



User Manual version 1.6



TESA DataDirect

Art Nr: 04981001

**Measurement transfer software
by keyboard emulator**

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1 Introduction

DataDirect is easy to use software that allows you to transcribe measurements from instruments to unspecific software. This software is doing like a keyboard in any software, this guarantee compatibility. More than that, you can also set instrument, display actual measure, and automatically details like date or instrument name. These features and others allow high traceability also with a high amount of connected instruments.

DataDirect is more than an easy solution for measure acquisition; this software allows you to personalize transfer according to your needs.

2 Main functions

- Transfer of measured values in any text field
- None limited amount of instruments.
- Most common TESA instruments already configured.
- Free to define transfer parameters
- Competitors instrument available
- Automatic adding of details to measurement.
- Compatible with TESA wireless system
- Management of paging in a table software
- Direct export as a CSV file
- Direct display of the value on instrument
- Personalised commands with key shortcuts
- Key shortcuts Windows compatible.

3 Installation

Insert the CD-Rom and follow the procedure according to the installation window. This procedure is based on the PC system. Four languages are available French, German, English and Italian.

If the installation window doesn't appear automatically, please execute the « setup.exe » file on the CD-Rom.

4 Language

From the main window, move to the language tab and select the one your wish.



Image 1 : Language

To confirm and apply the language, you have to restart the software.

5 General tab

When you start DataDirect from desktop icon or program start menu the General tab is displayed. .

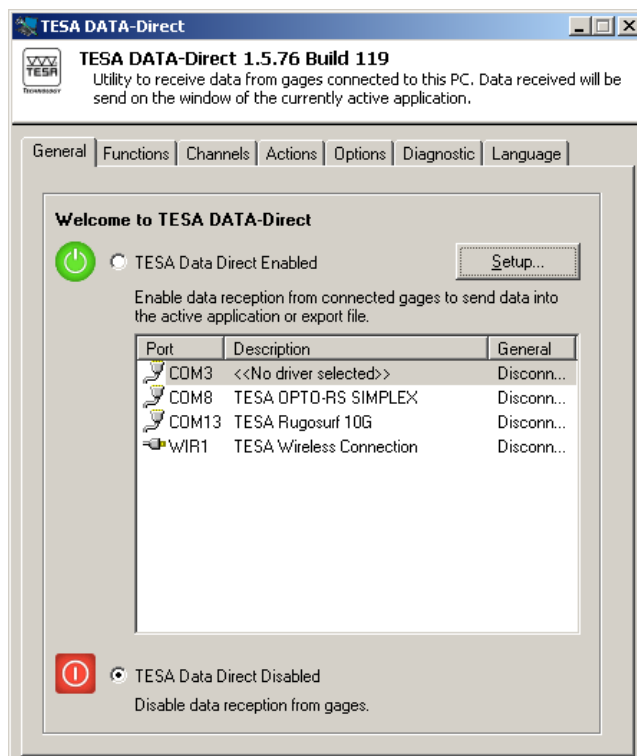
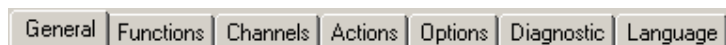


Image 2 : General tab (main window)

On the top are displayed 7 tabs :



General : definition of instruments and connection

Functions : adding of information, functions to the value and manage the paging

Channels: Enable the inputs and display real time value in separate window for selected instrument

Actions: Set the user commands according to COM port, key shortcut and command bar.

Options : options related to the measure procedure (export, automatic request, offset).

Diagnostic : back log of communication with instrument (display only)

Language : selection of language

You need to configure in "General" tab the instrument connected to its related COM port. With the USB cables or USB adapters it is easy to connect many instruments to one computer, virtual COM ports are automatically added. All instruments connected using the wireless system with USB Receiver RF are grouped under the WIR1 port and all instruments connected using the wireless system with TESA TWIN Station receiver are grouped under TES1 port.

To start configuration, in "General" tab and click on

Setup...

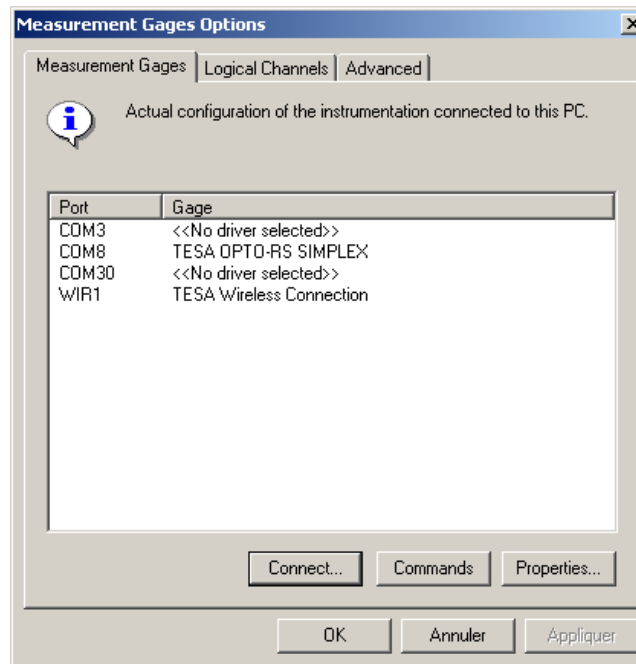
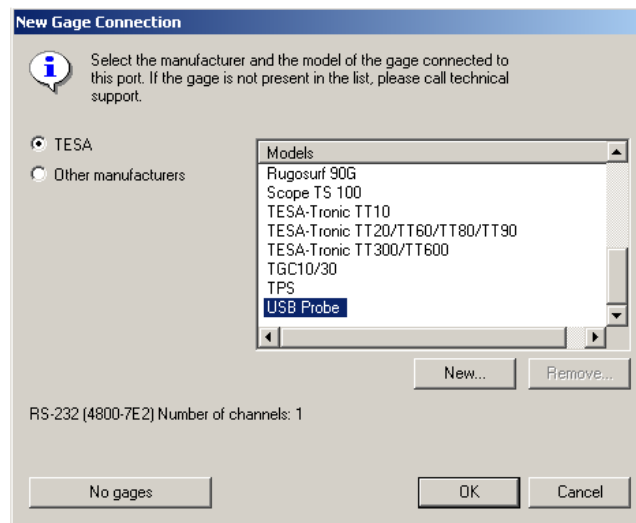


Figure 3 : Main settings window

5.1 Properties of wired connections

In "Measurement Gages" tab, select the COM port and click on

Connect...




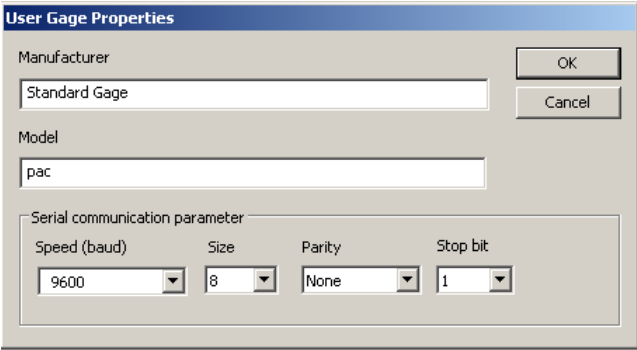
Select TESA as manufacturer, the appropriate instrument in the list.
(Demo version of the software is limited only to two drivers OPTO-RS and OPTO-USB)

Instrument	Model	Protocol
Caliper		Opto RS or Opto USB
Caliper	TWIN-Cal IP 67 TWIN-Cal IP 40	TLC connector
Micrometer		Opto RS or Opto USB
Imicro		Opto RS or Opto USB
Alesometer		Opto RS or Opto USB
Digico	1 - 2 10 - 11 12 - 12 HP 205 – 705	Digico 10/11 Opto RS or Opto USB
Rugosurf	20 10G 90G	Rugosurf 20 Rugosurf 10G Rugosurf 90G
TT TESAtronic	TT 10 TT 20 – 60 – 80	TESA-Tronic TT10 TESA-Tronic TT10/TT60/TT80
Colonnes hauteur	Hite / Magna Plus M Micro Hite Micro Hite plus M	Hite / Hite magna Micro Hite Plus M or MicroHite SPC Output Micro Hite 10/11/12 or MicroHite SPC Output Micro Hite Plus M or MicroHite SPC Output
TG-C Electronic counter	10 – 30	TGC10/30
Levelmeter	Clinobevel 1	Clinobevel USB
Setting bench	TPS 300 – 1500	TPS
Probe	TESA palpeur USB	USB probe
Measuring bench	Etalon POLO	Manufacturer : Heidenhain Instrument : ND 287

For all COM ports without connected instruments or connected instruments not in relation to DataDirect, specify by pressing .

It is also possible to create a connection for an instrument from another manufacturer, if the communication protocol is RS 232.

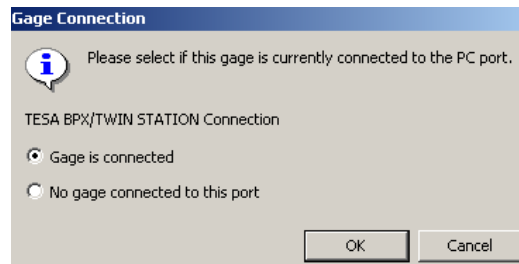
To do so, select “Other manufacturers” and click on . Specify communication protocol: speed (Baud), size, parity and stop bit. Confirm with OK.



The image shows a dialog box titled "User Gage Properties". It has a "Manufacturer" field with the text "Standard Gage" and a "Model" field with the text "pac". Below these fields is a section for "Serial communication parameter" with four dropdown menus: "Speed (baud)" set to "9600", "Size" set to "8", "Parity" set to "None", and "Stop bit" set to "1". There are "OK" and "Cancel" buttons on the right side of the dialog.

5.2 Properties of wireless connections

Ensure the receiver is connected to the computer. Select **TES1** or **WIR1**, then click on « Connect... »
Select « Gage is connected », confirm with "OK".

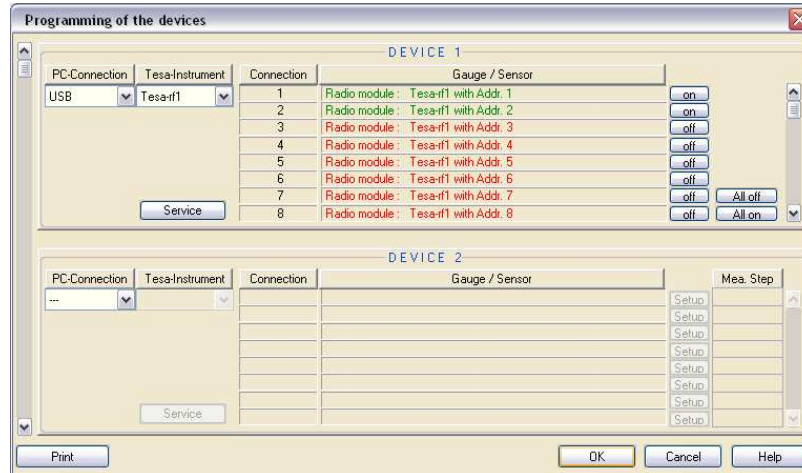


Note: All other ports that are not used should be configured as « No gage is connected to this port », an incorrect configuration will induce a communication error.

With **TES1** or **WIR1** selected, in « General » tab click on « Properties... » to reach the configuration window of wireless connection.

Port	Instrument
COM1	<<Aucun drivers selectionné>>
WIR1	TESA Wireless Connection
TES1	TESA BPX/TWIN STATION Connection

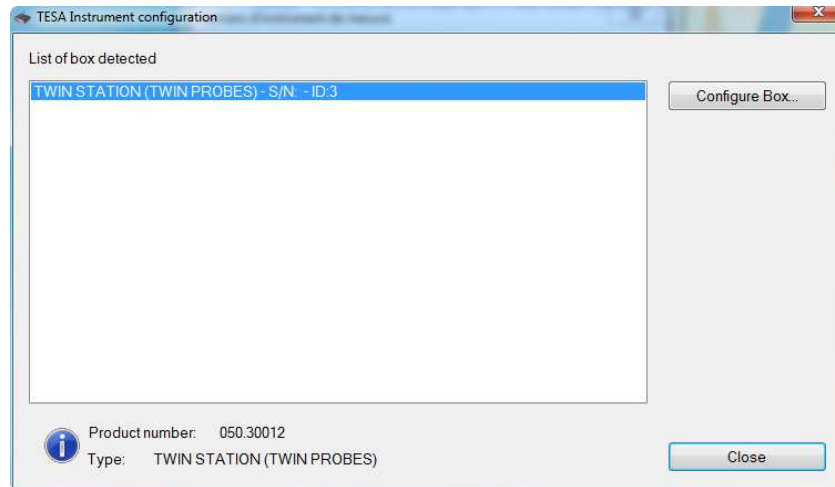
5.2.1 Configuration of wireless connections using Rf-USB receiver



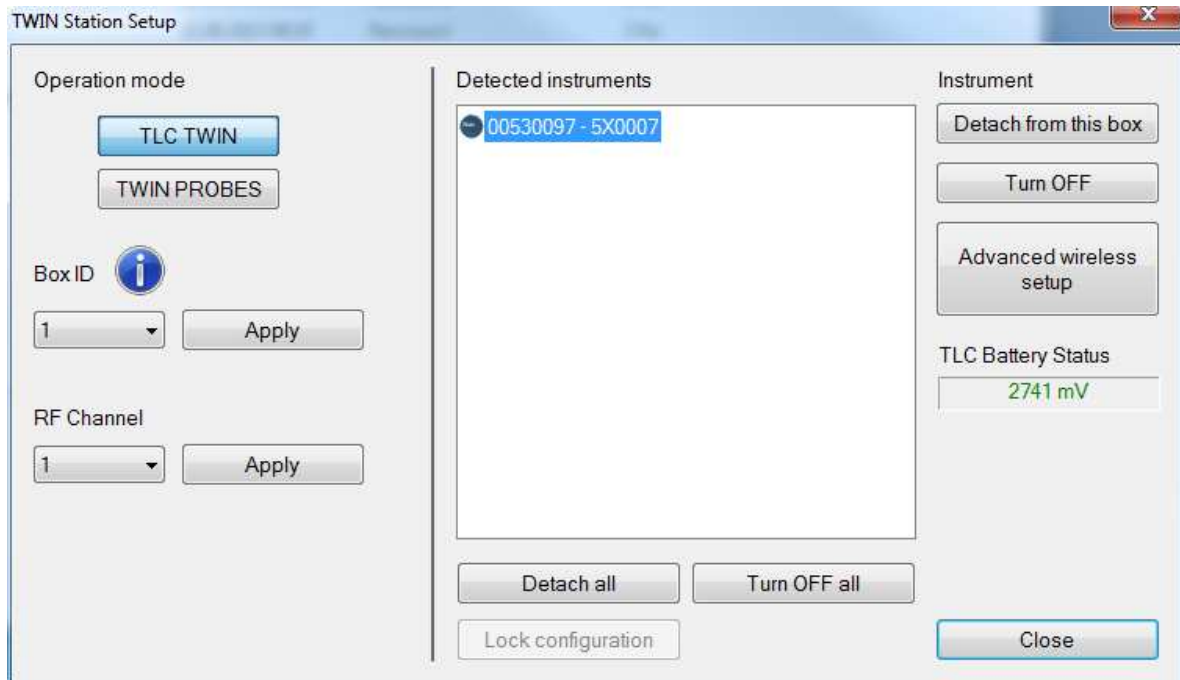
For more details, please refer to the user manual delivered with Rf-USB receiver.

5.2.2 Configuration of wireless connections using TWIN Station

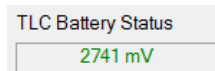
Port	Instrument
COM1	<<Aucun drivers selectionné>>
WIR1	TESA Wireless Connection
TES1	TESA BPX/TWIN STATION Connection



Select a TWIN station and click on “Configure Box...”. Press the data transfer button on the instrument in order to establish connection between the instrument and the TWIN Station. The instrument appears then in the list of detected instruments. It is possible to connect up to 48 instruments equipped with TLC-TWIN per TWIN Station receiver.

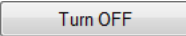


When selecting an instrument the battery status of the TLC-TWIN transceiver is indicated by color coding : green (OK) or red (low battery)




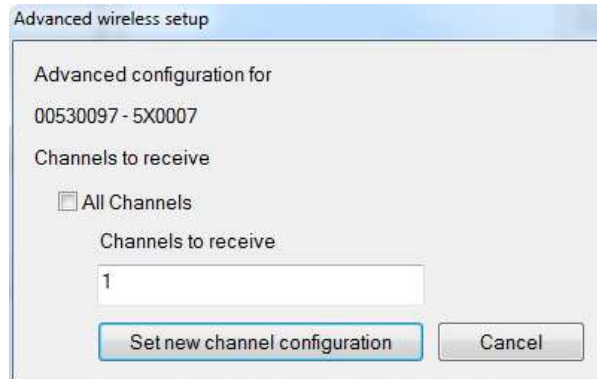
 disconnect this selected instrument from the TWIN Station.

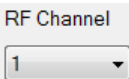

 disconnect all connected instruments from the TWIN Station.

 turns off the selected instrument.

 turns off all instruments connected to TWIN Station.

 specifies to the TLC-TWIN one or more allowed RF channels. This avoids interference with other TWIN Station boxes :



  changes RF channel of the TWIN Station.

Notes :


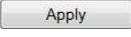
- when the RF channel is changed, all connected instruments disconnect. The connection must then be established again between the instruments and the TWIN Station. This is done by pressing the send data button on the instrument, in order to see the instrument listed in the list of connected instruments.

- The transmission range may be influenced by the environment usesuch as other sources emitting in the same 2.4-2.5 GHz frequency band.

The use of a RF spectrum analyzer helps determining the least used RF channel. By choosing a channel free from interferences, the transmission range can be improved, compared to an RF channel already overloaded with signals. There are also free downloadable applications for smartphones, to scan the channels of the frequency band. In general the channels at each end of the frequency band (Channels RF 1 and RF 40) tend to be usually less busy (but it is not an absolute rule).

- when there are several TWIN Station interface working in vicinity :
to avoid interference between several TWIN Station, choose to work on different and distant RF channels (for example, with 2 TWIN Station, choose RF channel 1 for a TWIN Station and RF channel 39 for the other TWIN station).

- DataDirect software manages maximum 1 TWIN Station.

  changes ID number of TWIN Station (also indicated by the LEDs of TWIN Station).

“Logical Channels” tab :

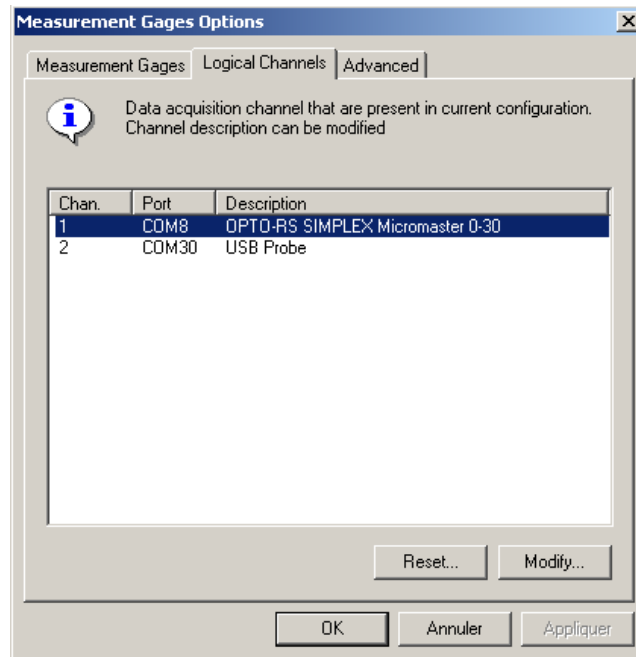

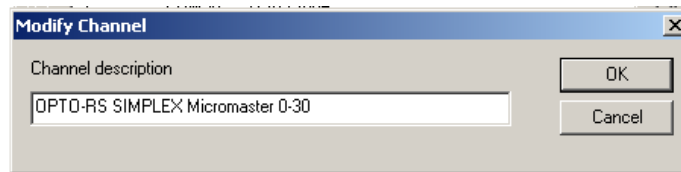


Image 4: Secondary setting window

Select the Port that the descriptions has to be modified and press  .



This allows you to enter the description of your choice, for example user name and instrument type. The entered description doesn't appear on main tap (Image 2) but only on the final software if the option “add channel “ is activated. (Chapter 9)

The “Advanced” tab is for experienced user only. Usually these settings do not need to be changed.

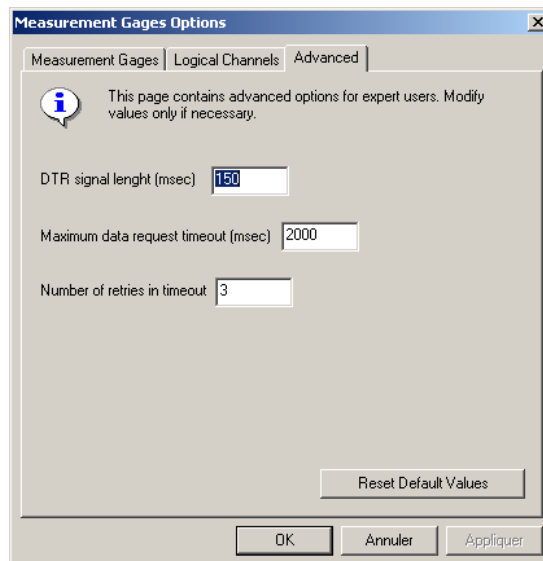
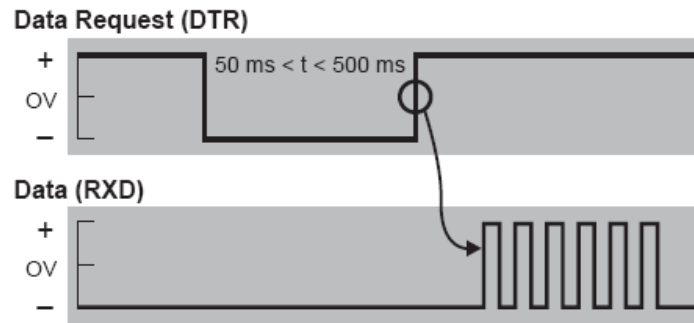


Image 5: Advanced setting window.

These options are useful with bidirectional communication. Data request from computer is based on short signal modification, this can be changed on this tab.



6 Start measurement

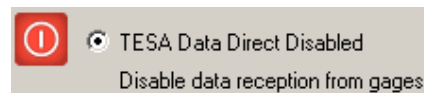
Once the instruments and parameter defined, move back to the General tap and activate the transfer



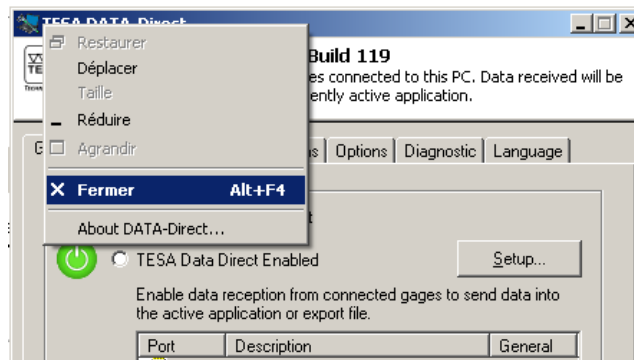
As soon as the green field is activated, the setup possibilities aren't possible anymore. At this time, move to your software in which you want measurements and begin measuring. Send the value has to be done from a key on instrument. It happens that some instruments don't have this key. In this case it's possible to press key F12 for MS Excel.

7 Finish and close software

To end a measurement click on :



To close software, press the cross on top right corner of main window or Close in menu on the left up corner.



8 Key shortcuts for MS Windows

On the main MS Windows programs following shortcuts allow a direct request from the active window to the instrument.

CTRL+F8	Request data from all connected gages and put received value to the current application
F12	Request data from all connected gages and put received value to the current application
CTRL+F9	Start polling from all connected gages as configured in DD and but every data to current application
CTRL+F10	Stop polling from gages.
F11	Get data from active displays and put it on the current application.

Custom key shortcuts are selectable according to set commands. Refer to "actions" tab for setting and customising.

9 Functions tab

This tab is dedicated to functions to do to each transferred value.

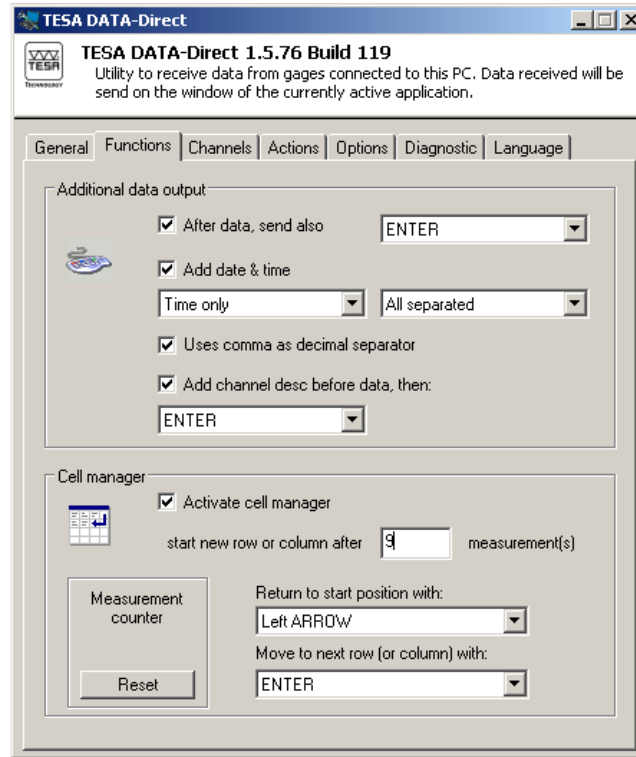


Image 6: Functions tab

- Additional data output

For each transmitted value following functions are available.

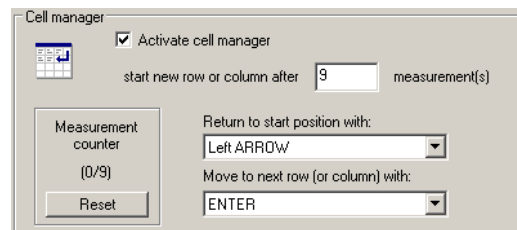
After data, send also : Select the function to do directly after value, before another function of this window.

Add date & time : Add date and time, or only one of these following your page setting.

Uses comma as decimal separator : In some countries the choice of decimal separator allows to recognize the characters as numbers.

Add channel desc before data, then: : Display the instrument description (to set on second setting tab Image 4)

- Cell manager :



Cell manager is made for tabulation software like Excel or specially if generally about the measurement process paging has to be done.

After a certain amount of measurement a paging action can be done, as shown after 9 measures the next field will be back to left and down. This setting require adjustment according to top of this page "additional data output"

10 Channels tab

This page set the filter of incoming data, a single instrument like Rugosurf 10G calculate within one measurement more than 30 different results, called channels. To prevent acquiring unused values, every single channel can be disabled if not necessary. Only enable channels are considered and transcribed to external software. To change setting, select the channel on the list and activate or disable in the options on page bottom.

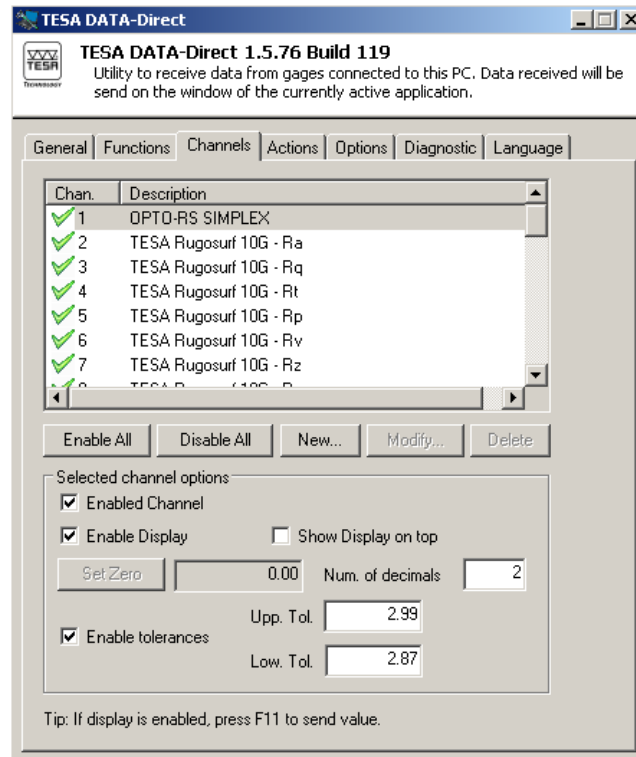


Figure 7: Channels display

Also on this page the possibility of real time display, the measured value on the instrument is shown in separate window on the PC: Simply select the channel and enable display. The default refresh time is 250ms. That means that every $\frac{1}{4}$ second the PC makes a request to instrument.

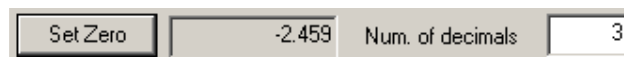


Figure 8: Real time display

As this option makes continuous request to the instrument the default data request doesn't work. If display window is used, transcribe the value to active program with key F11

Note: The channel display is not available with wireless system, as this technology doesn't support the data request from PC.

With some devices, like USB probes, the display is very useful and need to be set to zero.



Amount of decimals can also be adjusted as needed for each single input / channel



Figure 9: Real time display

At the bottom of this live display is a barograph that shows measured position according to tolerances set on the channel tab.

 A screenshot of a settings panel. On the left, there is a checked checkbox labeled "Enable tolerances". To the right, there are two input fields: "Upp. Tol." with the value "0.200" and "Low. Tol." with the value "-0.100".

Calculated channel

For cases where two instruments are required to provide one result, for example diameter measurement or thickness, the result has to be calculated. DataDirect offer the possibility to create a new channel made by two inputs. This new channel can be handled like before with zero setting and tolerances. Press on New...

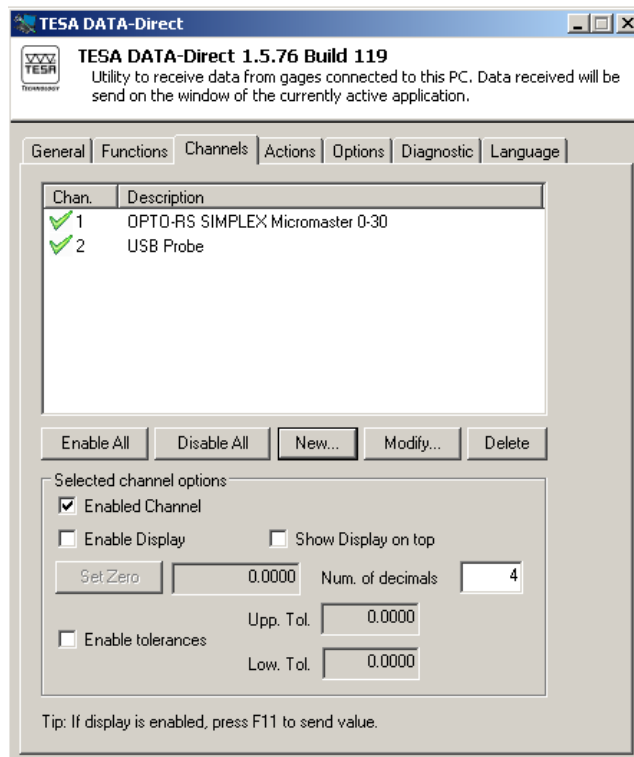


Figure 10: Channels main tab

A popup comes to define name and inputs, the available inputs are the set channels, so instrument need to be defined before as measuring device.

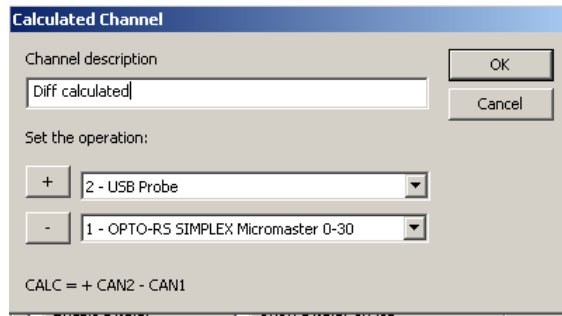


Figure 11: Calculated channel setting

Once set the channel appears additionally to the list, other inputs can be disabled to not transfer to much data. Now only the calculated channel can be used.

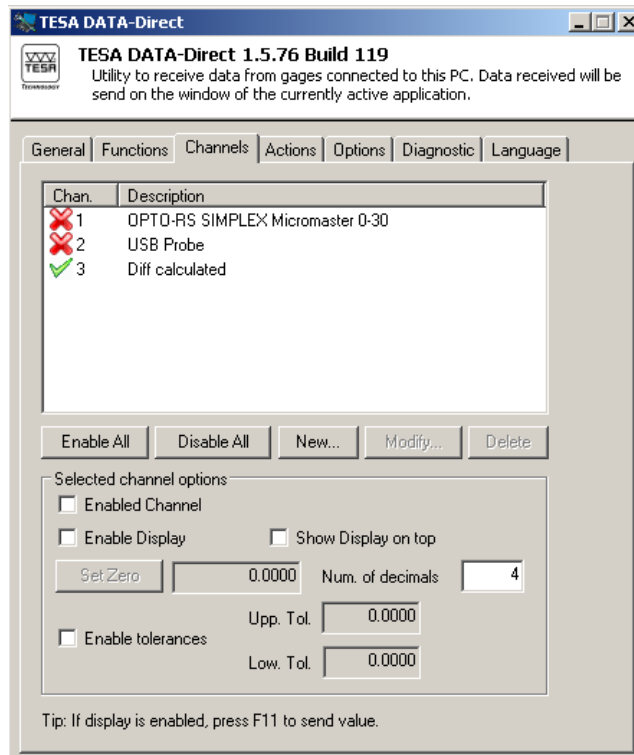


Figure 12: Calculated channel with inputs

11 Actions tab

An action is a command send from the computer to the instrument. This command can be used for setting or measuring and used by button or key shortcut.

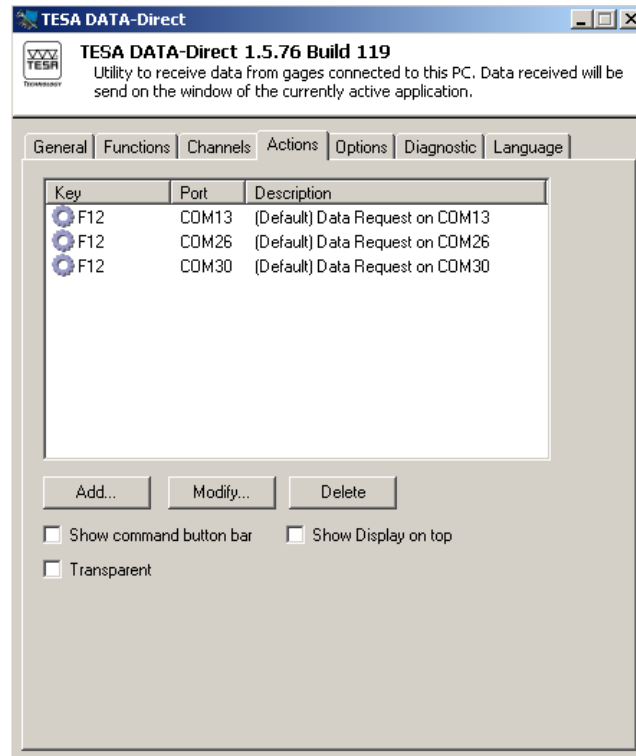


Image 13: Actions tab

The central field shows the set commands by key, COM port and description. Default command is data request on all available COM ports with F12 key.

Every additional command, for example data request on single instrument has to be set additionally. For standard command like request, changing unit or similar, simply press Add below the centre field, following popup appears.

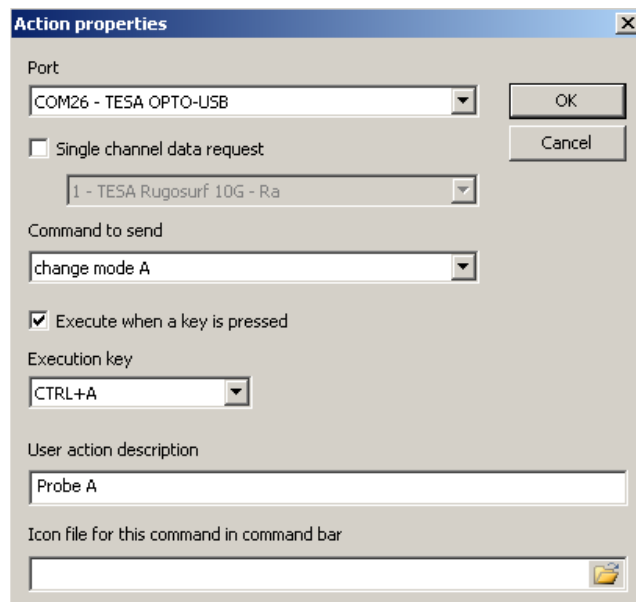


Image 14: Add action to COM port

Into this window the COM port has to be chosen, according to this and set instrument a row of commands are available. Move to “Command to send” selection and set the needed action. Additional features like key shortcut, description and icon permits to make this action easier to apply. Once everything is set, press on OK, on the centre field of actions tab appear a user action.

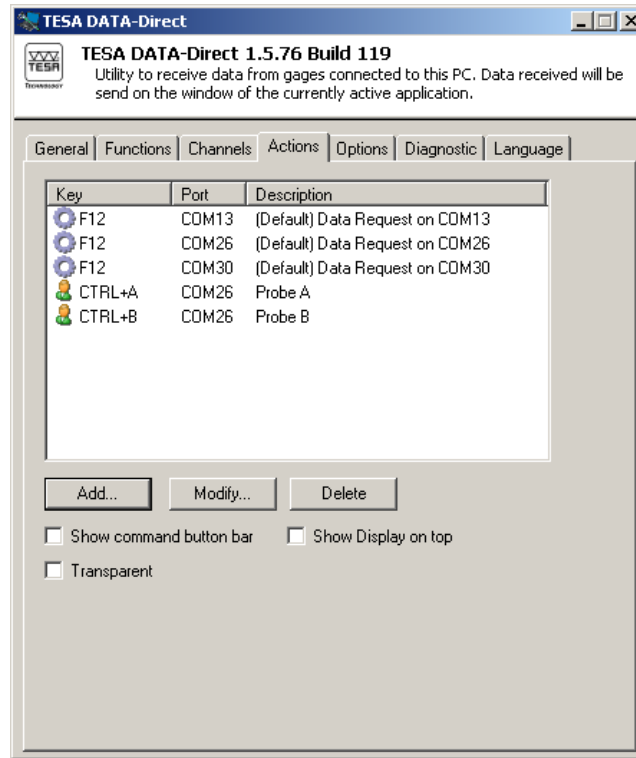


Image 15: Actions tab with user action

To make the use of commands faster an additional window can be open. This button bar, resume all set actions and permits to execute then with simple click. With this the setting of various instruments goes very fast.

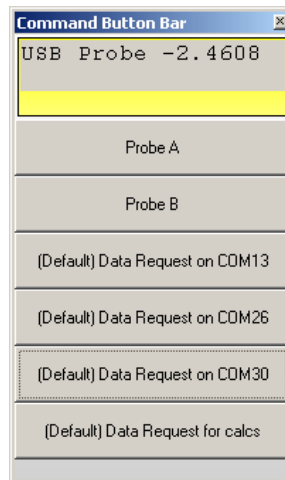


Image 16: Button bar

On some instruments or specific tools, the needed action is not available in the list, a user command has to be introduced. For doing that, it has to be add at instrument level. Move back to “General” tab and go to setup.

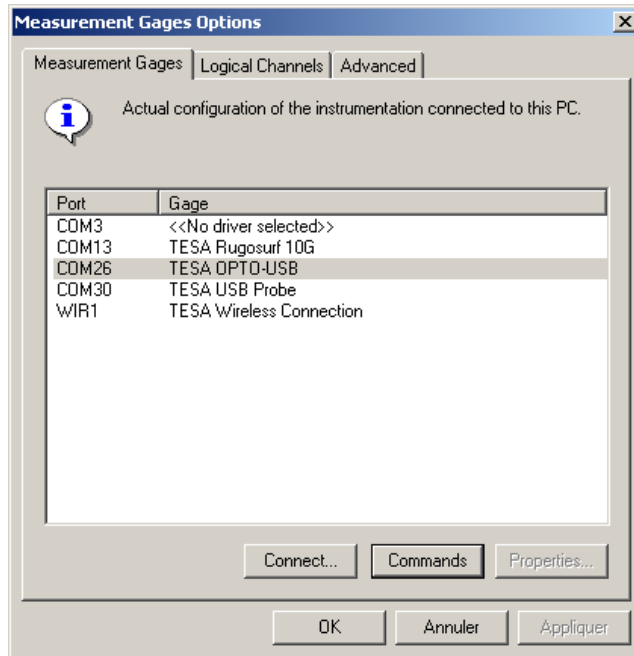


Image 17: Setup of DataDirect

Select the right device, instrument and press Commands on the bottom right

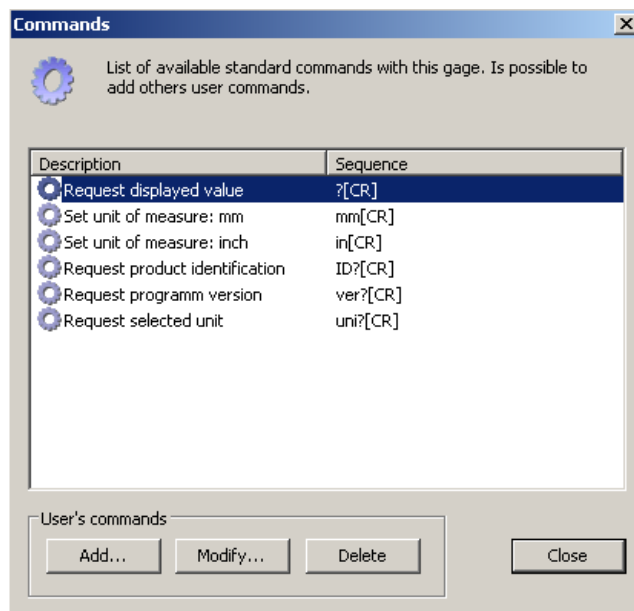


Image 18: Commands window for instrument

This command list is related to instrument type, a USB probe will not have the same than TESAtronic etc. Never the less not all commands are defined and some additional command can be entered.

Press on Add to open following popup.

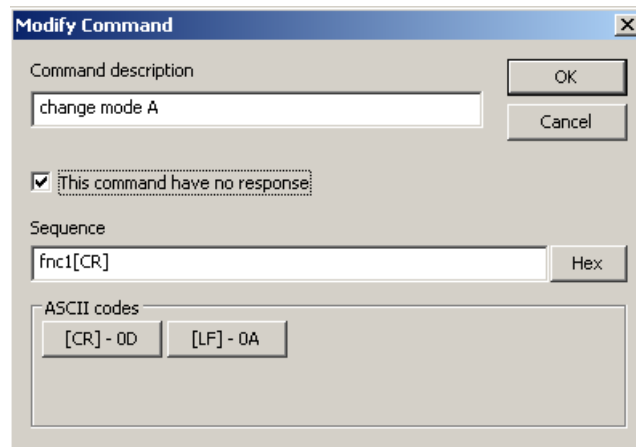


Image 19: New command

Sequence is the field that will be send thru the COM port to instrument, often the characters need to be confirmed with [CR].

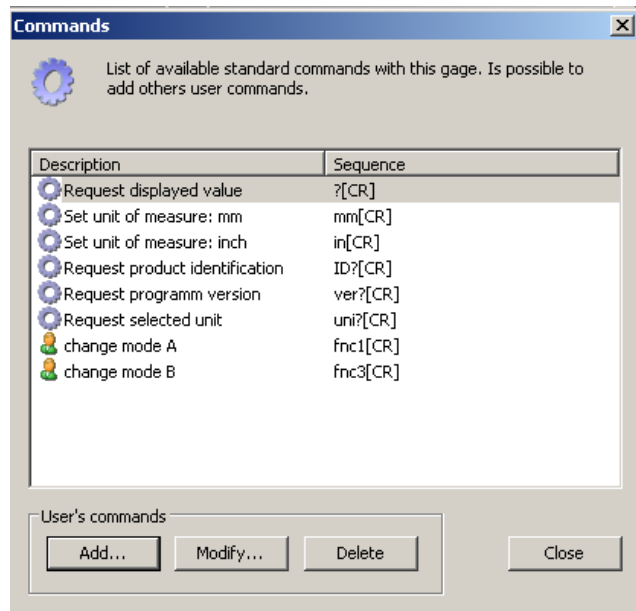


Image 20: Commands with user setting

Once set the new command is displayed and will be available for all COM ports with same instrument driver.

12 Options tab

This tab is related to the whole measuring process.

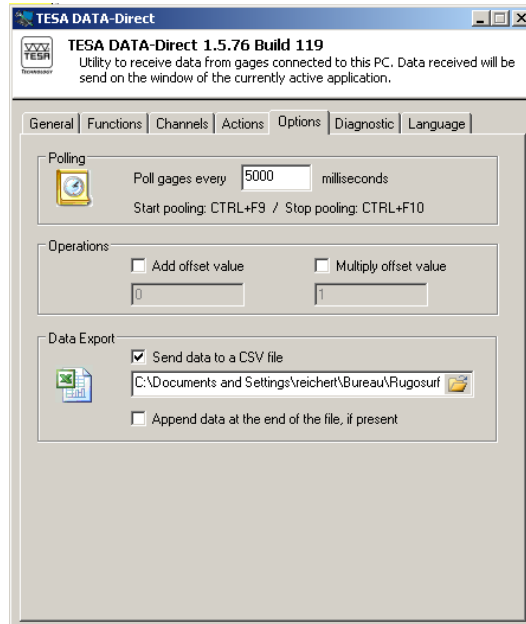
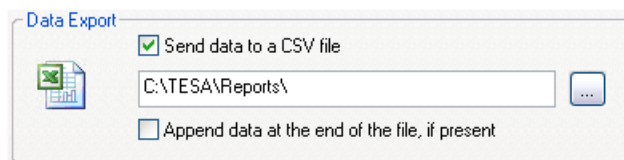


Image 21: Options tab

- The polling is doing an automatic data request every N milliseconds. This feature is enable with key shortcut CTRL+F9 and disable with CTRL+F10 from any MS Windows program. The minimum time request that is possible with OPTO-RS protocol is 150ms. Maximum value is the equivalent of appr. 596 hours (2'147'483'647 milliseconds)

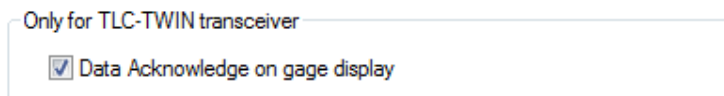
- Operations are offset or factors added to every incoming data.

- The direct Export as a CSV file is also possible with DataDirect. With this useful option you don't need second software like tabulator software to get your values saved. A solution for background archiving without writing on open software.



Simply enable and define the target file.

- For TLC-TWIN, it is possible to receive a receipt confirmation message "REC" on the display of the instrument after sending a data from the instrument. Once "REC" message appears on the display, the user knows the data has been received by the computer. To continue with the measures, press on "send data" button on the instrument to acknowledge: "REC" message will disappear from the display and it is possible to measure again.



13 Diagnostic tab

This tab shows you exactly what is coming in from the instrument. It is not possible to change anything in this tab.

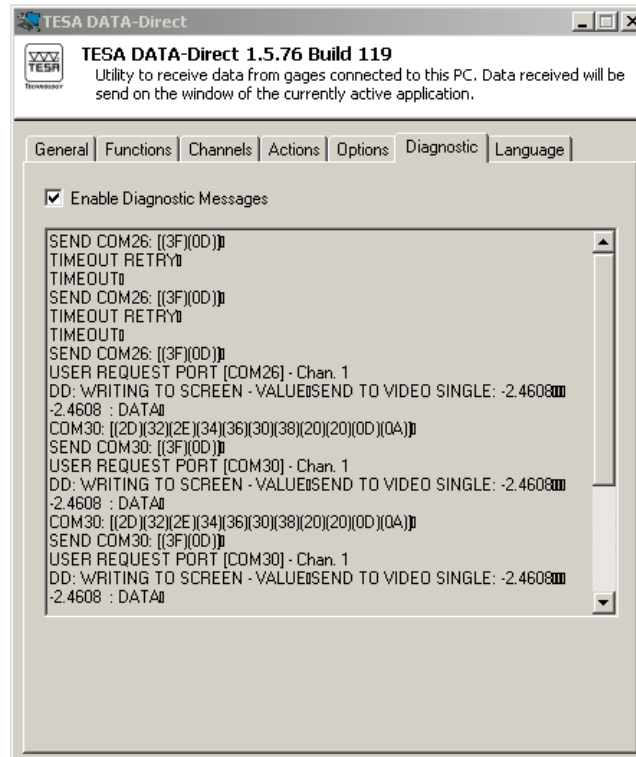


Image 22: Diagnostic tab

To display the incoming signal it has to be enabled. By default this is not enable to prevent using resources and also have a quick acquisition time.

14 Application example

Let's make a simple example to show the main settings.



Take :

TESALink : Cable OPTO-RS232 nr : 04761046 + adaptor RS232-USB nr : S47120002

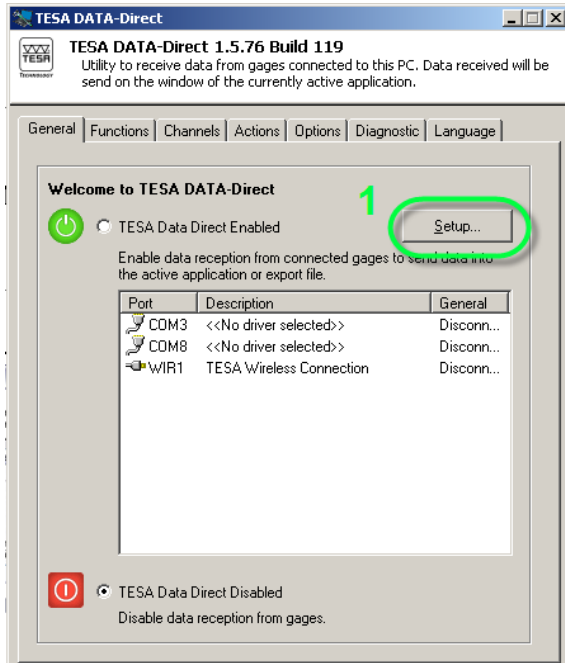
Instrument : Micromaster RS 0-30mm nr : 06030030

+ various part.



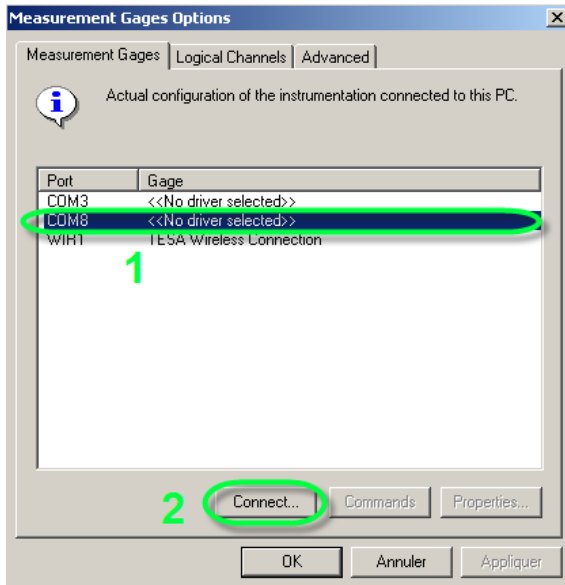
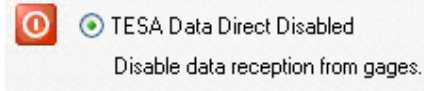
Once the adaptor installed, connect the cable to this and the instrument. Start TESA DataDirect.

DataDirect configuration



Once the general tab display, press on « SETUP »

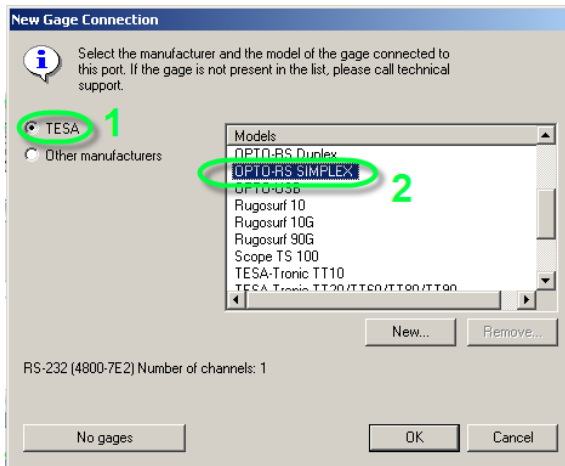
Note : If the button isn't available, check that acquisition is disabled.



1. Select the COM port on which the instrument is connected.

In our case, the USB adaptor (nr : S47120002) create virtual COM 4.

2. Then press « CONNECT »

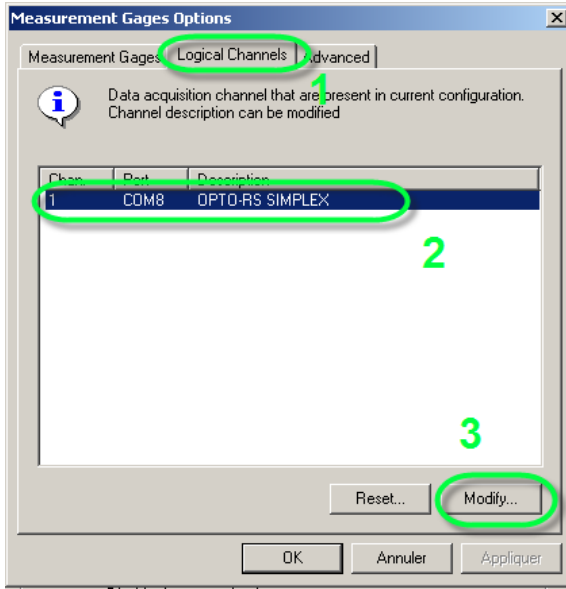


1. Select « TESA » on manufacturer column

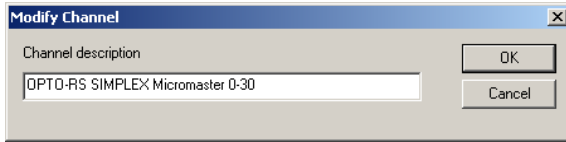
2. The model is « OPTO-RS »

3. Confirm by pressing « OK »

Note :
The freeware contain only the OPTO-RS instrument.



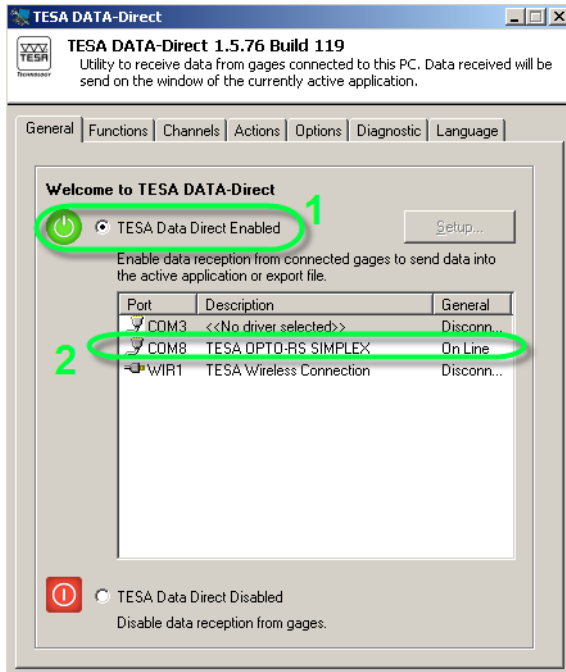
1. On the next tab « Logical Channels »
2. Select the instrument on right COM port
3. Press « Modify » to modify description of instrument.



Enter description of your choice

For example : « TESA Micromaster 0-30 »

Confirm your settings by pressing OK until the general tab is on screen. You're now ready to measure without any additional functions.



1. Press on « TESA DataDirect Enabled »
2. The connected instrument must be displayed

Note : The instrument description entered above is only used with the function « add channel description before ». You can see it only on the final software that receives value with channel.

Switch over to the final software who receives the value. (tabulator, notepad, text editor) and send values from instrument.

15 Troubleshooting

If the transfer is not working, please check following steps:

Instrument connection

Every connected device has to be seen and activated to allow any transfer. Especially for USB devices, the connection cable requires often an installation the first time you connect it.

Driver selection

Be sure to use the correct instrument on the correct COM port

Functions and options

Some functions may prevent from sending the value into the desired program. (send to CSV on Options Tab)

Diagnostic tab

This tab seems useless but it allows in case of none working to find out where the problem is.