



## User's manual Calibration Bench

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CIRCULATION :	ECHOSENS / NOTIFIED BODIES
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### MODIFICATIONS :

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21/11/08	2	Add upgrade install : chap 5	SLM
21/04/09	3	Add calibration.ini details §7.4 Modified upgrade install §5.1 Merge with E110M002 and deletion of paragraph to be not known by the final user	ST MA DP
14/05/09	4	Modification of the update procedure + add the description of the calibration report	FM
18/10/10	5	Update procedure for the new probe model 7, 8 and 9	EL
01/11/10	6	Update procedure "Software installation and update"	EL
11/07/11	7	Change corporate name and amount of capital	VL
19/03/12	8	Update procedure for new release of NI-DAQmx 9.5 and Windows 7	EL
26/02/13	9	Format adaptation – address modification	EL
26/03/13	10	Add calibration connectivity	EL



# **Echosens Calibration Bench**

## **USER'S Manual**

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# 1. PURPOSE OF THE MANUAL

***The present User Manual has no contractual value whatsoever and, under no circumstances may Echosens be held responsible on the basis of the information contained in the present manual.***

The present *user manual* details all of the information required for the installation and use of the Calibration Bench. Thus, after carefully reading the manual, operators shall be able to:

- Connect the probes to the Calibration Bench
- Do the calibration of the probes

The present manual contains a troubleshooting section.

Echosens publishes this manual "as is", without guarantees of any nature, whether explicit or implicit, including, but not limited to implicit guarantees or merchant conditions, or adaptation for specific use in view of providing simple and accurate information. Consequently, Echosens cannot accept any responsibility for the manual's incorrect interpretation. Though all efforts have been made to offer a manual that is as accurate as possible, this latter may nevertheless contain some technical inaccuracies and/or typographical errors.

Echosens cannot, under any circumstances, be held responsible for any loss of profit, loss of business, data loss, business interruption, or for any indirect, specific, accidental or consecutive damages of any type. In the event of damages arising from a defect (imperfection) or error contained in the present User Manual, Echosens undertakes to send the local dealer, as rapidly as possible, a hard copy or electronic document containing all corrections made to the present manual.

This manual is updated on a regular basis. The most recent version of this manual is available from Echosens on simple request. Should any major modifications be made to the manual, however, Echosens undertakes to send the physician, as rapidly as possible, a new copy of the manual in hard copy or electronic format. It is stated that this does not involve updating the hardware and/or software in your possession.

The product owner must keep the present manual for as long as the product is used. Any information or modification requests pertaining to this manual should be sent to:

Echosens  
30 Place d'Italie  
F - 75013 PARIS

## 2. MISCELLANEOUS INFORMATION

### 2.1 GUARANTEE

The terms of guarantee are stated in the Echosens terms of sale documents.

For any request, Echosens remains available to the physician and his/her appointees and shall, if applicable, transfer the request to a competent local representative.

### 2.2 PROPERTY AND COPYRIGHT

All manuals and documents of all types are the property of the company Echosens and are protected by copyright, all rights reserved. Your right to copy this documentation is limited to legal copyright. These manuals cannot be distributed, translated or reproduced, either in whole or in part, in any manner or in any form, without prior written consent from Echosens. Hence, the reproduction, adaptation or translation of the present manual without prior written consent is prohibited, within the limits provided by copyright law.

All rights reserved.

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First edition, March 2008.

### 2.3 REGISTERED TRADEMARKS

*EchoSens*<sup>®</sup> is registered trademarks of Echosens.

## 3. RECOMMENDATIONS AND SAFETY

### 3.1 SYMBOLS



**This symbol means:**

Warning: see the instructions before using the Calibration Bench.  
Instructions preceded by this symbol may cause injuries or damage the Calibration Bench and installation if not correctly followed.



**This symbol means:**

Additional information with no impact on instrument use.

### 3.2 ELECTRICAL SAFETY

The Calibration Bench has been manufactured and tested in accordance with IEC Electromagnetic Compatibility standards (EMC). It leaves the factory in full compliance with safety and performance requirements. In order to maintain this compliance and to guarantee the safe use of the Calibration Bench, the user must conform to the indications and symbols contained in the present manual.

Safe use is no longer guaranteed in the following main, non-exclusive cases:

- The Calibration Bench is visibly damaged;
- The Calibration Bench does not work.
- After prolonged storage under unfavourable conditions
- After serious damage incurred during transport

When safe use of the Calibration Bench is no longer possible (e.g.: due to damage incurred during transport or use), the probe must be taken out of operation. Steps must be taken to avoid its inadvertent use. The Calibration Bench should be handed to authorised technicians for inspection.

### 3.3 MAINTENANCE-RELATED SAFETY

For all maintenance operations, the local dealer and his/her appointees should contact Echosens. that will send an authorised technician. **These maintenance operations must not be performed by a third party other than a technician authorised by Echosens.** For correct and safe use and for all maintenance operations, the personnel must conform to normal safety procedures.

### 3.4 USER TRAINING

Only those individuals who have received training in the use of the Calibration Bench. Training is essential for correct equipment use.

This manual is not intended to provide user training.

## 4. SOFTWARE INSTALLATION AND UPDATE

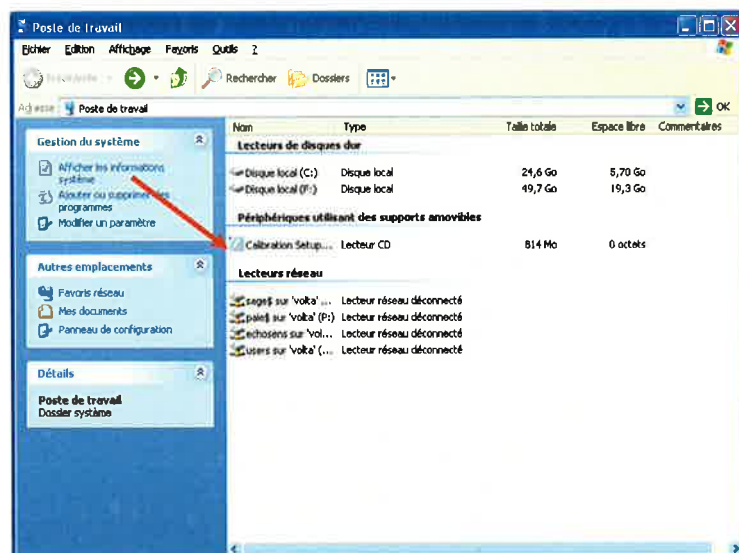


**Caution:** At this stage do not connect the bench of calibration to the computer

The installation or update should run automatically. The two steps are:

- Installation of NI software (described §4.1),
- Installation of PDF creator software, Excel viewer software and GhostScript software (described §4.2),
- Installation calibration software and DIOLAN board (described §4.3)

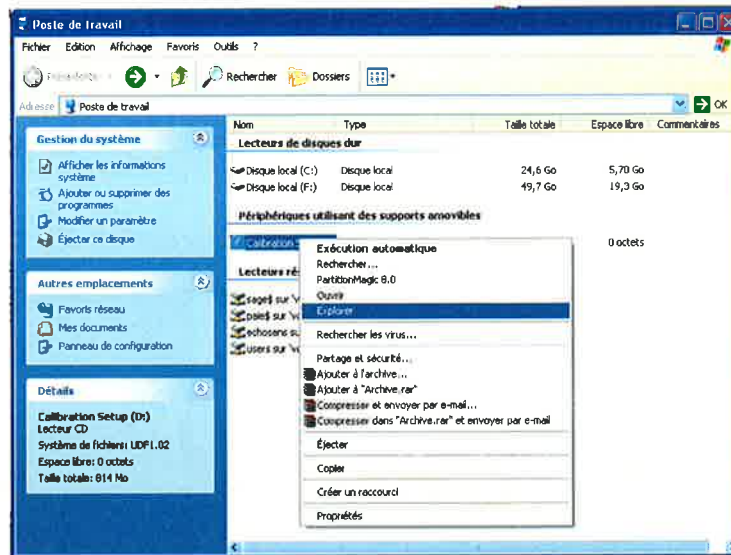
In this case go directly to the §4.1.2, if not then follow the steps below.



### 1. Start of the setup

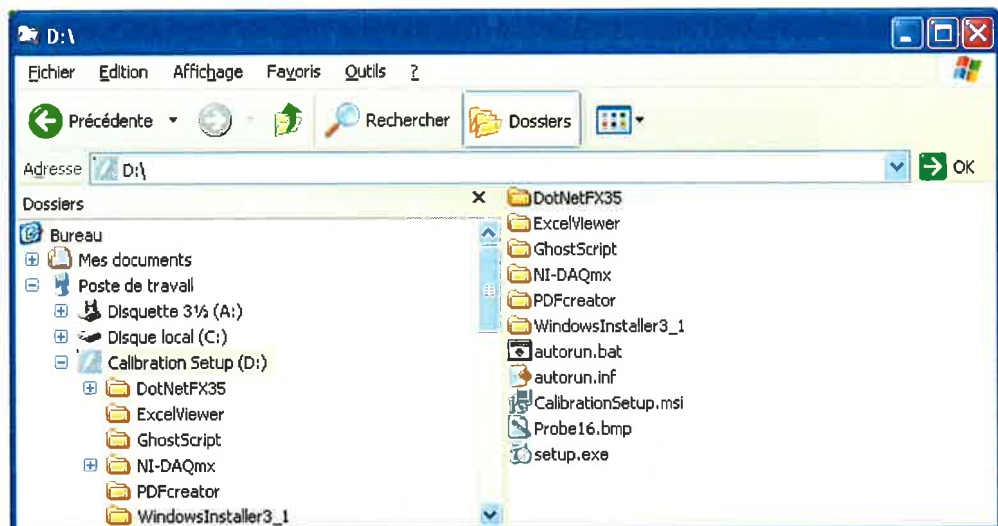
- The DVD should start automatically, if not when open "my computer" explorer and double click on the CD/DVD reader.
  - If nothing happens, then go to the step 2





## 2. Explore the DVD

- To explore the DVD, put the mouse on the DVD and click right.
  - Choose "explore"



## 3. Launch program

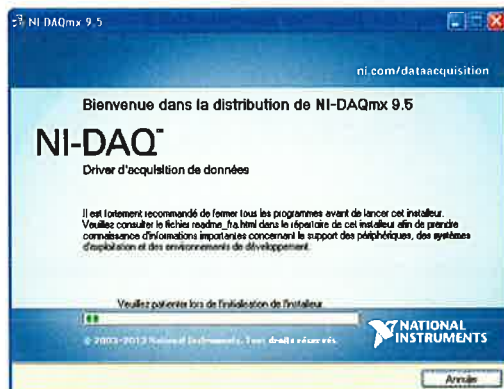
- Launch the "autorun"
- If the autorun doesn't start, launch "setup.exe" and when it finishes launch "NI-DAQmx\9.5\setup.exe"

## 4.1 INSTALLATION NATIONAL INSTRUMENTS BOARD (NI)

In this paragraph we will follow the stages of installation of the driver and software of the National Instruments (NI) board. It is thus recommended to follow carefully the various stages described below.

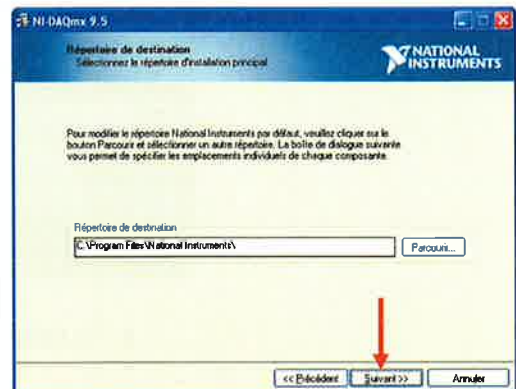
### 4.1.1 NI software installation

The installation should run automatically and the stages are described below:



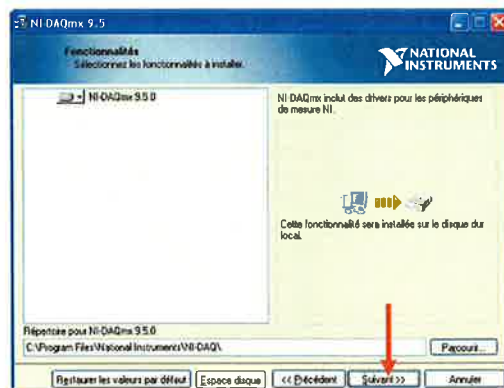
#### 4. NI software Initialization

- NI software installation starts automatically.
- Wait until the initialization is in progress.



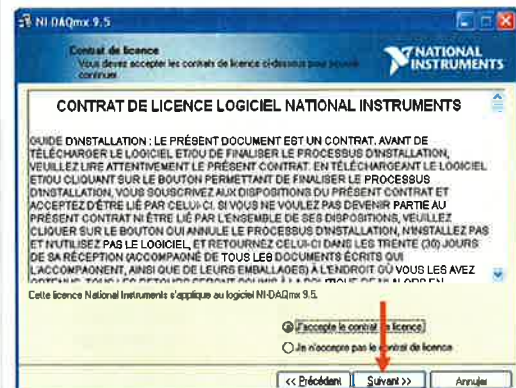
#### 5. NI Folder Install

- Don't change the default destination folder.
- Click "Next" to continue.



#### 6. NI Folder Install

- Don't change the default destination folder.
- Click on "Suivant" to continue.



#### 7. NI License

- The license agreement appears; choose "J'accepte le contrat de licence".
- Click "Suivant" to continue.



If the installation is an update you may have the following window. The NI software will not be installed because it's already installed. Then choose cancel and go directly to the §4.2 if not continue with step 12.



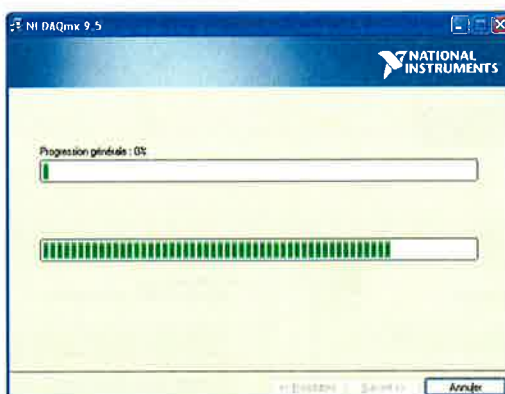
### 8. NI installation

- The software will not be installed.
- Click on "Cancel" to continue.
- A confirmation message will appear, click on "yes" and go automatically step 12.



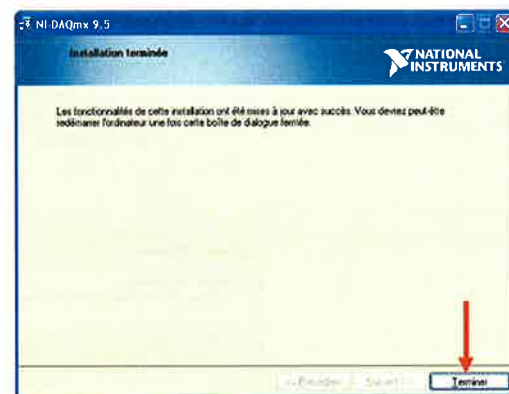
### 9. NI Installation start

- Click "Suivant" to start the installation.



### 10. NI Installation

- Wait until the installation of driver is in progress.



### 11. NI Install Complete

- Click on "Terminer" to finish the NI software installation and to close this window.



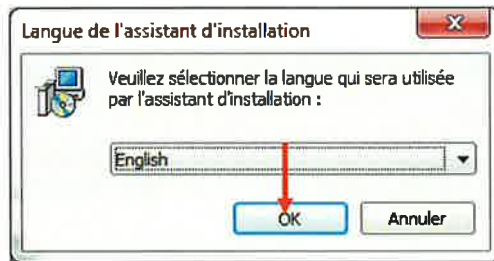
Don't switch off the computer; the next step will begin automatically.

## 4.2 INSTALLATION PDF SOFTWARE, EXCEL VIEWER SOFTWARE AND GHOSTSCRIPT SOFTWARE

In this paragraph we will follow the stages of installation of the pdf creator software, Excel viewer software and GhostScript software. It is thus recommended to carefully follow the various stages described below.

### 4.2.1 PDF creator installation

The installation should run automatically and the stages are described below:



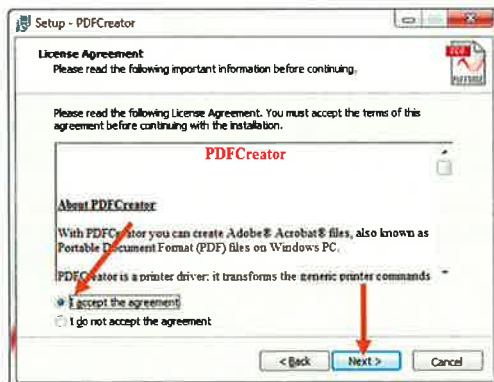
#### 12. software Initialization

- PDFcreator software installation starts automatically
- Select "English" language
- Click on "Ok" to continue



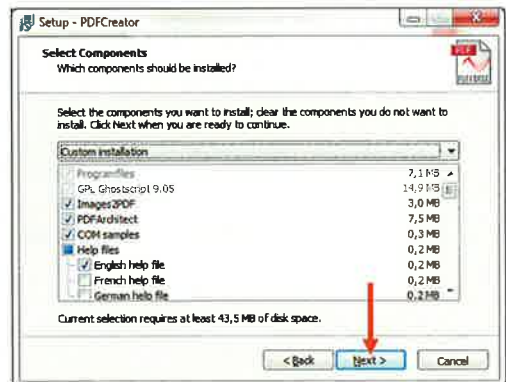
#### 13. Setup wizard

- Click on "Next" to continue



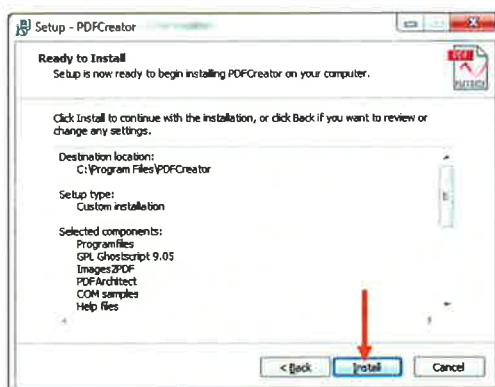
#### 14. License Agreement

- The license agreement appears; choose "I accept the agreement".
- Click "Next" to continue.



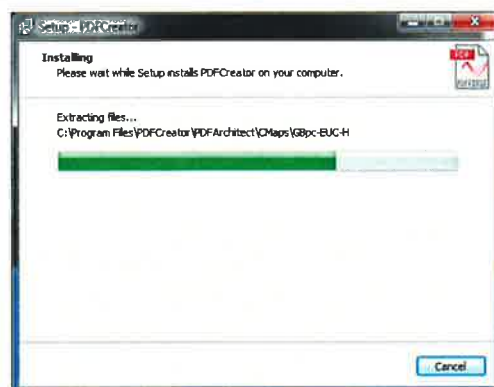
#### 15. Select Components

- Don't change the default components.
- Click on "Next" to continue.



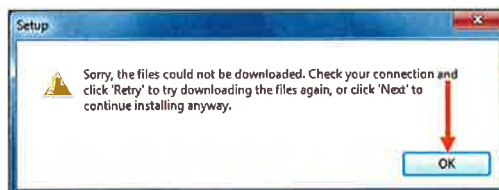
### 16. Installation start

- Click "Install" to start the installation.



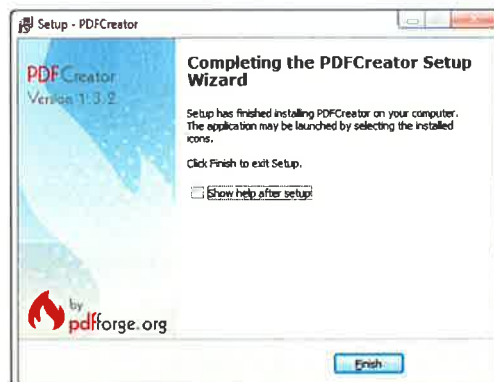
### 17. Installation in progress

- Wait until the installation is in progress



### 18. No download

- Click on "Ok" to continue.

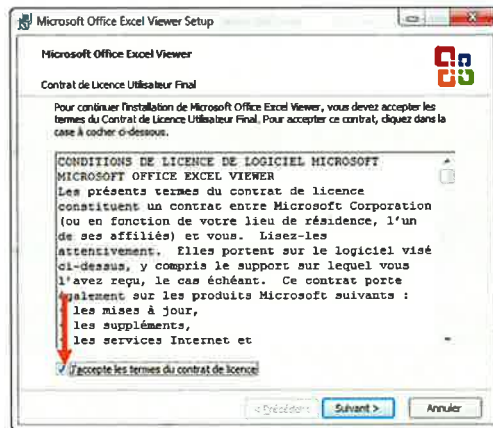


### 19. Install Complete

- Deselect the "Show help after setup"
- Click on "Finish" to finish the PDF creator software installation and to close this window.

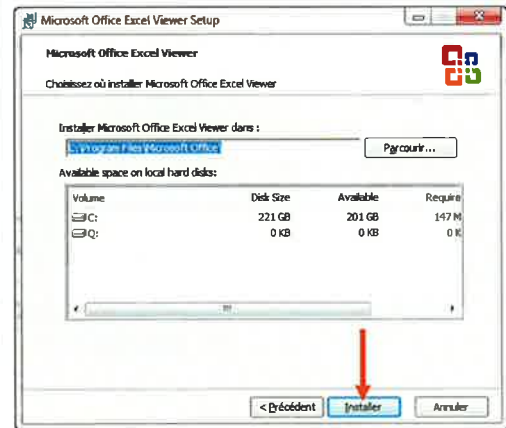
### 4.2.2 ExcelViewer installation

The installation should run automatically and the stages are described below:



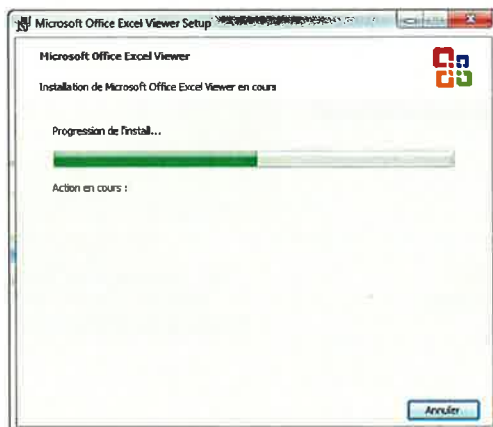
#### 20. License Agreement

- The license agreement appears; choose "I accept the agreement".
- Click "Suivant" to continue.



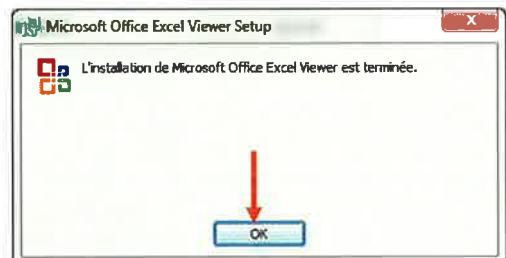
#### 21. Setup Wizard

- Don't change the default components.
- Click on "Installer" to continue.



#### 22. Installation in progress

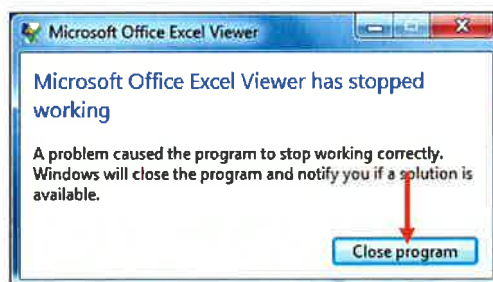
- Wait until the installation is in progress.



#### 23. Install Complete

- Click on "OK" to finish the ExcelViewer software installation and to close this window.





#### **24. Microsoft Office Excel Viewer**

- At the end of installation, the Microsoft Office Excel Viewer has stopped working, ignore it.
- Click on "Close program" to close this window.

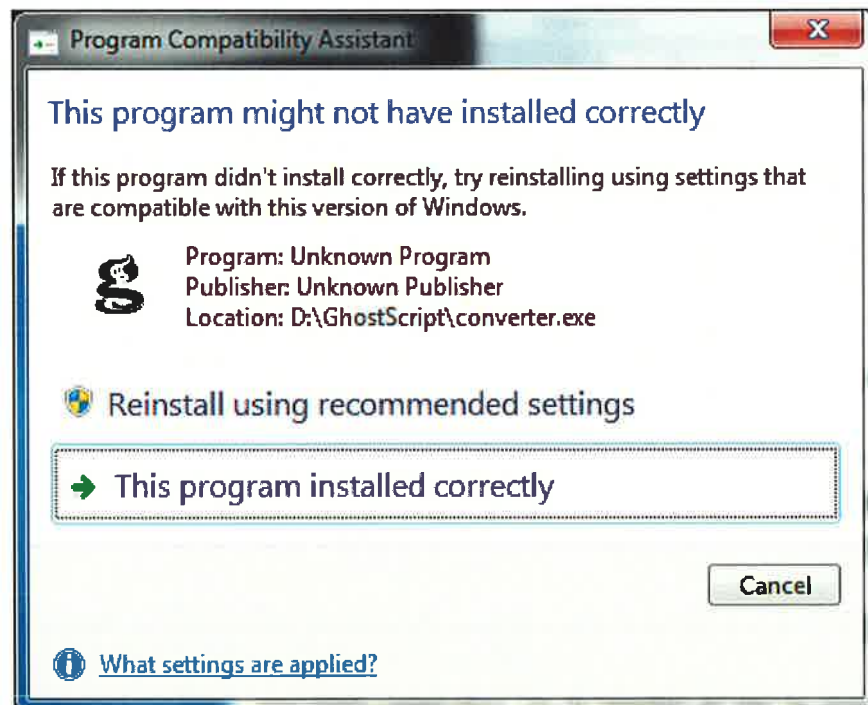
### 4.2.3 GhostScript installation

The installation should run automatically and the stages are described below:



#### 25. WinZip Self-Extractor

- Click on "Setup" to continue



#### 26. Program Compatibility

- Click on "This program installed correctly" to continue

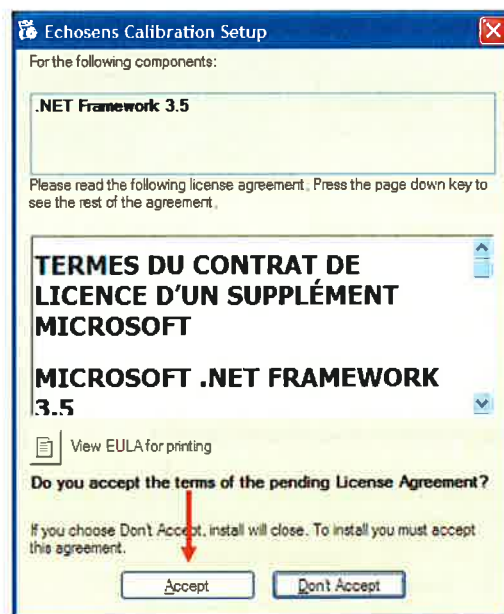


### 4.3 CALIBRATION SOFTWARE AND DIOLAN BOARD INSTALLATION

In this paragraph we will follow the stages of installation and the update of the calibration software as well as driver and software of the Diolan board. It is thus recommended to carefully follow the various stages described below.

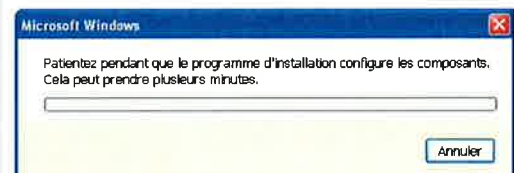
#### 4.3.1 Calibration software installation and update

The installation should run automatically and begin by the installation of the component .NET Framework 3.5.

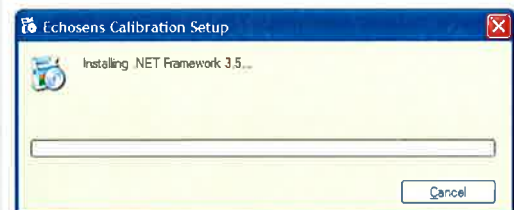


#### 27. Start of the setup

- If necessary, the installation .NET Framework starts automatically,
- Click on "Accept" to continue

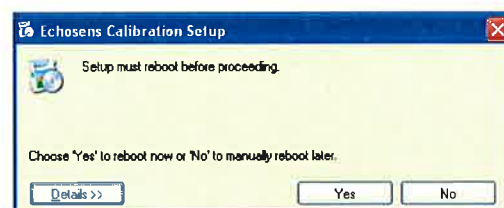


and



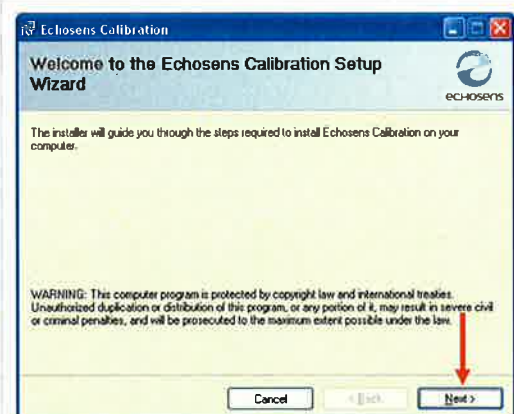
#### 28. .NET Framework 3.5 Installation

- Wait until the installation is in progress.



#### 29. Reboot

- Click on "Yes" to reboot the computer now  
The calibration setup should restart automatically



#### 30. Start of the calibration setup

- Click on "Next" to continue

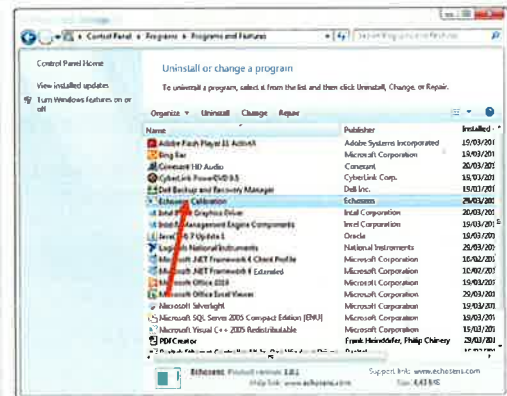


If the installation is an update you may have the stage from 31 to 33.  
**NB : the logo of the company (file named Logo.jpg) is recorded in the folder C:\Tmp.**



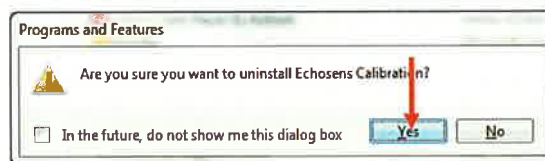
### 31. Windows Installer

- Click on "OK" to confirm that you want to uninstall the old version of calibration software.
- Launch Control Panel / Uninstall a program



### 32. Uninstall manually

- Double-click on "Echosens Calibration"

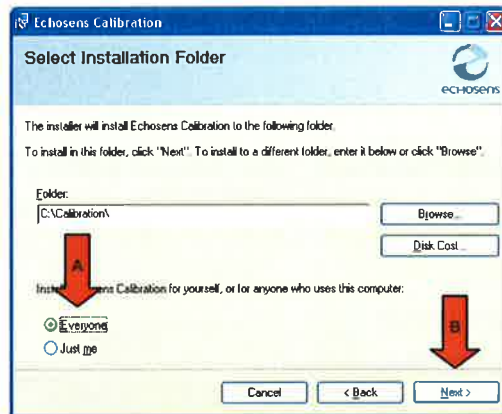


### 33. Setup Wizard

- Select "Repair Echosens Calibration"
- Click on "Finish" to continue

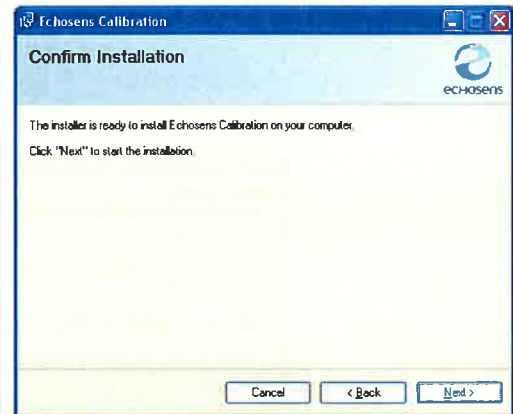


**At the question: "Do you want to allow the following program from an unknown publisher to make changes to this computer?" answer Yes**



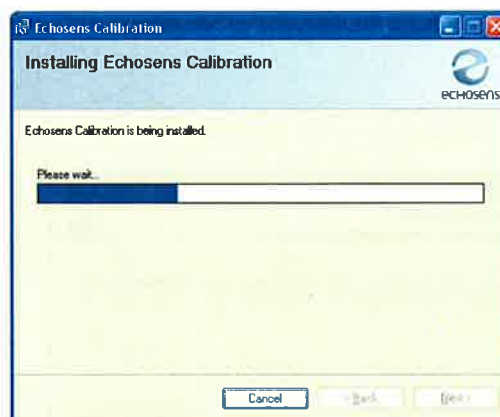
### 34. Select Installation Folder

- Select first "Everyone"(arrow A)
- And then click on "next" ( arrow B)



### 35. Confirm

- Click on "Next" to confirm the installation



### 36. Installation in progress

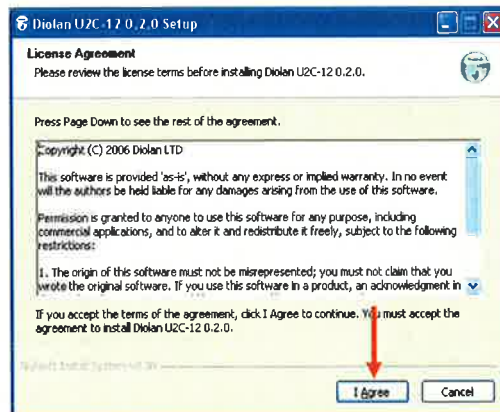
- Wait until the installation of calibration software is in progress.



**Step 36, the installation window hides the Diolan Licence agreement window.  
Move it to see the step 37.**

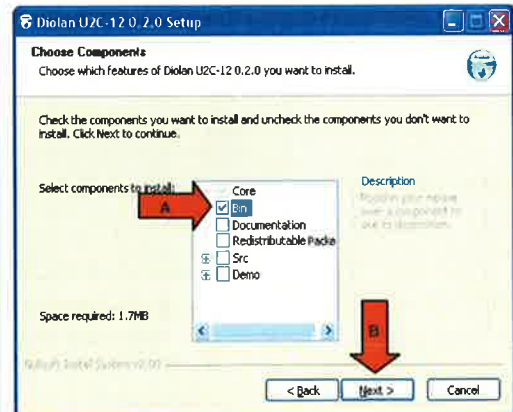
### 4.3.2 Diolan setup

The next step is the installation of the Diolan board and its component. Just follow the stage described below.



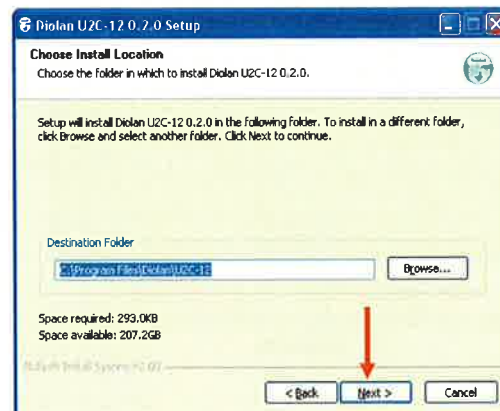
#### 37. Diolan Setup

- The installation of the driver of the Diolan board will start.
- Press on "I Agree" to accept the licence.



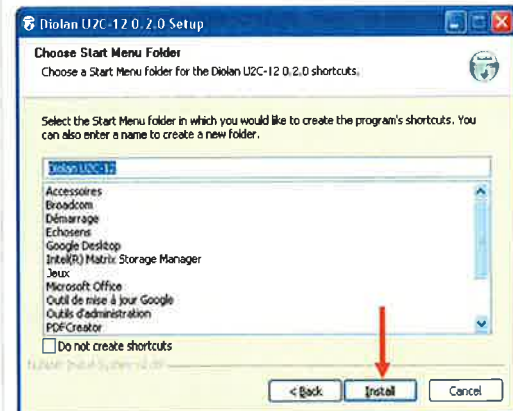
#### 38. Diolan Component

- Select the "Bin" component only (arrow A)
- And then click on "next" to continue ( arrow B)



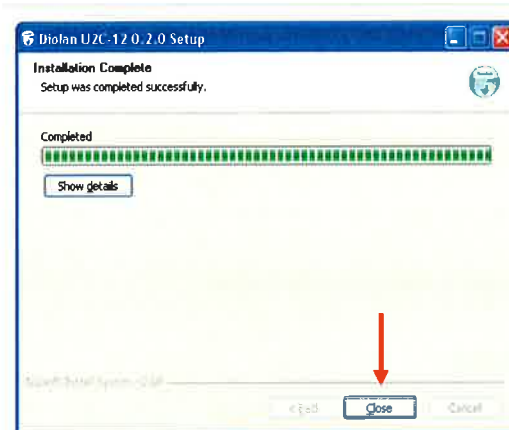
#### 39. Diolan Menu Folder

- Don't change the default destination folder.
- Click on "Next" to continue.



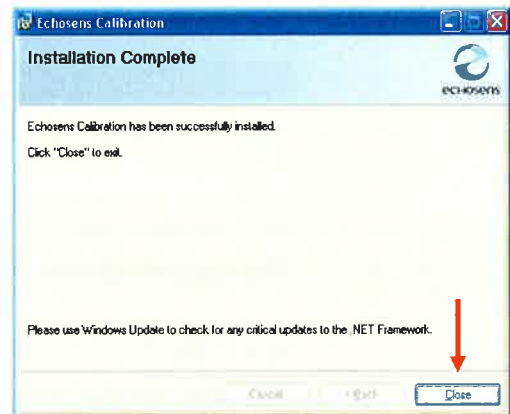
#### 40. Diolan Start Menu Folder

- Don't change the default destination folder.
- Click on "Install" to continue.



#### 41. Diolan Installation

- Wait until the installation of driver is in progress.
- Click on "Close" to finish the driver installation.



#### 42. Calibration installation complete

- Click on "Close" to finish the calibration software installation and to close this window.



After this installation, the computer should be manually restarted.

## 4.4 END OF INSTALLATION

After restarting the computer, it's now possible to connect the calibration bench (refer to the § 5.3).

When the calibration bench is connected for the first time to the computer; the following windows will appear.

This stage will allow the computer to recognize the bench

### 4.4.1 Hardware installation

This stage will allow the computer to recognize the bench:



### 43. Hardware detection



- After the hardware detection, an unidentified Device is detected - the bench is operational.
  - Click on "Close"

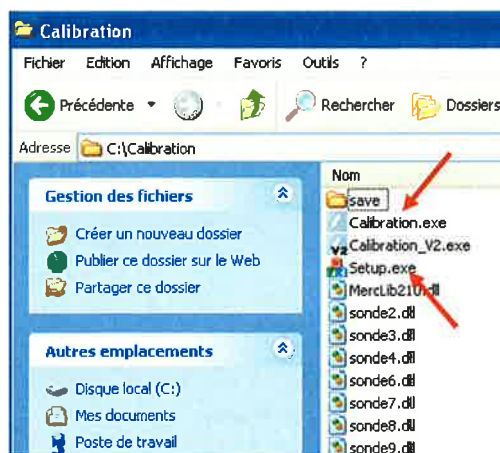


**It's recommended to restart the computer.**

#### 4.4.2 Shortcuts

After the installation, the software will create two shortcuts:

one for the calibration  and one for the setup . Delete them and create them directly from the calibration folder (c:\calibration).



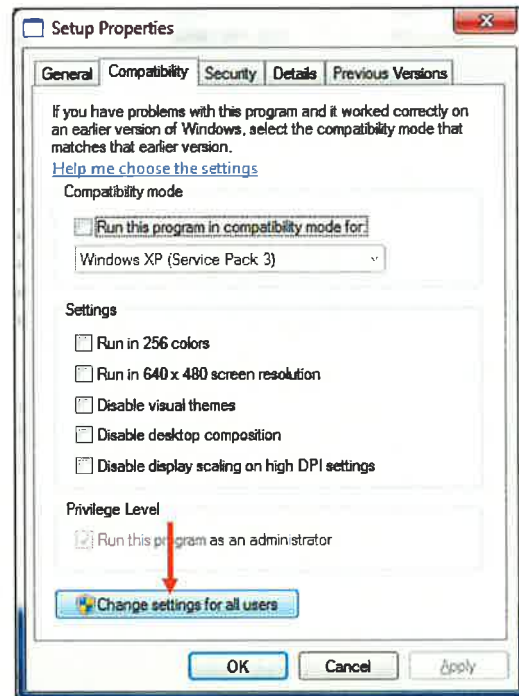
#### 44. Shortcuts



#### 4.4.3 Print setup

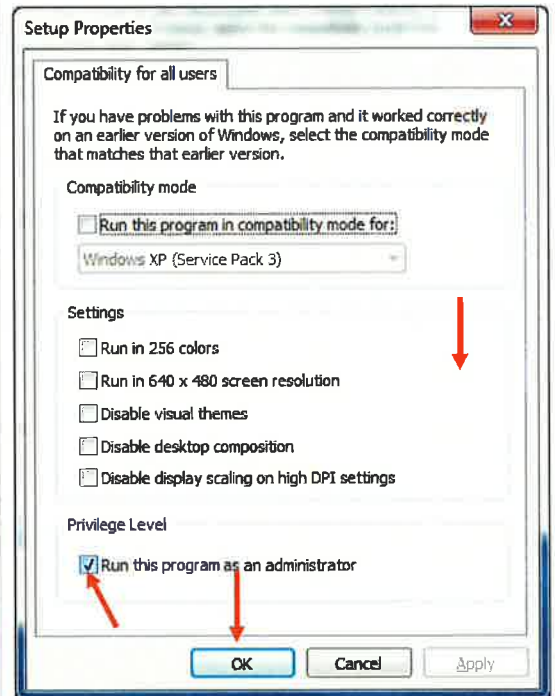
To get the name and address of your company printed on the calibration report, it will be needed to launch the adequate setup and to enter the data as well as the logo of the company.

Before the first use, select properties with right click on the setup.exe file, and do the following steps:



#### 45. Setup Properties

- Click on "Change settings for all users".



#### 46. Calibration installation complete

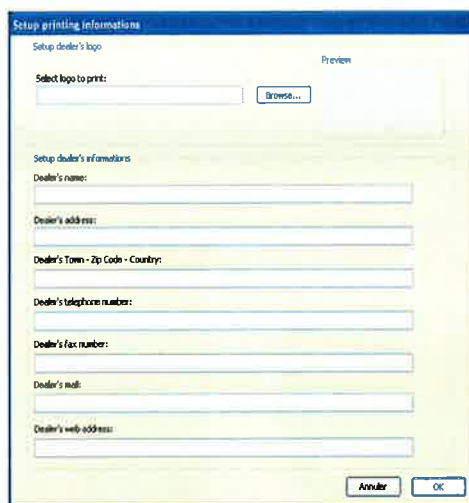
- Select "Run this program as an administrator".
- Click on "OK" to finish the setup properties.



You may find the shortcut on the desktop



or you can run it directly from the calibration folder: "C:\Calibration\setup.exe"



### The informations to enter :

- The logo of the company
- The name of the company
- The address.
- The city and country.
- The telephone number.
- The Fax number.
- The contact email.
- The web site.



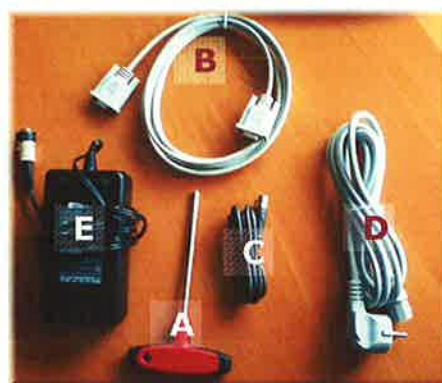
The dealer's information will appears in bottom on the left of the calibration report (cf. §6.2.4).

## 5. BENCH INSTALLATION

### 5.1 BENCH COMPONENTS

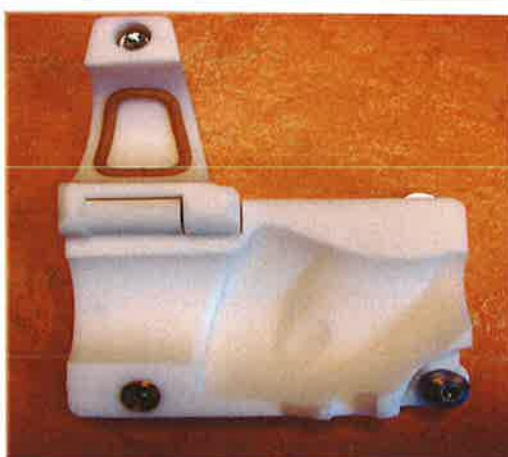


**1. The calibration Bench**

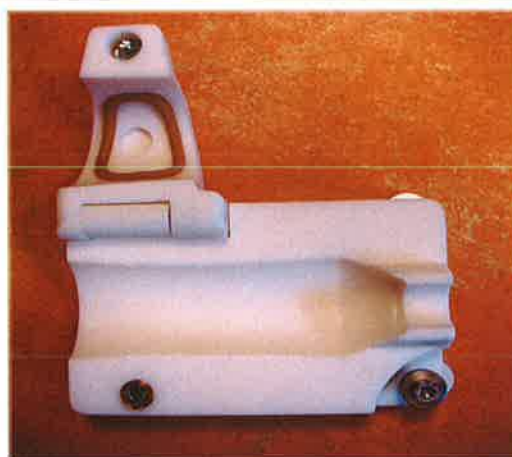


**2. The cables**

A: an Allen key  
B: a RS232 cable  
C: a USB cable  
D+E: a power supply cable



**3. A old probe holder**



**4. A new probe holder**

## 5.2 INTERFACE OF THE BENCH



**Probe's LED:** The LED ignites when the probe is connected to the bench one presses on the probe button.

**Motor's LED:** The LED indicates that the probe is connected to electric power (old probe only).

### 5.3 CONNECTIONS OF THE BENCH



**To connect the bench to the computer, it is necessary to have beforehand performed the software installation procedure, cf. chapter 4.**

The stages to be followed are:

1. Connect the power supply cable to the bench and screw the connector.
2. Connect an end of USB cable to the bench (cf. § 5.2) then the other with the PC.
3. Connect an end of RS232 cable to the bench (cf. § 5.2) then the other with the PC.
4. Switch on the bench (cf. § 5.2) and refer to the § 4.3.



**For item 3, screw well the connector RS232 with the connector of the bench and that of the PC.**

## 6. CALIBRATION



For probe calibration, it is necessary to have performed beforehand software installation procedure cf. chapter 4 and to connect the bench to the computer, cf. chapter 5.

### 6.1 PREPARING CALIBRATION

Before beginning a probe calibration, the following stages should be done:



**1. Open the calibration Bench**



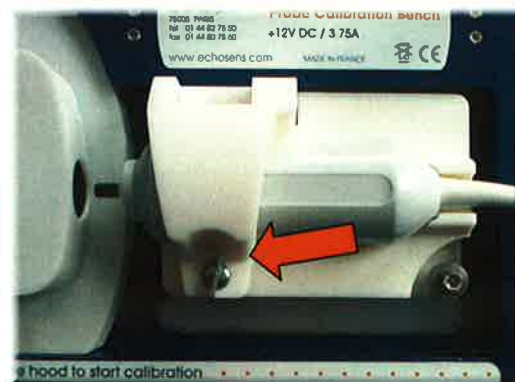
**2. place the probe holder**



To fix the holder use the Allen key provided with the Bench (cf. § 5.1 picture 2 reference mark A)



**2. Put the probe on the holder**



**3. Close the holder**



**4. Connect the probe to the bench**



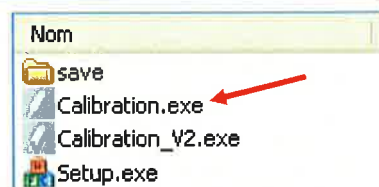
**5. Close the bench**

## 6.2 START THE CALIBRATION



During the calibration of the probes, it is necessary to keep the hood closed.

### 6.2.1 Launch the calibration software



#### **6. Launch the calibration software**

- The software can be launch from the folder "C:\calibration".


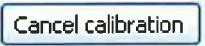

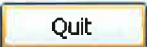


#### **7. Calibration software link**

- The software can be launch from the link on the desktop.



### 6.2.2 Different function

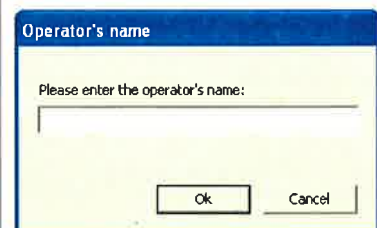
Button	Function
	To Launch the calibration
	To Cancel the calibration
	To Print the calibration report
	To quit the application

### 6.2.3 Run the calibration



#### 8. Start the calibration

- Click "calibrate" to start.



#### 9. Operator Name

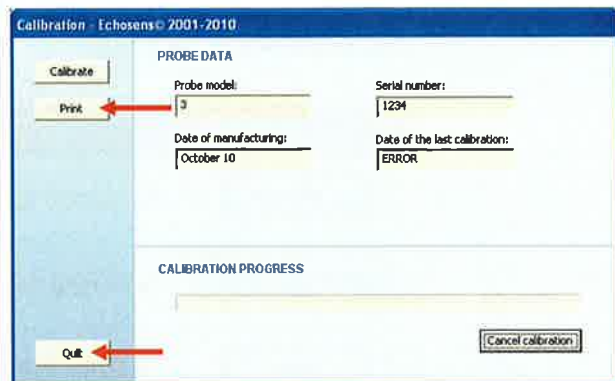
- Enter your name, minimum 2 characters.
- Click on "OK" to continue.



### 10. Calibration result

- Click "OK" to continue.

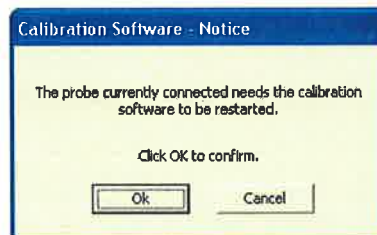
**i** If the calibration failed a message corresponding at the origin of this error will appear in the window of result. Start the calibration once again and if the error persists contact Echosens.



### 11. Print and Quit.

Before to quit the program:

- Click "Print" to print the calibration report
- Check the report
- Click on "Quit" to quit the application.



### 12. Calibration Software - Notice

- Click "OK" to restart calibration software.

**i** If the calibration software must be restarted a message will appear.



### 6.2.4 The calibration report

The calibration report can be printed after the calibration has been done. To print the calibration report it's necessary to perform it at the end of the calibration; after closing the software or beginning another calibration, it will not be possible to print it.



**For the model 2, 3, 4 and 6, the calibration report is noticeably different :**  
**The probe production number and the transducer serial number are not available.**

The calibration report gives the following information:

- **REFERENCE**
  - PROBE SERIAL NUMBER** Serial number of the probe calibrated
  - PROBE PRODUCTION NUMBER** Production number of the probe calibrated (only model 7, 8 and 9)
  - TRANSDUCER SERIAL NUMBER** Transducer serial number of the probe calibrated (only model 7, 8 and 9)
  - SOFTWARE VERSION** Software version used for calibration
  - BENCH SERIAL NUMBER** Serial number of the calibration bench where the probe received the calibration
- **OPERATOR:**  
Name of the operator who did the calibration
- **CALIBRATION DATE:**  
Date of probe calibration
- **PROBE DATA**
  - model 2 for the standard probe
  - model 3 and 7 for the M probe
  - model 4 and 8 for the S probe
  - model 6 and 9 for the XL probe
  - PROBE MODEL**
  - DATE OF MANUFACTURING** date when the probe has been manufactured
  - DATE OF THE LAST CALIBRATION** date of the last calibration of the probe
- **GRAPH**  
Graph of the probe calibration: for the standard probe only 2 graphs and for M, S and XL probe 4 graphs.
- **CALIBRATION STATUS**  
Result of calibration: succeeded or not, with or without information concerning the result
- **YOUR LOCAL DEALER**  
Address and the logo of the local dealer inserted with the setup (cf. § 4.3.3)
- **STATUS**  
The status is depending on the result: "passed" if the calibration succeeded and "failed" if not and sign.

## Calibration report for model 2, 3, 4 and 6



### PROBE CALIBRATION REPORT

REFERENCE		OPERATOR	CALIBRATION DATE
PROBE MODEL			
PROBE SERIAL NUMBER			
BENCH SERIAL NUMBER			

PROBE DATA				
DATE OF MANUFACTURING			CALIBRATION SOFTWARE SERIAL NUMBER	
DATE OF THE LAST CALIBRATION				

GRAPH	

CALIBRATION STATUS

YOUR LOCAL DEALER



OPERATOR'S SIGNATURE

STATUS: ☐ PASSED ☐ FAILED

## Calibration report for model 7, 8 and 9



### PROBE CALIBRATION REPORT

REFERENCE		OPERATOR	CALIBRATION DATE
PROBE SERIAL NUMBER			
PROBE PRODUCTION NUMBER			
TRANSDUCER SERIAL NUMBER			
SOFTWARE VERSION			
BENCH SERIAL NUMBER			

PROBE DATA				
PROBE MODEL				
DATE OF MANUFACTURING				
DATE OF THE LAST CALIBRATION				

GRAPH				

CALIBRATION STATUS

YOUR LOCAL DEALER



OPERATOR'S SIGNATURE

STATUS: ☐ PASSED ☐ FAILED

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SA JEU CAPITAL DE 100 000 000 - RCS PARIS B 438 208 187 - TVA INTRA : FR 82 438 208 187

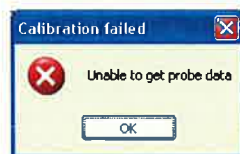
## 6.3 ERROR MESSAGES

It's possible that while beginning the calibration an error message can appear.

The following example can help for some of them.



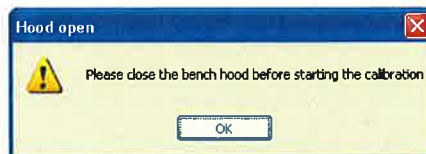
**In any case; if the problem persist contact Echosens.**



- problem from the probe
  - Check the connection.
  - Check with another probe.



- problem from the bench
  - Check the connection.
  - Check if the bench is on.
  - Call Echosens
- problem from the software
  - Restart the bench.
  - Restart the computer.
  - Reinstall the software.
  - Call Echosens



- problem from the bench
  - Check the hood.
  - Check if the connection.
- problem from the software
  - Restart the bench.
  - Restart the computer.
  - Reinstall the software.



- problem from the probe
  - Check the connection.
  - Check the position of the probe on the holder.
  - Check with another probe
- problem from the bench
  - Check the connection.
- problem from the software
  - Restart the bench.
  - Restart the computer.
  - Reinstall the software.
  - Call Echosens



- problem from the probe
  - Check the connection.
  - Check the position of the probe on the holder.
  - Check with another probe.
  - Call Echosens

## 7. TECHNICAL DESCRIPTION

### 7.1 SYSTEM MINIMUM REQUIREMENTS

- Operating system : Windows XP or Vista
- Computer Memory : 512 Mo for XP; 1 Go for Vista
- Connections : 1 RS232 connector free ; 1 USB 2.0 connector free

### 7.2 SIZE AND WEIGHT

- Size (mm) : 430x234x180
- Weight : about 10 Kg

### 7.3 INTERFACES

- With computer : USB 2.0 interface, RS232 interface
- With the probe : push-pull probe's connector
- Power supply : 1 connector

### 7.4 ELECTRICAL DESCRIPTION

- Power supply: 12V/3.75A
- Usable power : push-pull probe's connector
- Power supply : 1 connector

### 7.5 SYSTEM PROVIDED WITH

- A Power supply cable
- A RS232 cable
- An USB 2.0 cable
- A software calibration DVD.
- An Allen key

## 7.6 TEMPERATURES AND HUMIDITY

- Service Temperature: +10~ +40 °C (+50 ~ +104 °F)
- Service Humidity: 30 ~ 75% relative humidity , non-condensed
- Storage Temperature: -20~ +70 °C (-4 ~ +158 °F)
- Storage Humidity: 10 ~ 85% relative humidity , non-condensed



- The instrument's chassis should only be opened by Echosens<sup>®</sup> employees.
- Instrument repairs should only be performed by Echosens<sup>®</sup>,
- The instrument should be unpacked, assembled and transported by qualified personnel.



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