VVDI2 – BMW User Manual

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1. Document Declaration

Please view the following declaration carefully:

◆ VVDI2 – BMW User Manual can help you maintenance vehicles with VVDI2 device. **Please DON'T used for illegal purpose, Please follow the national law**

◆ VVDI2 – BMW User Manual is written by VVDI2, **please DON'T used for commercial purposes without authorize**

◆ VVDI2 – BMW User Manual can help you how to use BMW software, please view carefully

◆ **Any illegal use VVDI2 – BMW User Manual, illegal use VVDI2 device, The user should take all risks, the company does not assume any responsibility**

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2.Overview

Main functions currently supported (PICTURE2. 1) :

BMW Function 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	●	○	○

(PICTURE2. 1)

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2.1. Noun explanation

◆ **BMW**: Bayerische Motoren Werke
◆ **EWS**: Immobox used in earlier BMW cars
◆ **CAS**: Car Access System(40 unit), mainly include CAS1(0K50E), 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 write detail mask. If document have detail mask indicates the special explain to this type
◆ **FEM/BDC**: Immobox used in some new BMW models after 2014(F-Series)
◆ **OBDII method**: Connect BMW TOOL to car with OBDII interface
◆ **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 the above 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. **VVDI2 – BMW 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
◆ **Known ISTAP version SN**: 9262360, 9262361, 9278745, 9278746, 9287534, 9287535, 9267608, 9267609
◆ **Lost all key:** The car lost all working key, there is big different from add key with working key. Attention: 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**
◆ **About**

2.3. EEPROM/KM/Synchronization Codes (OBD)

Detail can be found in chapter 4 CAS/EWS Identification Information
◆ **Read EEPROM / Write EEPROM**

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◆ **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**
◆ **Program Key Info**
◆ **Repair Keyless Key**
◆ **Enable Key / Disable Key**
◆ **Clear DTC / Clear Shadow**

2.5.　File Make Key

Detail can be found in chapter 6 File Make Key

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

2.6.　Unlock Key

Detail can be found in chapter 7 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 8 File Change KM

◆ **EWS3/EWS4**
◆ **CAS1/CAS2/CAS3/CAS3+ CAS4**
◆ **Cluster (E Series): M35080 EEPROM dump**
◆ **Cluster (F Series)**

2.8.　CAS Repair

Detail can be found in chapter 9 CAS Repair

◆ **CAS1(0K50E) OBDII Repair**

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◆ **ISTAP4* Version OBDII Repair**

2.9. CAS PLUG

Detail can be found in chapter 10 CAS PLUG

3.Options

3.1. Language

Support following languages:
◆ **Chinese (Simplified)**
◆ **English**
◆ **Italian**
◆ **Spanish**
◆ **German**
◆ **Hungarian**
◆ **Polish**
◆ **Russian**

Please manual set user language at first time use software

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4.Control Unit Program

Main interface->>>Unit coding (PICTURE 4.1)
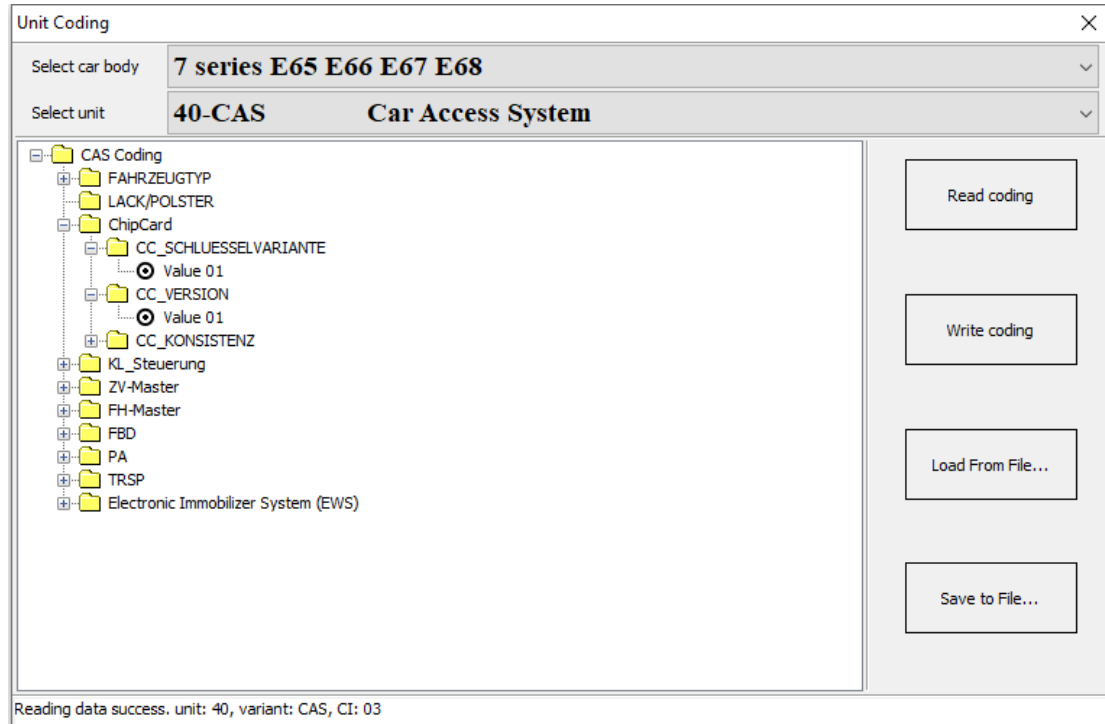
(PICTURE 4.1)

Read coding: Read the code in the corresponding module information
☐ **Write coding**: Write the code in the corresponding module information
☐ **Load From File**: Load coding file
☐ **Save to File**: Save coding file

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5.EEPROM/KM/Sync Code (OBD)

Main menu interface->>>Key Learn->>>CAS/EWS information

OBD main window (PICTURE 5.1), support following functions:

◆ **Auto Detect**: Detect communication protocol automatically, support KWP-E6X…, CAN bus 100Kbps, and CAN bus 500Kbps. Other functions need choose manually

◆ **OBDII KWP – E6X, E7X, E9X, E81, E82, E87, E89**: Usually used in old cars with CAS1, CAS2 and some CAS3

◆ **KWP – CAN bus 100Kbps**: This type will be use when VVDI2 connect to CAS with CAS PLUG or without gateway

◆ **KWP – CAN bus 500Kbps**: This type will be use when connect to car with CAS3 or CAS3+

◆ **BMW EWS KLine**: When connect EWS with CAS PLUG, choose this type

◆ **BMW F-Series**: This type can connect to CAS4 in BWM F-Series
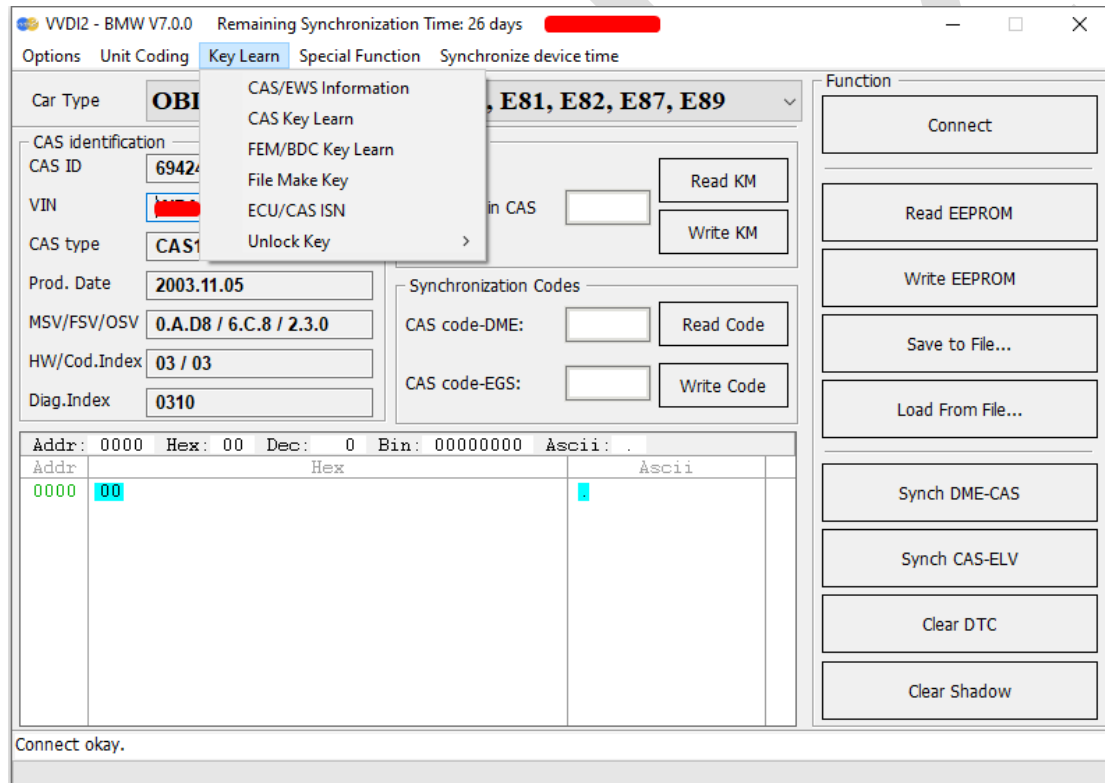
(PICTURE 5.1)

◆ **Connect**: Connect to CAS system. Attention: EWS don't support this **(see special Attention 1)**. After connect to CAS, there will display detail information in CAS identification. Auto Detect only support connect operate, you must choose a specific type before you do other operations.

◆ **CAS identification:**
  ➢ **CAS ID**: CAS identification number
  ➢ **CAS type**: **CAS type is very important, the type shown here is detected by**

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VVDI2-BMW, 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+: This means CAS should be CAS3 (0L01Y) or CAS3+(0L15Y)(not encrypt version)

CAS3++: This means detected CAS3+ encrypt version

CAS3++ (ISTAP): Means ISTAP version

➢ **VIN**: Vehicle identification number

➢ **Prod. Date**: CAS production date

➢ **HW**: CAS hardware version

➢ **FSV**: Function software version in CAS

➢ **OSV**: Operation software version in CAS

◆ **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 read EEPROM for 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 and 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 general user write this code, the car will stop working if write 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

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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

◆ **Key Learn:** See Chapter 6 Key Learn for details

◆ **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.

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6. Key Learn

6.1.   CAS1/CAS2/CAS3/CAS3+ Function

Main menu interface->>>Key learn->>>CAS key learn （PICTURE 6.1-1）
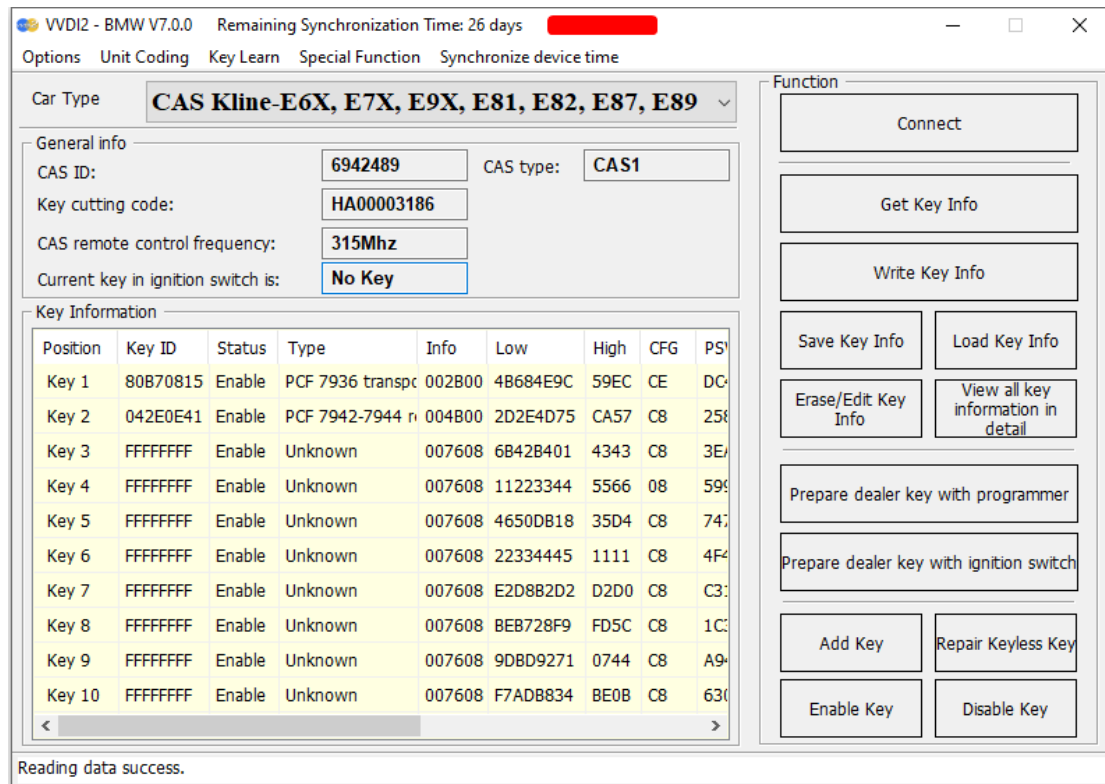
（PICTURE 6.1-1）

Mainly Function:

◆ **Connect:** Connect to CAS to get general information
   1) **CAS ID:** CAS version information
   2) **CAS type:** Classification type of CAS
   3) **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.
   4) **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 VVDI2-BMW device) when you have remote control at hand.
   5) **Current 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.
◆ **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

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function.

◆ **Save Key Info**: After get key info success, please save key info

◆ **Load Key Info:** Load the previously saved key information

◆ **Erase/Program Key Information:** After read key info or load key info, select a specify key that you want to program, the specific info interface like (PICTURE 6.1-2). **Attention: Select the corresponding key type, choose wrong type between smart and non-smart will cause the car to not start**
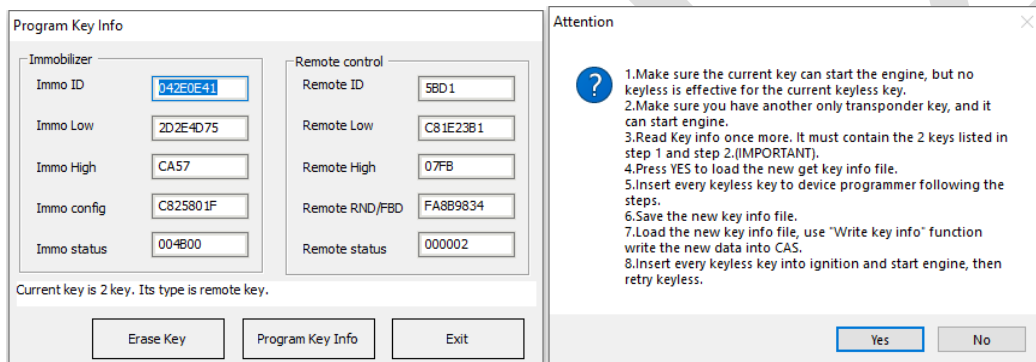
   Specific steps:

   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 key change to：007608**

   ➢ **Click"Program Key Info", you can use this key position to match after complete**

Program Key Info

Immobilizer
Immo ID: 042E0E41
Immo Low: 2D2E4D75
Immo High: CA57
Immo config: C825801F
Immo status: 004B00

Remote control
Remote ID: 5BD1
Remote Low: C81E23B1
Remote High: 07FB
Remote RND/FBD: FA8B9834
Remote status: 000002

Current key is 2 key. Its type is remote key.

Erase Key | Program Key Info | Exit

Attention

1.Make sure the current key can start the engine, but no keyless is effective for the current keyless key.
2.Make sure you have another only transponder key, and it can start engine.
3.Read Key info once more. It must contain the 2 keys listed in step 1 and step 2.(IMPORTANT).
4.Press YES to load the new get key info file.
5.Insert every keyless key to device programmer following the steps.
6.Save the new key info file.
7.Load the new key info file, use "Write key info" function write the new data into CAS.
8.Insert every keyless key into ignition and start engine, then retry keyless.

Yes | No

(PICTURE 6.1-2)(PICTURE 6.1-3)

◆ **View all key detailed information :** View detailed information of all keys

◆ **Prepare dealer key with programmer**: After get key info success, select a key position, prepare dealer key with VVDI2 programmer

◆ **Prepare dealer key with ignition switch**: After read key info success, select a key position, prepare dealer key with ignition switch

◆ **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 6.1-3). Attention: You must have a non-smart key that can start car

◆ **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 working key lost. In other words, this function can invalidate a work key which one you want. You need a key that could

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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.**

6.2. OBD-CAS/CAS4+ F-Series Function

Main menu interface ->>Key learn ->>>CAS key learn, see the learn interface （PICTURE 6.2-1）

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 6.2-1）
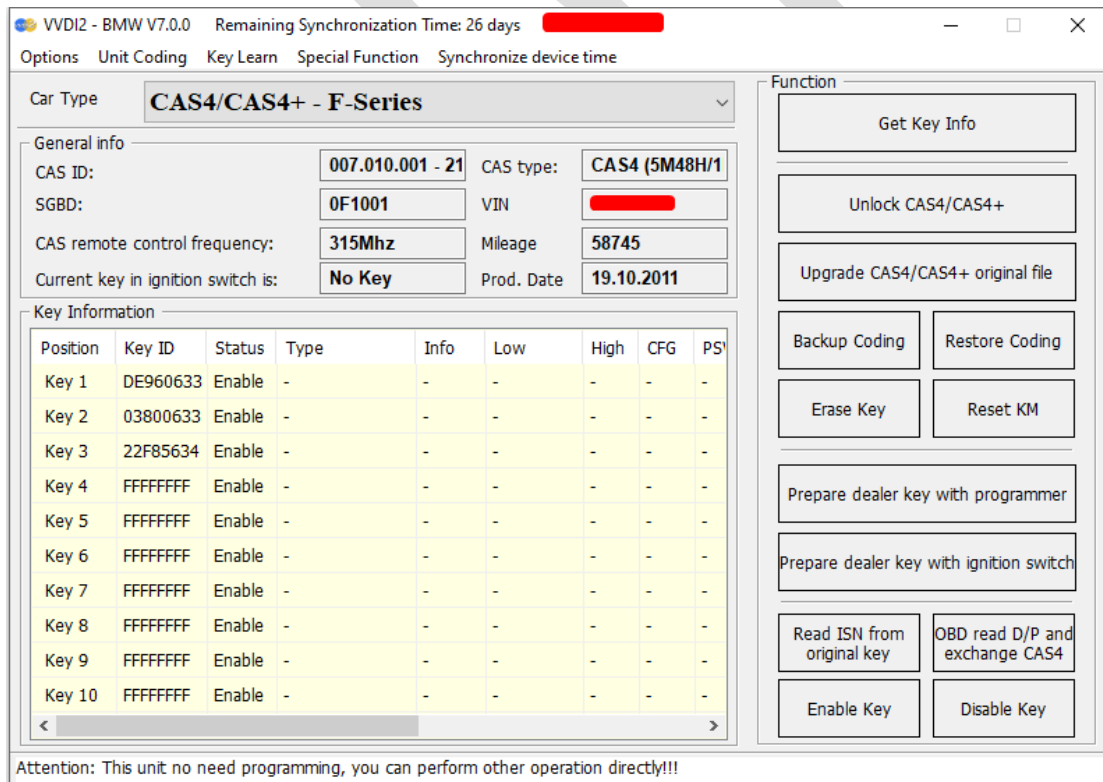
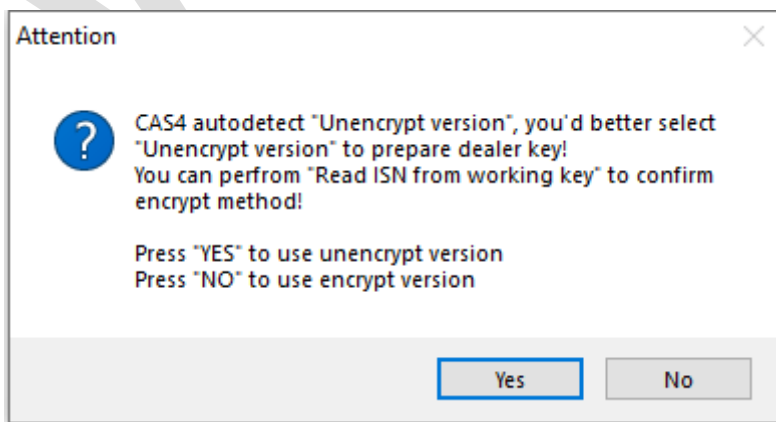（PICTURE 6.2-1）

◆ **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

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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. （PICTURE 6.2-4）

◆ **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 an abnormal condition, you can use this function to force programming before program/code. If failed, Need other tool do program/code**

◆ **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

◆ **Erase key:** Delete and refresh key position information

◆ **Reset KM:** Restore KM after replacing instrument

◆ **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 6.2-2）

（PICTURE 6.2-2）

◆ **Read ISN from the original key:** Put the original key into device sensor to read the

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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 6.2-3)
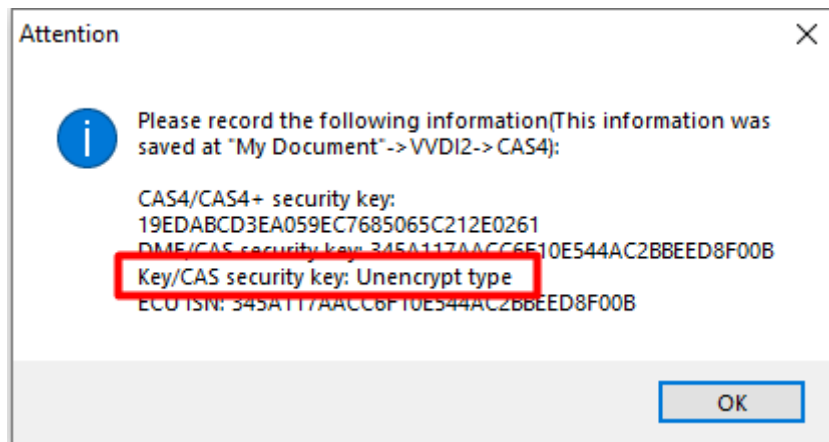
(PICTURE 6.2-3)

◆ **OBD Read D/P and exchange CAS4.** See the picture (PICTURE 6.2-4)

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 6.2-4)

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 6.2-4), click **"Restore Coding"** to load the code that was saved before the unlock CAS4/CAS4+, after restore code, check whether it work,

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if not work perform the next step

C) Click **"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. Power off 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, power off the CAS and power again, 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
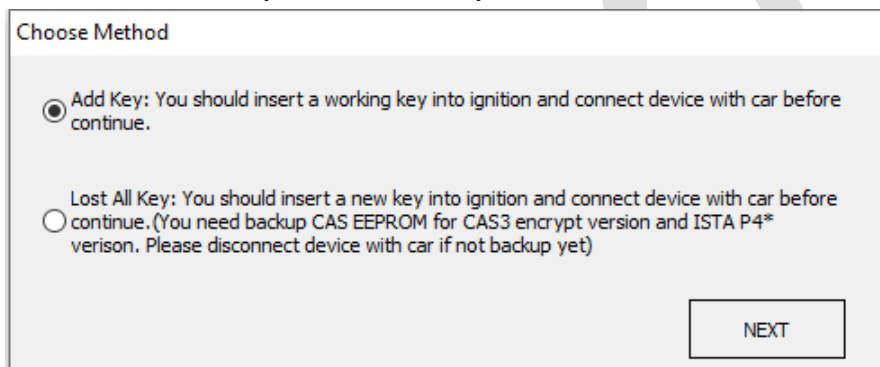
B) If failed, follow step 2 ->>> D) to repair
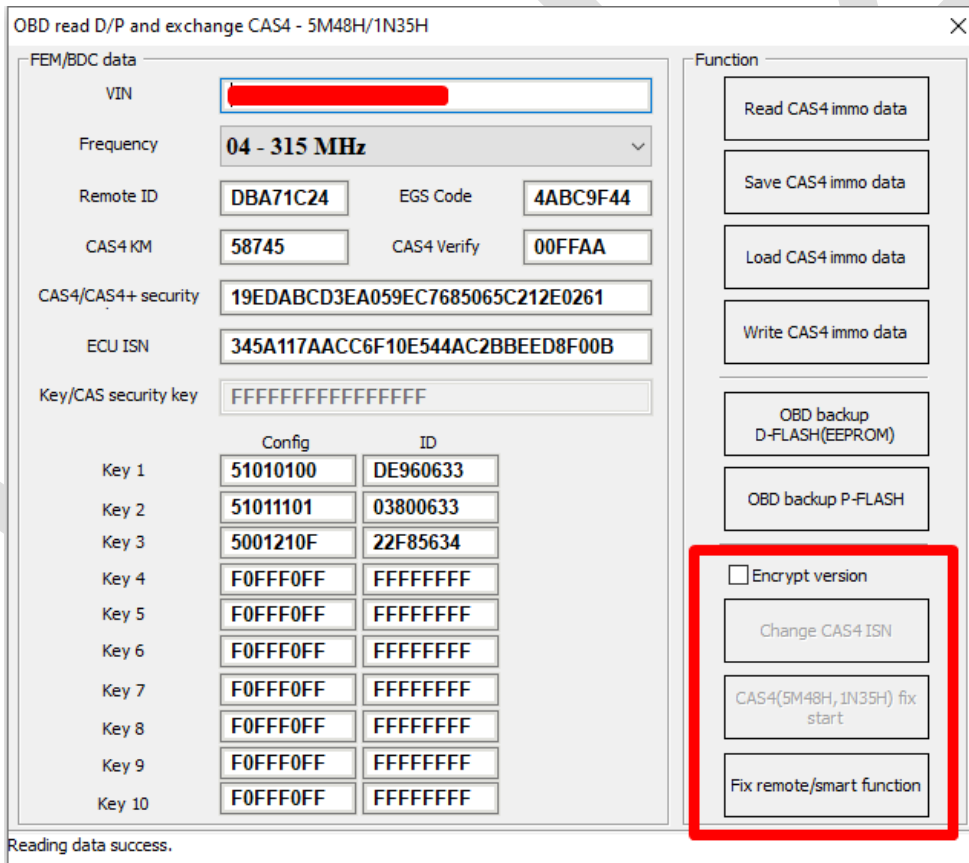
(PICTURE 6.2-4)

◆ **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

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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+
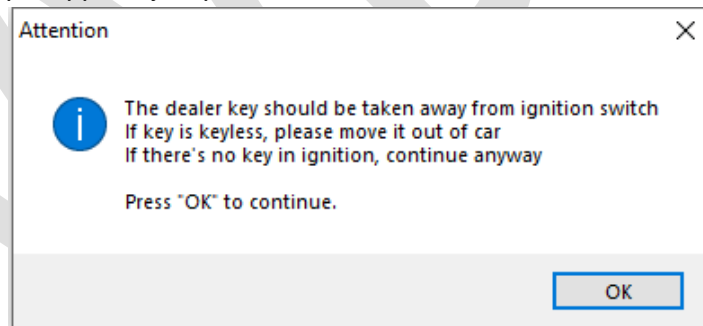
6.3. Special Attention in OBD operation (Important!!!)

◆ Under Get Key Info get window (PICTURE 6.3-1): 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


Choose Method

◉ Add Key: You should insert a working key into ignition and connect device with car before continue.

○ Lost All Key: You should insert a new key into ignition and connect device with car before continue.(You need backup CAS EEPROM for CAS3 encrypt version and ISTA P4* verison. Please disconnect device with car if not backup yet)

NEXT

(PICTURE 6.3-1)

◆ Under OBD operation get window (PICTURE 6.3-2): 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


Attention ✕

ⓘ The dealer key should be taken away from ignition switch
If key is keyless, please move it out of car
If there's no key in ignition, continue anyway

Press "OK" to continue.

OK

(PICTURE 6.3-2)

◆ Under prepare dealer key get window (PICTURE 6.3-3): 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

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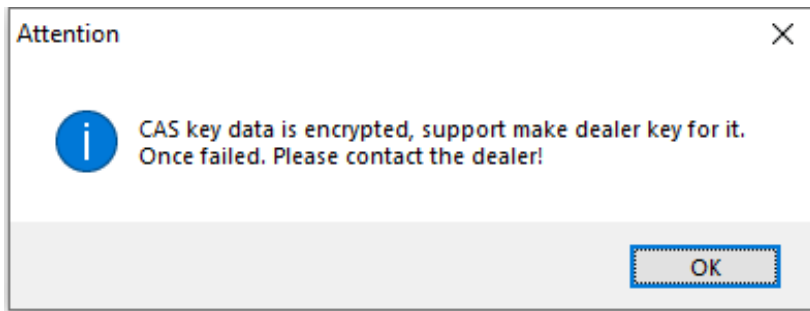
(PICTURE 6. 3-3)

◆ Under prepare dealer key with ignition switch get window (PICTURE 6. 3-4): Here we need unlock new key. Just follow step1 to step4. Attention: You must insert new key into ignition switch before NEXT
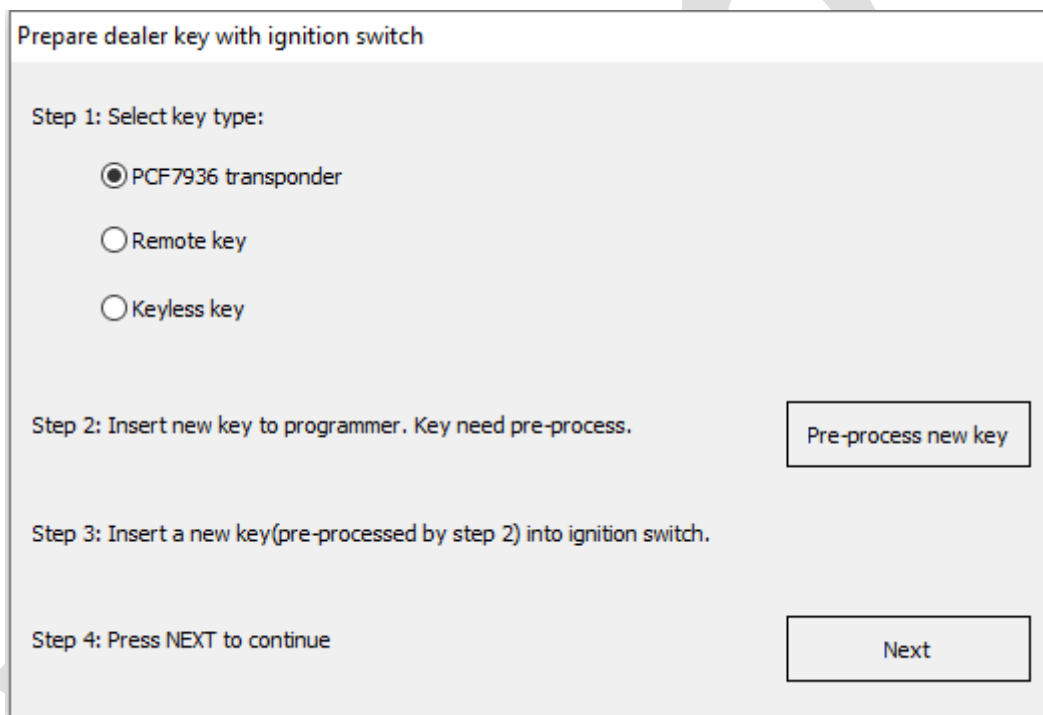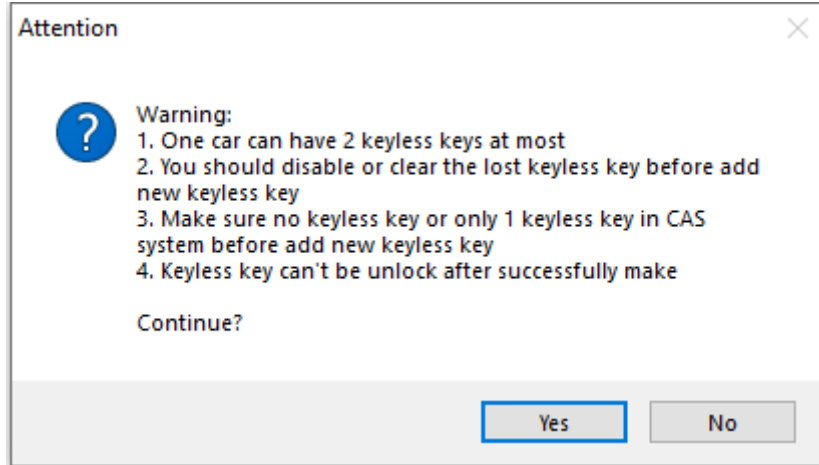

(PICTURE 6. 3-4)

◆ Under prepare dealer key(**File Make Key also have this**) get window (PICTURE 6. 3-5): Please select correct type, if it is smart key but you select NO, the keyless function will not work
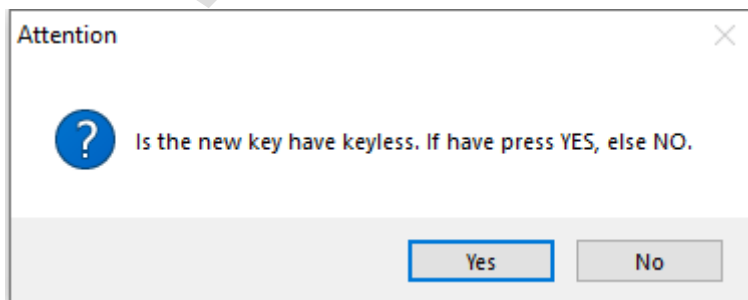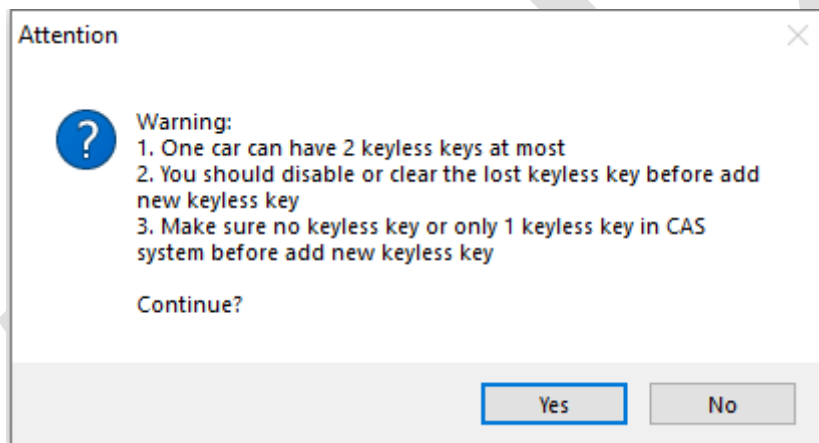

(PICTURE 6. 3-5)

◆ Under prepare a keyless key (**File Make key also have this**) get window (PICTURE

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6. 3-6) or (PICTURE 6. 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 6. 3-6) **will come with add key, this situation keyless key don't support unlock;** (PICTURE 6. 3-7) **will come with lost all key, here the keyless key can unlock by VVDI2**

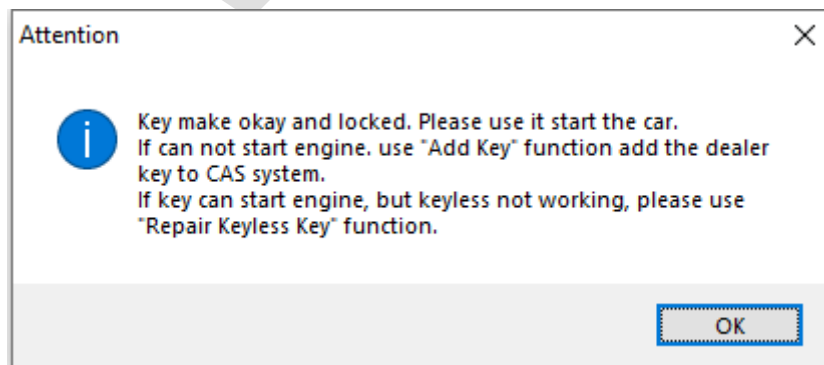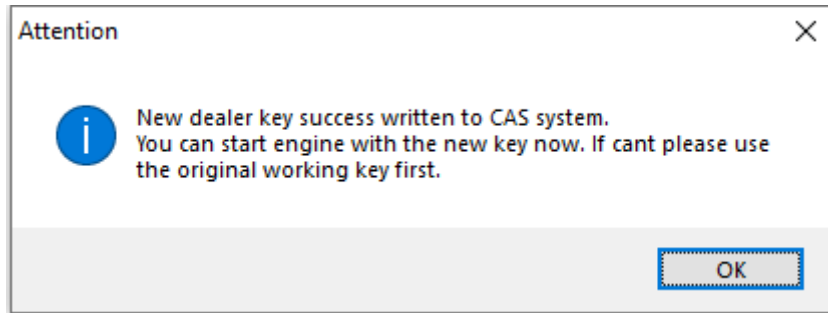(PICTURE 6. 3-6)

(PICTURE 6. 3-7)

◆ After make dealer key get window (PICTURE 6. 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
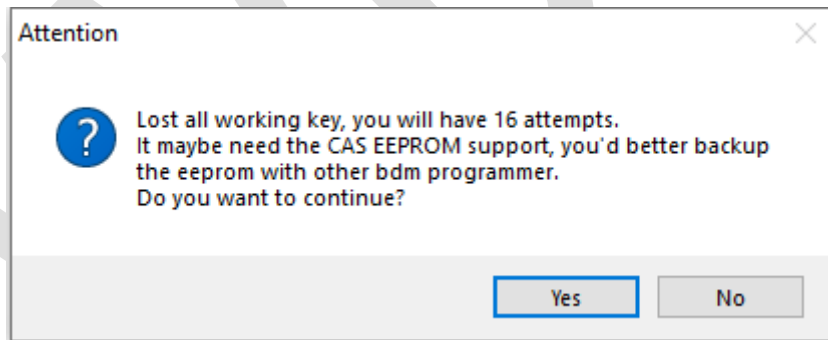

(PICTURE 6. 3-8)

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◆ After add key to CAS get window (PICTURE 6. 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
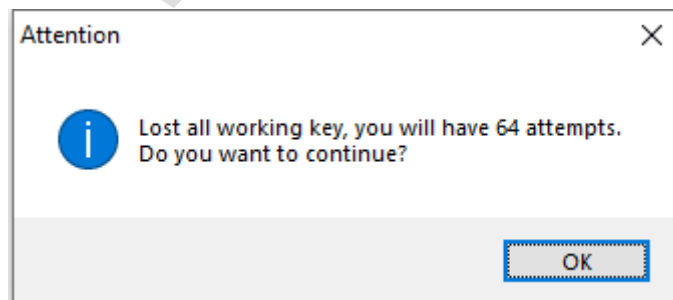

(PICTURE 6. 3-9)

◆ Under all key lost for CAS3+ encrypt version (**File Make key also have this**) get window (PICTURE 6. 3-10) or (PICTURE 6. 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 6. 3-10) is CAS3+ encrypt version (not ISTAP) window, at most need 16 times try start. (PICTURE 6. 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
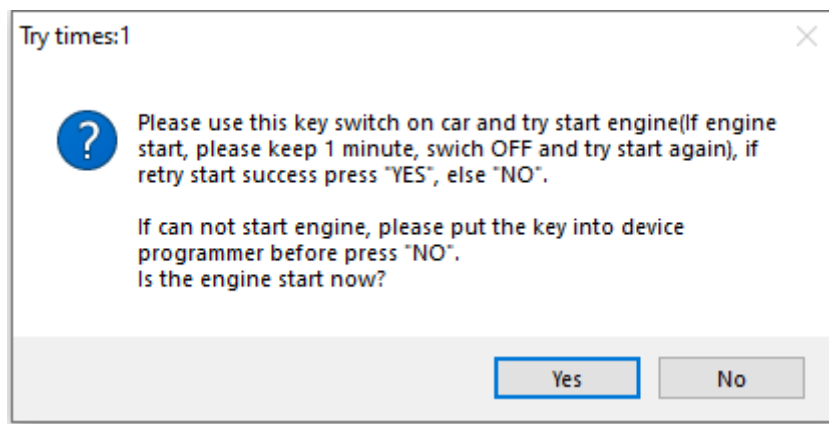

(PICTURE 6. 3-10)

(PICTURE 6. 3-11)

◆ Under lost all key for CAS3+ encrypt version (**File Make key also have this**) get

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window （PICTURE 6.3-12）: 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 6.3-12）

6.4.   CAS1/CAS2/CAS3/CAS3+Unencrypted version make key by OBD

Main interface->>>key learn->>>CAS key learn （PICTURE6.1）
◆ **Attention: For details of this process, please refer to Chapter 5.2**
◆ **Prepare new key steps**: All key lost is same with add key
1) In （PICTURE6.1）, use **Connect** to detect CAS type and read CAS identification information, key cut code (used to cut key), remote frequency (used to generate remote)
2） In （PICTURE6.1） , press Save Key Info save original key information
3) There are two ways to prepare the dealer key
  ➢ Method1: In （PICTURE 6.1）, select **Prepare dealer key with programmer**
    A) Put a new key into the VVDI2 programmer
    B) Select the position where you want to write the key (if there is a key in this position, you must use the add key function)
    C) Click （PICTURE6.1） to prepare dealer key with programmer to wait for the key generation to complete
    D) After the generation is successful, try to start. If it can start car, go to step 5). If it cannot start car, use Add Key in （PICTURE6.1） to add the new generated key to the CAS system
    E) Try to start car. If it can start car, go to step 5). **Attention: If CAS1/CAS2/CAS3**

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still cannot start car, please refer to the special notes 2 in Chapter 5

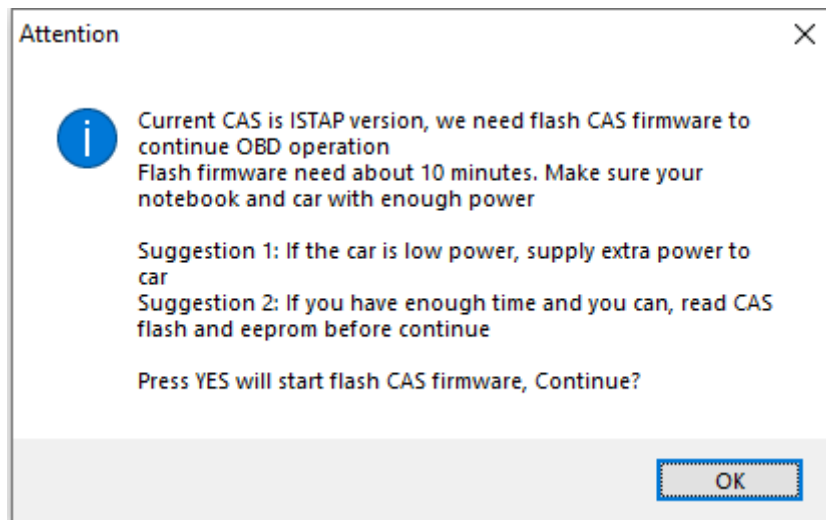> ☐ Method 2: In (PICTURE 6.1), select **Prepare dealer key with ignition switch**, select key type and pre-process the blank key, insert to ignition switch and wait complete. After finish, turn to step 5). If you get failure here, you need load key info to unlock the failed key via click unlock key before try again

4) In (PICTURE 6.1), clear trouble codes with **Clear DTC** and **Clear Shadow**

5) Complete

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

6.5.1. Add Key

◆ **Attention: For details of this process, please refer to Chapter 6.3**

◆ **Specific Steps:**

1) **Insert a working key to car ignition and switch ON, switch on the instrument**

2) Click **Connect** in (PICTURE6.1) to automatically diagnose the current type and get CAS identification information (**Attention: record the CAS ID**)

3) Click Key Learn->>>CAS Learn to enter key learn interface in (PICTURE6.1)

4) In (PICTURE6.1), click **Get Key Info** read CAS immo data, key cutting code and CAS remote frequency. (**Remember**: when you get window (PICTURE 6.3-1), 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(PICTURE6.5-1). **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 10 CAS Repair**

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(PICTURE6.5-1)

5) In (PICTURE6.1), click **Save Key Info** to save the read key info

6) There's 2 methods for prepare dealer key:

➢ Method 1: In (PICTURE6.1), select **Prepare dealer key with programmer**

a) Put a new blank key to VVDI2-BMW programmer

b) Select a key position for new key (If the selected position have key already, must use Add Key function)

c) In (PICTURE6.1), click on **Prepare dealer key with programmer** 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 (PICTURE6.1)

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 (PICTURE6.1), 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

7) Click Clear DTC and Clear Shadow in (PICTURE6.1) to clear error code

8) Complete

6.5.2. All Key Lost

◆ **Attention: Details of this process, please refer to Chapter 5.3**

◆ **Specific steps:**

1) Active OBD communication with all key lost method

2) In (PICTURE5.1), select **Connect** to detect CAS type and read CAS identification information **(Attention: record CAS ID)**

3) Click (PICTURE5.1) Key Learn->>>CAS key Learn to enter key learn interface in

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（PICTURE6.1）

4) In （PICTURE6.1）, use **Get Key Info** read CAS immo data, key cutting code and CAS remote frequency. (**Remember**: You need choose All Key Lost when you get key info（PICTURE6.3-1）)   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 6.5-1）.   **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 10 CAS Repair**

5) In （PICTURE 6.1）, use **Save Key Info** to save the original key info

6) In （PICTURE 6.1）, 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 7). If you get failure here, you need **unlock key** with load key info before next try.

7) Click Clear DTC and Clear Shadow in （PICTURE 6.1-1） to clear error code

8) Complete

6.6.FEM/BDC Key Learn

Click Key Learn->>>FEM/BDC Learn in to enter the key learning interface see at （PICTURE6.6-1）

Function introduction: 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.
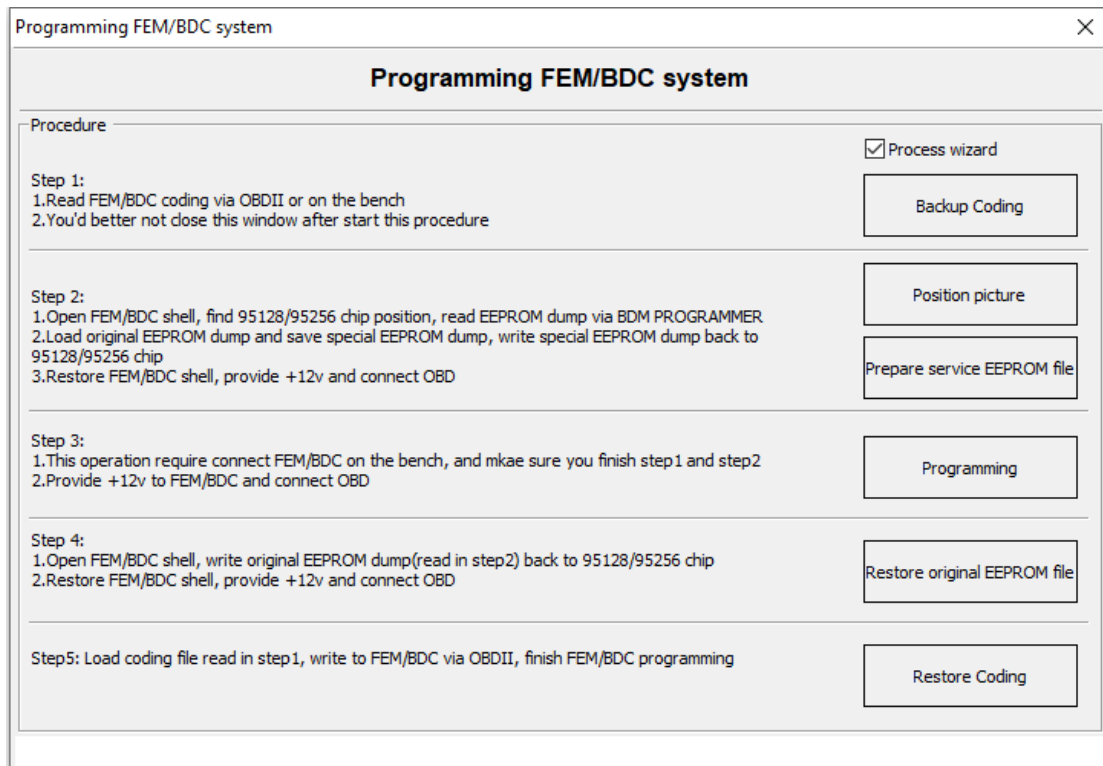
Ver: 2.0
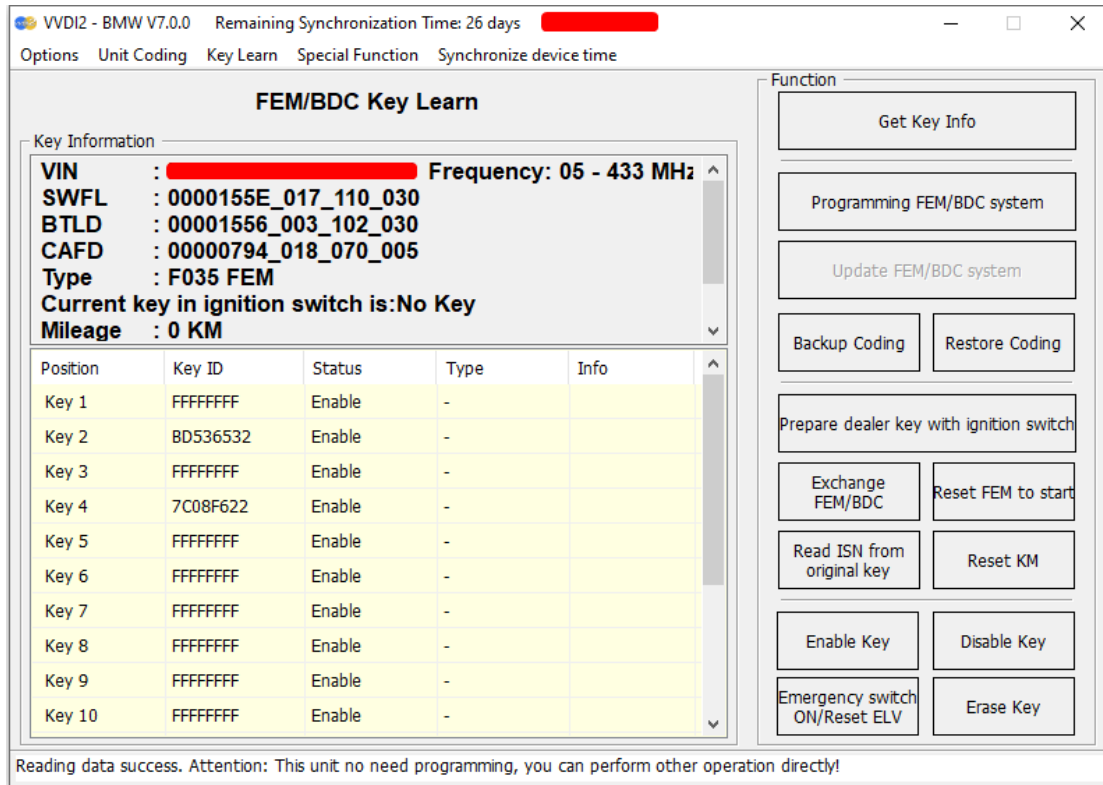
（PICTURE6.6-1）

◆ **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. （PICTURE6.6-2）

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

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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

Programming FEM/BDC system

Procedure

☑ Process wizard

Step 1:
1.Read FEM/BDC coding via OBDII or on the bench
2.You'd better not close this window after start this procedure

Backup Coding

Step 2:
1.Open FEM/BDC shell, find 95128/95256 chip position, read EEPROM dump via BDM PROGRAMMER
2.Load original EEPROM dump and save special EEPROM dump, write special EEPROM dump back to 95128/95256 chip
3.Restore FEM/BDC shell, provide +12v and connect OBD

Position picture

Prepare service EEPROM file

Step 3:
1.This operation require connect FEM/BDC on the bench, and mkae sure you finish step1 and step2
2.Provide +12v to FEM/BDC and connect OBD

Programming

Step 4:
1.Open FEM/BDC shell, write original EEPROM dump(read in step2) back to 95128/95256 chip
2.Restore FEM/BDC shell, provide +12v and connect OBD

Restore original EEPROM file

Step5: Load coding file read in step1, write to FEM/BDC via OBDII, finish FEM/BDC programming

Restore Coding

（PICTURE6. 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 9 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

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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 6.6-3)

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.

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(PICTURE6.6-3)

◆ **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 switch on 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

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7. File Make Key

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

◆ Prepare dealer key, keyless key, all key lost for CAS3+ encrypt version have some instructions in **chapter 6. 3 Special Attention in OBD operation (Important!!!)**

◆ Load CAS EEPROM dump get window (PICTURE 7. 1-1) : You can ignore this window, it means the software detected verify error in CAS system. Usually CAS3+ encrypt version have this window
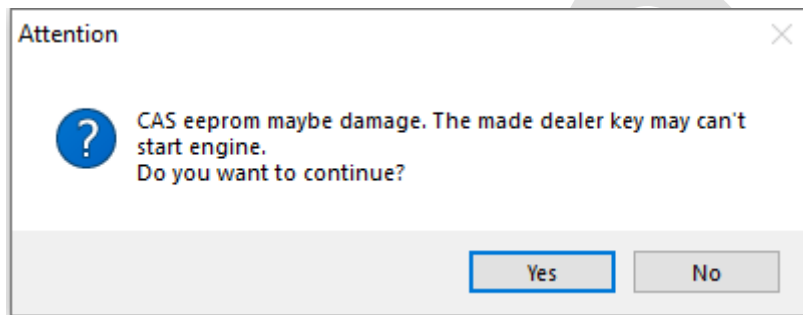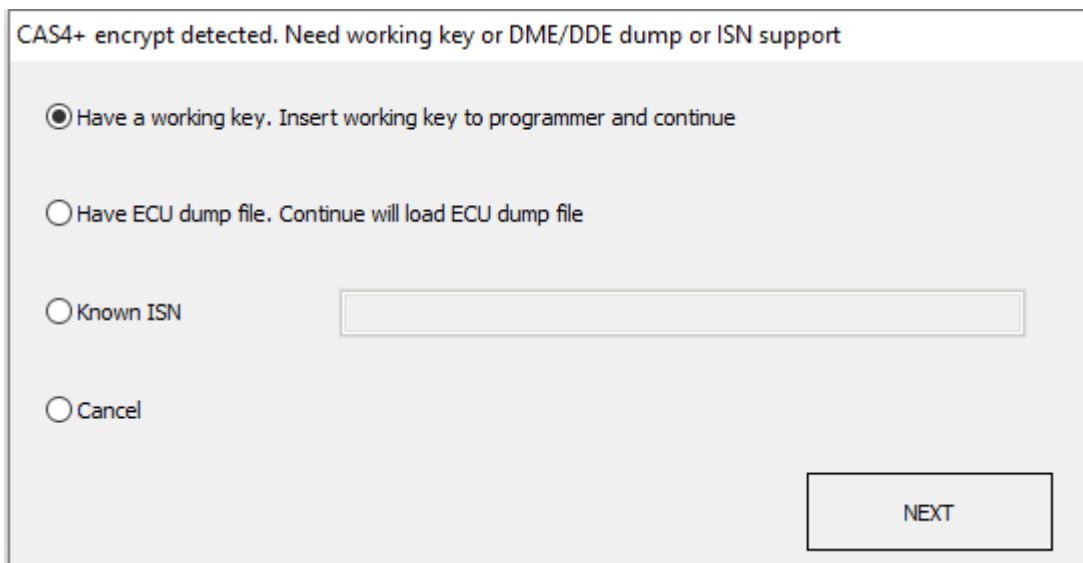

(PICTURE 7. 1-1)

◆ Under prepare dealer key for CAS3+ encrypt version get window (PICTURE7. 1-2) :
  ➢ Add key with working key select Have a working key
  ➢ All key lost, there are 3 methods:
    1) Have ECU dump file, load ECU dump file to continue
    2) Known ISN, input 16 bytes (32bits) ISN to continue
    3) **Use try start method, try start method don't need OBD communication, only require the original CAS EEPROM dump**
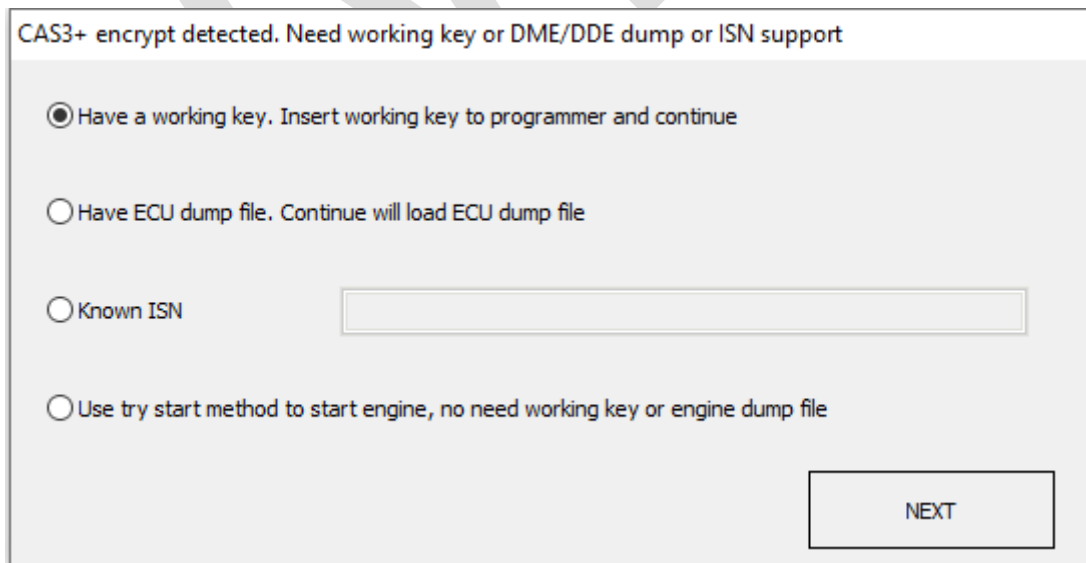
(PICTURE7. 1-2)

◆ The prompt of CAS4 encrypted version (PICTURE7. 1-3) :

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➢ When add key, prepare dealer key by work key
➢ There are three methods to choose when all key lost:
   1) Have ECU EEPROM data, load ECU EEPROM date to generate
   2) Known ISN, input a 16-byte (32-digit) ISN, and use ISN to generate

CAS4+ encrypt detected. Need working key or DME/DDE dump or ISN support

◉ Have a working key. Insert working key to programmer and continue

◯ Have ECU dump file. Continue will load ECU dump file

◯ Known ISN

◯ Cancel

NEXT

(PICTURE7. 1-3)

◆ About CAS1/CAS2/CAS3/CAS3+ generate remote key, the remote control is not available: The remote control is unavailable because the synchronization code does not match the car, you need to do synchronization operation, the method is as follows: **Press any key on the remote control, at this time The remote control is not available, use this key to start the car for a few seconds, then turn off the ignition switch. Try the remote control again, it will work**

◆ About CAS1/CAS2/CAS3/CAS3+ problem of data write back after the key is generated:
➢ When the file generates the key, it will not detect whether the key position is disabled, if the key does not start, please use the work key to enable the key position (you don't need to get the key information, just enable it)
➢ If you choose the blank key position, you can start the car directly without write data back, if you can't start the car, you need to write it back
➢ When there is a key in the key position you selected , the EEPROM data must be write back to start

◆ When the CAS3+ encrypted version generates the key, do not select the 10th key position

◆ CAS3+ encrypted version all key lost appears (PICTURE7. 1-4) prompt. This prompt appears when the key is generated for the first time before attempting to start. At this time, the temporary key has been written into the data of the first attempt, the file saved here it is the EEPROM data containing the temporary key ID. **Inserting the key can directly turn on the instrument (you can try to insert it twice). This data does not need to be write back (the new key chooses the CAS3+ encrypted version in the blank position, and data write back is not required). If the key is repeatedly inserted If there is an illegal key, you need to write back the saved**

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EEPROM data, and if the key cannot turn on the instrument please confirm that the key position is enabled
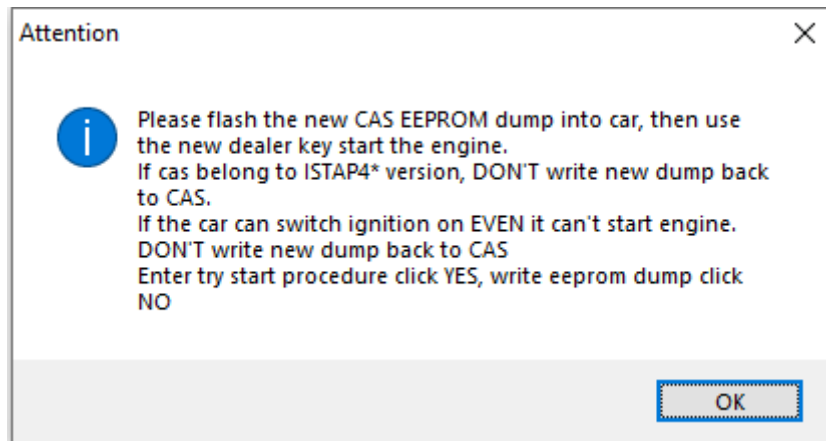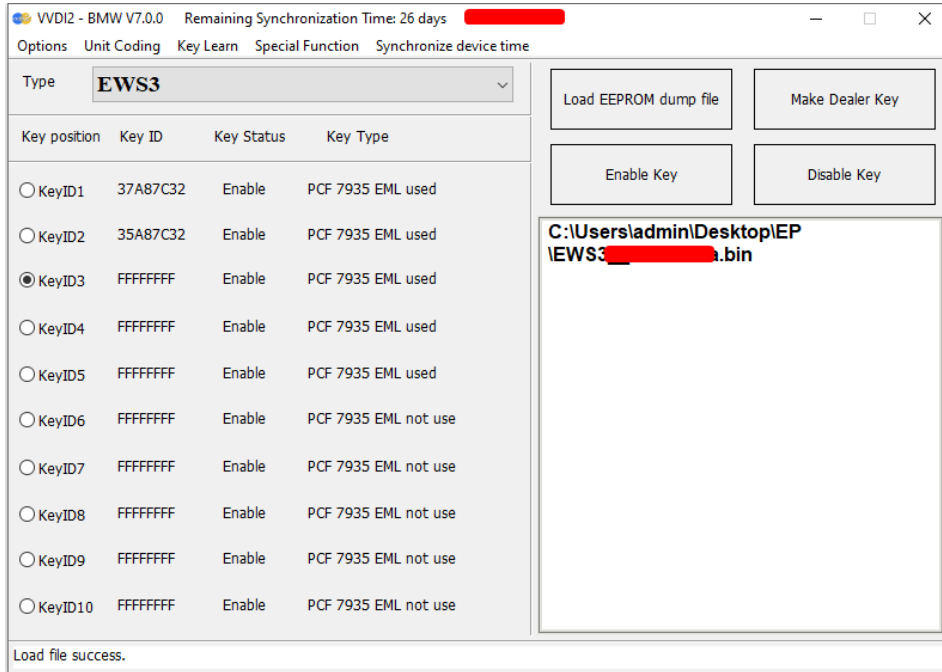

(PICTURE7.1-4)

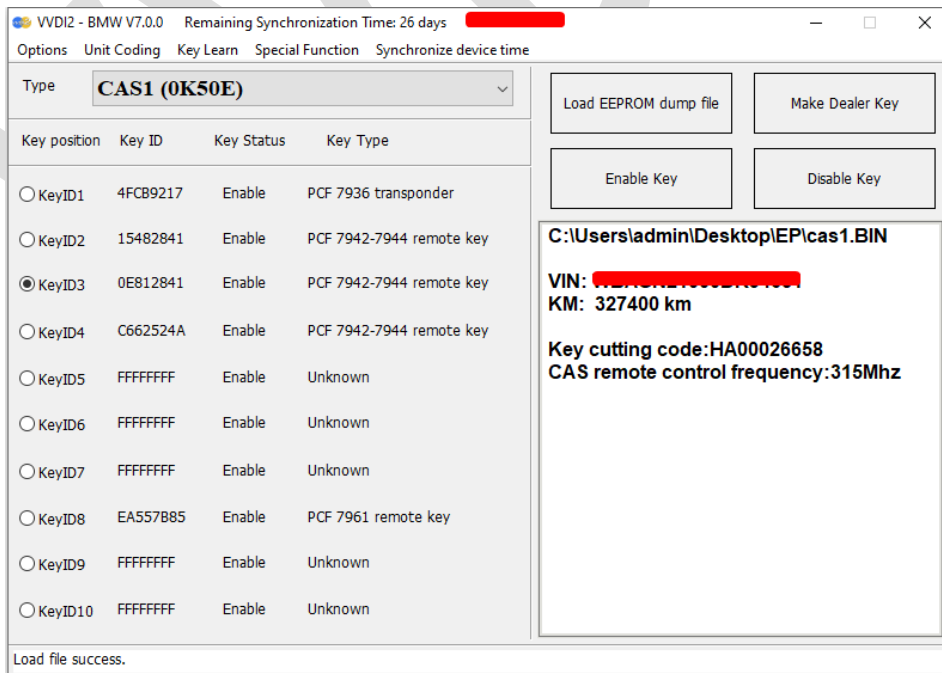# 7.2 File make key EEPROM-EWS1/EWS2/EWS3/EWS4/CAS1/CAS2/CAS3 (include all key lost)

◆ **Attention: Please refer to Chapter 7.1 for the detailed description of this process**

◆ **All key lost have same method with add key**

◆ Main menu interface ->>>Key learning->>>File generation key->>>Select right EWS/CAS type in main menu, load EEPROM dump file(BIN file), (PICTURE 7.2-1) 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

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(PICTURE7.2-1)

◆ (PICTURE7.2-2) 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 6.1 about write back new dump after make key for CAS1/CAS2/CAS3/CAS3+**

(PICTURE7.2-2)

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7.3. File generation key CAS3+ (include all key lost)

◆ **Attention: Please refer to Chapter 6.1 for the detailed description of this process**

◆ Menu->File generation key->CAS3+(0L15Y), follow the prompts to load EEPROM dump file (BIN file). (PICTURE7. 3-1) 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. VVDI2-BMW can automatically detect whether it is encrypt version. For the CAS3+ unencrypt version, please refer to Chapter 6.1 for prepare dealer key. If it is the CAS3+ encrypt version, the prompt (PICTURE7. 1-2) 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 (PICTURE7. 1-2) appears, choose with a working key) and save the new EEPROM dump. **About the write dump file back you can refer chapter 6.1 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 7. 1-2) 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 7. 3-10) or (PICTURE 7. 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 7. 1-4), 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 6. 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, see Chapter 8 Unlock key for details

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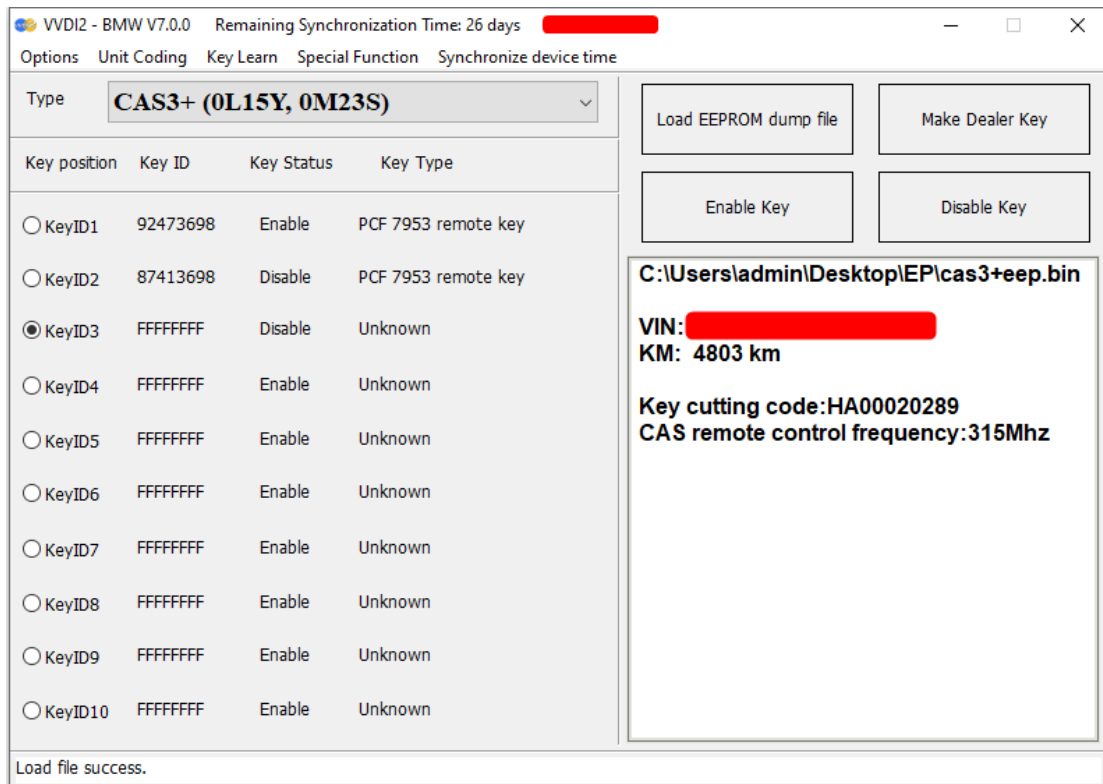
# 7.4. File make key CAS4 (encrypted version)
(include all key lost)

◆ **Attention: Please refer to Chapter 7.1 for the detailed description of this process**

◆ Menu->File generation key->CAS4 or CAS4 (5M48H), 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). (PICTURE7.4-1) 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 (PICTURE7.1-3) tips, there are two ways at this situation: add key and all key lost

➢ **Add key:** When the prompt (PICTURE7.1-3) appears, select have a working key

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1) Take the blank key out of the VVDI2-BMW programmer and put the work key in

2) Click NEXT, VVDI2-BMW 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 VVDI2-BMW programmer, then put in the blank key

4) Continue to prepare dealer key complete

➢ **All key lost:** (Only the 5M48H encrypted version have all key lost) When the prompt (PICTURE7.1-3) appears:

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.**
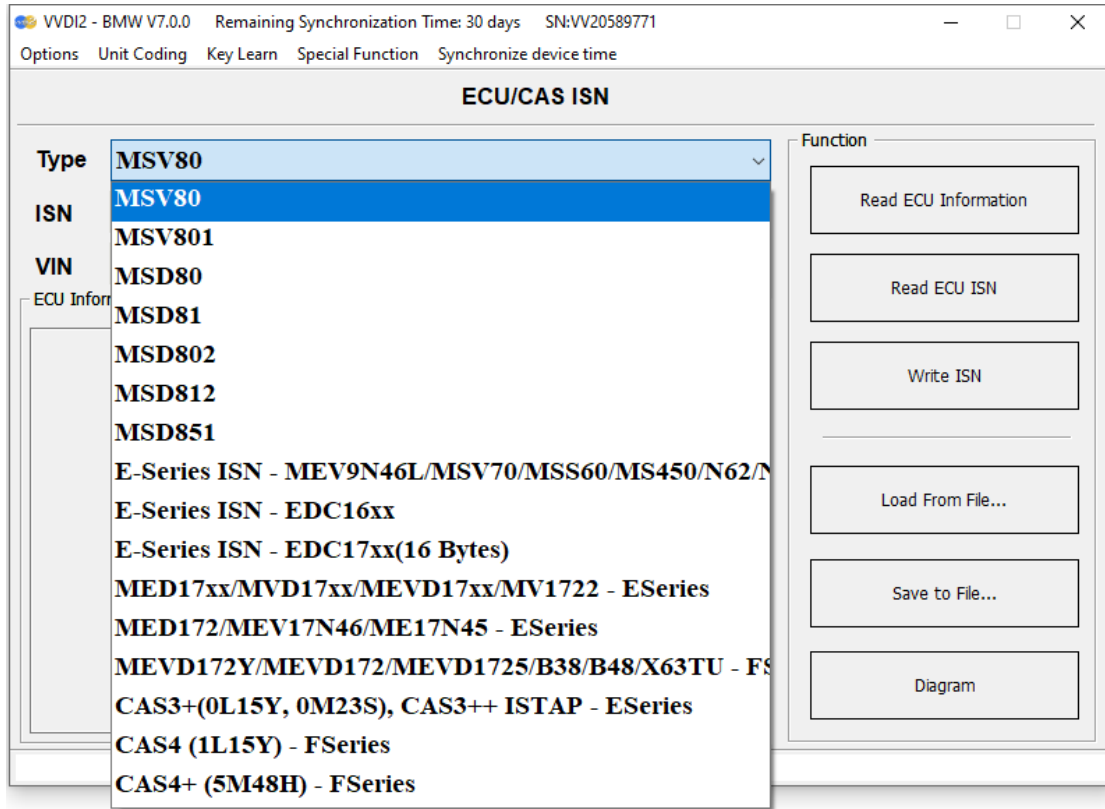

(PICTURE7.4-1)

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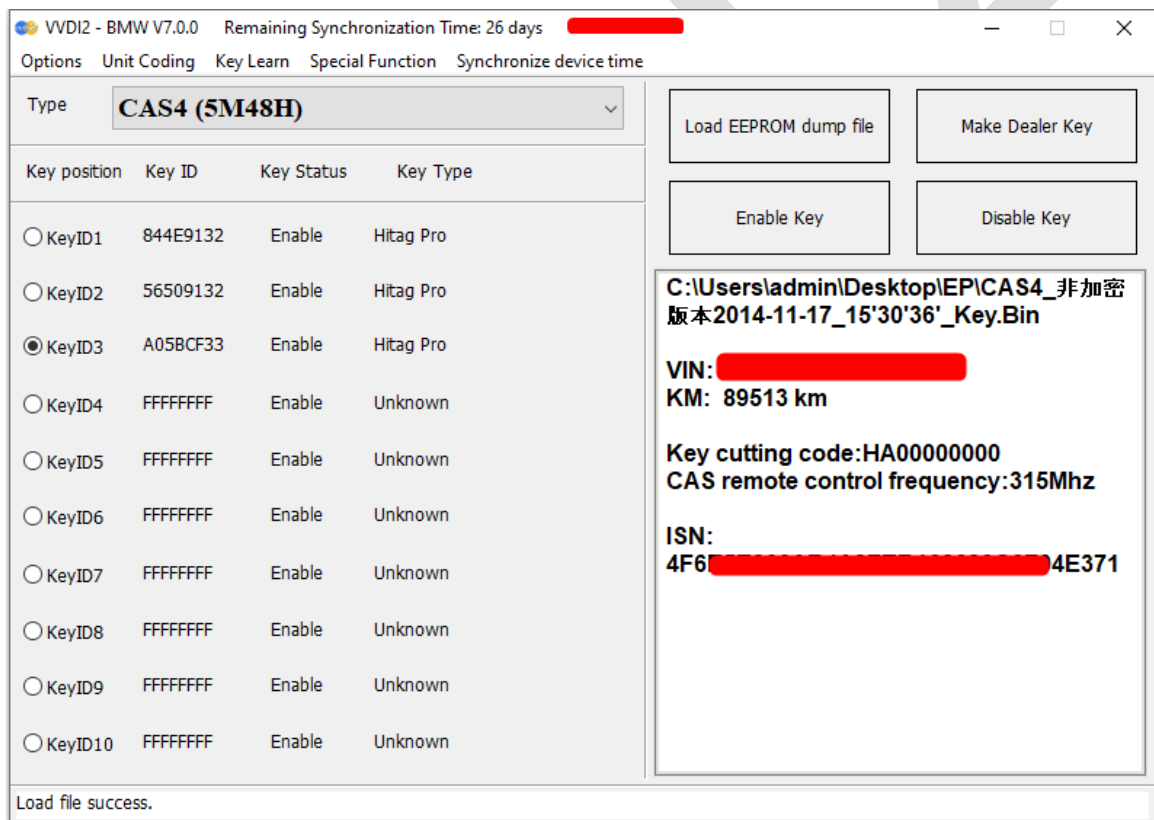
8.ECU/CAS ISN

Main Interface->>>Key Learn->>>ECU/CAS ISN (PICTURE 8.1)
This function support read information and ISN from some ECU, also support read VIN and repair VIN in ECU. Connect as connection diagram in correct option to read
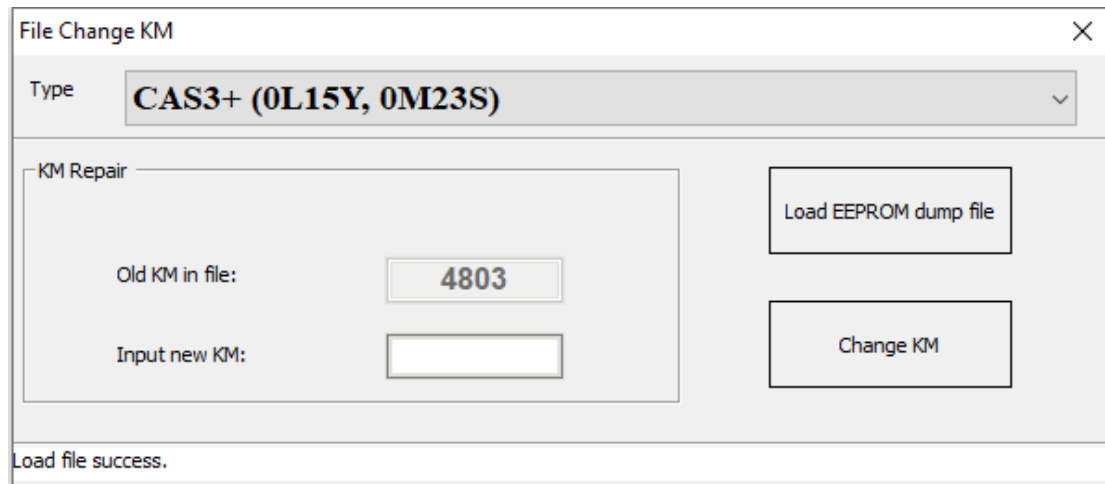
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9. Unlock Key

Main interface->>>special function->>unlock key

◆ Unlock function support unlock key prepared for CAS1/CAS2/CAS3/CAS3+/CAS3+ encrypt. 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

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10. File Change KM

Main menu interface->>>Special functions->>>File repair KM (PICTURE 10.1)

◆ **Support type**：EWS1,EWS2,EWS3, EWS4, CAS1(0K50E), CAS2(2K79K), CAS3(0L01Y), CAS3+(0L01Y,0M23S), CAS4(0L15Y), CAS4(5M48H)

◆ **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

File Change KM	×
Type **CAS3+ (0L15Y, 0M23S)** ⌄	
KM Repair	Load EEPROM dump file
Old KM in file: 4803	Change KM
Input new KM:	
Load file success.	

(PICTURE 10.1)

◆ **CAS1/CAS2/CAS3/CAS3+ /CAS3+ ISTAP 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 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 shown in instrument, take instrument away from car, avoid synchronize KM with CAS
2) Set CAS KM to 0km (Change KM with File Change KM, select type with chip mask,

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support 1L15Ymask and 5M48H mask)

3) Read instrument EEPROM dump with programmer then save EEPROM dump you read,

4) Select File Change KM ->F-Series Instrument and load EEPROM dump 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
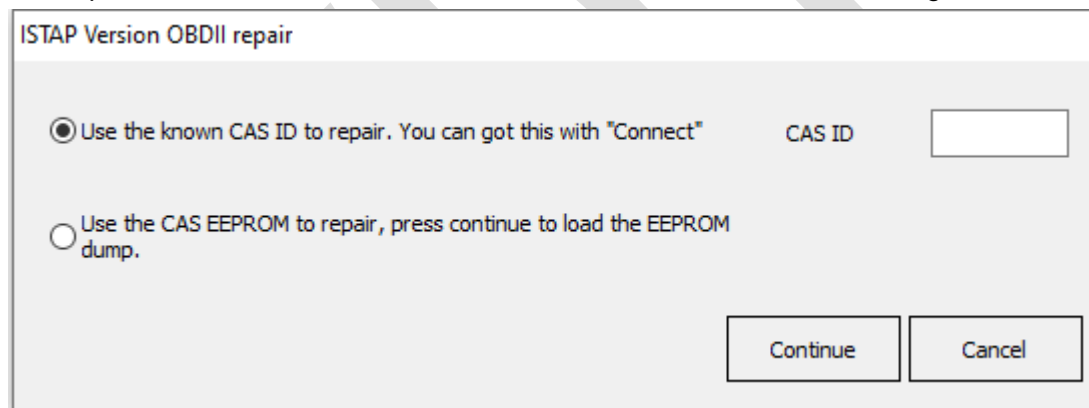
9) Finished

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11. CAS Repair(EEPROM OBDII)

Main menu interface->>>Special functions->>>File repair KM (PICTURE 11. 1)

11.1. CAS1(0K50E) OBDII Repair

◆ For suddenly condition causeCAS1 enter service mode while read CAS1 EEPROM via OBDII or CAS PLUG, you can select this type to repair

11.2. CAS3+ISTA-P4* OBDII Repair

◆ For suddenly condition cause CAS enter service mode while update ISTA-P4*，select this type to repair(PICTURE 11. 1)
◆ You need know CAS ID before continue. You can input the known CAS ID or load EEPROM for automatic search CAS ID
◆ Use the known CAS ID to repair: Before update CAS flash you have record CAS ID can use this way
◆ Use the CAS EEPROM to repair: If can't read CAS ID,you need to use this method to repair, connect the VVDI2 to the car with the OBD cable before clicking OK

```
ISTAP Version OBDII repair

◉ Use the known CAS ID to repair. You can got this with "Connect"      CAS ID  [        ]

○ Use the CAS EEPROM to repair, press continue to load the EEPROM
  dump.

                                              [ Continue ]    [ Cancel ]
```

(PICTURE 11. 1)

Attention: If the above method cannot repair CAS, you can use the VVDI BMW tool to disassemble and read the EP and FLASH of CAS to repair. For detailed steps, please refer to Chapter 11 CAS Repair in the BMW Tool Instruction Manual

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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 interface
◆ (PICTURE 12. 1) line 6: CAS3/CAS3+ interface

(PICTURE 12. 1)

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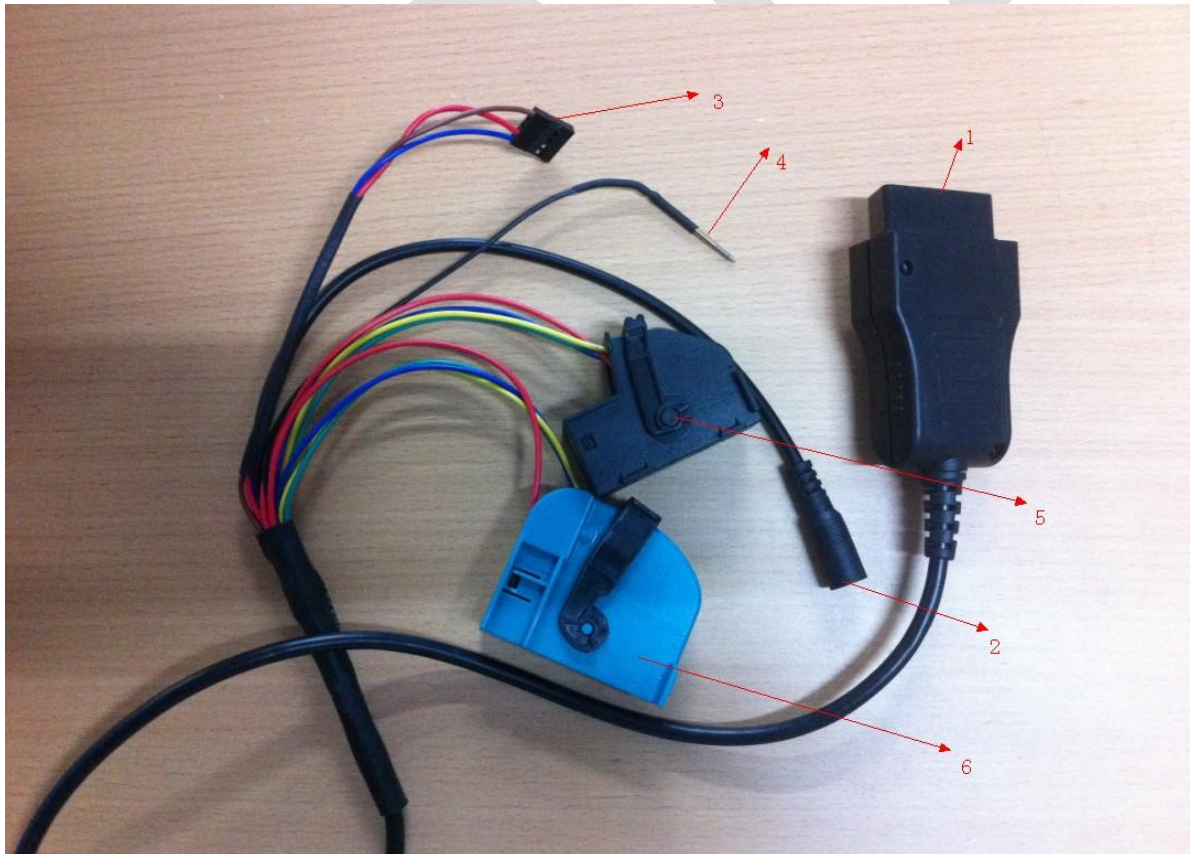
12.2. Make old CAS PLUG work on VVDI2

Old CAS PLUG can't use directly in VVDI2. 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)
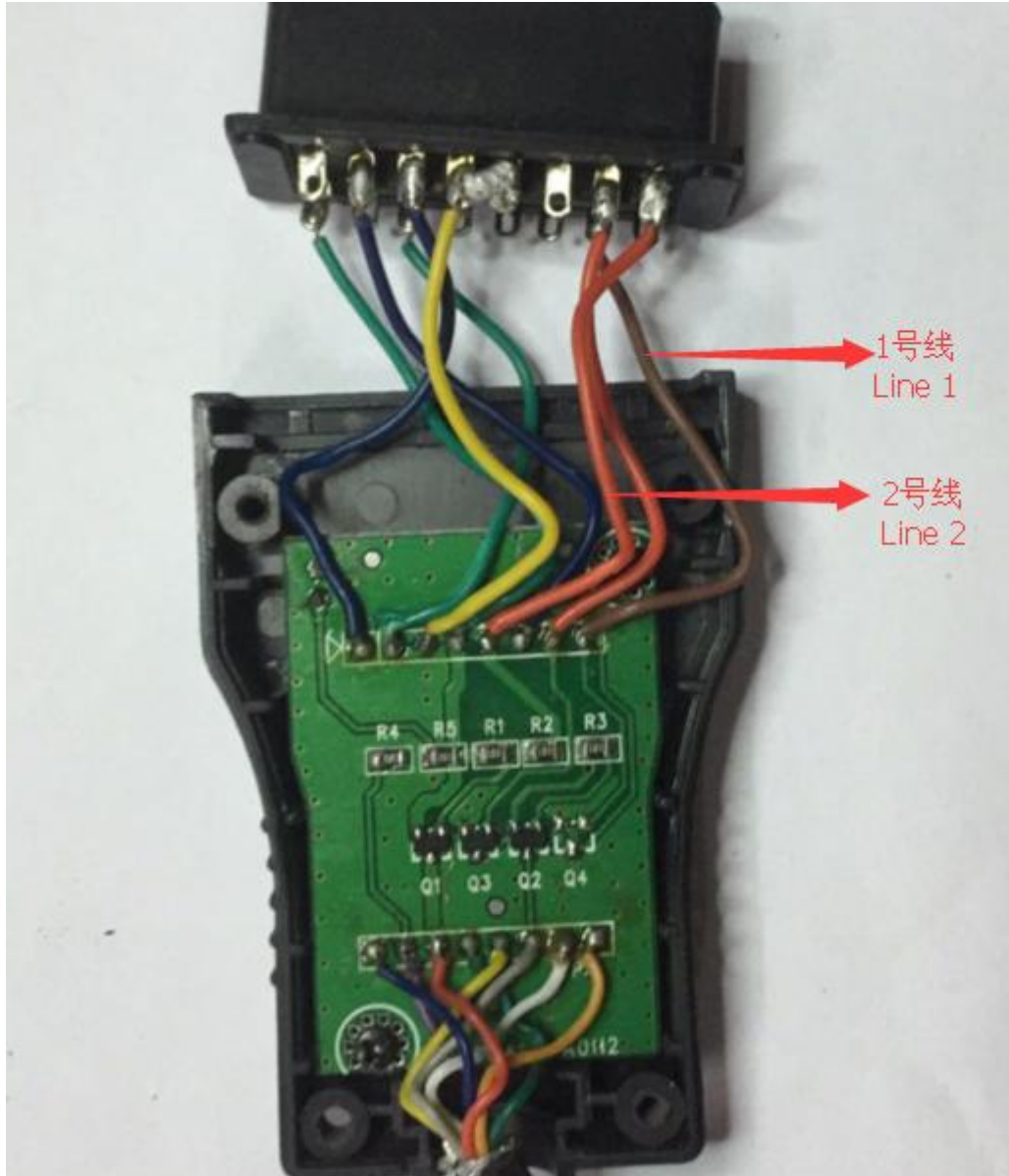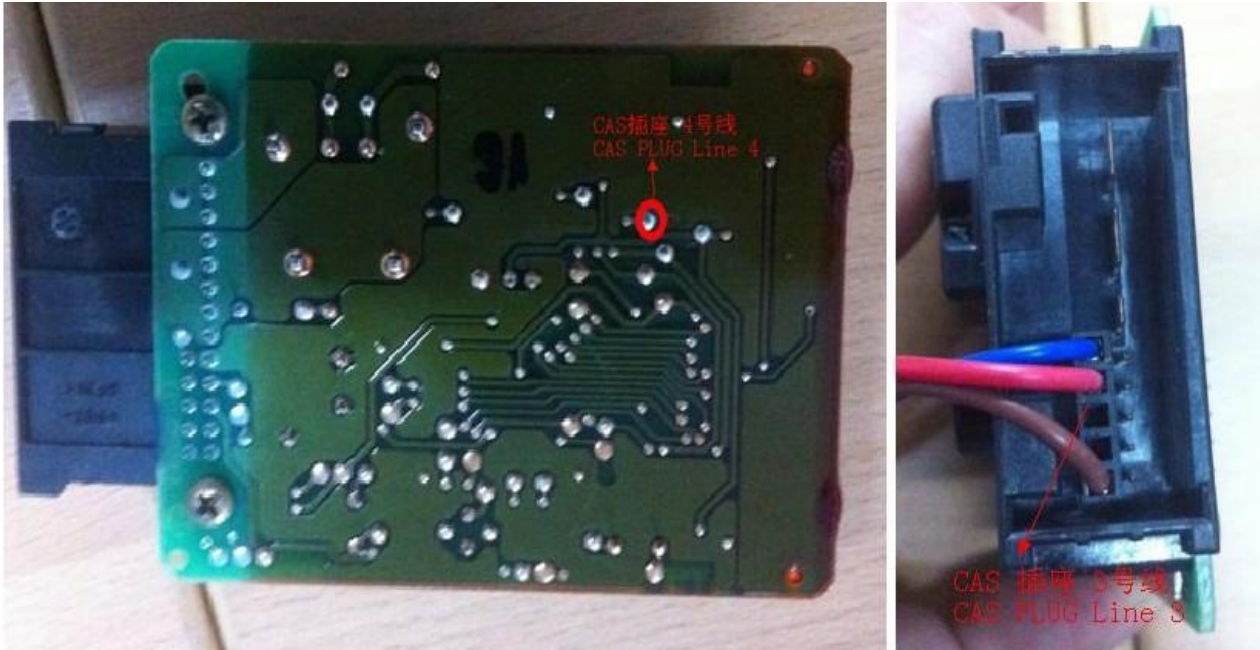

(PICTURE 12.2-1) original CAS PLUG

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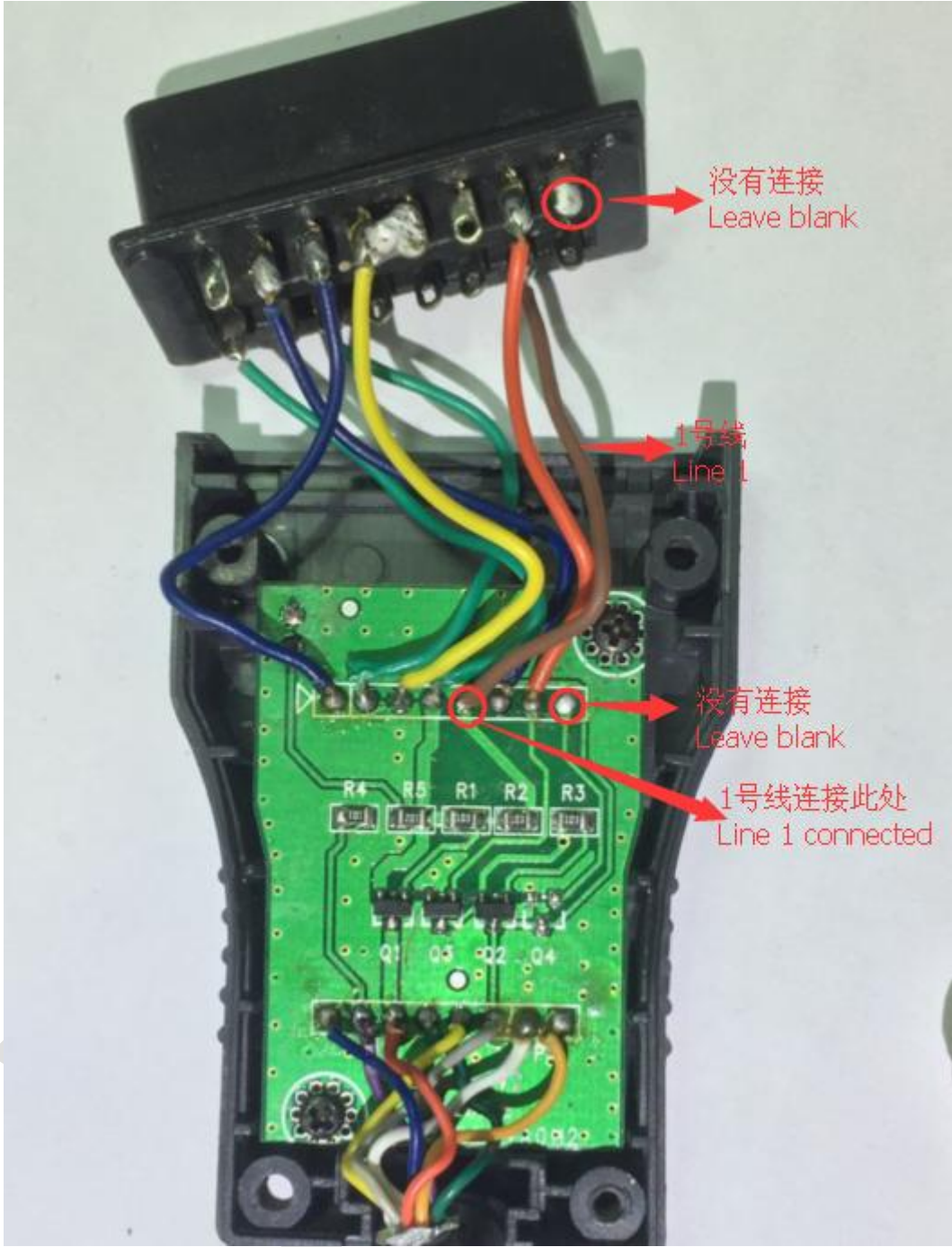
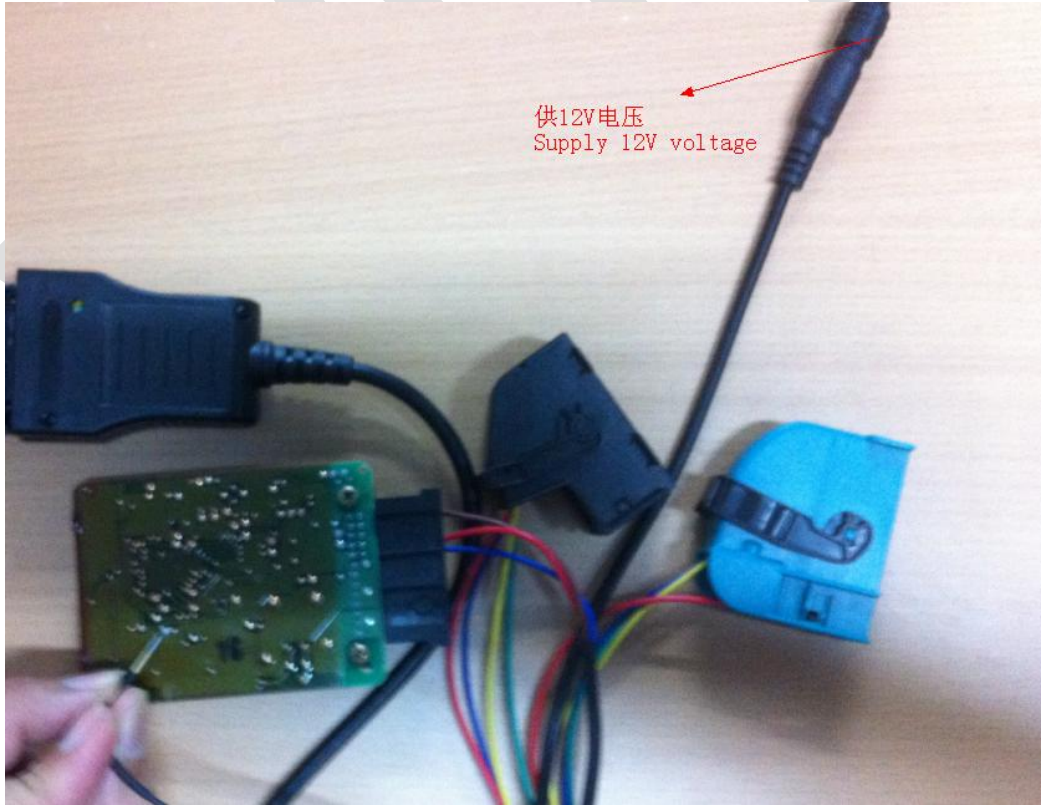(PICTURE 12.2-2) CAS PLUG works on VVDI2

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12.3. CAS PLUG connect to EWS/CAS

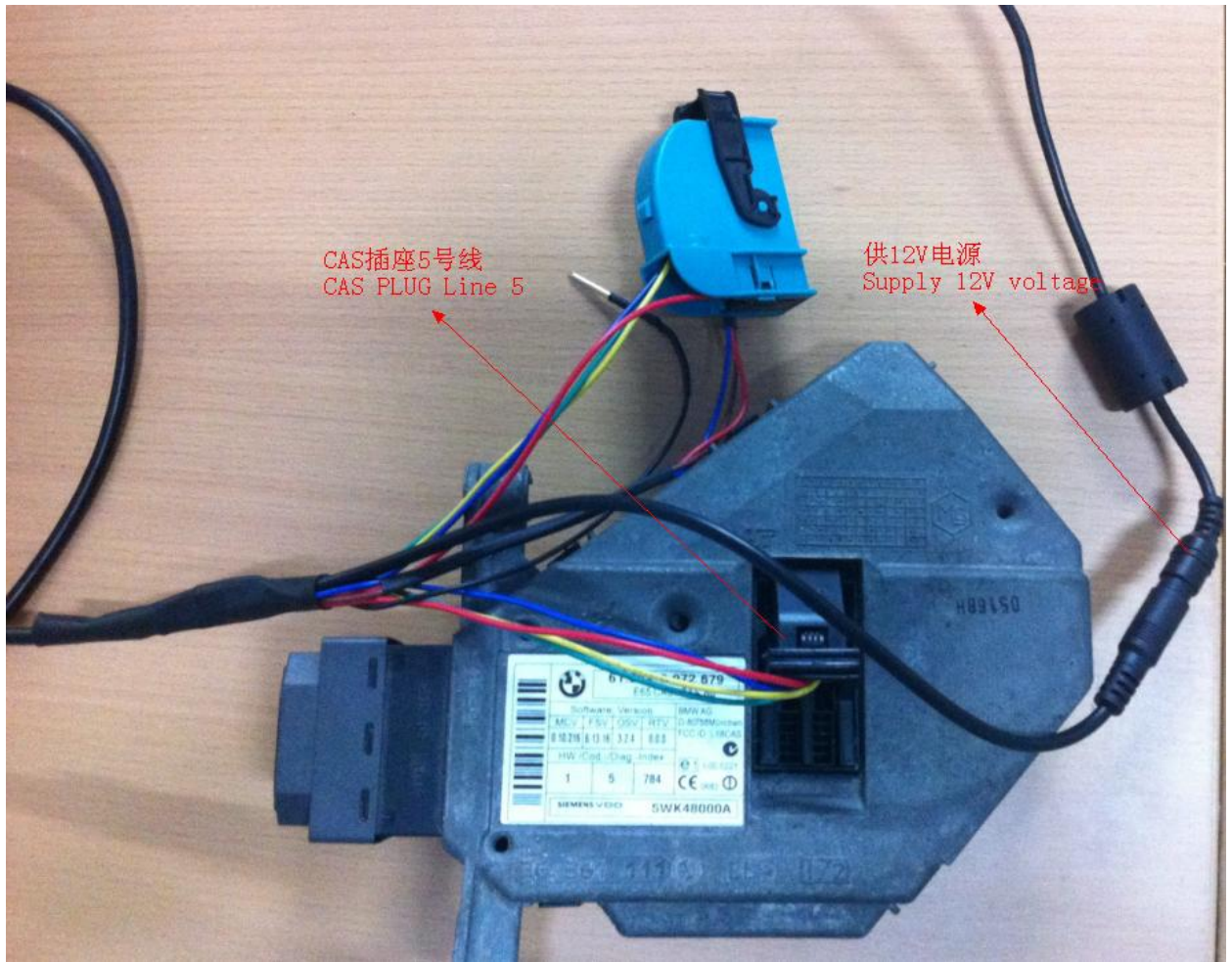◆ **CAS PLUG connect to EWS** (PICTURE 11.3-1) and (PICTURE 11.3-2)
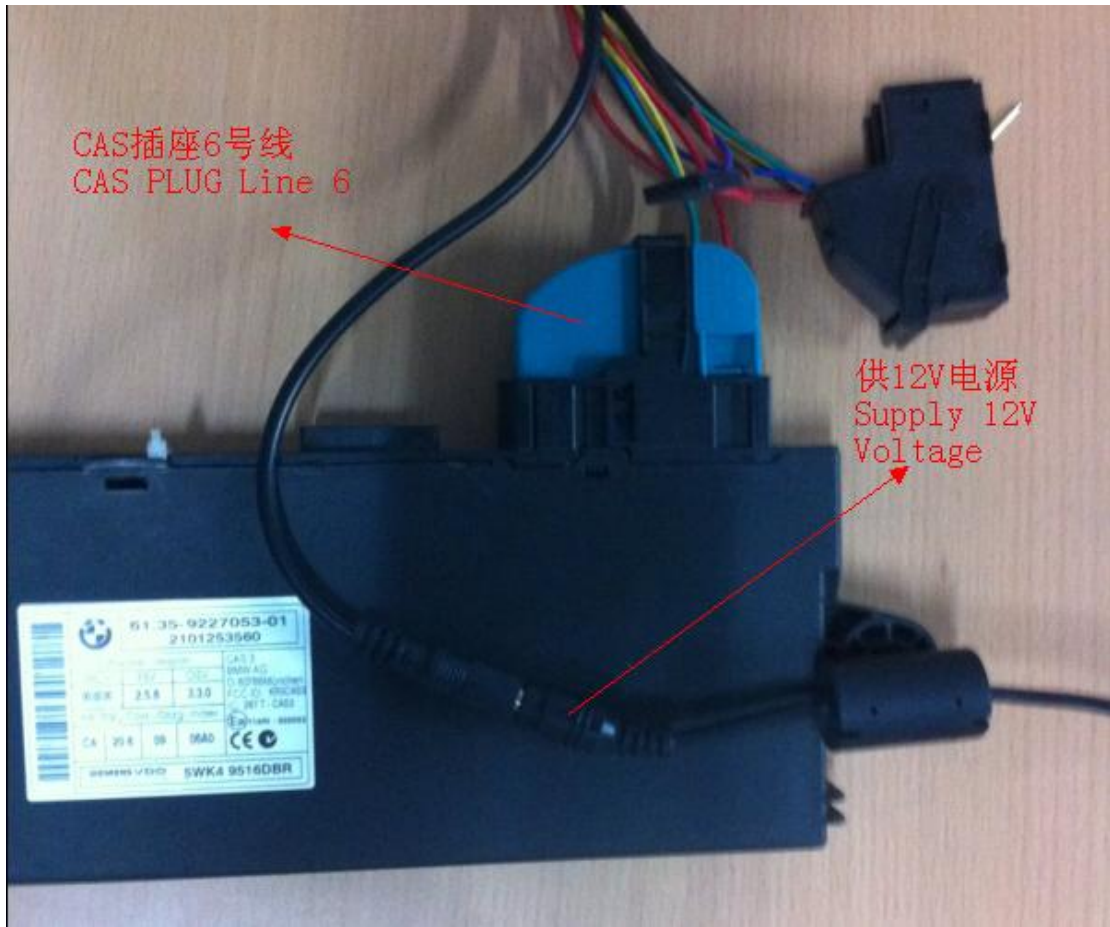

(PICTURE 12.3-1)

(PICTURE 12.3-2)

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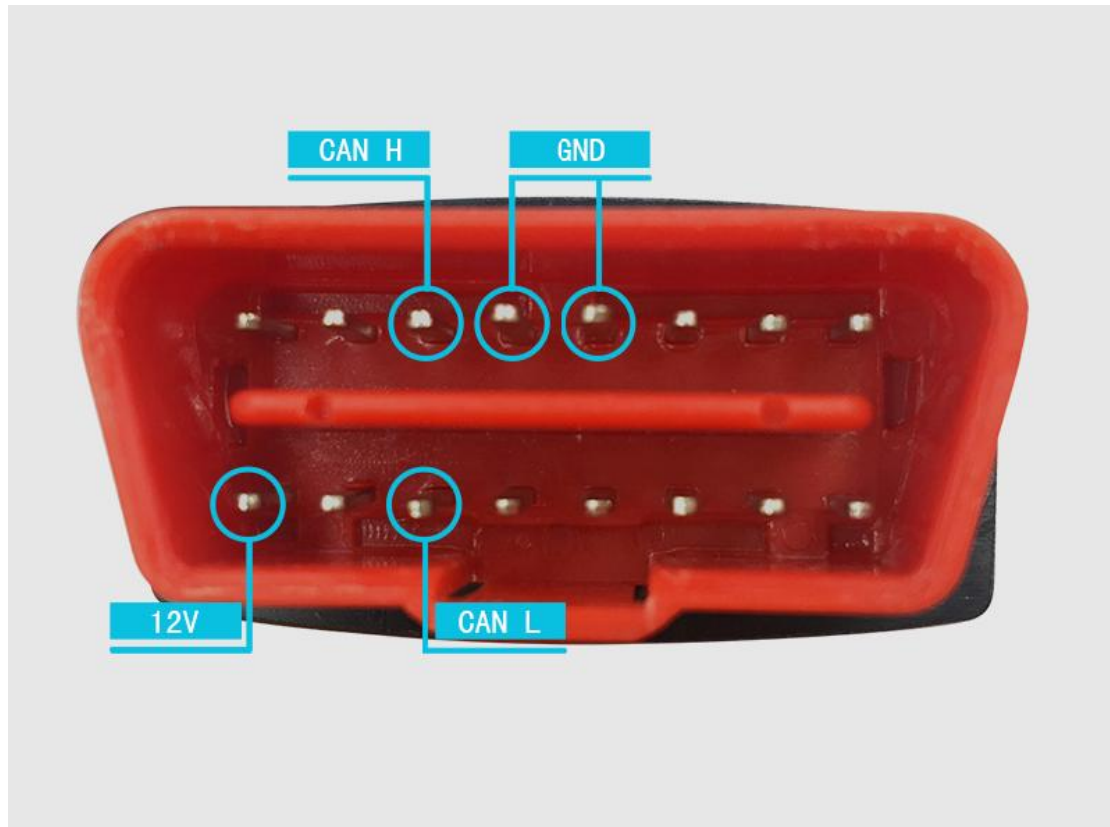◆ **CAS PLUG connect to CAS1/CAS2** (PICTURE 12.3-3)

(PICTURE 12.3-3)

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◆ **CAS PLUG connect to CAS3/CAS3+** (PICTURE 12.3-4)

(PICTURE 12.3-4)

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12.4. Manual connect to achieve CAS PLUG

◆ **Connect marking definition in CAS to VVDI2 OBDII marking definition，provide 12V power**

◆ **VVDI2 OBD marking definition** (PICTURE 12.4-1)

(PICTURE 12.4-1)

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◆ **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)

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