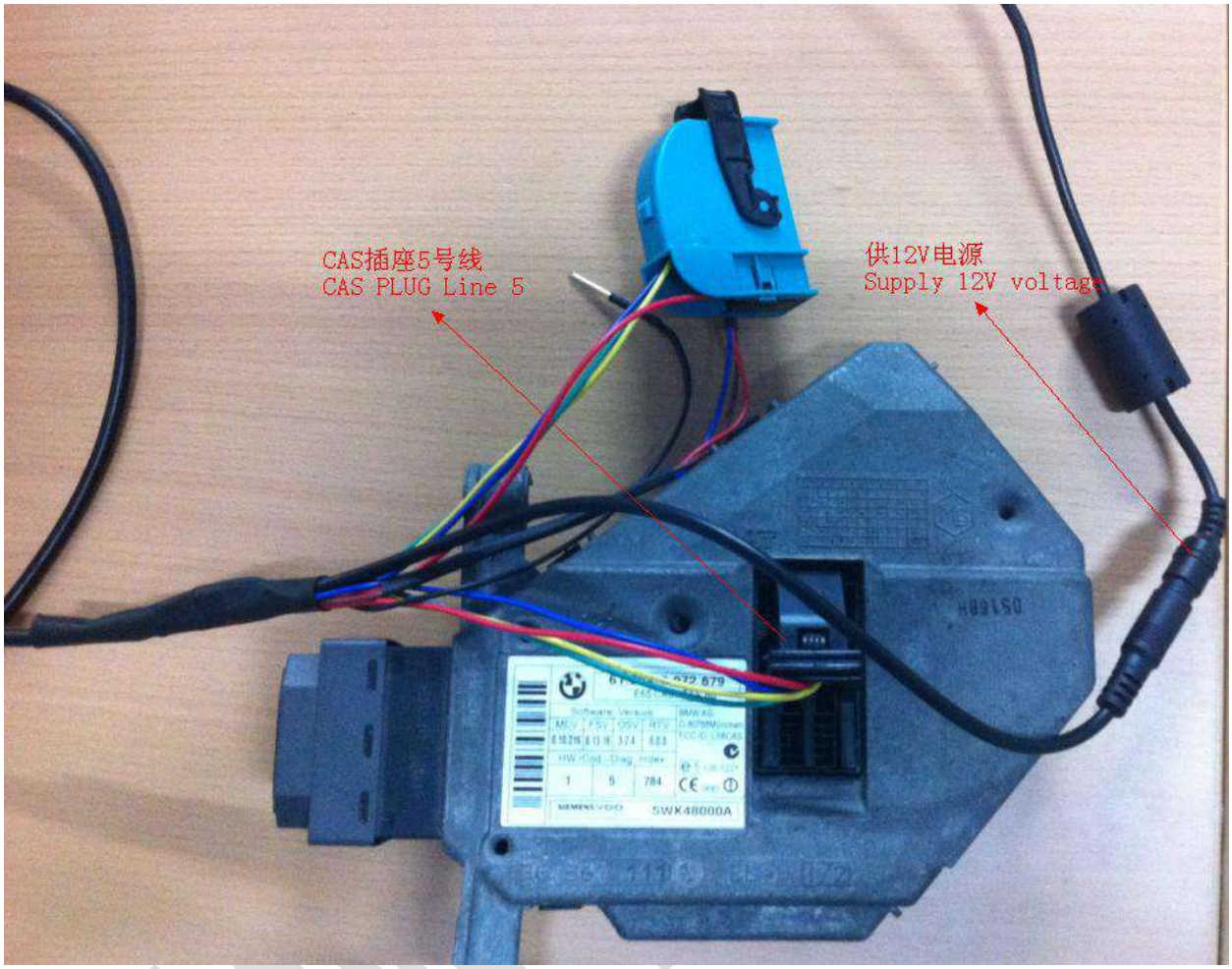


(PICTURE 12.3-1)



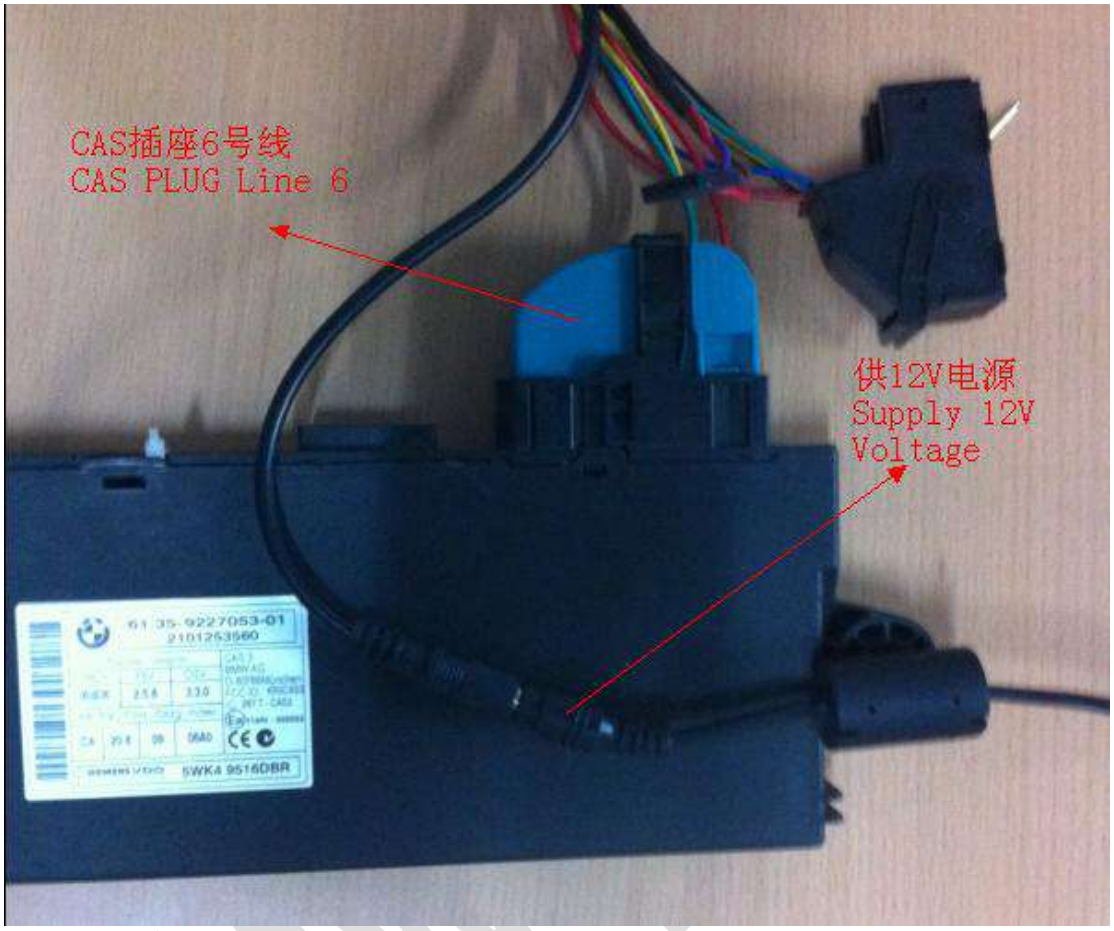
(PICTURE 12.3-2)

◆ **CAS PLUG connect to CAS1/CAS2** (PICTURE 12.3-2)



(PICTURE 12.3-2)

◆ **CAS PLUG connect to CAS3/CAS3+**(PICTURE 12.3-3)

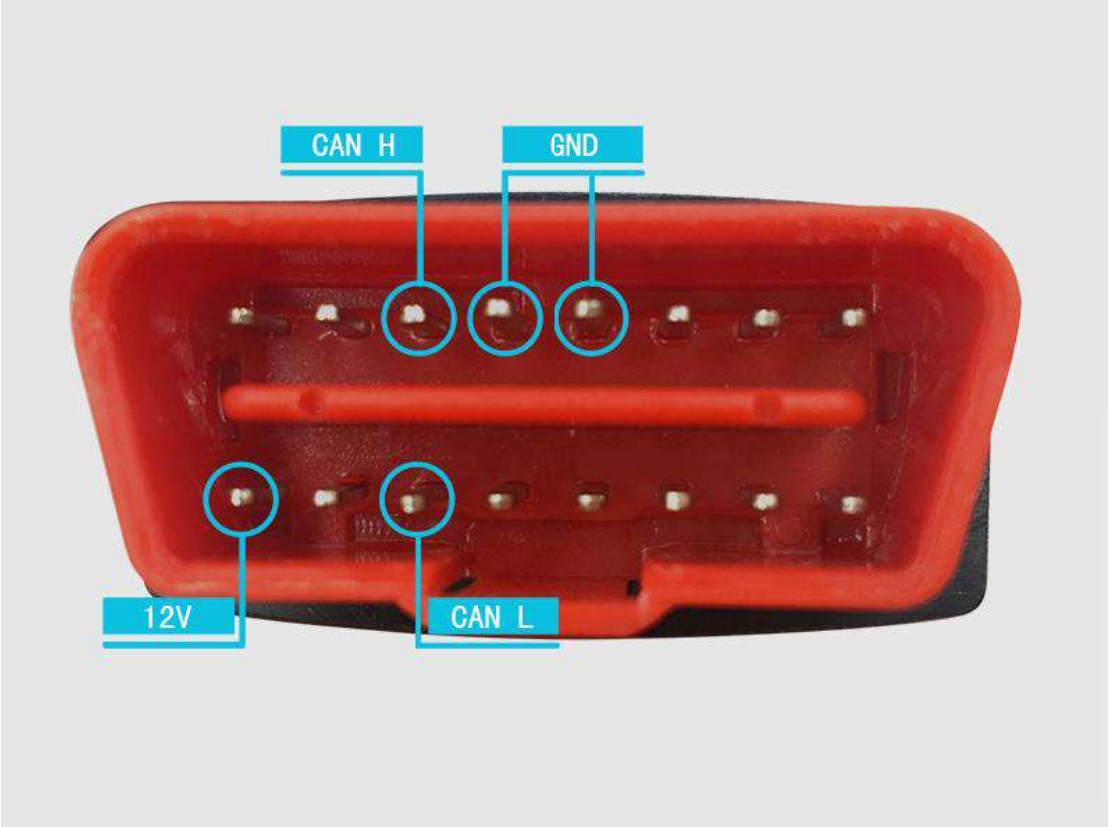


(PICTURE 12.3-3)

12.4. Manual connect to achieve CAS PLUG

- **Connect marking definition in CAS to BWM TOOL OBDII marking definition, provide 12V power**

- **BMW TOOL OBD mark definition** (PICTURE 12.4-1)

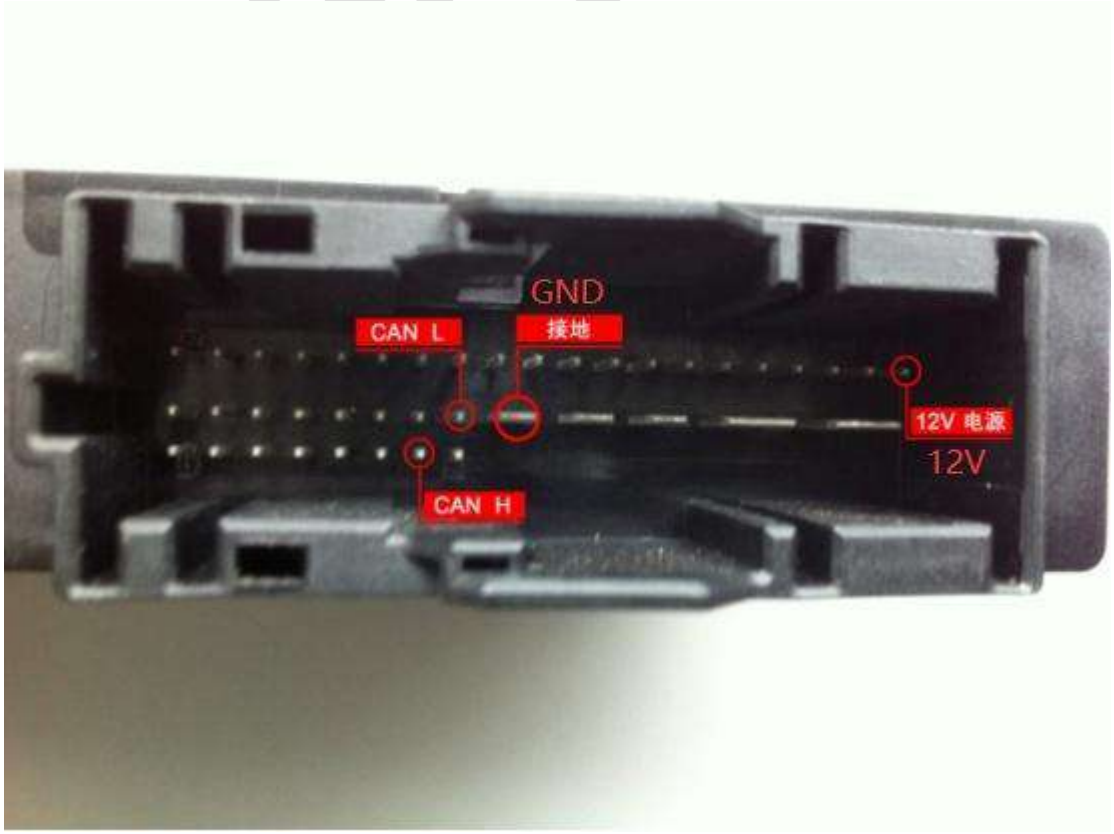


(PICTURE 12.4-1)

◆ **CAS1/CAS2 marking definition** (PICTURE 12.4-2)

(PICTURE 12.4-2)

◆ **White CAS2, CAS3, CAS3+ marking definition** (PICTURE 12.4-3)



(PICTURE 12.4-3)