LabCom (V 2.0)

Communication software for Laboratory Instruments - PC

User Manual

The continuous improvement of our products can bring about differences between the information written in this manual and the purchased product.
The information, figures and descriptions contained out in this manual cannot be legally asserted.
HACH reserves the right to make changes and corrections without prior notice.

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COMPONENT LIST

LZW8999.99 includes:

- CD with the software LabCom
- USB Flash drive must be connected to one USB port of the PC after the installation of LabCom.
- Connection cable, BD-9 female for connection of the instrument to the PC (LZW9135.99)
- USB- to-Serial Convertor, for PC's that do not have RS232C communication port.

PRESENTATION

LabCom is software created by HACH for using the laboratory instruments from the PC. It allows the acquisition and the management of the obtained results from up to four instruments.
LabCom allows:
1- Programming and configuration of calibrations and measurements from the PC.
2- Start calibrations and measurements from the PC.
3- Storage of the measuring results in a data base where the data can be viewed and printed.
4- Print reports of individual samples or results summary from several samples.
5- Data export to Excel or csv (coma separator values) file.
6- Measurement automation of one or several instruments with an Automatic Sample Changer, Sampler.

"On Line" results from the instrument

Every instrument has a window where the measuring and calibration conditions, the current calibration data and the daily measuring results are displayed.
Personalizing measurements table: LabCom allows the user to select the information displayed on the results table and its order.
Graph view during measurement: If the option "Graph" is selected (see Configuration), during measurement, the graph evolution will be shown on the PC display.
Sending samples identification: If a manual ID is selected (see Configuration), the samples ID should be entered from the PC, can be import from Excel file or from csv file or just can be copied from another file and pasted in LabCom.

Data Base

LabCom offers different tools for management of all data received from any of the connected instruments and stored in the Data Base.
Data Base Query: A full range of searching criteria allows visibility of all data (measurements and calibrations) or only the results. Flexible and easy data management within the database.
Results export: The results export to an EXCEL file "xls" ("xlxs" in Excel 2007) or to csv file simplifies the unification of the digital formats.

OPERATING REQUIREMENTS

Important

This software operates with Windows 2000/XP/Vista/Windows 7.

- Depending on the system, Administrator rights might be requested for installation.
- The numeric format for decimal separator must be a point "."or a coma ",".
- In Regional and Language Options of the PC, the short format of the date should dd-mm-yyyy or dd/mm/yyyy.
- The PC must have one USB port for the connection of the USB flash drive. The drivers required for the recognition of the USB flash drive are automatically installed during the installation of LabCom.
- The connection cable between the instrument and the PC requires that the RS232 port of the computer has a connection DB-9 male. If the computer does not have DB-9 male connection, the USB port can be used as RS232 port. In this case the USB-to-Serial Converter must be used.
- For more than 1 connected instrument, a communication port RS 232 (USB port + USB-to-Serial Converter) and a cable LZW9135.99 are required per an instrument.
- The instrument connection cable LZW9135.99 to PC is 3 m long.

Program location

The installation program creates a folder called HACH in the directory C:\Program files\ HACH\LabCom.
The data base files are in the folder Data Base and the setup files are placed in the folder SetUp.
The program and the files corresponding to the data base are saved in the LabCom folder.

Security

The user can not erase any result stored in the Data Base.

Important: It is recommended to perform periodic back-ups (security copies) of the folder LabCom placed in C:\ Program files \ HACH.

USB Flash Drive

The USB flash drive must be connected to the USB port of the computer after the installation of LabCom and must remain connected. The drivers are installed automatically with the LabCom installation.

USB-to-Serial Converter

The LZW8999.99 includes a USB-to-Serial-Converter for computers that do not have RS232 communication ports. Prior LabCom use, the USB-to-Serial Converter drivers must be installed (see User Manual of USB-to-Serial Converter). The drivers and the user manual can be found in the box containing the converter.

Program uninstallation

Go to Start→Programs→Folder HACH→Folder LabCom→select "Uninstall LabCom".
Go to Program Files and erase the folder LabCom.
Important: Re-start the PC if a new version of LabCom is going to be installed.

GETTING STARTED

INSTALLATION OF THE PROGRAM LabCom

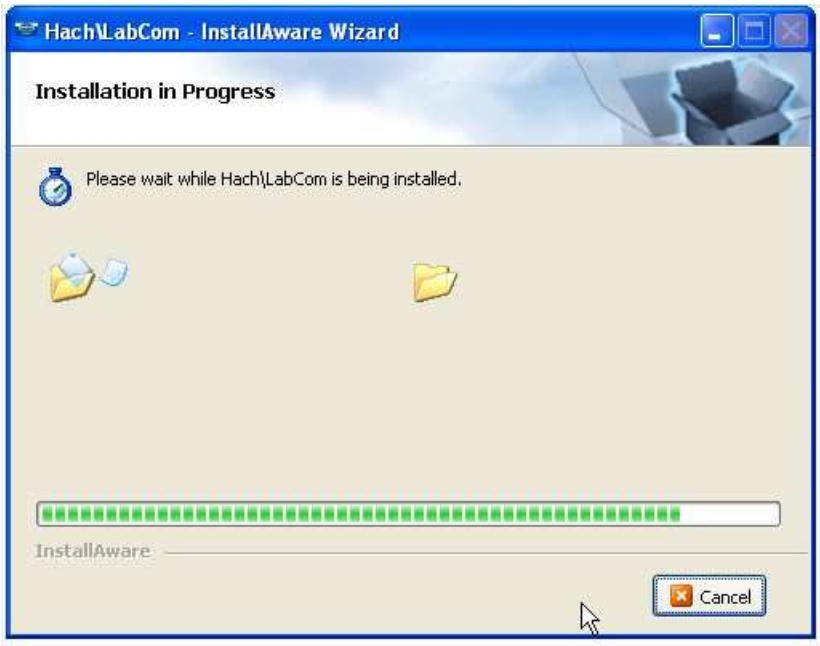
The installation disk contains Autorun software that will install the LabCom software on your Windows system. Carefully follow the steps below. If problems are encountered during installation, cancel the installation process and start from the beginning.

Insert the installation disk into the CD-ROM drive. After few moments the installation will start.

At that stage, the user must accept the license agreement.

Press **Next** to continue

Press **Next** to continue



The program installation is in progress

LabCom creates a shortcut on the computer desktop.

HARDWARE CONNECTION

Connect the USB flash drive to the USB port of the computer. Ensure that the green light turns on.

COMMUNICATION PREPARATION

The instrument must be connected to the PC with the corresponding cable LZW9135.99. One cable end should be connected to the rear panel of the instrument, connection “RS232C Printer/PC”. The other cable end should be connected to the RS232 connection DB-9 male of the computer.

Note: If the temperature will be expressed in ºF instead of ºC, change the temperature units from the option SYSTEM in the main menu of the instrument.

From the Main Menu of the instrument select: **SYSTEM**
Data output
For computer
LabCom

Once the instrument is in **"REMOTE MODE"** it can only be used from the program LabCom.

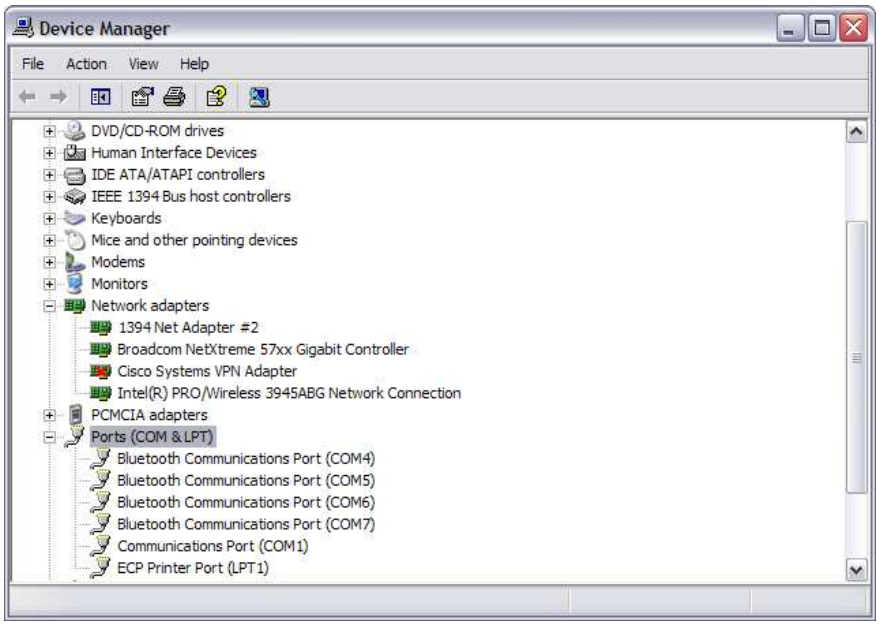
⚠ **Attention:** If the instrument has a software version less than V1.4, it must be updated. Follow the instructions in chapter "Updating Software", page 53.

Quit "REMOTE MODE": From REMOTE MODE press the key ▼ and select: **SYSTEM**
Data Output
Deactivated or To Printer

From this moment, the instrument is ready to work in standard mode.

RS232 SERIAL PORT

If you are using a USB-to-Serial Converter to connect the meter to USB port of the PC, you need to check the **Device Manager** of your PC to see what the exact port number is. Right-click on **My Computer** icon. Click on **Properties** and pop-up menu to open System Properties. Click **Hardware** tab and then click **Device Manager**. See the applicable COM port name under 'Ports (COM & LPT) as shown below



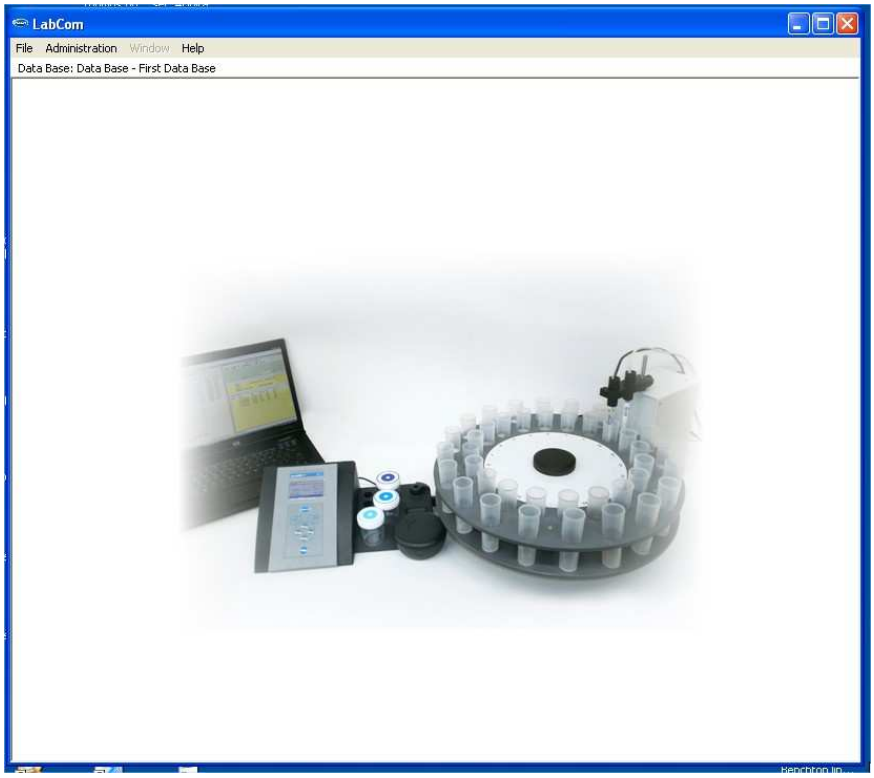
PROGRAM START

Click over the icon on the computer desktop.

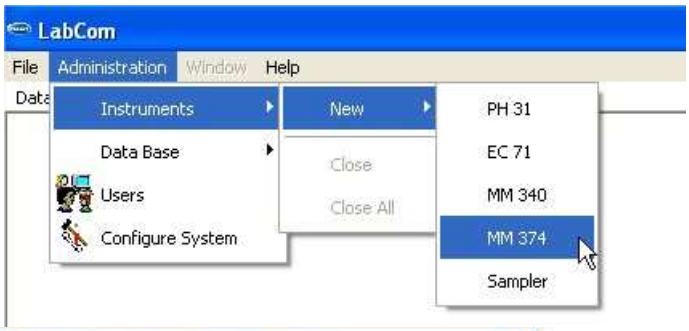
For first use, the program asks for the language.

Select the desired option and accept.

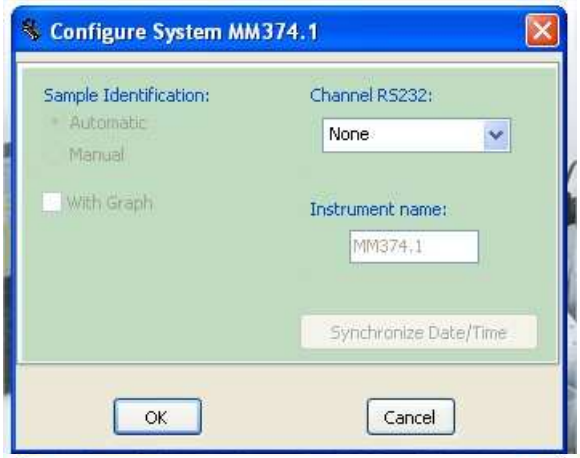
The generic window of the program is opened.



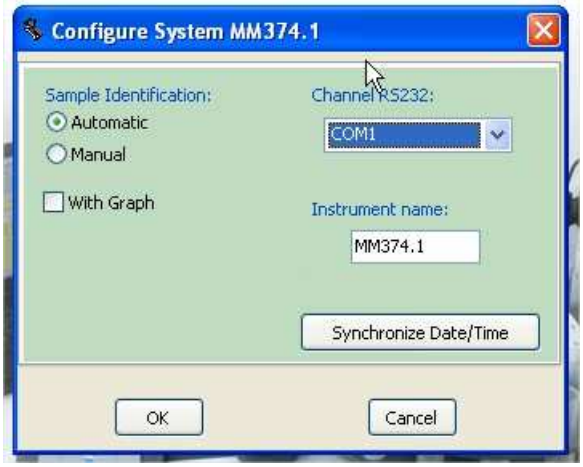
INSTRUMENTS CONFIGURATION



Firstly the instruments in use must be configured.
Select:
Administration
Instruments
New
and select the model.



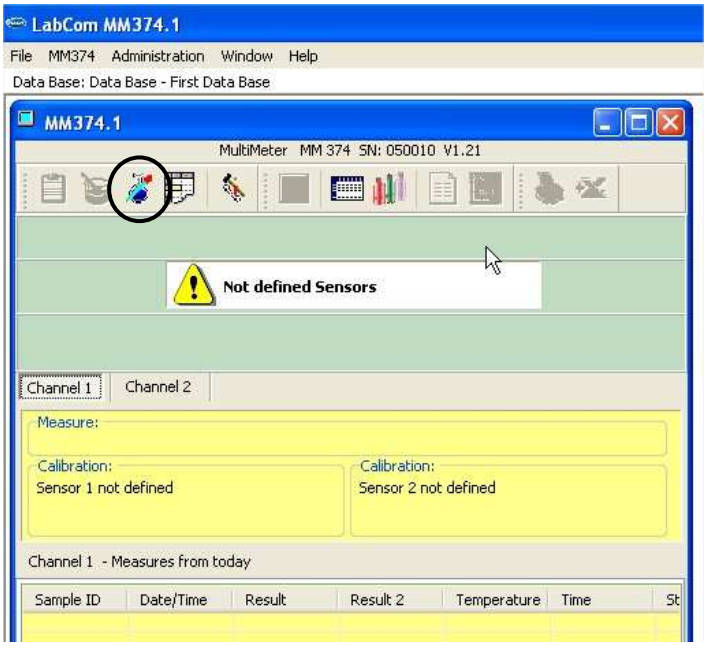
Select the RS 232C channel that will be used in the communication: COM X



Once the RS 232 channel has been configured, the rest of the options can be modified by the user:
Sample identification:
Automatic: The ID will be numeric, increasing and automatic.
Manual: The user will introduce an ID per every sample.
With graph: Selecting this option, the graph corresponding to the measurement will be displayed "On Line".
Instrument name: Shown as example MM374.1. Up to 20 characters for instrument's identification.
Synchronize Date/Hour: The PC sends the date and hour to the connected instrument.

Press OK to accept.

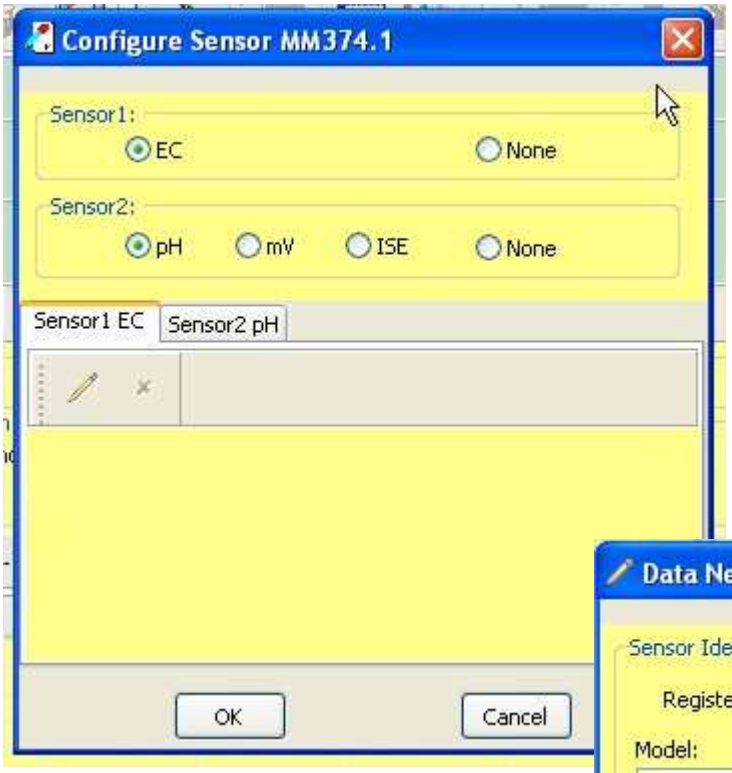
LabCom presents the display corresponding to the instrument.



It is necessary to **configure the sensor.** For this, click on the indicated icon.

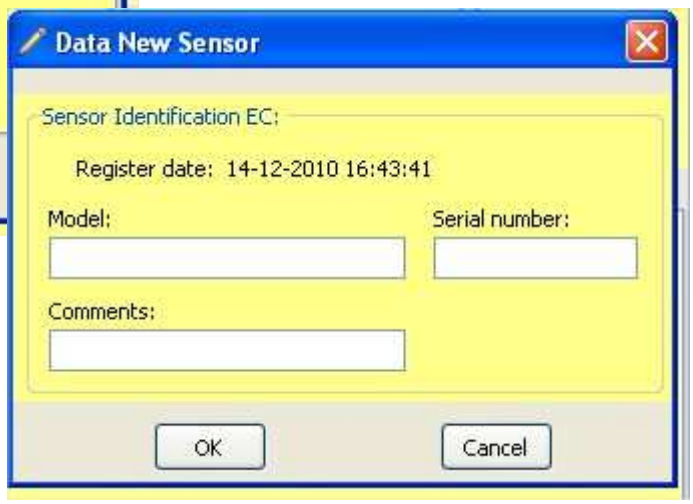
Pressing on the icon **SENSOR CONFIGURATION** from the tool bar, the user can introduce:

Model, Serial number and Comments about the sensor:



To identify a new sensor, click over the icon.

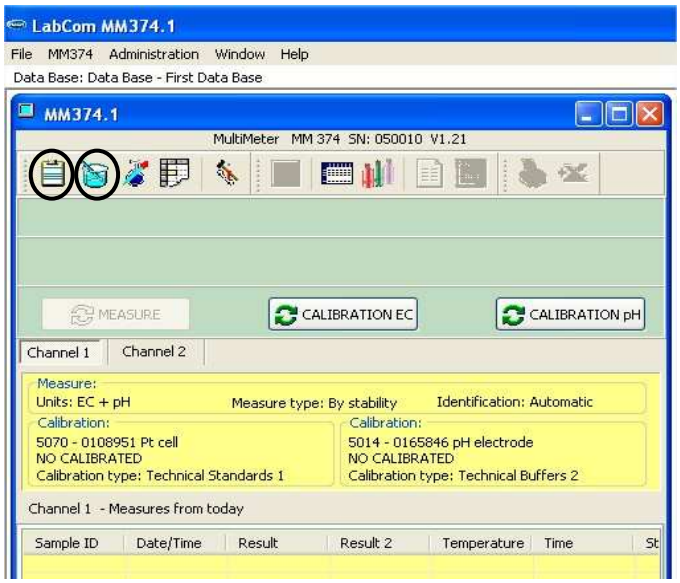
The date and hour of the sensor configuration is provided by the program and it is not accessible.
In the pH-meters, the type of sensor (pH, mV or ISE) defines the measuring units.



Model: maximum 25 characters
Serial number: maximum 15 characters
Comments: maximum 25 characters
Ion name: maximum 15 characters
(in MM340 and MM374, when working with ISE)

Once the information related to the sensor is introduced, press OK to accept the data.
It is recommended to check the data before pressing OK, because after its acceptance it is only possible the identification of new sensor.

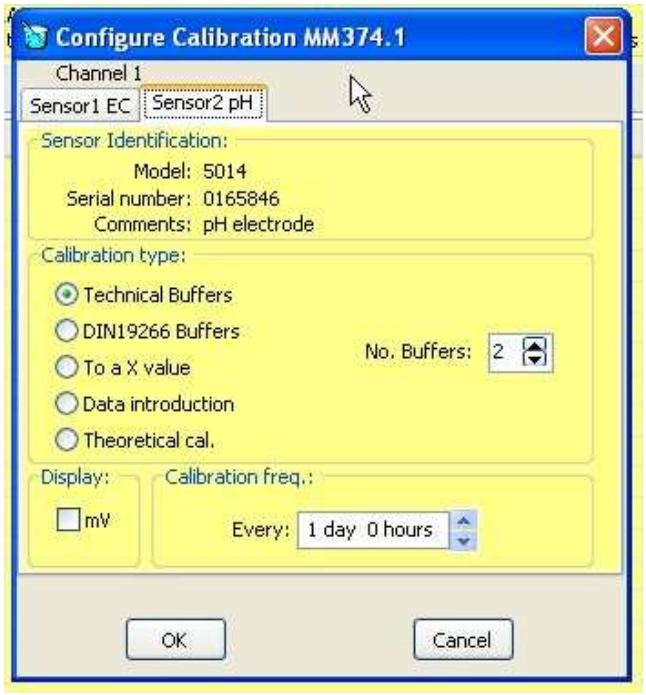
It is necessary to configure the calibration and measuring conditions required by the user's application.

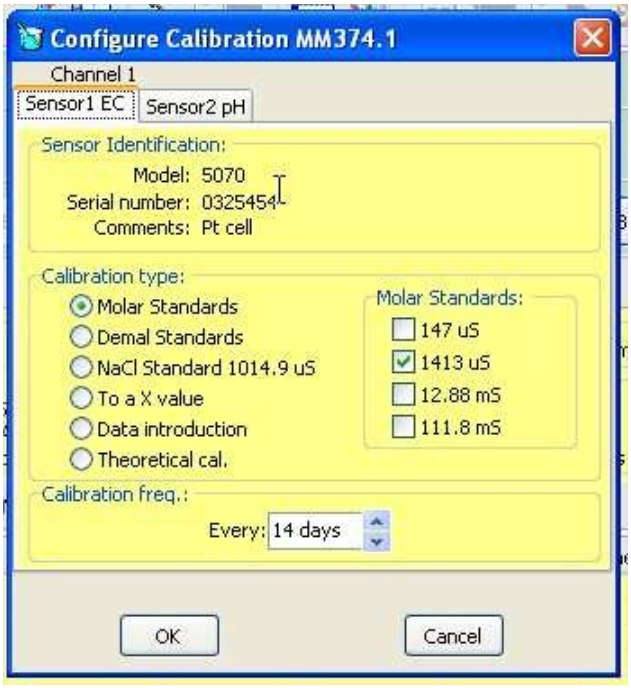


Calibration configuration:
Click over 

Measurement configuration:
Click over 

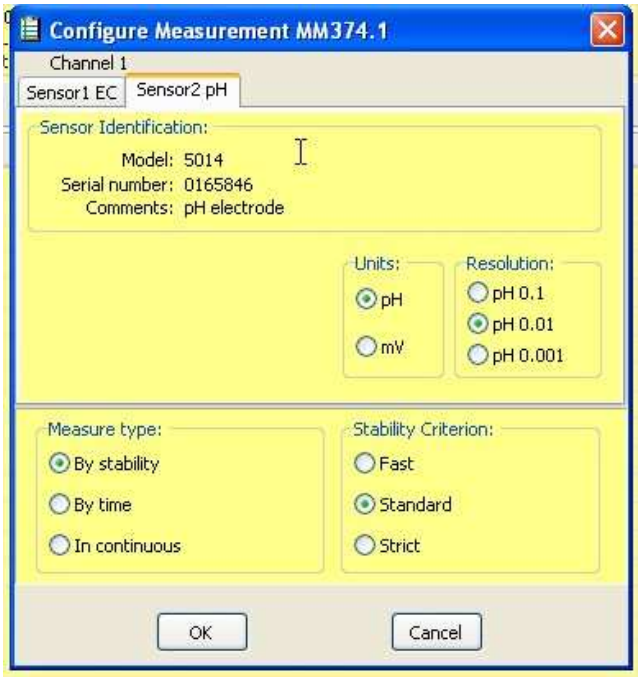
CALIBRATION CONFIGURATION: Define the conditions, standards, etc. for the calibration.
- Type of buffers (standards)
- Number of buffers (standards)
- Calibration frequency
- In case of pH-meters, the option “Display mV” provides the simultaneous display of pH and mV.





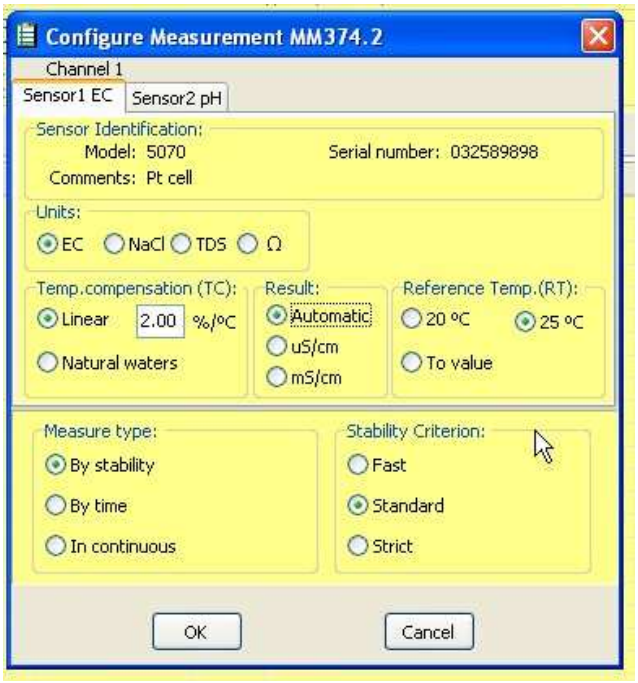
Examples for calibration configuration in pH and in conductivity.

MEASUREMENT CONFIGURATION: Define the measuring conditions



<u>pH measurement</u>:
- Units: pH or mV
- Resolution
- Measuring type:

When the measurement is by stability, the user can program the stability criterion.
When the measurement is by time, the user can program the duration of the measurement and the acquisition interval, useful for graph presentation of the measurement.
When the measurement is in continuous, the user can program the acquisition interval, useful for graph presentation of the measurement.



Conductivity measurement:

- Units: EC, NaCl, TDS or resistivity
- Temperature compensation: linear TC programmable from 0-5%/ºC or Natural Water
- Reference temperature: select among 20ºC, 25ºC or programmed reference temperature
- Measure type:

When the measurement is by stability, the user can program the stability criterion.

When the measurement is by time, the user can program the duration of the measurement and the acquisition interval, useful for graph presentation of the measurement.

When the measurement is in continuous, the user can program the acquisition interval, useful for graph presentation of the measurement.

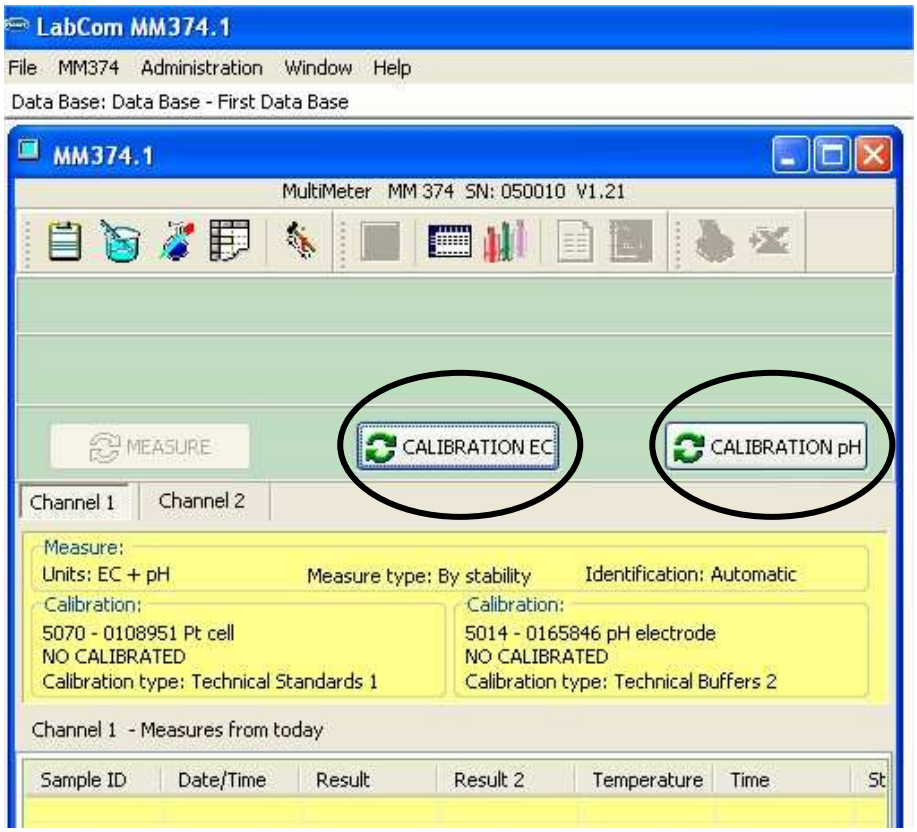
- Result:

Automatic: The conductivity (NaCl, TDS or resistivity) measured value will be shown in the data table with the automatic resolution assigned by the instrument.

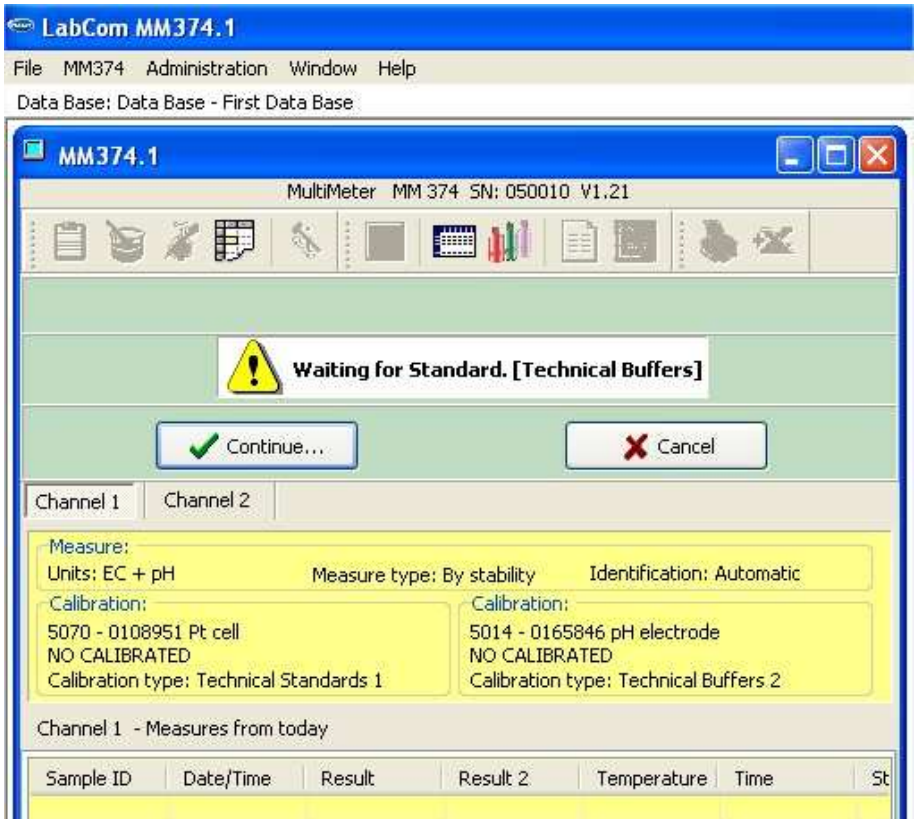
If the user selects “Result: µS/cm (mgl) ” or “Result: mS/cm (g/l)” hence the conductivity measured value will maintain always the selected units.

CALIBRATION

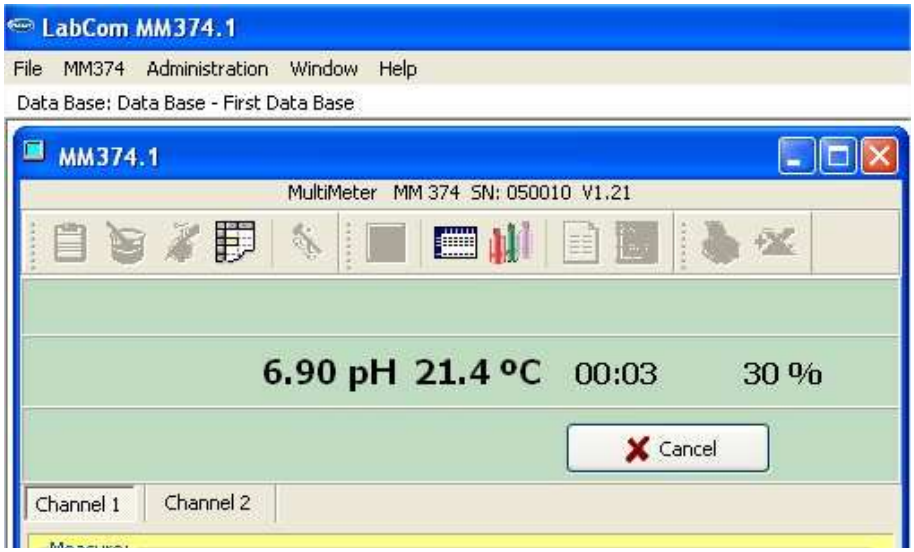
The process must start with a calibration.



For this, click on the button “CALIBRATE EC” or “CALIBRATE pH” depending on the model of instrument. In case of MM374 the calibration can start with EC or pH, the important is to calibrate both parameters.

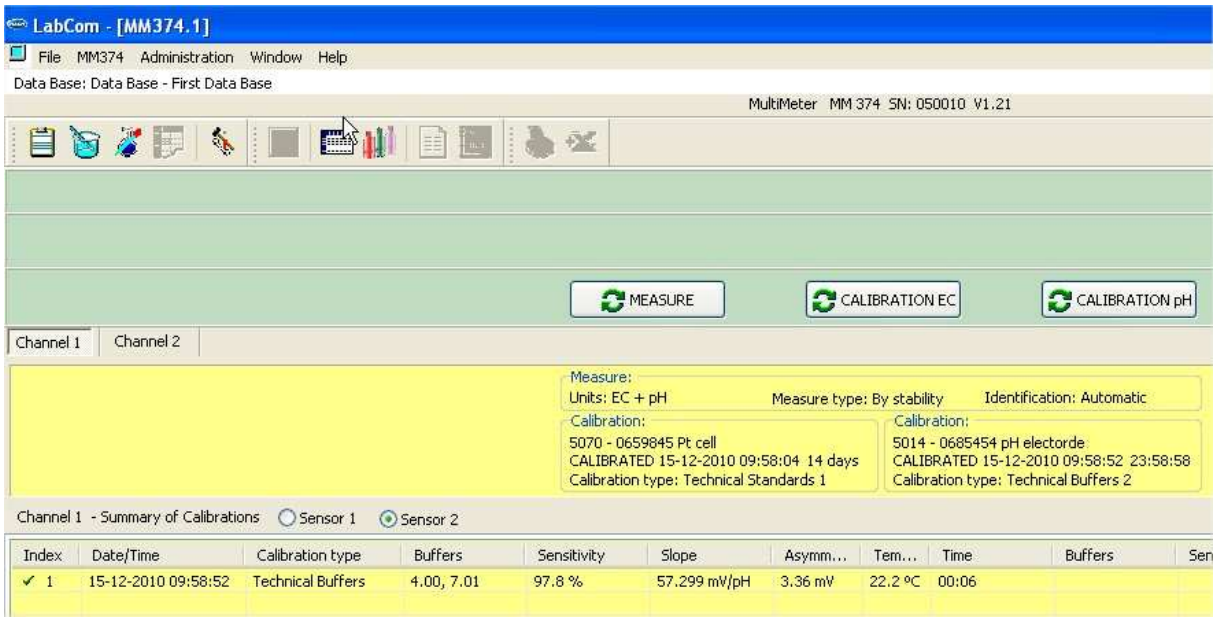


Introduce the sensor in the first buffer (standard) and start the calibration by pressing the key ✓ of the instrument key pad or by click on "Continue…" in LabCom.



During calibration the stirring speed can be modified from the arrow key on the instrument key pad.

After calibration, the calibration data are stored in the data base and the system is ready for measurement.

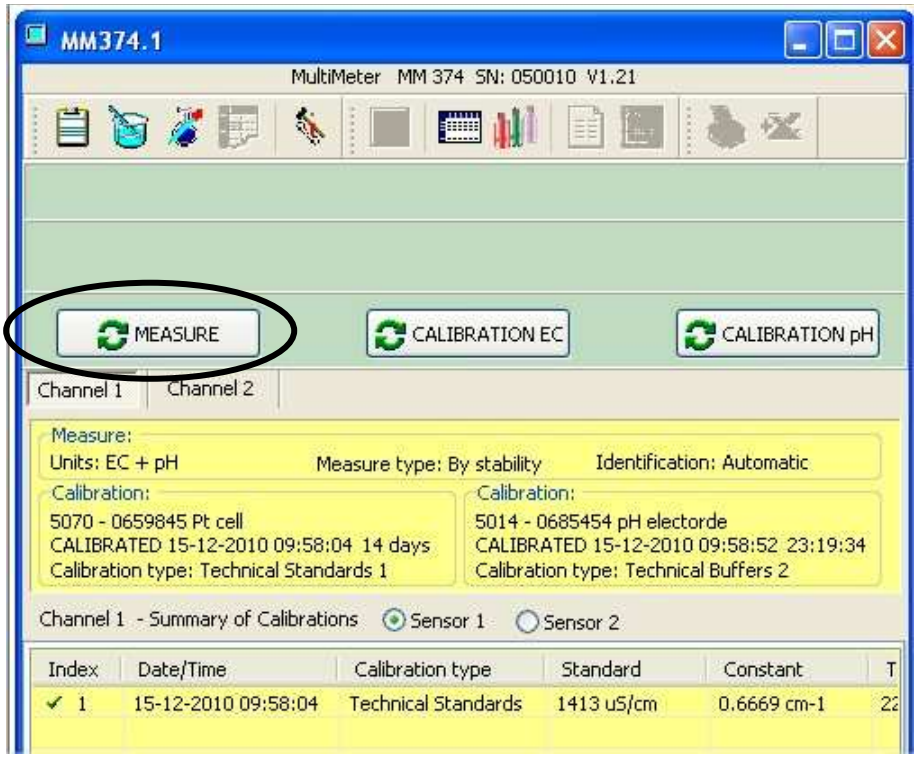


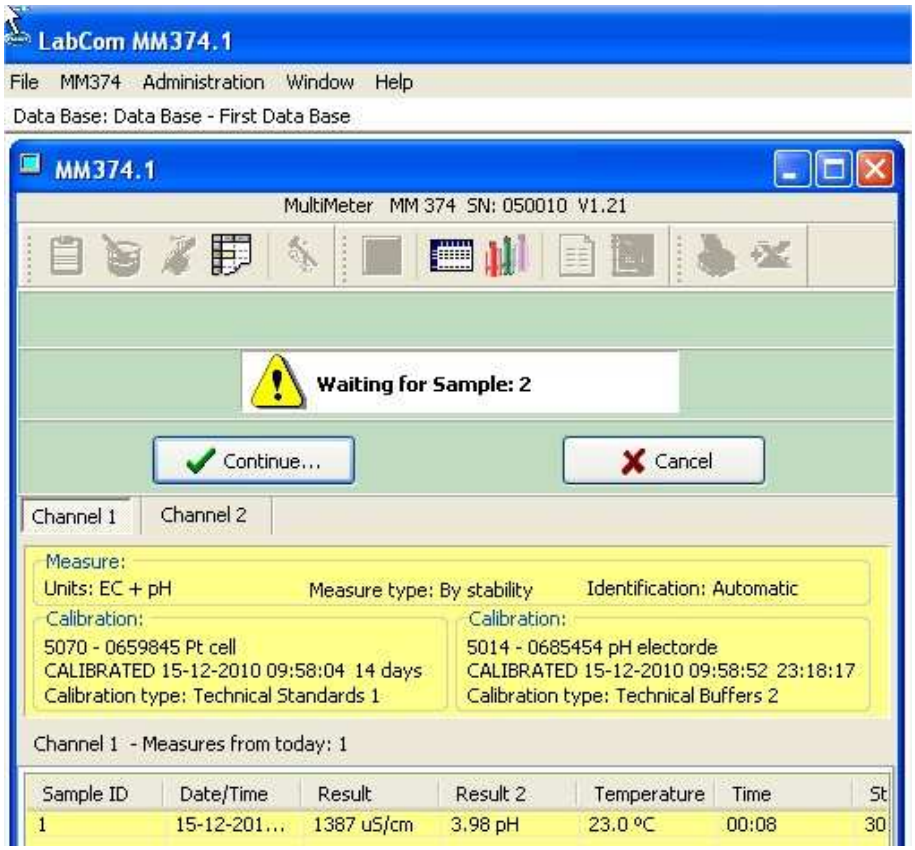
New calibration must be performed, once the programmed time in Calibration frequency has passed.

Important: If after calibration, the calibration frequency or the calibration configuration is modified, it will be necessary to calibrate with the new-programmed conditions.

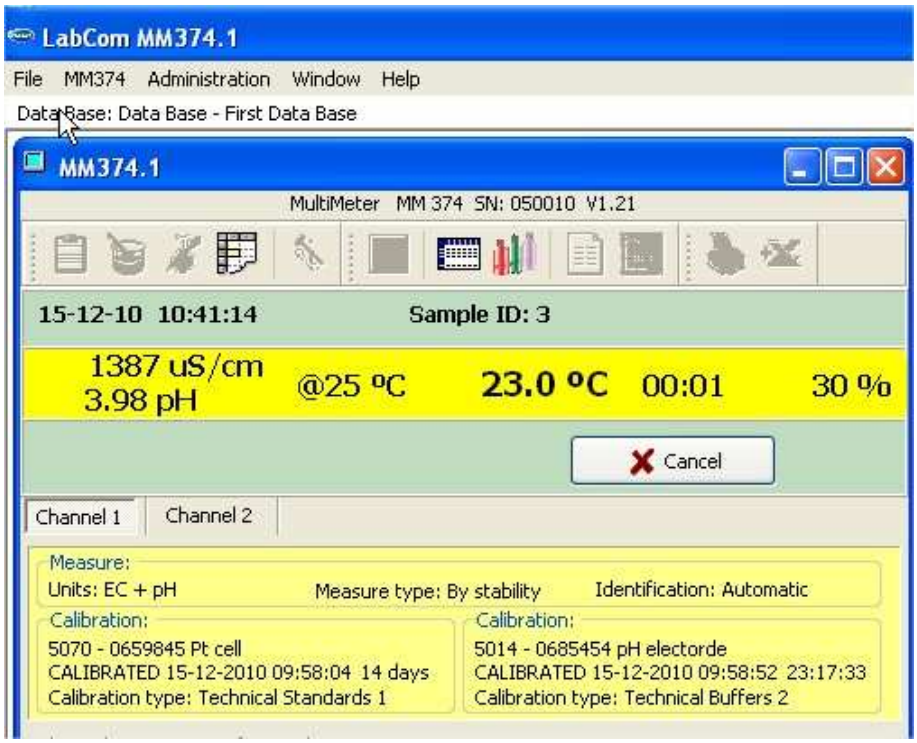
MEASUREMENT

To start measurement, click over the button “MEASURE”.



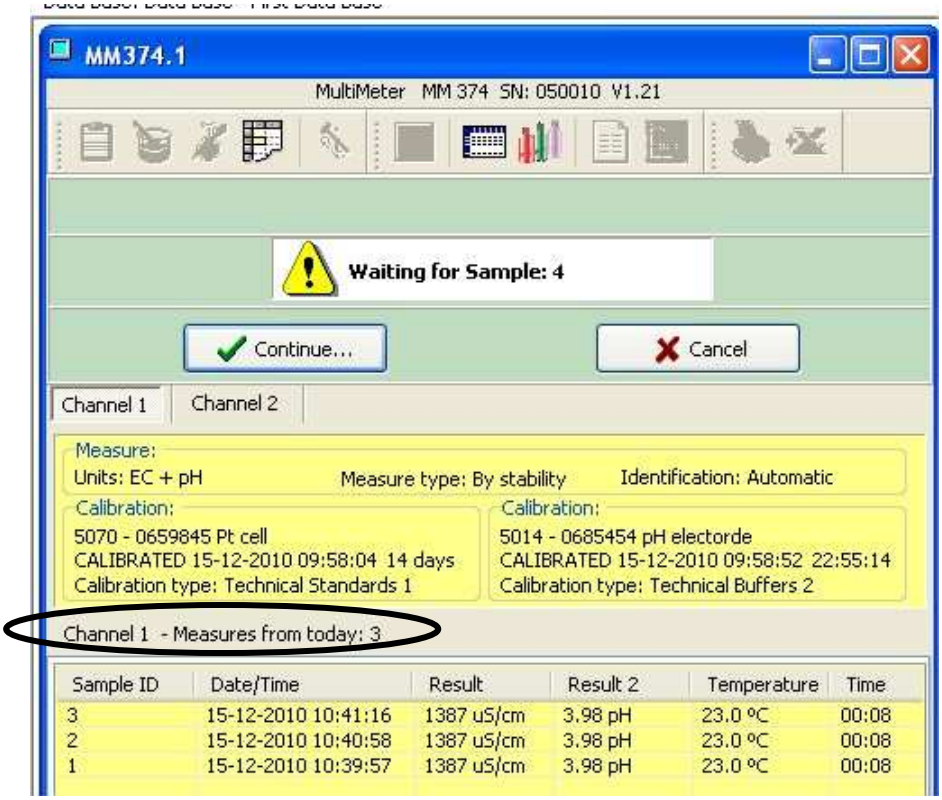


Introduce the sensor into the sample and start the measurement by pressing the key ✓ of the instrument or by clicking on the button "Continue…" in the LabCom.



Once the measurement has finished, the datum will be stored in the data base (Query, see page 19) and it will appear in the window of the instrument (daily measurements, Measures from today).

Next measurement can be done by pressing the key ✓ in the instrument or by click on the button "Continue…" in the LabCom.



To view daily measurements from the instrument's window.

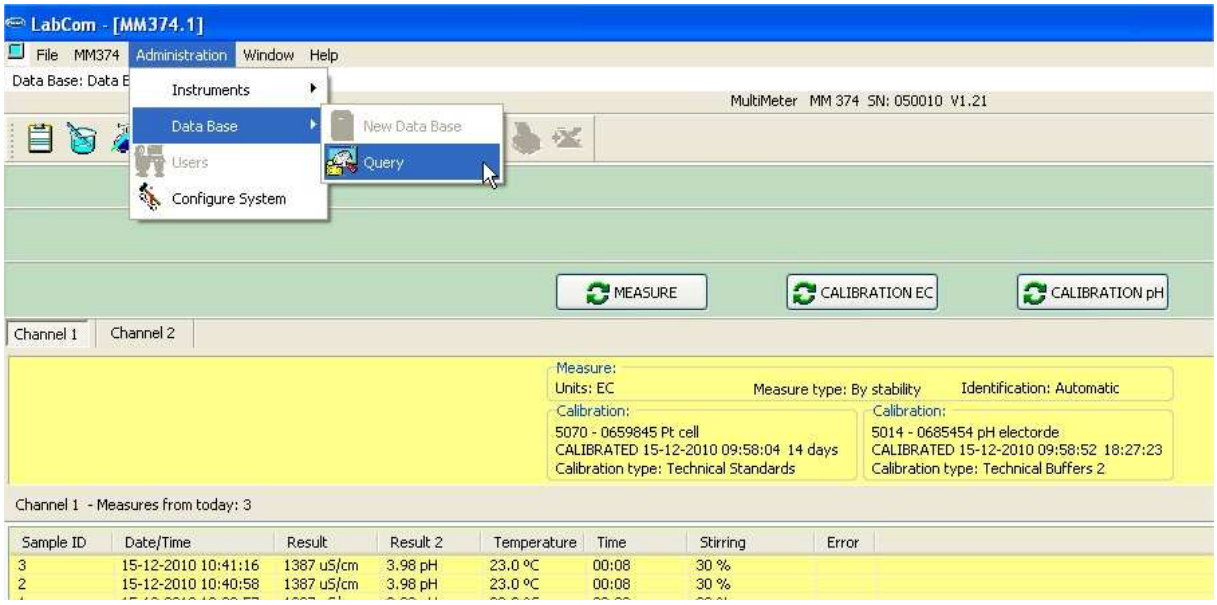
To view calibrations from the instrument's window. The current calibration used by the instrument is marked with a green ✓.

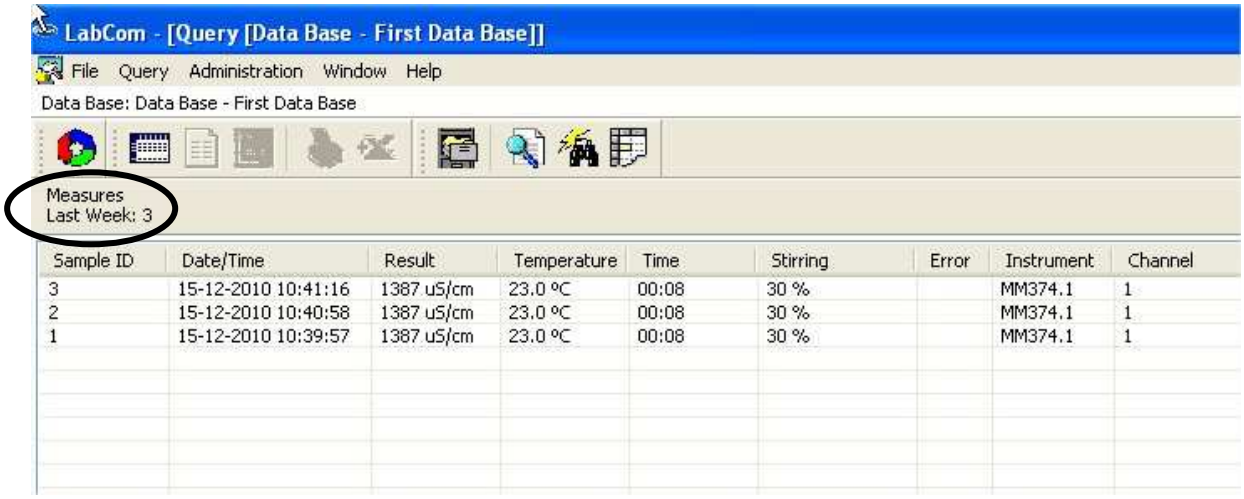
To quit measurement and have access to options.

For other possibilities, see chapter "Windows Management", page 28.

DATA BASE

From the instrument's window are viewed only measurements and calibrations performed today. To see the rest of the results it is necessary to go to the Data Base.
Access to the DataBase from the main window:





The program has by default one query identified as "LAST WEEK".

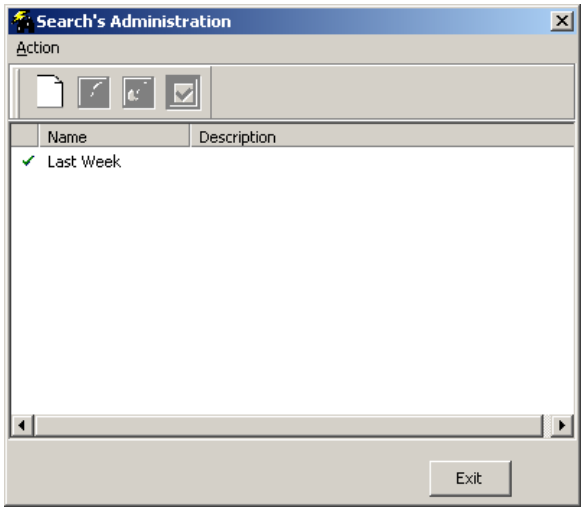
The calibrations and the measurements are kept in different data bases. To see the calibrations it is necessary to configure a specific query, see page 20.

Options on the Query windows (buttons from left to right).
Update table. To update the results table with the last performed measurements.
See table. To view the results table from any other option.
See individual report. To view individual report about the selected measurement(s). See page 25.
See graph. To view the graph of the selected measurement(s). See page 36.
Print. See page 27.
Export data to Excel or scv file. See page 39.
Modify search.
Configure search.
Configure data table. See page 25.

Queries in the Data Base

Within the query, different criteria for searching data in the data base can be established.

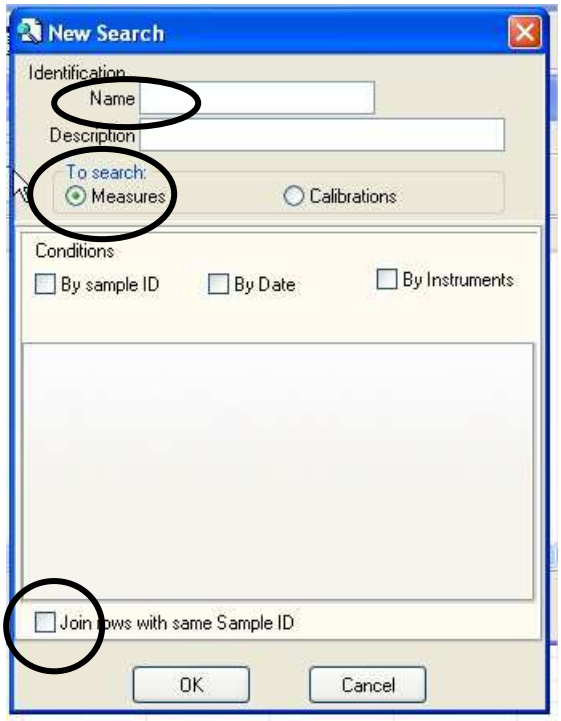
Configure search: This option is useful when a new Search is created. A name of the new search should be introduced and the searching conditions.



To create a new query, its name (compulsory) and description (optionally) should be introduced.
The queries can be used for measuring results or for calibration results.

The search of measuring results in the data base can be done by sample ID, by date or by instruments.

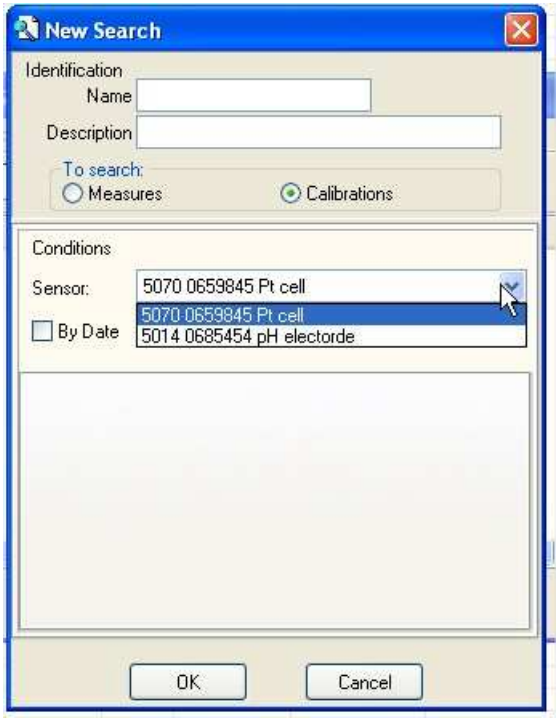
If the option "Join rows with same code" is given, there will be a row in the data base with all results related to the same ID (recommended option when working with two connected instruments. For example a pH-meter and a conductivity meter) and manual ID.



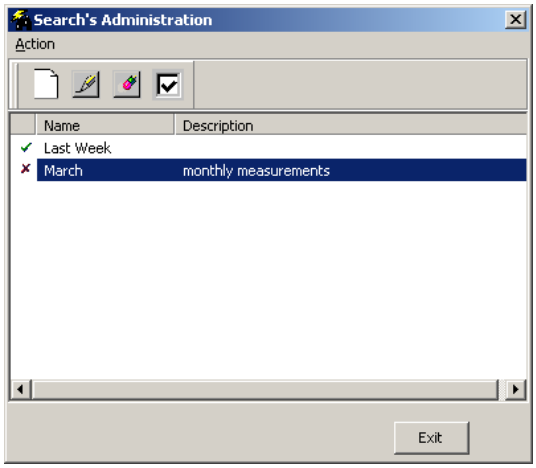
Calibration search in the data base

A sensor should be selected (appears all data introduced when the sensor was configured: model, serial number and comments).

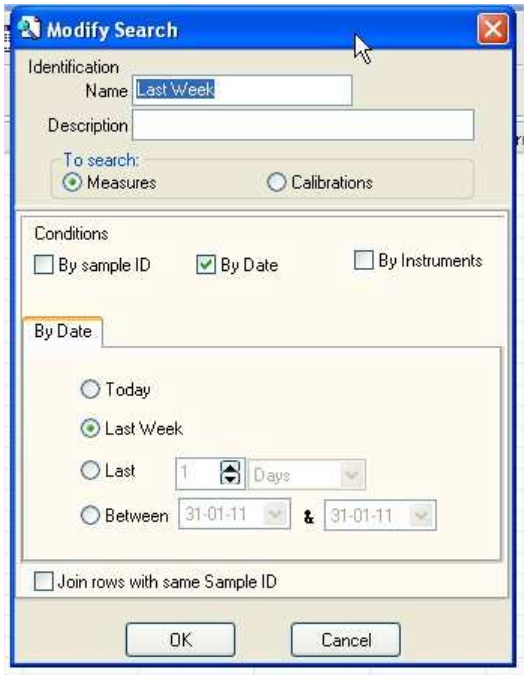
As a searching condition, the date can be used.



Once the query has been saved, it can be Modified, Erased or Activated (from left to right)

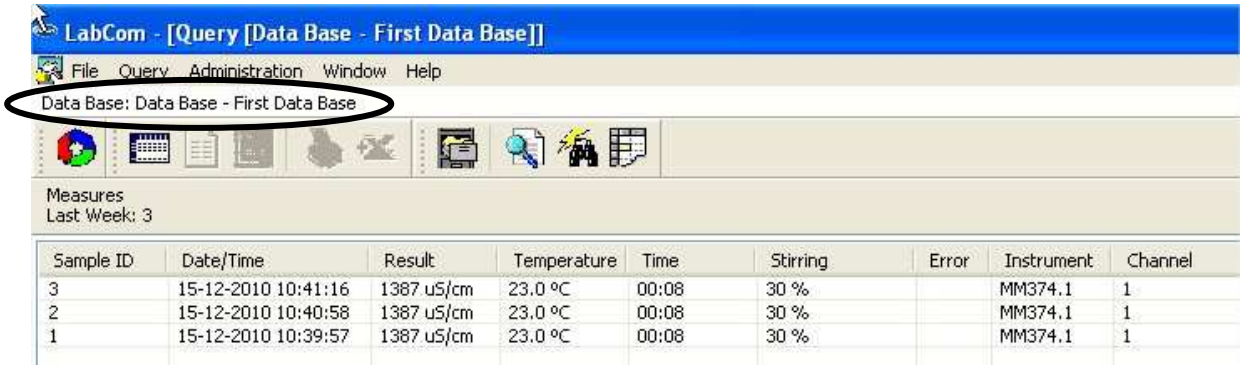


Modify query: Directly appears the different searching conditions.



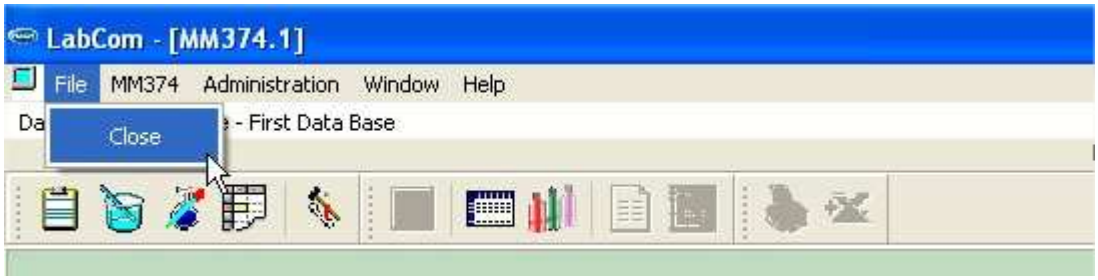
New Data Base

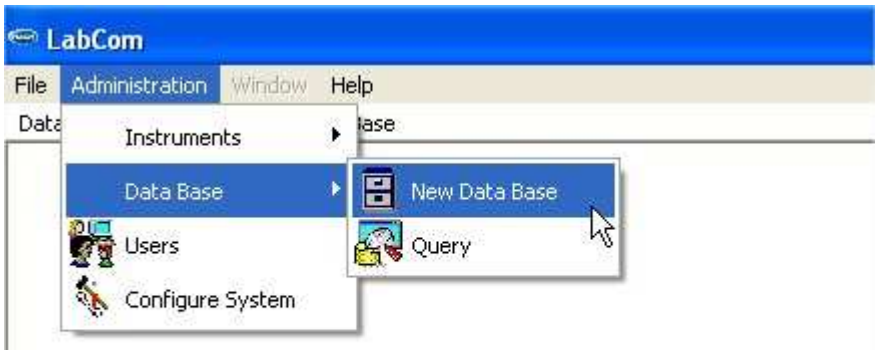
The program LabCom by default creates a Data Base called First Data Base.



To ensure security of the data or when the data base contains a huge number of measurements, it is recommended to open a new data base to speed up the data management. The previous data base can be opened at any moment only for queries of stored data.

To open a new Data Base, the windows of the instrument(s) and Query should be closed.



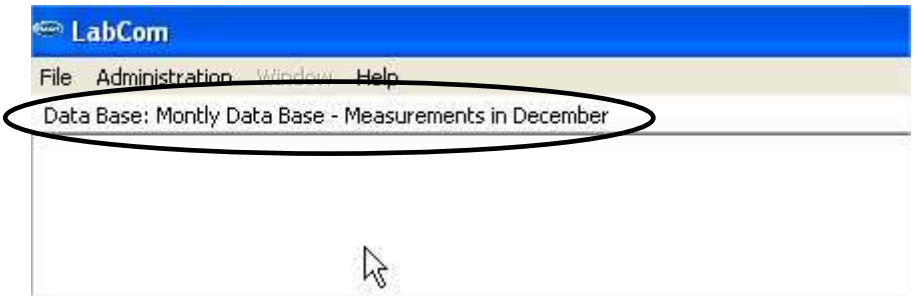


Go to Administration, Data Base, New Data Base.

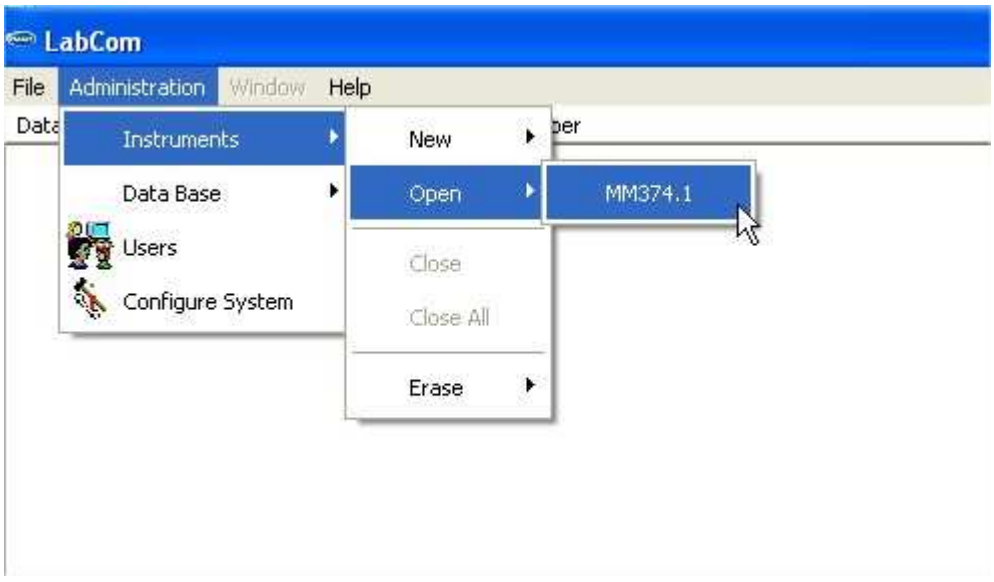
A window for the new data base identification is opened.

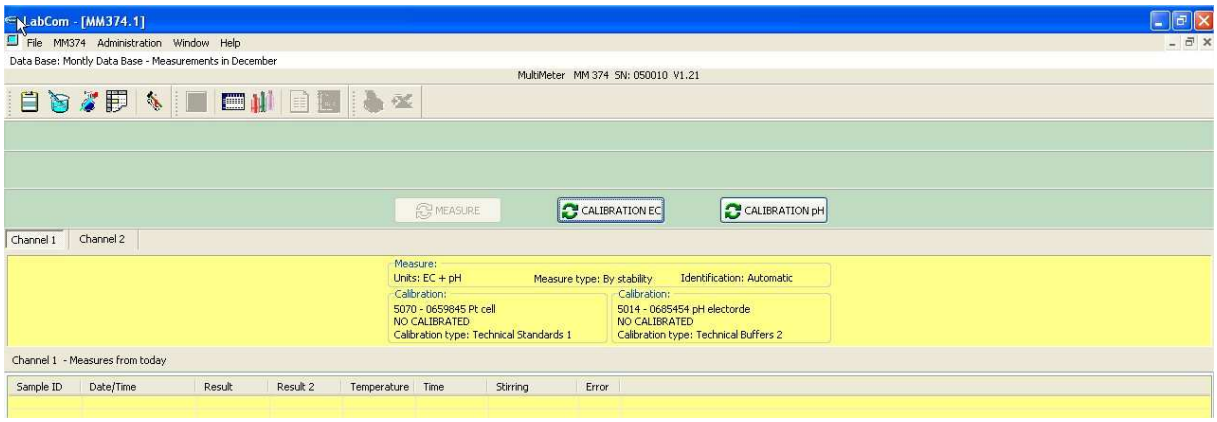
Name is obligatory and Description is optional.

When OK is pressed, a new data base is created.



The instrument in use should be open, Administration – Instruments – Open.

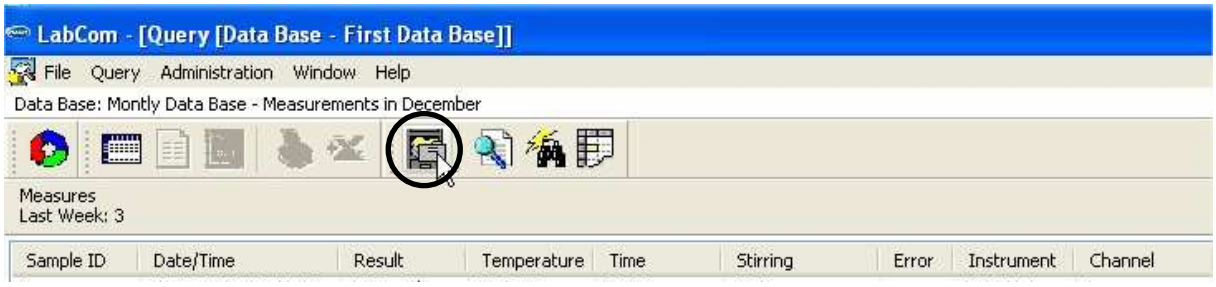




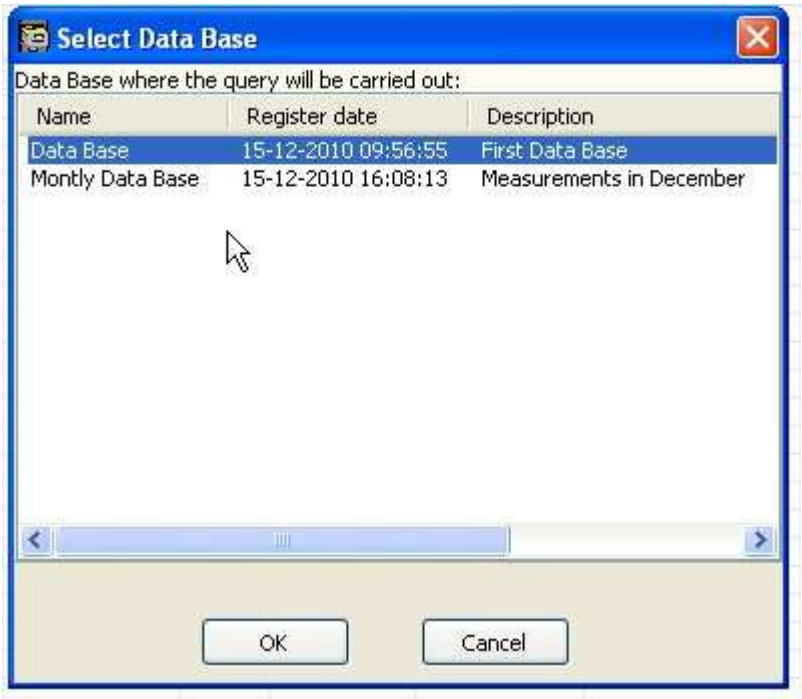
The sensors in use should be calibrated again and continue working in the usual manner.

If an automatic sample ID is use, the first ID in the new data base will be the next of the last measurement in the previous data base.

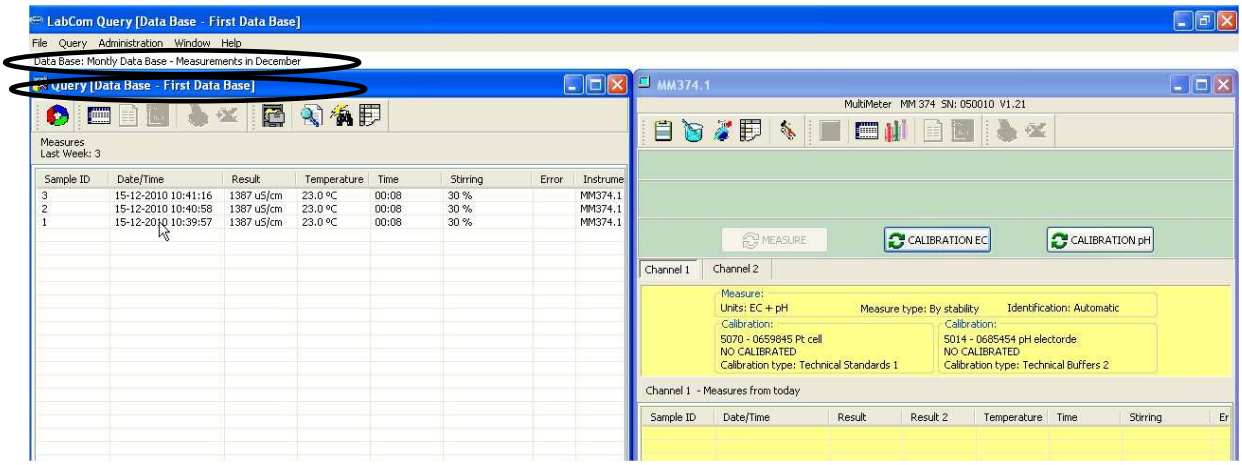
The results from the instrument will always be stored in the new data base (the last created). Meanwhile, the previous data base can be queried at any time. From the Query window, click on the



indicated button.



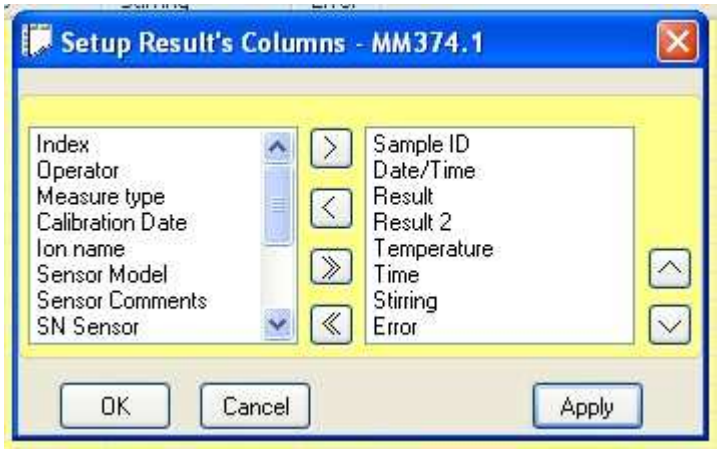
Select the Data Base where the query will be done.



Example of MM374, the obtained data are stored in Measurements in December, meanwhile a query in the First Data Base is performed.

TABLE CONFIGURATION

LabCom allows configuring the Results table in the Instrument window and in the Query window.
By this option, the user selects the data that appear on the table (columns) and the order of their appearance.



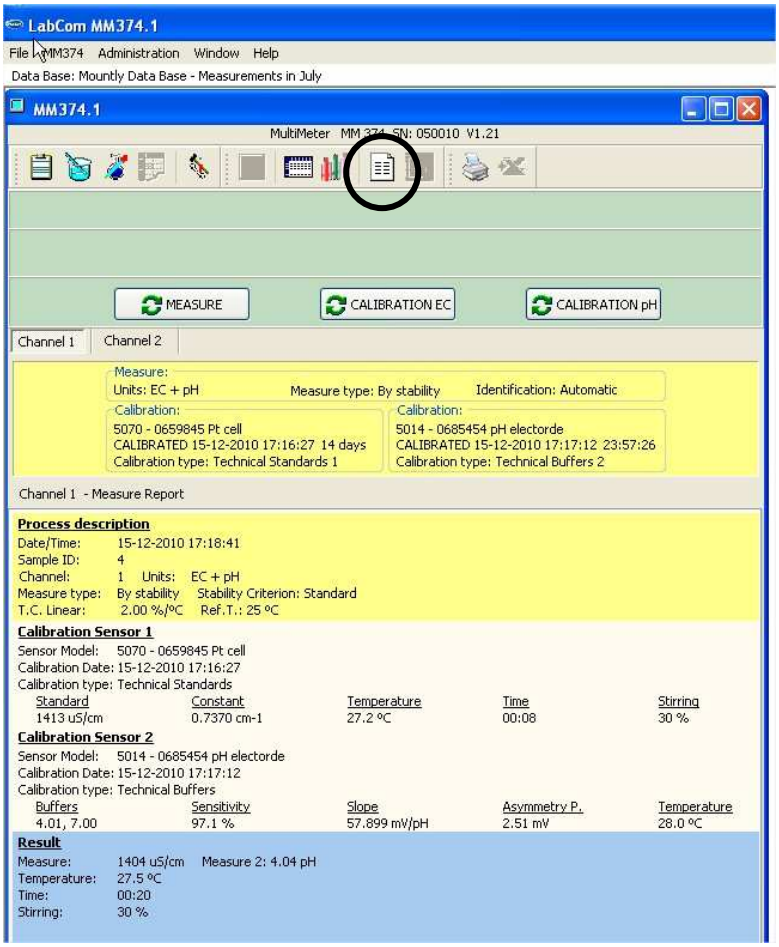
The columns appearing in the table are in the right group and the rest of possible options in the left group.
To add or remove displayed parameters in the table use > or <. Their order of appearance can be configured as well. Mark the parameter and move it up or down using ∧ or ∨.

Note: It is not possible to configure the data order in the calibration data base.

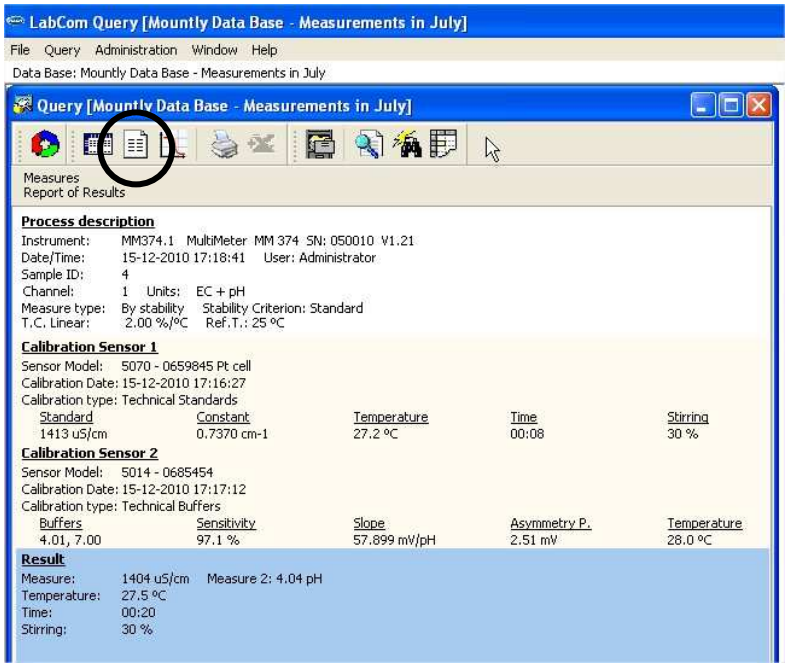
REPORT VIEW

View all data related to one or several measuring result(s). This option is available in the Instrument window or in the Query window.
Mark the measurement(s) in the data base or in the daily results table and click over 
On the display appear all data related to the selected measuring result.
From this window the user can view the graph, print, export to Excel or csv file or return to the data table.

Report view from INSTRUMENT Window



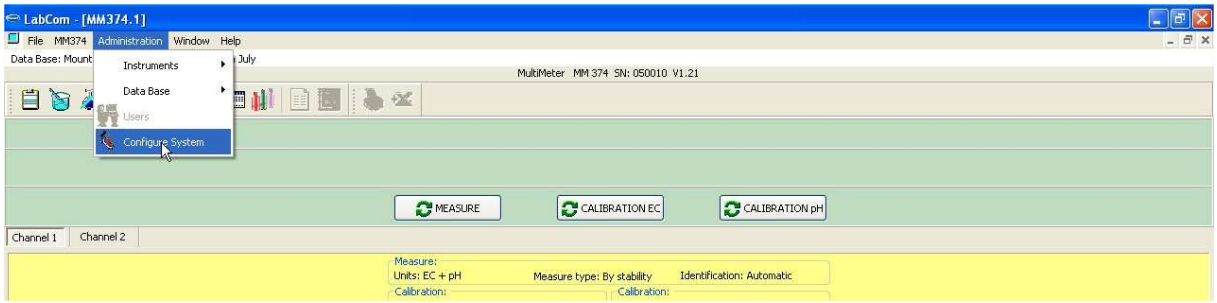
Report view from QUERY

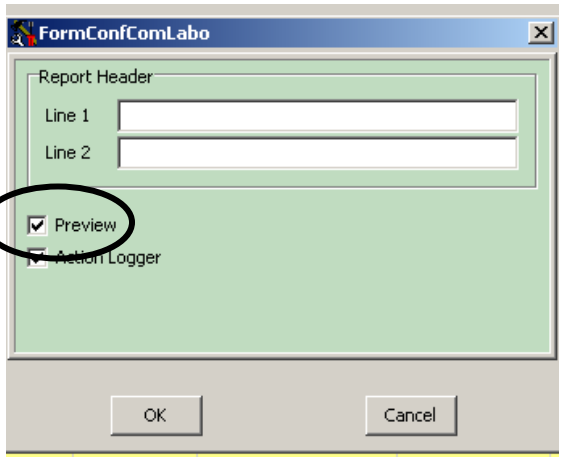


PRINT

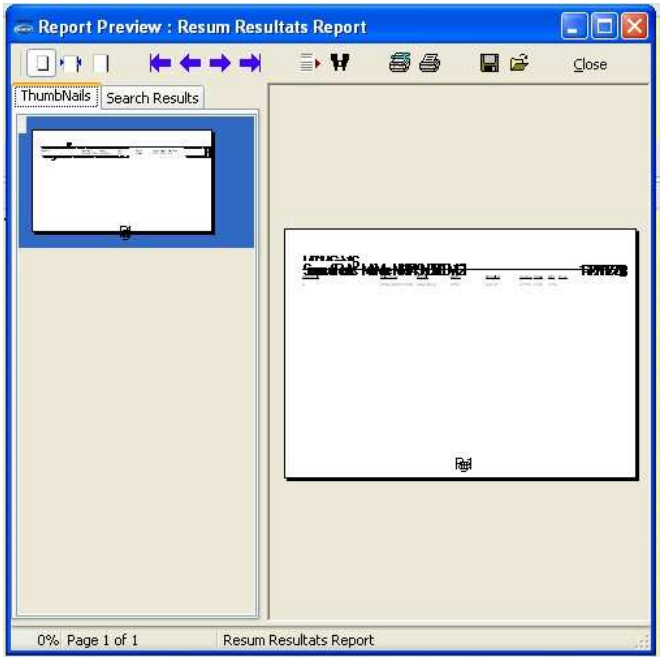
The reports can be printed from the Instrument window or from Query window. Select the result(s) in the results table and click on the icon “PRINT”.
From LabCom, the reports can be reduced, with graph, with all measuring points and a resume of several results.

The report can include a header of two lines introduced by the user. For their introduction, go to “Administration”, “Set up system”.





Introduce the two lines as header report and accept with OK.
Preview: If this option is selected there will be a preview before printing.



WINDOWS MANAGEMENT

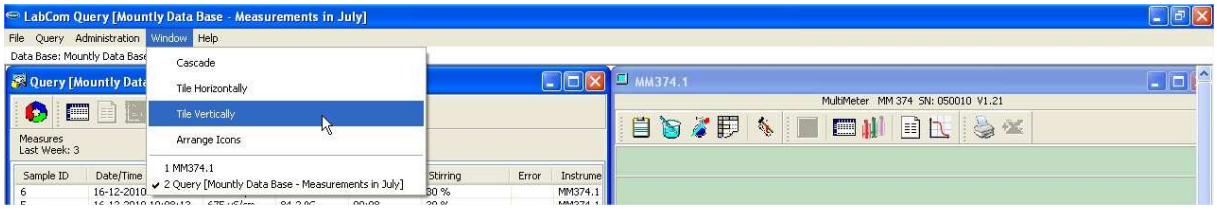
Main window:

The options on the menu bar before opening any instrument are:

File: To quit the application

Administration: Instrument management, for opening a new instrument, for closing or erasing an instrument.
Data base, for opening the data base and generate different queries.
Users, to identify the users of LabCom, see page 38.
Configure system, introduction of 2-line report header.

Window: This option is active when there is at least one instrument open. The user can select the view of the different Windows.



Help: The version of LabCom can be found and the contact details.

Instrument window:

There is a window per each connected instrument,

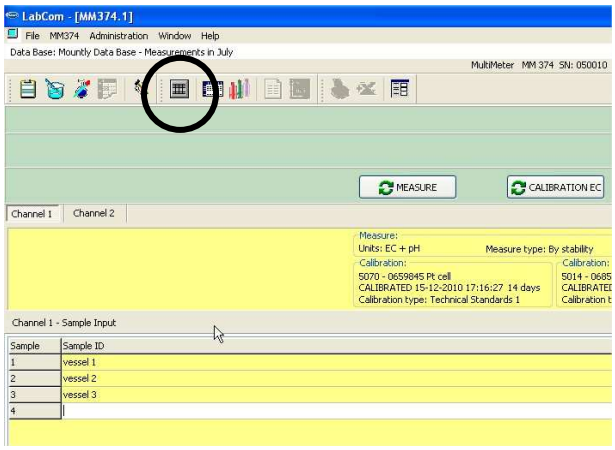
The possibilities on the tool bar are (from left to right):
Configure measurement, see “CONFIGURE MEASUREMENT, page 13.
Configure calibration, see “CONFIGURE CALIBRATION”, page 13.
Configure sensor, see “CONFIGURE SENSOR” page 12.
Configure the results columns, see configure data table, page 25.
Configure, see Program start, page 10.
Sample entrance, for sample ID introduction, only with manual ID, see Program start, page 10.
Results table, to view the daily measurements performed with the instrument.
Calibration table, to see the calibration table.
Results report, to see the complete report of the selected measurement (from the data table).

Graph, to see the graph of the marked measurement. Active only if the option “With graph” is selected in Configure, see Start of the program.
Print, to print one or several data points from the results table.
Export to Excel or csv file, see page 39.
Sample code input, to introduce and store a code list that will be used in successive way.
Measure, to start measurement.
Calibrate, to start calibration.

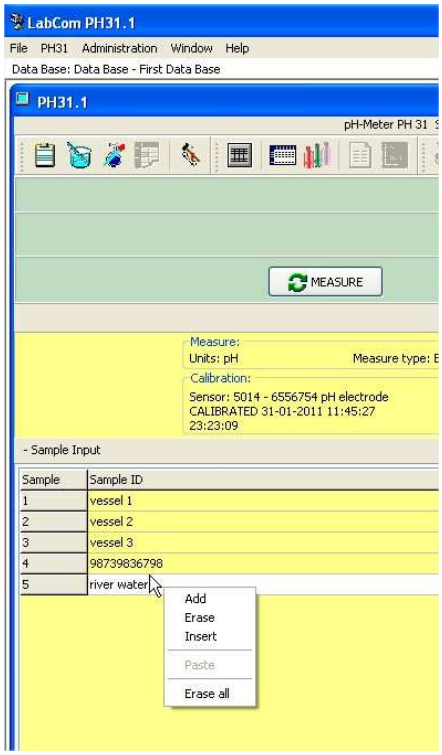
SAMPLE IDENTIFICATION

The type of sample identification, automatic or manual, must be selected in “Configure” during the Start of the program, see “Instrument Configuration” page 11 or at any moment click on the button “Configure” from the tool bar of the instrument window.
Sample identification
- Automatic: The ID will be numeric, increasing successively and automatic.
- Manual: The user introduces an ID per every sample, maximum 25 characters.

When manual ID is selected, the button “Sample entrance” is activated on the instrument window. Click on the button and introduce the ID of one sample or a series of samples.



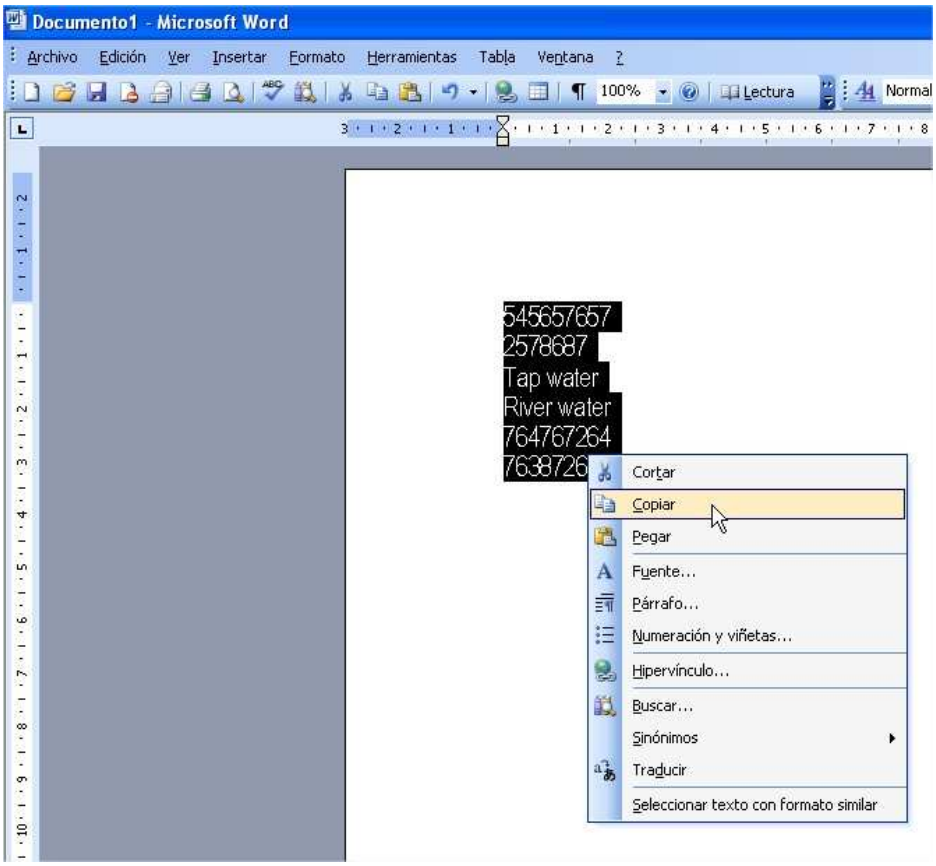
Measurements in one sample or a group of samples
Introduce the list of samples ID.
Click over “MEASURE”.
The measurements should be performed in the same order as the order of ID introduction.
Once the measurement has finished the corresponding ID will disappear from the list.

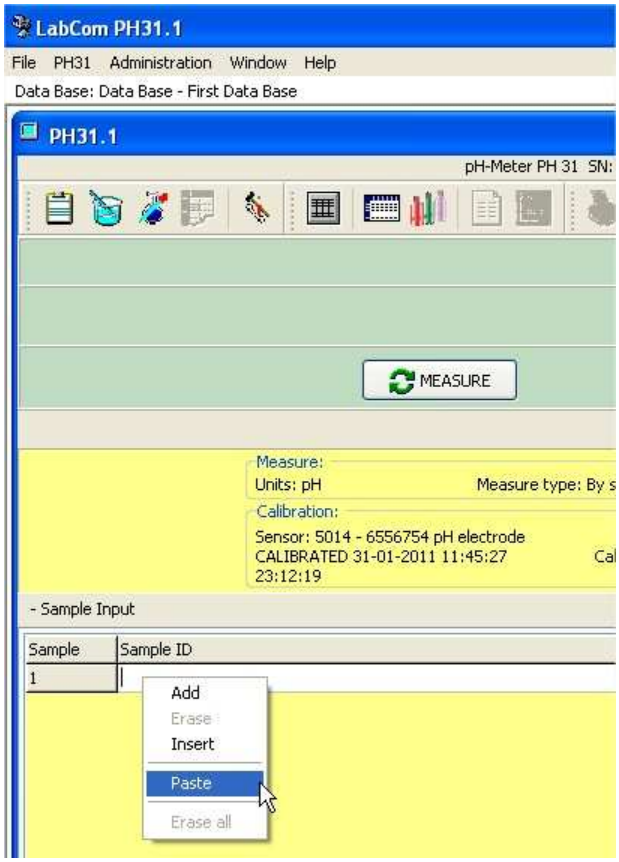


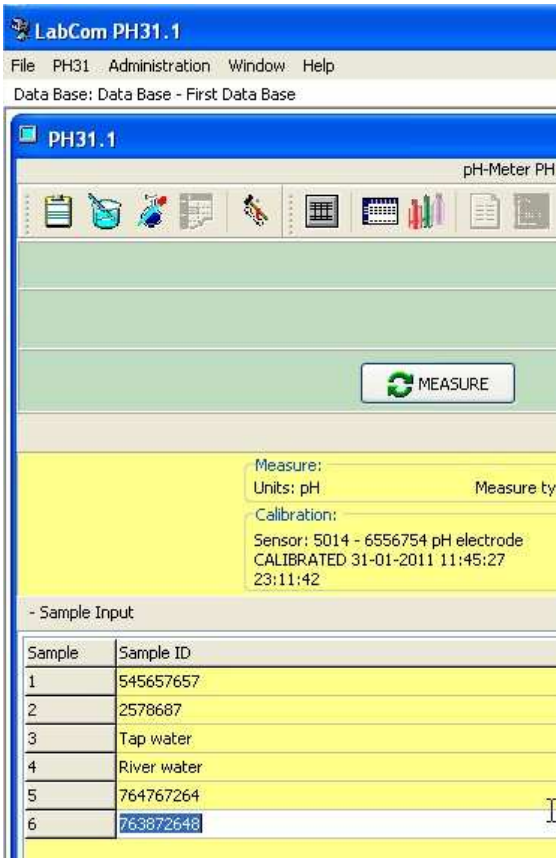
If the right button of the mouse is pressed, it is possible to:
- add
- erase
- insert sample ID.

Sample ID input using the Copy & Paste function

The sample ID placed in a column can be copied from any file (Note Pad, Word, Excel, csv file) and pasted in the LabCom.

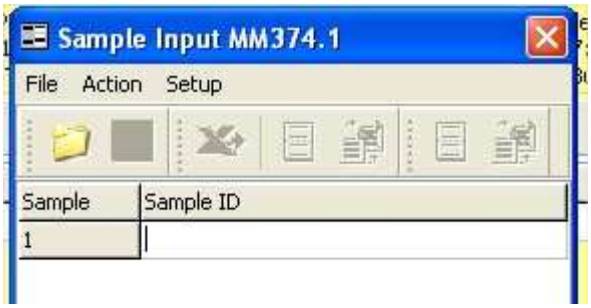




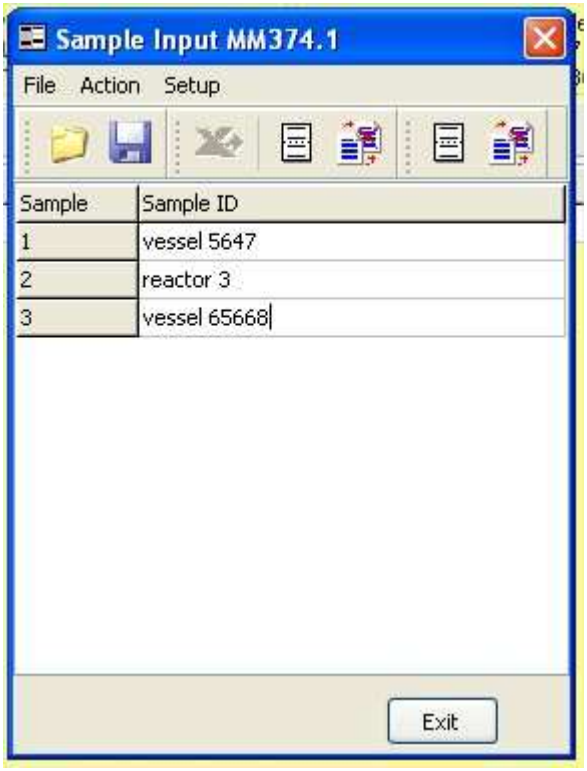


Button "General sample entrance" 

Sample ID input form a file stored in LabCom

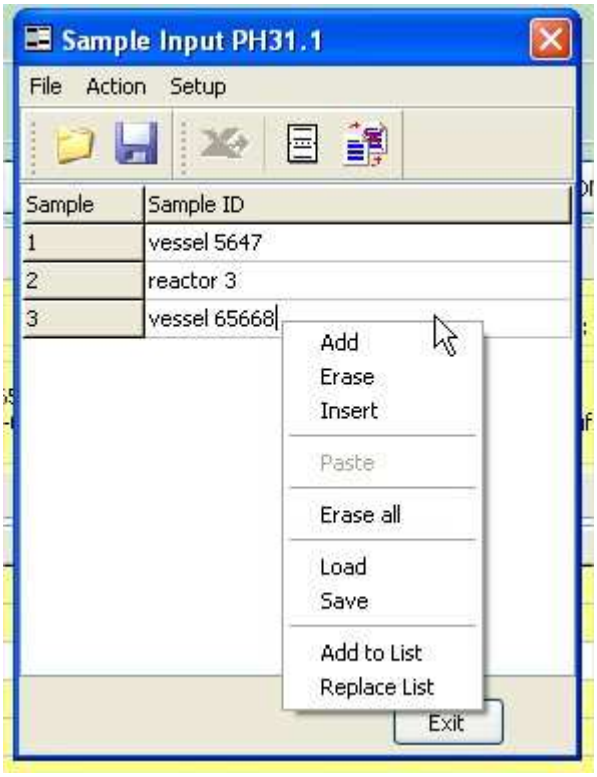


With this option a file can be generated with a series of ID, for example samples measured often. Therefore, the ID is introduced every time when measure is avoided.
It is possible to have only one list of sample ID per instrument or per channel in the instrument (MM340 and MM374).



Possibilities of the different buttons (from left to right):

- Load sample ID 
- Save list of sample ID 
- Add to list. In two channel instruments the user can select the measuring channel. 
- Replace list. In two channel instruments the user can select the measuring channel. 

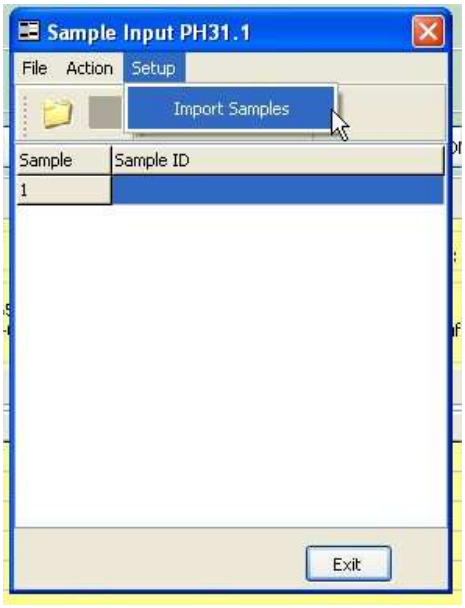


If over one of the sample ID the user presses the right button of the mouse, the same options appear.

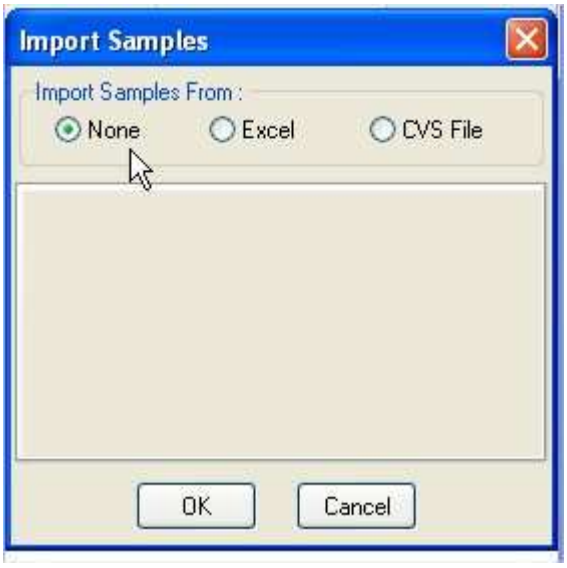
Sample ID input from Excel file

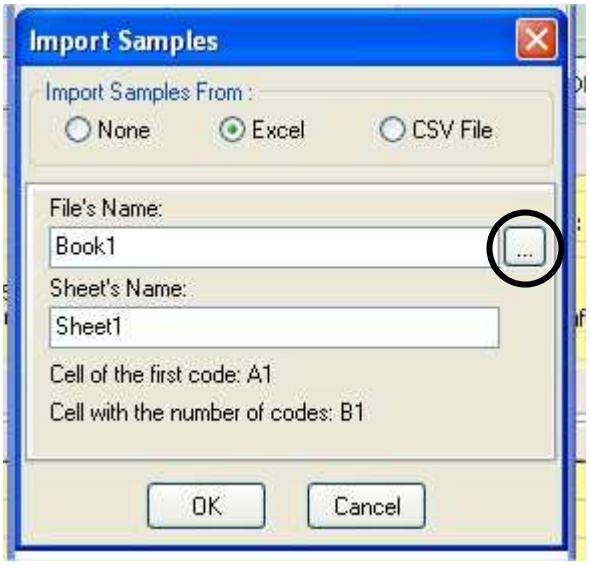
The software LabCom allows importing sample ID from Excel file.
To do this, the procedure is:
- Click on the button 

- Click on Setup. Select “Import Samples”.



- A new window will appear. Select “Import Samples From: Excel”.”. From the marked button the user can look for the Excel file containing the sample ID.

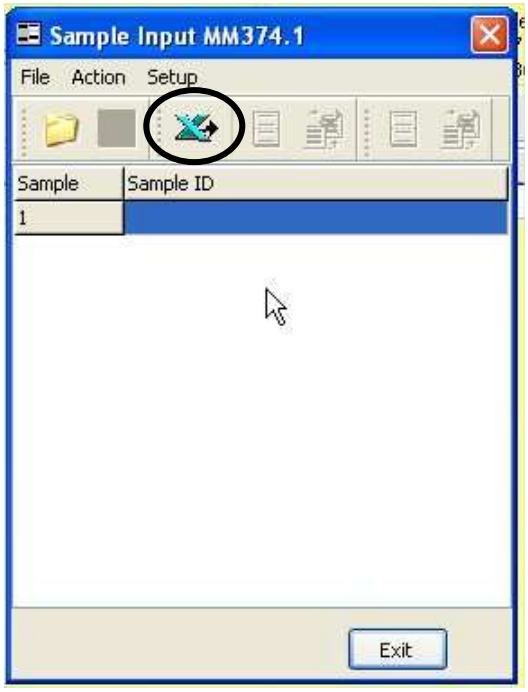


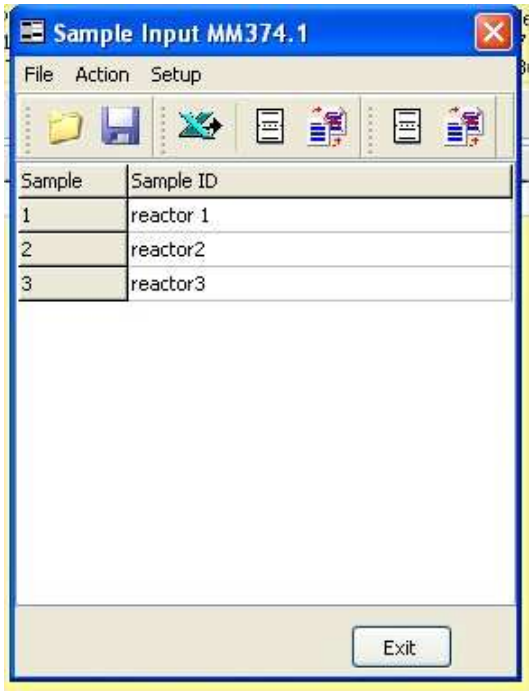


Using the button  select easily the file where the data will be imported from.

Important: In the Excel file the sample ID must be placed in a column. The first exported ID must be in the cell A1.
The number of ID exported to LabCom must be indicated in cell B1 and the cursor must be placed in another different cell.

- After activating the “Sample Import”, the Excel button is activated.





Pressing on the button  the selected sample ID are imported.

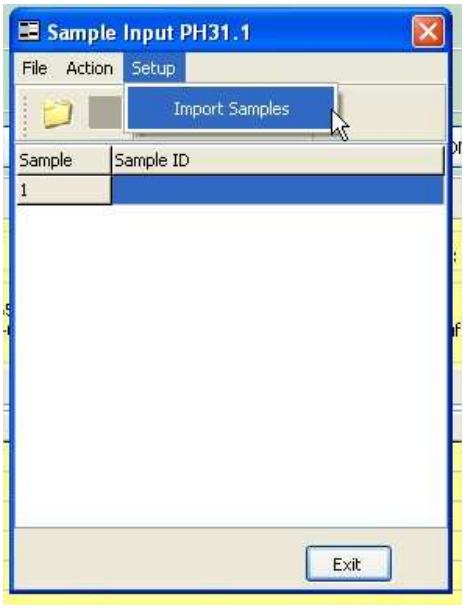
Now they should be sent to the instrument. The sample ID can be sent:
- to replace the instrument ID list 

- to add to the instrument ID list 

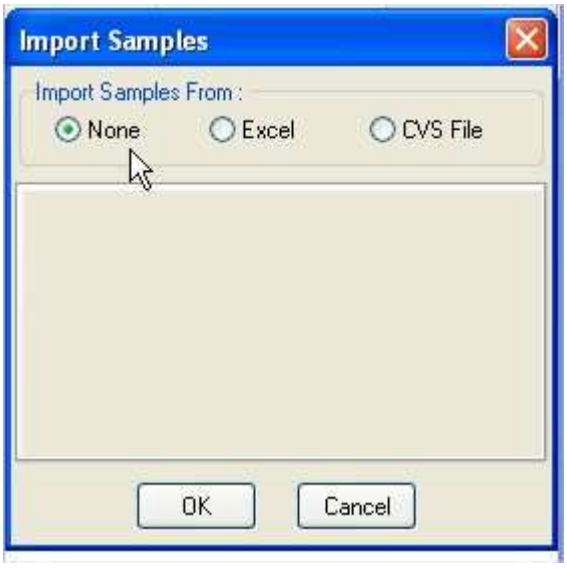
Sample ID input from csv file

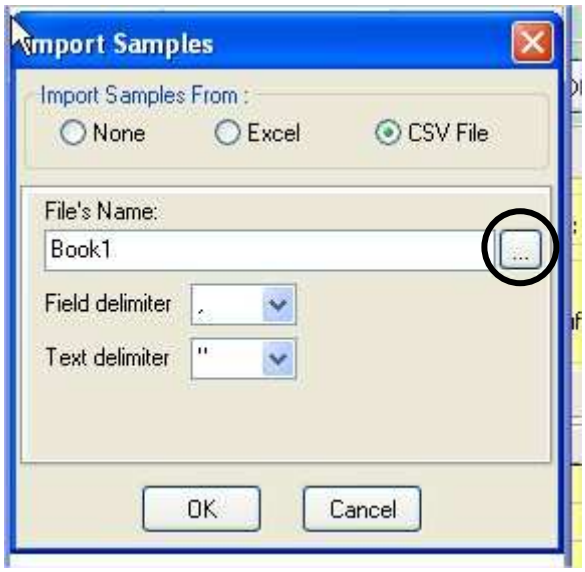
The software LabCom allows importing sample ID from csv file.
To do this, the procedure is:
- Click on the button 

- Click on Setup. Select “Import Samples”.



- A new window will appear. Select “Import Samples From: CSV File”. From the browse button, the user can look for the csv file containing the sample ID.

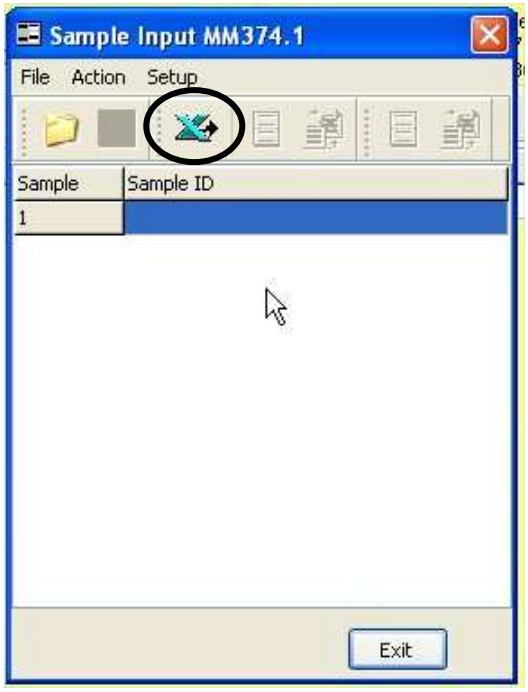


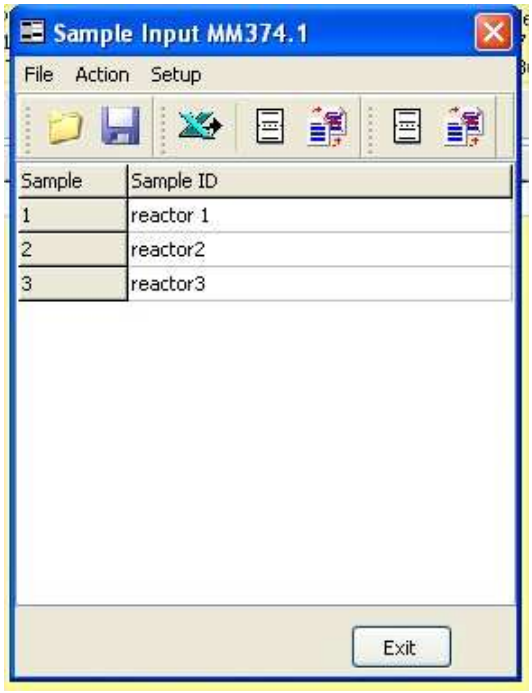


Using the button  select easily the file where the data will be imported from.

Important: The user must select the field delimiter and the text delimiter used in the csv file containing the sample ID.

- After activating the “Sample Import”, the Excel button is activated.





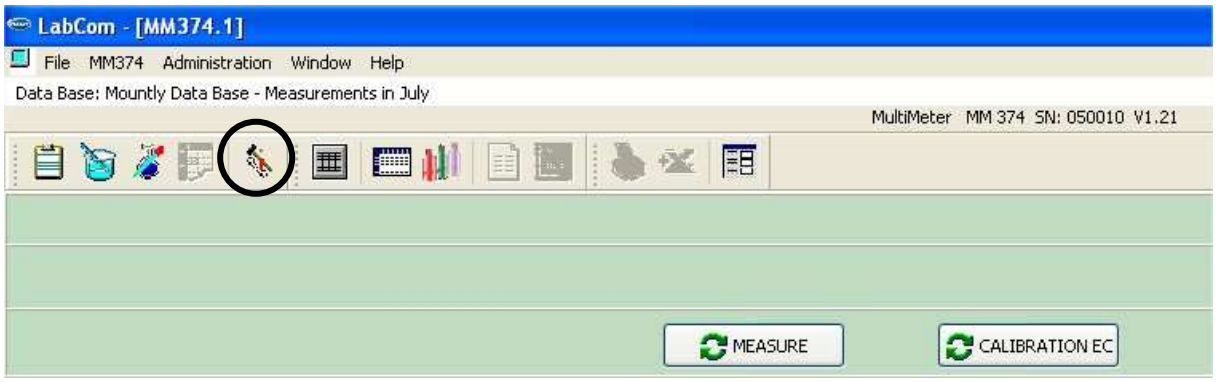
Pressing on the button  the selected sample ID are imported.

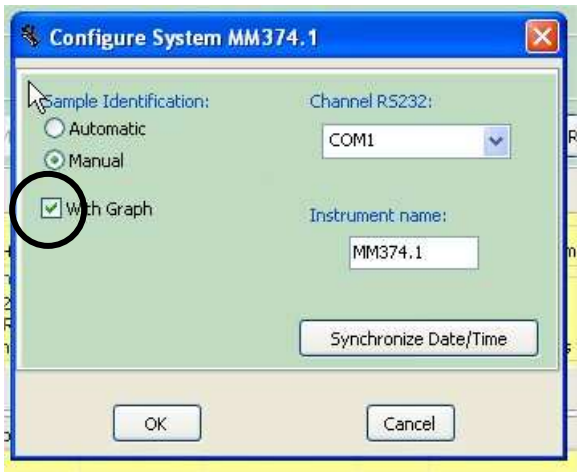
Now they should be sent to the instrument. The sample ID can be sent:
- to replace the instrument ID list 

- to add to the instrument ID list 

MEASUREMENT WITH GRAPH “ON LINE”

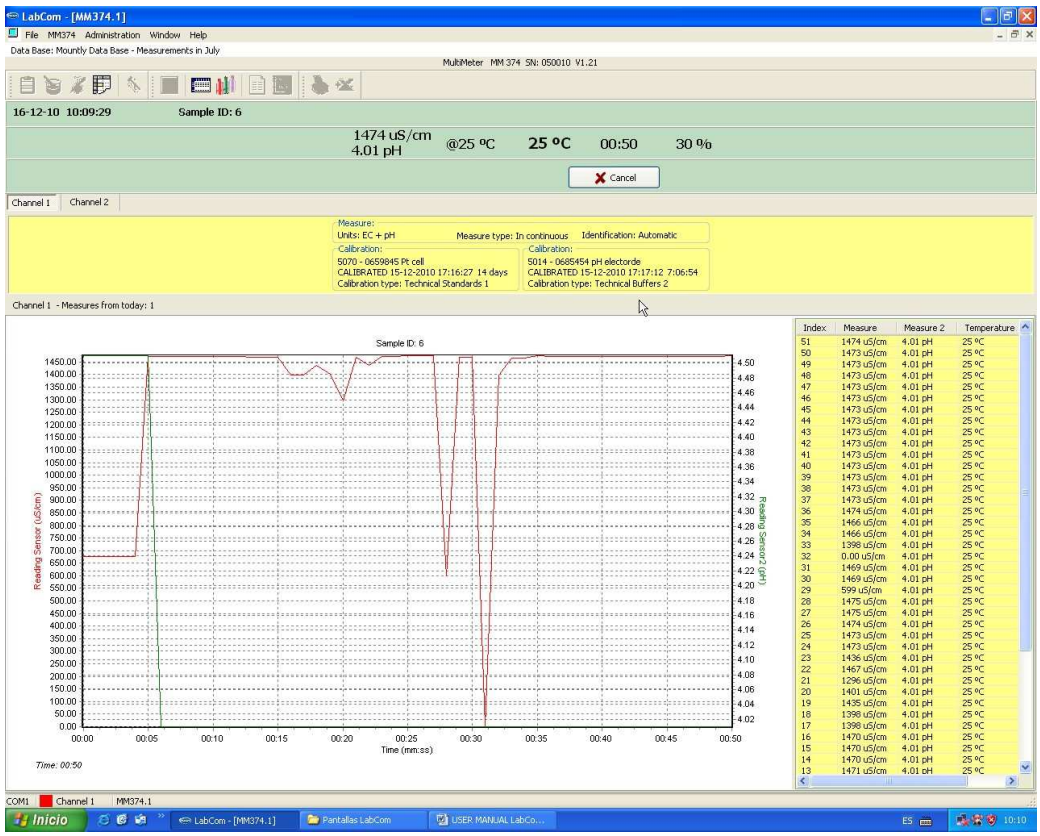
Using LabCom the user can obtain the graph “On Line” from the measurement. For this purpose, when starting the program, select the option “With Graph” in “Configure”, see Instrument configuration, page 11 or click over the button Configure from the tool bar of the instrument window.





In this way, the graph on-line will be displayed during measurement.

Example for graph view in measurement with multimeter MM374.



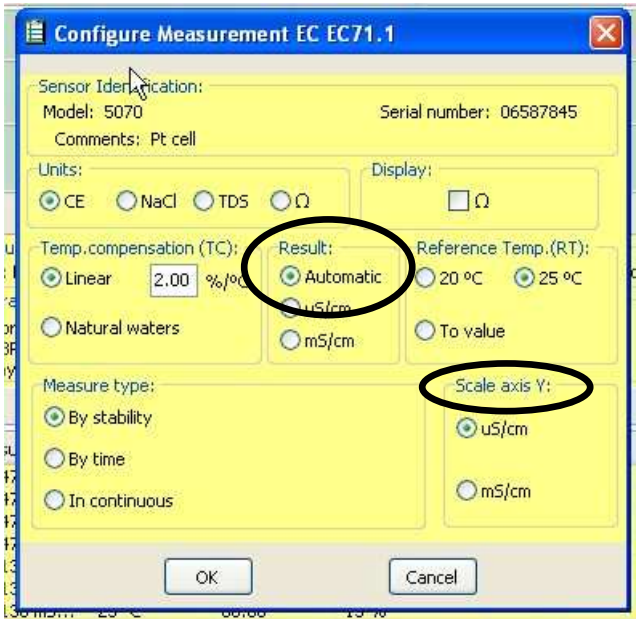
Once the measurement has finished, the results and the graph are stored in the data base and can be viewed at any moment. Select the result and click on 

Important: During measurement, all points are saved in the Data Base. For the graph presentation and data export, LabCom has a maximum of 7000 points between the first and the last point, which makes receiving information handling simple.

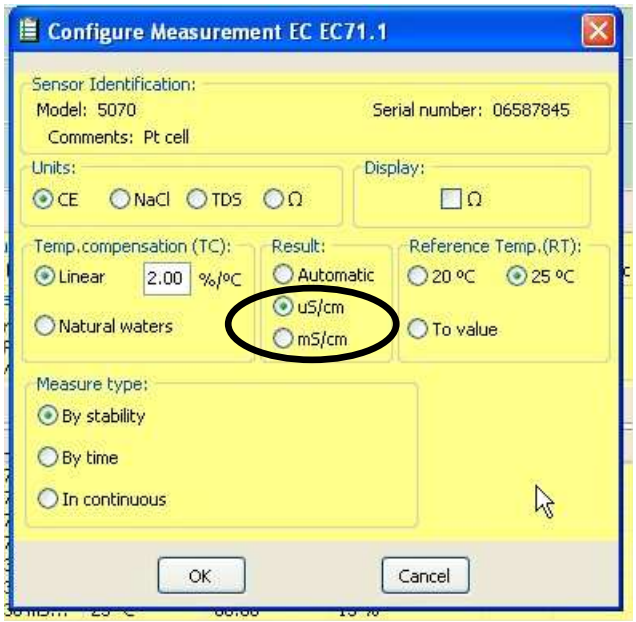
"On line" conductivity graph (EC71 and MM374)

If the user goes to the option "Configure Measurement" there are the following options:

1. Select "Result: Automatic". The measuring units on the on the graph (axis Y) can be selected (µS/cm or mS/cm). The conductivity measured value will be shown with the automatic resolution assigned by the instrument in the data table. Meanwhile on the graph the axis Y will be shown in accordance with the selected unit..

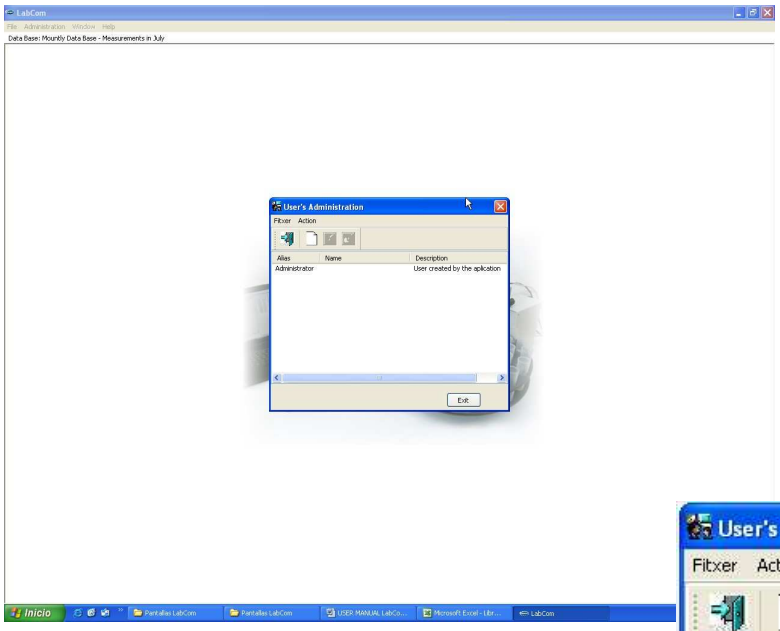


2. If the user selects "Result: µS/cm" or "Result: mS/cm" hence both the conductivity measured value and the axis Y in the graph will maintain the selected units.

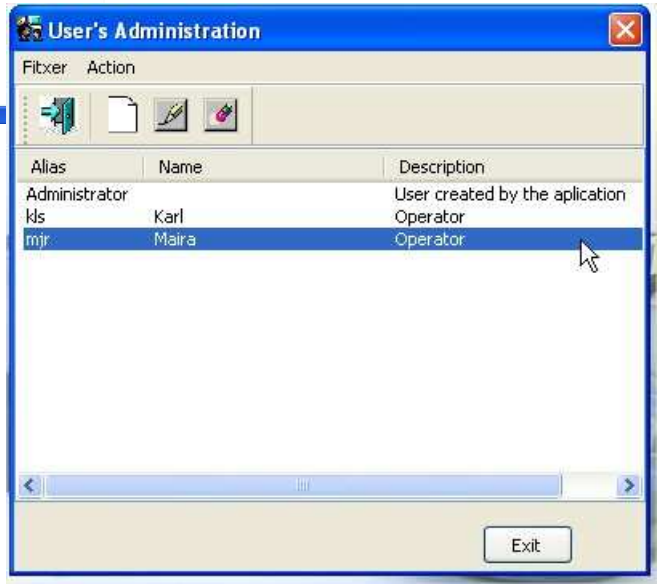


USERS

Working with LabCom, the users of the instrument can de identified.
For users' name introduction proceed as follows:



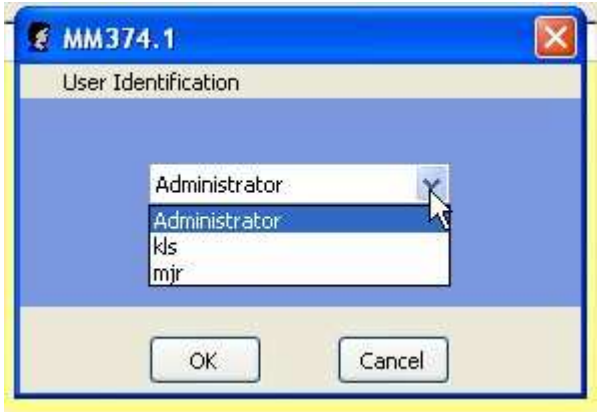
1- Close the instrument's window. Use the cross of the window or Administration/Instruments/Close ("Close all" can be used as well).
2- Close the window of the data base. Use the cross of the window.
3- Click over Administration / Users.



A window for users configuration will be open.
The options there are (from left to right):
Exit: to quit User Administration.
New user: To configure a new user. Alias (maximum 20 characters), name and description.
Modify user: To modify some of the already existing users.
Erase user: To erase some of the existing users.

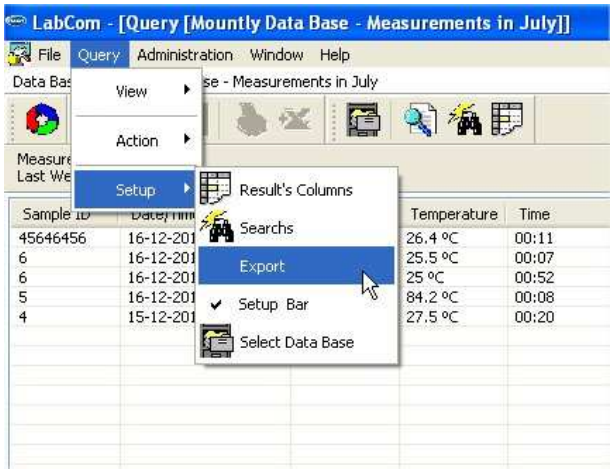
Once the users' names have been introduced, it is necessary to open the windows corresponding to every one of the connected instruments: Administration / Instruments / Open / Instrument(s).

At this time, when starting calibration or measurement there will be a previous window for selecting the user alias.



DATA EXPORT

Data Export to Excel: The data can be exported from the Instrument window or from the Query window. For this purpose, the **data export should be activated** in the window of the instrument or in the data base (Query). Select Setup/Export.



On this display select the option "Export Results To Excel".

From the browse button  the user selects easily the file where the data will be exported.

Once the option "Export" is activated there are several options:
1- Export one result. From the daily data table or from the data base.
Just mark the result and click over 

2- Export several results. Mark the different results in the daily data table or in the data base and click over 

3- Export all points of one result from measurement in continuous or by time and with graph.
Mark the result and view the graph or the complete result. Click over 

Important: The exported information occupies only the necessary cells, it means that after the data export the rest of existing data in the Excel sheet will maintain.

Example for data exported to Excel:

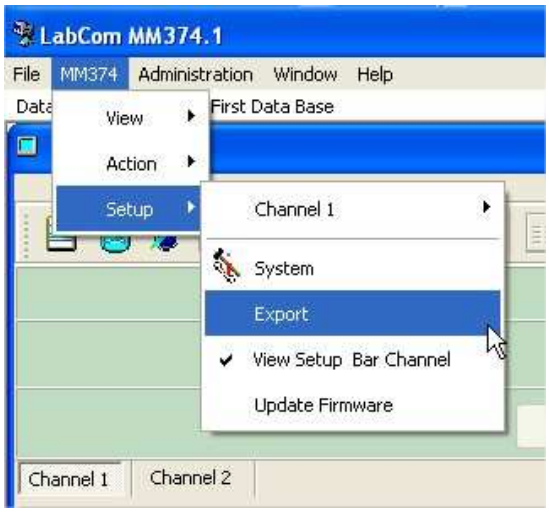
Microsoft Excel - Libro1.xls

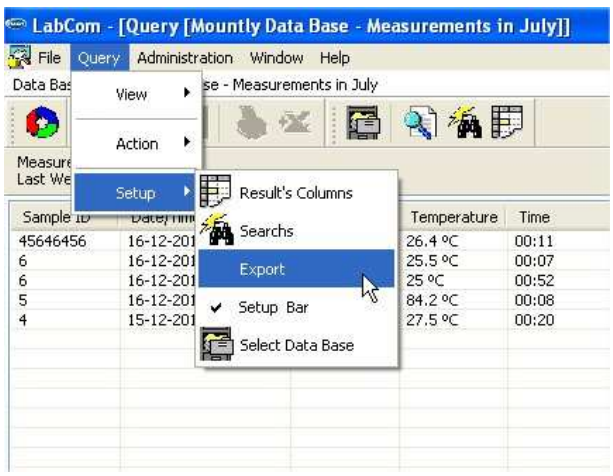
Archivo Edición Ver Insertar Formato Herramientas Datos Ventana ?

A1 HACH LabCom V1.6

	A	B	C	D	E	F	G	H	I
1	HACH LabCom V1.6								
2	Report of Results	16-12-2010 14:21:05							
3	Process description								
4	Instrument:	MultiMeter MM 374	SN: 050010	V1.21	MM374.1				
5	Date/Time:	16-12-2010 10:08:13							
6	Operator:	Administrator							
7	Sample ID:	5							
8	Channel:	1	Units:	EC + pH					
9	Measure type:	By stability	Stability Crite	Standard					
10	T.C. Linear:	2.00 %/ºC	Ref.T.:	25 ºC					
11	Calibration								
12	Sensor 1:	5070 - 0659845							
13	Calibration Date:	15-12-2010 17:16:27							
14	Calibration type:	Technical Standards							
15	Standard	Constant	Temperature	Time	Stirring				
16	1413 uS/cm	0.7370 cm-1	27.2 ºC	0:08	30%				
17	Sensor 2:	5014 - 0685454							
18	Calibration Date:	15-12-2010 17:17:12							
19	Calibration type:	Technical Buffers							
20	Buffers	Sensitivity	Slope	Asymmetry P	Temperature	Time	Stirring		
21	4.01, 7.00	97.10%	57.899 mV/pl	2.51 mV	28.0 ºC	0:06	30		
22	Result								
23		Measure	Measure 2	Time	Stirring				
24		675 uS/cm	4.51 pH	0:08	30%				
25	List of Points								
26		Index	Measure		Measure 2		Temperature		Time
27		1	676	uS/cm	4.51	pH	84.2	ºC	0:00
28		2	675	uS/cm	4.51	pH	84.2	ºC	0:01
29		3	675	uS/cm	4.51	pH	84.2	ºC	0:02
30		4	675	uS/cm	4.51	pH	84.2	ºC	0:03
31		5	675	uS/cm	4.51	pH	84.2	ºC	0:04
32		6	675	uS/cm	4.51	pH	84.2	ºC	0:05
33		7	675	uS/cm	4.51	pH	84.2	ºC	0:06
34		8	675	uS/cm	4.51	pH	84.2	ºC	0:07
35		9	675	uS/cm	4.51	pH	84.2	ºC	0:08
36		10	675	uS/cm	4.51	pH	84.2	ºC	0:08

Data Export to csv file: The data can be exported from the Instrument window or from the Query window. For this purpose, the **data export should be activated** in the window of the instrument or in the data base (Query). Select Setup/Export.





On this display select the option "Export Results To CSV File".

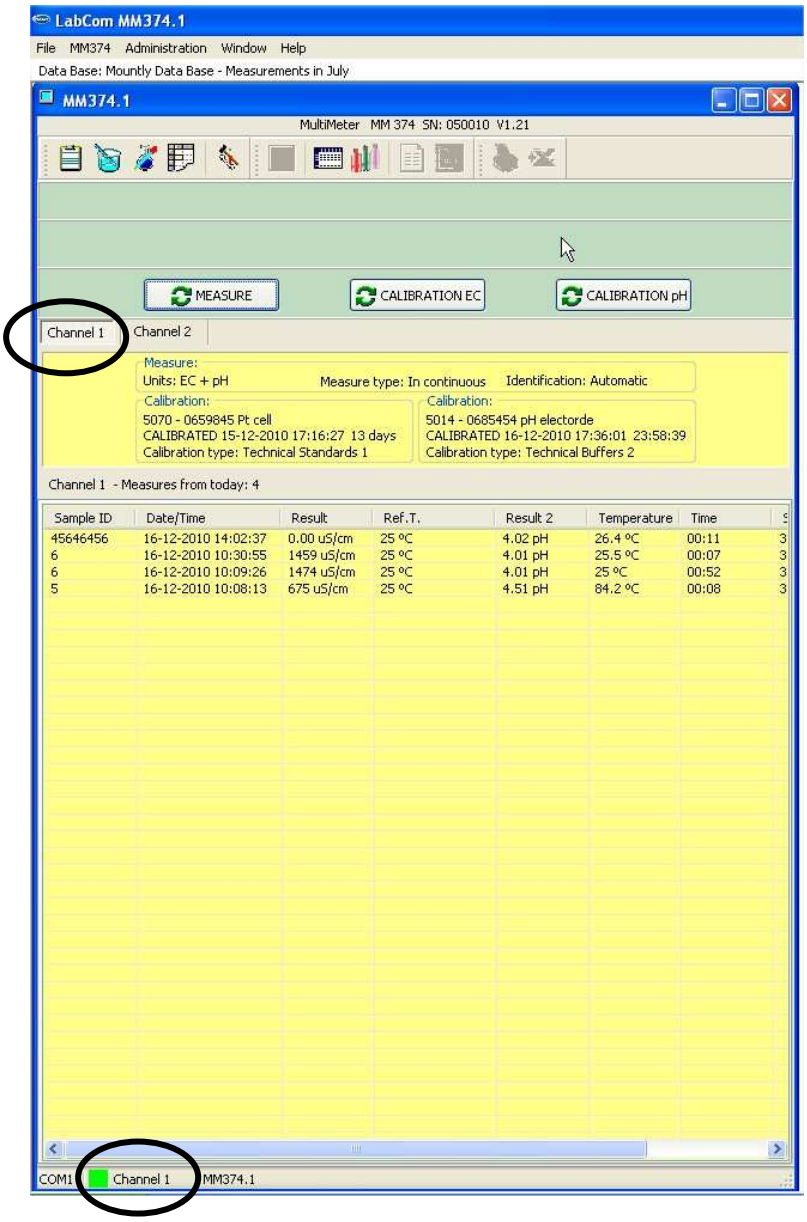
Using the button  select easily the file where the data will be exported.

Once the option "Export" is activated there are several options:
1- Export one result. From the daily data table or from the data base.
Just mark the result and click over 

2- Export several results. Mark the different results in the daily data table or in the data base and click over 

3- Export all points of one result from measurement in continuous or by time and with graph.
Mark the result and view the graph or the complete result. Click over 

MM340 and MM 374, TWO MEASURING CHANNELS



The pH-meter MM340 and the multimeter MM374 are instruments with two measuring channels. On the instrument's window, there is an indication for the activated channel.

To change from one measuring channel to the other, click over the corresponding button.

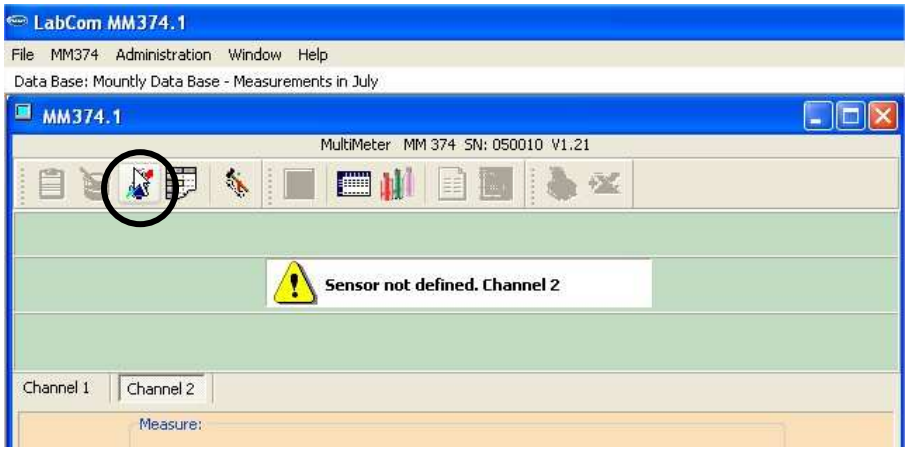
If the second channel will be used it is necessary to:

- Configure the sensor(s).
- Configure the calibration
- Configure the measurement

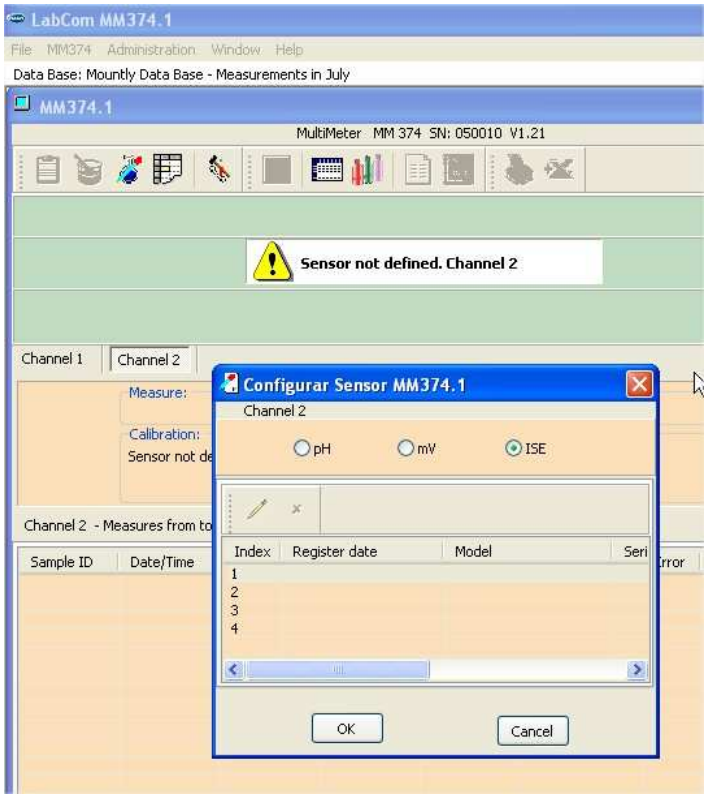
Moreover there are results tables with the daily data and the calibration table per every channel.

MM340 and MM 374, WORKING WITH ION SELECTIVE ELECTRODE

The use of LabCom with ISE is the same as any other sensor. It is necessary:
1. To configure the sensor.

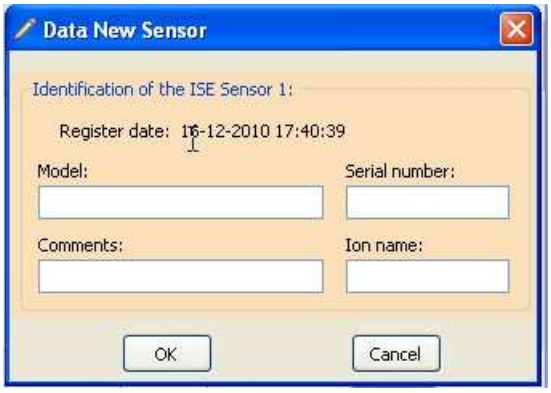


Click on 



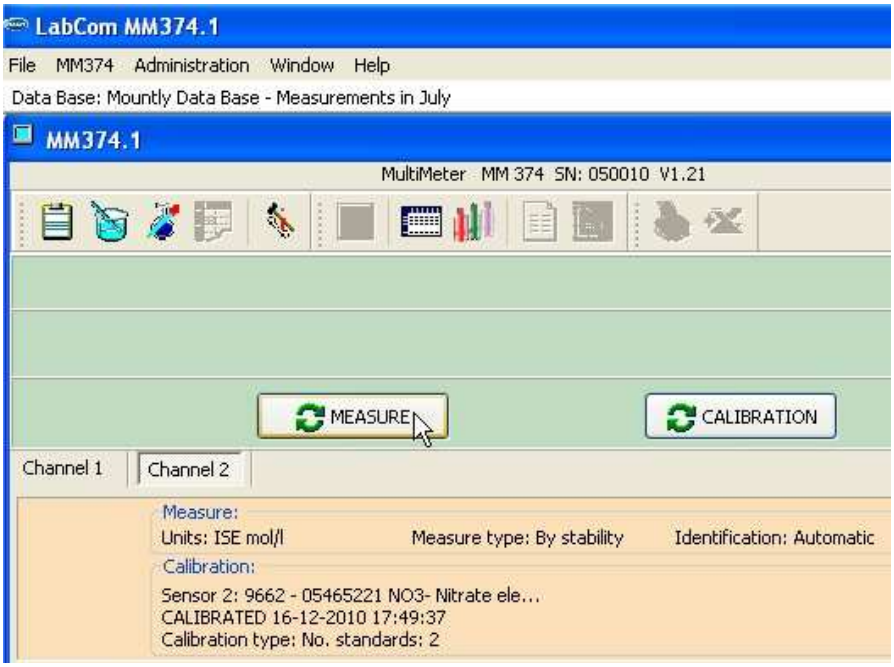
Click on line 1 and then click on 

Introduce the data of the ISE.



If more than one ISE will be used, it is necessary to configure the different sensors. For this, place on the next line and press 

2. Configure the calibration.

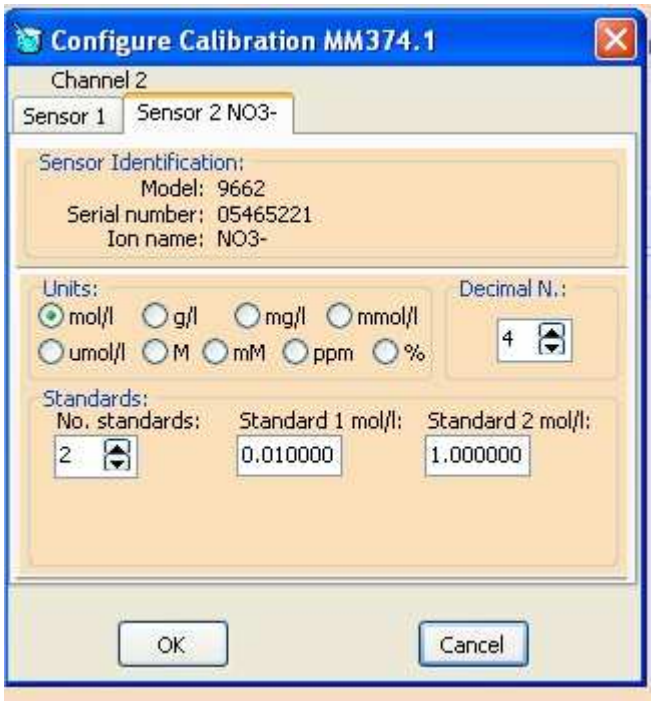


Click on 

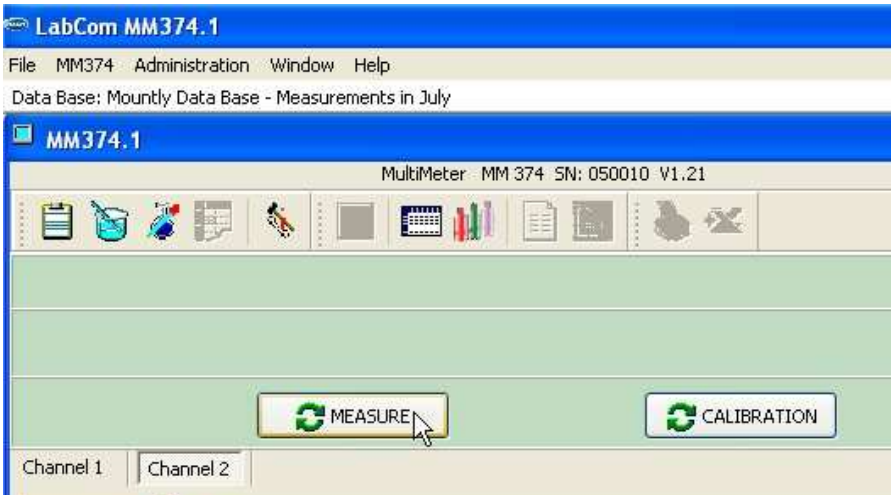
On this display the user selects the standards (measuring) units, number of standards (from 2 to 5), their concentration values and the number of decimals.
The order of the standards in the calibration will be in increasing order.

If there are more than one configured ISE, the calibration for every sensor must be configured.

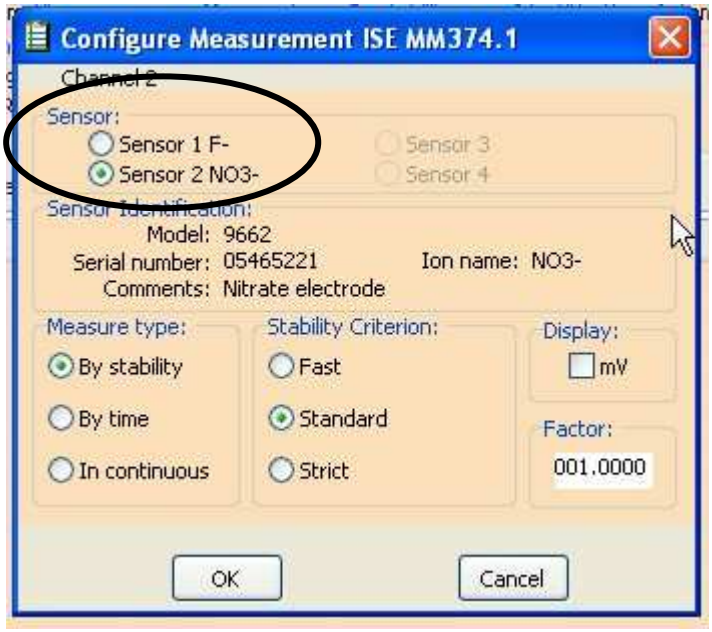
Important: When there are more than 1 sensors configured, to perform calibration or measurement, the desired sensor should be selected from Measurement Configuration.



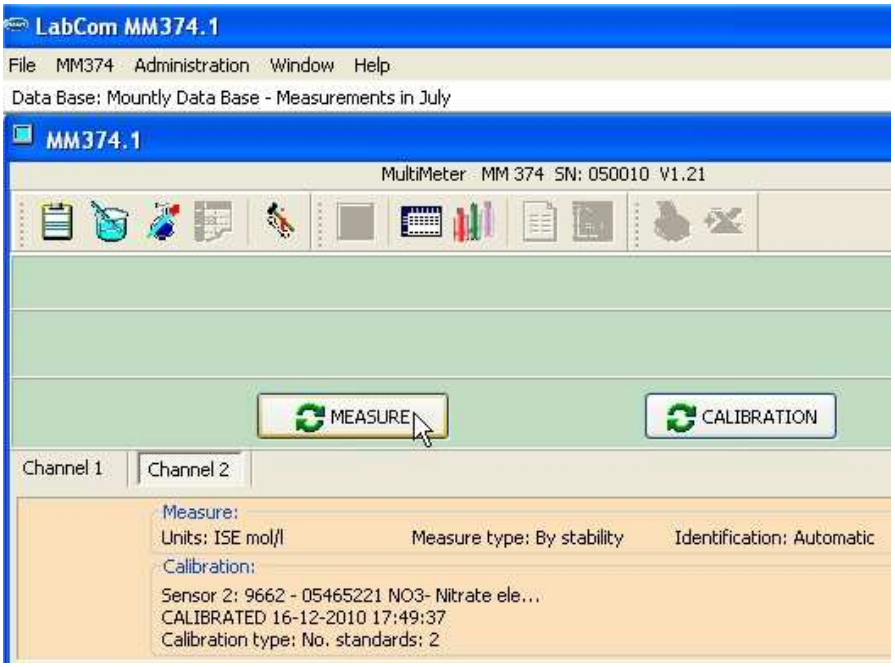
3. Configure the measurement.



Click on  .



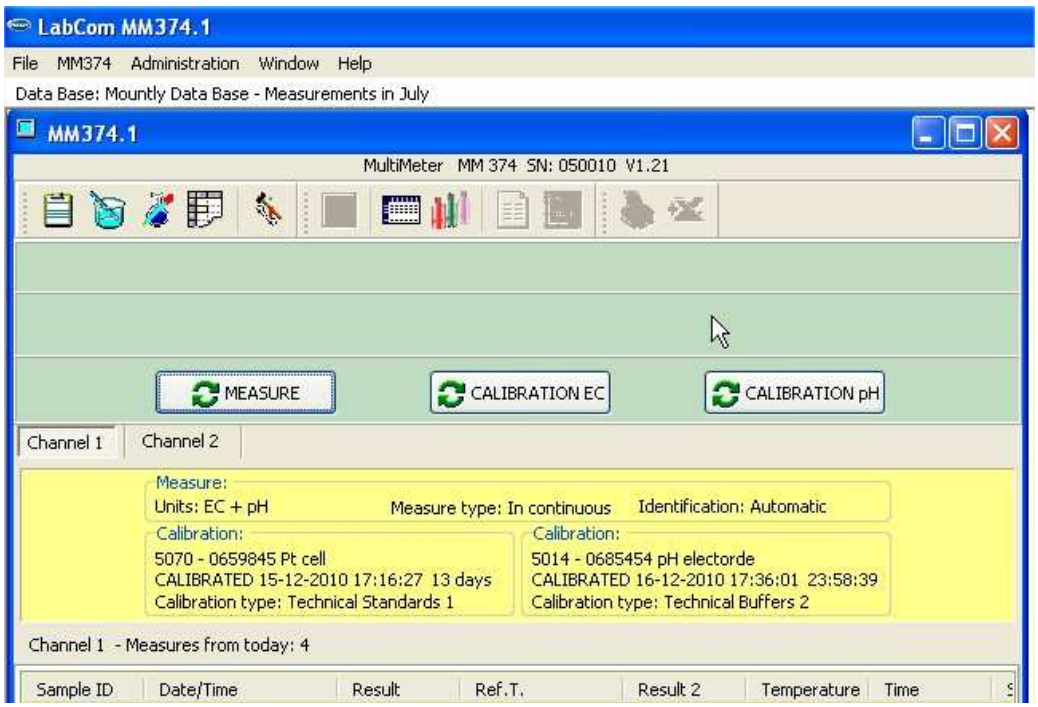
Select the electrode to use.
Select the rest of the measuring parameters.
Select OK.



The LabCom is ready for Calibration or Measurement of the selected sensor.

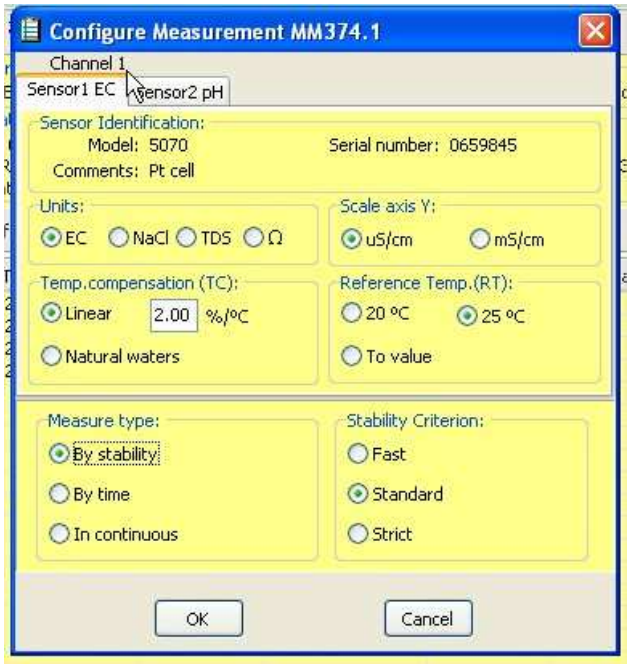
SensION+ M374, MEASUREMENT WITH CHANNEL 1 (DOUBLE), EC + pH

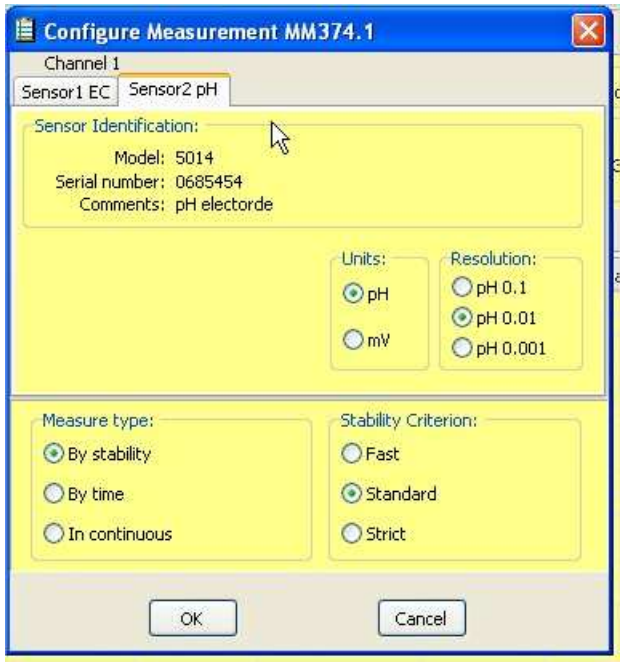
SensION + MM 374 has a double channel for measurement of electrical conductivity (or NaCl or TDS or Resistivity) and pH (or Redox (mV) or ISE). Instrument window corresponding to channel 1:



Note: To use channel 1 as a simple channel (only one parameter) it is necessary to deactivate one of the sensors, see Sensor configuration, page 12.

Calibration and measurement configuration

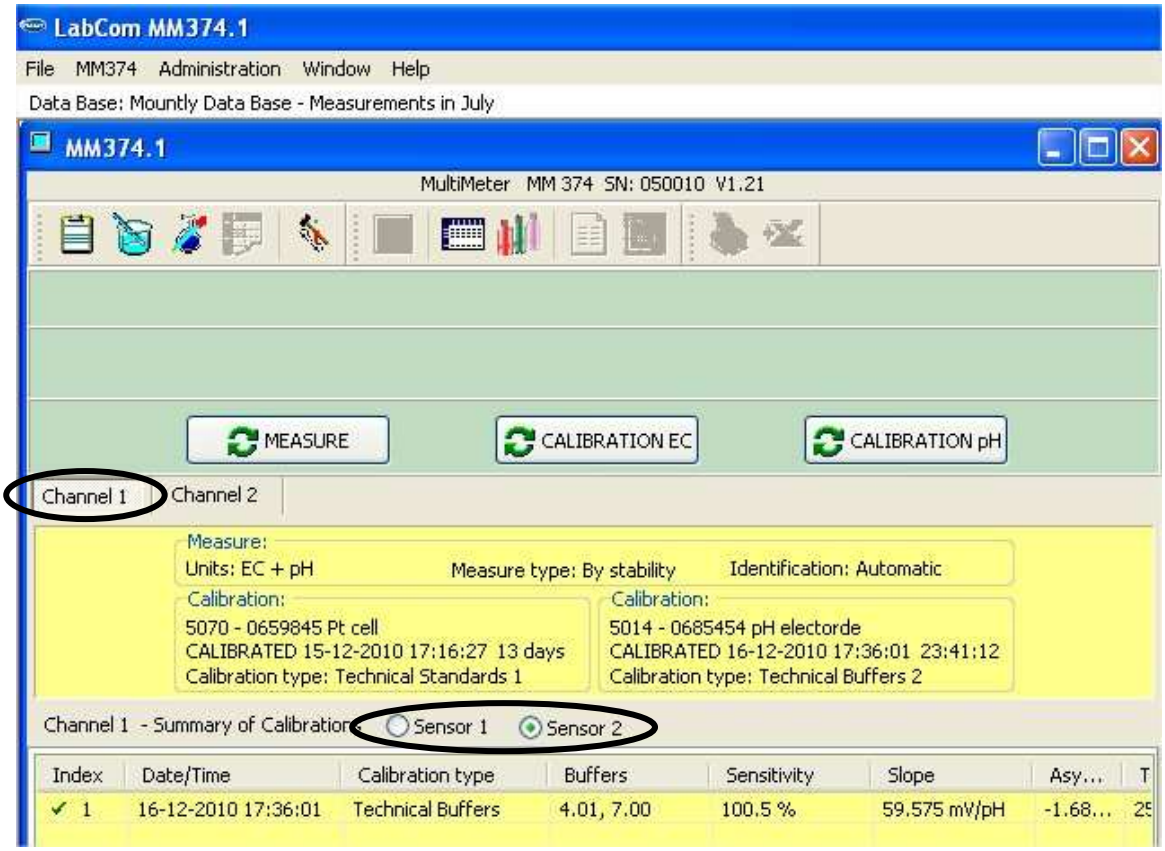




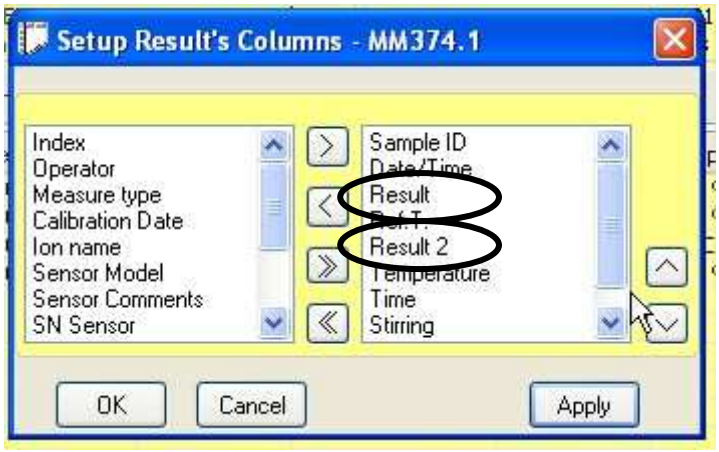
The calibration and the measurements of every one of the sensors are configured separately.
The only common parameter between EC and pH measurement is the type of measurement: by stability, continuous or by time.

View of the calibration data 

The calibration data are shown on the instrument's window. Click over Sensor 1 or Sensor 2.



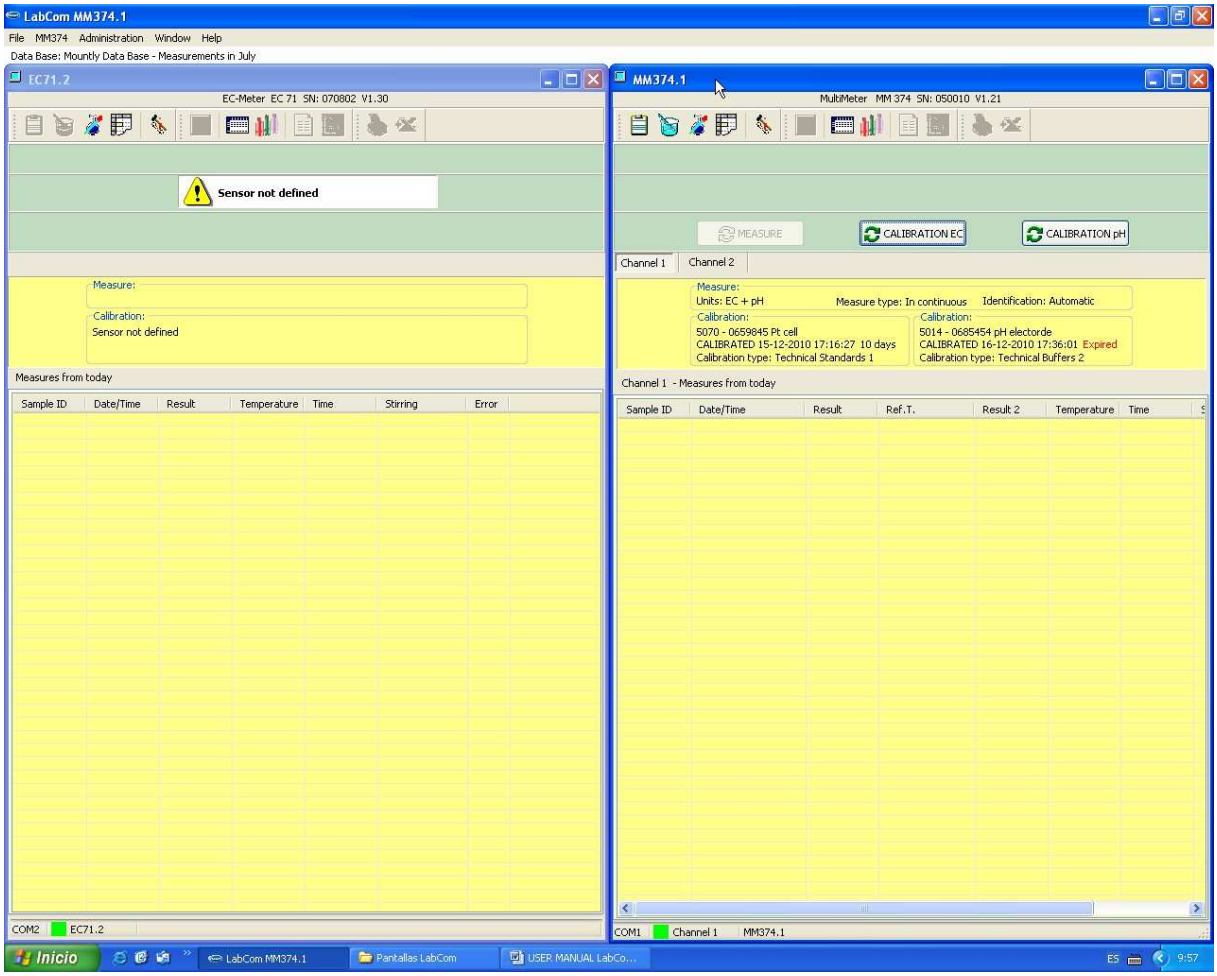
Results in the daily data table and in the data base:
In the daily data table and in the data base there is a column "Result" corresponding to the conductivity values and another column "Result 2" corresponding to the pH values.



MULTIPLE INSTRUMENT CONNECTIONS TO LabCom

LabCom allows the communication with up to 4 SensION+ instruments and one automatic sample changer.
The different instruments must be configured individually as it was explained in the previous chapters. The view on the corresponding windows can be individual or jointly. The type of view is selected from the option “Window”.

Example of jointly view of two instruments.



Important: When configuring the Query, the option “Group rows with the same code” will allow all results related to the same sample’s ID obtained from different instruments to be place on the same row. See page 20.

WORKING WITH AUTOMATIC SAMPLE CHANGER (SAMPLER)

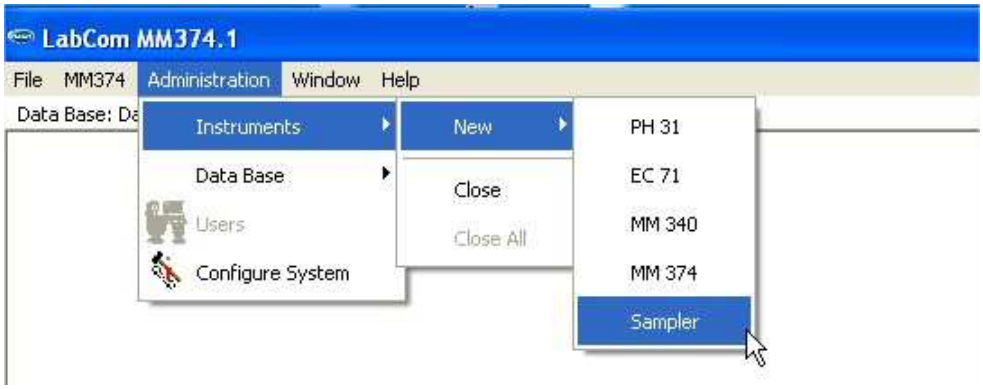
LabCom allows the communication with up to 4 sensION+ instruments and one automatic sample changer (Sampler). On the Sampler the user can perform calibrations and measurements.

Sampler Connection

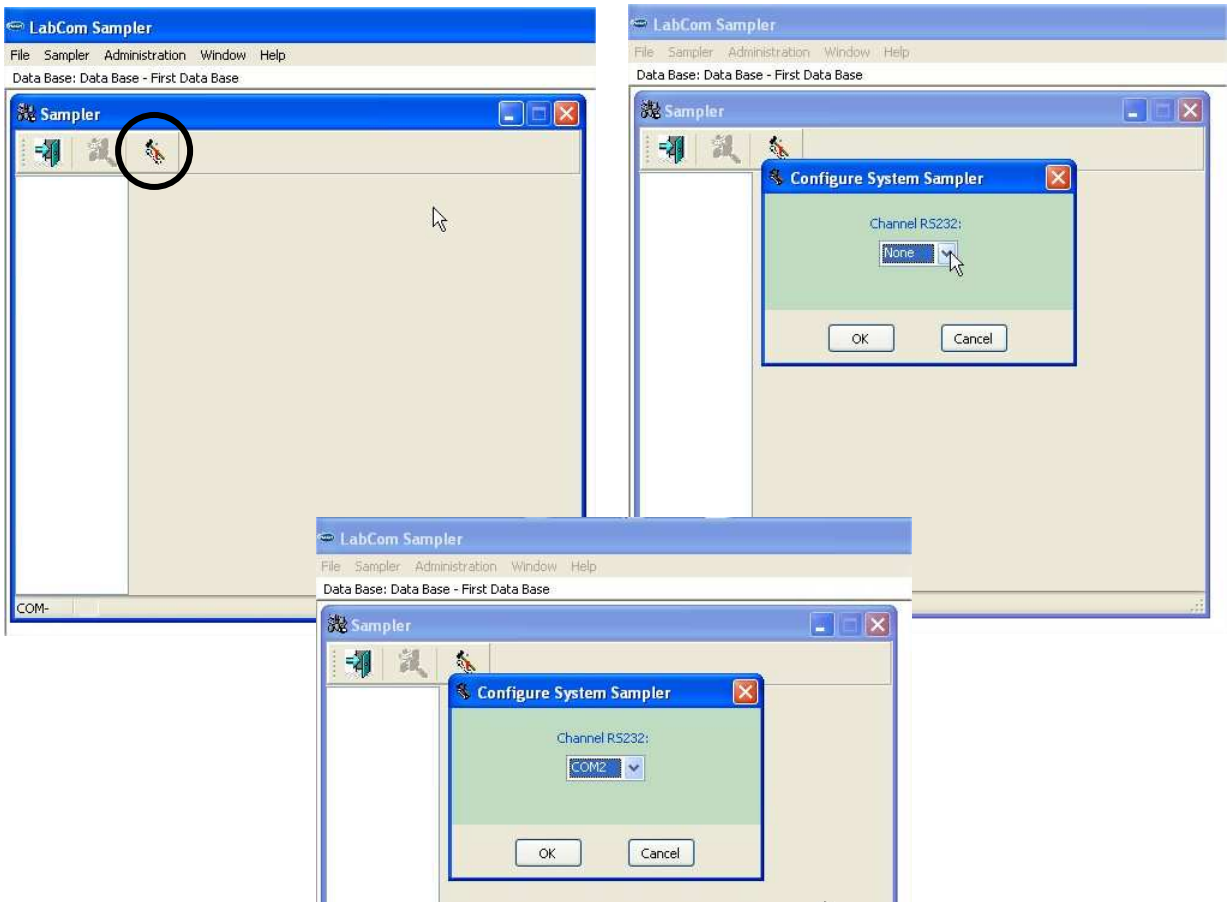
Connect the Sampler to the PC using the cable LZW9135.99. One cable end should be connected to the rear panel of the Sampler, see User Manual of Sampler. The other cable end should be connected to the RS232 connection DB-9 male of the computer. If you are using a USB-to-Serial Converter to connect the meter to USB port of the PC, you need to check the **Device Manager** of your PC to see what the exact port number is.

Sampler Configuration

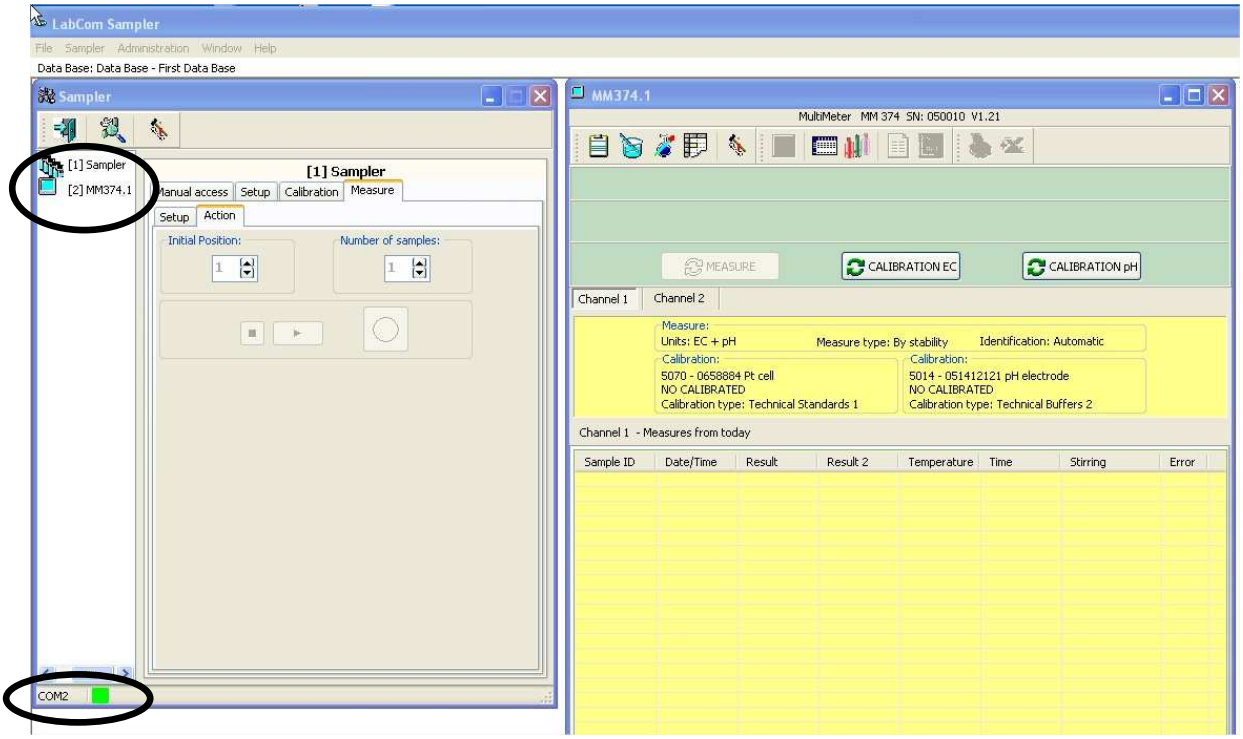
Once the instrument(s) was configured as explained in the previous chapters, it is necessary to configure the Sampler. For this:



The window corresponding to the Sampler appears.
Click over the marked button for configuring the communication port to which the Sampler is connected.



Select the communication port and accept with OK.



The selected communication port appears on the bottom left corner.
The connected instruments (in this case sensION+ MM374) and the Sampler appear on the left column.

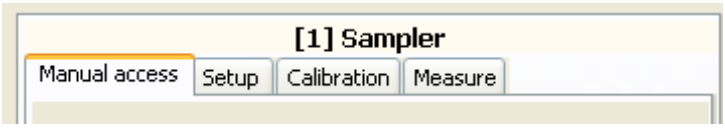
Tool bar of the Sampler Window

Close the Sampler window

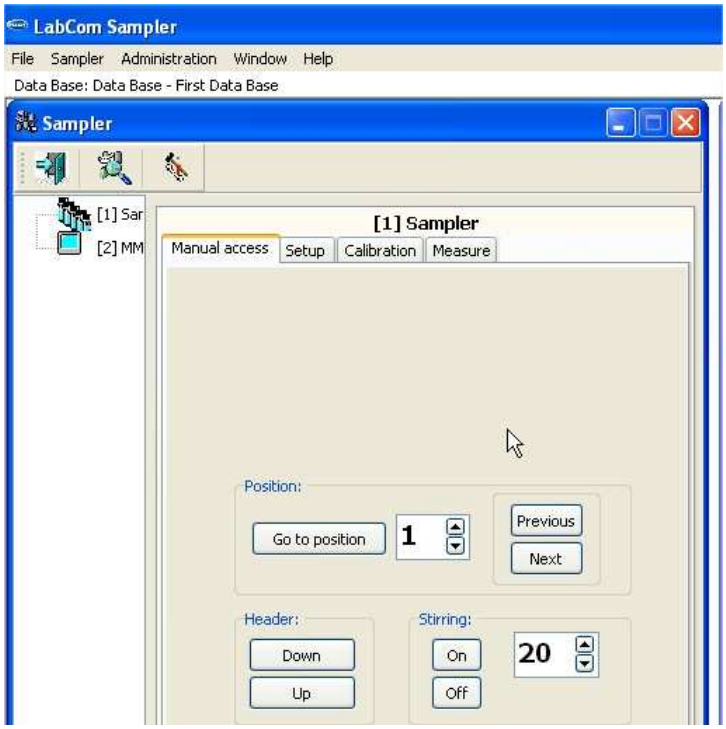
Refresh the communication between Sampler and the connected instruments.
Important: It is necessary to press this button after every change in Measurement or Calibration configuration from the instrument window.

Configure the communication port for the Sampler

Menu bar of the Sampler Window



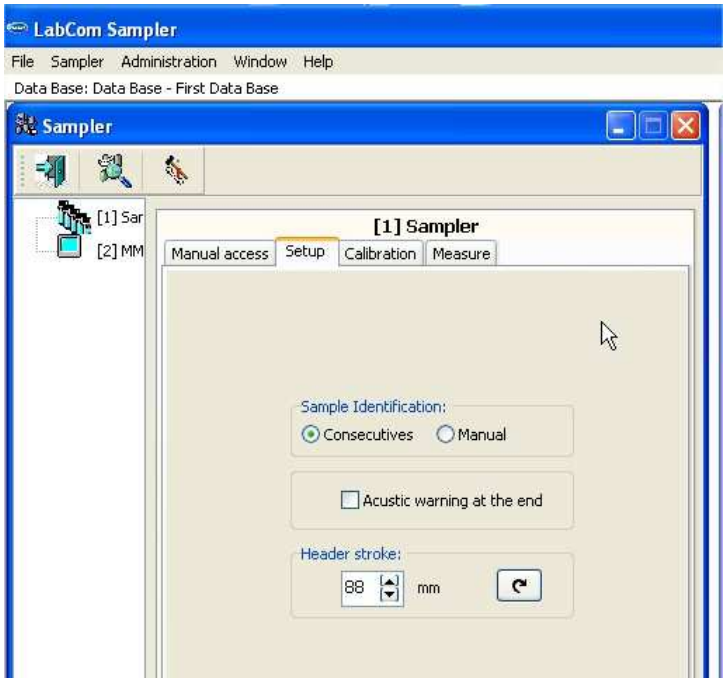
Manual access



From this option, the Sampler can be moved manually. The possibilities are:
Go to position X. Introduce the desired position number.
Go to next position
Go to previous position
Go up the electrode support (header)
Go down the electrode support (header)
Stirring: ON/OFF and stirring speed

Stirring speed: The selected stirring speed will be applied during calibration and measurement. To modify the stirring speed, introduce the desired speed and press ON to memorize it. Stop the stirrer with OFF.

Set up



Select:
1.Sample identification
Automatic. The identification will be automatic and consecutive per each sample assigned by the instrument.
Manual. The user will introduce the sample identification manually (see Measurement with manual sample ID, page 49).

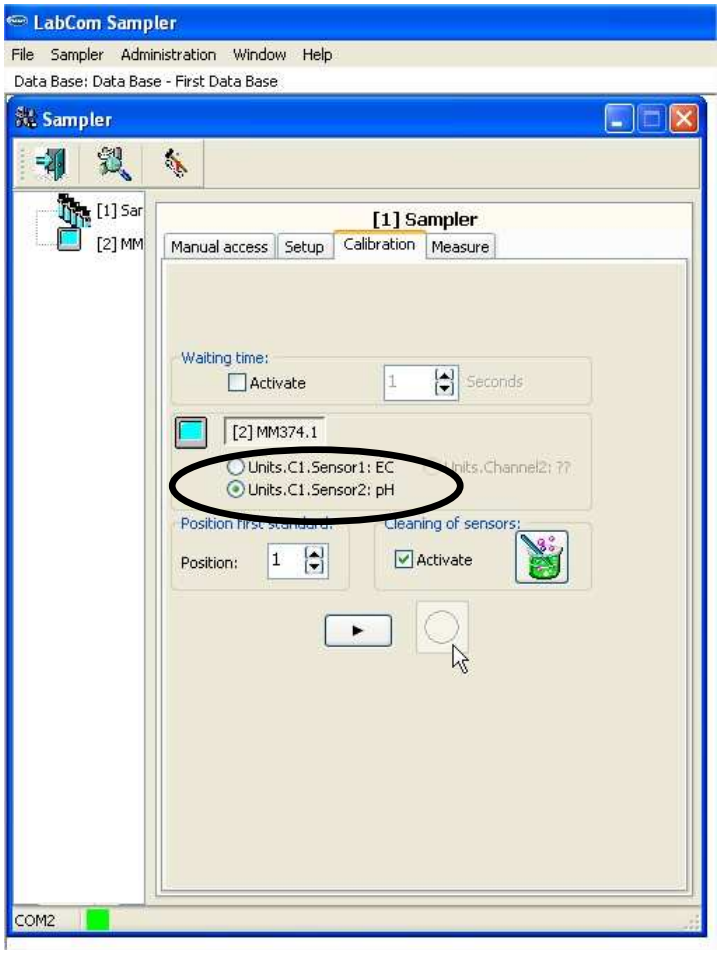
2. Acoustic warning: When the measurement in the series has finished there will be an acoustic sound until the message on the computer display for measuring end is accepted.

3. Vessel height (head stroke)
This parameter is related with the type of automatic sample changer in use.
Working with Sampler 20 or Sampler 20+20, the head stroke must be configured.
Recommended values:
Sampler 20+ 20
Stroke 88 mm for plastic vessel of 50 ml, diameter 30 mm.
Sampler 20
Stroke 88 mm for plastic vessel of 90 ml, diameter 45 mm.

Calibration

When the option Calibration is selected, the connected instruments appear and the measuring units configured on the measuring channels.

Important: The type of calibration, standards to use and calibration frequency are selected from the instrument window, see page 13.
After calibration modifications in the instrument window, click on  before starting calibration.



If there is more than one instrument connected, click on the instrument to perform calibration. If the instrument has more than one channel (only MM340 and MM374), mark the channel that will be calibrated.

1. Waiting time: It allows programming certain time of advanced stirring before starting the calibration with every one of the buffers. Mark “Activate” and introduce the desired time.

2. Position first standard: indicate the position of the Sampler where the first standard will be placed. The instrument understands that the second standard will be in the successive position.

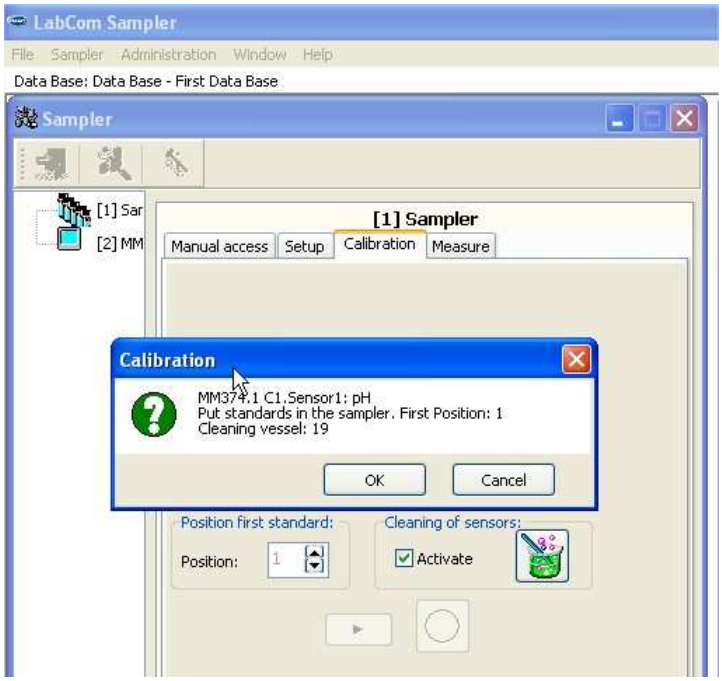
3. Sensor cleaning: The cleaning of the sensors will be performed by immersion in one or two vessels. To configure the cleaning, click on 

The following window appears:

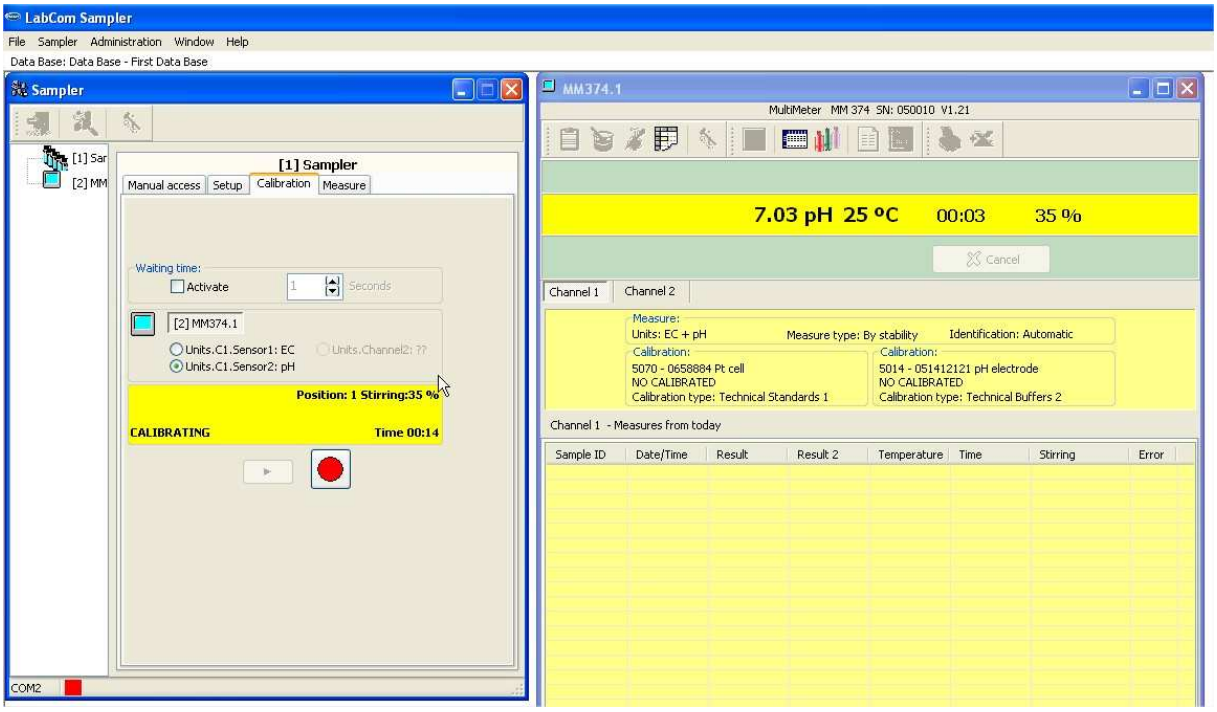
Select the required options and click on OK.
Note: When calibrating EC with several standards, we do not recommend cleaning between standards.

Put the vessels with standard solutions on the Sampler. To start calibration click over 

The following window appears:



Click over OK to start the process.



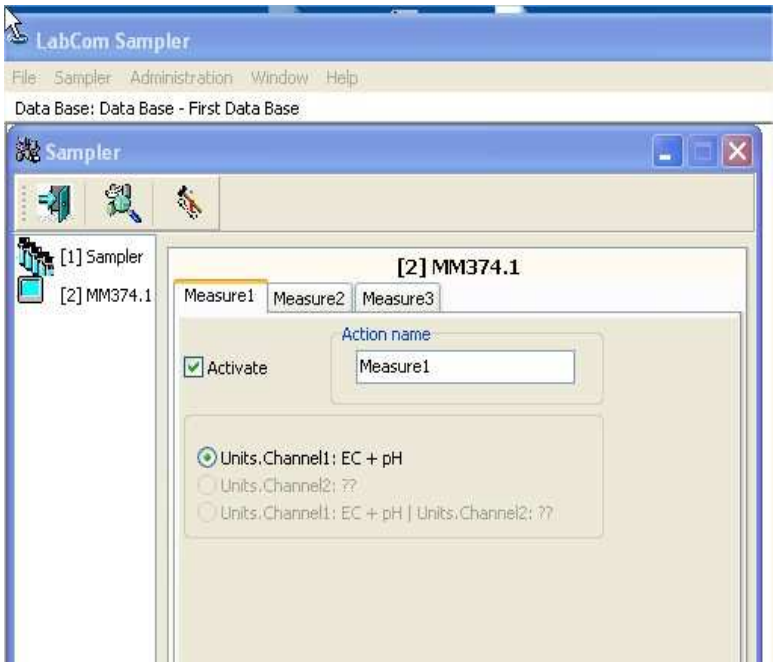
Once the calibration has finished, the calibration data can be seen on the Instrument window.

Measurement

When using the Sampler to measure, the following steps must be followed:

1. From the Instrument Window configure the measurement, see page 13. This step is necessary to be done only the first time. After that click on 

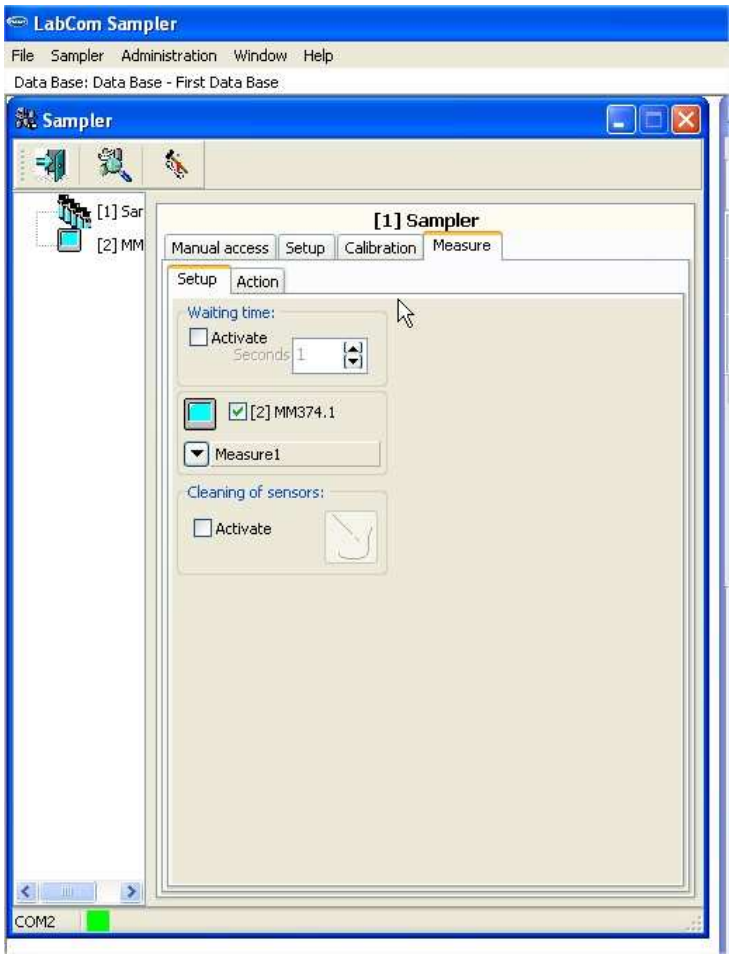
2. Click on the icon of the instrument on the left column, for example [2] MM374.1.



When the connected instrument has more that one measuring channel (sensION+ MM374 or sensION+ MM340) it is possible to configure three different measurements for each connected instrument Measure 1, Measure 2 and Measure 3.
Activate: To activate the measurement.
Action name: Name that identifies the activated measurement.
When the connected instrument has only one measuring channel (sensION+ PH31 or sensION+ EC 71) it is possible to configure only one measurement.
Activate: To activate the measurement.

Note: When working with more than one ISE on the Sampler, select the electrode to be used from the Instrument window, Measurement Configuration.

3. Click on  or over the option [1] Sampler.



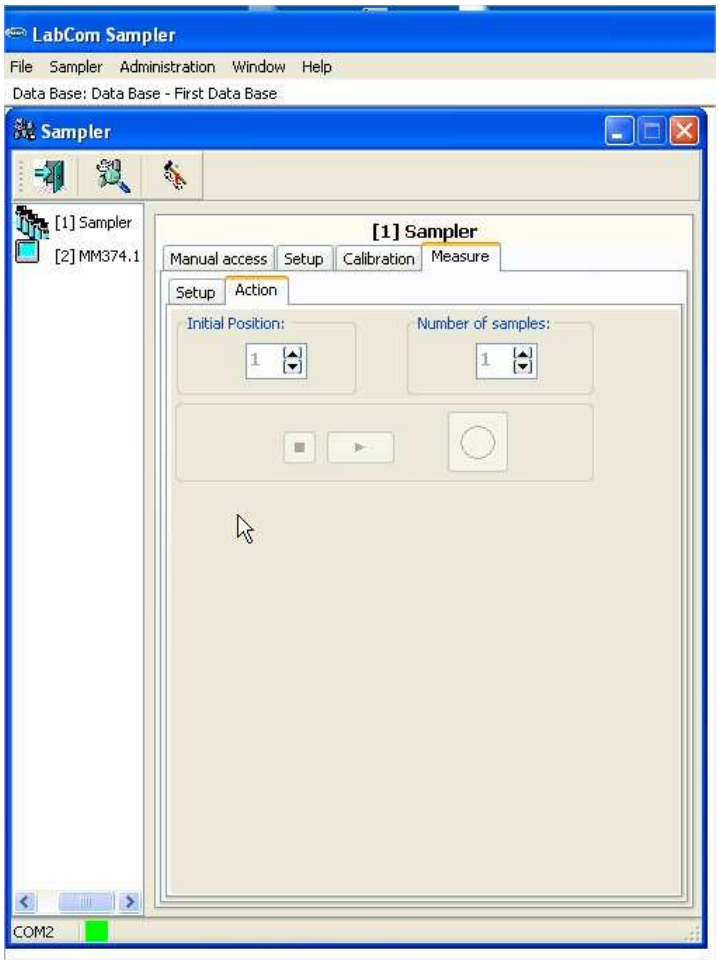
Setup: To configure the measurements to be performed:

- Mark the instrument(s) that will take part in the series of measurements.
- If the connected instrument has 2 measuring channels select among the possible measurements (Measure 1, Measure 2 or Measure 3)

Waiting time: It allows programming certain time of advanced stirring before starting the calibration with every one of the buffers. Mark “Activate” and introduce the desired time.

Sensor cleaning: Activating this option the cleaning of the sensors will be performed by immersion in one or two vessels see page 52.

Action: Working with automatic sample ID



Initial position: Introduce the start position on the Sampler.

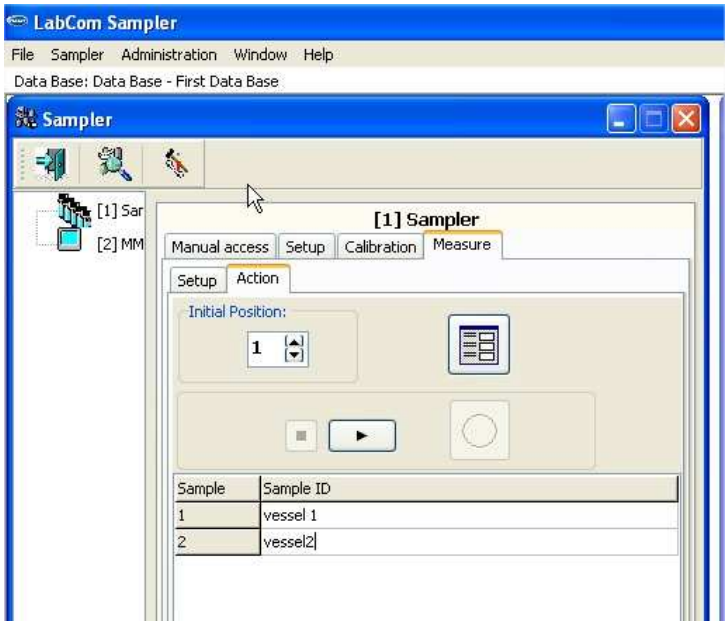
Number of samples: Introduce the number of samples that will be analysed on the Sampler. Put the vessels with samples and stirring bar on the Sampler trey.

Start the measurement, clicking on 

Action: Working with manual sample ID

1. The Manual sample ID should be activated. See Set Up, page 51.
2. Go back to the option “MEASURE” in the menu bar. There are 5 options for the manual sample ID introduction.

Option 1: Sample ID introduction from the PC key board

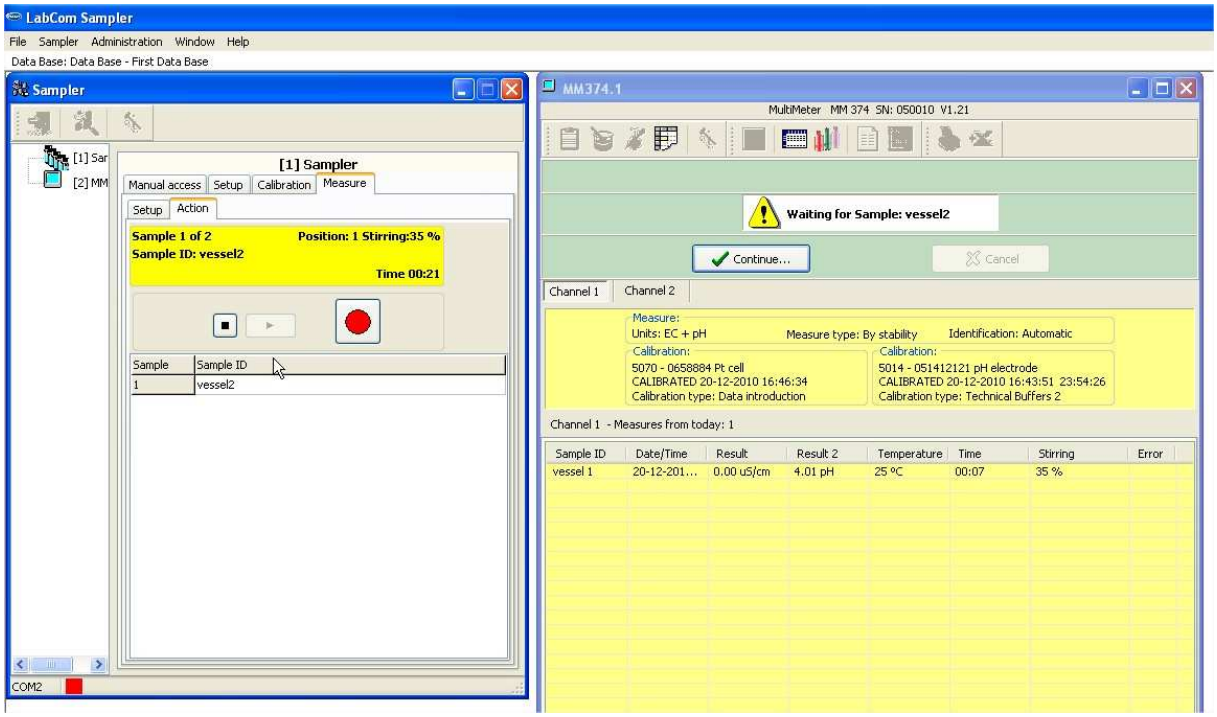


The user introduces the ID of the samples to be analysed.

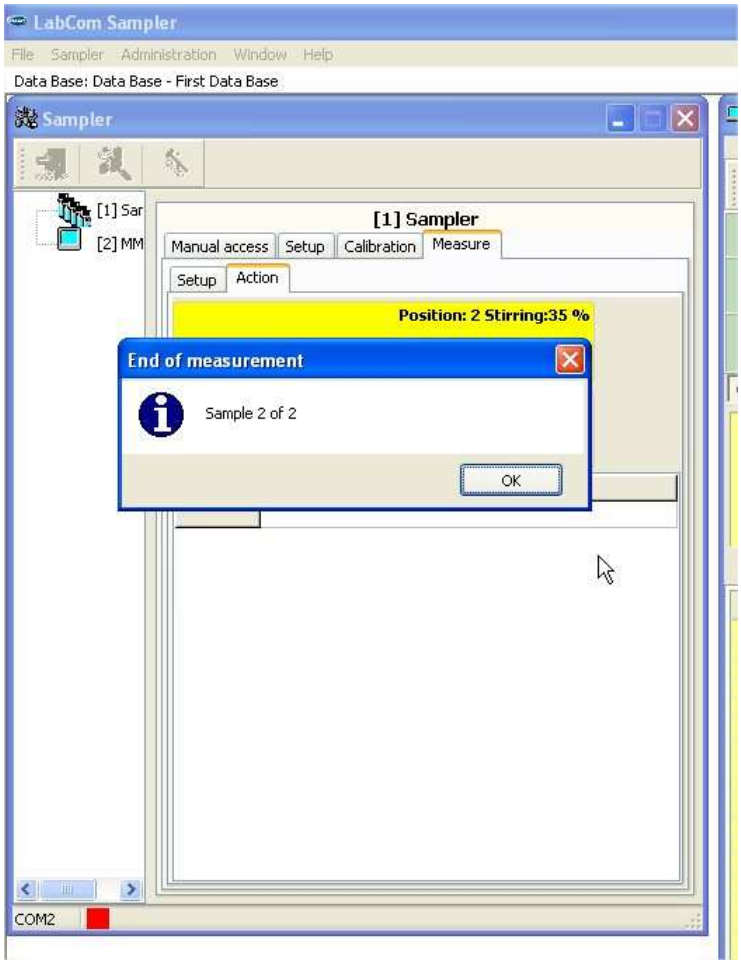
After that press the key  to start the measurement.

The vessels must be placed on the Sampler in the same order as the ID are introduced.

During measurement the results appear on the daily results table of the instrument's window and are stored in the data base and the corresponding ID disappears from the list in the Sampler window.



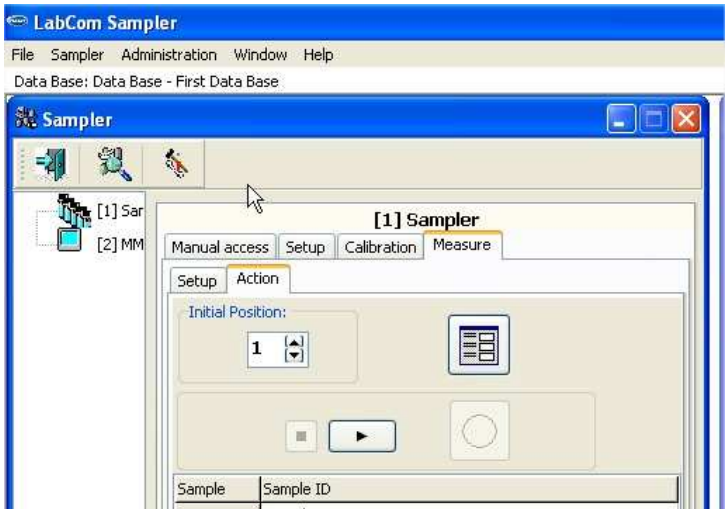
At the end of the measurement press OK.



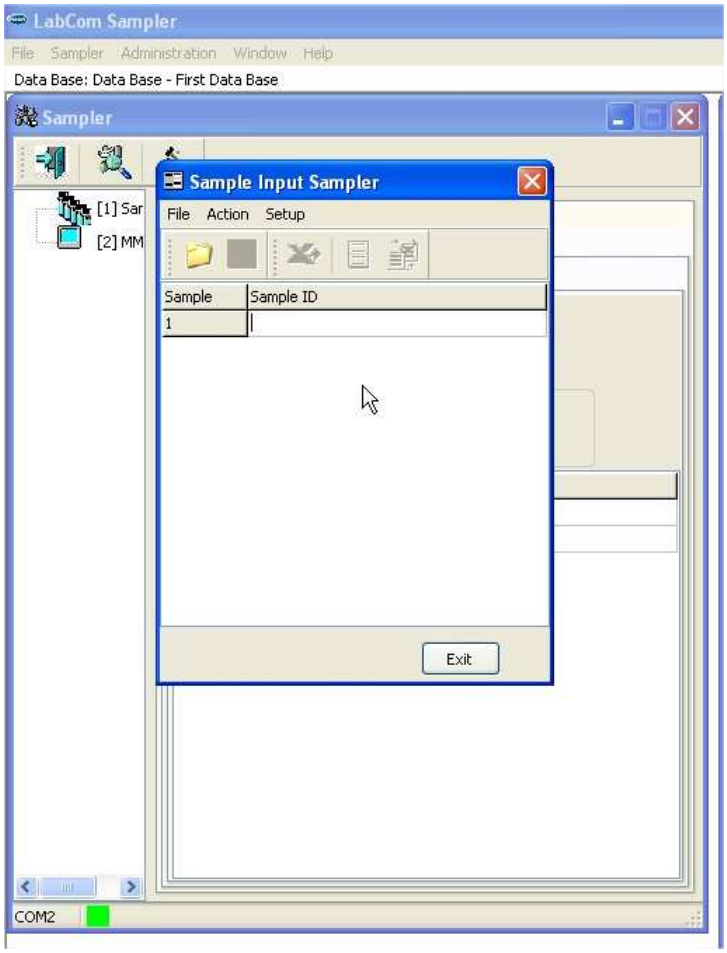
Option 2: Sample ID input using the function Copy & Paste

The sample ID placed in a column can be copied from any file (Note Pad, Word, Excel, csv file) and pasted in the LabCom in the Sampler window. See page 30.

Option 3: Sample ID introduction from a file stored in the LabCom



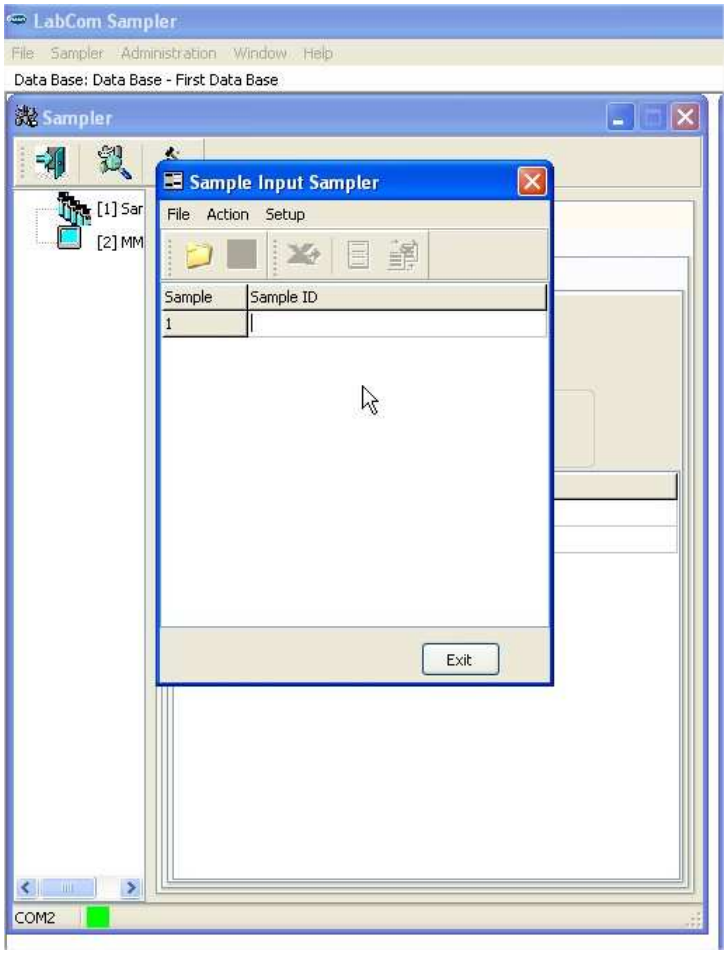
Press on the button  .The following window appear:



Introduce the sample ID that will be stored.
Proceed as described on page 31.

Option 4: Sample ID introduction from an Excel file

Press on the button  .The following window appear:



Proceed as described on page 32.

Option 5: Sample ID introduction from CSV file

Press on the button .  Proceed as described on page 34.

Process interruption

Button 
Interruption with confirmation. If during measurement the user presses this button, the process will be interrupted. After confirmation the measurement in the current sample will be finished and the Sampler will go to the rest position (position 20).

Button 
If during measurement the user presses the button, it will be an emergency interruption. The Sampler immediately will go to position 1. The Sampler will go back to rest position (position 20) after pressing the button  or after moving it from the option “Manual Access”.

IMPORTANT:
- It is possible to increase the number of samples once the measuring series has started, for this introduces the required sample ID.
- If the number of samples is higher than the number of positions on the Sampler tray, when the measuring system reaches the last position (in case of Sampler 20, position 19) there will be a message on the computer display to guarantee that the samples have been replaced by new one.
- Despite if the Sampler is configured, the instrument can be used at any time individually. For this purpose, just work over the instrument’s window.

UPDATING INSTRUMENT SOFTARE

For the correct functioning of LabCom it is necessary to update the software of instruments with version below 1.4. The instructions to follow are:

1. Follow the steps described in Start up (page 10) and Instrument Configuration (page 11).
2. From the window of the instrument go to the indicated option on the menu bar. Click over “Update Firmware”.

3. The following window will appear. Select OK to proceed with the updating.

:

4. The display of the instrument will flash several seconds and the message “Updating” will appear on it. After that you can select the option “Update Firmware”.

5. The updating will start.

It is not recommend interrupting the update by the key Stop.
If this happens, do not switch off the instrument and repeat the updating from step 4.

6. Once the updating has finished the following display appears:

Select the option ”Exit”.

7. On the instrument, select the language and Data Output for LabCom. The instrument goes to Remote Mode.
On the computer the following display appears

Accept with OK. At that moment the instrument is ready to be used with LabCom.

ATTENTION MESSAGES

The program is opened but the instrument is switched off, is not connected to the PC or it is not in REMOTE MODE.

The program is opened but the instrument is switched off, is not connected to the PC or it is not in REMOTE MODE.

Working with manual ID, any sample ID is introduced in the list.