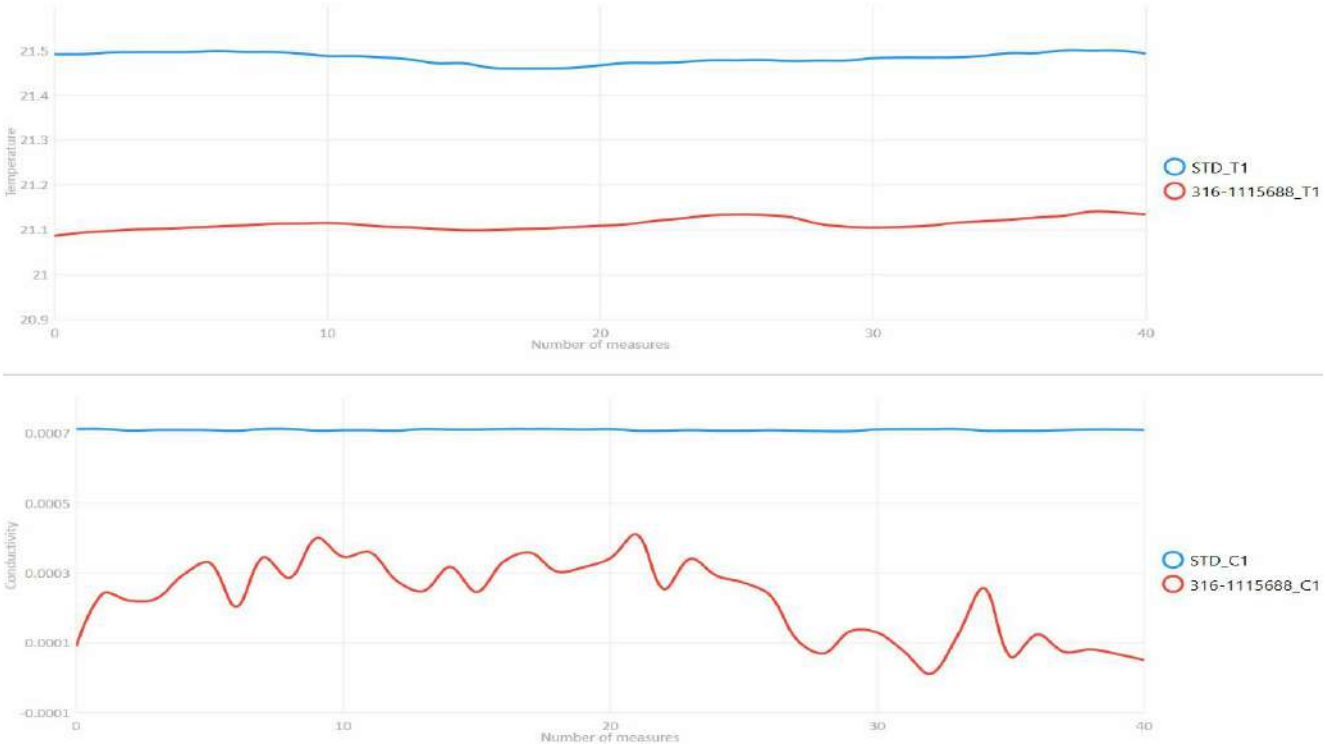
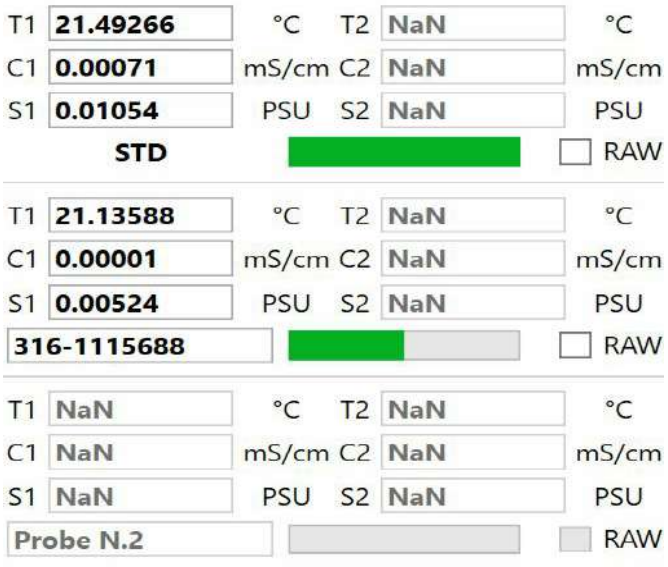
ICal 2 - Main Page

The main page of *ICal 2* is composed by the following sections:

- **Charts Section** on the right, with the Temperature chart (at the top of the page) and the Conductivity chart (at the bottom of the page), which graphically show the trend of the parameters. Each chart has a legend on the right, with the Name/SN of the device and the relative representative color on the chart. Values on the charts will be reset every 500 measures.

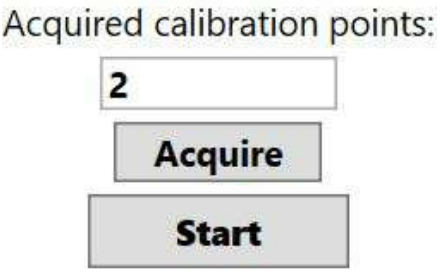


- **RealTime Data Acquisition Section** on the left, with a subsection for each device, which shows with a progress bar, the realtime acquisition values for temperature, conductivity and salinity also from double sensor (if device is provided). The button RAW allow the user to switch between engineering and raw value.



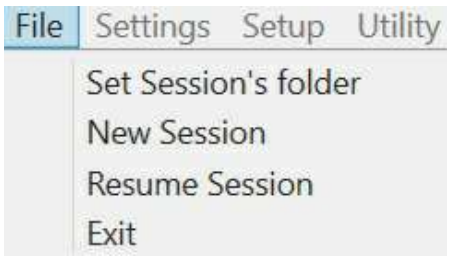
- **Bath Section** on lower left, that shows the actual Bath Temperature and the next Bath SetPoint. With the Bath Alarm button is possible to enable the automatic acquisition system of calibration points.

- **Calibration Points Section** on lower left, that shows the number of acquired calibration points, the button to execute a new acquisition of calibration point and the button to start the realtime data acquisition. During the acquisition of calibration point, the system check if the values of STD respect the acceptability limits for the derivative of temperature and conductivity and save data to a file txt in the session's folder, otherwise the acquisition will be repeated until the limits are respected.

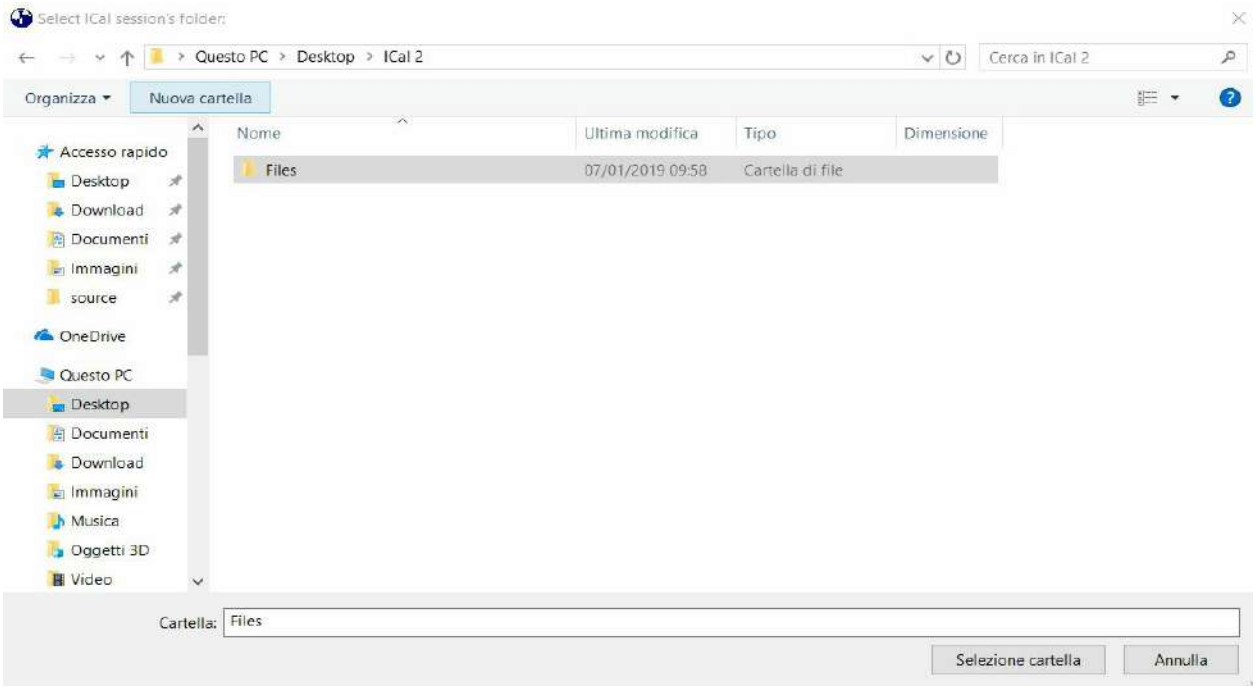


File Menu

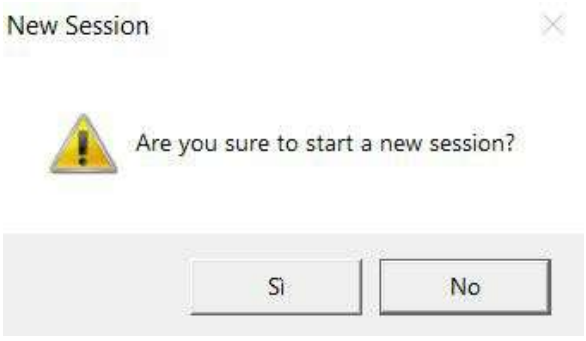
The **File Menu** is composed by the following commands:



- **Set Session's folder**, that allows the user to choose the folder where the files (as calibration coefficients, calibration points, etc.) will be saved. This choice is mandatory to start data acquisition and connect devices.



- **New Session**, that allows the user to work on a new session and restart the program. Will be showed a warning message to confirm the choice.



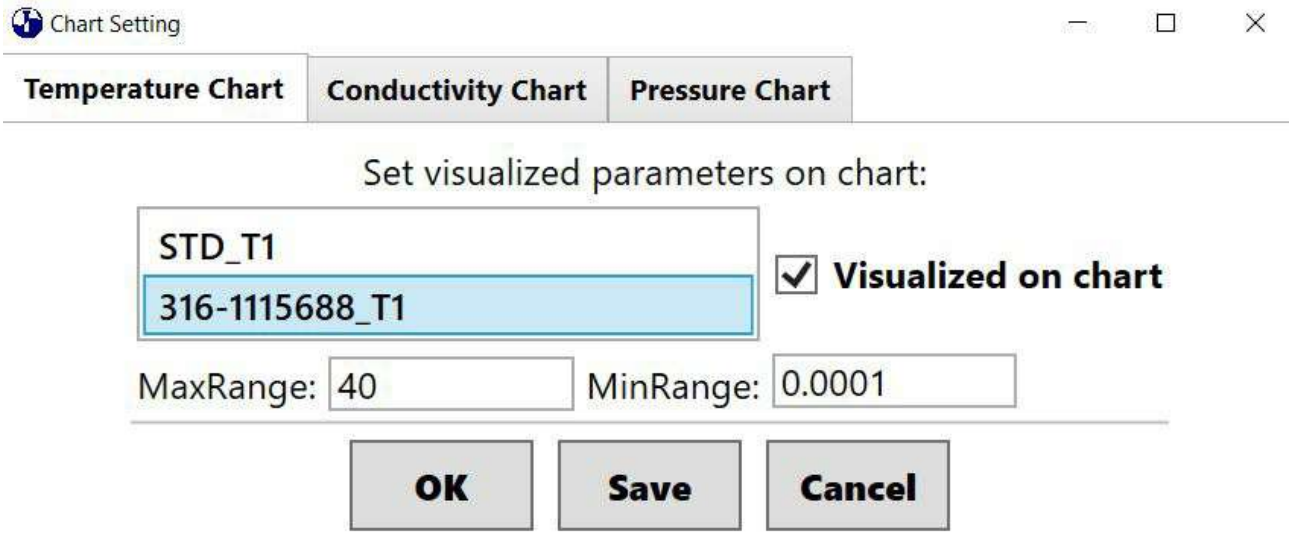
- **Resume Session**, that allows the user to resume a previous session and continue to work on it. Select the folder where the files of previous session were saved and will be showed a dialog window with the date of the selected session. Click on Restore to execute the restore or Cancel to abort.

- **Exit**, that allow the user to close the program. Will be showed a warning message to confirm the choice.

Charts Settings

In the **Settings Menu** is possible to find the following commands:

- **Charts**, that allows the user to modify the settings of the charts. Will be showed a dialog window with a section for each chart (Temperature chart, Conductivity chart and Pressure chart). Here the user can choose which parameter show on the relative chart and the max and min range (difference between max value and min value on the y axis). Click on button Save to apply the changes or Cancel to abort.



- **Reset Charts Zoom**, that allows the user to restore the default auto scale on the charts.

Bath Alarm

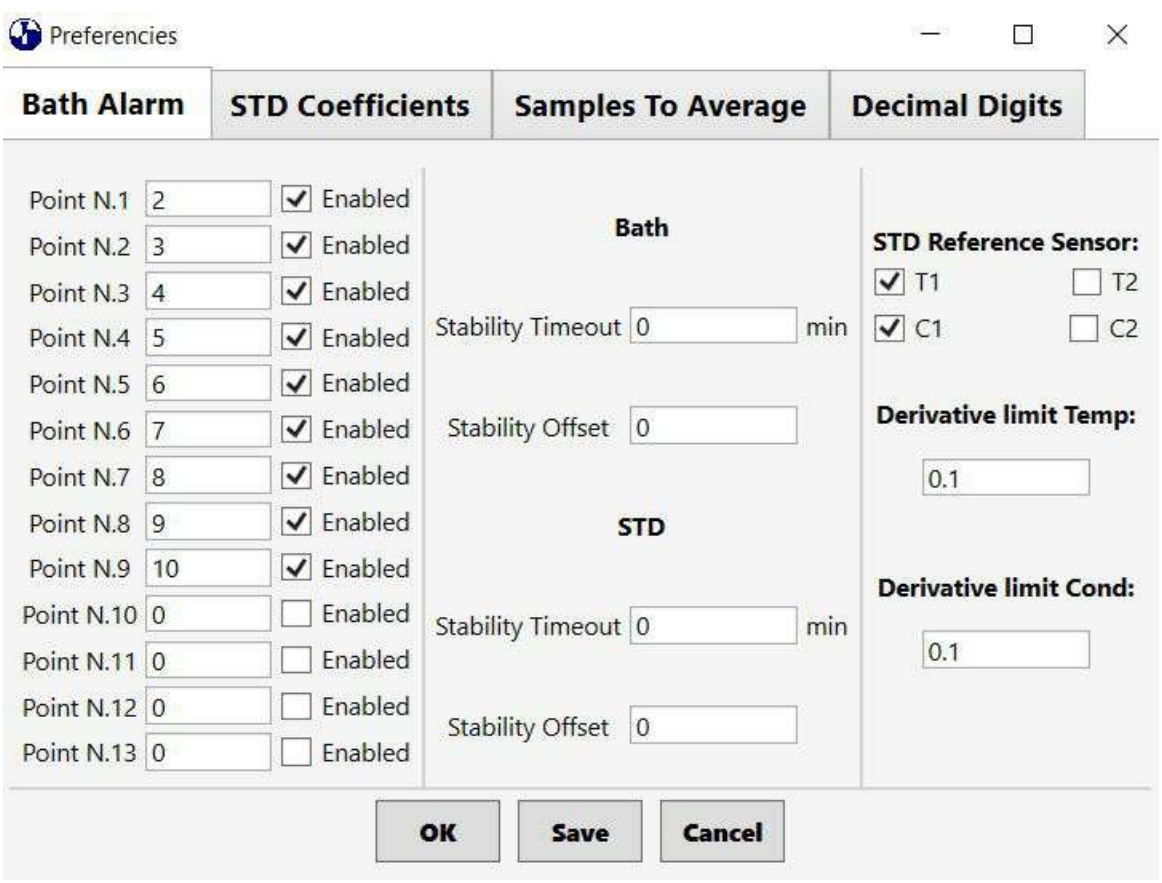
In the **Settings Menu -> Preferences** is possible to find the following section:

- **Bath Alarm**, that allows the user to set:
  - The Bath SetPoints and choose which to enable.
  - The Stability Timeout and the Stability Offset for STD and Bath.
  - The sensors of STD that will be used as reference for acquisition of calibration point.
  - Set the acceptability limits for the derivative of temperature and conductivity.

Click on button Save to apply the changes or Cancel to abort.

If the user choose to enable the automatic acquisition system of calibration points, it works as follow:

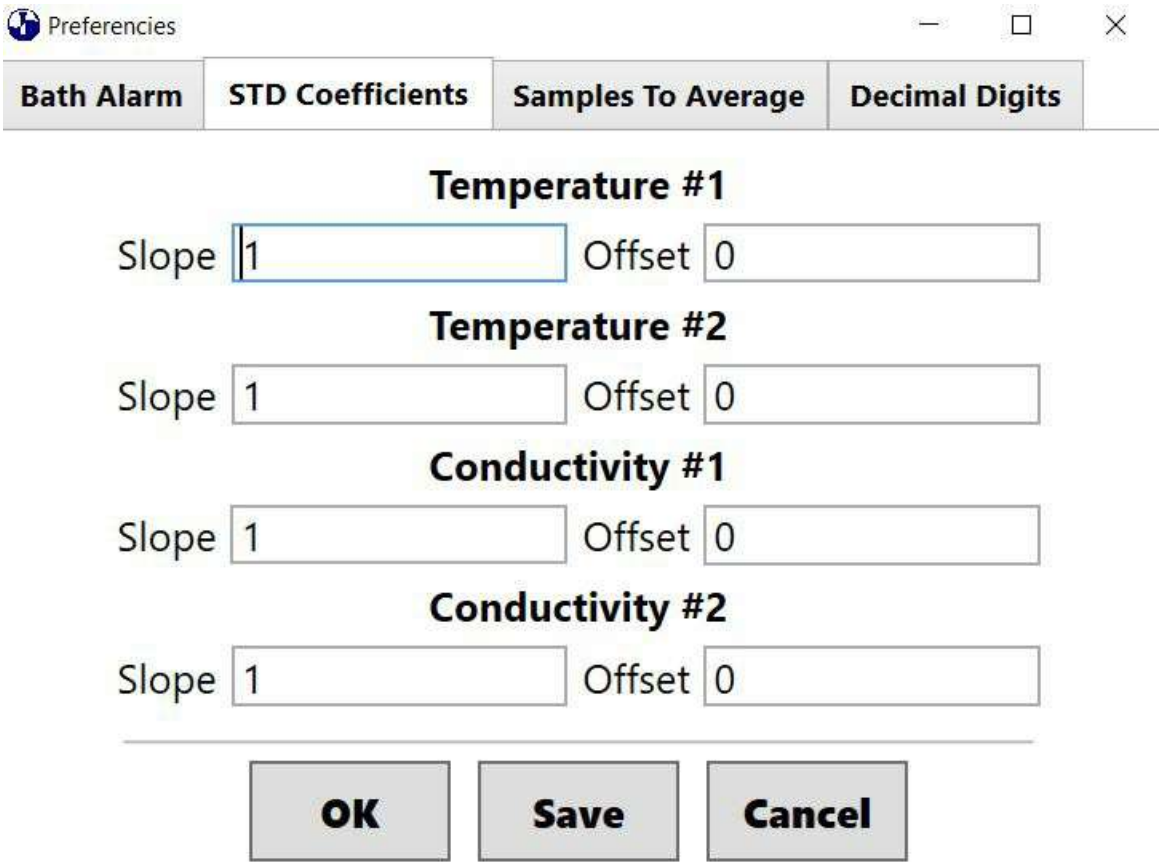
1. Set the next Bath SetPoint and wait until the bath temperature reach the setpoint.
2. Check that the bath temperature is maintained within Stability Offset for the Stability Timeout. If the bath temperature exceed the Stability Offset, the Stability Timeout will be reset.
3. Check that the STD temperature is maintained within Stability Offset for the Stability Timeout. If the bath temperature and/or STD temperature exceed the Stability Offset, the Stability Timeout will be reset. Continue from point 2.
4. Execute a new acquisition of calibration point, check if the values of STD respect the acceptability limits for the derivative of temperature and conductivity and save data to a file txt in the session's folder, otherwise repeat the acquisition until the limits are respected.
5. Repeat the operation with a new enabled setpoint.


Preferencies
Bath Alarm
STD Coefficients
Samples To Average
Decimal Digits
Point N.1 2 Enabled
Point N.2 3 Enabled
Point N.3 4 Enabled
Point N.4 5 Enabled
Point N.5 6 Enabled
Point N.6 7 Enabled
Point N.7 8 Enabled
Point N.8 9 Enabled
Point N.9 10 Enabled
Point N.10 0 Enabled
Point N.11 0 Enabled
Point N.12 0 Enabled
Point N.13 0 Enabled
Bath
Stability Timeout 0 min
Stability Offset 0
STD
Stability Timeout 0 min
Stability Offset 0
STD Reference Sensor:
T1
T2
C1
C2
Derivative limit Temp:
0.1
Derivative limit Cond:
0.1
OK
Save
Cancel

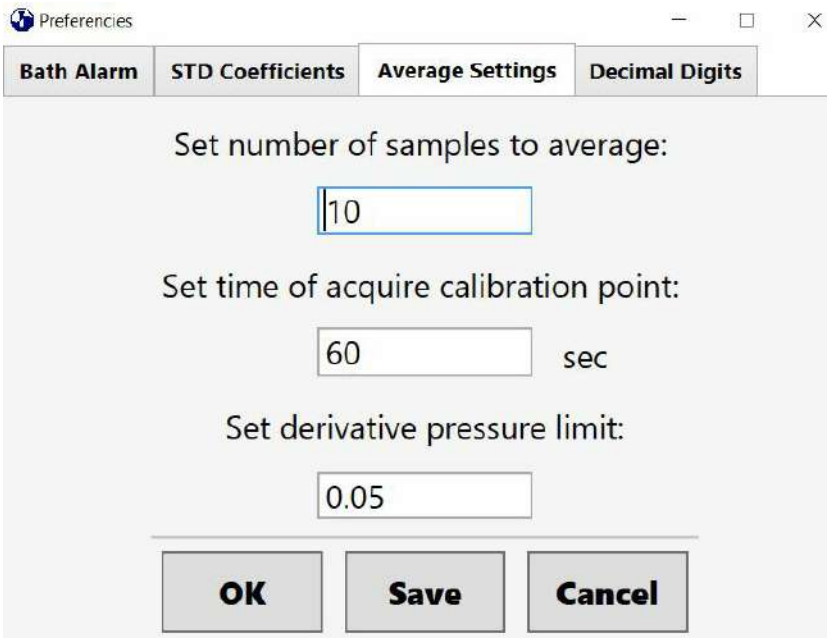
Preferences

In the **Settings Menu -> Preferences** is possible to find the following sections:

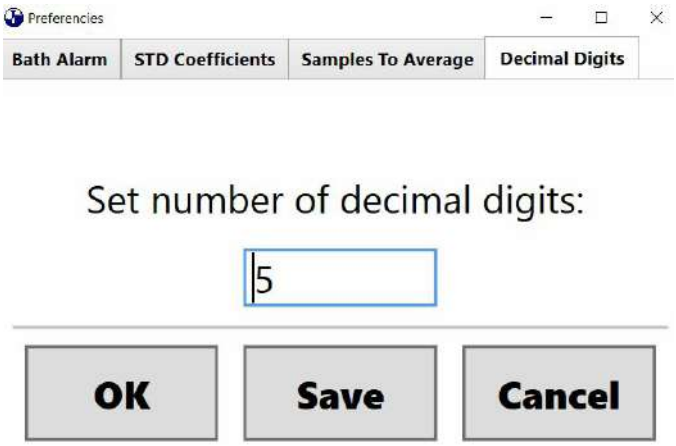
- **STD Coefficients,** that allows the user to set the slope and the offset for the temperature and conductivity sensors of *CT-01* STD. Meaning of the coefficients is described on the CT-01 operator manual. Click on button Save to apply the changes or Cancel to abort.



- **Average Settings,** that allows the user to set the number of samples to use for the average on the data acquisition, the acquisition time of calibration point and the acceptability limit for the derivative of pressure. Click on button Save to apply the changes or Cancel to abort.



- **Decimal Digit,** that allows the user to set the number of decimal digits that will be used to generate the values stored in the file of the acquired calibration points. Click on button Save to apply the changes or Cancel to abort.

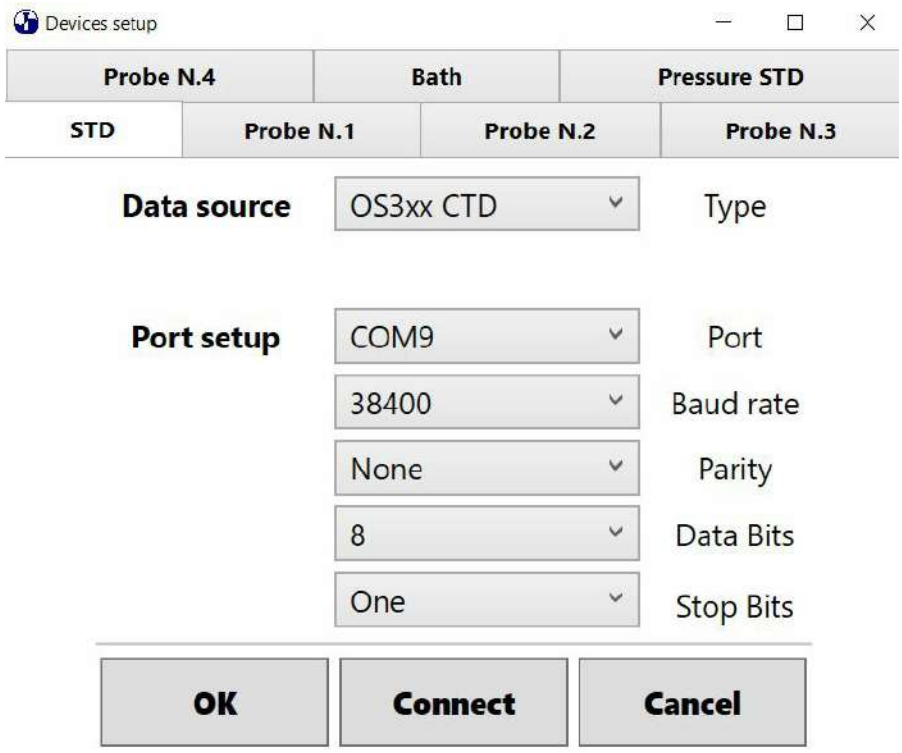


Device Setup

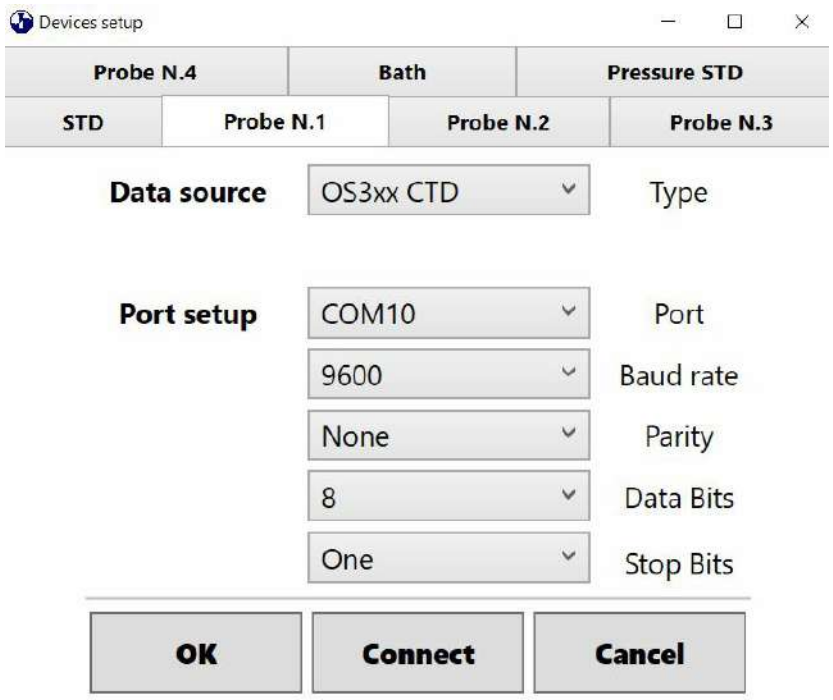
In the **Setup Menu** is possible to find the following command:

- **Device Setup,** allows the user to connect/disconnect devices to the program and is composed by the following sections:

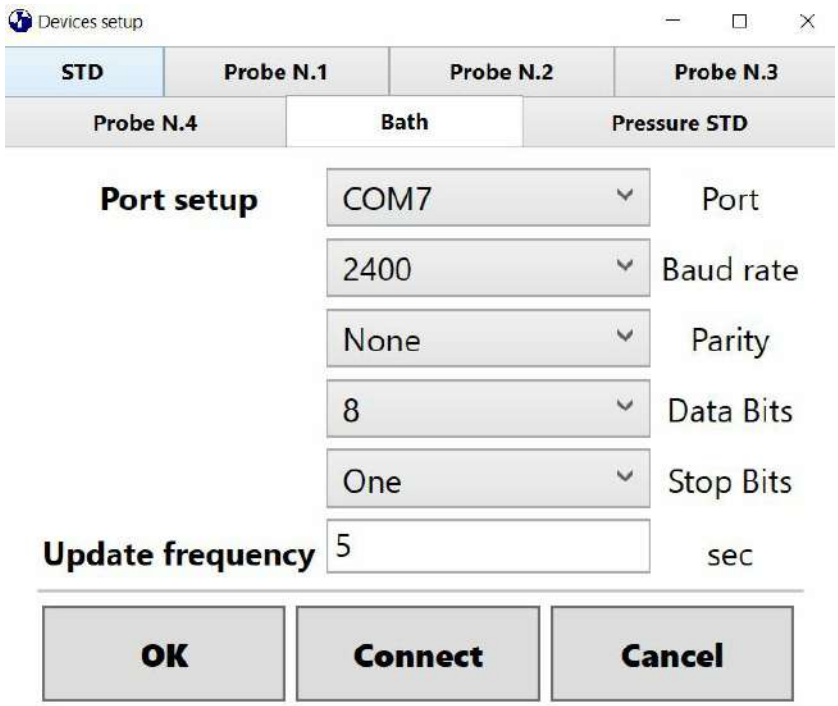
  - **STD Section**, that allows the user to connect/disconnect the *CT-01* STD to the program. Select the source type, the port, the baud rate, the parity bit, the data bits and the stop bits. Click the button Connect/Disconnect to connect/disconnect the device or Cancel to abort.



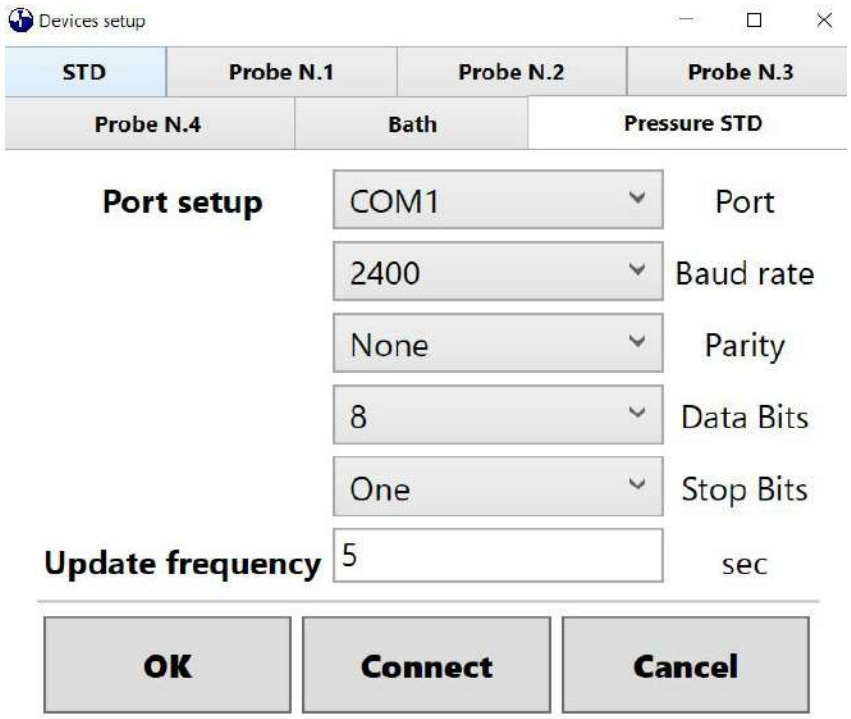
  - **Probe Section**, that allows the user to connect/disconnect the probe to the program. Select the source type, the port, the baud rate, the parity bit, the data bits and the stop bits. Up to four probes can be connected to the program at the same time. Click the button Connect/Disconnect to connect/disconnect the device or Cancel to abort.



- **Bath Section**, that allows the user to connect/disconnect the bath (*Hart Scientific High Precision Titanium Bath 7012*) to the program. Select the port, the baud rate, the parity bit, the data bits, the stop bits and the update frequency. Click the button Connect/Disconnect to connect/disconnect the device or Cancel to abort.

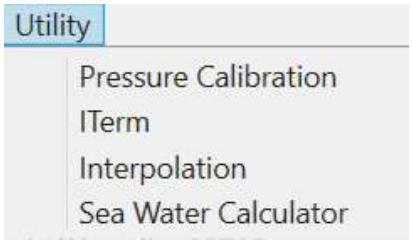


- **Pressure STD Section**, that allows the user to connect/disconnect the Pressure STD (*Paroscientific Digiquartz Laboratory Standard 745*) to the program. Select the port, the baud rate, the parity bit, the data bits, the stop bits and the update frequency. Click the button Connect/Disconnect to connect/disconnect the device or Cancel to abort.

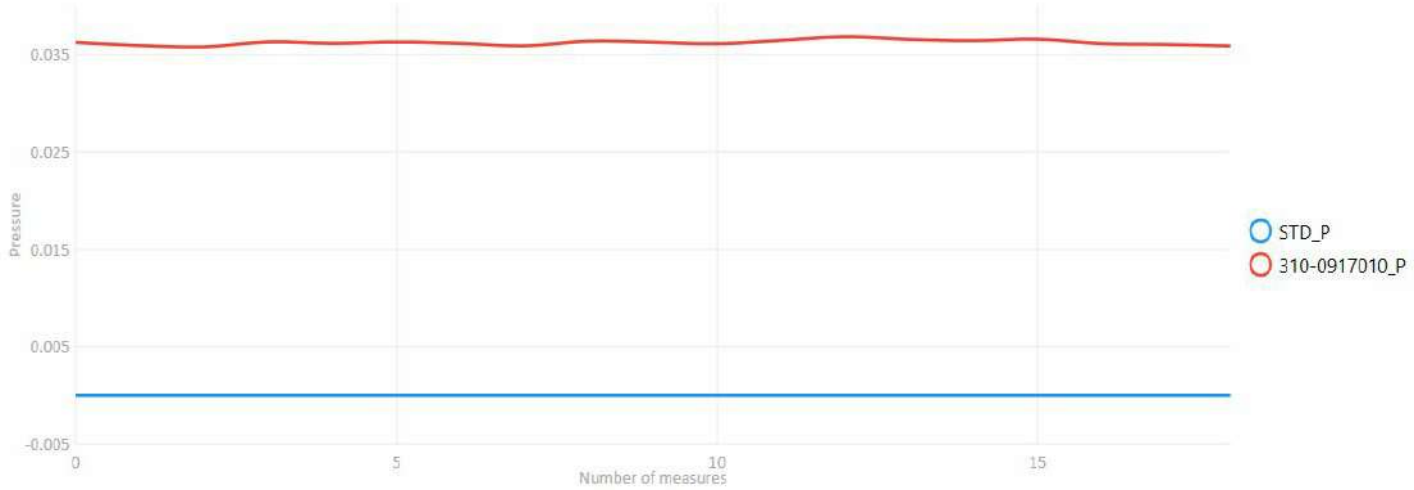

Devices setup
STD
Probe N.1
Probe N.2
Probe N.3
Probe N.4
Bath
Pressure STD
Port setup
COM1
Port
2400
Baud rate
None
Parity
8
Data Bits
One
Stop Bits
Update frequency
5
sec
OK
Connect
Cancel

Pressure Page

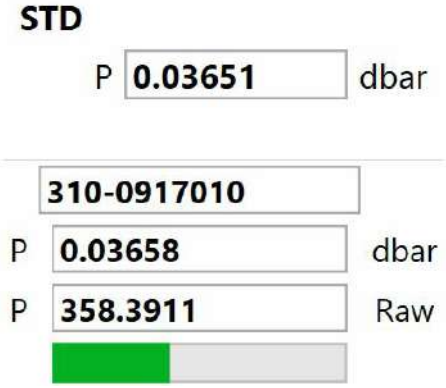
In the **Utility Menu** is possible to find the following command:



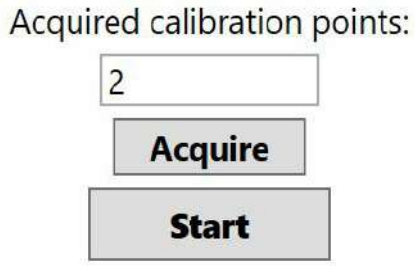
- **Pressure Calibration**, that open the pressure calibration window and is composed by the following sections:
  - **Chart Section** on the right, with the Pressure chart, which graphically show the trend of the parameters. The chart has a legend on the right, with the Name/SN of the source and the relative representative color on the chart. Values on the chart will be reset every 500 measures.



  - **RealTime Data Acquisition Section** on the left, which shows the realtime acquisition values of pressure from the probe(engineering and raw value) and the Pressure STD (engineering value).

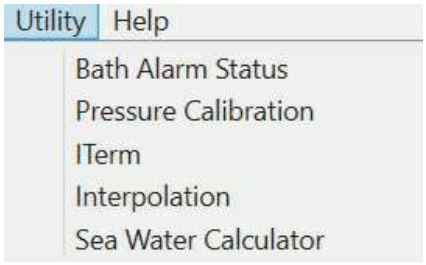


- **Pressure Calibration Points Section,** that shows the number of acquired pressure calibration points, the button to execute a new acquisition of calibration point and the button to start the realtime pressure data acquisition. The acquired calibration point will be saved to a file txt in the session's folder.



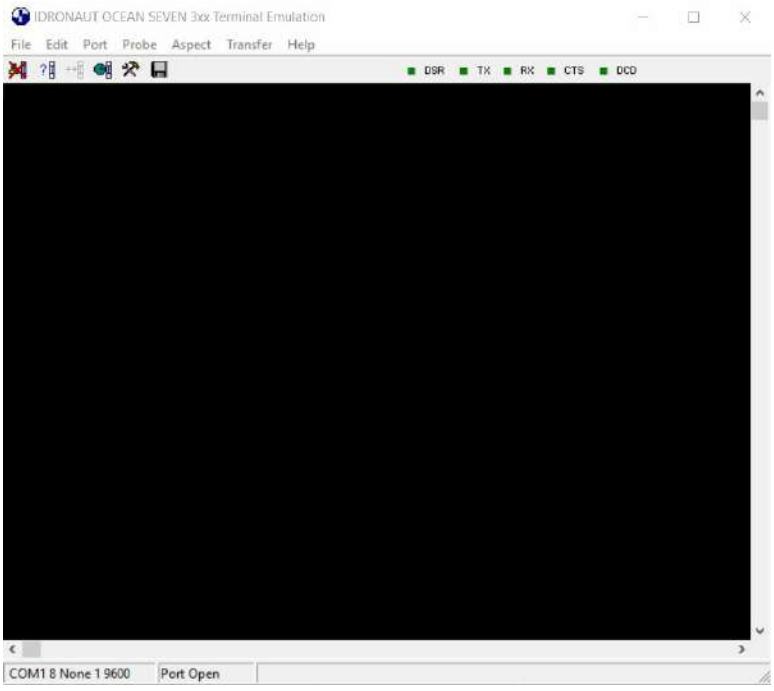
Utility Menu

In the **Utility Menu** is possible to find the following commands:

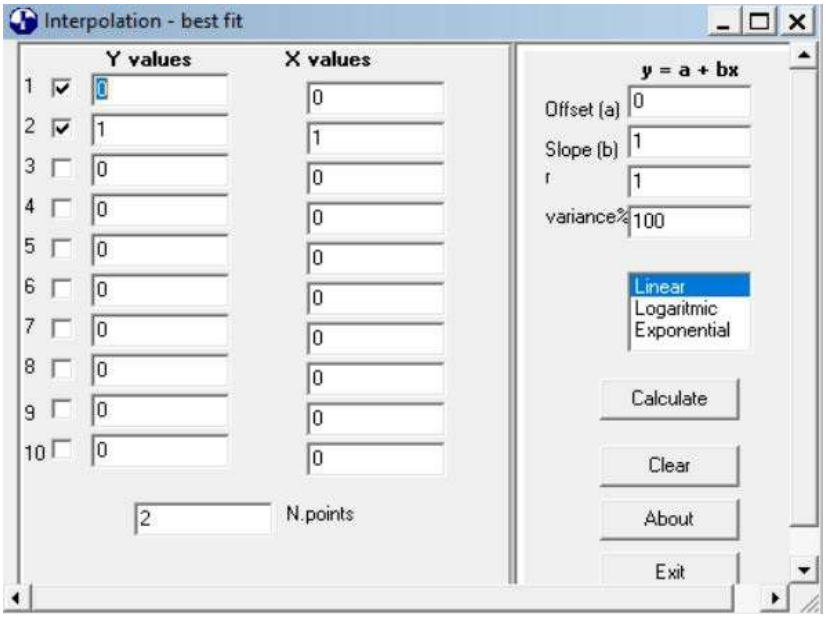


- **Bath Alarm Status**, that allow the user, if the automatic acquisition system of calibration point is enabled, to show a dialog window with the status of the system.

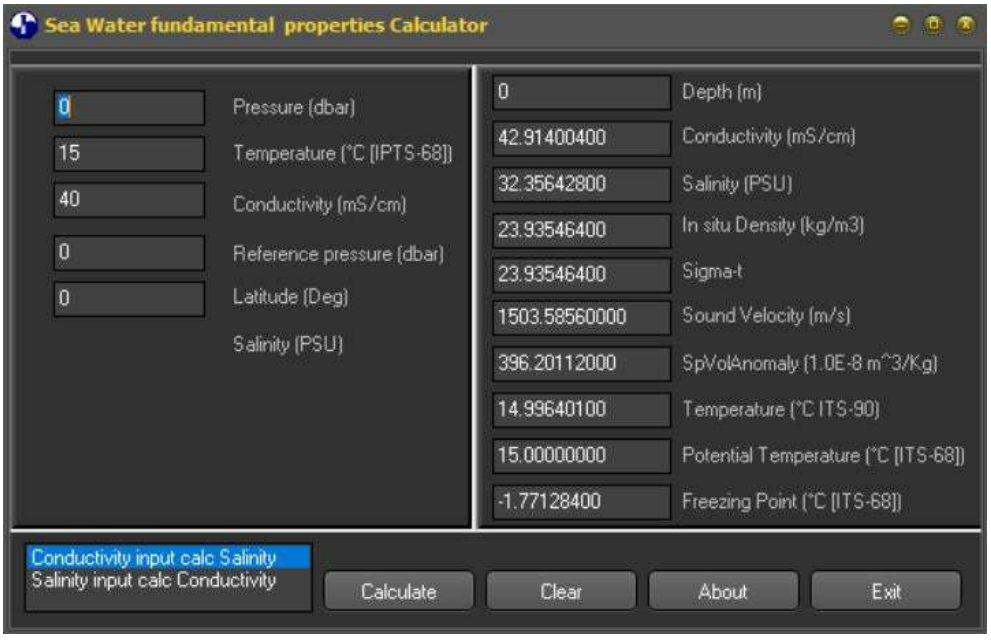
- **ITerm**, that allow the user to start the ITerm program.



- **Interpolation**, that allow the user to start the Interpolation program.



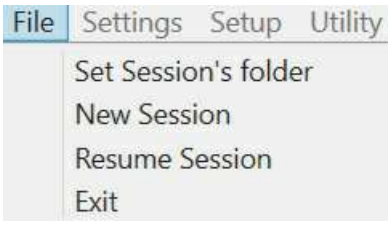
- **Sea Water Calculator**, that allow the user to start the Sea Water Calculator program.



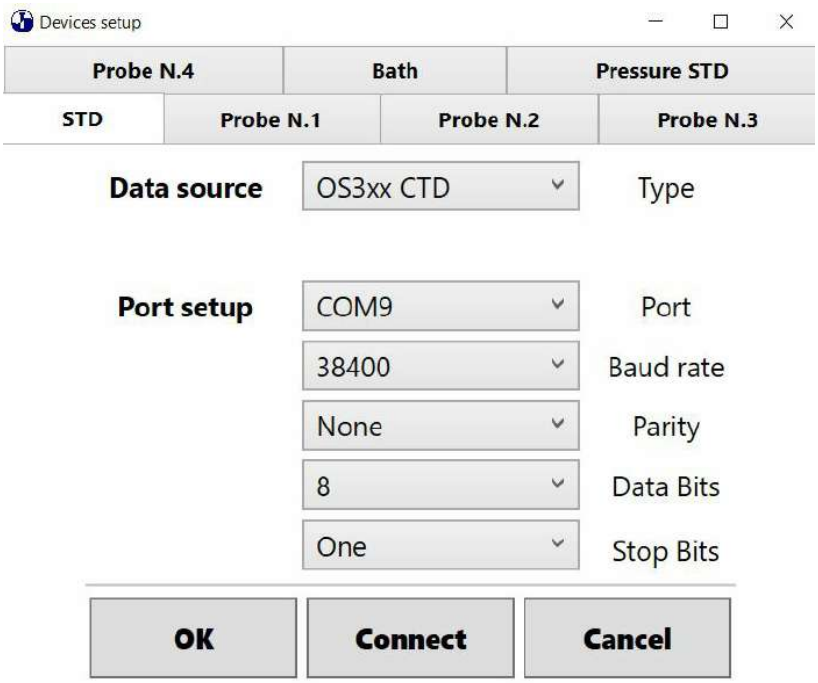
Example of C-T Calibration Session

To start a **C-T Calibration Session**, is possible to follow the steps below:

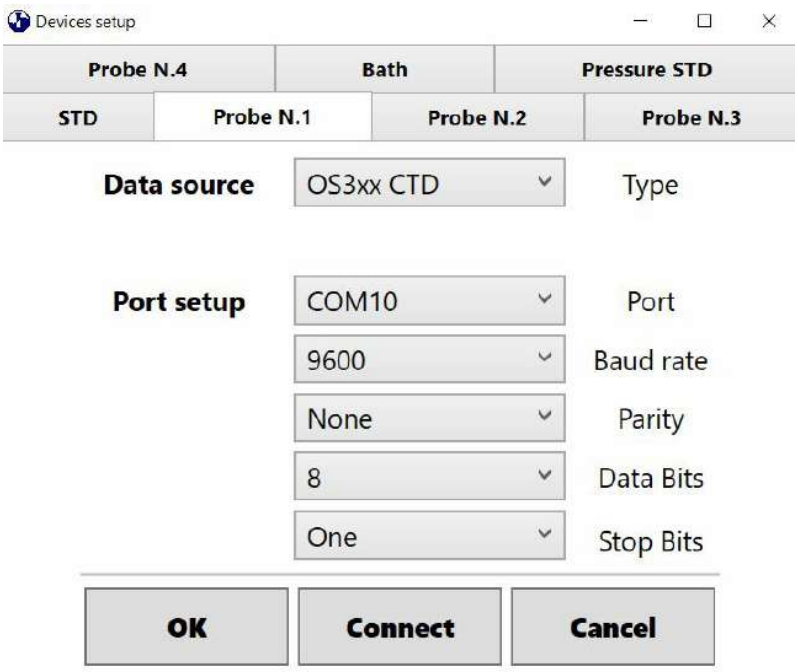
1. Click on **File->Set session's folder** and choose the folder where the files (as calibration coefficients, calibration points, etc.) will be saved.



2. Click on **Setup->Device Setup**, go to **STD** tab and set the source type, the port, the baud rate, the parity bit, the data bits and the stop bits. Then click the button **Connect** to connect the device.

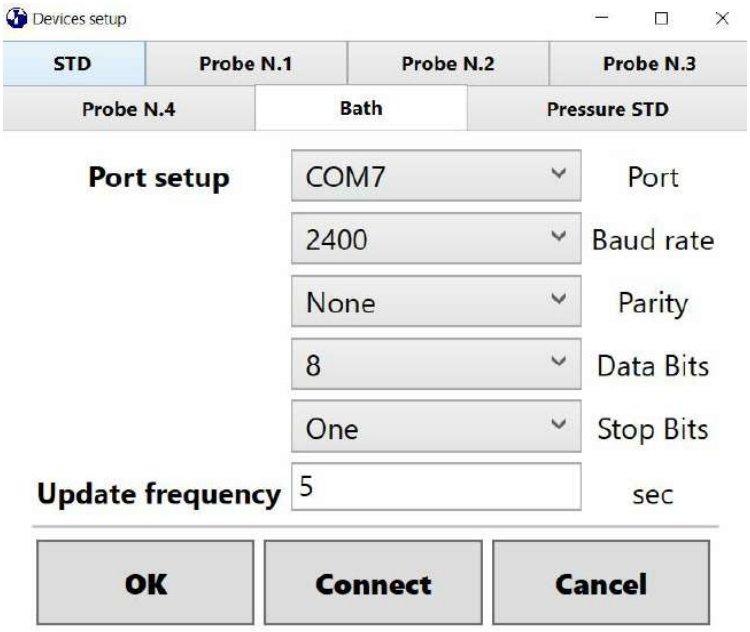


3. Go to **Probe N.1** tab and set the source type, the port, the baud rate, the parity bit, the data bits and the stop bits. Then click the button **Connect** to connect the device. Repeat the operation if you need to connect more probes. Up to four probes can be connected to the program at the same time.



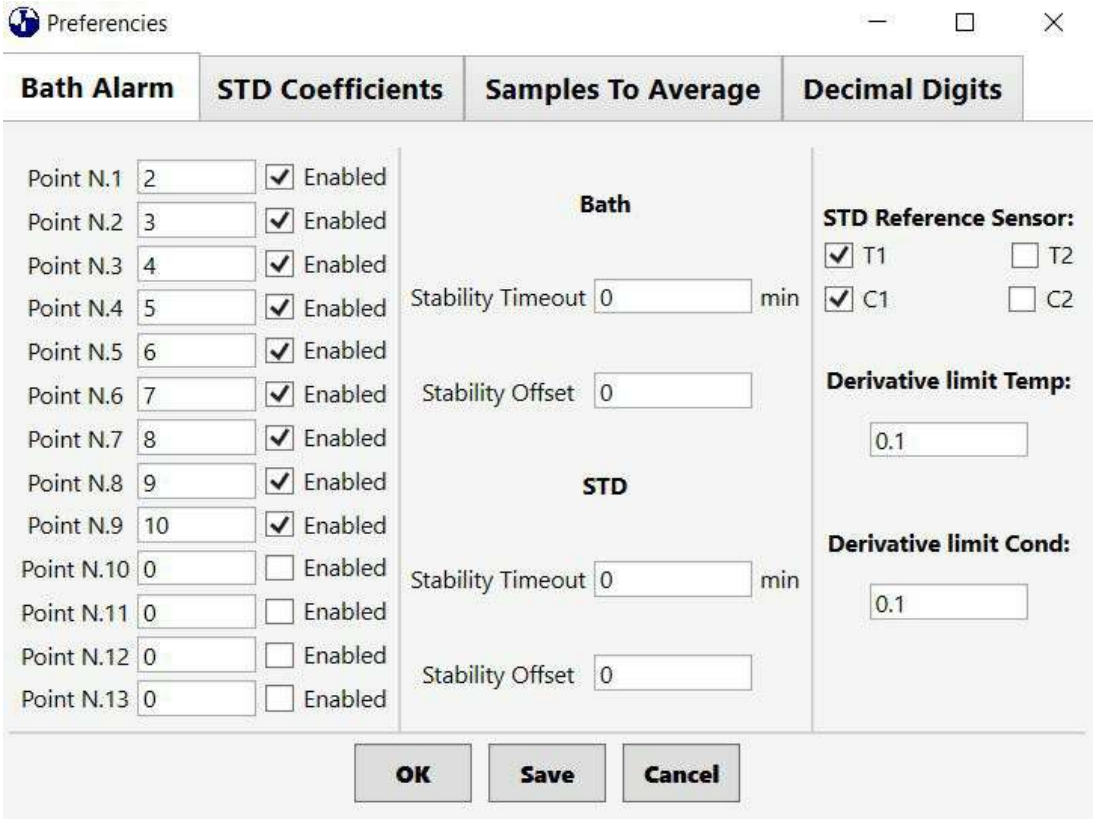
4. To use the bath and the automatic acquisition system of calibration point go to point 5, otherwise go to point 7.

5. Go to **Bath** tab and set the port, the baud rate, the parity bit, the data bits, the stop bits and the update frequency. Click the button **Connect** to connect the device.

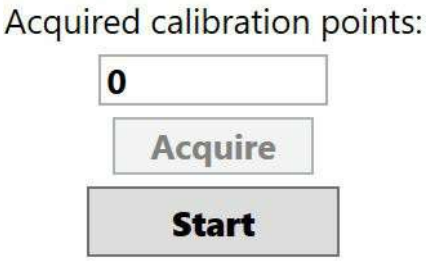


6. Click on **Settings Menu->Preferences**, go to **Bath Alarm** tab, set Bath SetPoints and choose which to enable. Set the Stability Timeout and the Stability Offset for STD and Bath. Set the sensors of STD that will be used as reference for acquisition of calibration point. Set the

acceptability limits for the derivative of temperature and conductivity. Click on button Save to apply the changes.



7. Click on **Start** button, to run the C-T Calibration Session and the realtime data acquisition.



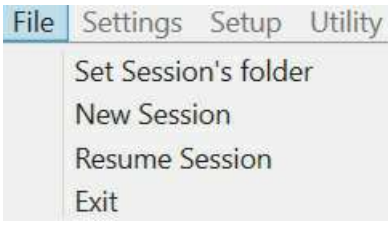
8. If bath was connected, click on **Bath Alarm** button, to enable the automatic acquisition system of calibration point. A dialog window, with the status of automatic acquisition system, will be showed.


Bath Alarm Status
Bath Alarm Info:
Status:
Wait for Bath stabilty
Time left Bath:
60
min
Time left STD:
20
min
OK

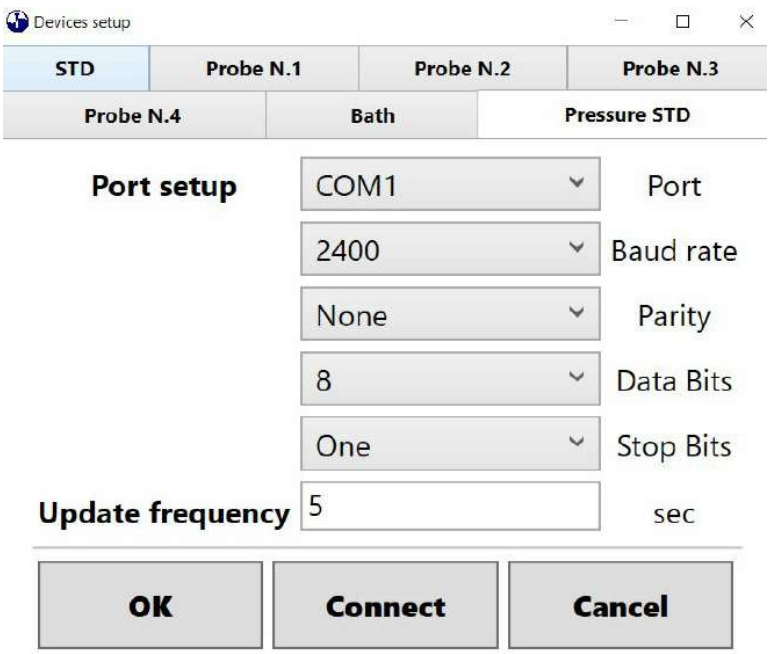
Example of Pressure Calibration Session

To start a **Pressure Calibration Session**, is possible to follow the steps below:

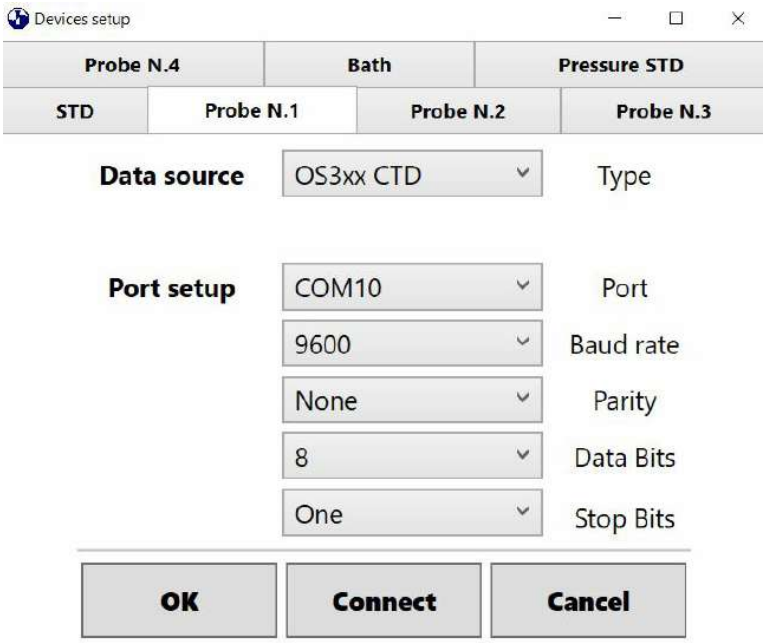
1. Click on **File->Set session's folder** and choose the folder where the files (as calibration coefficients, calibration points, etc.) will be saved.



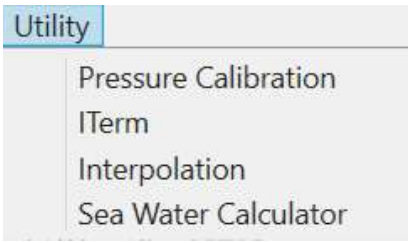
2. Click on **Setup->Device Setup**, go to **Pressure STD** tab and set the port, the baud rate, the parity bit, the data bits, the stop bits and the update frequency. Click the button **Connect** to connect the device.



3. Go to **Probe N.1** tab and set the source type, the port, the baud rate, the parity bit, the data bits and the stop bits. Then click the button **Connect** to connect the device.



4. Click on **Utility->Pressure Calibration** to open the pressure window.



5. Click on **Start** button, to run the Pressure Calibration Session and the realtime data acquisition.