

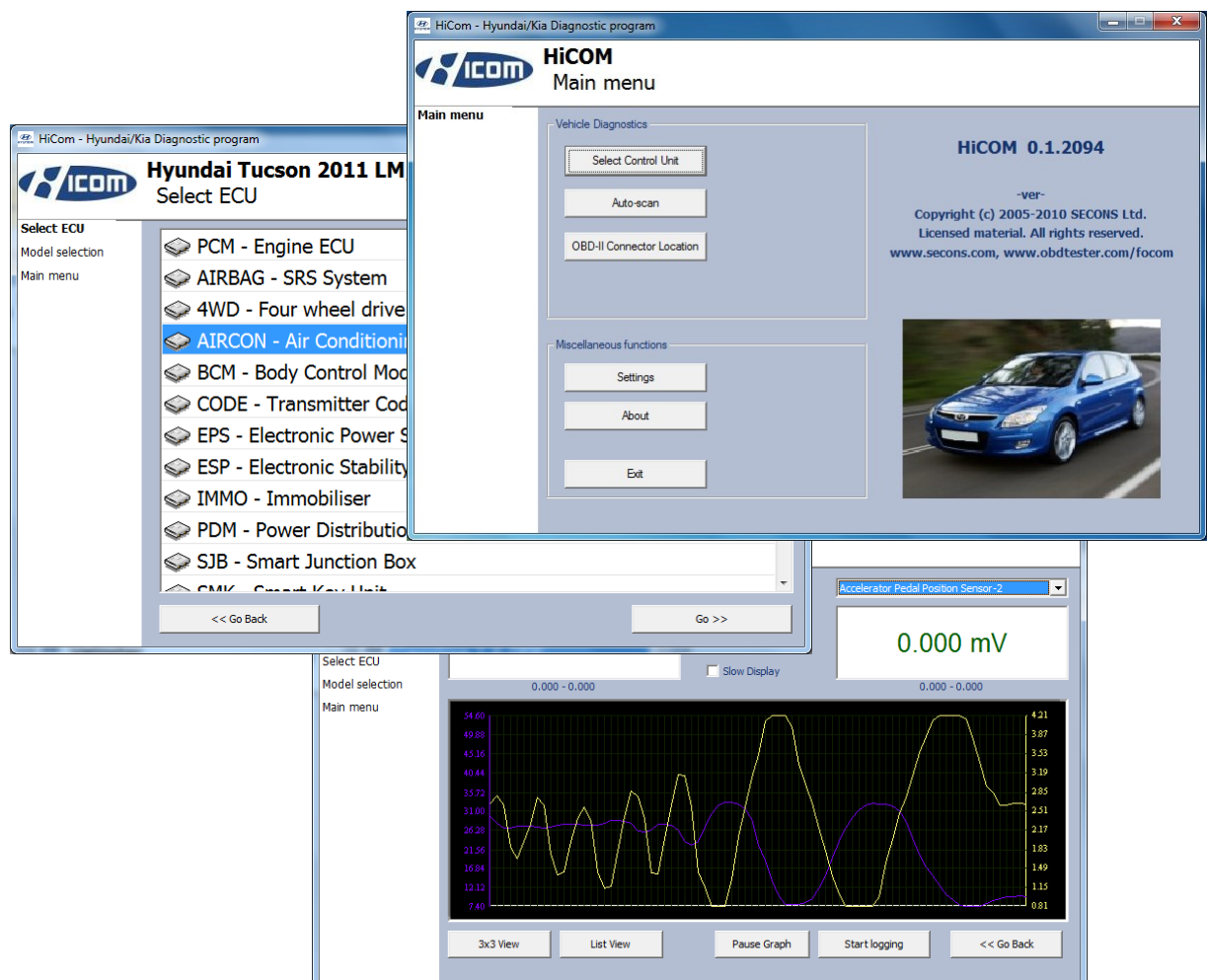


# HiCOM

## User manual

[www.obdtester.com/hicom](http://www.obdtester.com/hicom)

PRELIMINARY VERSION



SECONS Ltd. is not connected with Hyundai Motor Company in any way.

SECONS Ltd. is not liable for damages caused by using of software HiCOM.

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## 1 Introduction

Thank you for purchasing the HiCOM diagnostic interface and software. HiCOM is professional tool for diagnostics of Hyundai and Kia vehicles. Please read carefully this User Manual before using the product.

We hope you'll find our products useful. In case you have any questions, problems or feedback please contact as at [support@secons.com](mailto:support@secons.com). We're here to help!

### 1.1 Key features

- Fully multiplexed all-in-one smart USB2.0 interface
- Automatic ECU recognition
- Automatic vehicle scan
- ECU Identification
- Fault code (DTC) reading
- Fault code clearing
- Measured vaules / live data
- Live data recording
- Diagnostic protocol printing
- Actuator tests

The HiCOM system works with Hyundai and Kia vehicles. The rule of thumb is: tasks related to fault code memory and identification are reliable everywhere, but measured values and other functions may not be fully supported.

**List of supported cars and control units including diagnosis capability can be found at <http://www.obdtester.com/hicom-eculist>**

### 1.2 Software update

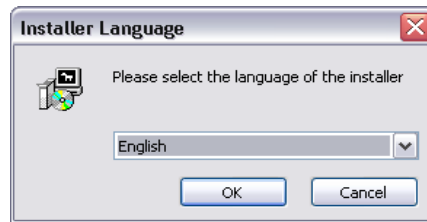
Software updates in diagnostic version are available for free. You can download them from <http://www.obdtester.com/downloads>. Use a serial number of interface (on the tag or in the menu *Settings*) as login and let password empty. We recommend you to maintain software up-to-data, because updates provides support for new ECUs and fix various HiCOM issues.

We recommend you to update firmware in diagnostic interface by clicking on *Settings* → *Upgrade firmware* every time you update the software.

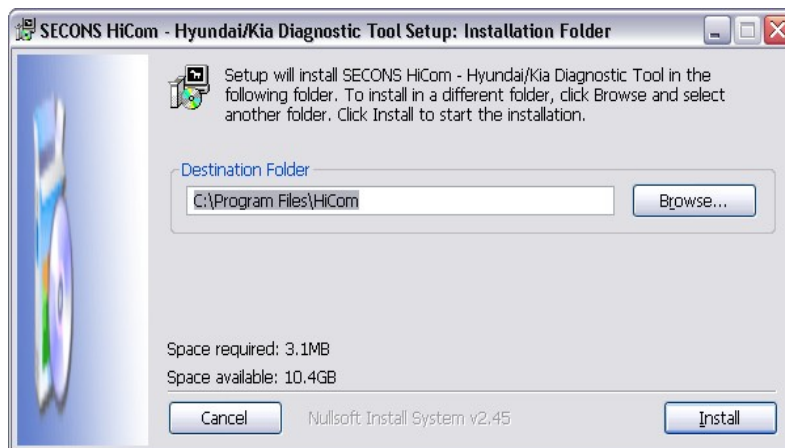
## 2 HiCOM software and driver installation

### 2.1 Microsoft Windows operating System

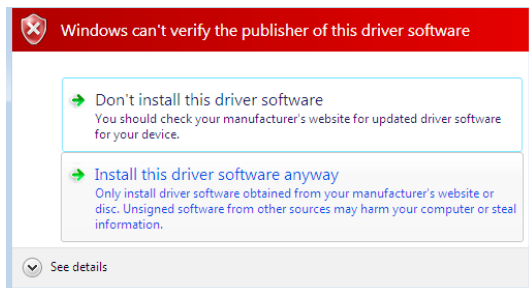
1. Insert HiCOM installation CD to your CD-ROM drive
2. Run installation file HiComSetup.exe
3. Choose language for the installer



4. Choose your destination folder for the HiCOM and click *Install* button and after successful installation click *Close* button.



HiCOM drivers are automatically updated during the HiCOM installation. When prompted to install „unsigned“ drivers, click on *Install this driver software anyway* (Microsoft® Windows® 7) or *Continue Anyway* (Microsoft® Windows® XP).



Microsoft® Windows® will automatically install drivers when you plug-in the HiCOM to USB port. Driver installation isn't required for operation on GNU/Linux system.

## 2.2 GNU/Linux System

Our diagnostic application are tested to work under Linux. No native Linux binary is available, however we have created our programs to work under Linux and other systems using Wine.

### 2.2.1 Requirements

- Linux 2.6.x with USB support (or FreeBSD)
- USB CDC Driver
- Wine 1.0.1

Recent Debian Linux or Ubuntu meet the above requirements.

### 2.2.2 Setting up devices

Driver installation isn't required for operation on GNU/Linux system. Diagnostic applications require access to /dev/ttyACMx devices from Wine environment. This can be set-up very easily using these commands:

```
ln -s /dev/ttyACM0 ~/.wine/dosdevices/com5
ln -s /dev/ttyACM1 ~/.wine/dosdevices/com6
ln -s /dev/ttyACM2 ~/.wine/dosdevices/com7
ln -s /dev/ttyACM3 ~/.wine/dosdevices/com8
```

Diagnostic interface should be then visible from the HiCOM diagnostic application.

### 2.2.3 Installation

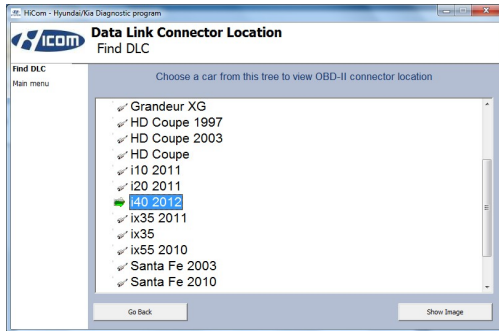
Programs can be installed by launching setup .exe file using wine, e.g. wine HiComSetup.exe.



You can download the latest version of HiCOM from [www.obdtester.com/downloads](http://www.obdtester.com/downloads)

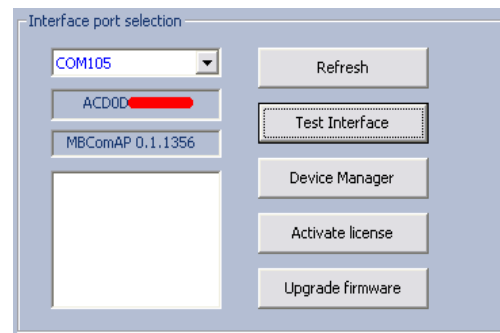
### 3 First steps

1. Connect the HiCOM interface to your computer.
2. Connect the HiCOM interface to OBD-II connector in the vehicle. You can use picture gallery for find it, available from main menu – *OBD-II Connector Location* button

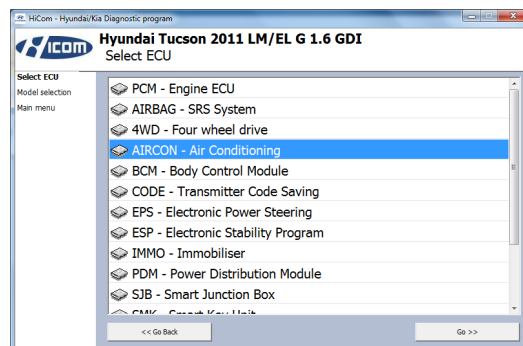
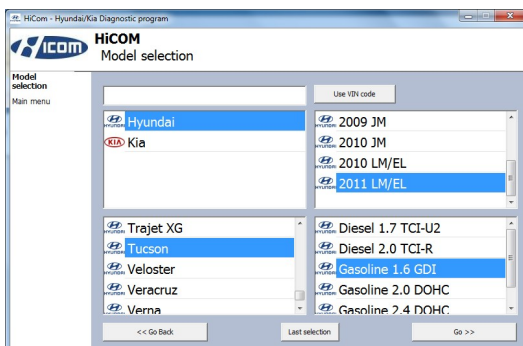


### 3. Set-up HiCOM application

Select *Settings* from OBDTester main menu and configure interface port. After click *Refresh* button software should find port to which is HiCOM interface connected. Choose these port. Click *Test Interface* to make sure everything is OK, you should see fulfilled *Serial number* (now hidden in red line).



4. Save settings and return to main menu.
5. Turn ignition ON, but don't start an engine.
6. Select control unit by clicking on *Select Control Unit* button.
7. Select exact vehicle model. Year and engine type must be selected, otherwise diagnosis may fail. We recommend selecting car based on VIN.
8. In a new window choose unit from list.



9. If unit was recognized, you can use diagnostic functions now. In other case, you must select the type of control unit. (chapter *Unrecognized Control Unit*)

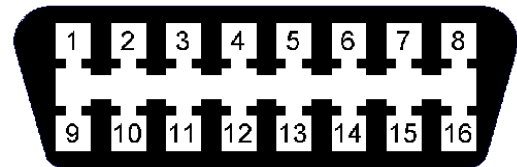
## 4 Diagnostic connectors used in Hyundai/Kia vehicles

Location of OBD-II and manufacturer-specific (OBD-I) connectors is available in DLC location database available from the HiCOM main menu.

### 4.1 OBD-II

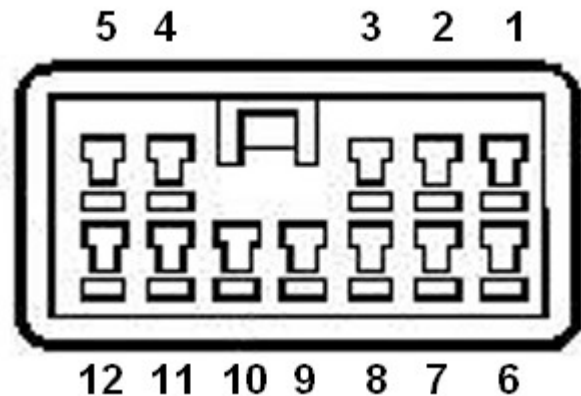
Standard OBD2 connector is used usually since 1996 models to present (please note that some models manufactured after 1996 still may use 12 or 20pin connector).

-	1	9	ISO9141 K Line
-	2	10	-
ISO9141 K Line	3	11	ISO9141 K Line
Ground (GND)	4	12	ISO9141 K Line
Signal ground (GND)	5	13	ISO9141 K Line
HS CAN High	6	14	HS CAN Low
ISO9141 K Line	7	15	ISO9141 L-Line
ISO9141 K Line	8	16	Battery voltage



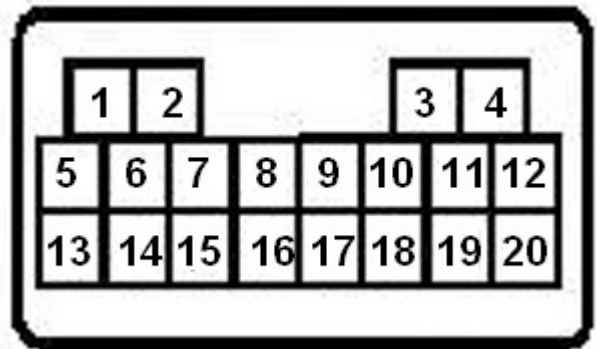
### 4.2 Hyundai 12-pin connector

Pin	Description
1	Engine K-Line
2	Airbag K-Line
4	ABS K-Line
6	Gearbox K-Line
10	Engine L-Line
11	Speed signal
12	Ground (Battery-)



### 4.3 Kia 20-pin connector

Pin	Description
1	Power after fuel pump
2	Cooling fan signal
3	Engine rotation speed / ignition signal
4	Ground
5	Battery positive voltage
6	
7	Initial ignition management (coil 2)
8	ABS L-Line
9	Engine K-Line
10	Automatic transmission failure code
11	Blink code / Check Engine indicator
12	Ground
13	
14	Airbag K-Line
15	ABS K-Line
16	Initial ignition management (coil 1)
17	Cruise-control K-Line
18	Automatic transmission L-Line
19	Engine L-Line
20	Engine monitor output



## 5 Connecting to control units

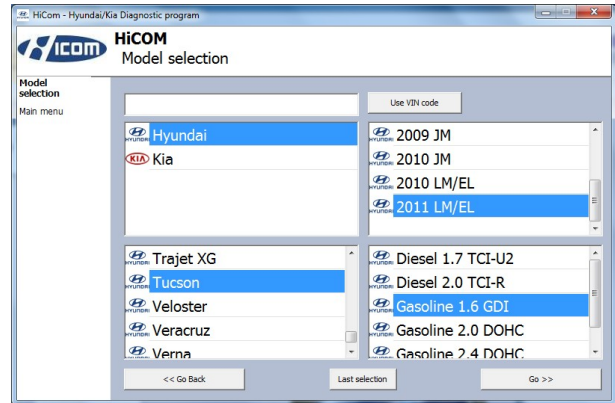
### 5.1 Model selection

Before connection to control units (or autoscan) is possible, vehicle model selection is required.

Correct model year and model code selection is essential for proper diagnostic functions.

It is highly recommended to always identify vehicle based on VIN code.

Incorrect model selection may result in wrong or incomplete live data, improper function of actuator tests and coding functions, possibly resulting in damaged car components.



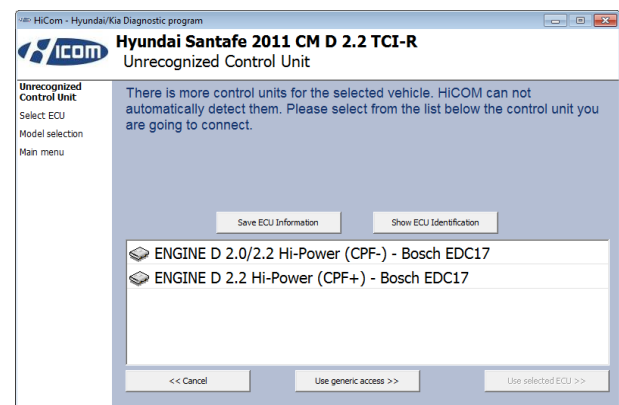
### 5.2 ECU variant selection dialog

In a case of more ECU variants are applicable for selected ECU type, the following screen is displayed and user must select correct ECU variant.

You can get more information about ECU by clicking *Show ECU Identification* button.



- It is important choose correct ECU for proper display of measured values.
- If you make a mistake in identification, you shouldn't perform any of coding or programming functions.



ECUs are usually identified and distinguished by:

- Territory (e.g. MEX=Mexico, India, Turkey, etc.)
- Selected features (e.g. ISG+, CPF-, etc.)
- Engine type (Leaded, Unleaded EOBD, Unleaded ALL, ...)
- Installation date range (e.g. 2009/05/01-, ...)

Feature list

Feature	Meaning
CPF	Diesel particulate filter
ISG	Idle Stop and Go
ESP	Electronic stabilization system
ETC	

### Engine type examples

Type example	Description
ENGINE Leaded	Leaded gasoline engine
ENGINE Unleaded OBD-II	Unleaded gasoline engine, OBD2 compliant
ENGINE Unleaded EOBD	Unleaded gasoline engine, European OBD2 compliant
ENGINE Unleaded MEX	Unleaded gasoline engine, Mexico market

ECUs do not have capability of self-identification and if multiple choices are possible, user must select proper control unit.

### 5.3 Hyundai ECU naming terminology

PCM	Engine ECU control unit
IMMO	Immobilizer control unit
AT	Automatic Transaxle
SMARTRA	Smart Transponder Antenna
SMK	Smart key unit
IPM	Instrument Panel Module
BCM	Body Control Module


### 5.4 Communication protocol

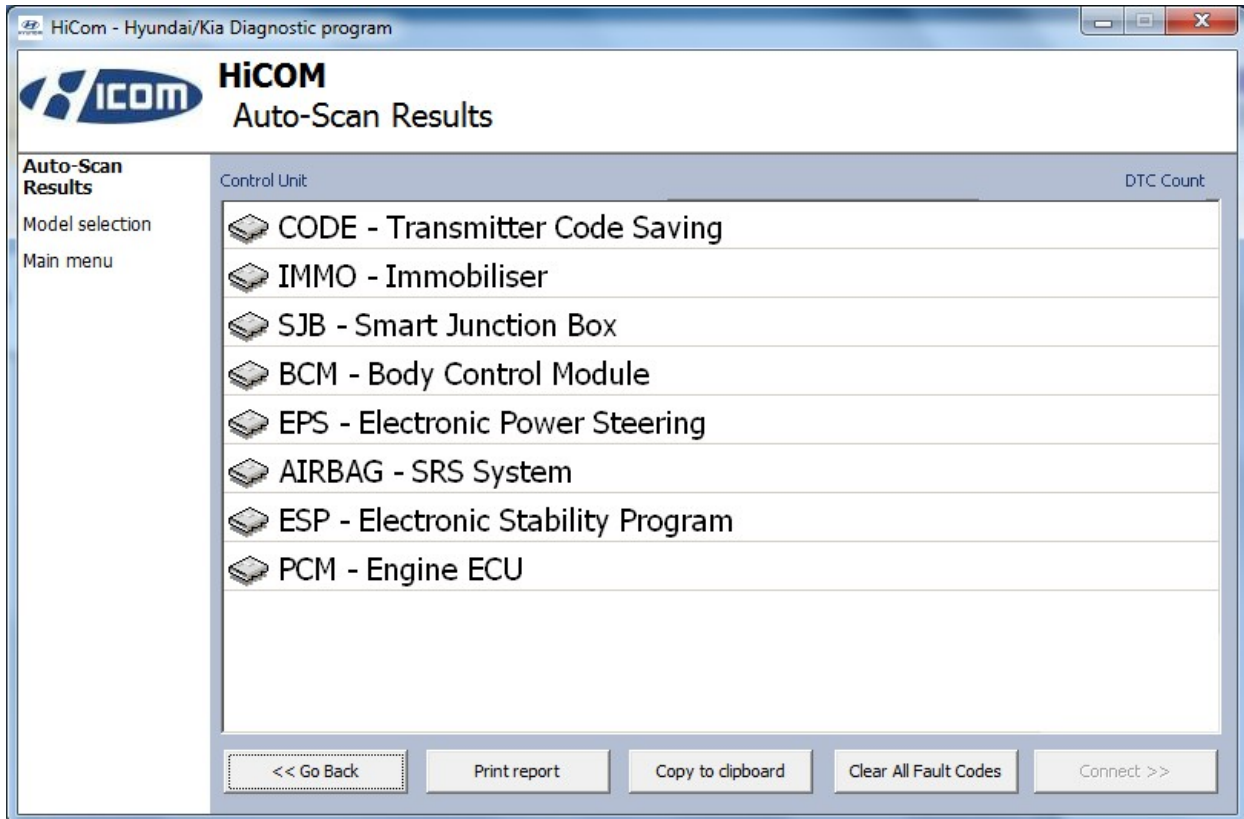
HiCOM supports these communication protocols:

Protocol	Diagnostic bus	Production	Usage
KW71 (Bosch)	ISO9141	1991 – 2001	Engine
ISO9141	ISO9141	1996 – present	Engine, ABS, Airbag
KWP2000,	ISO9141	1996 – present	All systems
ISO15765	CAN-BUS (ISO 11898)	2005 – present	All systems
UDS (ISO 14229)	CAN-BUS (ISO 11898)	2011 – present	All systems

## 6 Auto-Scan

This function scans for all known ECUs in selected vehicle, and shows the list of ECUs present in vehicle along with number of present or stored fault codes (DTCs).

 Some ECU types are “shared”, which means that one ECU is performing two functions (e.g. ENGINE has also immobilizer function). In that case both ECU types return same fault codes.

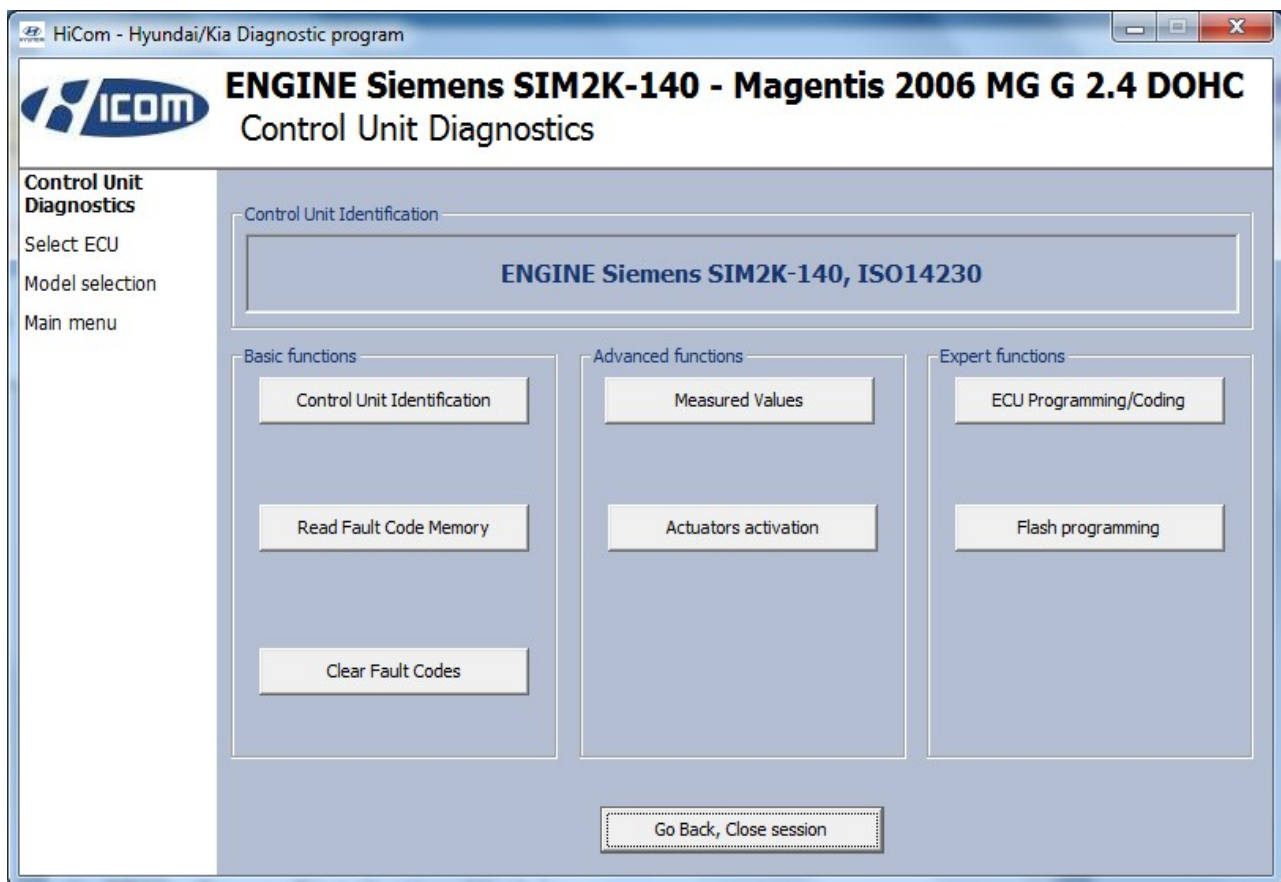


## 7 Diagnostic functions

You can connect to ECU by choosing control unit from list of ECUs in selected vehicle or auto-Scan listing.

If control unit was identified uniquely, diagnostic menu will be available immediately, otherwise it is necessary to select control unit variant as described earlier in this manual.

Diagnostic menu is divided into three parts. Basic functions, Advanced functions and Expert functions.



## 7.1 Control Unit Identification

**Works only on selected ECUs, mainly engine control modules. Other control units usually do not support identification functions.**

This function can display only identification data accessed by ECU, for example:

- Identification data
- ECU part number
- serial number



Please note that many vehicles do not have programmed VIN code or other data (such as programming date/etc).

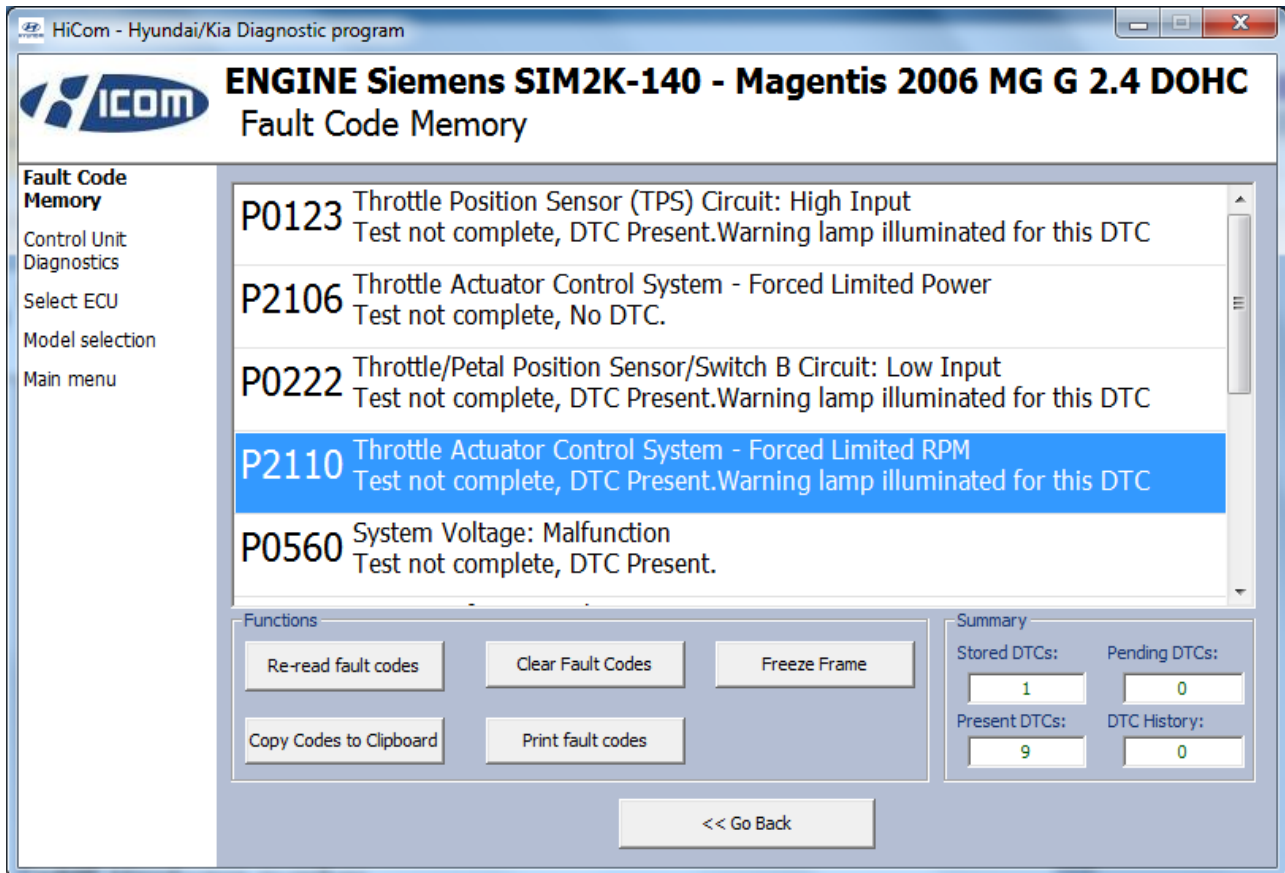
ENGINE Siemens SIM2K-140 - Magentis 2006 MG G 2.4 DOHC Control Unit Identification	
Kalibrace opravny/Seriové číslo testeru	.....
Calibration Programming Date	1515151515151515
VIN Code	KNAGE123365035007
HME Hardware number	.....
Repair shop code/tester name	.....
Programming date	1515151515151515
ECU bootloader number	65778852_C16
ECU software number	6577885135--
Calibration number	G6C4MK1A
Unknown 8F	671K1010
HME Hardware number	.....

Navigation buttons: << Go Back, Save ECU Information, Copy Values, Print Values

You can print identification by clicking *Print Values* button or you can copy to clipboard by clicking *Copy Values*.

## 7.2 Read fault code memory

This function allows to read and display diagnostic trouble codes saved in control unit memory.



*Note: Not all ECUs support fault code reading. In case Fault code memory reading is not available, error message is displayed. Use live data or actuator tests to diagnose ECU problems in such case.*

## 7.3 Clear Fault Codes

This function clears fault code stored in ECU memory.

Fault codes might appear again or under some conditions isn't possible to clear fault codes at all. Its possible that in the presence of some faults control unit doesn't allow to clear fault codes or fault is in no time written back to memory.

Is recommended to read memory by clicking *Re-read fault codes* button again.

## 7.4 Freeze Frame

*Freeze Frame* (also known as Snapshot or Environment data) function display selected measured values as present at occurrence of selected diagnostic fault code (DTC). This function is available from fault codes window.



Please note that HiCOM is not capable of decoding freeze frames on all ECUs. In such case raw hex dump is displayed. Please note that even dealer-level tool (Hyundai/Kia GDS) suffers from similar issue. In order to improve this function, please report such ECUs to [support@secons.com](mailto:support@secons.com).

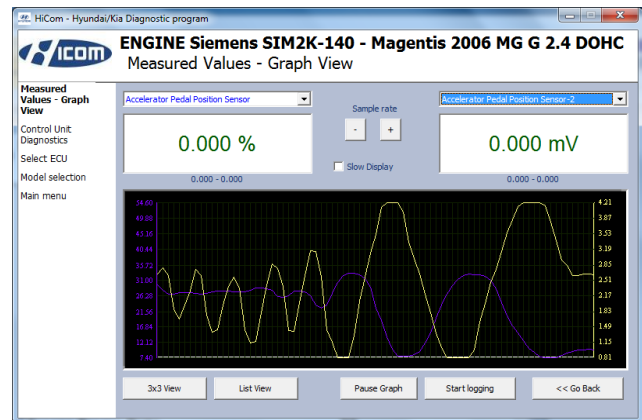
Freeze Frame Data	Value
Freeze Frame Data	57
Freeze Frame Data	01
Freeze Frame Data	21
Freeze Frame Data	10
Freeze Frame Data	F1
Freeze Frame Data	4F
Freeze Frame Data	00
Freeze Frame Data	00
Freeze Frame Data	9D
Freeze Frame Data	00
Freeze Frame Data	00
Freeze Frame Data	00
Freeze Frame Data	16

## 7.5 Measured values

### 7.5.1 Graph display

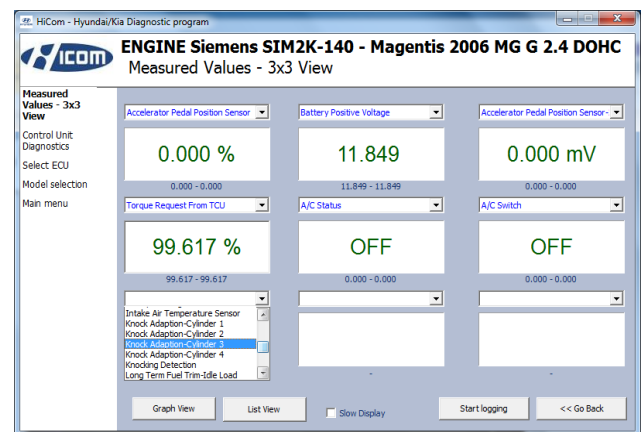
This function displays two measured values (also known as live data or sensor values) simultaneously. Measured parameters can be chosen from selectors at the top of the window.

Buttons + and – allow to accelerate or decelerate speed of graph.



### 7.5.2 Display 3x3

For measuring 9 value simultaneously, click on 3x3 View button.



### 7.5.3 Display list

To measure all available values simultaneously, click List view button.

Please note values means slower refresh rate.

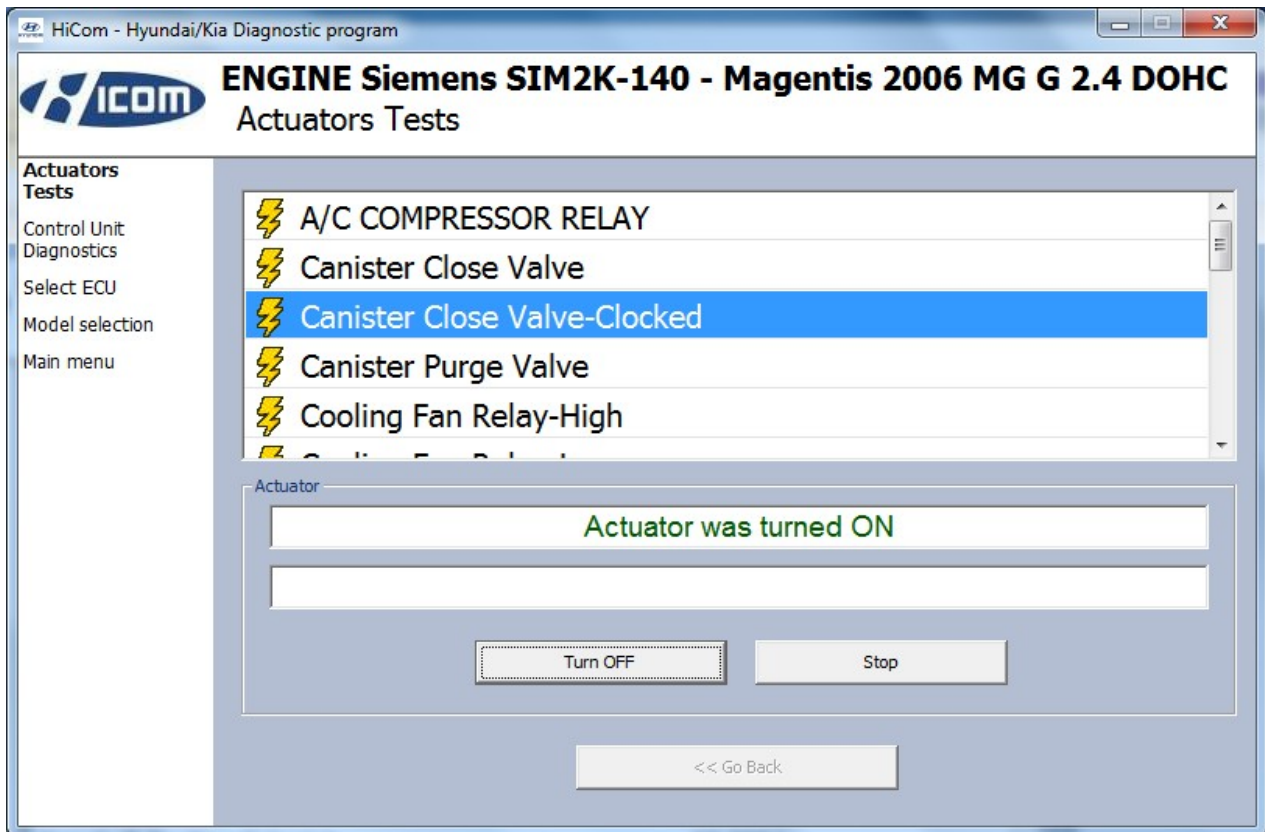
Measured Values - List View	Value
A/C Compressor	OFF
A/C Status	OFF
A/C Switch	OFF
Accelerator Pedal Position Sensor	0.000 %
Accelerator Pedal Position Sensor-1	0.000 mV
Accelerator Pedal Position Sensor-2	0.000 mV
Air Flow Rate from Mass Air Flow Sensor	0.000
Air Flow Rate from Mass Air Flow Sensor	0.000 kg/h
Battery Positive Voltage	11.849
CVVT Adaption PWM	11.501 %
CVVT Control State	PASSIVE
CVVT Valve Duty	0.000 %
Camshaft Position Setpoint	60.000 °
Canister Purge Duty	4.999 %
Canister Purge Phase	OFF

### 7.5.4 Save to log

Measured values can be saved/logged to a file by clicking Start logging button. The logfile is standard csv file and it is compatible with VagScope or can be imported to Microsoft Excel or OpenOffice Calc.

## 7.6 Actuators activation

This function can activate actuators and perform some actuators actions.



Make sure you understand consequences of activating ECU components. Also make sure that activation conditions (engine idle, engine running, etc.) are met. Always consult all tests with car repair handbook.

## ***7.7 Coding and programming functions***

More information about programming functions is available at [www.obdtester.com/downloads](http://www.obdtester.com/downloads) . Please note that this function is currently under development.

## 8 Reporting faults

In order to resolve any issue we need:

- Car information (VIN code, model, manufacture year, engine)
- ECU snapshot (Control Unit Identification → Save ECU information)
- Log file (save it after operation in “Settings” → “Save Debug”)

Description of problem and required data please send to us at: [support@secons.com](mailto:support@secons.com)

## 9 Known issues

- Freeze frame functionality is not guaranteed on all ECUs
- Communication with Hyundai Trajet 1999-2000 Gasoline 2.0 DOHC engine is not possible.
- Communication with Hyundai SantaFe 2001-2006 ABS 2WD control unit is not stable.

## 10 Planned improvements

The following improvements of user interface are planned for next release:

- Resizable windows
- Font size change option
- Screenshot to PDF or PNG
- Improved live data display
- Connection to online services