NEC_key Programmer.

Function – The programmer is designed for complex testing problems, problems of erasing and for programming Smart (IR) keys – so-called " NEC" for Mercedes and for independent preprogramming of new 212 keys for further use in MB Light program.

The programmer is designed for two types working with NEC processor keys:

Type 1.

PCB – soldering of the removed (soldered off) key processor on a special motherboard (included in the set)

Type2.

Via IR (INFRA RED) port when the key is not disassembled but inserted into the IR-port.

Important!

1. The programmer operates with the keys based on MOTOROLA processors only via IR (INFRA RED)
2. NEC processors can be erased, programmed, and tested via PCB
3. NEC and Motorola processors keys can be programmed (if they are erased) and tested via IR (INFRA RED)
4. Erasing of NEC rpocessors is realized via PCB and MOTOROLA processors by any program-mer independently if it supports their programming.
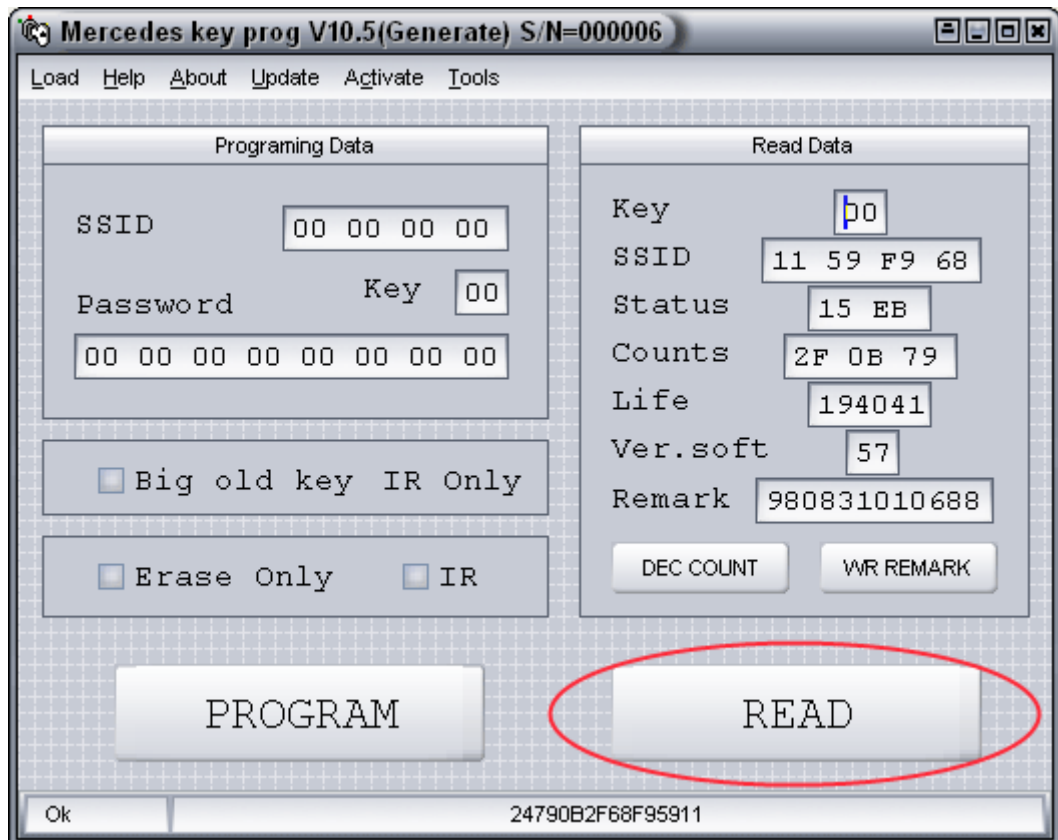
1. Testing the function of the key or key processor.

1.1. Via IR (INFRA RED)
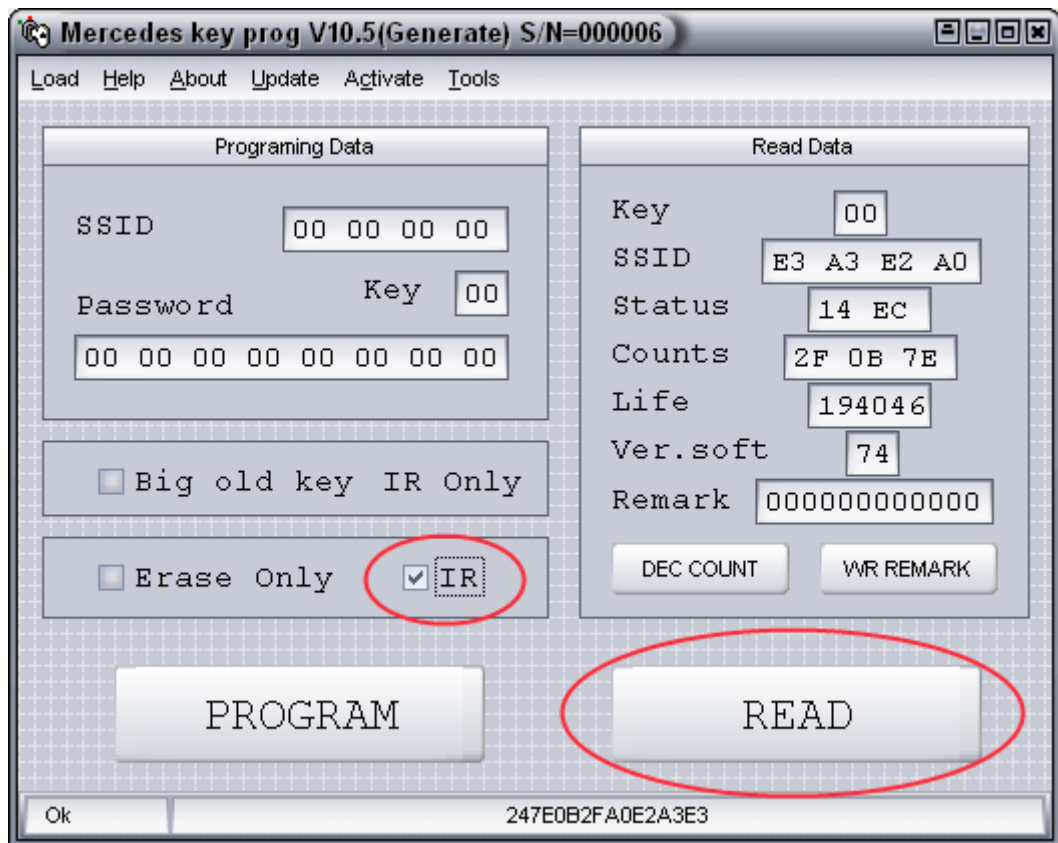
a. Tick the IR box

b. Insert the key into the IR port

c. Press "READ" button

1.2. Via PCB (only for NEC)

a. remove all the ticks

b. solder the NEC processor on the board and connect to the programmer

c. press "READ"

1.3. The data from the program windows:

Key - key number from 00 to 07. The total of 8 keys.

SSID - Serial System Identification, has a 4-byte pattern, some kind of VIN for the key and lock match.

Status - Two bytes, each byte defines its function in the adjustment function and the choice of the key function mode.

Some examples of Status field

14 EC – faultless, adapted and activated key with the NEC or MOTOROLA processor

15 EB - faultless, adapted and activated key with the NEC processor

04 FC – adapted but NON activated key with MOTOROLA processor;

05 FB - adapted but NON activated key with NEC processor

21 DF – key status with NEC processor ready for programming via IR (erased key)

00 00 - key status with MOTOROLA processor ready for programming via IR (erased key)

0C F4 – "orange" key status which will be discussed later

In the faultless key the two bytes of Status field are connected between each other by a simple calculation operation. If we sum up the first and the second bytes on the HEX-calculator we will always get 100

Counts - counts are designed for checking how many starts are left. The counts reduce the value by one with every start.

After pressing "DEC COUNT" the programmer emulates the work of the lock. There will be an exchange of data – imitating the engine start. While the counters value reduce by one.

Life - the calculated number of the starts left from the counters.

Ver.Soft - ROM processor version

Remark - 6 bytes for service information records. You may re-record the remark if you write your data in the "Remark" box and press "WR REMARK"

If the processor and the key are faultless you can see the data in all of the windows. But there are modes when the key does not show the information in some of the windows. For sure this key is faulty and needs reprogramming. If there is no data in any windows it means the chip itself is faulty or "dead".

## 2. Preprogramming of the key based on a processor via IR

MOTOROLA

For Motorola processors you must zero the EEprom (all EEprom addresses = 00). It is easy to do(if you have soldered off the processor) by any programmer. The status of this preprogrammed key will be read as "Status"= 00 00.
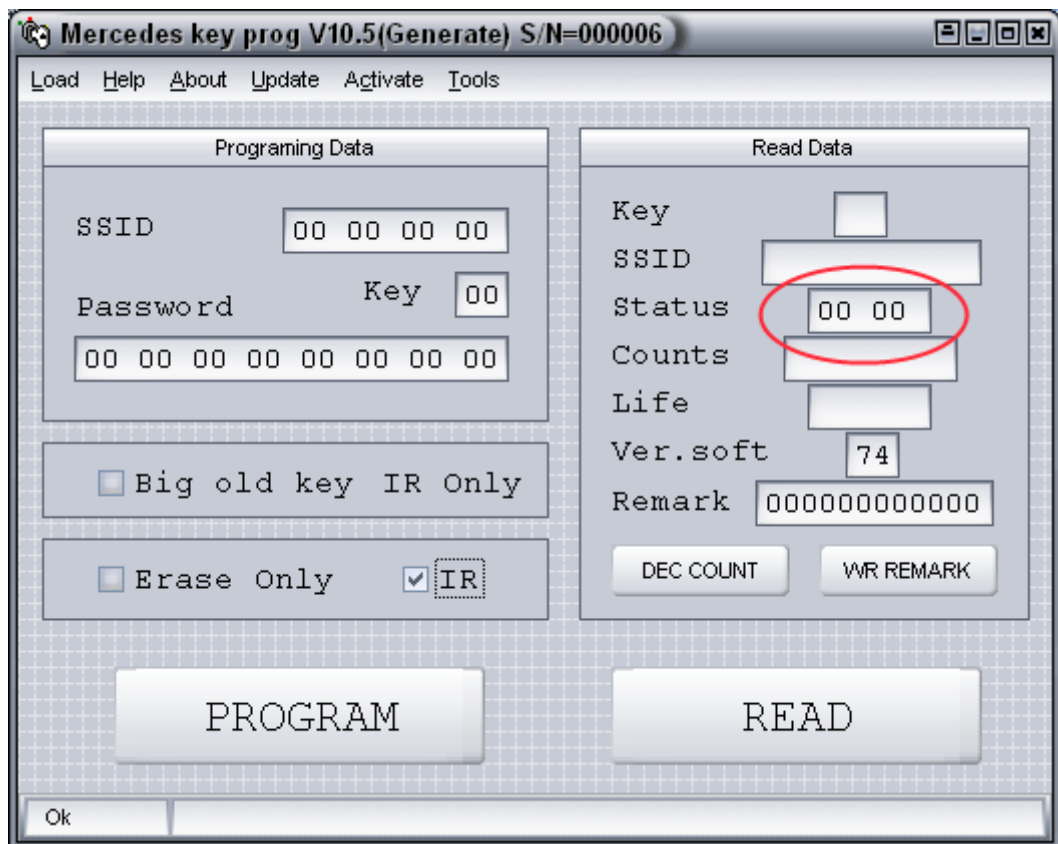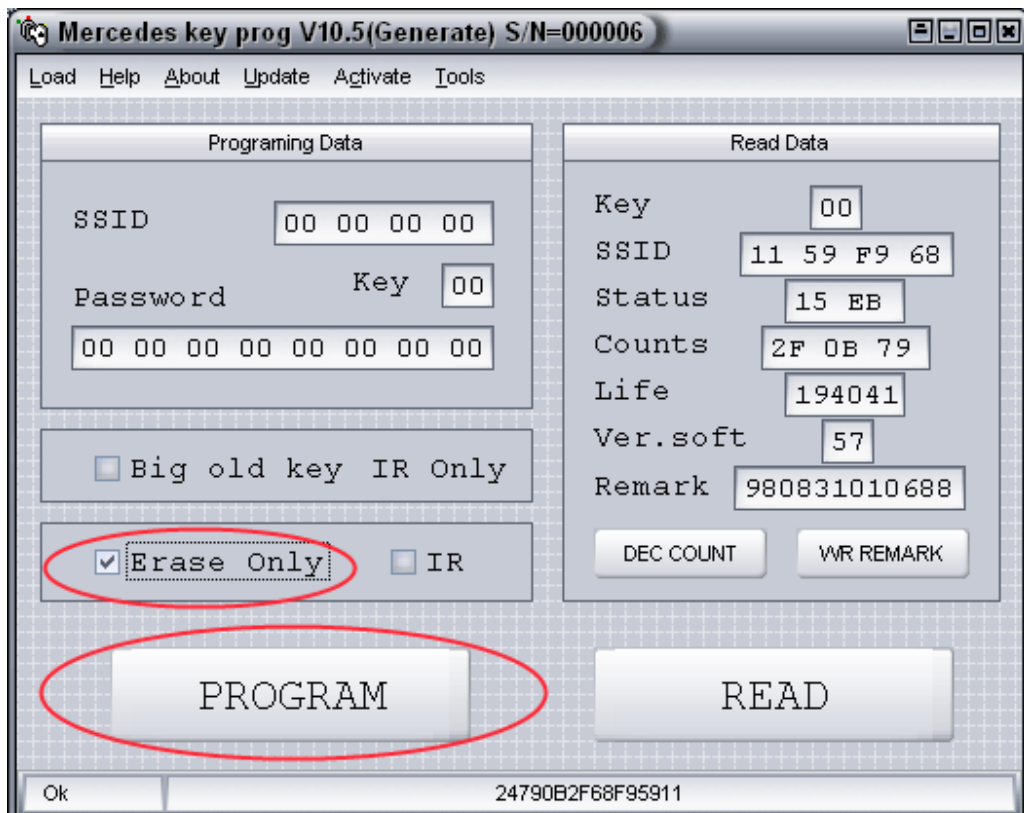
## 3. Preprogramming of the key based on NEC processor via IR

Solder off the processor and solder it on the PCB board then connect it to the programmer. Remove all the ticks and then press READ. We advise to do it to make sure the soldering to the transitional board was successful.
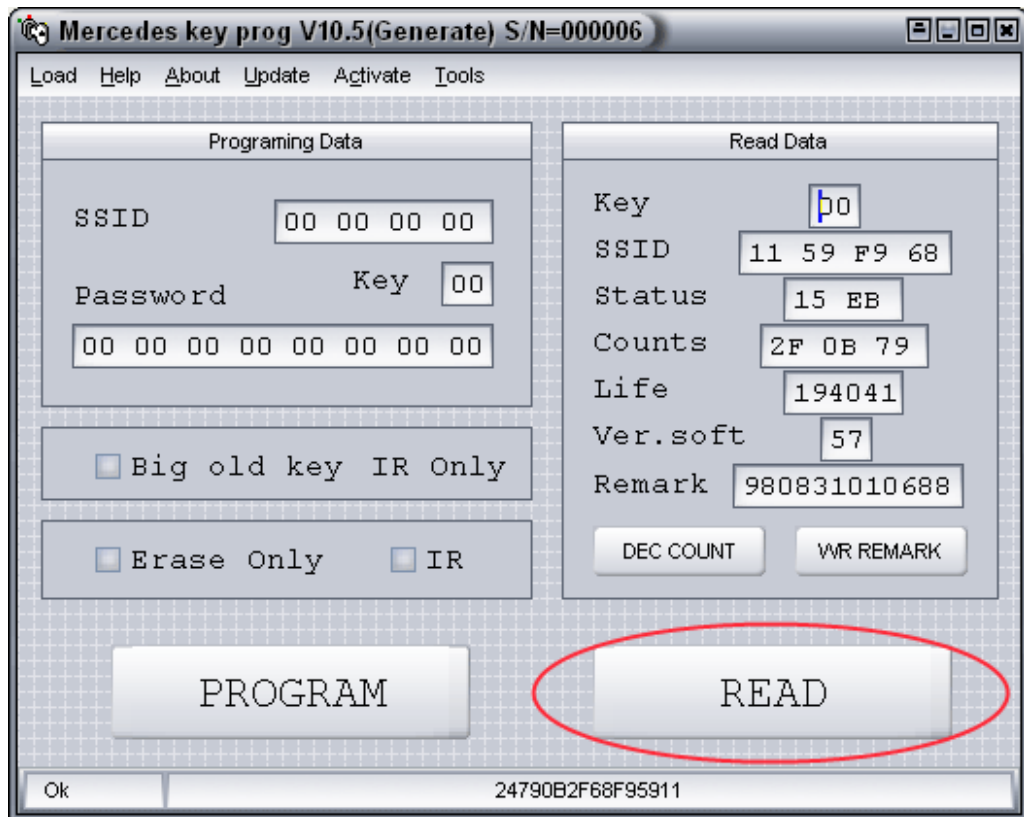
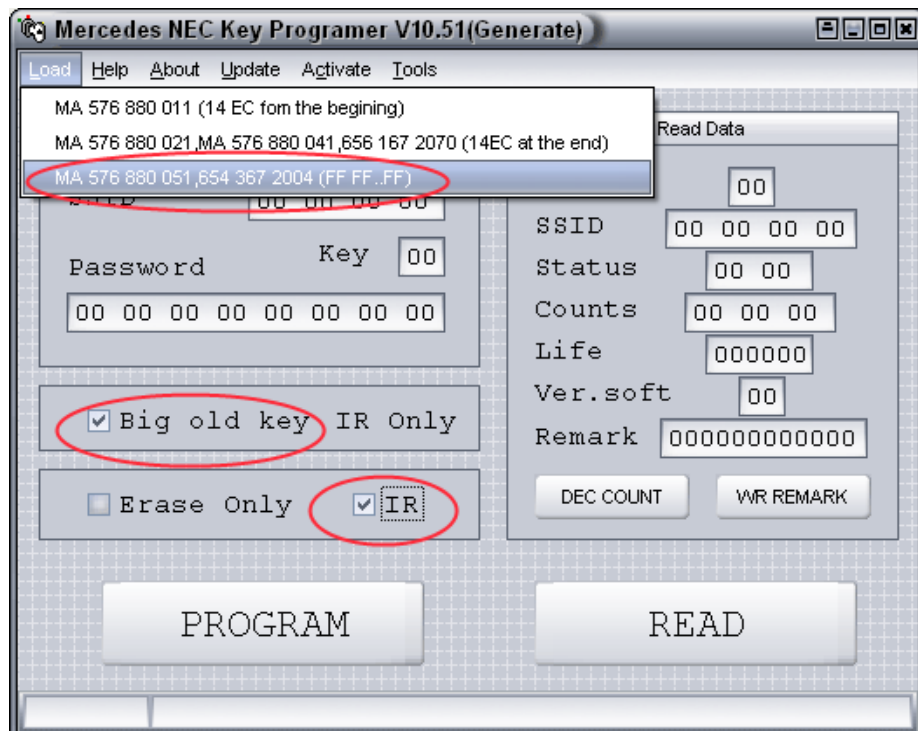Tick "Erase Only" then press "Program". It will take 1-3 sec on average.

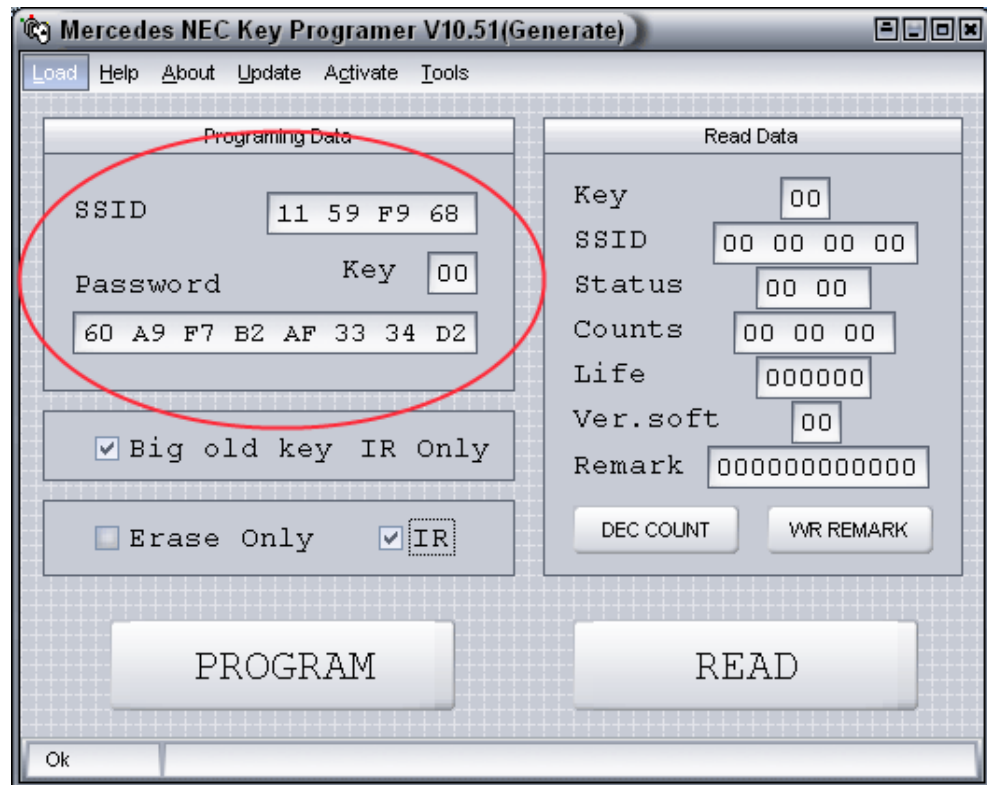If you press "Read" now you will see the status of the "erased" key – 21 DF.
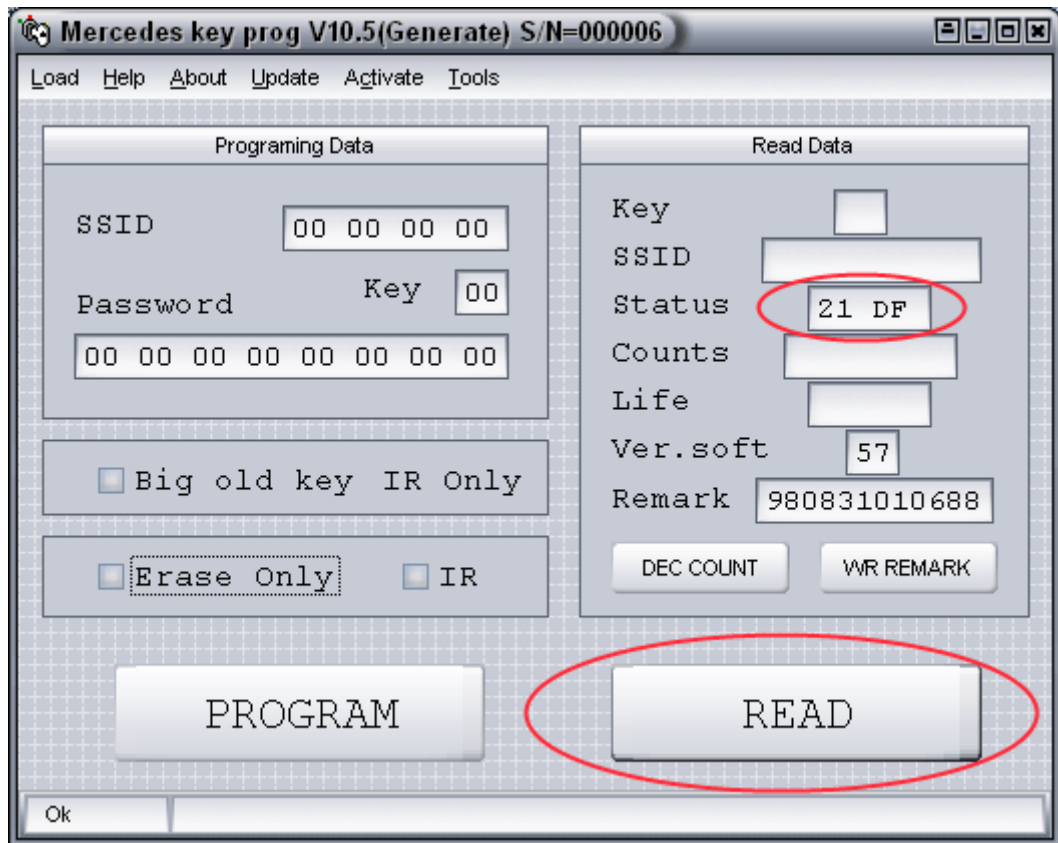
4. Programming of the keys based on MOTOROLA via IR.

a. Tick "Big old key" and "IR"

b. Press "load" in the main menu and choose the right version, then load the dump.

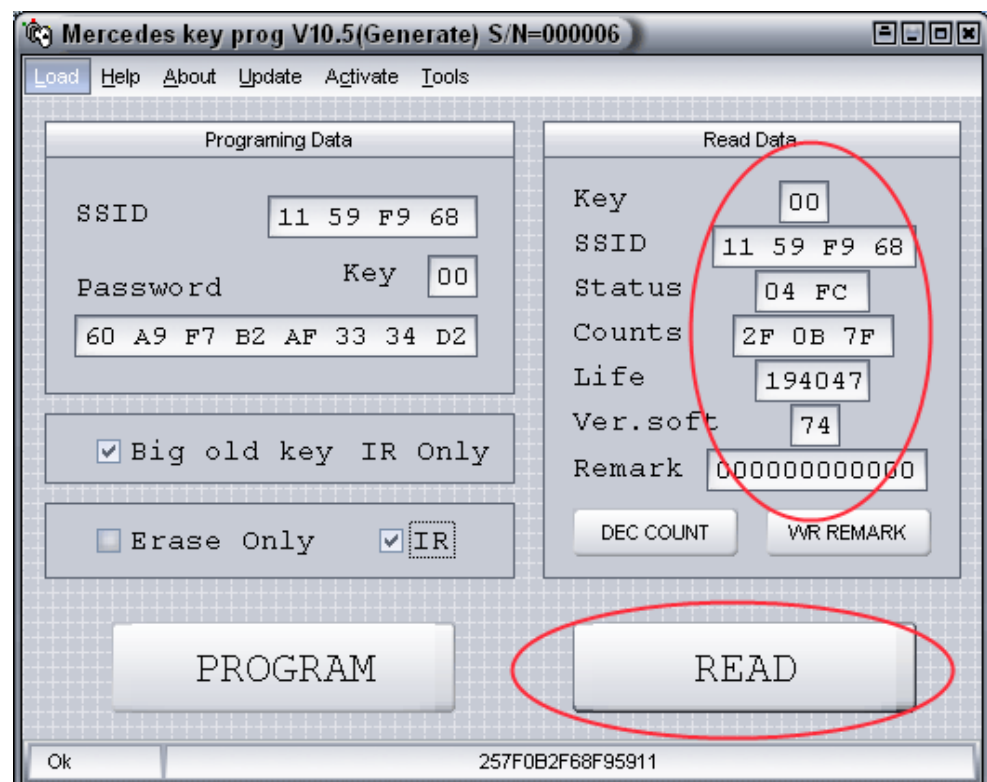When the loading is completed you will see

When the dump is loaded some data will appear in the Programming Data windows

It is done to make it possible to compare the read data with the data loaded.

c. Insert the preprogrammed (erased) key in the IR-port and press PROGRAM. Below the window there will be a progress-bar then you will see OK.
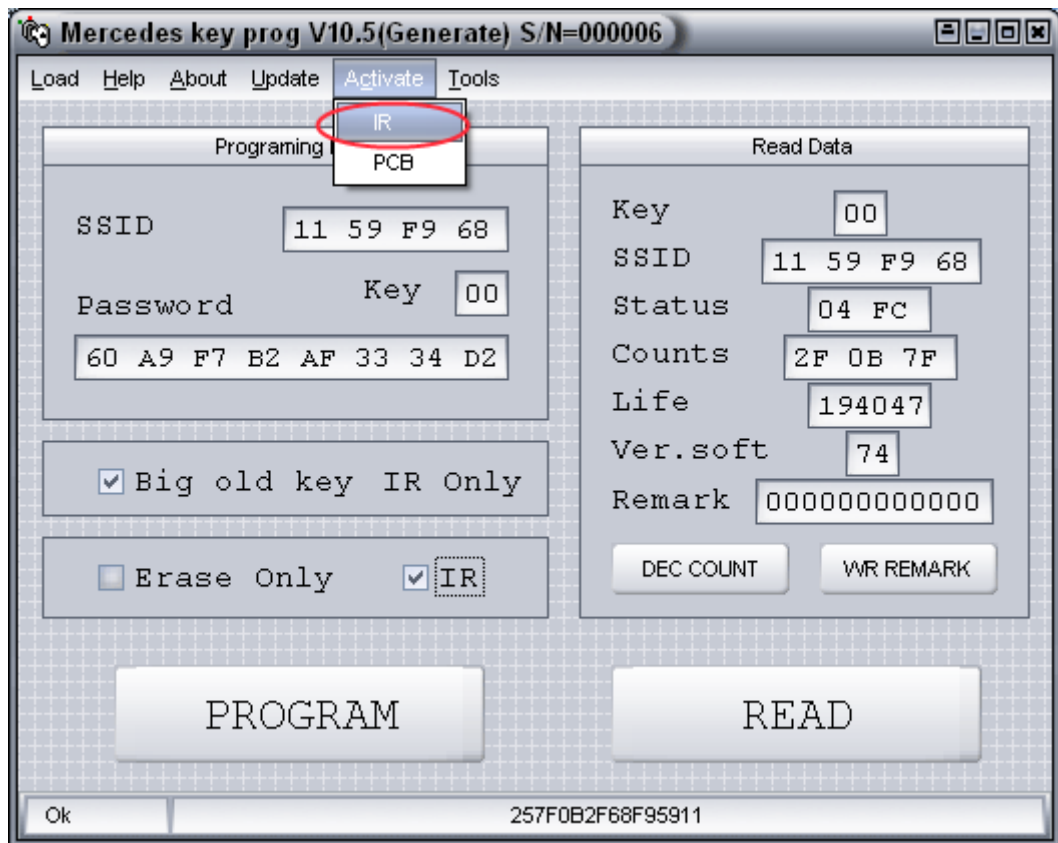
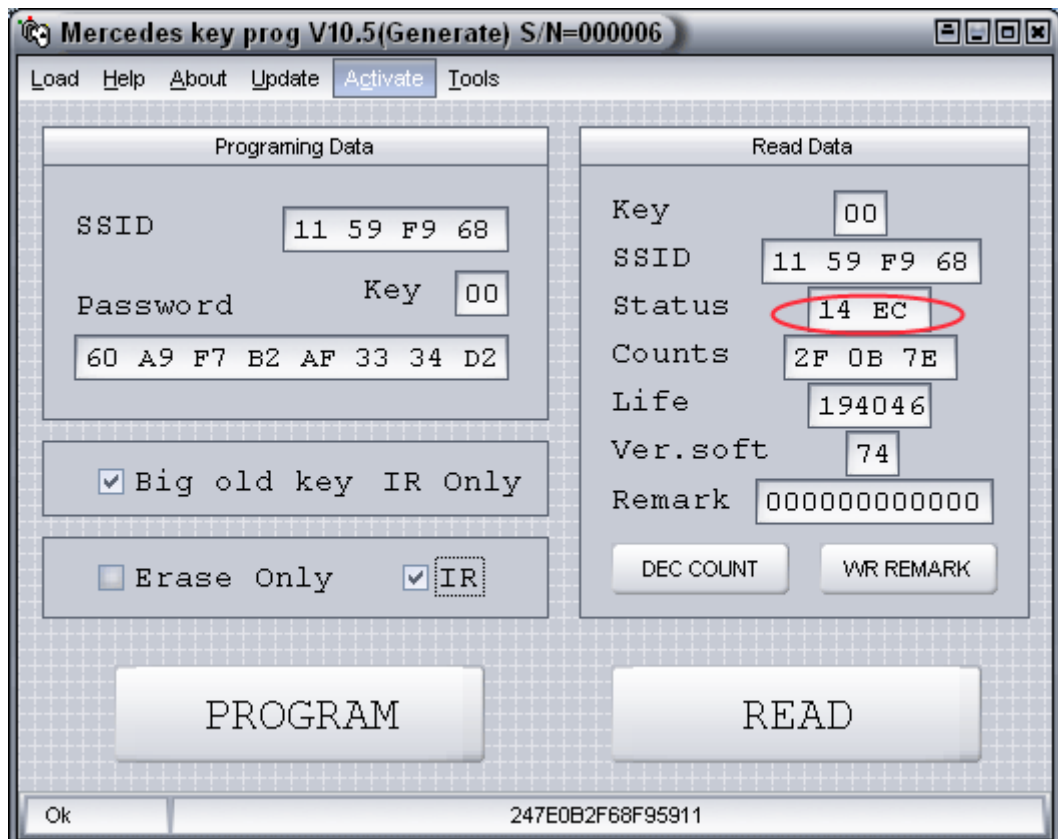d. Press READ to test and you will see

According to status (04 FC) the key is not activated

If you need to activate this key before you put it into the lock you may use the Activate bookmark where you choose between IR and PCB according to how you are going to activate it.


Now press READ to test and see the change of the status

When programming the keys based on MOTOROLA processors via IR-ports you must re-member what kind of processor is in the key. The programmer will solve this problem. You simply choose the preprogrammed EEPROM dump format of the file you load.

5. Programming of the keys based on NEC via IR.

a. Tick IR

b. Press LOAD on the main menu and choose the right key version, then load the dump
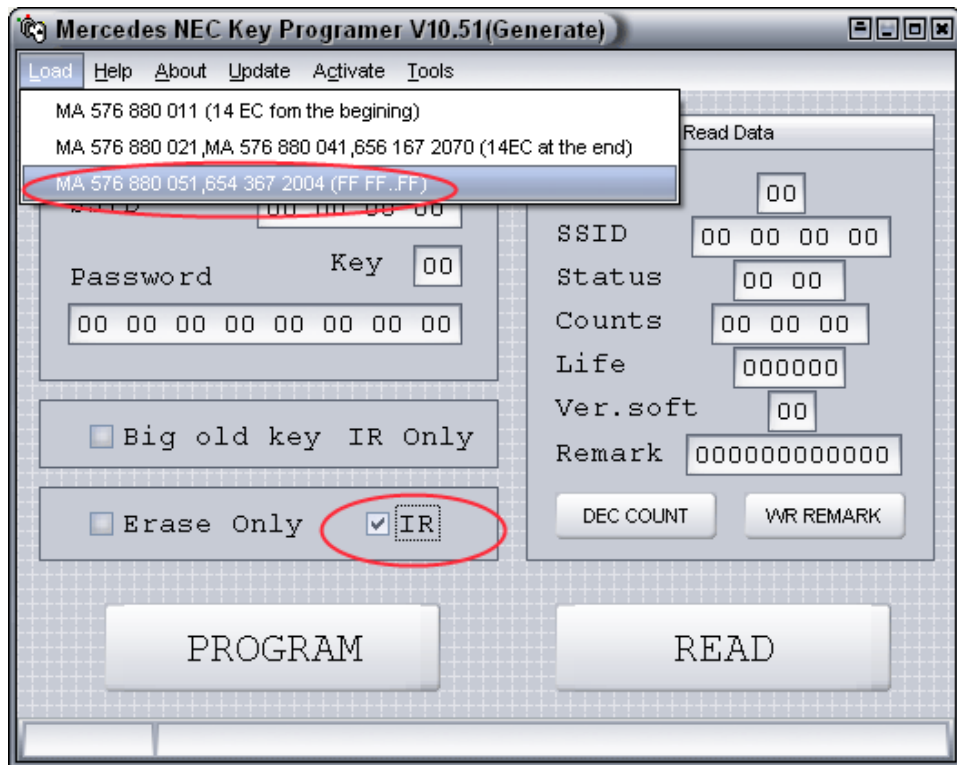
When the loading is completed you see
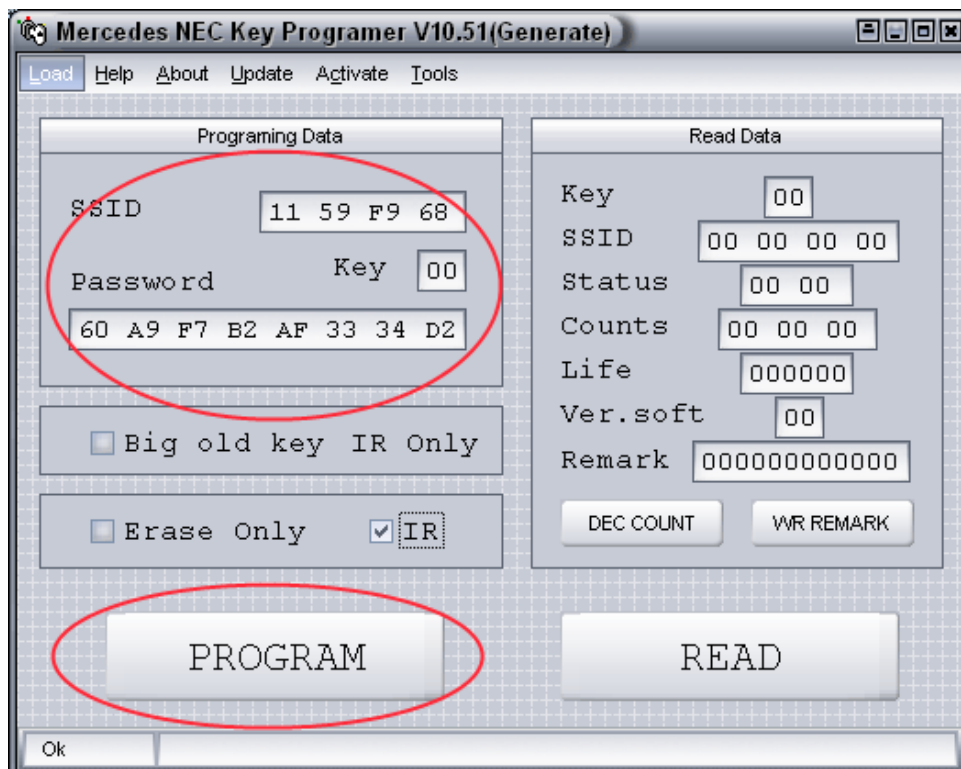
When the dump is loaded you see some data in the Programming Data windows

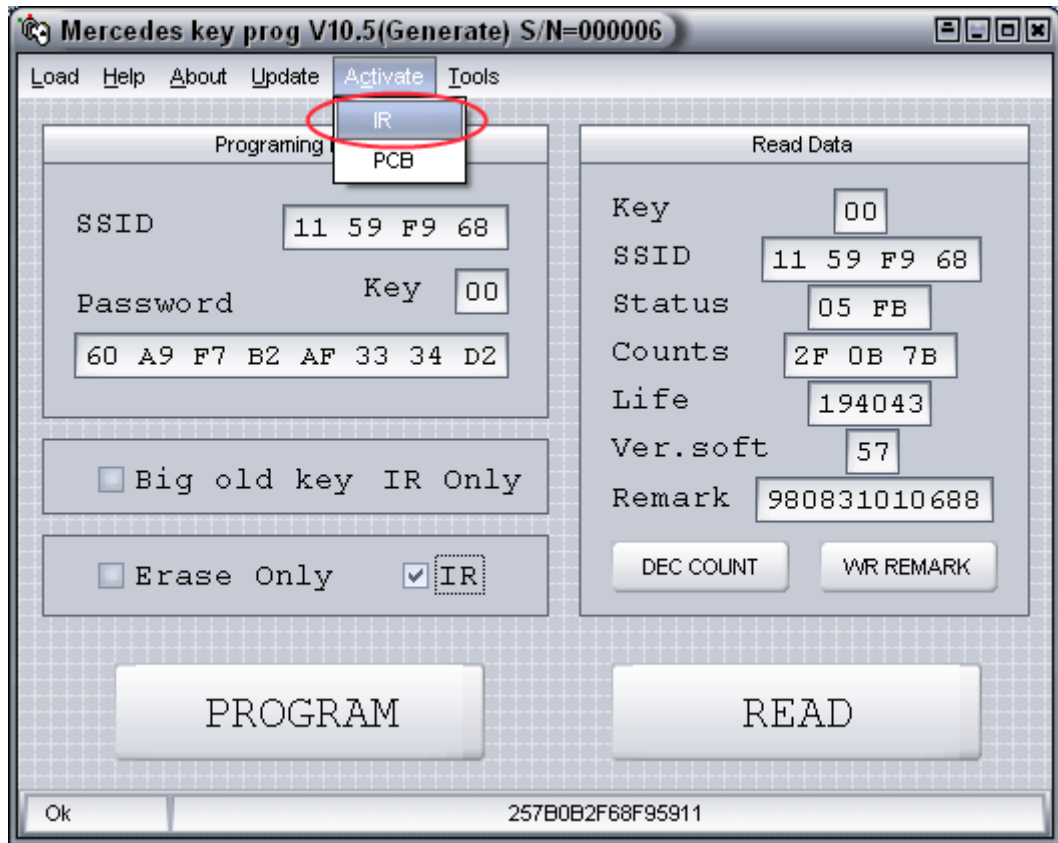It is done to compare the read data with the data loaded after the programming

c. Put the preprogrammed (erased) key into the IR-port and press PROGRAM. Below the window you will see the progress-bar then you will see OK.

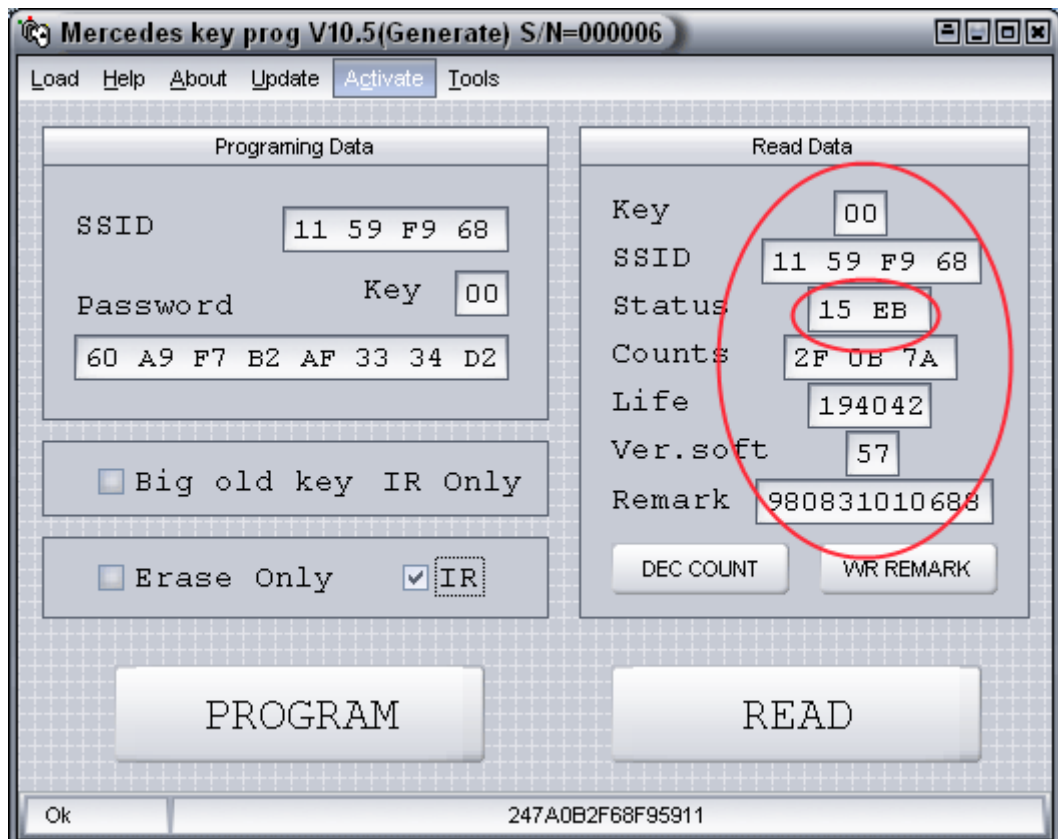d. Press READS to test and see the following
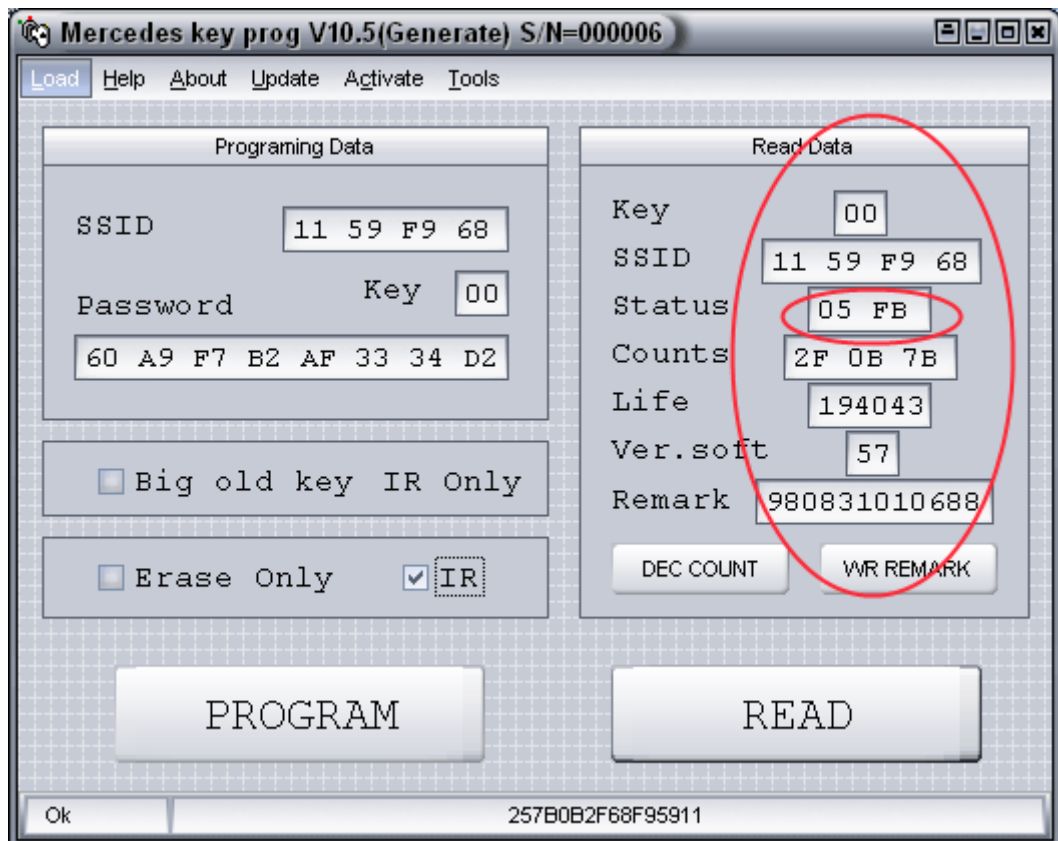
According to (05 FB) status this key is not activated.

If you need to activate this key before you put it into the lock you may use the Activate bookmark where you choose between IR and PCB according to how you are going to activate it.
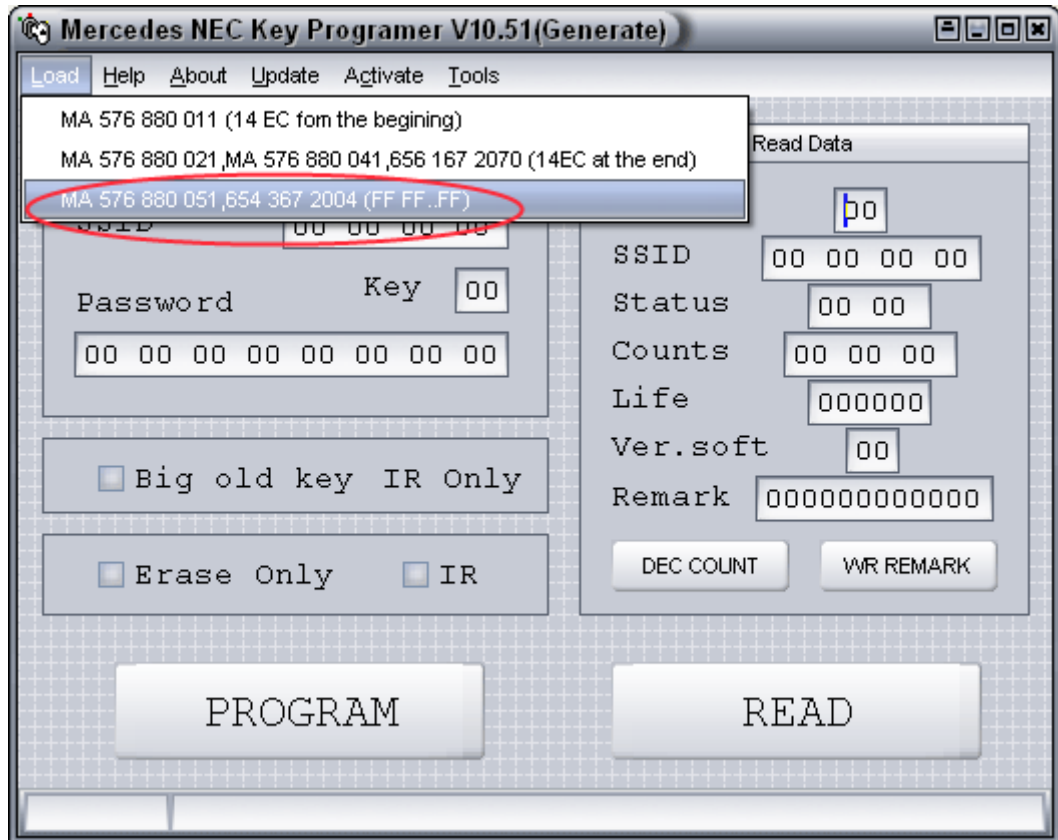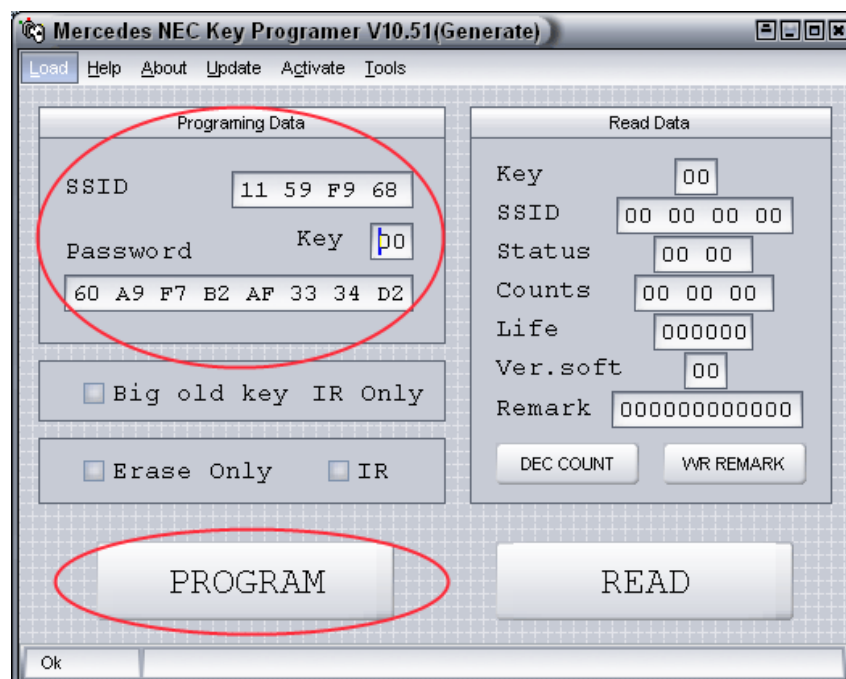

Now press READ and see the change of the key status.

6. Programming of the NEC processor base on PCB board.

a. Solder the NEC processor of the key

b. Solder it to the PCB board and connect to the programmer.

c. Remove all the ticks in the program window

d. Press "Load" on the main menu, choose the right key version and load the dump.

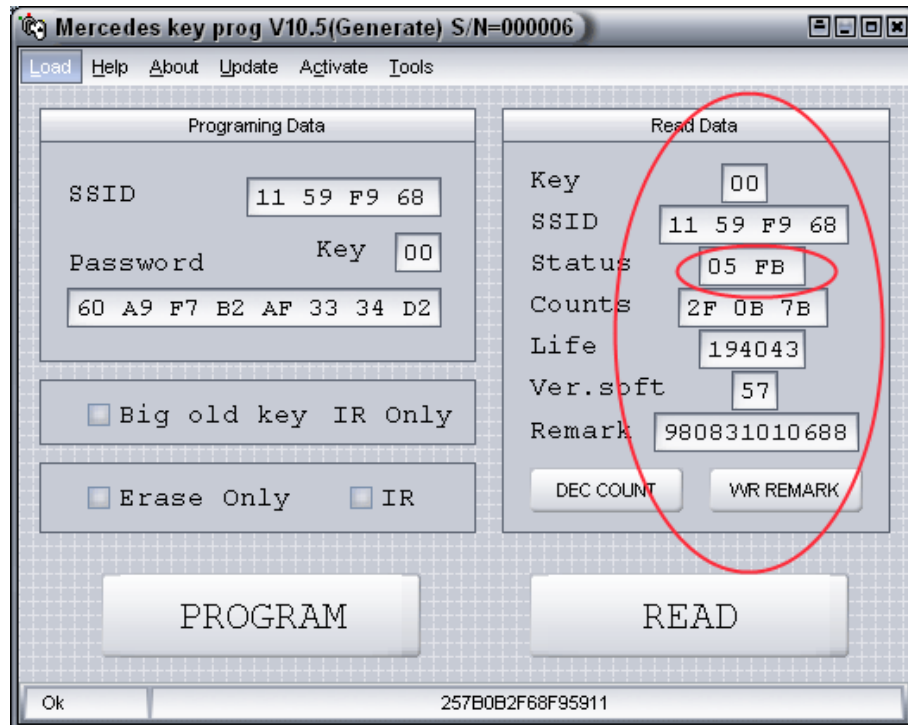After the loading is completed you see

When the dump is loaded you will see some data in the programming Data window

It is done to compare the read data with the data loaded after the programming

Press PROGRAM. Below the program window you will see a progress-bar then you will see OK.
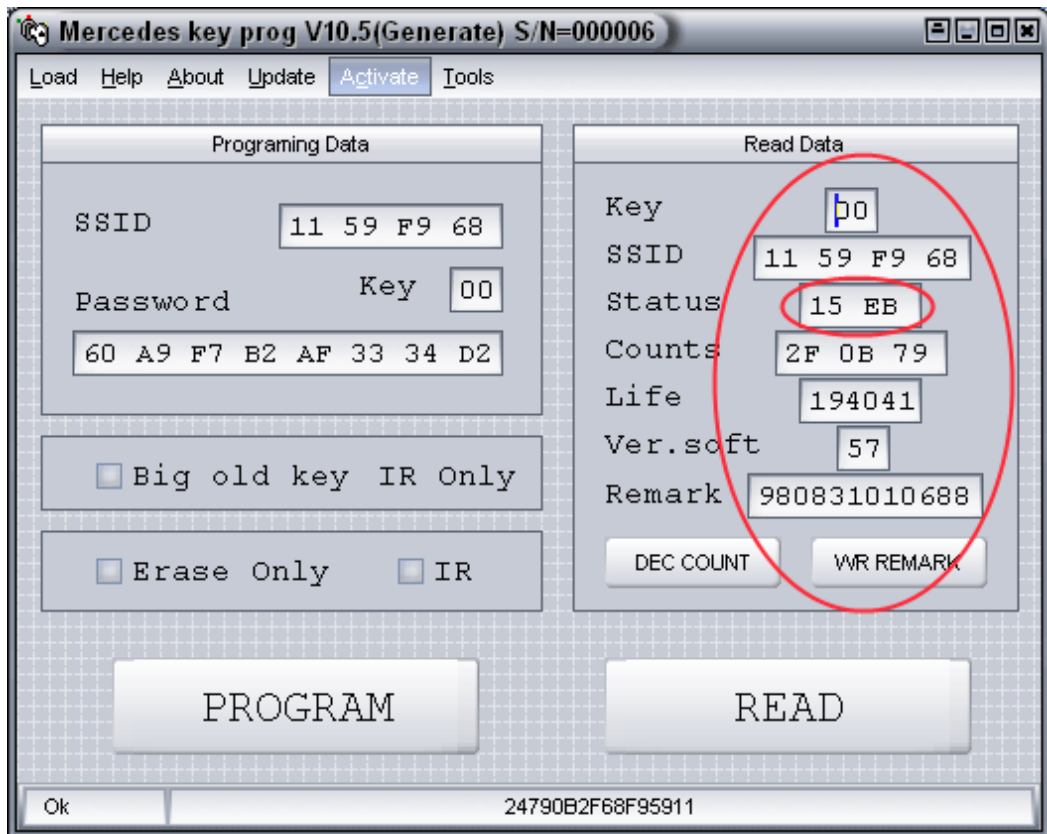
Press READ to test and see the following:

According to (05 FB) status this key is not activated

If you need to activate this key before you put it into the lock you may use the Activate bookmark where you choose between IR and PCB according to how you are going to activate it.
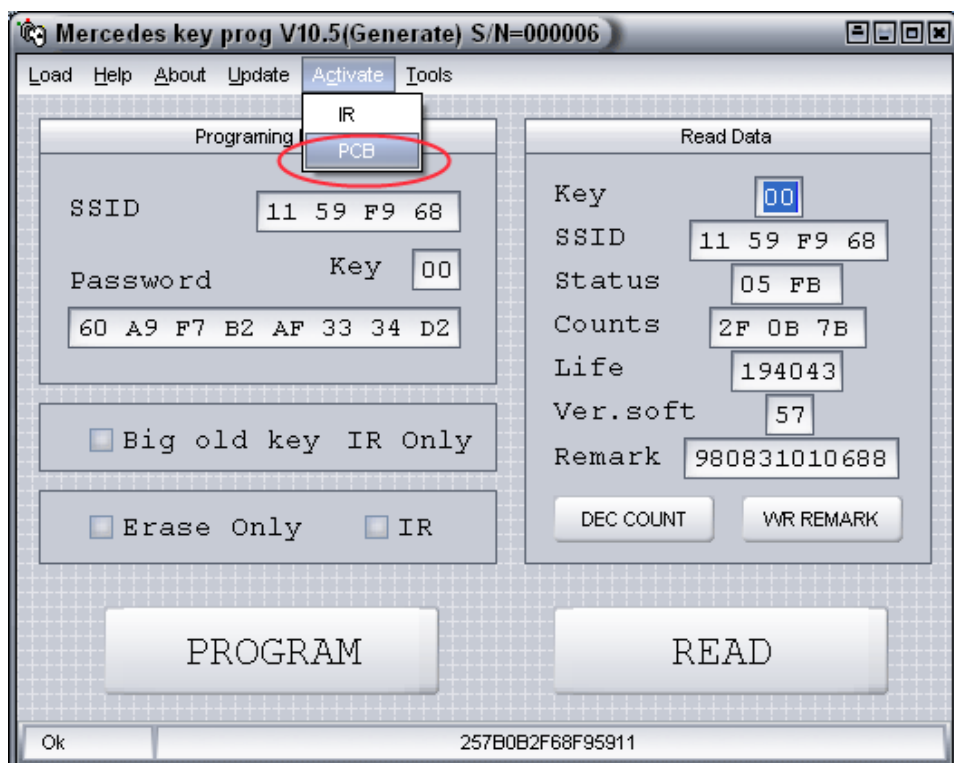
If you press READ now to test you will see the change of the key status

7. OPERATING WITH "TOOLS" BOOKMARK

Earlier MB_Light users had to buy the keys as below
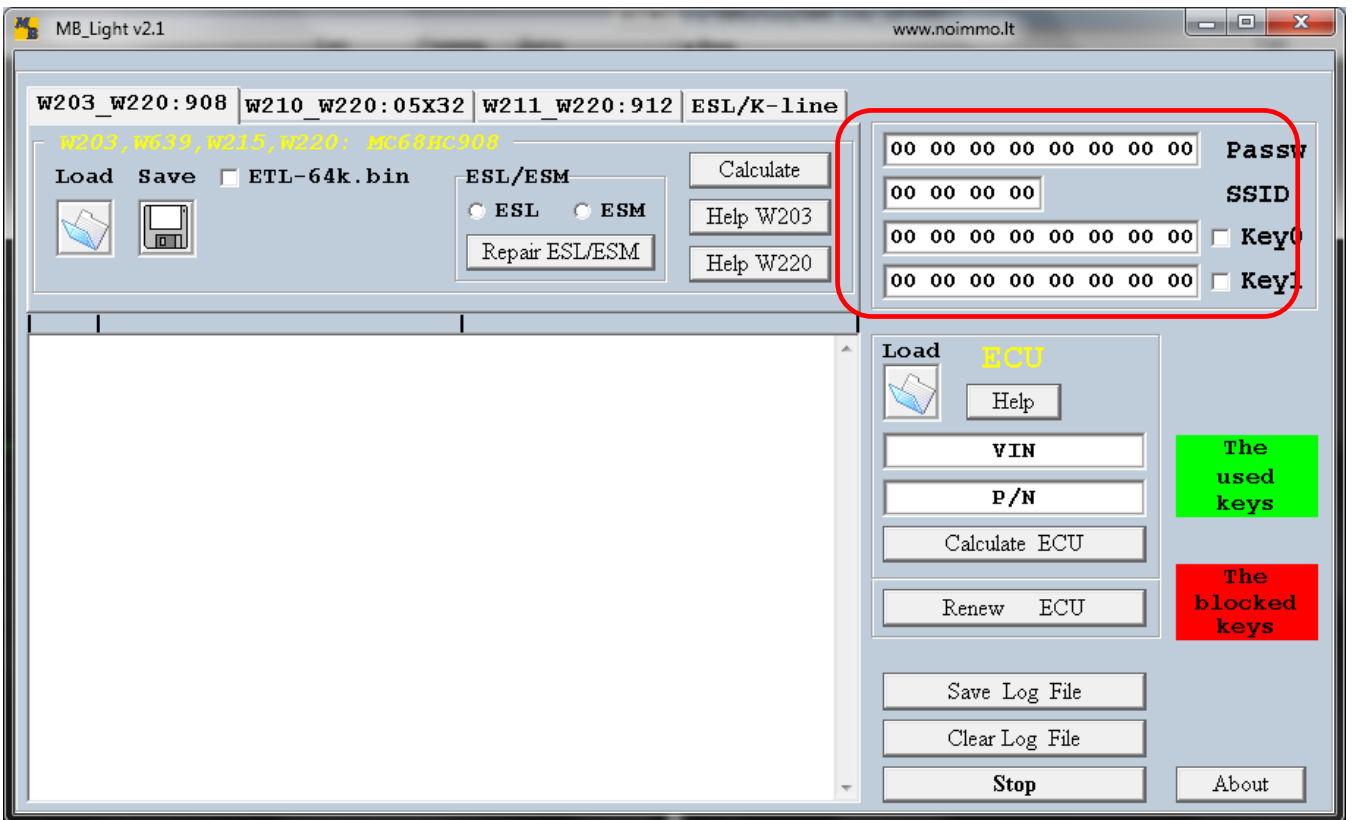

These keys were preprogrammed in a special way by our specialists and completed with a card with complete data

```
|----------------------------------------------------
| SSID        ... 433E1D28                    |

| PASSWORD    ... 6B233D37B58B0DD0   |

| HASH 0      ... 18E81B1458E15B10         |

| HASH 1      ... 2A44A1D38C97FB62         |

|_____|
```

You could fill in the data from the card in the right MB_Light program window fields

Now you are able to preprogram the keys which can't be disassembled when you can't work with the key processor directly.

Let us assume you have acquired two (three, four) key versions, as above. If it is a new unused set it is highly possible that one key is so-called "green" key which contains the data about the other keys from the set. Visually this key can be identified by the grey clip keeping the mechanic sting (plastic stopper in the new keys). If you test this "grey" key by our device you will see the respective status of this key.
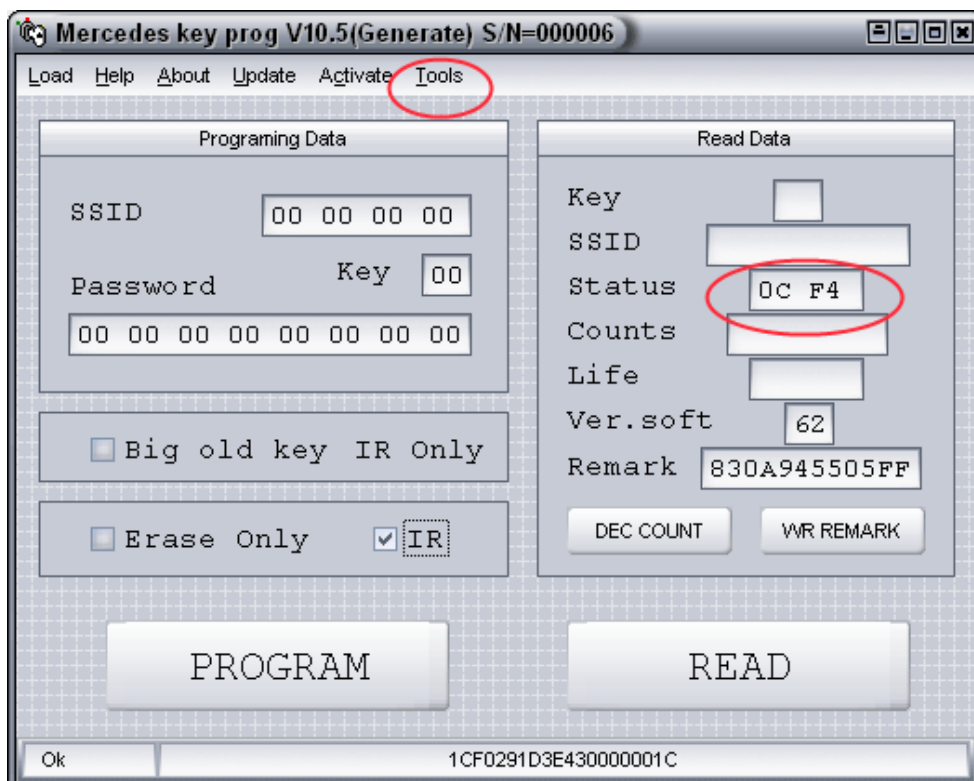
Note the "Tools" bookmark

When you press this bookmark you will see the window as below:

8. "TOOLS" SUBPROGRAM WINDOW FIELDS DESCRIPTION

The top part named "GRAY KEY" is designed to operate with the "Green Key" only. We remind that this key which version is shown above has got a grey clip; the name of the window takes its name from it.

IR – tick this window in case you work via IR. This mode is the chief one. If you do not tick you may work with the soldered off processor through PCB board. Of course it is only possible when you deal with a key which can be easily disassembled.

In case you deal with a "green key" in this version (can be found more seldom) you may work via IR without disassembling the key (which is preferable as it is simpler) but as it is possible to work through PCB board (having soldered off the processor) we have kept this function in our program.

Read

Press READ ONLY - you will start the "green key" reading (the key with a grey clip). The data in the key does not change). If the read key is not "green" you will get the following message:
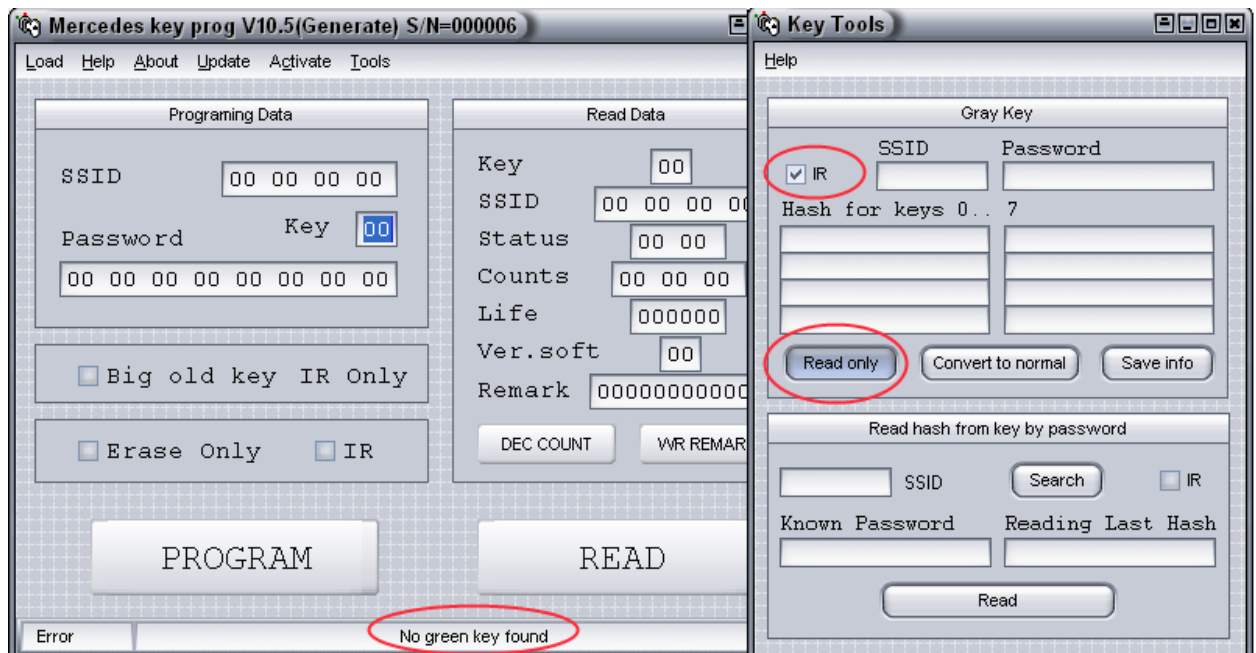
If you insert the "green key" and press "Read Only" the window will be filled in the following way:
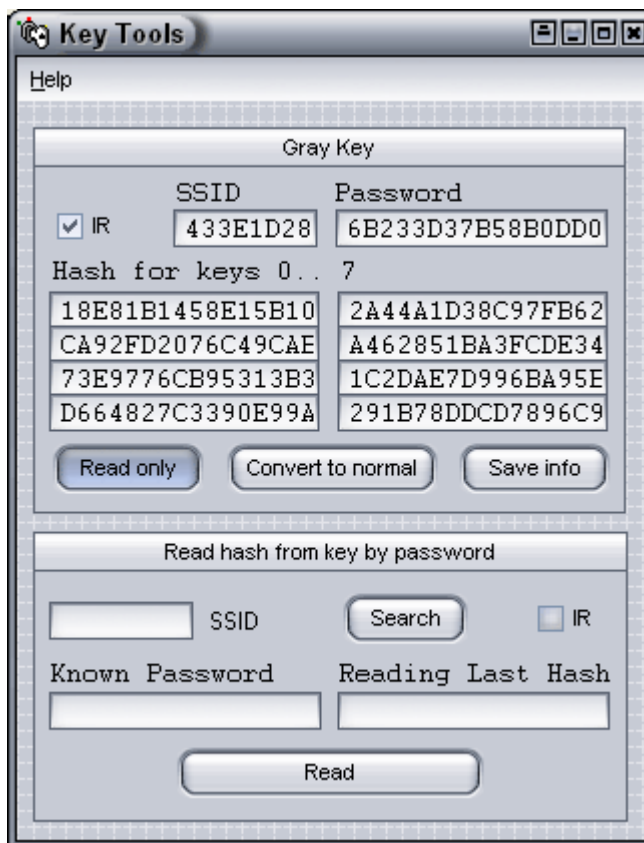
There will be the following data – the password, all 8 keys hashes, which data is in the "green key"

It will be automatically saved to SSID file with txt extension. In our example it is 433E1D28.TXT file which has the contents like this:

SSID   ... 433E1D28

PASSWORD   ... 6B233D37B58B0DD0

HASH 0   ... 18E81B1458E15B10

HASH 1   ... 2A44A1D38C97FB62

HASH 2   ... CA92FD2076C49CAB

HASH 3   ... A462851BA3FCDE34

HASH 4   ... 73E9776CB95313B3

HASH 5   ... 1C2DAE7D996BA95B

HASH 6   ... D664827C3390E99A

HASH 7   ... 291B78DDCD7896C9

at the same time there will be a file created in the same file with **SSID_PASSWORD.TXT name which contents are like this:**

433E1D28 6B233D37B58B0DD0

futher on this file will be "growing"

SSID_PASSWORD.

If you press "Save Info" you will be offered a place to save a file (**433E1D28.TXT** in our example). You can name it yourself.

You may check each key number in the band by test reading. If it is a pair the key with a black clip has got 00 number and the key with a grey clip (green key) always gets 01 number.

Due to the data saved in the file (433E1D28.TXT in our example) the key (keys) with a black clip are ready to be used in our MB_Light program. But to use the key with a grey clip ("green key") with the other keys from the band we have to convert it to the "normal" status.

By pressing this button the "green key" will be converted and can be used further as a normal key.

9. PASSWORD SEARCH IN THE BASE

There is a possibility of quick password search in the base which is automatically saved in your computer hardware. This search is possible when the key is available and when it is not. Of course you must know the SSID of the key which password you are looking for in your base.

If the key is nor available

Fill in SSID value in the program window

Now press "SEARCH". If the data of the key is saved in your computer hardware you will see:
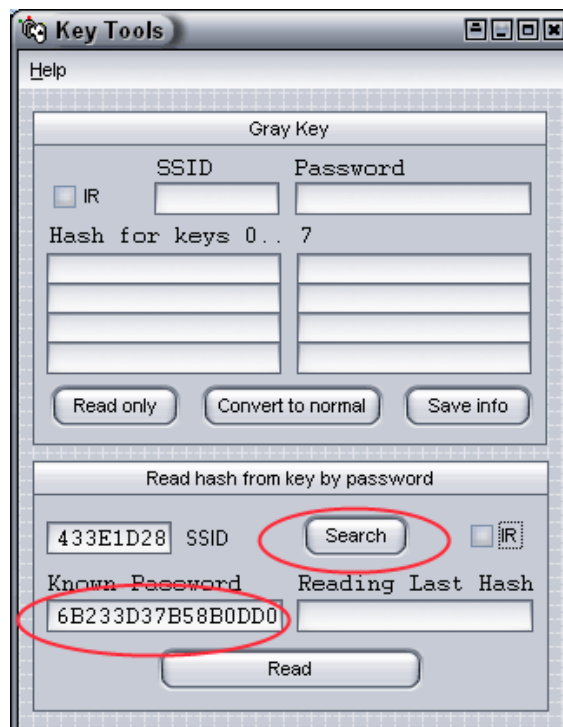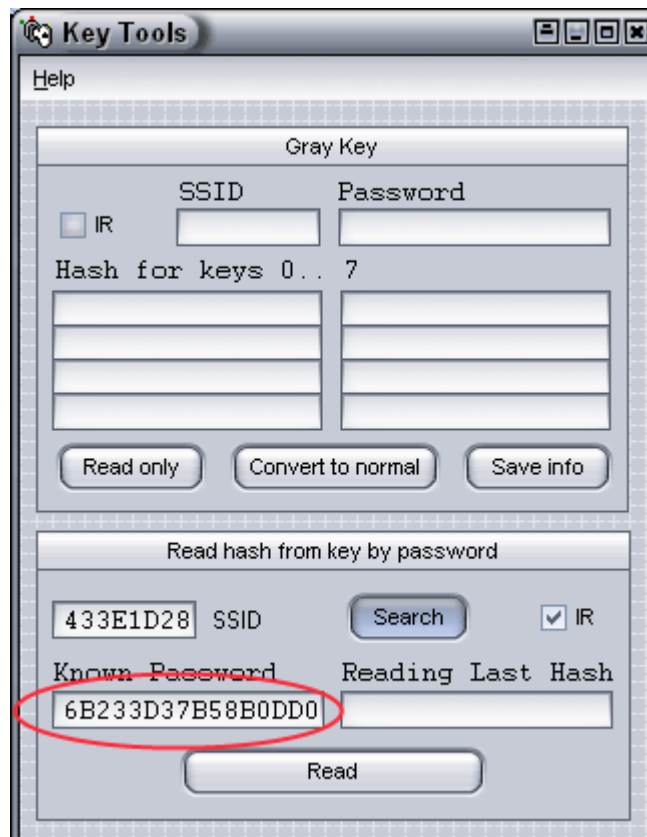
If the key is available

Insert the key in the IR-port, tick IR and press "search"

The device will read SSID of the key and if SSID is in your base you will see the password in the right field

No matter how you get the password:

Look for the SSID field

Read SSID and get the password by reading via IR

Fill in the password you got from other sources in the "Known Password" field

By pressing "Read" you will get the last hash value edited by this key.