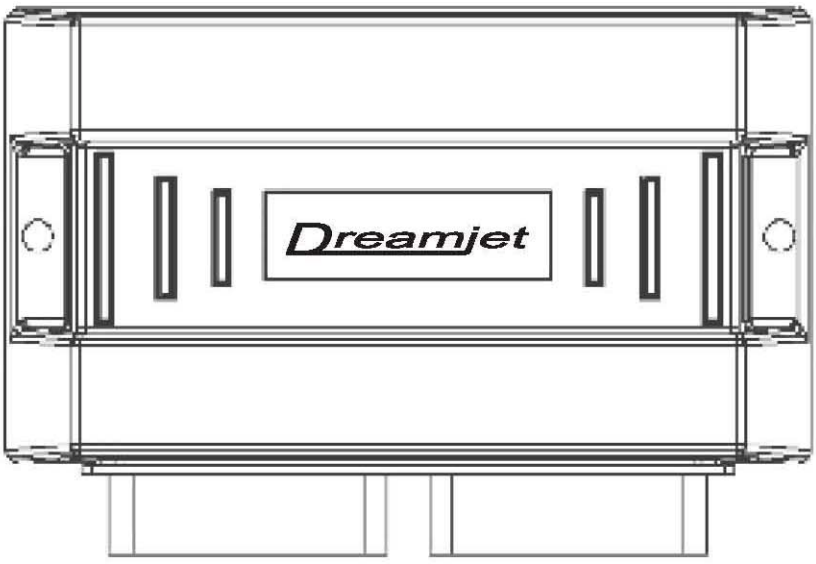
# Installing & Adjustment manual

# DreamJet

LPG & CNG Sequential Injection System



## Preparations for the system settings

After all parts of the system have been properly installed, detailed check of the mechanical and electrical parts of the system must be done separately. When the mechanical installation is properly done check of the electric connections of the following elements is followed:

• **Powering both electric valves** (particular attention should be granted to their ground witch must be independent from the connection of the measuring sensors with a separate cable to a substantial ground from the body of the car or directly from the terminal of the accumulator)

• **Cut-off of the petrol injectors** (in some cars an inversion of the entering connectors is required – connected to the petrol computer). When connecting the electronic control unit (ECU) with cables without injector connectors (particularly with Japanese, Americans and Korean cars) be careful for the sequence and the equality of the connections for every separate cylinder

• **Supply of the injector rail** – in this case the possibility for a mistake is reduced to the minimum. Attention should be granted to sequence of the cylinders. Much more attention should be granted to the ground connection of the rail. Here should be used cable terminals and screws with nuts. In some places the paint, dirt and anticorrosion plate must be cleaned where is needed.

• **Connecting of the sensors** – an independent supply is provided by separate cables, terminals and connectors directly from the ECU. It is important to know that the ground of these sensors should not be used for supplying other elements of the system – injectors, valves, common power of the ECU etc.

• **Level meter with turnover switch and buzzer** – separated cables are provided for them directly from the ECU and from the level meter sensor, mounted on the gas tank.

• **Interface connection between the programming computer and the ECU** – special cable and connectors

• Supplying and information cables – “+12V”, “+12V engine on”, “+12V from the fuel pump” and “ground cable”. The ground cable should be connected directly and stable to the terminal of the battery and the other 3 are not to be connected together, because they have their own

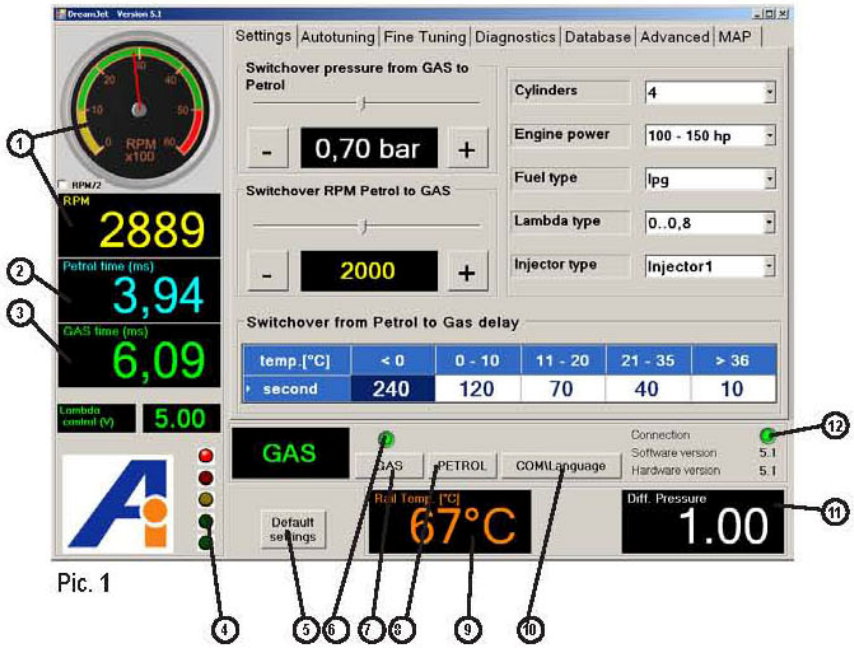
object. The “+12V engine on” cable should not be mistaken with the “ACC” terminal.

When the mechanical and electrical parts are properly installed you can go to starting the engine on petrol, warming it up, and primary checks and settings. To guarantee the automatic tuning some general car data is being required.

## Legend

### Menu tuning and autotuning

1. RPM meter
2. Petrol injection time in milliseconds (ms)
3. GAS injection time in milliseconds (ms)
4. O2 sensor level
5. Button for factory settings
6. GAS lamp – it’s green when the engine is working on GAS
7. Button GAS - you can switchover to GAS anyway
8. Button Petrol - switchover to petrol
9. Current temperature on the GAS rail
10. Button for language and “COM Port” setting
11. Differential pressure (0-3bar)
12. Communication - lights on green when is normal, lights red when is missing or is incorrect.



Pic. 1

## SETTI NGS *(Pic. 1)*

It is necessary to select from the first menu “**SETTINGS**” number of the cylinders, app. power in h.p., fuel type (LPG or CNG), Lambda type (for properly representation of Lambda level) and Injector type.

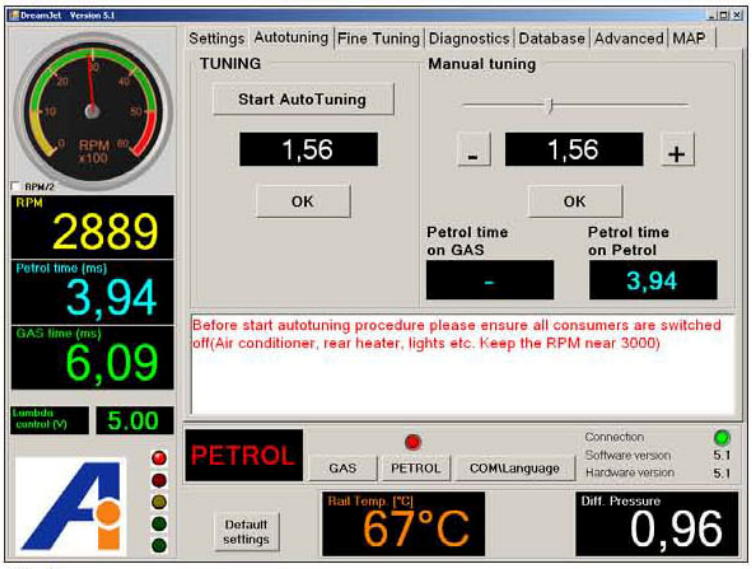
**Switchover pressure from GAS to Petrol** - pressure of the automatic switchover from GAS to Petrol, recommended value 0.7 of working pressure.

**Switchover RPM from Petrol to GAS** - The system allows to turnover from Petrol to GAS when the reached RPM is chosen by the slider. If it is in right end position, the function is switched off and the system is turnover independently from RPM.

**Switchover from Petrol to GAS delay** - The table shows after what time /seconds/ after the engine is started, the system will switch to gas depending of the rail's temperature. Changing the table ca be made by

"Double-clicking" over the cells, than on the screen will appear a window in which the value can be changed. There is possibility for simultaneously programming of several cells from the table by selecting them with the mouse and the "ENTER" button. Again a window will appear for selecting the values /the times/. The entered value can be shown as absolute, linear or percentage added.

## AUTOTUNING *(Pic. 2)*




Pic. 2

"**AUTOTUNING**" *(Pic. 2)* it is realize when all the consumers are switched off (AC, rear defroster, mirror defroster, cooling fan, lights, fog lights, etc.). At 3000 RPM ± 500 RPM/min without load (if gear is automatic – in "P" position), pushing the button "Start auto tuning" and keeping upper RPM, after 20 ÷ 50 sec in the dark field under the button will appear the number from 1.0 to 2.5 and the message "OK" in white field – it is mean the automatic tuning is finished. If the auto tuning is not working, the cause will appear in the white field. When you solve the problem (change the nozzles increase the RPM or others) start the automatic tuning again.

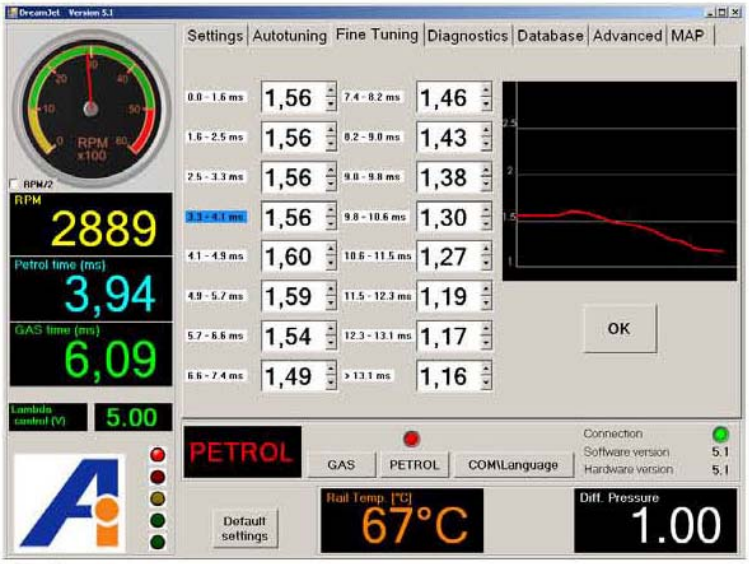
Manual adjustment – For many reasons the auto tuning could not be passed, so the system offers tuning by hand, it is makes this way:

Put the engine on idle. In the left dark square you see the petrol injection time on Petrol. When

the Petrol ECU really starts to control the time for idle, you have to turnover on GAS. In the right square you see the Petrol time on GAS, so after a few seconds the Petrol ECU starts to control the time. If there is difference between two times, by slider you have to adjust the time to be equal with other one.

If the time is bigger, you move the slider right and vice versa. When you equalize the times, button "OK" writes the parameters into the GAS ECU.

## FINE TUNING *(Pic. 3)*

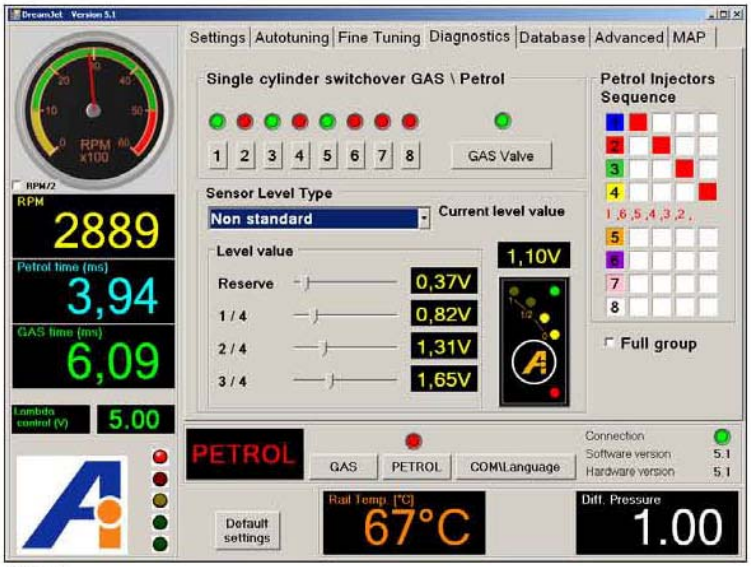



Pic. 3

For a more precise adjustment of the system you can go and execute it by using the "**FINE TUNING**" *(Pic. 3)* menu. In this case you have to ensure driving conditions with proper different loads for the engine, adjusting each coefficient to equalize the petrol times on Petrol and GAS modes. It is a hard procedure, but it ensures the right adjustment in any loads of the car engine. You also have to make fine tuning when you notice the change in the way of working of the engine (loosing power or increasing the consumption of GAS fuel).

On the screen you see 16 coefficients; the working in each moment is colored in blue. Ensure permanent load, RPM and throttle position (gas pedal) switchover from Petrol to GAS and if the petrol injector times are changing, correct the colored in blue coefficient simultaneously with switching over. If the petrol time when turn over from Petrol to GAS is increased you have to increase the coefficient and vice versa till you reach the equality of these petrol times. It is recommended to use this procedure for more load conditions of the engine (at least 6-10). If you didn't manage to cover all driving modes using the arrows adjust all uncalculated coefficients near to the calculated ones. Looking over the curve, you'll try to make this curve smoother. *(Pic. 3)*

# DIAGNOSTICS *(Pic. 4)*




Pic. 4

From the menu "**DIAGNOSTICS**" *(Pic. 4)* the right connection of the Petrol injector wires could be checked, also their sequence. If the control system of Petrol injectors is sequential, you could see on the left upper side of the screen real RPM of the engine, also sequent working of the colored squares for each cylinder separately in the field "Sequence of Petrol injectors". If the system is "Semisequent" or "Full group" from the type of moving of the red squares you could determine the type of the Petrol ECU control. Inthis case you need to switch check box "RPM/2" under the round RPM meter. If some red square is missing you have to check connection for corresponding cylinder, if it is for all cylinders – you have to reverse both wires from our harness, connected to the Petrol ECU.

If the engine is "Full group" or "semisequential", you can choose this check box. In this case the GAS injectors will inject two times less fuel (missing one cycle). On that reason the nozzles have to be one or two sizes bigger. From the menu the GAS valve or each cylinder could be switched, to localize the problem.

**Level sensor**. *(Pic. 4)* From this menu you can choose type of sensor and also adjust all 4 levels by sliders. Moving non standardtype sensor you could adjust all 4 levels, measured in volts. On the screen aree shown the LED-s from the switch - petrol, gas, reserve, 1/4, 1/2, 3/4,. When the level from multivalve is increasing and the voltage from the sensor is decreasing, you have to choose "Non standard inverted" the adjustment procedure is the same.

# DATABASE *(Pic. 5)*

Pic. 5

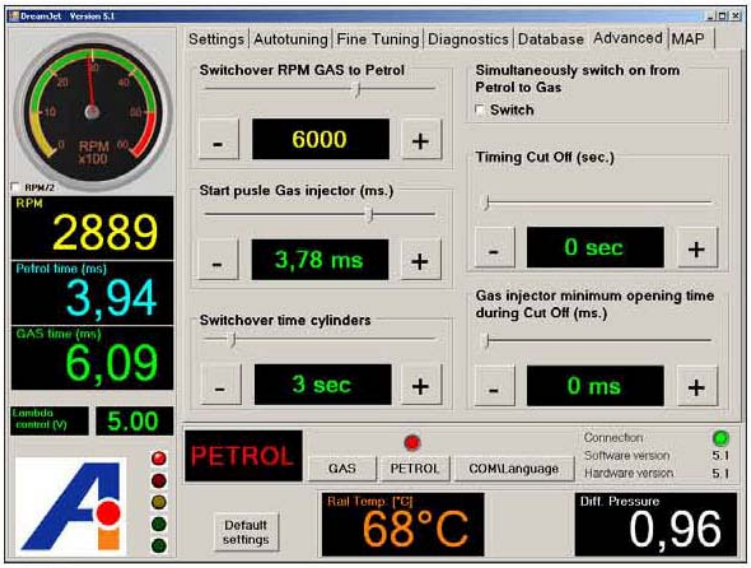
"**DATA BASE**" – this screen is divided on two: "**CAR DATA**" and "**CLIENT'S DATA**" *(Pic. 5)*

"**CAR DATA**" – if you want to create new folder with adjustment information for a car, after you fill lines "**CAR**", "**MODEL**", "**ENGINE TYPE**" etc., by "**SAVE AUTO DATA**" button you could save the details for the given car, the software automatically creates the fails with the names of the car (Ford, Opel, Honda etc). The fails are with extension "*.LPG" or "*.CNG" depending on the first menu "**SETINGS**". So the created fails you can use to adjust the next car types from previous ones. By button "**LOAD AUTO DATA**" you choose corresponding fail, on the screen will appear button "LOAD in the ECU" and by pressing it you can load the adjustment parameters into the ECU.

"**CLIENT'S DATA**":

After the adjustment of the system is made it is possible to save the information for about the client. You have to fill the lines, by button "SAVE" you save information into a different file, useful for the installer. The names of the files with the data about the client are automatically generated like "CAR NAME_MODEL_PLATE NUMBER (for example OPEL_VECTRA_CA1234XB) which data you can change for your needs. The fails are with extension *.CNT and they are saved in subdirectory "**CLIENT'S DATA**". On the time of maintenance of the LPG/CNG systems you can open the fails by button "**CLIENT'S DATA**" and to refer the adjustment for the car and the client's data – like "kilometres", "installing data" etc.

# ADVANCED *(Pic. 6)*




Pic. 6

1. RPM when switch from GAS to Petrol: *(Pic. 6)* You can choose for the system to work on Petrol over given from you RPM – by slider. You can switch off this function by leaving the slider in right end position.

2. On "**ADVANCED**" screen there is a very special function, which could be adjusted - Gas injector start pulse lenght *(Pic. 6, Left)*. For the injectors with different coil resistance (1, 1.5, 2, 3ohm) the lenght of the start impulse must be precisely adjusted, so by this slider you could readjust the necessary time for correspond coil resistance (basically in the system are given 3 ohm coils and factory set time is 3.78ms., you don't need to use this function). For some cars with very short petrol injector times (up to 2.2ms) the coils could be changed with 1.5 or 2ohm coils) in this case the system performance could be better. The times to be choosen are as follow: 1ohm - 2.5ms; 1.5 - 2.8ms; 2ohm - 3.2ms.

3. **Switchover time between cylinder**. Sometimes in cold weather (under 10oC) it is necessary to switchover the GAS injectors more slowly to insure easy turnover from Petrol to GAS. This slider is intended to choose the time for switchover between each cylinder. If the time is set for instance 3 sec., the system is working like this (for first time only)! All cylinders are working on Petrol, after that every one is working on GAS sequentially, but only one on GAS / three on Petrol. The function is off if the slider is in right end position.

4. Simultaneously turn-over all cylinders from petrol to LPG/CNG. This function is helpful for some cars with "full group" injector system, because all petrol injectors could not be interupted separately. *(Pic. 6)*

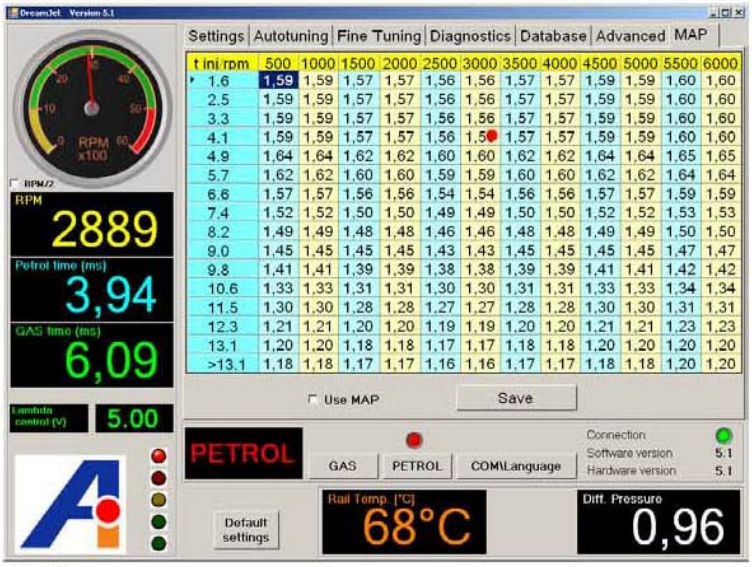
5. On the "**ADVANCED**" menu in the right side of the screen there are two sliders, which allow to decrease gas pressure after continuous "CUT OFF" mode for the engine, or for the "turbo" engines, which consume a lot of gas, also for the cars with big power (over 150 PS) with automatic transmissions, which are put often in "kick down" mode. First slider determines how much seconds you have to let the gas off. Sometimes if you choose the times over 5 sec., the

petrol ECU could light the "Check engine" lamp, so this function must be used very carefully. The second slider is used to adjust the length of Gas injector time.

6. Cycles on petrol when engine go out from "cut-off". (ADVANCED, Pic. *) Some engines have drop out of RPM when go out in "cut-off" regime, so some cycles you can programm (from0-7) to feed with petrol - it is helpful to keep the RPM over 500. This function is switched off when 0 is chosen. (Pic. *)

7. On the bottom figure you could choose pressure sensor type, by the slide you could choose the RPM when the cold engine starts automatically on gas, it is for the problem cars only for first switch-over. Basically this function is switched off. (Pic. 6)

## MAP *(Pic. 7)*

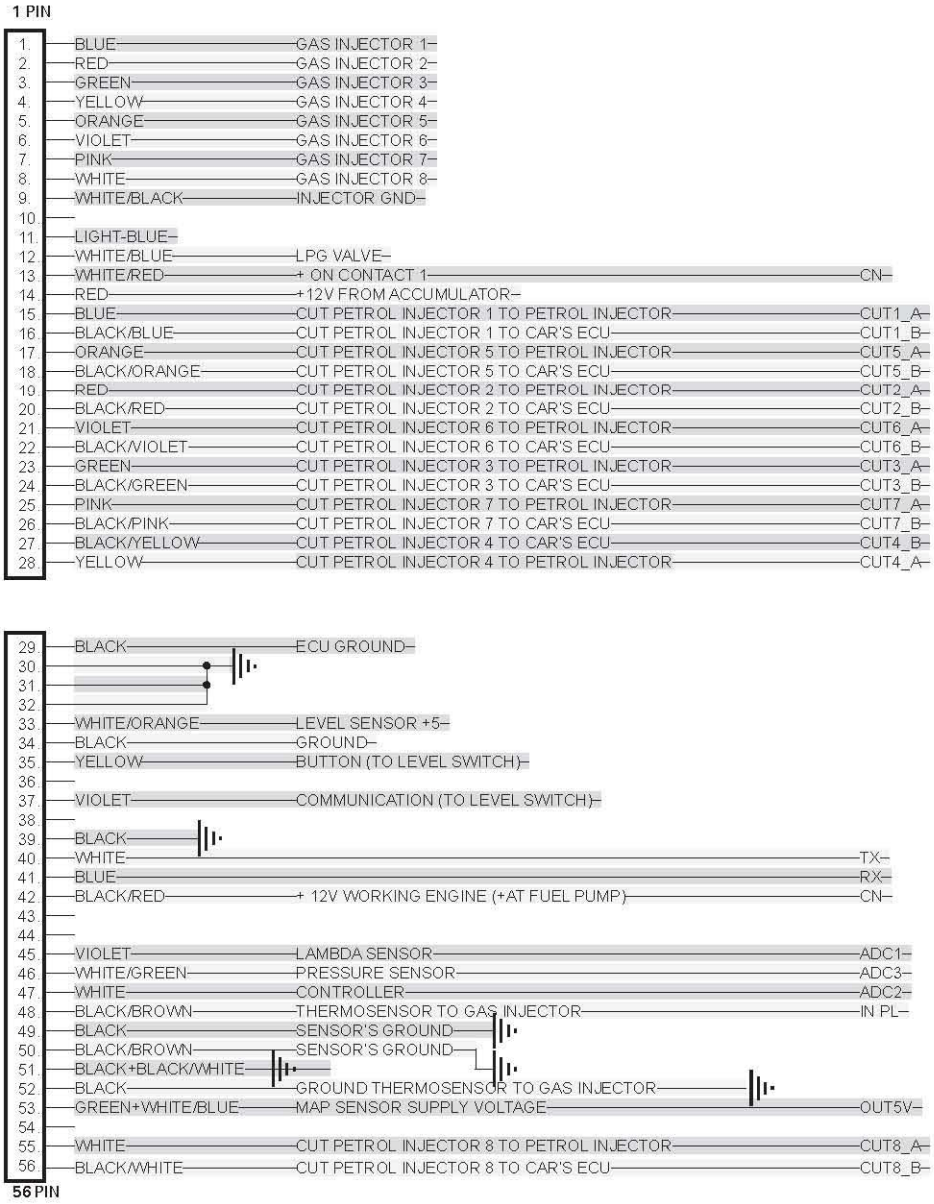



Pic. 7

"**MAP**" – the system has an option to work with the three size "**MAP**" – it is the function of the coefficients depending from the revolutions and engine load – ms. *(Pic. 7)*

To work with the map, you have to switch to menu "**MAP**" and the check box "Use MAP". There is also a red point, which is dynamic, signing the three parameters at the present moment. The change of the cell of the map or square of cells you can make by mouse marking (with blue colour) and pushing "ENTER". You will see the small menu for type of modification of coefficients – linear, percentage and adding of value. These values in the map could be from 1.00 to 2.50. Each of the time when you change some cells, the system is working with these coefficients, you have to save them by pushing "SAVE". *(Pic. 7)*

# The scheme of the cables tuft



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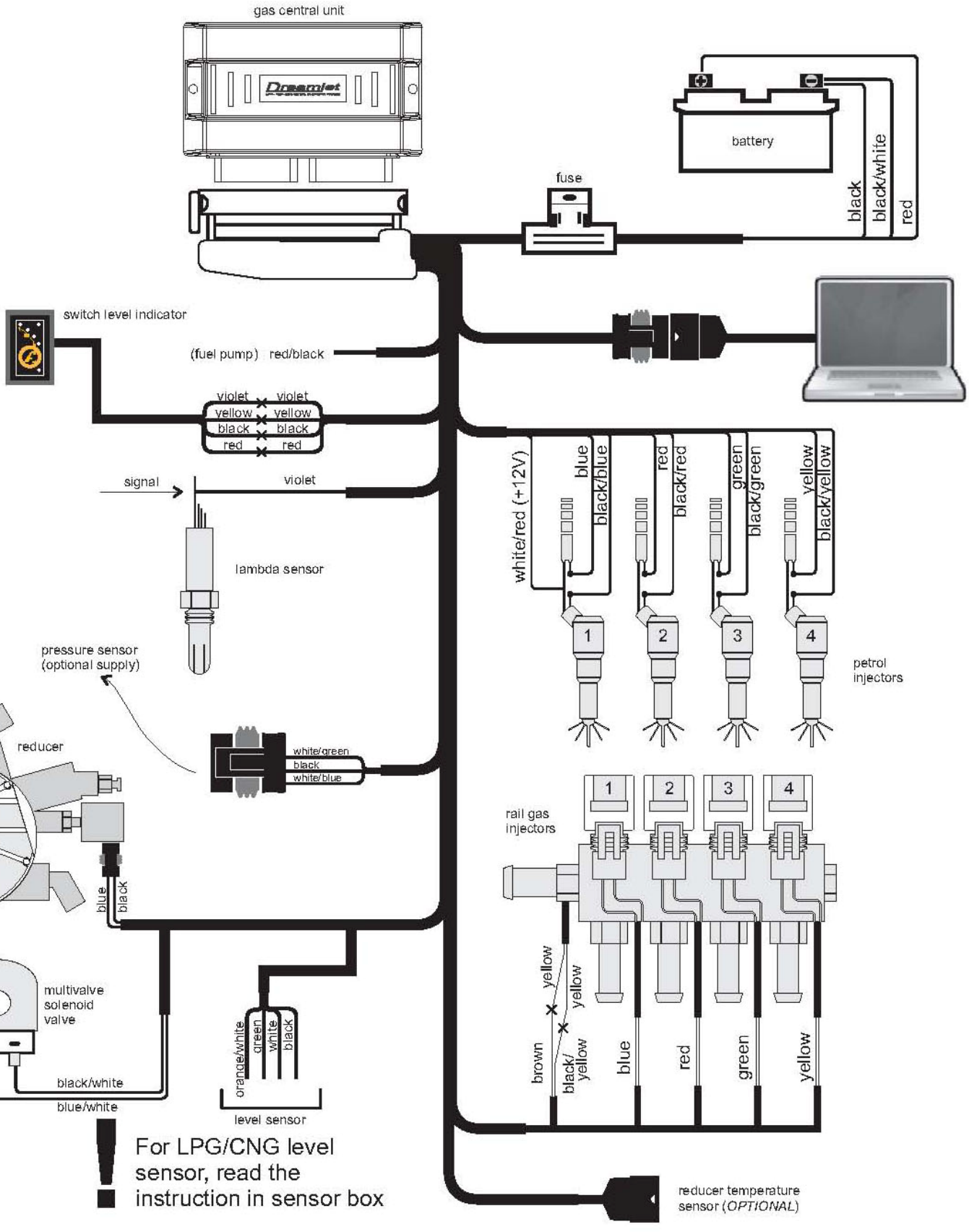
## LPG - CNG SEQUENTIAL INJECTION SYSTEM




! For LPG/CNG level sensor, read the instruction in sensor box

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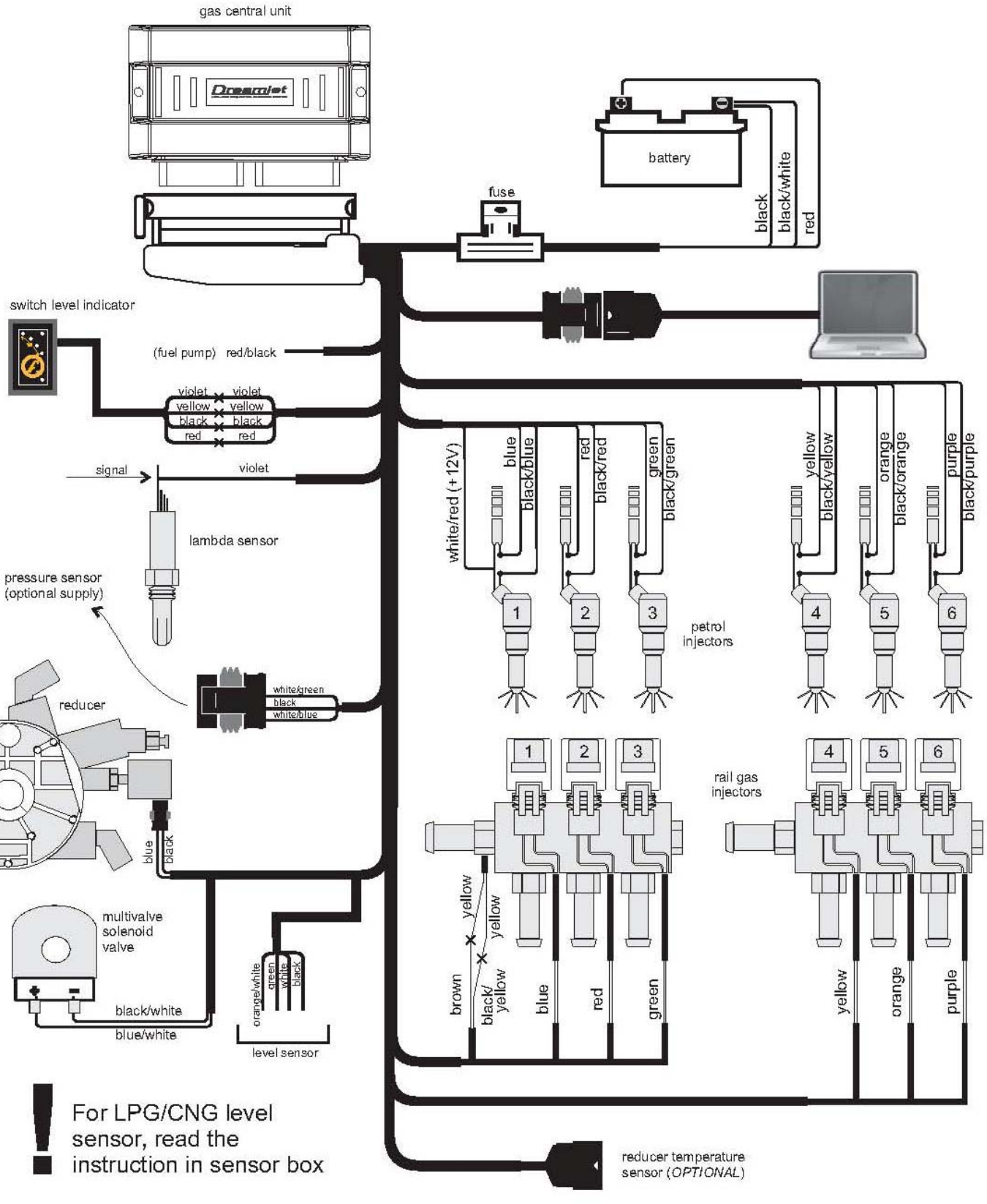


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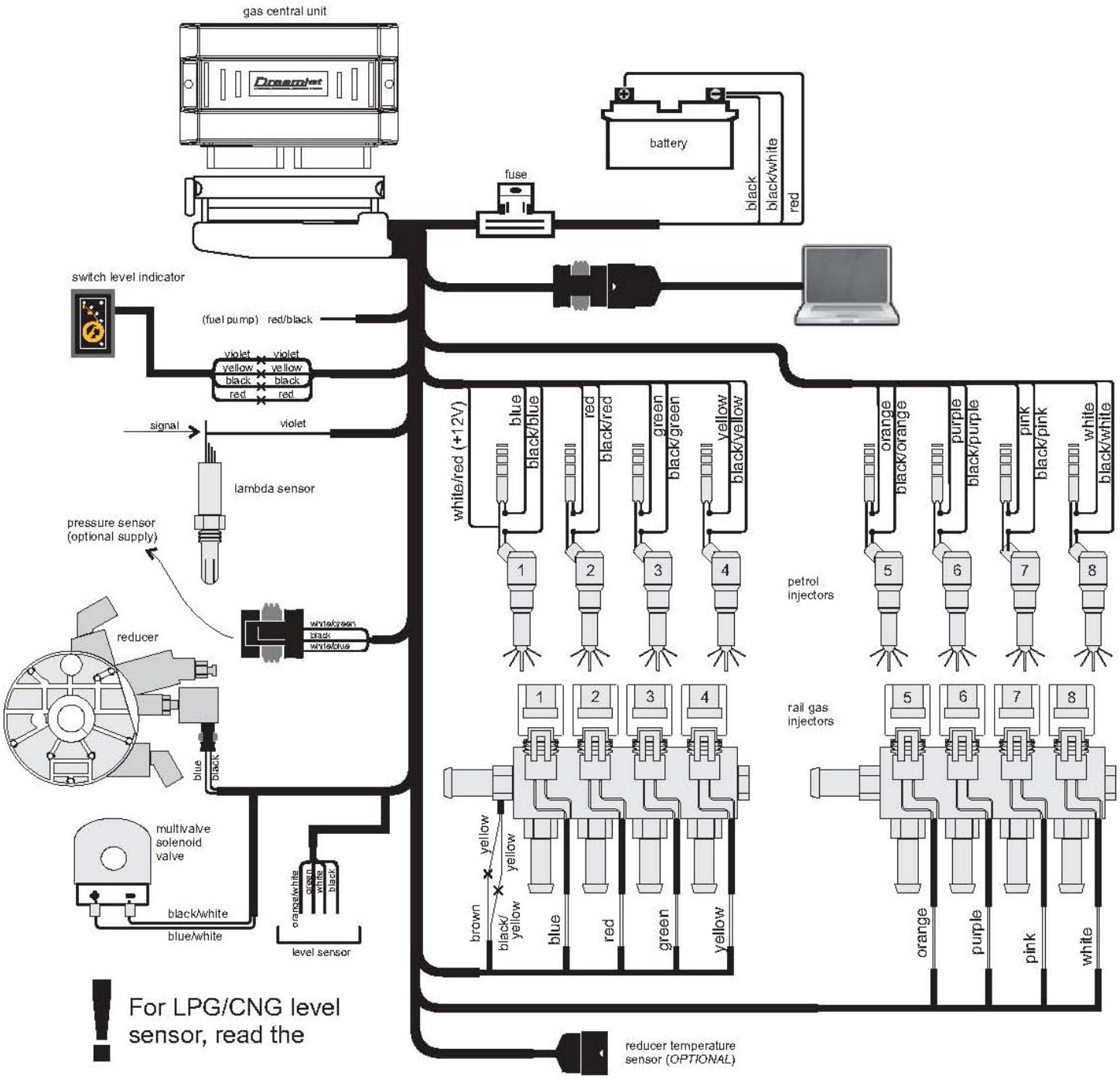


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