



INSTRUCTION MANUAL

03-03 GRAPHMASTER

Version 7.8.0
November 2019

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Introduction

The software has been designed to be used with different instruments.

It is a flexible package that we hope you will find reliable and easy to use, enabling you to get maximum productivity and use from your instrument.

This manual describes the various features of the software and how to use them.

This manual is to be used in conjunction with the instrument instructions.

As GraphMasterPRO™ Software is a Windows-based package, a basic understanding of Microsoft Windows is assumed.

The design of this software is subject to continuous development. Consequently, this software may incorporate minor changes in detail from the information contained in this manual.

The software version number in your CD-ROM may be higher as Fibro System reserves the right to update the software at any time.

In all correspondence concerning this software, please quote the version number as given on the CD-ROM or About window or on the footer of print page.

If there are any queries about the software and its usage, please contact your local representative.

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Connections

Check on [List cables in order to use GraphMasterPRO](#) the appropriate cable for your instruments.

For more information, read the user's manual of the instrument and the section of the instrument in this manual.

You can use a USB to Serial converter in case the instrument has a serial connection and your PC only has USB

PC specification

In order to run GraphMaster™ software the following minimum computer specifications are required:

Minimum specification

- 512MB of RAM
- 20MB of free disk space
- 1024x768 screen resolution or higher
- Only to install the software a CD-ROM drive or an internet connection..
- USB port for the software key
- 9-pin RS-232 serial port

Or

- USB port with a USB to Serial converter (optional).

Recommended System

- 4GB of RAM
 - 200MB of free disk space
 - 1280x960 screen resolution or higher
 - Only to install the software a CD-ROM drive or an internet connection..
 - USB port for the software key
 - Laser/Inkjet Printer
 - 9-pin RS-232 serial port
- Or
- USB port with a USB to Serial converter (optional)

Operating Systems

- Windows Vista, Windows 7, Windows 8 or Windows 10

Installation/Update

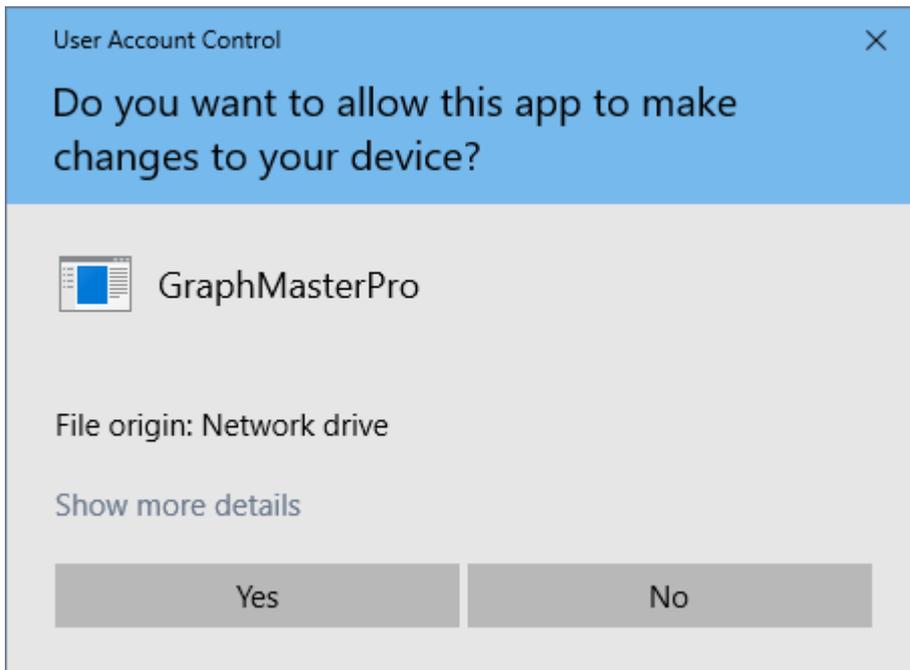
Close all running applications.

To install the software is necessary to be connected with administrative privileges.

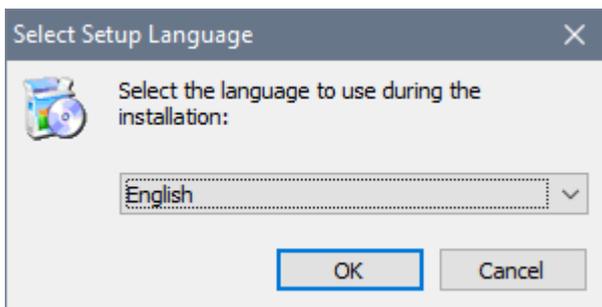
Insert CD supplied into input device.

Software installation should start automatically, but if the auto-play function is not available it will be necessary to start manually from File Setup.exe present on the CD.

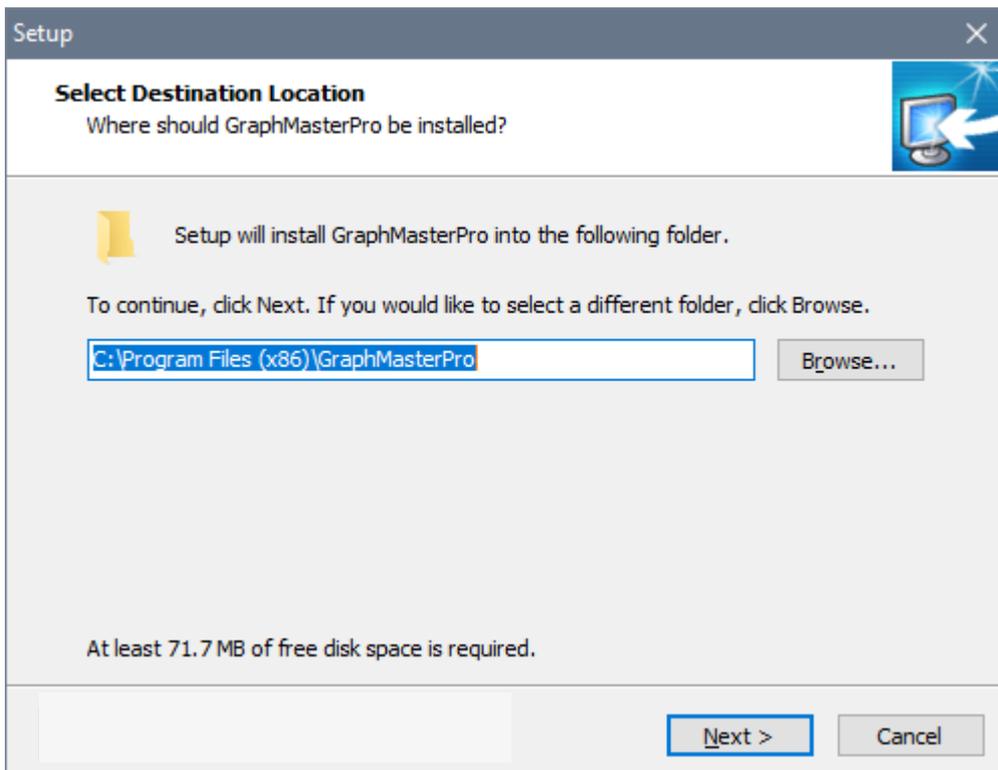
If you have a previous version you can run the setup without remove the previous version.



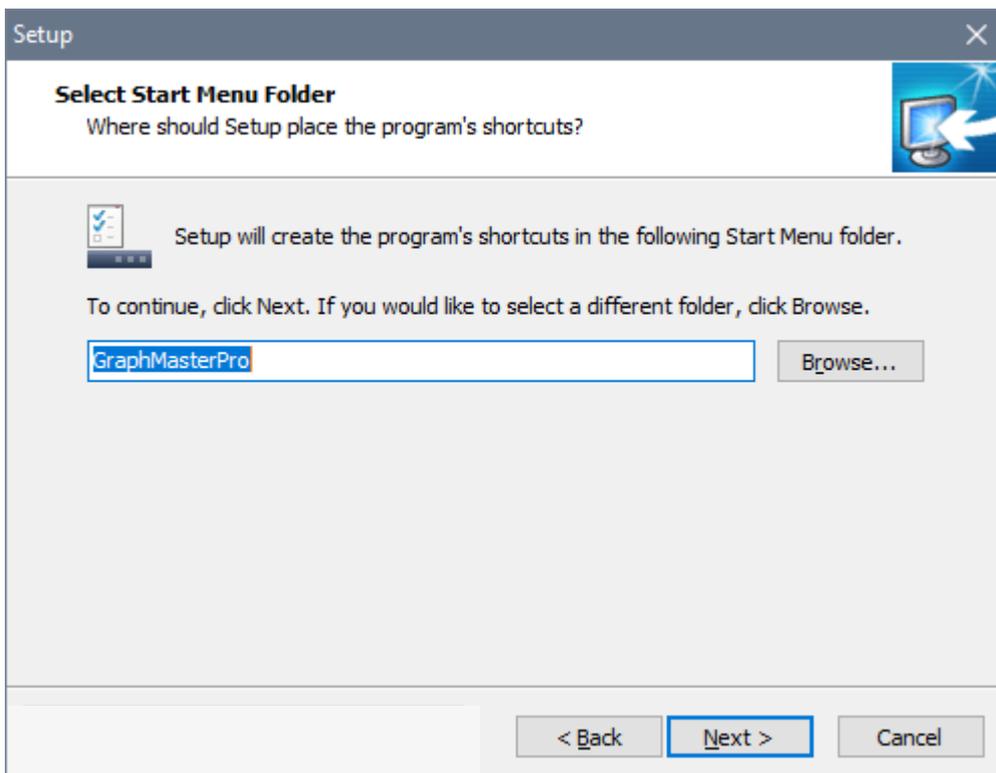
Verified the publisher and product information and confirm



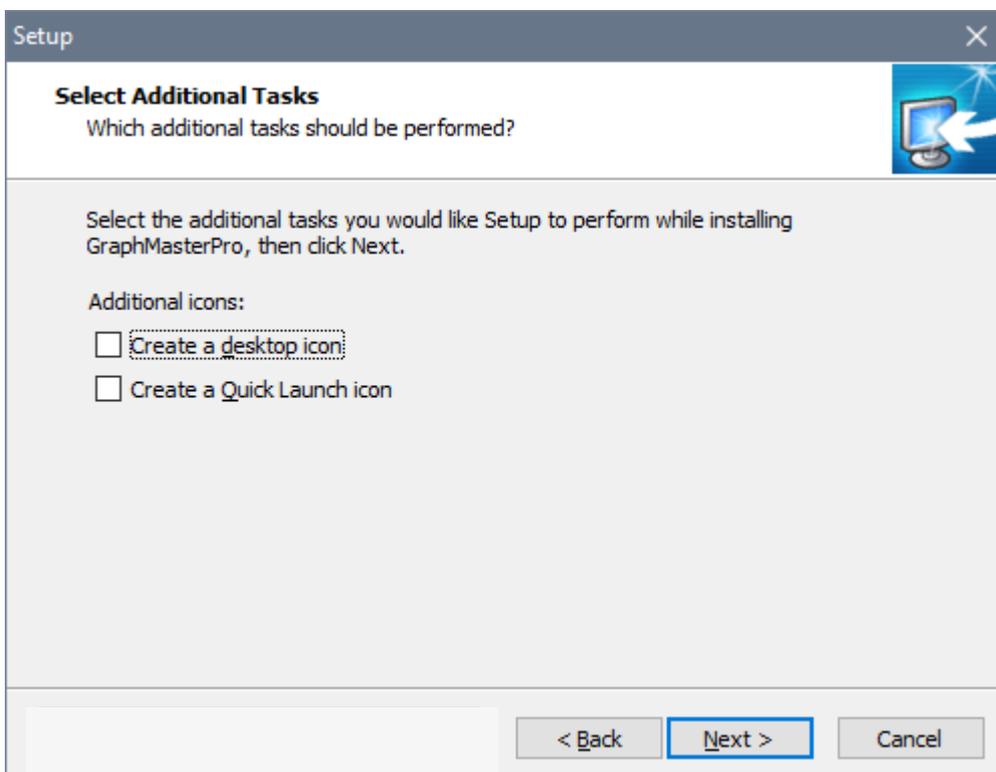
Select the language



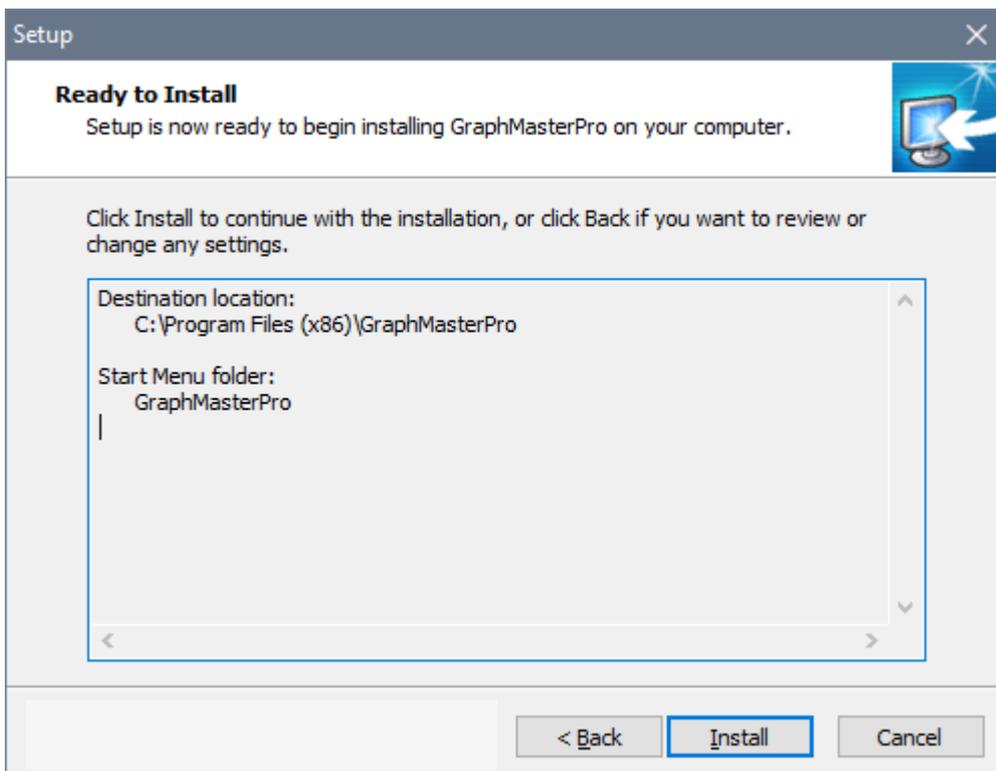
Confirm or select a new destination folder for the software (only during the first installation)



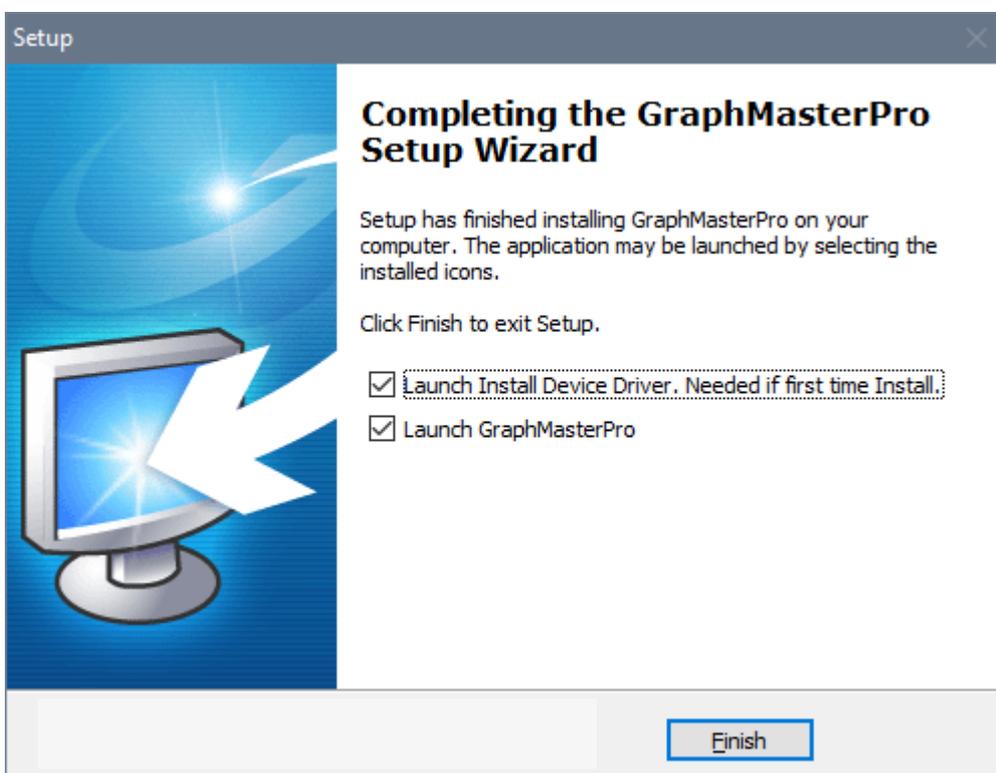
Confirm or select a new Start menu folder for the software (only during the first installation)



Select the additional tasks, to create a desktop icon and a Quick Launch icon



Confirm your choices

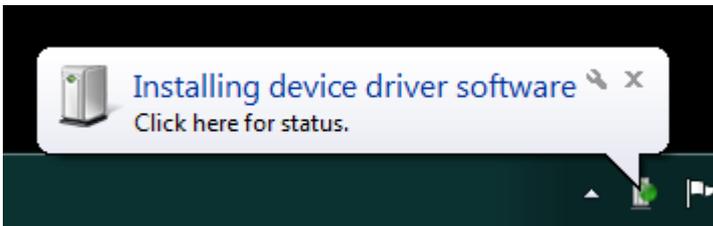


The setup is completed and the GraphMasterPro is installed on your PC.

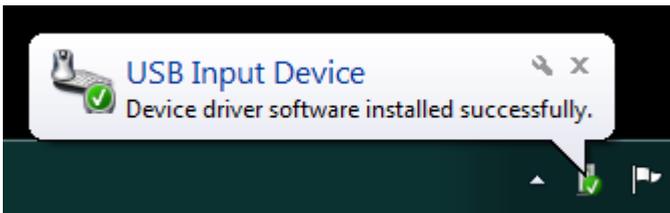
The [Device Driver installation](#) is required only during the first installation.
At the end of the installation the software will launch automatically if the Launch GraphMasterPro is checked.

Dongle (software key)

All software installations come with an installation CD and a dongle (software key).
The software key needs to be plugged in so the software can read the information programmed into it.
That information tells the software what functionality has been purchased and can therefore be unlocked in the software. If the software key is unplugged, the software will run with some limitations.
Therefore, in order to use the software with all features, it must remain plugged into the computer.
The dongle doesn't require drivers however the first time the dongle is plugged, the PC needs to install the device, and this operation can take few minutes.



Please wait until the device is installed.



Without the dongle, the software can be run with the followed limitations:

- Max 10 tests for each series
- The database will show only the first 20 records
- All the printouts have the watermark "DEMO VERSION"

Getting help

Off-line access

The off-line help file is part of the GraphMasterPro installation. To launch it, either press the F1 key or click the help button at the top right of GraphMasterPRO's main window.

Printing the help file

Alternatively, you can print a PDF version of GraphMasterPRO's documentation [GraphMaster Manual](#)

First start up

- Connect the instrument to the PC (see [Connections](#))
- Plug the dongle (software key) in to a USB port
- Install the software (see [Installation/Update](#))
- Run the software GraphMasterPro

- Add a new device (see [Add device](#))
- Double click on the instrument to open the [GraphMaster Test](#)
- In case the instrument selected has no auto-detection function, select the hardware setting and confirm the configuration (see [Hardware configuration](#))
- Run a test

GraphMasterPro

After the installation the GraphMasterPro icons will have been placed on the start menu.



GraphMasterPro

The standard software

GraphMasterPro Simulator

It allows to run the application without an instrument connected the software simulate the data.

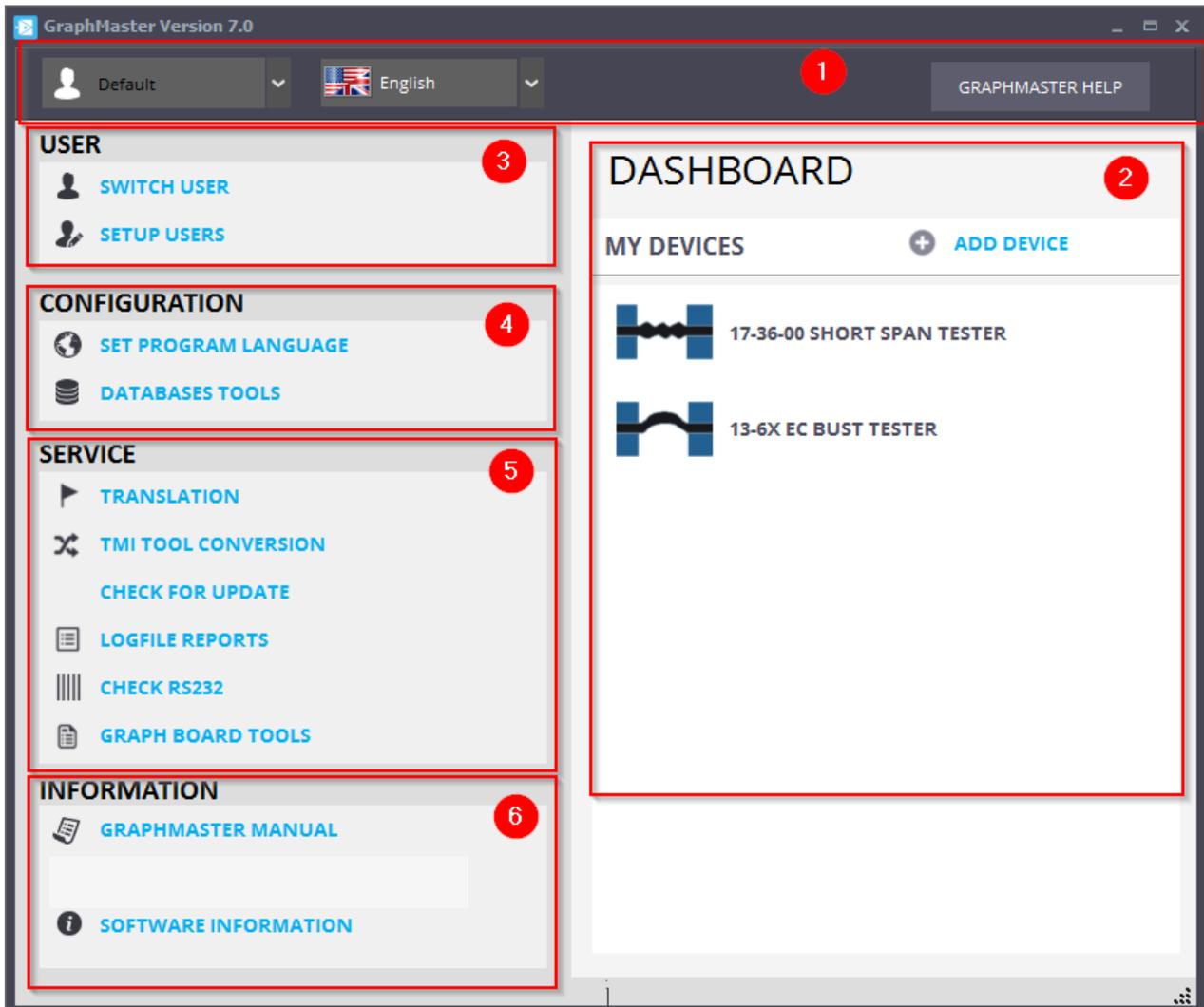
GraphMasterPro Diagnostic

It allows to run the application with advance function to investigate the causes of the troubles

Uninstall GraphMasterPro

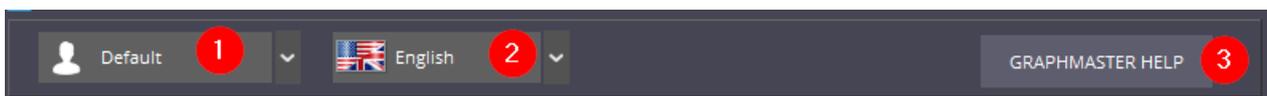
It allows to remove the software from the PC.
The database will be not removed

GraphMaster Dashboard



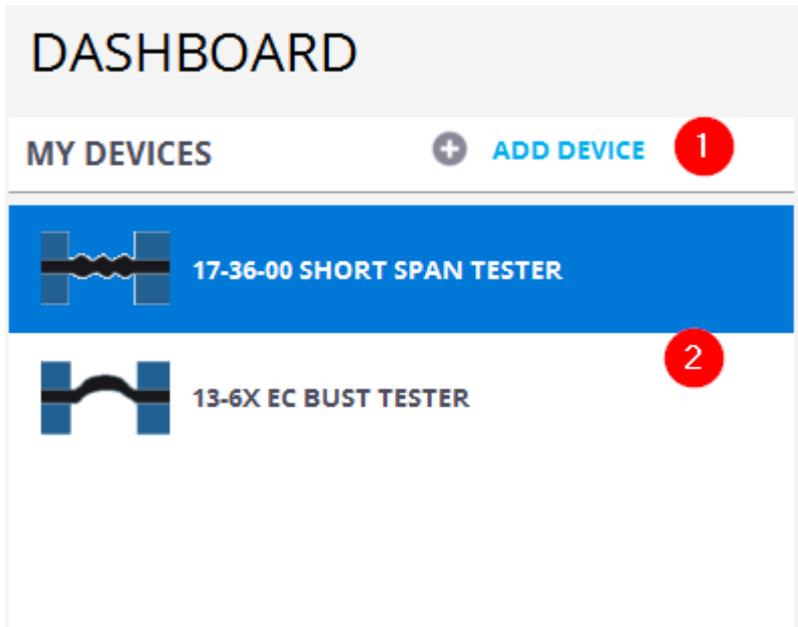
1. [Toolbar](#)
2. [Dashboard](#)
3. [User](#)
4. [Configuration](#)
5. [Service](#)
6. [Information](#)

Toolbar



1. The drop-down list allows a quick user change
2. The drop-down list allows a quick language change
3. Click on GraphMaster help to launch the help

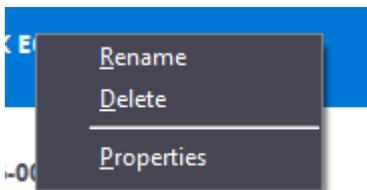
Dashboard



1. Click on [Add device](#) to add a new device on the list
2. The [List devices panel](#) allows to start the software [GraphMaster Test](#) with the selected device.

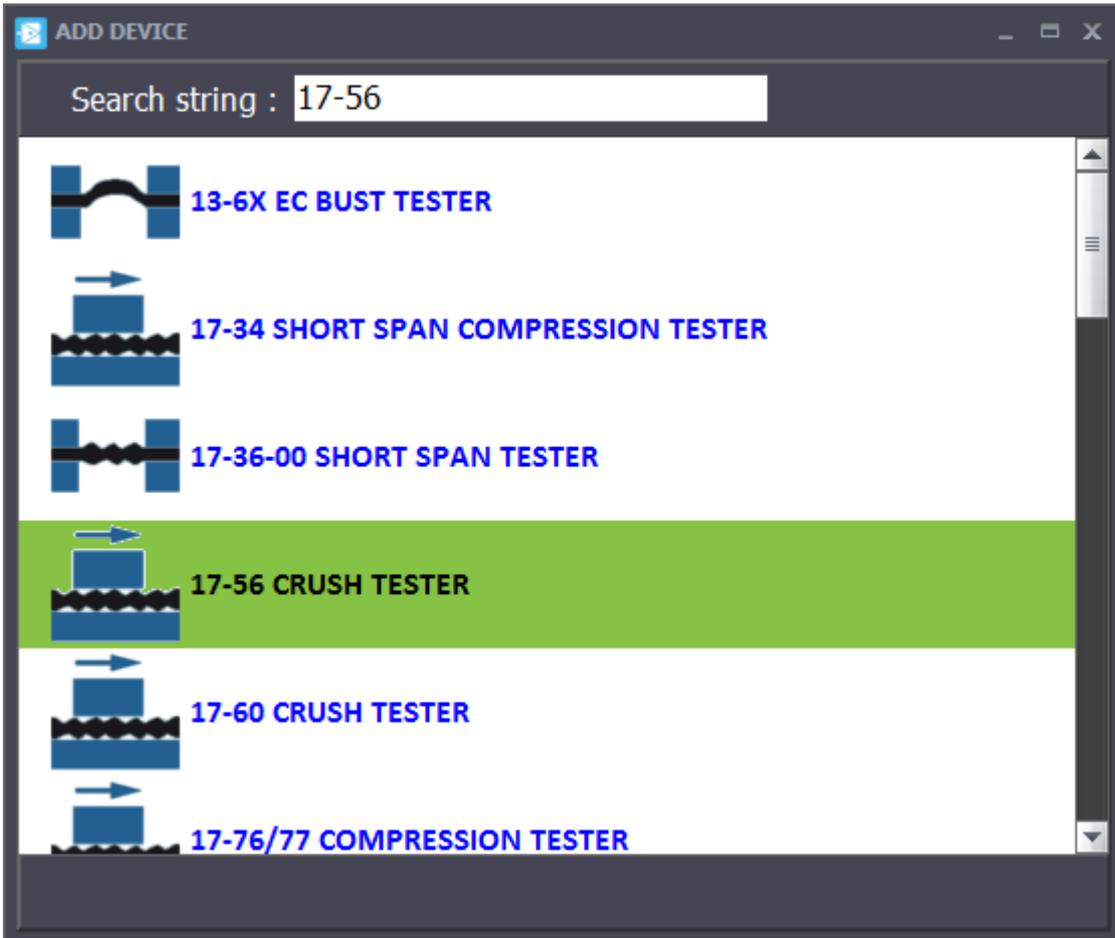
Note

If only one instrument is present the software [GraphMaster Test](#) will be launched automatically

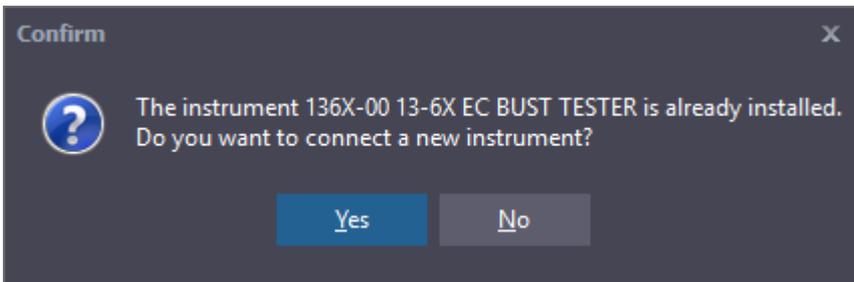


Using the context menu (right click of the mouse) allows to [Rename](#) the description, [Delete](#) the device from the list or see the [Properties](#).

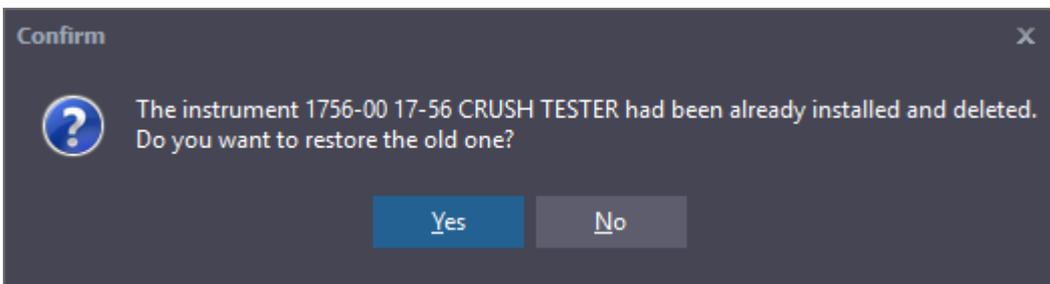
Add device



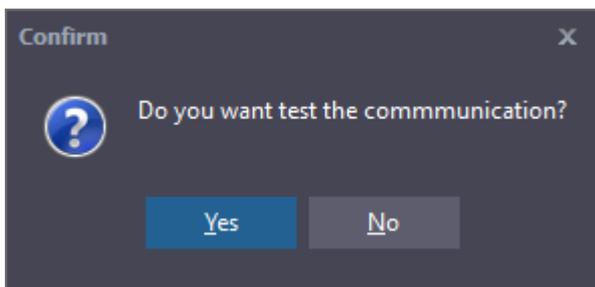
Enter a string to search the required instrument.
Double click on the instrument selected, to add it on the favorite list.



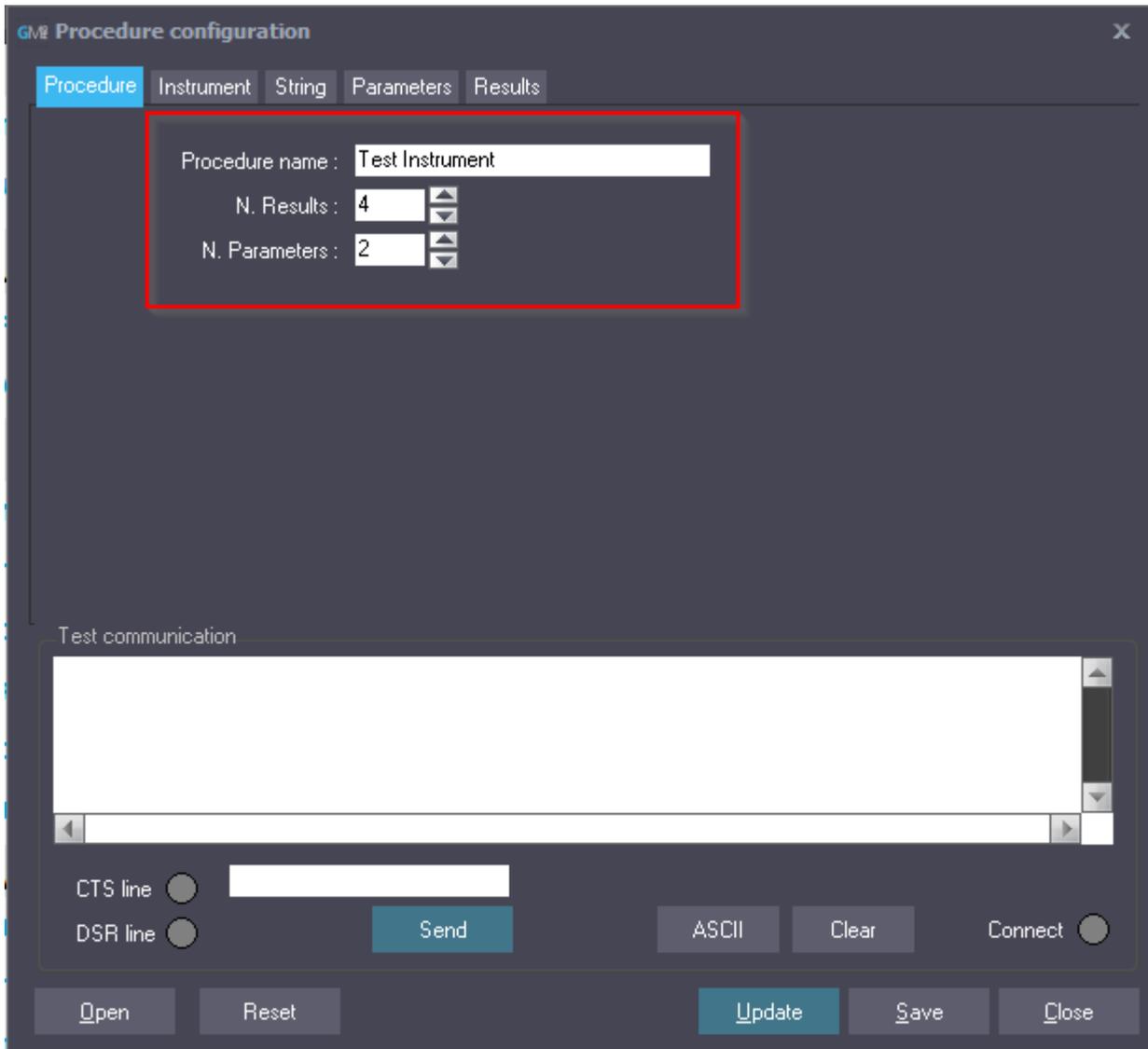
In case a same instrument was already installed the software required a second confirmation before continue



In case the same instrument was already installed and later deleted the software can restore the previous settings



In case the instrument has the function to auto-detect the configuration the software it prompts the check communication request
Please see the section [Auto Detect instrument](#) for more information.

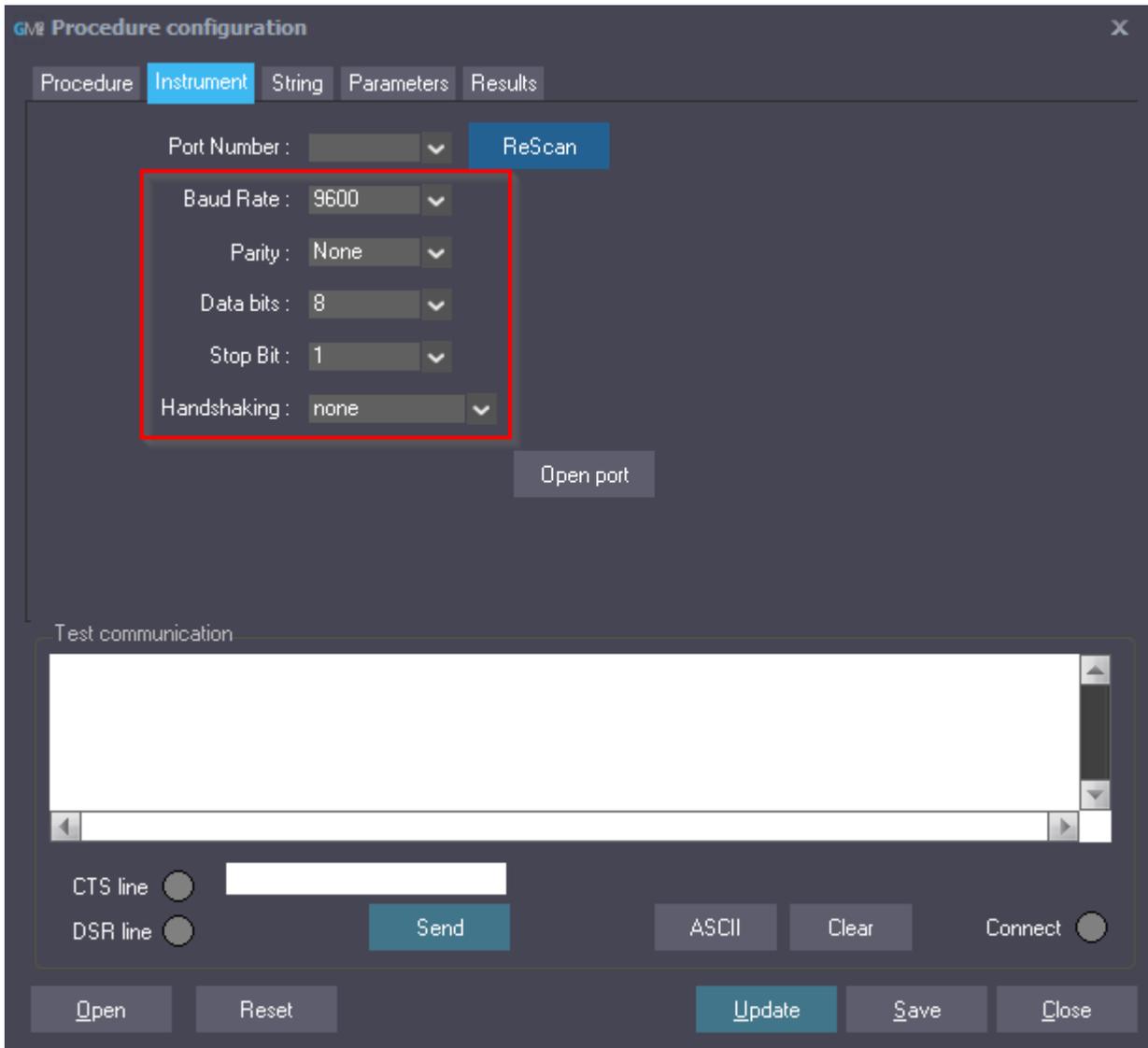


The function New configuration allows the user to create new procedure to interface GraphMaster with all kind of instrument with a RS232 output.

The tab Procedure allows to define the procedure name or the instrument name, to identify the procedure in the list.

N. Results are the number of columns added on the software.

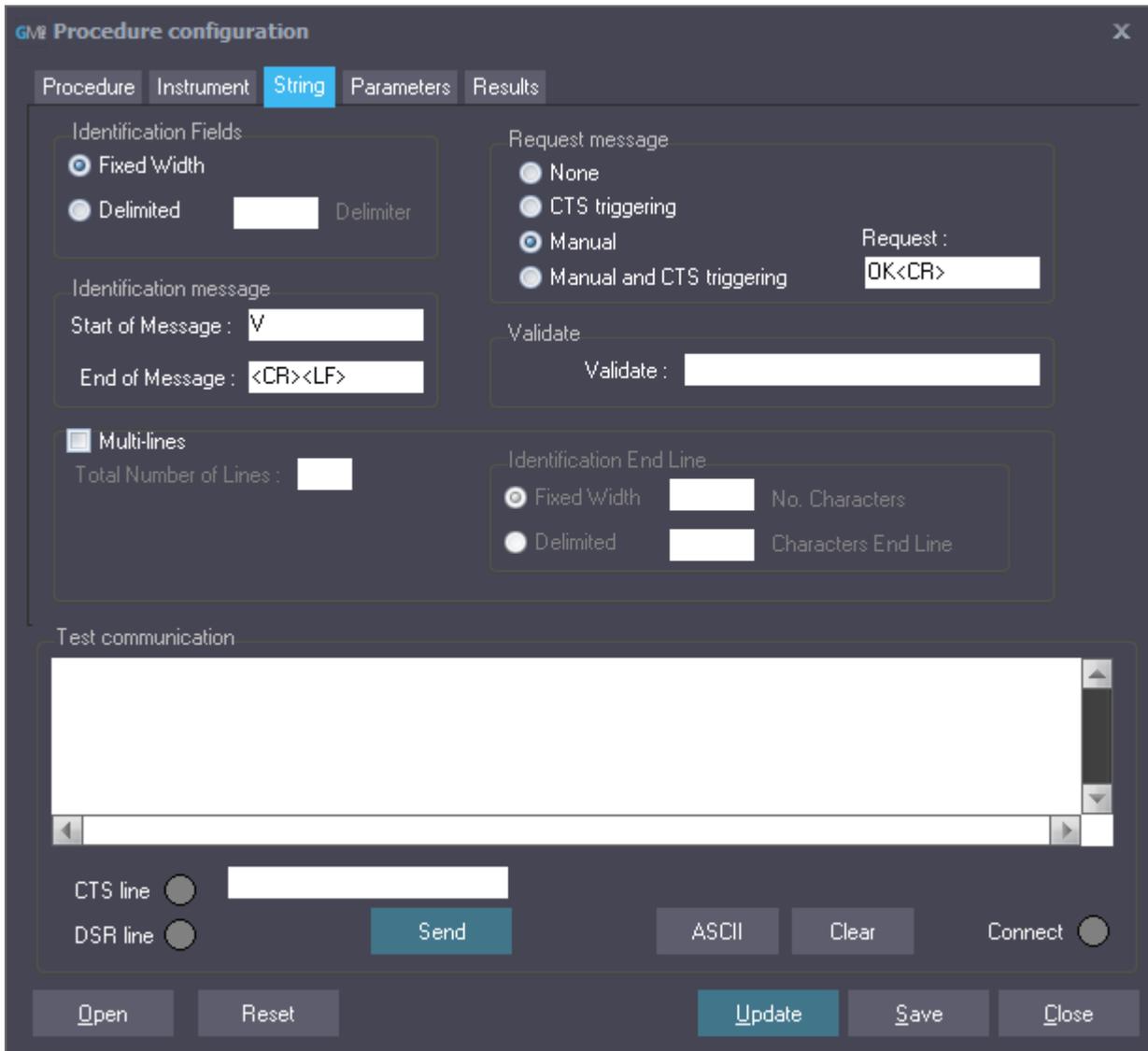
N. Parameters are the number of value shown on the left side of the software



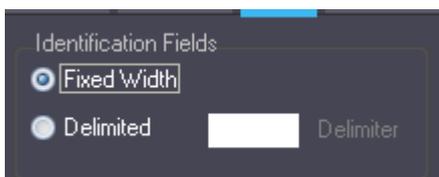
The tab Instrument allows to define the communication settings.

Note

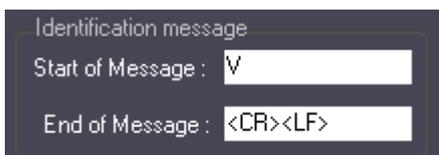
The Port number is not saved and it will select from the Graph software.



The tab String allows to define the settings to identify the message and the fields.



Identification fields, fixed width or delimited. If delimited the delimiter must be specify.



Start Message can be useful to extract only one message from a stream.

Example

During the test the instrument sends all the readings and at the end it sends the final results.

Request message

None
 CTS triggering
 Manual
 Manual and CTS triggering

Request :

Request message can be sent by a CTS trigger or manual (the user press a button)

Validate

Validate :

Validated message to confirm the received

Multi-lines

Total Number of Lines :

Identification End Line

Fixed Width No. Characters
 Delimited Characters End Line

Multi-Line is used for data strings that have more than one line due to the large amount of data being transmitted. Each line may contain one or more test results for different properties measured by an instrument. Enter the total number of lines transmitted by the selected Instrument. Enter either the number of characters for each line OR the end of line characters. For example (<CR>) or (;)

For more information about the string messages format see [RS232 messages](#)

Parameters

Caption	Unit	Multiply	Start	End	Line	Type
Range	Force [N]	0.5	1	5	1	Machine
Speed	Speed [mm/min]	1	6	10	2	Machine
Sample Length	Length [mm]					User Input

Test communication

CTS line

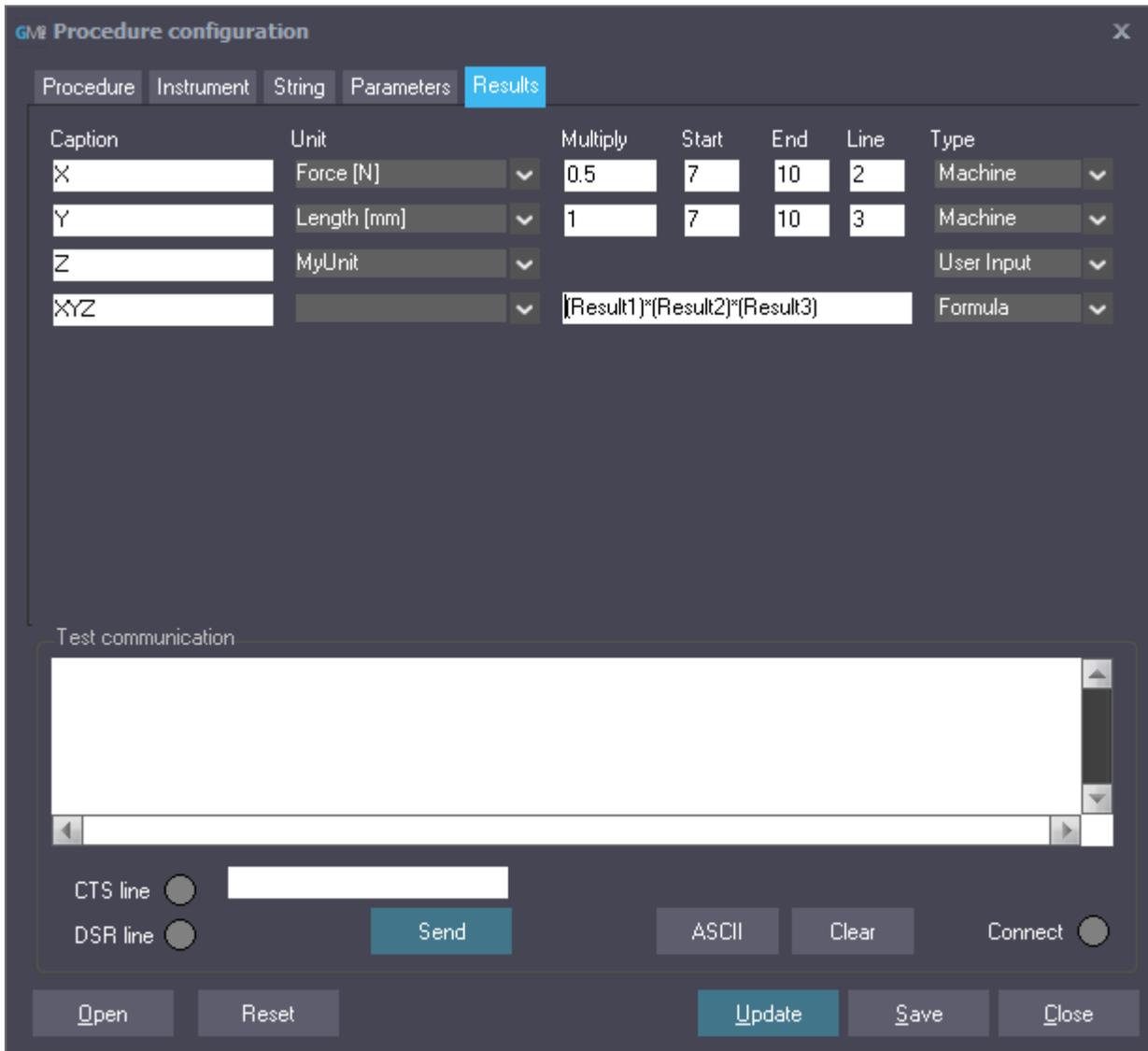
DSR line

The tabs Parameters allow to define for each parameter the caption, the unit, the multiply and the extraction settings

There are two types of results:

Machine : The value read from the instrument

User input : The value is enter by the operator



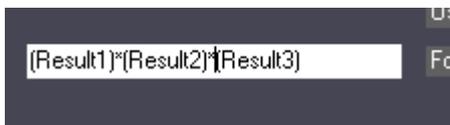
The tabs Results allow to define for each result the caption, the unit, the multiply and the extraction settings.

There are two types of results:

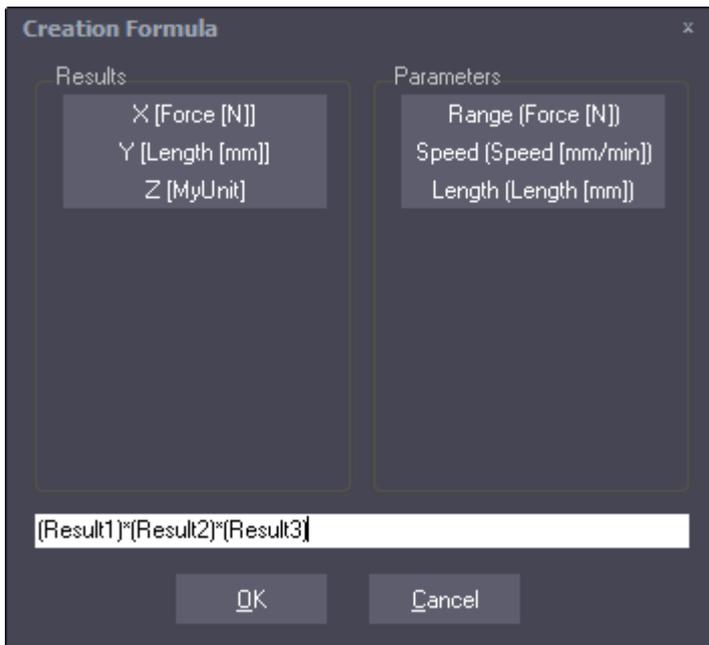
Machine: The value read from the instrument

User input : The value is enter by the operator

Formula : The value is calculated

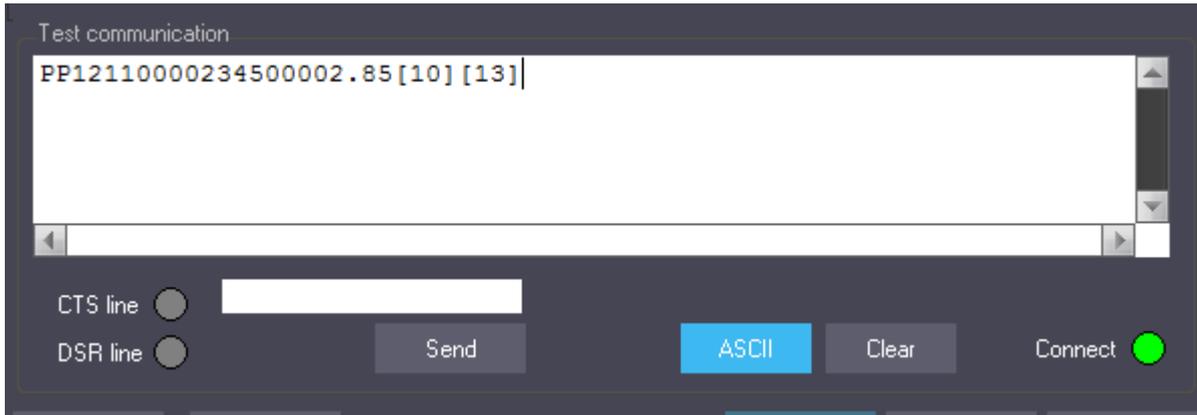


Click on field formula to edit string.

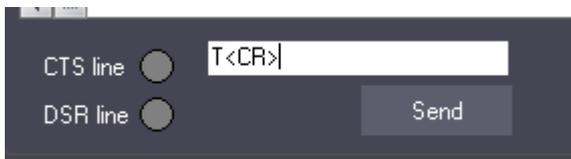


The function Creation Formula allows the user to create the formula to calculate the result.

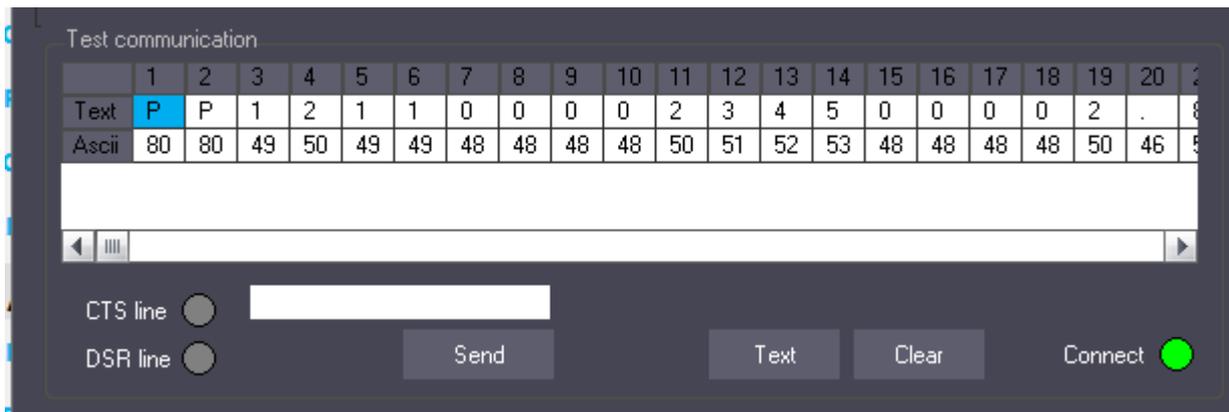
Test port



Test port panel allows to monitor the communication with the instrument.
When the Connect is highlighted the serial port is ready to receive or send data.



The Send button allows to send a message to the instrument.
CTS and DSR lines will be highlighted when the status is high.



The ASCII allows to swap the panel for easier the identification of fields.

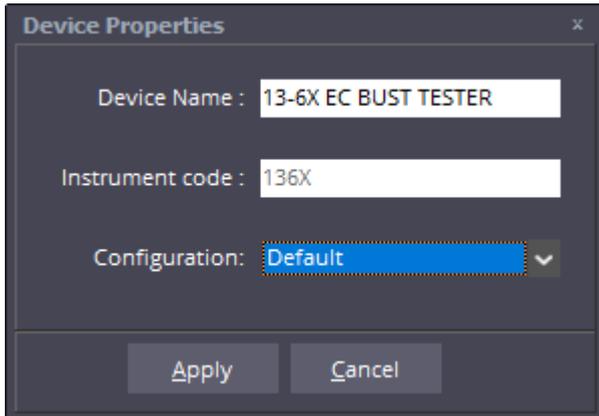
Rename

The default description can be changed to easier the identification

Delete

Once the instrument is deleted from the active list can be restored running again the procedure [Add device](#)

Device Properties



Device Properties

Device Name : 13-6X EC BUST TESTER

Instrument code : 136X

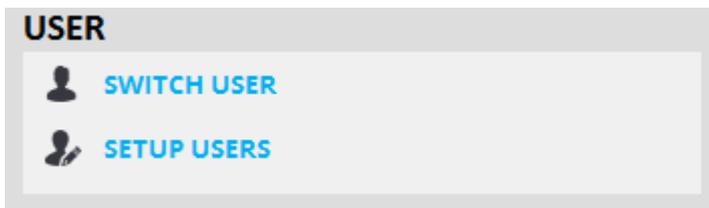
Configuration: Default

Apply Cancel

It allows to change the description, view the instrument code and for some device change the configuration. The configuration can be change in case the device has custom firmware or special settings.

The drop down list changes in accord of the instrument selected

User



USER

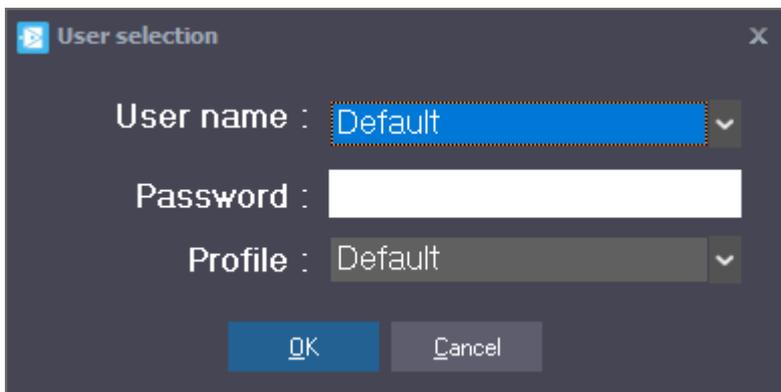
SWITCH USER

SETUP USERS

[Switch User](#)

[Setup users](#)

Switch User



User selection

User name : Default

Password :

Profile : Default

OK Cancel

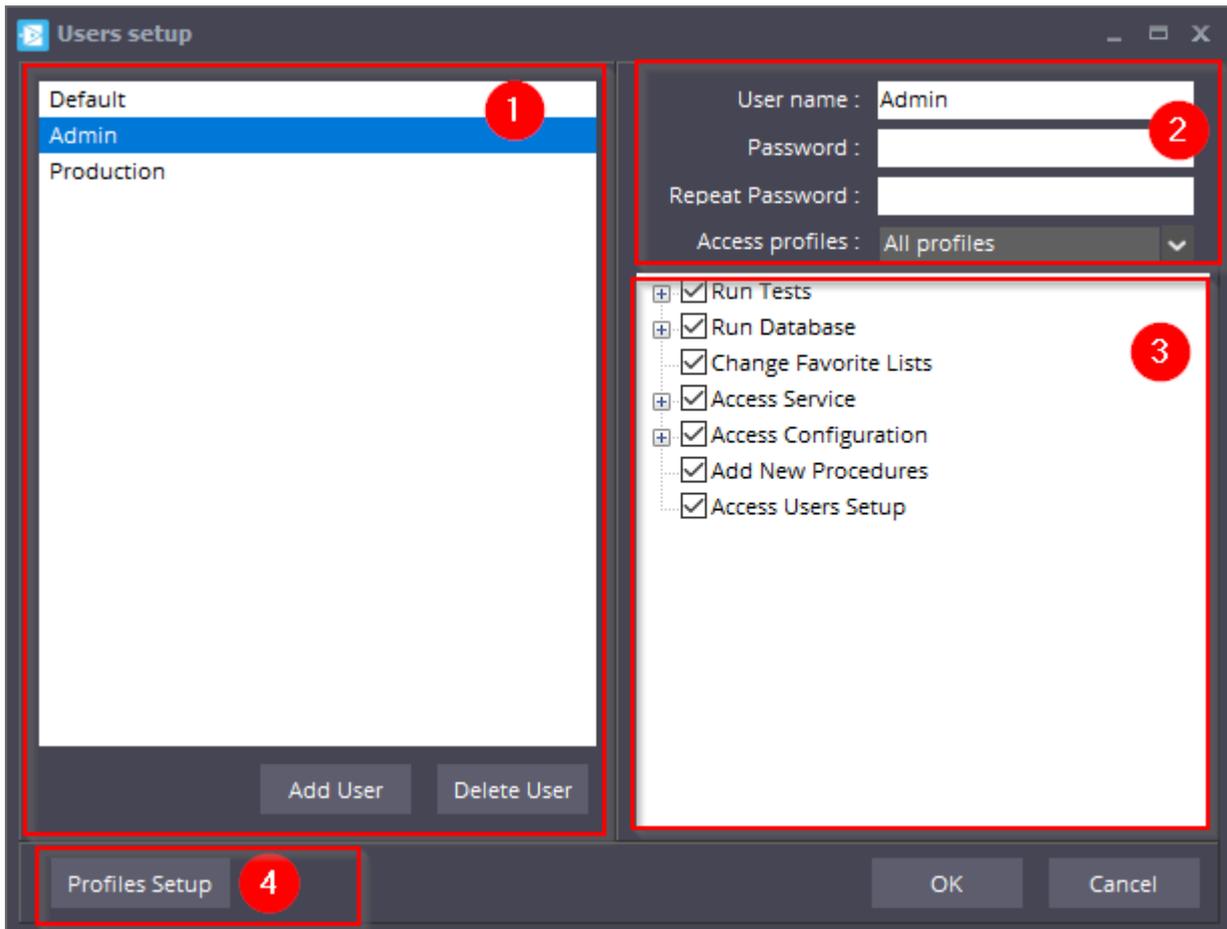
The window User Selection allows to select the user, enter the password and select profile to access. The window is automatically showed when the software starts.

NOTE:

If there are no users the window is not showed.

If there are no profile the list profiles is disabled.

Setup users



The window Setup Users allows to create/delete/edit the users and choose the level of permission.

1. [List Users](#)
2. [Details](#)
3. [List Permissions](#)
4. [Profile Setup](#)

Details

List Permissions

List Users

The list of the user is showed, click on the user name to see the [Details](#) and the [List Permissions](#)

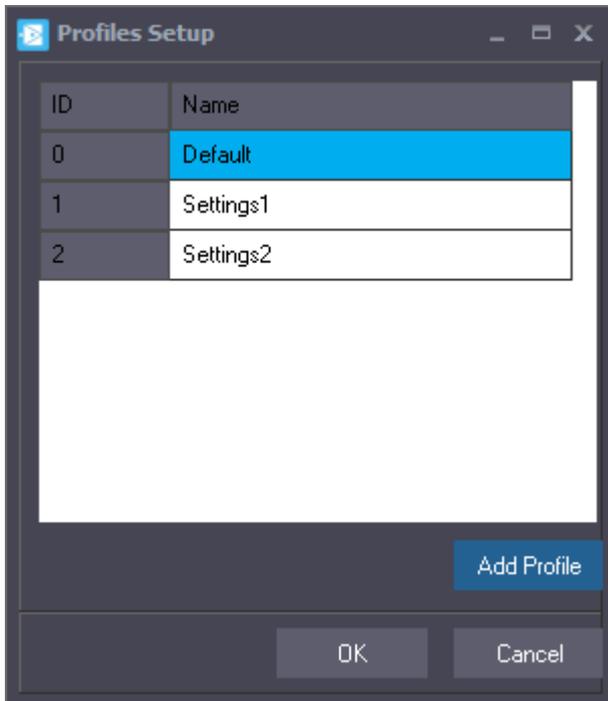
Add user

It allows to add a new user

Delete user

It allows to delete the selected user

Profile Setup



It allows to see all the profile created.
Click on the profile to rename it.

Note:

It's not possible delete a profile

Add Profile

It allows to create a new profile

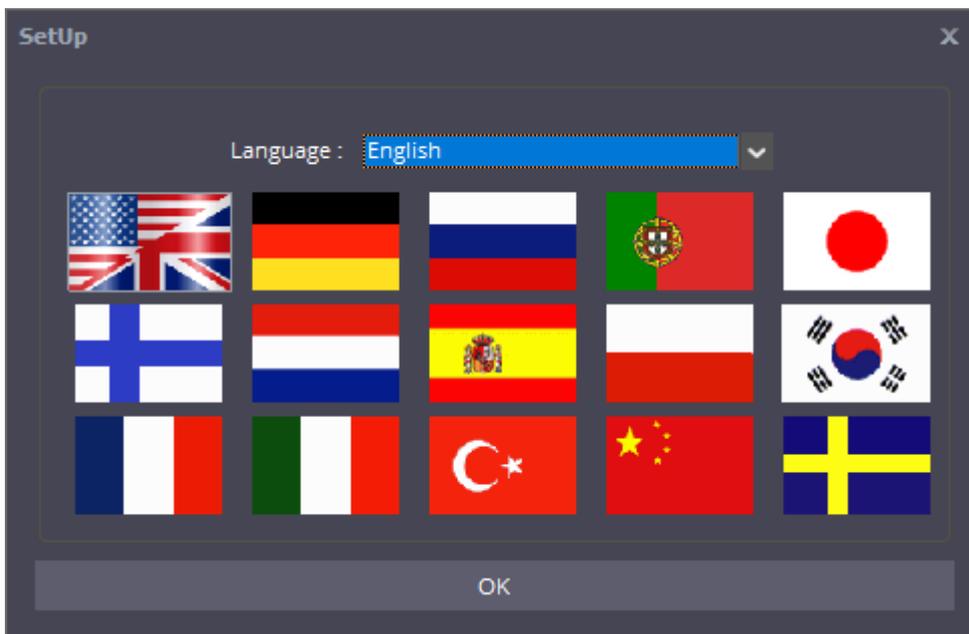
Configuration



[Set Program Language](#)

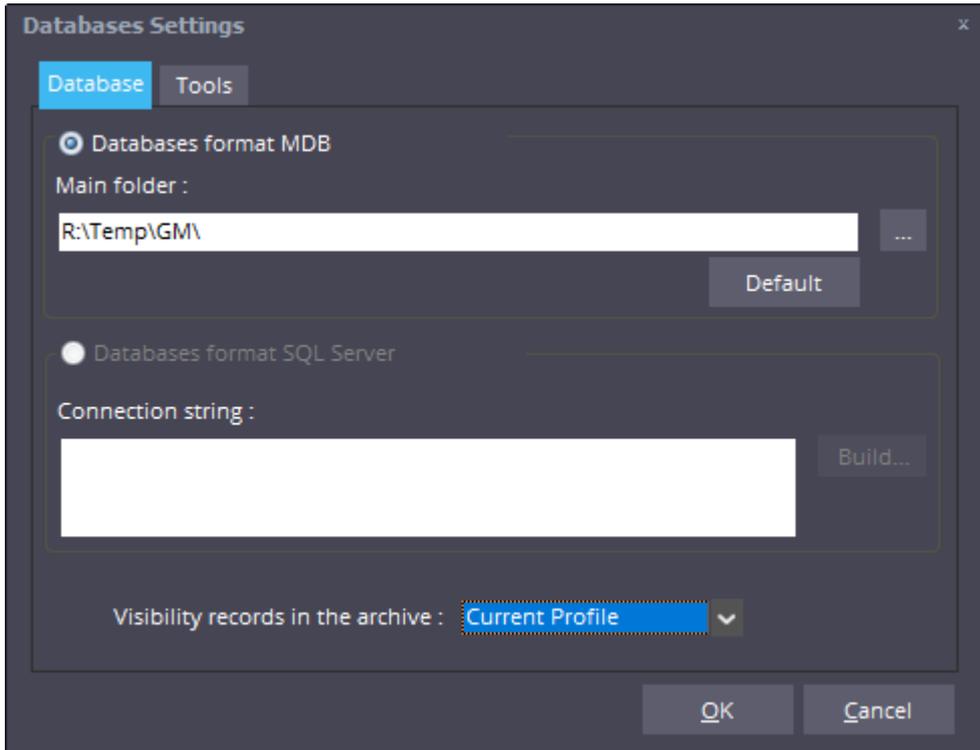
[Environment options](#)

Set Program Language



It allows to change the language used in the software

Database



It allows to change the folder where the software will save all the data.

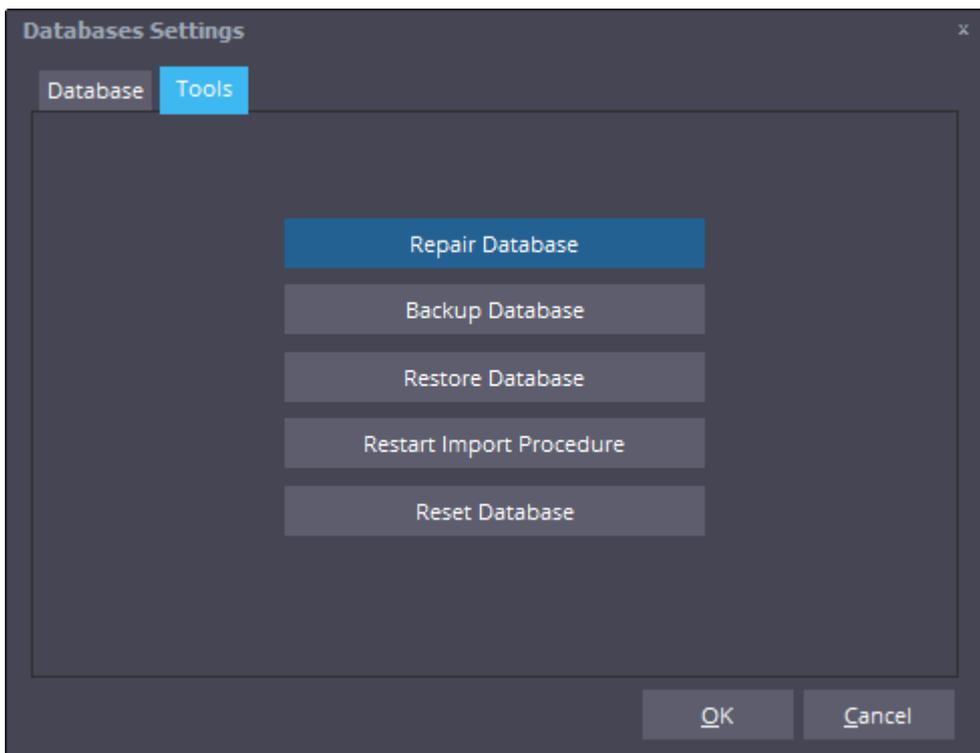
Selecting Default the folder will be changed into:
{commonappdata}\GraphMaster
(usually C:\ProgramData\GraphMaster)

The drop list visibility allows to choose how the database is filtered:

All	All users and profiles share the same database
Current Profile	The database shows only the tests collected with the profile selected
Current Profile	The database shows only the tests collected by the user selected
Current Profile	The database shows only the tests collected with the profile selected by the user selected

The setting has effect also on the old tests acquired and it can be changed in any moment.

Tools



Repair Database

It allows to repair a corrupted database.

Backup Database

It allows to create a copy of the database folder.

Backup Database

It allows to create a copy of the database folder.

Restore Database

It allows to restore a previous version of the database folder.

The function will run automatically a "Reset Database" before copy the backup database in the current folder.

Restart Import Procedure

It allows to start again the procedure to import the data from an old version

Reset Database

It allows to clean the database folder.

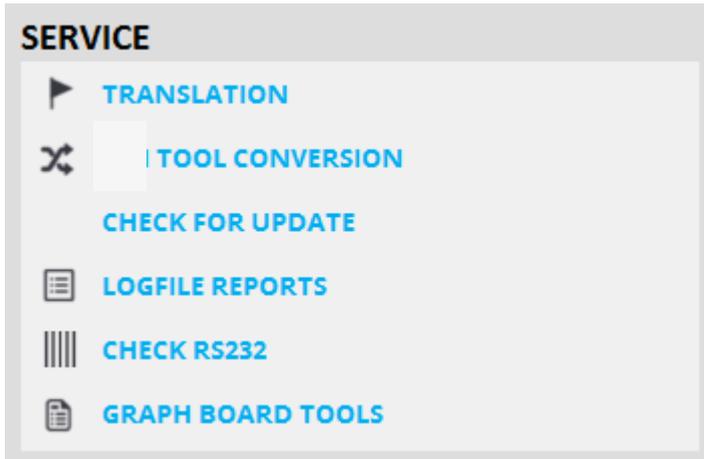
Note

The database are not deleted the database folder is renamed adding the _BAKx string where the x is a progressive number.

Example

If the database folder is "c:\GraphMasterDATA" the first time will be renamed in "c:\GraphMasterDATA_BAK1" the second time "c:\GraphMasterDATA_BAK2"

Service



[Translate](#)

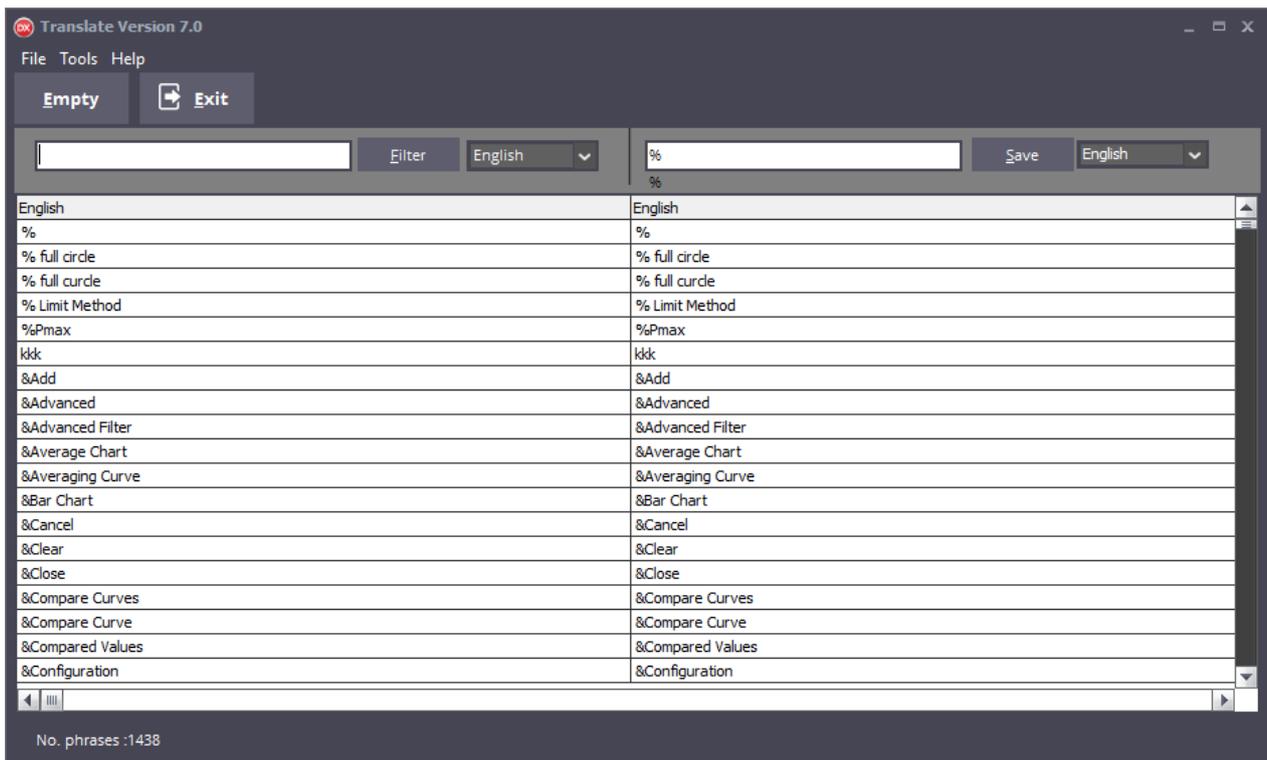
[Tool conversion](#)

[Check for update](#)

[LogFile reports](#)

[Graphboard tools](#)

Translate



The Translate software allows the user to modify all the phrases on the software.

To change the phrase, select the language to change on the pull-down menu near the Save button (right side) and click on the phrase to modify.

On the edit box near the Save button (right side) input the new phrase and press Enter to confirm.

To filter the list of the phrases, select the language to filter in the pull-down menu near the Filter button (left side). Input the filter-key in the edit box near the Filter button (left side), and then press Enter to filter.

Click on the Empty icon on the toolbar or choose the Empty option under the Tools menu to show just the phrases

without translation of selected language (right side).

When you have translated some or all the words, please send by email the file, **Traslate.mdb** to Fibro System, and we will incorporate your translations into the CD ROMs that we distribute.

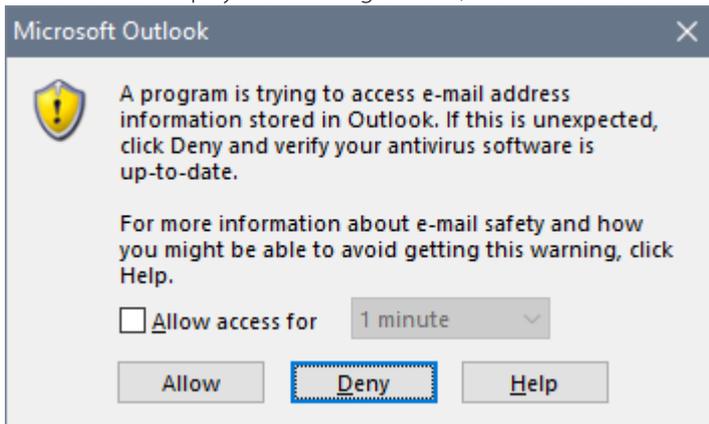
Select Open Folder Translate.mdb under Tools menu to find the file translate.mdb.

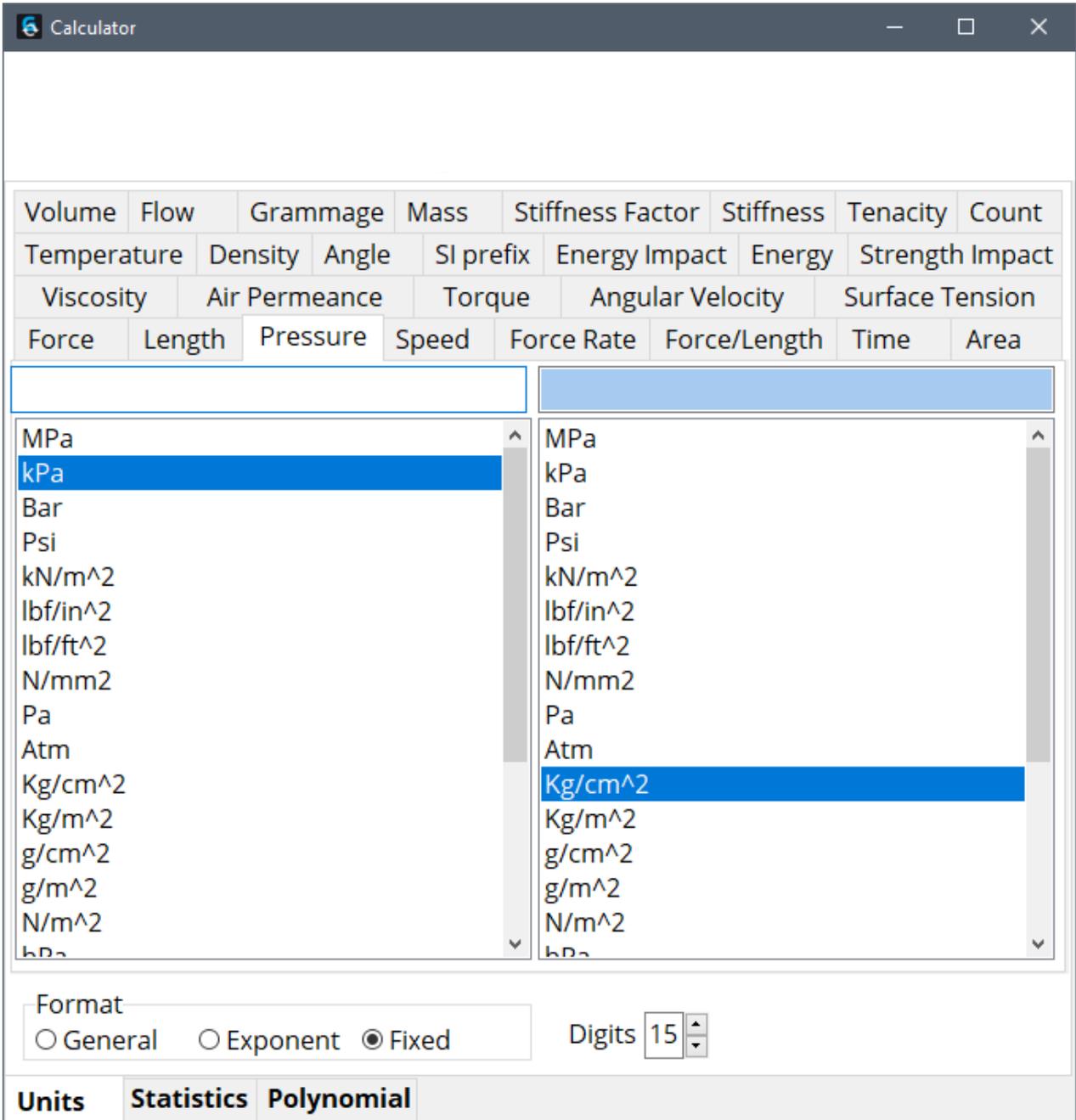
If you have any difficulties, please contact Fibro System.

If the PC has an internet connection with Outlook configured, you can select Send under the Tools menu to create automatically an e-mail.

Note:

If the software displays the message below, select Yes to send the file.





- Select the unit on top tabs
- Select the input unit on the left box
- Input the value on the top left box
- Select the output unit on the right box
- The output value is automatic update on the blue box on the top right.
- Format allows to change the format of the output string:

General

General number format. The value is converted to the shortest possible decimal string using fixed or scientific format. Trailing zeros are removed from the resulting string, and a decimal point appears only if necessary. The resulting string uses fixed point format if the number of digits to the left of the decimal point in the value is less than or equal to the

specified precision, and if the value is greater than or equal to 0.00001. Otherwise the resulting string uses scientific format, and the Digits parameter specifies the minimum number of digits in the exponent (between 0 and 4).

Exponent

Scientific format. The value is converted to a string of the form "-d.ddd...E+dddd". The resulting string starts with a minus sign if the number is negative, and one digit always precedes the decimal point. The "E" exponent character in the resulting string is always followed by a plus or minus sign and two digits. The total number of digits before the exponent in the resulting string is given by the Digits parameter (between 1 and 15).

Fixed

Fixed point format. The value is converted to a string of the form "-ddd.ddd...". The resulting string starts with a minus sign if the number is negative, and at least one digit always precedes the decimal point. The number of digits after the decimal point is given by the Digits parameter—it must be between 0 and 15. If the number of digits to the left of the decimal point is greater than the specified precision, the resulting value will use scientific format.

Limit Low	Limit High	Target
15	25	20

1	54.00
2	5.500
3	0.005000
4	4.554
5	55.54

Count	5
Average	23.919888
SD	28.2439344773833
CV%	118.077202022782
Max	55.54
Min	0.005
Range	55.535
IC95%	24.7564452039944
IC99%	32.5354840758037
Median	5.5
2Sigma	56.4878689547666
Cp	0.381286588149365
CpL	0.762573176298731
CPU	0.762573176298731
Cpk	0.762573176298731
LSI	15

Enter all the values on the top box separate from any chars, except 0123456789e-+.,
 Press F5 to see the statistics values on the right side and all values on the left side.
 Some statistic calculates require the limits and the target values.

Polynomial

2
3
5
8

Order Clear [F7]
Update [F5]

	X	Y
1	1	2
2	2	3
3	3	5
4	4	8
5	5	11
6	6	15
7	7	15
8	8	19
9	9	21

Correlation :

Formula :

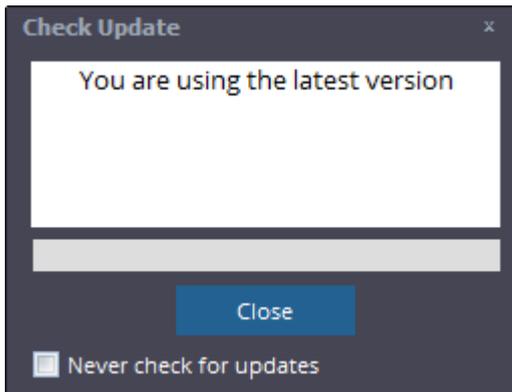
Digits

Chart

Units Statistics **Polynomial**

Enter all the values on the top box one for each line
Select the order of the polynomial and press F5

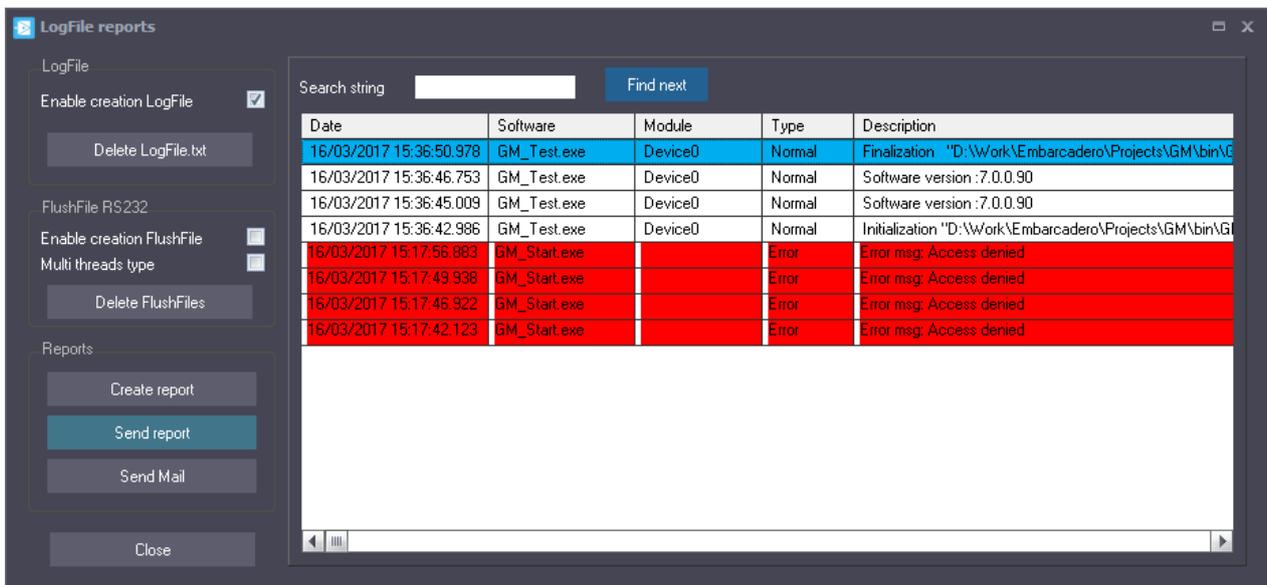
Check for update



The Check for updates function allows the user to check if the latest version is running. This function required an internet connection. Firewall settings or antivirus can disable this function.

By default the software check automatically every 14 days for new updates, check the option to disable the function.

LogFile reports



LogFile reports allows to enable the creation of a chronology of the activities to easier the identification of the problems.

The activities are show on the grid with different colors in according of the type (normal, error, warning, hint, debug).

The function Search allows to enter a string and highlight the cell contained the string.

Click to Find next to move the cursor at the next row contained the string.

Enable creation LogFile

If it's checked the LogFile.txt will be created.

Delete LogFile

Delete the LogFile.txt

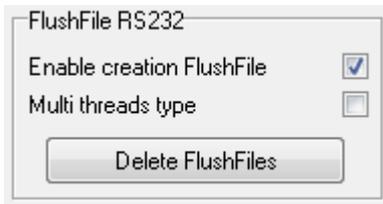
If the LogFile.txt doesn't exist, the function is disabled.

Create report bugs

Creates a compressed file with all bug information

Send Mail

Creates a compressed file with all of the information and automatically opens outlook to send the mail.



The function FlushFile allows saving all strings received from serial port into a text file.

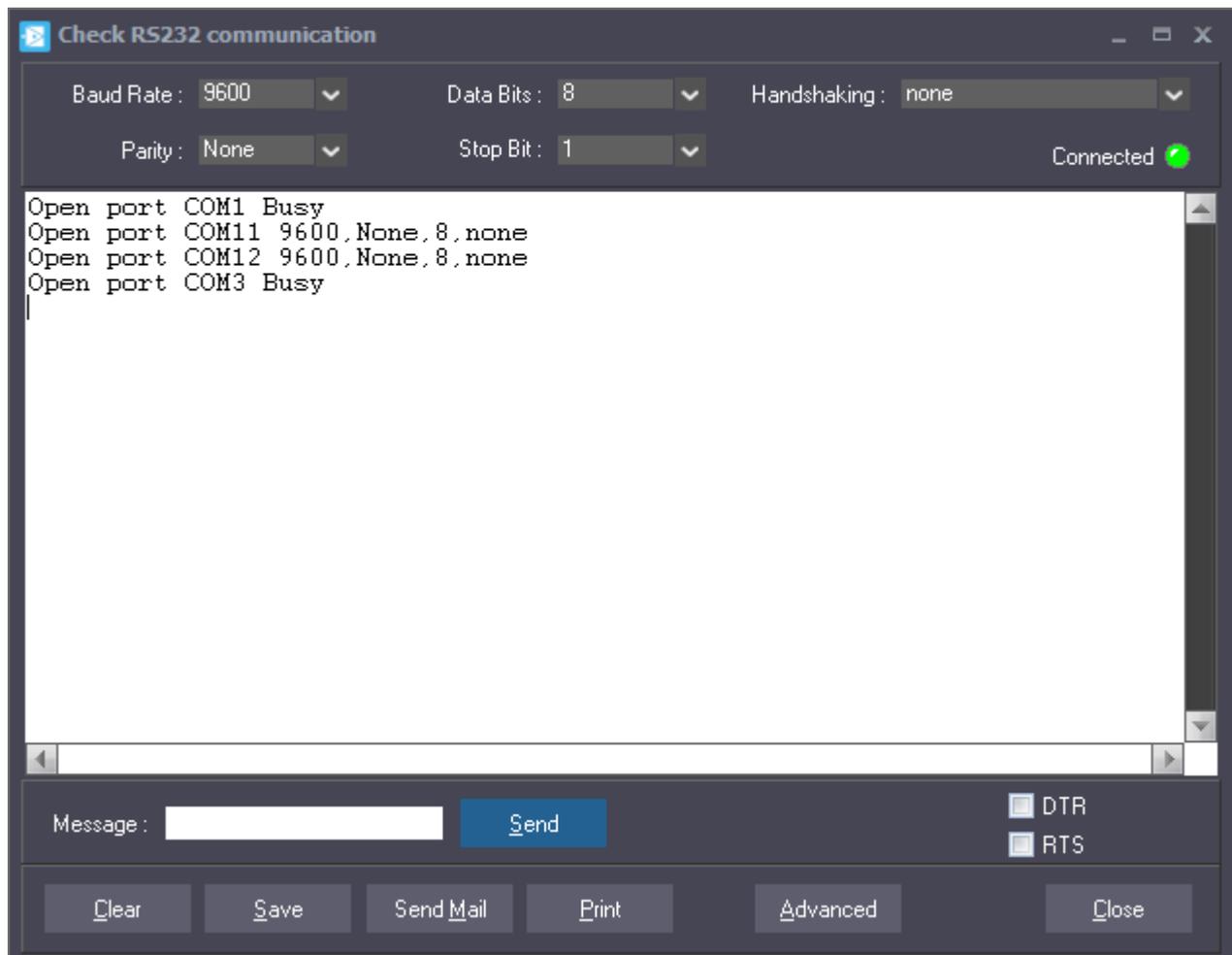
Activated the function Multi threads type to reduce the logging delays.

Remove the function Multi threads type to reduce the use of the resources.

NOTE

When the GraphMaster Diagnostic is running, both LogFile and Flush File are always enabled.

Check RS232 communication



It allows to read and write in all serial port installed on the PC.

The box Message allows to compose the message to be send to all the open ports. See [RS232 messages](#) for more information.

DTR

When the property is checked the DTR signal is activated

RTS

When the property is checked the RTS signal is activated

Clear

It cleans the screen

Save

It allows to create a text file with all the strings showed on the screen

Send Mail

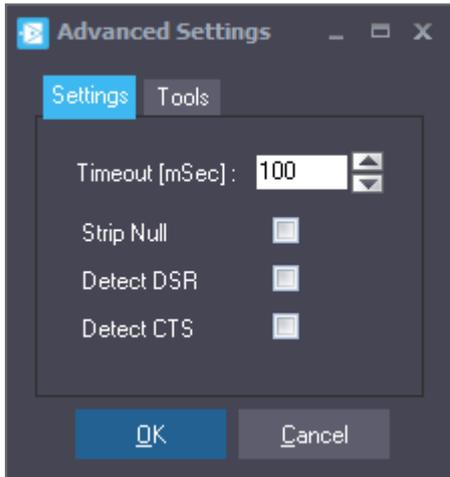
It allows to send to Fibro System a text file with all the strings showed on the screen

Print

It allows to print all the strings showed on the screen

[Advanced Settings](#)

Settings



The timeout allows to set the waiting time before the string is written on screen.

Strip Null

Specifies whether null bytes are discarded. If the property is checked, null bytes are discarded when received.

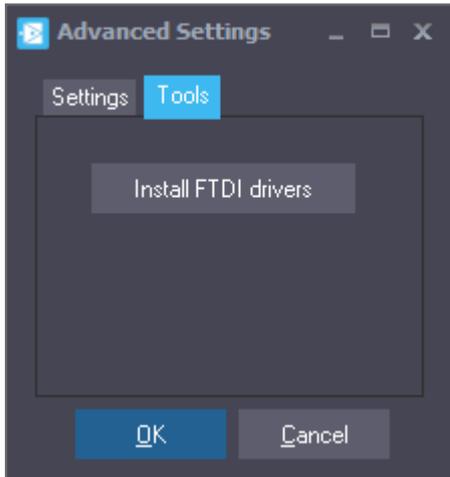
Detect DSR

If the property is checked a string is written when the DSR signal state changed.

Detect DSR

If the property is checked a string is written when the CTS signal state changed.

Tools

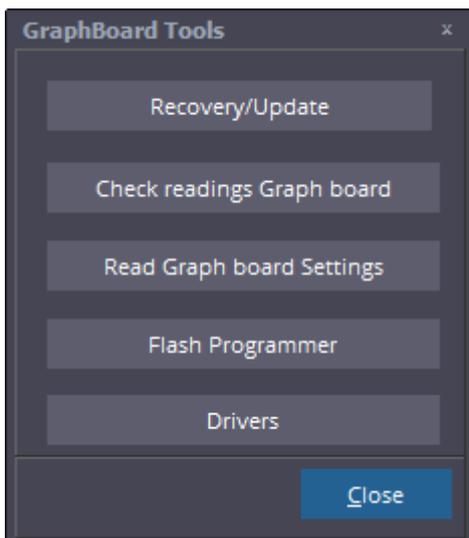


In order to communicate correctly with Fibro System instrument through USB the FTDI drivers must be installed on the machine.

Most of the time the drivers are part of Windows or they can be installed during the installation procedure.

"Install FTDI drivers" allows to re-install the drivers in rare case they are corrupted or missing.

Graphboard tools



[Recovery/Update](#)

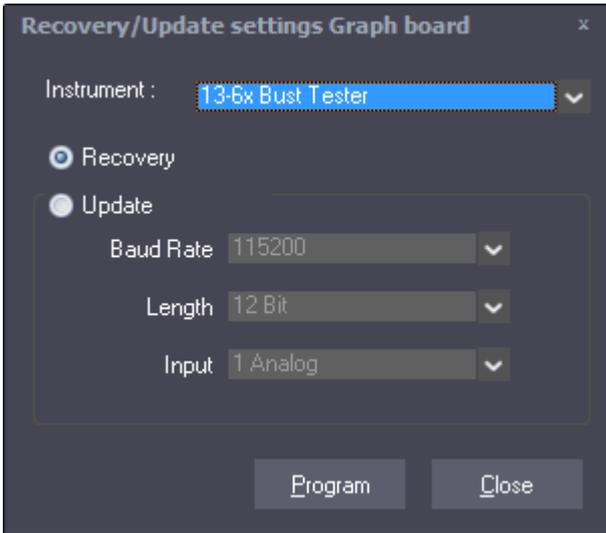
[Check readings Graph Board](#)

[Read Graph board Settings](#)

Flash Programmer

Drivers

Recovery/Update



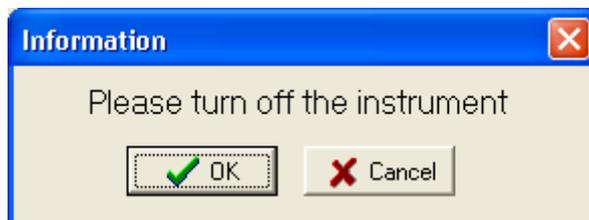
There are two options:

- Recovery** The board will be set in according of the default settings of the instrument
- Update** The board can be set with different parameters

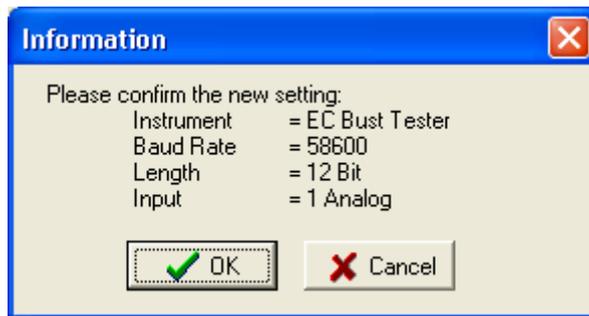
Click on Program button to confirm.

Table default settings

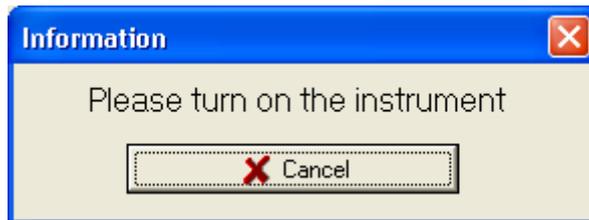
<i>Item</i>	<i>Description</i>	<i>Baud rate</i>	<i>Length</i>	<i>Input</i>	<i>Note</i>
13-6x	Bust Tester	115 200	12 Bit	1 Analog	
75-25	Bending Tester	115 200	12 Bit	1 Analog	
17-60	Crush Tester	115 200	12 Bit	1 Analog	
84-76	Tensile Strength	115 200	12 Bit	1 Analog + Counter	
17-76/77	Compression Tester	115 200	12 Bit	1 Analog + Counter	
17-35	Board Quality Tester	19200	13 Bit	2 Analog	Not used
49-56	Micrometer	115 200	12 Bit	1 Analog	Not used
84-58	Horizontal Tensile Tester	115 200	12 Bit	1 Analog	
17-35	Board Quality Tester	115 200	12 Bit	1 Analog	



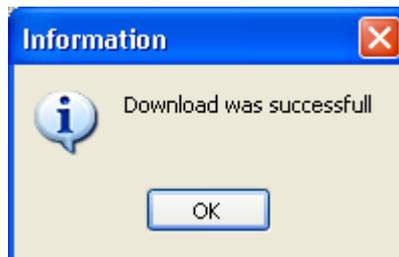
Turn OFF the instrument and confirm the message



Check the parameters and confirm



Turn ON the instrument to download the configuration

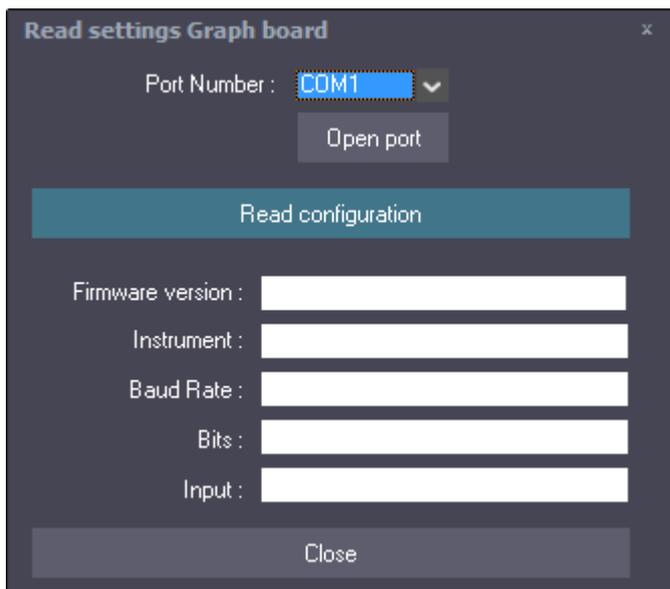


Wait for the confirmation message

Check readings Graph Board

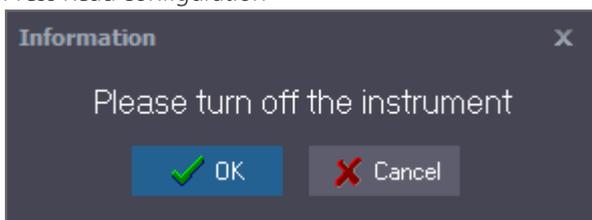
The function should be used only by Fibro System operator or under its supervision.
The instructions are cover by a Technical documentation

Read firmware configuration

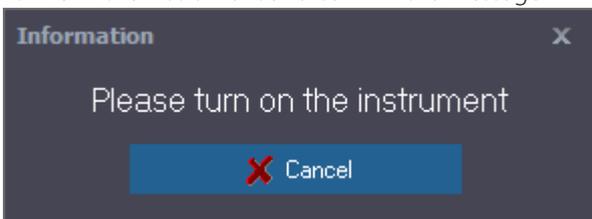


Set the serial port where the instrument is connected and press Open port.

Press Read configuration

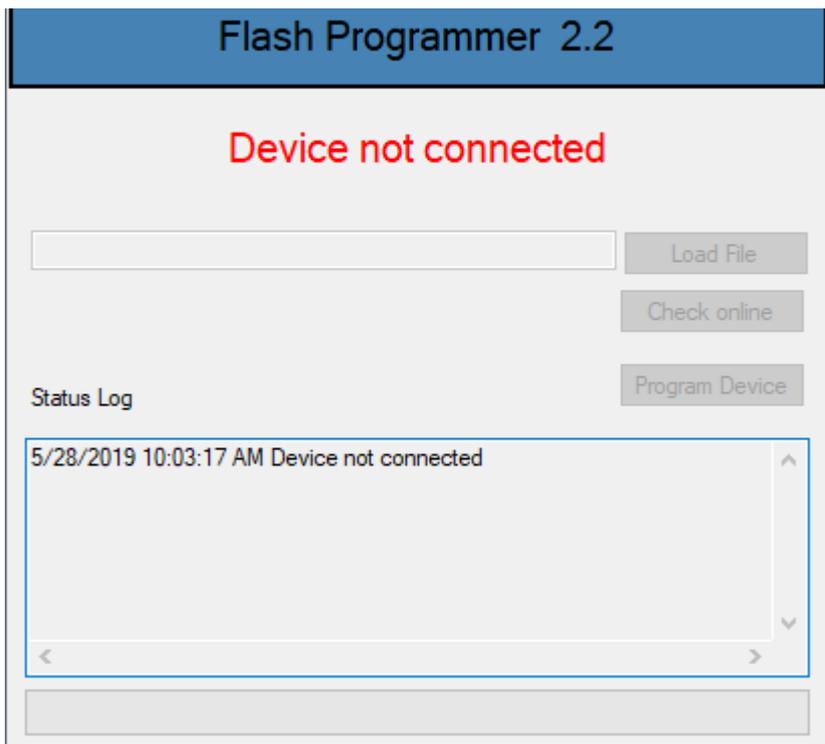


Turn OFF the instrument and confirm the message

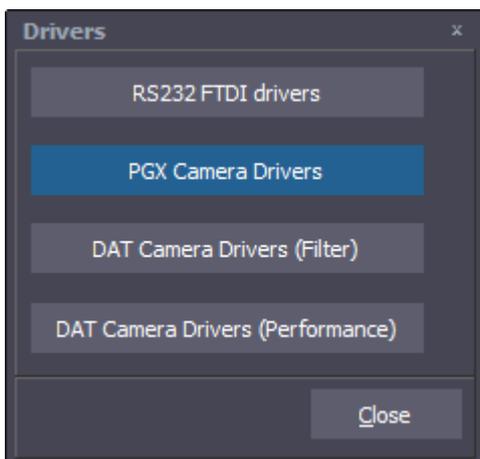


Turn ON the instrument to read the configuration

Flash Programmer



Drivers



Information



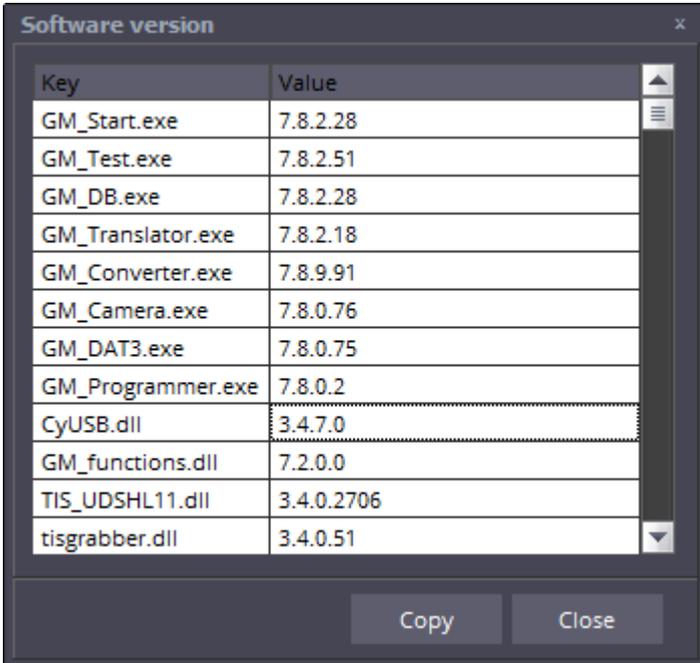
GraphMaster Manual

It allows to open the printable manual using default PDF viewer.

Visit TMI web site

It allows to open the TMI web site using default browser.

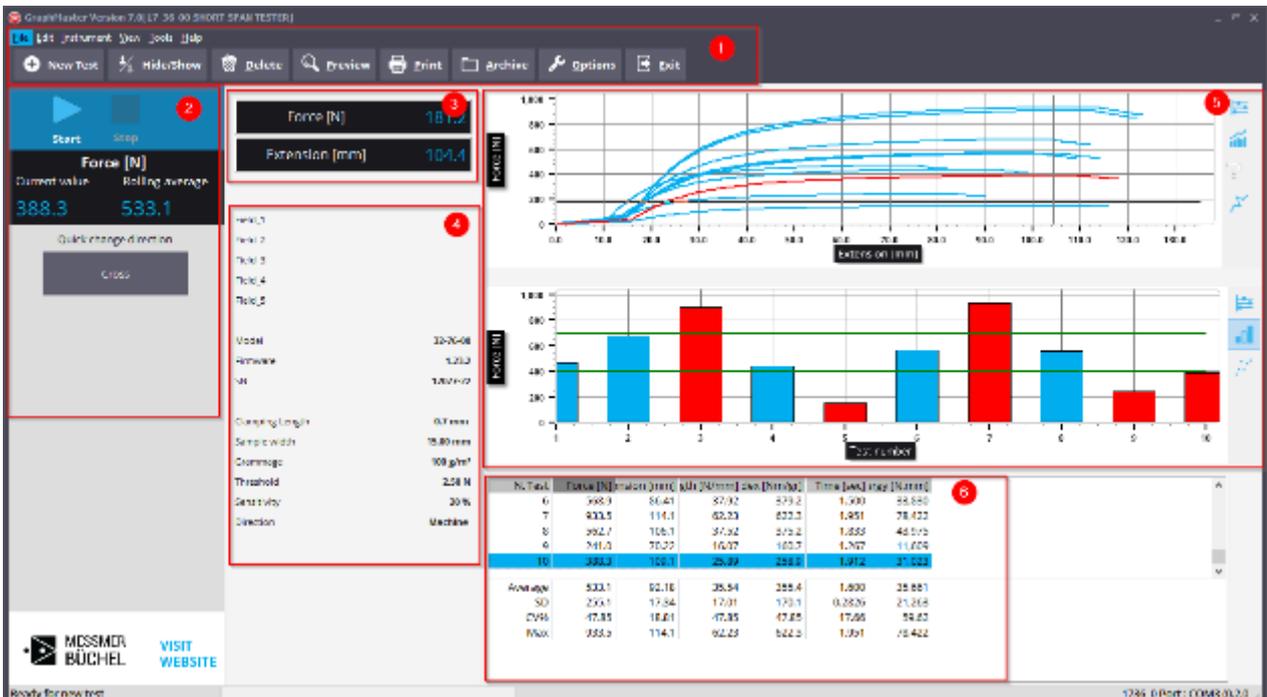
Software version



Key	Value
GM_Start.exe	7.8.2.28
GM_Test.exe	7.8.2.51
GM_DB.exe	7.8.2.28
GM_Translator.exe	7.8.2.18
GM_Converter.exe	7.8.9.91
GM_Camera.exe	7.8.0.76
GM_DAT3.exe	7.8.0.75
GM_Programmer.exe	7.8.0.2
CyUSB.dll	3.4.7.0
GM_functions.dll	7.2.0.0
TIS_UDSHL11.dll	3.4.0.2706
tisgrabber.dll	3.4.0.51

It allows to see all the software versions, folders used by the software and some hardware information.

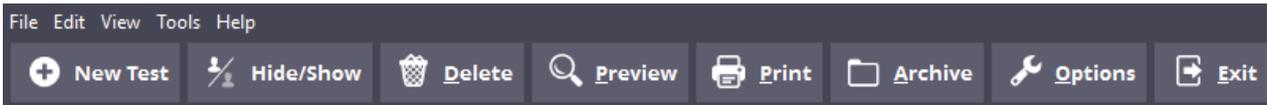
GraphMaster Test



1. [Main Menu](#)

2. [Control section](#)
3. [Display section](#)
4. [Parameters section](#)
5. [Graph section](#)
6. [Data section](#)

Main Menu



The toolbar can be customized

See [ToolBar](#) for more information

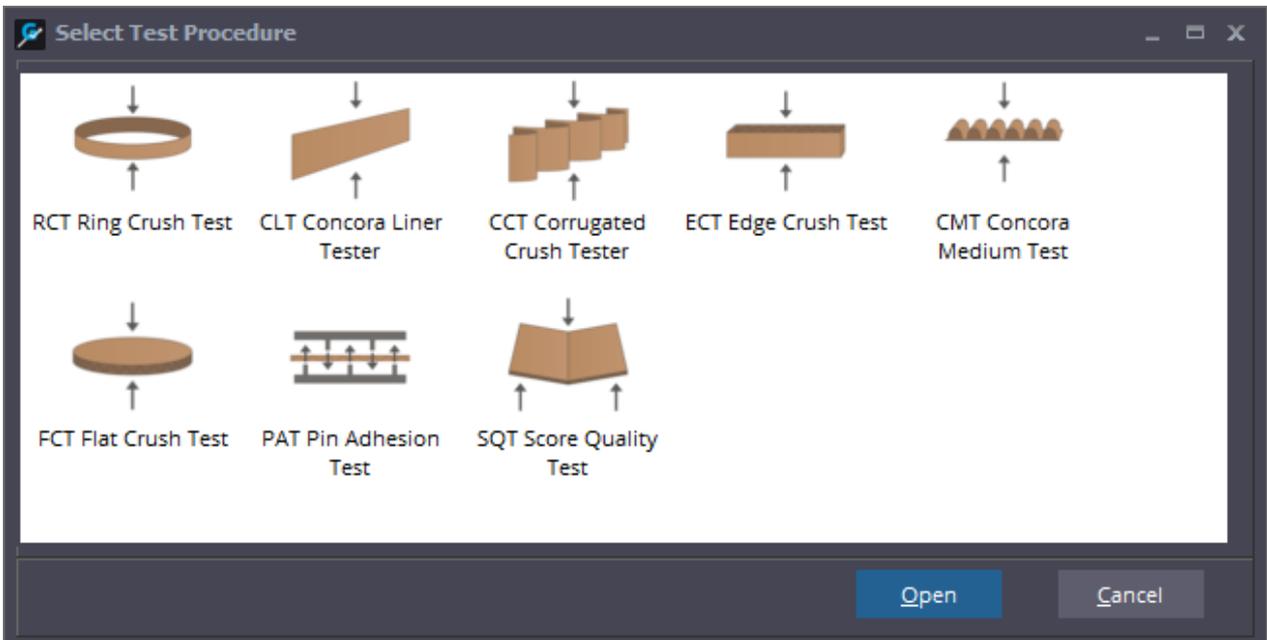
The actions change in accord of the instrument selected

New Test

Click on the New Test icon on the toolbar or choose the New Test option under the File menu to save the actual session and to start a new one.

Accord of the instrument selected the function can be launched automatically when a new series begin on the instrument

Open Procedure



It allows to select the procedure

The number of procedures changes in accord of the instrument selected

Load Master

It allows recalling a test previously saved and compare it with the current session.

See [Compare Statistics](#) for more information

Master Values

Test	Pressure [MPa]	Bending [mm]	Volume [cm ³]	Index [kPa.m2/gr]	Time [sec]	Energy [J/m ²]	re C
1	0.4650	0	13.00	4.650	0.003185	4,252	
2	0.4410	0	11.00	4.410	0.003164	3,376	
Average	0.4530	0	12.00	4.530	0.003175	3,814	
SD	0.01697	0	1.414	0.1697	0.0000146	620.1	
CV%	3.75	0.00	11.79	3.75	0.46	16.26	
Max	0.4650	0	13.00	4.650	0.003185	4,252	
Min	0.4410	0	11.00	4.410	0.003164	3,376	

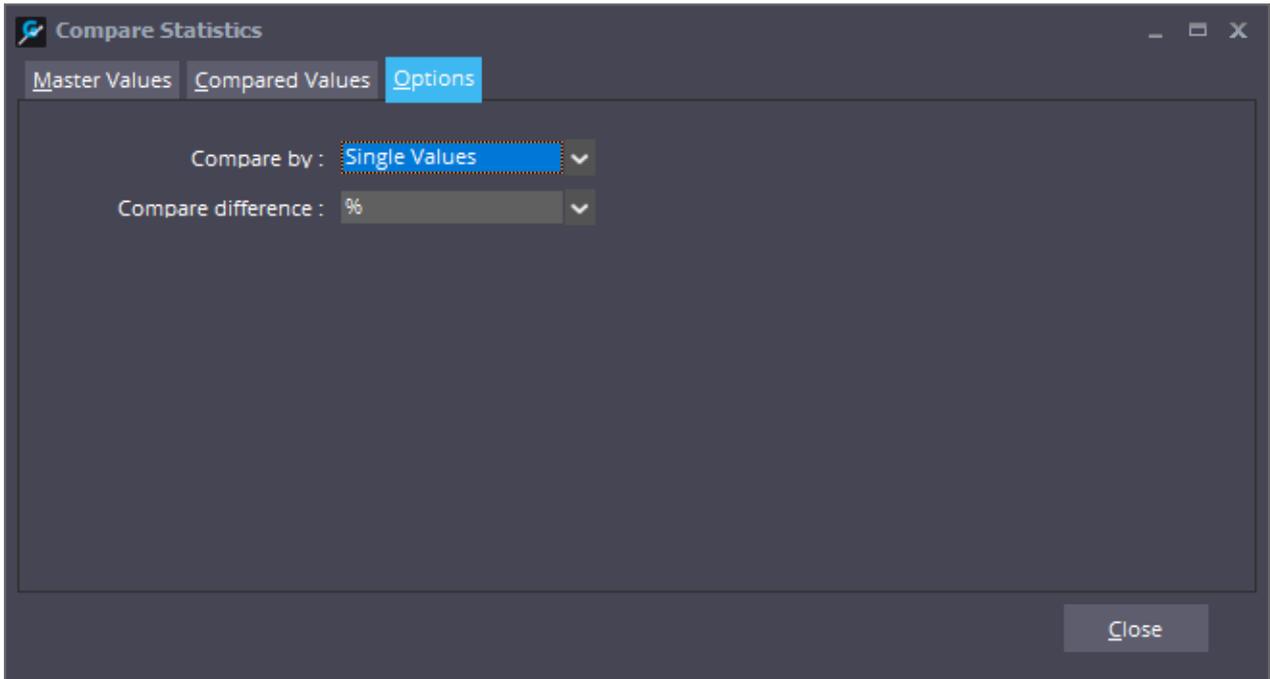
It shows the results of the Master series, included the statistics.

Compared Values

Test	Pressure [%]	Bending [%]	Volume [%]	Index [%]	Time [%]	Energy [%]	sure
1	-4.9	-	-23.1	-4.9	-49.9	-26.8	
2	12.7	-	-9.1	12.7	-49.7	3.2	
Average	3.64	-	-16.67	3.64	-49.83	-13.51	
SD	129.17	-	-100.00	129.17	-79.68	-57.81	
CV%	121.11	-	-100.00	121.11	-59.50	-51.23	
Max	6.88	-	-23.08	6.88	-49.93	-18.08	
Min	0.23	-	-9.09	0.23	-49.74	-7.75	

It shows difference of values between the current session and the master session.
The units and the method of comparison can be changed in Options.

Options



It allows changing the behavior of the comparison.

Compare by

- Average The current values of the session will be compared with the average of the master.
- Single value Each values will be compared with the same of the master.

Compare difference

- Value The difference between the current and the master will be expressed in value
- % The difference between the current and the master will be expressed in %

Example

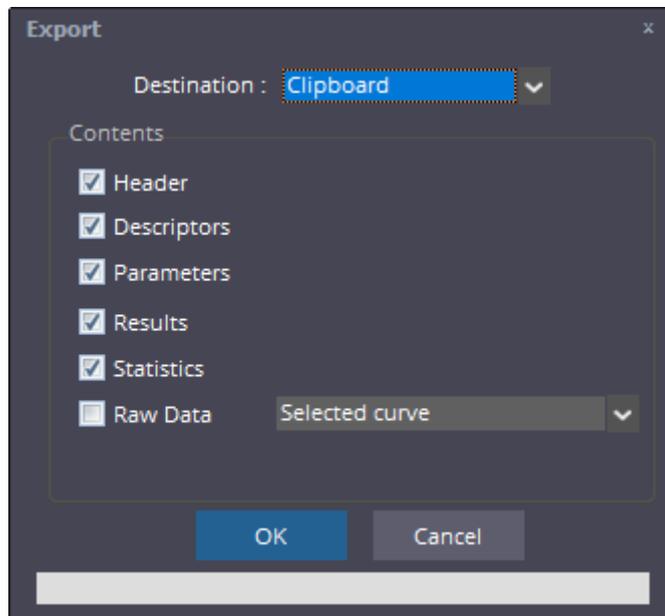
Current session	Values	10 N 11 N 12 N	
	Average	11 N	
Master session	Values	12 N 13 N 11 N	
	Average	12 N	
Compared statistics	Values	-2 N -1 N 0 N	Compare by = Average
	Average	-1 N	Compare difference = Value
Compared	Values	-2 N -2 N +1 N	Compare by = Single values Compare
	Average	-1 N	difference = Value

Compared	Values	-16.67 % -8.33 % 0.00 %	Compare by = Average Compare difference = %
	Average	-8.33 %	
Compared	Values	-16.67 % -15.38 % 9.09 %	Compare by = Single values Compare difference = %
	Average	-8.33 %	

Save As Master

It allows creating a Master file with all the information of the active session (values, Identification and limits).

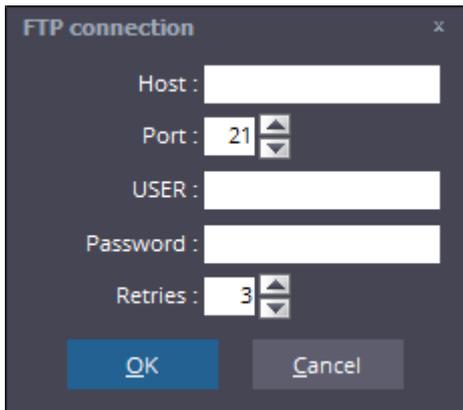
Export Data



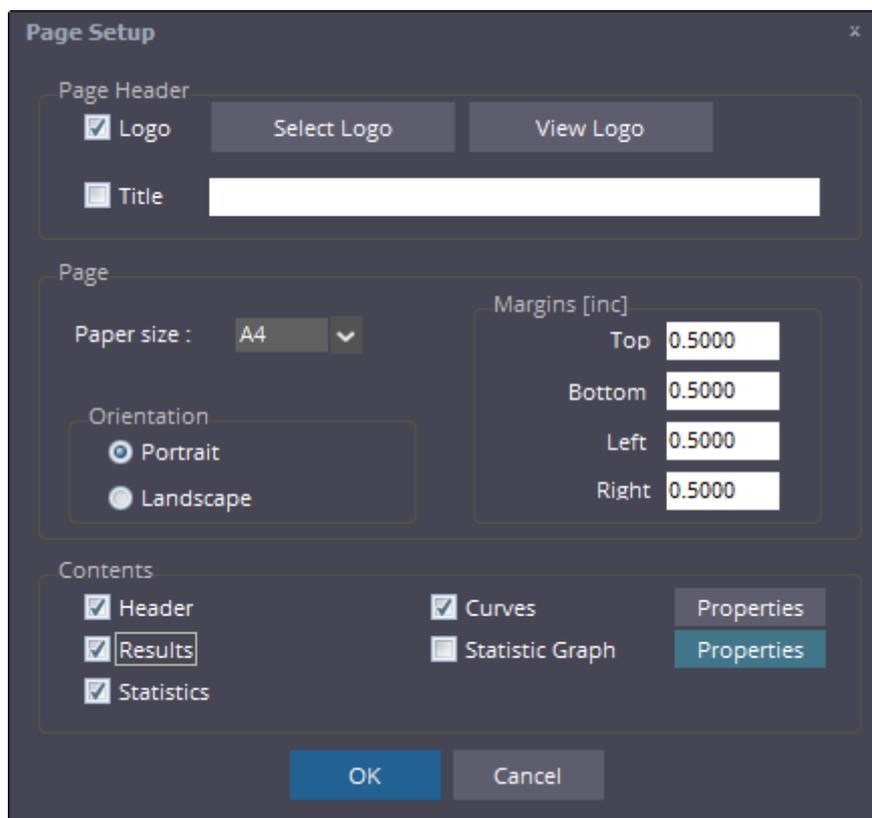
The Export box allows the export the data directly to a Clipboard, Excel or Text file. Copy to the Clipboard and paste into another Windows application which supports the Windows Cut & Paste or directly on the GraphMaster™ chart to compare the curves. Export the values directly to an Excel document to create your own graphs. Create a text file with all values divided by a TAB and CR chars.

The Raw data option is enable only if the instrument selected is compatible

FTP Setup



Page setup



The Page Setup function allows the user to customize the print report.

Logo allows you to insert a picture file into your report. Clicking the browse button will display a standard open dialog box.

Simply find the picture you wish to insert and click open.

Supported picture types are:

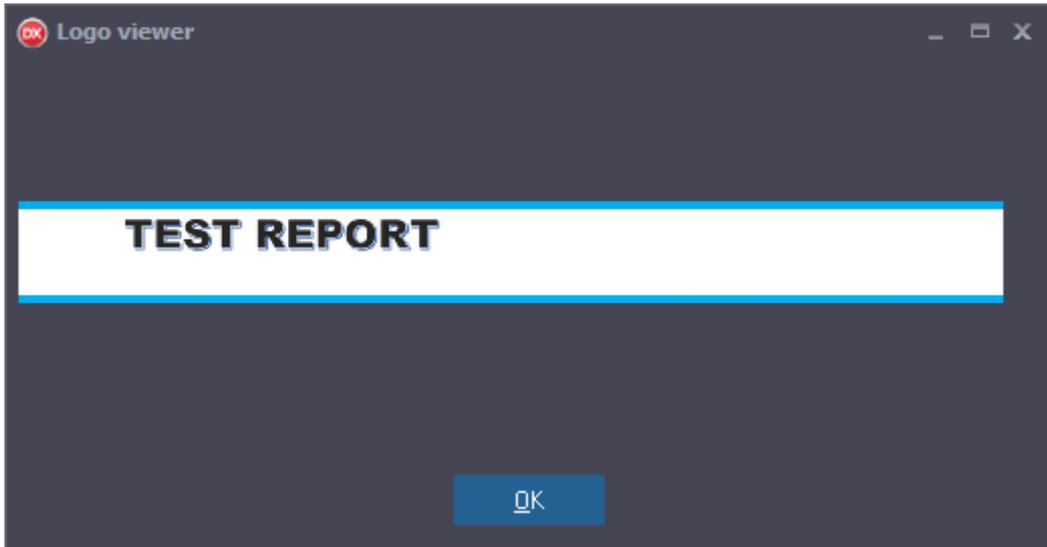
- Bitmaps (.bmp)
- GIF Images (.gif)
- JPG Images (.jpg)
- Metafiles (.wmf)
- Enhanced metafiles (.emf)
- Icons (.ico)

Title allows you to insert a phrase instead a picture into your report.

Select Properties to change the [Graph options](#) of the charts.

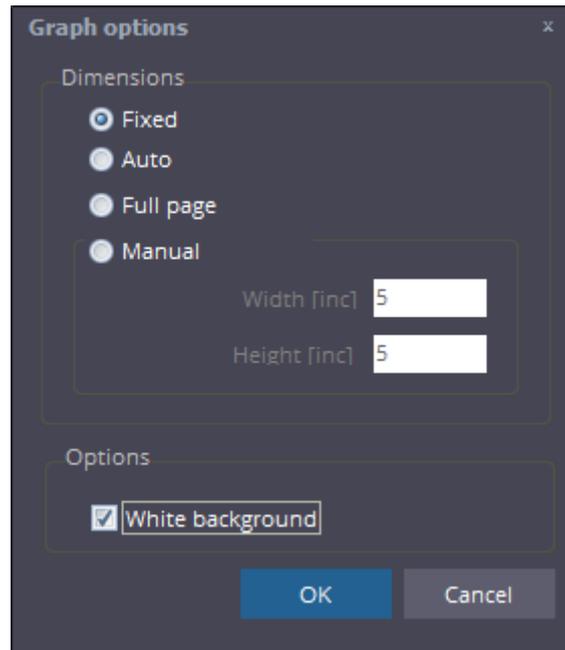
The Curves option is enable only if the instrument selected is compatible

View Logo



It allows to view the logo image selected

Graph options



It allows to change the dimensions of the chart printed.

Fixed

The dimensions are fixed

Auto

The chart dimensions will be changed to fit in the available space of the page

Full page

The chart will be printed in a new page

Manual

It allows to enter the chart dimensions.

Select White background to disable the selected color of the background in the printouts.

Preview

Click on the Preview icon on the toolbar or choose the Preview option under the File menu to see the print preview of the report.

See [Preview](#) for more information

Print

Click on the Print icon on the toolbar or choose the Print option under the File menu to print the report. A print dialog box is showed to allow the selection of the printer and the properties.

Create PDF

Click on the Create PDF icon on the toolbar or choose the Create PDF option under the File menu to create a PDF document of the report.

Exit

Click on the Exit icon on the toolbar or choose the Exit option under the File menu to close the GraphMasterPro software.

Parameters

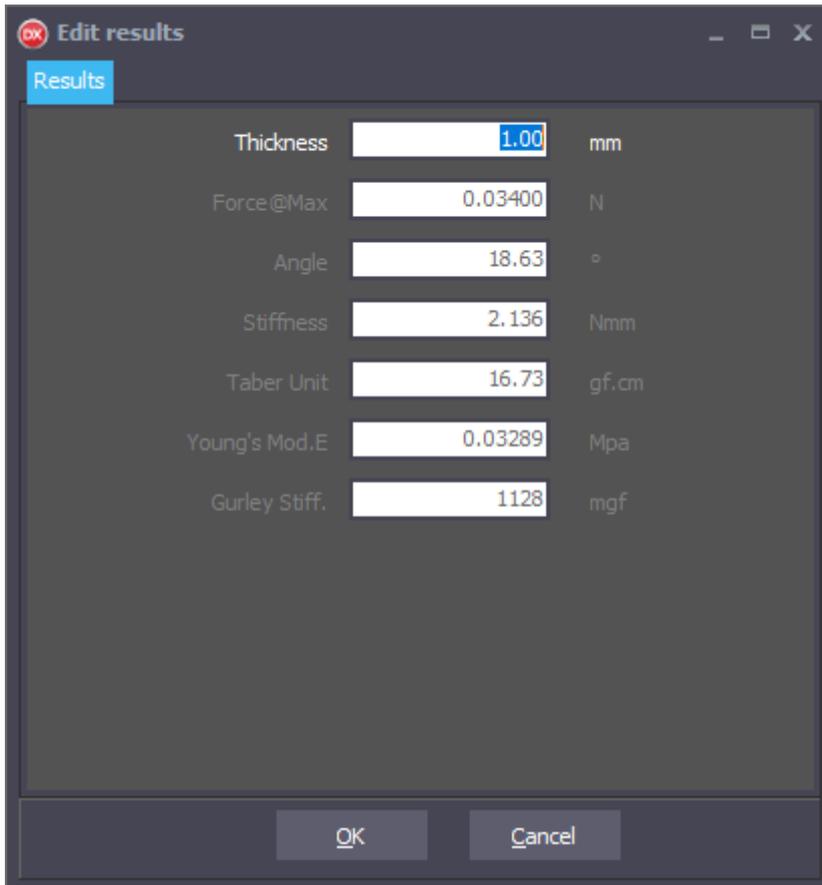
It allows to edit the identification and the parameters of the test during a series of test.

The window can be open with a double click on [Parameters section](#)

See [Parameters](#) for more information

The options change in accord of the instrument selected

Result



The screenshot shows a dialog box titled "Edit results" with a "Results" tab. It contains a list of parameters with input fields and units. The parameters and their values are:

Parameter	Value	Unit
Thickness	1.00	mm
Force@Max	0.03400	N
Angle	18.63	°
Stiffness	2.136	Nmm
Taber Unit	16.73	gf.cm
Young's Mod.E	0.03289	Mpa
Gurley Stiff.	1128	mgf

At the bottom of the dialog box, there are "OK" and "Cancel" buttons.

It allows to edit the results after the test is finished

The window can be open with a double click on record row of the [Data section](#)

The options change in accord of the instrument selected

Hide/Show

Click on the Hide/Show icon on the toolbar or choose the Hide/Show option under the Edit menu to exclude or included the selected result.

The hide values are excluded from the statistics and it is highlighted on the table.

N. Test	Thickness [mm]	Force@Max [N]	Angle [°]	Stiffness [Nmm]	Taber U
1	1.00	0.03400	15.93	2.136	
2	1.00	0.04700	15.95	2.953	
3	1.00	0.03500	16.00	2.199	
4	1.00	0.04900	19.26	3.078	
5	1.00	0.04000	16.00	2.513	
Average	1.00	0.04533	17.07	2.848	
SD	0.00	0.004726	1.897	0.2969	
CV%	0.00	10.42	11.11	10.42	
Max	1.00	0.04900	19.26	3.078	

Delete

Click on the Delete icon on the toolbar or choose the Delete option under the Edit menu to delete the selected test.
NOTE

- It is NOT possible to restore a deleted test
- When the test is interrupted or a full scale reading is detected during the test, the software automatically calls the Delete procedure.
- If you Delete a test on the instrument, it is NOT deleted on the software

Copy Graph

Click on the Copy graph icon on the toolbar or choose the Copy Graph option under the Edit menu to copy the graph to the clipboard and paste it into another Windows application which supports the Windows Cut & Paste.

The action is visible in accord of the instrument selected

Copy selected curve on clipboard

Choose the Copy selected curve on clipboard under the Edit menu to copy the curve on Clipboard.

The action is visible in accord of the instrument selected

Copy average curve on clipboard

Choose the Copy average curve on clipboard under the Edit menu to copy the average curve on Clipboard.

The action is visible in accord of the instrument selected

Instrument

The options available only for instrument that support remote control

Start

Start a new test

Stop

Interrupt a test

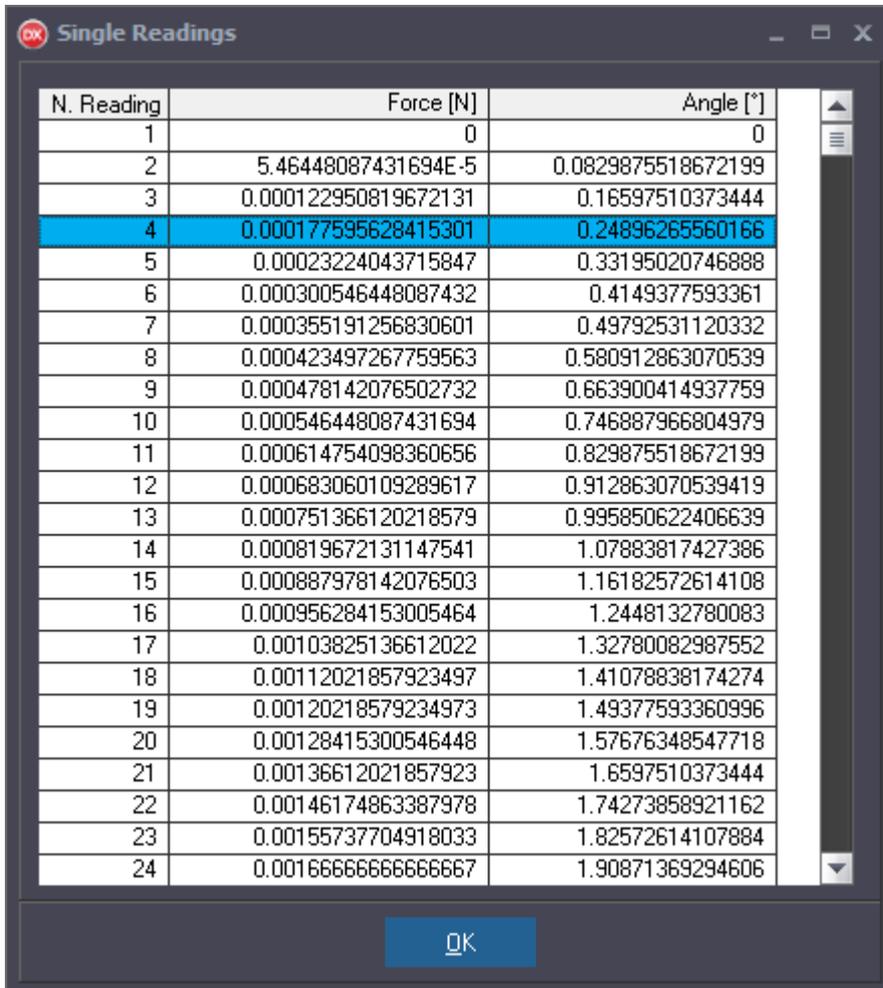
Retry

In case of communication error it allows to retry the operation

Restart

In case of communication error it allows to restart the remote system

Single Readings



N. Reading	Force [N]	Angle [°]
1	0	0
2	5.46448087431694E-5	0.0829875518672199
3	0.000122950819672131	0.16597510373444
4	0.000177595628415301	0.24896265560166
5	0.00023224043715847	0.33195020746888
6	0.000300546448087432	0.4149377593361
7	0.000355191256830601	0.49792531120332
8	0.000423497267759563	0.580912863070539
9	0.000478142076502732	0.663900414937759
10	0.000546448087431694	0.746887966804979
11	0.000614754098360656	0.829875518672199
12	0.000683060109289617	0.912863070539419
13	0.000751366120218579	0.995850622406639
14	0.000819672131147541	1.07883817427386
15	0.000887978142076503	1.16182572614108
16	0.000956284153005464	1.2448132780083
17	0.00103825136612022	1.32780082987552
18	0.00112021857923497	1.41078838174274
19	0.00120218579234973	1.49377593360996
20	0.00128415300546448	1.57676348547718
21	0.00136612021857923	1.6597510373444
22	0.00146174863387978	1.74273858921162
23	0.00155737704918033	1.82572614107884
24	0.00166666666666667	1.90871369294606

It allows to view all single readings of the curve selected.



Using the context menu is possible to copy the table to clipboard.

The action is visible in accord of the instrument selected

Curves Graph

See [Graph section](#)

Functions available if the instrument selected has graphics functions

View Curves Graph

Choose the Graph under the View menu to show or hide the graph curves.

Single

Click on the Single icon on the toolbar or choose the Single option under the Graph menu to show just the curve on the graph.

Click again to show all the session curves.

Average

Available only with the instruments with graphics function.

Click on the Average icon on the toolbar or choose the Average option under the Graph menu to show the Average curve on the graph.

Cursor on Curve

Click on the Cursor on Curve icon on the toolbar or choose the Cursor on Curve option under the Graph menu to read the X and Y values of the curve whenever the mouse cursor is placed on the graph.



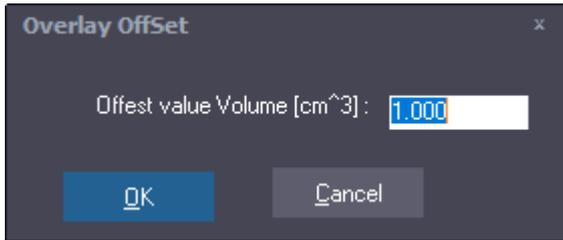
Click again to remove the Cursor on Curve and read the X and Y values of the position of the mouse.



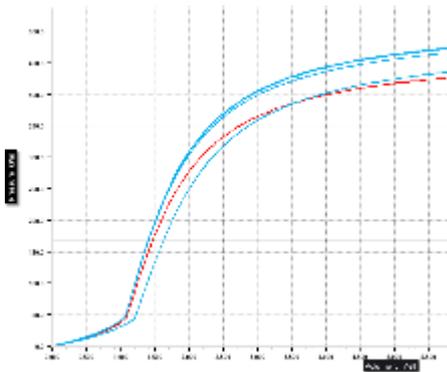
Compare Curve

Choose the Compare option under the Edit menu to paste the curve on Clipboard to the actual graph.

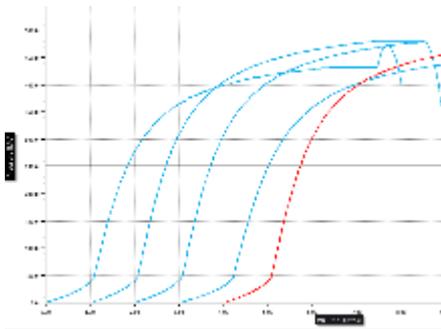
Overlay offset



The option Overlay offset allows to having all the test curves starting from the origin of the graph (value 0) or they can also be offset by a step of the current X axis.



Offset = 0

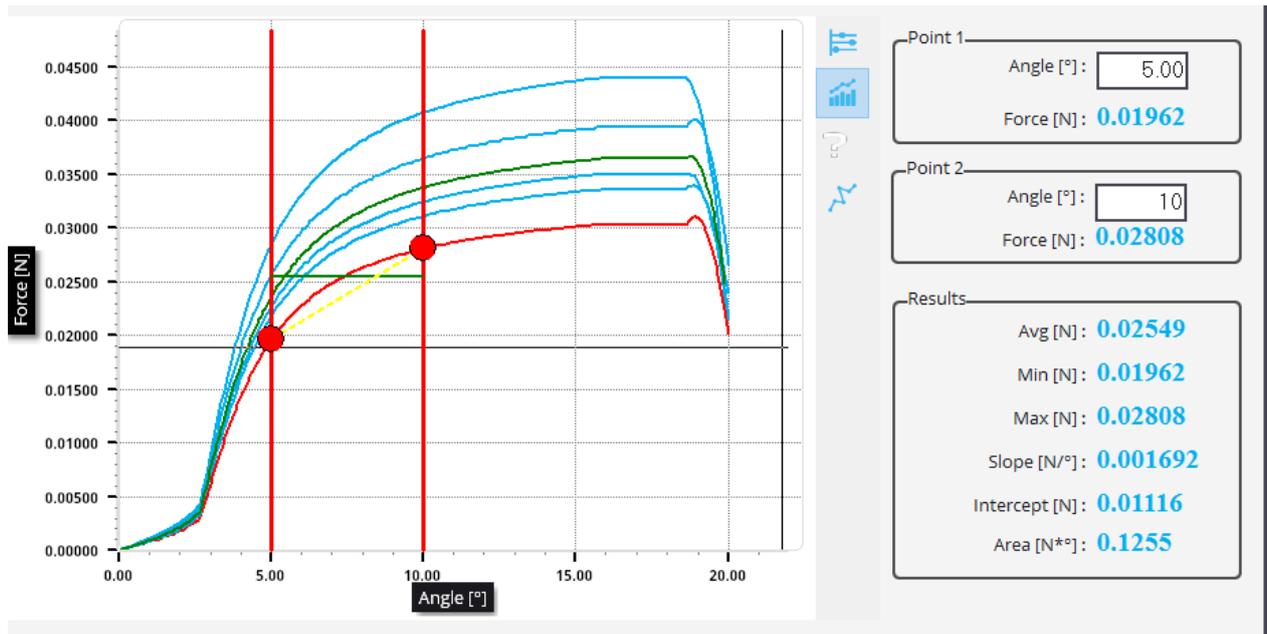


Offset = 1

Note

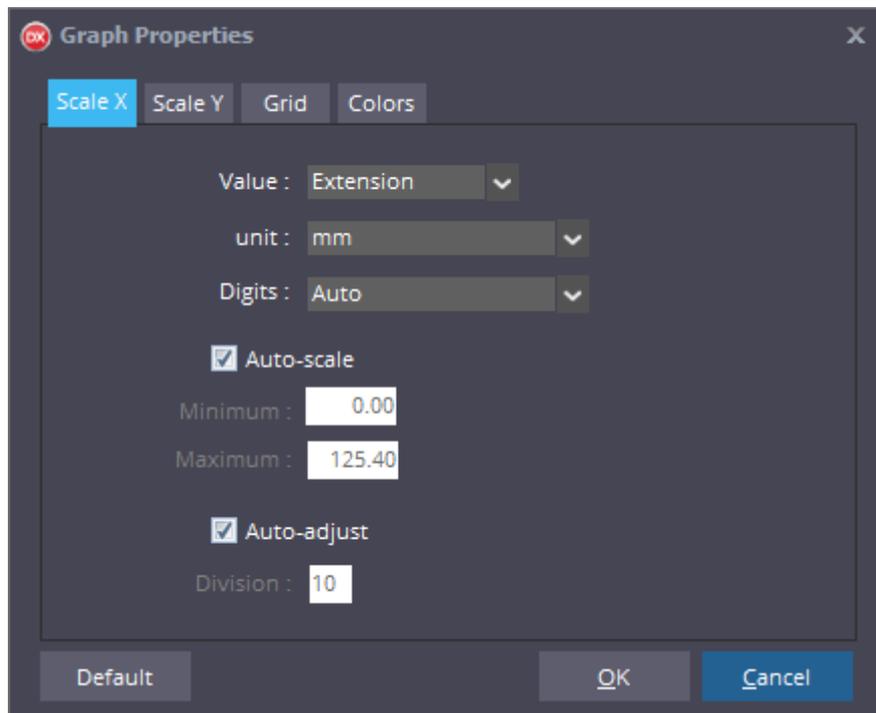
When the offset enabled (not 0) the [Average](#) and [Analysis](#) functions are disabled.

Analysis



Click on the Analysis icon on the toolbar or choose the Analysis option under the Graph menu to show the analysis section.

Scale X / Scale Y

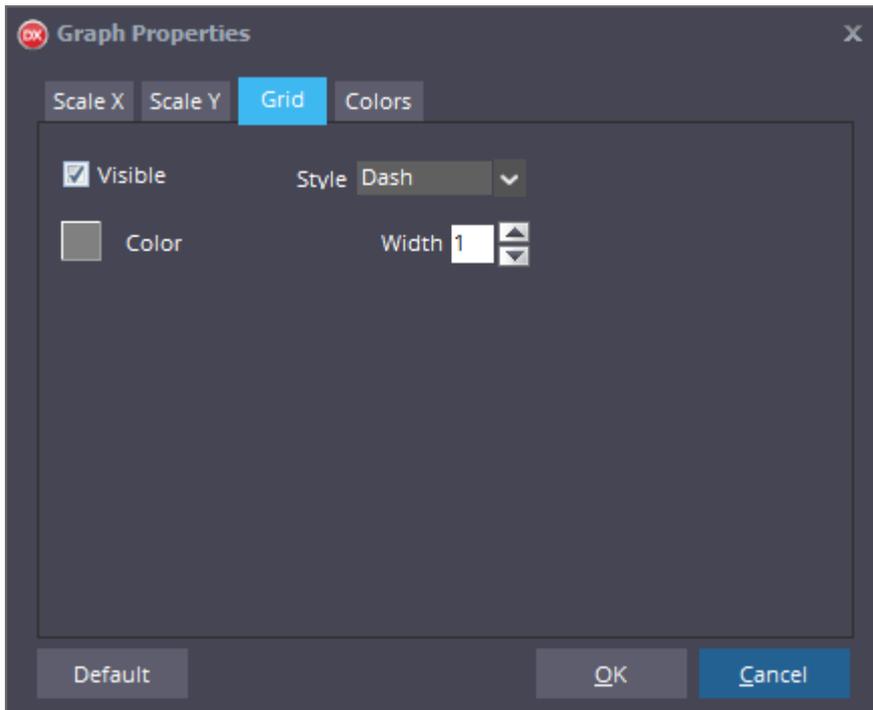


The scale boxes allow the user to select the values for the X and Y axis.

To re-scale the graph manually, enter the required ranges by typing them into the relevant text boxes.

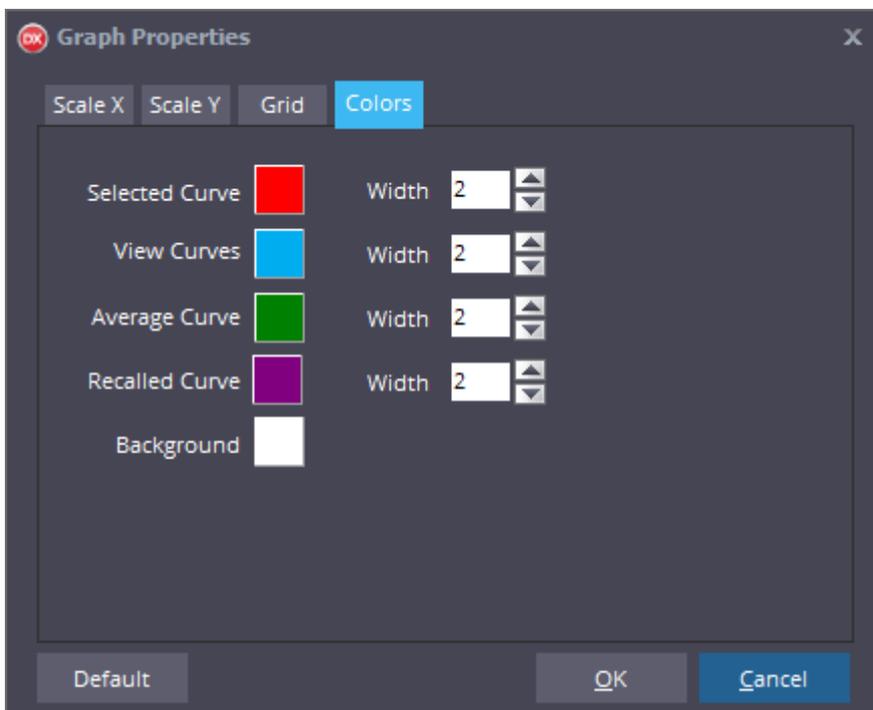
Select Auto-Scale will automatically re-scale the graph.

Grid



The grid box allows the user to select the color and the style of the grid.

Colors

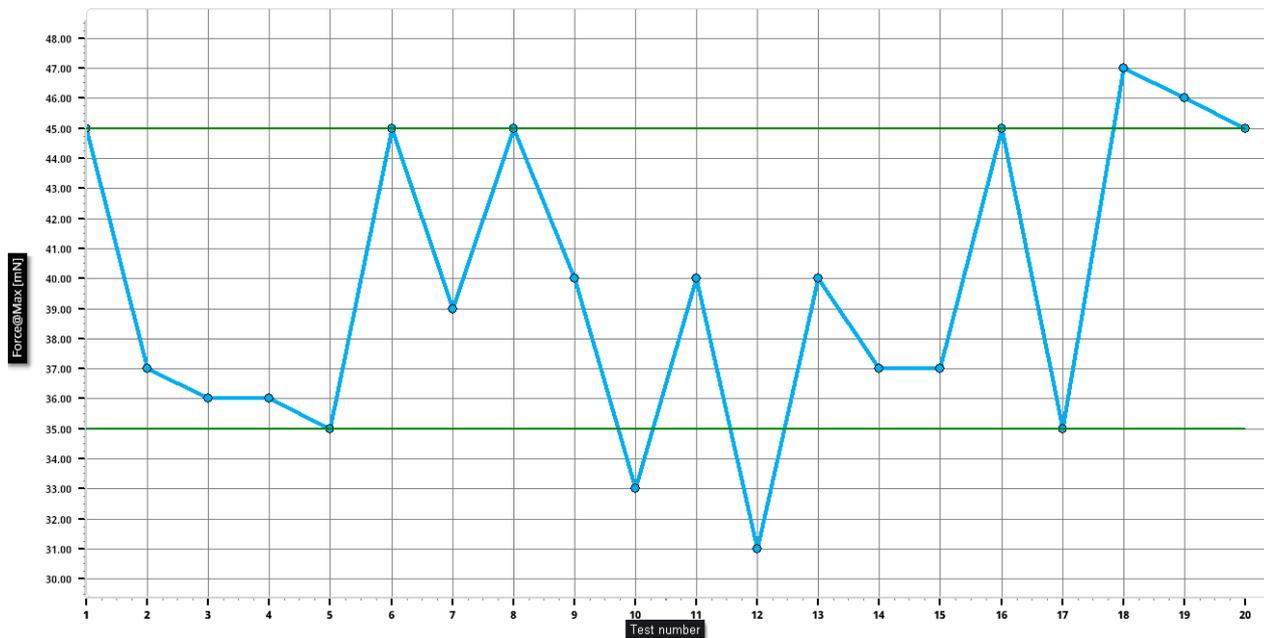


The Colors box allows the user to select the width and colors of curves via the standard Windows tool. To recall the factory settings click on Default button.

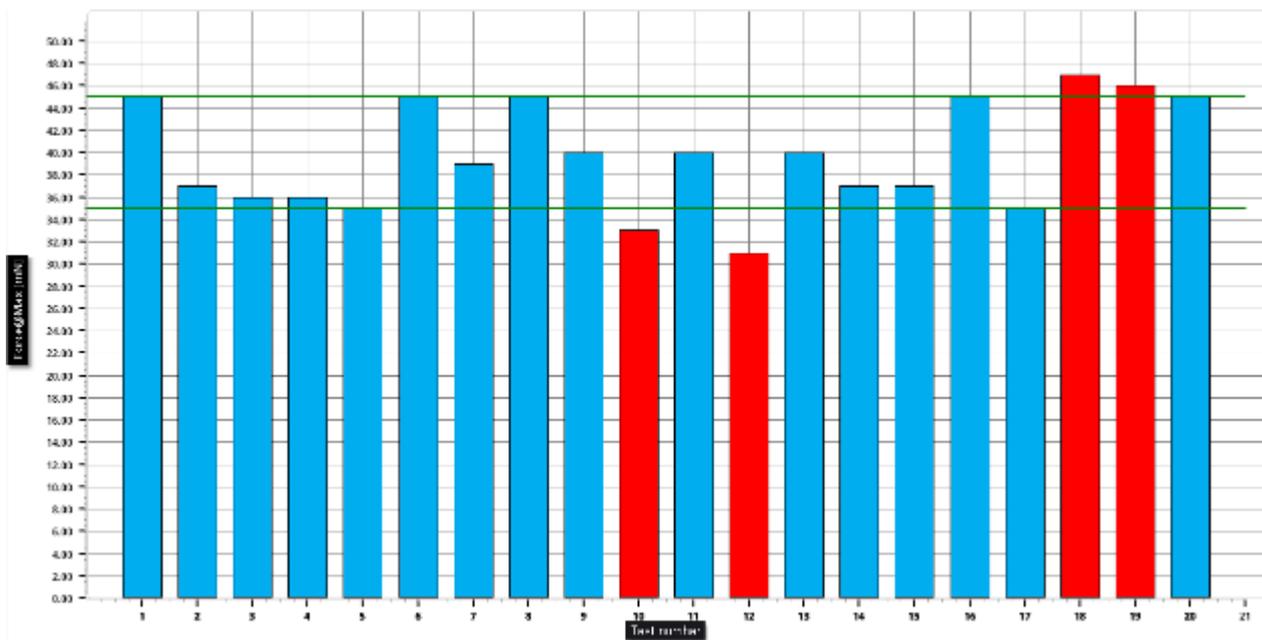
View Statistic Chart

Choose the Specifications under the View menu to show or hide the graph trend and the settings from parameter section.

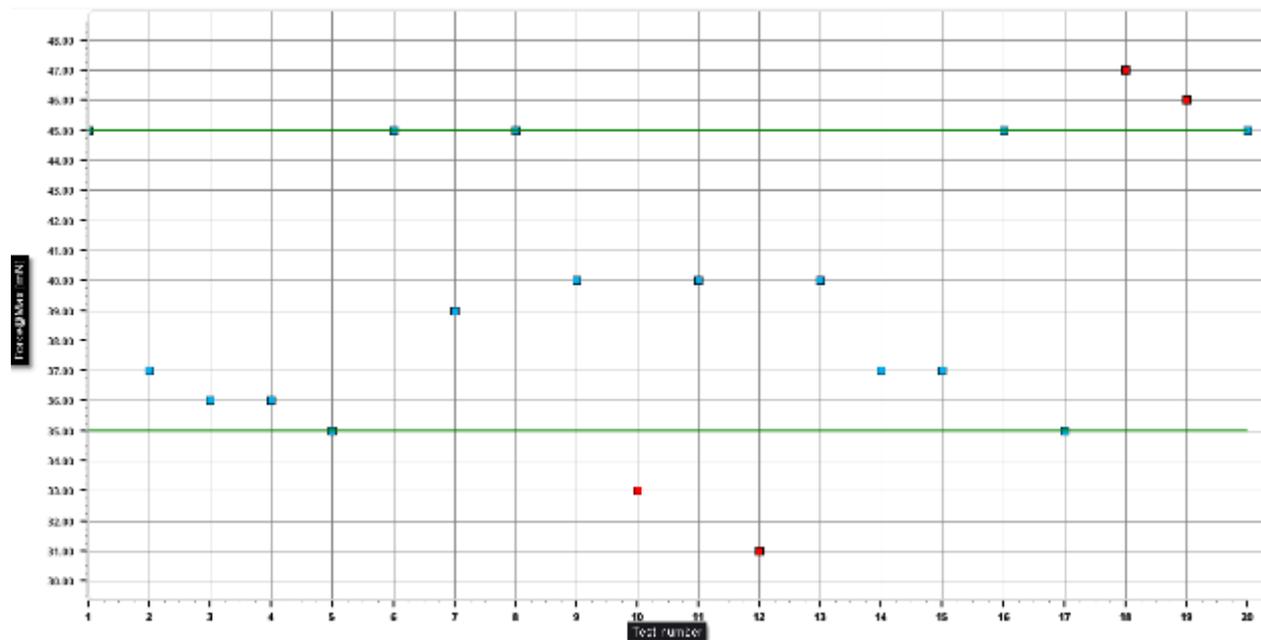
Line Chart



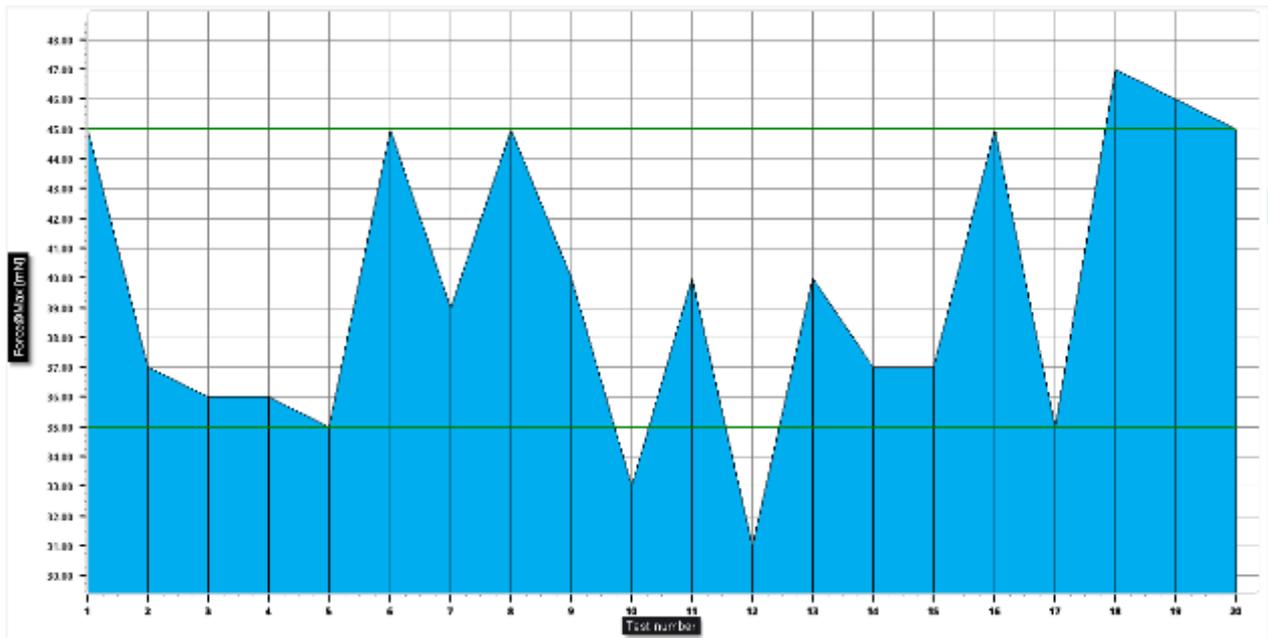
Bar Chart



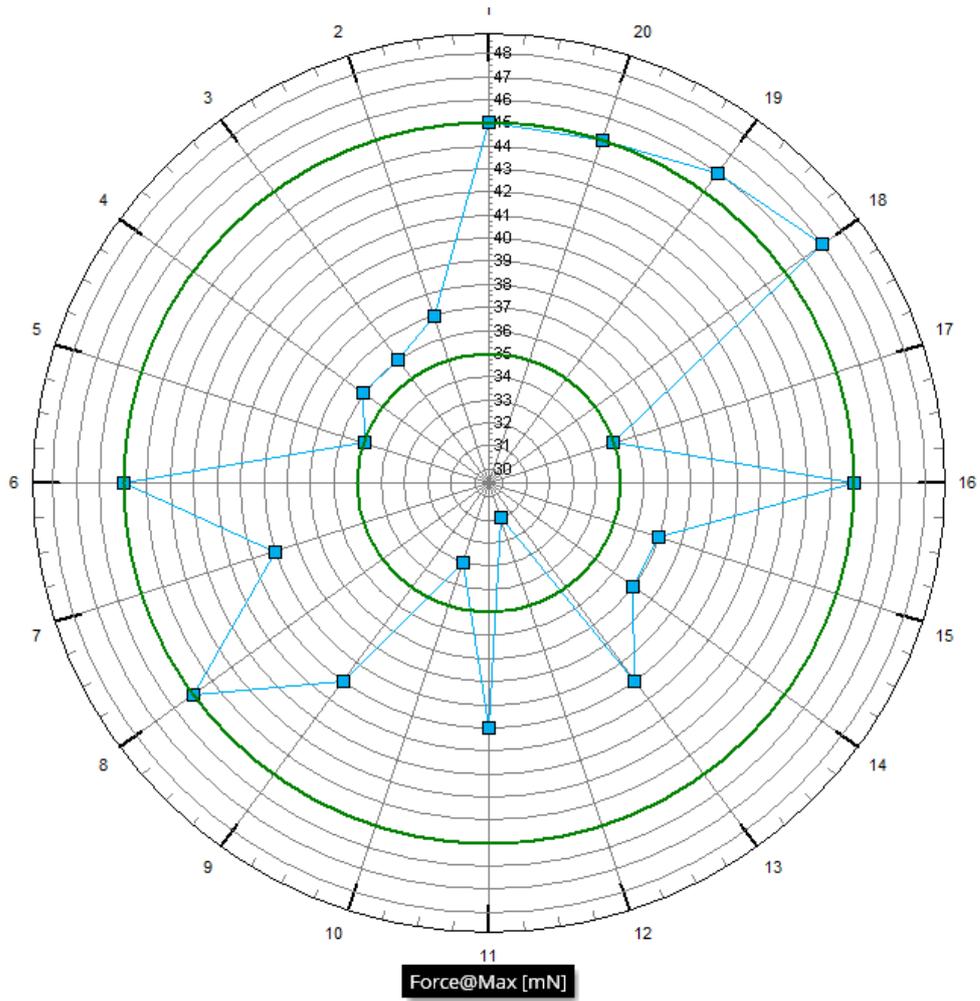
Points Chart



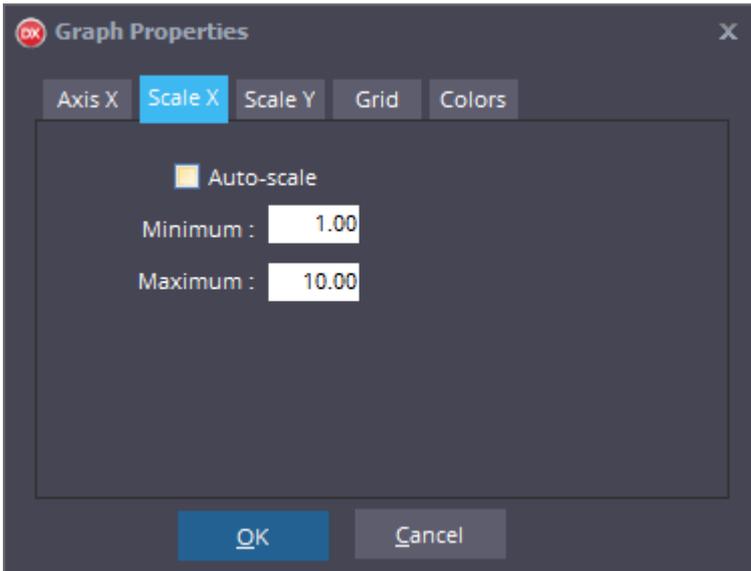
Area Chart



Polar Chart

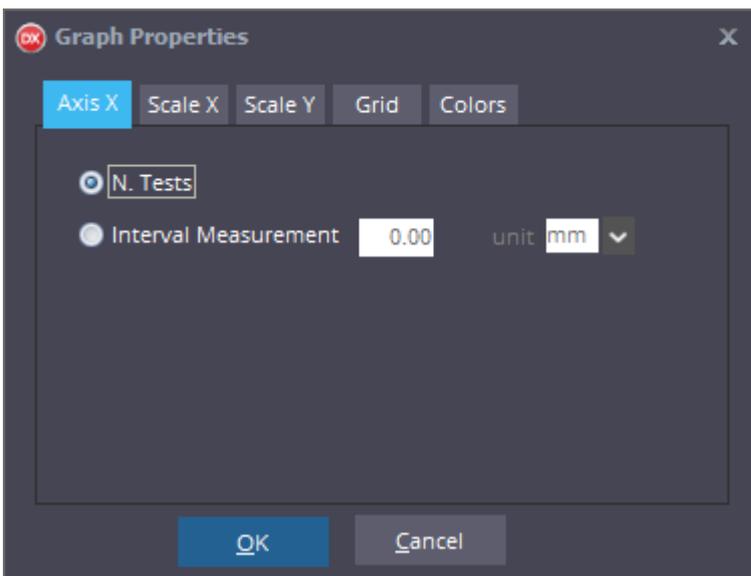


Properties

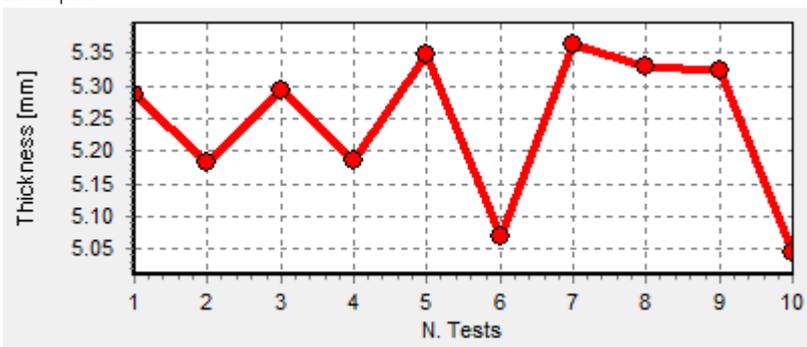


The Graph Properties box allows the user to change the configuration of the trend graph. To show the Graph properties, right-click on the graph trend and select Properties.

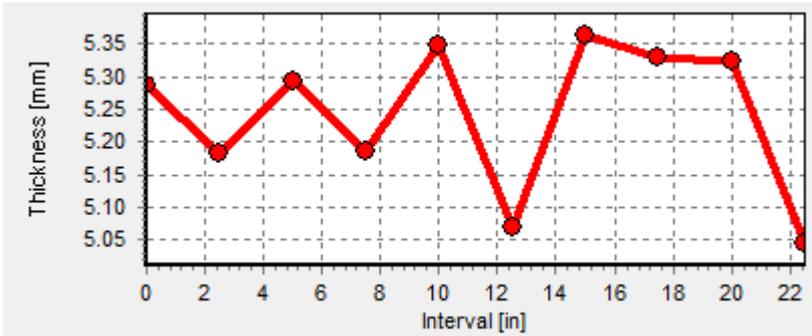
Axis X



The bottom axis labels can show the number of tests or the measurement distance. The units can be chosen from the prefix list or can be entered manually. Example



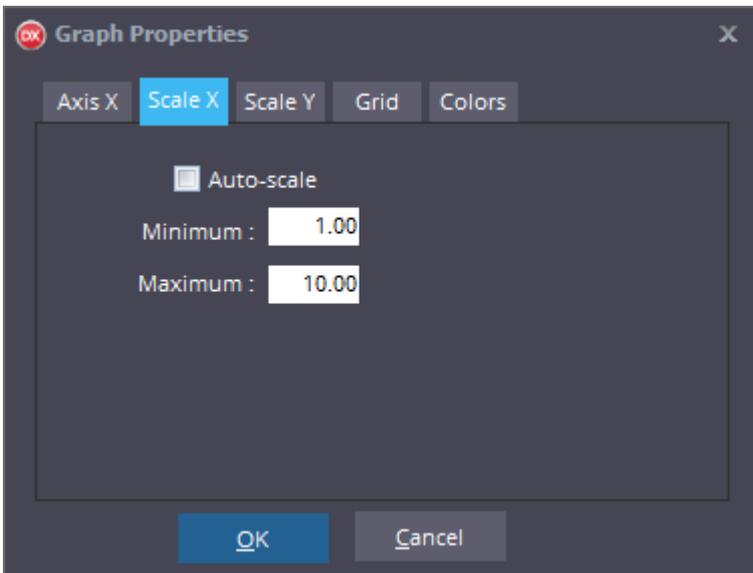
Axis X = N.Test



Axis X = Distance measurement = 2.5in

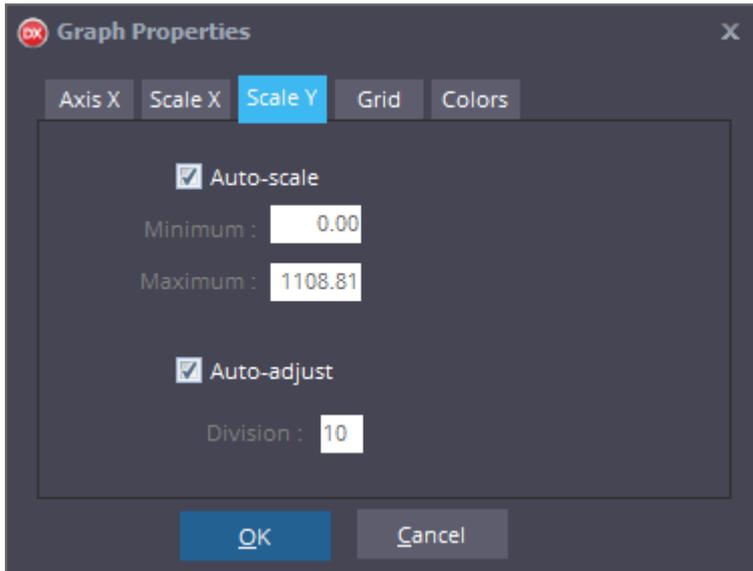
Once the value has been set, click OK to re-draw the graph. Clicking Cancel will close the option graph without changing the graph's scales.

Scale X



To re-scale the graph manually, enter in the required ranges by typing them into the relevant text boxes. Once the ranges have been set, click OK to re-scale the graph. Clicking Cancel will close the option graph without changing the graph's scales. Selecting Auto-Scale will automatically re-scale the graph.

Scale Y

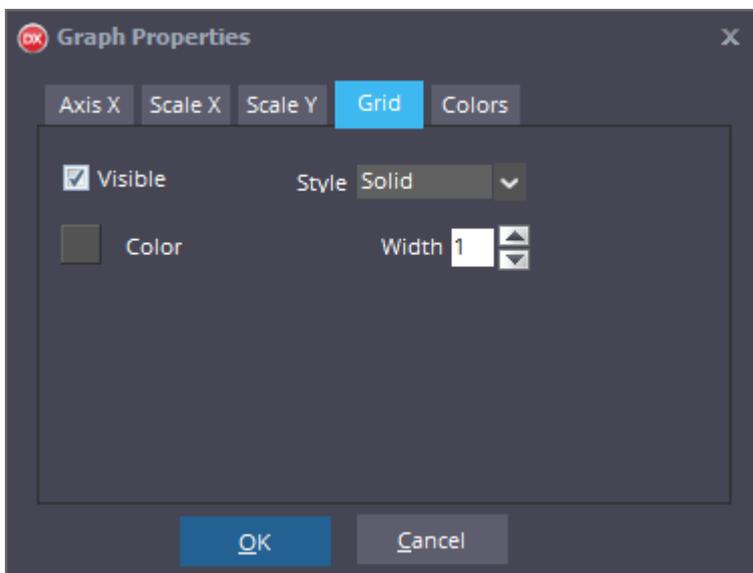


To re-scale the graph manually, enter the values into the required ranges by typing them into the relevant text boxes. Selecting Auto-Scale will automatically re-scale the graph.

To change the number of the division line, enter the value by typing them into the relevant text box.

Once the ranges and the division have been set, click OK to re-scale the graph. Clicking Cancel will close the option graph without changing the graph's scales.

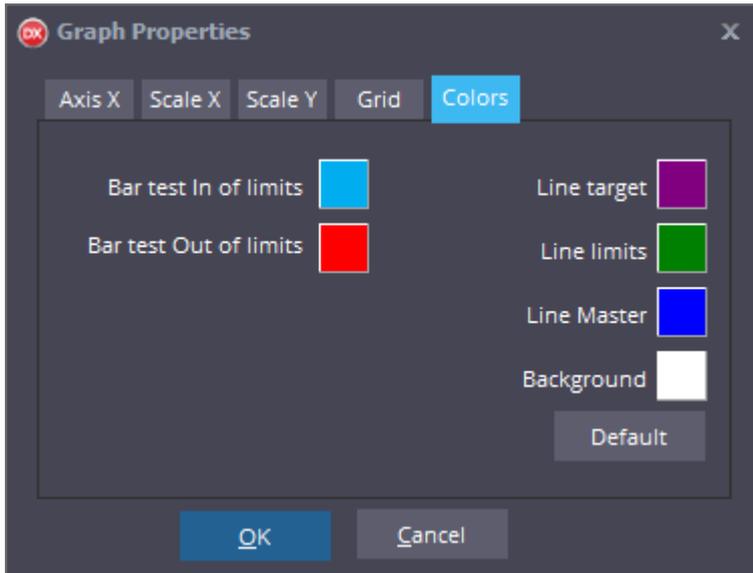
Grid



To change the grid aspect, select your choice into the relevant boxes.

Once the choices have been set, click OK to re-draw the graph. Clicking Cancel will close the option graph without changing the graph's scales.

Colors



To change the color aspect, select your choice into the relevant boxes. Click on Default to recall the factory selection.

Once the choices have been set, click OK to re-draw the graph. Clicking Cancel will close the option graph without changing the graph's scales.

Table on left/bottom

Choose the Table on left/bottom under the View menu to swap the data section table position on the screen.

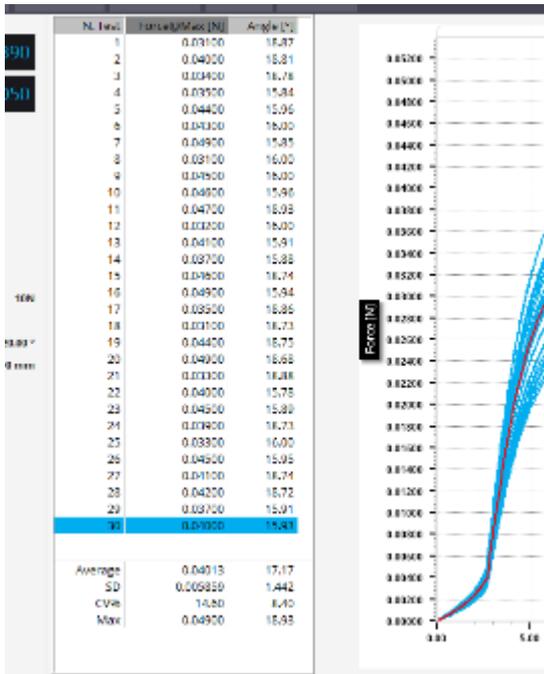


Table on the left

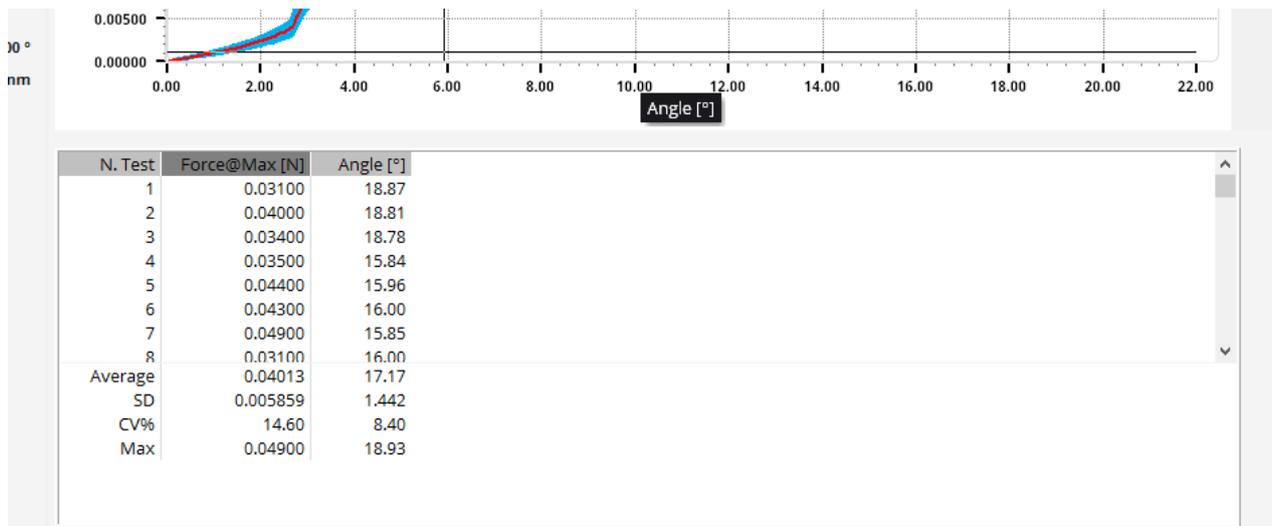
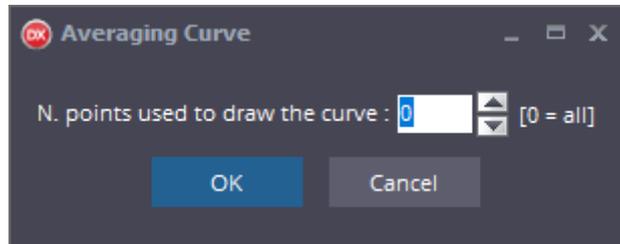
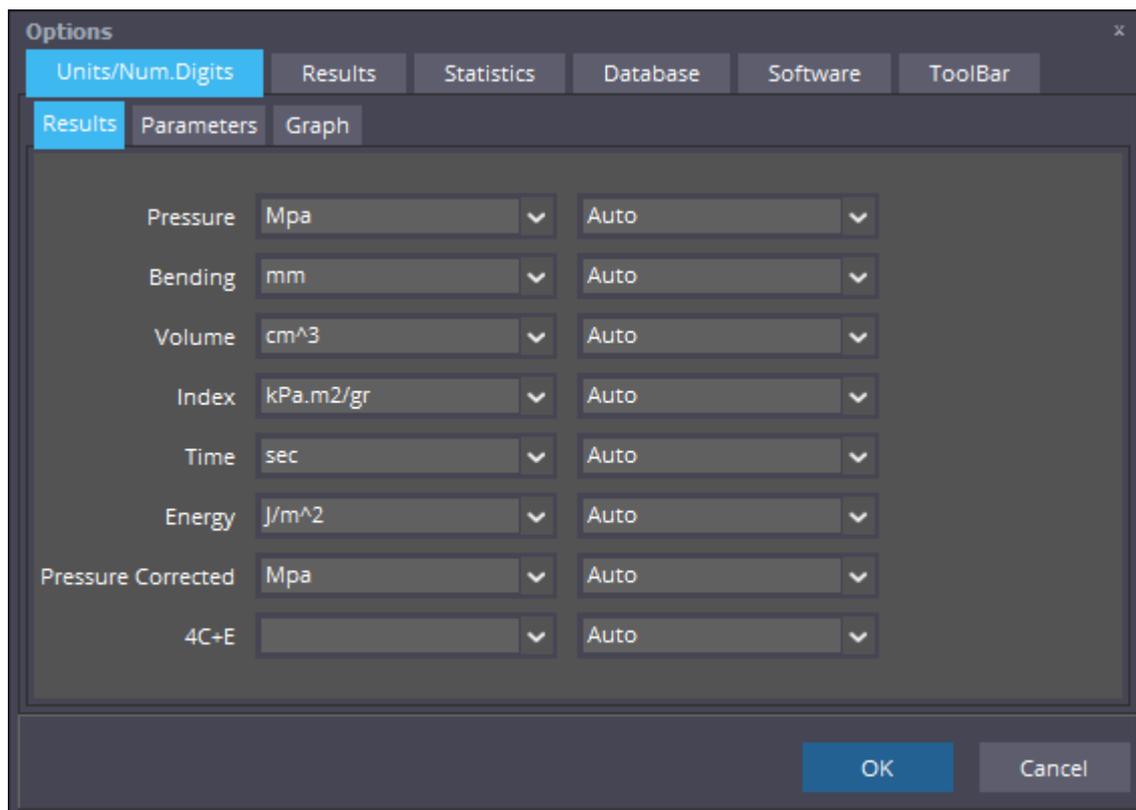


Table on the bottom

Averaging Curve



Choose the Averaging curve to smooth the curve. The changes have not effect on collecting data and it can be changed in any time.

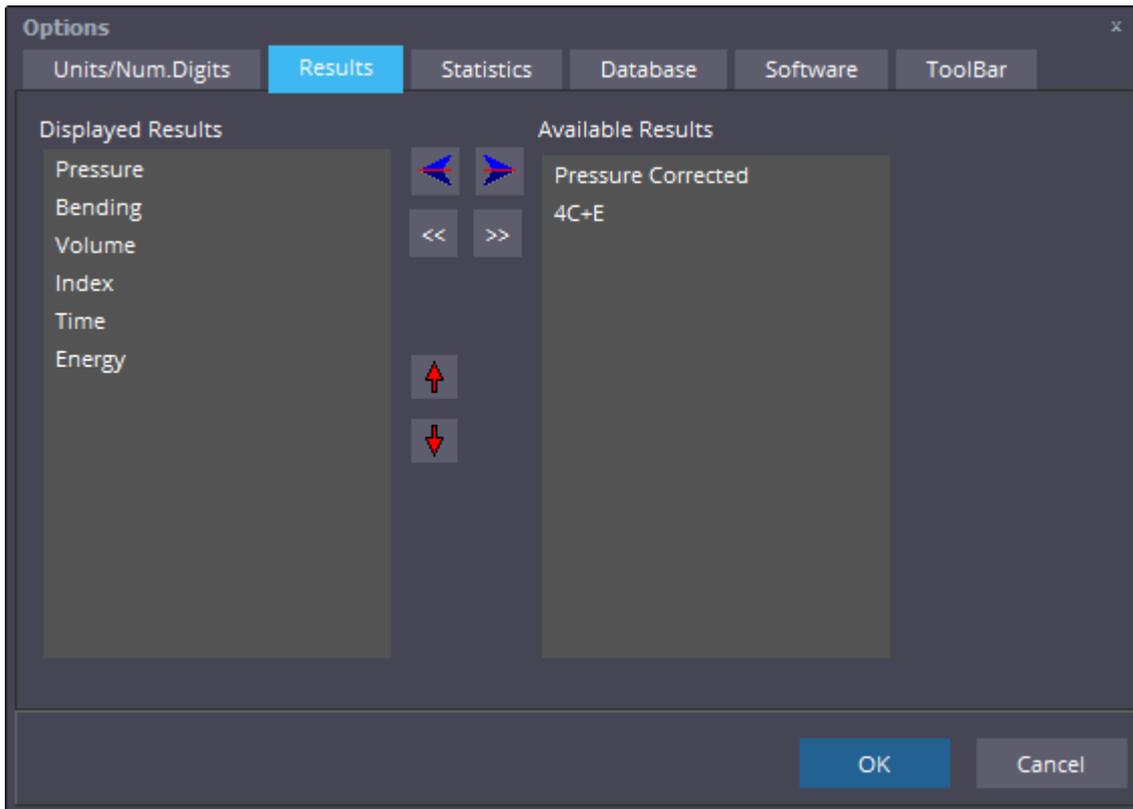


The Units/Num.Digits box allows the user to select the units and the number of decimal places to be displayed and printed of the results, parameters and graph.

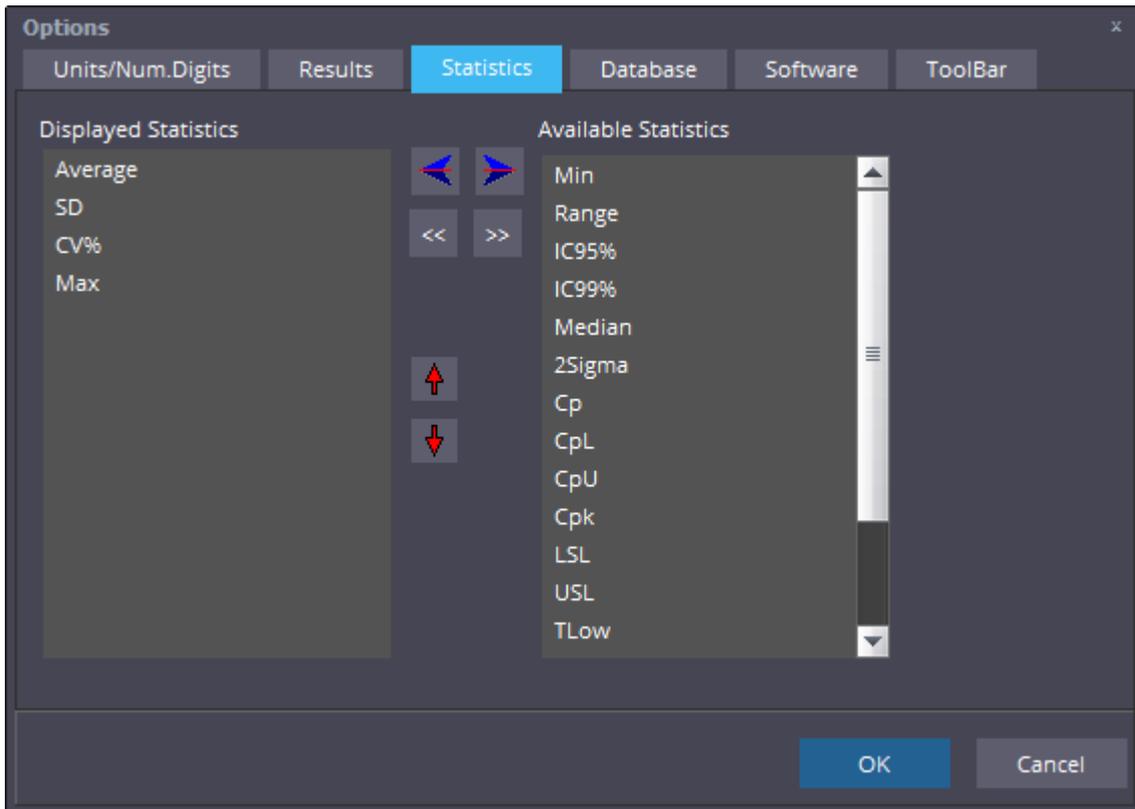
If number digits is Auto the software automatically selects the number of digits in according of the value following the below rule.

Value	Number digits
< 0.001	7
< 0.01	6
< 0.1	5
< 1	4
< 10	3
< 100	2
< 1000	1
=> 1000	0

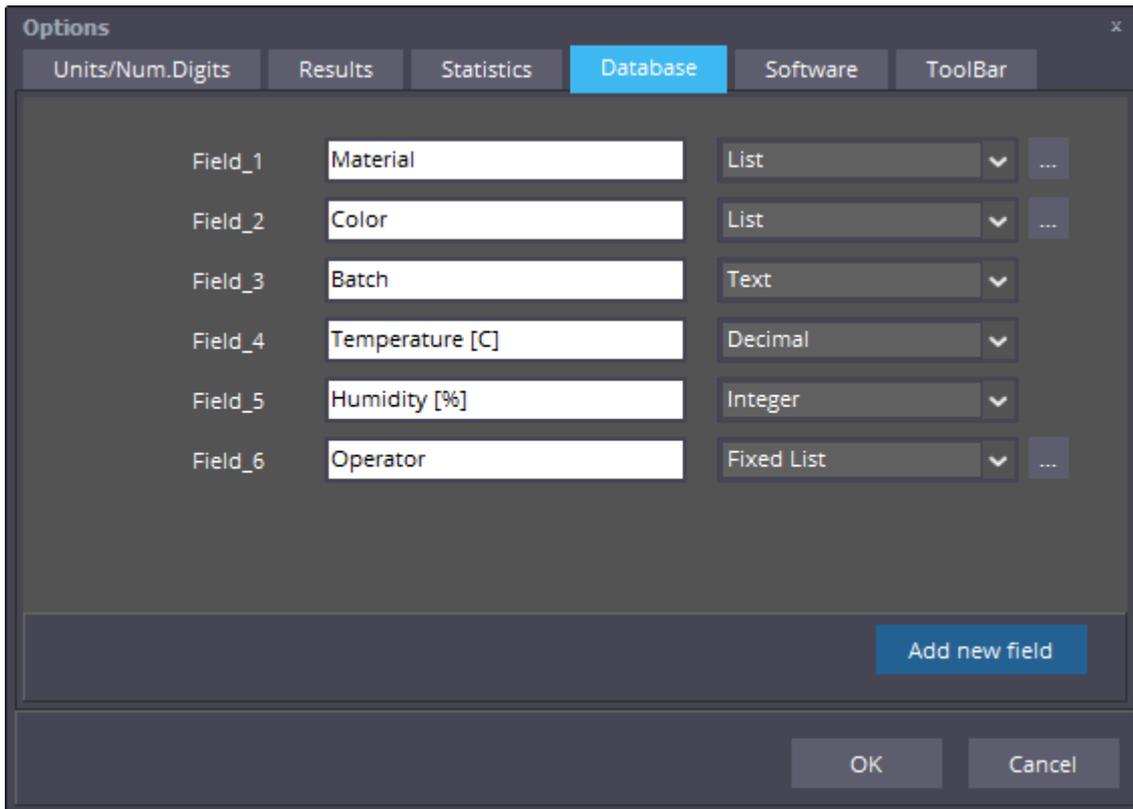
Results



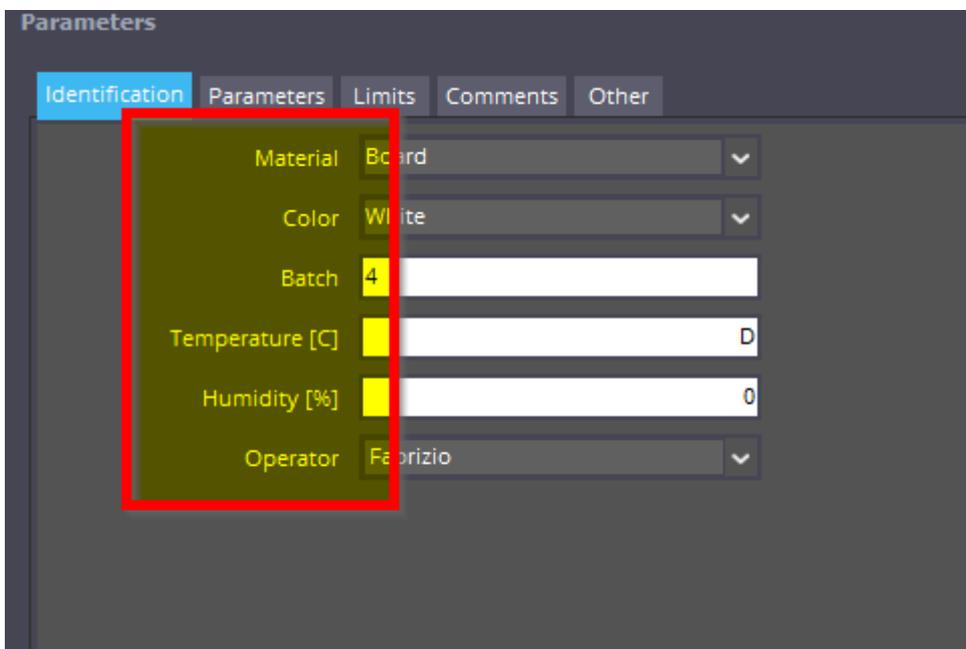
The Results box allows the user to select the displayed results and choose the order.



The Statistics box allows the user to select the displayed statistics and choose the order.



The Database box allows the user to customize the fields identification.



In addition of the name it's possible control how the data are input.

Text

All strings are accepted

List

All strings are accepted and it's possible select a prefix strings from the list

Fixes List

Only the prefix strings from the list are accepted

Integer

Only integer values are accepted

Decimal

All numbers are accepted

Press Add new field to increase the number of fields.

NOTE

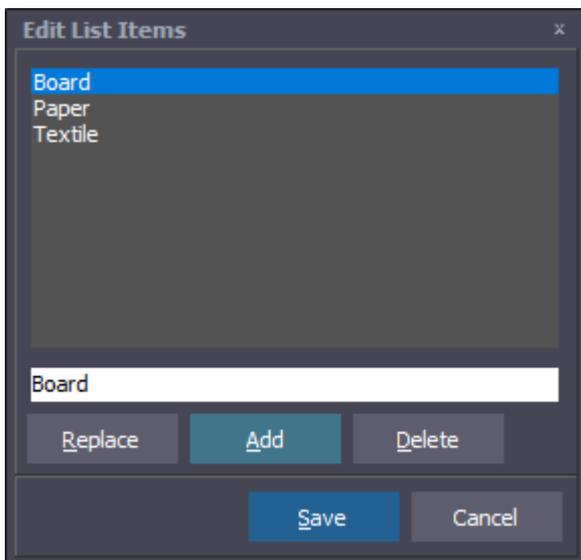
After a field is created will be NOT possible to delete it.

If the caption is empty the field will be hidden.

To add a new field the database must be not in use

IMPORTANT

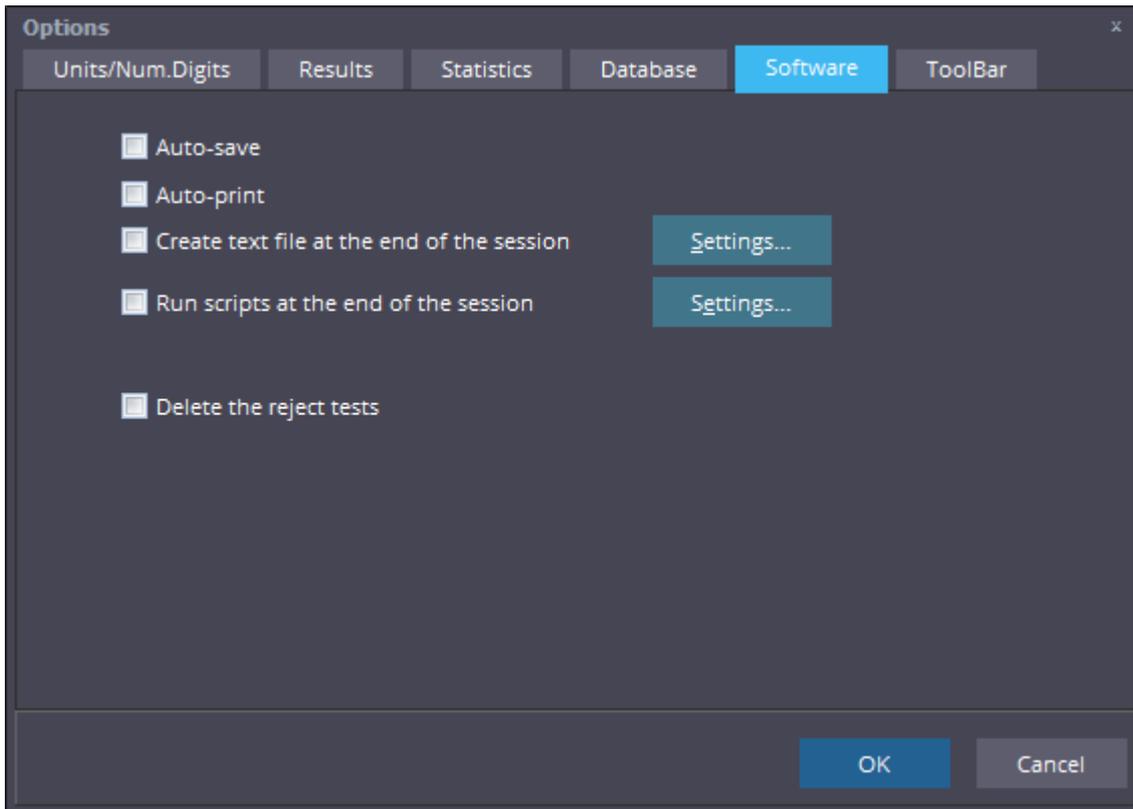
The values are always stored in text even if entered as number

Edit List Items

It allows to edit the list of the strings for the fields selected.

NOTE

The item are always sorted.



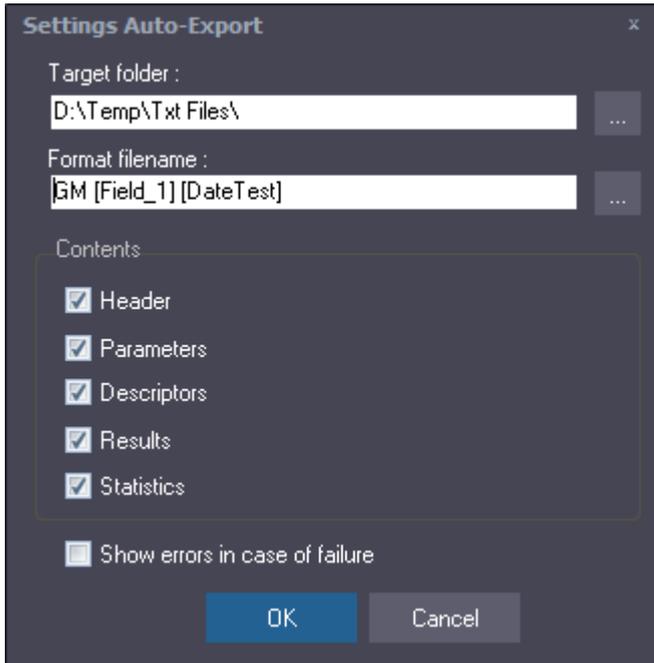
If the Auto-save is selected all tests are saved automatically at the end of the session without the confirm message.

When the session is saved is possible:

- print automatically a report (see [Print](#))
- create a text file, when the option is selected the Settings button is enable (see [Settings Auto-export](#))
- store the data in a different database, when the option is selected the Settings button is enable (see [Settings Append](#)) this option enables to export Data to a non GraphMasterPro database.

If the Delete the reject test is selected, the software will automatically delete the test outside the limits. When is not selected the test will be hidden.

Settings Auto-export



Target folder

It's the folder where the files will be created.

Format filename

It allows to create the template for the filename, the extension is always txt

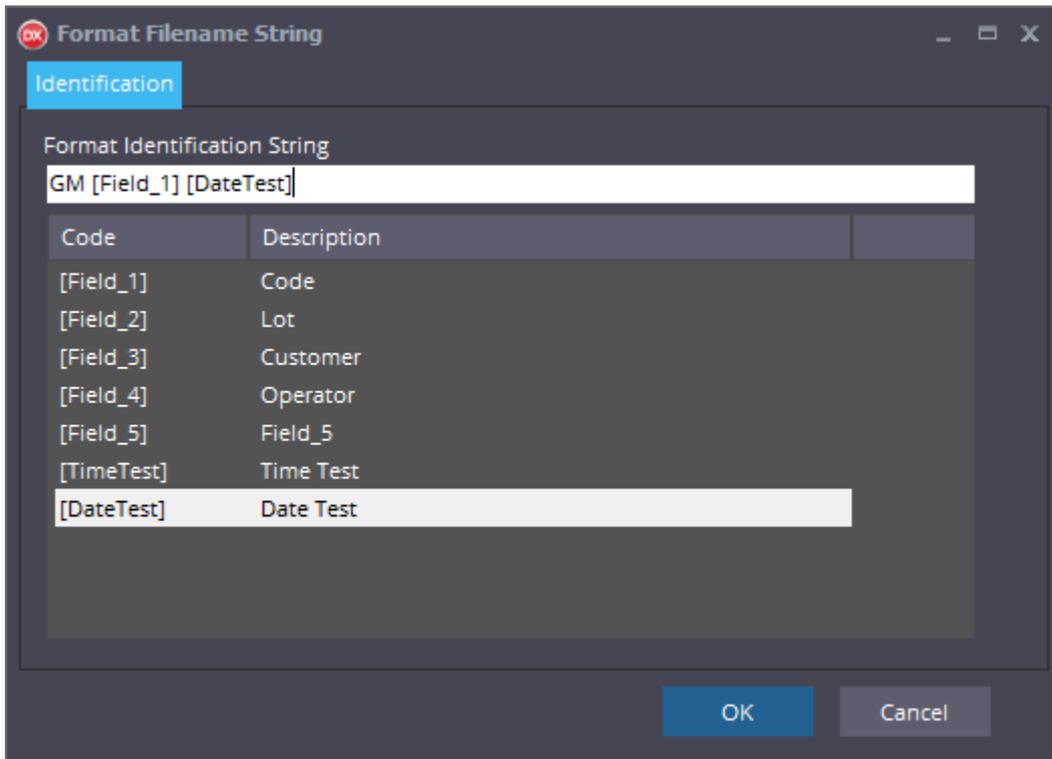
Contents

It allows to select the information required in the file

Show errors in case of failure

It allows to disable the error message in case the file can't be created

Format Filename String



The string is the template used to create the name.

Clicking on the items list the code is added on the string.

The [Field..] is created converting the identification field in a valid string (the chars ^:*?"<>| are converted in the char _)

The [DataTest] is created in the format "yyyymmdd" (year - month- day)

The [TimeTest] is created in the format "hhnnss" (hour - minute - second)

Example

Using the string GM [Field_1] [DateTest] the files created will be:

GM 123 20170315.txt

Test Code 123 created 15 March 2017

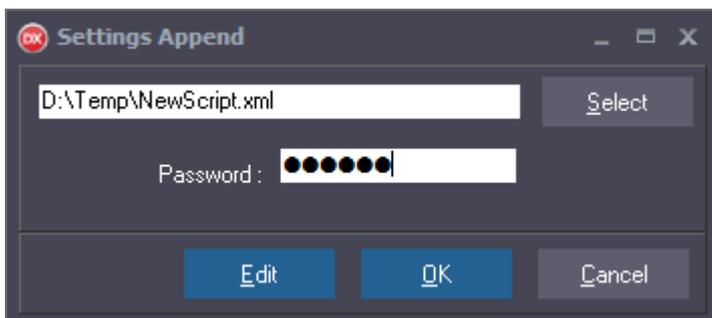
GM ABC 20170305.txt

Test Code ABC created 5 March 2017

GM A_B 20170316.txt

Test Code A/B created 16 March 2017

Settings Append



The box Settings Append allows to select the script to run when the session is saved. A script is a series of SQL commands that allow to save Results, Parameters and Identification Data to a non GraphMaster database.

After completing a session, data will be saved as per normal to the GraphMaster database. In addition the data will be saved to a separate database of the customer's choosing.

Click Select to create a new script or, in case you already have a script, select the file.

Enter the password used to connect the database, if the password is saved on the script the field can be empty. The password stored in the script is not encrypted and it is public.

Select Edit to change the selected file (see [Edit script](#) for more information)

Edit script



Type your connection string or select Connection string to create a new one (see [Data Link Properties](#) for more information)

The software can run two type of scripts:

Script run once for session

It allows to store the information and the statistics about the session

Script run for each single test

It allows to store the single results for each test in the session

List Parameters

The window help to search the correct parameters and check the unit used.

See [Example script](#) for more information

Example script

As example we would like to store in an SQL Server Database the information in two tables:

In a table called "Info" we stored one record for each session with the following info:

Test type
Item number
Production
Test Date
Avg
Max
Min
And

In a table called "Overview" we stored one record for each test with the following info:

LineNum
Reading
ValueInMils

First we need to write the connection string, using [Data Link Properties](#) we can select the provider then pressing next we can fill the connection information

Pressing Test Connection we can check all the information.

In the box "Script run once for session" we need to write a script like:

```
INSERT INTO [TestDB].[dbo].[Info]  
(Test type, Item number, Production, Test Date, Avg, Max, Min )  
VALUES  
('Micrometer',:Field1, :Field2, :DateTimeTest, :Avg1, :Max1, :Min1);
```

And In the box "Script run for each single test" we need to write the script like:

```
INSERT INTO [TestDB].[dbo].[Overview]  
(LineNum, Reading, ValueInMils)  
VALUES  
(:Progressive, :Result1, (:Result1)/0.0254);
```

The scripts are executed as SQL queries.

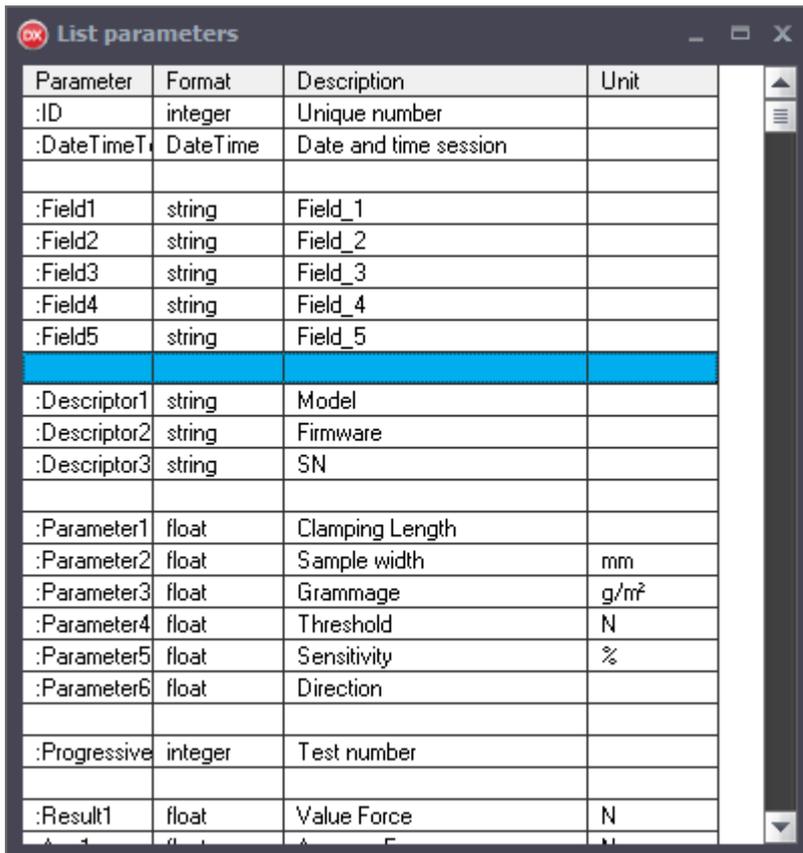
According the provider selected the syntax could change.

The values stored can be fixed (in the example the value Micrometer in the field Test Type).

The values are sent always with the same units, if you need to convert you need to add a formula in the script (in the example **(:Result1)/0.0254** it converts the reading from mm to Mils)

If the parameter and the field have different types (example float and string) the functions CAST or CONVERSION must be added.

List Parameters



Parameter	Format	Description	Unit
:ID	integer	Unique number	
:DateTimeT	DateTime	Date and time session	
:Field1	string	Field_1	
:Field2	string	Field_2	
:Field3	string	Field_3	
:Field4	string	Field_4	
:Field5	string	Field_5	
:Descriptor1	string	Model	
:Descriptor2	string	Firmware	
:Descriptor3	string	SN	
:Parameter1	float	Clamping Length	
:Parameter2	float	Sample width	mm
:Parameter3	float	Grammage	g/m ²
:Parameter4	float	Threshold	N
:Parameter5	float	Sensitivity	%
:Parameter6	float	Direction	
:Progressive	integer	Test number	
:Result1	float	Value Force	N
A_1	float	A_1	N

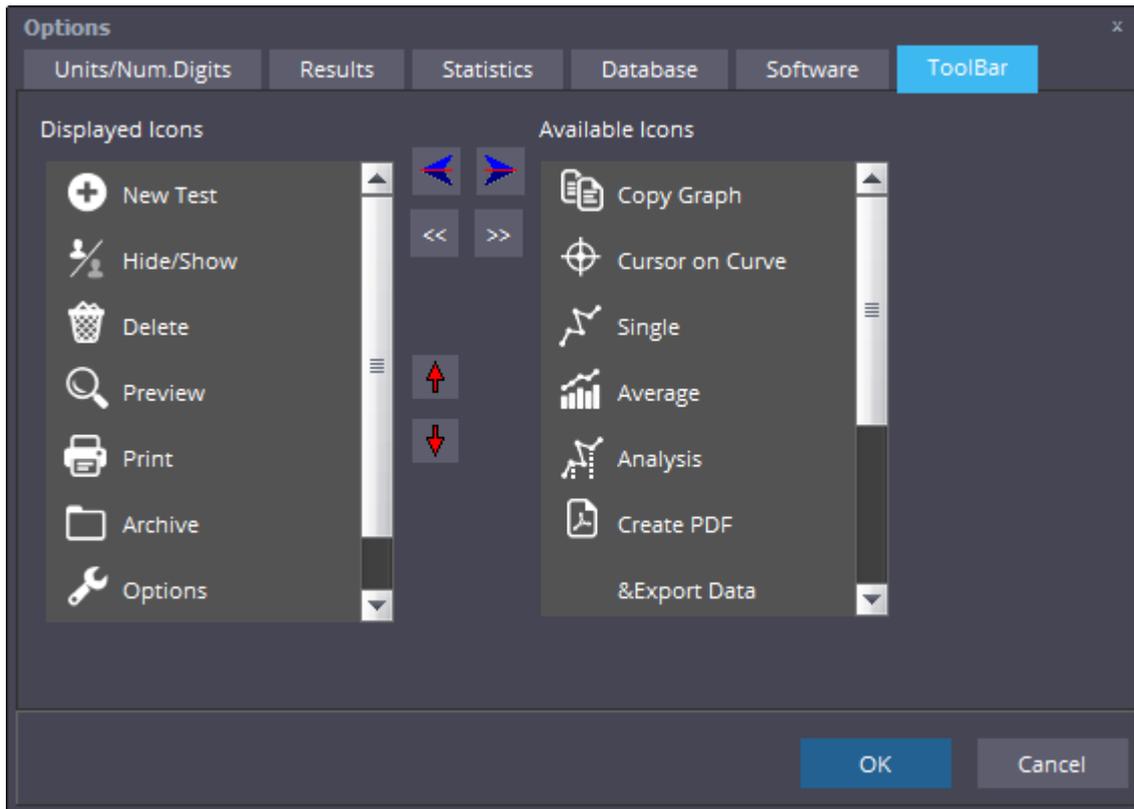
Double-click on the parameter to add the correct key in the box selected.

Data Link Properties

The Data Link Properties dialog box is the standard Windows system interface for configuring connection strings to data sources. This dialog box exposes all of the properties that the selected OLE DB provider supports. A link to the resulting data connection is displayed under the Data Connections node in the Server Explorer.

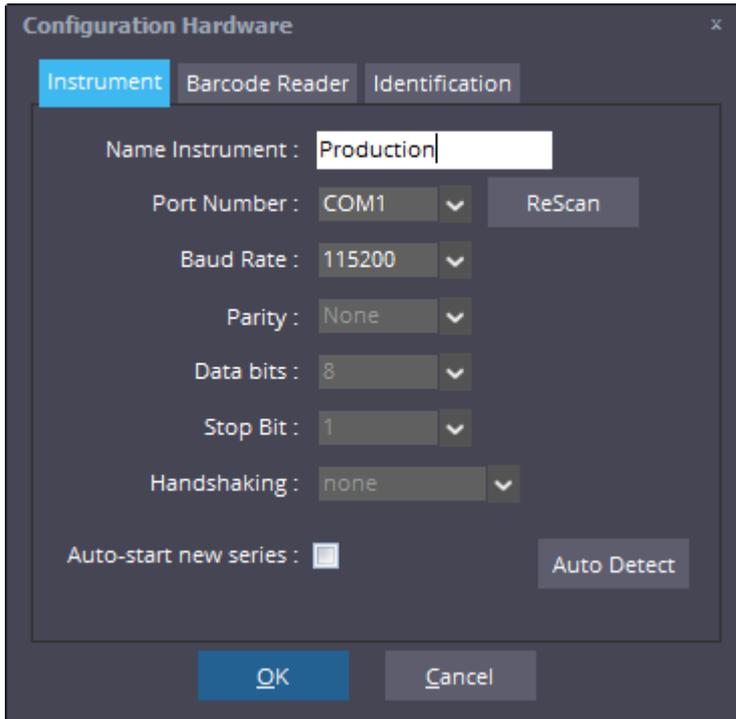
For more information visit <https://msdn.microsoft.com/en-us>

ToolBar



The ToolBar box allows the user to select the icons displayed on the ToolBar and choose the order. If the check Show captions is not selected only the icons are showed without text.

Instrument



The Instrument box allows the user to select the Port Number to which the instrument is connected.

Auto-start new series allows to start a new series automatically when a new series is started on the instrument.

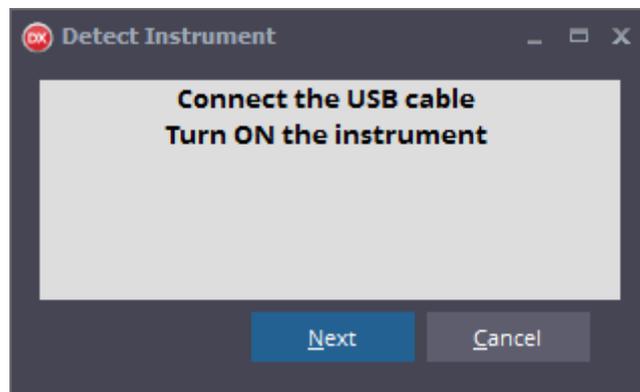
Depending on the instrument connected, other parameters can also be selected

Auto Detect function is showed only with compatible instrument

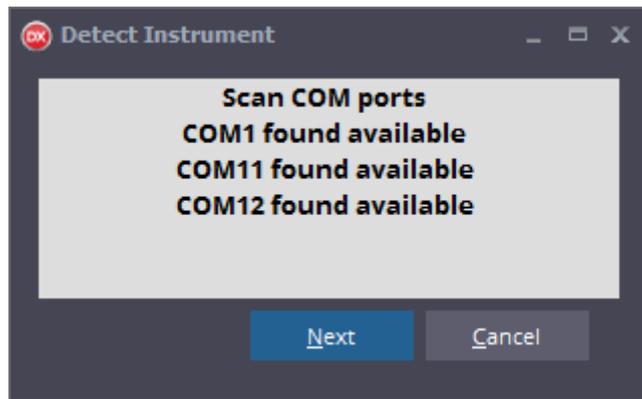
Auto-start new series function is showed only with compatible instrument

Auto Detect instrument

The Auto Detect instrument function allows the user to auto configure the software in according to the instrument connected.



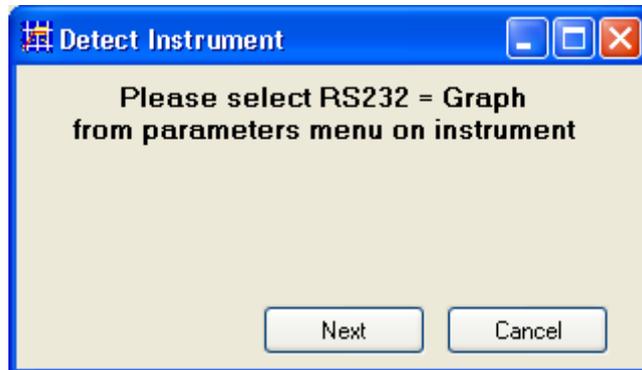
To detect the instrument, turn off it and connect the serial cable.



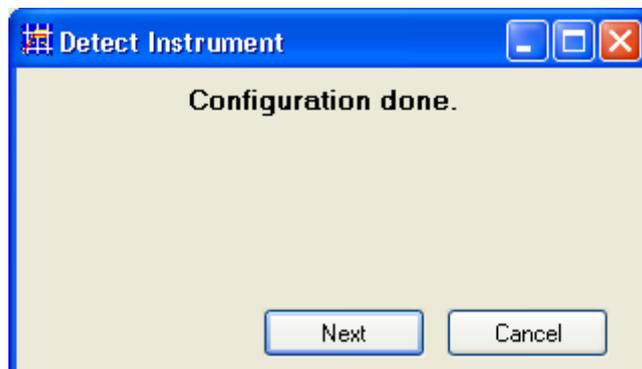
The software will scan the PC to find all serial port available.



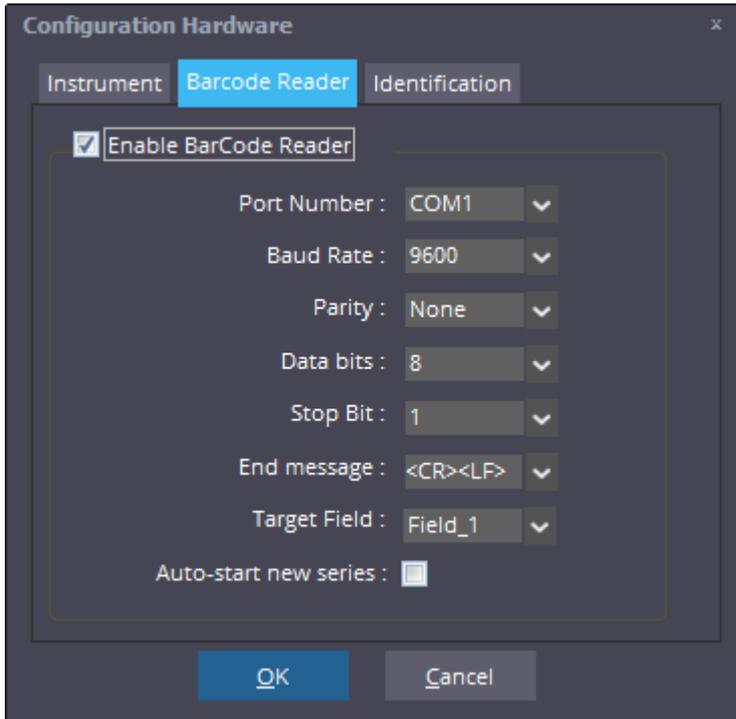
Turn ON the instrument



When the instrument is found, an information message is shown.



When the procedure is done, press next to save the configuration



The Barcode Reader box allows the user to enable a Barcode reader to import an identification string in a field.

End message

It's possible to choose among the list items or create an own string (see [RS232 messages](#) for more information).

Target field

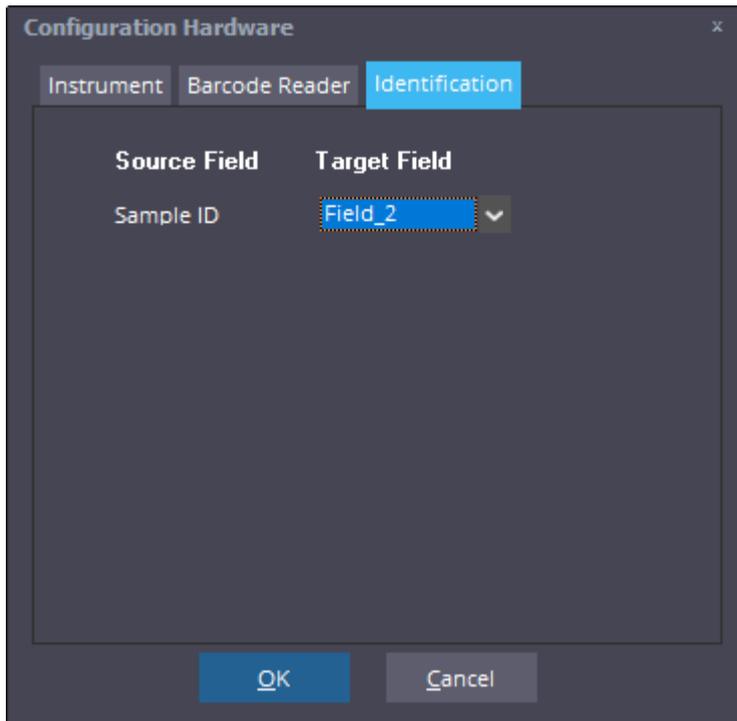
It allows to specify the field where the string received will be copied

Start new series automatic

It allow to start automatically a new series when a new string is received.

All barcode reader with RS232 are compatible.

Identification

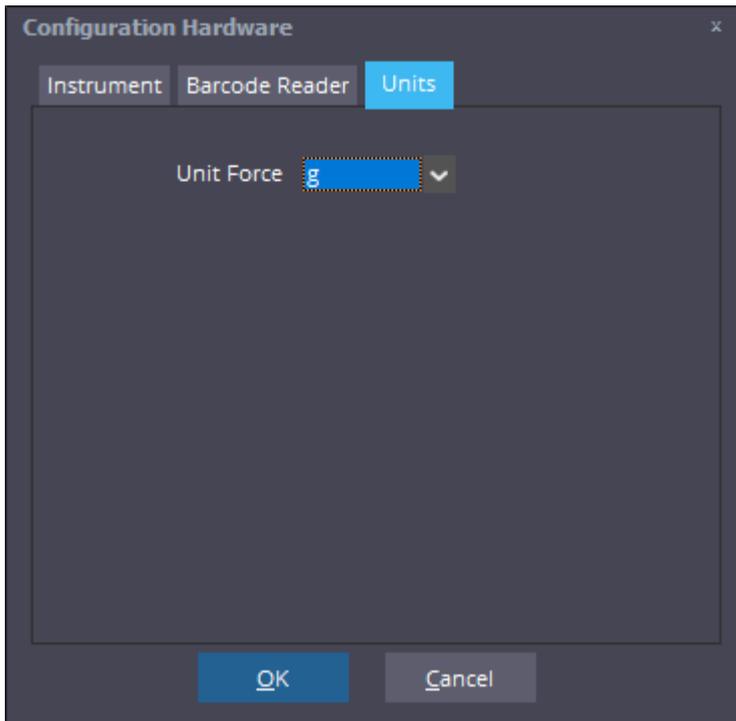


It allows to specify where the "Source Field" sent by the instrument must be copied.

Function available only if the instrument selected is compatible

The number and the fields change in accord of the instrument selected

Units

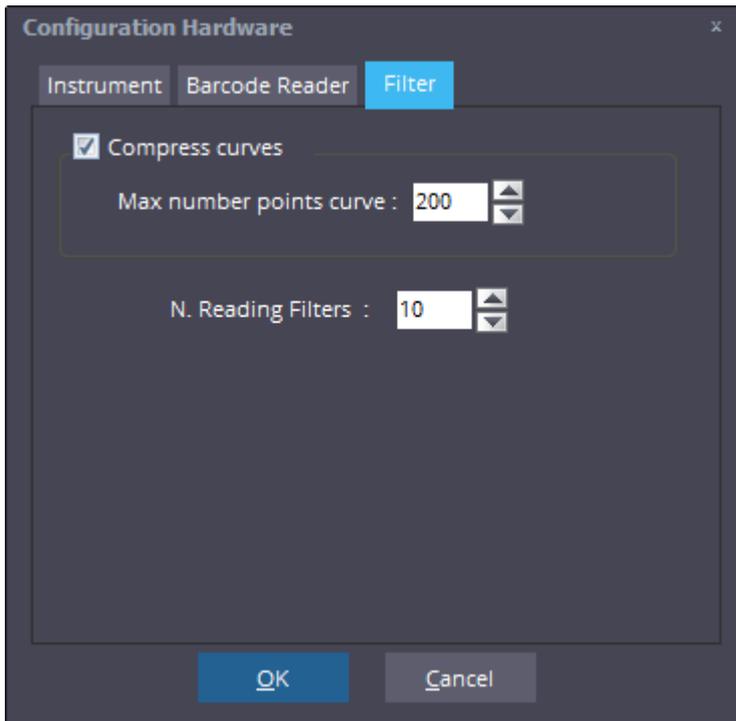


It allows to specify the unit how the data are transferred by the instrument.

Function available only if the instrument selected is compatible

The number and the units change in accord of the instrument selected

Filter



The Filter box is showed only when the instrument connected allows importing the curve.
The Compress curves option allows to reduce the number of data stored for each curve.
The Max number points is the number of points used to save/draw a curve.
The N. Reading Filter allows to smooth the curve averaging the readings.

Warning

Using one or both function can influence the results calculate and there will be a differences compared with the instrument results.

Dashboard

Choose the Dashboard option under the Tools menu to open the dashboard.

For more information see [GraphMaster Dashboard](#)

Archive

Click on the Archive icon on the toolbar or choose the Archive option under the Tools menu to open the database of the selected procedure.

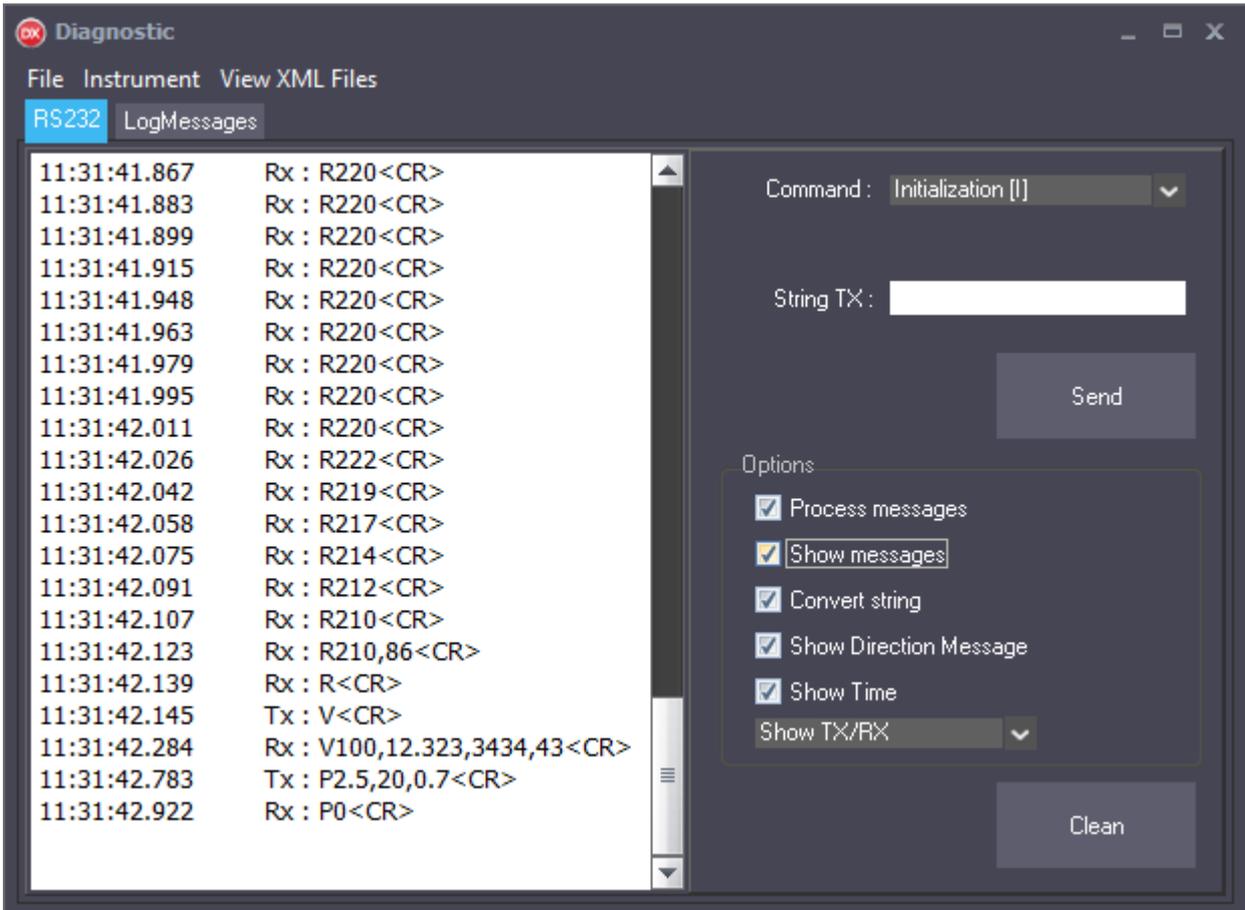
For more information see [GraphMaster Archive](#)

Demo

Available only when the software is running in dummy mode.
Click on the Demo icon on the toolbar to generate a dummy result.

Graph Help

It allows to open the online help



It allows to see all the strings received and sent between the PC and the instrument.

Process messages

If disable the messages are only showed but no other activities is done in the software.

Show messages

If enable the messages are showed

Convert string

If enable the non-visual chars are converted (see [RS232 messages](#) for more information)

Show direction message

If enable the string TX or RX is placed in front of the message to identify the direction

TX The message is sent by the software

RX The message is sent by the device

Show time

If enable the time string is added on front of the message

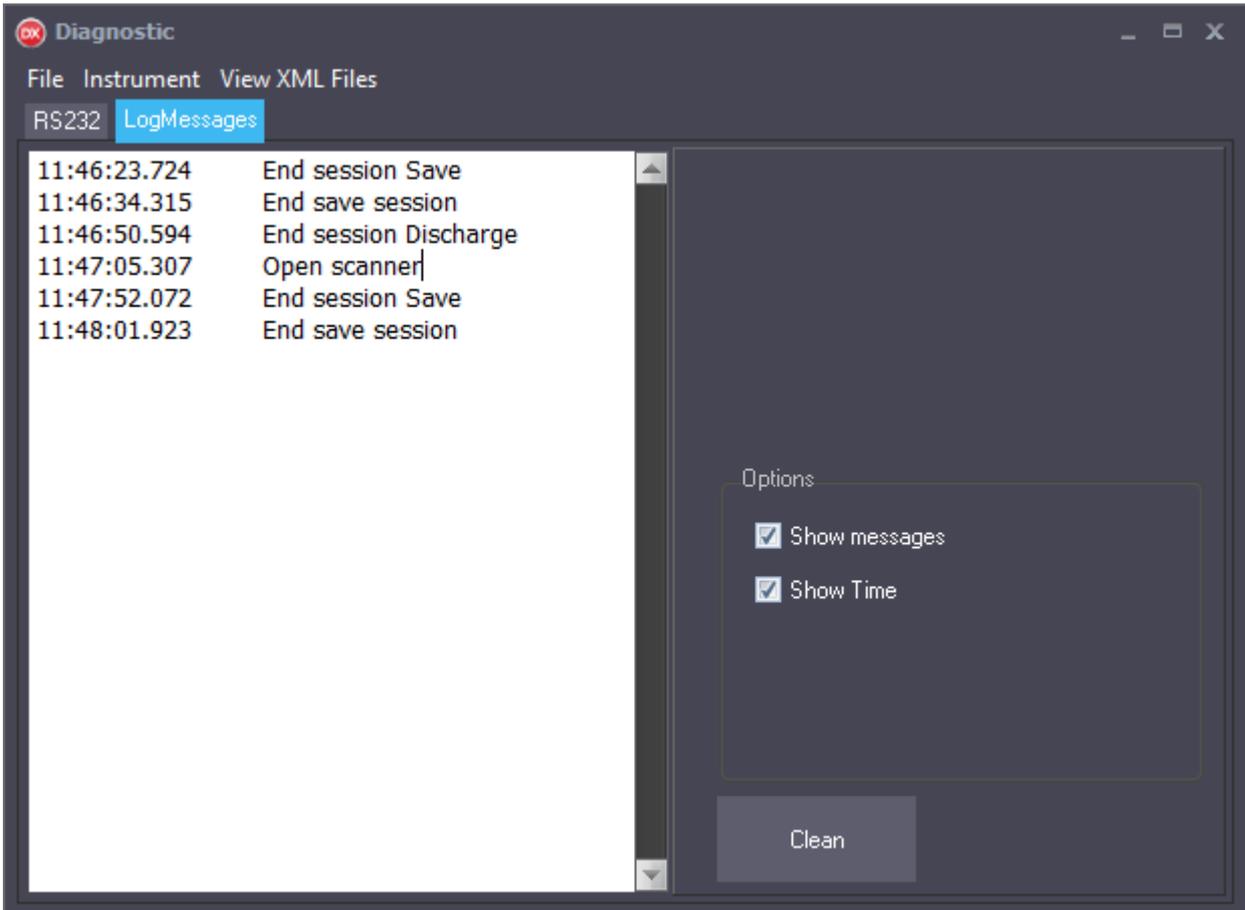
The drop-down list allows to filter the messages

Click on Clean to empty the screen

Use the function Send to transmit a message at the device.

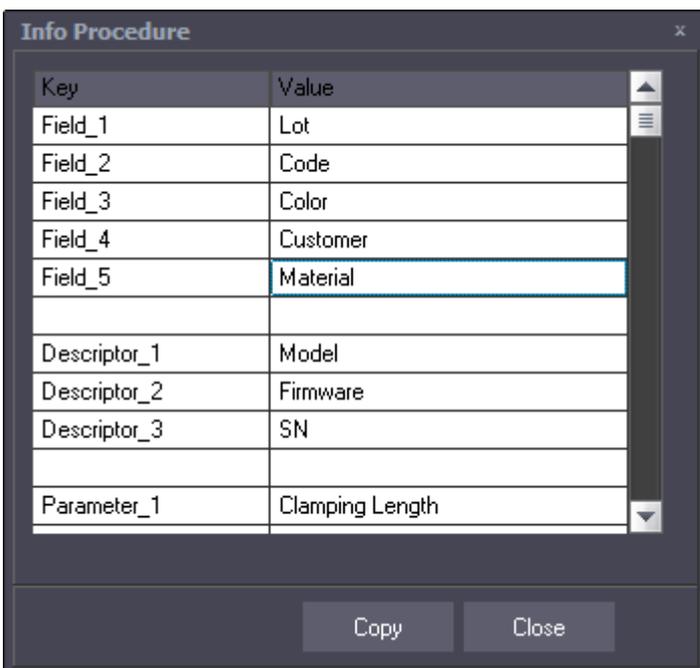
The drop-down list commands allows to send the string as parameters of the command (only for instrument with remote control functions).

LogMessages



It allows to see in real time the log messages created by the software.
The messages are write also in a file. See [LogFile reports](#) for more information.

Info Procedure



The box Info procedure allows to see the corresponding

field name in the database.

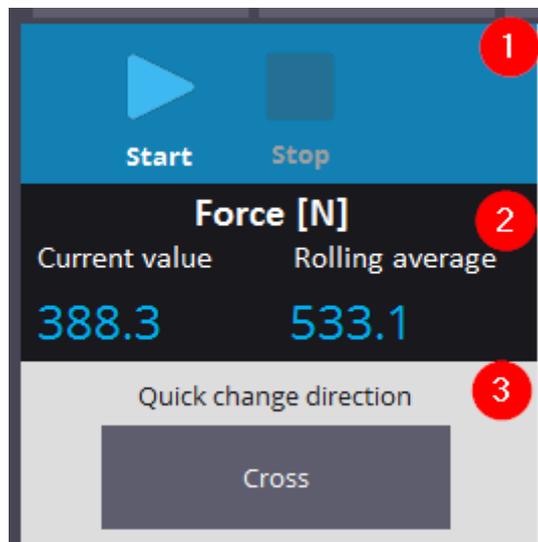
About



Folder application is the full path to where the executable file is located.
Folder database is the full path to where the data are saved.

Click on the path string to explore the folder.

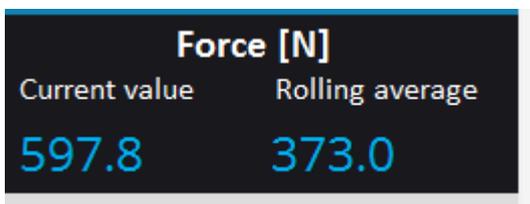
Control section



[Commands sections](#)

[Current values](#)

Current values

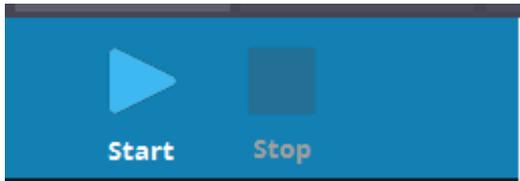


The current values box shows the last value and the rolling average of the result selected.
If the current value is not within the set limits, the value is shown in red.



If a test is not within the set invalid limits, the word "Rejected" is shown under Current Value.

Commands sections

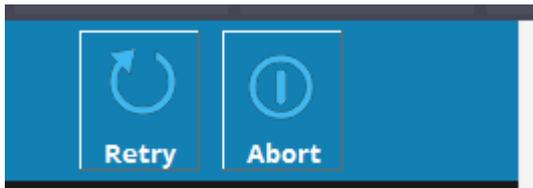


The panel is showed only when the instruments can be controlled by the software

When the instrument is connected and there is no problem there are two actions available:

- Start It allows to start a new test
- Stop It allows to interrupt the current test

When the instrument is connected but there is an error or a communication trouble the actions available are:



- Retry It allows the software to solve the problem re-sending the last command
- Abort It allows to terminate the current action and restart the communication

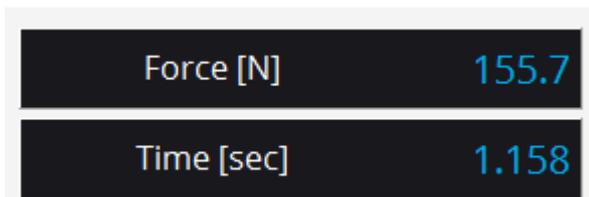
The section is visible only if the instrument selected is compatible

Quick change direction

It allows to change quickly the direction without open the parameter window.
When the direction is changed the current session is terminated.

The section is enable only if the procedure is compatible

Display section



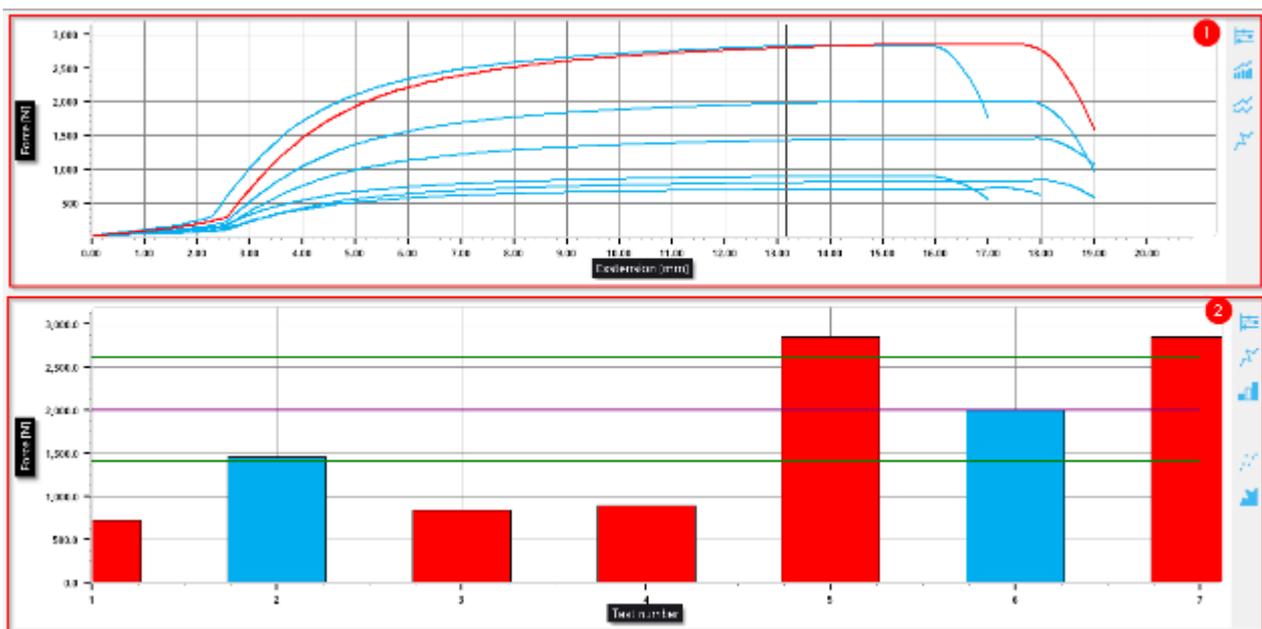
It shows the current position of the cursor on the graph

Parameters section

Code	ABC
Lot	123
Color	White
Material	ABC123
Buchel	Buchel
Model	32-76-00
Firmware	1.23.2
SN	12077-22
Clamping Length	0.7 mm
Sample width	15.00 mm
Grammage	100 g/m ²
Threshold	2.50 N
Sensitivity	20 %
Direction	Cross

In the Parameters section it is possible to read the parameters of the session selected on the instrument. In the upper area there are two windows that display the X and Y values of the position of the mouse or the point on the curve.

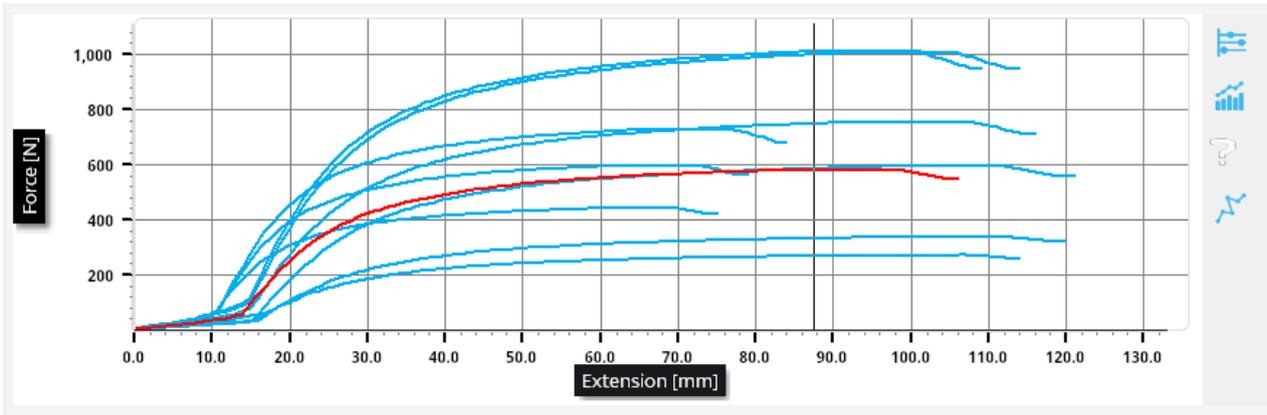
Graph section



The Graph section can display two different graphs:

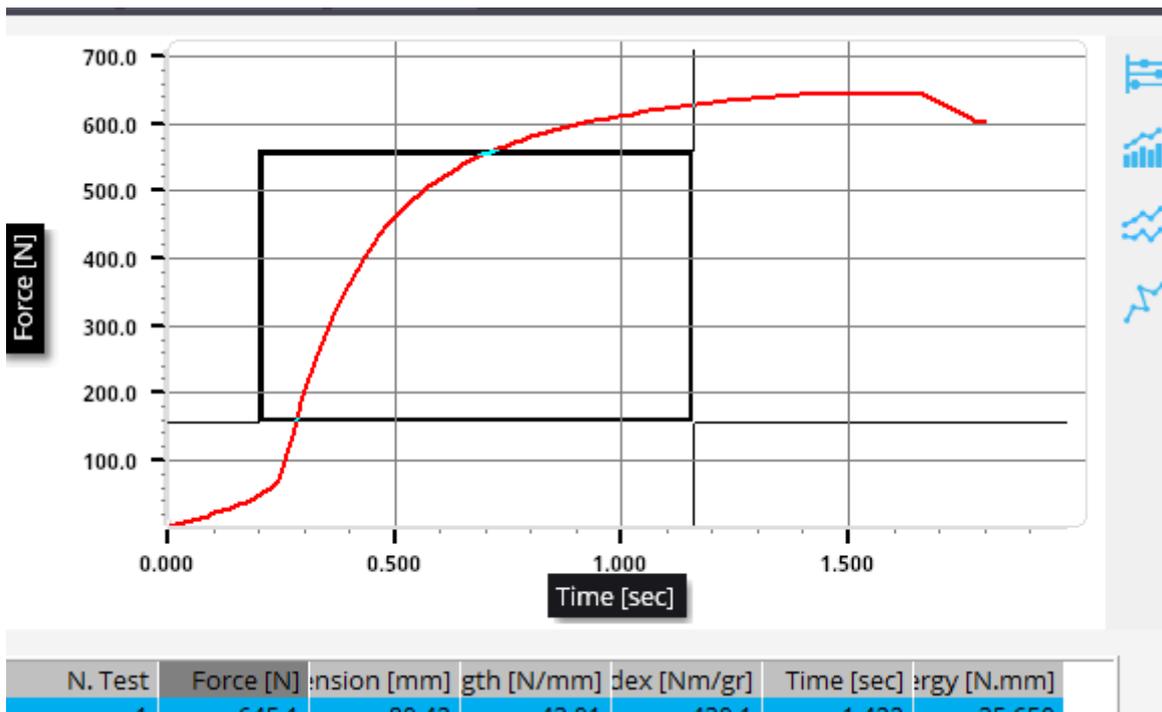
1. [Graph curves](#)
2. [Chart statistic](#)

Graph curves



In the Graph curves are plotted all the single curves collected.

Zoom



Left-click at the top left hand corner of the area you wish to zoom in on and, keeping the mouse button pressed, drag out the rectangle to the bottom right hand corner of the zoom area. Releasing the mouse button will zoom into the area selected.

To undo the zoom, double-click on the graph or press the left mouse button anywhere on the Chart area and drag up and left with the mouse button depressed. Releasing the button will force a redraw of the original Graph.

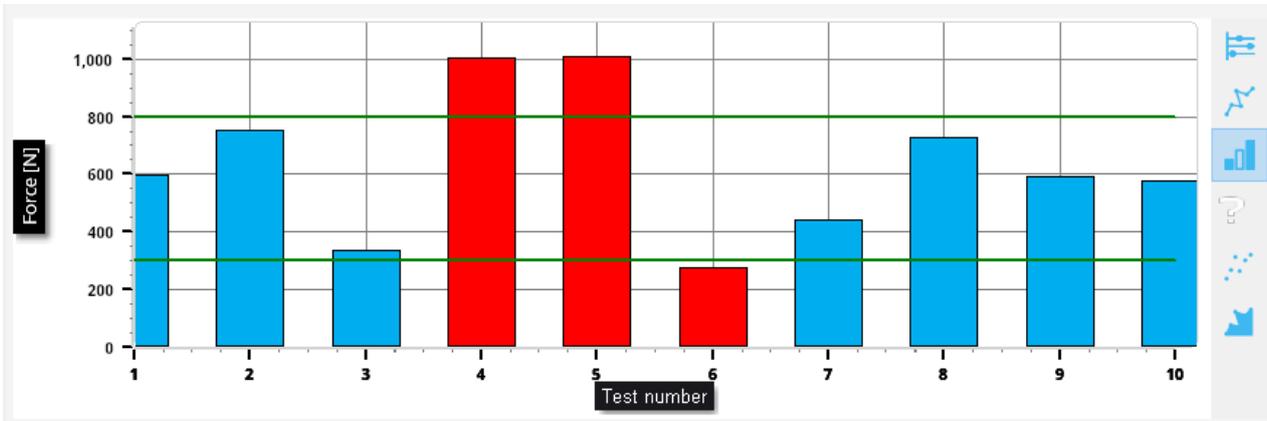
Scroll

To scroll across the Graph, press and hold the right mouse button and drag the mouse in the direction you wish to

scroll the Graph. When you release the mouse button the Graph will remain at the new location.

To undo the scroll, press the left mouse button anywhere on the Graph area and drag up and left with the mouse button depressed. Release the button and the Graph will redraw to the originally defined area.

Chart statistic



The charts are calculated for the selected result.
For more information see [Chart statistic](#)

Data section

N. Test	Force [N]	ension [mm]	Strength [N/mm]	Compression Index [Nm/gr]	1
1	645.1	80.42	43.01	430.1	1
2	664.4	71.21	44.29	442.9	1
3	775.7	67.22	51.72	517.2	1
4	362.0	80.07	24.13	241.3	1
Average	594.3	75.90	39.62	396.2	1
SD	211.5	7.524	14.10	141.0	1
CV%	35.59	9.91	35.59	35.59	1
Max	775.7	80.42	51.72	517.2	1

In the Data section it is possible to scroll down the values acquired during the session.

Clicking on any value in a row will display the selected curve.

The unit system is configured in Options (see [Units/Num.Digits](#))

The number and the order of results are configured in Options (see [Results](#))

The number and the order of statistics calculated are configured in Options (see [Statistics](#))

The dimensions of the data and statistics tables may be customized by placing the cursor on the appropriate line to be moved, holding down the left mouse key and dragging the line to the required position.

Clicking on the column title to change the selected result.

The screenshot shows a 'Parameters' dialog box with a dark theme. At the top, there are five tabs: 'Identification' (highlighted in blue), 'Parameters', 'Limits', 'Comments', and 'Other'. The 'Identification' tab contains the following fields:

- Material:** A dropdown menu with 'Board' selected.
- Color:** A dropdown menu with 'White' selected.
- Batch:** A text input field containing 'ABC123'.
- Temperature [C]:** A numeric input field with '22.50' entered.
- Humidity [%]:** A numeric input field with '65' entered.
- Operator:** A dropdown menu with 'Fabrizio' selected.

At the bottom of the dialog, there are four buttons: 'Load Profile' (highlighted in blue), 'Save Profile', 'OK', and 'Cancel'.

Identification allows the user to fill the fields to identify the sample.

If the field is defined as List, it's possible to modify the list quickly with a double-click on the field.

The list of a field defined as Fixed list can be changed only from the Options.

The numeric values are aligned on the left side only during the input, in the reports and database they are aligned on the left as the text.

Load Profile allows recalling the Identification, Parameters and Limits information, from a Profile file or from a Master file.

Save Profile allows storing the Identification, Parameters and Limits information in a Profile file. The file created can be stored everywhere and even shared with other users.

Parameters

The screenshot shows a 'Parameters' dialog box with the following settings:

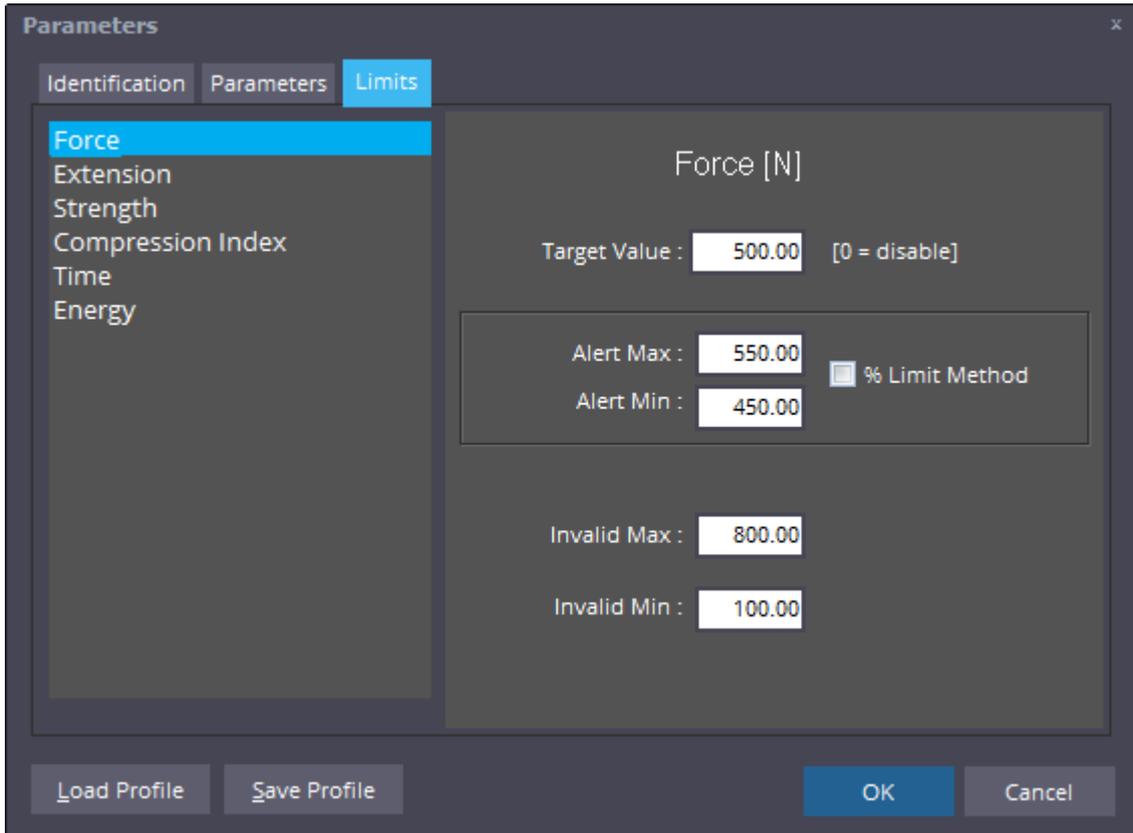
Parameter	Value	Unit	Range
Clamping Length	0.7 mm		
Sample width	15.00	mm	[1.00 - 15.00]
Grammage	100	g/m ²	[1 - 1,000]
Threshold	2.50	N	[2.50 - 250.00]
Sensitivity	20	%	[2 - 80]
Direction	Cross		

The box Parameters allows to change the test parameters.

The parameters can be:

- | | |
|----------------|--------------------------------------------------------|
| Drop-down list | The user can select only between the prefix items |
| Float | The user can enter a floating value between the limits |
| Integer | The user can enter an integer value between the limits |
| Check | The user can choose between active or not active |

Limits



The Limits box allows to enter the limit for all numeric results.

Target result allows the user to select which result should be considered on analysis.

Target value is the value used to calculate the % alert limit.

Alert limits can be defined by % or absolute value.

To disable the alert limits, enter the same value for both.

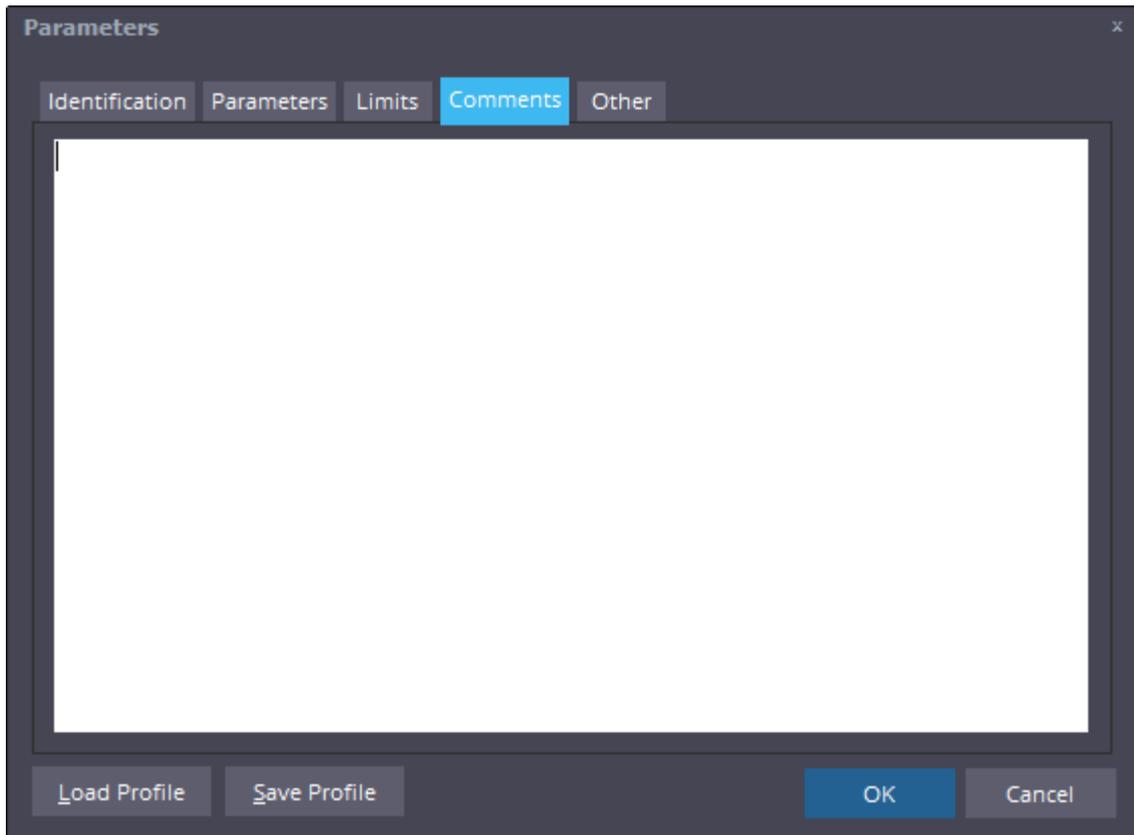
Invalid limits are used to reject the values.

The number of rejected tests will be shown on dedicated section.

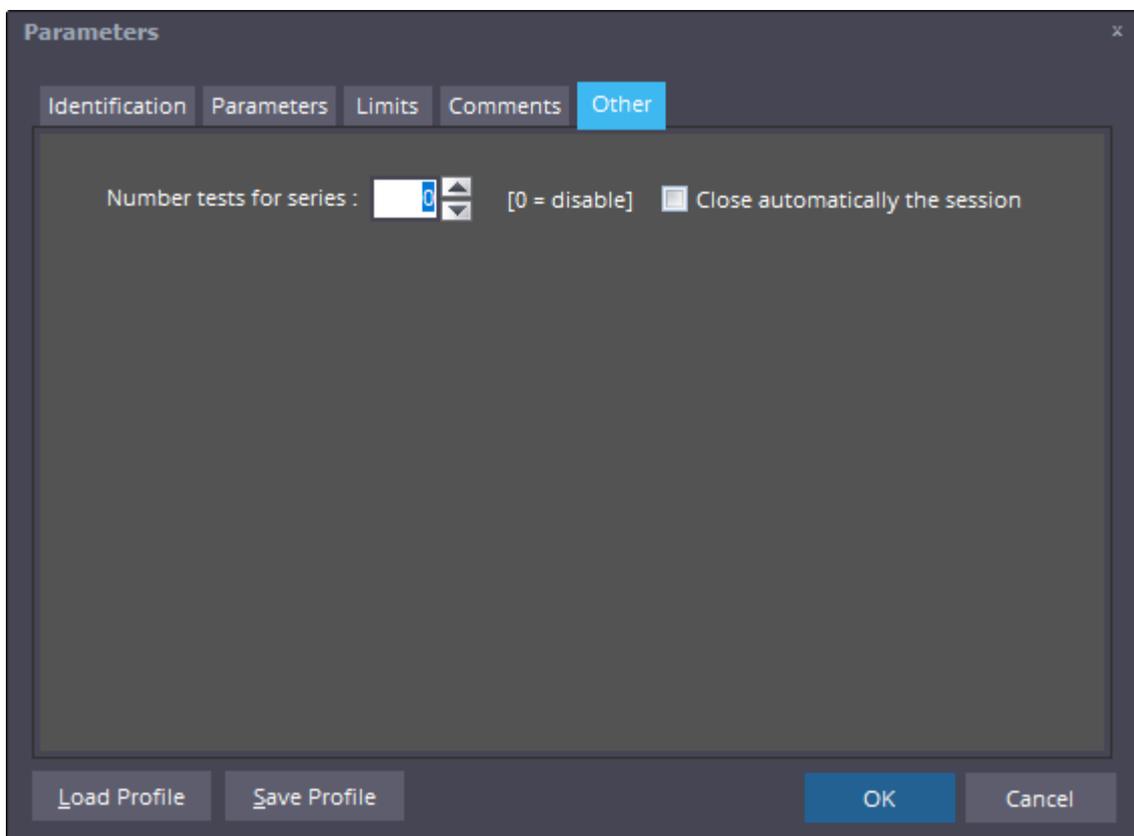
To disable the invalid limits, enter the same value for both.

On the trend chart the line target value and two alert limits will be plotted.

Comments



Other



It allows to set a limit of the test collected during a series.

Preview
☐ X

◀ ▶ Zoom **70** ▼

Print
PDF
Close

TEST REPORT

Field_1 : **B**
 Field_2 : **74**
 Field_3 : **4**
 Field_4 : **D**
 Field_5 : **E**
 Field_6 :

Date Test : **5/28/2019**
 Time Test : **10:12:58 AM**
 Model : **EC36**
 Company : **Buchel**
 SN : **231234**

Pump Speed : **95 ml/sec**
 Sensitivity : **3 %**
 Threshold : **0.1240 MPa**
 Grammage : **100 g/m²**
 Grammage cover : **1 g/m²**
 Press. Correction : **No**
 Tside : **Front**
 Burst Delay : **0.5000 sec**
 Stop Delay : **0.5000 sec**
 Number Sheet : **1**

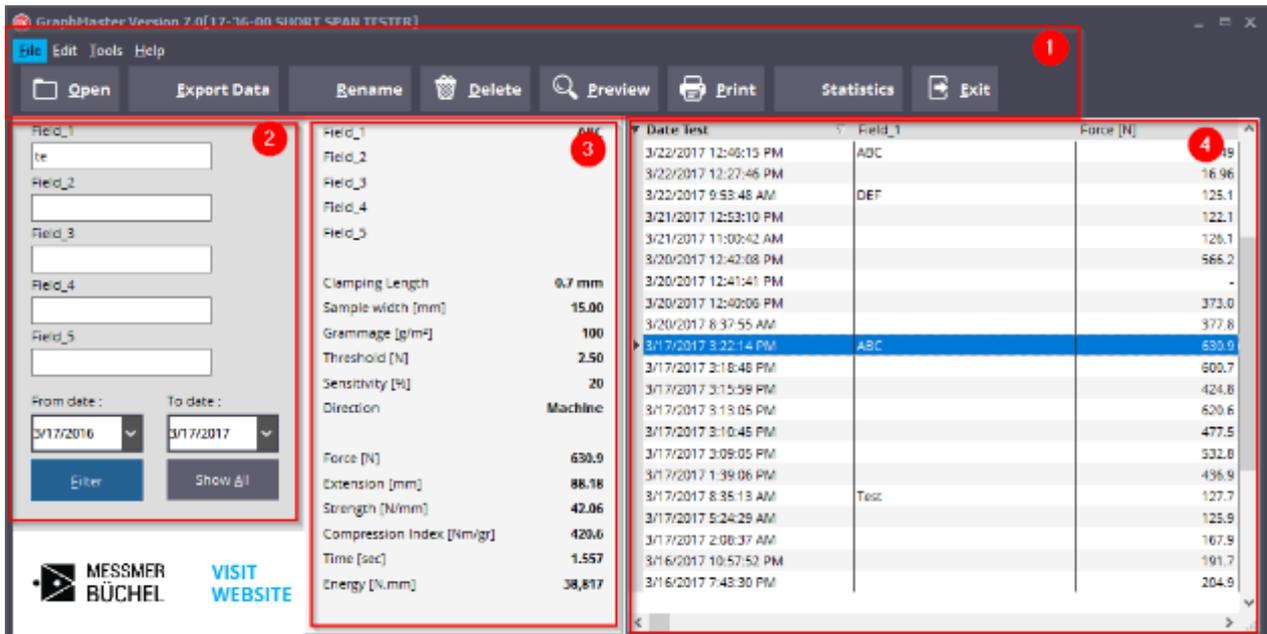
Test	Pressure MPa	Bending mm	Volume cm ³	Index kPa.m ² /gr	Time sec	Energy J/m ²	Pressure MPa	4C+E
1	0.4420	0	10.00	4.420	0.001595	3,114	0.4364	446.0
2	0.4970	0	10.00	4.970	0.001590	3,484	0.4914	501.0
Average	0.4695	0	10.00	4.695	0.001593	3,299	0.4639	473.5
SD	0.03889	0	0	0.3889	0.0000030	261.6	0.03889	38.89
CV%	8.28	0.00	0.00	8.28	0.19	7.93	8.38	8.21
Max	0.4970	0	10.00	4.970	0.001595	3,484	0.4914	501.0
Min	0.4420	0	10.00	4.420	0.001590	3,114	0.4364	446.0

The graph displays Pressure [MPa] on the y-axis (ranging from 0.0000 to 0.5000) and Volume [cm³] on the x-axis (ranging from 0.00 to 11.00). Two curves are shown, both starting at (0,0) and rising to a peak pressure of approximately 0.45-0.50 MPa at a volume of about 9.5 cm³, before dropping sharply to zero at 10.00 cm³.

Page 1 of 1
GraphMaster

- Use the arrow buttons to scroll the pages.
- Use the pull-down bar to arrange the view of the page on screen.
- Use the Setting button to change the print configuration.
- Use the PDF button to create a PDF document
- Use the Print button to print the pages.

Main Database



The main window is divided on four sections:

1. [Main menu](#)
2. [Filter section](#)
3. [Session section](#)
4. [Data section](#)

Open

Click on the Open icon on the toolbar or choose the Open option under the File menu to open the selected sessions on [GraphMaster Test](#)

If there are more sessions selected the software will merge the data.

NOTE

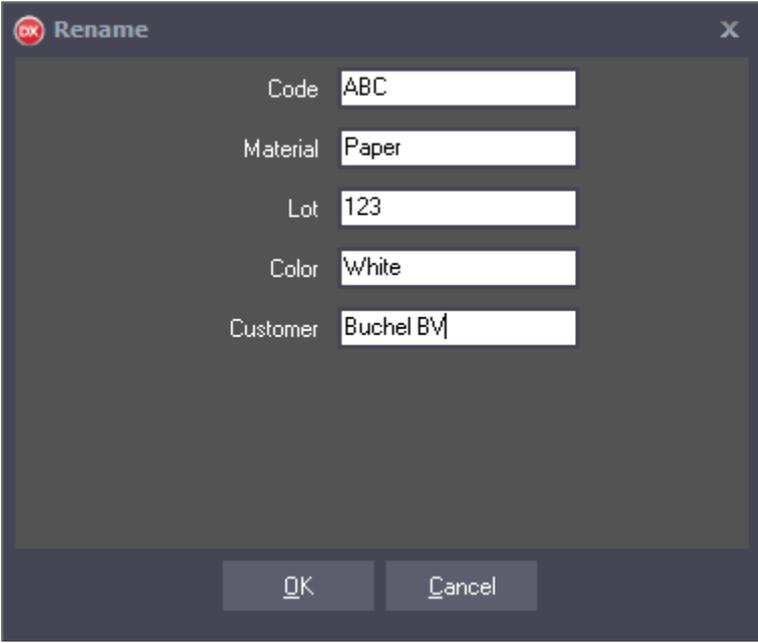
It is possible open a single session with a double click on the record.

Delete

Click on the Delete icon on the toolbar or choose the Delete option under the File menu to delete the sessions selected.

If there are more sessions selected the function prompt a confirm message.

Rename

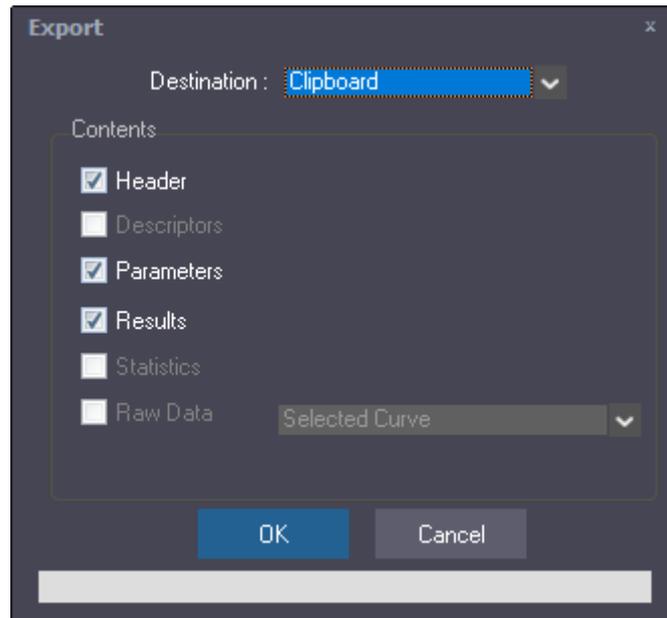


A screenshot of a 'Rename' dialog box. The dialog has a dark grey background and a title bar with a red 'OK' icon and a close 'X' button. It contains five text input fields with labels to their left: 'Code' with 'ABC', 'Material' with 'Paper', 'Lot' with '123', 'Color' with 'White', and 'Customer' with 'Buchel BV'. At the bottom, there are two buttons: 'OK' and 'Cancel'.

Click on the Rename icon on the toolbar or choose the Rename option under the File menu to change the values of the identification data.

If there are more sessions selected the function prompts a confirm message.

Export



The Export box exports the record directly to Clipboard, Excel or Text file.
Copy on the Clipboard and paste into another Windows application which supports the Windows Cut & Paste function.
Export the values directly to an Excel document.
Create a text file with all values divided by a TAB and CR characters.

Preview

Click on the Preview icon on the toolbar or choose the Preview option under the File menu to see the print preview of the list of all session filtered and sorting.

Print

Click on the Print icon on the toolbar or choose the Print option under the File menu to print the list of all session filtered and sorting.

Create PDF

Click on the Create PDF icon on the toolbar or choose the Create PDF option under the File menu to create a PDF document of the report.

Exit

Click on the Exit icon on the toolbar or choose the Exit option under the File menu to close the GraphDB software.

Filter

Click on the Filter icon on the section filter or choose the Filter option under the Edit menu to enable the criteria filter.

Show All

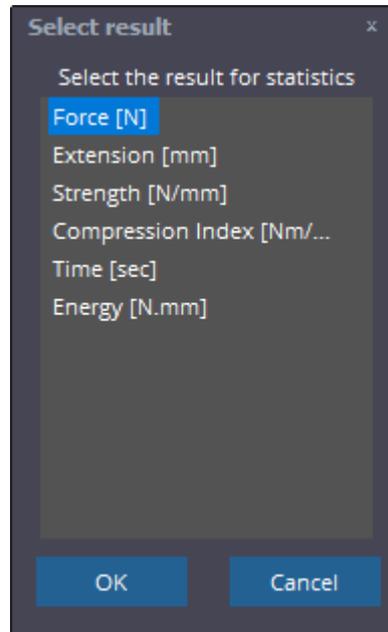
Click on the Show All icon on the section filter or choose the Show All option under the Edit menu to delete the filter.

Refresh Database

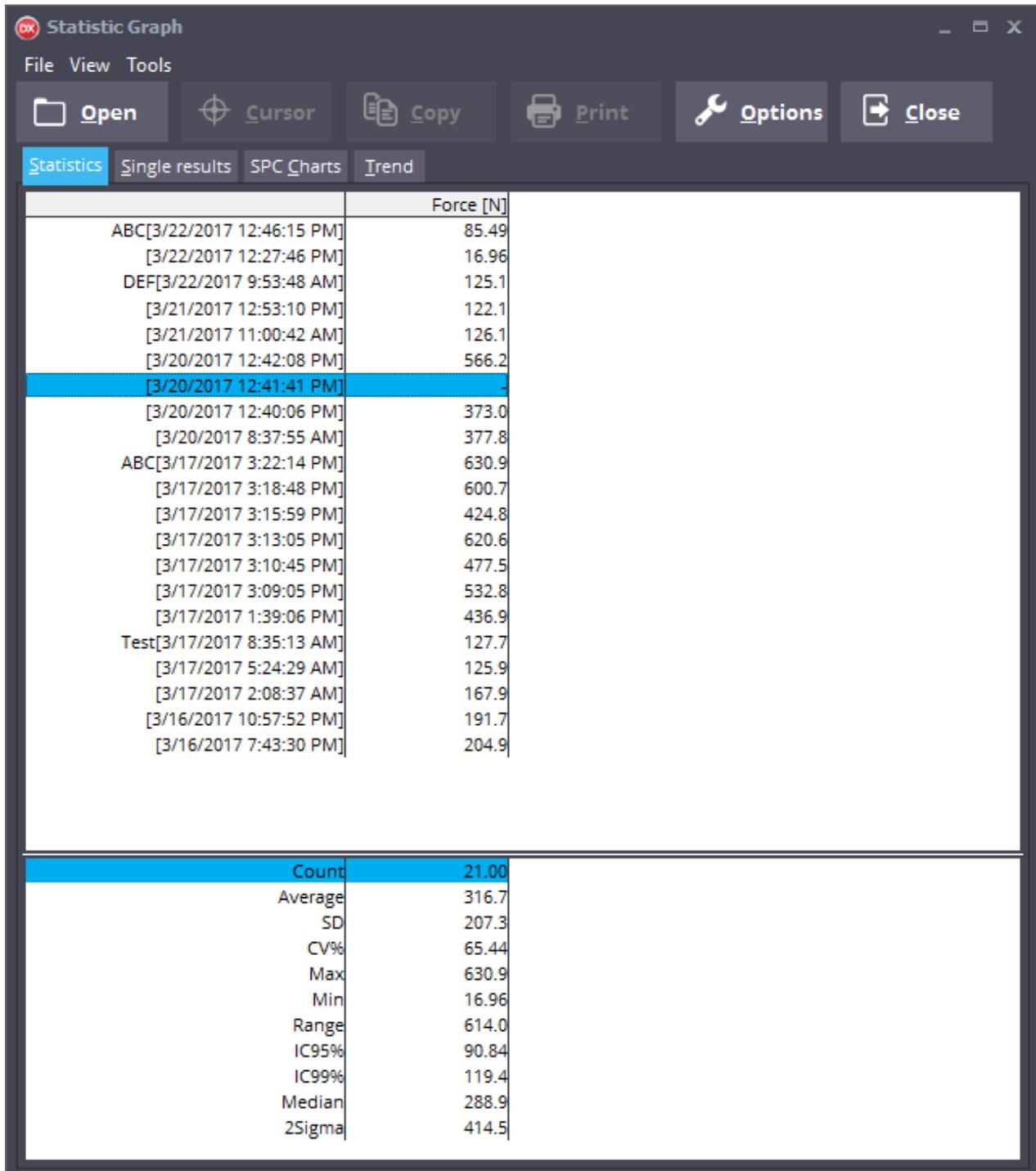
Choose the Refresh database under the Edit menu to update the query. The function allows to refresh the database with the new tests acquired.

Statistics

Once the required specimens have been selected, clicking on the Statistics icon on the toolbar or choose Statistics option under the Options menu will allow the user to create a statistic using one of the results. A box will be displayed allowing the user to select which result will be used to calculate and draw the statistic.



To select the result to use, click on the result name within the list and click on the OK button.



The window calculated the statistics of the series of batch.

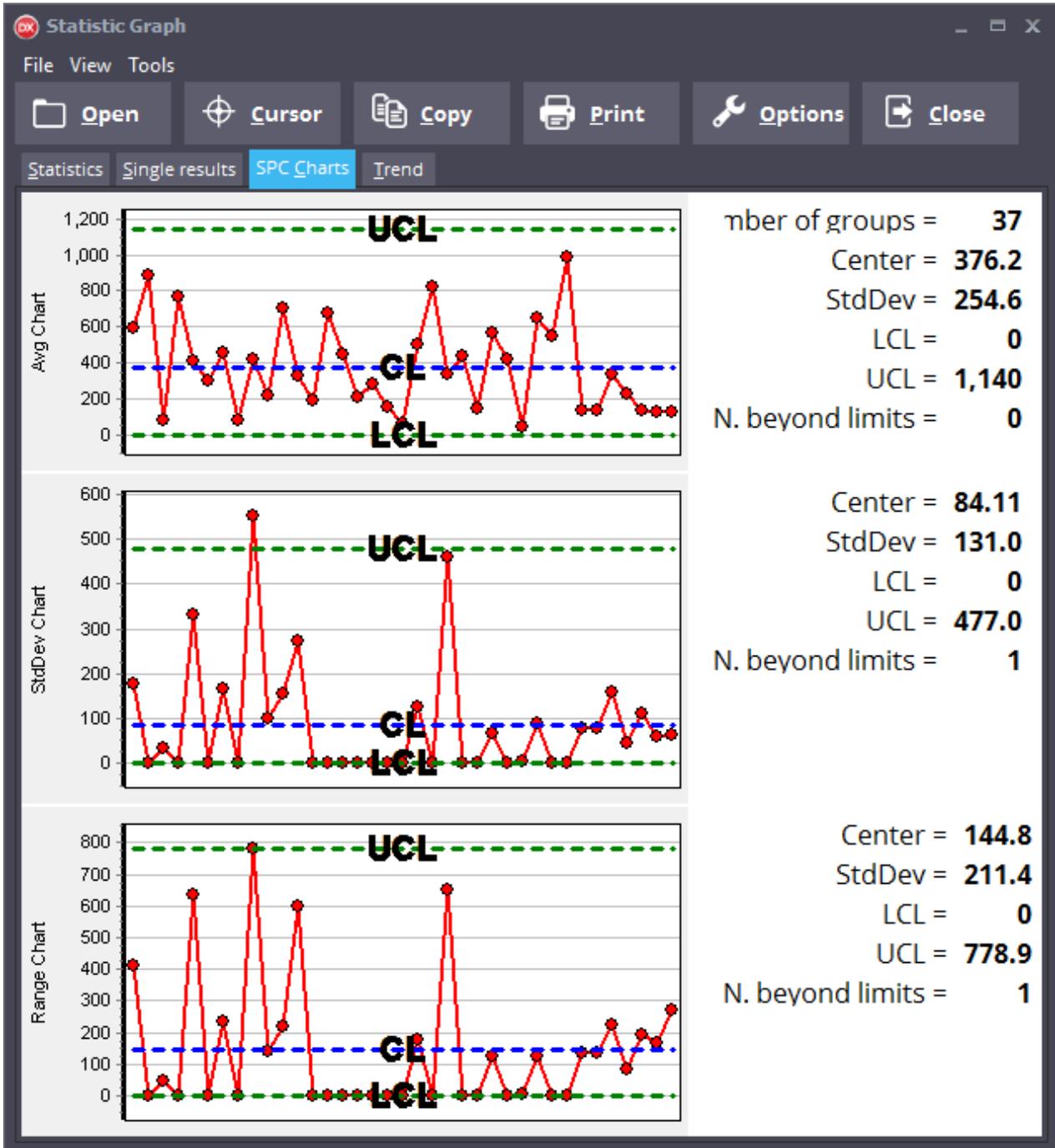
Single results

The screenshot shows the 'Statistic Graph' window with the 'Single results' tab selected. The window contains a table of individual test results and a summary statistics table.

	Force [N]
ABC[3/22/2017 12:46:15 PM] #1	169.4
ABC[3/22/2017 12:46:15 PM] #2	32.76
ABC[3/22/2017 12:46:15 PM] #3	54.36
[3/22/2017 12:27:46 PM] #1	16.96
DEF[3/22/2017 9:53:48 AM] #1	179.6
DEF[3/22/2017 9:53:48 AM] #2	70.63
[3/21/2017 12:53:10 PM] #1	147.3
[3/21/2017 12:53:10 PM] #2	96.88
[3/21/2017 11:00:42 AM] #1	20.21
[3/21/2017 11:00:42 AM] #2	201.9
[3/21/2017 11:00:42 AM] #3	198.4
[3/21/2017 11:00:42 AM] #4	91.54
[3/21/2017 11:00:42 AM] #5	19.75
[3/21/2017 11:00:42 AM] #6	120.3
[3/21/2017 11:00:42 AM] #7	83.40
[3/21/2017 11:00:42 AM] #8	168.9
[3/21/2017 11:00:42 AM] #9	217.0
[3/21/2017 11:00:42 AM] #10	174.2
[3/21/2017 11:00:42 AM] #11	203.5
[3/21/2017 11:00:42 AM] #12	22.07
[3/21/2017 11:00:42 AM] #13	255.0
Count	2,602
Average	170.0
SD	72.44
CV%	42.61
Max	1,039
Min	10.52
Range	1,028
IC95%	2.784
IC99%	3.658
Median	176.4
2Sigma	144.9

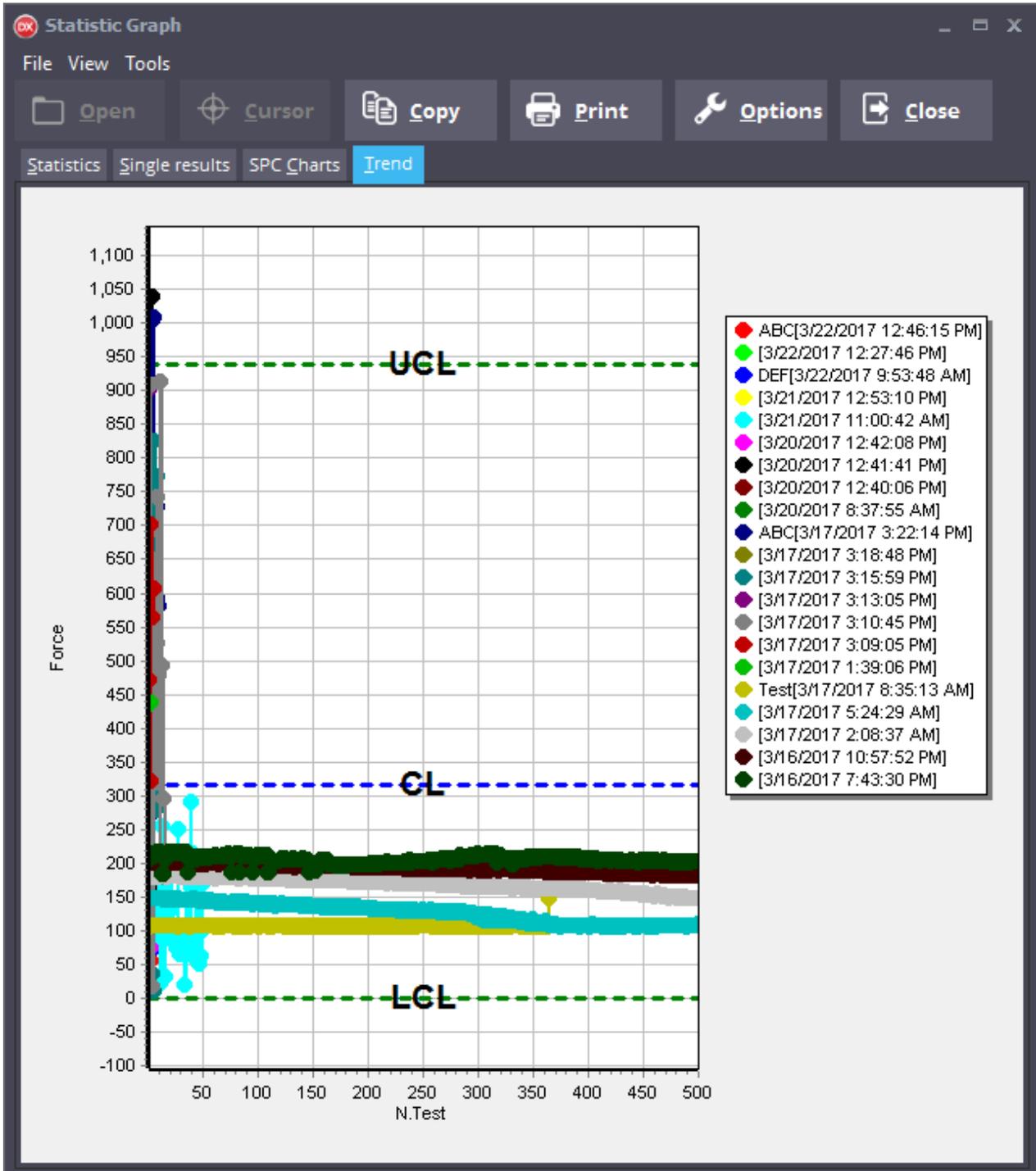
The window calculated the statistics of the single results of all batch.

SPC Chart



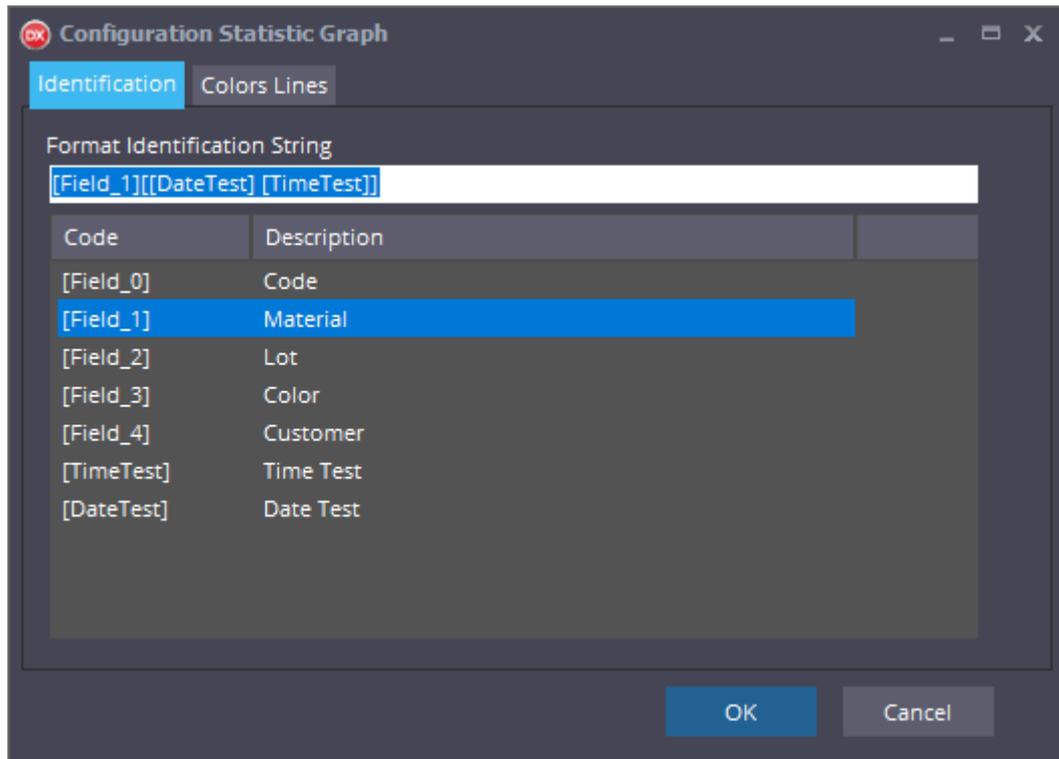
The box SPC Charts shows the Average, Standard deviation and Range trend of the sessions. The charts show the upper and lower control limits and the mean. The graphic panel charts can be resized using the split bar between the graphic panels. To hide the charts use the menu View. The charts can be printed and copied in memory.

Trend



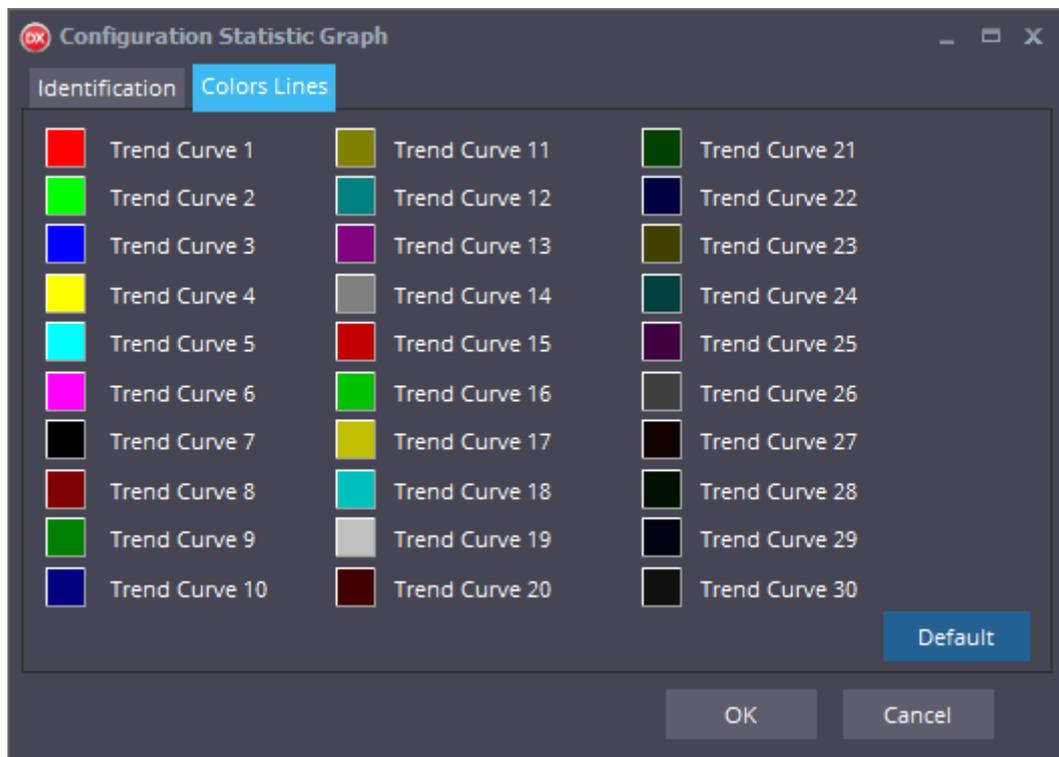
The box Trend allows to compare the single tests of the single sessions.
 The colors and the identification string can be customized [Options](#)

Identification



The box Identification allows to create a template name used to identify the session.

Colors Lines



The box Colors allows to select the color used to identify the session in the [Trend](#) chart.

Dashboard

Choose the Dashboard option under the Tools menu to open the dashboard.

For more information see [GraphMaster Dashboard](#)

Test

Choose the Test option under the Tools menu to open the Test software of the selected procedure.

For more information see [GraphMaster Test](#)

Data section

Date Test	Item	Lot	Material	Color	Customer	Force [N]	Extension [m...	Strength [N/m...
3/31/2017 11:57:44 AM	XYZ	ABC	ABC123	White	Buchel	407.1	83.74	27.1
3/31/2017 11:57:28 AM	XYZ	ABC	ABC123	White	Buchel	398.6	88.40	26.5
3/31/2017 11:57:15 AM	XYZ	ABC	ABC123	White	Buchel	334.3	94.51	22.2
3/31/2017 11:57:01 AM	XYZ	ABC	ABC123	White	Buchel	700.0	95.42	46.6
3/31/2017 11:56:47 AM	XYZ	ABC	ABC123	White	Buchel	487.7	89.61	32.5
3/31/2017 11:56:33 AM	XYZ	ABC	ABC123	White	Buchel	494.4	100.7	32.9
3/31/2017 11:56:19 AM	XYZ	ABC	ABC123	White	Buchel	246.1	86.20	16.4
3/31/2017 11:56:05 AM	XYZ	ABC	ABC123	White	Buchel	565.4	81.41	37.6
3/31/2017 11:55:52 AM	XYZ	ABC	ABC123	White	Buchel	548.4	83.64	36.5
3/31/2017 11:55:39 AM	XYZ	ABC	ABC123	White	Buchel	517.9	89.94	34.5
3/31/2017 11:55:24 AM	XYZ	ABC	ABC123	White	Buchel	505.8	89.59	33.7
3/31/2017 11:55:11 AM	XYZ	ABC	ABC123	White	Buchel	502.4	80.37	33.4
3/31/2017 11:54:58 AM	XYZ	ABC	ABC123	White	Buchel	523.5	87.98	34.9
3/31/2017 11:52:25 AM	123	ABC	ABC123	White	Buchel	237.8	102.4	15.8
3/31/2017 10:32:53 AM	123	ABC	ABC123	White	Buchel	-	-	-
3/30/2017 4:20:21 PM	ABC	123	White	ABC123	Buchel	594.3	75.90	39.6

In the Data section it is possible to scroll the database and open the session on the Graph by double-clicking.

All test sessions that conform to the criteria entered in the filter section will be listed.

To select multiple rows in a grid using the following techniques:

- Ctrl + Mouse clicks (single row selection)
- Shift + Arrow Keys (range selection)

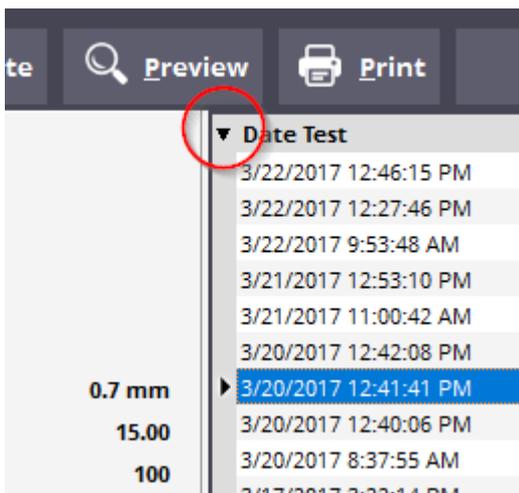
It is possible change the order of the list by clicking on any column title.

To invert the system order (increasing / decreasing), click column title again.

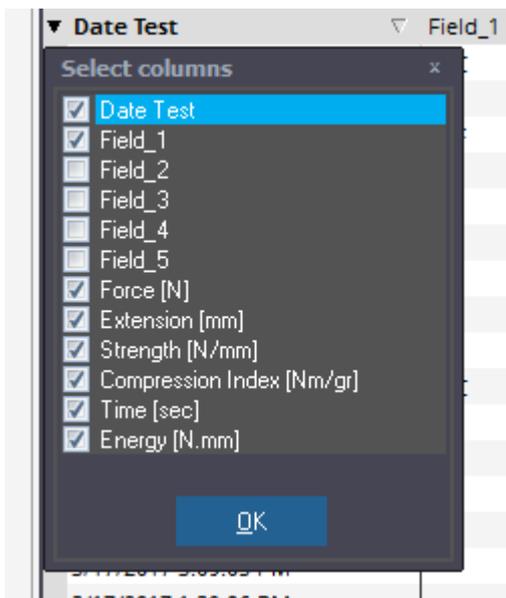
Dimensions of the columns may be customized by placing the cursor on the appropriate column divider line inside the title field, holding down the left mouse key and dragging the line to the required position.

The columns can be drag to change the position.

Columns customize



Click on the small arrow on the top-left corner to show the Select columns windows.



The Select columns window allows hiding or showing the column in the grid.

Filter section

In the Filter section, it is possible to choose the criteria for filtering the Data section

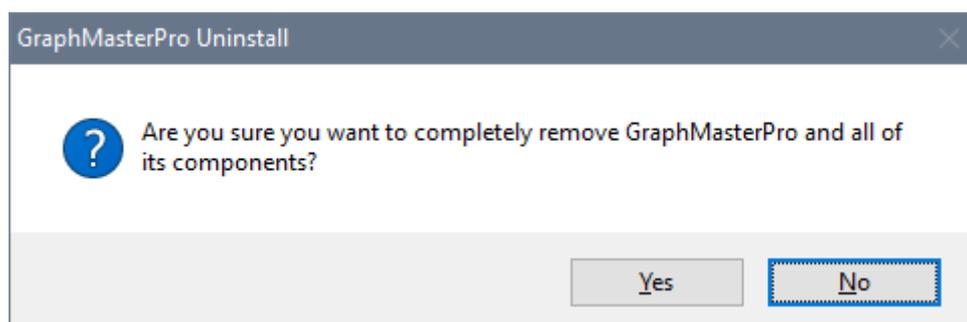
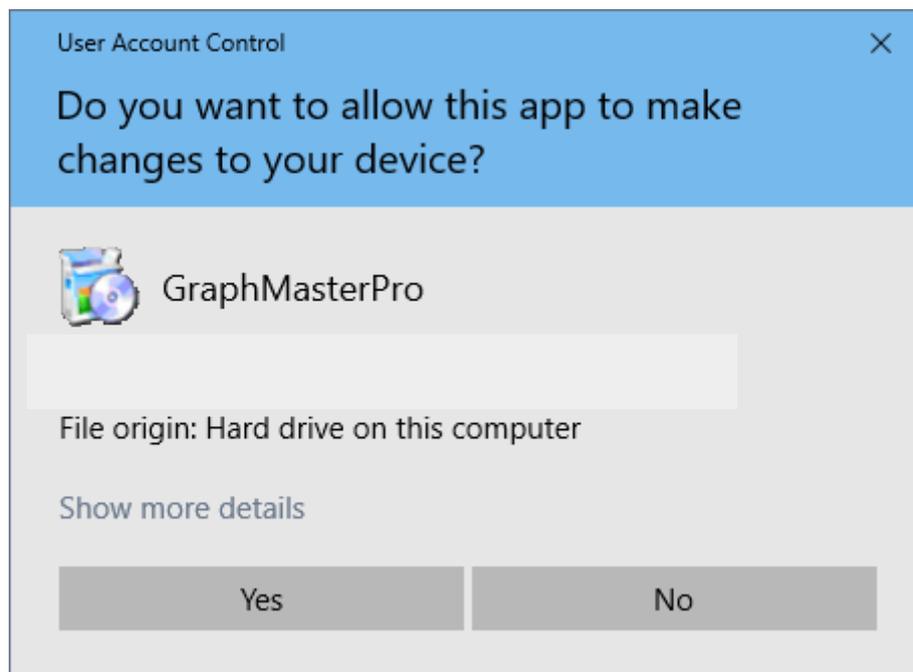
Session section

In the Session section, it is possible to read the parameters and the average of the selected session of the Data section. The unit system for average is configured in Options.

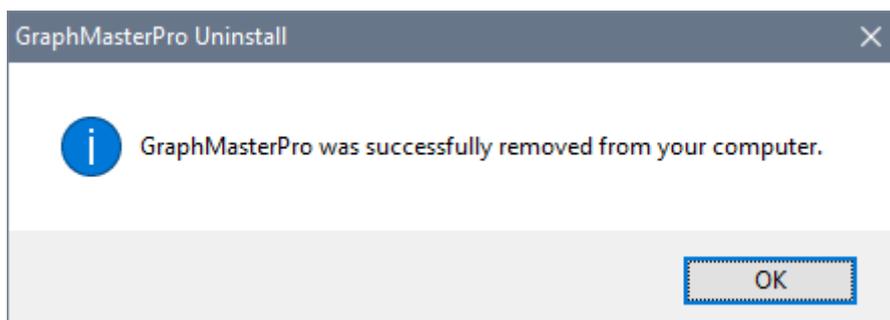
Uninstall the software

To remove the software from the PC, select "Uninstall GraphMaster" from the Start menu.

The procedure will NOT remove your data but only the application.



Confirm or cancel the uninstall process.



At the end of procedure the software is completely removed from the PC.

NOTE

The database are not deleted from the PC.

Software characteristics

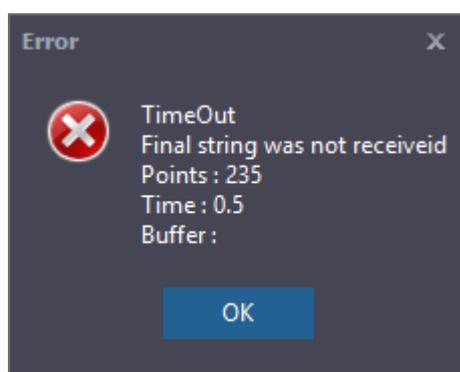
Software size: 150Mb

Database format: MDB (Microsoft Access 2000/2002)

Space used by the archive: about 250kB for a session of 20 tests with a curve of 500 points

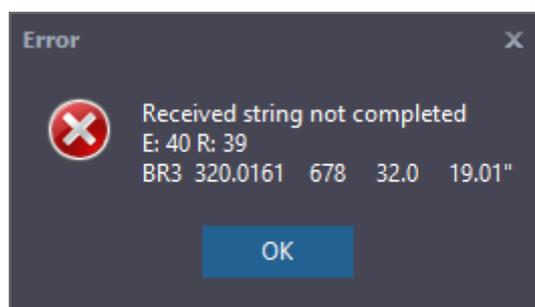
Error communication

Timeout



This error occurs when the PC does not receive data from the instrument.
Try repeating the test. If the problem continues, switch off the instrument and switch on.

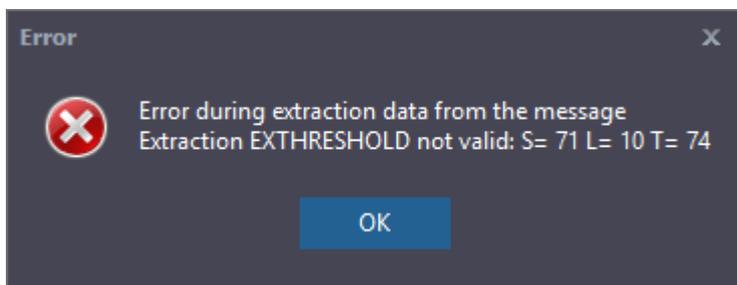
String not complete



This error occurs when the PC does not receive all data from the instrument.

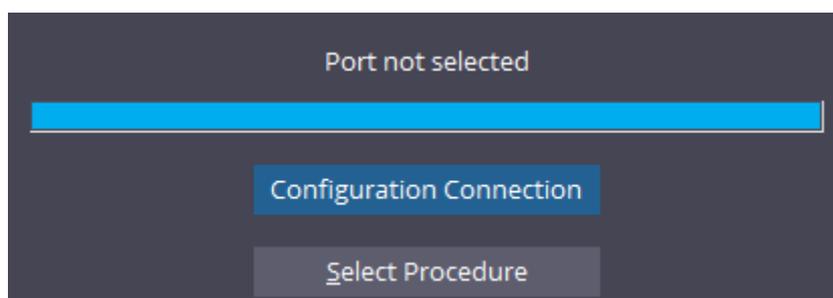
Try repeating the test. If the problem continues, switch off the instrument and switch on.

Error during extraction



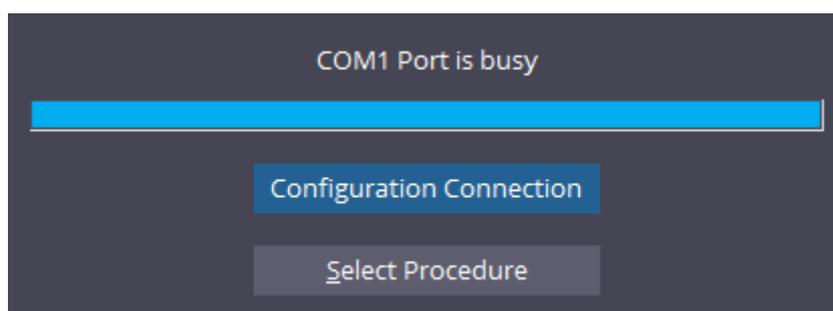
This error occurs when the PC does not receive all data from the instrument. Try repeating the test. If the problem continues, switch off the instrument and switch on.

Port not selected



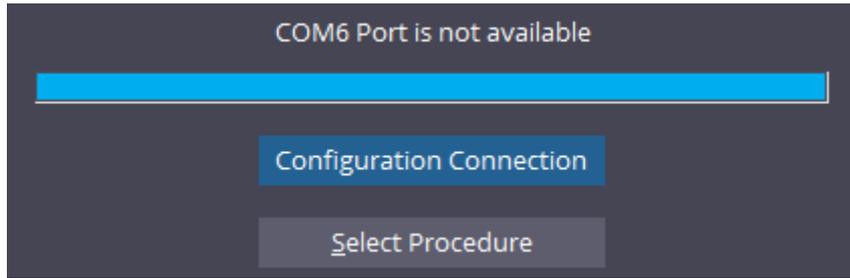
This error occurs when there is no port selected; select Configuration connection to choose the port.

Port busy



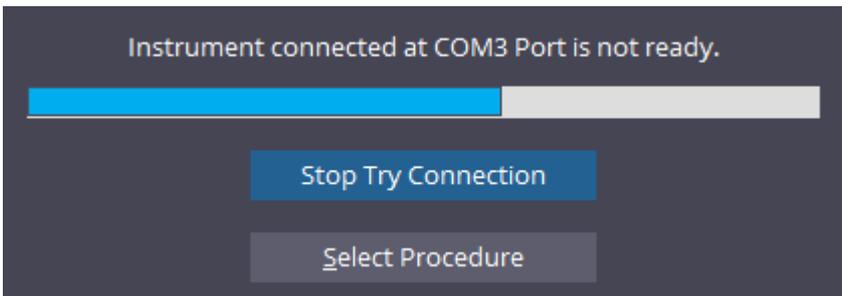
This error occurs when it is not possible to open the port because it is already open by a different software.

Port not available



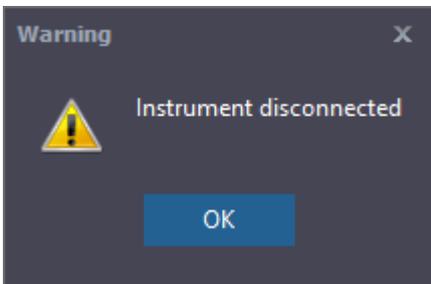
This error occurs when it is not possible to open the port because it is already open by a different software.

Instrument not ready



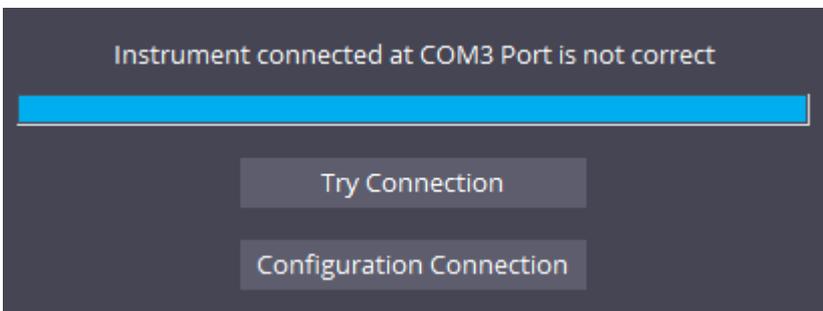
This error occurs when the software is not able to communicate correctly with the instrument. Please check that the instrument is powered and the main menu is showed.

Instrument disconnected



This error occurs when after a correction connection the instrument is powered off or the USB cable is disconnected.

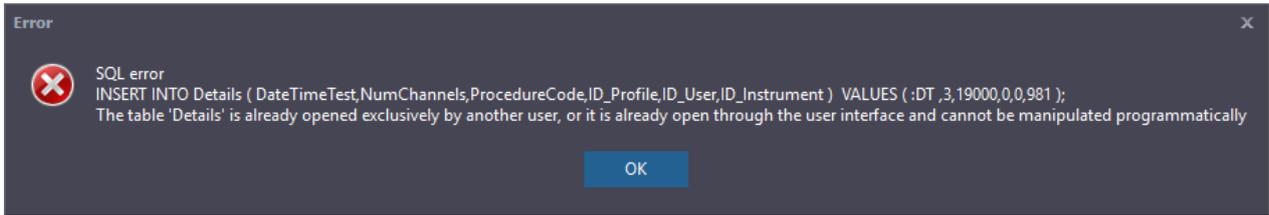
Instrument not correct



This error occurs when the instrument connected at the COM port selected and the instrument open are different.

Error end of session

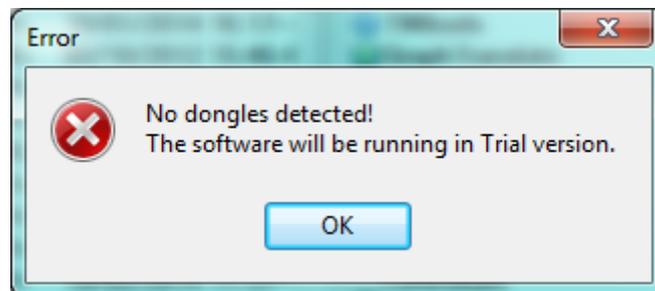
Impossible to save the data



This error occurs when the user doesn't have the privilege to edit the database file.
Check the user privilege on the database folder.

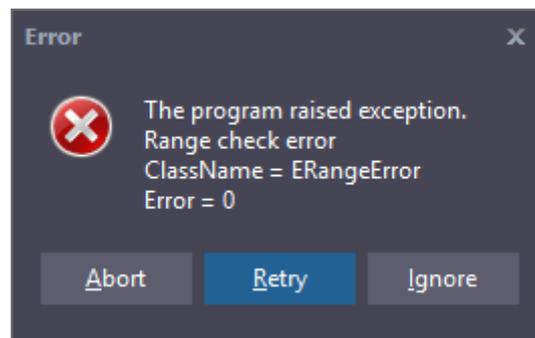
Errors

No dongles detected



If you receive a message upon GraphMaster startup that the dongle is missing, please first verify that it is plugged in and the green light is on.
You may also wish to try using the key in a different USB port.
Last you may check the presence of the HID Dongle into the Devices and Printers windows.

Unexceped



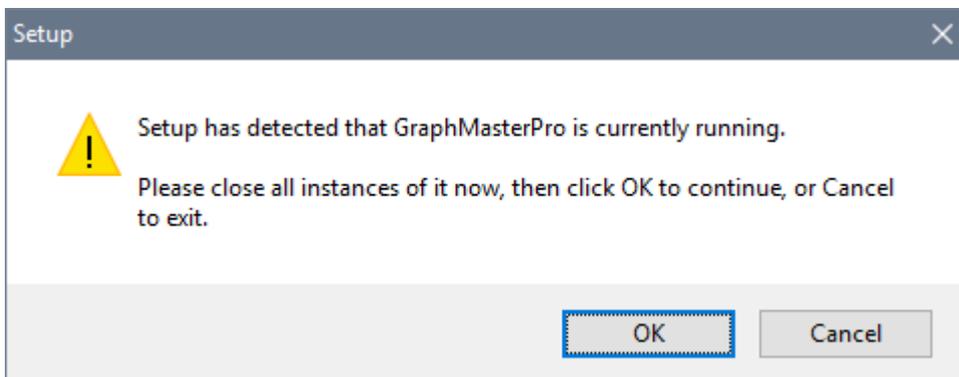
This error occurs every time the software raises an unexpected error (on the example a "Range check error")
Select Ignore to try to skip the error and continue the process
Select Retry to try to repeat the function
Select Abort to close the application

Some statistic calculus are not showed

9	77.50
10	73.70
<hr/>	
Average	67.85
Cp	-
CpL	-
CpU	-
Cpk	-
LSL	-
USL	-
SD	5.211
CV%	7.680

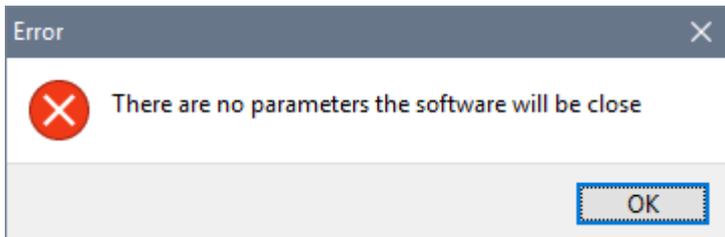
If the limits are not entered some statistic values (Cp, CpU, CpL, Cpk, THigh and TLow) cannot be calculated.

Setup errors



Please close all GraphMasterPro software to continue.

No parameters



The software GM_Test and GM_DB can't be run without parameters or launched directly.

Statistic calculation

Average

$$\bar{Xm} = \frac{X_1 + X_2 + \dots + X_n}{n}$$

Standard Deviation

$$s = \sqrt{\frac{\sum (x - X_m)^2}{(n-1)}}$$

Coefficient of Variation

$$Cv\% = \left(\frac{s}{X_m}\right) * 100$$

2Sigma

$$2s = s * 2$$

Range standard

$$RANGE\% = \left[\frac{(MAX_x - MIN_x)}{X_m}\right] * 100$$

Confidence Interval

$$I.C. = \pm \frac{(K * s)}{\sqrt{n}}$$

K = 1.96 by level 95%

K = 2.58 by level 99%

Median

$$Me = X_i + (X_{i+1} - X_i) \frac{0.5 - F_i}{F_{i+1} - F_i}$$

Cp

$$cp = \frac{USL - LSL}{6 * s}$$

USL = Alert Max

LSL = Alert Min

CpL

$$cpL = \frac{X_m - LSL}{3 * s}$$

CpU

$$cpU = \frac{USL - X_m}{3 * s}$$

Cpk

$$cp = \min(CpL, CpU)$$

THigh

$$THigh = \sum (X_n > USL)$$

TLow

$$TLow = \sum (X_n < LSL)$$

LSL

$$LSL = \bar{Xm} - 3s$$

USL

$$USL = \bar{Xm} + 3s$$

RS232 messages

The RS232 messages can contain all alphanumeric chars are accepted. (example ABCDEabcd123!@#&.&{[])

To enter a non-visual char write the ASCII code between brackets (example [10][13]).

For some special chars is possible to use a memo string:

Mnemonic Code	Description	ASCII code
<SP>	Space	32
<CR>	Carriage Return	13
<LF>	Line Feed	10
<TAB>	Horizontal Tab	9
<BS>	Backspace	8
<EOT>	End of Transmission	4
<ETX>	End of Text	3
<STX>	Start of Text	2

Example

OK<CR><LF>

OK[13][10]

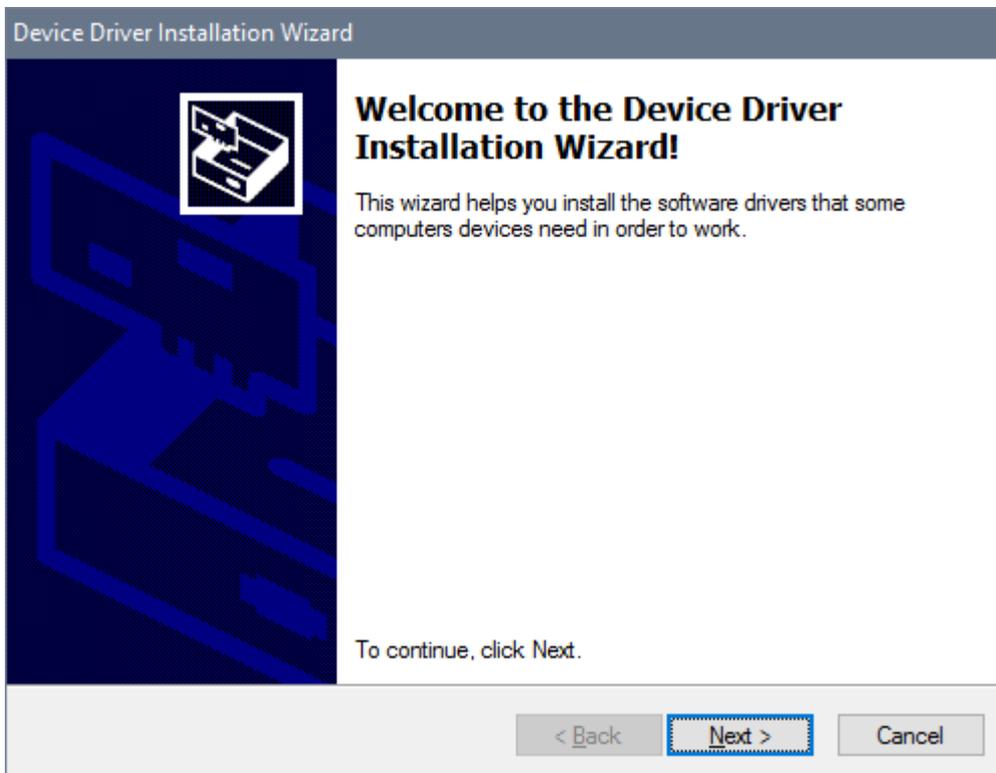
The two messages below are the same and the message is OK followed from a carriage return char and a line feed char.

Note

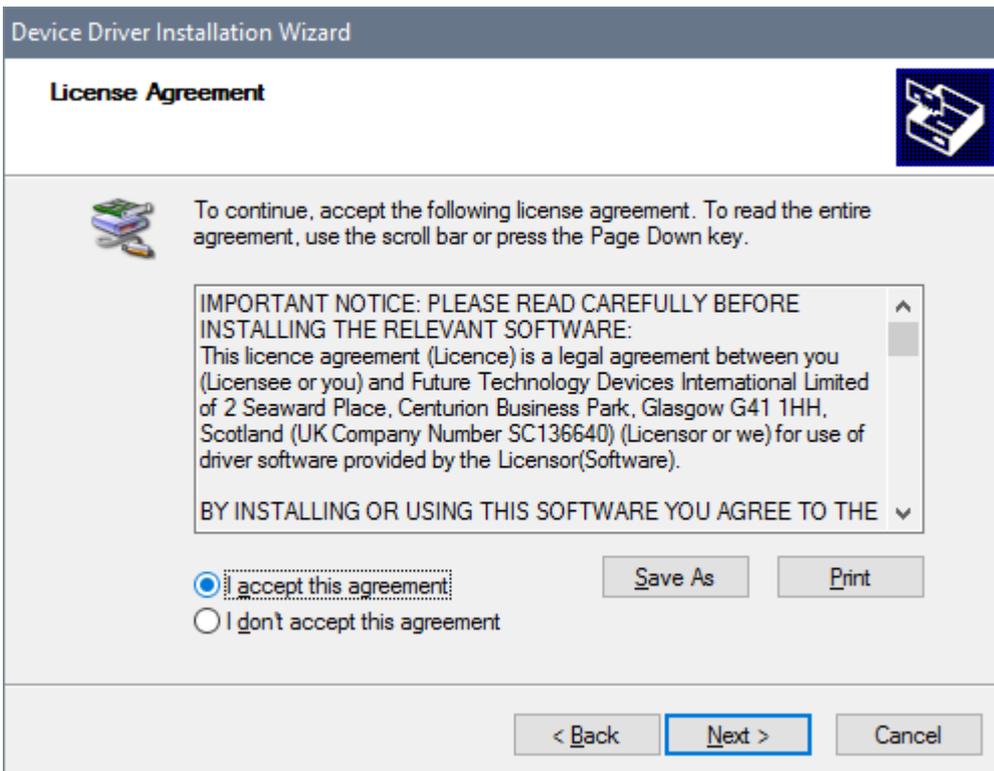
All space chars are accepted like ASCII code 32.

Installation Device Driver

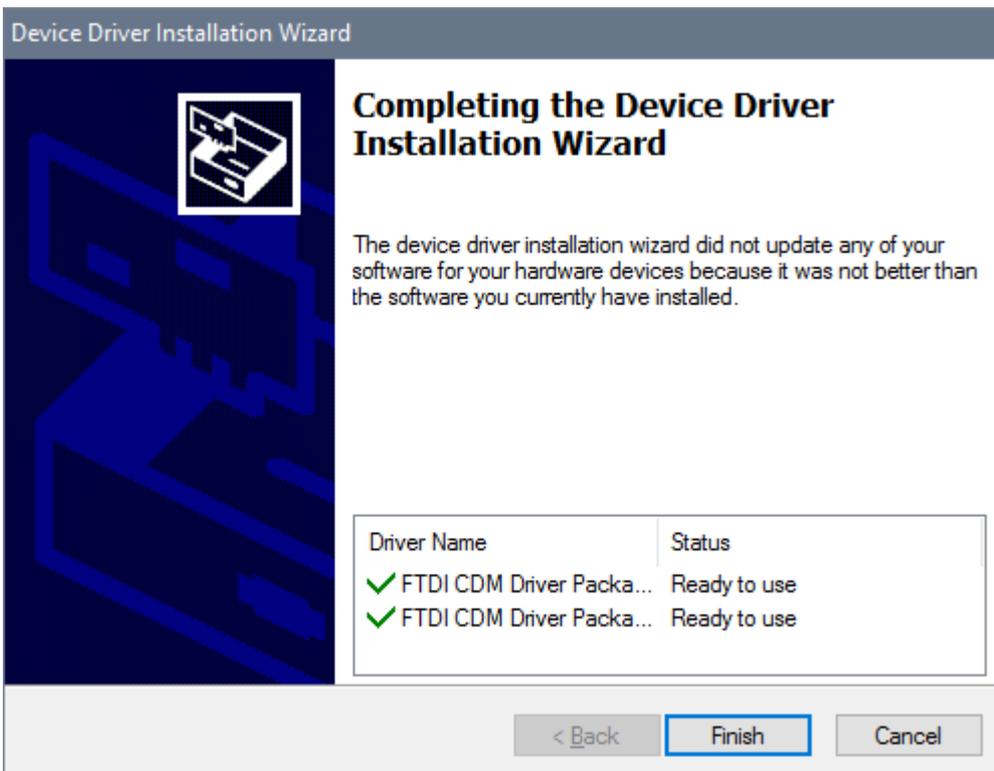
RS32 FTDI Driver



Confirm the welcome page

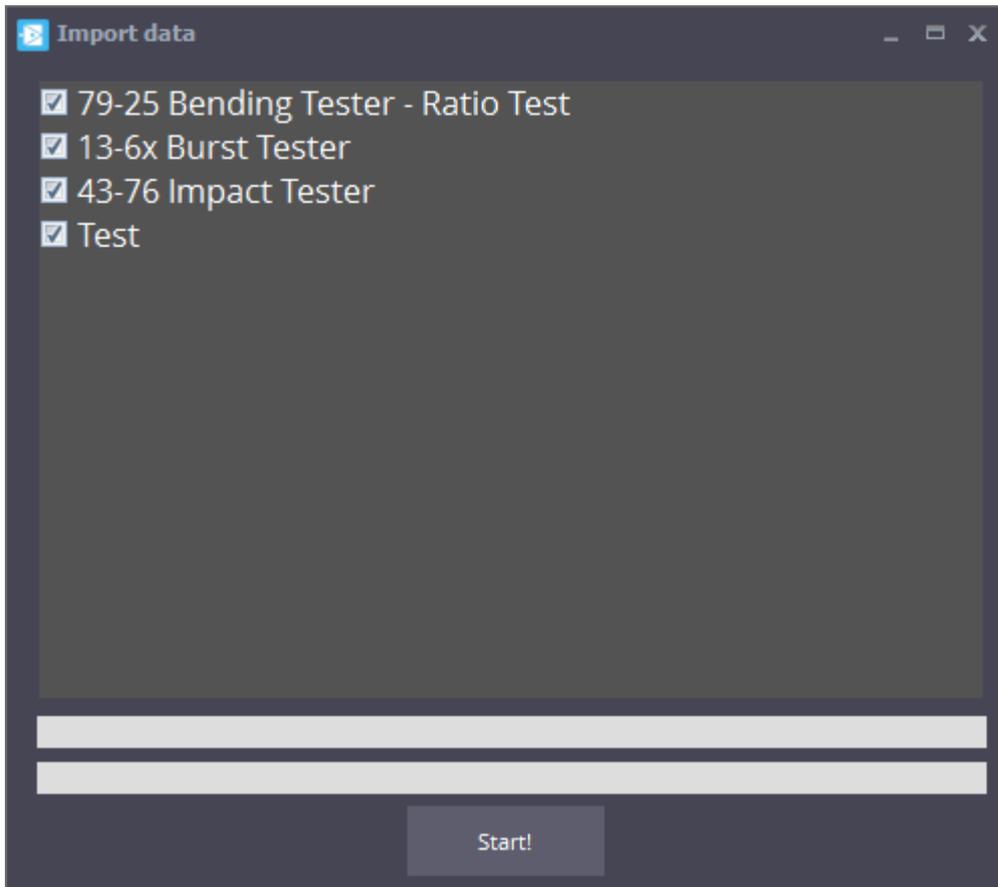


Read and accept the license agreement



The setup is completed and the drivers are installed on your PC.

Data Import Utility



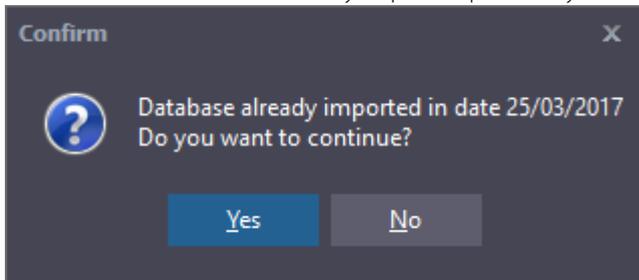
This is used to import saved data from the old GraphMaster format into the new GraphMasterPro format.

The procedure is launched automatically when the software is open the first time or it can be launched manually [Tools](#)

The program will display a list of the old tests located in the GraphMaster folder.

Check the procedures to import and click Start!

In case the data has been already imported previously a confirm message is showed.



Confirming the message the data the software will create a duplication of the data.

A progress bar will be displayed indicating the number of products and batches imported.

Once the import is completed a message will be displayed and you will be returned to the initial window.

The procedure import the data, the hardware settings and the identification labels. It does NOT import the settings.