Instruction Manual

FUJI HART®
EXPLORER

TYPE: SOFTWARE

COMMUNICATION PROTOCOL

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VERSIONS

Date	Date	Modification	Author
11/2005	Version 1.0	Creation	P.DURIEZ, J.LAMESCH
01/03/2007	Version 1.1	Add warning	P.DURIEZ
17/04/2015	Version 1.2	General review of the Instruction manual	C. NORA

1 About this guide

1.1 Purpose

This guide introduces the features of the software "FUJI HART EXPLORER", and shows you how to configure, monitor and manage Hart transmitters.
This software is designed for communicating with transmitters using Hart protocol. The software gives full functionalities to some transmitters like "FUJI FCX A-C II & FUJI FCX AIII & FUJI FCX AII V5 pressure transmitter". The others transmitters can be used in generic mode.
In the future, the software can be extended by developing plug-in for specific transmitters.

This software is compatible with Windows 95, 2000, XP and 7.

1.2 Audience

This guide is intended for those responsible for setting up Hart transmitters, and especially Fuji Hart transmitters. It assumes that you are familiar with the transmitters and Hart protocol.

1.3 Scope

"FUJI HART EXPLORER" allows you to

- work in English or French
- work directly with a transmitter connected (online mode) or work on files (offline mode)
- monitors dynamics variables

1.4 FUJI ELECTRIC FRANCE Contact Information

To contact FUJI ELECTRIC FRANCE SA by	Use :
World Wide Web	http://www.fujielectric.fr
Email	sales@fujielectric.fr
Telephone (France)	04 73 98 26 98
Telephone (other locations)	+33 4 73 98 26 98

2 Installing the application

2.1 Using the serial Hart Modem

You need not to install the modem, only to connect it. (Compatible Windows 98, 2000, XP, 7)

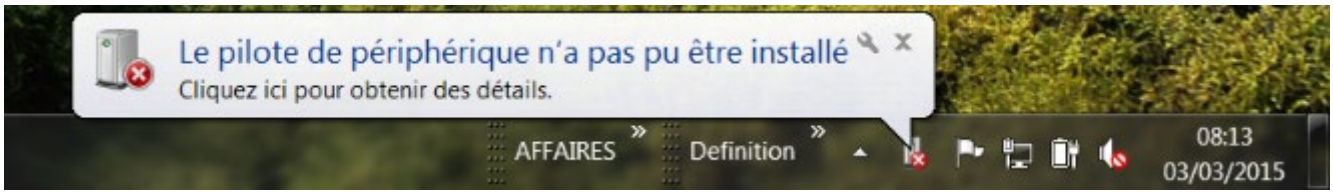
2.2 Using the USB Hart Modem

You need to install the driver for the USB Hart Modem.

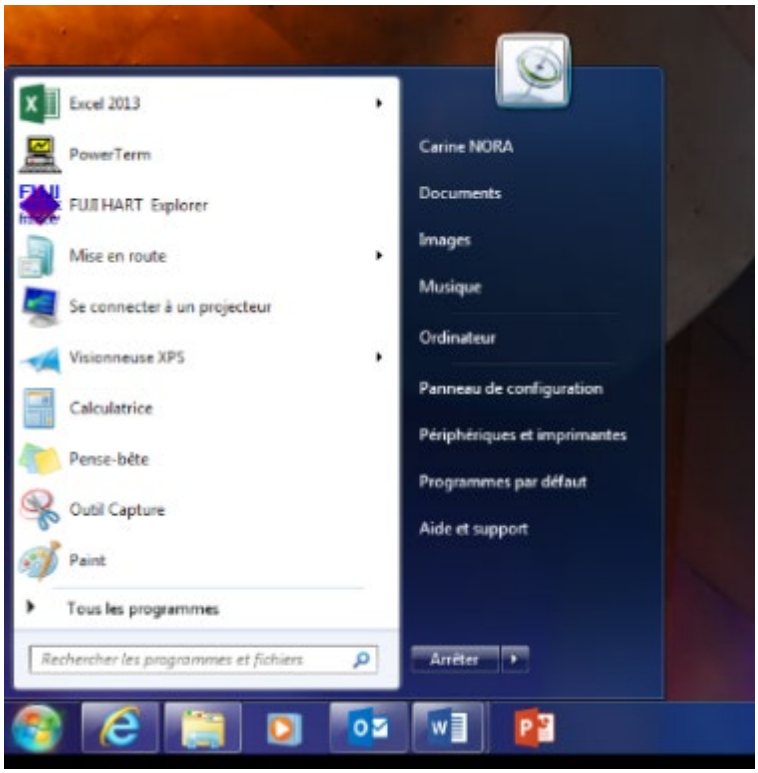
To install the USB Hart Modem driver, please download it on:
http://www.fujielectric.fr/en/pressure-transmitters

2.2.1 Installation example for Windows 7

- Unzip the file “HART_Explorer_modem.zip”
- Plug in the modem without the transmitter. Windows will detect a new transmitter named “HCOMUSB” but cannot install it “Peripheral driver cannot be found”.



- To install it correctly, open the “control panel”.

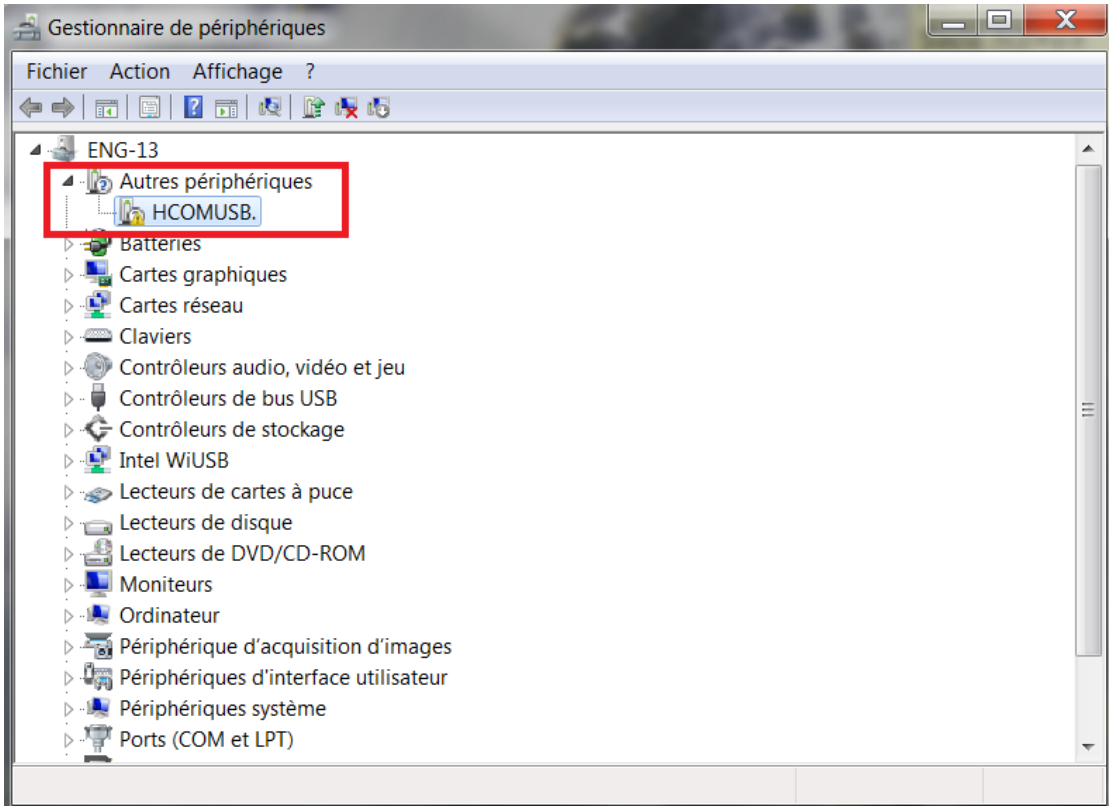


- Open the folder “System” then “transmitter manager”

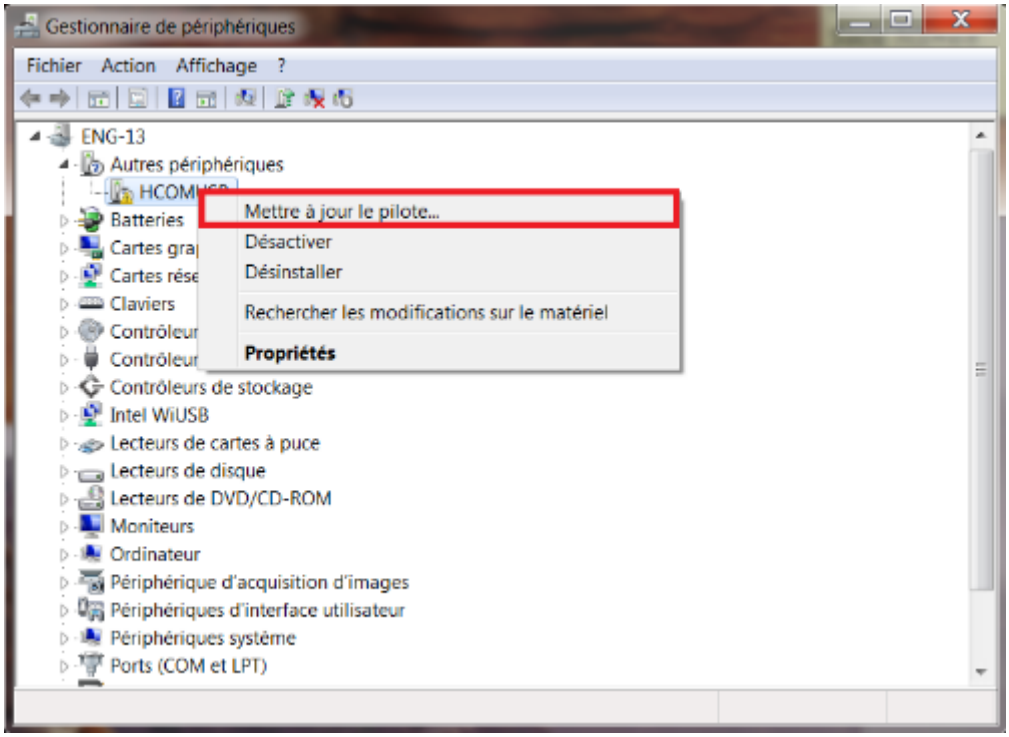
We must have the administrator rights.

- Open “Other devices”

The HART modem is called: HCOMUSB

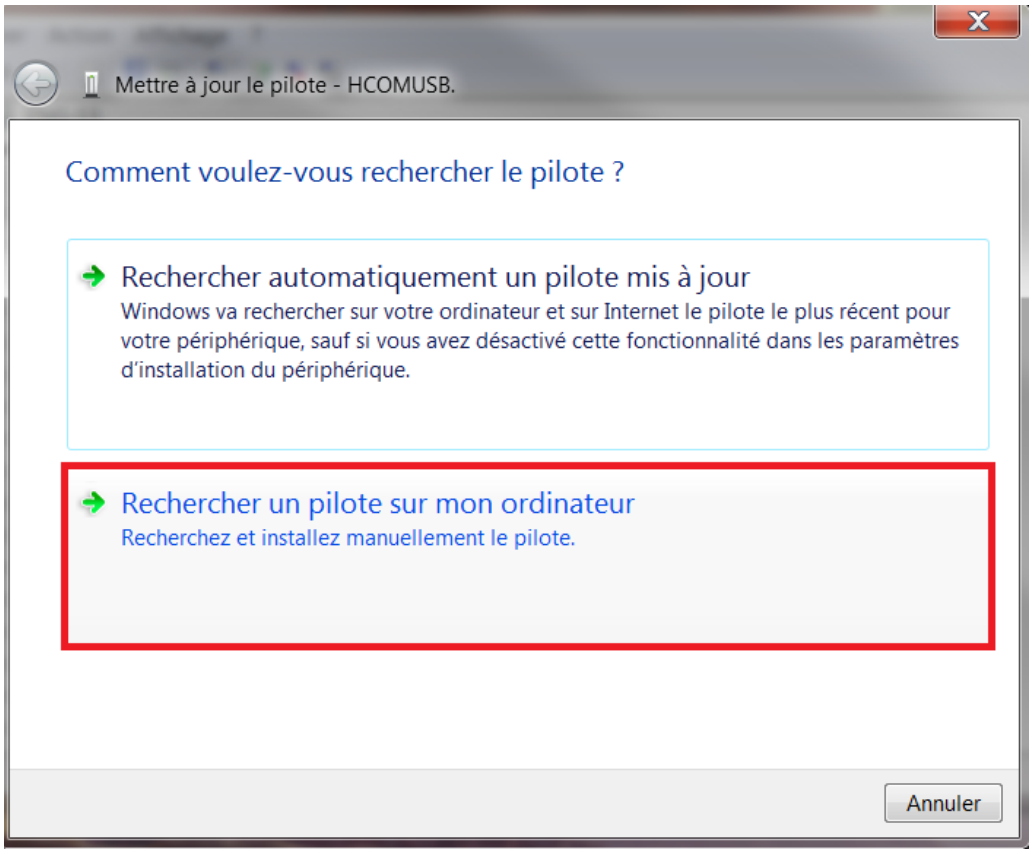


- Update the HART Modem driver by click on the right button of the mouse then “update Drivers software”.

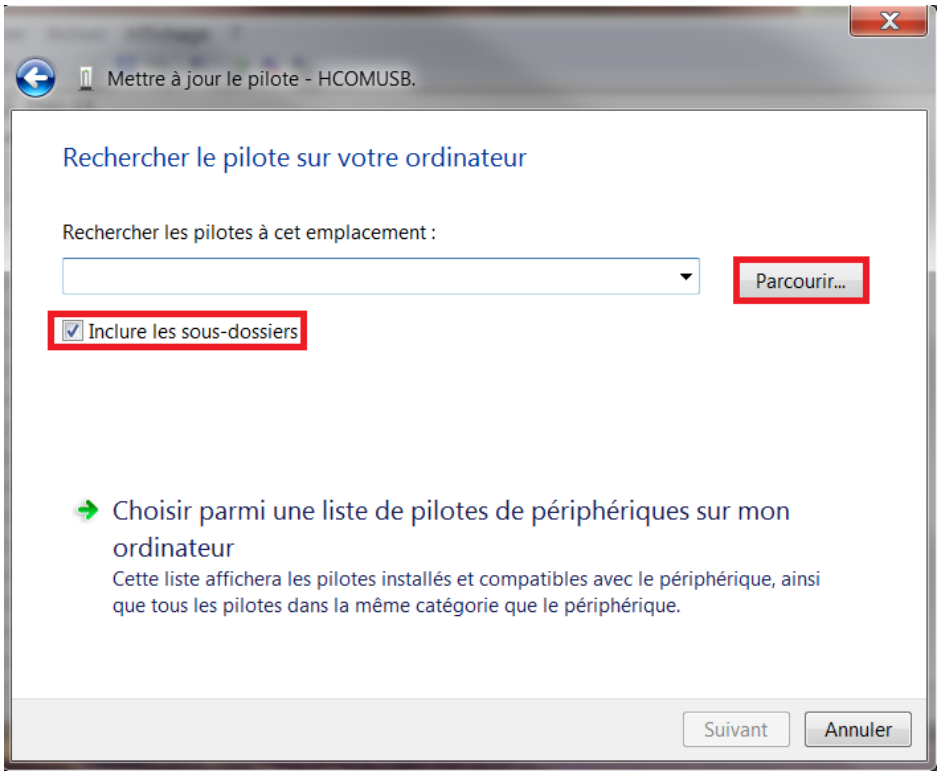


If you do not have “update driver software”: you are not in administrators rights

- Click on “Browse my computer for driver software”

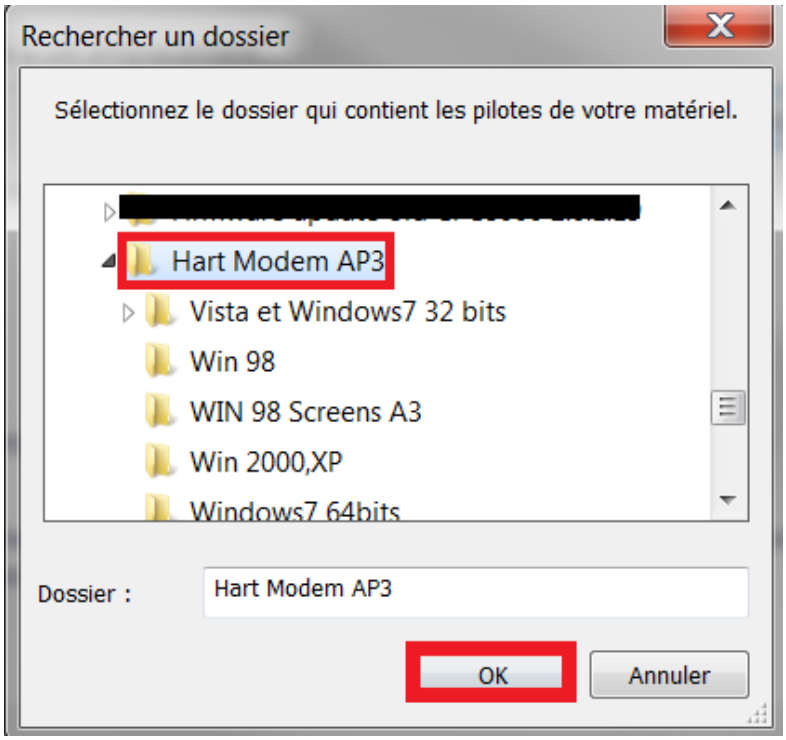


- Find the path to “HART Modem AP3” folder included in the zip file downloaded before or in the CD installation.

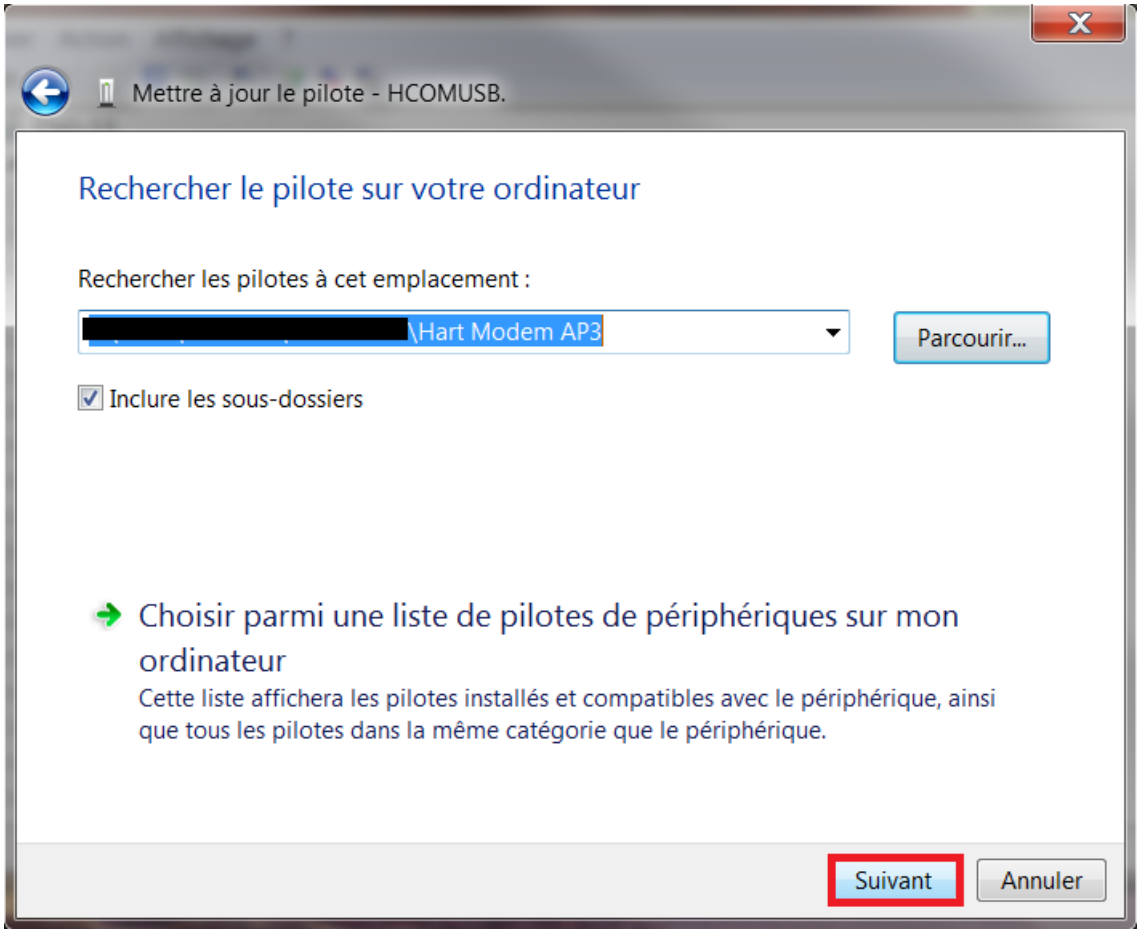


Do not forget to tick the box: “included subfolders”

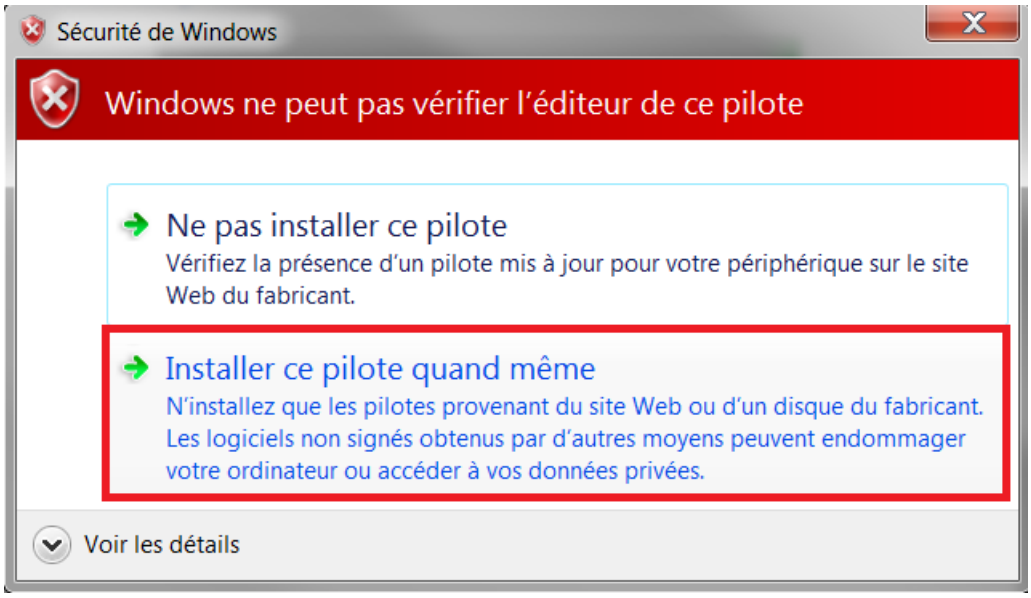
- Select only the HART Modem AP3 folder (do not select folder with your Windows version)



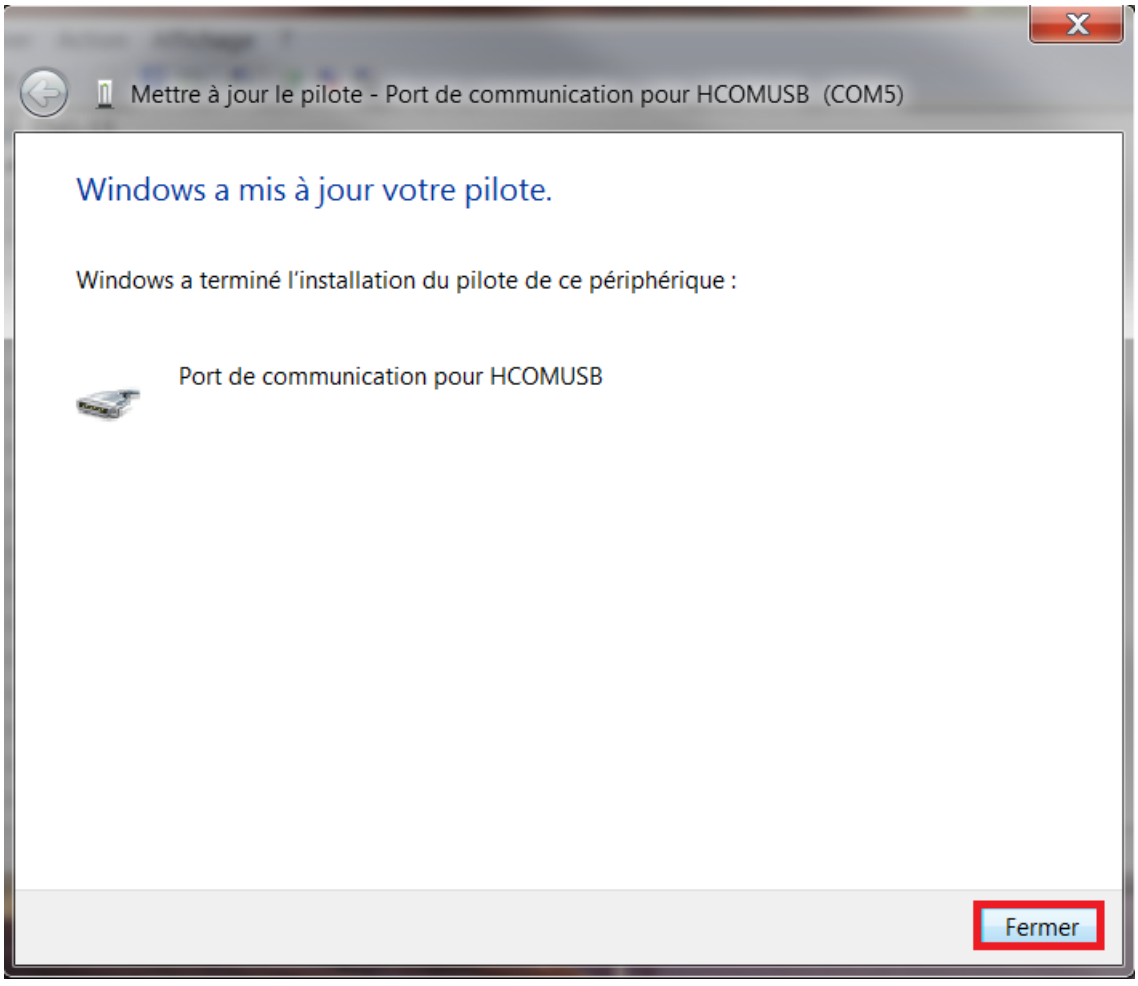
- Install the driver



- Accept the windows warning

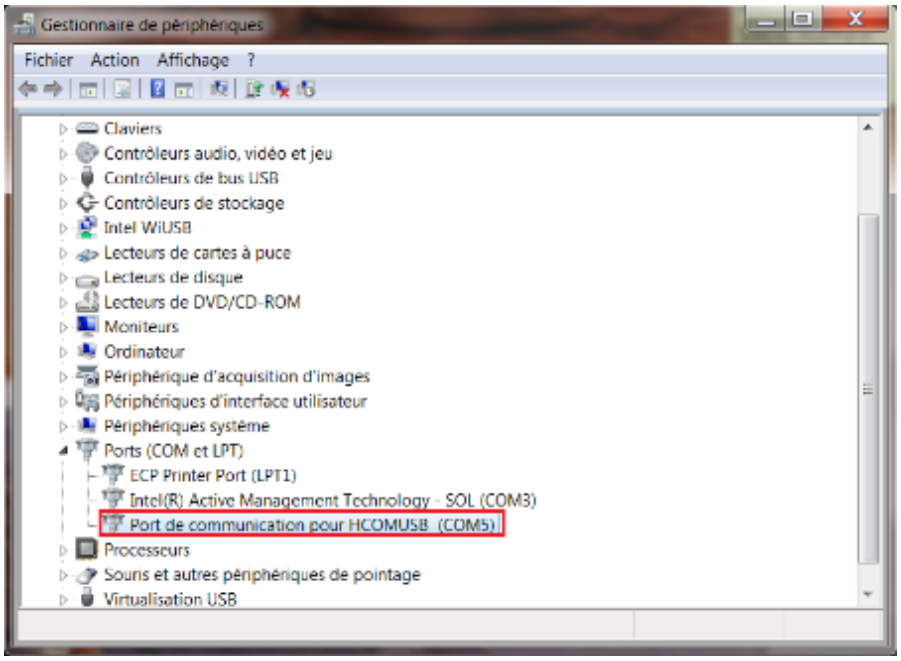


- End of driver installation



- Last action: you must note the Number of COM ports because you need it, perhaps, for using the software HART Explorer.

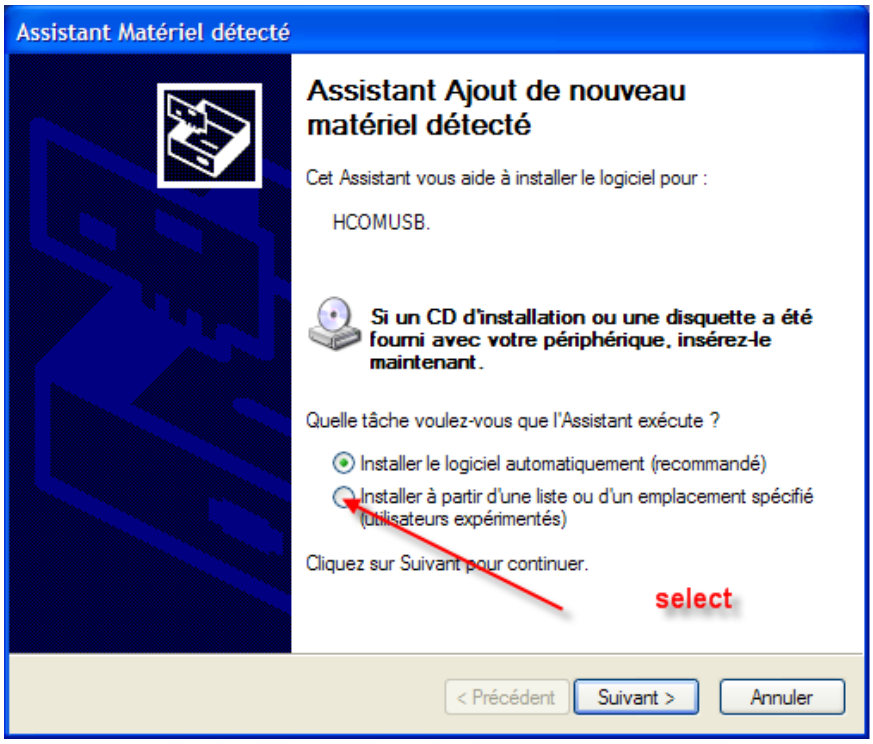
  Go back to device manager and see which port you HCOMUSB is connected (COMx for the example, it is COM5)



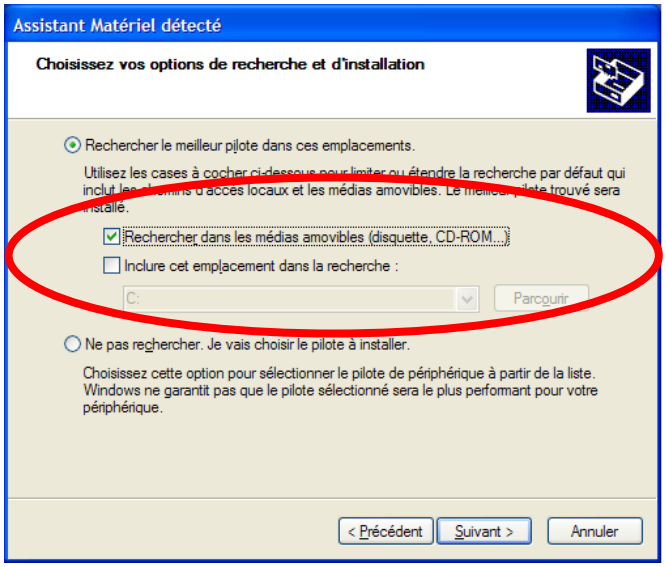
2.2.2 Installation example for Windows 2000, XP

- Plug in the modem without the transmitter. Windows will detect a new device named “HCOMUSB” but cannot install it automatically. You reach the box “Found New Hardware Wizard”.

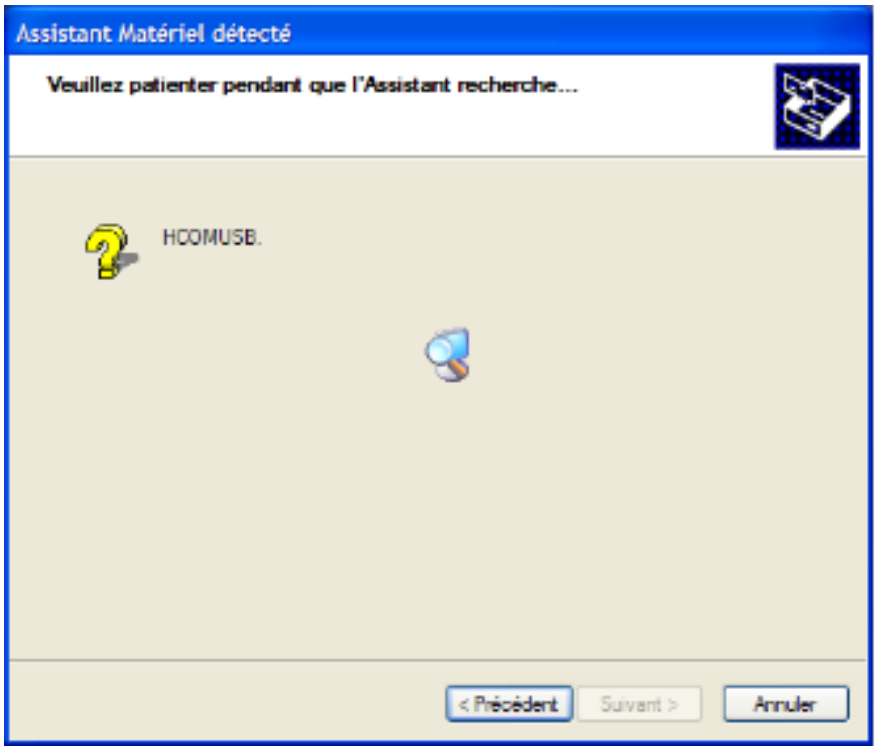
  There is 2 possibilities:
  - Standard and automatically installation ➔ recommended for CD installation
  - Manual installation from a dedicated location ➔ for the zip folder



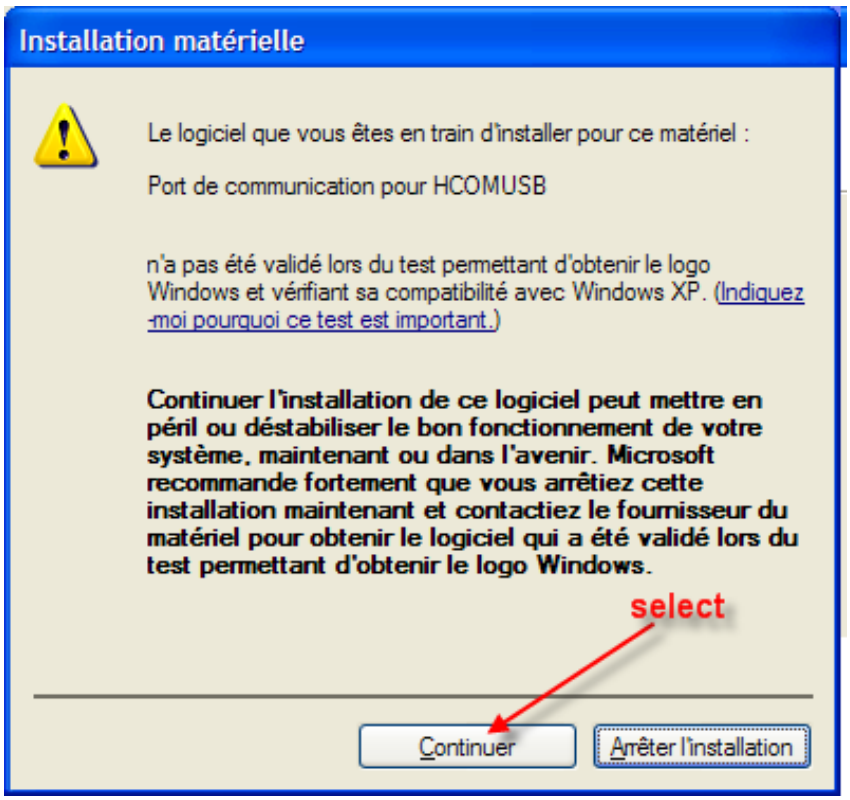
- Find the path to “HART Modem AP3” folder included in the zip file downloaded before or in the CD installation
  Tick the box “Search removal media (floppy, CD-ROM…) if you have a CD installation
  Tick the box “Include this location in the search” if you have the downloaded file.



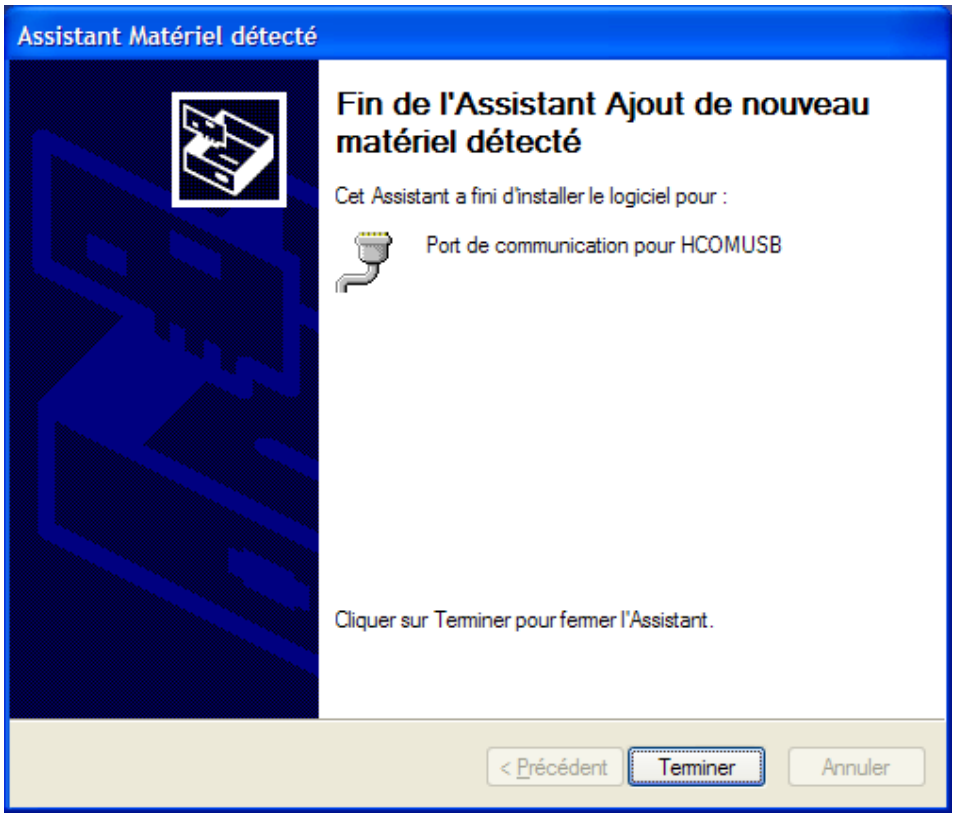
- Windows will be in progress



- If there is a warning message concerning the software, please choose to continue.



- At the end of the installation, a new communication port is added to your system.

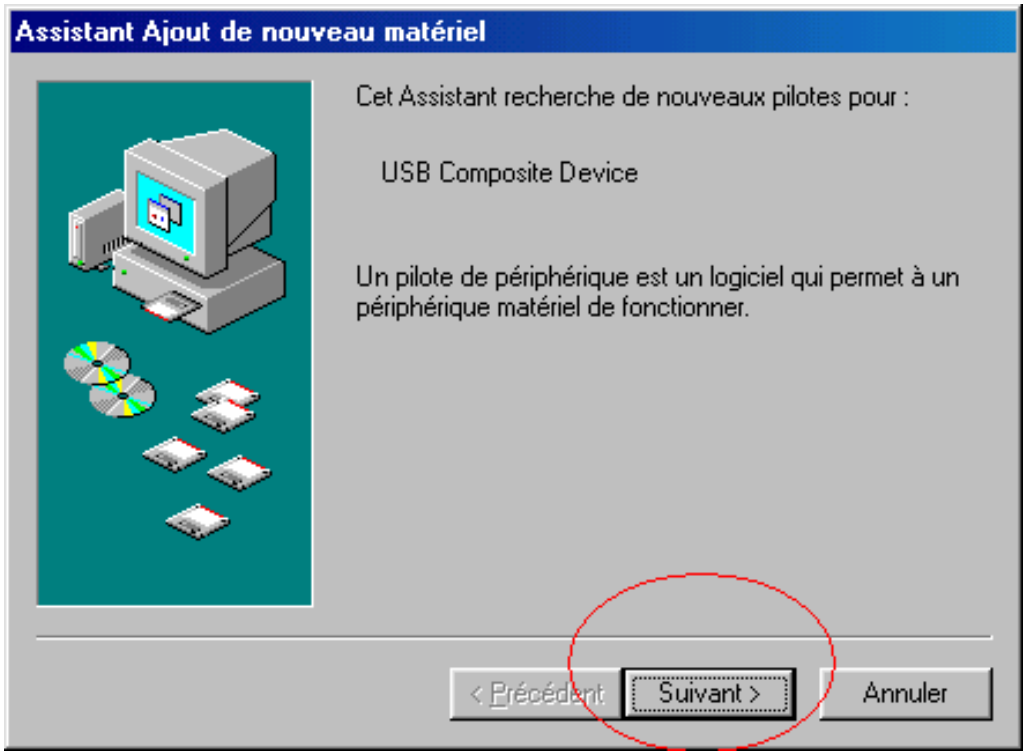


- Last action: you must note the Number of COM ports because you need it for using the software HART Explorer.

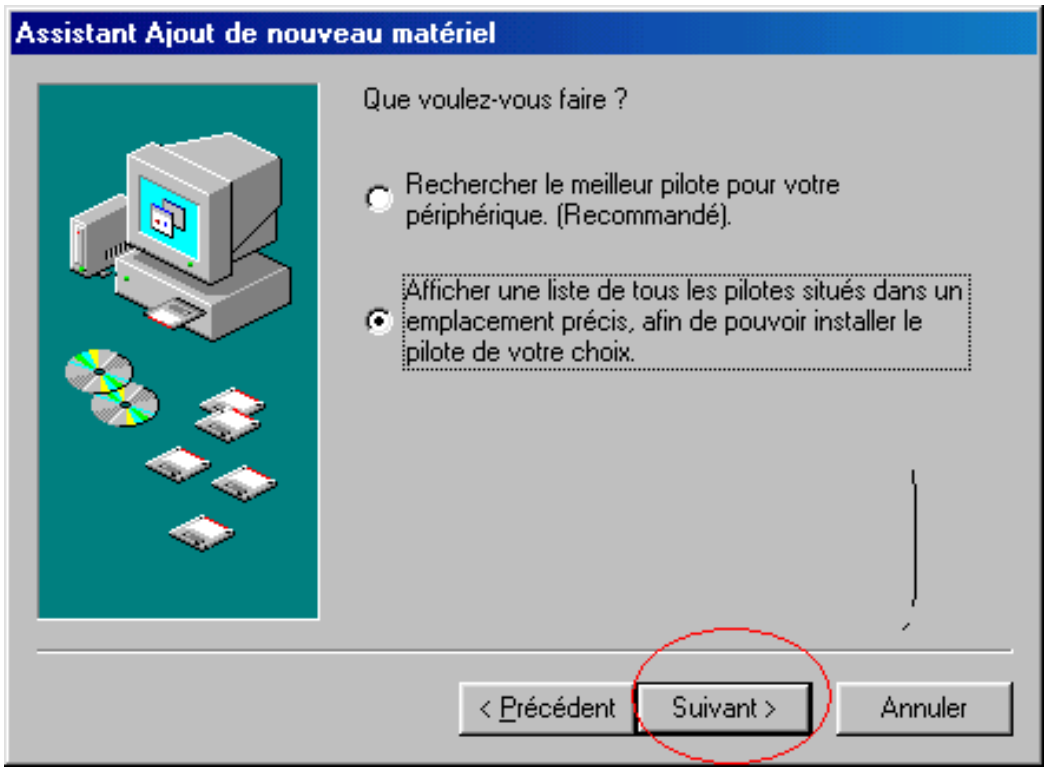
Go to transmitter manager and see which port you HCOMUSB is connected (COMx for the example, it is COM5)

2.2.3 Installation example for Windows 98

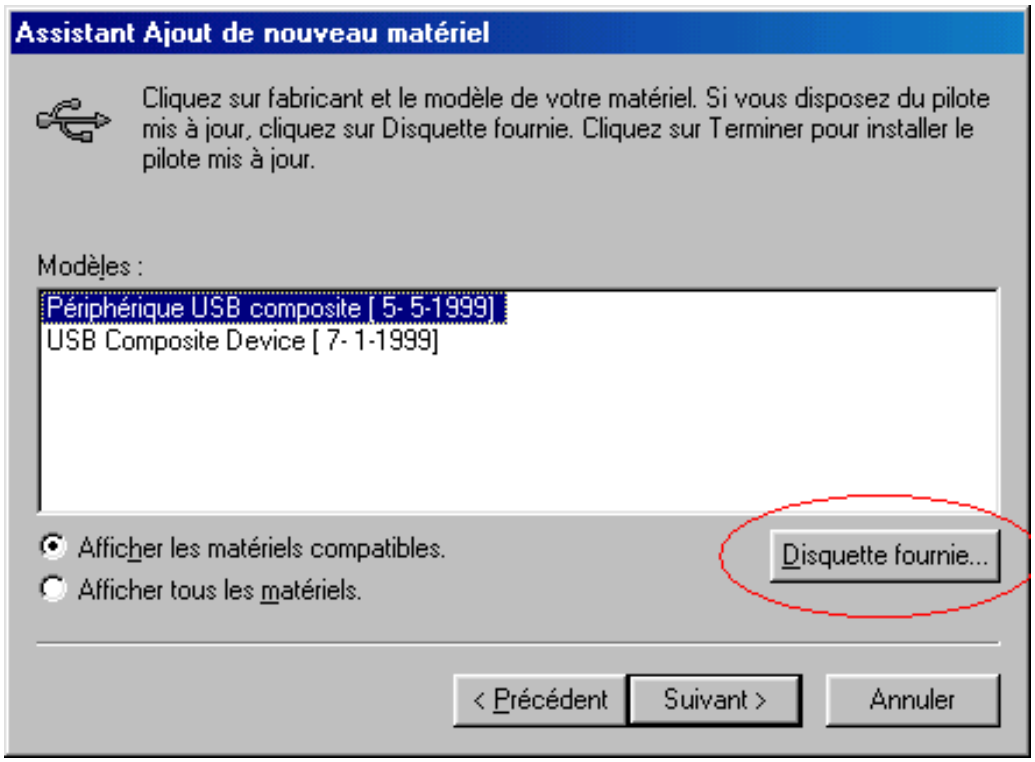
- Plug in the modem without the transmitter. Windows will detect a new device named “HCOMUSB” but cannot install it automatically. You reach the box “Add new Hardware Wizard”.



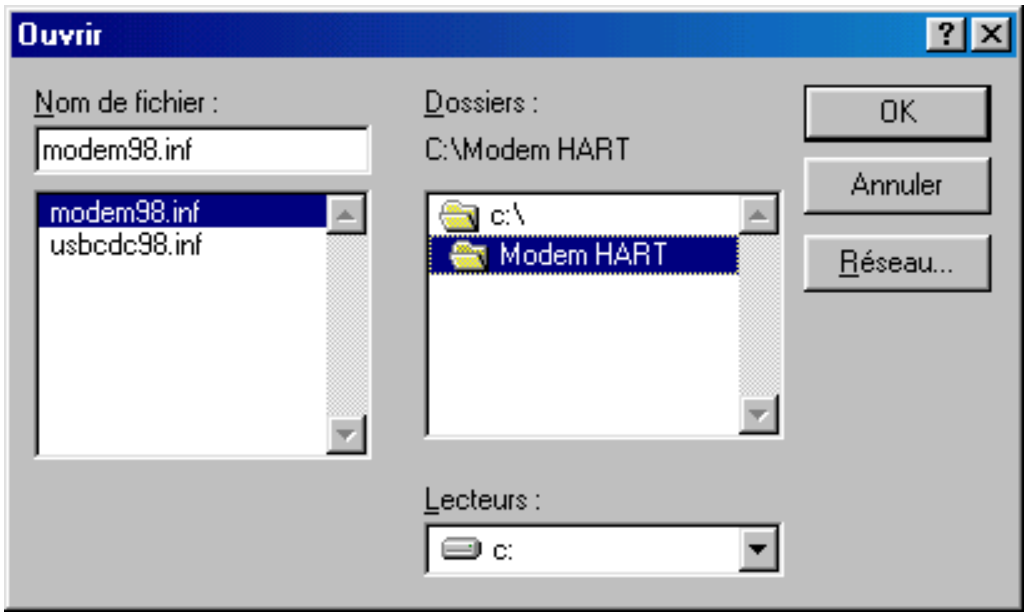
- Select “Display a list of all the drivers in a specific location, so you can select the driver you want”



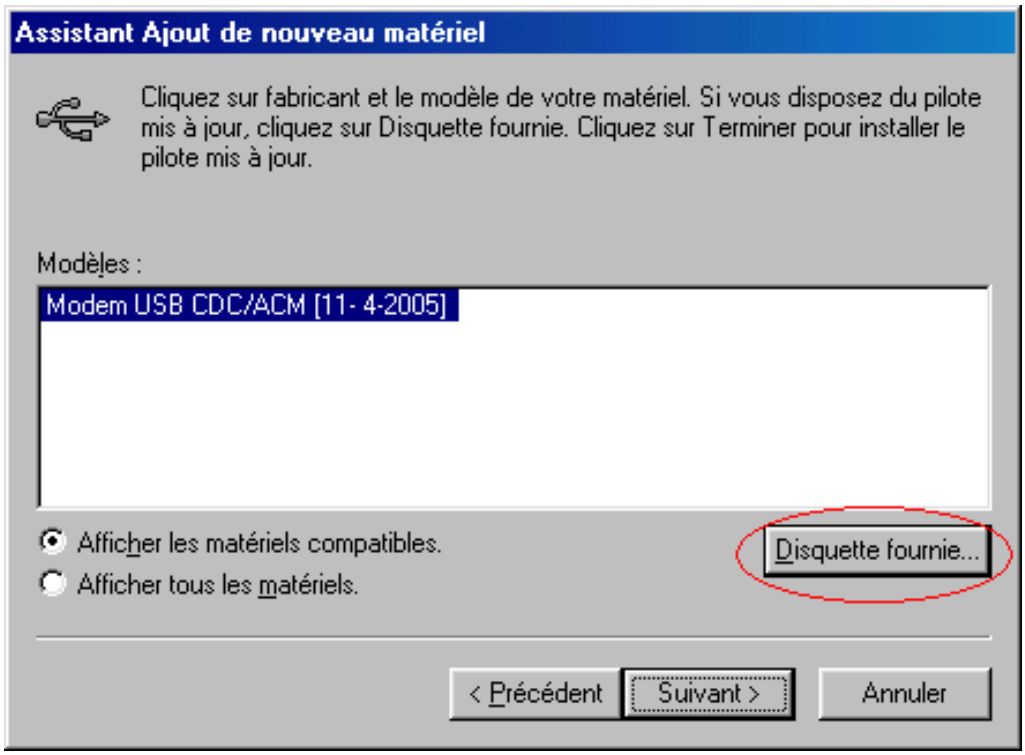
- Click on the “have a disk” button” when Windows shows you a list of available drivers



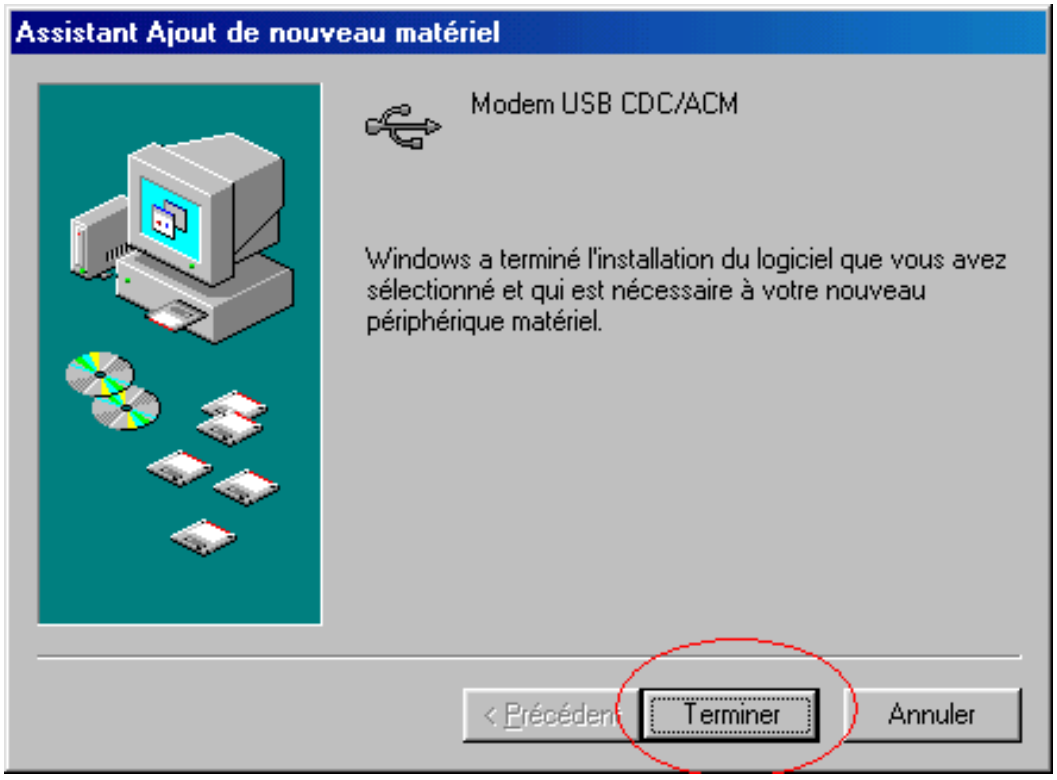
- Browse you CD to find these files:
  - Modem98.inf
  - Usbcdc.98.inf



- The USB modem will be installed

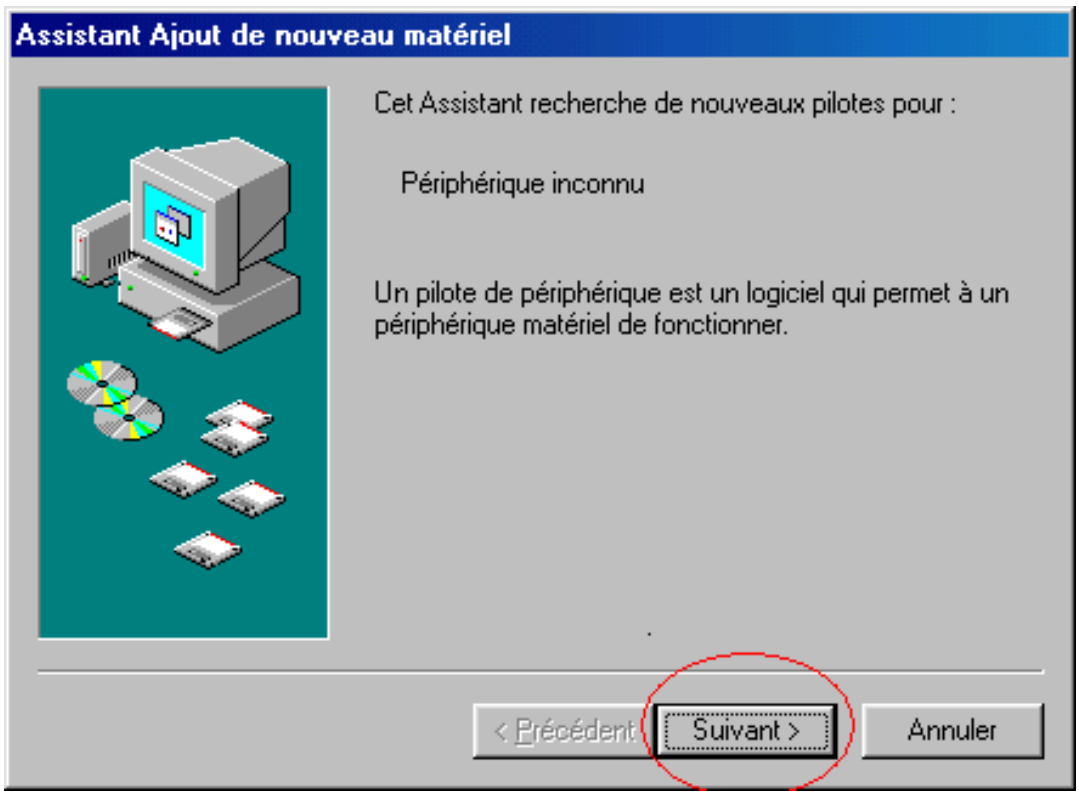


- The modem is installed when you click on “finished”

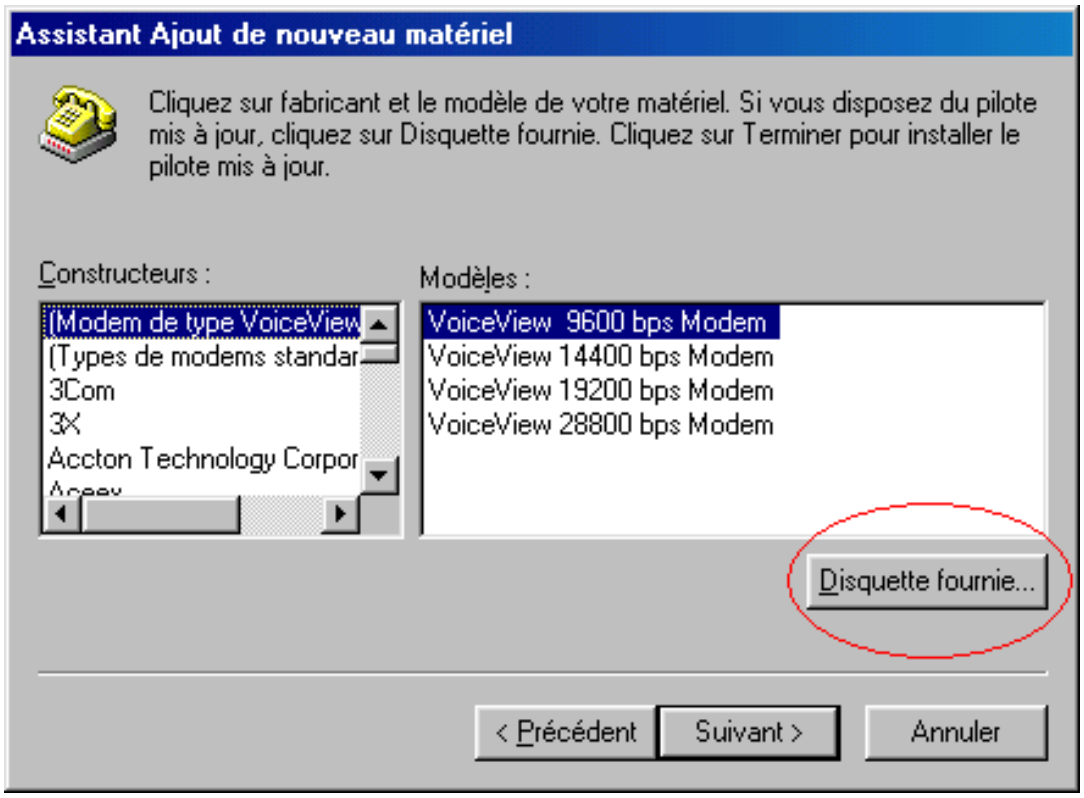


- A new device is detected

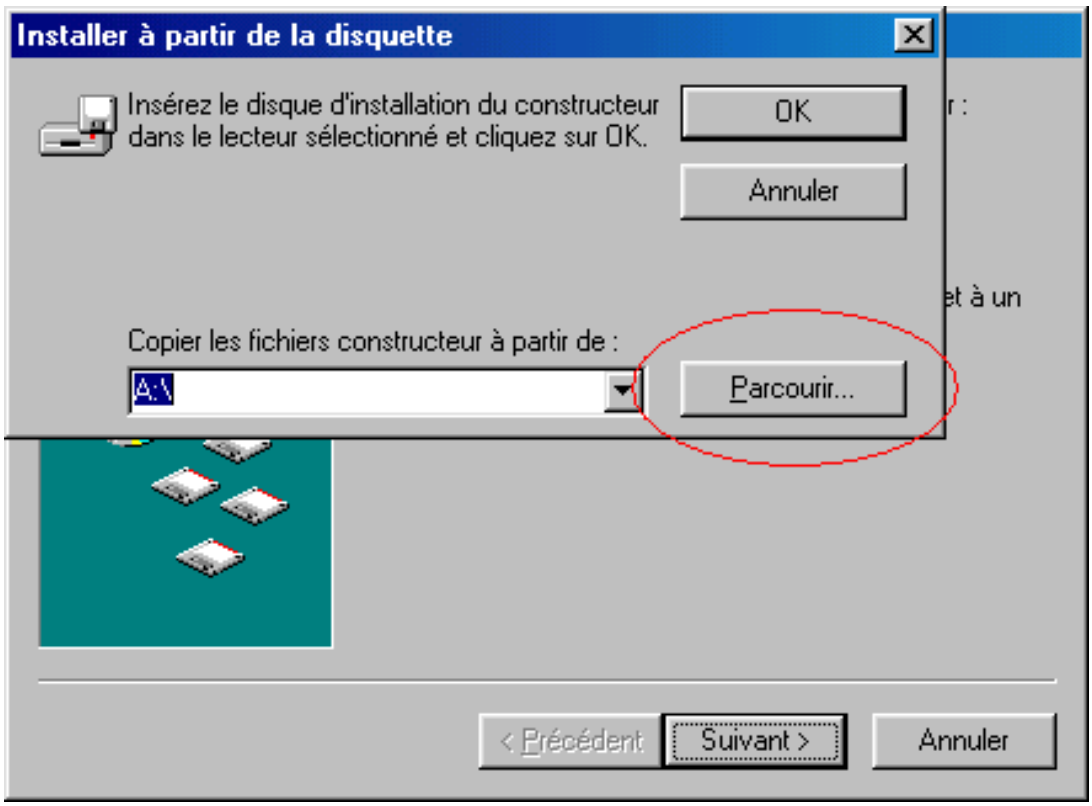
- The communication port is detected



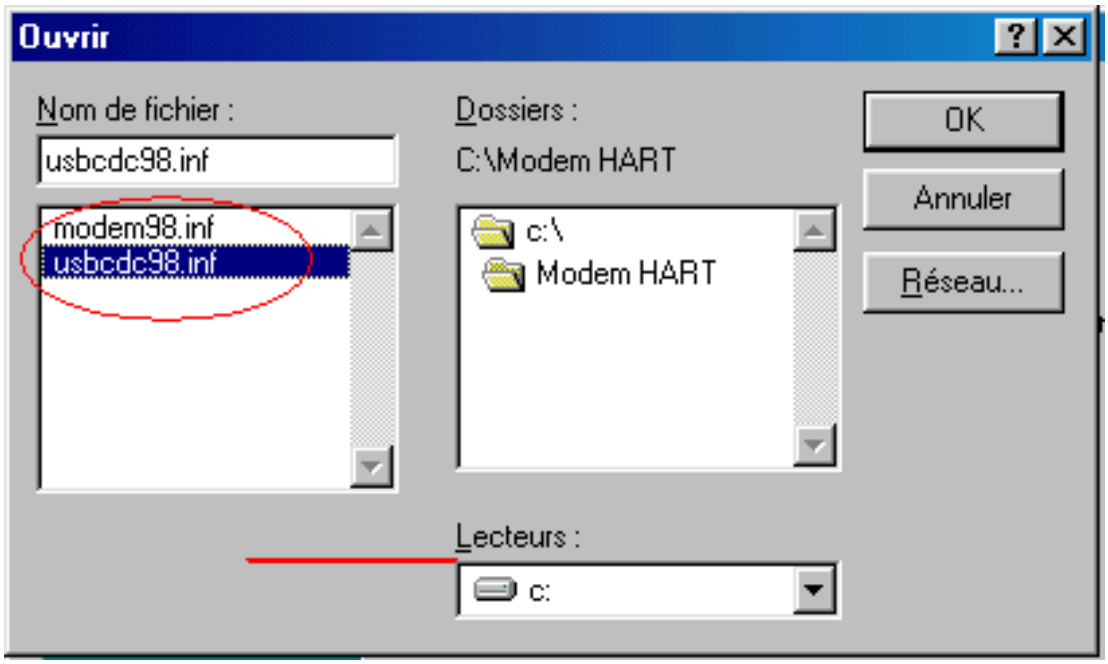
- Click on the “have a disk” button” when Windows shows you a list of available drivers



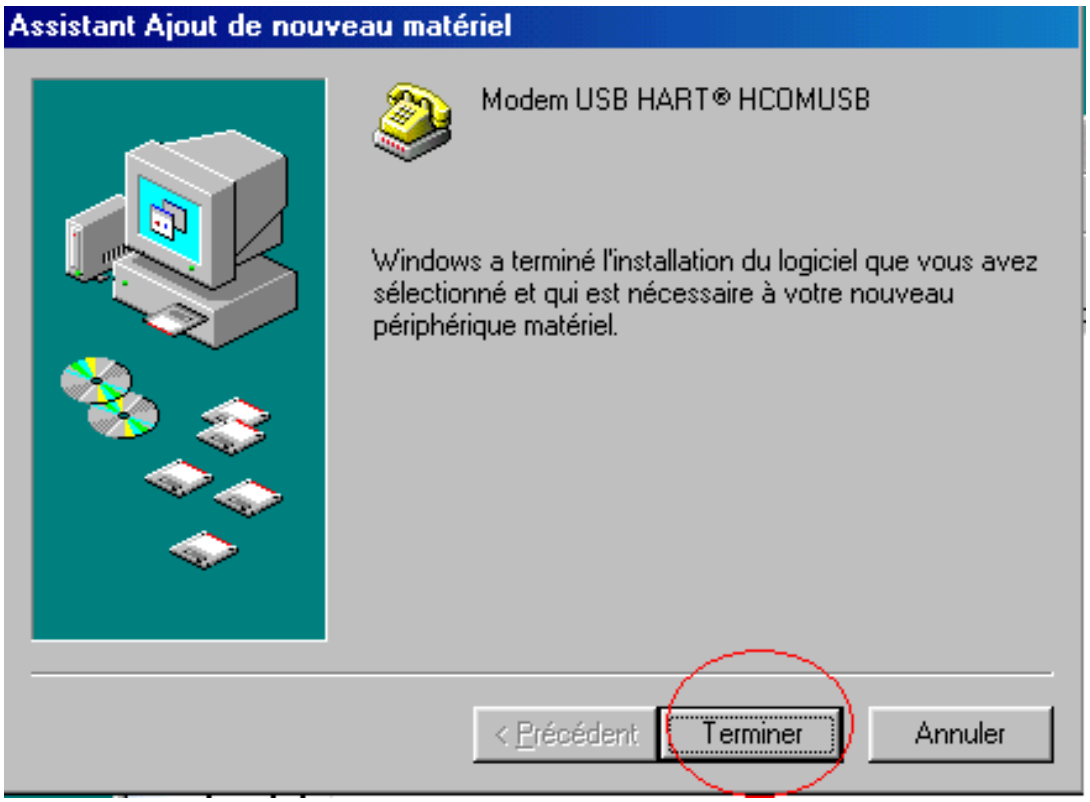
- Click on “browse” button



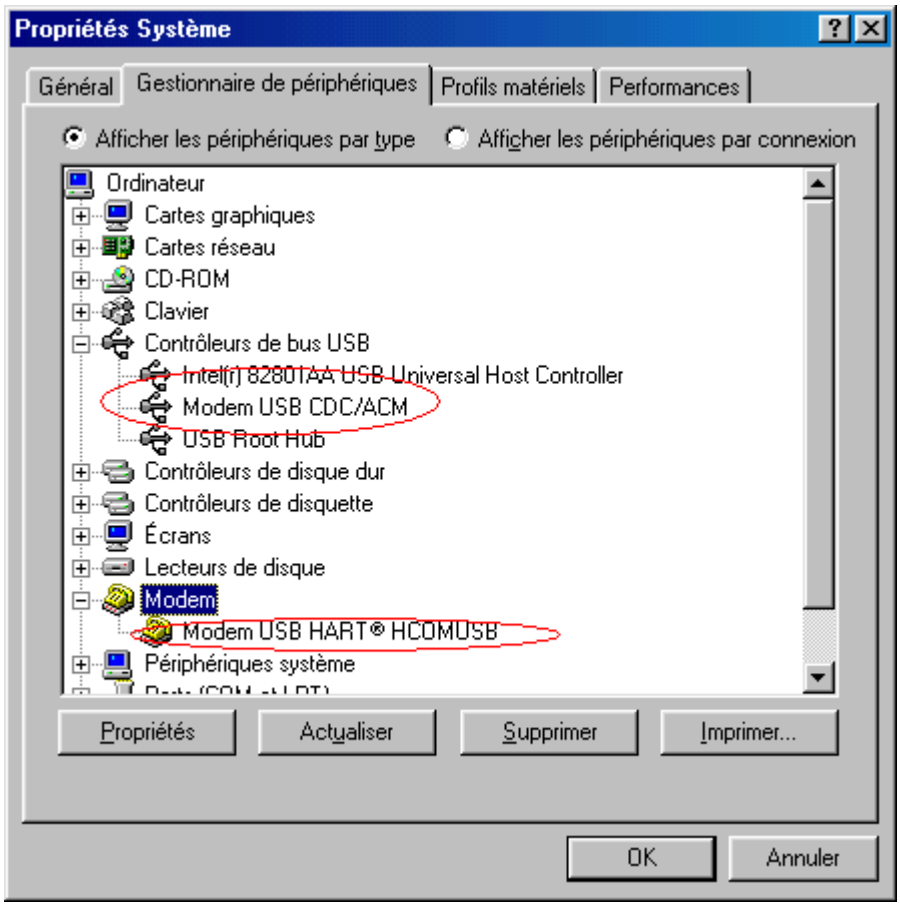
- Browse to display the following files:
  - Modem98.inf
  - Usbcdc98.inf



- The port is installed



- Using the panel configuration > System icon > System drivers, you can verify that the modem is installed
  You have to see:
  - Modem USB CDC
  - Modem HART



2.3 Installing the application (FUJI HART EXPLORER)

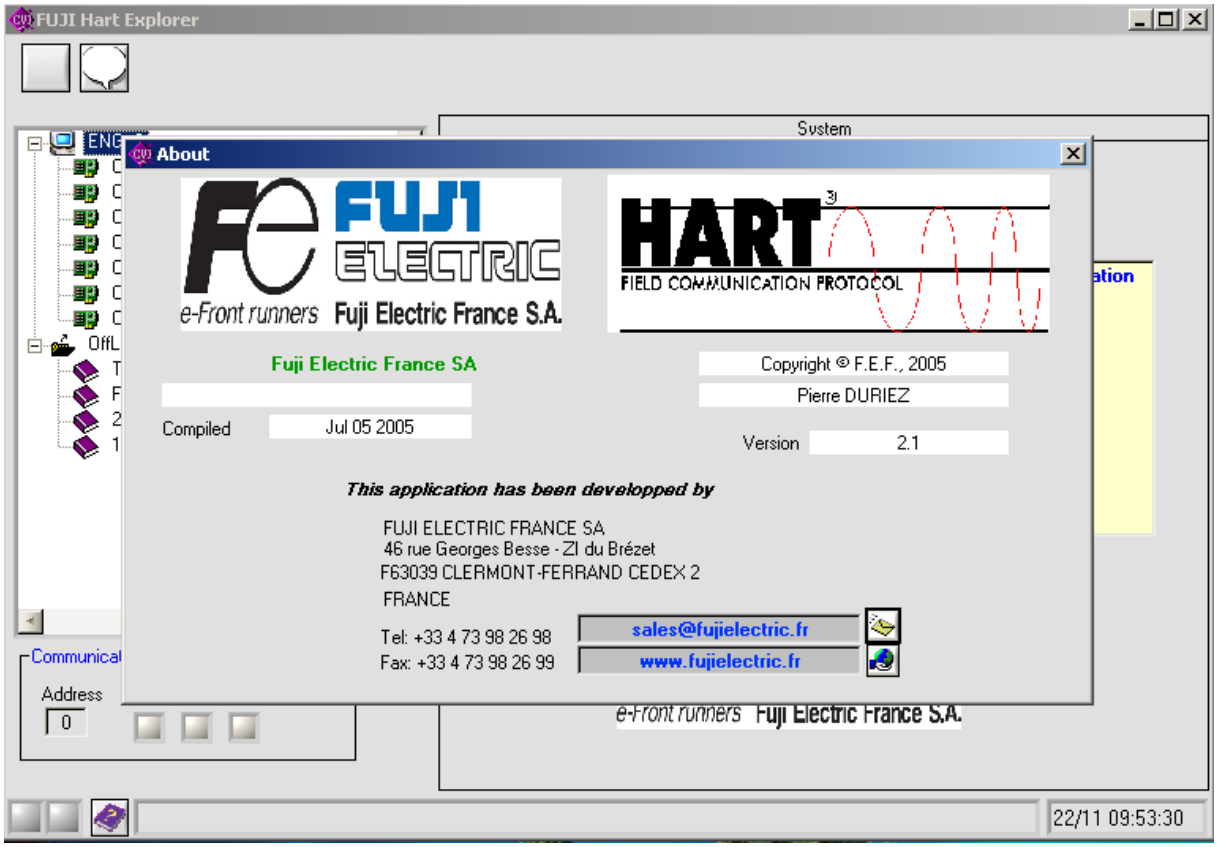
Double click on the file named “setup.exe” and follow the instructions.

2.4 Uninstalling the application

If you have already installed the application, you can uninstall it by launching “setup.exe” one more time or by using the classical uninstall procedure from the configuration panel.

3 Starting the application

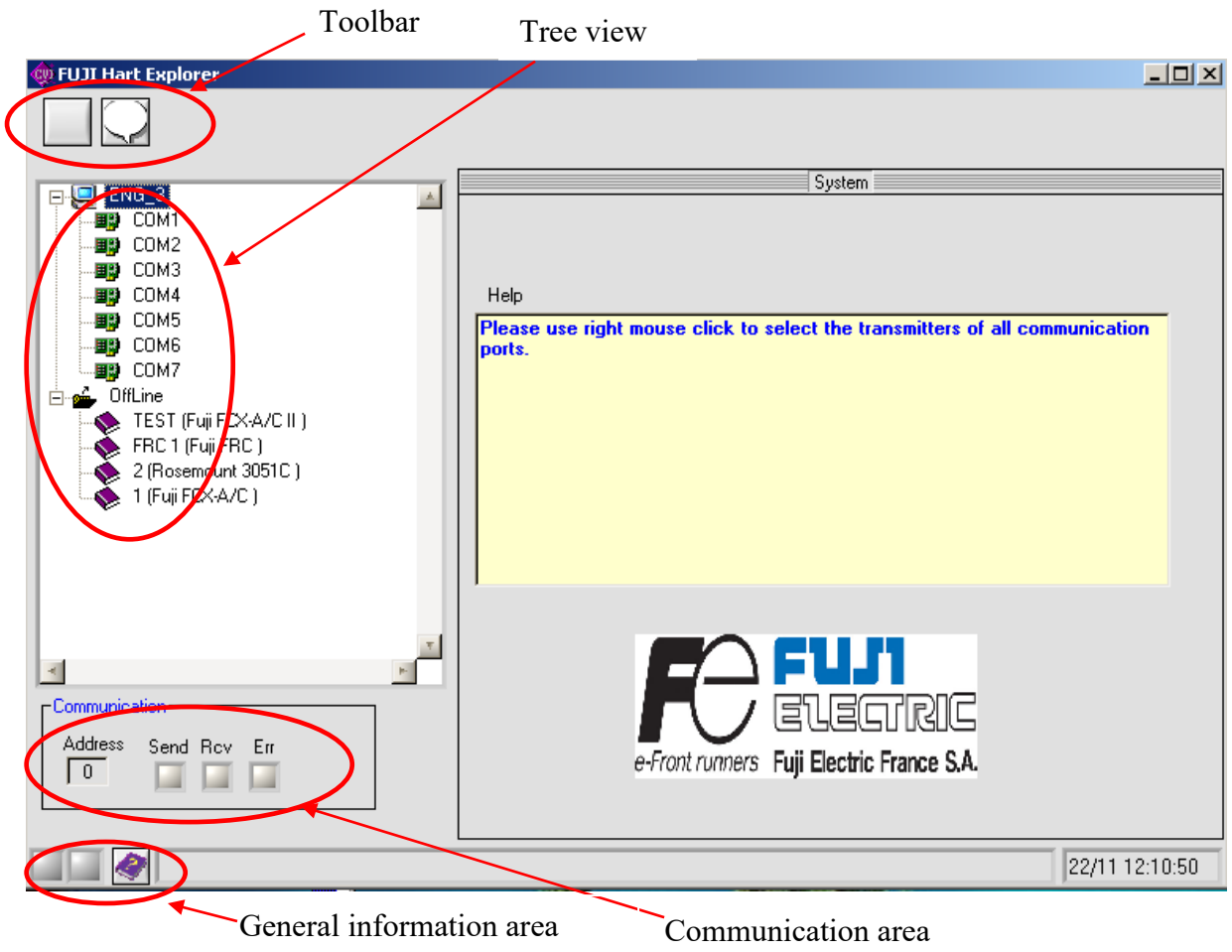
After started the application you've got the "About windows":



3.1 What can you do ?

See the actual version number		Version 2.1
Contact Fuji Electric	click on the email button	
	Or double click one the address	sales@fujielectric.fr
See our web site	click on the web button	
	Or double click one the URL	www.fujielectric.fr
Close the windows		

3.2 Main windows



3.3 Description

The windows contains

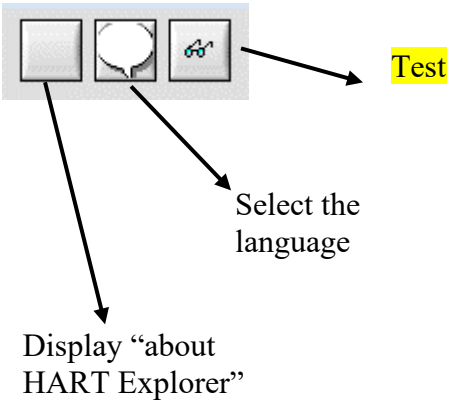
- a toolbar
- a tree view
- a communication area
- a general information area

3.4 The toolbar

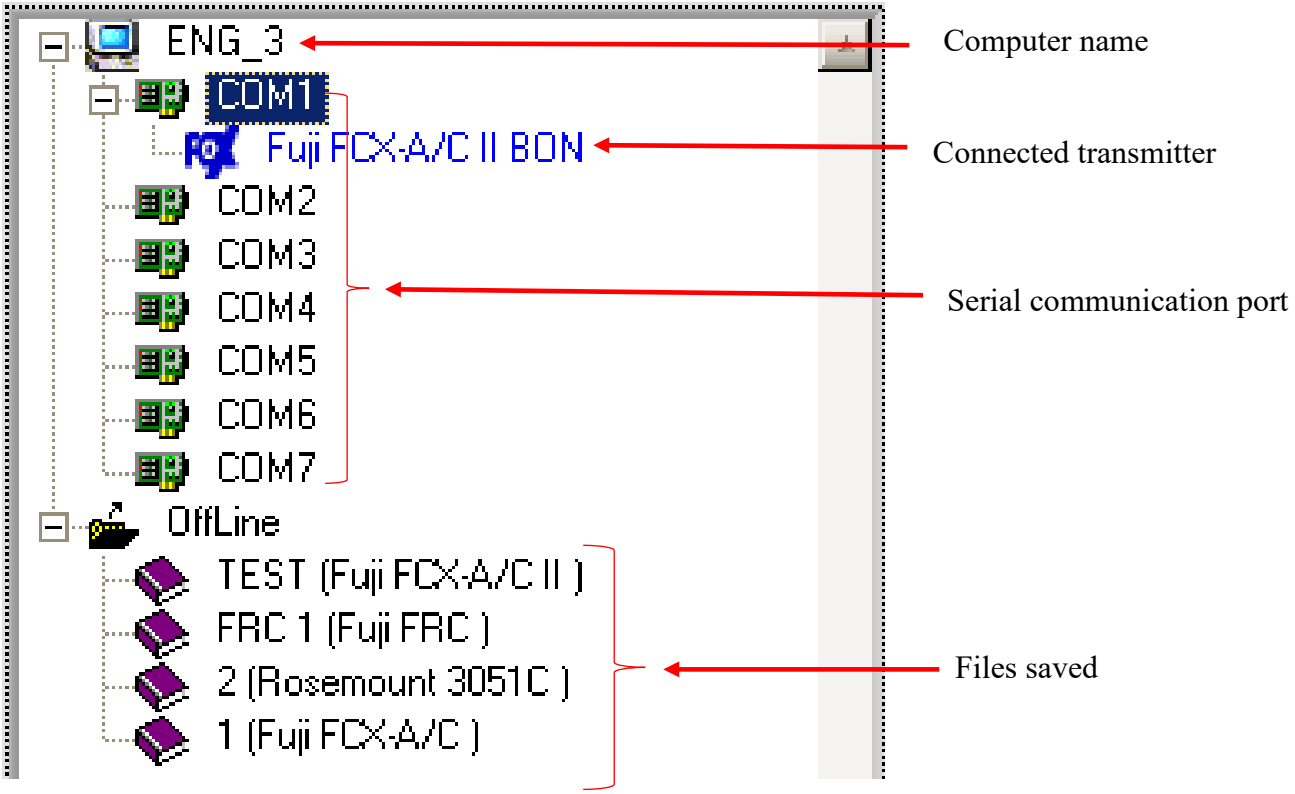
3.5 What can you do?

The toolbar gives you the possibility to

- display the “About HART explorer”
- select the interface language
- test



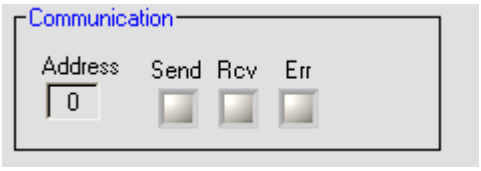
3.6 The tree view



The tree view show you

- the computer name
- the available serial communication ports
- the connected transmitters
- the files saved for offline mode

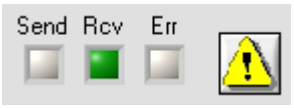
3.7 Communication area



The communication area show you:

- **THE ADDRESS OF THE TRANSMITTER FOR THE ACTUAL COMMUNICATION**
- a send indicator (“Send”)
- a receive indicator (“Rcv”)
- an error indicator (“Err”)

- sometime an error button 



3.8 What can you do ?

You can get information about the communication.

Indicator		**Meaning**
Send	is flashing green	Data are sent to the transmitter during the green state.
Rcv	Is flashing green	A transmitter is sending data back
Rcv	Is flashing red	A response was expected but the transmitter doesn’t answer
Err	Is flashing red	A communication error occurs. **THE COMMAND IS REJECTED BY THE TRANSMITTER (VALUE/COMMAND REJECTED)** **AN ERROR IS DETECTED DURING THE COMMUNICATION**

When an error occurs in a Hart command, the error button appears. You can click on it to get the Hart Error Code. See “Communication error” in the paragraph “Annexes”.

3.9 General information area

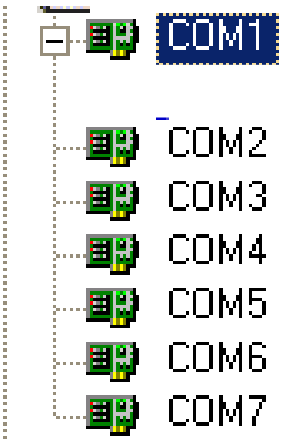
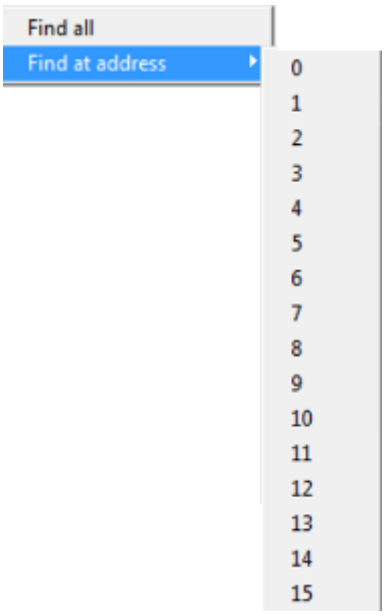
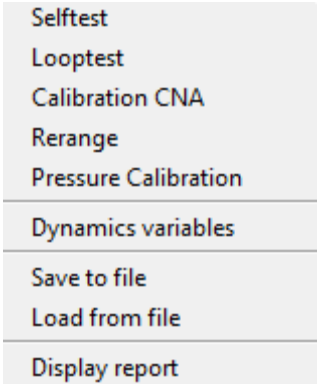
This area show you:

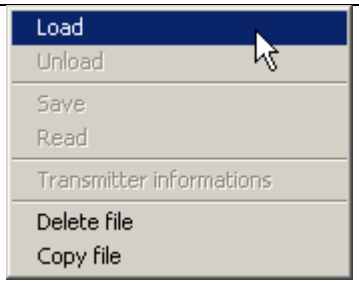
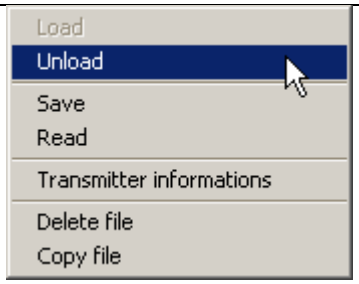
- **THE CURRENT DATE AND TIME**
- a button to display help file
- an area for process and error messages

3.10 Functionalities

When you select an item of the tree view, the right panel of the window is refreshed and display information depending on the kind of the selected item (computer, communication port, transmitter, file).

Right clicking on the item displays a contextual menu:

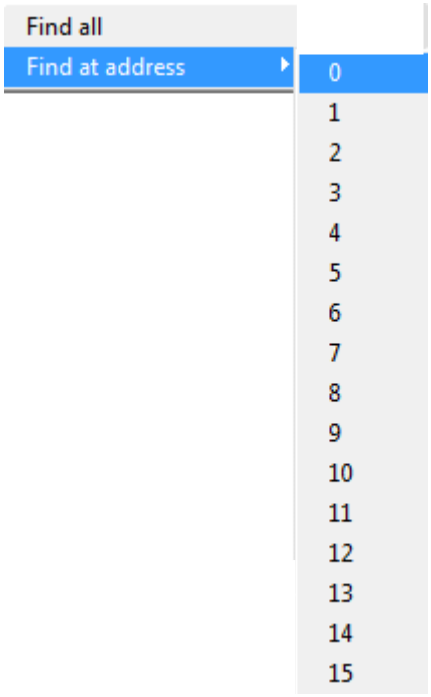
Item	Contextual menu (right click)	Functionality
Computer name 		Detect all transmitters for all addresses and all communication ports.
Communication port 		Find all transmitters for all addresses for that communication port. Find a transmitter for a specific address.
Connected transmitter 		**SELFTEST** **LOOPTEST** **CALIBRATION CNA** **RE RANGE** **PRESSURE CALIBRATION** **DYNAMICS VARIABLES** **SAVE TO FILE** **LOAD FROM FILE** **DISPLAY REPORT**
Other Transmitter	See specific documentation	

Offline		
File File not loaded		**LOAD FILE AS TRANSMITTER** **DELETE FILE** **COPY THE FILE**
File File loaded		**UNLOAD FILE** **SAVE ALL PARAMETERS** **REFRESH ALL PARAMETERS FROM FILE** **MAKE A REPORT** **DELETE FILE** **COPY THE FILE**

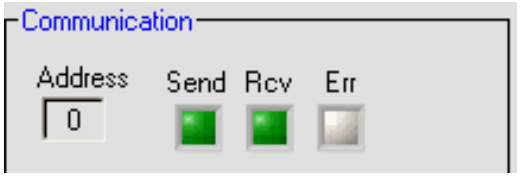
3.10.1 Connect a transmitter (online mode)

Right click on the port and select “Find all” if you don’t know its address or select “Find at address” with the right address.

For example: Transmitter with address 0



You will see the communication indicators flashing. If “Recv” indicator turns in green a transmitter is detected and is sending frame. At the end, no color will be shown and the name of your transmitter appears below the COMX.



Remark:

- For the point to point communication the address (poll address) is always “0”.
- **FOR COMMUNICATION IN MULTIDROP MODE THE ADDRESSES FROM 1 TO 15 HAVE TO BE PROGRAMMED.**

IF A TRANSMITTER IS DETECTED A NEW ITEM IS CREATED UNDER THE COMMUNICATION PORT ITEM.

Example of generic transmitter :

Example of FCX transmitter :

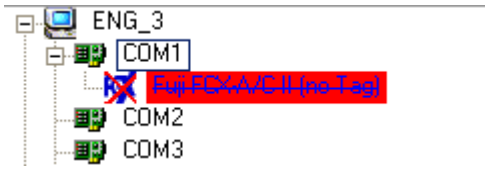
The item is defined with

- A icon 
- the manufacturer name Fuji
- the transmitter name FCX-A/C II
- the tag BON

If the transmitter is not especially implemented in the software, it can be manage in generic mode. The icon is  . Otherwise, if the transmitter is fully implemented, like "FUJI FCX pressure transmitter", the icon is  .

3.10.1.1 Transmitter in error:

If a transmitter is detected and a diagnostic problem occurs during the detection, the textual information is barred.

You will see 

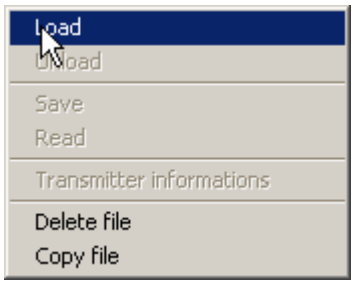
3.10.2 Connect a transmitter in offline mode

3.10.2.1 Introduction

Offline mode allows you to work on a file that contains all the parameters of a transmitter of any kind. Those files are created by using a connected transmitter and saving all its parameters. You can modify the parameters inside that file directly, like if the transmitter were connected. After, you can download your file to a transmitter of the same kind.

3.10.2.2 To load a transmitter

You have to select a file under the root named “Offline”, right click and select “Load” option.



The file is loaded exactly like if the transmitter was really connected. You can modify settings values and save them. The main differences are:

THE CONTEXTUAL MENU IS SPECIFIC TO THE OFFLINE MODE, NOT TO THE TRANSMITTER KIND. SO, YOU CAN’T DO SELF TEST, LOOP TEST …

THE INPUT OUTPUT FUNCTIONS ARE DIRECTED TO AND FROM THE FILE INSTEAD OF THE TRANSMITTER. USUALLY, PARAMETER VALUES ARE CHECKED (AND MAY BE REJECTED) BY THE TRANSMITTER.

IN OFFLINE MODE, INCORRECT VALUES OR COMBINATIONS CAN’T BE DETECT. YOU WILL GET AN ERROR ONLY WHEN YOU WILL DOWNLOAD THE FILE TO A TRANSMITTER.

3.10.3 Working on a transmitter

In online and offline, you can work on a transmitter by selecting it and open a contextual menu with a right click.

4 Working with a "Fuji FCX A-C II pressure transmitter"

Remark: *If the transmitters has the local LCD indicator option, please check that the switch "LOCAL/COMM" is in COMM position.*

LOCAL/COMM switch

4.1 Introduction

The "Fuji Hart Explorer" includes a plug in for totally implementing the transmitter "Fuji FCX A-C II Pressure Transmitter".

4.2 Parameters panels

The parameters are grouped by panel. You can select a group by clicking on the associated button. There are 6 parameters panels.

HART GENERAL INFORMATION PANEL

TRANSMITTER / TRANSMITTER INFORMATION PANEL

MEASUREMENT SENSOR INFORMATION PANEL

PROCESS INFORMATION PANEL

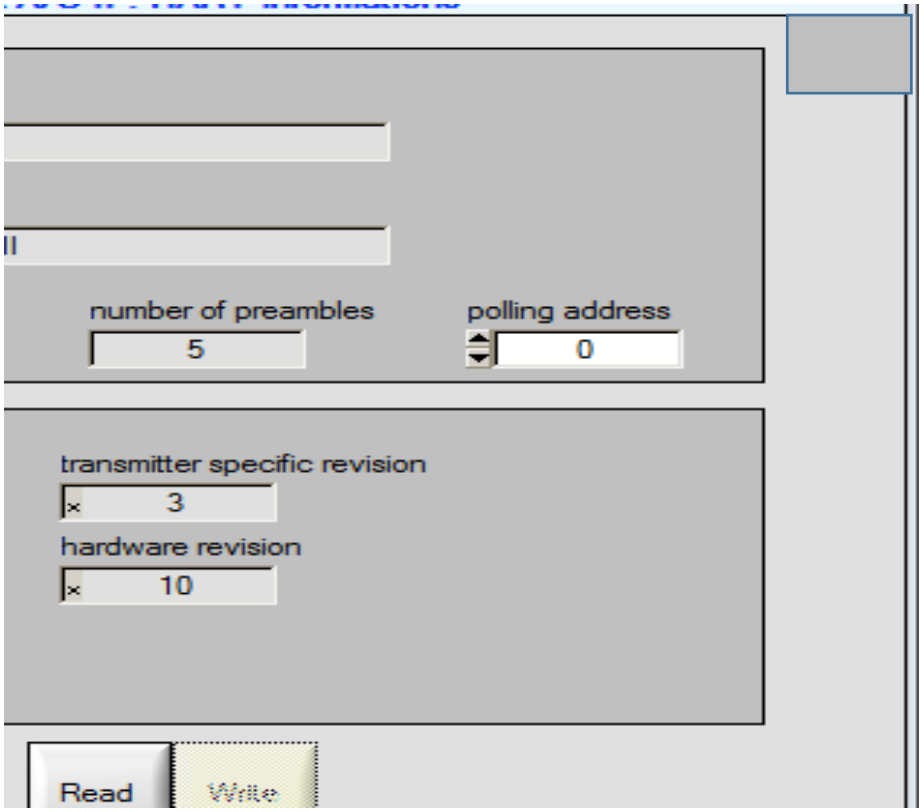
LDC INDICATOR PANEL

ALARMS INFORMATION PANEL

The panels are refreshed only if necessary, and commands are sent to the transmitter to take back needed data. Fields associated with only readable data are dimmed. When you change a writable parameter, the "Write" button becomes available to really write the data. At any time, if you need to read back data, click on read button.

4.3 HART general information panel

This panel shows some information about HART. They cannot be changed except the polling address.

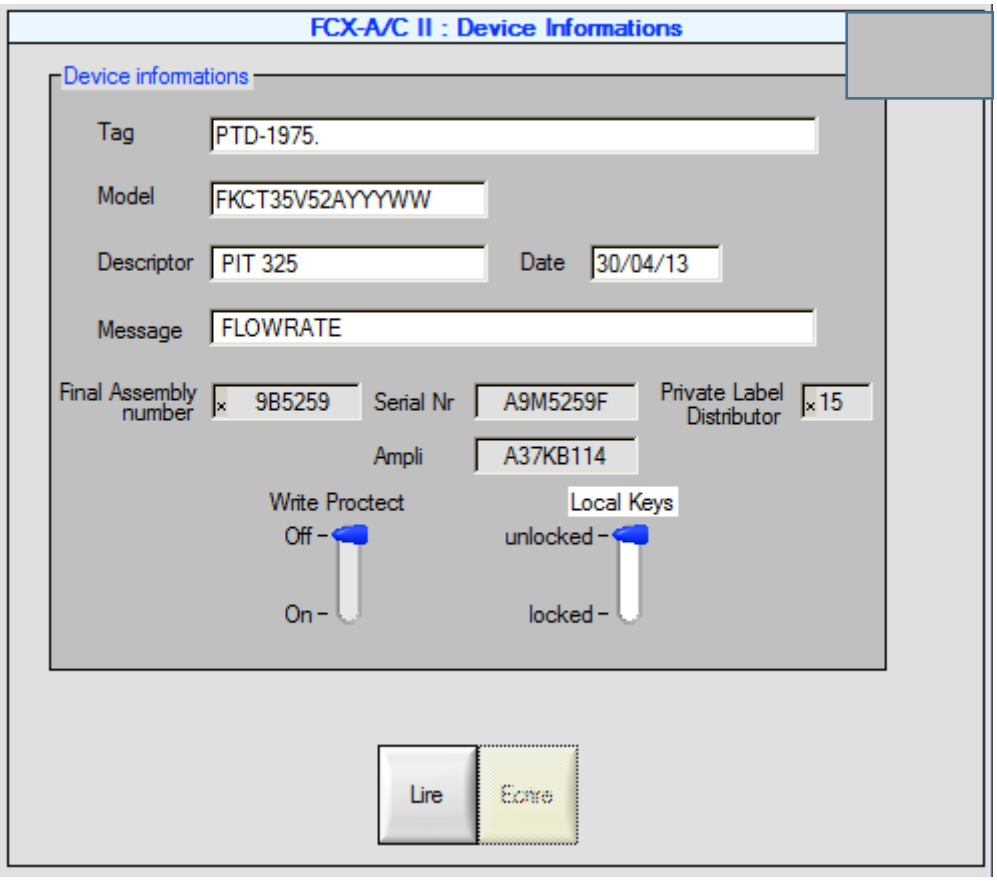


Hart general information	
Manufacturer Id	Official code of the manufacturer in hexadecimal. The next field is the name associated.
Transmitter type code	Official code associated with the transmitter. (in hexadecimal). The next field is its name.
Polling address	(selectable, see page 19) Address of the transmitter.
Transmitter id.	Transmitter Code identification.
N° of preambles	Number of preambles used by the transmitter
Revisions	
Universal command rev.	
Transmitter command rev.	
Software command rev.	
Hardware command rev.	
Transmitter function flags	

Warning: IF YOU CHANGE THE "POLLING ADDRESS" PARAMETER, IT'S RECOMMENDED TO RESTART THE APPLICATION.

4.4 Transmitter information panel

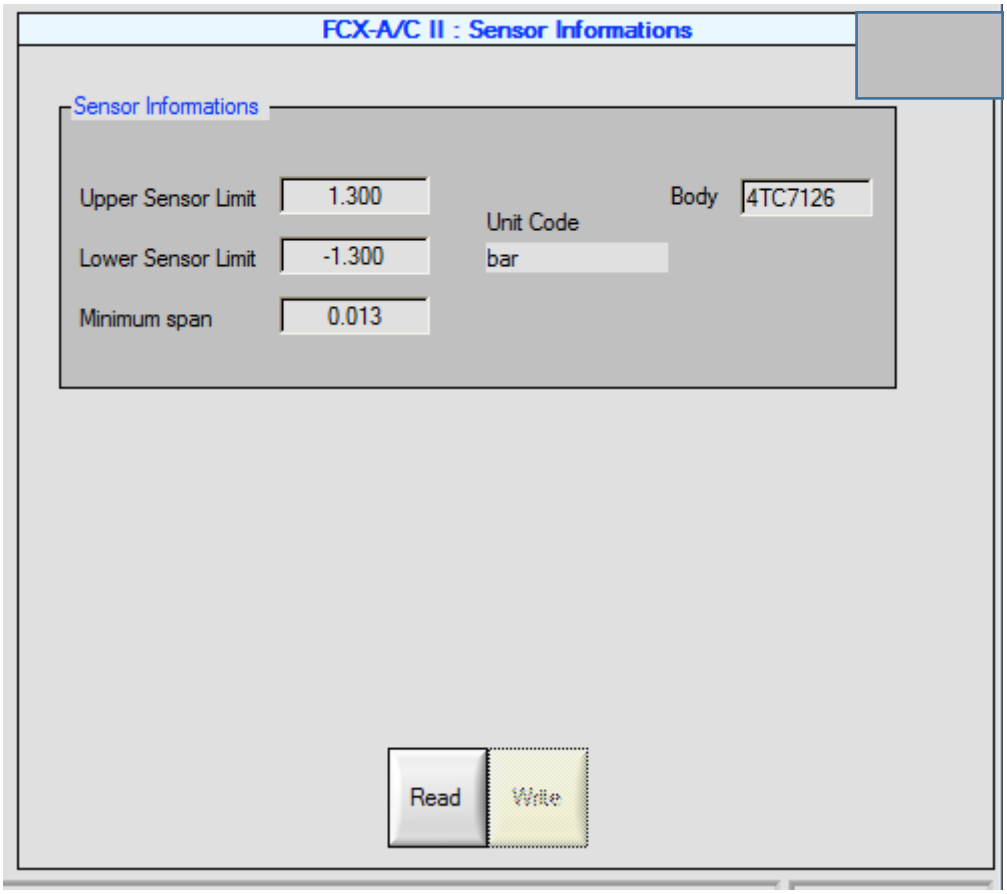
Only the white boxes can be changed.



Transmitter information	
Tag	(Selectable) Tag number of the measuring transmitter
Model	(Selectable) Fuji transmitter model number
Descriptor	(Selectable) Description of the measuring point
Date	(Selectable) Date
Message	(Selectable) Possible message can be written in 32 digits
Final Assembly number	
S/N of the transmitter	Serial number of the transmitter
S/N of the amplifier	Serial number of the amplifier
Private Label	
Write Protect	Enables or inhibits the write function in the different panels
Local Adjust. screw	Enables or inhibits the adjustment screw on the transmitter electronics housing

4.5 Measurement sensor information panel

No data can be changed.

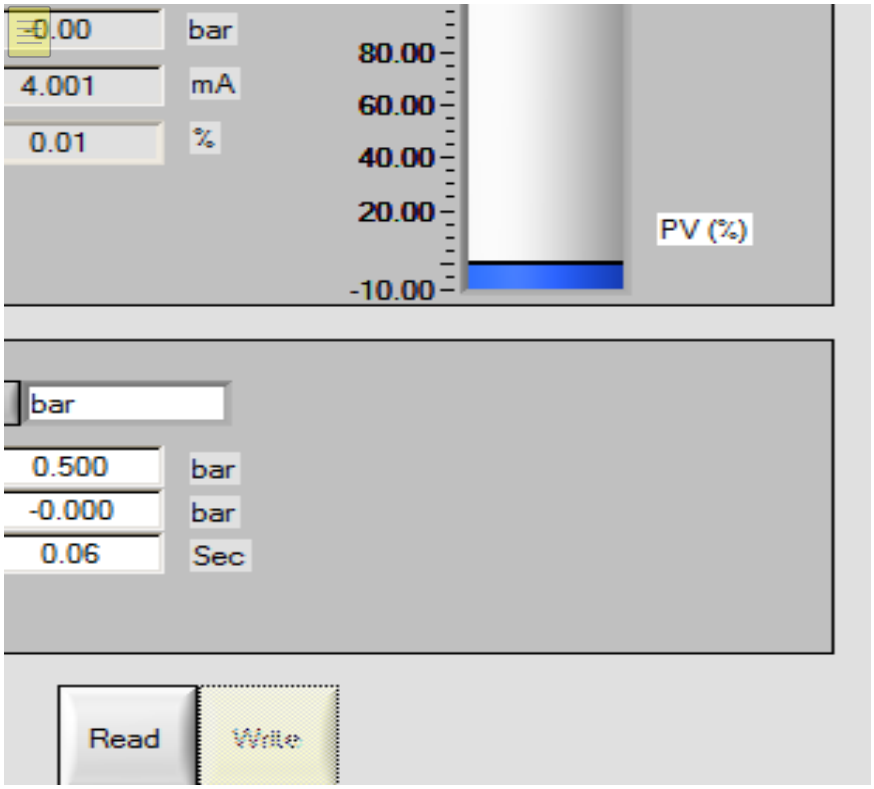


Measurement cell information	
Upper sensor limit	Maximum setting limit
Lower sensor limit	Minimum setting limit
Minimum span	Minimum span
Unit code	Unit
Body	Serial number of the cell's body

Remark:
Upper/lower sensor limit corresponds to the interval between upper and lower sensor limits for the possible setting of the span of the measuring transmitter. This interval does not correspond to the max. range of the transmitter.

4.6 Process information panel

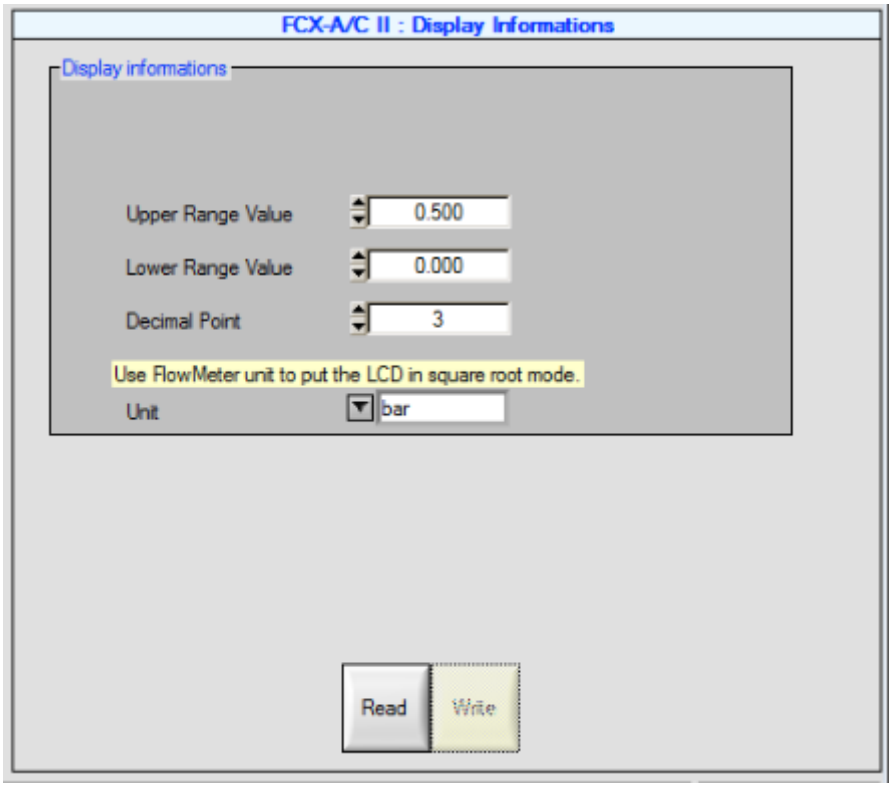
Only the white boxes can be changed.



Process information	
Process value	Process value indicated in the programmed unit
Analog value	Analog output signal
Percent range	Output in % - also indicated on the bar graph
Unit	(Selectable) Programmable unit for the software
URV	(Selectable) Upper range value (20mA)
LRV	(Selectable) Low range value (4 mA)
Damping	(Selectable) Damping of the output signal

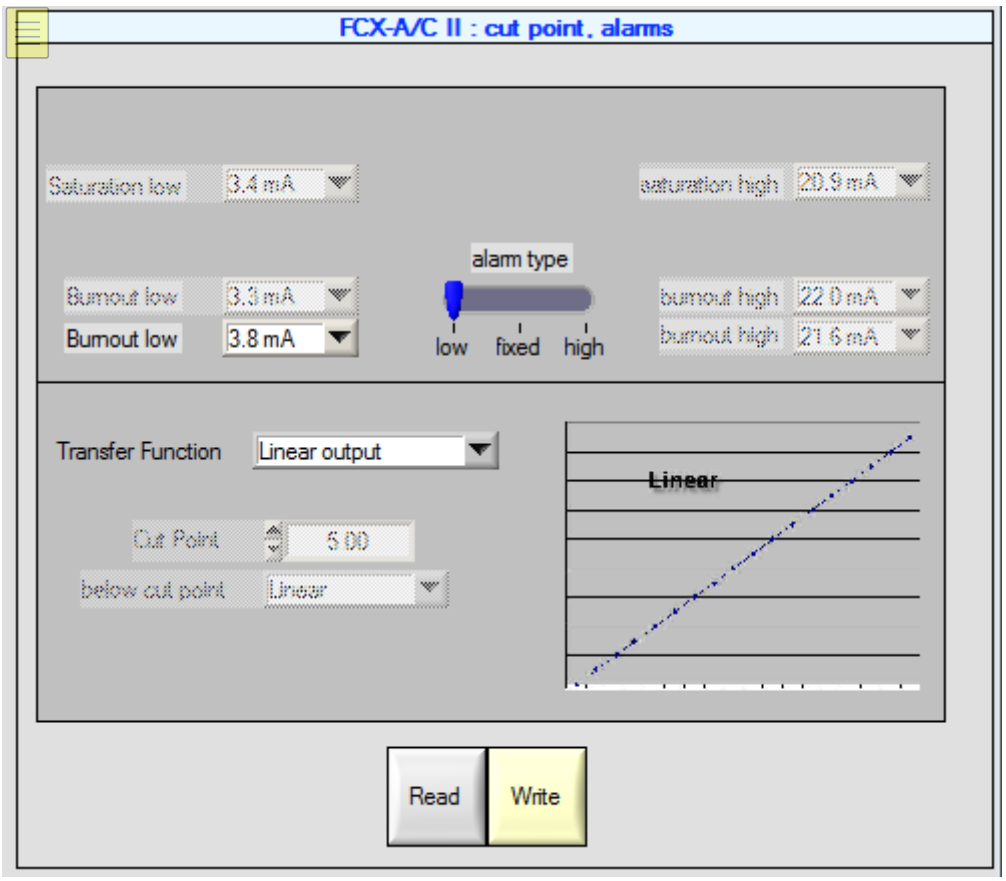
4.6.1 LCD indicator information panel

The LCD indicator can be configured concerning the values to be indicated and the units.
All data can be changed.



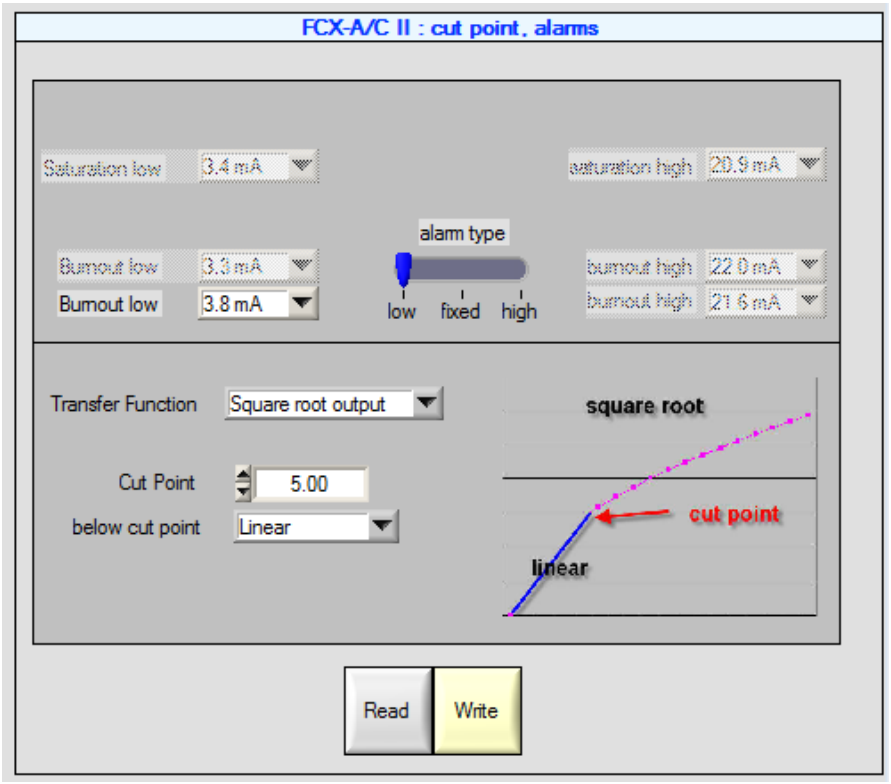
Process information	
URV	(Selectable) Upper range value (20mA)
LRV	(Selectable) Low range value (4 mA)
Decimal Point	(Selectable) Configure the decimal point position of the indication
Unit	(Selectable) Unit of the indicator A large quantity of LCD indicator units are available for pressure, flow and level indications. • If you choose a flow unit, the indicated value will be **automatically a flow indication in square root independent of the output signal mode**. (See transfer function). • If a pressure or level unit is programmed, the indication will be linear.

4.6.2 Alarms information panel



Process information	
Saturation	
Burnout	(Selectable) Burnout mode is selectable between high (over scale), hold, and low (under scale). In case on high and low burnout, the burnout values are programmable for high between 20.8 to 21.6 and for low between 3.2 and 3.8 mA output signal
Alarm type	
Transfer function	(Selectable) Transfer function allows to program the output signal in linear or square root.
Cut Point	Cut point, (the start of the output signal in square root) for square root output is programmable between 0 and 20% of output.
Below cut point	

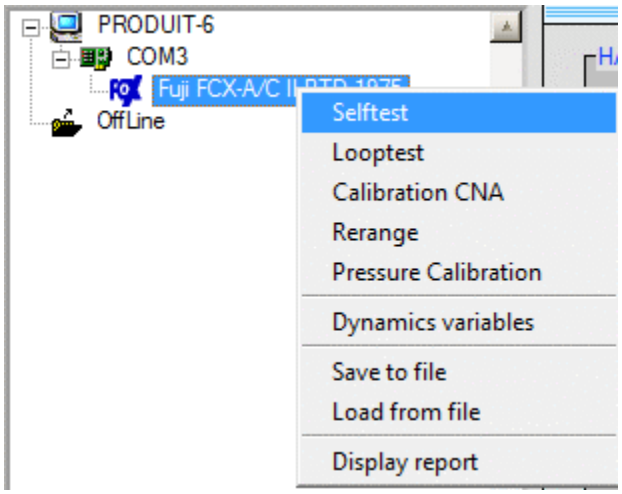
Example of square root output



5 Transmitter functions

5.1 Introduction

You can access the transmitter functions in online mode by right clicking on the transmitter item in the tree view.



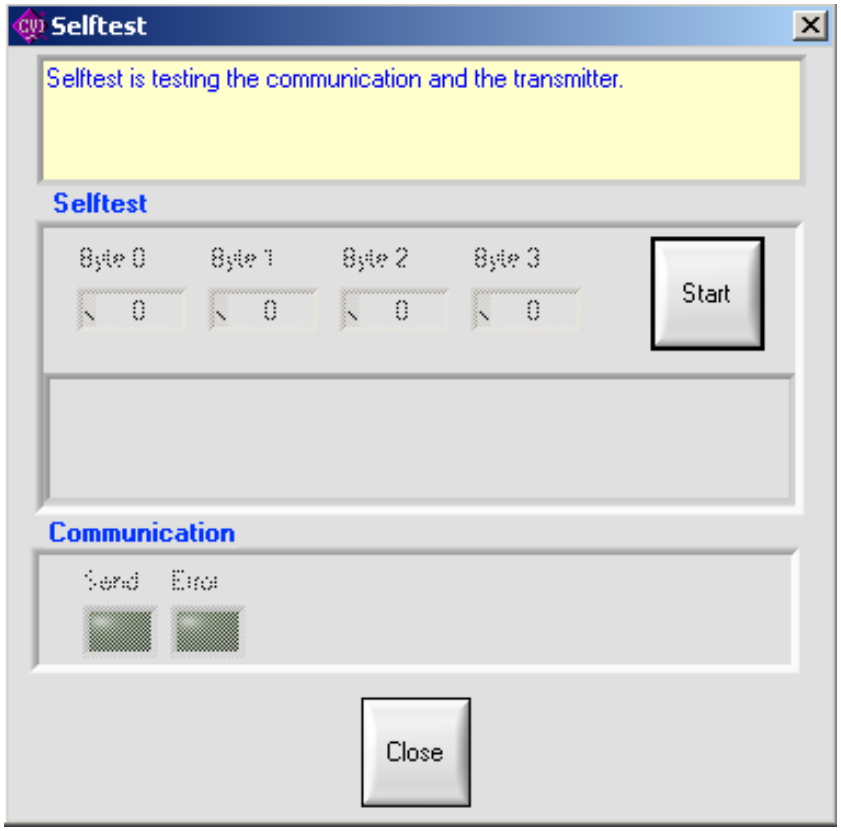
5.2 Self-test function

5.2.1 Introduction

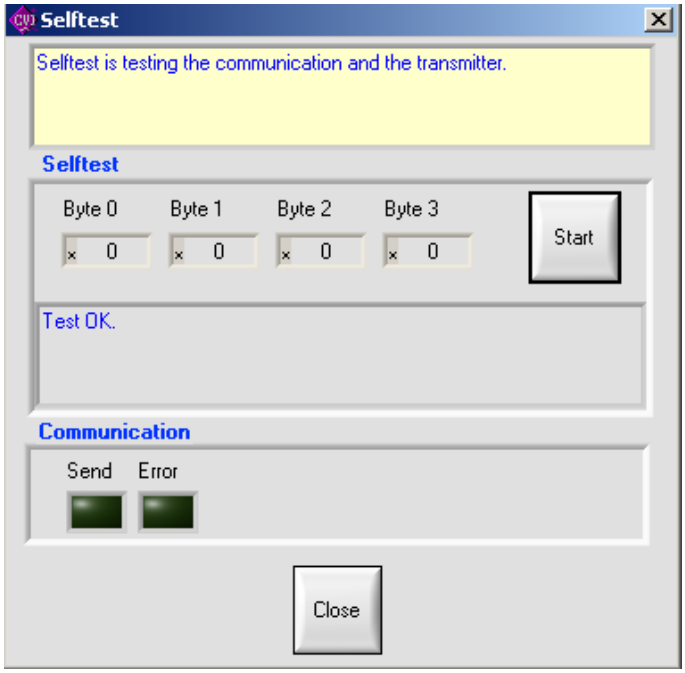
This function is to test the communication between the HART Explorer software and the transmitter

5.2.2 Procedure

This panel is very simple. Just click on start button to proceed the test.



After the test, you can read the response code (4 status bytes).



Response code	
0	No command-specific errors
6	Transmitter-Specific command error

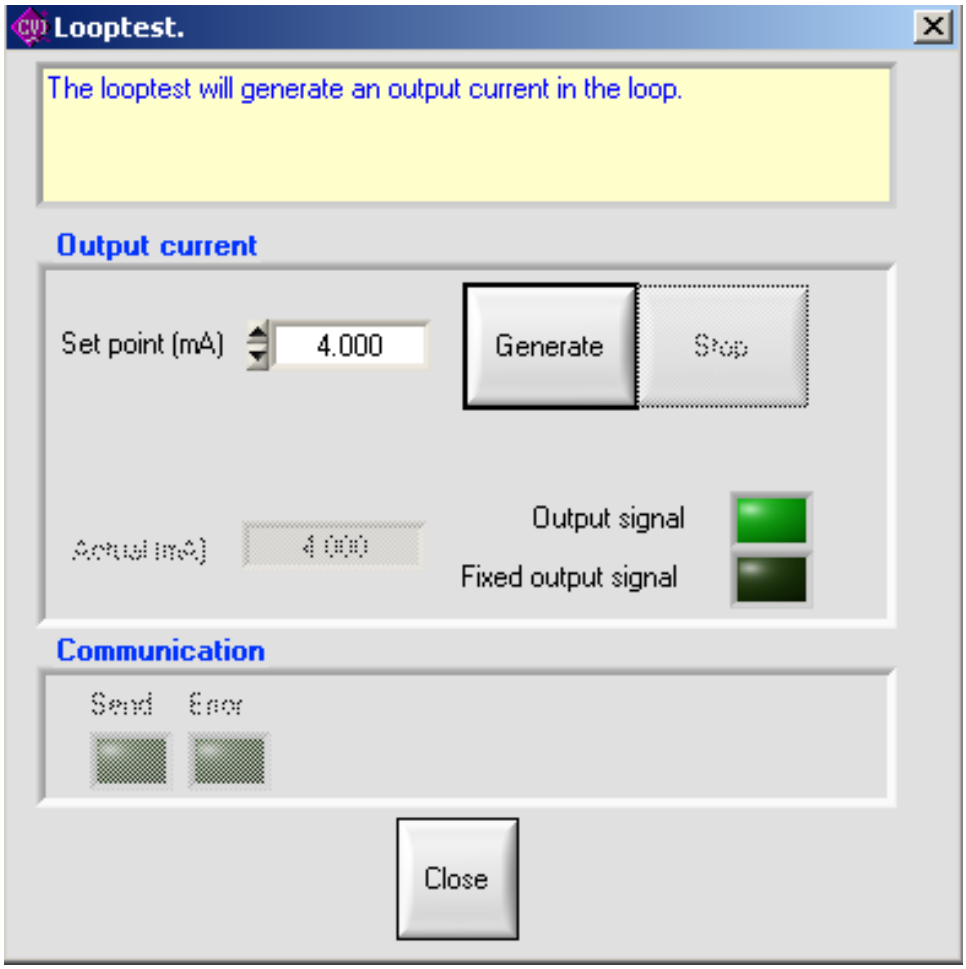
5.3 Loop test function

5.3.1 Introduction

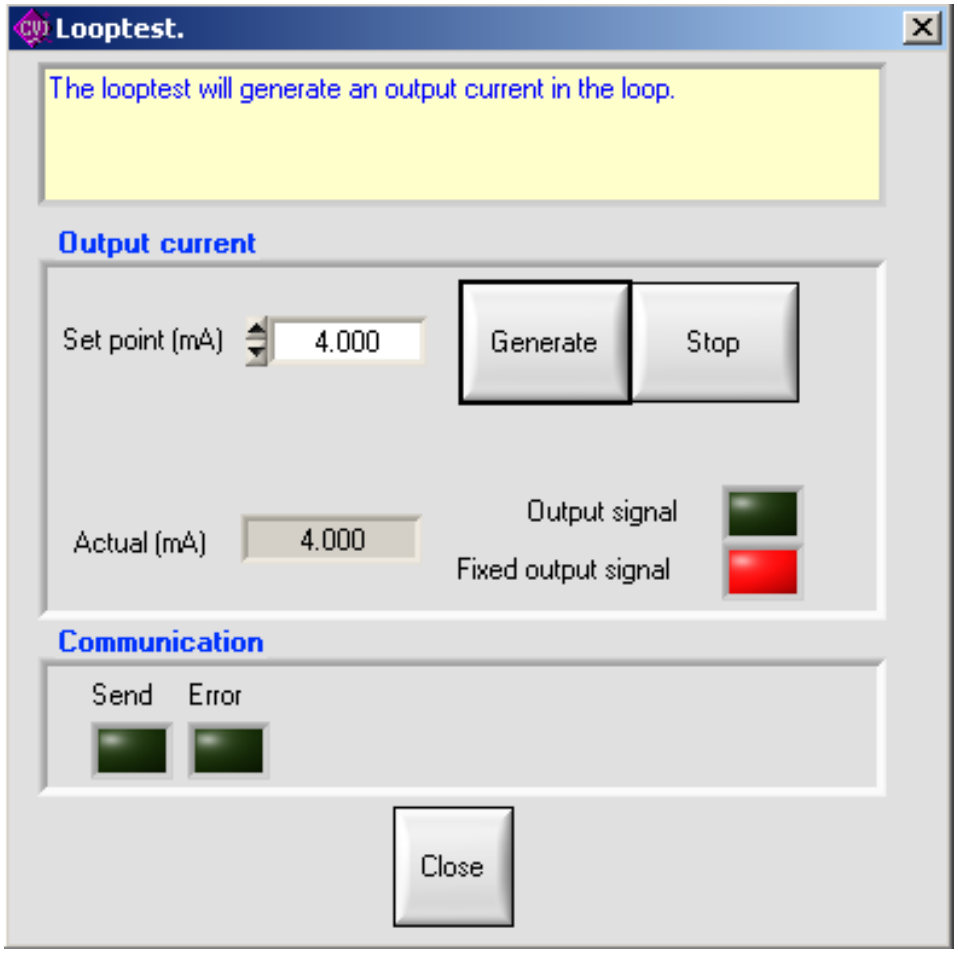
Fix the analog current at specified value.

5.3.2 Procedure

Define the set point value, and click on “generate” button:



The transmitter is in fixed output signal and the actual value is displayed. Click on “stop” button or “close” button to go back in output signal.



5.4 Calibration CNA function

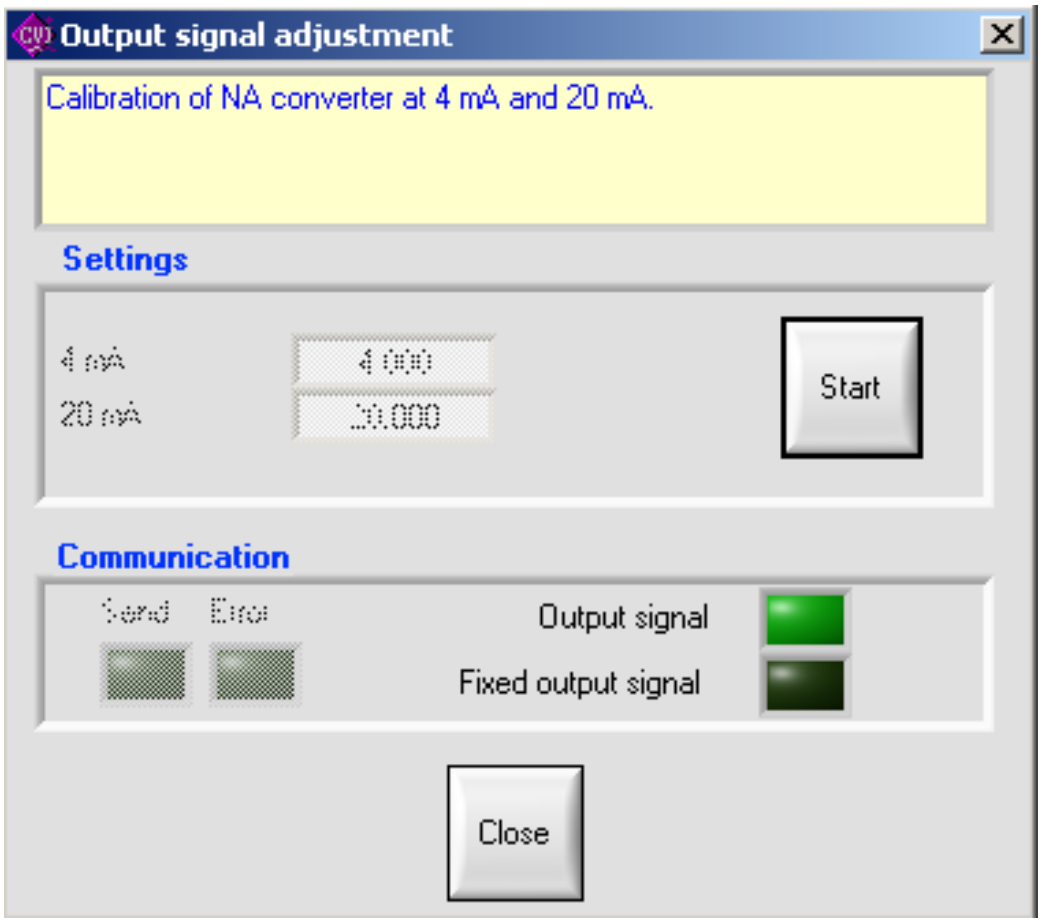
5.4.1 Introduction

This function will adjust the output signal. It will

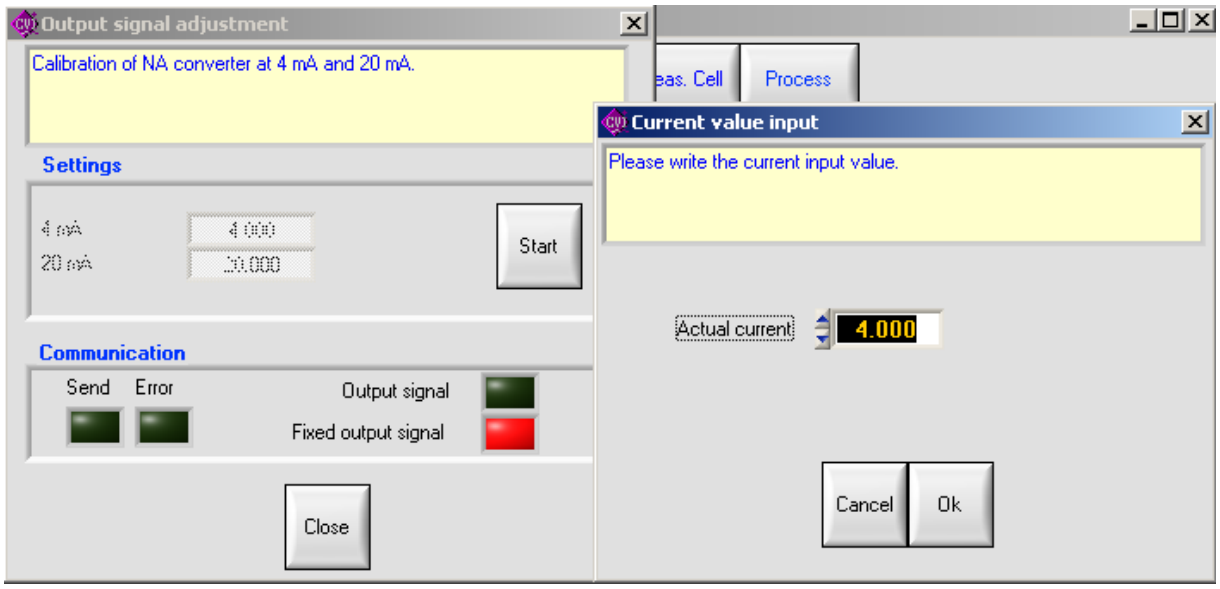
TRIM THE ZERO OR 4 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 4 MILLIAMP.

TRIM THE GAIN OR 20 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 20 MILLIAMP.

5.4.2 Procedure



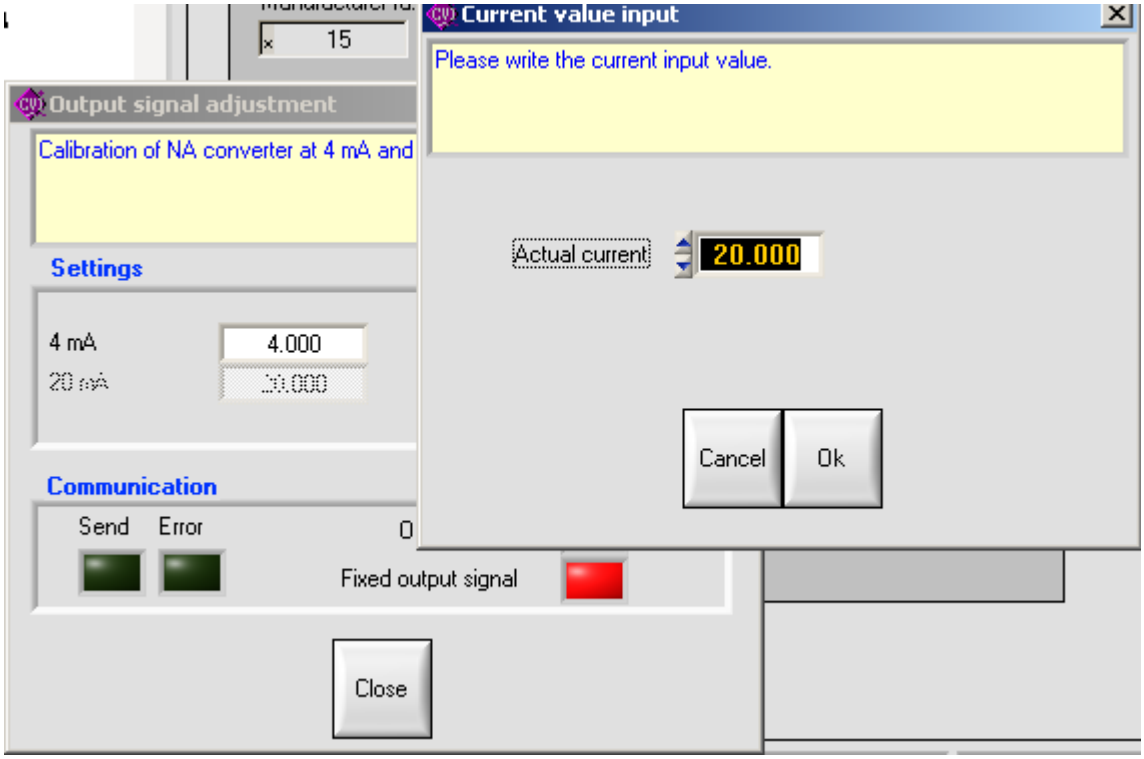
When clicking on START button, the following window is displayed.



Enter the output signal displayed on the milliamp – meter connected to the transmitter in the "actual current" space.

- first for the LRV
- next for the URV

Calibrate the output signal only with a high accurate milliamp – meter (3 digits after the point)
Close the window on "Close" button.



5.5 Re range function

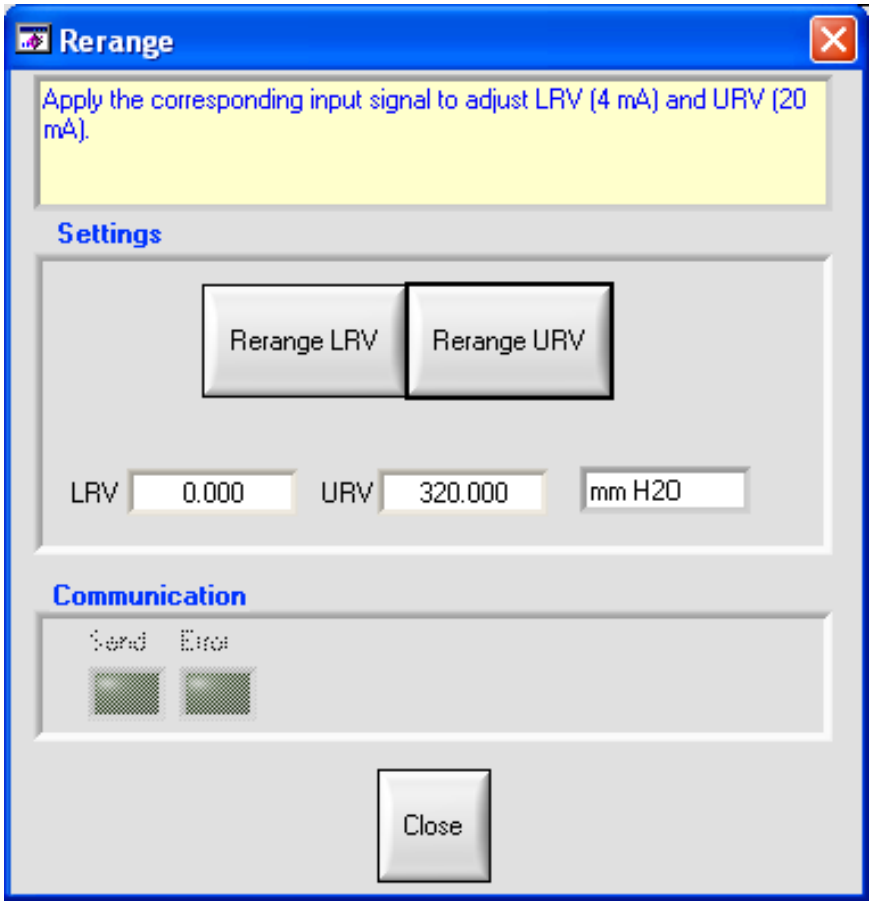
5.5.1 Introduction

This function is mainly used for an easy adjustment of the zero elevation or suppression for example on a liquid level measurement.
The reference pressure needs to be applied on the transmitter for zero and adjusted span to use this function. (for example : wet leg has to be filled for a level measurement)
When the zero elevation/suppression (on Rerange LRV button) is adjusted, the calibrated span will also be elevated or suppressed of the same value than the zero.

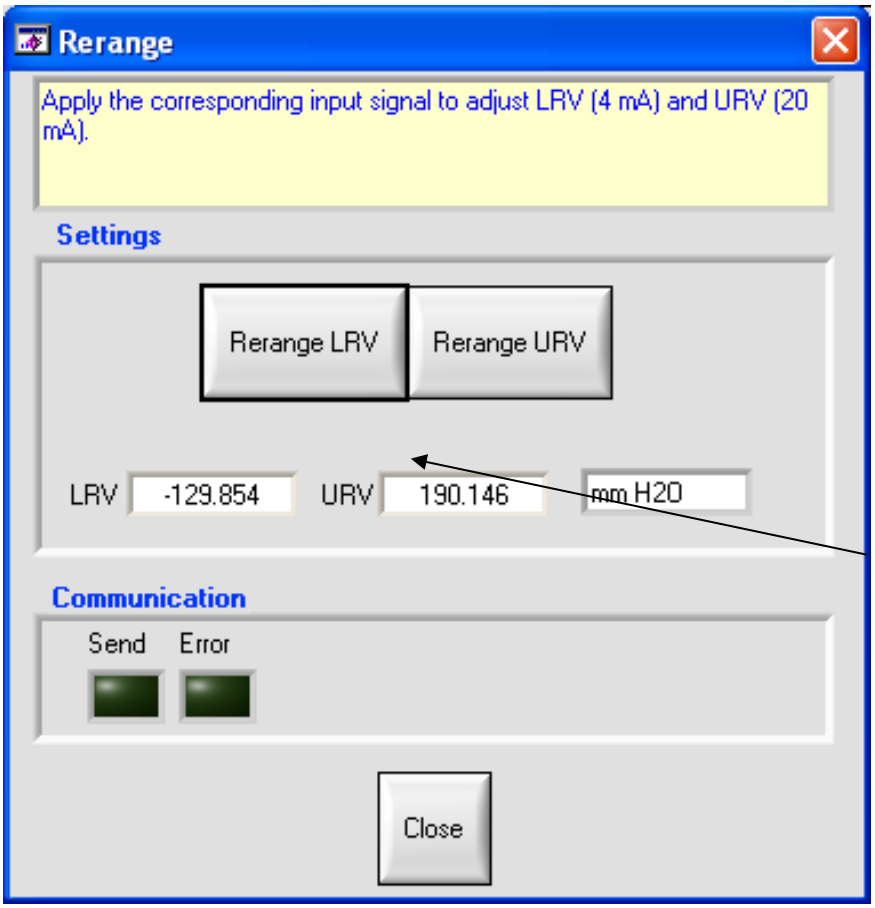
5.5.2 Procedure

Mount the transmitter in the application condition.
Click on Rerange LRV for the 4 mA output adjustment (reference pressure is required)
Click on Rerange URV for the 20 mA output adjustment (reference pressure is required)
Close the window after adjustment.

Example: Transmitter before Re ranging of LRV for zero suppression or elevation :



Example: Zero elevation is done by clicking on LRV button:



Please mind LRV and URV values showing the zero elevation without changing the transmitter span

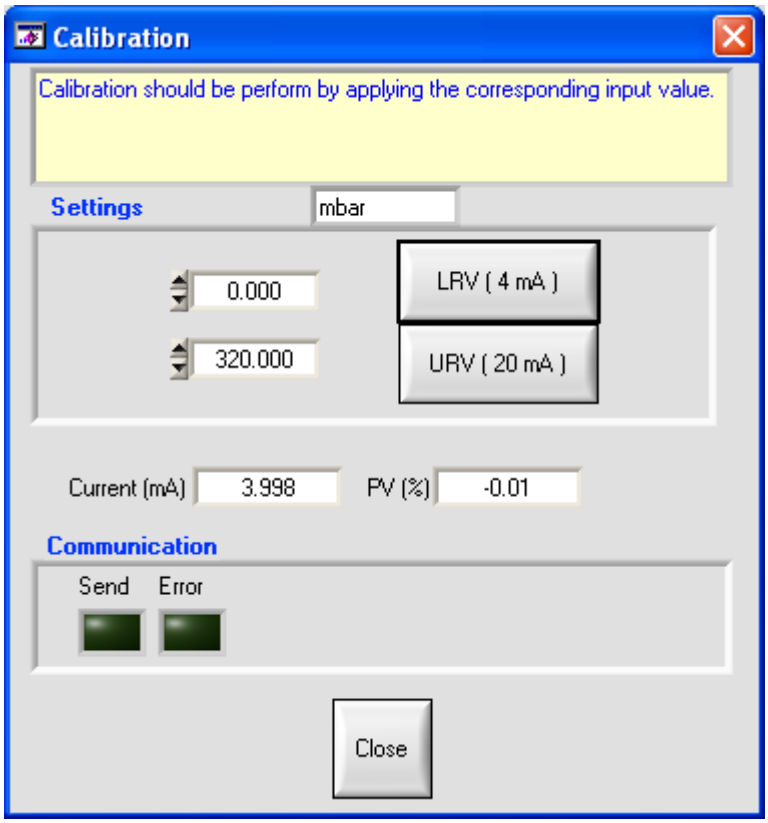
5.6 Calibration function

5.6.1 Introduction

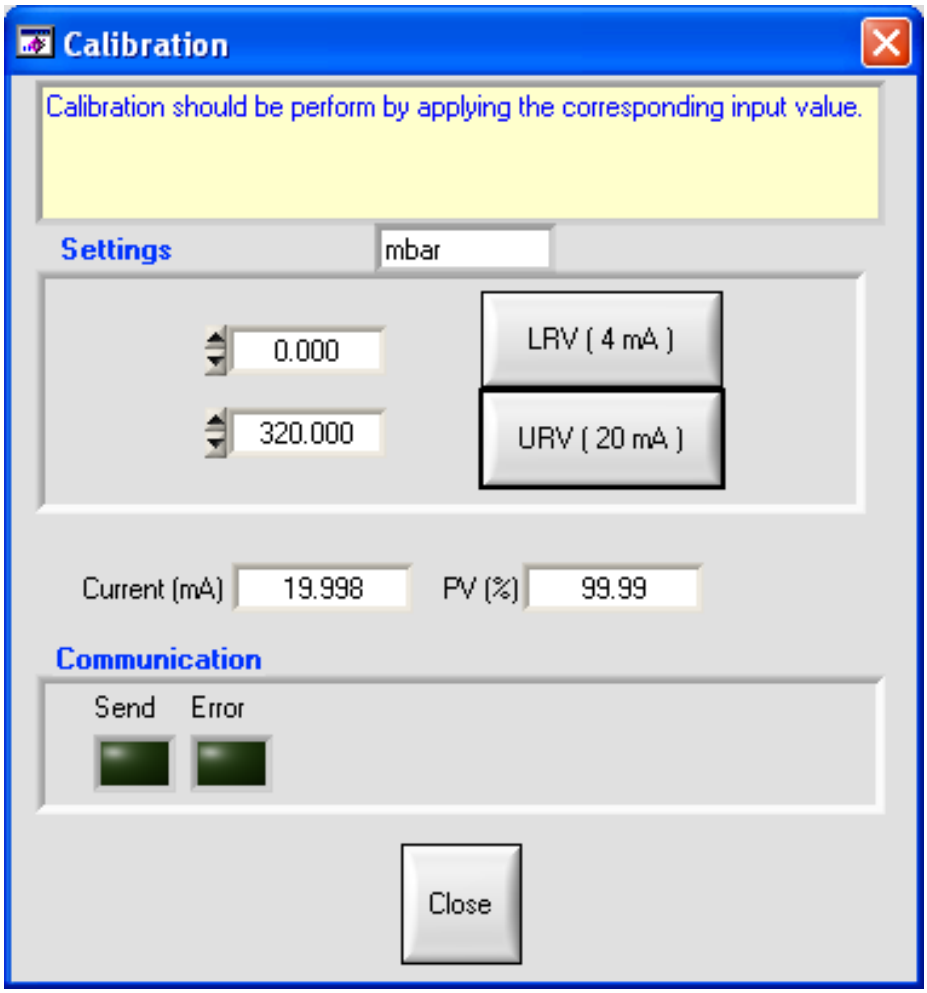
Zero and span can be calibrated by applying the accurate reference pressure and by applying on the concerned buttons.
Accurate reference pressure is required corresponding to zero and span.

5.6.2 Procedure

Zero calibration example:



Span calibration example:



5.7 Dynamics variable function

5.7.1 Introduction

This panel allows you to monitor the process values. The maximum duration depends on your free disk space.

You can set the following parameters:

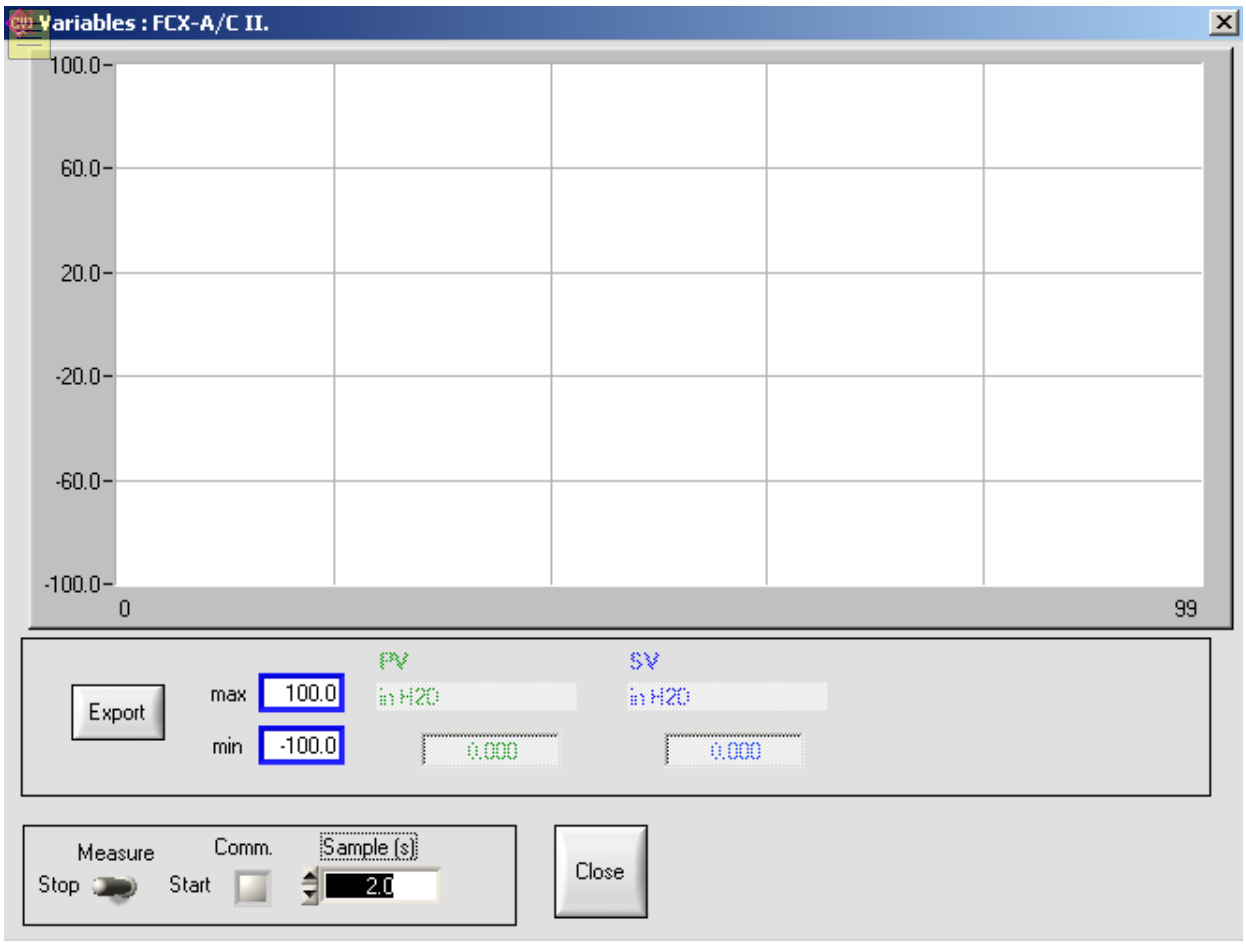
PERIOD (IN SECOND)

MINIMUM AND MAXIMUM AXIS VALUES OF THE GRAPH

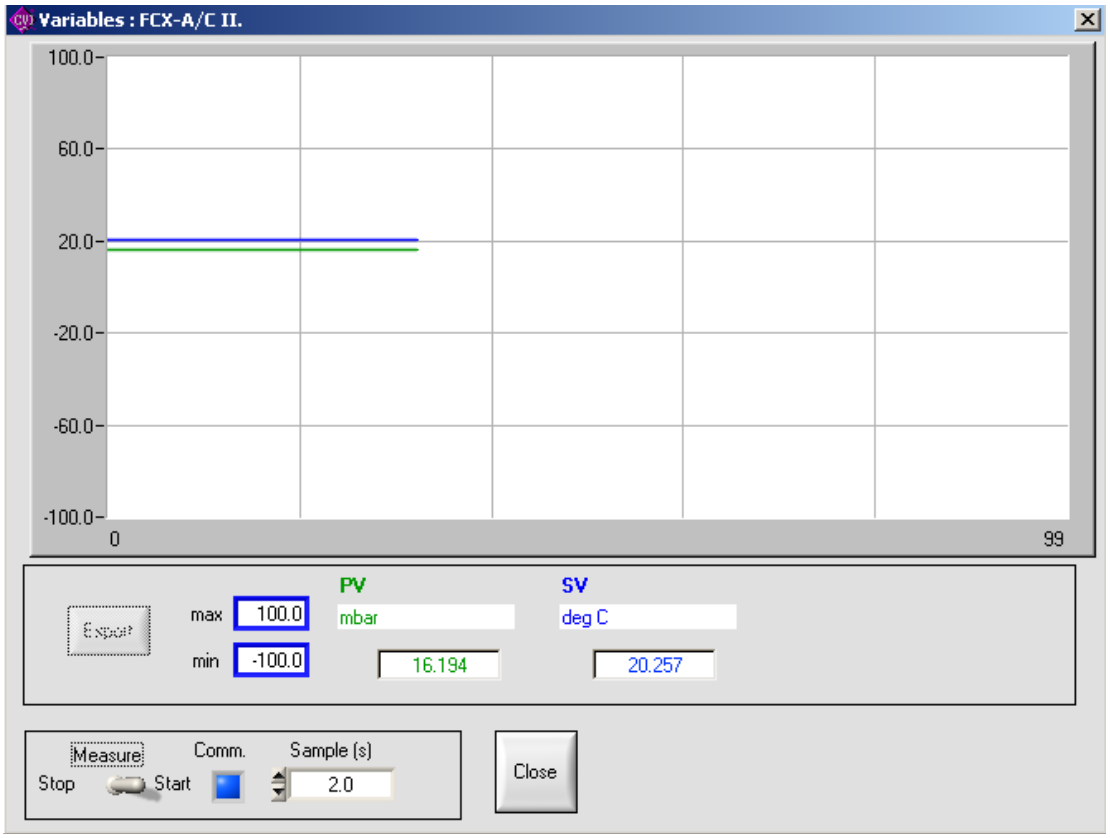
After the monitoring, you can export data to a CSV (Comma Separated Value) file compatible with Excel.

5.7.2 Procedure

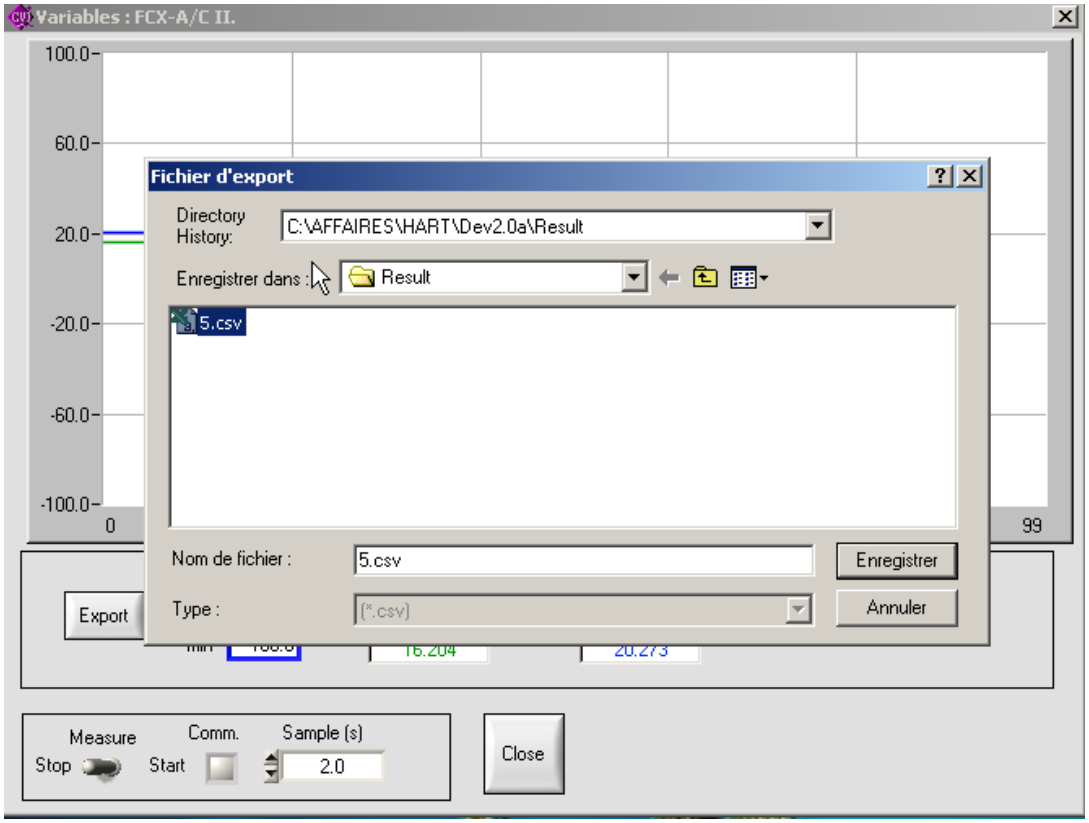
Set the parameters and click on start button.



Example of recoding the process values every 2 seconds.



Click on stop button, stops the monitoring. Export button is available. If you click on it, you will be asked to name the file.



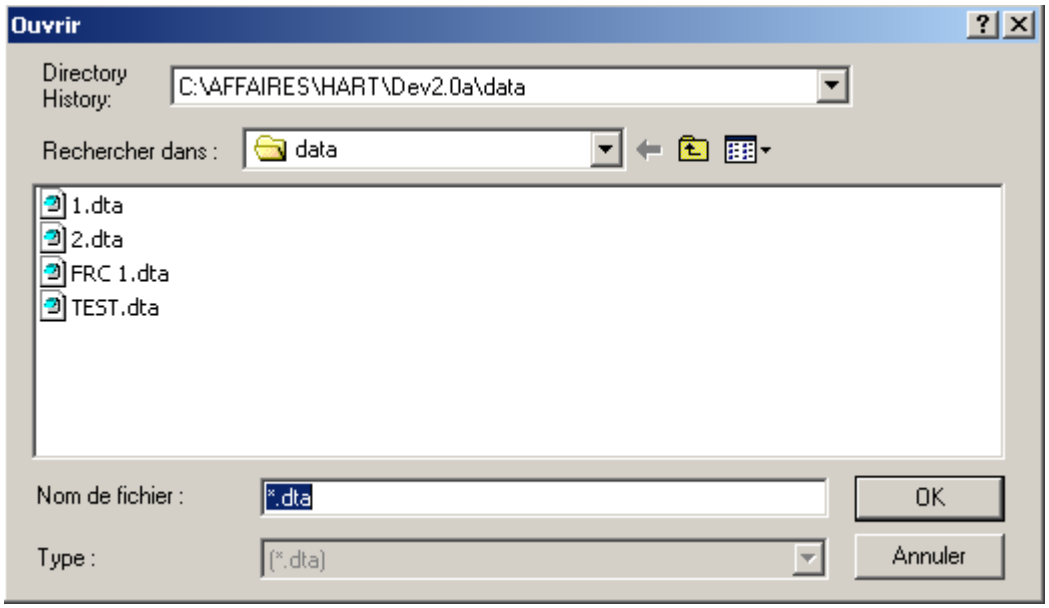
5.8 Saving parameters function

5.8.1 Introduction

This function allows you to save all the parameters displayed in the panels into a file. After that operation, you can download the file in the transmitter or work on it using the offline mode.

5.8.2 Procedure

Select the menu and choose a name file.



The saved parameter file will be displayed in the tree view under “off line”.

Warning: IT’S IMPOSSIBLE TO LOAD A PARAMETER FILE IF YOU DO NOT USE THE SAME LANGUAGE.

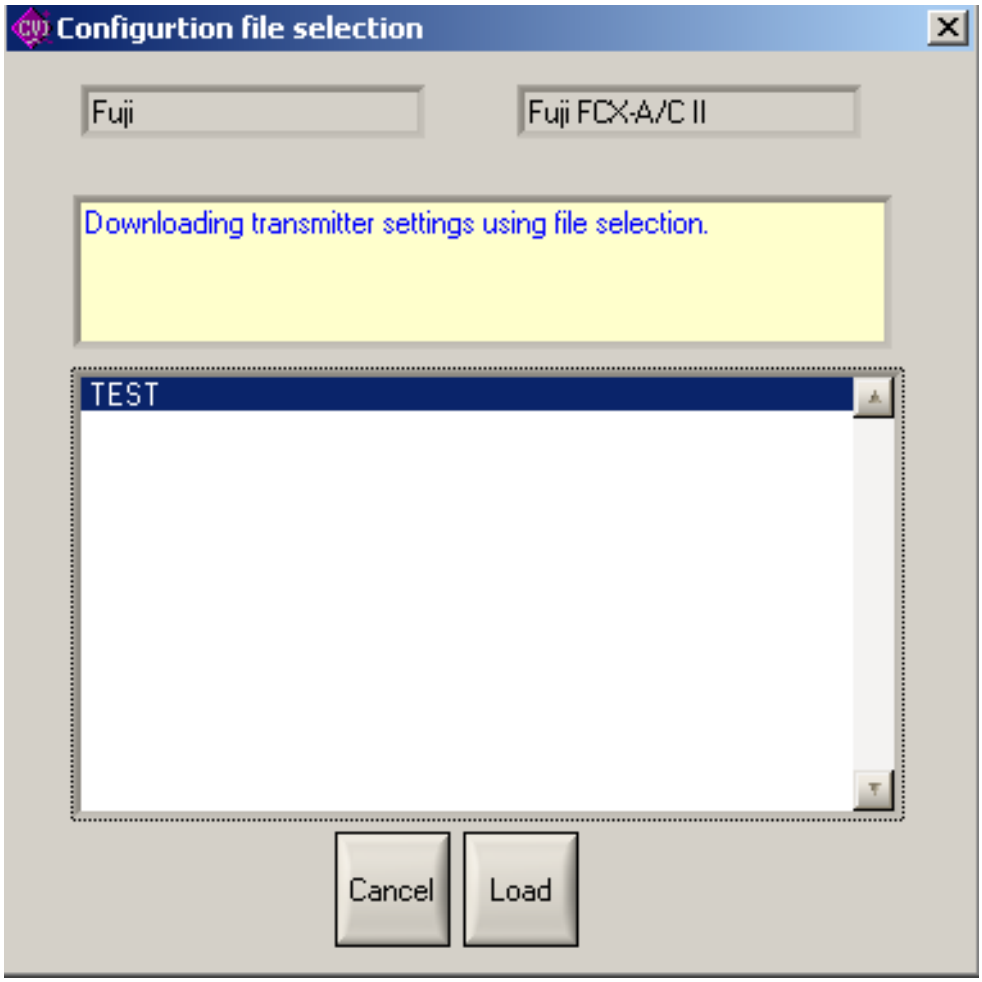
5.9 Loading parameters function

5.9.1 Introduction

This function allows you to write all parameters already saved into an existing transmitter. Only the parameters of saved transmitter configurations are displayed in the panels.

5.9.2 Procedure

Select the function and choose the file corresponding to the kind of your transmitter.



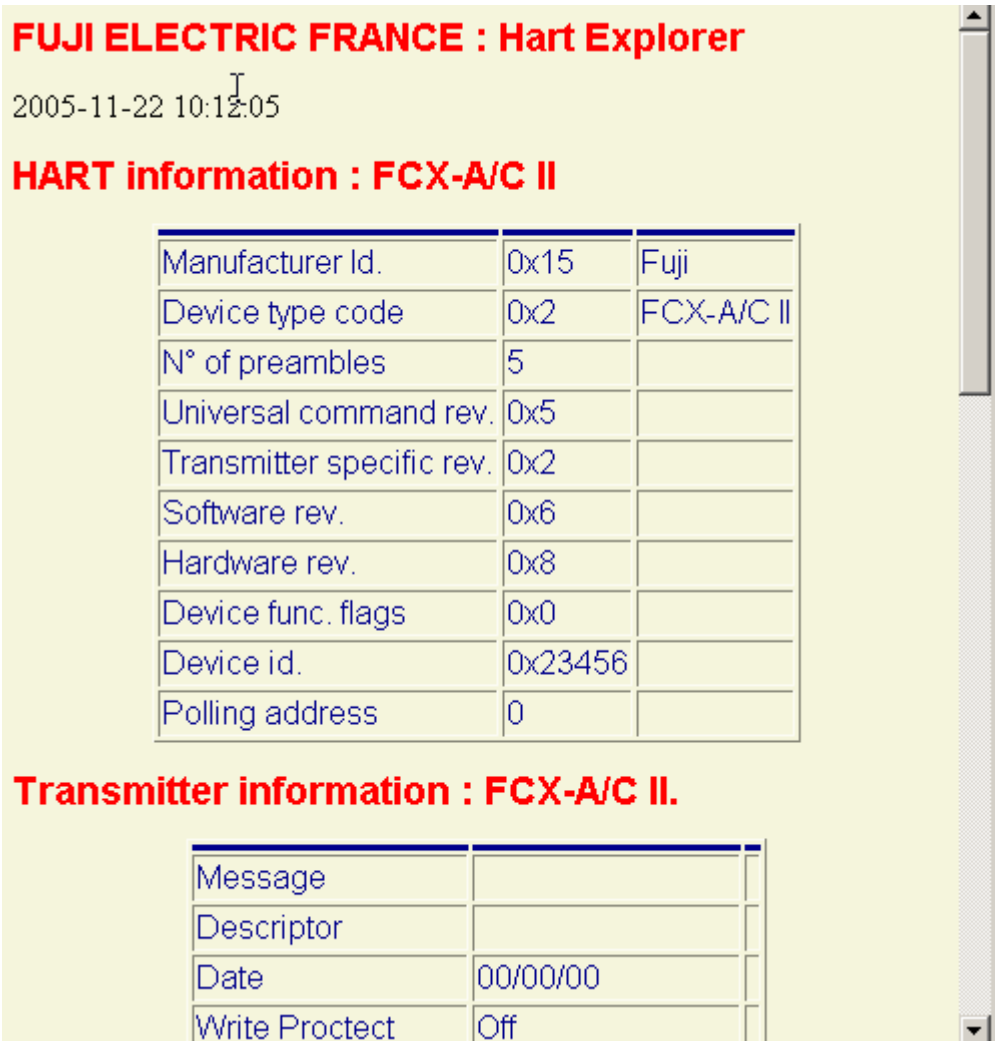
5.10 Display report function

5.10.1 Introduction

The report function is useful for taking a picture of your parameters. This function displays the parameters of all the panels into your browser. So you can print it, saved it using your browser.

5.10.2 Procedure

After selection in the menu, a new window is opened in your browser. You can see a title and a 3 column tab of parameters for each panel. The tab show you the parameter description, value and value meaning.



FUJI ELECTRIC FRANCE : Hart Explorer

2005-11-22 10:12:05

HART information : FCX-A/C II

Manufacturer Id.	0x15	Fuji
Device type code	0x2	FCX-A/C II
N° of preambles	5	
Universal command rev.	0x5	
Transmitter specific rev.	0x2	
Software rev.	0x6	
Hardware rev.	0x8	
Device func. flags	0x0	
Device id.	0x23456	
Polling address	0	

Transmitter information : FCX-A/C II.

Message	
Descriptor	
Date	00/00/00
Write Proctect	Off

6 Working in generic mode

6.1 Introduction

The “Fuji Hart Explorer” is able to manage any kind of Hart transmitters. If a transmitter is fully implemented, the software give you access to transmitter specific functions. Otherwise, you can work in generic mode. It does mean that you can only use Hart generic functions.
In the future, Fuji can develop plug in for implementing new transmitter.

6.2 Parameters panels

The parameters are group by panel. You can select a group by clicking on the associated button. In generic mode, there are 4 parameters panels.

HART GENERAL INFORMATIONS PANEL

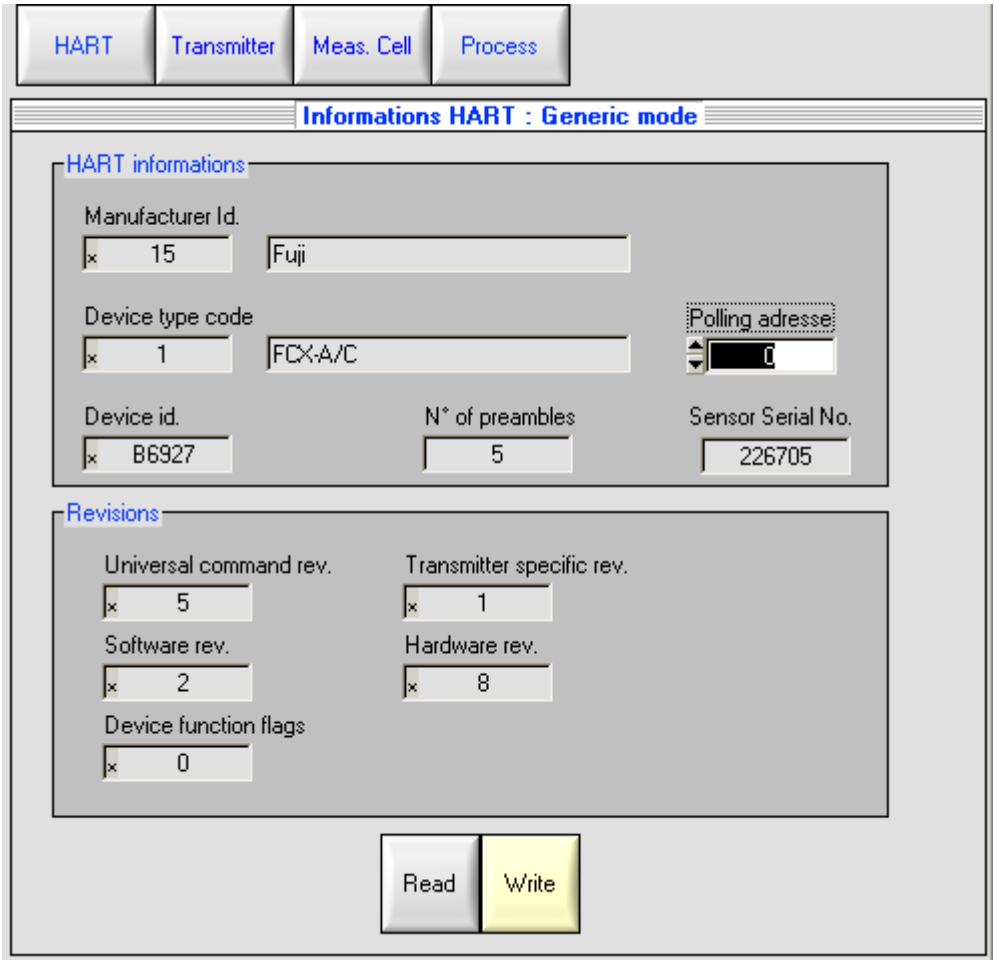
TRANSMITTER / TRANSMITTER INFORMATIONS PANEL

MEASUREMENT CELL INFORMATIONS PANEL

PROCESS INFORMATIONS PANEL

The panels are refreshed only if necessary, and commands are sent to the transmitter to take back needed data. Only readable data are dimmed. When you change a writable parameter, the “Write” button become available. At any time, if you need to read back data, click on “read” button.

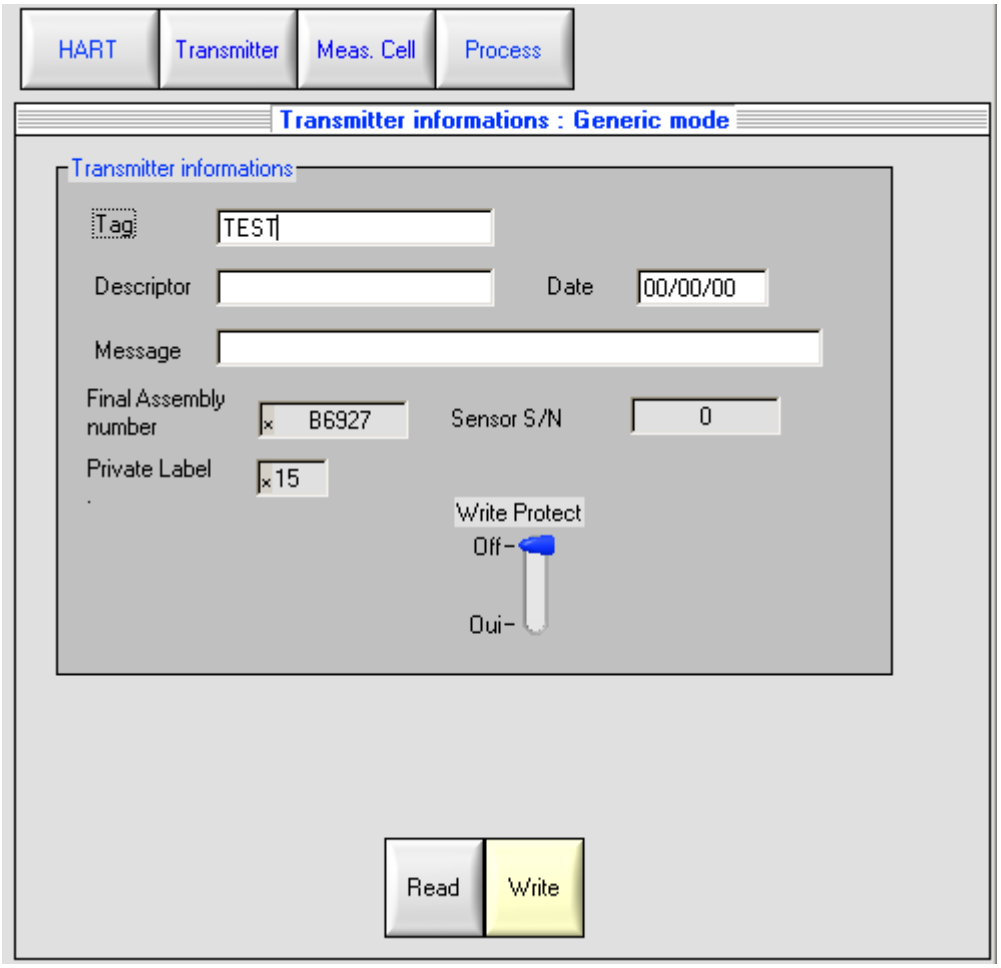
6.3 HART general information panel



Hart general information	
Manufacturer Id	Official code of the manufacturer in hexadecimal. The next field is the name associated .
Transmitter type code	Official code associated with the transmitter. (in hexadecimal). The next field is its name.
6.3.1.1 Polling address	Address of the transmitter. (selectable, see page 19)
Transmitter id.	Transmitter Code identification.
N° of preambles	Number of preambles used by the transmitter
Sensor Serial No.	Serial Number of the sensor
Revisions	
Universal command rev.	
Transmitter command rev.	
Software command rev.	
Hardware command rev.	
Transmitter function flags	

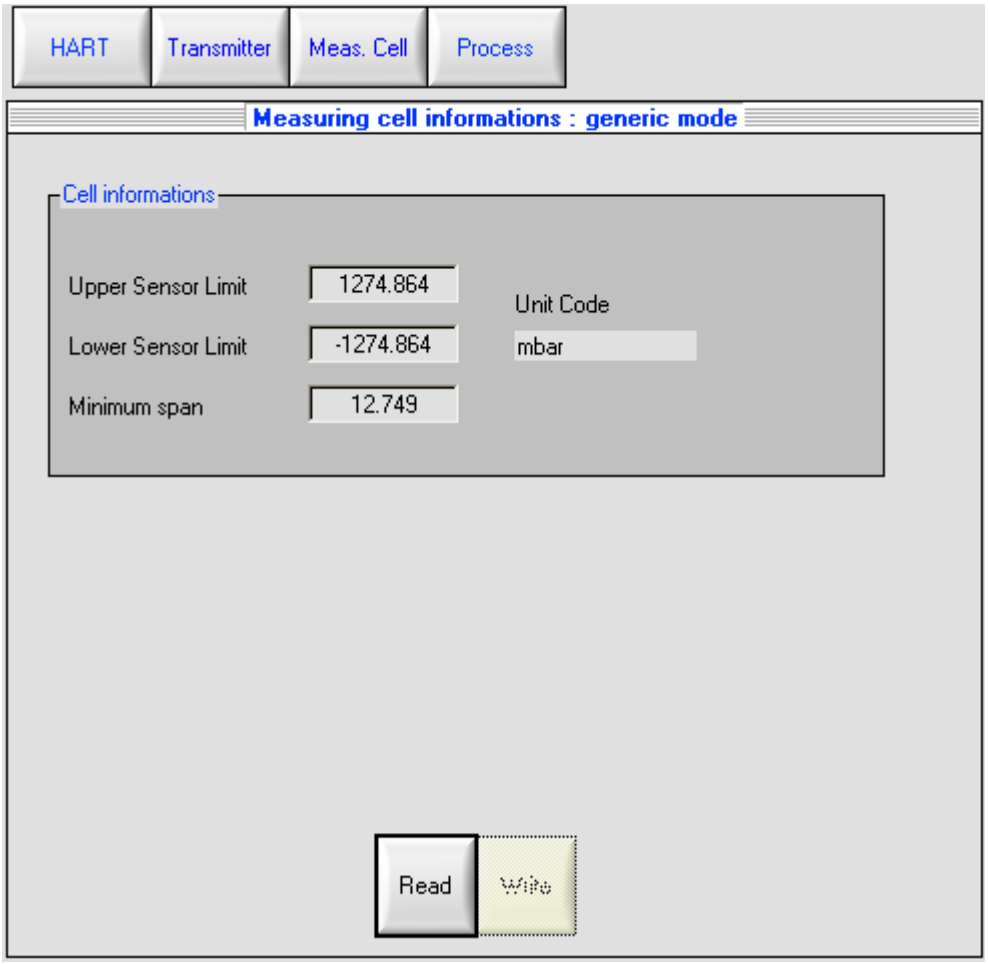
Warning : if you change the “polling address” parameter, it’s recommended to restart the application.

6.4 Transmitter information panel



Transmitter information	
6.4.1.1 Tag	Tag number of the measuring transmitter
6.4.1.2 Descriptor	Description of the measuring point
6.4.1.3 Date	Date
Message	Possible message can be written in 32 digits
Final Assembly number	
Sensor S/N	
Private Label	
Write Protect	Enables or inhibits the write function in the different panels

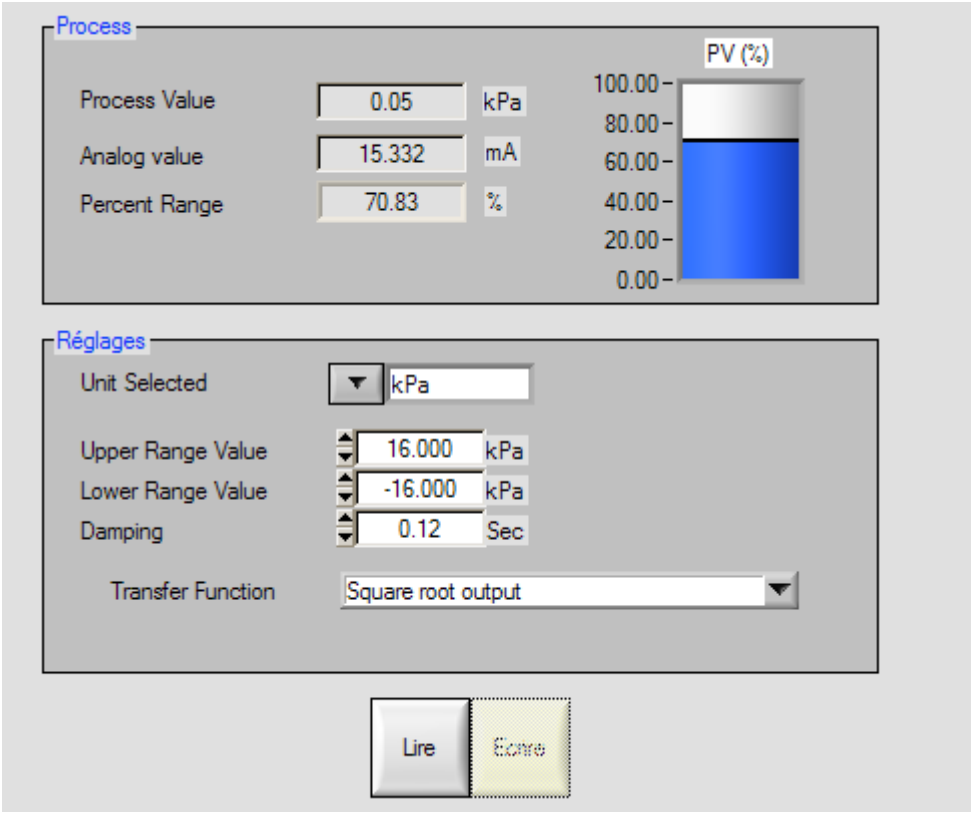
6.5 Measurement cell information panel



Measurement cell information	
Upper sensor limit	Maximum setting limit
Lower sensor limit	Minimum setting limit
Minimum span	Minimum span
Unit code	Unit (can not be changed)

Please mind :
Upper/lower sensor limit corresponds to the interval between upper and lower sensor limits for the possible setting of the span of the measuring transmitter. This interval does not correspond to the max. range of the transmitter.

6.6 Process information panel

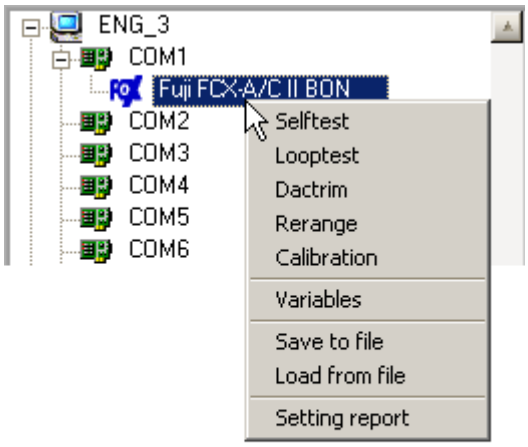


Process information	
Process value	Process value indicated in the programmed unit
Analog value	Analog output signal
Percent range	Output in % - also indicated on the bar graph
6.6.1.1 Unit	Programmable unit for the software
URV	Upper range value (20mA)
LRV	Low range value (4 mA)
Damping	Damping of the output signal
Transfer function	Not supported by the Hart protocol in generic mode

7 Transmitter functions

7.1 Introduction

You can access the transmitter functions in online mode by right clicking on the transmitter item in the tree view.



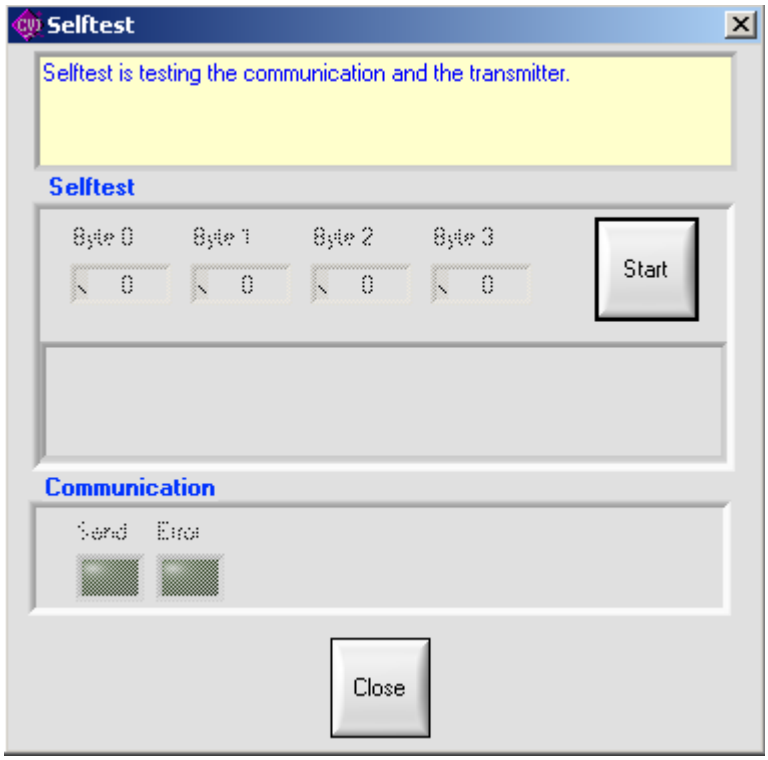
7.2 Self-test function

7.2.1 Introduction

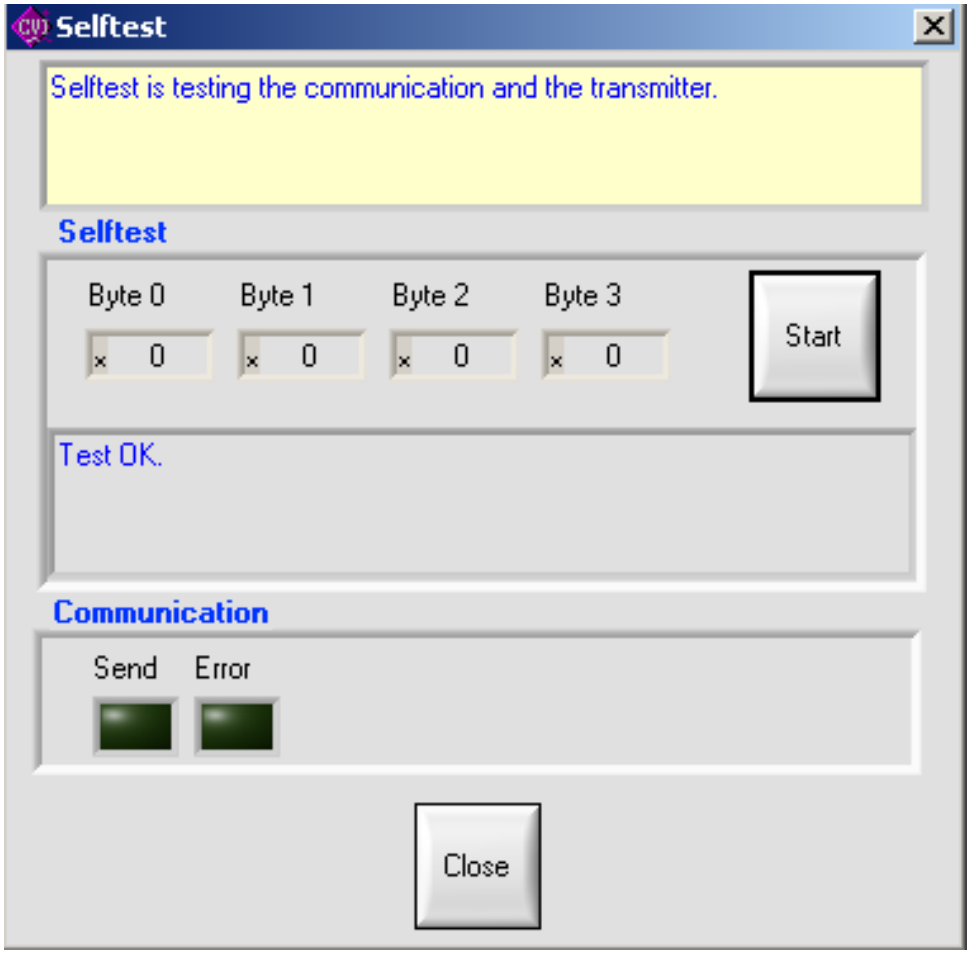
Initiates the Self-test function in the transmitter. The transmitter responds immediately to the command and then performs the Self Test. Refer to the transmitter specific Hart documentation for specific implementation details.

7.2.2 Procedure

This panel is very simple. Just click on start button to proceed the test.



After the test, you can read the 4 status bytes. Please refer to the Hart documentation of the transmitter to get the meaning of those status bytes.



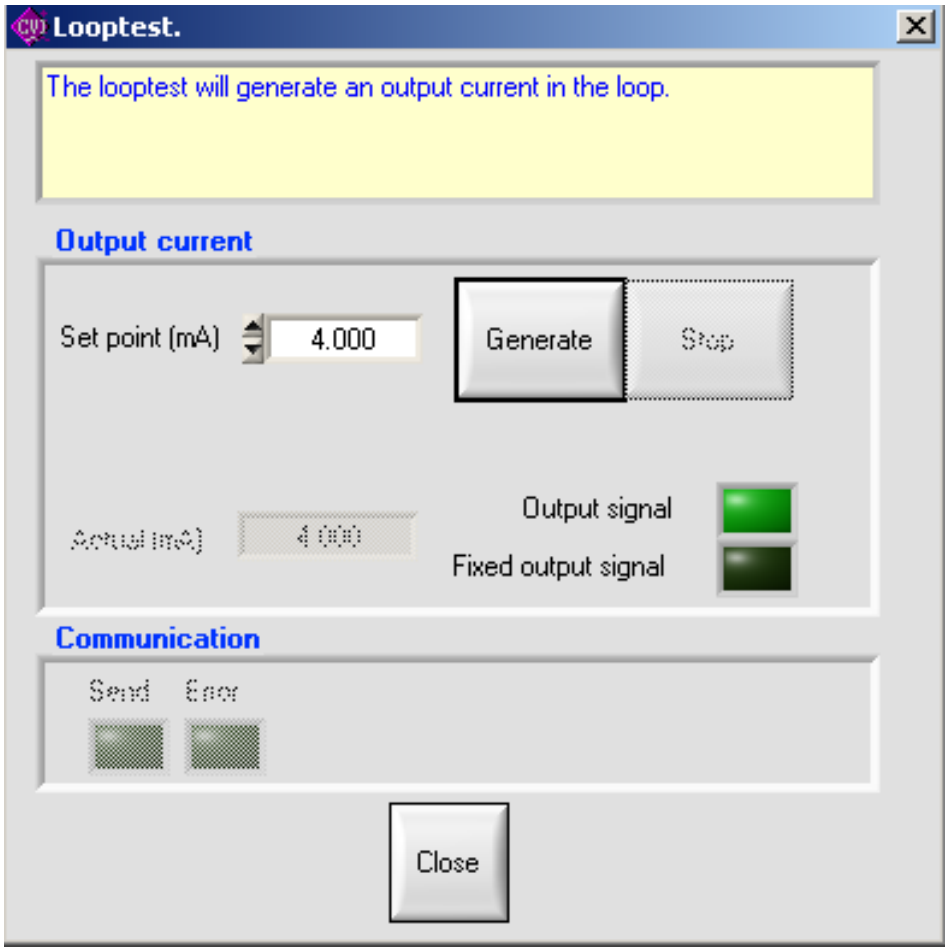
7.3 Loop test function

7.3.1 Introduction

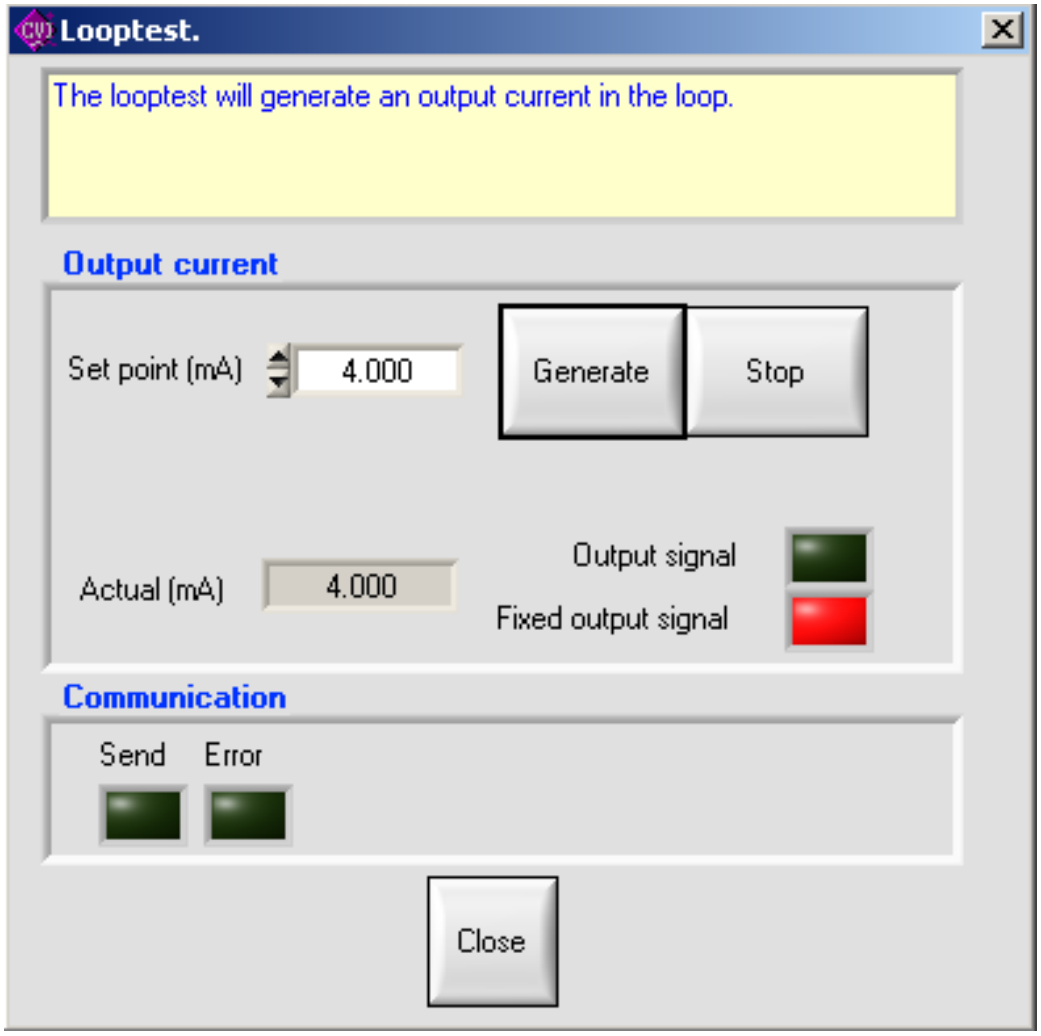
This test will fix the analog current at specified value.

7.3.2 Procedure

Type in the set point value, and click on generate button :



The transmitter is in fixed output signal and the actual value is displayed. Click on stop button or close button to go back in output signal.



7.4 Dactrim function

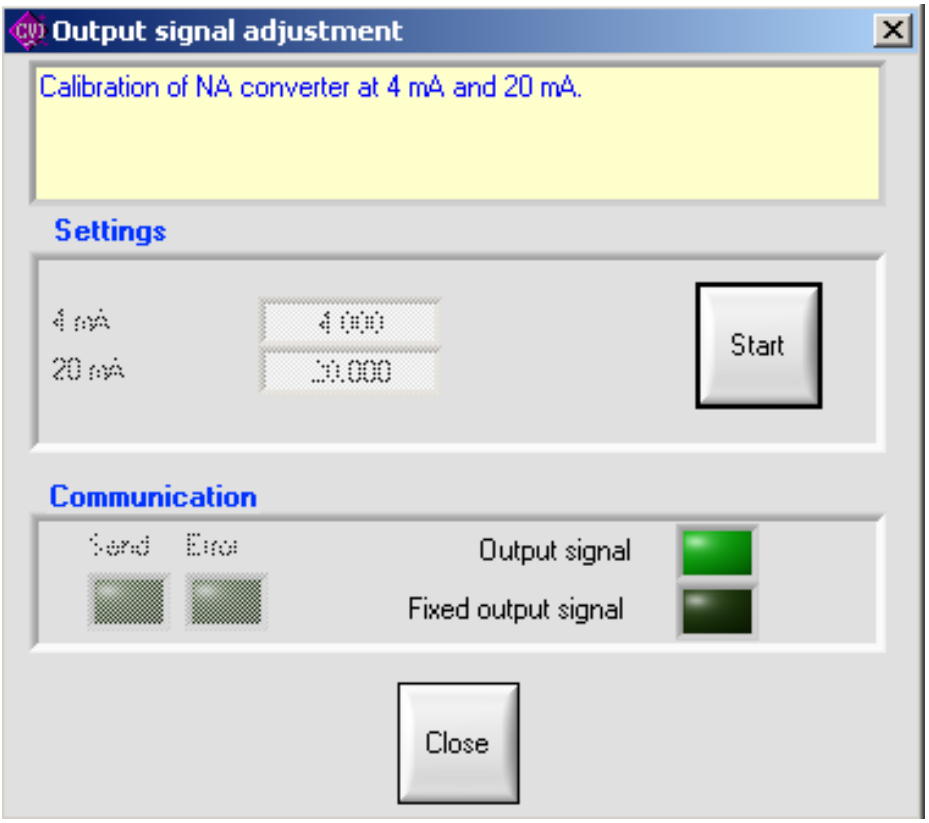
7.4.1 Introduction

This function will adjust the output signal. It will

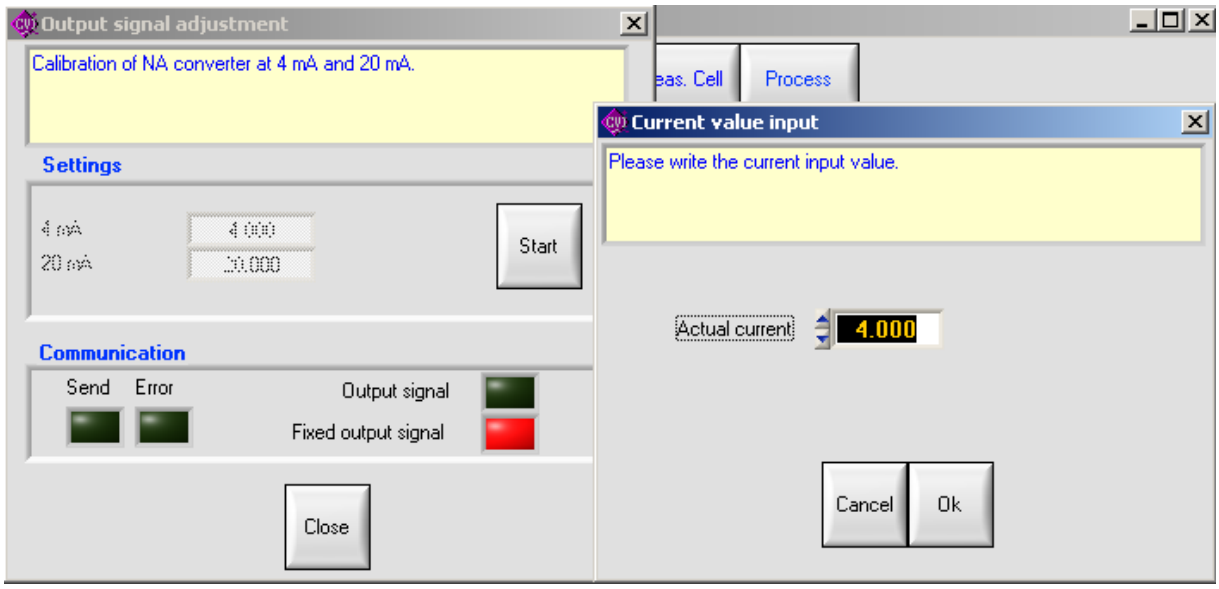
TRIM THE ZERO OR 4 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 4 MILLIAMP.

TRIM THE GAIN OR 20 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 20 MILLIAMP.

7.4.2 Procedure



When clicking on START button, the following window is displayed.



Enter the output signal displayed on the milliamp – meter connected to the transmitter in the “actual current” space.

- first for the LRV
- next for the URV

Calibrate the output signal only with a high accurate milliamp – meter (3 digits after the point)
Close the window on “Close” button.

7.5 Re range function

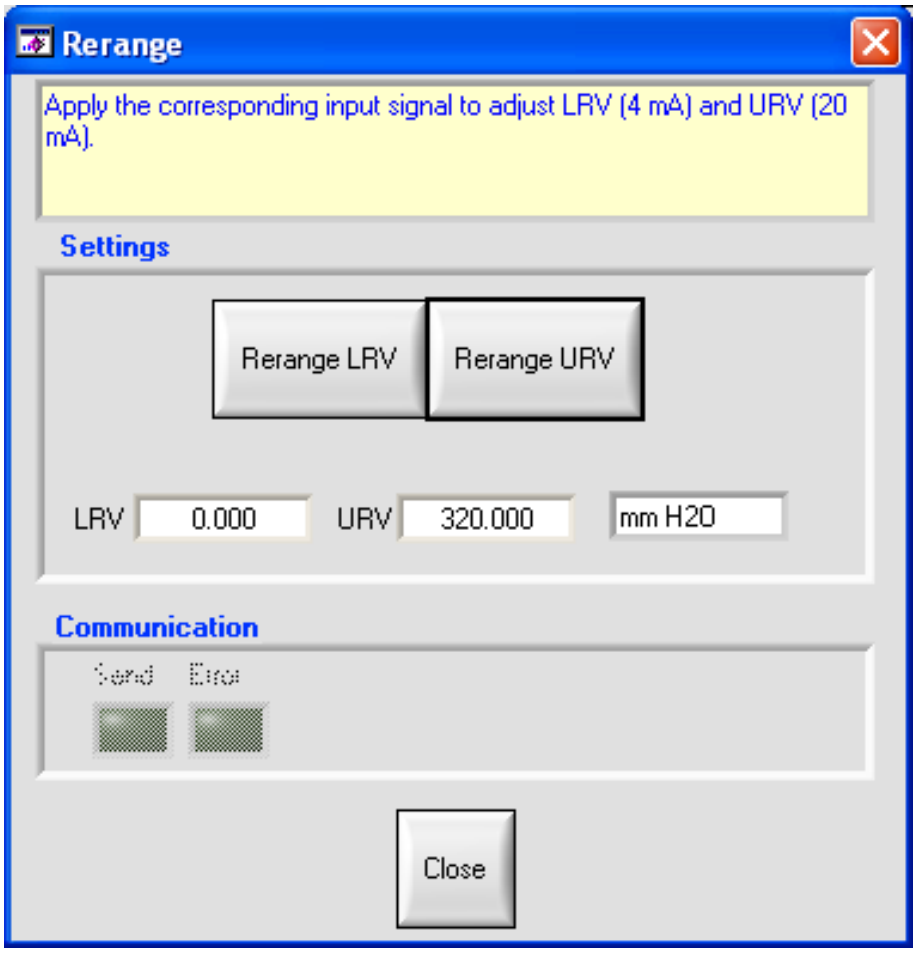
7.5.1 Introduction

This function is mainly used for an easy adjustment of the zero elevation or suppression for example on a liquid level measurement.
The reference pressure needs to be applied on the transmitter for zero and adjusted span to use this function. (for example : wet leg has to be filled for a level measurement)
When the zero elevation/suppression (on Rerange LRV button) is adjusted, the calibrated span will also be elevated or suppressed of the same value than the zero.

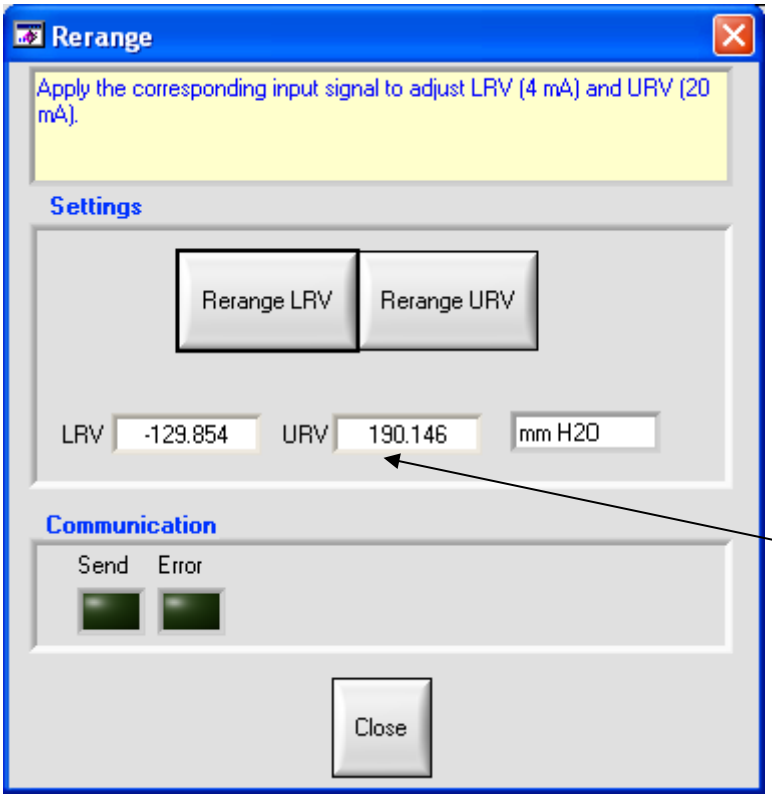
7.5.2 Procedure

Mount the transmitter in the application condition.
Click on Rerange LRV for the 4 mA output adjustment (reference pressure is required)
Click on Rerange URV for the 20 mA output adjustment (reference pressure is required)
Close the window after adjustment.

Example : Transmitter before Re ranging of LRV for zero suppression or elevation :



Example : Zero elevation is done by clicking on LRV button :



Please mind LRV and URV values showing the zero elevation without changing the transmitter span

7.6 Process values monitoring function

7.6.1 Introduction

This panel allows you to monitor the process values. The maximum duration depends on your free disk space.

You can set the following parameters :

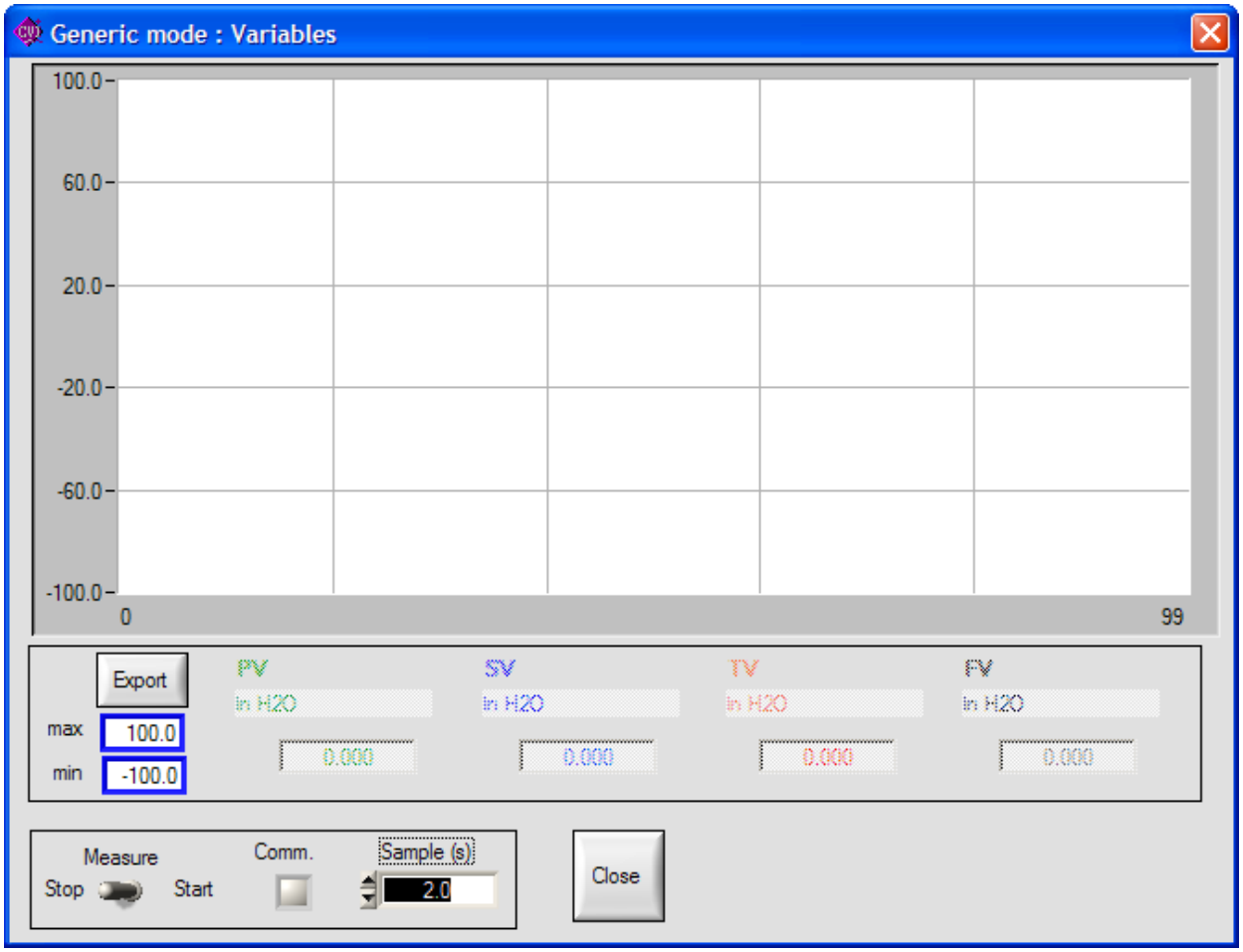
SAMPLE (IN SECOND)

MINIMUM AND MAXIMUM AXIS VALUES OF THE GRAPH

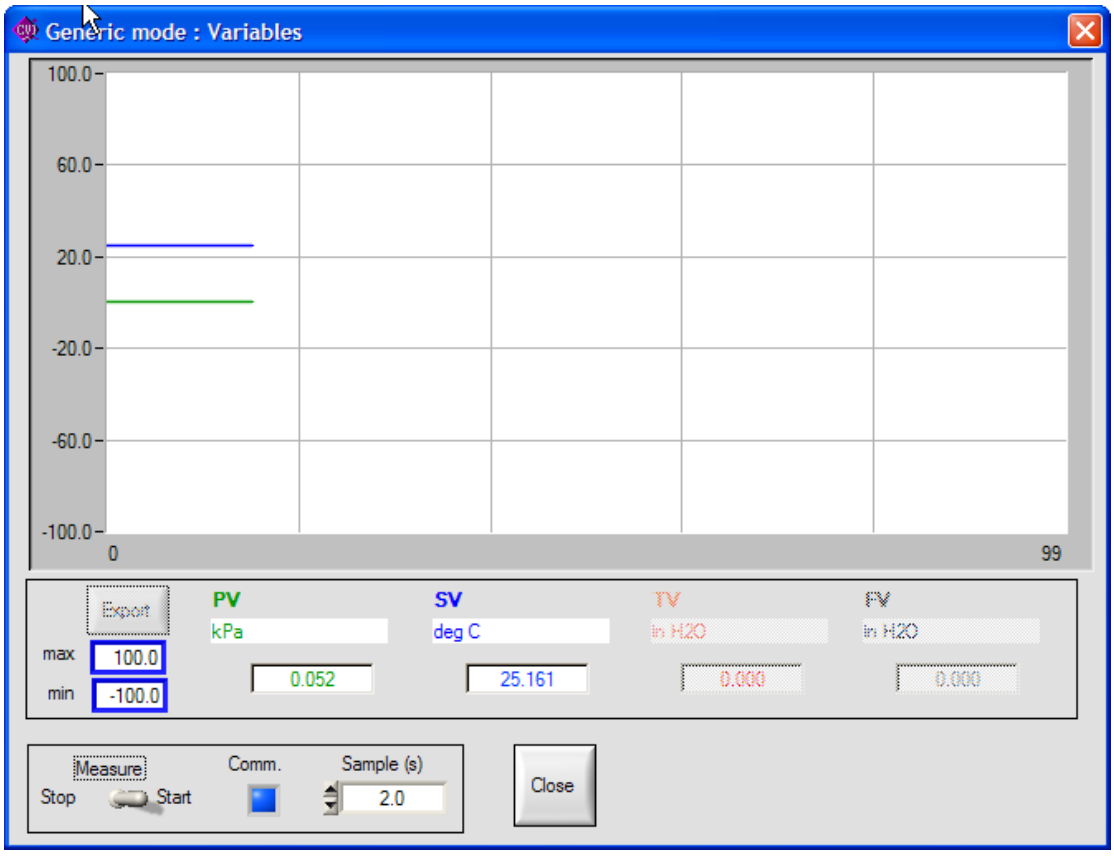
After the monitoring, you can export data to a CSV (Comma Separated Value) file compatible with Excel.

7.6.2 Procedure

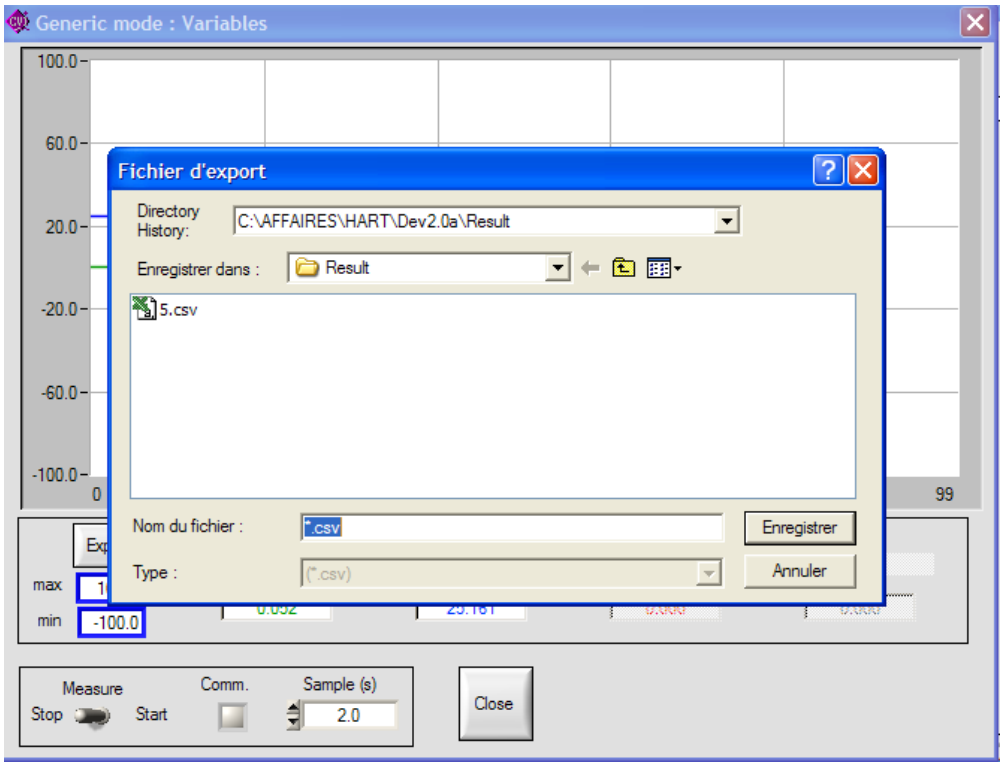
Set the parameters and click on start button.



Example of monitoring every 2 seconds.



Click on stop button, stops the monitoring. Export button is available. If you click on it, you will be asked to name the file.



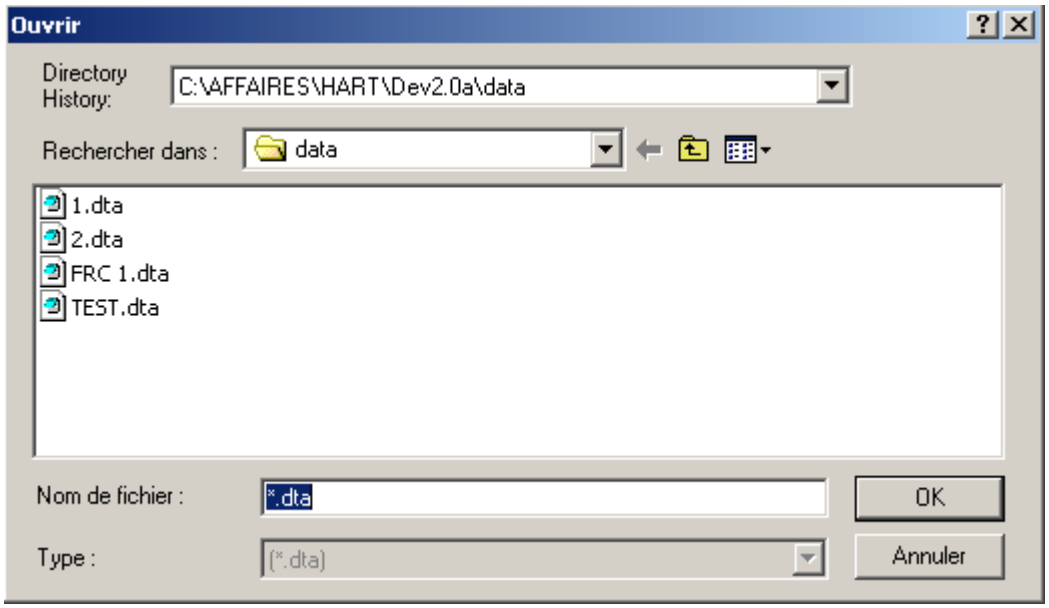
7.7 Saving parameters function

7.7.1 Introduction

This function allows you to save all the parameters displayed in the panels into a file. After that operation, you can download the file in the transmitter or work on it using the offline mode.

7.7.2 Procedure

Select the menu and choose a name file.



The saved parameter file will be displayed in the tree view under “off line”.

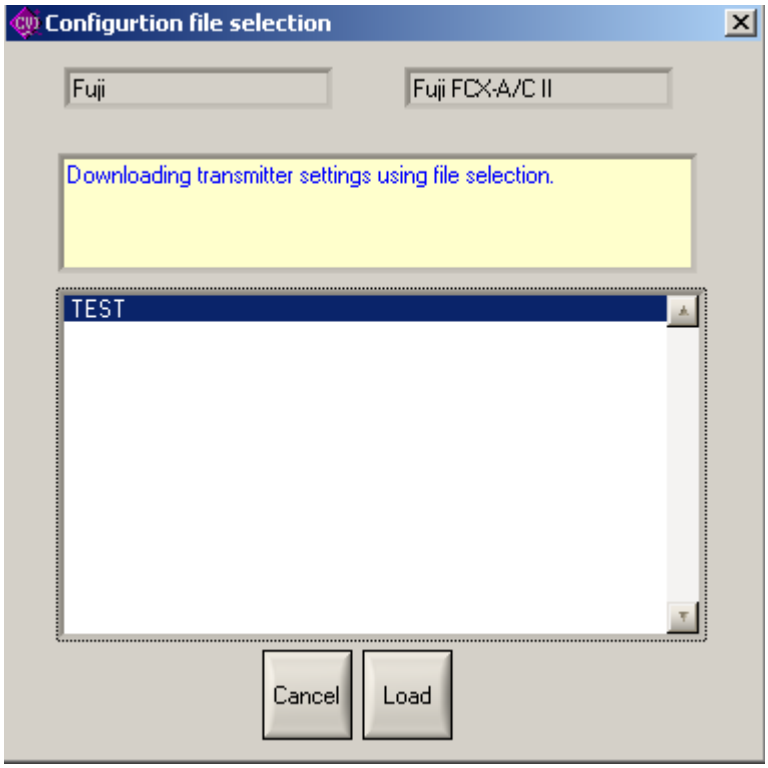
7.8 Loading parameters function

7.8.1 Introduction

This function allows you to write all parameters already saved into an existing transmitter. Only the parameters of saved transmitter configurations are displayed in the panels.

7.8.2 Procedure

Select the function and choose the file corresponding to the kind of your transmitter.



Load a transmitter configuration by clicking on the Load button.

Warning: IT IS IMPOSSIBLE TO LOAD A PARAMETER FILE IF YOU DON'T USE THE SAME LANGUAGE.

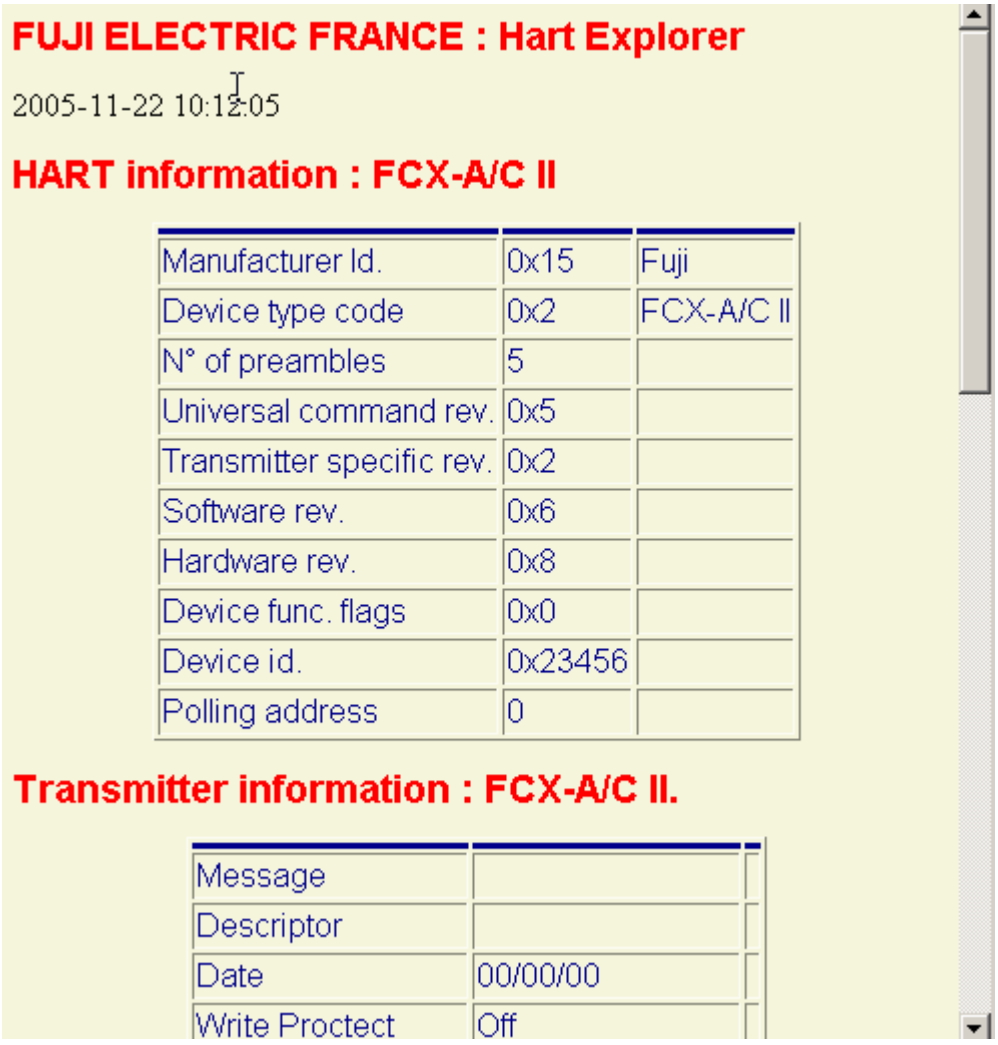
7.9 Parameters reporting function

7.9.1 Introduction

The report function is useful for taking a picture of your parameters. This function displays the parameters of all the panels into your browser. So you can print it, saved it using your browser.

7.9.2 Procedure

After selection in the menu, a new window is opened in your browser. You can see a title and a 3 column tab of parameters for each panel. The tab show you the parameter description, value and value meaning.



FUJI ELECTRIC FRANCE : Hart Explorer

2005-11-22 10:12:05

HART information : FCX-A/C II

Manufacturer Id.	0x15	Fuji
Device type code	0x2	FCX-A/C II
N° of preambles	5	
Universal command rev.	0x5	
Transmitter specific rev.	0x2	
Software rev.	0x6	
Hardware rev.	0x8	
Device func. flags	0x0	
Device id.	0x23456	
Polling address	0	

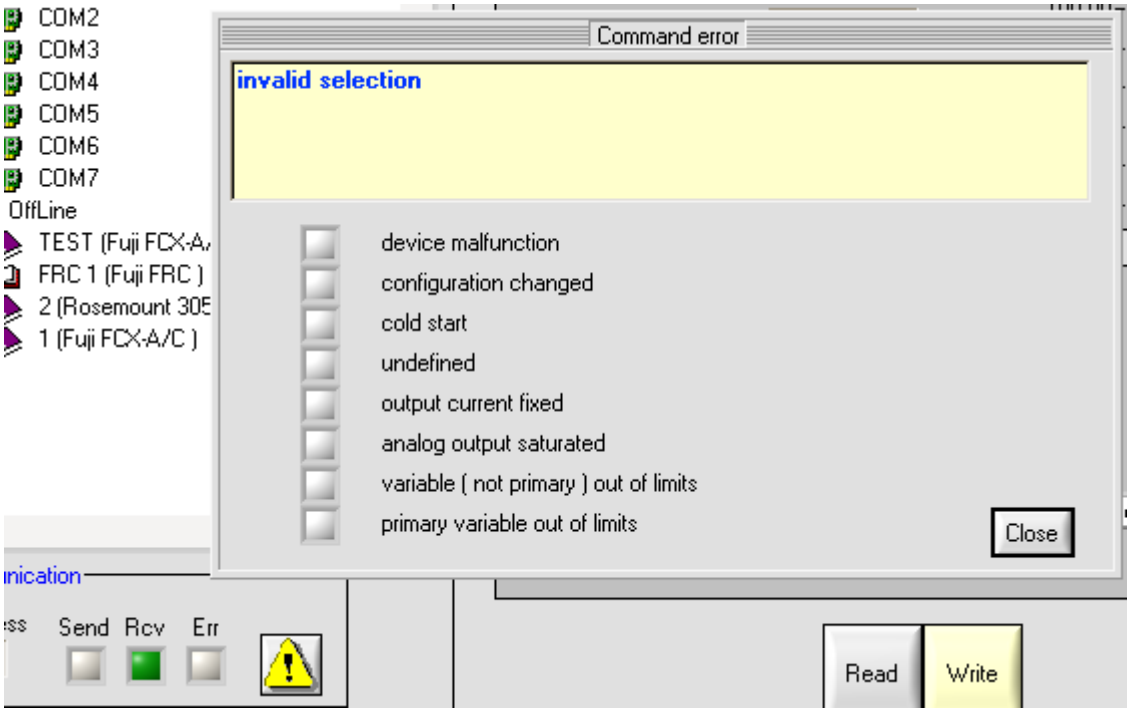
Transmitter information : FCX-A/C II.

Message	
Descriptor	
Date	00/00/00
Write Proctect	Off

8 Annexes

8.1 Communication error

If an error occurs during the communication with the transmitter a button appears. If you press that button, you will see a panel explaining the error.



This window can show you multiple error messages : maybe only one is correct in your case.