Measuring System
Insoric RealPower

Instruction Manual

Insoric AG
Hofwisenstrasse 12
8260 Stein am Rhein
Switzerland
Tel. +41 (0)52 742 04 40
Fax +41 (0)52 742 04 44
info@insoric.com
www.insoric.com

Dear valued customer

By purchasing **Insoric RealPower** you have acquired a high-quality product distinguished by special capabilities and permanent innovation in the field of performance measurement. Congratulations on your purchase of this high-quality product and thank you for your trust.

The Insoric Team

Imprint

This instruction manual is a publication by Insoric AG, Hofwisenstrasse 12,
CH-8260 Stein am Rhein, Switzerland / Tel. +41(0)52 742 04 40 / info@insoric.com / www.insoric.com.

The instruction manual is part of the Insoric RealPower measuring system. It contains important information on commissioning, handling and operation. In order to ensure proper and safe operation, all instructions must be precisely followed. The same applies if you pass on the product to third parties.

This instruction manual reflects the technical status at the time of going to print. Later changes that are not included in the instruction manual and further guidance and assistance can be found on our website at www.insoric.com.

Contents

1.0 Technical description

1.1 Recording power data

Insoric RealPower enables precise measurement of vehicle performance.

The readings are taken from the vehicle's road wheel. All data produced during a road test is recorded and internally stored by the RealPower module attached to the vehicle wheel.

1.2 Analysing the data

Using the RealPower software specially developed for this application, analysing the data is extremely simple.

After a road test and having installed the RealPower software, you connect the RealPower module to your PC using a USB lead.

You can then enter various parameters relating to a road test and save vehicle-related details in the RealPower program. There are also functions for selecting individual measurement results and producing test certificates for them.

The use of the RealPower module and the subsequent data analysis on a PC do not require any kind of specialist knowledge. Consequently, a key feature of the product is that it can be used immediately without knowing the specifications of the vehicle being tested.

The following performance data can be measured with the Insoric RealPower system:

- Wheel power
- Engine power
- Road speed
- Maximum torque

1.3 Product specifications

The measuring system and all required accessories are supplied in a tough case.

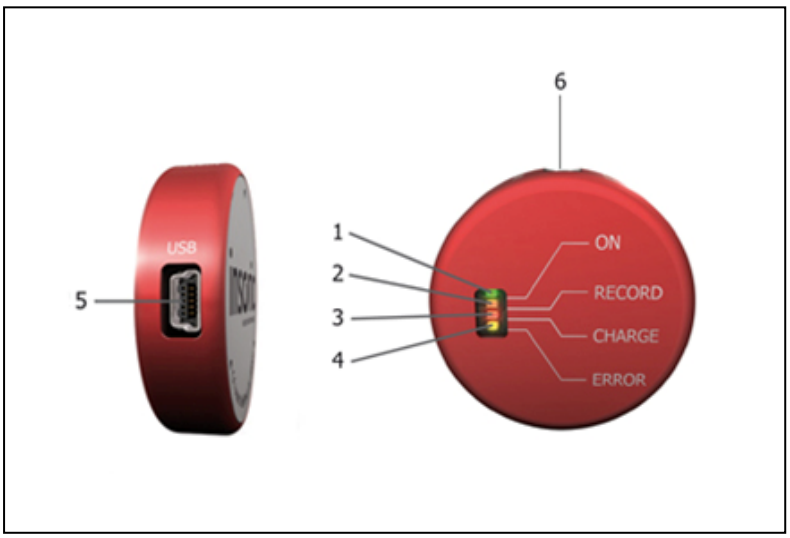
1 Case
2 RealPower module
3 Fixing systems
4 Canister with fixing systems
5 Canister with protective cap
6 Wheel measuring device
7 Barometer/Thermometer
8 USB lead
9 Installation CD/DVD
10 USB Stick (licence key)
11 Instruction manual
12 Quick step guide
13 Data checklist
14 Ball-point pen
15 Quality certificate/ Safety instructions

This product left our factory in perfect condition. Please check the case after receipt for any damage and to make sure nothing is missing, and inform us immediately if anything is not as it should be.

To maintain proper working order of the product and ensure trouble-free operation of Insoric RealPower, it is imperative that you follow the directions in this instruction manual.

Use for purposes other than that described in the instruction manual may impair or damage the product. Insoric RealPower must not be modified or converted as doing so will void the manufacturer's guarantee.

1.4 Controls and indicators – RealPower Module



1 Green LED – ON mode
2 Orange LED – Recording mode
3 Red LED – Charging battery mode
4 Yellow LED – Error mode
5 USB socket
6 RealPower module "ON/OFF" and mode selector button

1.5 Switch functions

Switching on the RealPower module – ON mode
Press and hold the ON/OFF button (for 1 sec) ⇨ The RealPower module is now activated (green "ON" LED flashes).

Starting recording – Recording mode
Press and hold the ON/OFF button again (for 1 sec) ⇨ The RealPower module switches to recording mode (green "ON" LED and orange "RECORD" LED both flash).

Stopping recording
Press and hold the ON/OFF button (for 1 sec) ⇨ The RealPower module switches back to ON mode (green "ON" LED flashes).

Switching off the RealPower module
Press and hold the ON/OFF button (for 3 sec) ⇨ The RealPower module is now deactivated (no LEDs flashing).

1.6 LED indicators

Green "ON" LED – ON mode
Signals by flashing that the RealPower module is switched on.

Orange "RECORD" LED – Recording mode
Signals by flashing in alternation with the green "ON" LED that the RealPower module is in recording mode.

*If the **"RECORD"** LED remains constantly lit, it indicates that the recording capacity of the RealPower module has reached its limit (the maximum recording capacity is 80 minutes). The RealPower module memory then has to be cleared using the RealPower software application before further road tests can be carried out.*

Red "CHARGE" LED – Charging battery mode
When constantly lit, signals that the internal battery is being charged (only when the RealPower module is connected to a PC by the USB lead).

Yellow "ERROR" LED – Error mode
Signals an error. If the yellow LED does not go out after the RealPower module is switched off and on again, please contact the manufacturer via the website www.insoric.com/support.

1.7 Software

Supplied with the product, there is an installation CD/DVD containing the RealPower software for analysing the recorded power data. The RealPower software requires a special driver which is also supplied on the installation CD/DVD. Please note the following basic and system requirements for using the RealPower software:

Basic requirements:

- DVD-ROM drive
- 2 available USB ports
- Printer (preferably a colour printer)
- Keyboard
- Mouse with scrolling wheel

System requirements:

- Microsoft® Windows XP, Vista, 7
- At least 2 MB of RAM
- Hard disk with at least 2 GB of free space
- Graphics card with min. resolution of 1024 x 768
- Adobe Acrobat Reader®

1.8 Licence key

To use Insoric RealPower you require a licence issued by Insoric. That licence is supplied with the product in the form of a USB stick, i.e. there is a licence key stored on the USB stick. To be able to use the RealPower software, the USB stick must be plugged into your PC – otherwise an error message will be displayed.

You can install the RealPower software on multiple PCs. However, the program will only run in conjunction with the licence key. If you lose the licence key, you will not be able to start the RealPower software.

The licence key controls the range of functions available in the RealPower software and the number of power tests that you have available.

2.0 Operating instructions

2.1 Safety instructions

2.1.1 Safety warnings – Definition

This warning indicates a potentially dangerous situation that could lead to serious or fatal injuries if the safety precautions are not followed.

This warning indicates a potentially dangerous situation that could lead to minor or slight injuries if the safety precautions are not followed.

This warning indicates the possibility of damage to property if the safety precautions are not followed.

Special tips that can simplify working with Insoric RealPower are printed in ***Italics***.

With the exception of the instructions given in Section 2.1.2, the safety warnings appear next to the passage of text to which they relate.

2.1.2 Safety instructions – General rules

Before using Insoric RealPower for the first time, please read through the whole of the instruction manual as it contains all the important information for correct operation.

Operation of the Insoric RealPower measuring system is at the user's own risk. We accept no liability for personal injury or damage to property caused by incorrect use or failure to follow the safety instructions. In such cases all guarantee entitlement will also be void.

The RealPower module casing must not be opened nor its contents interfered with or modified. In such cases all guarantee entitlement will be void.

The applicable statutory road traffic regulations and highway code of the country in which the Insoric RealPower is used must be observed. Compliance with those regulations is the responsibility of the user alone.

When using Insoric RealPower in schools or educational establishments, supervision by trained technical staff is absolutely imperative.

The RealPower module and its accessories are not toys and should not be operated by children!

The statutory safety regulations for prevention of road traffic accidents are to be observed.

2.2 Using for the first time

2.2.1 Installing RealPower software and driver

After inserting the CD/DVD in the DVD drive of your PC, the installation menu for the software and driver will automatically open.

The RealPower software is not a network application. Therefore please install the software on your hard drive.

*If the installation screen does not automatically open, you can start it manually by double-clicking the file **autorun.exe**, which is on the CD/DVD.*

Make sure that the driver is correctly installed on your PC. That is the only way that communication between the RealPower software and the RealPower module is possible.

2.2.2 Charging the battery

Before using the RealPower module for the first time and/or before the first road test, its battery must be charged. That is done using the USB lead supplied.
Connect the USB lead to the RealPower module and a free USB port on the PC. The first time it is charged, the RealPower module should remain connected until the red "CHARGE" LED goes out (see also Section 1.6).

The RealPower module can be charged on any PC that has a USB port.

NOTICE

Risk of property damage

Only connect the RealPower module to a USB port on a PC. That is the only way to ensure it is charged at the correct voltage.

If the electronics of the RealPower module are damaged due to charging the battery incorrectly ⇨ guarantee will be void.

2.3 Preparing for the road test

2.3.1 Road test route

To measure the power, acceleration or torque on a vehicle, a suitable road test route is required. Ideally, the course of the road should contain no uphill or downhill gradients or corners and should be at least 500 to 600 m long. The route should provide clear visibility along its entire length and allow a speed of at least 80 km/h.

2.3.2 Attaching the RealPower module

To carry out a road test, the RealPower module has to be attached to the wheel of the vehicle being tested. There are fixing systems supplied with the product for the purpose.

Risk of accidents and property damage

If the RealPower module were to become detached from the wheel during the road test it would pose a danger to other road users.

In addition, the RealPower module could be destroyed.

Use only the fixing systems supplied by the manufacturer.

- **Risk of dirt**: the wheel must be cleaned using a dirt and grease removing cleaner before attaching the RealPower module. Do not use cleaners that are corrosive or contain solvents.
- **Risk of moving parts and wheel trims**: the RealPower module must not be attached to moving parts of the wheel, wheel trims or hub caps that could become detached when the vehicle is moving.
- **Risk of uneven attachment face**: wheels with an uneven or ridged centre are not suitable for attaching the RealPower module. The attachment face must be completely flat.
- **Risk of eccentricity**: the RealPower module must be attached exactly in the centre of the wheel.

When carrying out the road test avoid extreme weather conditions such as heavy rain, hail showers or heavy snow falls.

Risk of property damage

There is a risk of damage to the RealPower module from splash-water or dirt in bad weather.
Attach the protective cap supplied to the RealPower module.

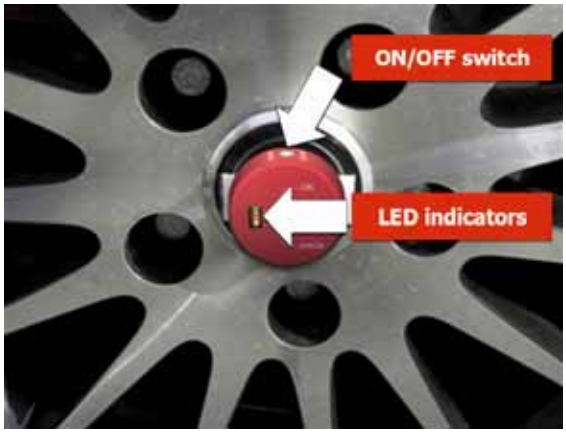
As a fundamental principle, the RealPower module should always be fixed on the passenger side. To counteract the spin that can occur on a driving wheel, it should be attached to a non-driven wheel. (Check whether car is front or rear-wheel drive!)
For cars with four-wheel drive it doesn't matter whether the module is attached on the front passenger side or rear passenger side.

Attaching the RealPower module is very easy: remove the protective foil from one side of the fixing system and fix it to the back of the RealPower module *(the side with the Insoric logo). In that way, the LED indicators remain clearly visible.*

Then remove the protective foil from the other side of the fixing system and press the RealPower module as **exactly as possible** onto the centre of the wheel.

*The RealPower module is **not** designed for continuous use and must be removed from the wheel again after completing the road test.*

2.3.3 Activating the RealPower module



Switch on the RealPower module before starting the road test. To do so, press the "ON/OFF" button twice in succession.

The RealPower module is now in recording mode. The orange "RECORD" LED flashes in alternation with the "ON" LED.

Please note that the recording capacity of the module memory is 80 minutes. If the RealPower module has already been used before, we recommend that you delete the module data before each new road test (see Section 2.7.3).

If the recording capacity limit is reached during a road test, the RealPower module automatically switches off and no further data is recorded. In that case, the data has to be read out and the memory cleared as described in Section 2.7.3 before the RealPower module can be used again.

2.4 The road test

2.4.1 Vehicle safety

Before commencing the road test, the vehicle must be checked for roadworthiness and/or damage that might impair its handling characteristics and road safety.

⚠WARNING

Risk of accidents

There is a risk of accidents if tyres are not inflated to the correct pressure or are worn or damaged.
Check the tyre pressure and examine the tyres for damage and penetration by foreign objects.

Incorrectly adjusted tyre pressure affects the wheel diameter and, therefore, also the measurement results.

2.4.2 Road test safety

Use of this product is at your own risk. Inadequate attachment of the RealPower module and incorrect use of Insoric RealPower are the responsibility of the user.

During the road test, the general statutory road safety regulations apply.

When performing the road test, always keep within the legally permitted speed limit. Desist from extreme and risky driving manoeuvres.

Risk of accidents

An unsuitable choice of road test route could place you and other road users at risk.

Do not continue with the road test if the circumstances or the road or weather conditions are not suitable.

Avoid routes with
- heavy traffic
- obscured visibility
- junctions or crossroads
- agricultural traffic
- steep downhill gradients

Do not carry out road tests on roads
- where children are playing
- through built-up areas
- with poor road surfaces
- with snow or ice on the surface
- with poor visibility due to fog or darkness

Discontinue the road test if any of the above circumstances occurs unexpectedly.

2.4.3 Road test – Power measurement

Before the road test, switch off air conditioning and other equipment and vehicle functions that affect engine power.

***The test involves two stages**. Depending on the prevailing traffic conditions, the two stages (acceleration and roll) can be carried out in a single run or separately with an interval in between.*

Power measurement using Insoric RealPower consists of an **acceleration** phase followed by a **roll** phase. During the acceleration phase, a power curve is recorded up to maximum revs. During the roll phase, the vehicle-specific loss factors are recorded.

Vehicles with manual gearbox
Depending on vehicle power, the **acceleration phase** is carried out in 2nd or 3rd gear. Ideally, the acceleration phase should start at **approx. 20 – 30 km/h** in **2nd gear** and at **approx. 50 – 70 km/h** in **3rd gear**. Now press the accelerator to the floor and accelerate the car until the rev counter needle reaches the **red area**.

Make a mental note of the engine speed reached!

NOTICE

Legally permitted speed

Be sure to observe the allowed maximum speed for the road you are driving on.

After that, you disengage the clutch so that the vehicle is **rolling**. You should leave the gear lever in the gear previously selected.

The **roll phase** should – allowing for the conditions on the road test route – last as long as possible. The **speed difference** between declutching and the end of the roll phase should ideally be **approx. 30 km/h**.

Vehicles with automatic gearbox
Establish in which selector lever position it is possible for the rev counter to reach the red zone on the chosen road test route. Then accelerate the vehicle with the selector lever in that position to a speed of **approx. 20 – 30 km/h** in **2nd gear** or **approx. 50 – 70 km/h** in **3rd gear**. Now press the accelerator to the floor and accelerate the car until the rev counter needle reaches the **red area**.

Make a mental note of the engine speed reached.

NOTICE

Legally permitted speed

Be sure to observe the allowed maximum speed for the road you are driving on.

Now change to the highest transmission setting and take your foot off the accelerator. The vehicle is then **rolling**.

The **roll phase** should – allowing for the conditions on the road test route – last as long as possible. The **speed difference** between upshifting and the end of the roll phase should ideally be **approx. 30 km/h**.

Several acceleration and rolling phases can also be carried out in succession. Combining multiple test phases provides for greater possibilities when subsequently analysing the power data.

2.5 After the road test

2.5.1 Removing the RealPower module

After completing the road tests, the RealPower module should be switched off using the "ON/OFF" switch (press and hold for approx. 3 sec) and removed from the wheel as follows:

Pull on the tab of the fixing system between the RealPower module and the wheel for several seconds. The RealPower module can then be removed easily from the wheel without using force. Afterwards, remove the fixing system from the RealPower module.

*The RealPower module is **not** designed for continuous use and must be removed from the wheel after completing the road test. Use only fixing systems supplied by Insoric AG. Use fixing systems once only.*

WARNING

Risk of accidents and property damage

Using the fixing systems more than once could endanger other road users if the RealPower module were to become detached from the wheel during the road test.

In addition, the RealPower module could be destroyed.

2.6 Preparing for analysis

2.6.1 Preparing the data

To calculate the power data ("maximum levels" and "performance diagram") and to produce the test certificate, the RealPower software requires the following additional data:

- **Details from the car documents** (registration certificate and owner's manual)
- **Wheel diameter** (see Section 2.6.2)
- **Gear and maximum revs** (details noted by the driver during the road test)
- **Meteorological data** at the time of the road test (barometer/thermometer, see Section 1.3, item 7)

A "Data checklist" is supplied with the product to simplify the process of completing the data to be entered manually.

2.6.2 Measuring the wheel diameter

The wheel diameter is measured using the wheel measuring device supplied with the product and subsequently entered in the RealPower software program.

The wheel diameter should be measured horizontally, as in that position there is always sufficient space between the wheel and the wheel arch.

To obtain the precise measurement, the diameter must be measured horizontally though the centre of the hub.

2.7 Analysing the data

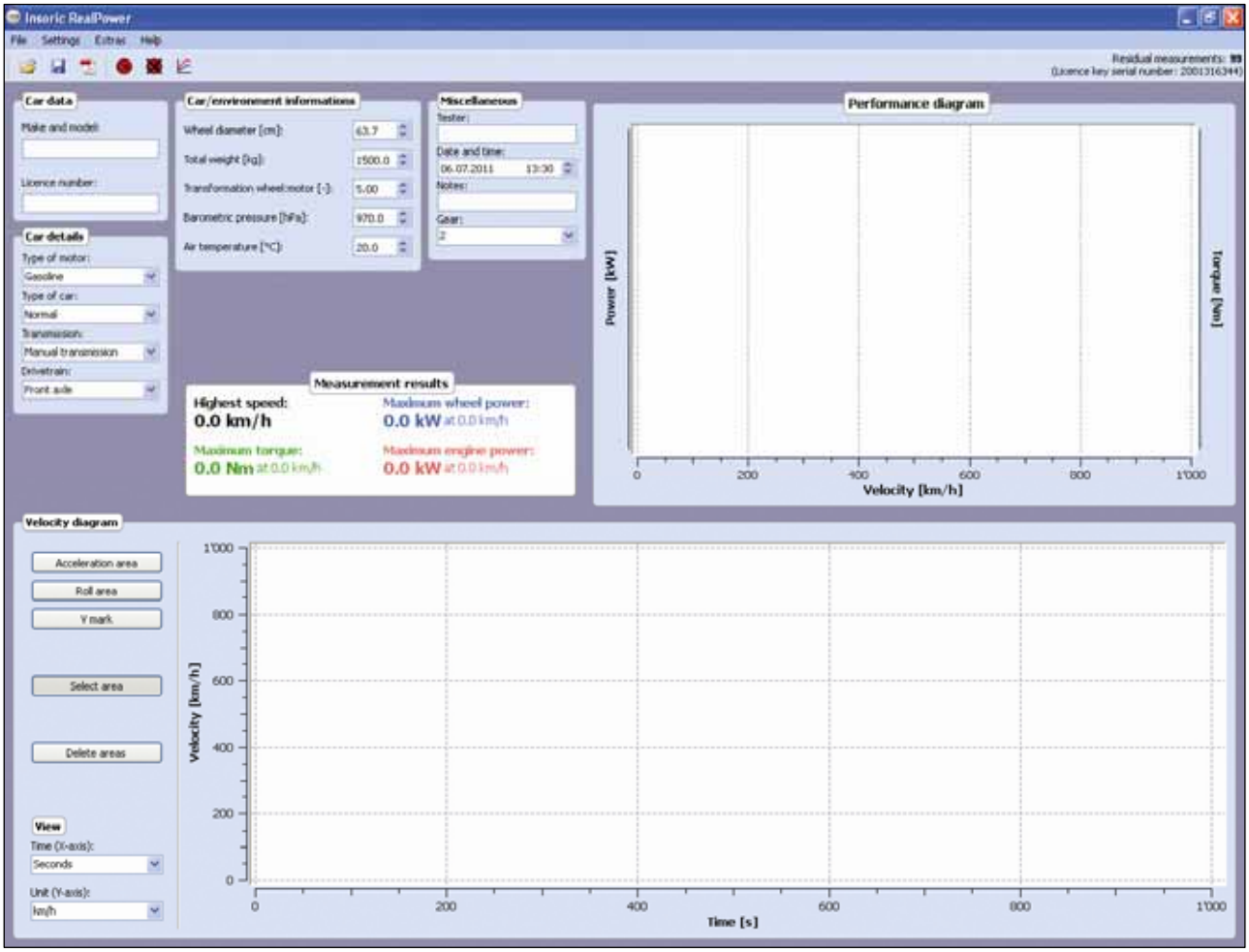
2.7.1 Starting the RealPower software

When the RealPower software is installed, a desktop shortcut is automatically created.

The shortcut is displayed as an icon.

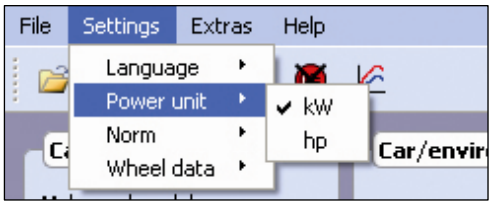
To start the RealPower software you require the licence key (see Section 1.8). Plug the USB stick (see Section 1.3, item 10) on which the licence key is stored into an available USB port on your PC.

Double-clicking the program icon will then start the user interface of the RealPower software.

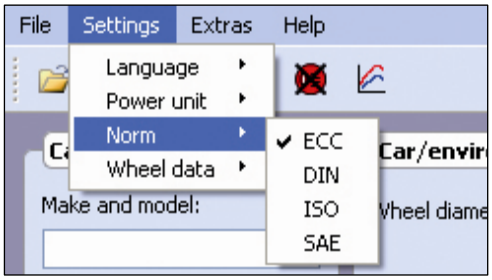


2.7.2 Entering basic settings

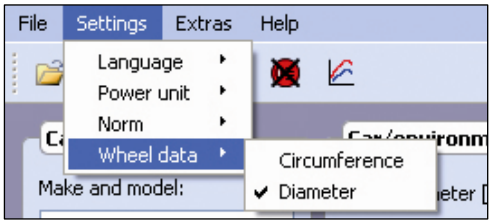
Go to the menu item **"Settings ⇨ Language"** on the pull-down menu and set the desired language.



The menu option **"Settings"** ⇨ **"Power unit"** allows you to choose between kW and hp.



The setting **"Norm"** is for calculating the adjustment and is preset.



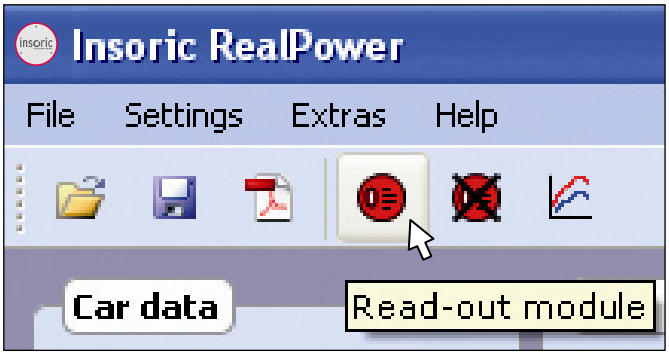
The option **"Wheel data"** allows you to specify the unit for the wheel dimensions.

You should have measured the wheel diameter using the wheel measuring device supplied with the product (see Section 2.6.2).

2.7.3 Reading the data from the RealPower module

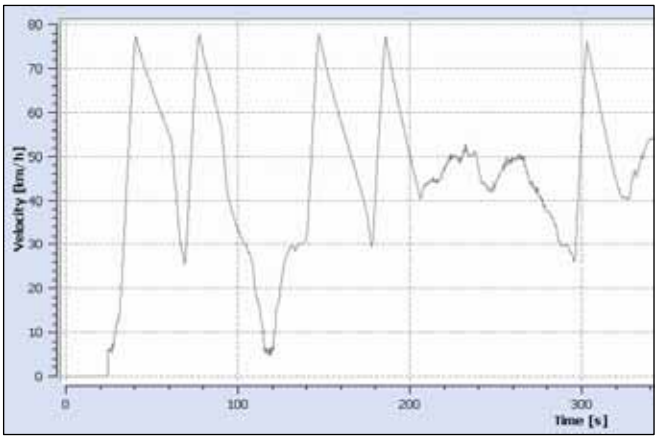
Now connect the RealPower module to the PC using the USB lead supplied and switch it on.

The green "ON" LED should start flashing.



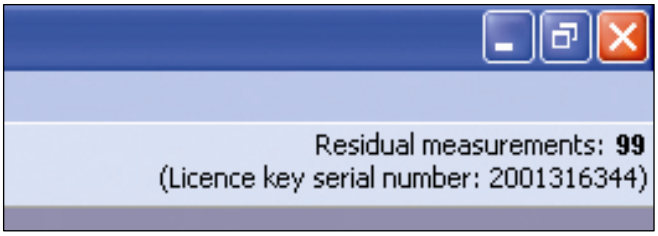
Activate the RealPower module by clicking the **"Read-out module"** button. The process of reading/transferring the data then starts.

A green progress bar appears in the bottom right corner of the application window.



Once all the data has been successfully read from the RealPower module, the progress bar window is closed and the power traces recorded appear on the velocity diagram.

If there are problems with data transfer, an error message appears.



After completion of data transfer, the RealPower software automatically reduces by one the number of remaining tests shown in the top right corner.

Choosing **"File ⇨ Save"** saves the data on your PC. The file name and where it is saved are always user-definable.

The data remains on the RealPower module even after data transmission.

Clicking the **"Delete module data"** button completely and irretrievably deletes all data from the RealPower module memory.

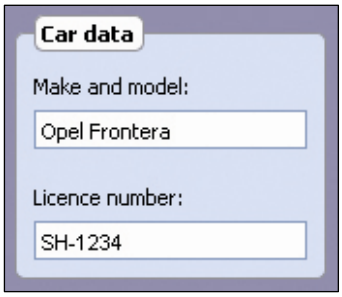
Before wiping the module memory, please make sure that you have saved the data on your PC.

2.7.4 Analysing the results

2.7.4.1 Entering parameters

Now you should enter the parameters already mentioned in Section 2.6.1 in the RealPower software program. *If you have completed the "Data checklist", you should have all the information to be entered manually available at a glance.*

Car data

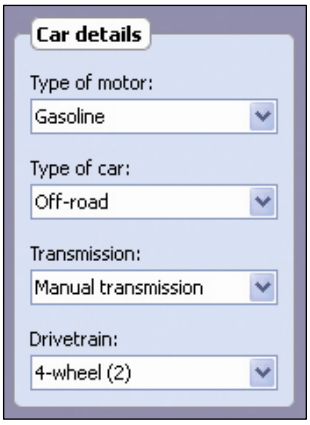


In this window you enter the make, model and licence number of the car. Those details will appear on the test certificate later on.

Make and model

Licence number

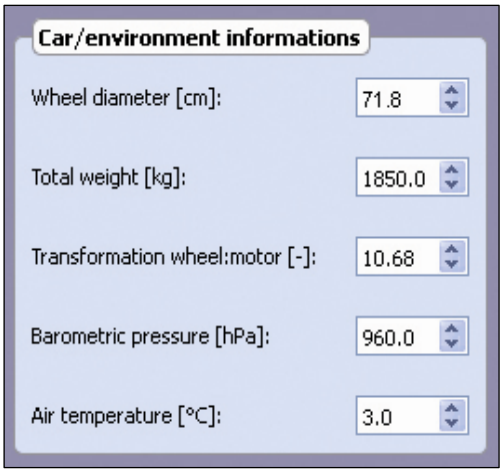
Car details



In this window, you select the type of motor, vehicle, transmission and drive. *The options are selected from the drop-down lists.*

Type of motor	Car documents
Type of car	Car documents
Transmission	Car documents
Drivetrain	Car documents

Car / environment informations



In this window you enter the vehicle parameters and the environment informations during the road test.

Wheel diameter	Wheel measuring device
Total weight	Car documents: vehicle unladen weight* + weight of all vehicle occupants
Transformation	Car documents or by means of V mark (see Section 2.7.4.3)
Barometric pressure	Barometer
Air temperature	Thermometer

Miscellaneous

In this window you specify the name of the tester, date and time of the test and other details of the road test or the vehicle.

Tester

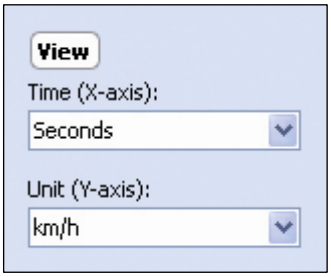
Date and time

Notes

Gear
The gear selected during the acceleration phase of the road test.

** For vehicles registered from 1995 onwards, the vehicle unladen weight stated in the registration documents usually equates to the weight of the vehicle with the fuel tank 90 % full plus the weight of the driver (75 kg). For vehicles registered before 1995, the vehicle unladen weight is usually only the weight of the vehicle with the fuel tank 90 % full.*

Parameters for X and Y axes



The parameters for the X and Y axes can be set on the **"View"** menu at the bottom left of the RealPower application window.

The time on the X axis can be shown in seconds, minutes or hours.

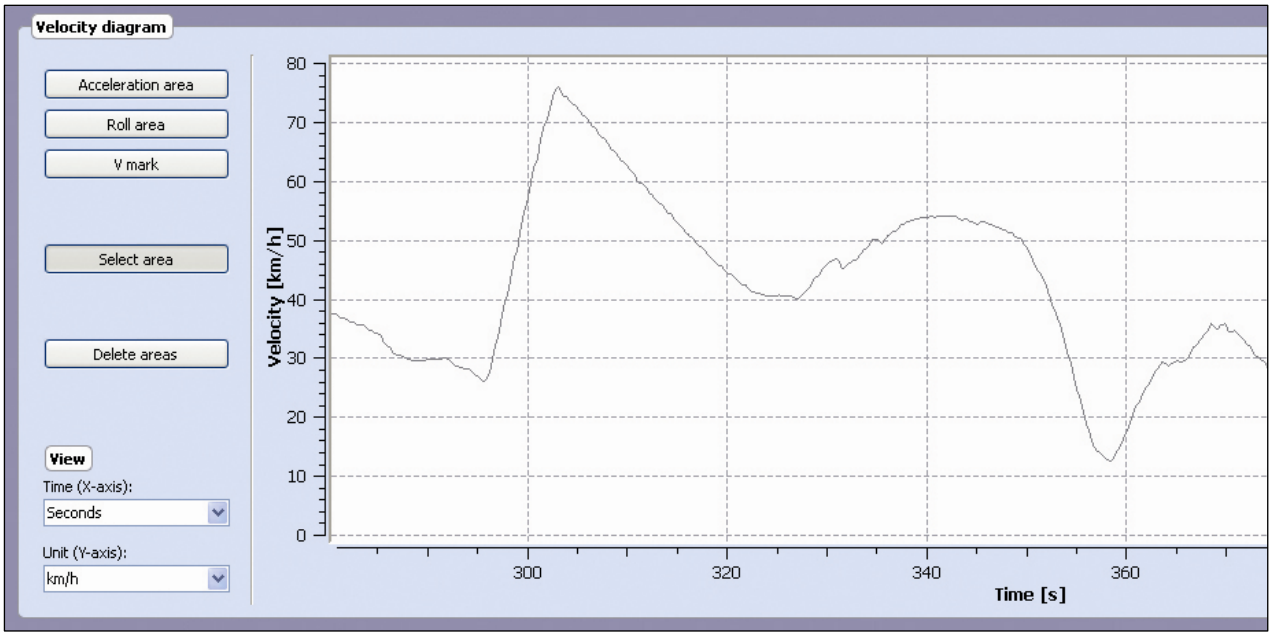
The unit for the Y axis can be set to m/s, km/h, mph, 1/s (wheel), rpm (wheel), 1/s (engine) and rpm (engine).

2.7.4.2 Marking the acceleration and roll areas

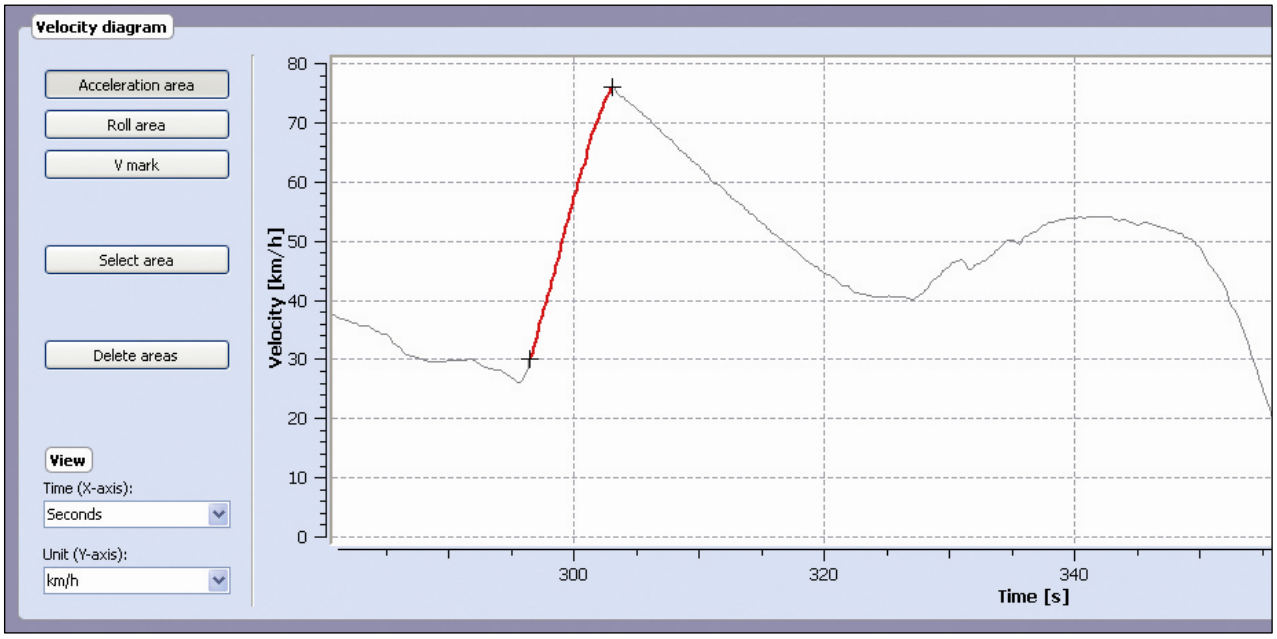
So that the power can be calculated, you have to mark an **acceleration area** and a **roll area** on the velocity diagram.

Zoom function

To make the selected window clearer and to make it easier to mark the acceleration and roll areas, you can use the zoom function.
To do so, rotate the scrolling wheel on your mouse until the window contents are magnified to the desired size.



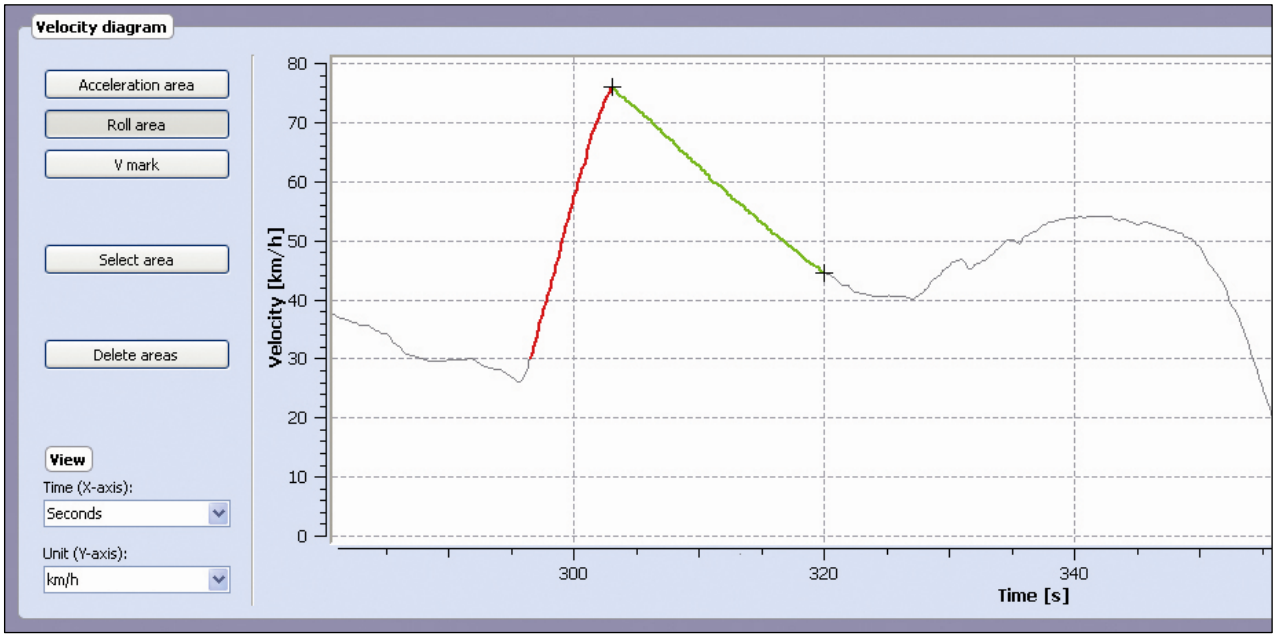
Marking the acceleration area



Now click the **"Acceleration area"** button on the **"Velocity diagram"** menu. Position the cursor (cross-hairs) at the start of the acceleration area you wish to mark and click the left mouse button to confirm that point. Now position the cursor at the end of the section you wish to mark and left-click with the mouse again. The acceleration area is now shown coloured in red. That completes the marking procedure.

Please note that the selected section should be as close as possible to a straight line without zig-zags. The direction in which the gradient is marked (i.e. from top to bottom or from bottom to top) is of no consequence.

Marking the roll area



Now click the **"Roll area"** button on the **"Velocity diagram"** menu. Position the cursor (cross-hairs) at the start of the roll area you wish to mark and click the left mouse button to confirm that point. Now position the cursor at the end of the section you wish to mark and left-click with the mouse again. The roll area is now shown coloured in green. That completes the marking procedure.

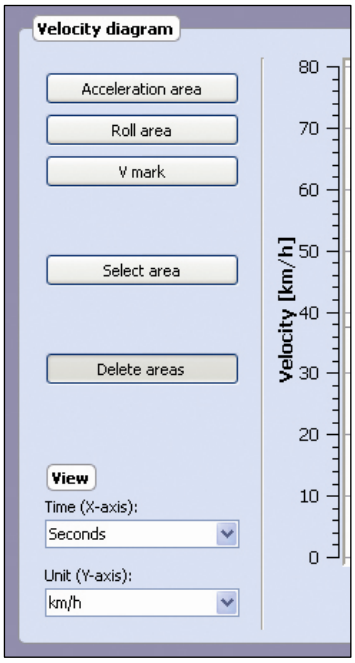
Please note that the selected section should be as close as possible to a straight line without zig-zags. The direction in which the gradient is marked (i.e. from top to bottom or from bottom to top) is of no consequence.

Selecting the acceleration and roll areas

Insoric RealPower allows you to select individual acceleration and roll areas.

To do so, click the **"Select area"** button on the **"Velocity diagram"** menu. Then select the acceleration and roll areas to be used for the analysis by positioning the cursor (cross-hairs) on the desired sections and clicking the left mouse button to confirm in each case. After selection (cursor changes to hand), the selected gradients are highlighted, i.e. shown in **bold**.

Removing incorrectly marked areas

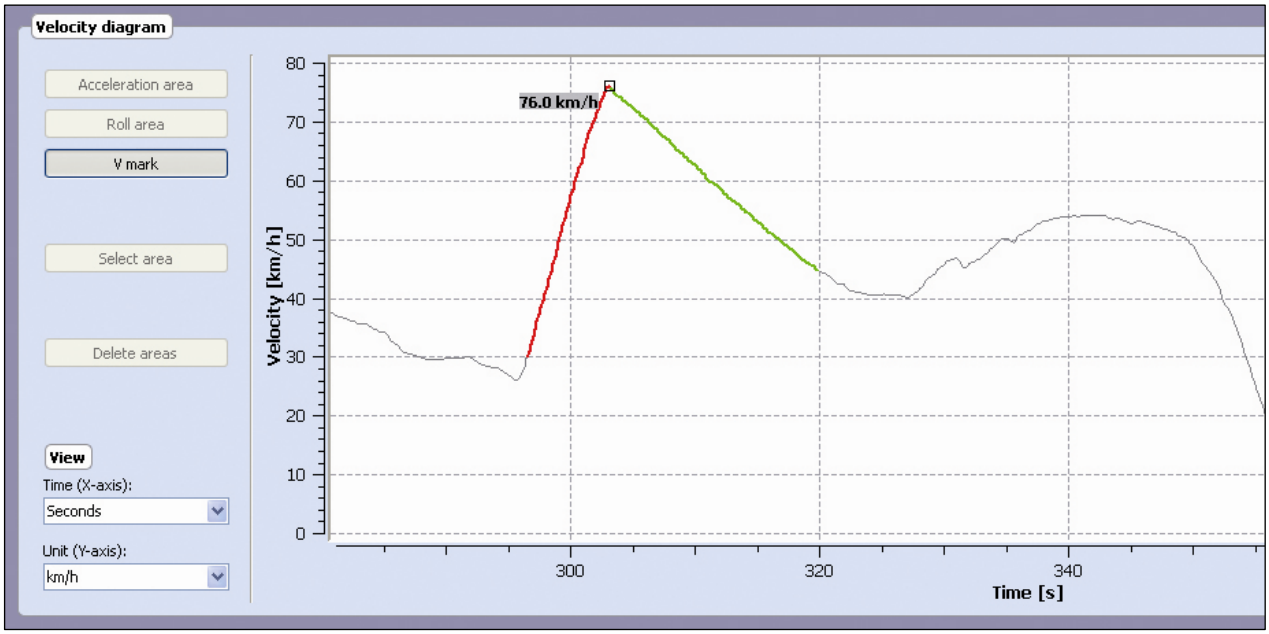


Incorrectly marked diagram areas can be unmarked by clicking the **"Delete areas"** button.

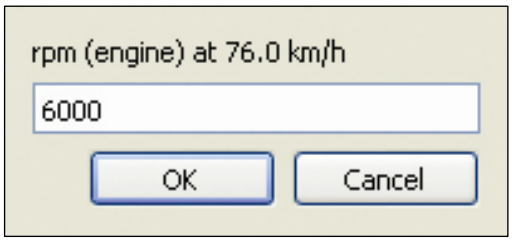
The cursor then changes into a hand symbol. Clicking the incorrectly marked gradient unmarks it.

2.7.4.3 V mark

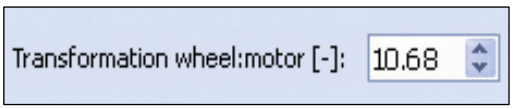
The V mark is used to determine the transformation between wheel and motor **if it is not known**.



The V mark function allows you to specify the relationship between vehicle speed and engine revolution at various points along the acceleration gradient (at intervals of 1/10 of a second). When you click the V mark button, a small square appears on the diagram. That square can be moved to any position along the diagram. As you do so, the road speed measured every 1/10 of a second is shown. If you know the engine speed for any of the measured road speeds, you move the mark to that point and left-click to fix it on the velocity diagram.



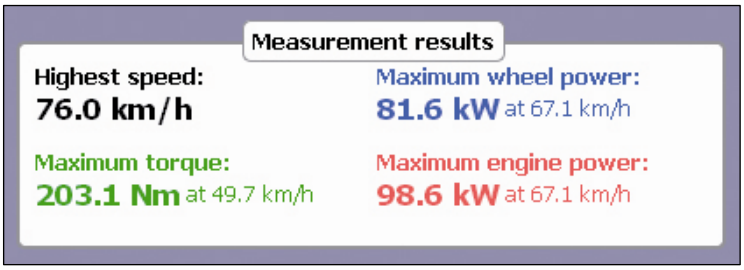
Then a window automatically opens for you to enter the engine revolution that was shown on the rev counter when the car was travelling at the road speed you have just marked on the diagram.



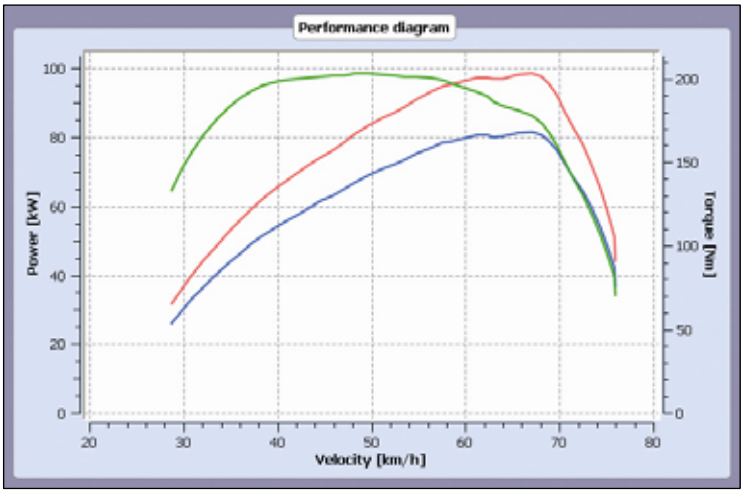
After you have entered the engine revolution, the wheel-to-motor transformation is automatically calculated and shown in the "Transformation wheel:motor [-]:" window.

*If the V mark/engine revolution is **not** specified, the transformation for the gear in which the road test was carried out must be entered directly in the **"Car/environment informations"** ⇨ **"Transformation wheel:motor [-]:"** window.*
The details of the transformation ratio can be found in the owner's manual for the vehicle or the manufacturer's technical documentation.

2.7.4.4 Displaying the measurement results



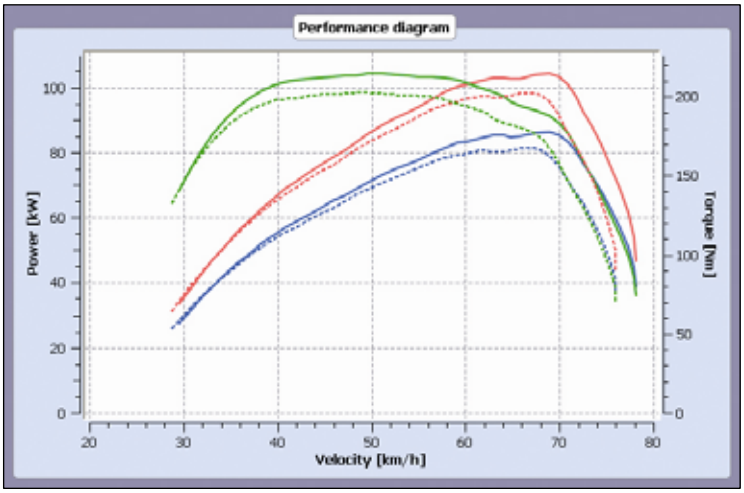
If the vehicle-specific parameters and the acceleration and roll areas have been correctly specified, the performance figures are now shown as maximum levels ...



... and as curves on the performance diagram.

2.7.4.5 Freezing the power diagram

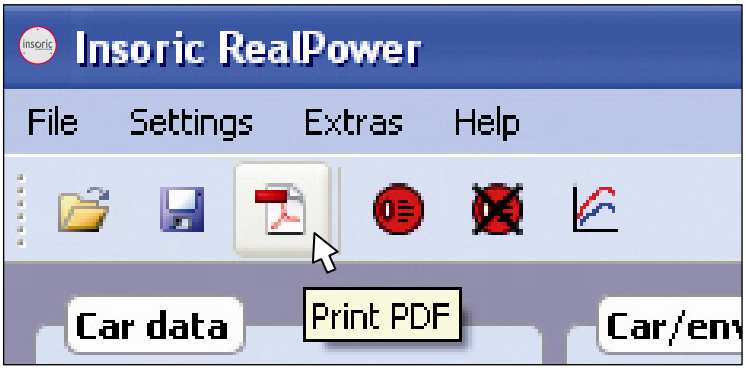
After analysing the data from a road test, the power curves can be fixed (frozen) on the performance diagram. This function is suitable for comparing the power curves from two different tests. To do so, first click the Freeze power diagram button.



Then open a different, previously saved test. The performance diagram then shows the frozen test with broken lines and the new test opened with unbroken lines. In that way, two different sets of measurement results can be compared with one another.

2.7.5 Producing a test certificate

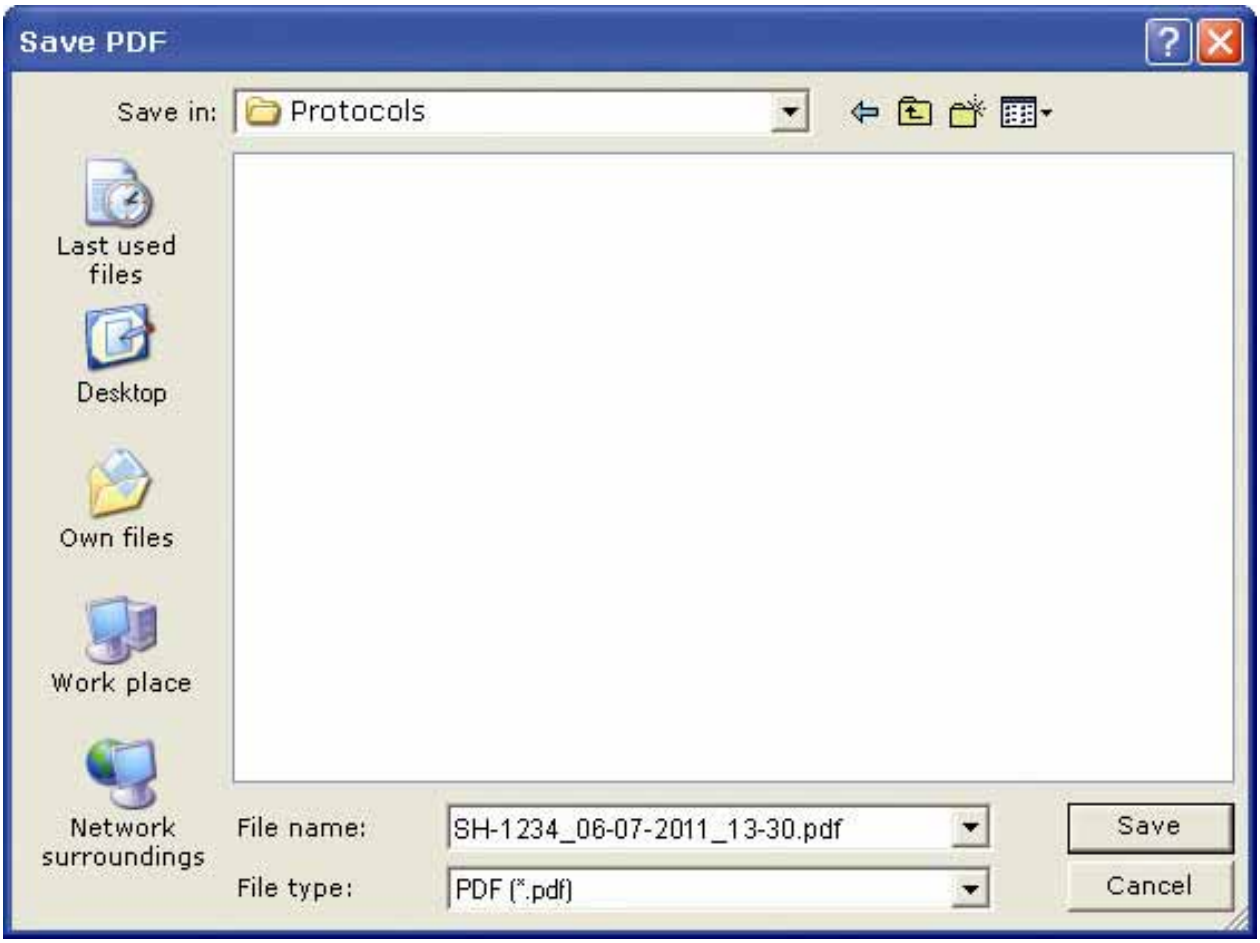
As soon as the analysis of the data from a road test is complete, all the results can be printed out in a test certificate.



Clicking the **"Print PDF"** button creates a PDF document and then opens it in the Acrobat Reader® application. The test certificate can then be printed out on a printer using the print function in Acrobat Reader®.

To print out the test certificate, you need the Acrobat Reader® application.

When you press the **"Print PDF"** button, a window opens suggesting a file name and location for saving the PDF file.

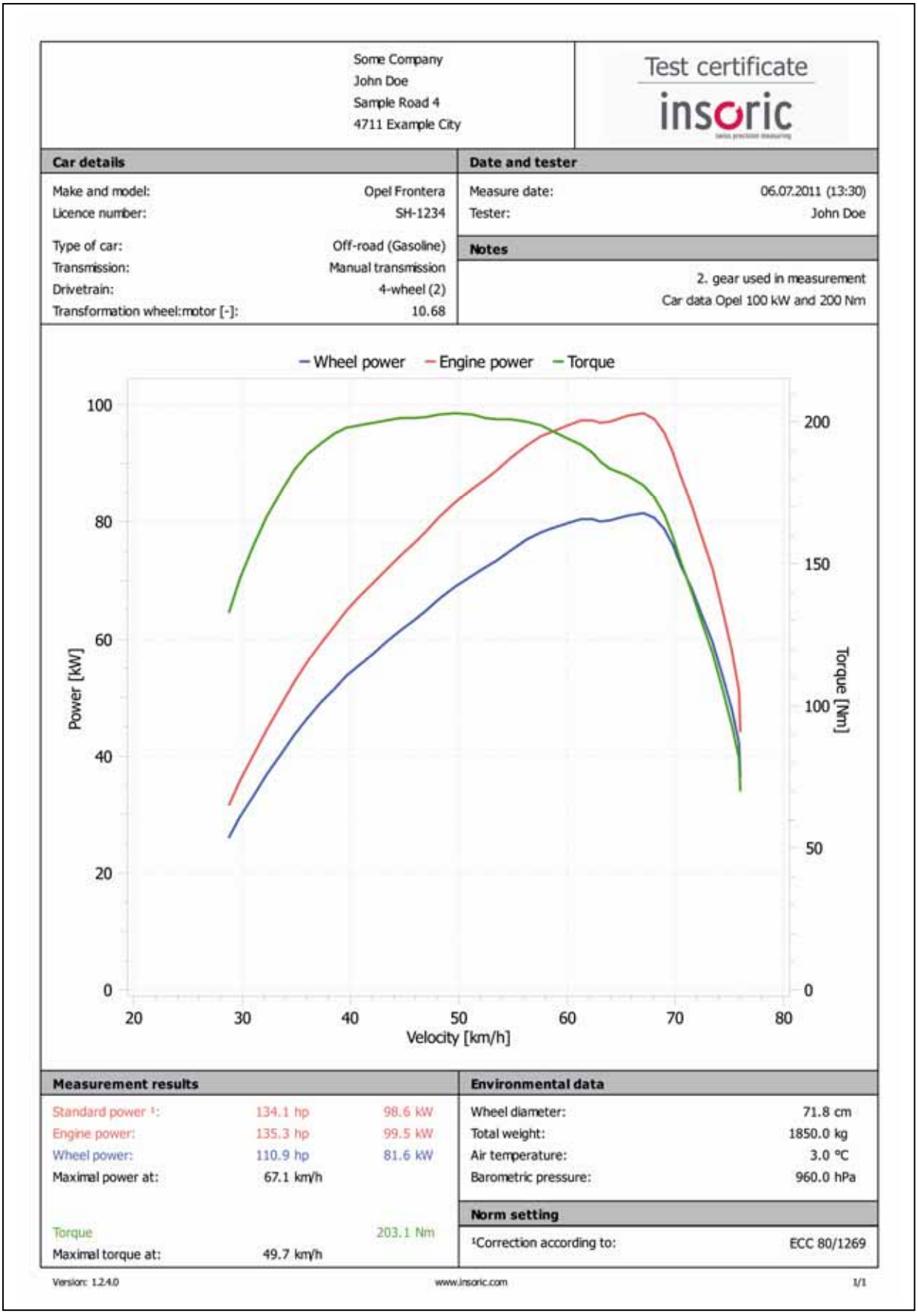


A file name that clearly identifies the measurement results – e.g. indicating registration number, date and time – will simplify subsequent retrieval of the data and prevent accidental deletion of other files in the same folder.

The RealPower software automatically creates a folder for PDF files when it is installed. However, you can choose to save the files anywhere else.

Pressing **"Save"** saves the file with the specified name in the specified folder/directory.

When the file has been saved, the test certificate is displayed on the screen.



Some Company
John Doe
Sample Road 4
4711 Example City

Test certificate

insoric

Car details		Date and tester	
Make and model:	Opel Frontera	Measure date:	06.07.2011 (13:30)
Licence number:	SH-1234	Tester:	John Doe
Type of car:	Off-road (Gasoline)	**Notes**	
Transmission:	Manual transmission	2. gear used in measurement Car data Opel 100 kW and 200 Nm	
Drivetrain:	4-wheel (2)		
Transformation wheel:motor [-]:	10.68		

Measurement results			Environmental data	
Standard power [1]:	134.1 hp	98.6 kW	Wheel diameter:	71.8 cm
Engine power:	135.3 hp	99.5 kW	Total weight:	1850.0 kg
Wheel power:	110.9 hp	81.6 kW	Air temperature:	3.0 °C
Maximal power at:	67.1 km/h		Barometric pressure:	960.0 hPa
			Norm setting	
Torque		203.1 Nm	[1]Correction according to:	ECC 80/1269
Maximal torque at:	49.7 km/h			

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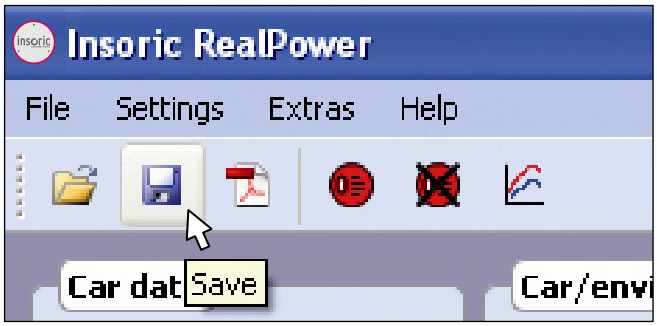
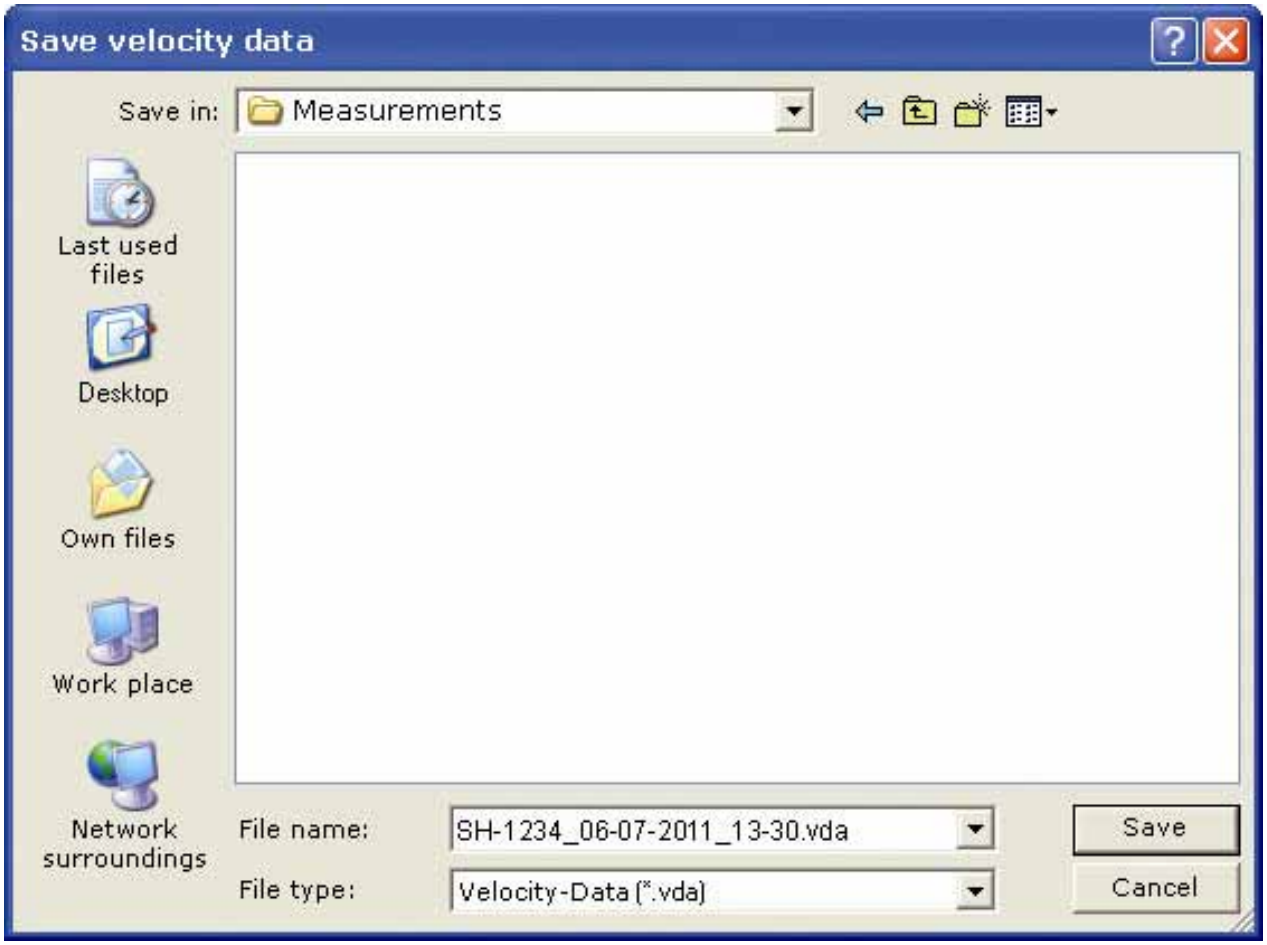
2.7.6 Saving the measurement results



Analysed test data can be saved to your hard disk by pressing the **"Save"** button or by Choosing **"File ⇨ Save As"**.

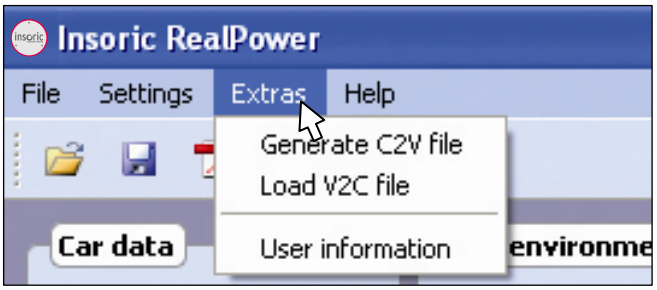


The RealPower software suggests a clearly identifiable name for the file.
That name is made up of the registration number, date and time. But here again, you can change the file name and where it is saved as you wish.

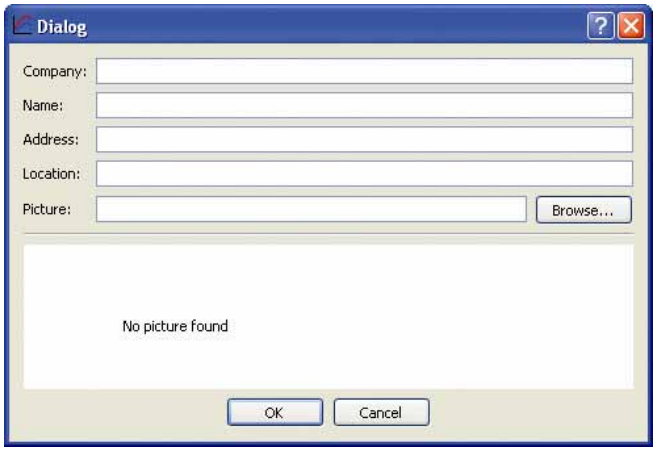
2.7.7 Opening measurement results

You can open previously saved test data or test certificates by choosing **"File ⇨ Open"** or clicking the **"Open"** button.

2.7.8 User informations



Choosing **"Extras ⇨ User information"** opens a window in which you can enter general details that are to appear on the test certificate.



*The other items on the **"Extras"** menu are not required for normal use of the RealPower software. They relate to individual customer service and adding extra test credits (Insoric ReCharge).*

3.0 General instructions

3.1 Maintenance and cleaning

Insoric RealPower and its accessories do not require any special maintenance. Dirt that gets onto the equipment in the course of use can be removed with a damp cloth.

NOTICE

Risk of property damage
Washing and immersing in liquids may damage the electronics.

3.2 Rectifying errors and faults

If any faults occur on the Insoric RealPower module ("ERROR" indication) or if it fails to function, you should contact the manufacturer via www.insoric.com/support.
For information on possible faults and how to avoid them during the road test and when reading and analysing data, please contact our Service platform at www.insoric.com/support.

3.3 Technical data

Data analysed to	ECC, DIN, ISO, SAE
Max. recording time	80 minutes
Power consumption	2 mA
Function indication	LED
Measurement accuracy	0.001 Hz at 10 Hz
Operating conditions	0 to 60 °C
Max. rel. air humidity	< 80 % (non-condensing)
Max. operating altitude	2000 m
Weight	28 g
Dimensions (dia. x h)	42 mm x 12 mm

3.4 Disposal

Electronic devices contain recyclable raw materials and should not be disposed of as normal household refuse. When the device has reached the end of its service life, it must be disposed of at a local recycling centre in accordance with the applicable statutory regulations in the country of use.

CE Conformity
The product in the form as delivered is in conformity with the provisions of the following European Directives:

204/108/EC	Electromagnetic compatibility (EMC) – (successor of 89/336/EEC with amendments)
1999/519/EC	Limitation of the public exposure to electromagnetic fields (council recommendation)
2002/95/EC	Restriction of hazardous substances (RoHS)
72/245/EEC	Radio interference (electromagnetic compatibility) of vehicles (Last updated by CE-Conformity 2009/19/EC)

A copy of the original declaration of conformity can be downloaded from www.insoric.com.

RealPower Soft- and Hardware certification
Microsoft®, USB and Dynamic Test Center certifications:

insoric
swiss precision measuring

Notes