

Installation and operation

SpyWatch 1.1



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Contents

1	Introduction	3
2	Installation	4
3	Starting SpyWatch®	5
4	Starting a new data recording	7
5	Displaying a previously stored data file	11
6	Zoom functions.....	14
7	Unistat® pin assignment.....	15
8	List of abbreviations for process data.....	16

1 Introduction

SpyWatch[®] is a software program for visualizing and documenting process relevant data. The communication is via RS232, RS485 or TCP/IP. The installation is very easy. SpyWatch[®] requires very little disk space, and is very easy to use. The recorded data is displayed over time. Here the data axes of the graph are freely scaleable. A zoom function eases the graphical interpretation of each time period. SpyWatch[®] can record up to 10 channels simultaneously. Each data channel is individually documented and the visualization is also freely configurable. With SpyWatch[®] the user has the following possibilities:

- set a set-point value
- change from internal to jacket temperature mode
- start/stop temperature control or circulation

2 Installation

To install SpyWatch[®], just start the installation file which is located on your CD-ROM. The program is compatible to the operating systems Windows 98 SE, Windows NT, Windows 2000 and Windows XP Home/Professional. The installation program copies SpyWatch[®] into a folder of your choice. After that a link on the desktop and an entry in the start menu will be created.

Important notes

1. A memory error message may occur on computers with less than 128 MByte of total system memory. Especially if you perform data recordings which take more than one day.
2. The program was designed for the classical windows design. Please ensure that the colour scheme “Windows Classic“ is set. Under “Windows XP“ the graphical scheme “Luna“ should not be used, “Windows Classic“ should be chosen. A screen resolution of at least 1024x768 is highly recommended.

3 Starting SpyWatch®

After you have started the program, a logo is displayed, after which you will see the user interface. In this version, you have the possibility to display an already saved file or to start a new data recording. All options require a data channel to transfer the data. There are ten channels available which can be used either for displaying already stored data, for recording (and displaying) a new file or for the above mentioned options. Take a look on Fig. 1.

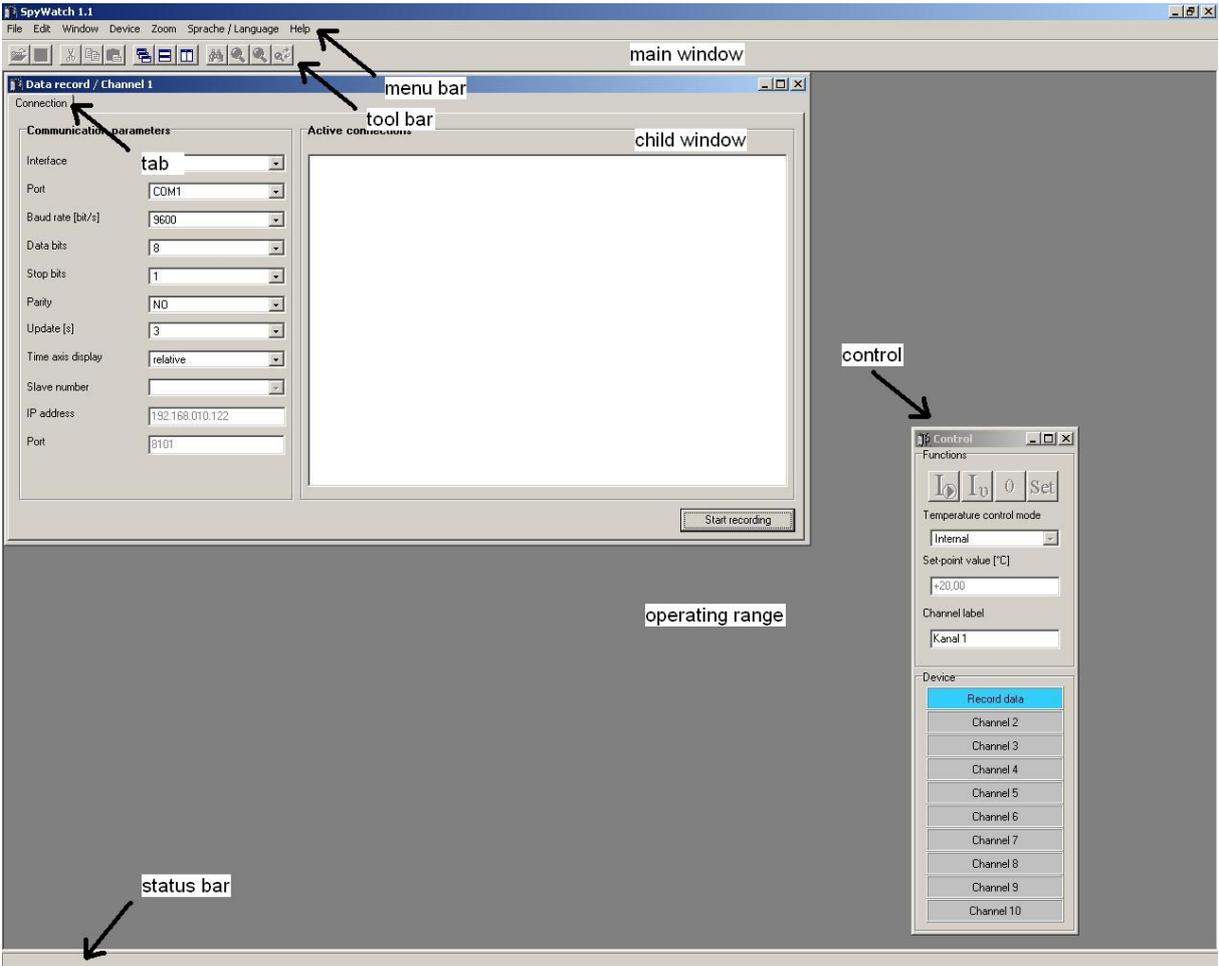


Figure 1

The graphical user interface consists of a main window and multiple child windows. The job of the main window is to process the child windows and to offer the functions required. It contains the title of the application, a menu bar, a tool bar, the operating range for the child

windows, a control window and a status bar. The menu and the buttons of the tool bar serve to activate various functions which will be explained here.

- File

Here for example one can configure the recording and display of new process data, or display a previously saved data file. An opened child window can be closed when it has the focus. During a data recording, one can save the values of the displayed data. It is also possible to print the graphical screen display, or the contents of the application information windows. You can save a screen shot of the current graph and the application may also be closed.

- Edit

This menu offers text operations. One can copy an error or status message from an information window into the buffer so it can be used by other programs. The standard operations of „cut“, „copy“ and „paste“ are available.

- Window

This menu serves to arranging the child windows. They can be arranged overlapping, vertical or horizontal. The menu shows all available child windows. This function is very useful if one child window is covered by another.

Note: That product supports ten child windows.

- Device

Here you are able to stop or to start temperature control or circulation. Additionally, you can set a specific set point.

- Zoom

This menu sets the zoom functions “overview“, “arrange left axis“, “arrange right axis” and “set zoom limit“. These functions are described in chapter [6](#).

- Sprache/Language

Here one can choose English or German language.

- Help

A window with copyright information can be displayed. You can find the handbook of SpyWatch[®] in your installation folder.

4 Starting a new data recording

Before one starts a new data recording, a thermostat must be connected to the PC. The interfaces RS-232, RS-485 and TCP/IP are available for use. The connection of the machine with a serial interface cable is described in the operating handbook of the machine concerned. After the machine is connected to the PC, the menu point “Record data“ can be called up as shown in Figure 2, via the menu “File“, sub-menu “New“. It can also be called via the keyboard shortcut <Strg+N>.

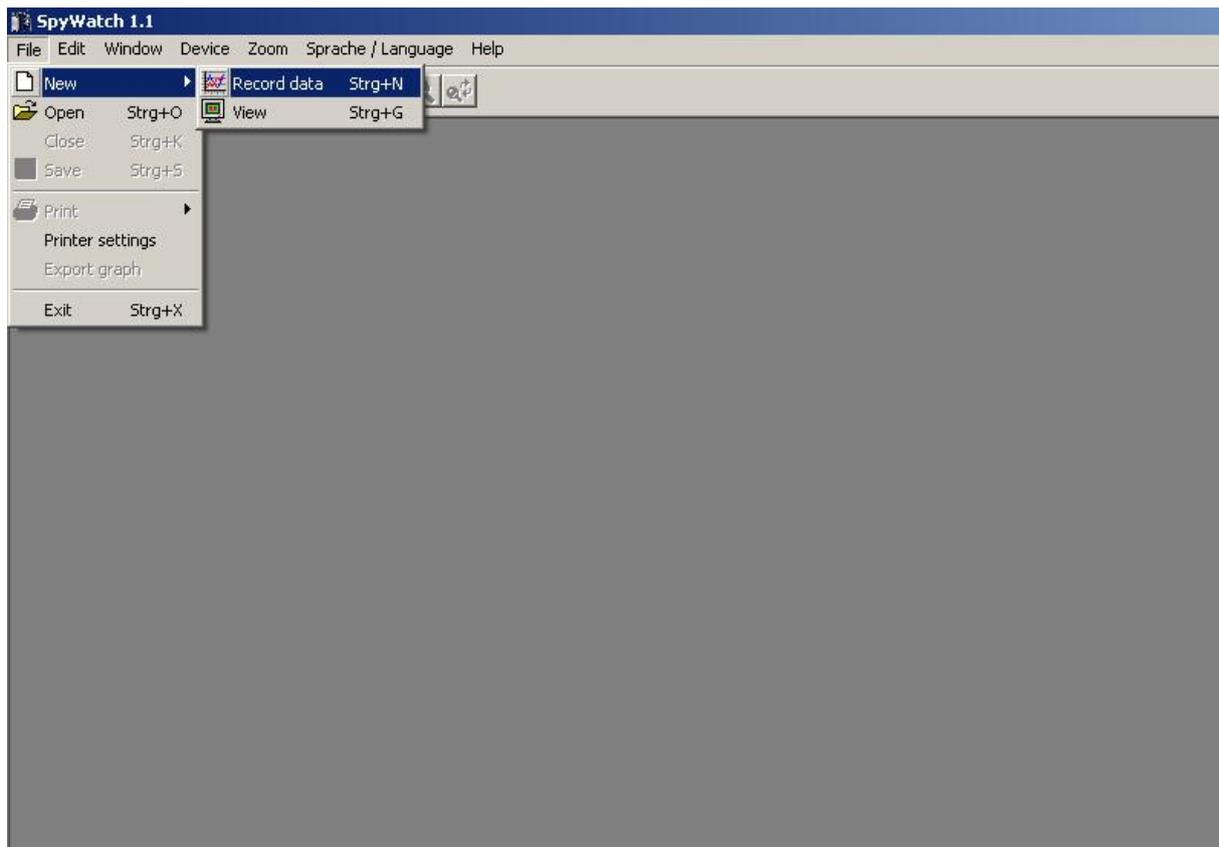


Figure 2

In addition to the above, further essential parameters for the data transfer must be set in another window. Here for example, the required interface, the appropriate COM port and the baud rate. The parameters are described in the following table 1.

Interface	Choose the required interface (RS-232, RS-485, TCP/IP). For a TCP/IP connection a so called COM server must be configured. Also an IP address and an appropriate port must have been given. <u>Note:</u> A firewall can cause communication between PC and machine to fail. It is recommended that any firewall being used is deactivated.
Port	The program discovers all COM ports available depending on the chosen interface.
Baud rate	This parameter can contain a value between 1200 bit/sec up to 19200 bit/sec. Please use the value given in the

	operating handbook of the appropriate machine.
Data bits	Generally, the default value can be used.
Stop bits	Also here, the default value can be used.
Parity	The default value can be used.
Update	The graph is updated with the latest process data after this time. The longer the data recording is, then the higher this time should be made, to prevent the file becoming too large.
Time axis display	With a relative time axis, the time always begins at zero seconds. An absolute time axis begins with the present system time.
Slave number	This parameter can only be set in connection with the RS-485 interface. It gives the address of the slave being used.
IP address	If TCP/IP has been chosen, then the IP address of the COM server can be given here.
Port	An appropriate port must also be configured in addition to the COM server.

Table 1

After specifying these parameters, one can start the data recording by clicking on the “Start recording” button. After the user has entered a serial number for the device and has chosen a name for the data file, the device recognition starts. After a successful recognition one can change to the graphic display by clicking the tap “Graph”. This is shown in Figure 3.

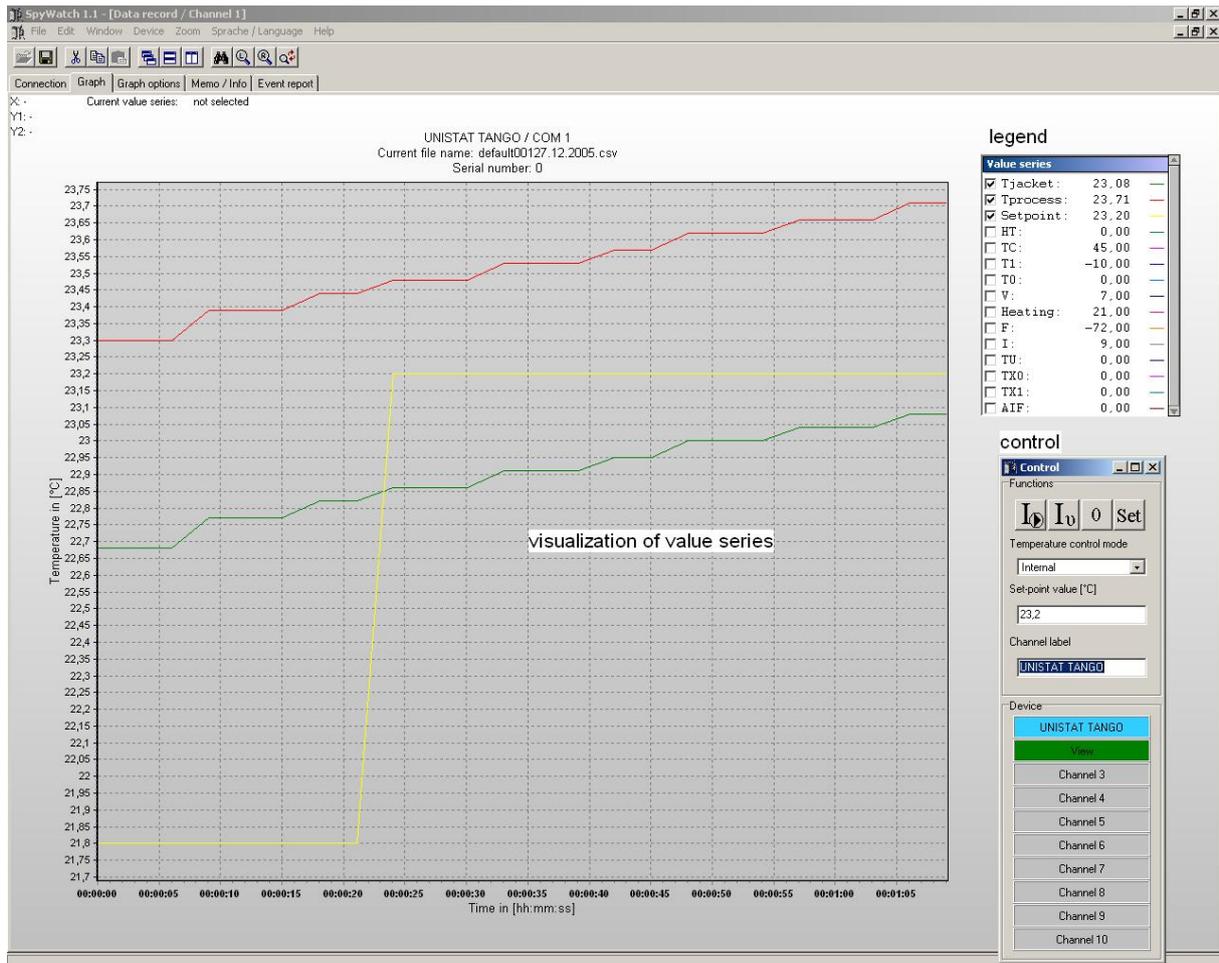


Figure 3

The user now has the possibility to find out, via five tabs, additional information about the data recording. The tab “Connection“ shows the specified parameter on the left of the window, and a view of the present connections can be seen on the right.

The tab “Graph options“ serves to change the graphical display of the process data. Under the group “Value series“ one can specify for example the colour of a variable. Under the next group the value of the graph axis can be manually changed, or an automatic time axis scaling can be chosen. The automatic scaling turns off the manual scaling. The user has also the possibility of activating a time window. The time window serves to display only the present values measured. The time frame is set by the user between 10 minutes and 720 minutes. This is mainly useful for longer data recordings. Additionally, under the group “Graph“ one can display faulty measurement data, change the appearance of the border of the graph or activate the segment labels.

The menu point „Memo/Info“ consists of two information windows. The left window serves to display important notices by the user concerning the present data recording. In contrast, the right window displays information concerning the machine being used for example, and the path and file name of the presently recording data. The data is recorded in the **csv** format (comma separated value) and is thus MS Excel compatible. The file name is constructed like this:

<User chosen name> + <Channel number (0xy)> + <present date>.csv

The variable xy shows the presently used data channel. If a data recording lasts longer than 24 hours, then a new file with the present date is produced.

The last tab delivers event specific messages, such as the start of a new data recording, or possible errors during a data recording. Every entry is stamped with the actual time and date. The control window shows the user how the ten data channels are used. Visualizations are shown in green colour. Data recordings are shown in blue colour. The user is able to switch to a specific device by clicking on that channel. The current channel is shown in a brighter colour. Gray coloured channels are not used. In the upper area of the window, the user can start/stop temperature control, circulation or set a set point. For example, if you want to change to external temperature control you first have to choose “external” under “temperature control” and then click on the “I₀” symbol. A pop-up window will ask for confirmation and after that the operation will be executed.

Note: Take care that you have chosen the right device!

5 Displaying a previously stored data file

To display a previously stored data record, you must go to the menu “File“, sub-menu “New“ and choose the menu point „View“ or use the keyboard shortcut <Strg+G>. You will then observe a file browser where you can choose your data file. The program automatically displays **xlu** files and those using the new file structure **csv**.

The data in the old **xlu** format is converted by the program. After it has been converted, it is possible to choose individual values to be associated with the vertical axis of the graph. An example of such a converted file is shown in Figure 4.

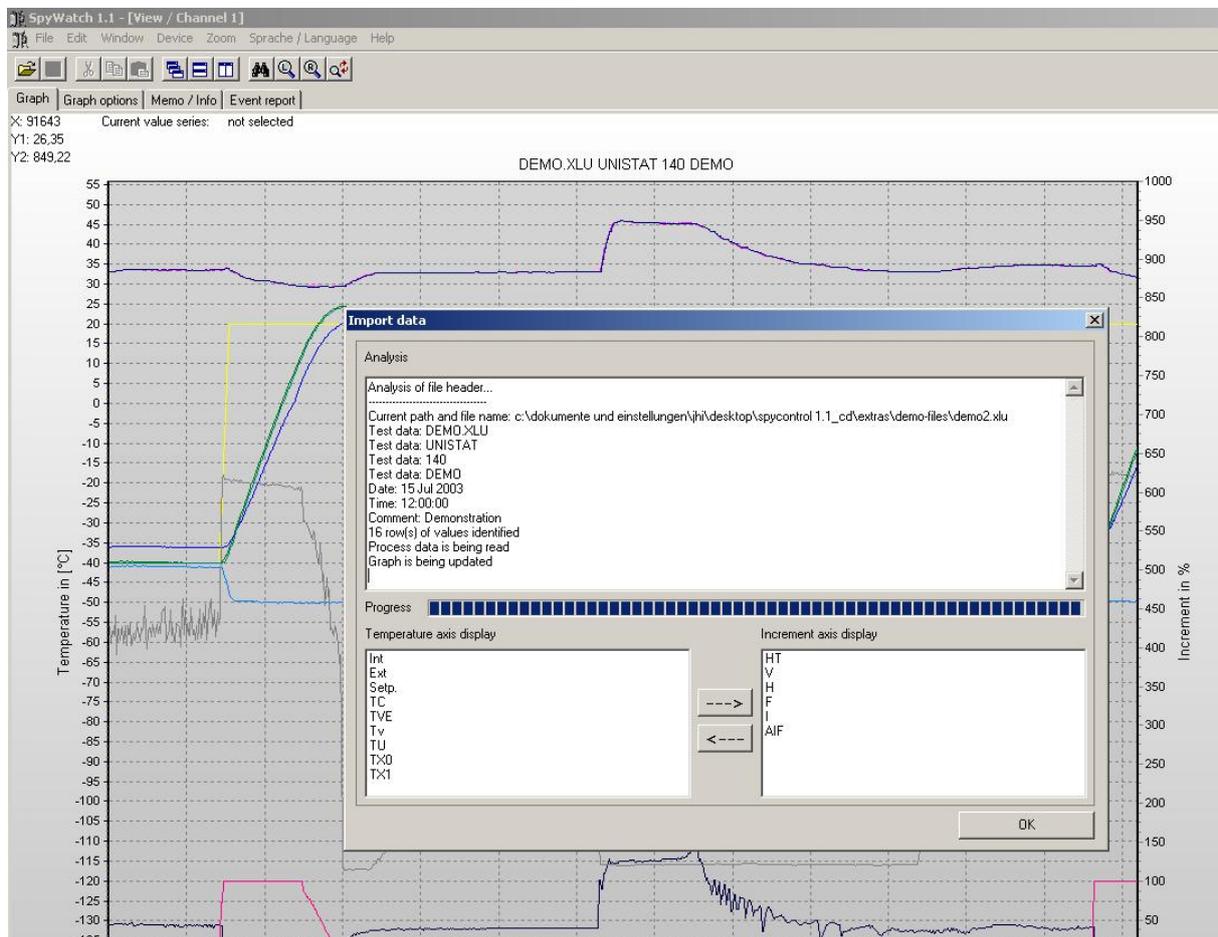


Figure 4

After the conversion, the graphic display is updated. It is now possible to confirm the conversion by clicking on "OK".

The left axis of the graph displays the measured values in °C (degrees centigrade). The right hand axis visualizes the values in % (percent). The horizontal axis displays the relative or absolute time scale. On the right next to the graphical display one can find a legend with the attributes of the measurements. The activation, the colour and the name are displayed. Beneath the legend can be seen the display showing the occupied data channels and that which is presently active. Also the measured value is shown at the position the mouse pointer is at on the graphical display.

The menu point “Graph options“ is split into three sections. These sections are called “Value series“, “Scaling“, and “Graph“. In the section “Value series“, a colour and a name can be chosen. The second area serves to manually set the minimum and maximum axis values of all three axes. It is also possible to choose an automatic scaling. In this case, the minimum on the time axis is fixed, and the maximum is adjusted to the present time. The minimum is dependant on the option “Time Window“. The time window range is set by the user between 10 minutes and 720 minutes. The ”Graph“ section contains further three options. You have the choice to allow faulty measured value to be displayed in the graph, to change the appearance of the border of the graph or to display the marks of new segments (if a programmer has been used before). The errors include timeout and synchronisation errors. The button “Accept values“ accepts all modifications that have taken place since the menu was called up.

The tab “Memo/Info“ contains a text input window and an information window. The text input window accepts anything written to describe the temperature control operation. The status window displays the program status messages. The contents of both windows can be printed and saved.

Another information window can be found under the tab “Event Report“. This window shows data concerning status and error messages, together with the present date and time. Various possibilities are available for an exact analysis of the displayed data. The exact range one wishes to examine can be visualized manually using the “Graph options“ menu.

The graph can also be shifted to any desired area using the right mouse button. Here however, care should be taken that the start point does not lay on a value, otherwise no functionality is available. For a magnified display of any area, basic and extended zoom functions are integrated into the program. These are explained in chapter 6.

6 Zoom functions

The basic zoom functions of SpyWatch[®] are the ability to zoom in and out. A rectangle is drawn by pressing the right mouse button and pulling, from the upper left corner to the lower right corner of the area of interest. The start point of this rectangle **must** not lie on a value. If the rectangle is drawn in the other direction, then the previous zoom operation is cancelled.

The Fig. 5 is included as help. By clicking on the binoculars symbol, an overall view of the total graph is given so that an impression of what has occurred during the entire recording can be gathered. The **large** magnifying glass symbols offer the possibility for the values to be so adjusted that all active values can all be displayed. The **small** magnifying glass is to save the displayed graph. The stored excerpt is displayed when a zoom operation is cancelled. Here, a rectangle must be drawn from the right lower corner to the upper left corner.

A manual display of the graphical excerpt is possible by using the tab “Graph options“. Here, the limits must be manually entered, and then accepted with the “Accept values“ button.

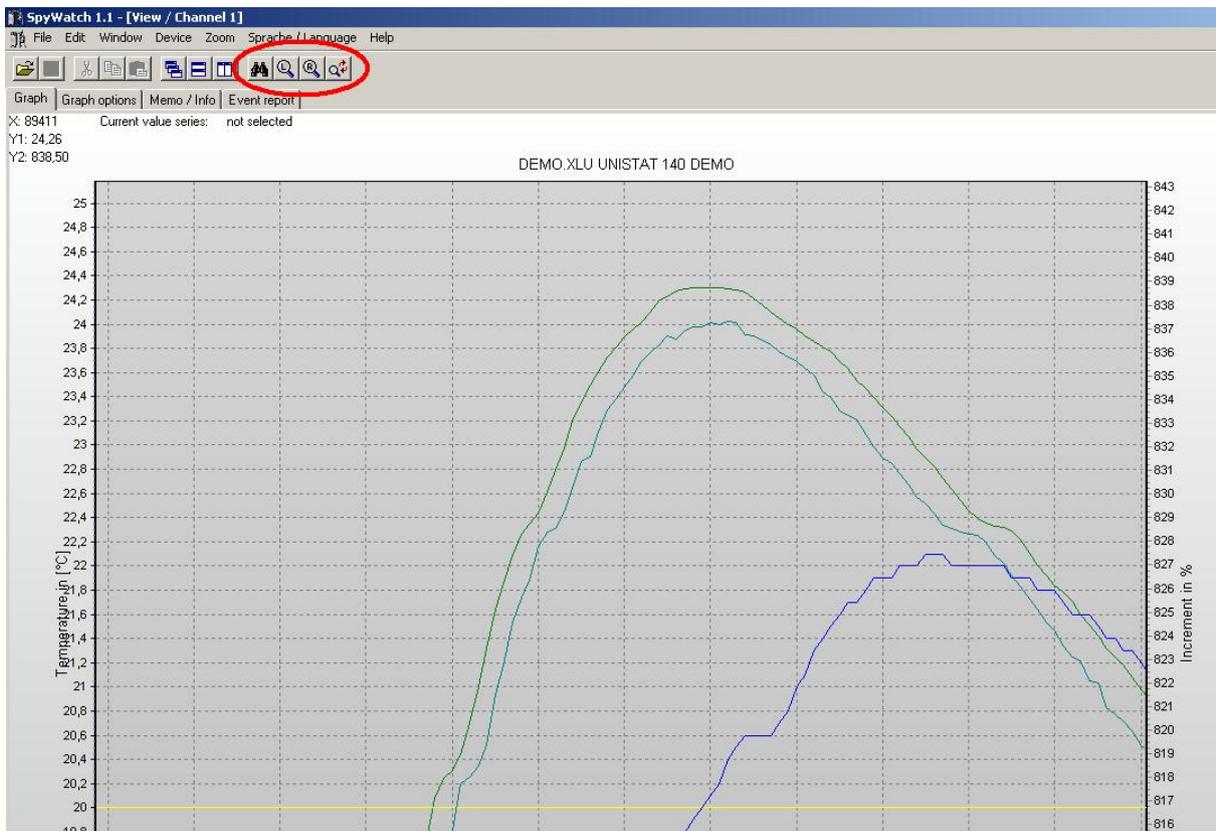


Figure 5

Note fore using the extended zoom function

To display a particular area of a graph, proceed as follows:

Using the tab “Graph options“, deactivate the values which are not required to be displayed. Then set up the required values with the **large** magnifying glass symbols, then zoom into the required area. In order that you can return to this exact same spot, it should be saved with the **small** magnifying glass symbol. Cancel the zoom function to return to the original display.

7 Unistat[®] pin assignment

For a RS232 connection you need a cable which has the following pin assignment:

Unistat [®] : 9 pin male connector	PC: 9 pin female connector
Pin 1 - not connected	Pin 1 - not connected
pin 2 - data in	pin 3 - data out
pin 3 - data out	pin 2 - data in
pin 4 - not connected	pin 4 - connect to pin 6
pin 5 - ground	pin 5 - ground
pin 6 - not connected	pin 6 - connect to pin 4
pin 7 - not connected	pin 7 - connect to pin 8
pin 8 - not connected	pin 8 - connect to pin 7
pin 9 - not connected	pin 9 - not connected
shielding not connected	shielding connected

Table 2

Please compare this section to your manual „Unistat[®] Control“.

8 List of abbreviations for process data

During data recording, the legend in the graphic display shows the process data in an abbreviated way. These abbreviations are explained below:

TIntern	Internal temperatur / Fluid outlet temperature [°C]
TProzess	Process temperature [°C]
Sollwert	Setpoint [°C]
HT	Position HT-slider
TC	Condensation temperature [°C]
T1	Evaporator end temperature (machine dependent)
T0	Evaporation temperature
V	Position of the expansion valve
Heizung	Main heating [%]
F	Fine heating [%] (Displayed in the graphic display as 0 to -100)
I	Current coefficient
TU	reserved (Huber-Service)
TX0	reserved (Huber-Service)
TX1	reserved (Huber-Service)
AIF_In	Analogue interface input
AIF_Out	Analogue interface output 1 (machine dependent)
AIF_Out2	Analogue interface output 2 (machine dependent)
AIF_Out3	Analogue interface output 3 (machine dependent)
Poko	Potential free contact (machine dependent)
ECS	External control signal (machine dependent)
Drehzahl	Pump speed (machine dependent)
Druck	Pump pressure [mbar] (machine dependent)

Table 3