VVDI – MB TOOL User Manual

VVDI

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1.Document Declaration

Please view the following declaration carefully:

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

VVDI MB

2.Overview

2.1. Noun explanation

- **Mercedes Benz:** A car brand come from German, we simply use MB, BENZ instead
- **EIS**：Sometimes we call it EZS. The immobilizer system for MB cars
- **ESL:** Sometimes we call it ELV
- **Chassis:** Mainly use to distinguish car platform, the same platform will have same EIS type, example: W204, W216 etc

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2.2. VVDI – MB TOOL Hardware

1. VVDI-MB TOOL device
2. IR adaptor
3. USB cable
4. NEC adaptor 1
5. NEC adaptor 2
6. NEC adaptor base PCB
7. K Line in OBD line
8. OBD line

9. VVDI-MB NEC Key Adaptor (not standard component, need buy extra)
10. Connector for W164, W209, W211 without gateway (not standard component, need buy extra)
11. VVDI-MB W204 ELV adaptor (not standard component, need buy extra)

2.3. Mainly function

◆ **Read Write Key**

1. Read key basic information
2. Key with BE version, we can read password from key via IR directly. Of course, renew key, write new key file via IR is also supported
3. Support IR repair key, repair key not work via IR
4. NEC adaptor can read key password from NEC v51, v57 version
5. Support write and renew (NEC adaptor) NEC key versions following:
   v51, v57
   v28, v35, v40
   v03, v06, v08 (Keyless Go)
   v05, v07, v09 (Keyless Go)
   v59, v61 (Keyless Go)

◆ **EIS Tools**

1. Support read EIS data via OBD and IR adaptor
2. Under OBD mode, we provide auto detect EIS type for CAN protocol
3. Support read W164, W209, W211 EIS via OBD without gateway support
4. Support read old Motorola EIS (HC05, HC08, K-Line) password via IR directly
5. Support renew EIS, make 2nd hand EIS to new one (online)
6. Support replace EIS, you can write original EIS data to new EIS via IR
7. Support write new VIN
8. Support clear TP
9. Support disable key position
10. Support personalize W204 ESL
11. Support test EIS, ELV, working key status
12. Support type：
    W164
    W164 2009-
    W166, 197, 212, 218, 246
    W169, 209, 211
    W172, 204, 207, 212(old, with ELV)
    W203, 463, 639 (K)
    W202, 208, 210 (K)
    W215, 220 (K)
    W230 (K)
    W216
    W221
    W639 2009-

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◆ **Password Calculation: support working key and lost all key**

1. Password calculation can get the key password from working key and EIS(online)
2. CAN protocol EIS all support password calculation (support BGA keys and other NEC keys)
3. We also support calculate password for NEC v51, v57 keys. No soldering.
4. Data acquisition time depends on the key version. It needs about 3.5 minutes -13 minutes, BGA version need about 5 minutes
5. Calculate time in server: 30 seconds – 1 minute
6. Now VVDI-MB TOOL is the fastest tool for password calculation
7. **Lost all key password calculation: Now we support calculate password for W166, W212, W246, W212(old, with ELV) while lost all key**
8. Support type (have working key)：

   W164
   W164 2009-
   W166, 197, 212, 218, 246
   W169, 209, 211
   W172, 204, 207, 212(old, with ELV)
   W216
   W221
   W639 2009-

◆ **Prepare Key File**

1. Prepare key file means prepare the key file which you will write to new key(online)
2. Prepare key file need about 20 seconds
3. Support VVDI-MB type EIS data and old Motorola EEPROM dump

◆ **ESL Tools**

1. Support read ESL data via OBD (K-Line)
2. Support renew ESL, make 2nd hand ESL to new one (online)
3. Support replace ESL, you can write original ESL or EIS data to new ESL
4. Support write new VIN
5. Support clear TP
6. Support auto personalized ESL, no need renew EIS
7. Support check ESL damage status
8. Support repair W204 ESL NEC chip(fatal error: 0xAA) and Motorola ESL chip
9. Support renew VVDI-MB W204 emulator

◆ **Renew ECU/Gearbox**

1. This function support renew, write VIN, personalization operation for module ECU, Gearbox, ISM etc

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- **Special Instructions (2016.05.29)**

1. The newest cars after 2015 with FBS4 EIS don't support read data and password, we are researching it
2. Renew EIS and renew ESL require erase password. Now search erase password have 85% success rate. We are building a new server for erase password. It will support all erase password after new server finished
3. Auto personalized ESL: Now only support auto personalized ESL with key password all 00, we will support all the passwords in future (You can use "Personalize W204 ESL" instead before we publish new version). **In ESL window, you can input crypto password for auto personalize (no need renew EIS). Crypto password need calculate with other tools**

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3.Options

3.1. Language

Please manual set user language after first run program

Support following languages:

- **Chinese (Simplified)**
- **English**

3.2. User Manual

Open user manual folder

3.3. Open Log

Open log folder

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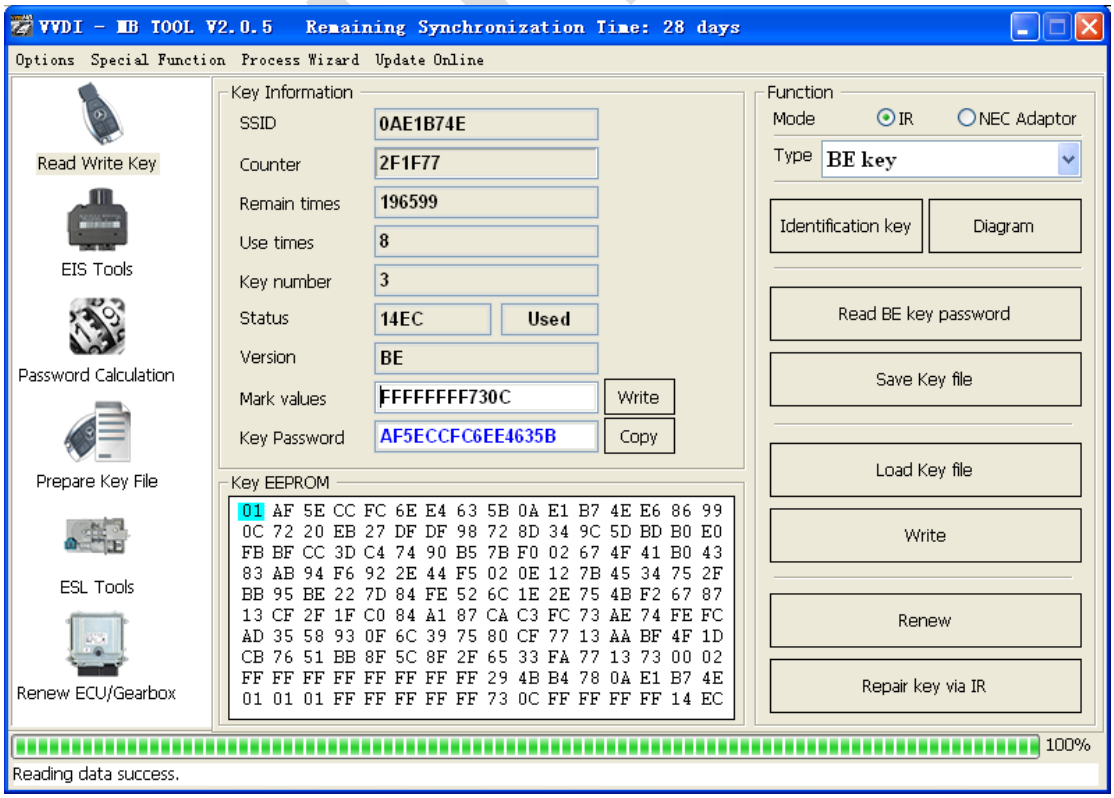
4.Read Write Key

Read Write Key support read key basic information, write key file, renew/write NEC key (Support Keyless Go). BE keys can read password directly via IR, renew BE key, write new key file to BE key
NEC adaptor support v51, v57 key password

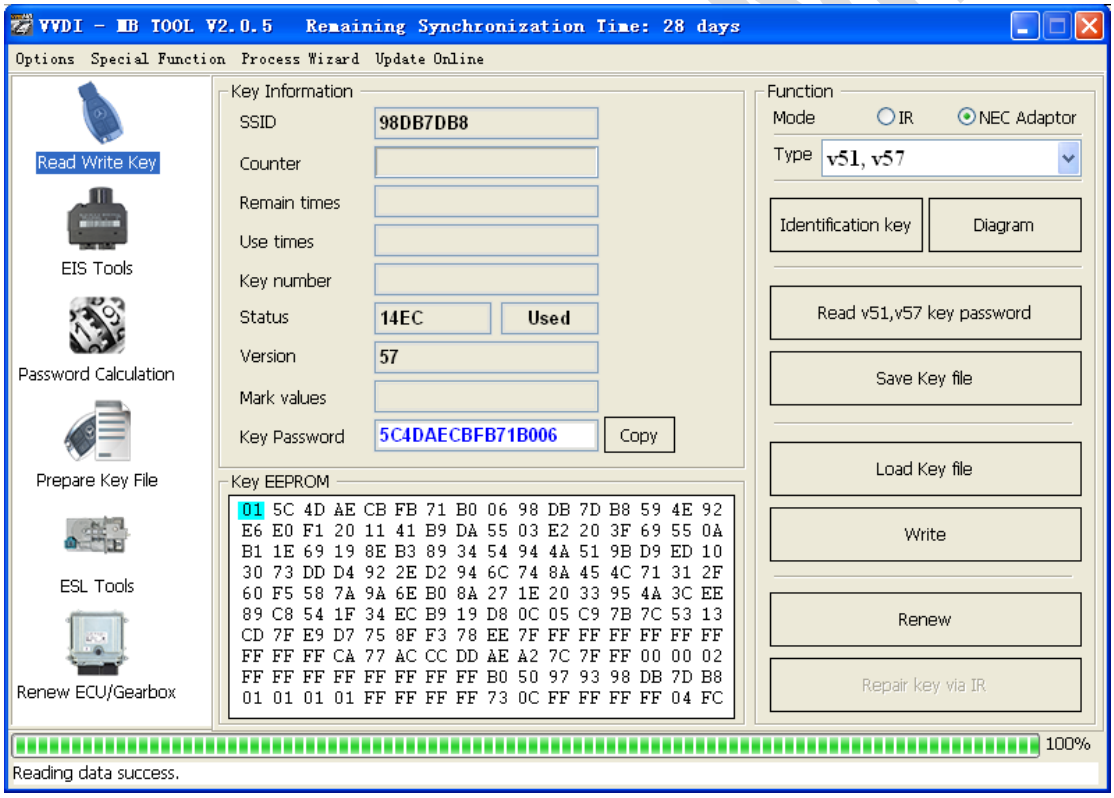
4.1. IR mode

Identification key：Support read key basic information: SSID, counter, remain times, use times, key number, status, version, mark values etc
BE key: Key version is BE，support read password and key eeprom stored in BE key, write new key file to make a working key, **renew used BE key to new one** etc
If working key is BE version, you can read password from key directly, no need read password from EIS
NEC&BGA Keys: Write key file to new original keys or erased keys via IR
Write mark values: Only BE key support, you can write information for yourself
Copy key password: You can copy the password to clipboard after success read key password
Repair key via IR: When identification key, you can only get SSID, Status, Version, then you can repair this key via IR

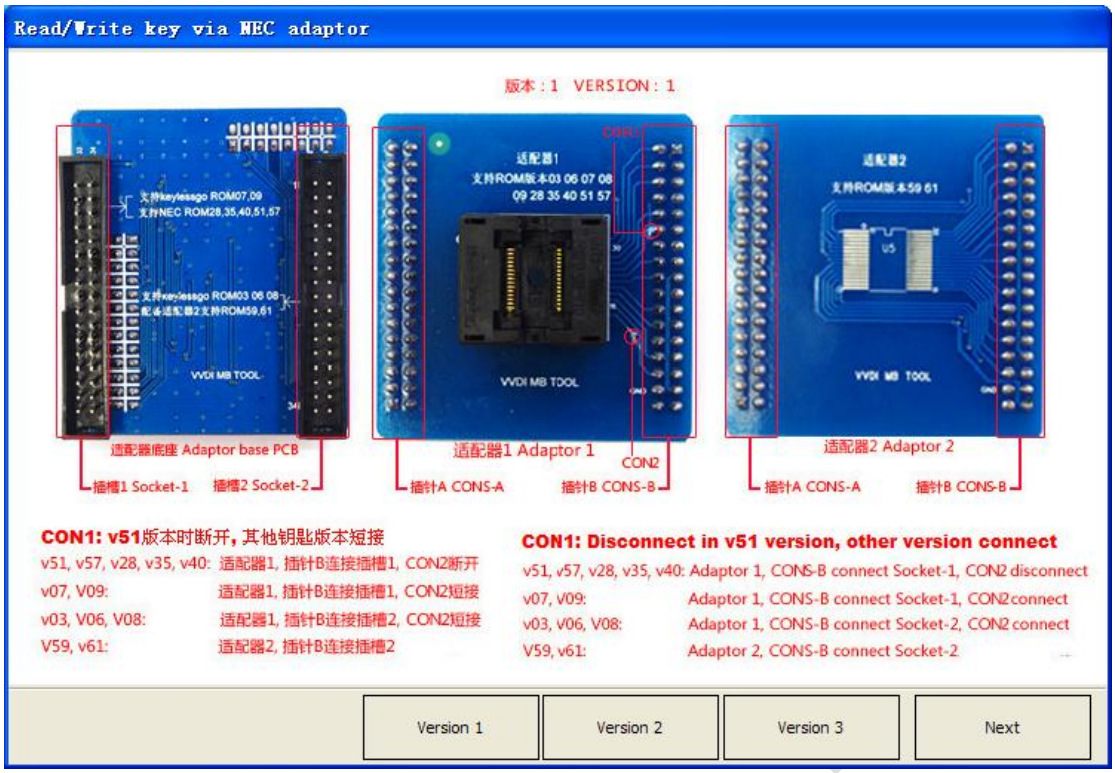


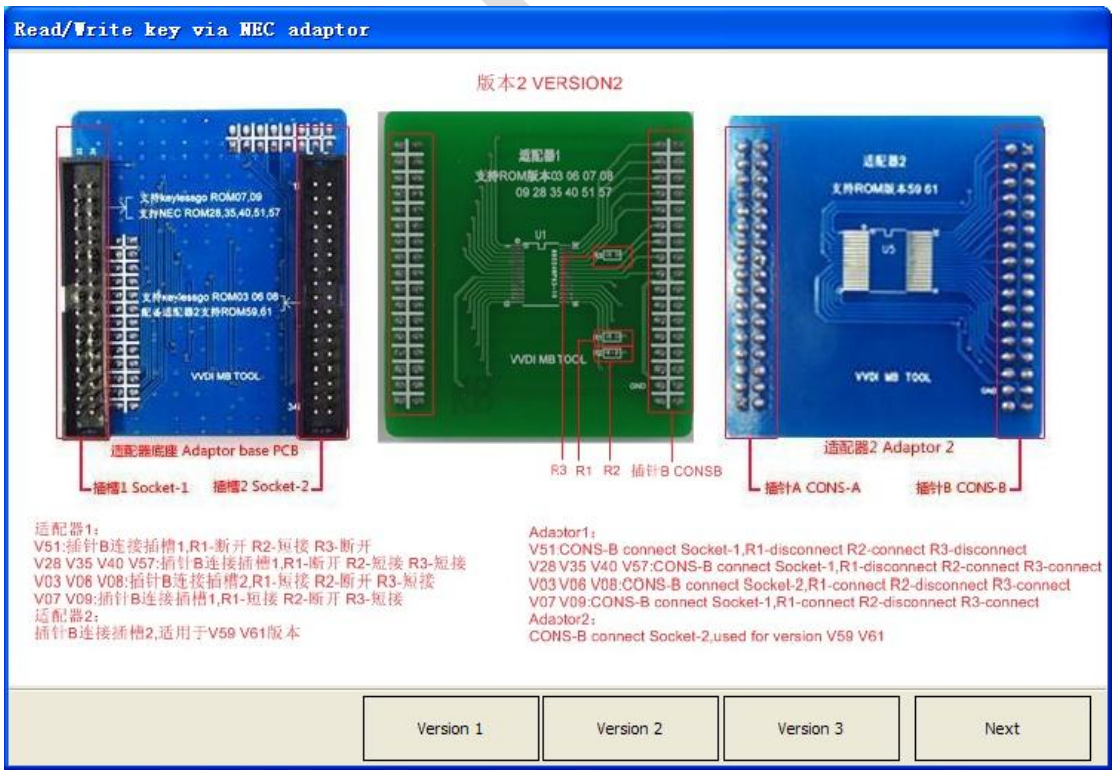
4.2. NEC Adaptor mode

Renew/Write new key file via NEC adaptor
Support versions:
v51, v57
v28, v35, v40
v03, v06, v08 (Keyless Go)
v05, v07, v09 (Keyless Go)
v59, v61 (Keyless Go)
The above keys all with NEC chip (not BGA type). You need solder the NEC chip from key and place it to NEC adaptor
For NEC v51, v57 version, support read password from working key directly, no need read password from EIS
For all NEC types, you must use "Identification key" to read one time before renew/write key



How to place key NEC chip to adaptor via read/write/renew key via NEC adaptor:



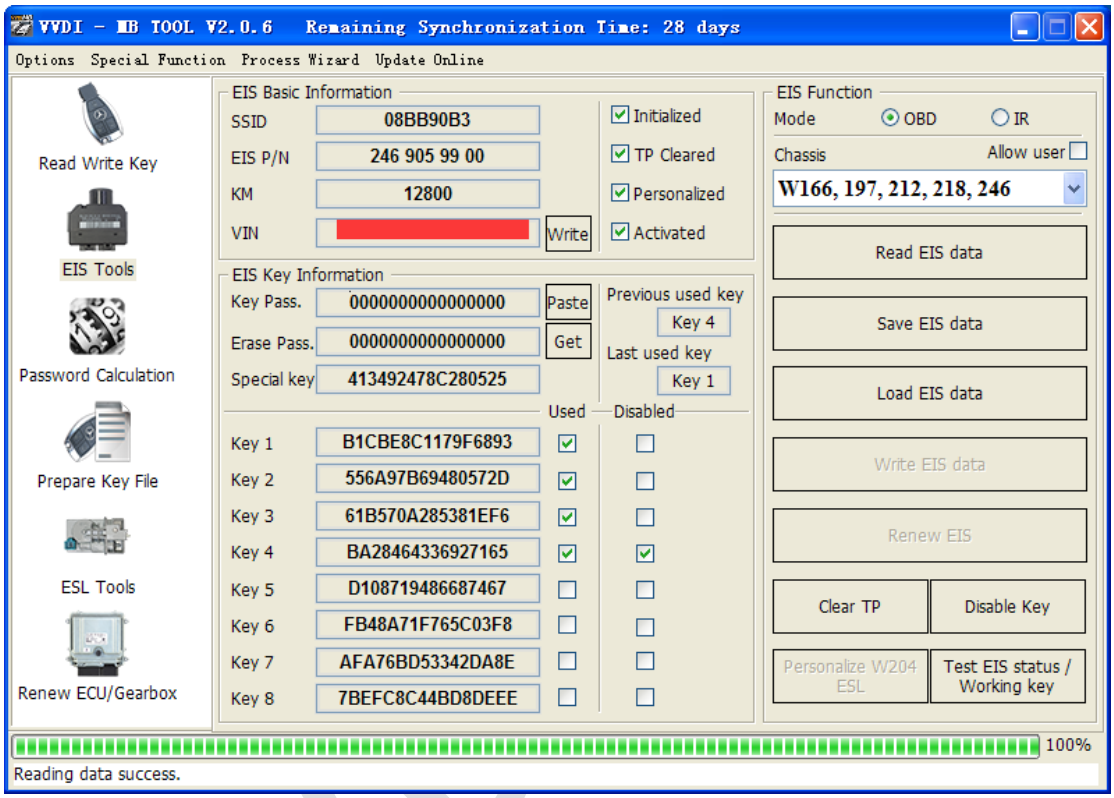


Read/Write key via NEC adaptor
VVDI MB NEC 钥匙适配器 VVDI MB NEC Key Adaptor
VVDI MB
NEC Key Adaptor
1. 支持读取v51, v57版本的钥匙密码
2. 支持擦除和写入的钥匙版本: v28, v35, v40, v51, v57, v03, v05, v06, v07, v08, v09, v59, v61
注意: 此版本适配器需选配, 如有需求请联系经销商
1. Support read key password from v51, v57 version
2. Support renew/write key versions: v28, v35, v40, v51, v57, v03, v05, v06, v07, v08, v09, v59, v61
Attention: NEC Key Adaptor is option component, connect dealer for help
Version 1
Version 2
Version 3
Next

5.EIS Tools

EIS data can prepare key file
VVDI MB TOOL support 2 mode to read EIS data: OBD and IR adaptor

This picture is read from W246 EIS



5.1. EIS type

Support types:

W164
W164 2009-
W166, 197, 212, 218, 246
W169, 209, 211
W172, 204, 207, 212(old, with ELV)
W203, 463, 639 (K)
W202, 208, 210 (K)
W215, 220 (K)
W230 (K)
W216
W221
W639 2009-

5.2. Functions

1. **Mode**: Support OBD and IR adaptor read EIS. You need connect OBD line to car in OBD mode, IR mode only need IR adaptor
2. **Chassis**: EIS type, **support auto detect CAN protocol EIS under OBD mode**
3. **Allow user**: When you select this option, allow input key information, password, VIN manually
4. **Read EIS data**: Read basic information and key information from EIS. **Attention: You can read password via IR directly, select IR mode, EIS is old Motorola type HC05, HC08 (K-Line)，support add key or lost all key**
5. **Save EIS data**: Save the read EIS data. Support save 2 types: VVDI-MB type and HC05 type
6. **Load EIS data**: Load VVDI-MB type EIS data
7. **Write EIS data**: First you should read EIS or load EIS data, second write EIS data to new EIS. This function can use to replace EIS. Attention: Only support under IR mode, but you must connect OBD line to car
8. **Renew EIS**: Input correct key password and erase password, renew 2nd hand EIS to a new one. Attention: Only support under IR mode
9. **Clear TP**: This function only use to close transport protection. Once the EIS activated, this option will be always selected even renew EIS. The EIS without transport protection closed doesn't support write data
10. **Disable Key**: This function can disable key position
11. **Personalize W204 ESL**: This function can synchronize key information from EIS to W204 ESL, use for change W204 ESL. Before run this function, make sure "EIS status: Personalized selected, Activated not selected", "ESL status: Activated not selected". After success, ESL will have personalized selected. Open ignition with working key will activate ESL automatically. Attention: Only support under OBD mode, and chassis number select W172, 204, 207
12. **Test EIS status/Working key:** This function can test EIS, ELV and working key status

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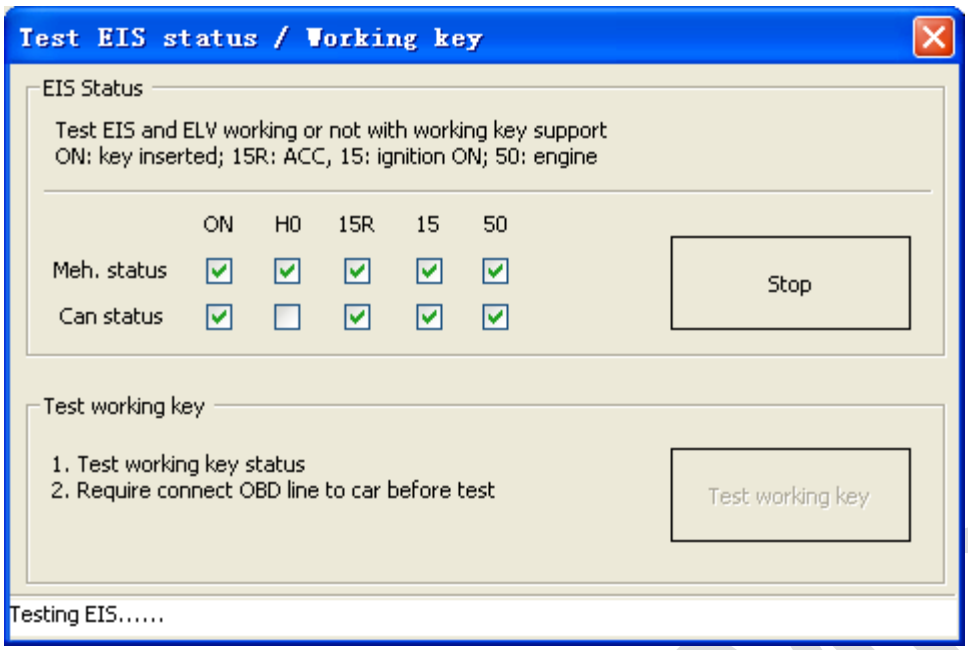

5.3. EIS Basic Information

SSID: The identification ID in EIS, use to recognize key, something like key ID

EIS P/N: EIS part number, the front 3 characters is the main type, example: W164, W166, W246 etc

KM: KM stored in EIS

VIN: VIN stored in EIS

Write VIN: Under OBD mode, we support write VIN to ESI without activated status

Initialized: Selected means EIS was already initialized. All EIS include new one with selected status

TP Cleared: Selected means transport protection was closed. You can't write data to EIS without transport protection closed

Personalized: Selected means already written car information, insert working key will activate EIS automatically

Activated: Selected means this EIS already have working key. You can't write data to EIS with activated status

5.4. EIS Key Information

Key Password: Key password use for EIS to recognize working key. It is also the password when prepare key file (IMPORTANT)

Paste key password: You can paste your password here directly

Erase Password: Renew activated EIS to un-activated status, make EIS allow write new data. Attention: Renew EIS not only need erase password but also key password

Get erase password: First read EIS, then press button “Get”, get erase password online

Special Key: A special key stored in EIS

Previous used key: The previous used key in EIS, it is always different from last key

Last used key: The last used key in EIS. Example: insert working key with 3, 3, 1, 1: the lasted used key is 1, the previous used key is 3

Key 1 – Key 8: Key track (hash) for every key. Attention: key track is not a fixed value. When you insert a working key to EIS, it’s key track will changed. You can verify working key status though this method

Key used: Selected means this position have a working key

Key Disabled: Selected means this position was disabled, not accept any key. Now we don’t support enable key

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6. Password Calculation

6.1. Overview

Password calculation support working key mode and lost all key mode. WORKING KEY MODE NEED PAY 1 TIME FOR SUCCESS CALCULATION. LOST ALL KEY NEED PAY 2 TIMES FOR SUCCESS CALCULATION

Password calculation – working key: can get key password through EIS and working key (online)

CAN protocol EIS all support password calculation

Support BGA keys and other NEC keys

Support calculate password for NEC v51, v57 keys. No soldering, safe method.

Data acquisition time depends on the key version. It needs about 3.5 - 13 minutes

BGA version need about 5 minutes, some versions only need 3.5 minutes

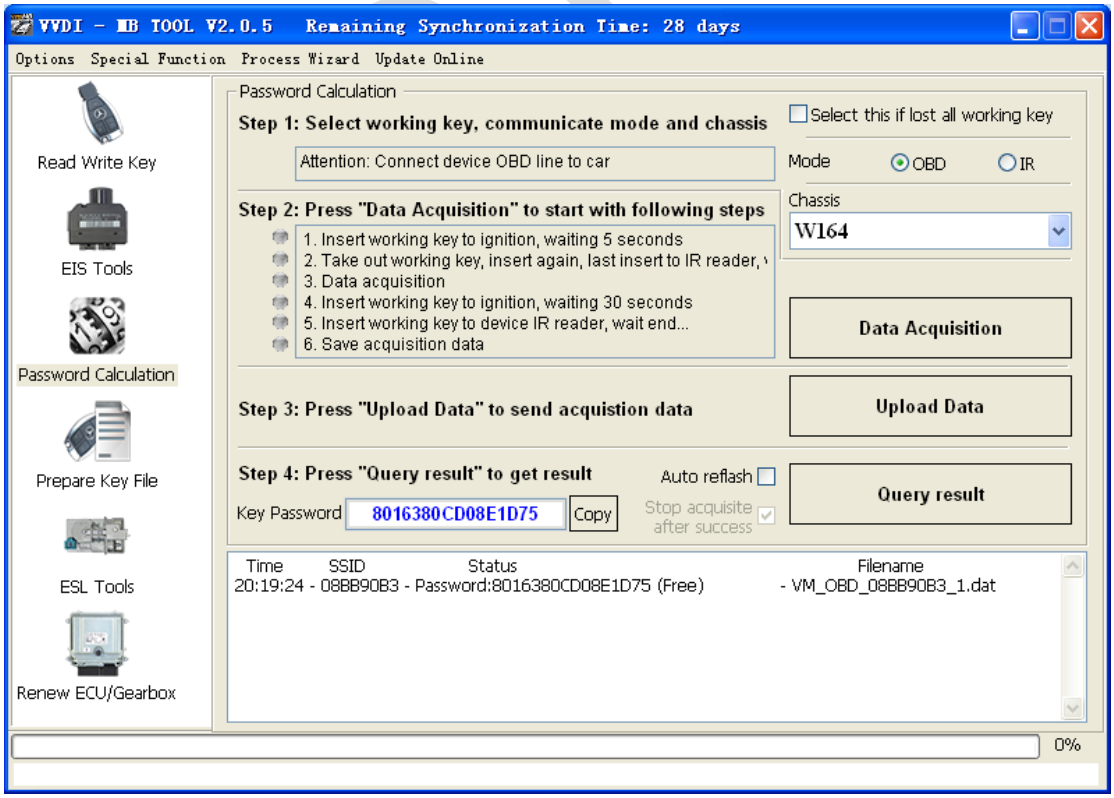
Calculate time in server: 30 seconds – 1 minute

Password calculation – lost all key: support W166, W212, W246, W212(old with ELV)

EIS for password calculation while lost all working key

Lost all key data acquisition time depends on EIS type, It needs about 3.5-8 minutes

Lost all key calculate time in server: 30 seconds – 1 minute



6.2. Support type

- Add key support type
  W164
  W164 2009-
  W166, 197, 212, 218, 246
  W169, 209, 211
  W172, 204, 207, 212(old with ELV)
  W216
  W221
  W639 2009-
- Lost all key support type
  W166, 197, 212, 218, 246
  W212 (old with ELV)

6.3. Functions

Mode: OBD and IR adaptor, mode use for communicate with EIS

Chassis: Select chassis number, you can detect it with auto detect in EIS Tools

Data Acquisition:

Press “Data Acquisition”, it will continue with following steps automatically

1. Insert working key to ignition, waiting 15 seconds
2. Insert working key to device IR reader, verify key and car
3. Data acquisition
4. Insert working key to ignition, waiting 30 seconds
5. Insert working key to device IR reader, wait end...
6. Save acquisition data

Upload Data: Upload saved acquisition data to server for calculate password. Attention: Once success calculate password for one SSID, the server will not accept calculate the acquisition data with same SSID in 2 hours. **After 2 hours, acquisition data with same SSID upload to server will start with a new task**

Query result: Query server calculation result. The password will fill in key password area automatically after success calculation. Use “Copy” copy password to clipboard

Auto reflash: Program will auto re-flash server result until there’s no task for this device. You can start data acquisition once more while auto reflash starting

Stop acquisite after success: If you are run data acquisition while auto reflash running, program will stop the acquisition progress when find correct password

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6.4. About query result status

Query result support query calculation result in 24 hours, others don't support

Query result will display Time, SSID, Status, Filename (name when upload to server)

Status has the following types:

1. Queuing: number x, require about y minutes, means your task need y minutes
2. Processing: requires 1 minutes, means your task need 1 minute to finish
3. Password: xxxxxxxxxxxxxxx (Free), means success find password, "Free" show this task is calculated for free or this task already success calculated before
4. Discard: Once you success calculate the password, in 2 hours, the upload acquisition data with same SSID will discard
5. Already upload: means the server already have this file in queuing
6. Pay for password calculation before upload: means your device doesn't have authorize for calculation. Contact your dealer and pay for password calculation
7. Failed: means this task failed to get password, you can run data acquisition again. Failed task is always free

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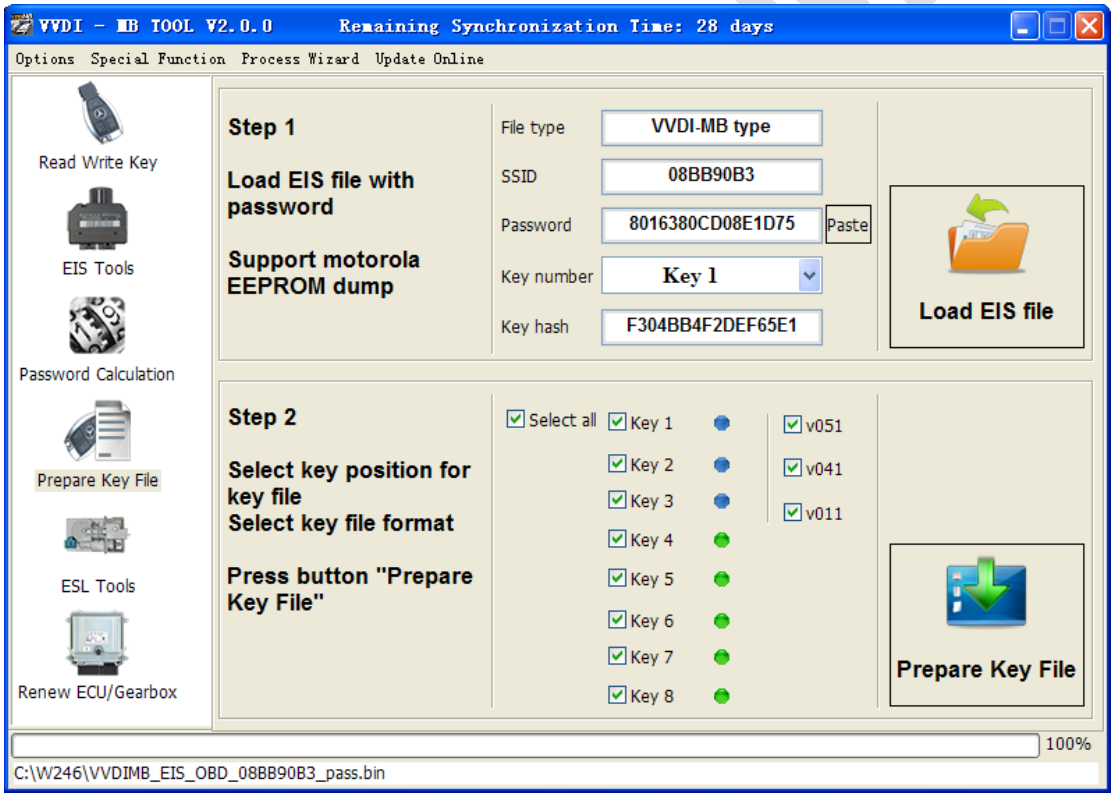
7. Prepare Key File

Prepare key file means prepare the key file which you will write to new key (online)

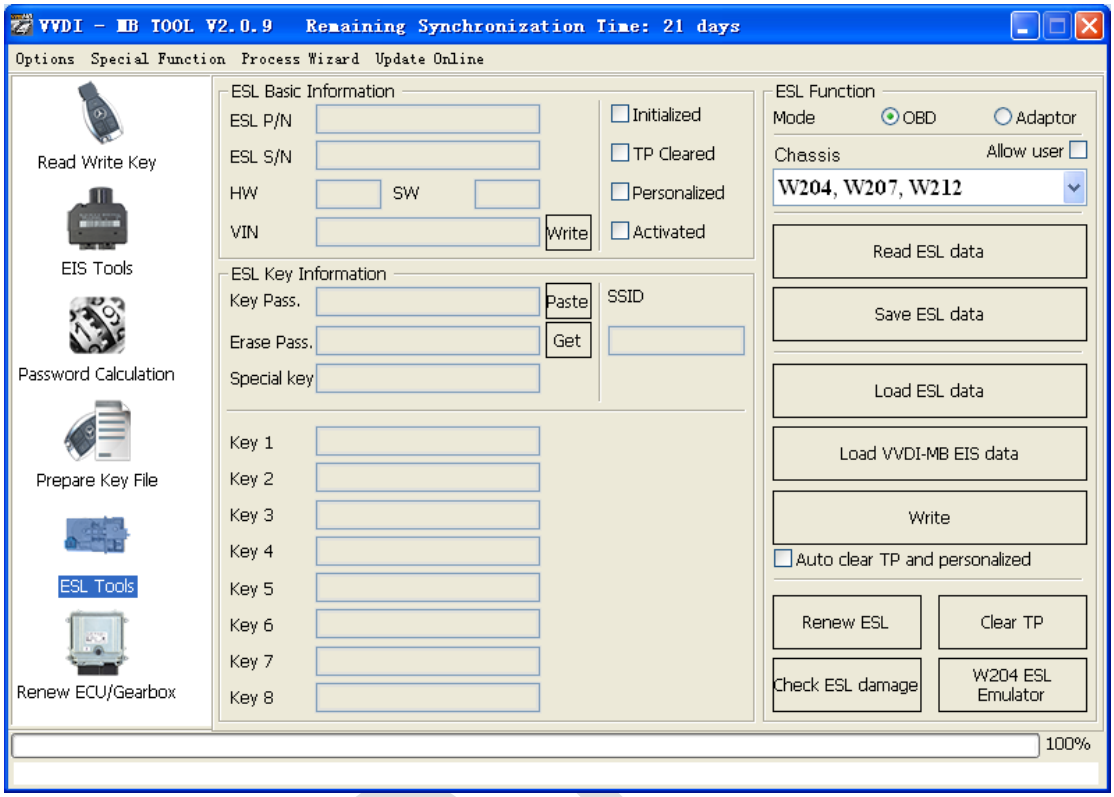
Step 1: Load EIS file with password. The file can auto detected by VVDI-MB TOOL
Support VVDI-MB type and old Motorola EEPROM dump file
If the loaded EIS don't contain key password, paste your password with "Paste"
After load file key position show blue means it is used
After load file key position show green means it is unused
After load file key position show gray means it is disabled

Step 2: Press "Prepare Key File". This function need online, about 20 seconds
It will prepare the key file after success find in server
After prepare key file, key position show green means success
After prepare key file, key position show red means failed



8. ESL Tools

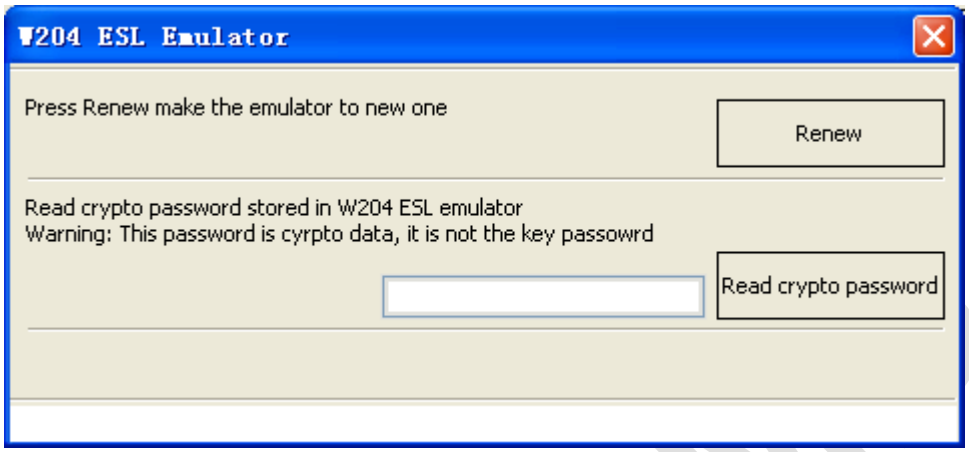
ESL Tools can read/write/renew ESL via OBD(K-Line). Adaptor also support



8.1. Functions

1. **Mode**: Now only support OBD (K-Line). If ESL was on car, you need connect the K-Line(find from device OBD head) to ESL separately
2. **Chassis**: ESL type
3. **Allow user**: If select this option, allow input key track, password, VIN manually
4. **Read ESL data**: Read basic information and key information from ESL
5. **Save ESL data**: Save the read ESL data
6. **Load ESL data**: Load ESL data read by VVDI-MB TOOL
7. **Load VVDI-MB EIS data**: Load VVDI-MB type EIS data
8. **Write**: Write the key information (shown in window) to ESL
9. **Auto clear TP and personalized**:
   If you select this option, it will close transport protection and personalized ESL automatically while write data. Attention: Correct key password and EIS SSID should placed with this option
10. **Renew ESL**: Input correct erase password, renew 2nd hand ESL to a new one
11. **Check ESL damage**: Most W204 ESL will damage with lock status. You can test it
12. **Clear TP**: Close transport protection in new ESL. The ESL without transport protection closed doesn't support write data

13. **Unlock W204 ESL**: Fix the locked ESL to normal one (NEC chip fatal error: 0xAA). This function need buy an extra NEC ELV adaptor, support W204 ESL and old Motorola ESL. You need select Adaptor option in ESL window
14. **W204 ESL Emulator**: Support renew VVDI-MB ESL emulator, the emulator will finish all the W204 ESL function. Before you use emulator, please renew it first, then you can do personalize. Connection is same with original W204 ESL



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8.2. ESL Basic Information

ESL P/N: ESL part number, the front 3 characters is the main type, example: W204
ESL S/N: ESL serial number
HW: ESL hardware version
SW: ESL software version
VIN: VIN stored in ESL. Attention: only last 14 characters
Write VIN: Support write VIN to ESL without activated status
Initialized: Selected means ESL was already initialized
TP Cleared: Selected means TP was cleared. You can't write data to ESL without TP cleared
Personalized: Selected means already written car information, insert working key will activate ESL automatically
Activated: Selected means this ESL already have working key. You can't write data to EIS with activated status

8.3. ESL Key Information

Key Password: Key password use for EIS to recognize working key. It is also stored in ESL
Paste key password: You can paste your password here directly
Erase Password: Renew activated ESL to new one
Get erase password: First read ESL, then press button "Get", get erase password online
Special Key: A special key stored in ESL. Normally it is same with EIS special key
SSID: You can't read this from ESL. When you write ESL, it need this value
Key 1 – Key 8: Key track (hash) for every key. Normally it is same with EIS key track

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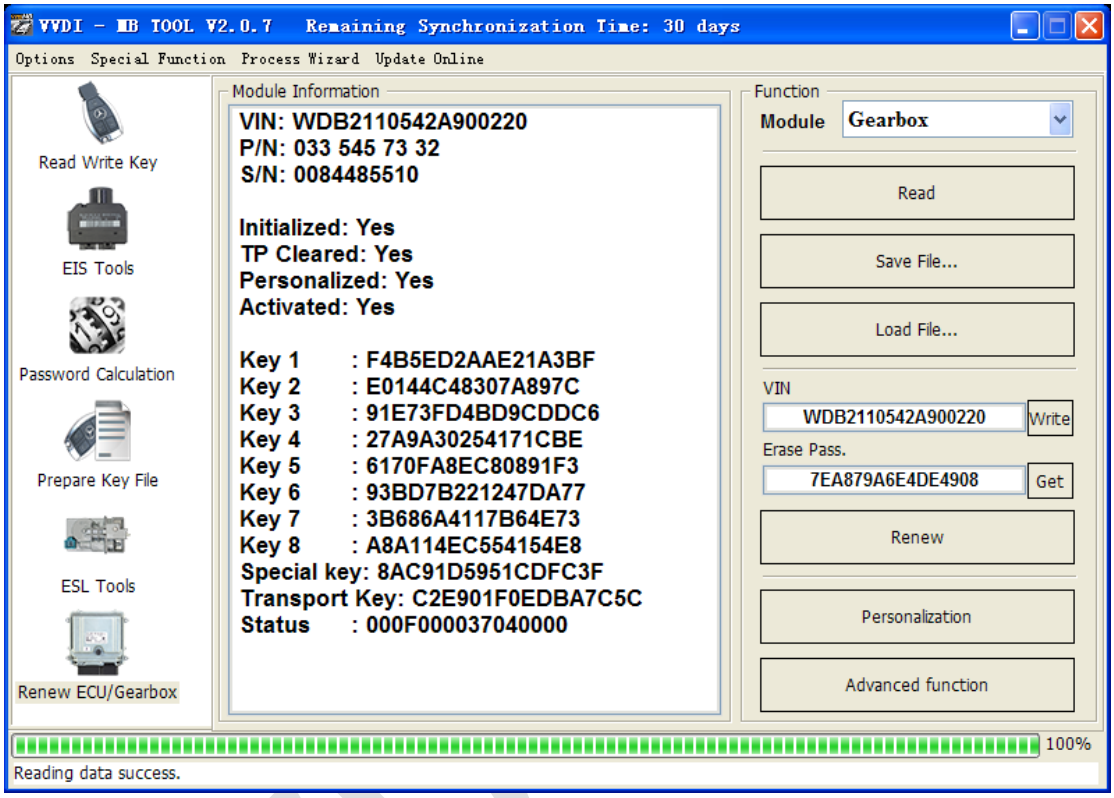
9. Renew ECU/Gearbox

This function support renew, write VIN, personalization operation for module ECU, Gearbox, ISM etc

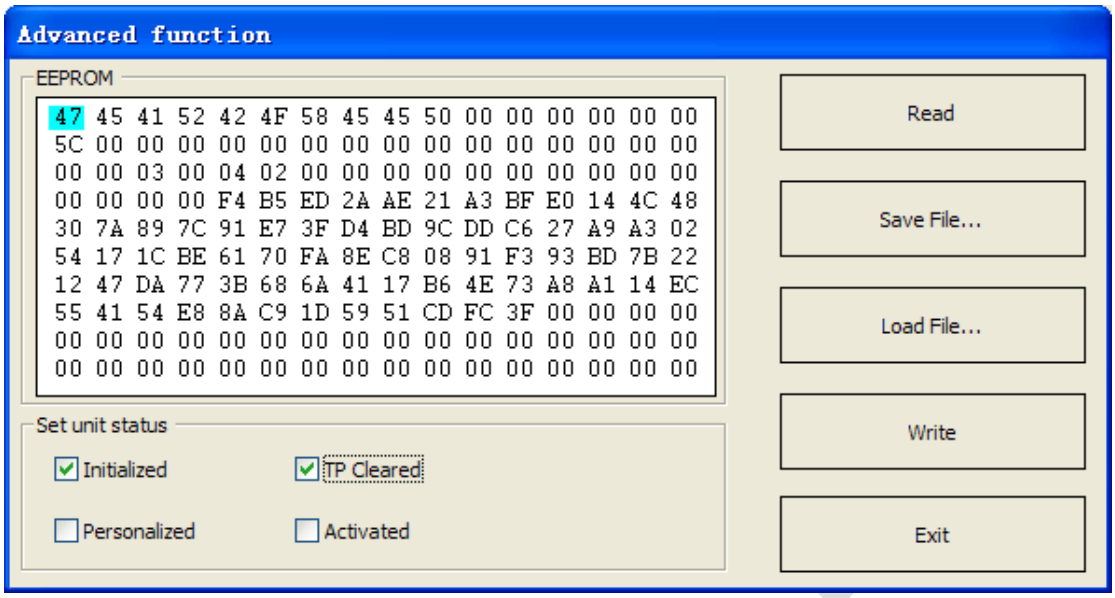


9.1. Functions

1. **Module**: Support ECU, Gearbox, ISM etc
2. **Read**: Read key information, unit status and other diagnostic information. Require connect unit with CAN separately
3. **Save File…**: Save the read data to file
4. **Load File…**: Load the saved file
5. **Write VIN**: Write VIN to unit
6. **Get Erase Password**: Get erase password online after success read module information
7. **Renew**: Input correct erase password, renew 2nd hand unit to a new one. Require connect unit with CAN separately
8. **Personalization**: Personalize unit to new car. Requires module placed on car
9. **Advanced function**: Only gearbox has this function. Support renew gearbox without erase password, see chapter 9.2

9.2. Advanced Functions

Support Read/Write gearbox special EEPROM. Support set unit status while write data. That means you can renew gearbox without erase password



1. **Read**: **Read module special EEPROM**
2. **Save File…**: Save the read EEPROM file
3. **Load File…**: Load the saved EEPROM file
4. **Write**: Write EEPROM to unit，it will set the selected status to module
5. **Set unit status**: Set unit status, you can set status to unit by write once
   Set Activated: Will set Initialized, TP Cleared, Personalized, Activated status
   Set Personalized: Will set Initialized, TP Cleared, Personalized status; not set Activated status
   Set TP Cleared: Will set Initialized, TP Cleared status; not set Personalized, Activated status
   Set Initialized: Will set Initialized status; not set Cleared, Personalized, Activated status

10. Process Wizard

Here will provide whole progress for some special function. Example replace EIS and replace ESL etc (Under developing, it will be released soon!)

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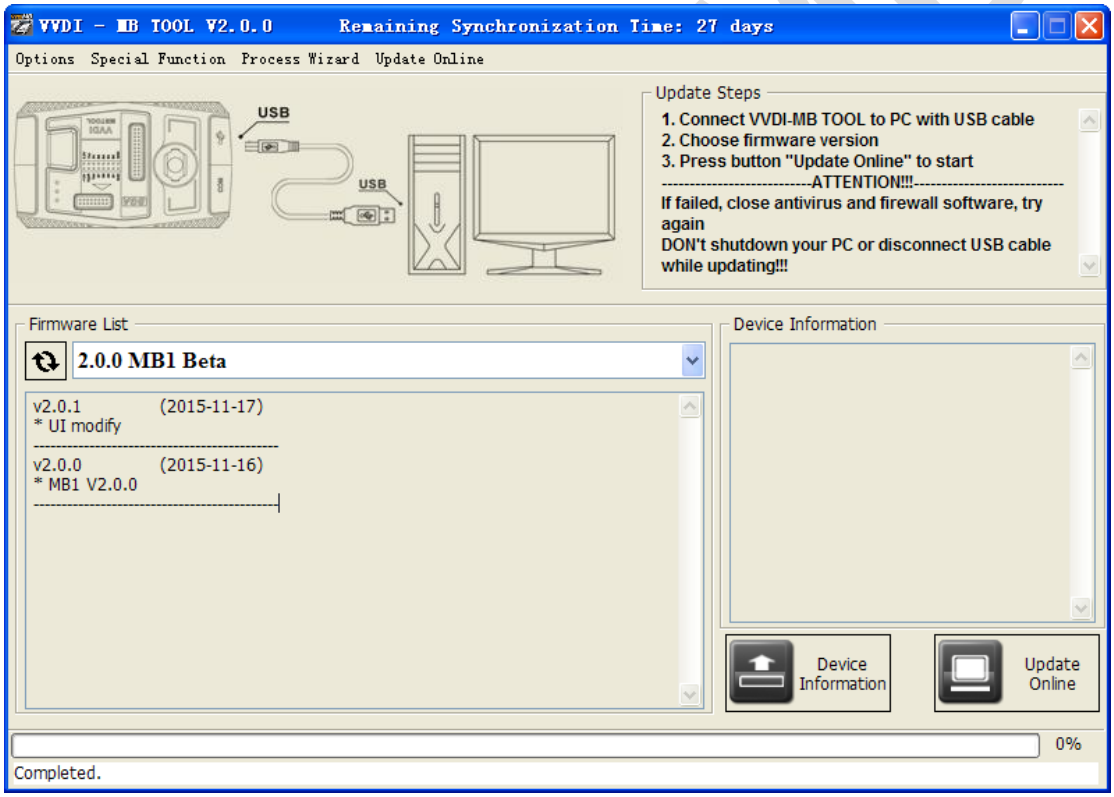
11. Update Online

11.1. Update Firmware

- The program will read the newest software version from server automatically
- Update firmware steps:

1) Connect VVDI – MB TOOL to PC with USB cable
2) Choose VVDI – MB TOOL firmware version from Firmware List
3) Press button Update Online, wait the progress end
4) If failed to get firmware list or get something like “communicate with server error!” while update your device, close antivirus and firewall programs, try again. Change your internet provider once failed again
5) DON’T shutdown your PC or disconnect USB cable while update device



◆ Reflash Firmware List

Update Online Tool will connect to server automatically and download the newest firmware information. You can press reflash picture button if there's no display.
After you get information success, will display current support firmware list, the software support by specify firmware and the mainly include update information

◆ Device Information

After connect VVDI-MB TOOL to PC and install USB drivers, Press button Device Information, will show you VVDI-MB TOOL Serial Number, current firmware version and hardware version etc

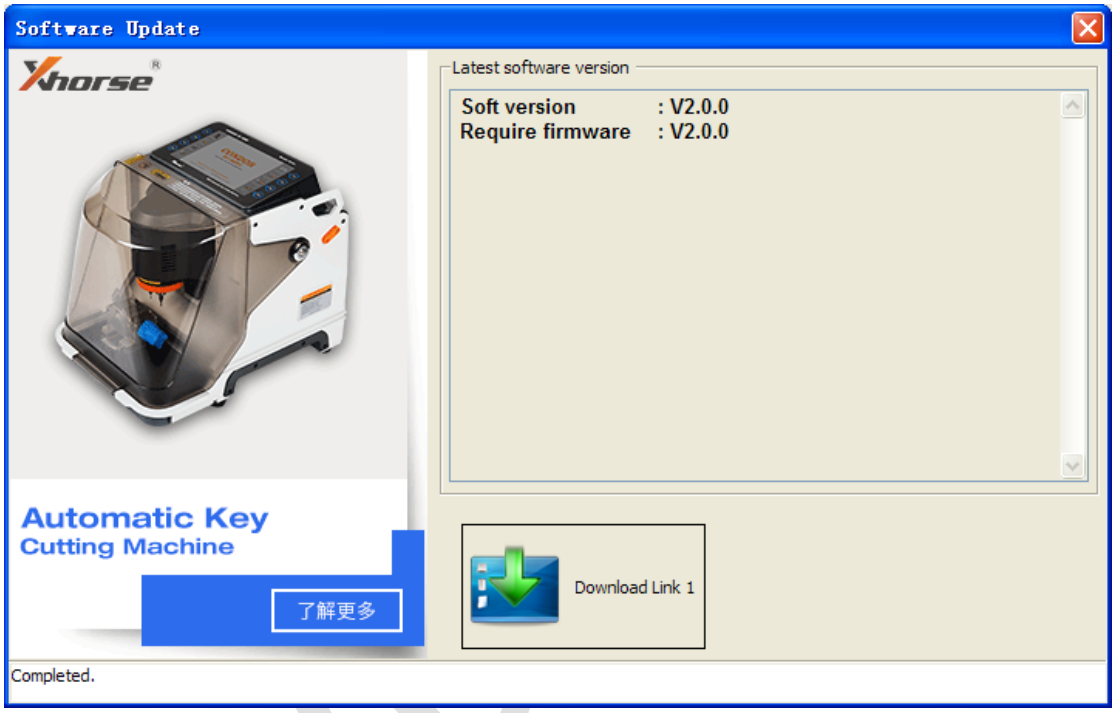
◆ Update Online

After connect VVDI-MB TOOL to PC and install USB drivers, choose you expect firmware version from firmware list, Press button Update Online, wait progress finish (about 3 minutes) (Require internet)

VVDI MB

11.2. Update software

- This function require internet support
- Use “Menu ->Update Online->Software Update” to obtain VVDI-MB TOOL latest software version, the software version require firmware version etc. Press Download Link will download the latest software
- If there’s no display for software version, shutdown your firewall and antivirus programs, try again



11.3. Latest Update Information

- This function require internet support
- Use “Menu->Update Online->Latest Update Information” to obtain VVDI-MB TOOL latest update information

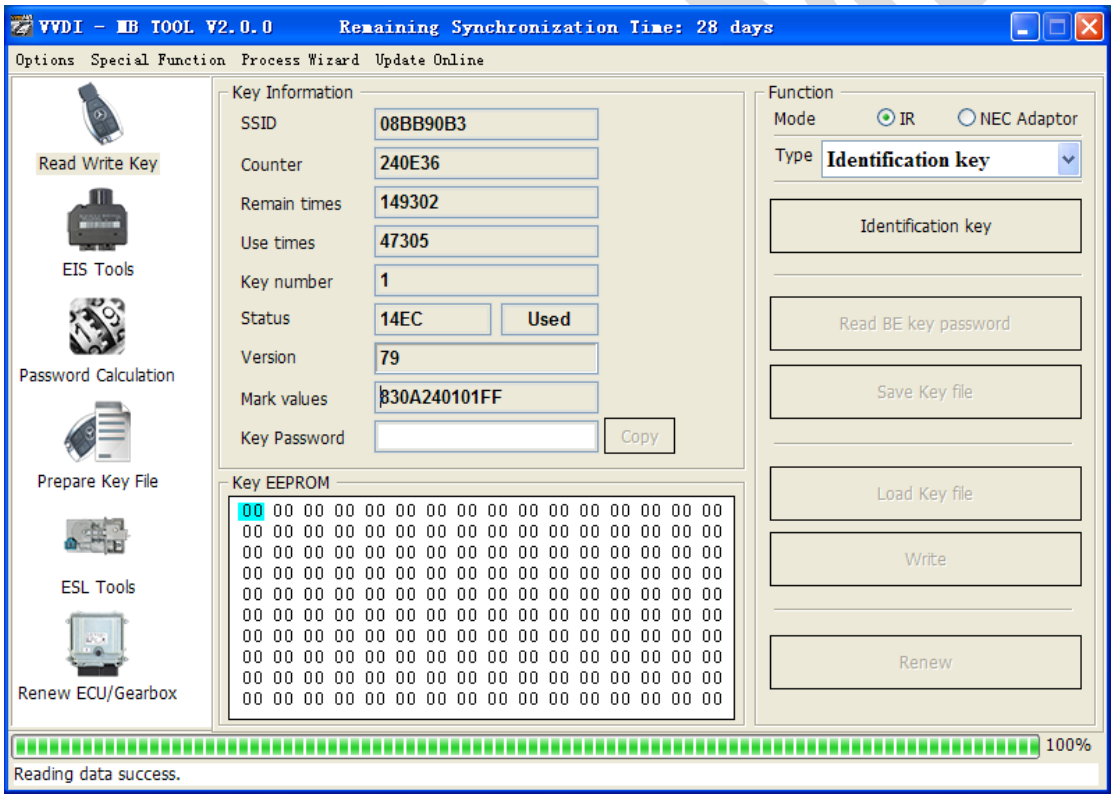
11.4. History Update Information

Use “Menu->Update Online->History Update Information” to obtain VVDI-MB TOOL history update information

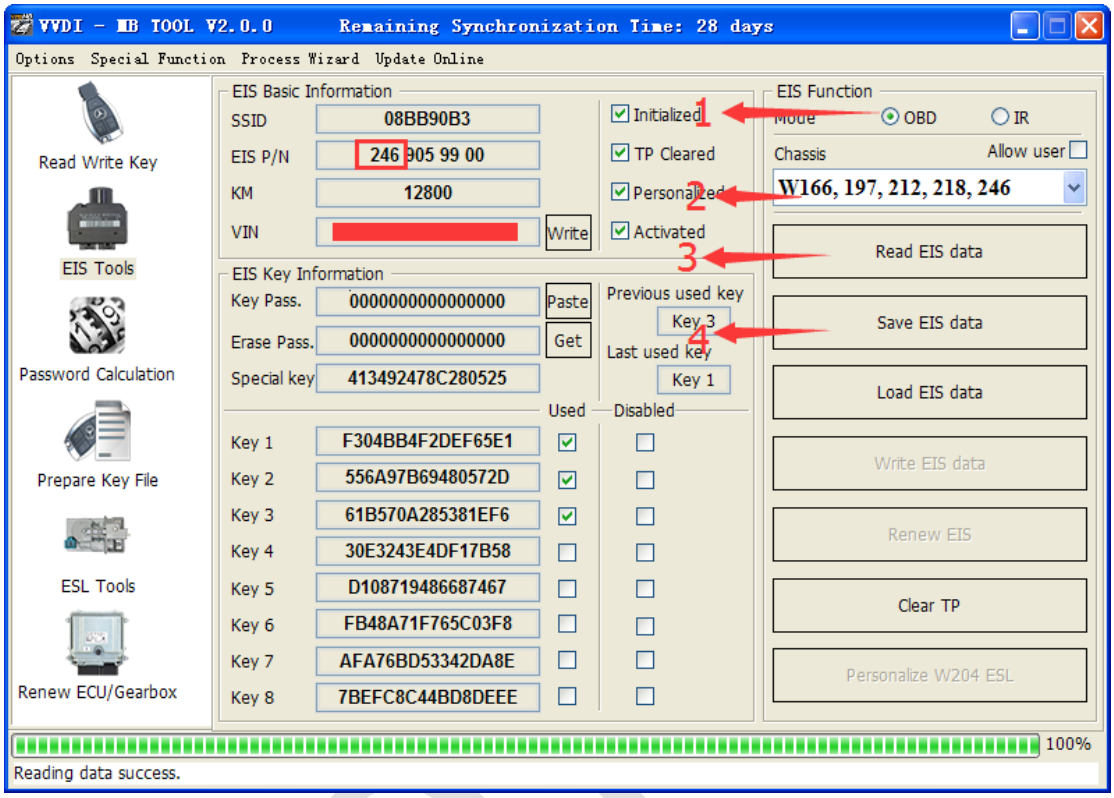
12. Case Description

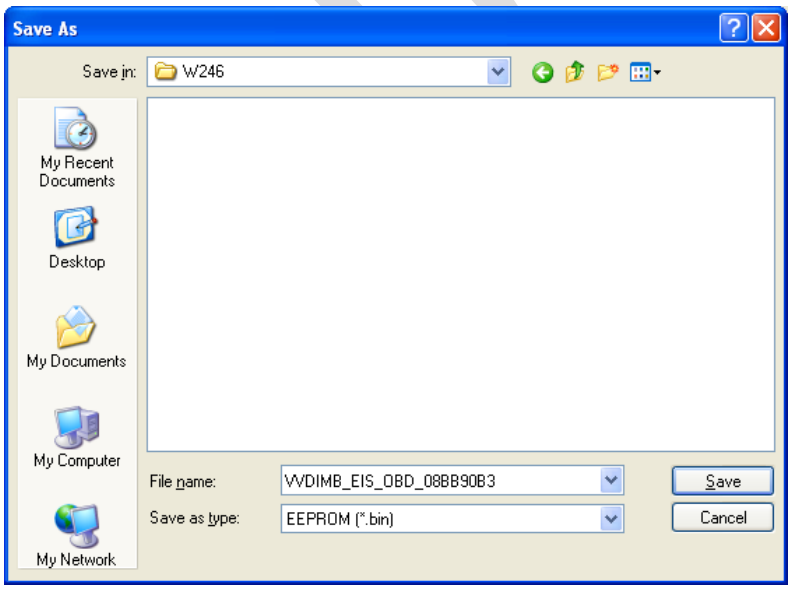
12.1. W246 EIS with BGA (79) keys, add new key via OBD

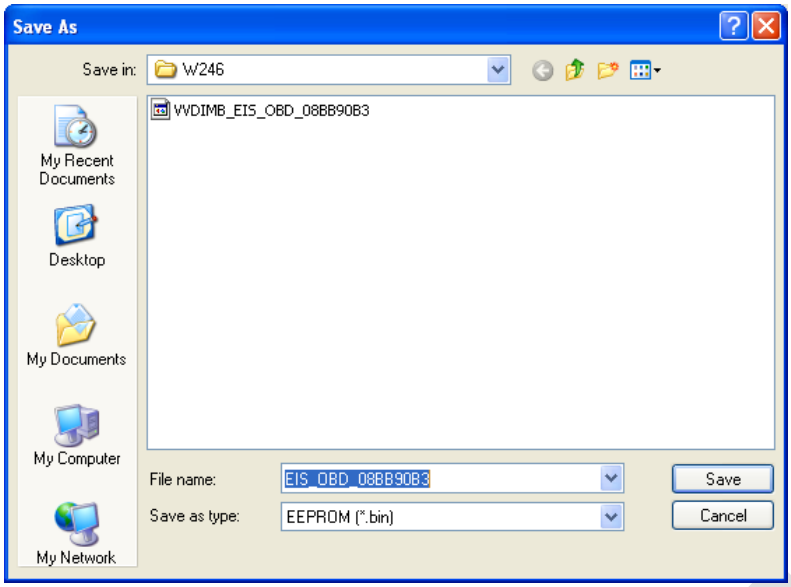
1. Insert working key to device IR reader, Press "**Identification key**", check working key version
   - ◆ If key with BE version, you can read password via IR
   - ◆ If key with v51, v57 version, you can read password via NEC adaptor, or you can use password calculation
   - ◆ Here key version is 79, belong to BGA key. We use password calculation for key password



2. Connect device OBD line to car. Select **OBD** mode, chassis select AutoDetect (CAN)
   - ◆ Press **Read EIS data**. Chassis will turn to specify item after success read
   - ◆ Follow steps 1->2->3->4 in picture and save EIS data
   - ◆ It will save 2 files, VVDI-MB type and HC05 type
   - ◆ There's default file name when save EIS data. You'd better keep it

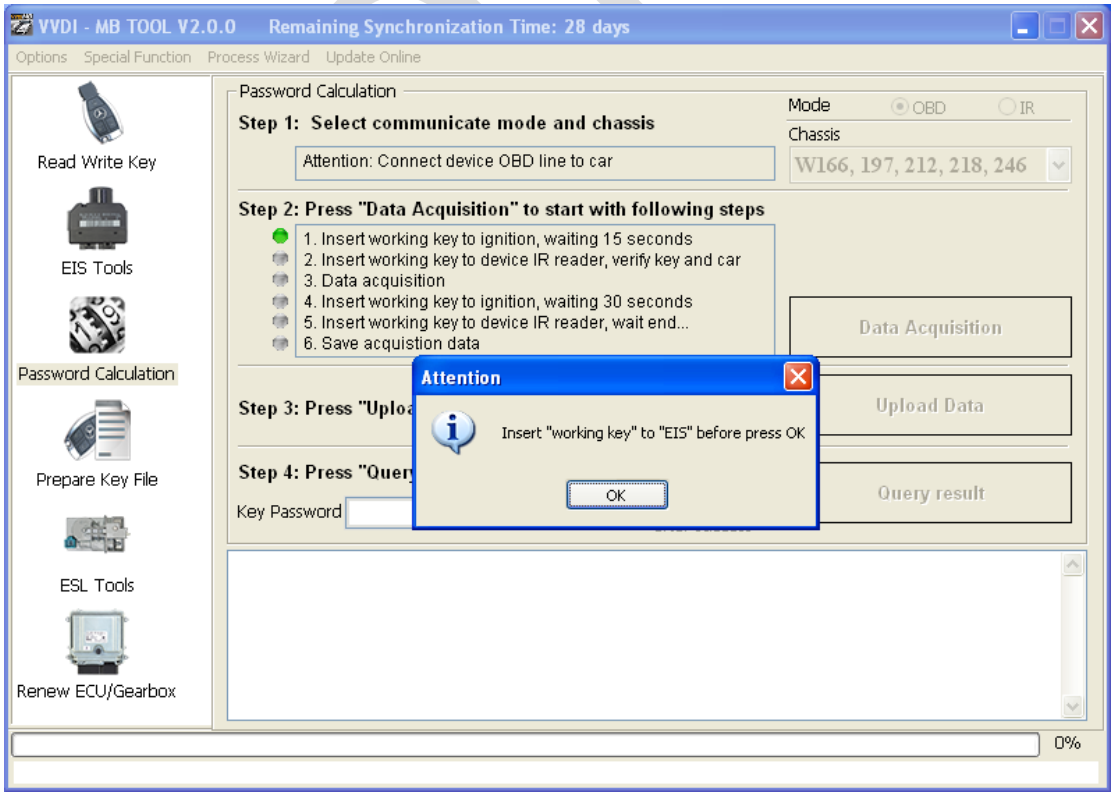






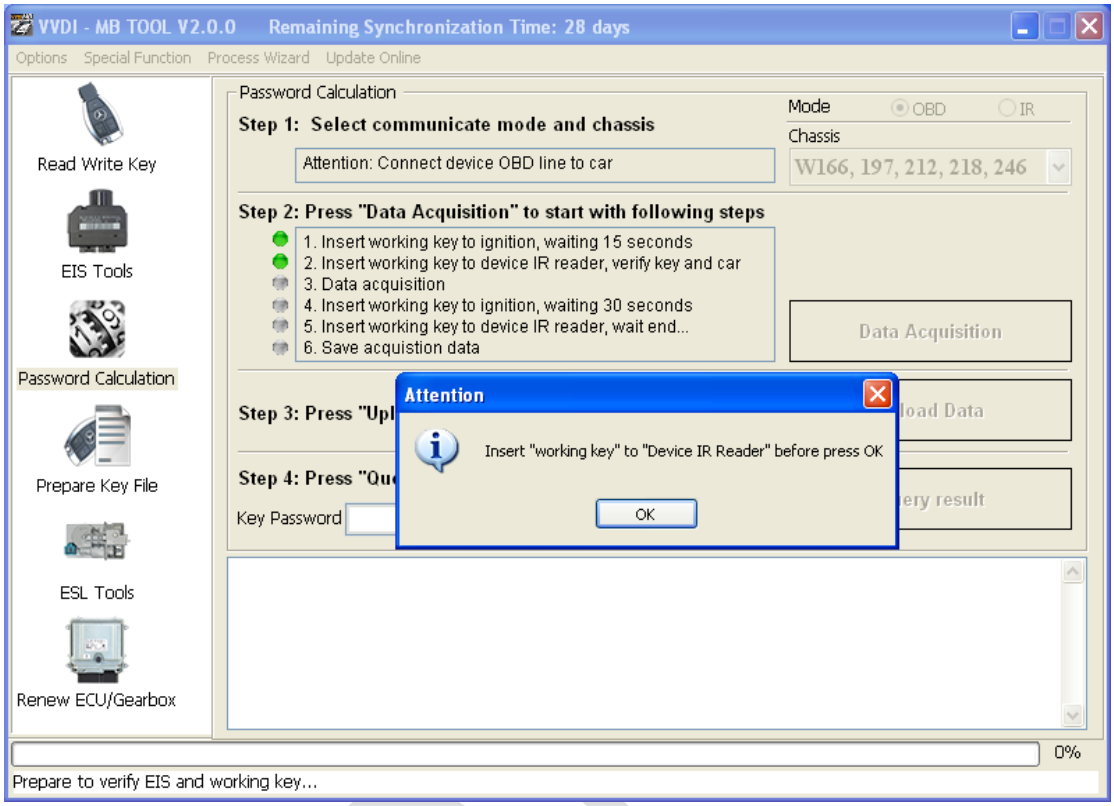
3. Enter **Password Calculation**, calculate key password
   - ◆ Select OBD mode, chassis select W166, 197, 212, 218, 246
   - ◆ Press "**Data Acquisition**", progress with following steps

   - ◆ Insert "working key" to "EIS" before press OK; only insert working key to EIS, don't switch ignition ON

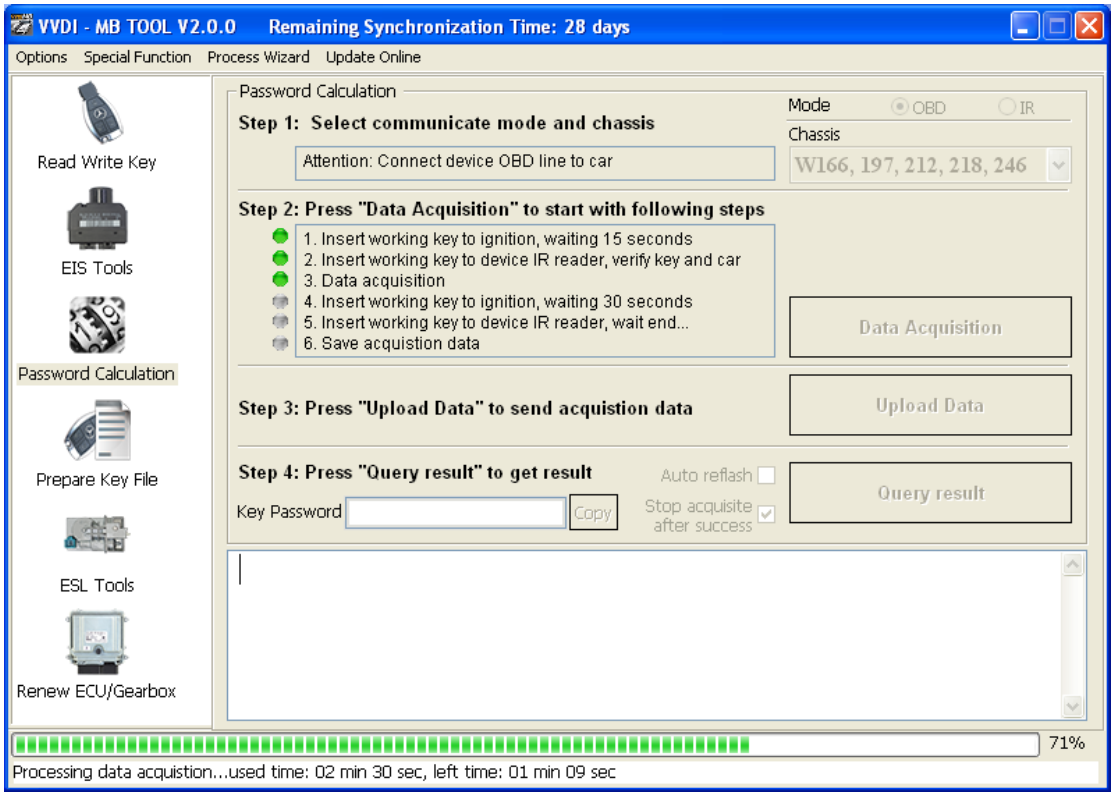


◆ Waiting 15 seconds

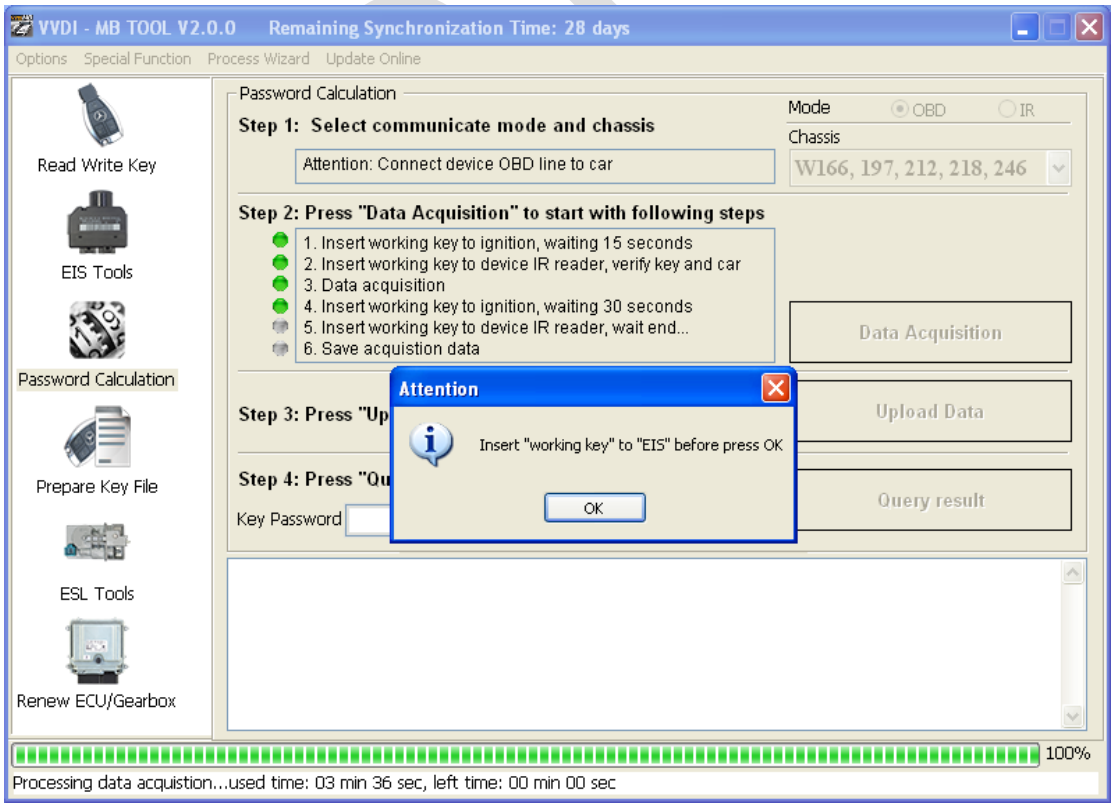
◆ Insert “working key” to “Device IR Reader” before press OK; take off working key from EIS and insert to device IR Reader, then press OK



◆ Data acquisition progress, just wait it finish. The left time will show on the bottom

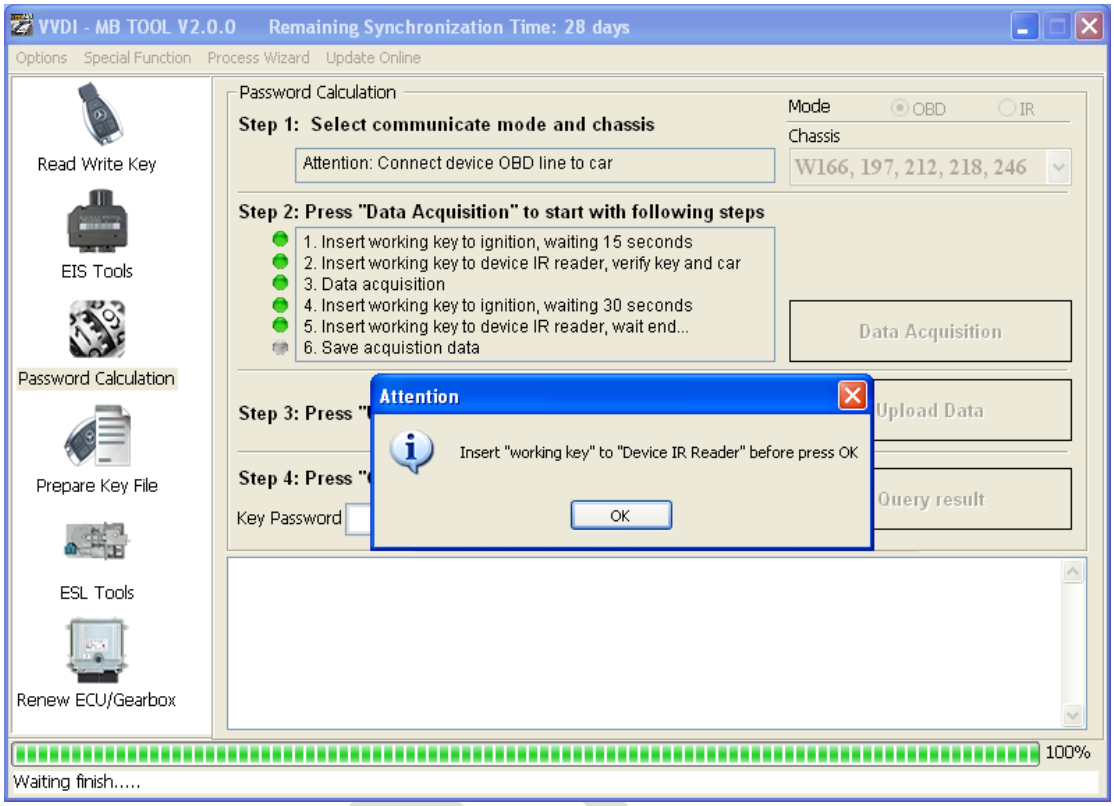


◆ After 100%, Insert “working key” to “EIS” before press OK; only insert working key to EIS, don’t switch ignition ON



◆ Waiting 30 seconds

◆ Insert “working key” to “Device IR Reader” before press OK; take off working key from EIS and insert to device IR Reader, then press OK



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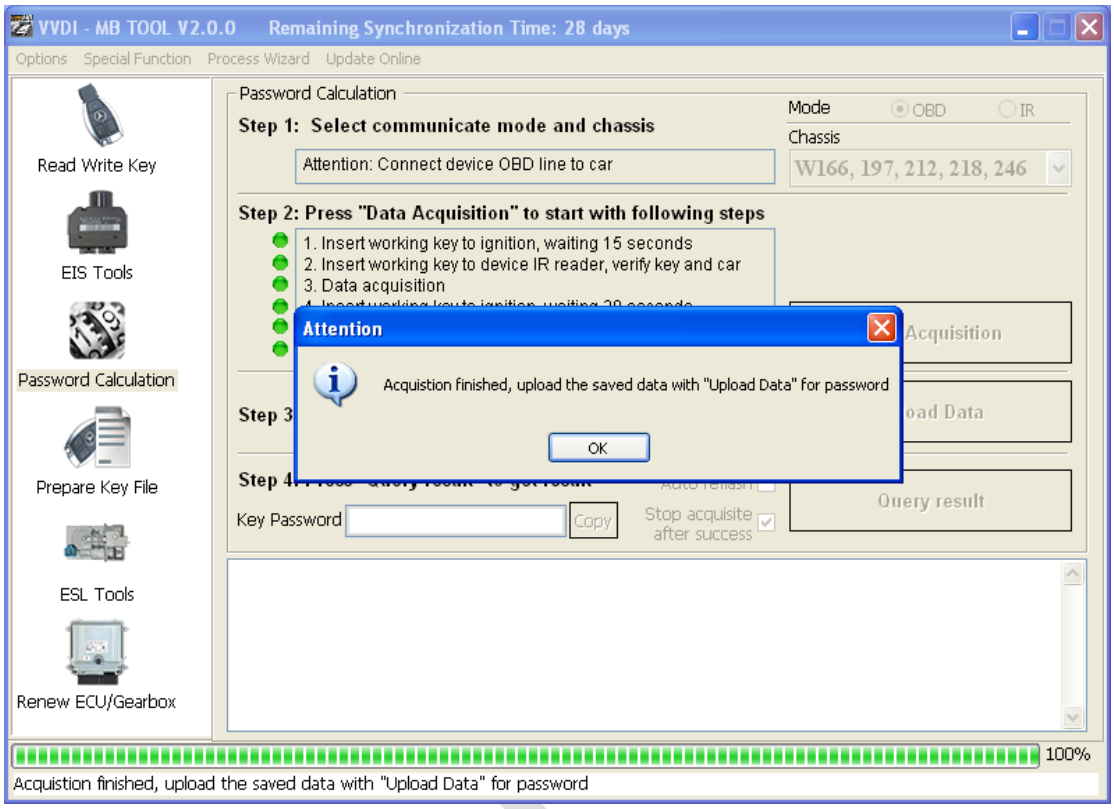
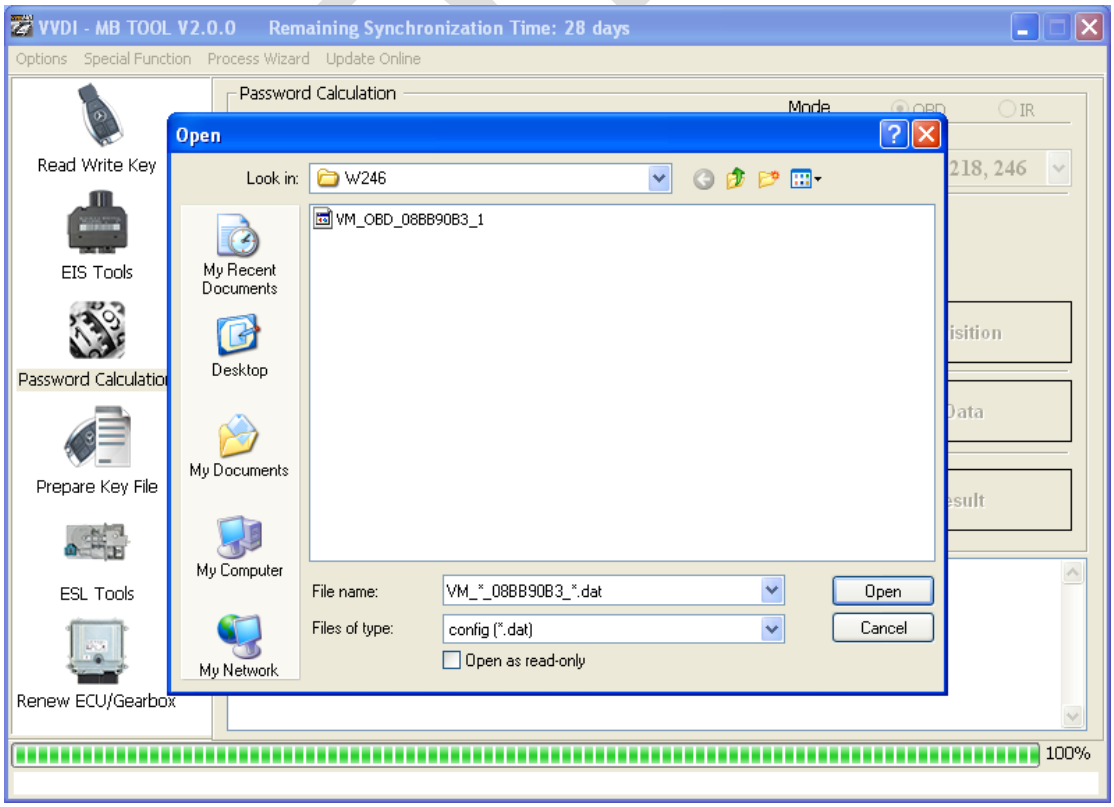
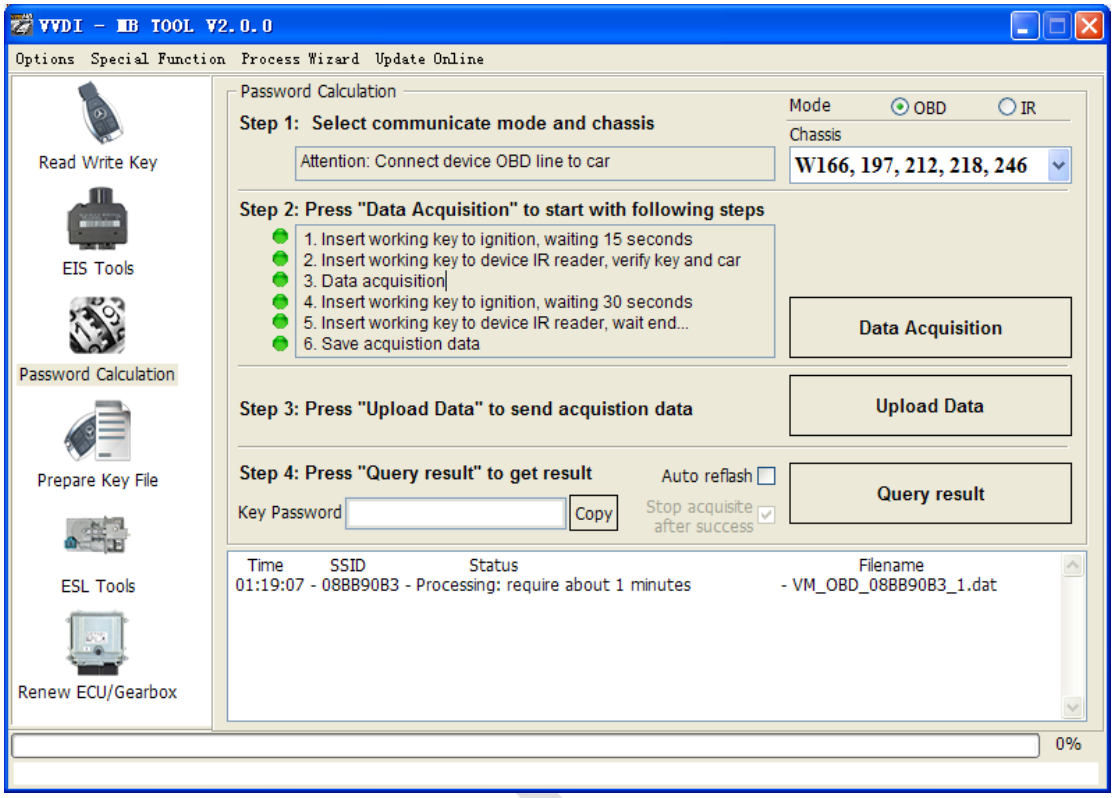
◆ After save acquisition data you will get next window. Please keep the default file name when save acquisition data



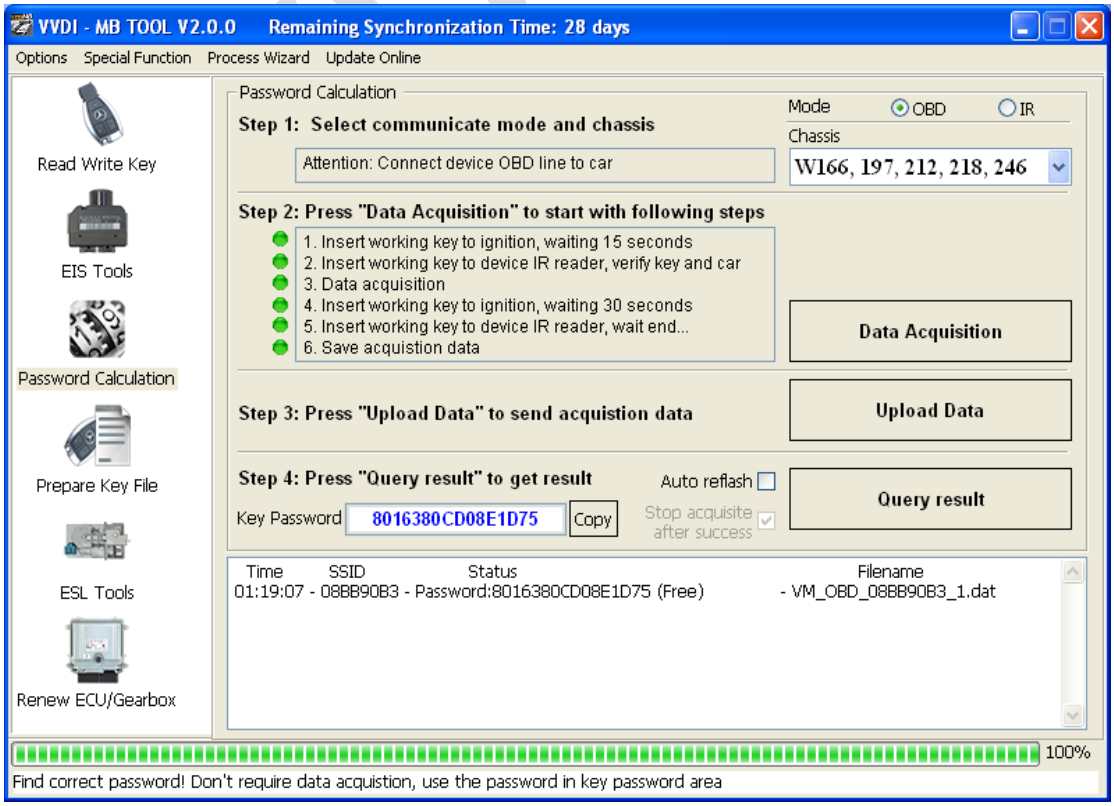
◆ Press **Upload Data** to upload saved acquisition data to server



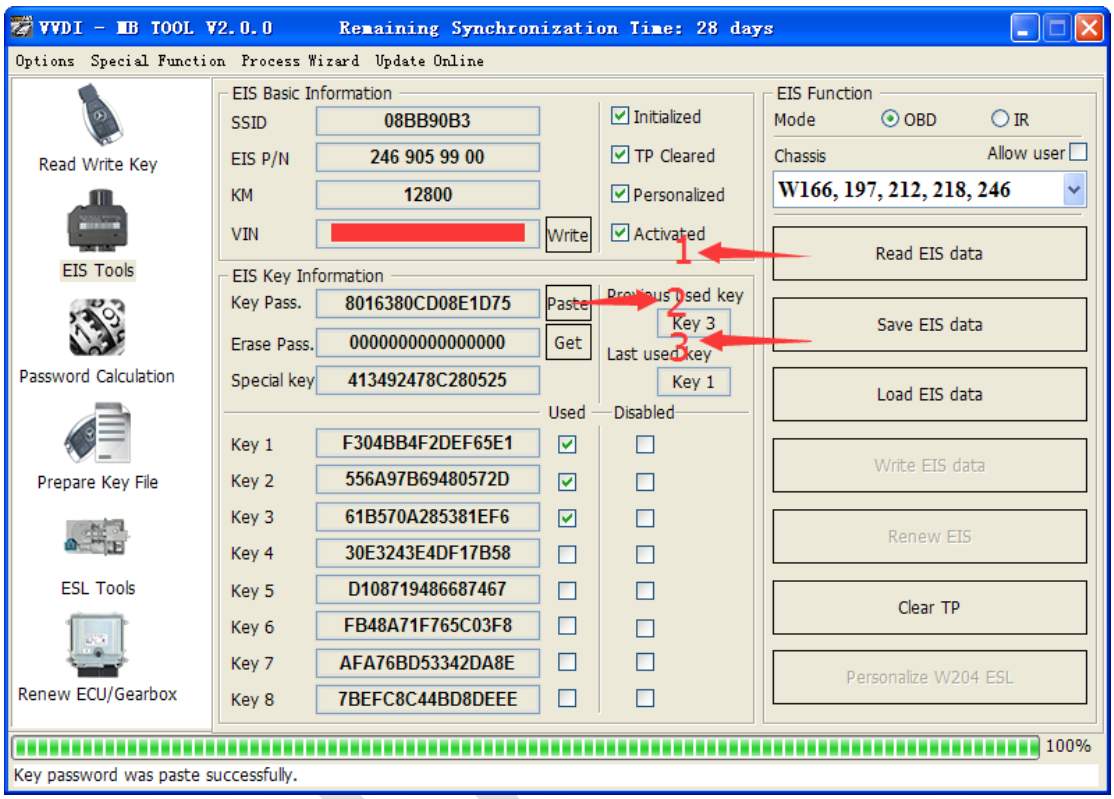
◆ Press **Query result** to get result, you can select "**Auto reflash**", it will query server result automatically, it need about 1 minute



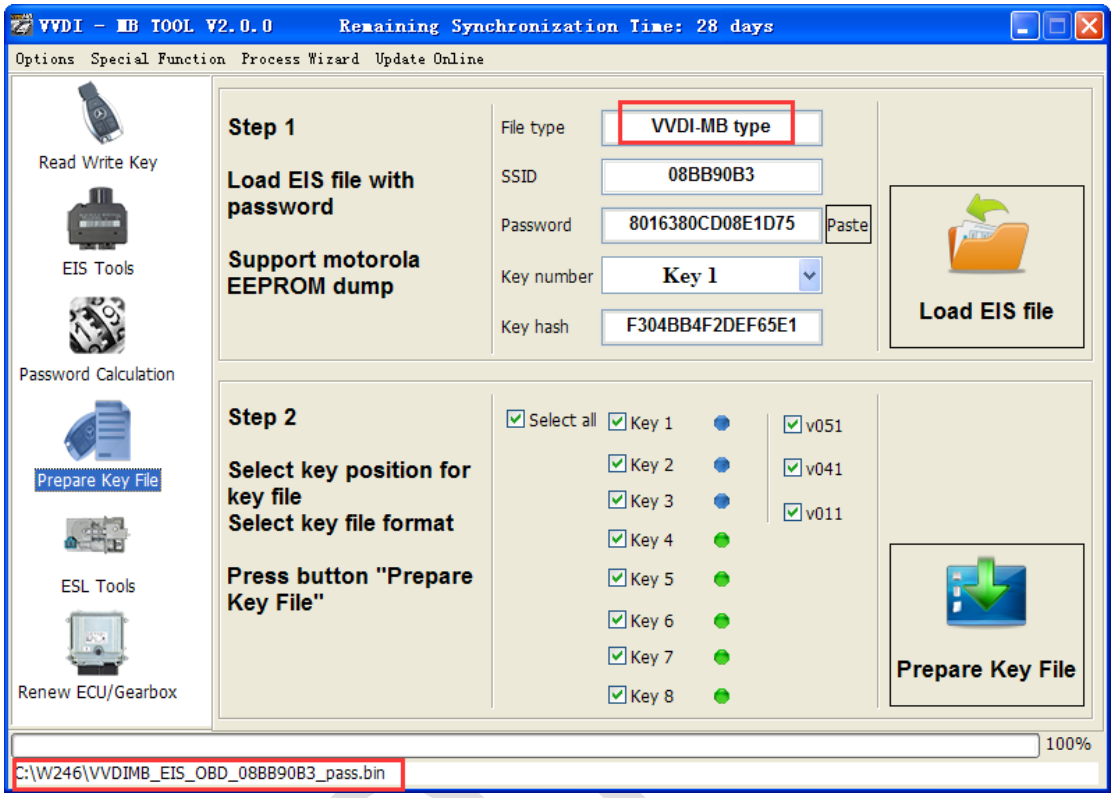
◆ After calculate success, key password will display at key password area automatically, press "**Copy**" copy the password to clipboard



4. Save EIS data with password
   - ◆ Enter **EIS Tools** again
   - ◆ Read EIS data
   - ◆ Use "**Paste**" paste the password to key password area
   - ◆ Then save EIS data again
   - ◆ Steps: 1->2->3

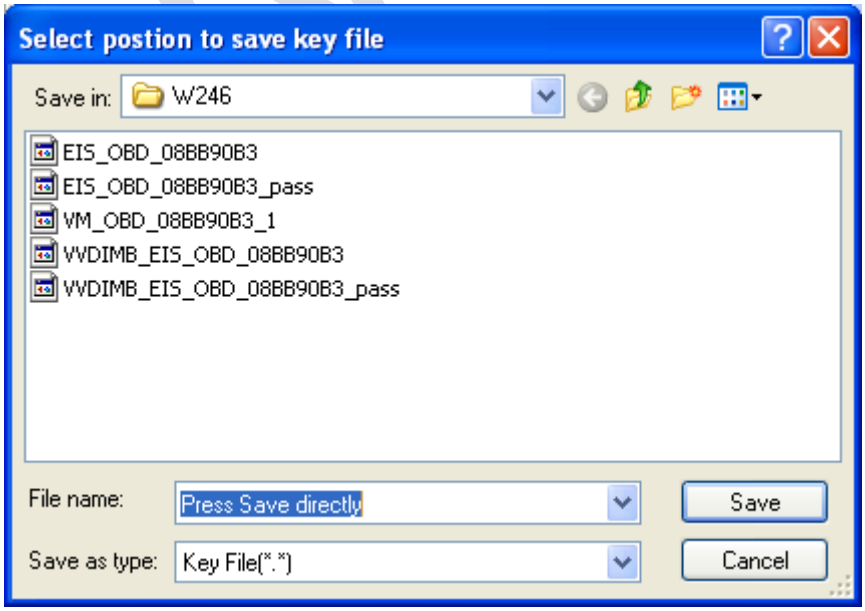


5. Enter **Prepare Key File**
   - ◆ Press **Load EIS file** load EIS data with password
   - ◆ The file path will be shown at bottom
   - ◆ VVDI-MB TOOL will auto detect load file type, here is VVDI-MB type
   - ◆ SSID and key password was shown

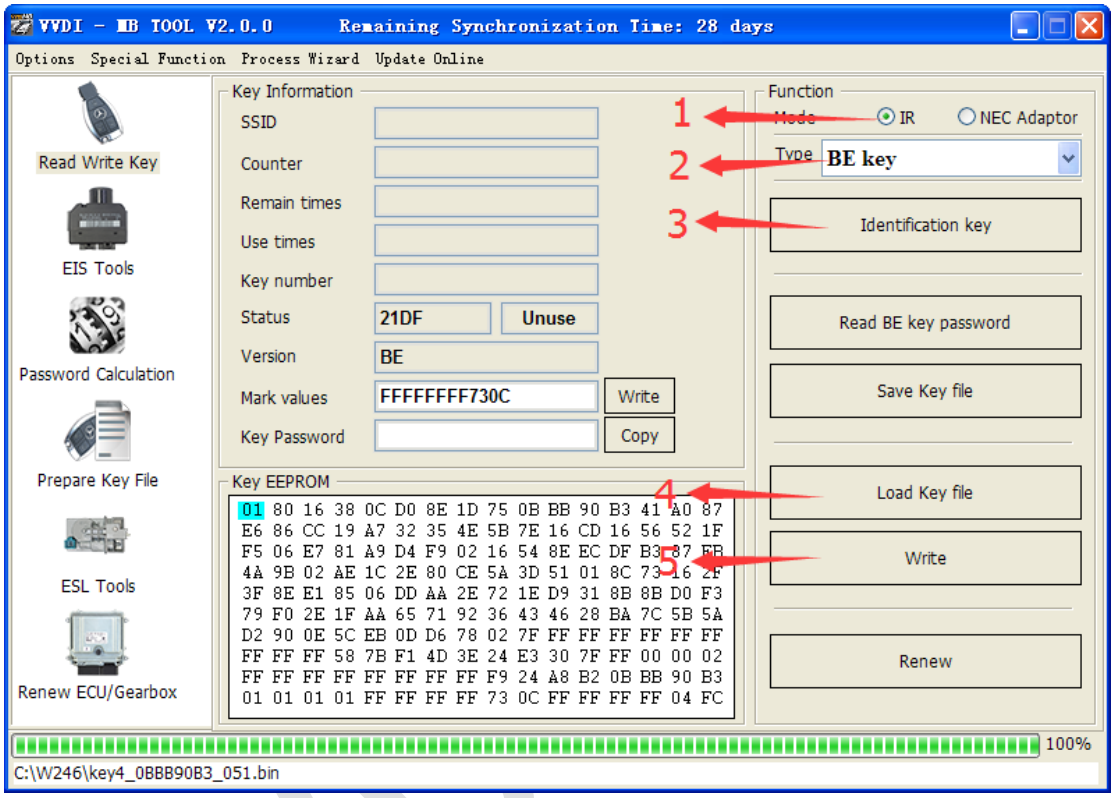


- ◆ Select key position and format for key file, Press **Prepare Key File** (online)

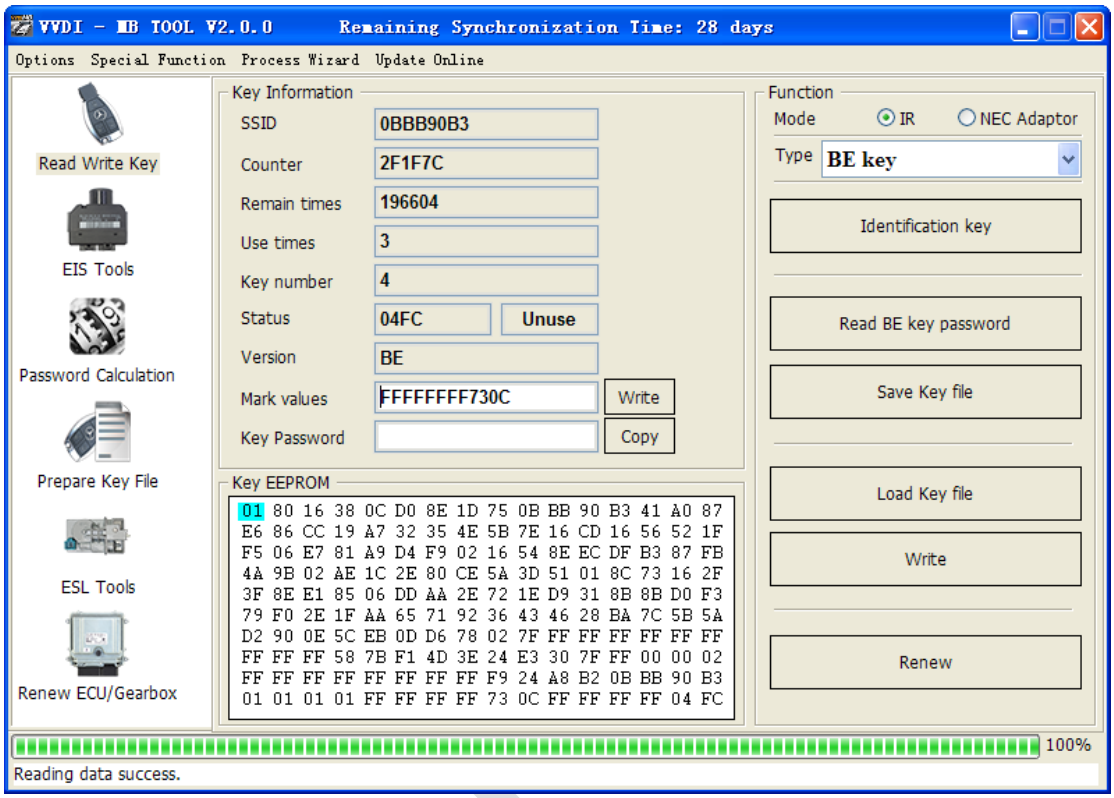
- ◆ After server find success, select where you want to save the key file, press save directly



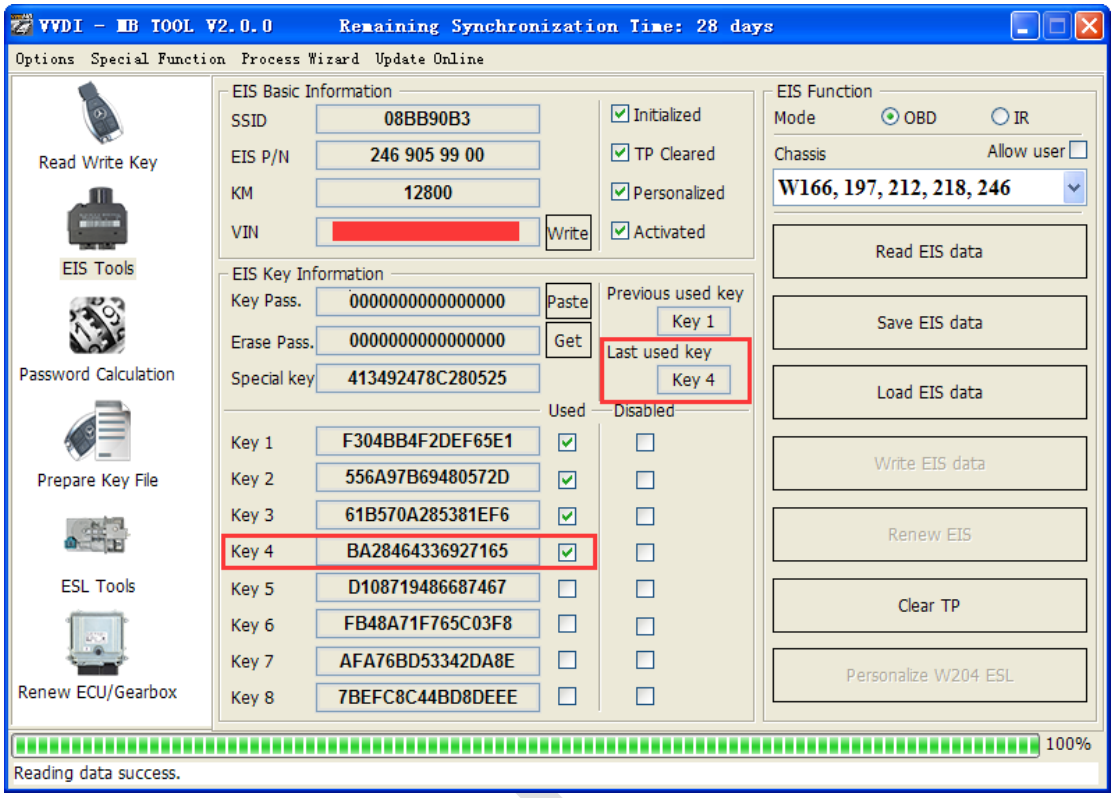
6. Enter **Read Write Key**. If you want Keyless Go, please select NEC adaptor
   - ◆ We make a BE key.
   - ◆ Input BE key to device IR reader, select IR mode and BE key
   - ◆ Press **Identification key**
   - ◆ **Load Key file**, we load key 4
   - ◆ Press **Write**
   - ◆ Steps:1->2->3->4->5



◆ Press **Identification key** again after write key file. You can see key is prepared success



7. Insert new key to EIS, the EIS will learn the new key
   - ◆ First the red light will ON , then OFF, means key learn success
   - ◆ Read EIS data once more, you can find key 4 was selected



8. Completed.