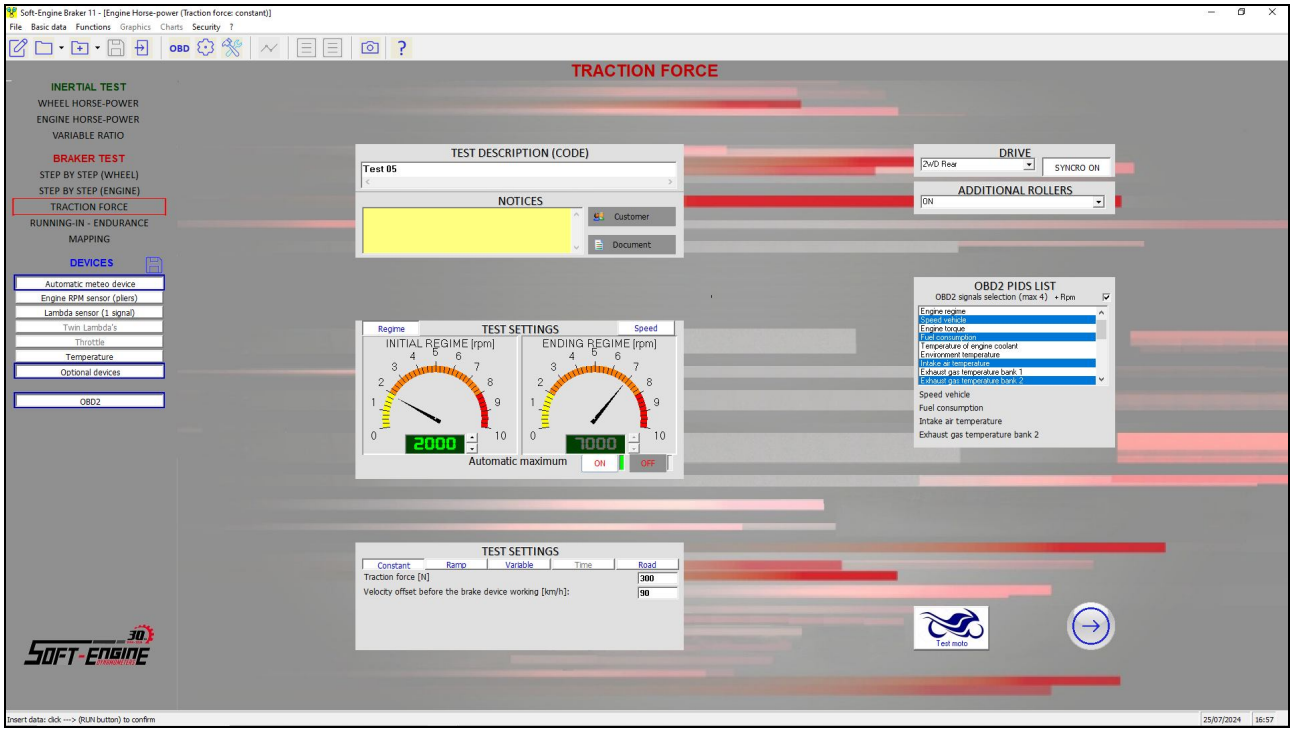
Soft-Engine - Data store software: Version 11

Software description

INERTIAL 11 – BRAKER 11 is a new generation software for **dynamometers** by **SOFT-ENGINE**. This is very a very and very performant software, but easy to use. Compared to previous versions, it has many more features, such as the ability to enter everything you need for the test in a single screen, press a button and accelerate. All in just two steps!



Braker 11: eveything you need for the test in a single screen!

The features of version 11 compared to the previous ones

We have already talked about the first great innovation of version 11 compared to the other versions. Other innovations are:

1) EXTENDED OBD2: with the OBD button on the vertical button can choose freely 4 PIDs to combine with the test in addition to the engine RPM. You can see the value during test and acquired PIDs diagram and chart.

2) "ALL CURVES" DIAGRAM: including lambda, temperature and pressure. "Composable" diagram form in which you can show the diagram of all the quantities in a single screen and select which ones to show together on video or in the printout report.

3) Improved LEGENDS with light/dark contrast to better see the writing and information on the type of test, on the masses used (additional rollers on/off) and if the Syncro device has been set.

4) NEW GRAPHICS ASPEECT: on the data entry form, more attractive and with a new background. New graphic aspect for the data input form.

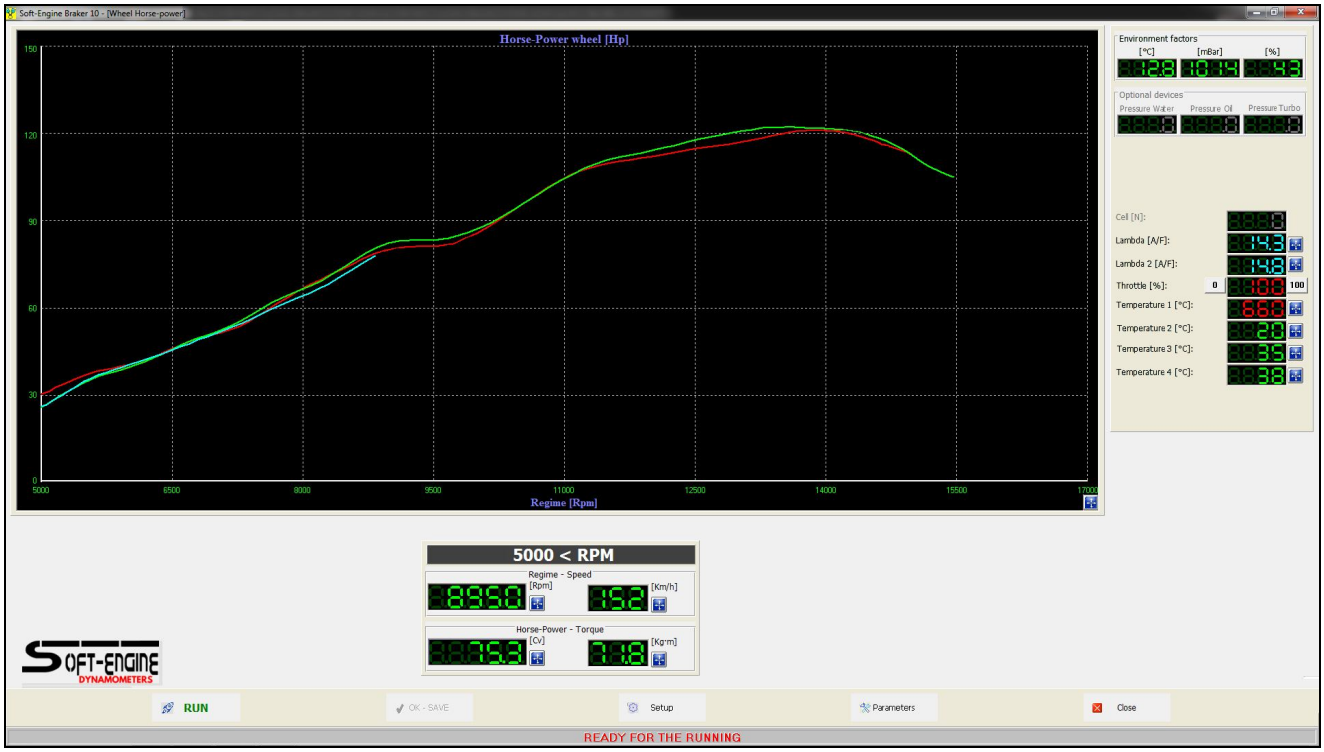
5) SESSION MANAGEMENT: with a "check" set to "true" you can save all the tests of a session carried out in "succession of tests" mode in one go.

6) BRAKE PARAMETERS: can be entered directly on the data entry form when carrying out the "by points" test. Example dwell time at constant braking or braking step. This avoids the step of having to access the parameters form, entering this data on the initial screen together with the others. Furthermore, in "**traction force**" → "**fixed force**" the parameter for the offset control of the speed from which the brake begins to act is inserted.

7) LAMBDA: now the change of measurement unit (Lambda or AF) affects the entire program and no longer just the diagrams.

8) RICHESSE (1/lambda): new quantity derived from Lambda.

9) MODULABLE FORCE: choice of "variable force": a Force vs Speed control point is inserted and a parabilical traction force passes through that point. Possibility to modulate the force by acting on the control point and change the shape of the curve. It is possible to change between parabolic force, increasing linear force, starting from the control point, increasing or decreasing linear force or piecewise constant.
10) BASIC DATA: opening and saving only the data entered in the main screen, without having to do the complete test before saving. This makes possible to use software remotely in any place of your workshop, to open, plan and make the tests.



Braker 11: real time horse-power acquisition!

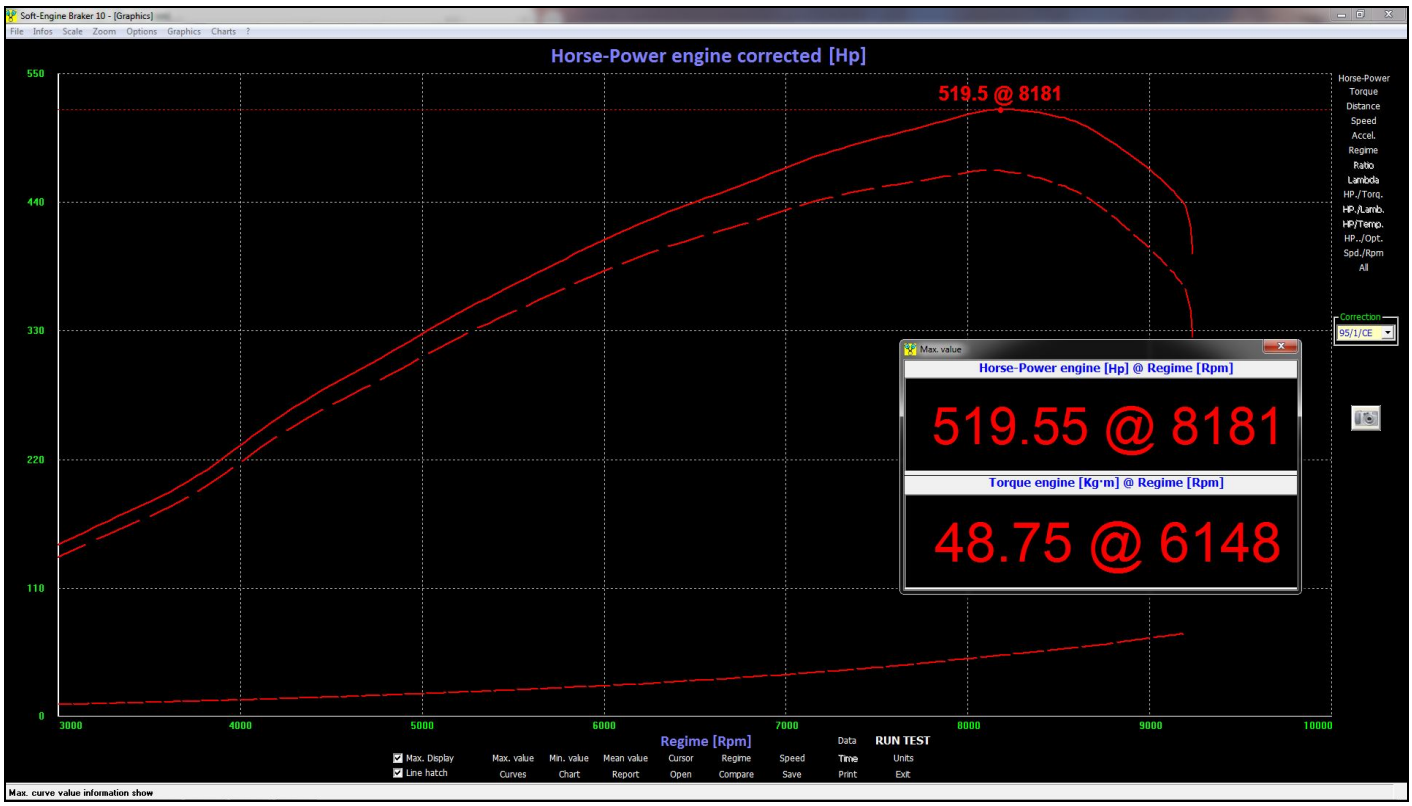
Software works in Windows© environment. We tried to simplify the use by putting all the analysis functions of the software in a single screen, that of the graphs. In this way, all the functions and all the screens in the program can be accessed simply by clicking with the mouse on the command buttons.

The stored quantities

The software has a lot of utilities, such as graphics, diagrams and charts. Here is a list of the most interesting operations. It measures of:

1) **Horse-power** and **torque:**

- to wheel;
- to engine;
- absorbed;
- DIN / CE / SAE / DIESEL / TURBODIESEL correction;
- HP - KW units (power) and british;
- Kg*m - N*m (torque) and british.



The diagrams window

2) Horsepower and torque stored in **inertial or braked modality**.

3) **Vehicle performances** (**space**, **speed** and **acceleration**).
- during acceleration.
- during deceleration;

4) **Instantaneous gear** (for automatic gear test and scooter variable-speed drive-line analysis), vs RPM, speed and time.

5) Very sensible temperature (exhaust gas, under-spark-plug, engine water etc...) measurement with untill four probes ("K" type).

6) Very sensible pressure (turbo-oil or airbox air) measurement, with untill three probes.

7) Carburation data acquisition system by **lambda sensor**: a diagram of air/fuel or stechyometric ratios, displayed versus regime displaies on the screen, with marks on the screen about rich / small carburation of engine.

8) Displayed power and torque together.

9) Displayed Rpm and Speed togheter..

10) All values compared and displayed.

11) **Four PID freely chosen to visualize OBD channels during test-**

12) **Airbox overpressure** management (optional).

13) **REAL TIME DIAGRAMS** during test.

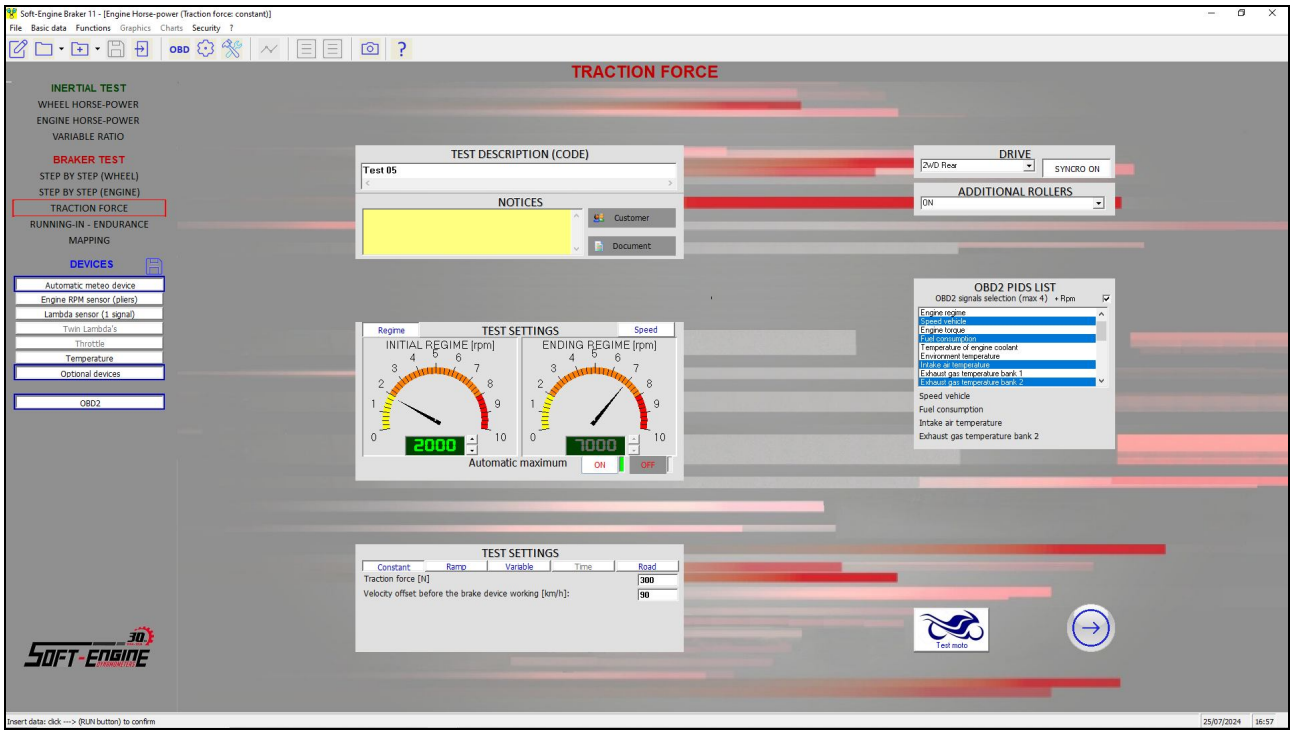
Kind of tests

1) **INERTIAL** tests:

- **Wheel horsepower** (Manual gear, constant ratio).
- **Engine horsepower** (**Deceleration test** with transmission friction measurement).
- **Sequential gear** (from initial to top speed rate).
- **Acceleration test** (the **acceleration is constant** during the test).

2) **BRAKED** tests

- **Constant speed braking:** control by RPM, the horsepower is stored step by step.
- **Constant load braking:** control by traction force. Constant traction force during all test.
- **Variable load braking:** control by traction force. Variable (linear-crescent) traction force during all test.
- **Road simulation test:** it is an **"Inertial and Braker"** test and brake simulates the road frictions.
- **Engine Running-in:** impose some RPM points, the brake stops the engine at these RPM points for a pre-imposed numbers of seconds. The cycle can be repeated.
- **Endurance**: like the running-in test, but it's possible to control also the TPS and a servo-mechanism for the automatic acceleration (optional). The cycle can be repeated (also infinite).



Braker 11: PID OBD selection for the test

The test analysis

When the test ends, the diagram window appears.

Values versus:

- Rpm
- Vehicle speed
- Test time

For each assessed value the following data are availabe:

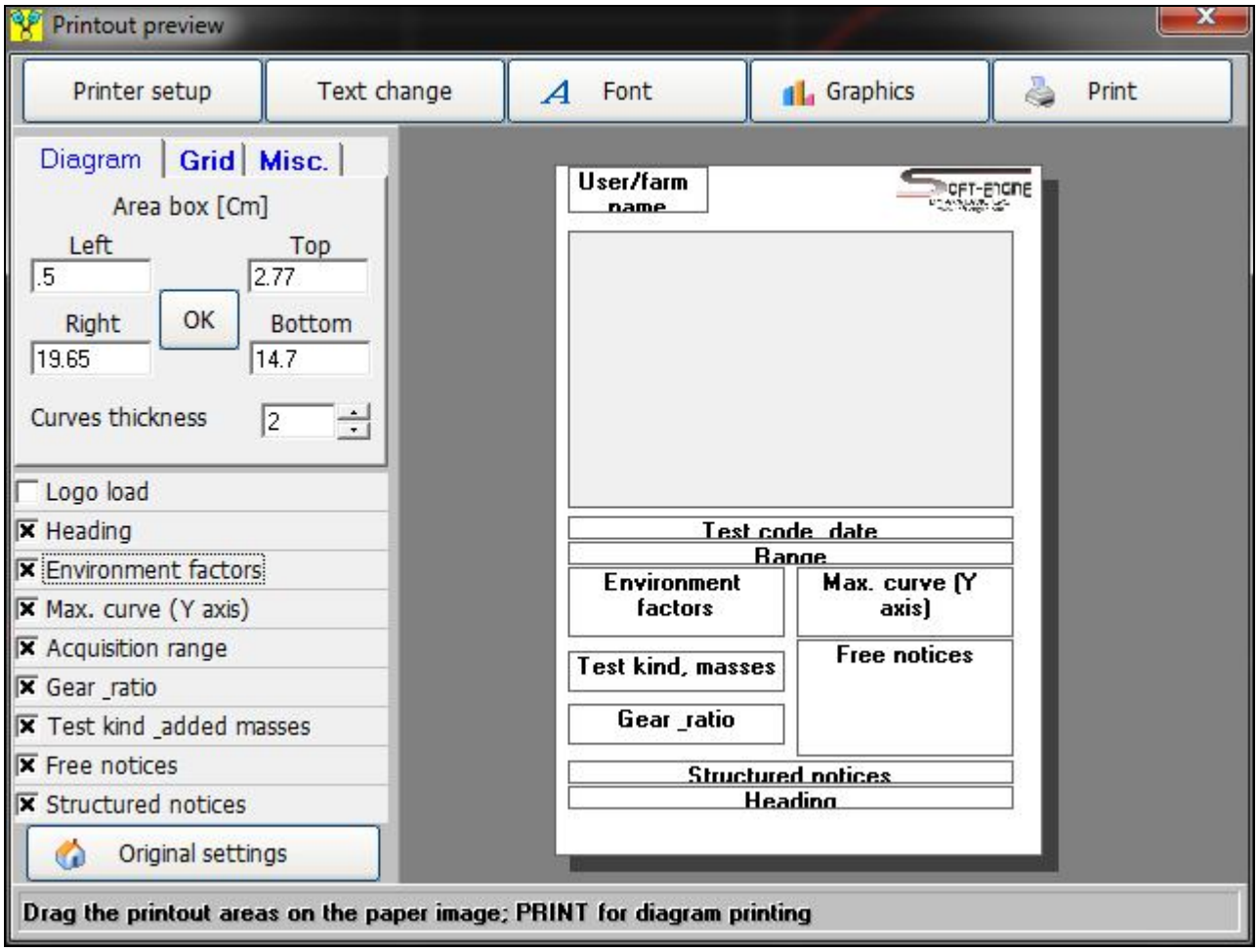
- Max., min. and mean value; **cursor** to read all curve points
- **Smooth** effect for the curves
- **Zoom**, graph scale management
- Test replay
- Sizeable graphics window with complete colour management
- **Comparison** of different test curves
- Different values of a test comparison
- File section: it is possible to create directories to classify tests in a single session
- Long filename management
- Different test compared charts
- Sensors and device management improvement
- Quick test mode choice
- Acquisition of max. 6 curves in sequence
- **Printing preview** with remarks, logo and graphics management
- Chart of all values
- Other Soft-Engine software interfaces.

THE SOFTWARE IS SUITABLE FOR ADDING PLUG-INS "RAPID-LINK" FOR "RAPID BIKE" CONTROL UNITS MAPPINGS, AND RPM DIRECT ACQUISITION BY OBD2 SYSTEM.

Diagram are upgraded with new buttons design and above-all with the possibility to watch immediately maximum value and the **cursor** (new function "References on the diagram). The new "**Video**" function is able to generate a video in avi format while the "**Test replay**" is running. From Diagram window all stored quantities (Horse-power, Torque, Performances, Carburation. Temperatures, Pressures etc...) and all analysis, tabulation, data store and comparison function are immediately available with the pushes.

Printouts

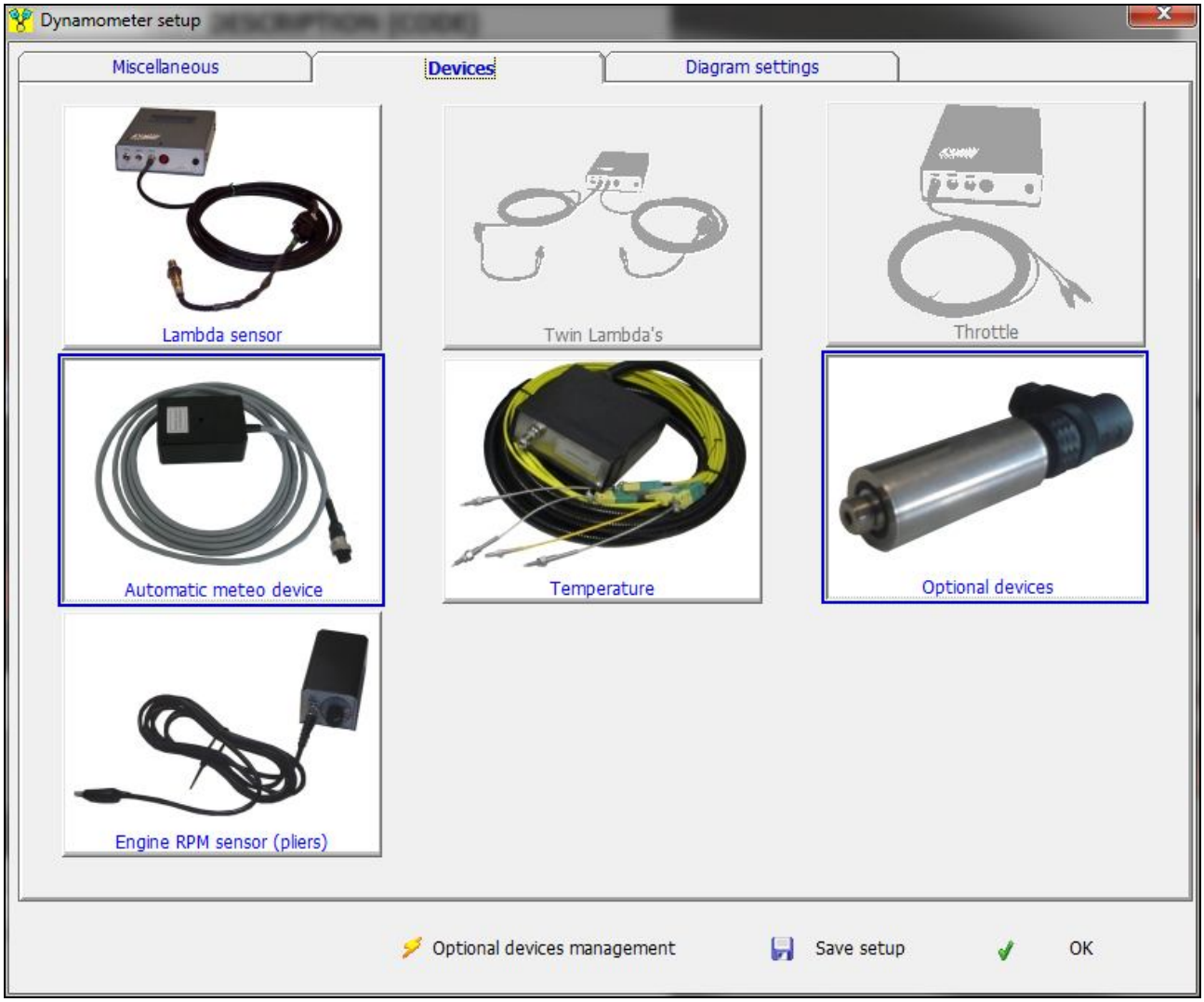
The printout page is extremely customizable, thanks to the "Printouts setup" function, by which is possible to import a logo and a printout background, to choose which notices have to be printed, to change writings fonts and colors and to set the printout boxes. During comparisons, the most important data are added to the diagram.



Printouts page setup

Optional devices management

IT IS VERY SIMPLE to enable or disable the electronic optional devices, with the dynamic test setup!



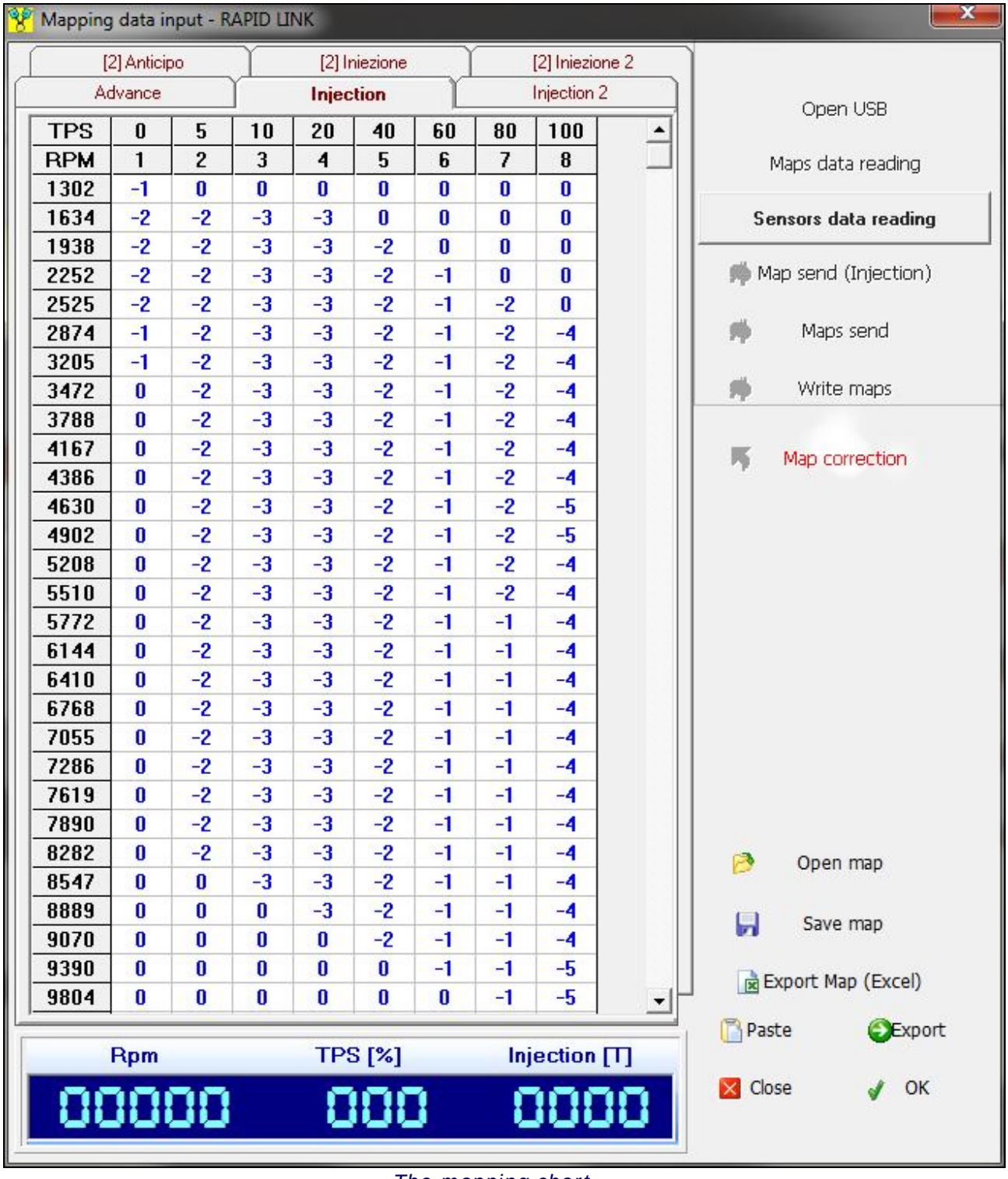
Test setup, electronic devices management

By the **setup window - "Devices" section**, it is possible to connect or not the optional devices without remove the cables. All devices are connected with the USB electronic unit.

Mappings: at real and design time

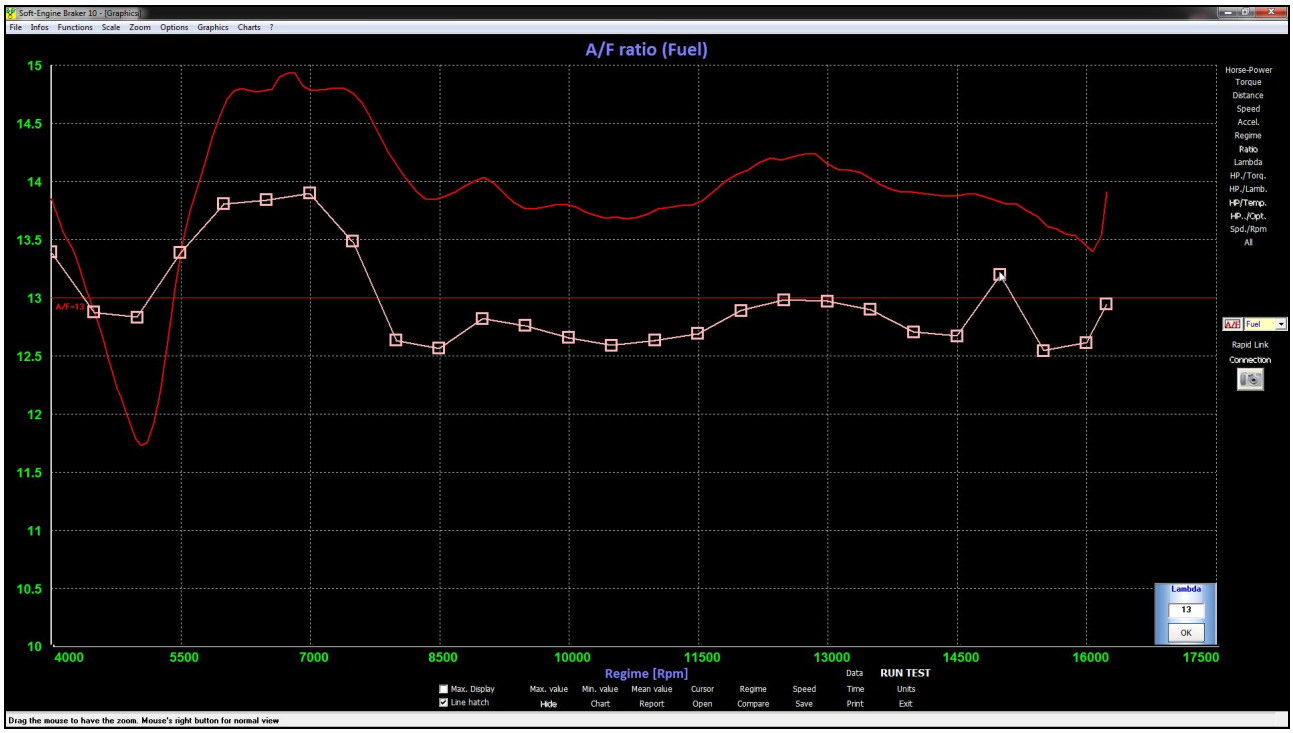
AND IT IS VERY SIMPLE the system to manipulate the mapping chart: "Real time" during a braked test, or at "design time", by correcting the lambda diagram quickly after a test!

The optional device "**Mappings - Rapid Link**" it is possible to modify and correct the lambda carburation curve both at "real time" (during a brkeed test) and at a "design time", redrawing the lambda diagram as shown in the picture. In this case you can adjust the lambda diagram after a test (also inertial).



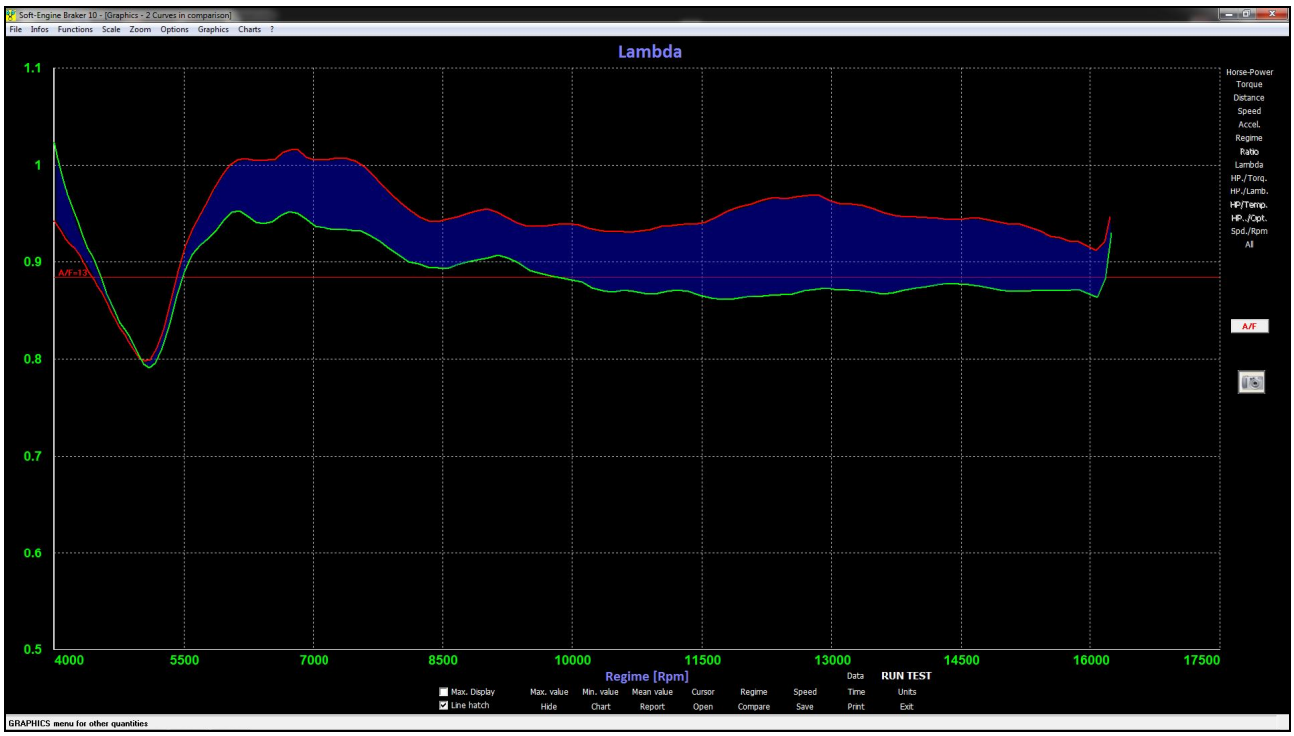
TPS	0	5	10	20	40	60	80	100
RPM	1	2	3	4	5	6	7	8
1302	-1	0	0	0	0	0	0	0
1634	-2	-2	-3	-3	0	0	0	0
1938	-2	-2	-3	-3	-2	0	0	0
2252	-2	-2	-3	-3	-2	-1	0	0
2525	-2	-2	-3	-3	-2	-1	-2	0
2874	-1	-2	-3	-3	-2	-1	-2	-4
3205	-1	-2	-3	-3	-2	-1	-2	-4
3472	0	-2	-3	-3	-2	-1	-2	-4
3788	0	-2	-3	-3	-2	-1	-2	-4
4167	0	-2	-3	-3	-2	-1	-2	-4
4386	0	-2	-3	-3	-2	-1	-2	-4
4630	0	-2	-3	-3	-2	-1	-2	-5
4902	0	-2	-3	-3	-2	-1	-2	-5
5208	0	-2	-3	-3	-2	-1	-2	-4
5510	0	-2	-3	-3	-2	-1	-2	-4
5772	0	-2	-3	-3	-2	-1	-1	-4
6144	0	-2	-3	-3	-2	-1	-1	-4
6410	0	-2	-3	-3	-2	-1	-1	-4
6768	0	-2	-3	-3	-2	-1	-1	-4
7055	0	-2	-3	-3	-2	-1	-1	-4
7286	0	-2	-3	-3	-2	-1	-1	-4
7619	0	-2	-3	-3	-2	-1	-1	-4
7890	0	-2	-3	-3	-2	-1	-1	-4
8282	0	-2	-3	-3	-2	-1	-1	-4
8547	0	0	-3	-3	-2	-1	-1	-4
8889	0	0	0	-3	-2	-1	-1	-4
9070	0	0	0	0	-2	-1	-1	-4
9390	0	0	0	0	0	-1	-1	-5
9804	0	0	0	0	0	0	-1	-5

The mapping chart...



...And graphical Lambda correction

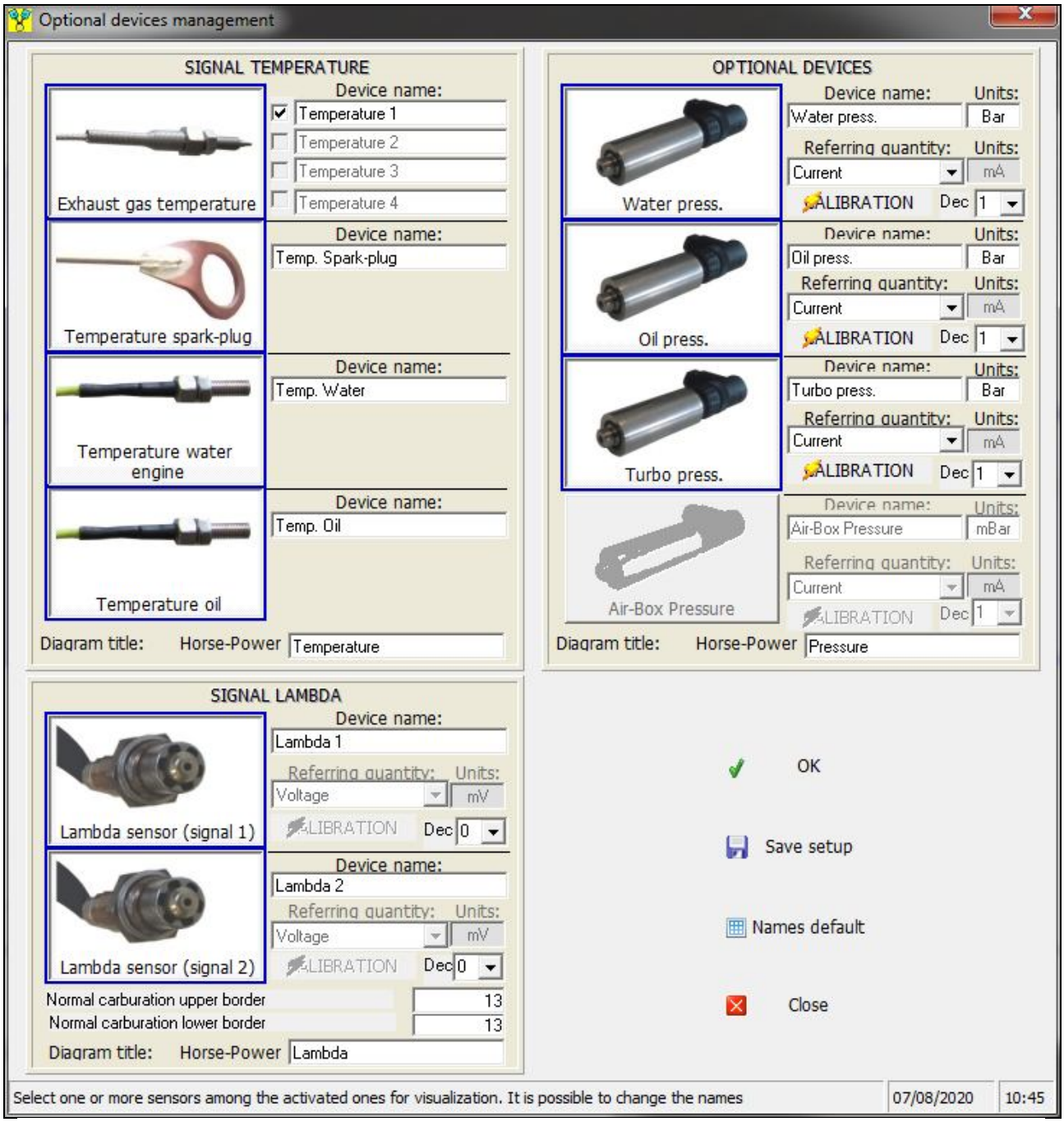
Now, **in the last version (11)** the graphical lambda corection method generates an exportable mapping chart in Excel format, indicating the right correction to do in a mapping chart, for any electronic unit. This correction method is direct when the electronic unit is a "**Rapid Bike**".



Rapid link module: lambda "reacts" according with the correction

Free calibration and personalization of devices

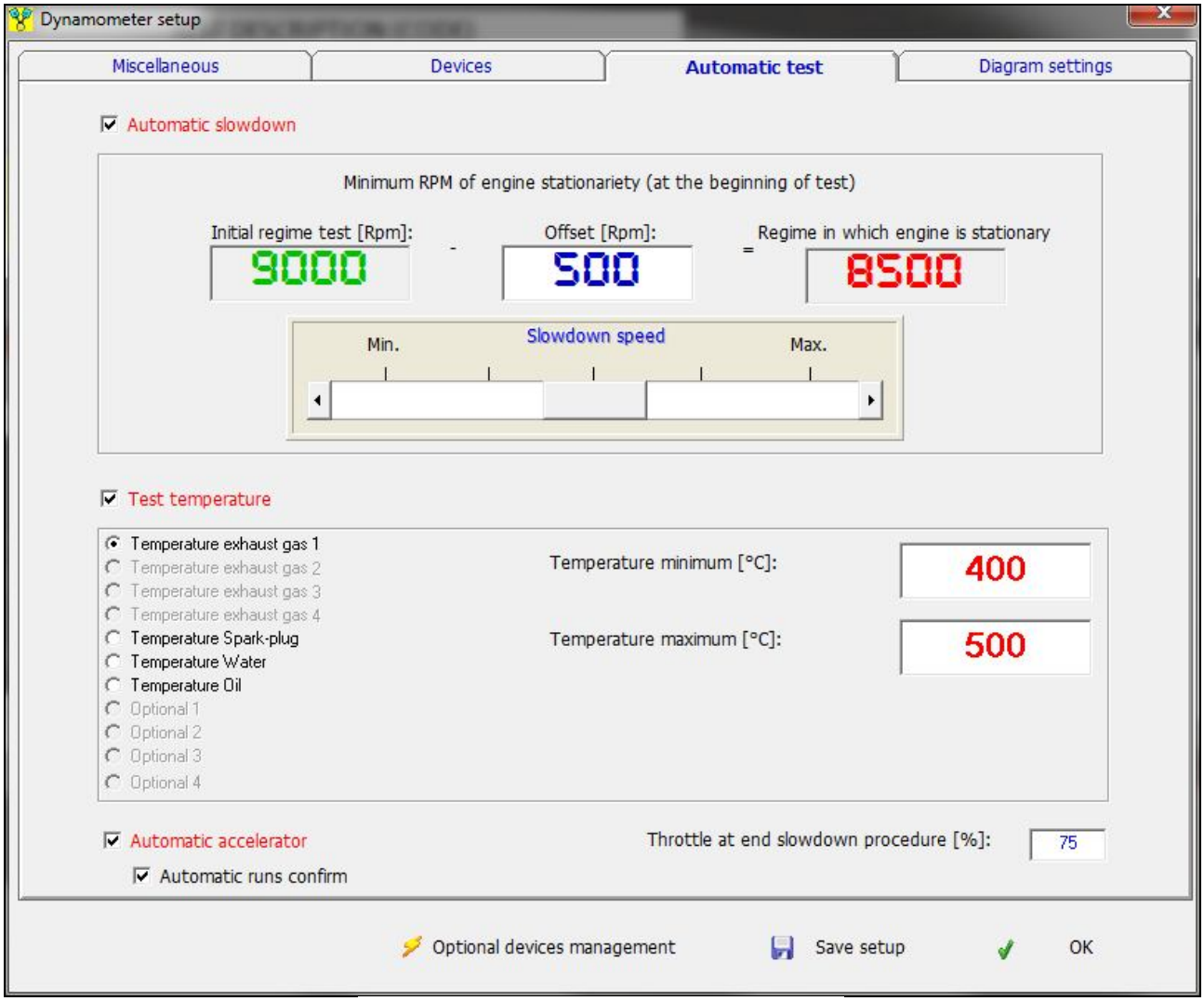
Now, **in the last version (11)** is possible to freely calibrate the optional acquisition device giving the values vs voltage or current. There are up to four calibrable channels. There are also teo (optional: four) calibrable lambda devices (vs voltage only). All optional devices can have a customized name and it is possible to select its visibility in all the software (diagrams, chart and tools).



Customize management of optional and free calibrables devices (temperatures, lambdas and free sensors)

Automatic slowdown test

This function is also a characteristic of **version 11** and is enabled for engine dynamometers. IThis is an optimization of tests in sequence, designed to make the most possible repetitive testing. After launch, the eddy current brake is applied to slow the engine until an initial regimen planned RPM. The slowdown can be controlled by temperature, that means if this control is active, the system allows the new launch only if the temperature (exhaust gas, engine cooling water, or even more) value is inside a planned range. This type of testing, combined with "**Rotogas**" system automates and streamlines the entire process of acceleration / deceleration of the motor during tests in sequence.



Automatic slowdown test management

Other features

Other features specific for version 11 are

- Lambda values scale choice (Fuel, Diesel, E85 blend, Methanol, LPG);
- Improved tools for diagrams (curve cursor, diagrams elements customization, diagram scale management ecc…);
- Self-translating, to generate reports in other languages.
- Maximizable displays and possibility to move them in the screen during real-time tests;
- Fast repetition of test: multiple runnings **and manage of sessions**.

PC minumum configuration

Feature	Description
Processor:	Personal computer, processors i3-2120 (3.3 GHz), i5-3230 (2.6 GHz), i7-4510 (2.0 GHz) or more.
System:	Windows ME, NT, Xp, Vista, Seven, Eight, Ten - 32 or 64 bit systems.
Memory RAM and Hard Disk:	At least 4 GB RAM and 60 GB free in the hard disk (for best Windows performances).
CDrom or Dvdrom device:	Speed at least 52X.
Graphic card:	VGA, SVGA and compatible cards, set at least 32 bit, Min. resolution: 1360x768.
Miscellaneous:	Keyboard, mouse, at least 3 USB ports free (to connect the data store electronic unit, the USB hardware key and the printer).
Printer:	Any ink-jet printer. Total compatibility with laser printers.
We suggest:	1) To remove the internet connection and the antivirus systems; 2) To remove the Blue-tooth connection; 3) To add an UPS to PC and data store electronic unit; 4) To make periodically the saved tests backup.
Total compatibility with notebooks and cases minitower PC.	