Universal RENAULT injection ECU decoding tool

1. Introduction

Have you ever seen where fuel injection ECU (Electronic Control Unit) on the Renault car is located? Yes, it is located in most vulnerable place in the engine compartment. In most cases even after medium-strength impact it became unusable because of mechanical damage and must be replaced. However from year 1994 most Renault cars are equipped with engine immobilizer system and it makes replacement of injection computer more complicated. There is no problem if replacement ECU is bought from Renault service dealer - it is sold with no immobilizer code stored, but replacing computer with used one is impossible because of mismatch of unlocking codes. And that was why an idea to create universal Renault ECU decoder revealed. Now if you have this tool you can take used injection computer and make it not coded as it was bought from Renault stores. Decoder has several modes of operation and covers all known petrol and diesel injection systems, introduced in range of year 1994-2001 ***without intervention in to the ECU*** (diesel coded anti-start valve as well). Systems, this tool was tested with, are listed below:

Petrol
SIEMENS **FENIX3B**
SIEMENS **FENIX5**
SIEMENS **SIRIUS32**
SAGEM **SAFIR** (55pin) Coded fuel cut-off valve (1.9D DDS)
SAGEM **SAFIR2** (35pin)
BOSCH **MOTRONIC MP7.0**
MAGNETI MARELLI **IAW 06R**
MAGNETI MARELLI **IAW 8R.30**

Diesel
BOSCH **MSA15.5** (DTI)
BOSCH **EDC15C3** (DCI)
LUCAS **DCU3R** (1.9D)
Coded fuel cut-off valve (1.9D DDS)

Most of engine control unit mentioned above can operate without immobilizer at all after decoding.
ECUs, that cannot operate without immobilizer code stored in memory:
some of **FENIX5** for LAGUNA/SAFRANE 2.0l 16V,
all of **SIRIUS32** except for KANGOO 1.4l 16V,
LUCAS DCU3R, **Bosch MSA15.5** and **EDC15C3;**
It means that after decoding procedure on one of those ECU is done, you must to have immobilizer system properly operating (matching key), to make the engine start. Immobilizer signal emulator can also be used.

MODE button is used to switch between operation modes. Mode can be changed only before pressing red START button. When decoding is in progress, MODE button becomes inactive.
There are 4 operation modes:

Mode "MODE" LED		
Standard	-	OFF
Advanced 1	-	ON
Advanced 2	-	Slow blinking
Semi-Auto (for TYPE1 immo)	-	Fast blinking

All you have to do is connect decoder to the ECU you want to decode, according to connection diagram, select desired mode of operation and press red START button. Which mode is to be selected depend on engine immobilizer type and several other factors, described below. Connect ground, battery +12V, MIL lamp and relay (if required). Use any 12V lamp (up to 3W), any relay with 12V coil and 12-14V power supply (over-current protection would be an advantage). Lamp must blink after applying +12V IGN. If lamp goes on and does not blink, ECU is already not coded or there is mistake in connection.
Connect decoder box as follows: red wire to ECU's +12V BAT, black wire to GND, yellow wire to ECU's +12V IGN (decoder switches +12V on and off by itself) and green wire to ECU's immobilizer input.

1.1. Immobilizer system overview

Renault immobilizer systems are divided in to three types – TYPE1, TYPE2 and TYPE3. This tool is able to decode ECUs with TYPE1 and TYPE2 immobilizer. Engine ECU from the TYPE2 system is decoded automatically with this tool; therefore TYPE1 ECU decoding is semiautomatic. It is very easy to find out what type of immobilizer is used with

Immobilizer type	*Prod. date*	*ECU ↔IMMO*	*ECU types*
TYPE1	-01.96	Wire	Fenix3B, some of Fenix5 (produced up to beginning of the year 1996)
TYPE2	02.96-2001	Wire	Fenix5, SIRIUS32, IAW 06R, MSA15.5, EDC15C3(-2001), SAFIR, SAFIR2, Lucas DCU3R, etc
TYPE3	2001-	CAN bus (not all)	SIRIUS34, SIRIUS35, S2000, EDC15(2001-)

1.2. Decoding TYPE2 immobilizer system engine ECU

Decoding process is fully automated. On SIEMENS FENIX5 select ***Standard*** type of operation (green LED off). Other systems may require ***Advanced1*** or ***Advanced2*** mode (especially engine control systems, where ignition-on signal to ECU is passed via fuel pump relay coil, e.g. SAFIR2). Decoding in ***Standard*** mode takes about 1h 50min, in ***Advanced 1*** – 4h, in ***Advanced 2*** – more than 5h. In most cases 1h 50min is enough to make ECU not coded. Ignition is switched from off to on by decoding tool; red LED indicates ignition on. After decoding, ignition is switched off and green led is lit permanently.

After decoding, ECU is "virgin" and can be used on another car. If immobilizer system is ok (valid key), ECU retains new code from immobilizer control unit after ignition on. Most of decoded ECU can operate without immobilizer code stored (Fenix5, diesel coded solenoid valve, some of SIRIUS32, …), other require immobilizer code to be stored.

1.3. Decoding TYPE1 immobilizer system engine ECU

Select ***Semi-Auto*** operation mode (fast green LED blinking). Press START button. After every ignition-on, MIL immediately starts to blink fast. Watch the ECU MIL lamp and count number of ignition-on (start counting from 1). Note number of ignition-on cycles when MIL stops blinking for a while. Use ***Immo1.exe*** to convert this number to security code. For ex.: MIL stopped blinking on 89-th ignition-on: program calculates code 2232.

ECU is not decoded after this procedure; you only found out its security code! Count number can be in range 1-255. In worst case when MIL stops to blink on 255-th ignition-on, counting takes about 8 minutes. Put ECU back to car and turn key to ignition-on. Injection fault lamp flashes quickly.

1. Depress and keep depressed accelerator pedal fully – injection fault lamp extinguishes. To enter security code use trip computer button on the end of wiper control stalk. This button is called ADAC button.
2. Press the button same number of times as the first figure of the code (injection fault lamp illuminates each time the switch is pressed).
3. Release the accelerator pedal: injection fault lamp flashes.

Repeat operations 1, 2 and 3 to enter in succession the three other digits of the code. When the code has been entered the injection fault lamp should be illuminated continuously for 2sec and then must to extinguish. ECU is no longer protected by immobilizer and is ready to retain new code. If injection fault lamp flashes, the code is incorrect. Switch off the ignition, switch it on again and repeat procedure for entering code. Three attempts to enter incorrect code locks ECU for 15min. It does not accept any codes during this “penalty” time. Turn ignition ON and wait 15mins. Procedure for code entering can be performed without car as well. Accelerator pedal depressing-releasing can be simulated using throttle position potentiometer connected to the ECU, button must be connected between ground wire and immobilizer line (see wiring drawings).