



Hyundai/Kia key teaching

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1. SMARTRA introduction

The SMARTRA stands for **SMARt TRansponder Antenna**. The SMARTRA unit contains an integrated inductive antenna and electronics around the ignition lock assembly.



The SMARTRA does not carry out the check of validity of transponder or the calculation of encryption algorithm. This device is only an advanced interface, which converts the RF data flow (radio frequency of 125 kHz) of transponder into serial communication to ECM and vice versa. The SMARTRA communicates to a engine control module via a dedicated communications line (called W-Line, or Immo-Line). During communication of ECM and SMARTRA the K line of ECM cannot be used for communication. The ECM controls the communication either to SMARTRA or diagnostic equipment on K line by switching of a multiplexer and specific communication procedures. The multiplexer is a part of ECM hardware.

The immobilizer system consists of the ECM, the SMARTRA, the lamp and ignition keys with built-in transponder. The ECM carries out the check of ignition key by special encryption algorithm, which runs in the transponder and in the ECM in parallel. Only if the results are equal the engine can be started. The data of all transponder, which are valid for the vehicle, are stored in the ECM.

During the key teaching procedure the transponder will be programmed with vehicle specific data. The vehicle specific data are written into the transponder memory.

PIN Codes

PIN code stands for of **Product Identification Number** code. The PIN code is a unique code for each vehicle and it is programmed into ECM at production line.

PIN code is needed when the teaching new ECM and new keys, e.g.

- 1) When a new key is added
- 2) When replacing with new ECM or used ECM (neutralized ECM)
- 3) When a key is lost and needs to be deleted

If you enter incorrect pin 3 times the immobilizer (SMARTRA or Smart key) will lock In order to unlock:

- For mechanical keys leave key on for 1 hour.
- For smart key (proximity) leave car alone with good battery charge for 1 hour.



Vehicle PIN code can be obtained through www.PATSCode.com service or through Hyundai dealer.

SECONS www.PATSCode.com PATS (immobilizer) INCODE authorization for Ford and Mazda cars
Compatible with SECONS or IDS.

Your current credit balance is 2

VIN: KMHJM [REDACTED]
 Kia SMARTRA PIN: 321824

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2. Supported vehicles

Following list shows all vehicles for which is key teaching supported:

Manufact.	Model	Production	Manufact.	Model	Production
Dodge	Atos	2000-2004	Hyundai	i10	2008-2011
Hyundai	Accent	2000-2011	Hyundai	i20	2009-2011
Hyundai	Amica	2000-2004	Hyundai	i30	2008-2011
Hyundai	Atos Prime	2000-2004	Hyundai	i40	2012
Hyundai	Atos	2002-2009	Hyundai	i45	2011
Hyundai	Atoz	2000-2004	Hyundai	i800	2002-2009
Hyundai	Azera	2006-2012	Hyundai	ix20	2011
Hyundai	Centennial	2010-2012	Hyundai	ix35	2010-2011
Hyundai	Elantra Neos	2008-2011	Hyundai	ix55	2007-2011
Hyundai	Elantra	2001-2012	Inokom	Atos	2000-2004
Hyundai	Equus	2010-2012	Kia	Borrego	2009-2010
Hyundai	Genesis Coupe	2009-2011	Kia	Cadenza	2010-2011
Hyundai	Genesis	2009-2012	Kia	Carens	2003-2010
Hyundai	Getz	2003-2011	Kia	Carnival	2002-2011
Hyundai	Granduer	2006-2012	Kia	Cee'd	2006-2010
Hyundai	H-1 Bus	2008-2011	Kia	Cerato	2003-2010
Hyundai	H-1	2002-2009	Kia	Forte	2009-2010
Hyundai	H-200	2002-2009	Kia	K2500	2005-2010
Hyundai	HD Coupe	2002-2008	Kia	K2700	2005-2010
Hyundai	Libero	2002-2009	Kia	K3000	2005-2010
Hyundai	Matrix	2002-2011	Kia	K3000S	2005-2010

SECONS

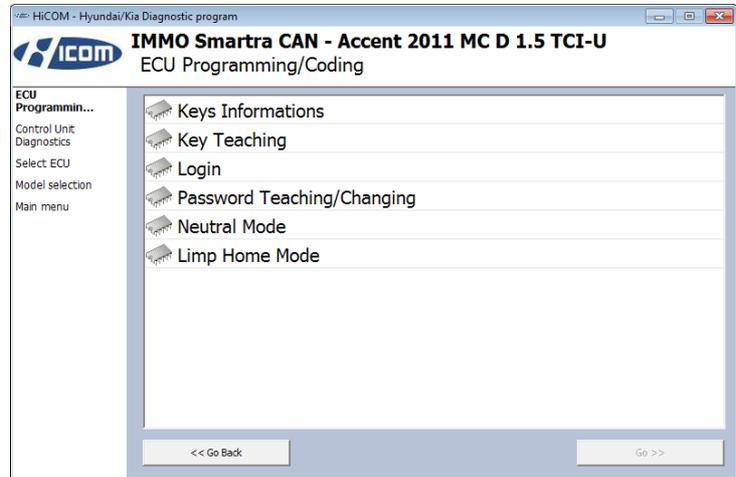
HiCOM key teaching manual

www.obdtester.com/hicom

Hyundai	Santafe	2001-2011		Kia	Magentis	2006-2010
Hyundai	Santro Xing	2000-2004		Kia	Mohave	2009-2010
Hyundai	Santro	2000-2004		Kia	Opirus	2004-2010
Hyundai	Satellite	2002-2009		Kia	Optima	2006-2010
Hyundai	Solaris	2011		Kia	Picanto	2003-2010
Hyundai	Sonata	2005-2011		Kia	Pregio	2006
Hyundai	Starex	2002-2009		Kia	Rio	2005-2010
Hyundai	Terracan	2001-2006		Kia	Sedona	2002-2011
Hyundai	Tiburon	2002-2008		Kia	Shuma	2001-2004
Hyundai	Trajet XG	2000-2007		Kia	Sorento	2002-2010
Hyundai	Tucson	2005-2011		Kia	Soul	2009-2010
Hyundai	Tuscani	2002-2008		Kia	Spectra	2001-2004
Hyundai	Veloster	2011		Kia	Sportage	2005-2010
Hyundai	Veracruz	2007-2011		Kia	Venga	2010
Hyundai	Verna	2012		Kia	Visto	2000-2004

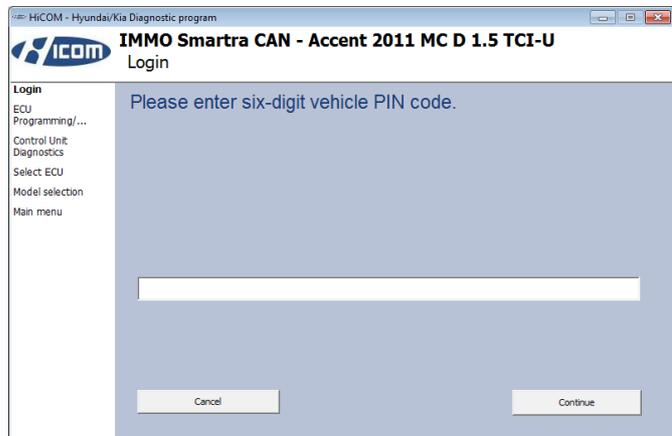
3. Mechanical keys with RFID chip (non-proximity)

- Key coding procedure is available in control unit IMMO – Immobilizer from “ECU Programming/Coding” menu.

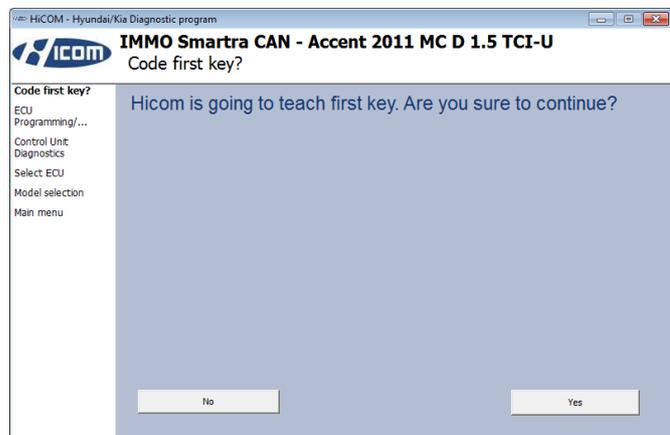


Teaching

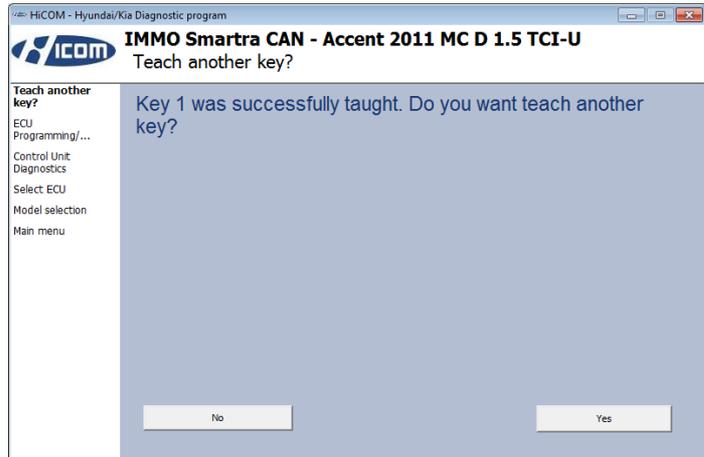
- Engine must be turned off. Key is turned to ON position.
- You will be prompted to enter a 6-digit PIN code. (eg 123456, see page 2 - PIN codes)



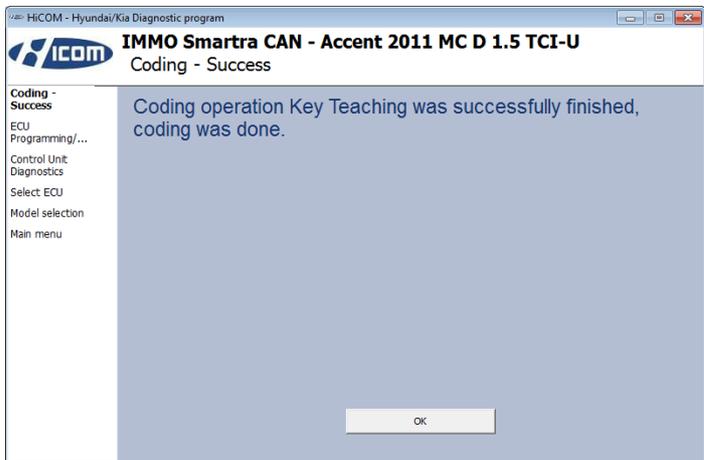
- Now you have the key in ignition in the ON position. This key is coded after clicking on "Yes" button.



- You will be prompted whether you want to code another key. If you click "yes", HiCOM will ask you to insert the next key. Up to 4 keys can be coded.(some control units allow units up to 8 keys). If you click on "No", the coding process is terminated and no more keys are added.



- After successful completion of the operation, switch off the ignition for 10 seconds.



4. Smart key (Proximity remote)

Some vehicles have contact-less (RFID) smart-key instead of mechanical key. On these vehicles coding via SMARTRA operation will fail, it is necessary to use special dedicated smart-key control unit for this purpose. The feature can be found in Smart Key Code Saving control unit (PIC, SMKCODE).



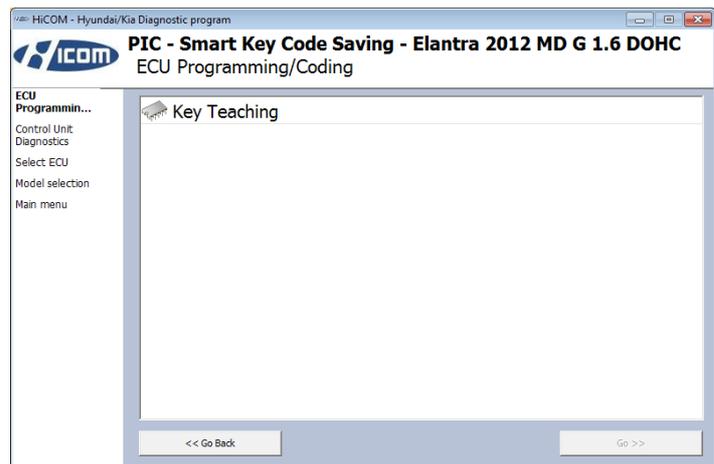
Used smart keys **cannot** be programmed to another car. Please make sure you are purchasing smart keys from a trusted source.



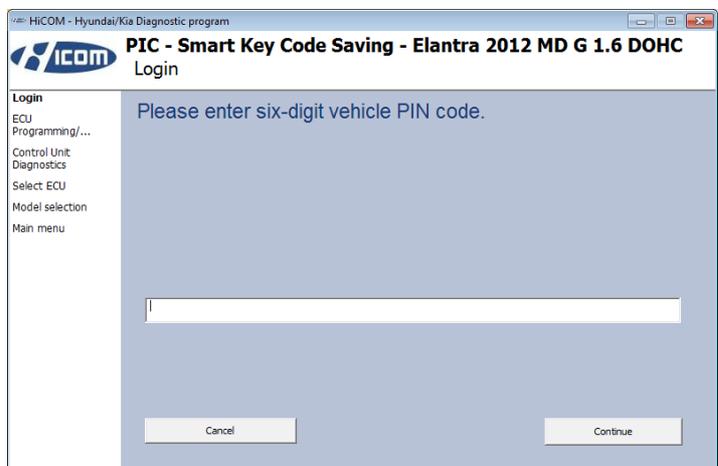
When no valid smart key is present it is not possible to start engine and also it might be not possible to diagnose other ECUs than PIC/SMK.

Teaching

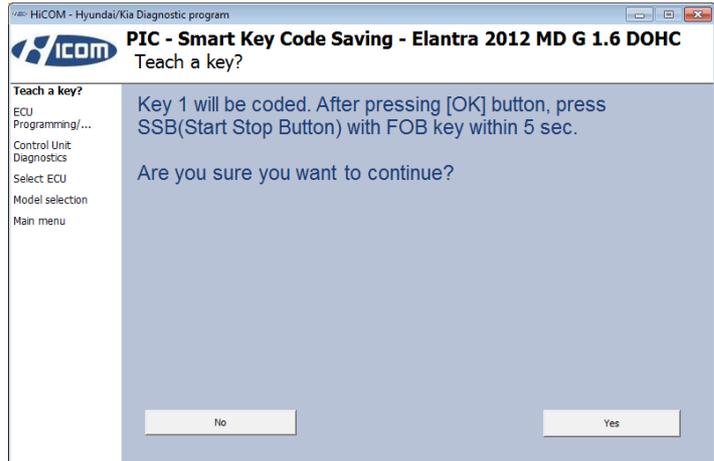
- Engine must be turned off, start/stop pushbutton in OFF state.
- Select "Key Teaching" feature in "ECU Programming/Coding" menu.



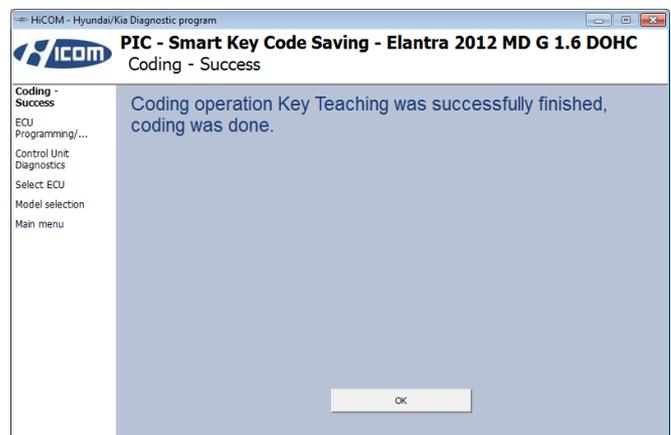
- You will be prompted to enter a 6-digit PIN code. (eg 123456, see page 2 - PIN codes)
- If you enter incorrect pin code, the ECU will lock after 2 or 3 attempts.
- After this step MSL teaching starts automatically on some ECUs.



- Key fob must be inserted into the Smart key holder (if there is no smart key holder, use tip of the remote to push start/stop button)
- Hold Stop Start Button for 5 seconds with key in smart key holder. If your car does not have smart key holder, please use tip of the remote to push start/stop button.
- The same operation will be performed for other of smart key fobs. Maximum of 2 Smart keys can be recoded.

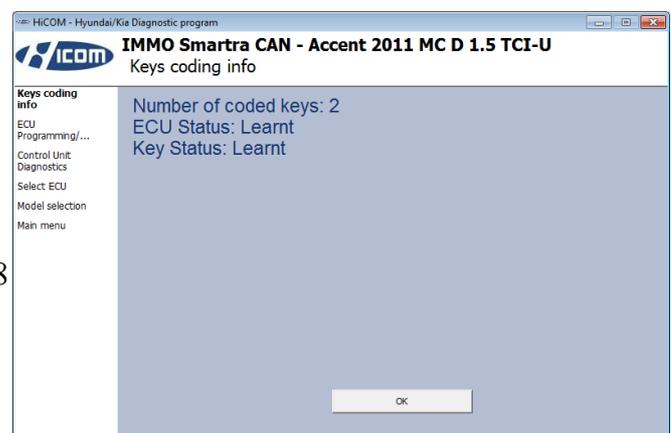


- After coding operation is complete, HiCOM displays information about successful coding.



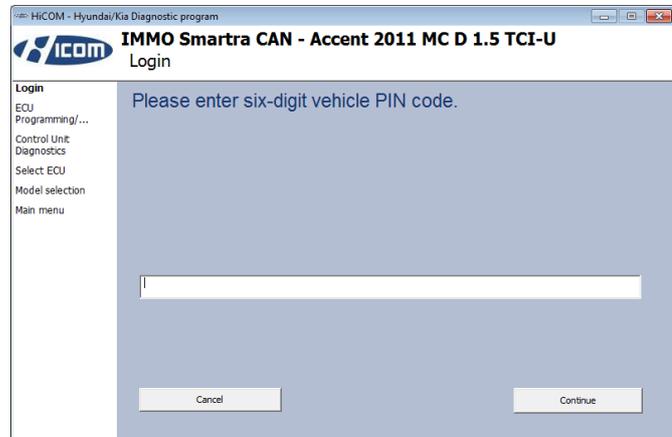
5. Key information

- Shows basic info about keys. Possible values: Not checked, Learnt, Virgin, Neutral, Locked



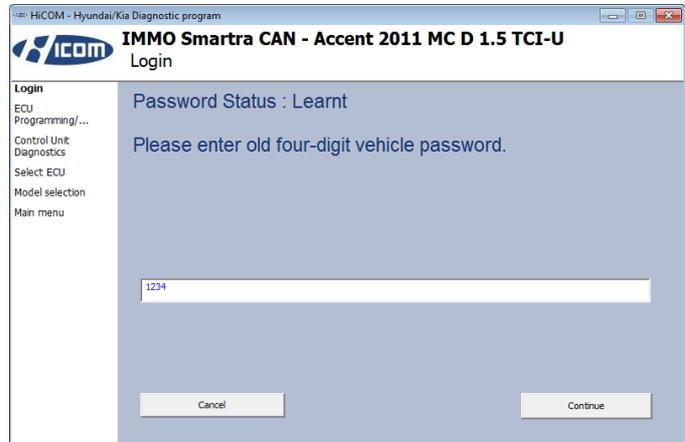
6. Login

- This feature is used to test of PIN correctness.



7. Password Teaching/Changing

- The password is used to switch the car into Limp mode.
- You will be prompted to enter password, if the control unit is not a "Virgin". The password is numeric, consisting of 4 decimal digits (eg 1234). Regarding the Virgin control unit, you are directly prompted to set a password.

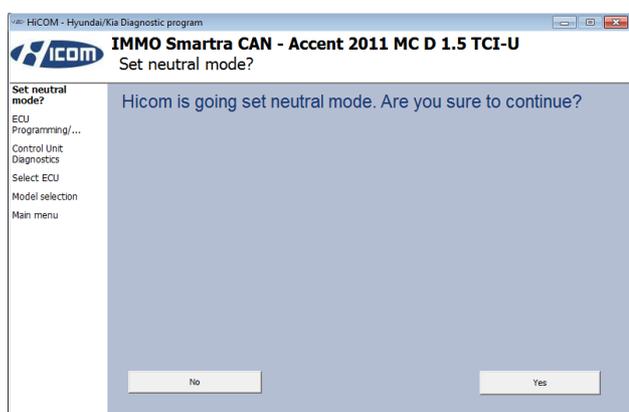
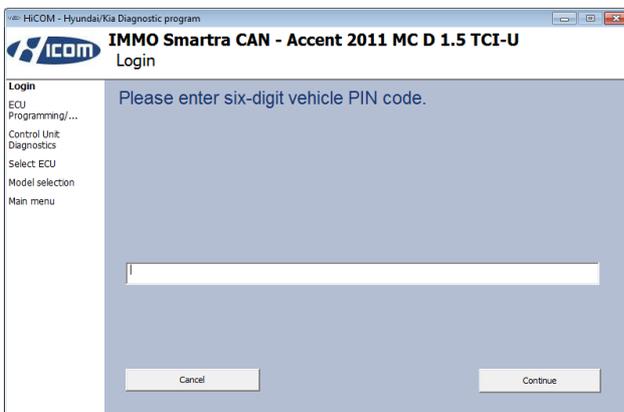


- Now enter a new password. The password must consist of four-digit decimal number (eg 1234). After pressing the "Continue" button the password is set in the control unit.



8. Neutral Mode

- This function serves to use already used ECU in another vehicle.
- Engine must be turned off. Key is turned to ON position.



9. Limp Home Mode

This function switches the car into emergency mode that is used to drive the car to workshop in case of all keys are lost or SMARTRA module is not working properly.

The ECM informs the driver about the limp home condition by 5 times blinking for 5 second. Then the user password can be sent to the ECM by HiCOM. The limp home can be activated also by the ignition key. The ECM informs the driver by blinking immobilizer lamp about the limp home condition. Then the input of user password to ECM can be done by special sequence of ignition on/off.

- Password must be set up first (using "Teaching Password/Changing" feature)
- Engine must be turned off. Key is turned to ON position.
- Type four-digit decimal number (password), eg 1234.

