DIGITRONIC
Smart Autogas Systems

MANUAL SOFTWARE
MULTIPOINT

Minimum computer requirements for software installation

Operating system   -   Windows XP or later versions
Memory (RAM)   -   At least 16 Mbyte
Hard drive   -   At least 20 Mbyte free at time of installation
Display resolution   -   800 x 600 or greater
Internet Explorer 5.5 or higher must also be installed.

Software installation

To install the calibration software, select and launch the "setup.exe" file.
During installation you will be asked in which directory you want to install the program. We rec-ommend you to not change the pre-set directory. **The configuration, acquisition files and the firmware will be saved in the folder "User\Documents\Multipointinj".**
The program icon will appear on the desktop when installation is completed.

Introduction

The calibration software can be opened without having to be connected directly to the control unit. To connect it to the control unit it is necessary that the PC and the ECU are duly connected through a **specific** interface cable or a wireless interface (Items to be ordered separately, not included in the kit and available for purchase at AEB distributors).
Inoltre la centralina deve essere collegata al +12 volt batteria (filo rosso-nero), al +12 volt sotto chiave (filo rosso-bianco) e alla massa (filo nero).
Quando viene avviato, il software tenta automaticamente di effettuare la connessione alla centralina, se questa non è ancora collegata verrà visualizzato un errore di connessione.
collegare tramite l'interfaccia e rifare la connessione (vedi paragrafo MENU PRINCIPALE).

SOFTWARE PROGRAM FAULT CODES

| ERROR | DESCRIPTION |

PROGRAMMING

|	
P01	Cannot connect to ECU on COM or USB ports, cannot find a connected ECU. The ECU is not communicating or the communication pathway is interrupted.
P02	The ECU connected is incompatible due to hardware or firmware.
P03	Error opening the programming file.
P04	Error in decryption of the programming file. (The reprogramming procedure re quires the presence of Internet Explorer 5.5 or higher, with at least 128-bit cryptography).
P05	Incorrect programming voltage.
P06	Error in flash cancellation.
P07	Error during initialisation (BAD_PREPARATION).
P08	Error during initialisation (BAD_ERASE).
P09	Error in start programming phase.
P10	Null dimension in input data.
P11	Incorrect encryption mode.
P12	Generic programming error.
P13 (1-6)	Firmware isn't correct for the ECU connected.
from **P1000** to above	Error in record programming (ERR.CODE-1000). Firmware writing was not successful, the programming must be repeated.

HARDWARE KEY

H01	Error reading/writing hardware key.
H02	–
H03	Key with expired data or number of accesses.
H04	Data not compatible with the internal data of key.

CONNECTION

|	
C01	Cannot connect to ECU on COM or USB ports, cannot find a connected ECU. The control unit is not communicating or the communication pathway is not complete.
C02	Error loading control unit identification data.
C03	The firmware of the connected ECU is not compatible with the program installed on the PC.
C04	The program installed on the PC is not compatible with the ECU firmware.
C05	ECU in boot mode, you must reprogram it with a suitable FW

Main menu

All calibration software submenus listed below with their separated descriptions can be entered from this menu:
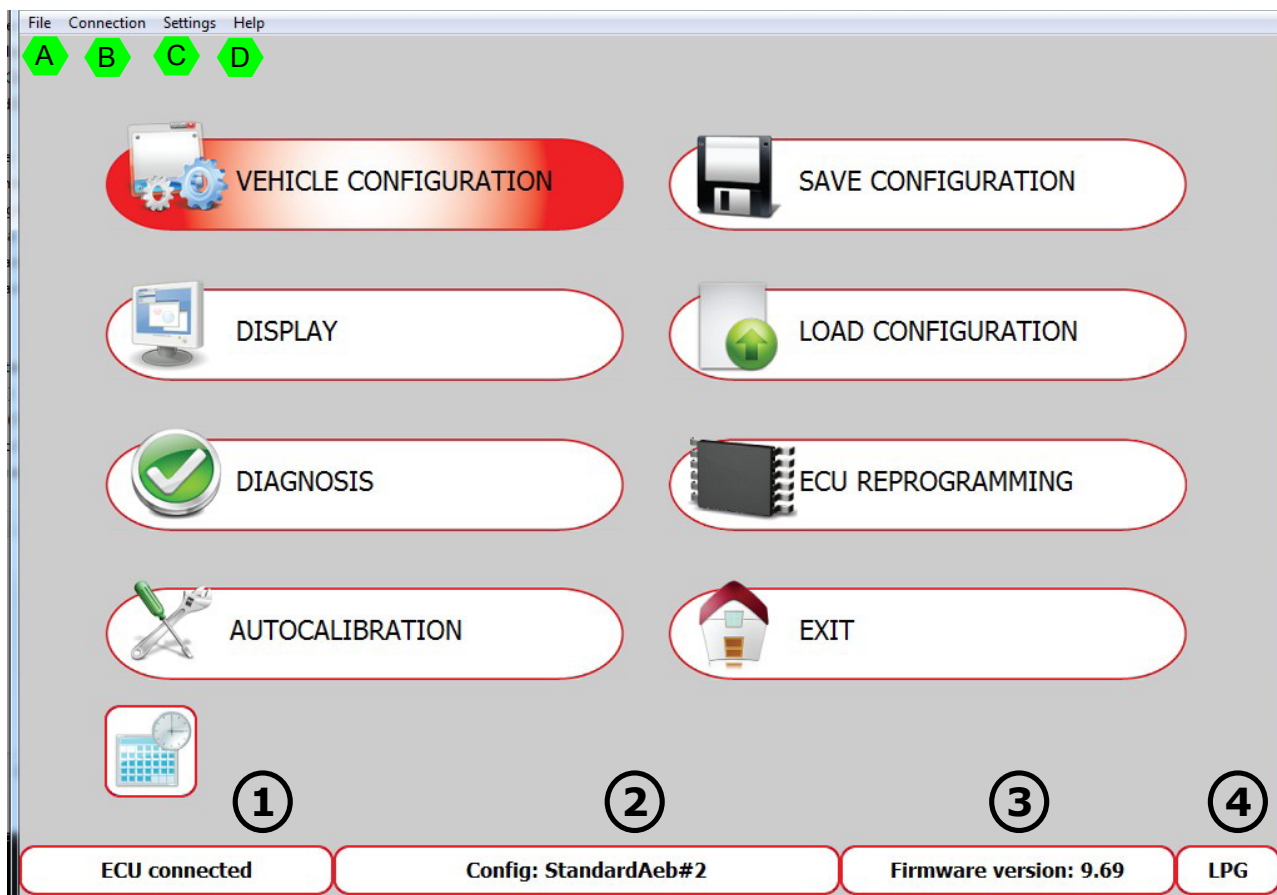
File Menu **A** **:** To escape the calibration software.

Connection Menu **B** **:** To connect/disconnect the gas control unit from the calibration software.

Settings Menu:
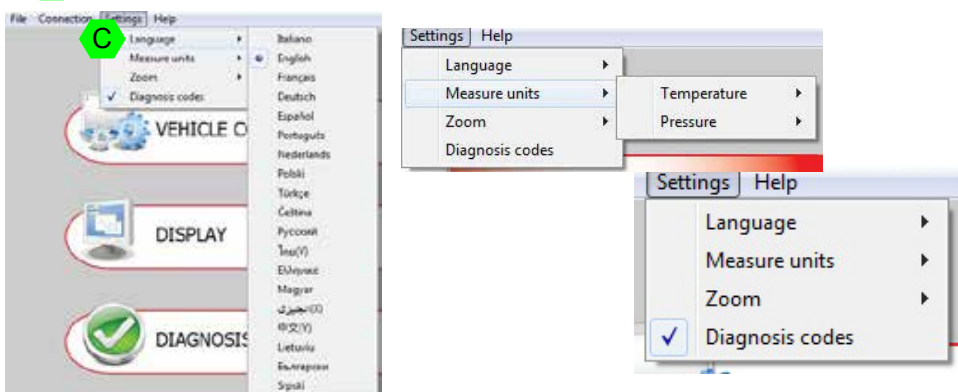
Language: To select the calibration software language based on the country where it is used.

• **Measure unit:**

   - **Temperature:** allows you to choose which unit of measurement you want to display the T.Gas and T.Reduc temperature: in the software, you can choose between celsius degrees or fahrenheit degrees;

   - **Pressure:** allows you to choose which unit of measurement to display the pressure values with Gas and MAP in the software, you can choose between bar or psi.

•   **Zoom**: allows you to change the size of the software window.
      - **Restore original zoom**: selecting this option, the size of the window back in its original state;
      - **Zoom in**: increase the window size;
      - **Zoom out**: decreases the window size.
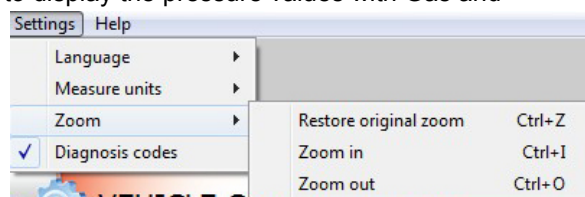
•   **Diagnosis Codes:** selecting this option when the gas control unit stores an error in diagnosis, in addition to the normal description of the error, the error will be assigned a code as for the OBD errors of the petrol control unit. For the list of displayed codes and relative description, refer to the DIAGNOSIS paragraph.

Main menu

- **Help Menu:** Allows to know which version of the software is in use, the expiry date of the hardware key and it contains the instruction booklets for both the calibration and the wireless connection setting software.

The following information is shown at the bottom of the page:

① Indicates whether the control unit is connected or disconnected to the calibration software.

If you connect the ECU through a wireless interface, the ![symbol] symbol will appear at the bottom, left side of the screen. Clicking on the symbol you can enter the wireless setting parameters.
It is important to remember that all settings made when the control unit is disconnected will be lost when it is connected, unless they are previously saved in a configuration file.
When the program is opened automatically, it will try to connect itself to the control unit.
If the program does not connect, an error window will open. At this point check:
- the serial interface connection,
- that the control unit is connected to the battery and to the ground,
- if the sub key has been disconnected for more than an hour, to connect it will be necessary to connect the panel for a few seconds and check that the switch turns on at the same time, or start the vehicle.
To attempt connection again, open the "Connection" window and select "Connect".

② Is the name of the configuration in the control unit (max. 28 characters displayed). To upload a pre-existing configuration in the control unit, it must be connected to the configuration software (see chapter **"Load configuration"**).

③ Is the firmware version of the connected control unit; to update it, go to the submenu "REPRO-GRAM CONTROL UNIT" and select the desired firmware from those proposed.
Note: This operation is possible only if INTERNET EXPLORER 5.5 or higher is installed.

④ Indicates whether the configuration currently loaded in the control unit uses the operation parameters for natural gas or for LPG; to select the fuel type, go to the submenu "VEHICLE CONFIGURATION".
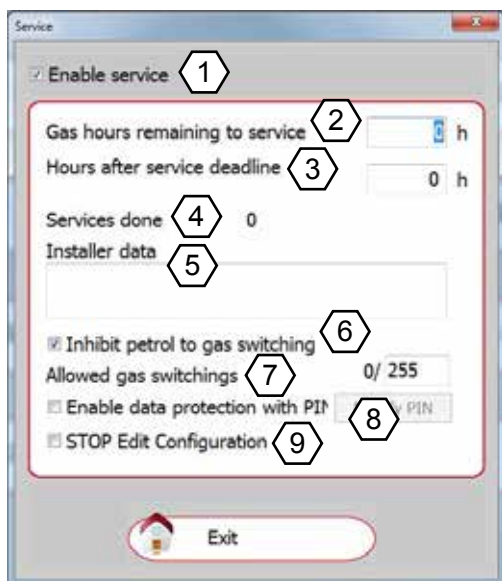
Service management function
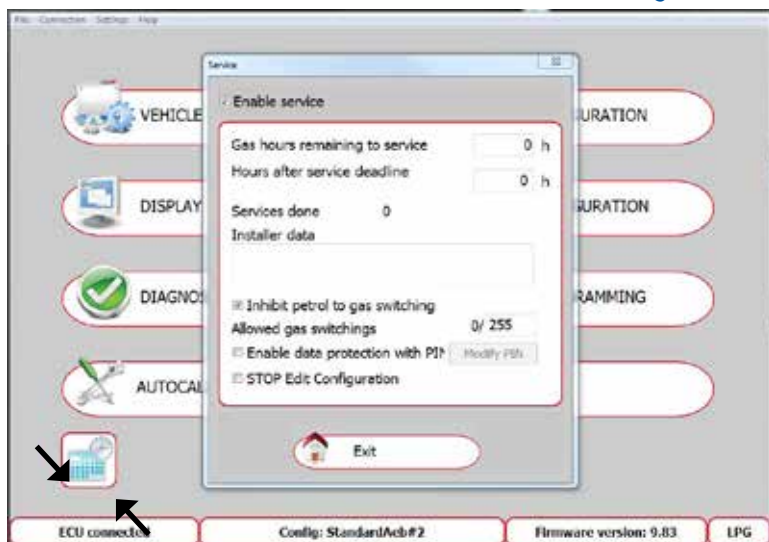
From this menu you access the SERVICE MANAGEMENT function used to set the hours of GAS operation after which the car is called in the workshop for the coupon. This function depends on the firmware, so if the control unit does not have an updated firmware the icon SERVICE MANAGEMENT will not be visible. In this case, updating the firmware, this function will be enabled and the icon will be visible.

⚠ **ATTENTION** ⚠

Enabling the SERVICE MANAGEMENT function it will not be possible to reprogram the control unit. To be able to reprogram the control unit it will be necessary to disable the SERVICE MANAGEMENT. Furthermore, when the service management function is enabled, if a configuration is loaded, this function will remain active and the pin will remain active if inserted.

Enabling the services management function ⟨1⟩ enables the following functions:

⟨2⟩ **Gas hours remaining to service:**

In this field you can enter the hours elapsed which the car will signal to the driver the need to make the service at the workshop that installed the GAS system. This signal occurs when the engine is switched off through the buzzer acoustic signal and the flashing of all the LEDs on the GAS switch. The hours set change according to the hours of gas operation, so when you connect to the control unit it will always be possible to display the remaining hours on the service.

⟨3⟩ **Hours after service deadline:** in questo campo viene visualizzato per quante ore la vettura ha funzionato a gas dopo che son terminate le "**Ore a gas rimanenti al tagliando**".

⟨4⟩**Services done:**

In this field displays the number of services have already been made.

⟨5⟩ **Installer data:**

In this field you can enter additional data regarding the workshop enabled for the service (MAX 20 characters).

⟨6⟩ **Inhibit petrol to gas switching:**

Enabling this function will activate the option 7 "Allowed gas switchings".

⟨7⟩ **Allowed gas switchings:**

In this area it is possible to enter a maximum number of petrol gas passages allowed after the service expires, once this number is reached the passage of the vehicle to GAS will be prevented and it will therefore be necessary to perform the service.

ATTENTION: leaving 255 as the number of gas passages allowed, the function is inhibited.

Service management function
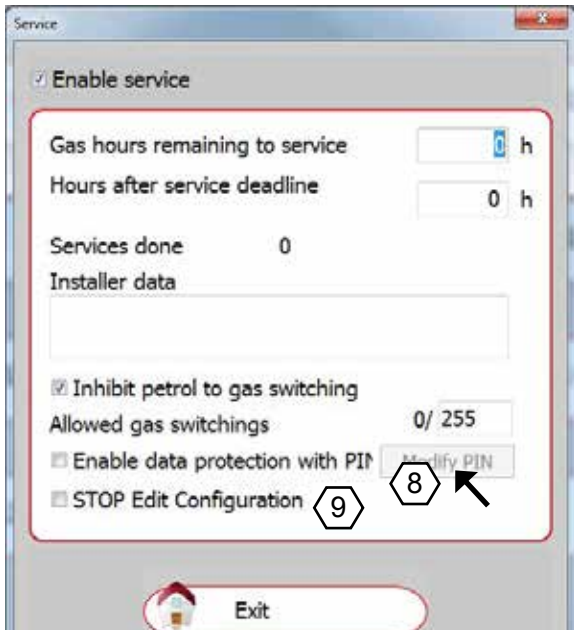
⟨8⟩ **Enable data protection with PIN:**

By enabling this function you will have the possibility of entering a PIN protection code so as to prevent tampering from the hours service by the unauthorized personnel. After the pin has been inserted, and confirmed "OK" , the pin is requested to return to access the service management. Once the pin is inserted, if you want to change it, select the "Modify Pin" button.
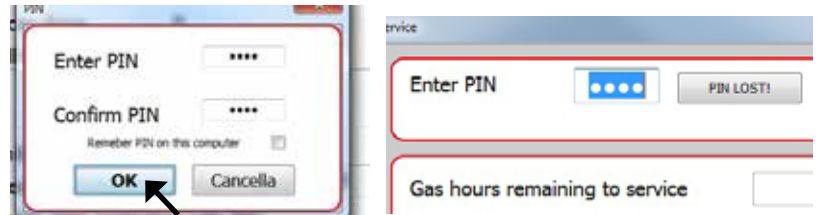
Remember PIN on this computer: if this function is enabled the pin inserted will be memorized by the pc, in case the pin is forgotten it will be possible to recover it but only if the connected pc is the same one used when the pin was inserted. This is the screen that appears when you want to access the service management with enabled pin.
If the computer is the same one used when the pin was inserted, selecting "**PIN LOST**" a window will appear showing the pin used. Inserting the pin in the appropriate window will appear the standard screen of the Services Management.
Selecting "OK" you will directly access the window "**Service Management**" without having to type the pin.
Attention: after typing the pin or after using the "**PIN LOST**" function and be logged in in the "**Service Managemen**t" page, the pin will continue to be active so if you exit the window it will remain the same pin as before.
If you want to disable the pin you need to deselect the option "**Enable data protection with PIN**".


⟨9⟩ **STOP Edit Configuration**: By enabling this function it will no longer be possible to access on the "Vehicle Configuration", Self-Calibration "," Save Configuration "," Load Configuration "pages and "ECU Reprogramming" of the Main Menu, it will not be possible to make changes to the configuration present in the control unit.
Disabling this option will make all the pages of the Main Menu accessible again.

When the programmed service is reached, click on the icon [icon] or [icon]   (See legend of icons) to access the SERVICE MANAGEMENT function.
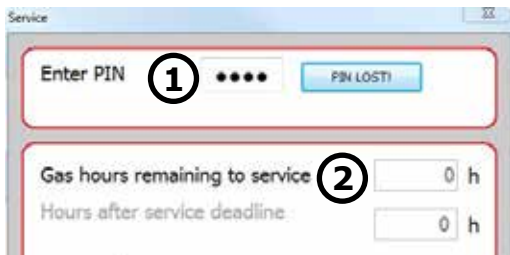
If the SERVICE MANAGEMENT protection is deactivated follow this sequence of operations:
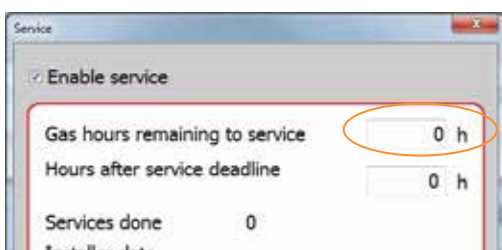
Re-enter the hours of GAS operation you wish to spend until the next service.

Smart Autogas Systems

Icons legend

If the SERVICE MANAGEMENT protection is active, follow this sequence of operations:

① Enter the **PIN** code to unlock the SERVICE MANA-GEMENT function.

② Enter again your GAS operating hours that you want to elapse until the next service.

ICON	ICON DESCRIPTION
	Allows access to the **SERVICES MANAGEMENT** function
	SERVICES MANAGEMENT function enabled
	Service report to be made. Shows that the counter for the remaining hours at the coupon is at zero.
	SERVICES MANAGEMENT function enabled and pro-tected with PIN
	Service reporting to be carried out with MANAGEMENT SERVICES PIN protected. Indicates that the counter for the remaining hours at the service is at zero.

Vehicle configuration

This menu consists of 8 pages in which it is possible to set the parameters that manage the behaviour of the gas control unit. Pressing ESC on the PC keyboard, you quit the configuration menu.
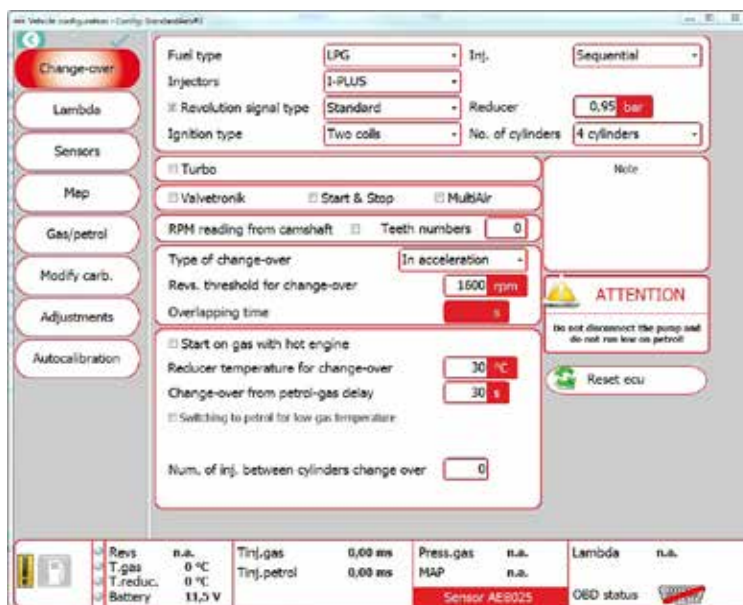
In the part underneath all of pages, a display summarising the current values of the general system operation signals is provided.
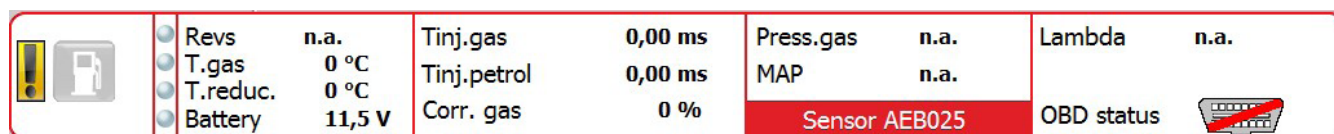
① Whether the vehicle is petrol or gas powered is displayed in this box

CUT-OFF also might appear when the system is in the cut-off condition.

② This box shows the occurrence of certain events, via specific LEDs, which are explained in detail below.

←When the LED is on, it indicates an extra injection.
←When the LED is on, it indicates the operation of the extra injection sensitivity filter(Carburetion Modification Menu)
←When the LED is on, it indicates the operation of the Enrichment in acceleration filter(Carburetion Modification Menu)
←When the LED is on and its colour is yellow or red, it indicates the operation of a petrol contribution

ATTENTION: When you hover the mouse on the corresponding LED, the description related to the function of the actual LED appears.

③ The following are displayed in this box:
REVOLUTIONS: the engine revolutions read in real time by the gas control unit.
T.GAS: gas temperature detected by the temperature sensor positionned on the gas injection rail.
ATTENTION: parameter available only for MP32 control unit.
T.RED: gas reduction gear temperature detected by the temperature sensor positionned on the gas reduction gear.
BATTERY: is the battery voltage read by the control unit.
ATTENTION: the battery voltage is read only during gas operation, if a gasoline value is displayed it refers to the last voltage read during gas operation.

④ The gas (Tinj.gas) and petrol (Tinj.benz) times are displayed in this box. If 2 banks are selected (see paragraph **"Lambda"**), the gas and petrol times regarding the second bank will also be displayed

ATTENTION: in OBD control units, if auto-adaptation is enabled, the "Gas Corr." will be displayed below the petrol times, see the paragraph Carb Modification.

⑤ The following are displayed in this box:
GAS PRESS: this is the pressure difference between the gas in the gas injectors and that in the intake manifolds read by the pressure gauge supplied in the kit.
MAP: If an AEB025 pressure sensor has been installed, it identifies the intake pressure in the manifolds.
AEB025 SENSOR: indicates the type of pressure gauge the software selects (see paragraph **"Sensors"**).

The following are displayed in this box:

⑥ ➢ The voltage of the **lambda** probe read by the purple wire (if connected); it is also necessary to set the type of probe connected (front/back) in "F2 Lambda". If the latter is not set, no value will be displayed (n.d.).

➢ The voltage of the **lambd2a** probe read by the purple/black wire (if connected); it is also necessary to set the type of probe connected (front/back) in "F2 Lambda". If the latter is not set, no value will be displayed (n.d.).

➢ The OBD plug status (connected/disconnected).

Change-over

N.B. all parameters highlighted in YELLOW are changed with the panel disconnected and the switch off. Moreover, to keep system operation in good condition, do not leave the petrol tank co pletely empty and do not disconnect the petrol pump.

Fuel type	LPG	Inj.	Sequential
Injectors	I-PLUS		
☑ Revolution signal type	Standard	Reducer	0,95 bar
Ignition type	Two coils	No. of cylinders	4 cylinders

FUEL TYPE
To select and set LPG or NATURAL GAS matching them to the ECU preset parameters.

Select: **LPG:** for LPG-powered vehicles.
NATURAL GAS: for NATURAL GAS-powered vehicles.
When LPG or NATURAL GAS is selected, also the directory where the configuration files are saved changes (see **"Load configuration"**).

INJ.
This function lets you select the GAS injection activation strategy with reference to the type of system:

SEQUENTIAL (RECOMMENDED OPTION): the GAS injector is activated next to every PETROL injection. In case the gas injection time is lower than necessary, the control unit will AUTOMATI-CALLY supply petrol to avoid carburetion "gaps".
NOTE: this "petrol supply" is not signalled by the switch which keeps showing a regular Gas functioning.
SEQUENTIAL MJ: in case the gas injection time is lower than necessary, the control unit will AUTOMATICALLY switch back to petrol. The event signalised by the switch.
FULL GROUP: the GAS injector is activated next to every 2 PETROL injections
HALF GROUP: (only present on ECU MP32) it is used by the control unit to read correctly the number of RPM through the injector signal when the brown wire is not connected (see REVOLUTION SIGNAL TYPE).
Select this option if the control unit is mounted on a vehicle with Half Group injection, that is, where the injectors are driven in pairs of two and are activated twice each engine revolution.
HALF GROUP x 1: (only present on ECU MP32) it is used by the control unit to read the number of RPM correctly using the injector signal.
Select this option if the control unit is mounted on a vehicle with Half Group injection, ie where the injectors are controlled as a pair of two, and are activated once each engine revolution.

INJECTORS
This window is used to select the type of GAS injectors that are supplied with the conversion kit. When a previously saved configuration is loaded, this window indicates the type of injectors that are used in the configuration.
If the GAS injectors installed on the vehicle do not correspond to the type shown in the window, then you will need to load a configuration that uses the correct type of injector. If the installed injectors do not correspond to the type that have been selected on the software, then the injectors will be piloted with incorrect parameters and may cause malfunctions during gas operation.

TYPE OF REVOLUTION SIGNAL
It sets up the control unit for reading the rev signal through the BROWN[2] wire:

STANDARD: select this option when the BROWN[2] wire is connected to one of these signals:
- rev counter wire **with 0 ÷ 12 V square wave signal**;
- negative coil.
WEAK SIGNAL: select this option when the BROWN[2] wire is connected to one of these signals:
- rev counter wire **with 0 ÷ 5 V square wave signal**;
- static ignition control **with 0 ÷ 5 V square wave signal**;
These signals can be identified only by using an oscilloscope.

Change-over

This function can be disabled unflagging the box (☑) next to "REV signal type".
Disabling the function, the warning window shown on the left appears as a reminder to remove the rev connection. As a consequence the signal is detected by the injection ECU.
However, where possible, we recommend to always connect the brown wire as the reading of the turns will be more precise and constant.

REDUCER
This window allows to modify the activity pressure of the reducer with the engine idling and during the gas operation.

IGNITION TYPE (not available on the ECU MP32)
The control unit uses this parameter to calculate exactly the engine speed, which changes based on the type of ignition on which the BROWN^2 wire is connected. Set:

MONO COIL: for vehicles with one coil per cylinder if the BROWN^2 wire is connected to the negative terminal of one of the coils;
DOUBLE COIL: for vehicles with one coil every 2 cylinders if the BROWN^2 wire is connected to the negative terminal of one of the coils;
REV COUNTER: for vehicles with one coil and mechanical distributor if the BROWN^2 wire is connected to the negative terminal of this coil, or in all vehicles where the BROWN^2 wire is connected to the rev counter signal wire.
REV COUNTER 2: set this option when the engine speed is not read correctly on a **6 or 8-cylinder** vehicle with the BROWN^2 wire connected to the rev counter.
NOTE^2: Meaning the Brown wire of the gas control unit wiring harness.

NUMBER OF CYLINDERS
This parameter allow to inform the control unit about the number of the vehicle cylinders and therefore how many gas injectors it to control:
set **2 CYLINDERS, 3 CYLINDERS** or **4 CYLINDERS**, depending on the number of cylinders the vehicle has.
If a control unit for 5-6-8 cylinders is used, these options will also be displayed in the selection window: select **5 CYLINDERS**, **6 CYLINDERS** or **8 CYLINDERS**, depending on the number of cylinders the vehicle has.


TURBO VEHICLE: this option is used to modify the acquisition references of the autocalibration in the case of a turbo car.
When automatically selected, the references are modified (see the AUTOCALIBRATION page)

VALVETRONIK
This function allows to enable a particular strategy in cars equipped with this device.
These cars, during the CUT-OFF, cut also the ignition signal; consequently the control unit loses the rpm signal withconsequent backpass gasoline. Enabling this feature solves this problem.
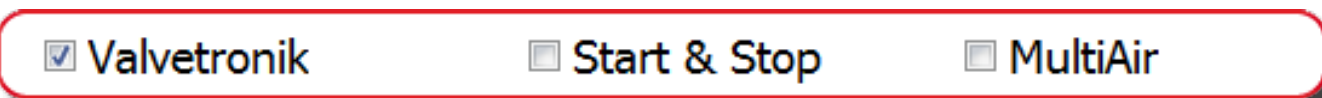
WARNING !!!!!!
IF THIS FUNCTION IS ENABLED IT IS NECESSARY TO CONNECT THE KEY SWITCH WIRE (WHITE AND RED WIRE) TO A POINT WHERE THE +12 VOLT DISAPPEARS IN THE EVENT OF AN ACCIDENT OR IN ANY CASE ACCIDENTALLY SHUTS DOWN THE ENGINE.
TO VERIFY THAT THE RED-WHITE WIRE IS CORRECTLY CONNECTED, CAUSE AN ACCIDENTAL SHUTDOWN OF THE ENGINE (WITHOUT TURNING OFF WITH THE KEY) AND CHECK THAT THE + 12 VOLT ACTUALLY DISAPPEARS.
IN THIS WAY, IN THE EVENT OF AN ACCIDENT OR ACCIDENTAL ENGINE SHUTDOWN, THE SYSTEM WILL ACTIVATE THE IMMEDIATE CLOSING OF THE SOLENOID VALVES.

START & STOP
On cars fitted with the device enabling this function when the car is stopped, when you start the engine the car directly to the GAS. In the case where stop exceed 5 MINUTES, the car part GASOLINE and remains predisposed for subsequent transition to GAS.

MULTIAIR
This function allows to enable a particular strategy in cars equipped with MULTIAIR technology.
In these cars, under certain conditions, the accelerator throttle works slightly differently from normal; for example it works on idle and opens at a certain run speed and motor load.
This effect does not allow a correct engine mapping as carburetion gaps may happen that jeopardize the

Change-over

smooth driving while working on gas.
Enabling the multiair function, the system uses a different compensation for the gas injection pressure. This function can be used also on cars equipped with VALVETRONIC device or on systems with dynamic variation of the engine intake geometry.

WHILE THIS FUNCTION IS ACTIVATED IT IS NECESSARY TO PAY ATTENTION TO THE CHOICE OF THE INJECTION NOZZLE WHOSE DIAMETER VARIES DEPENDING ON THE CAR MODEL.
ON IDLE, THE MAPPING VALUES WILL BE LOW WHILE THEY WILL GROW STEADILY WITH THE ENGINE REVVING UP. AS A CONSEQUENCE THE DRIVEABILITY BENEFITS FROM THE MAPPING RESULTS FAR MORE LINEAR.

RPM READING FROM CAMSHAFT
Selecting this option it is possible to perform the reading of RPM by connecting the BROWN wire of the control ecu gas to the camshaft sensor signal wire (the camshaft sensor must be of Hall type).
TEETH NUMBER
If "CAM RPM READING" is enabled, in order to read the correct number of revolutions, it is necessary to set the correct number of teeth of the camshaft sensor in this window.
WARNING: To know how many teeth the camshaft signal has, it is necessary to check the signal using an oscilloscope.

TYPE OF CHANGE OVER
The mode of switching over from PETROL to GAS can be selected.

ACCELERATION
PETROL switches over to GAS during acceleration when the vehicle exceeds the number of revolutions set in "REV THRESHOLD FOR SWITCH OVER".
DECELERATION
The change-over from PETROL to GAS will be carried out in deceleration following one of the following conditions:
- during a deceleration after the engine speed has exceeded the reference set in "REVOLUTION THRESHOLD FOR change-over".
For the transition to take place, it is not important that the RPM falls below the reference set in "REVOLUTION THRESHOLD FOR THE CHANGE-OVER".
STARTING GAS
The car starts directly to GAS but PETROL strategies remain available and it is possible to switch to PETROL via the switch. Furthermore, in the case of low GAS pressure, the PETROL back passage is however carried out.
MONOFUEL
Warning: by selecting this option the system will always run on gas only, select this option only on MONOFUEL cars.
The switch will only serve as the amount of fuel gauge, having completed the gas (the gas low pressure), the system will not make the switch from gasoline and the motor will come to shut down to lack of fuel. All petrol contributions will be disabled.

REVs THRESHOLD FOR CHANGE-OVER
Identifies the rpm at which you want the petrol-gas switch over to take place..

OVERLAPPING TIME
It indicates the time during which there is an overlap between PETROL and GAS in order to prevent possible carburetion gaps when switching over from one type of fuel to the other.

Note. **It is recommended to leave the pre-set value (ZERO).**

START ON GAS WITH HOT ENGINE
Enabling this function the vehicle starts directly on GAS, ignoring the settings chosen for "Reducer temperature for Change over" and " Change over from petrol to gas delay". The temperature reference setting window is displayed only when the function is active. It is recommended to set temperature values above 50 °.

REDUCER TEMPERATURE FOR CHANGE OVER
It indicates the temperature the reduction gear has to reach so that switching to gas is allowed.
The control unit WILL NOT SWITCH TO GAS beneath this temperature.
It is recommended to set a temperature between 20°C and 45°C since:
- setting a lower temperature could trigger the fuel change over if the reducer has not warmed up enough for a correct Gas output.
- setting a higher temperature would postpone too long the change over to Gas.

CHANGE OVER FROM PETROL-GAS DELAY
It indicates the minimum time from engine ignition for switching over from PETROL to GAS.
We recommend you to set a time no less than 20 seconds in order to ensure correct system operation.

SWITCHING TO PETROL FOR LOW GAS TEMPERATURE.
It sets the temperature value that inputs the switch from CNG to petrol.

NUM. OF INJ. BETWEEN CYLINDERS CHANGE OVER
Identifies the number of engine revolutions that elapses between the passage of an injector GAS and the next. This function is enabled only if the page GAS / PETROL is selected "Sequential fuel changeover" The value defaults to 0, in this case, the transition occurs in a sequential way using the factory settings.

RESET ECU
All control unit configuration parameters are reset and put back in the original configuration when this button is pressed. We recommend that this button will be pressed if you are unsure you have correctly set all control unit parameters and you want to start with the original configuration of the parameters
NOTE[2] Meaning the Brown wire of the gas control unit wiring harness.

NUMBER OF BANKS
This selection allows to set the number of banks in which the engine is divided into.

FUEL TRIM BANK 2
When the number of banks is set at two, this item appears. Its purpose is to be able to modify (enrich or weaken) the GAS carburetion concerning the second bank in vehicles equipped with two front lambda probes if the two banks are working slightly off-balance.
In particular, in the case of 4-cylinder vehicles, carburetion of the GAS B and C injectors is unbalanced respected to carburetion of the GAS A and D injectors when this parameter is changed.
In case of 6 or 8-cylinder vehicles, carburetion of the GAS injectors connected by the wiring harness identified by the RED STRAP is instead unbalanced with respect to that of the other GAS injectors.

TYPE OF PRE-CATALYTIC OXYGEN SENSOR
When this parameter is set correctly, the control unit is able to detect operation of the lambda probe.
Before you select the type of Lambda Probe, check its operation with a digital multimeter.
With probes having 0-1 Volt, 0-5 Volt, 5-0 Volt, 0.8-1.6 Volt voltage, follow these instructions if you want to read only its value:

    Connect the PURPLE wire to the lambda probe without interrupting the original connection (therefore leave the GREY wire disconnected).

If you want to check the emissions, follow these instructions:

    Interrupt the original connection and connect the PURPLE wire to the sensor and the GREY wire to the PETROL control unit.

0 ÷ 1 V - Select this option is the voltage fluctuates between these voltage values on the signal wire:
    - about 0 ÷ 0.2 V with lean mixture;
    - about 0.8 ÷ 1 V with rich mixture.

0 ÷ 5 V - Select this option is the voltage fluctuates between these voltage values on the signal wire:
    - about 0 ÷ 0.2 V with lean mixture;
    - about 4.8 ÷ 5 V with rich mixture.

5 ÷ 0 V - Select this option is the voltage fluctuates between these voltage values on the signal wire:
    - about 4.8 ÷ 5 V with lean mixture;
    - about 0 ÷ 0.2 V with rich mixture.

0.8 ÷ 1.6 V - Select this option is the voltage fluctuates between these voltage values on the signal wire:

- about 0.7 ÷ 0.8 V with lean mixture;
- about 1.4 ÷ 1.6 V with rich mixture.

UEGO - Select this option if the lambda probe is the linear type and if required to change the emission values (using the GREY wire only).

2.5 ÷ 3.5 V - Select this option is the voltage fluctuates between these voltage values on the signal wire:

- about 2.4 ÷ 2.5 V with lean mixture;
- about 3.4 ÷ 3.5 V with rich mixture.

PLEASE NOTE: If a 2001PC ECU is connected to the software, no UEGO and 2,5/ 3,5 V probes will appear on screen.

OXYGEN SENSOR 1 (PURPLE WIRE)
It allows to check the values of a front lambda sensor and eventually to emulate a rear lambda probe (in case diagnostic issues like "Catalytic malfunctioning" should manifest).

NOT CONNECTED: the lambda probe value is not displayed (n.d.) and no type of emulation is activated.

PRE: While working on GAS, the front lambda reference value is shown on the lower-right side of the monitor **(if you decide to select this option, connect the PURPLE wire only).**

POST: While working on GAS, the rear lambda reference value is shown on the lower-right side of the monitor and an emulation control unit is activated.
This action is particularly usefull to solve catalyser inefficiency problems witch can cause the led switching on. The warning light being consequently turned on by the PETROL control unit (see **EMISSIONS** menu).

NOTE: Selecting this option you need to connect the GREY wire to the PETROL control unit and the PURPLE wire to the lambda sensor.

OXYGEN SENSOR 2 (PURPLE/BLACK WIRE)
It allows to check the values of a front lambda sensor and eventually emulate a rear lambda probe (in case diagnostic issues like "Catalytic malfunctioning" should manifest).

NOT CONNECTED: the lambda probe value is not displayed (n.d.) and no type of emulation is activated.

PRE: While working on GAS, the front lambda reference value is shown on the lower-right side of the monitor **(if you decide to select this option, connect the PURPLE/BLACK wire only).**

POST: While working on GAS, the rear lambda reference value is shown on the lower-right side of the monitor and an emulation is activated from the control unit.
This action is particularly advisable for solving catalyser inefficiency problems with the warning light being consequently turned on by the PETROL control unit (see **EMISSIONS** menu).

NOTE: Selecting this option you need to connect the GREY/BLACK wire to the PETROL control unit and the PURPLE/BLACK wire to the lambda sensor.
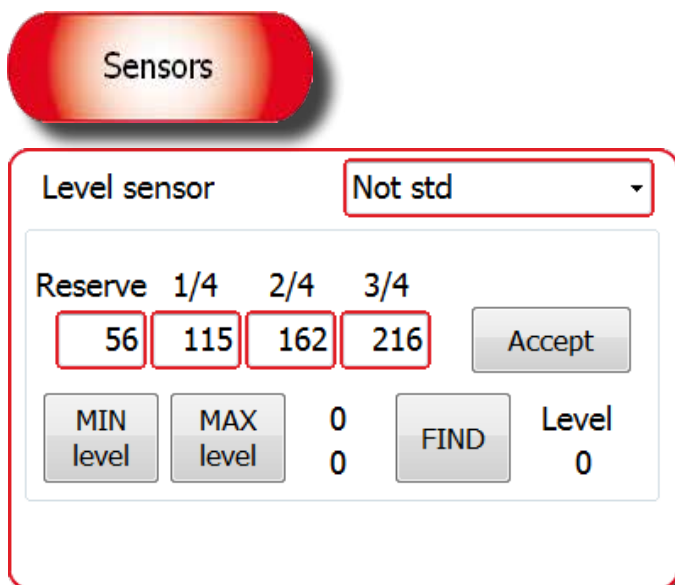
Sensors

LEVEL SENSOR
It informs the gas control unit what type of level sensor was used:

AEB - set AEB if a sensor with an AEB standard output signal sensor (e.g. AEB1050) is connected. Refer to the assembly drawing of the gas control unit for connection.

CARTESIO - set CARTESIO if the gas control unit is connected to a sensor output signal linear voltage 0.5 - 4.5 V ratiometric.
For the connection, refer to the assembly diagram of the gas control unit.

0 - 90 ohm - set 0 – 90 ohm if a sensor with output signal sensor ranging between 0 and 90 ohm (e.g. AEB1090) is connected. Refer to the assembly drawing of the gas control unit for connection.

NOT STANDARD - Set this option if an LPG or NATURAL GAS resistive sensor with a variable STRAIGHT signal (lower (Ohm) value with higher vacuum level and value (Ohm) with full level) is connected.

NOT STANDARD INVERTED - Set this option if an LPG or NATURAL GAS resistive sensor with a variable REVERSED signal (higher (Ohm) value with lower vacuum level and value (Ohm) with full level) is connected.

ATTENTION: The reference levels RESERVE - 1/4 - 2/4 - 3/4 are only displayed if the sensor selected is NOT STANDARD - NOT STANDARD INVERTED – CARTESIO

LEVEL REFS. NOT STANDARD - This option appears only if NOT STD or NOT STD INVERTED is set in the "LEVEL SENSOR" box.

MANUAL PROCEDURE

Set the reference values necessary for setting the level sensor as follows:
- manually move the sensor indicator starting from the full level and note the value indicated in "Level" for each reference (RESERVE, 1/4, 2/4, 3/4).
- enter the values noted in the corresponding boxes.
- press the **ACCEPT** button.

We can then see the following changes on the switch:

RESERVE = LEVEL value when the red reserve LED turns on and the 1/4 LED turns off.
1/4 REFERENCE = LEVEL value when the 2/4 LED turns off.
2/4 REFERENCE = LEVEL value when the 3/4 LED turns off.
3/4 REFERENCE = LEVEL value when the 4/4 LED turns off.

SEMIAUTOMATIC PROCEDURE

MIN level - TO TANK EMPTY, click on this button to acquire the minimum level of fuel.
MAX level - TO TANK FULL, click on this button to capture the maximum level of fuel
FIND - Click this button to calculate the intermediate levels of fuel

Sensors

PRESSURE SENSOR
It informs the GAS control unit what type of MAP sensor is being used (AEB 025 – AEB 013).

NTC temp gas - Allows you to set the value of the NTC used on the temperature of the gas.

NTC temp motore - Allows you to set the value of the NTC used on the engine temperature.

INJECTORS HEATING
It allows to activate the injector heating strategy.

TANK SOLENOID VALVE WITH DEDICATED WIRE
Enables diagnosis of the GAS solenoid valve of the tank.
If there is no sheath with BLUE-WHITE and BLACK wires on the GAS control unit cable (wires expressly dedicated to powering the rear multivalve) or they are not connected, do not enable this control; otherwise, the GAS control unit might save errors.
Attention: this option is selectable only when the ENABLE DIAGNOSIS option, present on the DIAGNOSIS page, is enabled (see DIAGNOSIS page description).
GAS ELECTROVALVES OPENED IN ADVANCE
The Gas control unit usually enables the GAS solenoid valves about 1 second before switching from PETROL to GAS in order to allow the pipes filling.
If the time span is not enough to prevent the vehicle from shutting down while switching from one fuel to the other, it is possible to enable this function so that the gas solenoid valves are opened (and stay open until the switch-over is completed) at least 5 seconds before switching over to GAS allowing a major filling of the pipes. If this function is enabled, a warning message will appear reminding the user not to switch off the PETROL pump.
AUTOMATIC GAS PRESSURE COMPENSATION
Activating this option, during the SELF-CALIBRATION, the software will automatically set the value read of the Gas differential pressure in the REDUCER box on the CHANGE-OVER page (see description on the CHANGE-OVER page)
ATTENTION: If this function is enabled, a warning message reminds you to not interrupt the PETROL pump because it would cause the vehicle to shut down.

ATTENTION: If you use a timing advance processor, this will start to advance when the vehicle is still running on petrol, causing it to malfunction during the "fill gas pipes more" phase. For this reason we recommend setting the processor with 9° advance at the most.

AUTOMATIC CHANGE BACK TO PETROL
The switch-over from GAS (whether it is LPG or NATURAL GAS) to PETROL is automatic when the pressure drops below the minimum operating pressure.
Note. It is recommended to keep the function enabled to prevent system malfunctions.

LOW PRESSURE TIME FOR CHANGE BACK
It indicates the delay in going back to PETROL in the case of operation at minimum operating pressure.
Note. It is recommended to leave the parameter at ZERO, which is the default value.

LOW PRESSURE VALUE FOR CHANGE BACK
Indicates the minimum value pressure reached GAS to which is carried out backpass GASOLINE.

Map

Map

CALIBRATION MAP

This menu shows a numerical display of the multiplication coefficients called K the control unit uses in calculating the GAS injection time.

The table displays the petrol injection times on the Y axis, while we find the engine rpm on the X axis. The red dot displayed on the map identifies the rpm references and petrol injection time in which the engine is running.

Enabling the **"MAP profile"** function, the user has a quick view of the map progressing; the higher values are identified by a stronger marking.

OBD target map (available only on ECUs with OBD connection)

By selecting OBD target map, the map of the GAS control unit ADAPTIVITY plate is displayed.

This map is active only when the ADAPTATIVITY option on the MODIFY CARBURATION page is enabled, for a description of how this map works, refer to the page where the ADAPTATIVITY option is described.

Map

Slow trim - Fast trim (available only on ECUs with OBD connection)
By connecting the specific wires of the Gas ECU to the OBD diagnostic socket of the car, in this window it will be possible to view the values of the SLOW and FAST trim of the Petrol ECU.

To change the K values, select one or more map boxes and press enter; a window with the following modification modes will appear:

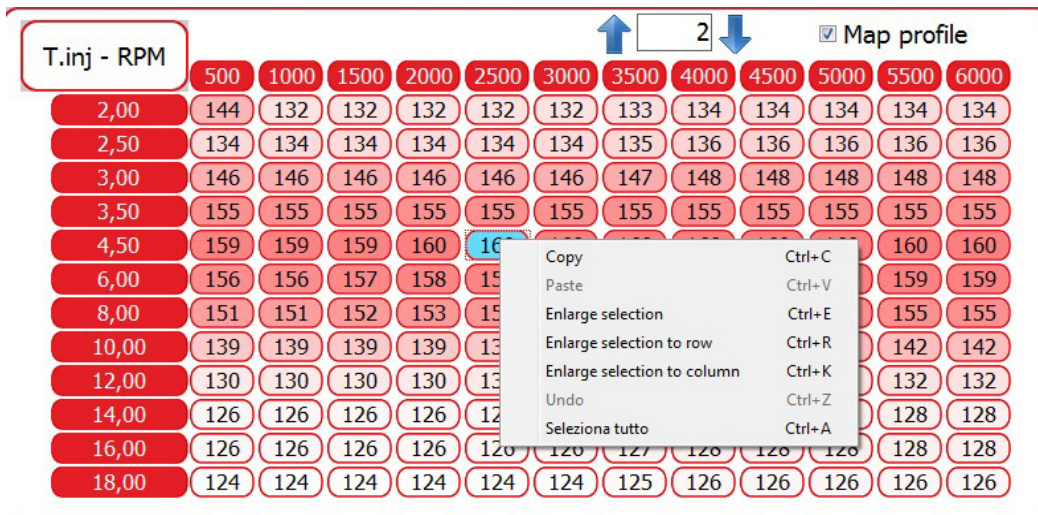**ABSOLUTE -** the value corresponding to the one entered can be exactly placed in the map.
LINEAR - adds or subtracts (if a number with negative sign is entered) the entered value to or from the one already in the box or boxes selected.
PERCENTAGE - adds or subtracts the entered value to or from the one in the box or boxes selected in percentage.
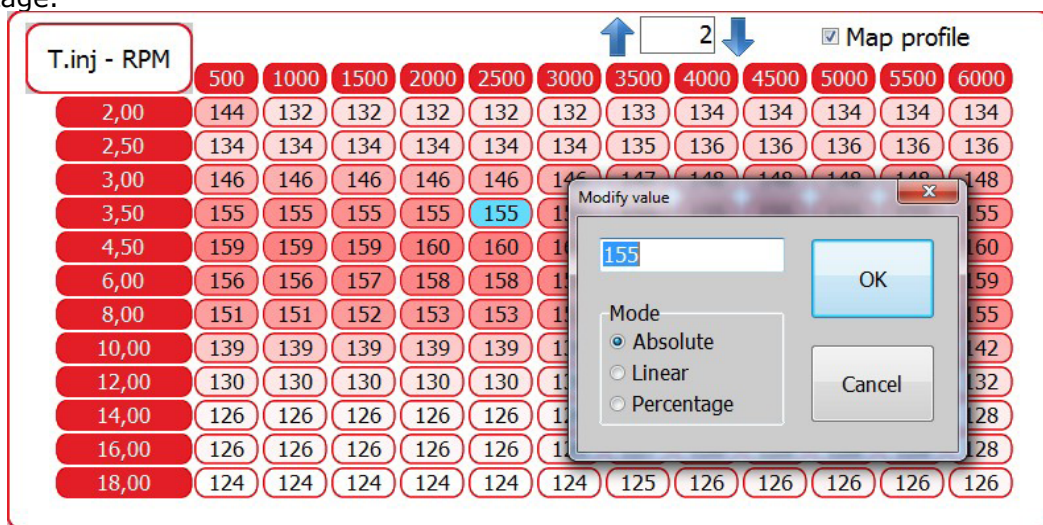
When you select a value of the map and click on the right button of the mouse, a drop-down menu appears allowing to do the following:

• Copy the value of the cell selected and paste it in any other cell of the map.

• Extend the selection to the cells right next to the cell selected.

• Extend the selection to the whole line where the cell selected is situated.

• Extend the selection to the whole column where the cell selected is situated.

• Delete up to a maximum of 8 modifications made.

Map

The references regarding the engine revolutions and the PETROL injection time can be modified with this function.
To change the references, set the new values and then press OK.
Alternatively, it is possible to enter the maximum number of revolutions or petrol injection time and select "**Interpolate**". in this way the software will automatically divide the references.

Clicking on this button it is possible to switch from GAS to PETROL directly from the PC.
When this function is selected, the switch in the cockpit is temporarly disarmed.

This function allows to reset the map to default values.

CARBURETION TESTING PROCEDURE:

Once the self-calibration procedure is completed, it is recommended to test the carburetion and make the necessary changes as described below.
NOTE: Before making any changes, check that the vehicle is running correctly on petrol as the Gas delivery system is based on the Petrol delivery system.

- Start the petrol-powered vehicle and wait for the engine to reach the operating temperature;
- Move into the area of the map where you want to test carburetion and keep the accelerator position steady;

If the vehicle is equipped with an OBDII diagnostic system, it is necessary to check the value of integrators/calibrators under the map.
If the vehicle does not have an OBDII diagnostic system, it is necessary to check the petrol injection time **(in OBDII equipped vehicles it is advisable to check the calibration using the integrators/calibrators parameters instead of the petrol injection time);**

If you are working with a non-OBD Gas ECU, and therefore it is not possible to view the correctors directly through the software, to read the correctors we recommend the use of an external OBD diagnostic handtool.

- Click on the button to switch to GAS being careful to keep the acceleration steady.

- Check the value of the integrators/calibrators or of the PETROL injection time;

TEST USING THE INTEGRATORS/CALIBRATORS:

ATTENTION: this description refers to cars where the correctors / supplements are RIGHT, but on some cars the supplements / correctors are INVERTED and work in the opposite way.
In this case, when the value of the correctors / supplements increases, it indicates that the carburetion is greasy, consequently the K value in the map will be decreased.
While if the value of the correctors / supplements decreases it will indicate a lean carburation therefore the k value will be increased.
To understand if the correctors of a car work in STRAIGHT or REVERSE mode, refer to the CHANGING CARBURETION - TYPES OF PETROL CORRECTORS chapter.

If the value of the calibrators/integrators shifts more than 3-4 units compared to the normal PETROL operation during GAS operation (e.g. the calibrator moves from 8% to 11-12%), correct the value in the map keeping in mind that:

• If the integrators/calibrators shift toward positive values, this usually means that the petrol control unit detects a weak carburetion, so in the box you are checking the K value should be increased until the integrators/calibrators return to the values detected with PETROL.

• If the integrators/calibrators shift toward negative values, this usually means that the petrol control unit detects a rich carburetion, so in the box you are checking the K value should be decreased until the integrators/calibrators return to the values detected with PETROL.

To check that the K values entered are correct, perform a few PETROL/GAS changes at a constant speed while checking that the calibrators/integrators are operating in a similar way with both PETROL and GAS.

To perform a correct mapping, you have to road-test the vehicle keeping in mind that it will not be possible to perform the procedure described above in some map areas because the engine will not abide staying in the same map area during the PETROL/GAS changes as it is in a transient state (acceleration or deceleration).

TEST USING THE PETROL INJECTION TIME:

If the value of the PETROL injection time during GAS operation shifts compared to normal PETROL operation (e.g. 0.5/1 ms longer or shorter), correct the carburetion remembering that:

• If the PETROL injection time increases, this means that the petrol control unit is detecting a weak carburetion, so in the box you are checking the K value should be increased until the PETROL injection time returns to the values detected with PETROL.

• If the PETROL injection time decreases, this means that the petrol control unit is detecting a rich carburetion, so in the box you are checking the K value should be decreased until the PETROL injection time returns to the values detected with PETROL.

To check that the K values entered are correct, perform a few PETROL/GAS changes at constant speed while checking that the PETROL injection time is working during GAS operation as it works during PETROL operation.

To perform a correct mapping, you have to road-test the vehicle keeping in mind that it will not be possible to perform the procedure described above in some map areas because the engine will not abide staying in the same map area during the PETROL/GAS changes as it is in a transient state (acceleration or deceleration).

Gas / Petrol

SEQUENTIAL FUEL CHANGE OVER

GAS is switched over to gradually one cylinder at a time when this function is enabled (recommended default option).
The switch over is usually smoother when this function is used.
If this function is not enabled, the PETROL injectors are all disconnected at the same time and switching over to GAS is immediate.
This function is automatically disabled when the engine is started in emergency mode through the switch.

ANTICIPATE THE INJECTION SEQUENCE

This is a guided procedure which allows automatic acquisition of the original injection sequence and enables a phase shift in advance of the gas injection. The entity of the phase shift also depends on the **"Number of cylinder banks"** control on page **Lambda**.
This advance can improve vehicle function especially if the gas injectors are distant from the intake manifold.
This function is to be used only if it is really necessary since it disables the GRADUAL PETROL-GAS switch over feature, with the switch over occurring instantaneously.

WARNING: This function could cause the OBDII calibrators to drift when activated on vehicles with a V-multi-cylinder engine. The anticipated injection sequence may cause the inversion of some cylinders on the two cylinder banks, each one controlled by a pre-cat probe.

OPERATION AT MINIMUM

GAS - the vehicle always works on GAS in case of low speed when this function is enabled (recommended default option).

RETURNING TO PETROL - while returning to idle speed, for a few seconds the vehicle switches to petrol and then returns to gas, in some cases preventing the vehicle from switching off during this phase. Only use this function if absolutely necessary.
The value **"Revolutions to identify idle speed"** determines the number of revolutions below which this strategy is enabled.

PETROL - when running at idle speed, lower than the value of the set revolutions, the vehicle always runs on petrol. Gas function is restored when the number of revolutions exceeds the set value.
This function can only be used if running on gas at idle speed is practically impossible, unstable and causes the vehicle to switch off frequently.
The system is running on petrol it is not indicated on the switch (which stays on gas), but by reading the gas injection time on the computer (which becomes nil).
In this phase, the switch continues signalising gas function and the gas solenoid valves stay enabled. If there is an advance variable valve timing mechanism, and the supply remains active during this phase, ensure the idle speed advance does not disturb the system.

DIGITRONIC
Smart Autogas Systems

Gas / Petrol

OPERATION AT HIGH RPM

GAS - the vehicle normally runs on GAS when this function is enabled, even at high engine speed and load (recommended default option).

PETROL ADDITION – by enabling this function, there is the possibility to deliver an additional contribution of PETROL to the normal GAS injection. You can therefore set:

- **RPM for petrol addition:** it identifies the RPM engine range within which the PETROL contribution will be enabled.
- **Petrol inj. time for petrol addition:** indicates the petrol injection time beyond which the PETROL contribution will be enabled
- **Amount of petrol addition:** it is the time of the petrol contribution that will be given when the PETROL CONTRIBUTION is activated. Therefore, when the PETROL CONTRIBUTION is active this time corresponds to the time that the petrol injector remains open, allowing a certain amount of petrol to pass which will be added to the amount of injected gas. When this function is activated, the control unit automatically reduces the injected gas to compensate for the part of petrol that is injected and not to grease the carburetion too much, it is however advisable to check the map in the area corresponding to the PETROL CONTRIBUTION to check if it is necessary to grease or lean this part of the map.

ATTENTION: The petrol addition will be enabled only if both the RPM for petrol addition and Petrol inj. time for petrol addition will be respected.

ATTENTION: **it must be considered that the petrol injector has an opening delay time that varies according to the type of injector, if you enter a value that is too low it may be that the injector is unable to open correctly and that the quantity of petrol that is injected is nothing or almost.**
In this condition, however, the gas control unit will in any case reduce the injected gas time to compensate for the PETROL ADDITION time inserted, thus making the carburation lighter.
We therefore recommend entering a PETROL ADDITION time equal to or slightly lower than the petrol injection time that occurs in the minimum condition.

The graphic status indicator on the far right side of the "Running at high engine speed" box will be **YELLOW** to signal temporary operation with PETROL contribution.

PETROL – temporary high engine speed and load operation with PETROL will begin when this function is enabled, and will last until the accelerator is released. Both the number of revolutions and the injection time after which the GAS control unit will switch over to PETROL can be set.

ATTENTION: Switching over from one type of fuel to the other will occur only if both conditions are met.

This function will be particularly recommended for all vehicles equipped with a very delicate catalyser subject to overheating while running on GAS.
Another application where this system proves to be extremely useful regards highly powerful engines (usually turbo), where in order to be able to power the high-load engine we are forced to use large GAS injectors with consequent instability at low loads.

Gas / Petrol

The fact that the system is running on petrol is not indicated on the switch (which stays on gas), but by reading the gas injection time on the computer (which becomes nil).
In this phase, the switch continues to signal gas function and the gas solenoid valves stay enabled.
If there is an advance variable valve timing mechanism, if the supply remains active during this phase, ensure the idle speed advance does not disturb the system.

The graphic status indicator on the far right side of the "Running at high engine speed" box will be **RED** to signal temporary operation of the vehicle with PETROL.

SPLIT FUEL

Enabling this feature will be activated injected PETROL cyclically.
This feature is particularly suitable in those engines which do not have valve seats reinforced so as to lubricate them, and consequently to preserve them.

RPM for Split fuel activation - Identifies the number of engine revs above which is activated the split fuel.

Gas press. [bar] - Identifies the absolute pressure values on which it's possible to interfere by injecting an appropriate quantity of PETROL.

VALUE (0-25%) - is the percentage, calculated on 100 total injections, of injected per single cylinder that are made with petrol. This means that, in a 4-cylinder engine, if you set 25% there will always be a cylinder that runs on petrol and therefore the petrol consumption will be equal to 25%.
If, for example, 10% is set, the petrol injector will cyclically make 10 injections in each cylinder while the remaining 15 injected will be made with gas.
Therefore, in cylinder 1 the petrol injector will make 10 injected while the remaining 15 (for a total of 25 which is 25% out of 100 total injected) will be done with gas, during this phase the other three cylinders work only with gas .
At the end of the cycle of 25 injected corresponding to cylinder 1, one passes to cylinder 2 which will perform the same cycle and so on.
To change these values, select one or more boxes and press enter a window will appear with the following mode:

ABSOLUTE - Allows to bring on the map exactly the value corresponding to that typed.

LINEAR - Add or subtract (if you enter a number with a negative sign) the entered value to that already present in the box or boxes selected.

PERCENTAGE - Adds or subtract a percentage value to the already present in the box or boxes selected.

CUT-OFF PETROL SWITCH-BACK TRANSITION

Enabling this function when the car goes into cut-off (injection time = 0), at the exit of this condition the system runs on petrol for a number of injectes corresponding to the number set in the parameter "injections for petrol switch return".
Once the petrol injected is finished, the system will start running again on Gas.

**DIGITRONIC** Smart Autogas Systems

Modify carburation

OBD connection type Auto — Found connection type: None
RPM threshold for adaptivity 900 [0 - 8000] ☑ Adaptivity
Type of PETROL trimmers
◉ standard — lean carburation with positive trimmers
◯ inverted — lean carburation with negative trimmers

All the parameters in this window are available only with control units equipped with OBD con-
nection and only if the OBD wires of the system are correctly connected to the car diagnosis
socket.
For correct connection of the wires to the vehicle diagnosis socket, refer to the table below.

TYPE OF CONNECTION	CONNECTION DETAILS
Connection type 1	ISO 9141-2
Connection type 2	KWP-2000 Fast Init
Connection type 3	KWP-2000 Slow Init

PIN7

FIG.1
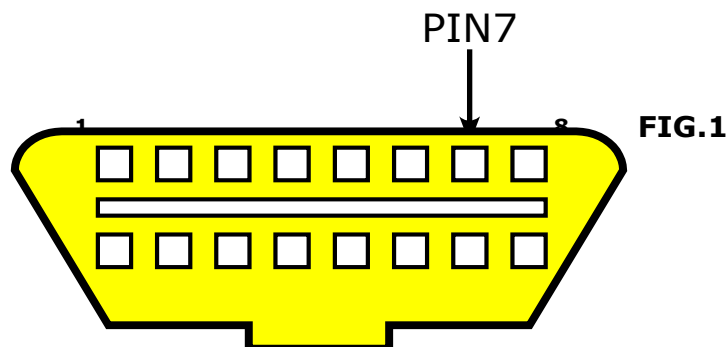
Connect the GREEN wire to the signal found on PIN 7 of the OBD connector.
ATTENTION: The YELLOW-GREEN and YELLOW-GREY wires must be isolated and not connected.

TYPE OF CONNECTION	CONNECTION DETAILS
Connection type 6	CAN Standard 250 Kbps
Connection type 7	CAN Extended 250 Kbps
Connection type 8	CAN Standard 500 Kbps
Connection type 9	CAN Extended 500 Kbps

PIN6

FIG.2
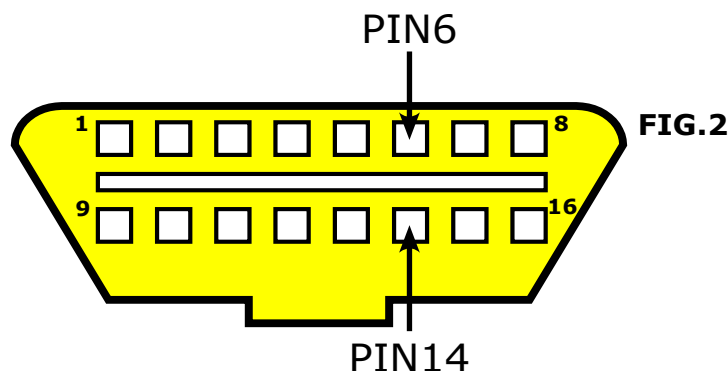
PIN14

Connect the YELLOW-GREEN wire to the signal found on PIN 6 and the wire YELLOW-GREY to PIN 14 of the
OBD connector.
ATTENTION: The GREEN wire must be isolated and not connected

OBD CONNECTION TYPE
This menu allows to choose the OBDII connection type among a list of possible connections. Setting the default connection (AUTO), the software automatically tries to connect to the vehicle testing all the available OBDII types of connection till it targets the suitable one.
However, we recommend that you always set the specific type of connection used by the car.

ADAPTIVITY
Enabling this option activates a strategy of adapting the gas carburetion according to the trend of the petrol correctors.
This strategy ensures that the gas carburetion is enriched or leaned to correct the trend of the petrol correctors in the following way: the system will try to ensure that the sum of the correctors is 0 (for example fast corrector +5 and slow corrector -5 = 0), in this condition the ECU will not make corrections to the gas carburation which will work normally following the gas map and petrol times.
Instead if the sum of the correctors is positive (for example fast corrector +5 and slow corrector +5 = +10) the control unit will automatically enrich the gas carburetion, with respect to the gas map, so as to drive the sum of the correctors to 0.
If, on the other hand, the sum of the correctors is negative (for example fast corrector -5 and slow corrector -5 = -10) the control unit will automatically lean the gas carburation, with respect to the gas map, so as to drive the sum of the correctors to 0.
If, during petrol operation, the correctors do not work close to zero, bringing the correctors to zero during gas operation could cause petrol malfunctions, especially at start-up, as the petrol carburation would not be correct.
In this case it is possible to use the CORRECTIONS MAP (see paragraph MAP) to set an adaptability target different from 0.
Based on the number of revolutions and the petrol injection time, it will be possible to set the value of the sum of the correctors required,
for example if in a point of the map you set +5, the system will try to correct the carburation so that the sum of the petrol correctors reaches +5 (for example fast corrector +10 and slow corrector -5 = + 5), and not 0 any more.
When ADAPTIVITY is enabled, the CORR parameter will be displayed in the lower bar of the software and under the gas and petrol times. GAS, this parameter indicates the percentage of correction, with respect to the gas map, that the ECU is applying to correct the gas carburation according to the ADAPTIVITY.

ATTENTION: the adaptivity of the gas control unit is a thin correction of the gas carburation since the correction is made starting from the gas map, therefore it cannot be used as a substitute for the normal mapping procedure.
For this reason it is very important that a good gas mapping is done before enabling gas adaptivity.
ATTENTION: the gas adaptation strategy is based on the type of operation of the petrol correctors, it is therefore essential to select the correct TYPE OF PETROL ADAPTERS to ensure that the strategy works.

ATTENTION: it is not possible to use this strategy in cars where the correctors work up to +/- 100%, for example this situation occurs on some cars equipped with a Marelli control unit.

RPM THRESHOLD FOR ADAPTIVITY
Setting an RPM value from 0 to 8000, below which the adaptability is blocked.

TYPE OF PETROL TRIMMERS
It allows to select the type of petrol trimmer in use in the vehicle choosing among right or inverted.

STANDARD: by STANDARD we mean the correctors that assume positive values with lean carburation and negative values with rich carburation.

INVERTED: by INVERTED we mean the correctors that assume negative values with lean carburation and positive values with rich carburetion.

Verification procedure of the CORRECTORS:
to check if a car has the RIGHT or INVERTED CORRECTORS, it is recommended to carry out this procedure:
- start the petrol engine and wait for the correctors to start working;
- switch to gas and wait a few seconds for the correctors to stabilize;
- select the area of the map where the dot indicating the work point is located, taking care to also select some boxes surrounding the work point;
- press "enter" to open the "CHANGE VALUE" window of the map, type 20 and press "enter" (in this

Modify carburation

way the previously selected boxes are increased by 20 points).

At this point it is necessary to check the behavior of the fast corrector:
- if the value of the fast corrector decreases, it means that the car correctors are of the STANDARD type;
- if the value of the fast corrector increases, it means that the car correctors are of the INVERTED type.

Attention: the procedure for checking the correctors must be carried out with the GAS ADAPTATION DISABLED.
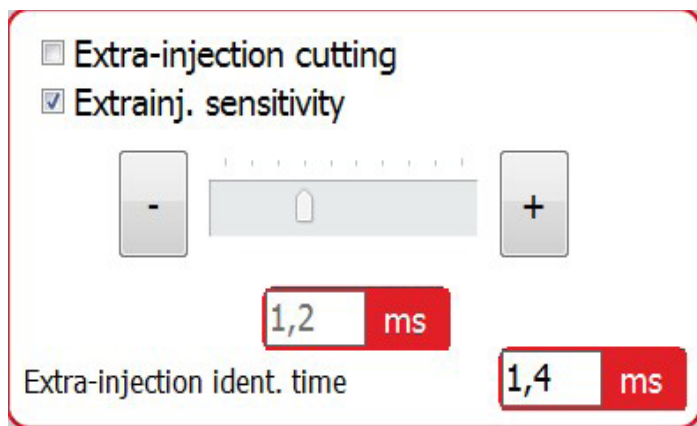
EXTRA-INJECTION CUTTING
By enabling this option all petrol injections with a duration shorter than the value set in "**EXTRA INJECTION IDENT. TIME**" will not be replicated to gas.
For example, in the case of the figure on the side, all petrol injections with a duration of less than 1.4ms will not be replicated to gas.

EXTRAINJ. SENSITIVITY
EXTRA INJECTIONS
are very short injections made in addition to the normal injection, and are given during petrol operation, usually during accelerations, to slightly enrich the carburetion, thus improving engine performance.

The extra injections can be recognised by looking at the progress of the RED dot in the map, or the petrol injection time that will switch from normal injection time (e.g. 8ms) to a much shorter time (e.g. 0.8ms), to go back immediately to the previous one.
If we control the extra injections like a normal injection during gas operation, we may enrich the carburetion too much, with the risk that the engine runs too fast serrating (this happens above all in natural gas systems, whereas the problem is usually less noticeable in LPG systems).
By enabling the "EXTRAINJECTION SENSITIVITY" check at the side, the parameters of the GAS extra injections can be changed, increasing or decreasing the GAS injectors opening time during the extra injection.
By moving the slider towards the plus sign, we increase the gas extra injection time, whereas we decrease it by moving the slider towards the minus sign.
Extra injection Ident. time: Represents the value below which the control unit manages the injection as an Extra-injection.
If the check is not enabled, the extra injection will not be considered as such, and the GAS control unit will control the impulse like a normal fuel injection.
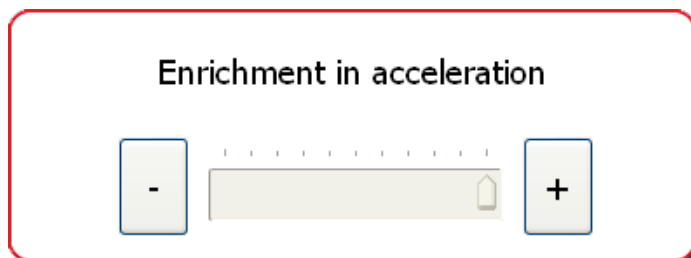
ENRICHMENT IN ACCELERATION
In some models of vehicles, the PETROL injection time almost instantaneously changes from a MEDIUM-LOW level to a high value (e.g. 15-16 ms) when accelerating suddenly. This can cause malfunctioning when GAS is used since the carburetion would be greatly enriched.
To get round this problem, use the "Enrichment in acceleration" slider in the following way:

- By moving towards the plus sign, the control unit will follow the PETROL injection time changes faster and faster.
- By moving towards the minus sign, this change will be increasingly narrower and filtered.
The background of the slider lights up BLUE when the "Enrichment in acceleration" strategy goes into operation.

Modify carburation

WEAKENING ON MAZDA

On some MAZDA models we see a change from a sequential injection strategy to a half-group with opening of the PETROL injectors in pairs during PETROL operation in acceleration.

This condition is easily to recognise by watching the course of the RED dot in the map or the PETROL injection time in acceleration.

When switching from one injection strategy to the other, the injection time normally displayed almost halves (e.g. from about 8ms goes to 4ms). The display will show a constant variation of the injection time that in some models could be steady till the vehicle reaches a given number of rpm. In the end, the value will return to the initial PETROL injection time.

This working condition may cause malfunctioning during GAS operation since when injection changes from a sequential type of strategy to a half-group (low injection time), GAS carburetion tends to become highly enriched, causing erratic behaviour.

Therefore, in order to get round this problem all you have to do is enter a value adequate for resisting this tendency in "Leaning on MAZDAS".

Note: **We suggest to try low values while testing the vehicle on the road, increasing them till the problem is solved.**

Reducer temperature corrections (°C)

20	25	30	35	40	50	60	70	Over	(°C)
-6	-5	-4	-3	-2	-1	0	0	0	(±100%)

Gas temperature corrections (°C)

0	10	20	30	40	50	60	70	Over	(°C)
-12	-9	-6	-3	0	2	4	6	8	(±100%)

On the basis of the temperature read by the reducer and the gas, the control unit carries out an automatic correction on the carburation to compensate for the variations in the gas density due to the temperature variation.
In this menu you can change the corrections preset in the software.

Note: **The default parameters have been tested by our personnel. It is not recommended to change them.**

REDUCER TEMPERATURE CORRECTIONS:
This is the correction string of the gas carburation with respect to the temperature read on the pressure reducer, the correction is expressed in% of the gas time.
It is possible to modify both the temperature references and the correction value, to modify a box select it and press enter or double click on the box, the "modify value" window will open, type the value you want to enter and confirm with enter.

GAS TEMPERATURE CORRECTIONS (not available on 32 pin ECUs):
This is the correction string of the gas carburation with respect to the gas temperature, the correction is expressed in% of the gas time.
It is possible to modify both the temperature references and the correction value, to modify a box select it and press enter or double click on the box, the "modify value" window will open, type the value you want to enter and confirm with enter.

AUTOCALIBRATION IN BRIEF

AUTOCALIBRATION has been designed to allow a quick and reliable calibration of the Gas System on the vehicle. Unlike SELF-CALIBRATION (see AUTO CALIBRATION paragraph), which is performed when the vehicle is stationary, SELF-CALIBRATION takes place with the car in motion and it is therefore necessary to turn on the road to complete it.

Once the system has been installed and the necessary parameters configured on the CHANGE page, a minimum calibration must first be performed and then the AUTOCALIBRATION is enabled. In this way, a learning mode starts in the control unit, which occurs first in petrol mode and then in gas mode.

The system acquires the trend of the injection time / MAP ratio up to the tracing of a line (red in petrol mode - green in gas mode).

The procedure ends after the system has carried out and repeated a series of acquisitions normally set in: a cycle of acquisitions during petrol operation, and three acquisition cycles during gas operation.
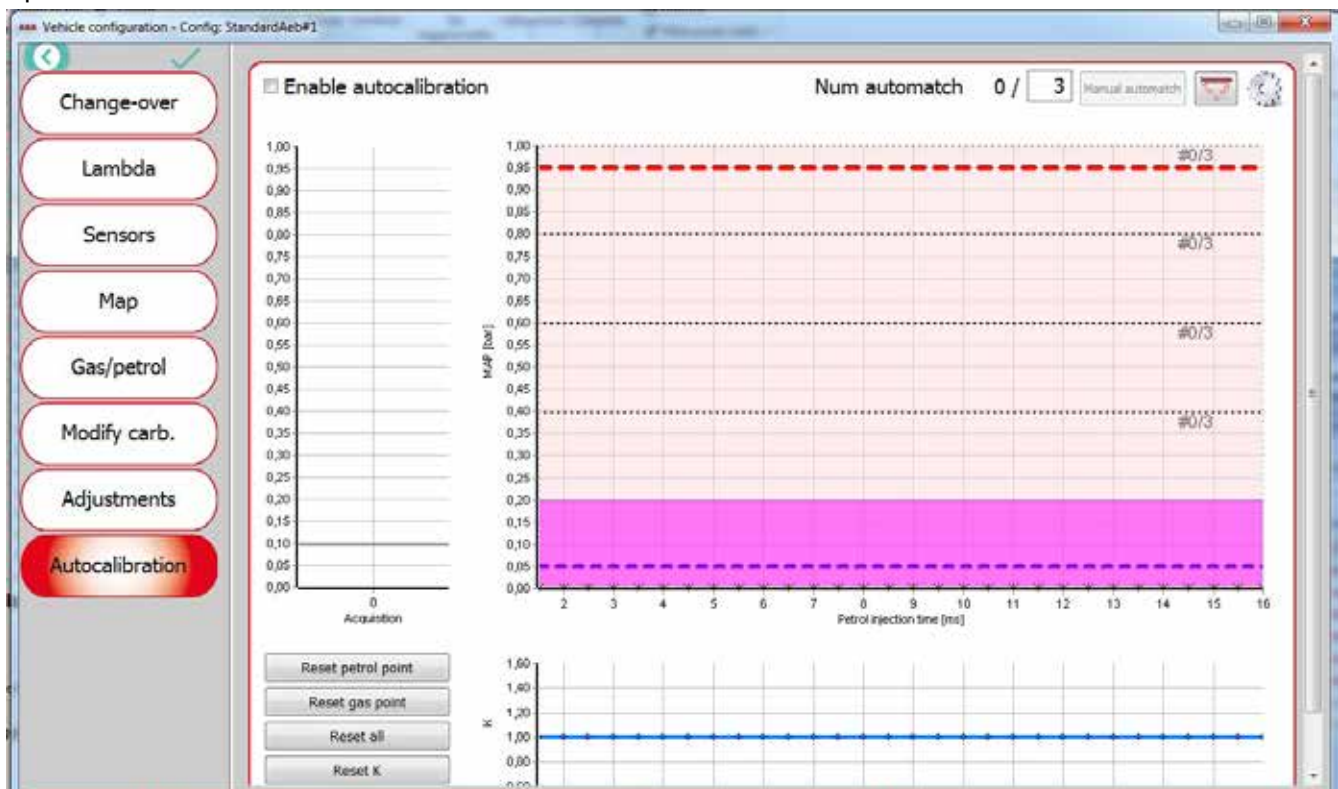
APPLIANCE OF AUTOCALIBRATION

AUTOCALIBRATION is available for control units listed in the table below, whether it is CNG or LPG installations, control units not listed in the table are not compatible with AUTOCALIBRATION.

AUTOCALIBRATION depends on the Firmware version loaded in the control unit, it is therefore necessary that a Firmware version that manages the AUTOCALIBRATION is loaded in the control unit, the table shows the Firmware that must be loaded in the corresponding control units to make it available.

Over time some improvements have been made to the SELF-CALIBRATION, so the table shows the minimum Firmware versions to activate it and the latest Firmware versions, introduced with the current software version, which introduce the improvements.

If a control unit has a firmware version prior to the "minimum FW versions" shown in the table, it is necessary to update the firmware in order to activate it.

ATTENTION: after updating the firmware, to correctly activate the AUTO CALIBRATION, it is necessary to reset the control unit (see RESET CONTROL UNIT in the CHANGE chapter)

Autocalibration

If PC Tool connects to an ECU that doesn't run a firmware with the autocalibration feature, the Tool PC will disable the related buttons.

TIPE OF ECU	Minimum FW version	FW version recommended
MP32	MP32_#00527	MP32_#00570
MP48	2001MP_#01115	2001MP_#01149
MP48OBD	2001MPOBD_#00938	2001MPOBD_#00983

PRE-REQUIREMENTS TO AUTOCALIBRATION
In order to execute the procedure, gas equipment is supposed to be installed and tested, petrol and gas in the tanks, warm engine.
Hence should be executed a standard system calibration (fuel, engine, sensors, injectors,…) and specific vehicle strategies enabled, if necessary (Valvetronik, Start & Stop ecc.).
If you are using a response control unit with OBD connection, DO NOT enable Adaptivity during Autocalibration.

AUTOCALIBRATION PROCEDURE
Before enabling the Autocalibration it is necessary to carry out the "Calibration at minimum";

with the Software connected to the control unit, select the icon to open the corresponding menu drop down and select "Go to min calibration".
The "go to min calibration" page will open, select "Start calibration" and follow the instructions in the window.
At the end of the calibration select "Exit", the page will be closed and the software automatically returns to the "Autocalibration" page.
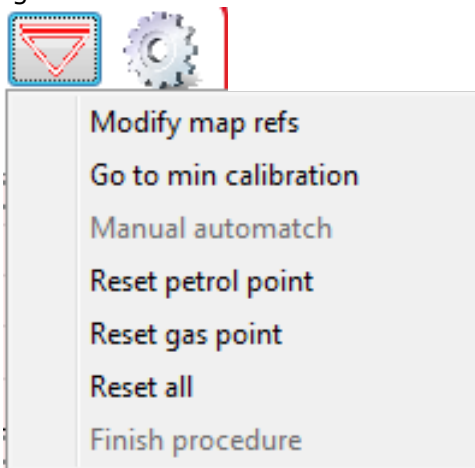
Once the "Go to min calibration" has been completed, select "Enable autocalibration", in this way the control unit sets itself up in the injection time / MAP ratio learning mode, the acquisition field is divided into zones, for each zone it will be necessary to acquire a number minimum of points that will be used for the realization of the petrol / MAP time trend line.

Subdivision of the learning areas and respective minimum number of points to be acquired:

Minimum area   - almeno 3 punti di acquisizione
Low load area   - almeno 3 punti di acquisizione
Medium load area   - almeno 3 punti di acquisizione
High load area   - almeno 1 punti di acquisizione

Each acquisition point is fixed after about 3/4 seconds that you remain still in the same point, it is therefore very important to try to drive while keeping the working point constant.
To do this it is advisable to use high gears and work at low rpm especially to acquire the two upper bands of the map.
There is also a maximum engine rpm limit, normally set at 3000rpm, beyond which points are not acquired, it is therefore necessary to drive below the maximum rpm limit set for learning the points.
If the maximum number of laps is exceeded, a written highlighted in yellow will appear indicating that this limit has been exceeded.

The first step of the self-calibration consists in the acquisition during petrol operation, it will therefore be necessary to drive in petrol mode to acquire the necessary points in the various areas.
When the minimum acquisition points have been reached in an area, the area itself will turn green in the graph, indicating the completion of this area.
In this phase the acquired points will be red as well as the injection time / MAP trend line that will be drawn after completing the four learning zones. pletate ed evidenziate di verde, mentre la zona

Autocalibration

In the image below it can be seen that three areas of the acquisition field are already completed and highlighted in green, while the medium load area, where the necessary points have not yet been acquired, is still to be completed.

In this case it will be necessary to drive in order to work with the motor point within this zone to acquire the necessary points.

The first step consists in driving on petrol: with the engine running on petrol, the system acquires samples in the Injection time / MAP space.

The vehicle driver, bringing the vehicle both to idle and to the various loads on the road, must try to get as many red points as possible, as long as a straight red line is drawn. In this phase, the PC software facilitates the acquisition by suggesting which area is still to be covered with samples, or by offering the possibility to delete points acquired by mistake.
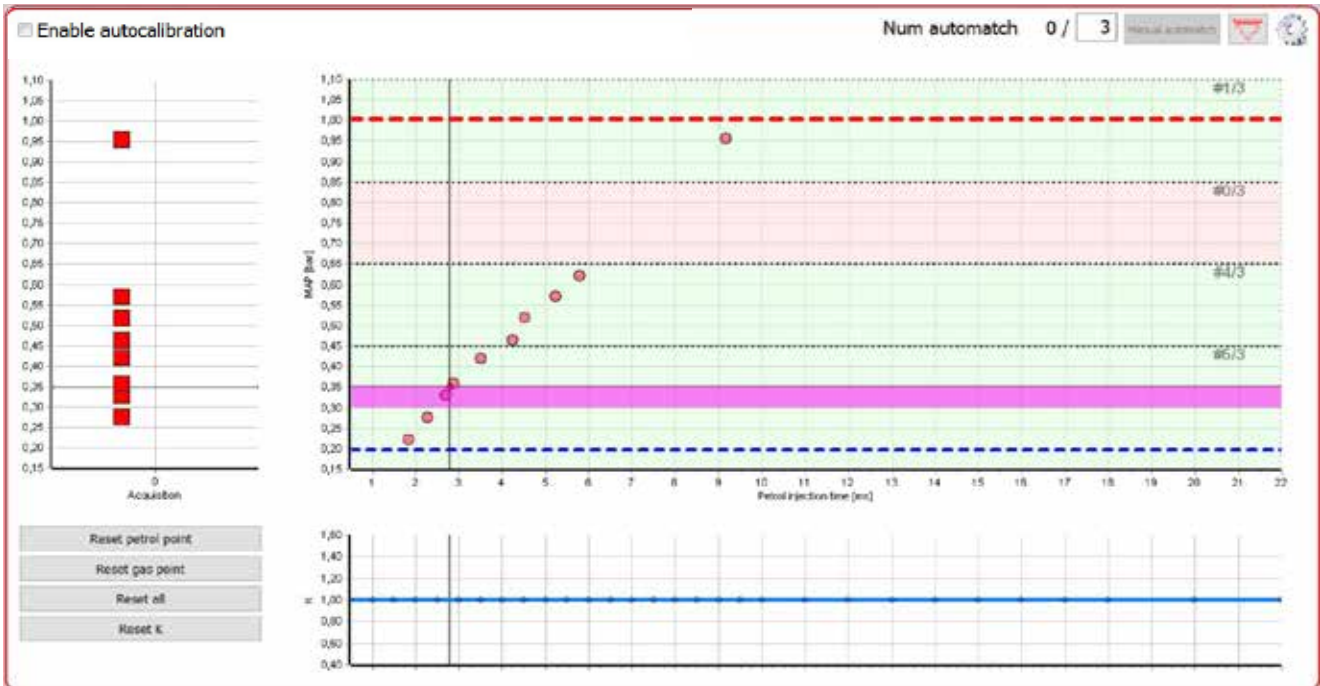
The first step will be completed as soon as the four learning zones are completed and the red line of the injection times / MAP trend will be drawn.

The system can still acquire more points, for each zone, than the minimum points necessary to complete each learning zone.

At the completion of learning areas it will then be possible to continue to turn gasoline to acquire more points honing the trend of the line injection / MAP times.
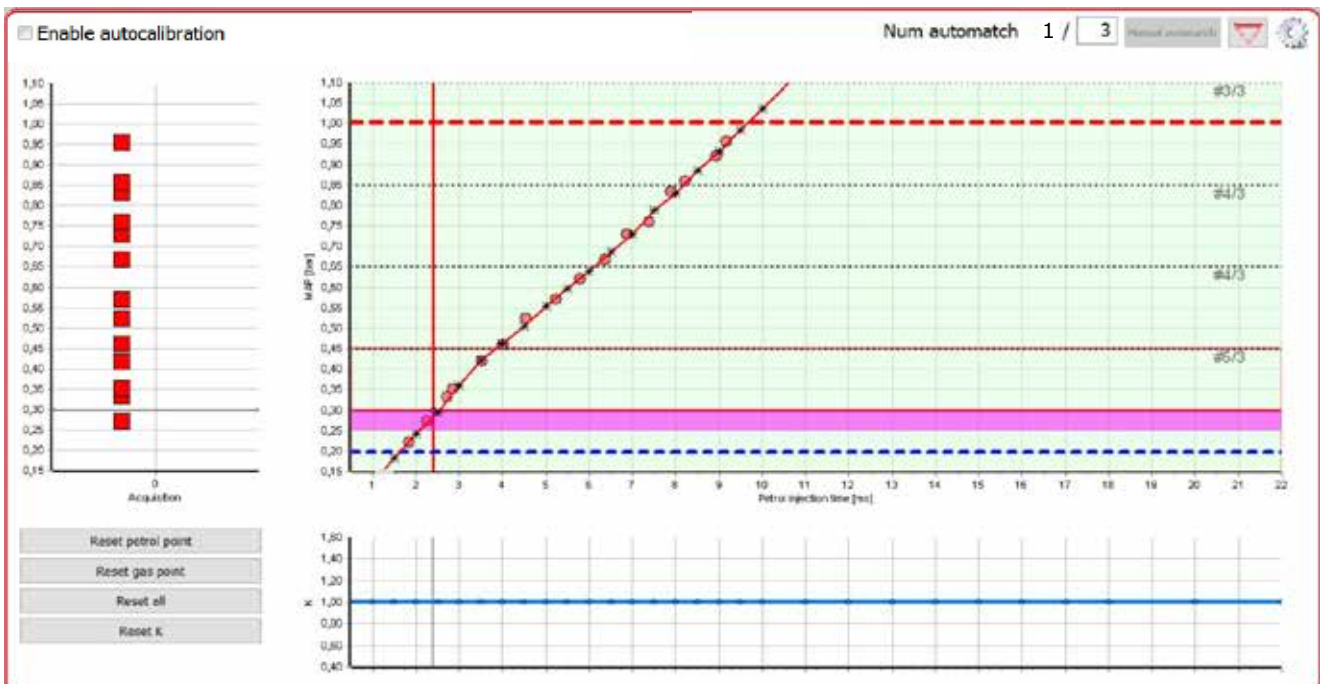
Autocalibration

Once the petrol acquisition has been completed, it will be possible to move on to step 2 by switching the vehicle to gas using the switch.

As soon as the system has changed over to gas, the acquisition of the petrol injection times / MAP ratio will begin during gas operation.

As for step 1 it will be necessary to drive the car in order to acquire the necessary points to complete the four learning areas.

In this phase the acquired points will be green as well as the trend line that will be drawn.

In the image below it can be seen how three areas of the acquisition field are already completed and highlighted in green, while the medium load area, where the necessary points (green) have not yet been acquired, is still to be completed.

In this case it will be necessary to drive in order to work with the motor point within this zone to acquire the necessary points.
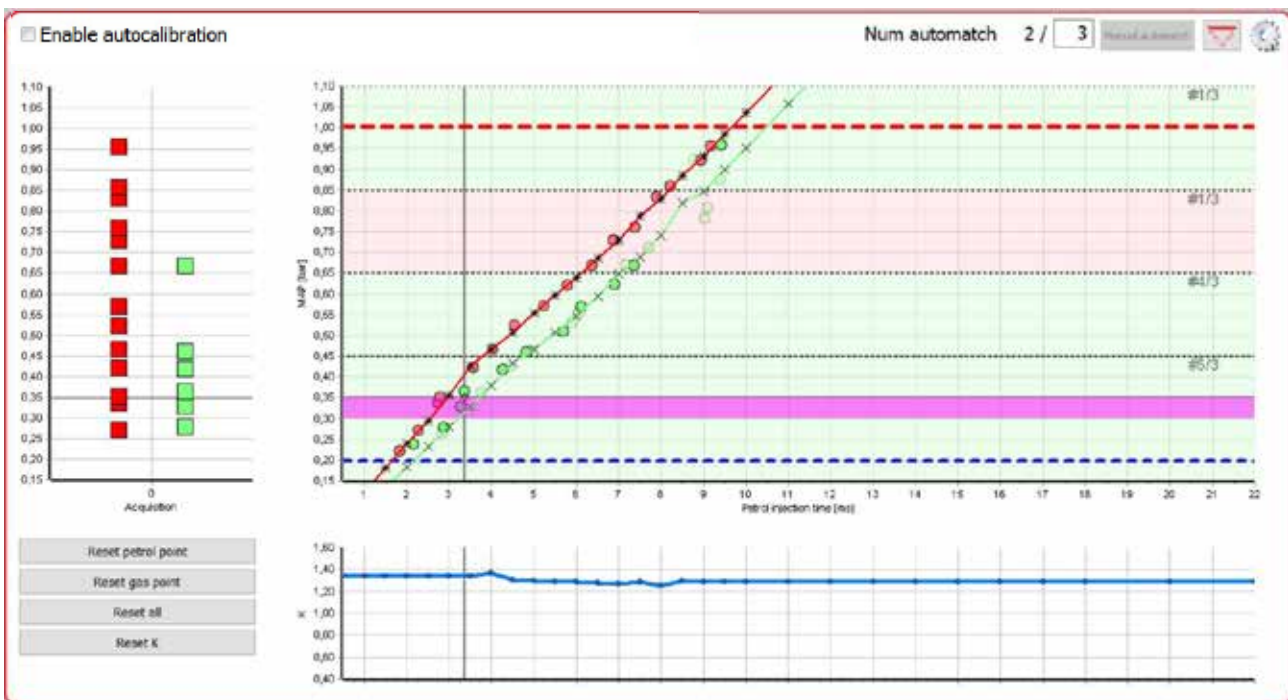
The second step of self-calibration will be completed when the four learning zones are completed and the green line of the injection times / MAP in gas operation will be drawn.

When the four learning zones are completed and the green line is drawn, the system will automatically perform a K gas correction (blue line in the graph below), this operation is called "automatch".

To end the AUTOCALIBRATION step 2 will be repeated three times so that the system can perform three "automatches".

Whenever the system finishes the gas acquisition and performs the automatch it will automatically go to the next automatch.

After the third automatch the AUTOCALIBRATION is finished, leave the check "Enable autocalibration" selected.

After the AUTOCALIBRATION the red and green lines should more or less coincide, it is however advisable to check that the car's correctors work as petrol during GAS operation, if there are areas where they work in a different way, manually correct the map gas (see MAP paragraph).

Autocalibration
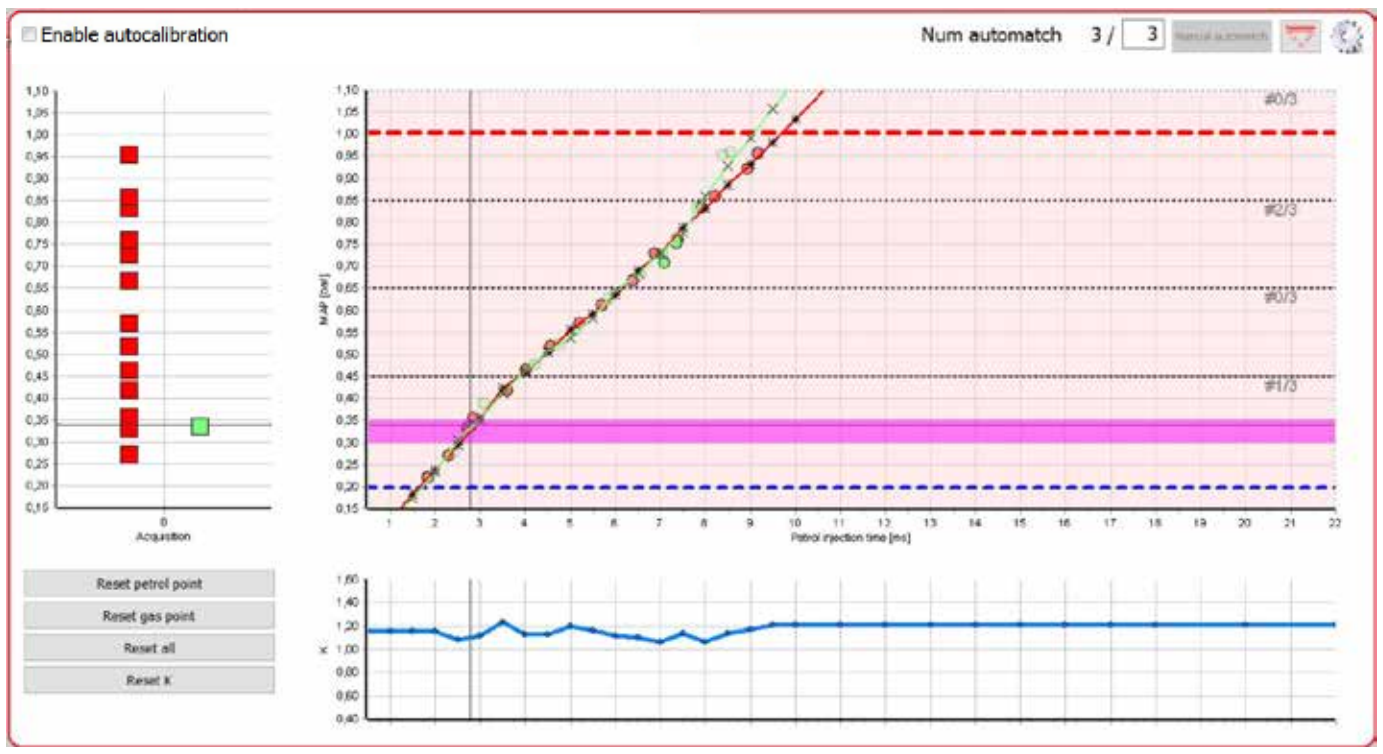
DESCRIPTION OF THE AUTOCALIBRATION WINDOW
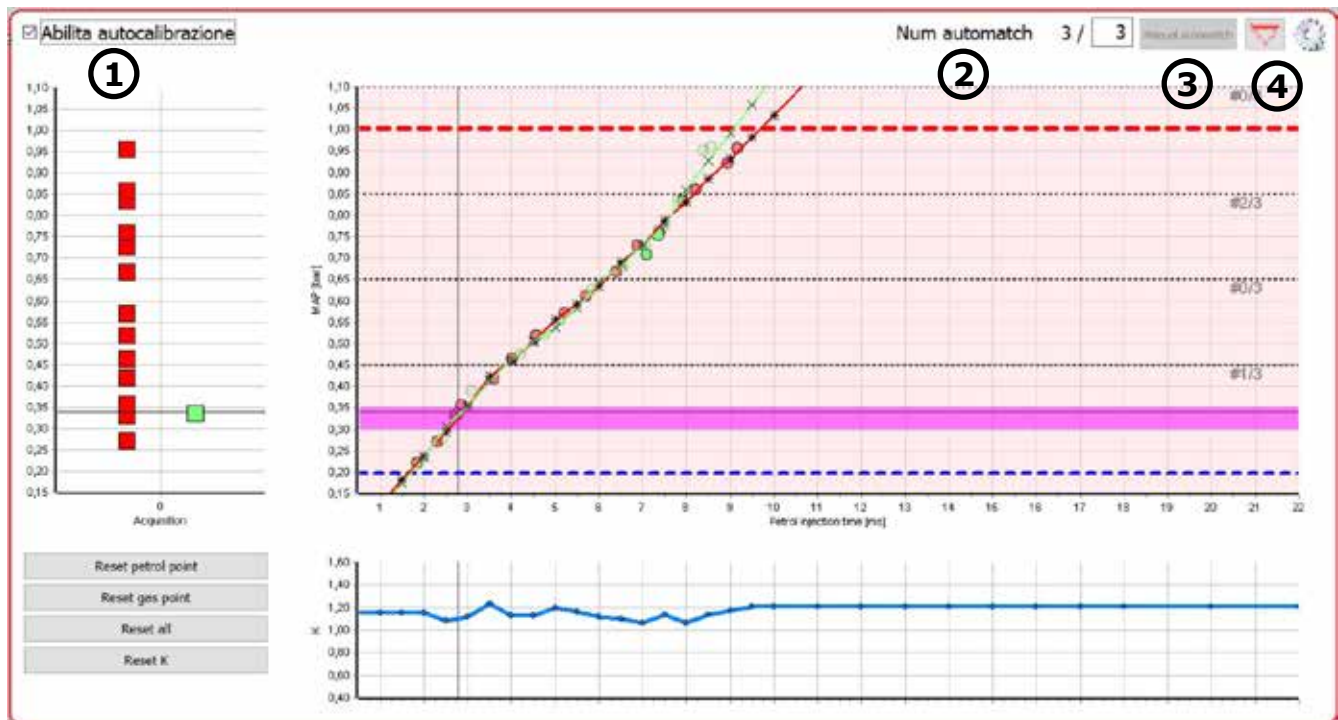
① AUTOCALIBRATION ENABLE:
It allows you to enable / disable the AUTOCALIBRATION strategy
Note: if the Autocalibration is disabled, the system does not use the K Factor correction calculated in the autocalibration, so the enable flag must be switched to on permanently.

② NUM AUTOMATCH (default 3)
It is the number of automatic K Gas corrections that is carried out by the software each time the acquisition of the four learning zones is completed during gas operation.

③ MANUAL AUTOMATCH BUTTON
It is used to carry out an additional AUTOMATCH.
Once the three AUTOMATCHs necessary to complete the self-calibration have been completed, the system will continue to acquire points during gas operation, consequently updating the trend of the green line relating to the petrol injection times / MAP during gas operation.
In this way, when a car comes back for a check, by connecting to the control unit, it will be possible to check if during gas operation the green line has deviated from the red one.
In this case by selecting "MANUAL AUTOMATCH" the system will use the acquired data to make a correction of the "K" Gas.
Warning: the MANUAL AUTOMATCH is available only if the self-calibration is enabled and only if the necessary points have been acquired to complete the four learning zones.
At the end of each MANUAL AUTOMATCH, the system resets the points learned and prepares to start a new acquisition of points.

④ SCROLL
The button give access to a menu.
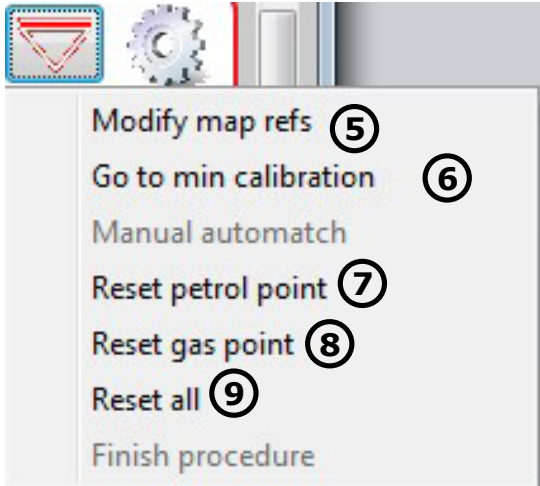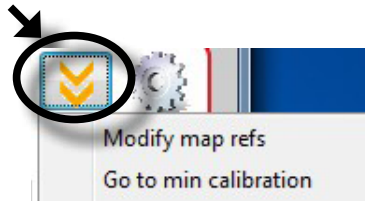
⑤ MODIFY MAP REFS:
Opens a setup window for the calibration of the references of the map, and the admitted range of the "K".
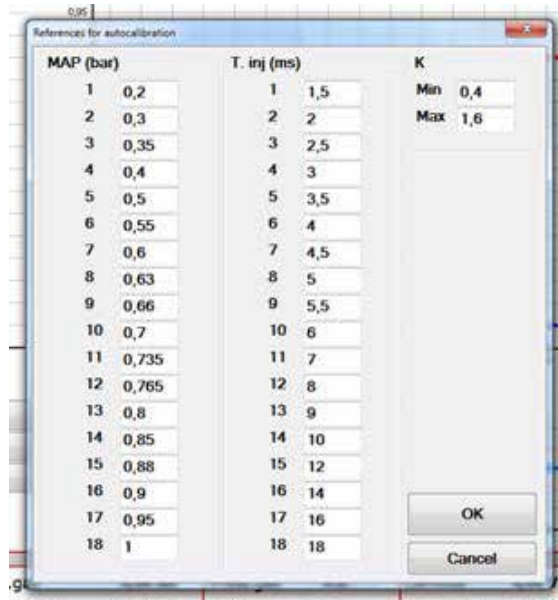
⑥ GO TO MIN CALIBRATION:
It is used to start the MIN CALIBRATION

⑦ RESET PETROL POINT BUTTON:
It resets completely the red dots dataset, and the red line, leaving green dots and "K" Factor line inaltered.

⑧ RESET GAS POINT BUTTON:
It resets completely the green dots dataset, and the green line, leaving petrol dots and "K" Factor line inaltered.

⑨ RESET ALL :
Reset all the autocalibration dataset.
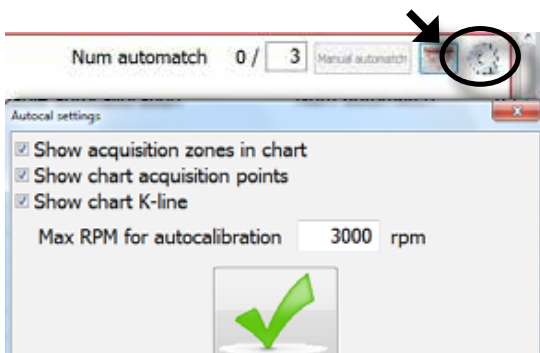
⑩ AUTOCAL SETTING:
Is a panel useful for the customization of the graph view and the maximum level for acquire point during the autocalibration.

MAP CHART ITEMS AND CONTROLS:

The map chart is an active control, intended to reduce the time of completion of the autocalibration. It displays multiple data, and using the mouse actions the user can :

• Select and delete one or more dots
• Drag up and down the maximum MAP threshold
• Drag up and down the minimum MAP threshold.
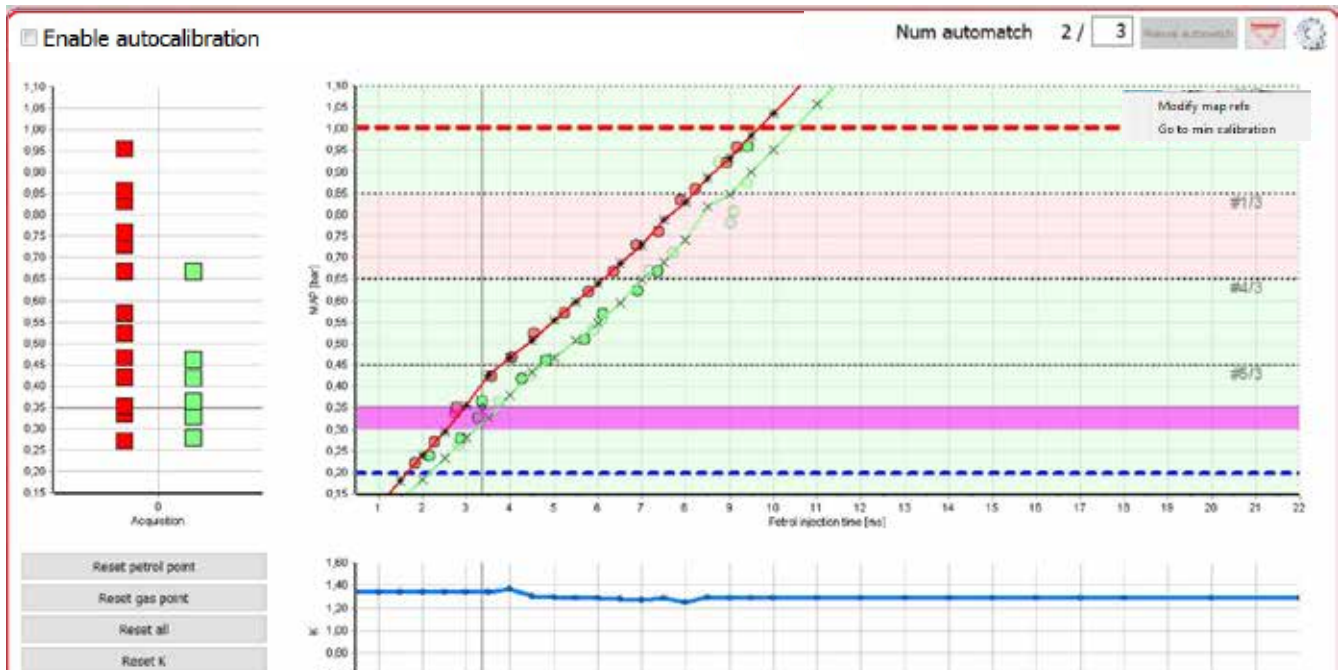
Red rhombus dot: is the current working point of the acquisition. It is visible only if the ECU is connected and the engine is on, and the fuel is petrol.
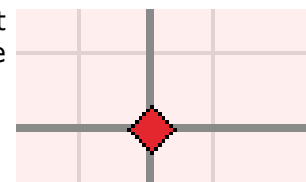
Green rhombus dot: is the current working point of the acquisition. It is visible only if the ECU is connected and the engine is on, and the fuel is gas.
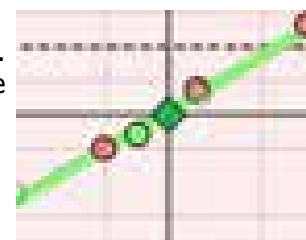
Green dots: are the samples acquired during the trial gas mode.
Red dots: are the samples acquired during the petrol mode.
Red square: appear when you acquire 7 red dots in the same subzone, appear in the left chart. The zone become green if you have at least one red square.

Green square: appear when you acquire 7 green dots in the same subzone, appear in the left chart. The zone become green if you have at least one green square.

Green line: resulting line from the interpolation of the green points that indicates the trend of the petrol injection / MAP times ratio during gas operation. The line is drawn only after the four learning zones have been completed and colored green.
Red line: resulting line from the interpolation of the red points that indicates the trend of the petrol injection times / MAP ratio during petrol operation. The line is drawn only after the four learning zones have been completed and colored green.

Horizontal red dashed line: maximum MAP threshold. Samples acquired above this line will be ignored. The line can be dragged with the mouse.

Horizontal blue dashed line: minimum MAP threshold. Samples acquired below this line will be ignored. The line can be dragged with the mouse.

Horizontal gray dashed lines: they split the chart in 4 zones. To draw a line, the four stripes must be green. This is a useful suggestion that the driver can use to drive in that area, in order to shorten the procedure.

Red area color: indicates that not enough points have been acquired in that area.

Green area color: indicates that a sufficient number of points have been acquired in that area and is completed.

Acquisition graph: on the left side of the page is plotted a graph of squares, that gives the driver a quick idea of the coverage of the acquisition. The denser the squares in the two columns, the more accurate is the autocalibration. Optionally the chart can be hidden.

K Factor chart and controls: in the lower part of the page is the graph of the K factor, that is the output of the autocalibration procedure. The blue dots can be manually drag, changing the K correction within admitted range. By right-clicking the mouse on the graph, a popup menu allows the reset of the graph, and the export of the graph to a picture.
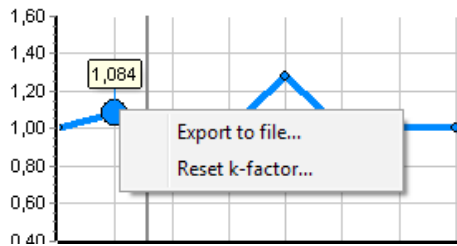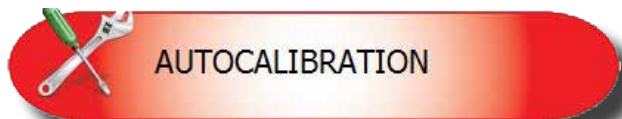
AUTOCALIBRATION

In this section it is possible to automatically calibrate the GAS control unit so as to get car carburetion that on the average is correct during GAS operation.
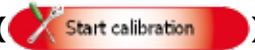
Before starting the self-calibration procedure, you have to check that the vehicle is in good operating condition with petrol as the Gas fuel delivery system is based on the Petrol system.
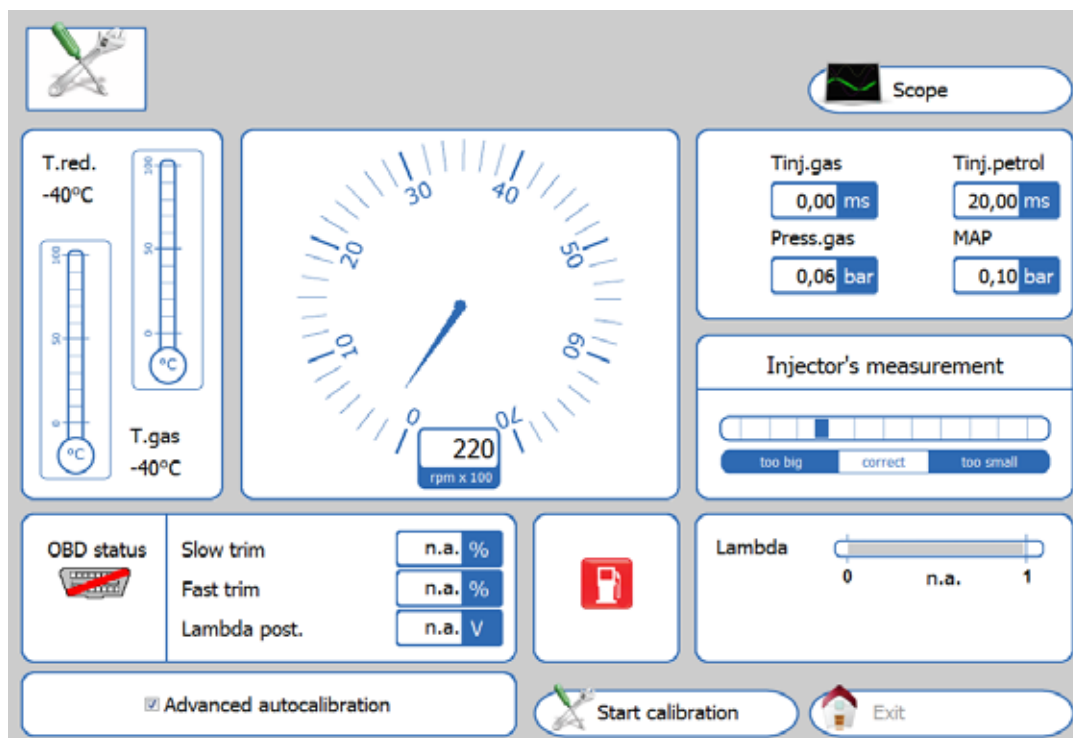
Follow these instructions for self-calibration:

1) Start the vehicle running on Petrol and check that the following parameters are correct:
- **PETROL injection time**
- **Number of rpm**
- **GAS temperature**
- **Reduction gear temperature**

2) Wait for the engine to reach the operating temperature.

3) Start the self-calibration procedure by pressing the **Start calibration (** **)** key and follow the instructions displayed on the monitor.

Once the number of engine rpm specified on the monitor is reached, the control unit will perform several switch overs from petrol to gas. It is important that the accelerator be kept steady in this condition, even if the revolutions shift, without trying to bring the number of rpm back to the value set during the PETROL operation.

After SELF-CALIBRATION is completed, try the vehicle running on gas to verify it operates correctly, and if necessary, correct the calibration using the map (see paragraph **"Modify carburation"**) as previously illustrated.

Display

All the signals managed by the control unit are displayed on this page.
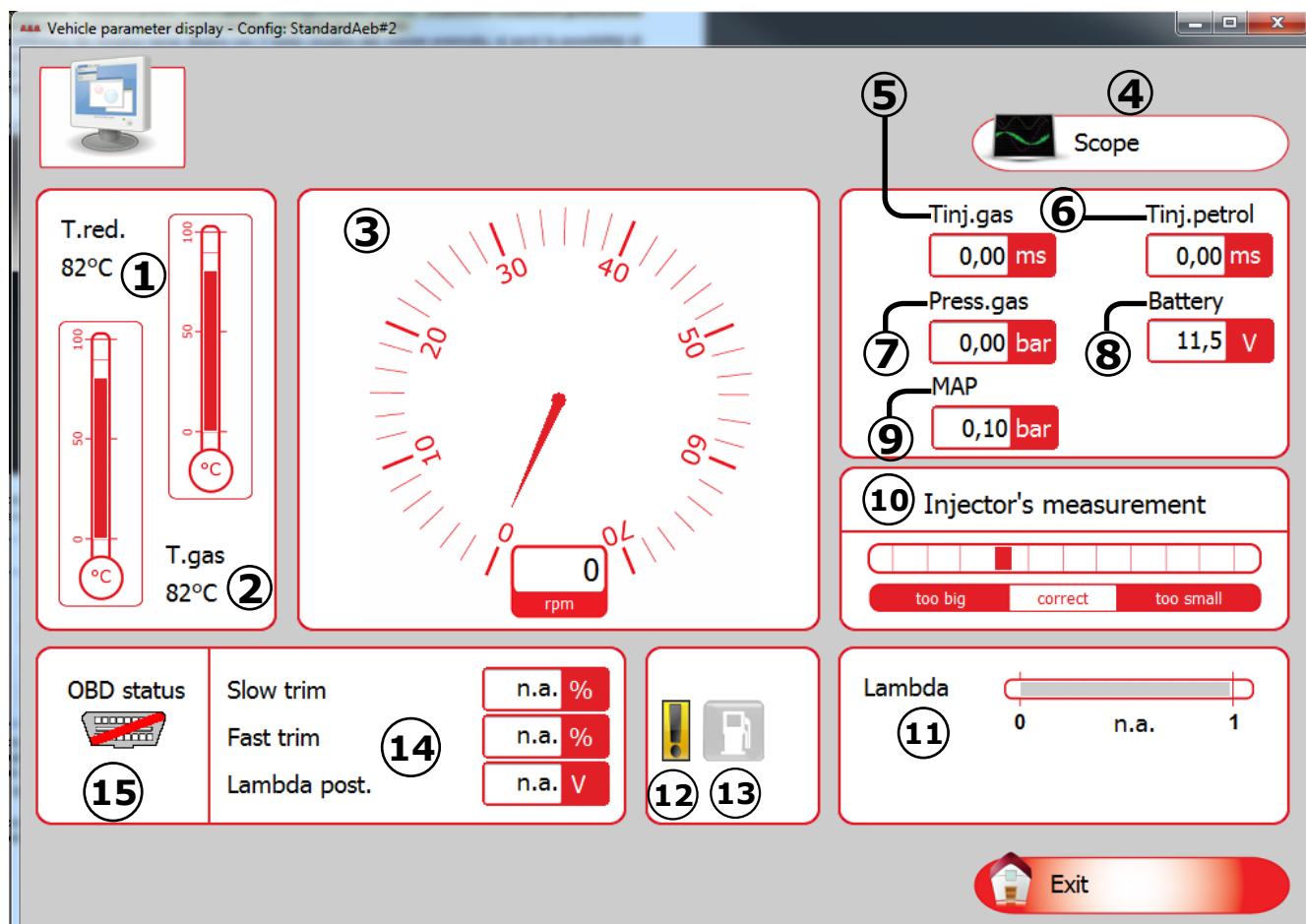
1) It displays the temperature of the GAS reduction gear (expressed in °C);

2) It displays the gas temperature (expressed in °C);

3) It displays the number of engine revolutions in real time (rpm);

4) Opens the OSCILLOSCOPE page from which it is possible to view the trend of the control unit parameters (see dedicated paragraph);

5) It displays the Gas injection time in real time (ms);

6) It displays the PETROL injection time in real time (ms);

7) It is the pressure difference between the gas in the gas injectors and that in the intake manifolds read by the pressure gauge supplied in the kit (expressed in Bar);

8) It displays the battery voltage read by the control unit (attention: this parameter is displayed only during gas operation);

9) It displays the pressure in the intake manifolds (expressed in Bar);

10) It provides information useful for correctly sizing the nozzles installed on the GAS injectors.

11) It is the voltage of the lambda probe(s).
If the wires of the lambda probe(s) are not connected, there will be no display;

12) It shows the presence of an error in the diagnosis of the gas control unit;

13) It shows if the car is running on GAS or PETROL;

14) It indicates the parameters displayed by the OBDII plug

15) It indicates the OBDII plug status (connected/disconnected).

Display chart

Selecting "Scope" (see chapter DISPLAY) opens the relative window from which it is possible to acquire all the signals managed by the control unit, you can start an acquisition and see the trend of the signals in real time, save an acquisition made and load a previously saved acquisition.
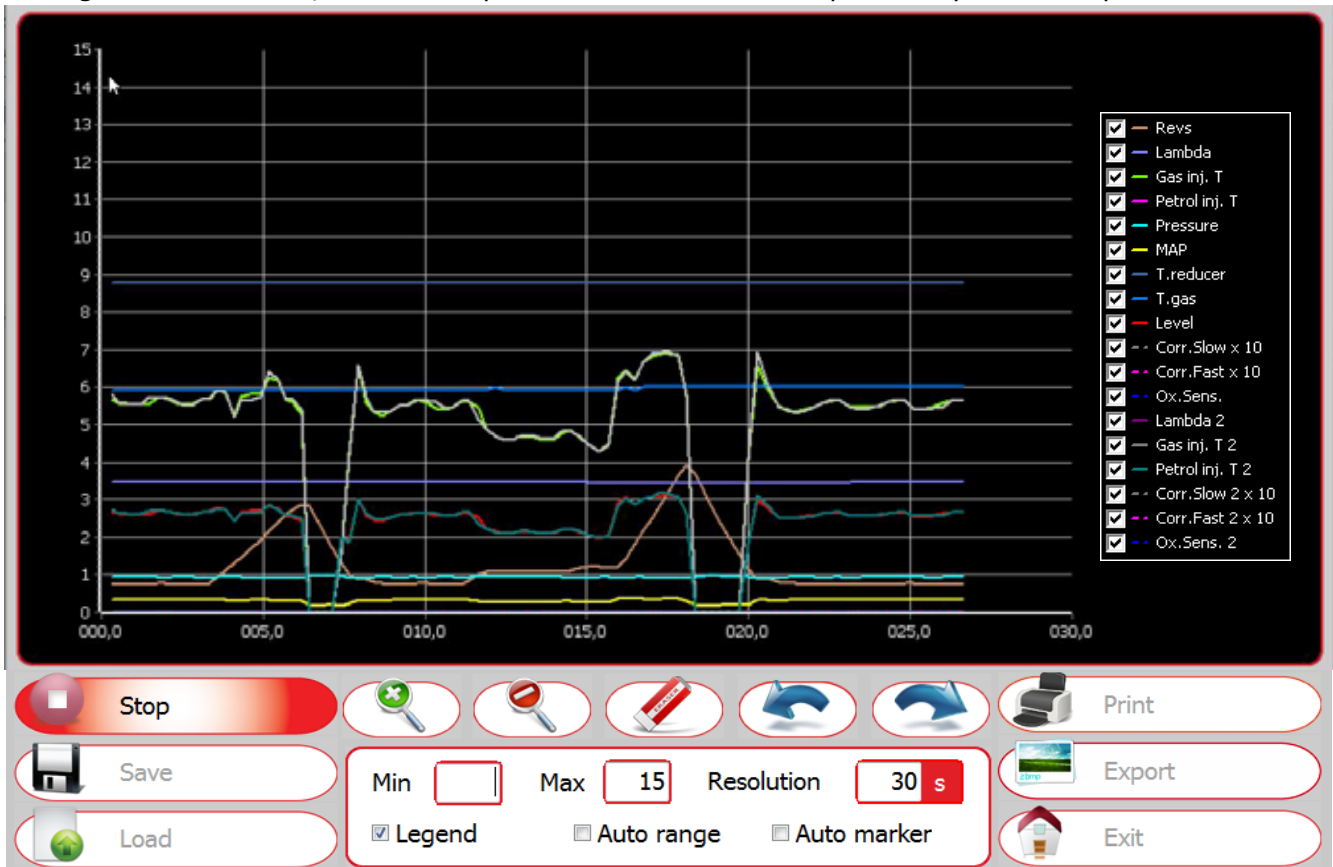
1) In the "Display Chart" menu, you can do the following:

• Start/Stop: It allows you to start and subsequently stop data acquisition.
• Save: It allows you to save the display chart displayed.
• Load: It allows you to load a previously saved display chart.

• : This button is used to zoom in on the display chart.

• : This button is used to zoom out on the display chart.

• : This button is used to remove the orange markers from the map.

• : This button is used to move onto the previous marker.

• : This button is used to move onto the next marker.

• Min/Max/Resolution: It is used to set the display chart resolution.

• Legend: It is used to select all the parameters (traces) that you want to show on the display chart, diversified according to different colours.
• Auto range: If you enable this function, the display chart will be automatically adapted despite the set resolution range.
• Auto marker: If you enable this function, the SW will automatically add the Markers on the display chart when certain events occur (Extra injections and petrol contributions) or when certain parameters are changed (Map and split fuel).
• Print: It is used to print the display chart currently on the screen.
• Export: It is used to export the display chart to an image file.
• Exit: It is used to exit the "Display chart" menu.

N.B. **Traces "T inj.gas 2" and "T inj.benz.2" refer to the "GAS injection Time" and "PETROL injection Time" respectively.**

Display chart

When you click on the question mark button **?** in the bar of menus above the display chart, the following legend appears, which will help you identify the Markers that can be displayed on the display chart.

Using the mouse, click on axis X of the display chart; you can enter an orange Marker to display the trend of the parameters of the display chart in a certain time range.This marker can be removed by clicking on the button "Remove cursor" or alternatively by clicking on the button

You can press function button F12 on the PC keyboard to enter a red marker on the display chart, at any time, to point out the occurrence of a certain event.

DIGITRONIC
Smart Autogas Systems
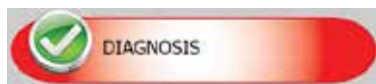
If present, one or more errors detected by the GAS control unit are displayed on this page. There is an example of a display of some of these errors in the figure below.
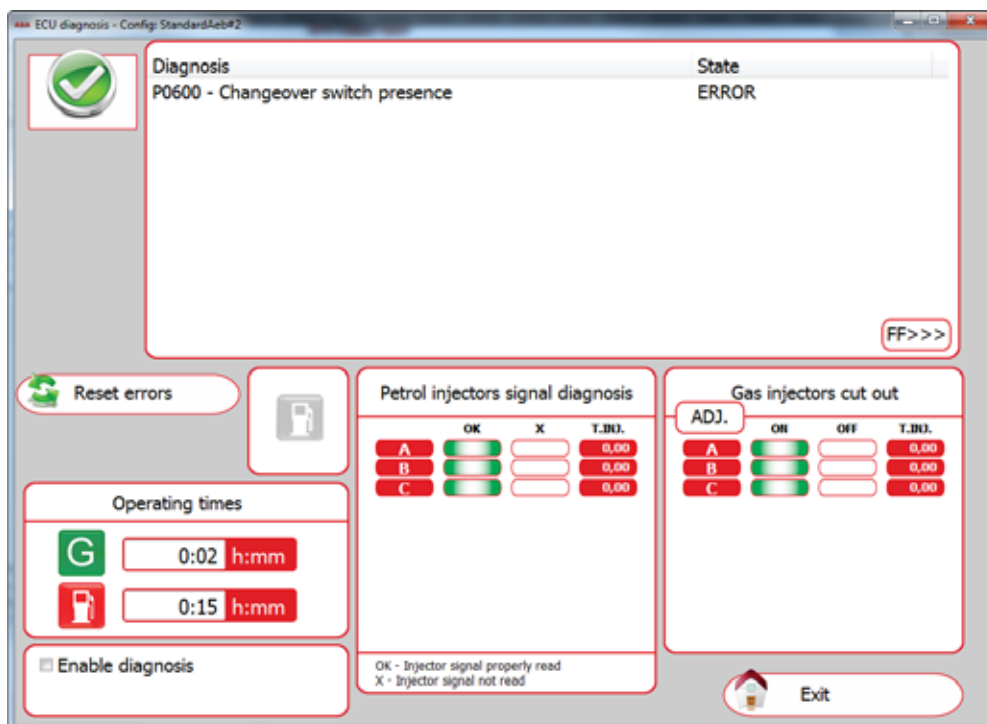
This page displays, if present, one or more errors detected by the GAS control unit.
The previous figure shows an example of how some of these errors are displayed.
The following table shows all the errors that the Gas ECU is able to memorize.
The AEB codes are displayed only if the "Diagnosis Codes" function is active (ref. Paragraph Main menu, "Diagnosis Codes" option).

| AEB CODE	DESCRIPTION
P0201	Gas Injector 1
P0202	Gas Injector 2
P0203	Gas Injector 3
P0204	Gas Injector 4
P0205	Gas Injector 5
P0206	Gas Injector 6
P0207	Gas Injector 7
P0208	Gas Injector 8
P0209	Gas Injector 9
P0210	Gas Injector 10
P0230	Reducers Gas Valve
P0231	Tank solenoid Valve
P0190	Gas Pressure Sensor
P0180	Gas Temperature Sensor
P0181	Gas Temperature
P0105	MAP Sensor
P0115	Water Temperature Sensor
P0600	Change Over Switch

NOTE: Switching over to petrol is envisaged for some errors. In this case, the GAS control unit will automatically switch over when the error is detected.
**To return to GAS operation, it is necessary to shut down and re-start the vehicle.**

Enable diagnosis: this flag is used to enable / disable the diagnosis of the gas control unit.
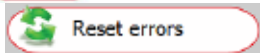
Counters (hh:mm) register the vehicle's time of operation (shown in hours and minutes) during GAS ( )

and PETROL ( ) operation, it is found in the "Function Time" option.

Diagnosis

Freeze frame `FF>>>` : by selecting this button, it is possible to view the "freeze frames GAS" page in which it is possible to view all the operating parameters of the control unit when the first diagnostic error is stored.

In this way it is possible to know in which operating condition the error was memorized by the gas ECU.

The following screenshot shows an example of how it will appear:
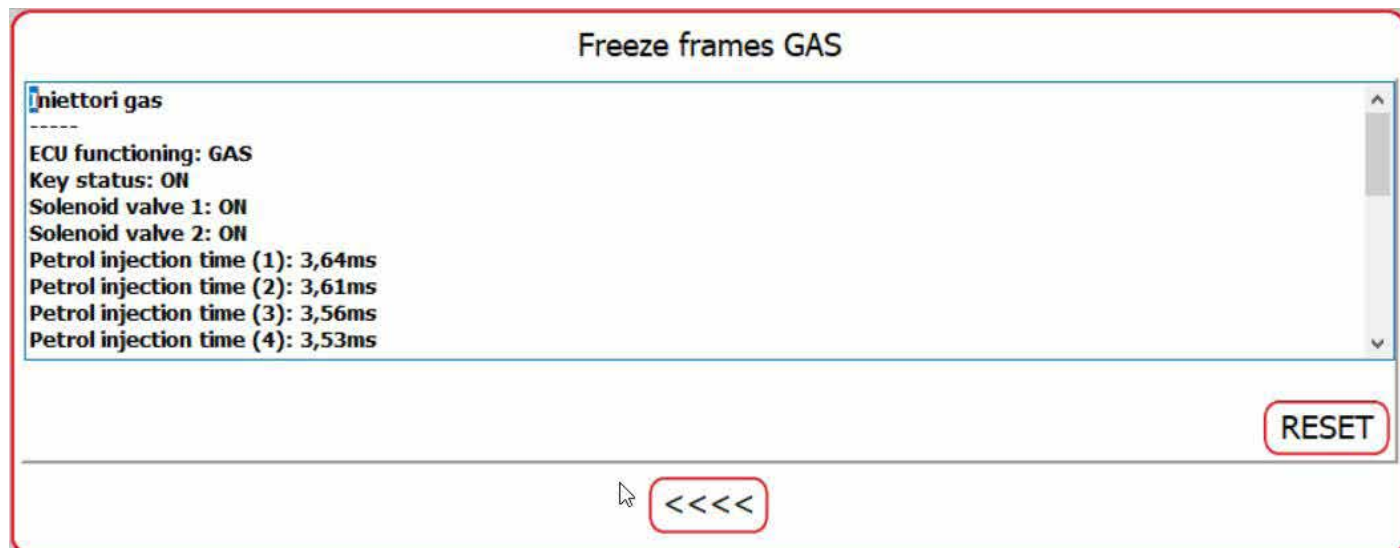
Selecting the key `<<<<` will return to the previous error screen.

Selecting the key `Reset errors` all stored errors will be cleared.

Selecting the key `G` the switch will be made from gas to petrol and vice versa.

Petrol injectors signal diagnosis This screen will display all the petrol injection times read by the ECU.

In case the time of a petrol injector is not read, it will not appear in the "**OK**" column, but will be displayed in the "**X**" column.

N.B. In the case of 5/6/8/10 cylinder cars, the PETROL injectors and the corresponding GAS marked in red refer to the second bank.
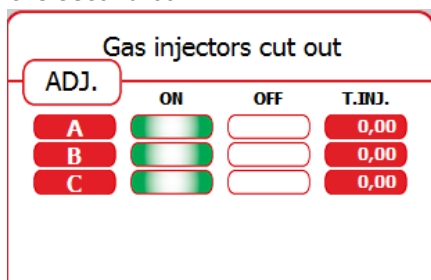
Gas injector cut out: From this screen, during gas operation, it is possible to exclude each individual gas injector and reactivate the corresponding petrol injector.

This function is particularly useful for checking the correct correspondence between the petrol injectors and gas injectors.
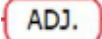
Also in the case of a mal-operation of the gas engine, excluding a gas injector at a time, it is possible to tell which cylinder is caused the problem.

To exclude a gas injector, position the mouse on the "OFF" column and select with the left button the injector to be excluded.

ATTENTION: if one or more gas injectors were excluded and the diagnosis page was exited without returning them to gas, they would remain running on petrol as long as the software remains connected to the control unit.

When the software is disconnected and the vehicle is switched off, the gas injectors excluded will resume normal operation on gas.
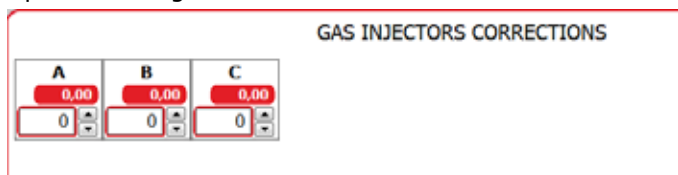

Selecting the key `ADJ.` the "gas injector corrections" window shown on the side will be displayed.
From this page it is possible to change the dead times of the individual gas injectors to allow the optimization of the flow rate of the individual injectors, if it is not uniform between one injector and the other.

By acting on the "Gas injectors cut out" commands, you can work on one gas injector at a time, using the cursors to increase or decrease the dead times (the unit is equivalent to 0.1ms).
At the end of the settings it is necessary to check the correctors.

Save/Load configuration

SAVE CONFIGURATION
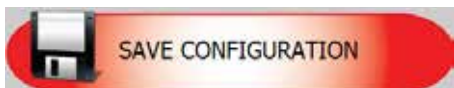
It is possible to save all calibration parameters set in the **"Vehicle configuration"** menu in a file in this submenu.
This file can later be used to set other control units installed on vehicles of the same model and with the same type of fuel, NATURAL GAS or LPG.
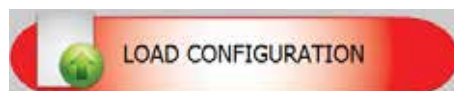
Note: The "Control unit type" and "Fuel type" menus (in the lower part of the window) appear **only if the control unit is not connected to the PC**.
The "Fuel type" parameter cannot be modified because it depends on what is set in the "Vehicle configuration" menu (see paragraph **"Change-over"**).
If the control unit **is connected** to the computer, this information is saved automatically.

To save, specify the "Name of the file to save" and click on OK.

By selecting a configuration in the list of those available, you can also sent the file by e-mail. It will be automatically attached to the message.

LOAD CONFIGURATION

It is possible to upload a pre-existing configuration into the control unit from this submenu.
The configuration files are in two separate directories: one for LPG configurations and the other for NATURAL GAS configurations.

Before uploading a configuration it is necessary to go to "VEHICLE CONFIGU-RATION" (see paragraph **"Change-over"**) and select natural gas or LPG in "Fuel type", based on the configuration you want to upload.
The "Control unit type" and "Fuel type" menus (in the lower part of the window) appear **only if the control unit is not connected to the PC**.

If the control unit **is connected** to the computer, only the configurations available for automatically recognised control unit are proposed in the list.

Select the file you want to upload and click on OK.

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ECU reprogramming

From this submenu it is possible to update the FIRMWARE (the management program in the control unit) of the gas control unit after updates.
The latest firmware version available when the CD-ROM is created is always included in the calibration software installation CD-ROM, whereas any subsequent versions can be sent by e-mail or on any other removable support.

WARNING	⚠	WARNING

**The correct path for saving the programme file (firmware) is the following:**
C:\DOCUMENTS AND SETTINGS\PERSONAL ACCOUNT\DOCUMENTS\MULTIPOINTINJ\FIRMWARE where "PERSONAL ACCOUNT" is usually the"USERNAME" or the PC-ID.

IT IS THEREFORE NECESSARY TO FOLLOW THE SAME PATH TO SAVE POTENTIAL UPDATES AND NEW FIRMWARE. IT IS RECOMMENDED TO KEEP A COPY OF THE OBSOLETE FIRMWARE IN THE PATH IN ORDER TO KEEP A FILE-HISTORY IN THE SAME FOLDER.

To update the FIRMWARE, select "REPROGRAM CONTROL UNIT". The window "Select program file" will be displayed.
Select the update file and click on open.
If there is more than one file, select the one with the highest number (most recent version).
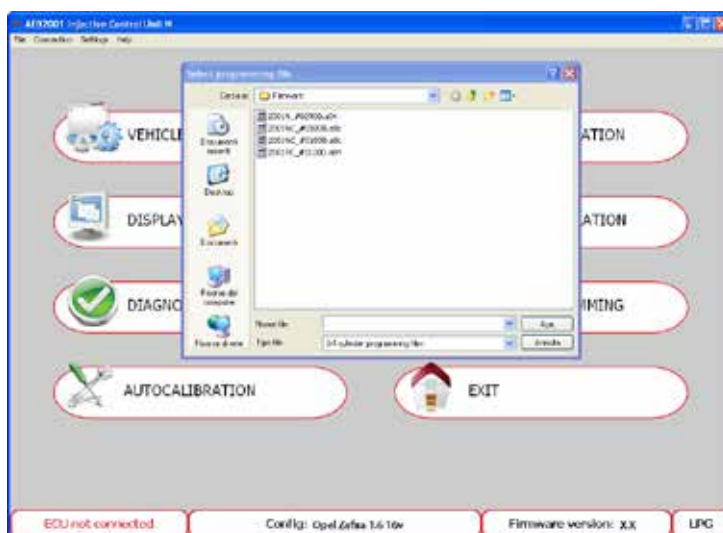
NOTE: To avoid losing the configuration of the control unit, make sure that the control unit is connected to the computer before updating. Whether or not the control unit is connected is indicated on the bottom left-hand side of the main menu screen.
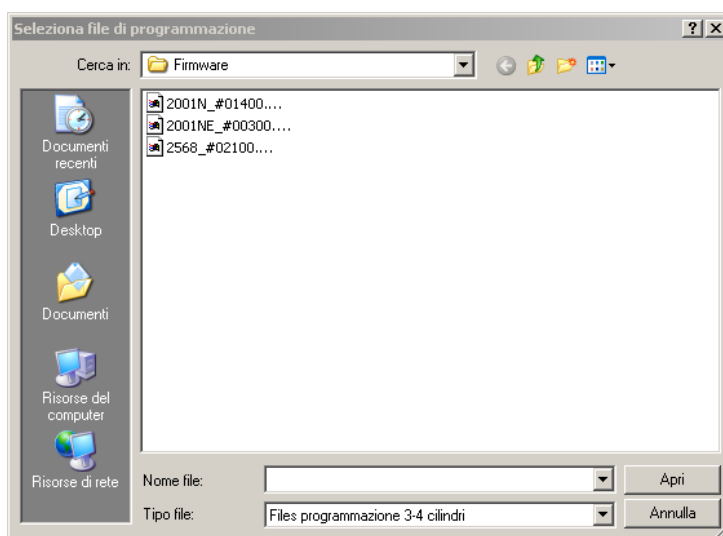
IMPORTANT: to run the reprogramming, it is necessary that Internet Explorer 5.5 or higher be installed on the PC.

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