



HART Transmitter Configuration Program Help

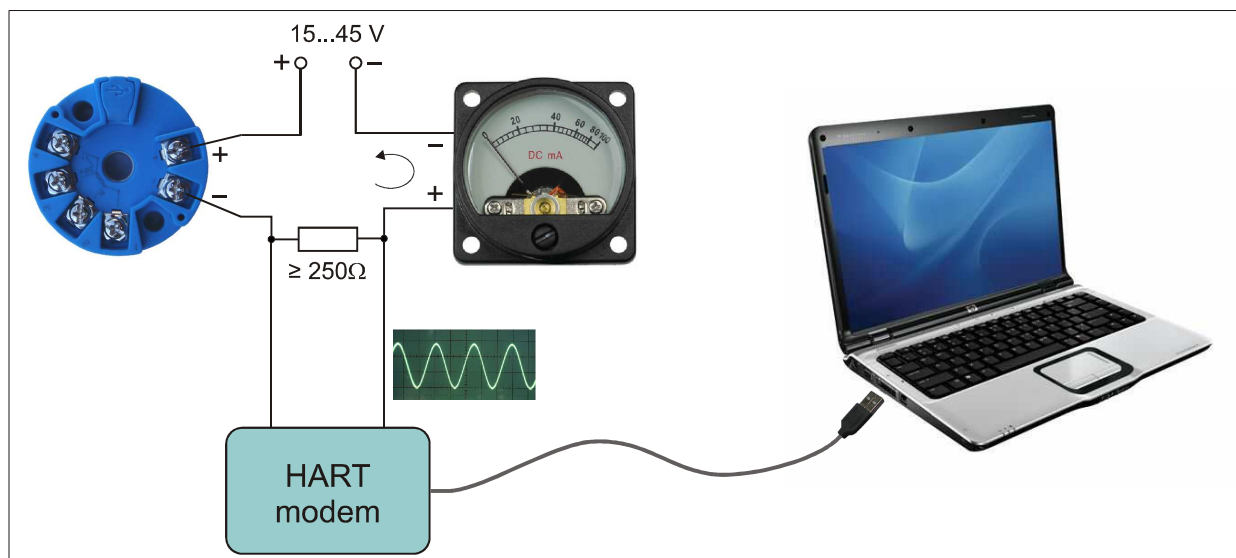
DESIGNATION

The *HartTemp* program is designed to operate with HART Transmitters series TRH. The program allows users to make:

- ❖ Transmitter configuration and parameter setup
- ❖ HART communication adjustments
- ❖ Process PV and current output monitoring
- ❖ Transmitter calibration

HARDWARE PREPARATION

Before running *HartTemp* program, connect your TRH transmitter to a powered current loop and HART modem according to the schematic on Fig. 1.



System Requirements

- ❖ Windows 98/2000/ME/XP/Vista/7
- ❖ CPU: min. 350 MHz
- ❖ RAM: min. 128 Mb
- ❖ Free serial interface
- ❖ Screen resolution: 800x600 and higher
- ❖ HART modem

Fig. 1

COM Port Setup

If your OS is Windows 2000/XP/Vista/7, COM Port setup is required before running *HartTemp* following the steps below:

1. For Win2000/XP go to *Start→Settings→Control Panel→System→Hardware→Device Manager*
For Vista/Win7 go to *Start→Control Panel→Hardware and Sound→Device Manager*
2. Click *Ports→Communication Port→Advanced*
3. Uncheck *Use FIFO buffers* and confirm with [OK].

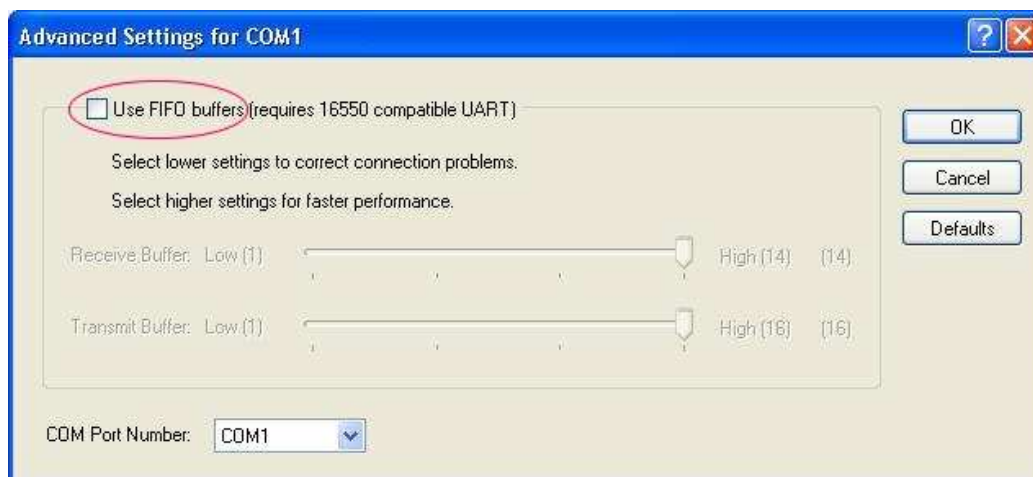


Fig. 2

INSTALLATION

Program Download

1. Make sure you have archiving/extracting software (like WinZip® or WinRAR®) installed on your computer.
2. Download the *HartTemp* program form www.comeco.org/downloads following the link path *Software → Configuration → HartTemp → Download file...* ✓
3. Unzip the archive file *harttemp.zip* and extract *HartTemp.exe*.

Program Start

After running *HartTwmp.exe* the message from Fig.3 appears.

Click [Yes] to continue.



Your antivirus program may warn you about running .exe file. Just confirm to trust the application and continue with installation.

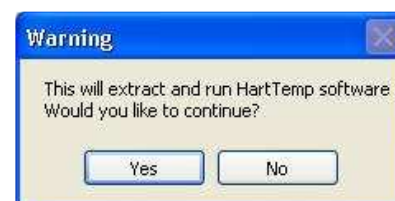


Fig. 3

When the information message on Fig. 4 appears, click [Setup] to setup the installation.

Meanwhile you may click [About] if you want to read more about the program. A successful installation opens the *HartTemp* main window.



Fig. 4



Do not close the information message during program operation! It will close automatically when close the program.

SOFTWARE OPERATION

Main Window

The main program window opens every time at program start and it functions as a user interface of *HartTemp* program.

The main window consists of several bar fields and a central operational area (see Fig. 5).

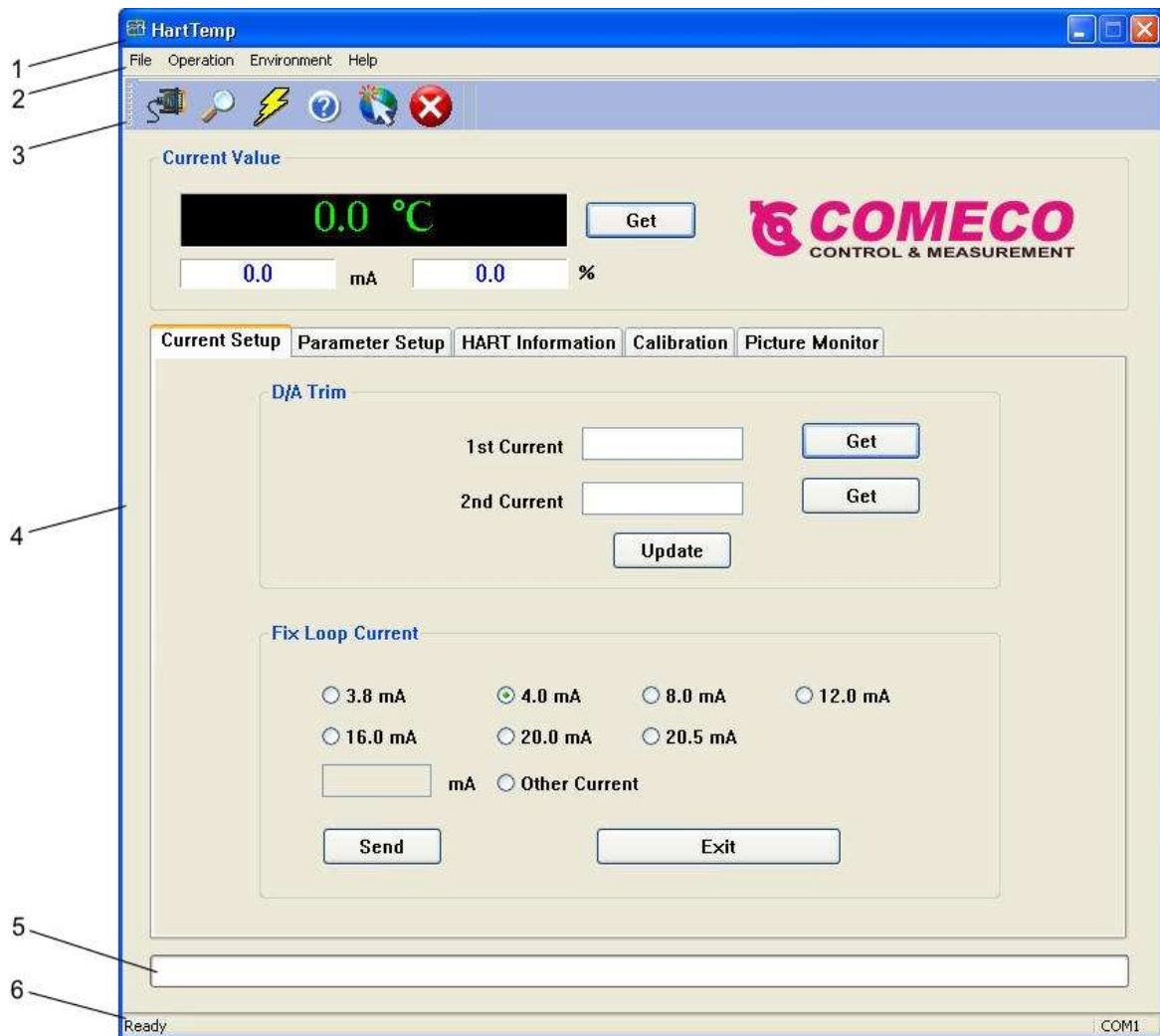


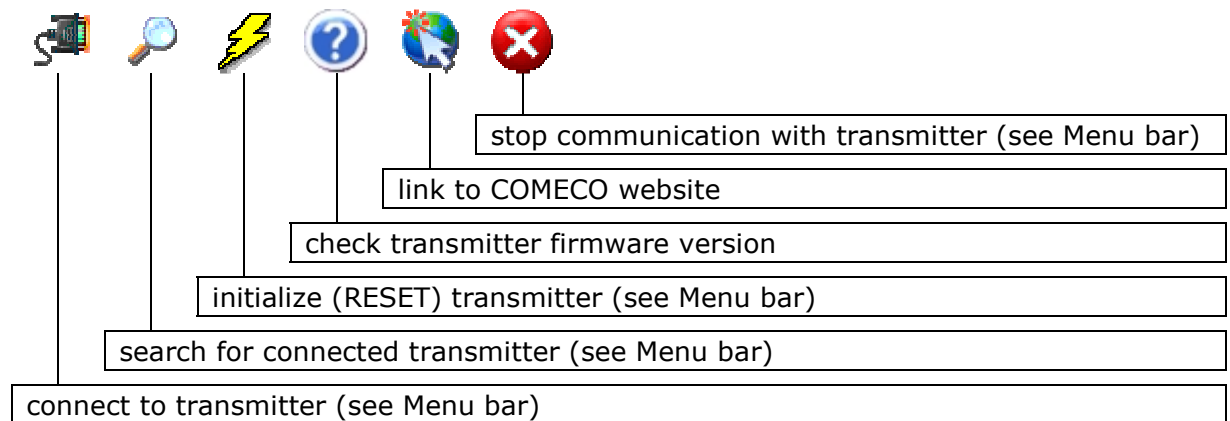
Fig. 5

1. Title bar: Shows program icon and name

2. Menu bar:

- ❖ **File** menu: Use to exit *HartTemp* (**File/Exit**)
- ❖ **Operation** menu: Use to communicate with transmitter
 - connect to transmitter (**Operation/OnLine**)
 - search for connected transmitter (**Operation/Search Transmitter**)
 - initialize (RESET) transmitter (**Operation/Reset Transmitter**)
 - stop communication with transmitter (**Operation/Stop Communication**)
- ❖ **Environment** menu: Use to adjust system environment
 - select serial port for communication (**Environment/Serial Port**)
 - select user interface language (**Environment/Language**)
- ❖ **Help** menu: Use to see program version and vendor (**Help/About**)

3. Icon bar:



4. Window main area: Contains configuration tabs and visualization area (see below)

5. Status bar: It is a bargraph showing communication or command execution status

6. Information bar: This bar has 2 panels (left and right). The left informs about current program status and the right shows the communication port name

Current Value Area

Use this area to monitor current value of PV (temperature), output current [mA] and percentage of selected measurement range (Fig. 6). Click [Get] to see current values. To refresh click [Get] again.



Fig. 6

Current Setup Area

This area opens under **Current Setup** tab (see Fig. 7).

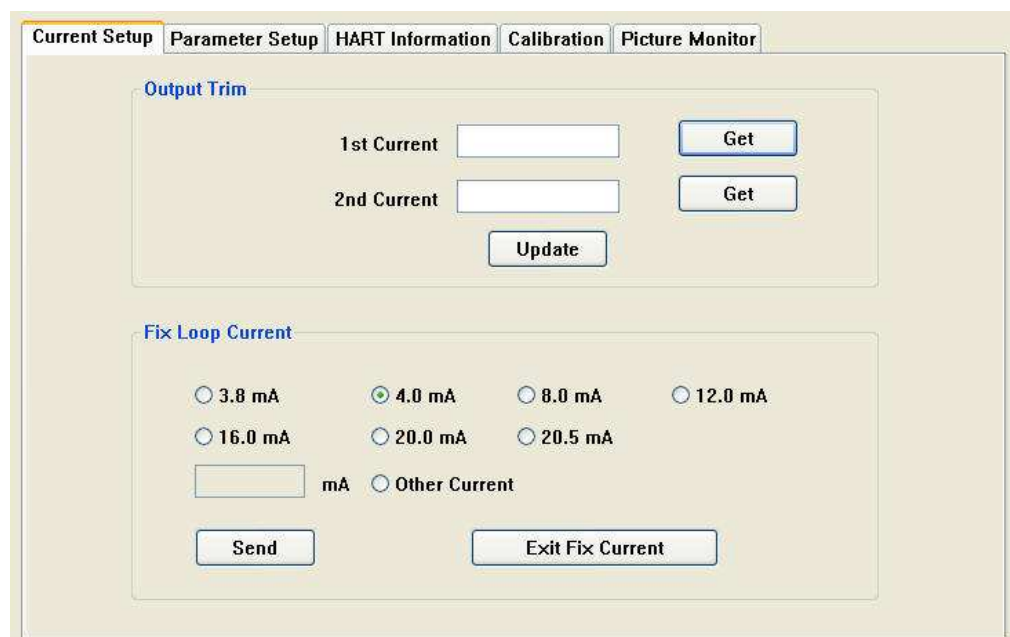


Fig. 7

This area contains 2 parts: **Output Trim** and **Fix Loop Current**.

1. The purpose of **Output Trim** area is to make the transmitter output current the same as measured by the standard mA-meter connected into the loop (see Fig. 1). To do that:
 - Click [Get] and enter the mA-meter reading in the field [1st Current]
 - Click [Get] and enter the mA-meter reading in the field [2nd Current]
 - Click [Update] to trim the transmitter output.

You can check the results of trimming by clicking [Get] in **Current Value** area.



Output trim affects only transmitter output.

For complete device calibration - see Calibration Area.



Wrong trim may lead to decalibration or loss of communication!

2. The purpose of **Fix Loop Current** area is to fix the transmitter output current independent from the PV change and measurement (Manual output control). To do that:
 - Set the fixed output current value from the offered or enter your own value in [mA] field after checking [Other current] radio button.
 - Click [Send] to load the fixed mA value to transmitter.To exit manual output control and return to automatic output - click [Exit Fix Current].

Parameter Setup Area

This area opens under **Parameter Setup** tab (see Fig. 8).

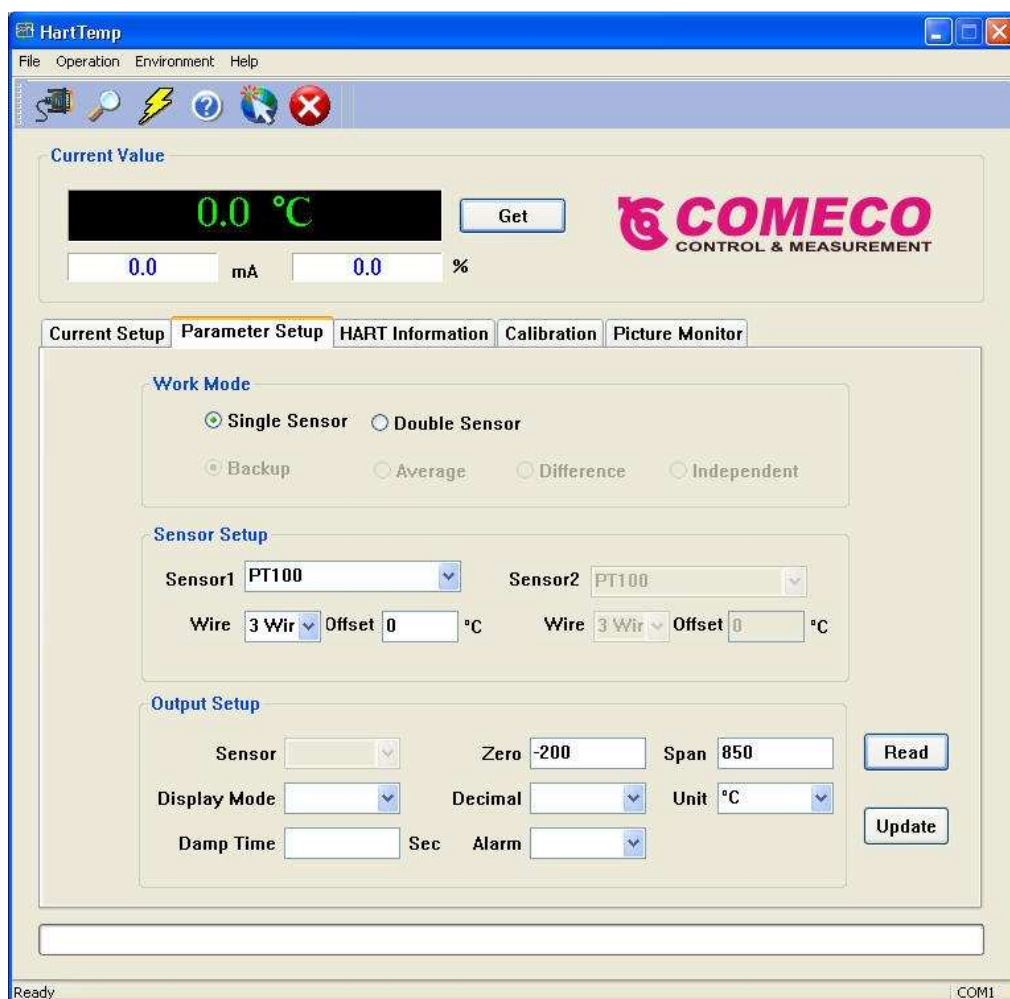


Fig. 8

This area consists of 3 parts: **Work Mode**, **Sensor Setup** and **Output Setup**.

1. Depending on transmitter model select [Single Sensor] or [Double Sensor] mode in **Work Mode** area.
 - ❖ In double sensor mode, choose input/output conversion mode:
 - For redundant sensor choose [Backup]. Both sensors have the same range and the transmitter automatically switches to Sensor2 in case of Sensor1 failure;
 - [Average] will generate output depending on average temperature $(T1+T2)/2$;
 - [Difference] will generate output depending on temperature difference $(T1-T2)$;
 - If [Independent] is selected, both sensors have independent ranges and the user can switch them manually from [Sensor] drop-down menu in **Output Setup** area.
 - ❖ In single sensor mode, the radio buttons described above are inactive.
2. In **Sensor Setup** area set for every sensor (signal):
 - ❖ Sensor/signal type from [Sensor1(2)] drop-down menu
 - ❖ RTD sensor wiring schematic from [Wire] drop-down menu
 - ❖ Input zero-point correction - enter offset value in [Offset] field
3. In **Output Setup** area the user can:
 - ❖ Select sensor number (if work mode with 2 independent sensors work mode is used) from [Sensor] drop-down menu
 - ❖ Read Low/High conversion range values from transmitter by clicking [Read]
 - ❖ Set Low/High conversion range values in [Zero] and [Span] fields
 - ❖ Set engineering units for temperature measurement from [Unit] drop-down menu
 - ❖ Enter low-pass filter damp time from 0 to 100 s with step 0.1 in [Damp Time] field.
 - ❖ Load the setting above to transmitter by clicking [Update]
 - ❖ For transmitters with built-in digital display additionally set:
 - What will be displayed (PV, mA or %) from [Display Mode] drop-down menu;
 - Decimal point position (x1, x.1, x.01, x.001) from [Decimal] drop-down menu.



Zero and Span values must be entered within sensor (signal) range stated in transmitter specifications!

HART Information Area

This area opens under **HART Information** tab (see Fig. 9).

The screenshot shows a software window with five tabs: 'Current Setup', 'Parameter Setup', 'HART Information' (selected), 'Calibration', and 'Picture Monitor'. The 'HART Information' tab contains the following elements:

- Information** section:
 - Date: 6/18/2012 (dropdown)
 - Tag: [text input]
 - Descriptor: [text input]
 - Message: [text input]
 - Buttons: Read, Update
- Short Address** section:
 - HART Short Address: 0 (dropdown)
 - Modify HART Short: [text input]
 - Buttons: Update
- Long Address** section:
 - [text input]
 - Buttons: Read, Update

At the bottom of the window, there is a status bar with 'Ready' on the left and 'COM1' on the right.

Fig. 9

1. **Information** area is to enter user information:

- ❖ Date of programming - enter in [Date] field or select from drop-down calendar
- ❖ Transmitter or system TAG # (max. 8 characters) - enter in [Tag] field
- ❖ Operator name (max. 16 characters) - enter in [Descriptor] field
- ❖ Specific message or note (max. 32 characters) - enter in [Message] field

2. Use **Address** area if 2 or more transmitters are connected to the loop.

In such "multi-drop" configuration every transmitter must have its unique address:

- ❖ Enter Short HART address (0...15) in [HART Short Address] field
- ❖ Modify short address by entering new address [Modify HART Short] field and confirm with [Update] button.
- ❖ Read Long Address (if entered) from transmitter by clicking [Read]
- ❖ Enter new long address (16 digits) in the field and confirm with [Update] button.

Calibration Area

This area opens under **Calibration** tab (see Fig. 10).

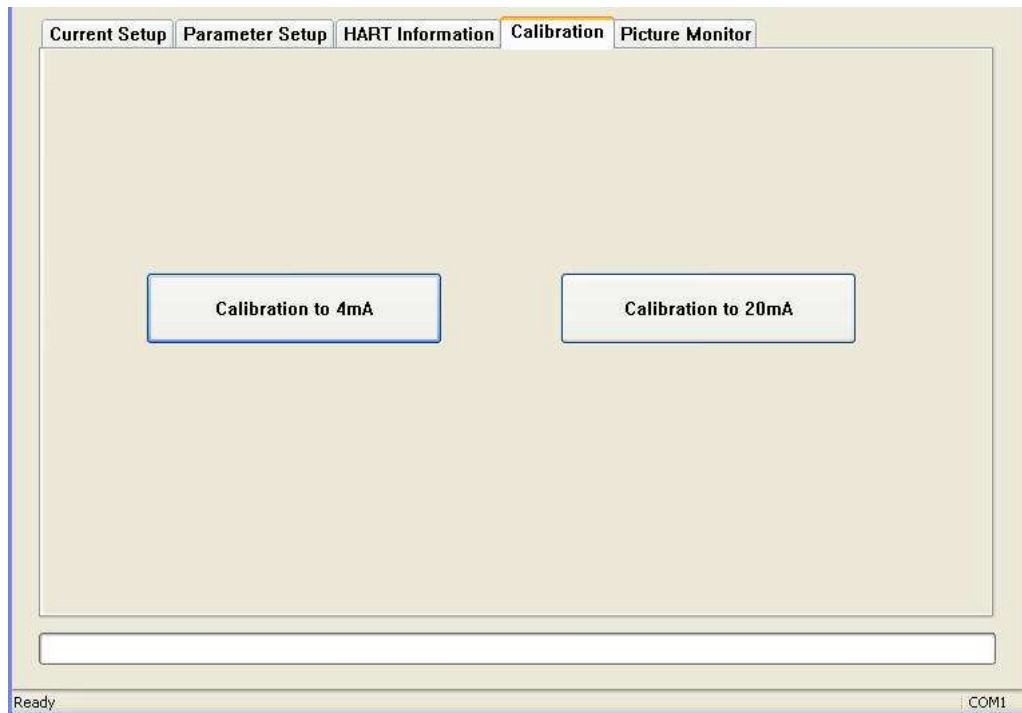


Fig. 10

Use this area to calibrate the transmitter by following steps:

1. Simulate LOW range value (corresponding to 4 mA)
2. Click [Calibration to 4mA] button
3. Simulate HIGH range value (corresponding to 20 mA)
4. Click [Calibration to 20mA] button



Make calibrations WITH CARE! Wrong calibration may lead to wrong measurement!

Picture Monitor Area

This area opens under **Picture Monitor** tab (see Fig. 11).

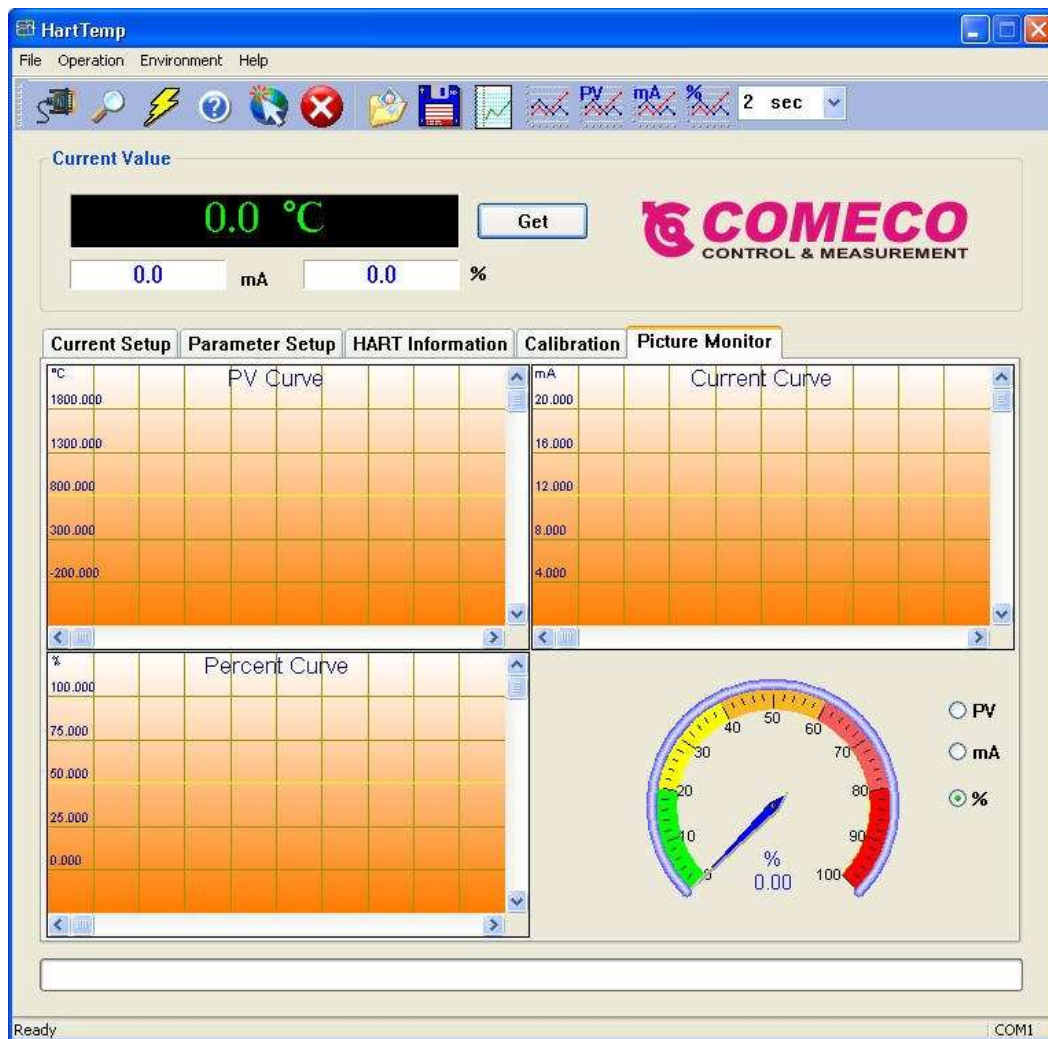
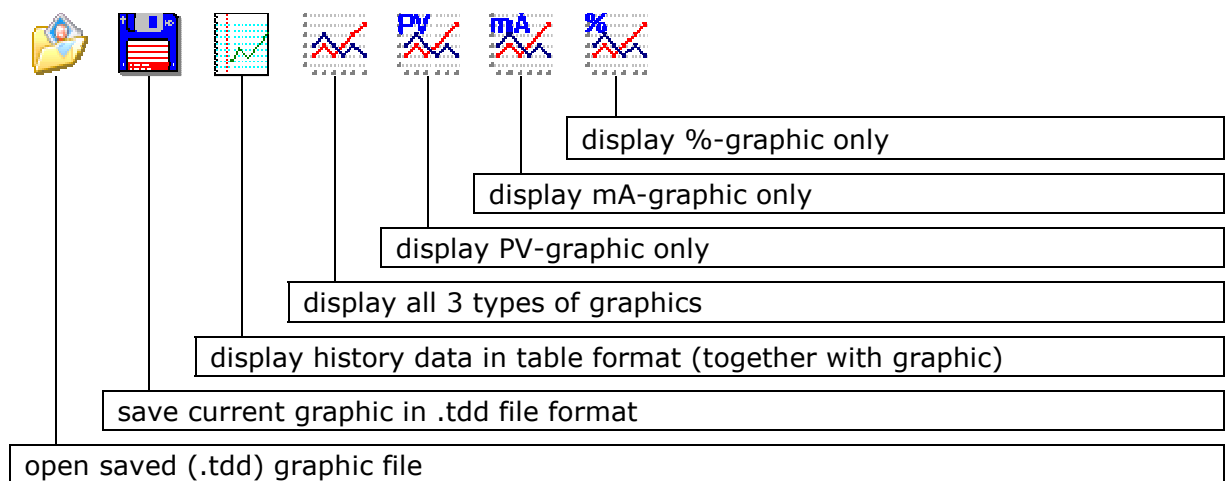


Fig. 11

Some new icons appear on the Icon bar:




Use this area to visualize and monitor measurement in gauge and graphic mode.

1. Gauge visualization:

- ❖ It functions automatically (see lower right part of the window)
- ❖ Select what to display and scale dimension by checking radio-buttons on the right gauge (PV, mA or %)

2. A graphic monitor draws and saves process data online:

- ❖ Use the additional icons on Icon bar to choose what type of graphic to display (PV, mA, % or all 3 types)
- ❖ Select monitor period from drop-down menu at the Icon bar end (from 2s to 30min)
- ❖ If you want to see history data in table format - click . It will open an additional window area for data table (Fig. 12) with time stamp, data measured and unit:

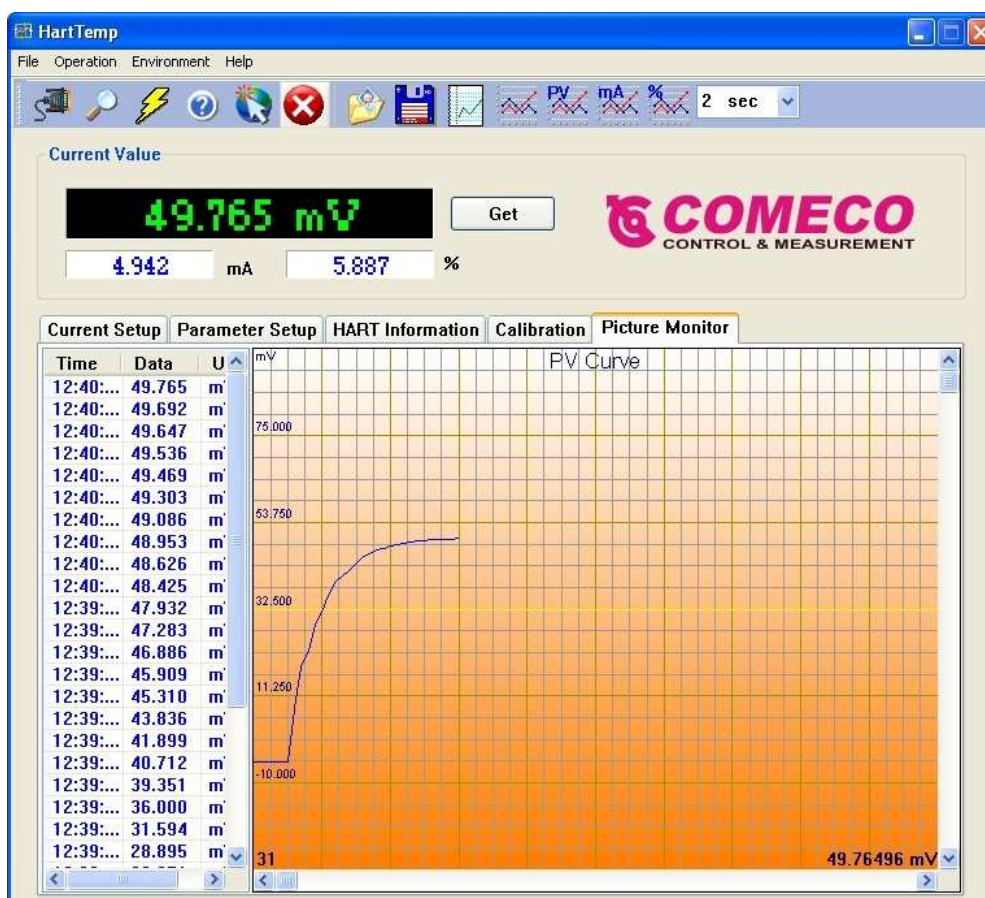





Fig. 12

3. Saving and reading graphic files:

- ❖ Graphic history can be saved in file with .tdd format.
First stop communication with  and then save file by clicking .
It will open a standard OS window for file saving.
Name the file and save it on your computer.
- ❖ A saved graphic file can be visualized offline by clicking .
It will open a standard OS window for file looking.
Select a .tdd file and open it.
The saved data and can be seen as picture graphic or table data (see above).

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