User's Manual

Pocket VibPro

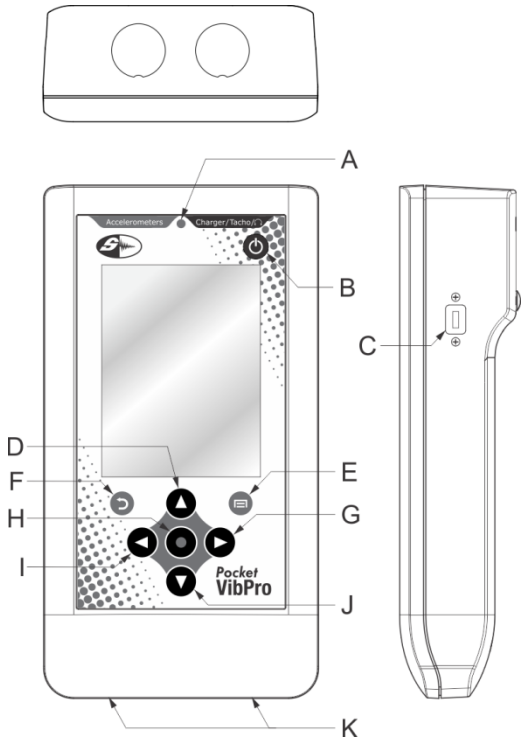
Content

VibPro Pocket parts: 4
Quick Measurement....5
Data Saving 6
Diagnostic ISO-10816-3: 7
Spectrum Graphic 9
Diagnostic IEC 60034 12
Data Collector....14
Detailed measurement: 15
Quick Measurement: 16
Reset Status: 17
Balancing....18
Balancing in 1 Plane:....19
Balancing in two planes: 23
Setting....27
Language:....27
Time and date:....28
Units System:....29
Channels and Sensors: 29
Battery Information:....30

Reports: 31

Connect to PC: 32

VibPro Pocket parts:

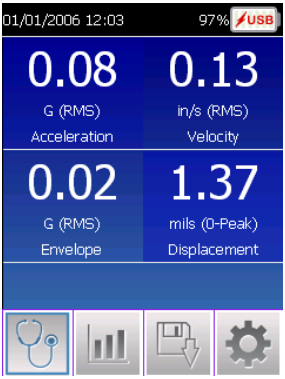


A. Power On Led Light (green) / In-charge indicator (red)
B. On button
C. Micro USB port
D. Upward button
E. Menu button
F. Go back button
G. Rightward button
H. Enter button
I. Leftward button
J. Downward button
K. Base load contacts

Quick Measurement

After initiating the device by pressing the ON key we will be able to see (after a few seconds) in main screen acceleration vibration levels measured in g RMS, velocity measured in mm/s RMS, acceleration envelope measured in g RMS and displacement measured in µm 0-Peak; all this in a way that if the provided sensor is already placed over the equipment that has to be measured, you will be able to visualize in a single screen general vibration level of machine.

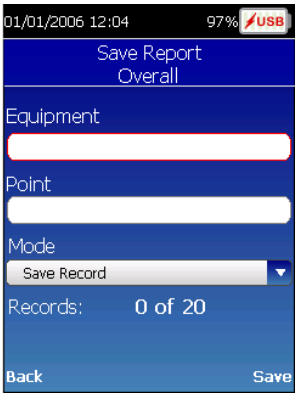
Frequency range managed in the different measurements is as follows: acceleration 2 Hz to 10000 Hz, enveloping, velocity and displacement 2 Hz to 1000 Hz



Data Saving

On lower part of screen, you can see representative icons of different menu options. By pressing menu key these icons disappear from screen.
The third option from the left is the data saving option, by pressing enter over this icon a window will open that allows saving reports in which it will be required to enter the name of the equipment and control point. In order to enter this information, you will have to go to the corresponding box and press enter, this will display a virtual keyboard. This keyboard can be accessed by arrow keys; you can use these keys to select the characters you need to enter.

Finally, you will have to select the mode in which you wish to save data, being PDF, CSV or both.



You can save up to 20 records per Report, once that number is reached, you will have to start a new Report.

Total number of reports is determined by internal SD memory capacity. You can always save space downloading reports to a PC and deleting it from equipment memory.

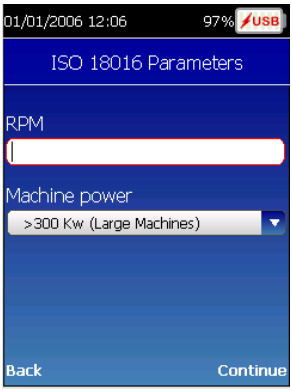
Diagnostic ISO-10816-3:

First menu option on the left is diagnostic function. By selecting this option with the arrow keys (right - left) and then pressing enter (central button) you will access diagnostic parameter configuration screen. This will allow you to evaluate the condition state of the tested machine in accordance to the ISO 10816-3 standard. In order to achieve this, you will just need to enter the operation rpm of the machine and its power expressed in Kw.

In order to enter rpm, you will need to press Enter and a virtual numeric keyboard will display. You can select the corresponding value using arrow keys and then you can accept it with Enter key. If you want to delete an entered number you can use Return key. And finally you can use menu key to accept and save rpm value.

With the Down Arrow key you can switch to Machine Power field, and by pressing again Down

Arrow key a board will display in which you can select Powers. Once here you can select appropriate power by moving through the board with the Arrow keys (down - up). You can accept selection by pressing Enter key, and then you can press Menu key to continue.

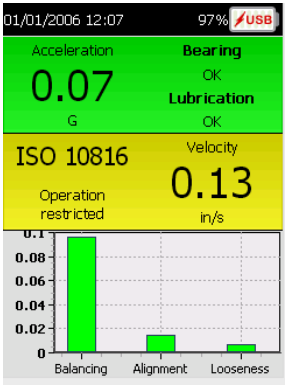


In this way we can access the diagnostic screen in which you can visualize at the top the value of acceleration g RMS and general state of bearing and lubricant film.

In the central part of the screen, you can see the state of the machine in accordance to the ISO 10916-3 Standard and velocity value in mm/s RMS. Finally, at bottom you can see the balancing, alignment and mechanical clearance condition.

Menu will display on screen by pressing the Menu key, and with the Return key you can go back to the main screen.

Saving function works the same way as it does on initial screen, allowing to generate and save a report of performed diagnostic.



Spectrum Graphic

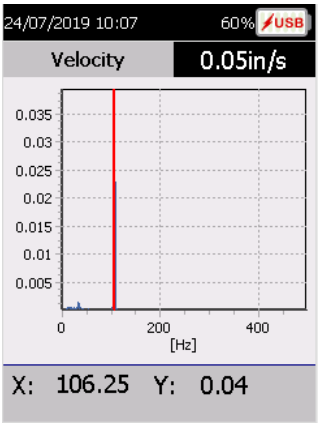
From startup screen, along with activated menu you can access spectrum graphics by activating the menu second icon, in order to do this, you will need to go over this icon with right arrow key and press enter.

The screen will automatically show acceleration spectrum graphic with a maximum frequency of 10000 Hz, with the left-right keys you can select

different resolutions (Lines) and maximum Frequencies for each spectrum. If you want to select a different number of lines or maximum frequencies to one shown by default you will have to go over the corresponding parameter and change it using up-down arrow keys.

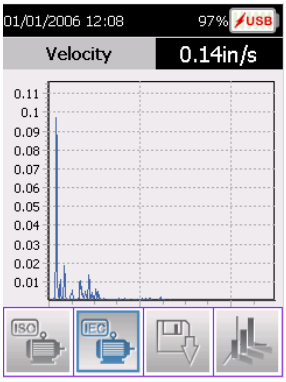
To change the variable, you will need to press Enter and screen will start showing the different spectrums according to the following order: acceleration in 10000 Hz, velocity in 1000 Hz, displacement in 500 Hz and enveloping in 1000 Hz, all spectrums will be shown in 400 lines of resolution and total value in RMS at top right side of the screen.

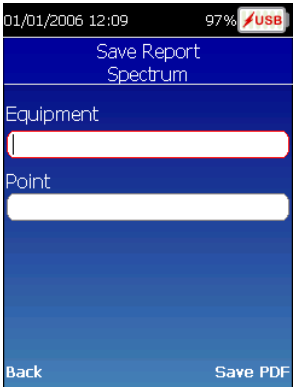
Cursor tool: To activate the cursor on spectrum screen you must press menu key and looking for the second option from the left with enter will activate the cursor.



This will be located automatically on the component of greater amplitude showing on lower part of the screen the X and Y values, to move the cursor it is enough to press left or right keys and the cursor will move line by line for one side or the other, pressing the up or down keys the cursor will move from to 10 lines each time for one or the other side

You can save measured spectrums by entering the aforementioned menu option, allowing generating a PDF of each of the spectrums shown in screen.

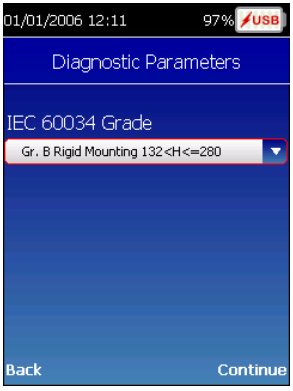




Diagnostic IEC 60034

By activating menu in spectrums screen you can access the IEC 60034 Standard application to diagnose motors in the workshop. By pressing the second icon you can access Diagnostic Parameters screen, with Down arrow key you can activate selection of the norm subgroup, you will have to choose the appropriate one in accordance to the motor that is going to be tested according to the following consideration:

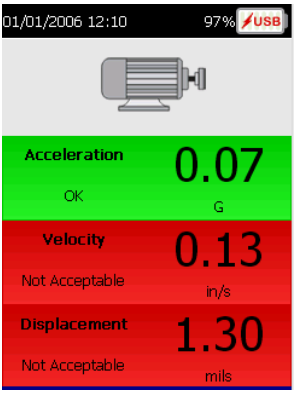
Grade A for motors in general, Grade B for motors with special requirements. You will have to select "Suspension" if the motor is simply leaning on the floor, "Montage" if the motor is rigidly tied on the floor and finally define the range of "H", which is the height from the axis center to the ground.



Once you selected the appropriate criterion press Enter and then "Continue".

Screen will then display variable, acceleration RMS value and condition, velocity and displacement in accordance to the standards of the aforementioned norm.

Saving function works the same way as it does in main screen, allowing generating and saving a report of the performed diagnostic.



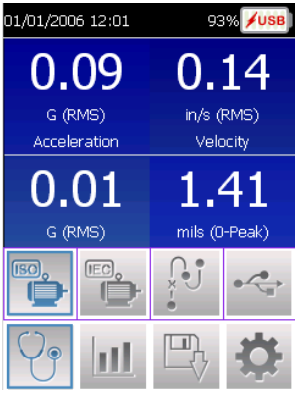
Activate Menu and select the spectrum icon to enter to spectrums screen, once there you can go back to startup screen by pressing Return.

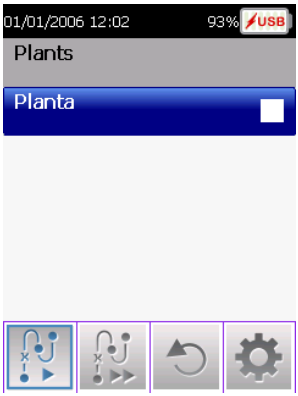
Data Collector

From start screen, select icon on the left side of menu and press Enter.

You will access the second Menu bar. Press right arrow key till you reach the third option from left and thus access the Routes Measurement function.

Press Menu key and select icon on the right. Press Enter to access configuration of the VibPro.





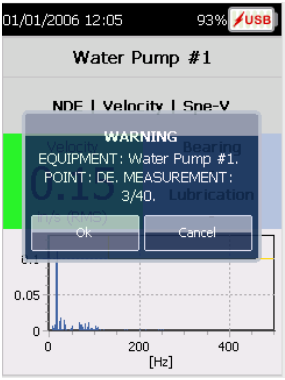
In Configuration mode, activate "Connect to PC" option. The message "Connect the equipment to the PC" will appear; at that time connect equipment using the USB cable provided, then proceed to load a route as described in the Machinery Control Software manual. After this disconnect USB cable (always perform a safe disconnect, using the standard Windows procedures from PC) press

Menu key and then Back key to exit configuration. Turn the equipment off.

Turn the equipment on again, enter route option as explained above, select "plant" to measure and press Enter, select subplant and press Enter, select the route and press Menu. On the left you will see two measurement options, Detailed and Quick.

Detailed measurement:

Select this option and press Enter. This mode measures step by step each measurement, always displaying the value or graph corresponding to each measurement, always waiting for confirmation from operator. When each new point or equipment message appears, you must press Enter key to begin measuring.



To confirm the current measurement and advance to next one, press the Enter key again. This option is ideal for an operator with analyst capabilities, since it will allow you to have an idea of the state of equipment as you carry out the routine. When a new measurement is displayed, you can discard it and measure again by pressing the Left key, pressing the Return key will exit the measuring mode and display plant again.

Quick Measurement:

This mode captures all measurements configured at point without interacting with the operator, eg: ACCELERATION, VELOCITY and ENVELOPE SPECTRUM. If the values of all these measurements are "Normal" they are recorded in memory without displaying any graphs. Screen will flash for an instant this condition and move on.

If any of the measurements are flashed as CAUTION or EMERGENCY, you can see the graph, if you choose to do so, and then you can record with Enter key.

If you want to repeat the measurement simply press the Left key and measurement will be repeated again as many times as desired.

This can be done at each point of the machine. Unit will tell you when to move from point to point. Obviously, this implies repositioning the sensor.

Reset Status:

This function is very important because it allows operator to return status of a route and measurement to a Non-Measured state, in order to perform a new measurement of the equipment of the route without losing measurements already performed.

These past measurements will remain in memory of equipment, in this way the same route can be remeasured as many times as required, without needing to connect equipment to PC.

All you have to do is select the route you want to measure again and press Menu key and then press RS to reset it to Not Measured.

When you perform a status reset, values contained in database of last measurement become part of the history that is generated within the VibPro database.

Once you have confirmed the command to reset a plant or route, you will not have access to values of the last run, until a transfer is made to the DSP Machinery Control software.

After completing the route measurement, press Menu key and select configuration option to reconnect the equipment to PC and download measured route as described in Machinery Control manual

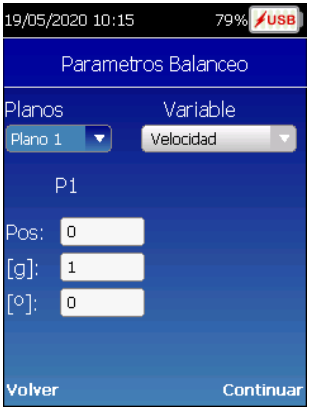
NOTE:

In data collector option, this equipment supports measurements of 25600 lines of resolution at maximum frequencies of no less than 200 Hz, with a resolution of 12800 and 6400 lines. Maximum frequencies cannot be less than 50 Hz. At 3200 lines the maximum frequency cannot be less than 20 Hz, for the rest of the resolutions there is no frequency limitation.

Balancing

From home screen selecting icon on left of menu and pressing Enter, the second menu bar is accessed, with right arrow key, activate the fourth option from the left and thus access to rotor balancing function.

When entering configuration screen, you must first select if you are going to balance on one or two planes, to select the different options we move with keyboard arrows and display options with the central key, select the desired option and confirm by pressing the center key again.



Balancing in 1 Plane:

We move through configuration of parameters with arrow keys and the first option allows us to select variable that will be used to perform balancing, being able to choose Velocity or Displacement

Note:

For rotation speeds less than 400 RPM, it is recommended to select Displacement since it is the variable that is most amplified at low RPM, which will

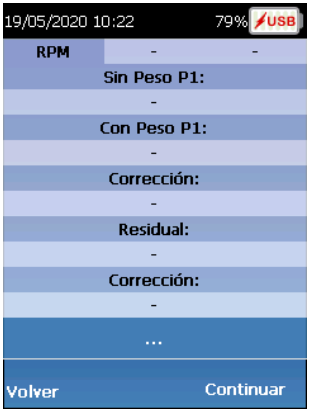
make the system more sensitive to vibration caused by imbalance.

Next option allows us to enter the number of fixed positions where to place correction weights (for example, the blades of a fan), if you enter a certain number of positions the system will tell us how to distribute correction weight between two consecutive positions, positions are counted upwards from position 1 which must coincide with the position of mirror tape placed on the rotor to be read by optical sensor and coinciding with direction of rotation of the rotor, if 0 is entered the system will deliver as a correction position a fixed value expressed in degrees, taking the position of the tape as 0 ° and counting up to 360 ° in direction of rotation

Finally, test weight to be used must be entered in grams and its position, always with respect to tape, pressing continue, we are already in a position to start balancing, by this time both vibration sensor and tachometer must be connected and positioned.

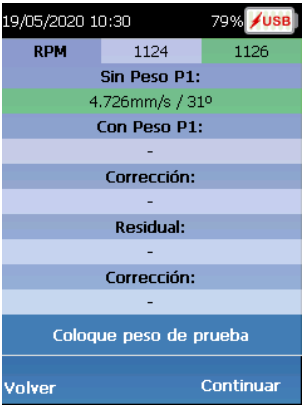
Before pressing continue to start the process, rotor must be rotating at the speed to which it is going to balance, press continue and when you see that the rpm read is stable press again continue, then

carefully follow instructions at bottom of screen that will guide you through whole process.

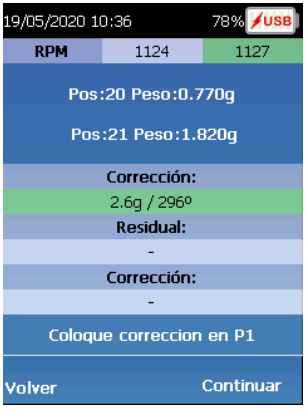


Pressing continue measures an initial spectrum of system and then the initial unbalance value will be measured automatically, press continue again and this value is saved and indication to place the test weight appears.

Stop the rotor, place test weight in indicated place, start the rotor again and when it reaches working speed press continue, system will measure the unbalance condition showing it on screen, when it is stable press continue and system will show the weight and correction position, if number of positions was entered it will also show weight distributed in two consecutive positions.



Stop the rotor, remove test weight, set the correction weights and start rotor, pressing continue will show obtained vibration value, a second correction may be necessary to achieve optimum balancing, press continue and system will show the new correction, stop the rotor, put new correction weights without removing the old ones and press continue, when rotor is running again, now the system asks if you want to continue with balancing, if you select Yes, it will give you a new correction, selecting no, will measure final spectrum finishing the process, press continue twice and you can save a report in PDF with the name that you designate



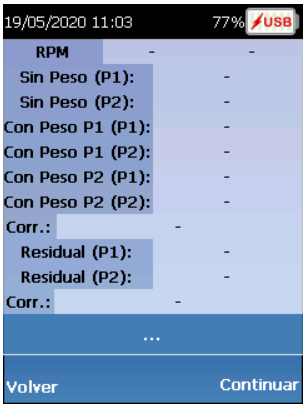
Balancing in two planes:

Selecting the option 2 planes the screen is divided into two columns allowing to enter parameters for each plane.

Here the same considerations apply as for balancing in one plane, taking into account that correction weight can be the same for both planes or different, entering value as appropriate, at the end we press continue to start the process, make sure that both the tachometer as the vibration sensor are already positioned, vibration sensor on plane designated as 1.

Before pressing continue to start process the rotor must be rotating at speed to which it is going to balance, press continue and when you see that the

rpm read is press again continue, then carefully follow the instructions at bottom of screen that will guide you through whole process.

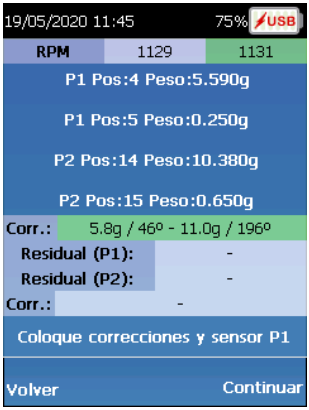


Place sensor on plane 1 and pressing continue measures an initial spectrum of the system for plane 1, press continue and place sensor on plane 2, press continue and initial spectrum of plane 2 will be measured, press continue and place the sensor on plane 1, press continue and initial unbalance value in plane 1 will be measured, press continue again, this value is saved and place sensor on plane 2, press continue and now the value of plane 2 is measured.

Stop rotor, place test weight on plane 1 in indicated place, place sensor on plane 1, start rotor again and when it reaches working speed press continue, system will measure unbalanced condition of plane 1 showing it on screen, when stable press continue and place sensor on plane 2, press continue and system will measure the unbalance condition of plane 2 showing it on screen, when it is stable press continue.

Stop the rotor, remove test weight from plane 1, place test weight on plane 2 in the indicated place, place sensor on plane 1, start the rotor again and when it reaches working speed press continue, system will measure the unbalance condition of plane 1 showing it on screen, when it is stable press continue and place sensor on plane 2, press

continue and system will measure unbalance condition of plane 2 showing it on screen, press continue the system will show weight and correction position for both plane 1 and plane 2, if number of positions was entered it will also show weight distributed in two consecutive positions, for each plane.



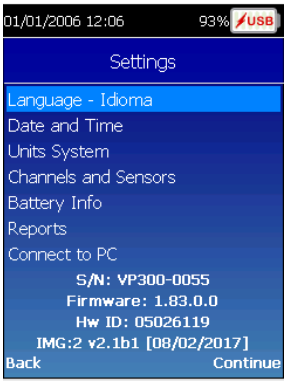
For rotor, remove test weight from plane 2, place correction weights in each plane, place sensor on plane 1 and start rotor, pressing continue will show vibration value obtained on plane 1, press continue and place the sensor in plane 2, pressing continue will show the value obtained in plane 2.

A second correction may be necessary to achieve optimal balancing, press continue and system will display new correction, for rotor, place new correction weights without removing the old ones

and perform above operation again, now the system asks if you want continue balancing, if you select Yes, it will give you a new correction, selecting no, it will measure final spectrum for each plane, finishing the process, press continue twice and you can save a report in PDF with the name that you designate

Setting

From startup screen you can access equipment configuration by selecting the icon to right of menu and pressing Enter.



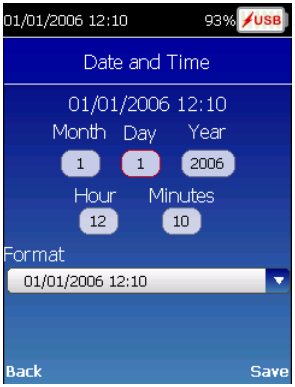
In this screen are presented various parameters that allow defining general configuration of system:

Language:

Allows switching equipment operation language between Spanish, English, Chinese and Portuguese.

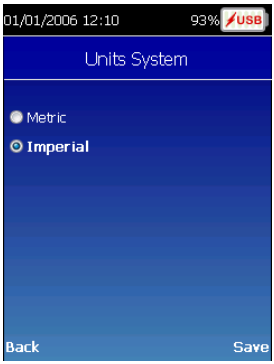
Time and date:

Modifies time and date of the system. Although equipment is configured from factory with correct time and date, it is possible, due to different time zones, that there may be need to correct this data.



Units System:

Allows switching between metric and imperial system. This will only affect velocity and displacement measurements displaying them in in/s and mils respectively.



Channels and Sensors:

This option allows to change sensibility of the sensors to use in case you want to use a different sensor to the one provided with the equipment.

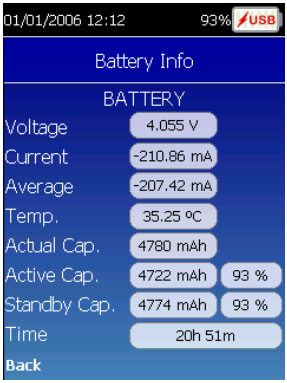
In order to do this, you will need to select the corresponding channel with the up-down arrow, then with Enter the numeric keyboard will be enabled to enter the sensor sensibility expressed in mV.

In this option it's also be found the possibility to select the applicable filter to the enveloping

measurement. There are four options: none (no applicable filter), 1250 Hz to 2500 Hz, 2500 Hz to 5000 Hz and 5000 Hz to 10000 Hz. The 1250 Hz to 2500 Hz filter is the one selected by default.

Battery Information:

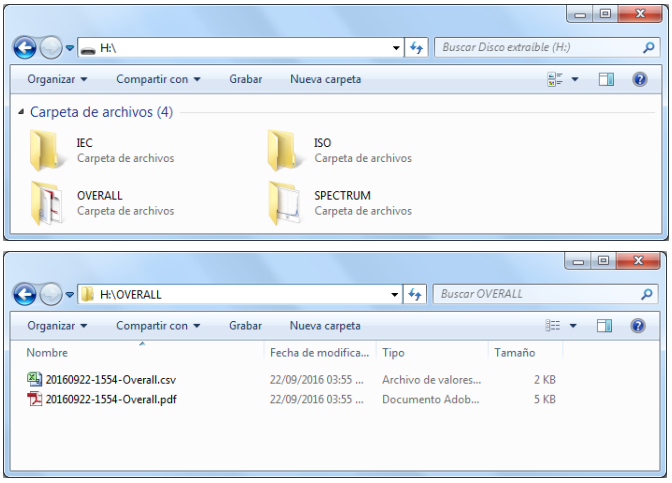
This screen is solely informative. It displays information in regards to state and capacity of the battery. Finally, time field shows estimated time remaining of equipment battery.



Reports:

This option allows adding to report name of company and name of the inspector that performed measurement. If you wish to do so, you can also add to report a company logo.

Connect to PC:

You will have to choose this option each time that you wish to download saved reports to a PC, by connecting equipment by means of th provided USB cable.

Equipment content: