

Logger Termio+

**TEMPERATURE AND HUMIDITY
REGISTERING DEVICE**



MANUAL

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Intended use

Termio Logger is designed to measure and register temperature or temperature and humidity (Termio+) in premises and in transport. The device is equipped with a modern integrated circuit with a temperature and humidity sensor, the clock indicating the actual time, and memory that stores the all taken measurements. It is powered by a battery and it cooperates with a computer. Using the LogSoft program that is added to the device, the user can set logger's parameters such as:

- activation time
- frequency of taking measures
- alarm thresholds

Moreover, the program allows to:

- read and print recorded measurements as a table
- display and print the data as a chart
- save the data as a txt file and load it into another application i.e. Excel

Termio can also be programmed to activate by pressing the button on its front panel or to activate with a proper delay according to previously set time.

The device is small what makes it easy to be located at any place. To connect it with a computer a serial COM port or USB port may be used.

Technical data

| | |
|----------------------------|--|
| measured temperature range | from -30°C to 70°C |
| measured humidity range | from 0 to 100 % RH |
| resolution | in the whole measuring range 0,1 |
| accuracy °C | -/+0,5°C Or more accurate in the range from -20°C to 40°C -/+1°C in other temperature ranges |
| accuracy RH | -/+2% RH |
| display | LCD |
| saving frequency | from 1 second to 1440 minutes (24hours) |
| memory | 32703 measurement samples (a possibility to increase its capacity to 65406) |
| battery life span | 5 years of constant exploitation |
| feed | 1/2xAA 3,6V battery |
| interface | Rs232,USB |
| casing size | 45x100x19 mm |
| casing protection degree | IP65 |
| weight | 85g |

This manual includes the description of both, a logger and LogSoft program, on the example of Termio+ Logger. Termio Logger looks and works identically, however, it measures temperature only.

Description

Termio Logger is protected by a special industrial ABS casing that characterizes with a very high mechanical endurance. The device is designed with unique sealings that make it dust, dirt and water resistant. It has a small display on which the user can observe:

- current status of the device (LOG – means it's activated and taking measurements, WAIT – means that it doesn't register data)
- actual temperature and humidity
- extreme values of temperature and humidity that have been registered (minimum and maximum)
- ranges of values within which measurements should be taken (tresholds)
- a PC icon – if the device is being connected to a computer and it is in a data transferring mode

Termio Logger has a button that allows for moving from a currently displayed values to the other ones, so they are displayed in a sequence. The same button switches the device on after previous programming with a computer. On the bottom of the device there is a plug in socket for the adapter.

Installation and activation of the logger

The installation of the logger includes two simple steps:

- 1.Plug the adapter in using a free serial COM port or a free USB port of a coputer
- 2.Copy the LogSoft.exe file to any folder on your computer's hard drive and create a desktop shortcut. You can also copy the program directly to your desktop.

The logger is now ready to be programmed.

Click on the LogSoft icon to start the program.



The main window of the program

Once the program is started, a main window of the application will appear on your computer's screen. If the device is already connected to the computer, its status will be read automatically. The application window includes basic logger information. Some elements of the window can be hidden or not available, depending on the current device's mode.

In the upper part of the main window there is a menu bar, with two functions available:

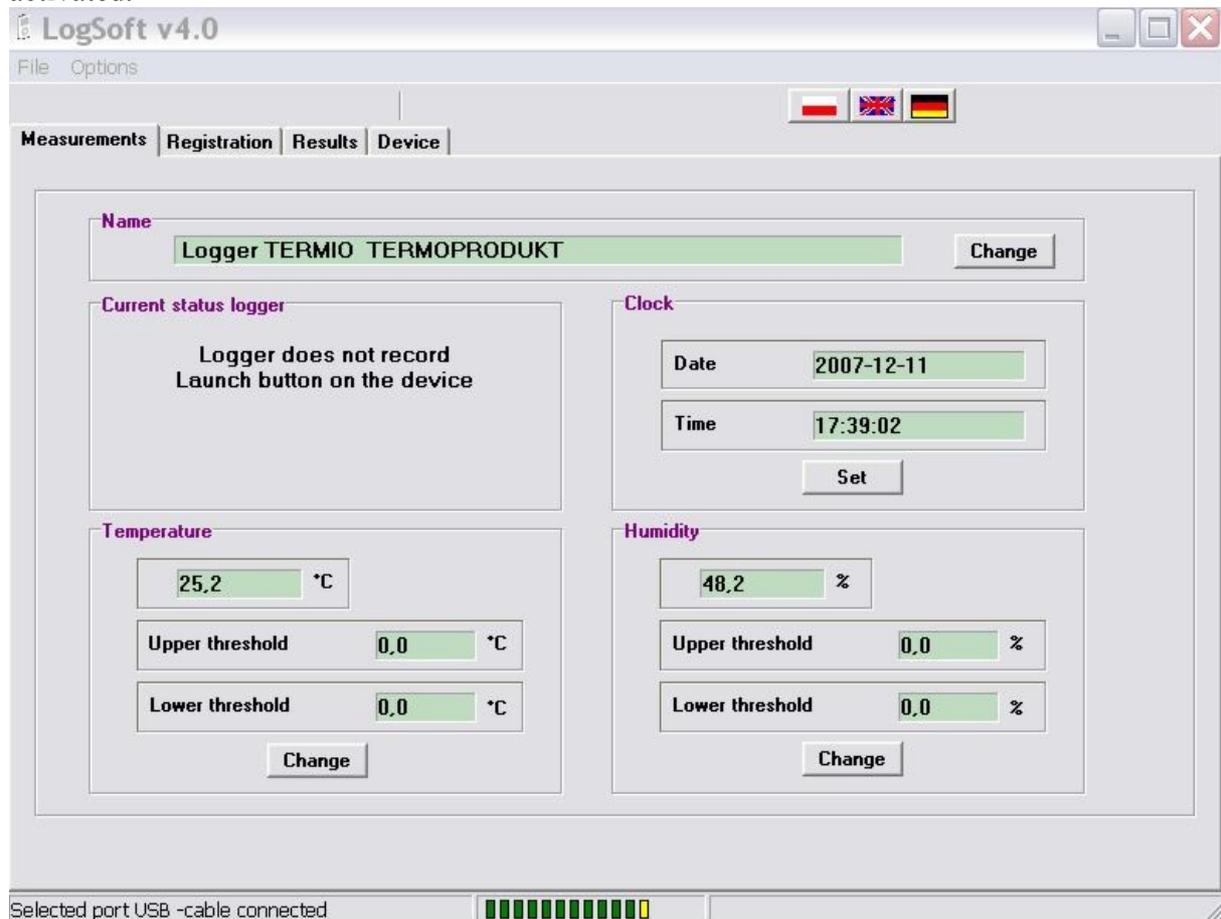
File → Exit - ends the work with the program
Settings → USB , COM1, COM - selection of communication port

The main part of the window is changing depending on the tab you choose:

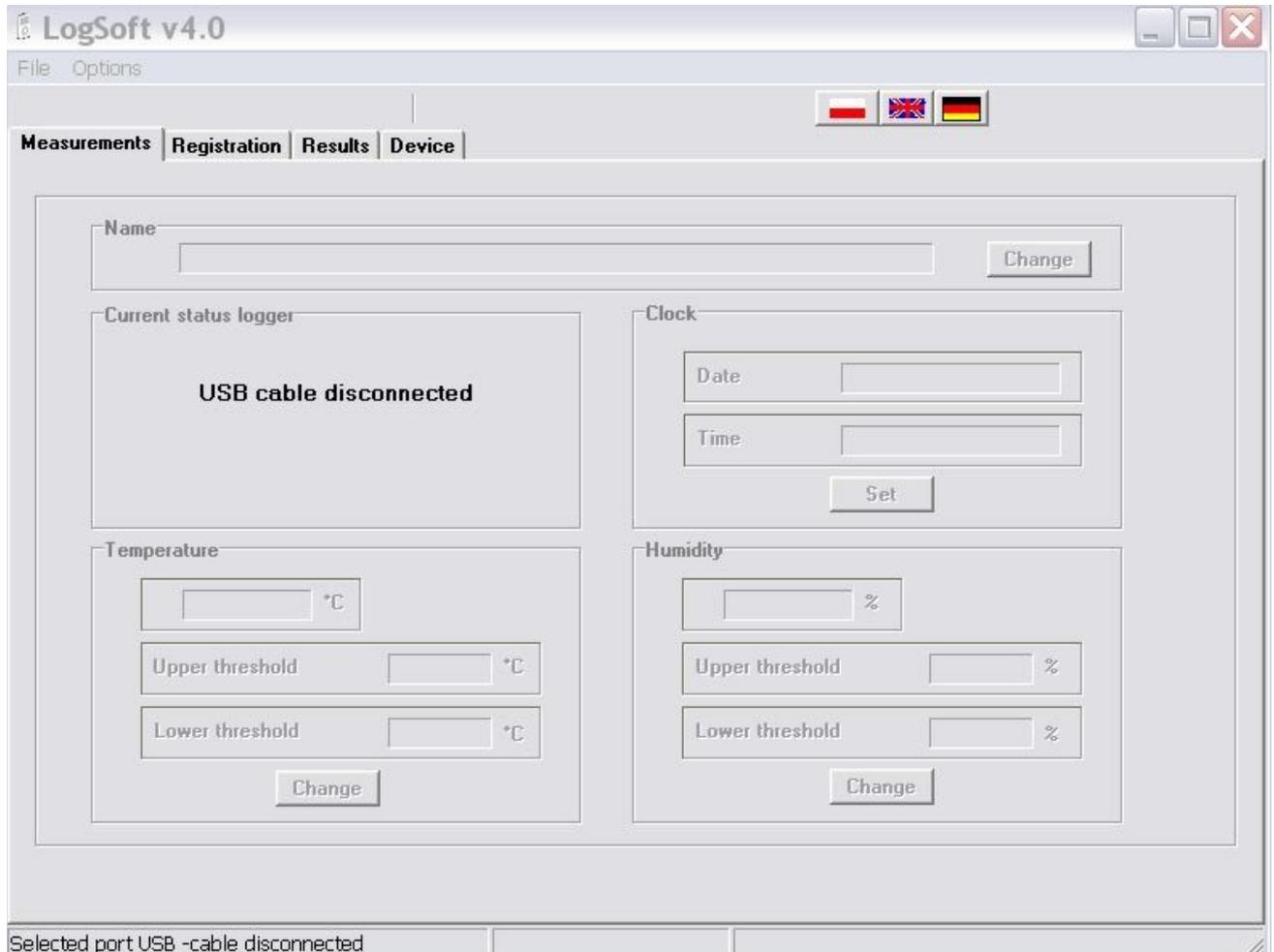
1. Measurements – device's basic data
2. Registration – parameters of the device's activation and settings of data saving
3. Results – displaying saved data
4. Device – technical details and operational wear indicator

Navigation between tabs and particular buttons can be made with a mouse.

The example of the application window view is presented below. The logger is being activated.



At the bottom of the window there is information about the communication port (COM, USB) chosen for a computer connection. In the middle, a progress bar shows its status. Because the reading of the basic data from the device takes place constantly during the work with the program, you can check if the program communicates with the device. If the connection is broken the progress bar will change its colour.



- green – indicates smooth communication
- red – indicates the lack of communication

By observing the colour of the progress bar you can determine that the connection was active for some time (green) and then the communication was interrupted (red) i.e. the device was unplugged from the adapter.

Measurements

After the program is initiated the first tab, which is „Measurements”, will be displayed and active. You can find there basic logger data and its current status. The information is divided into a few sections within separate frames. For example:

- logger's name – every logger can receive a name for identification purposes. You can name it after a place it is located i.e. „Freezer”
- current logger's mode – connected/disconnected to the computer, registering mode/waiting mode
- actual time indicated by the device
- temperature - actual temperature measurement result, defined min and max alarm thresholds
- humidity – actual humidity measurement result, defined min and max alarm thresholds

Apart from the above information, there are also buttons available on the screen, that serve for changing the device's settings and parameters.

If the logger is working, there is a STOP button in the „Current logger mode” section, that enables you to stop/pause the registration process.

If the logger is activated but not taking measurements, and a mode of switching on by a computer has been set, there will be a START button showing until the device gets started as per programmed settings.

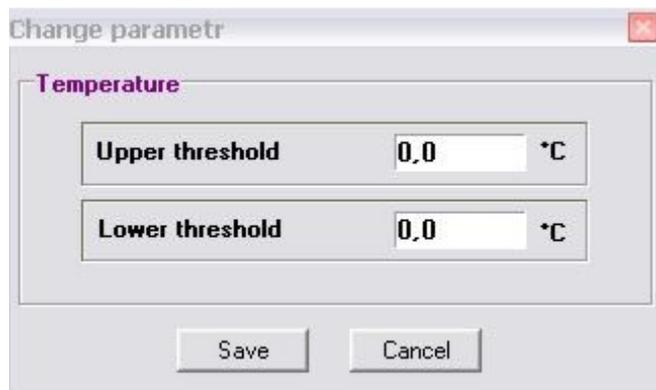
In the „Clock” section there is a „Set time” button that allows for changing the date and time displayed by the device. In „Temperature” and „Humidity” sections minimum and maximum values (alarm thresholds) can be defined.

After clicking a „Set” or „Change” button, another window will pop up, in which you can enter the data. Once the modifications are made, save them so they could be stored in the device's memory. Then the logger will automatically come back to its initial screen.

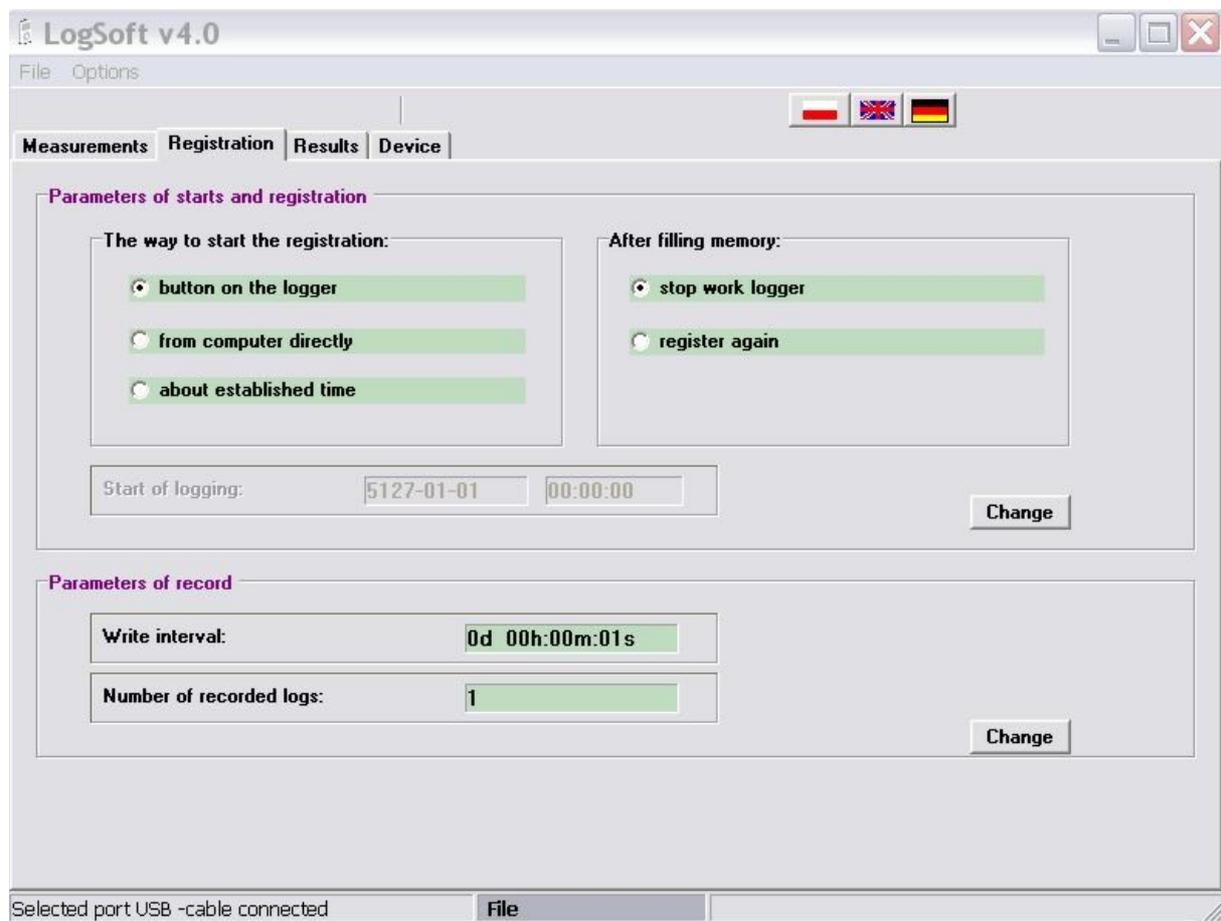
The below windows shows setting date and time of a logger:



Changing the alarm thresholds:



Registration



To change the parameters of the device and its current mode choose „Registration” tab. Then you will be able to set:

- the way the device is activated to register measurements
- the action that should be taken in case of memory shortage
- the frequency of saving the data

Before registration starts, it is recommended that you choose the proper activation mode and data saving frequency. If you don't know the exact time you wish the measuring to begin, you can programme the device to be switched on by the button on the front panel. There is also a possibility to get the device to start registering „directly from a computer”.

The frequency of data saving can be defined in days, hours, minutes, and seconds. Depending on this frequency, the device's memory will be filled more or less quickly. For example: if you set the device to register temperature and humidity every minute, the memory will be full after 22 days. It's important to programme the device's action that you wish to be taken after the memory is full. If you choose „Register anew” option, then Termio will overwrite previously saved data with new measurements, so the old ones will be deleted. If you choose „Stop logger” option, then after filling the whole memory the device will stop saving new data.

Warning!

If a logger has been already on and working, no changes to its parameters or settings should be made. To introduce changes switch the device off.

As long as you don't make changes, the information displayed in the window is the data from the latest measurements registration, including the number of saved values.

Results

Recorded data

| Lp | Date | Time | Temperature | Humidity |
|----|------------|----------|-------------|----------|
| 1 | 2007-12-11 | 17:52:55 | 25,7°C | 46,0% |
| 2 | 2007-12-11 | 17:52:56 | 25,8°C | 46,0% |
| 3 | 2007-12-11 | 17:52:57 | 25,7°C | 46,0% |
| 4 | 2007-12-11 | 17:52:58 | 25,7°C | 46,0% |
| 5 | 2007-12-11 | 17:52:59 | 25,7°C | 46,0% |
| 6 | 2007-12-11 | 17:53:00 | 25,7°C | 46,0% |
| 7 | 2007-12-11 | 17:53:01 | 25,7°C | 46,0% |
| 8 | 2007-12-11 | 17:53:02 | 25,7°C | 46,0% |
| 9 | 2007-12-11 | 17:53:03 | 25,7°C | 46,0% |
| 10 | 2007-12-11 | 17:53:04 | 25,7°C | 46,0% |
| 11 | 2007-12-11 | 17:53:05 | 25,7°C | 46,0% |
| 12 | 2007-12-11 | 17:53:06 | 25,7°C | 46,0% |
| 13 | 2007-12-11 | 17:53:07 | 25,8°C | 46,0% |
| 14 | 2007-12-11 | 17:53:08 | 25,7°C | 46,0% |
| 15 | 2007-12-11 | 17:53:09 | 25,7°C | 46,0% |
| 16 | 2007-12-11 | 17:53:10 | 25,7°C | 46,0% |
| 17 | 2007-12-11 | 17:53:11 | 25,7°C | 46,0% |
| 18 | 2007-12-11 | 17:53:12 | 25,8°C | 46,0% |
| 19 | 2007-12-11 | 17:53:13 | 25,7°C | 46,0% |
| 20 | 2007-12-11 | 17:53:14 | 25,7°C | 46,0% |

Logger data

Name: Logger TERMIO TERMOPRO...
 Type: 0211
 Number: 00000371
 Period: 0d 00h:00m:01s

Status

Reading data complete
 Downloaded 20 logs

Start reading
 Resume reading
 Stop reading
 Show graph
 Print table
 Save results as TXT file

Selected port USB -cable connected

The „Results” tab serves for displaying, reading, and printing the data saved by the device. After you choose this tab, click on the „Start reading” button and the LogSoft program will recall all the measurement results saved from the logger's last activation. Depending on the

number of values, the data may take from a few seconds to a few dozen minutes to load and display. You can pause the process at any time or restart it. The current status of the data being processed is visible in the „Status” section. The values, sorted from the oldest ones to the most recent, are displayed in a table. Scroll down to move to the further table cells.

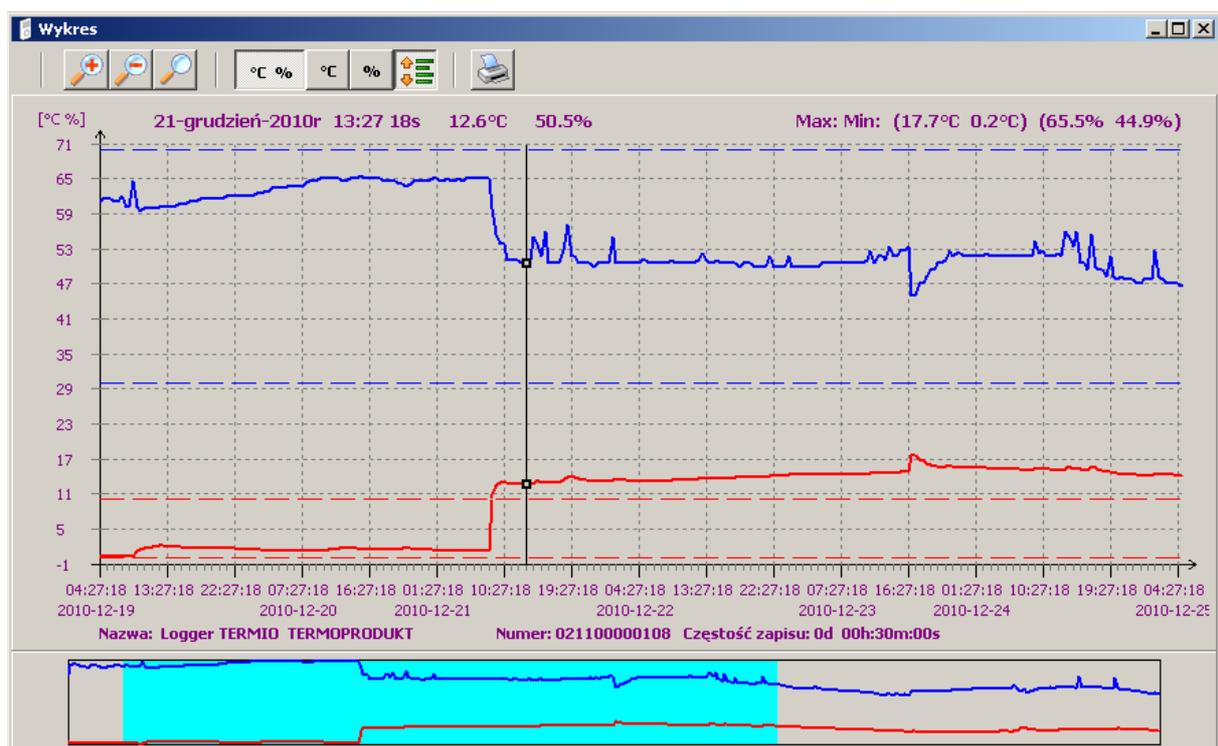
To print the data click on „Print table” button. Printing will be commenced on any printer that is currently connected to your computer. To save the data in a txt format choose the button „Save as TXT file”. Then after saving it you can modify the file using another application like Excel.

The example content of a file:

| | | | | |
|---|------------|----------|-----|------|
| 1 | 2010-12-18 | 16:27:18 | 2.7 | 54.4 |
| 2 | 2010-12-18 | 16:57:18 | 0.9 | 62.0 |
| 3 | 2010-12-18 | 17:27:18 | 0.8 | 62.8 |
| 4 | 2010-12-18 | 17:57:18 | 0.8 | 62.4 |
| 5 | 2010-12-18 | 18:27:18 | 0.8 | 62.4 |
| 6 | 2010-12-18 | 18:57:18 | 0.8 | 62.0 |

...

The first column is the ordinal number of a given value. Then, there are the day, hour, temperature and humidity values. If you would like to see the data as a chart, click on „Show a chart” button.



The horizontal line depicts the time line.
The vertical line stands for the values

Temperature – is marked by a red line
Humidity – is marked as a blue line

The dashed line represents the frame of minimum and maximum thresholds of temperature and humidity that were previously set.

By clicking on the magnifying glass icon in the upper part of the window you may zoom in and out the whole chart or narrow/broaden the time range that is currently displayed on the screen. Light blue colour of the background of the chart indicates you the area of the diagram that is being zoomed in. By clicking on this light blue area and holding the mouse's button while moving the mouse right and left, you can go through different parts of the chart, viewing the chosen sections in more details.

Other buttons allow you to modify the chart according to your needs, so you can:

- create a chart including only one of the measured values: temperature or humidity
- show or hide the minimum and maximum thresholds
- print the chart using your computer printer

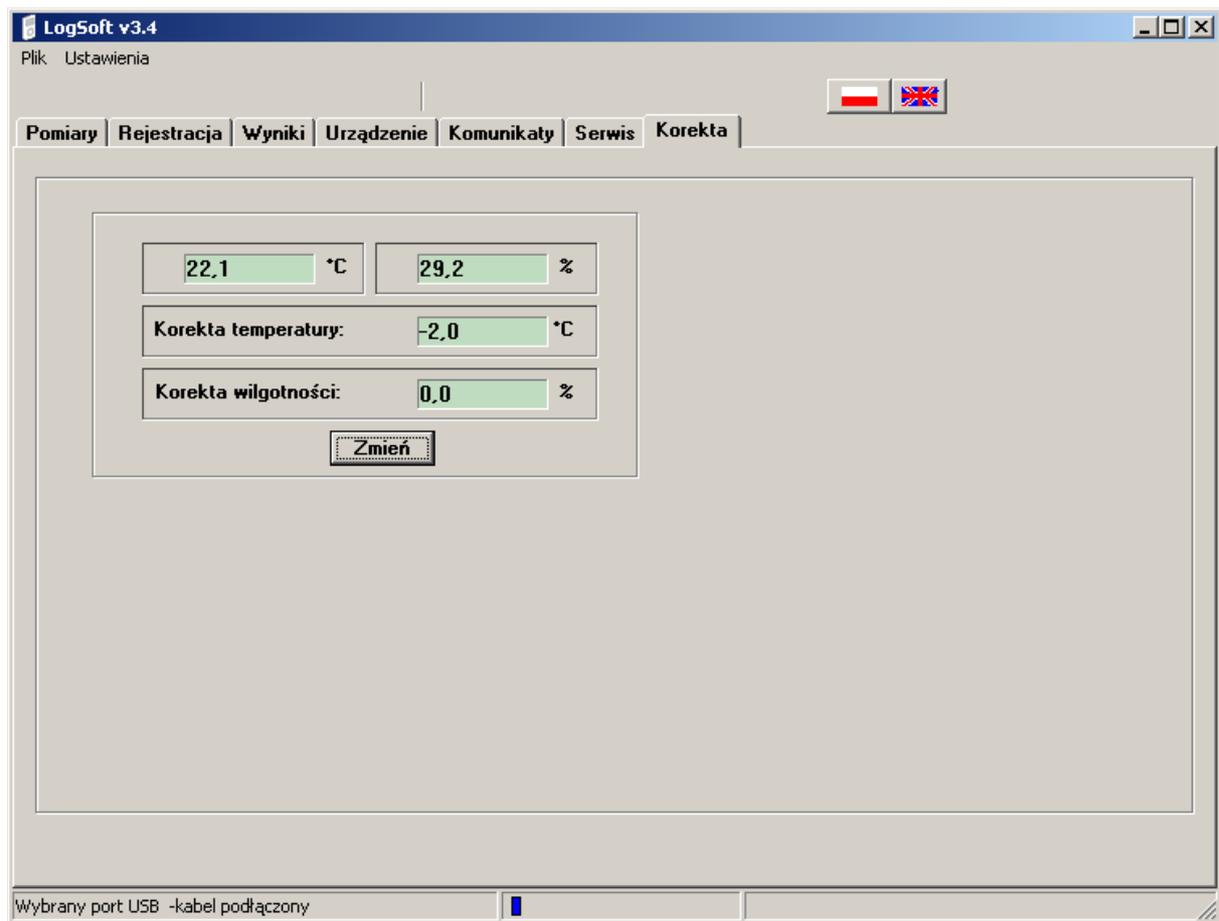
The device

The „Device” tab displays technical data of the logger such as:

- its production date
- serial number
- installed software version
- the number of all measurements taken from the beginning of its exploitation
- battery condition – wearing percentage

Service functions

To display the additional tab menu allowing for access to special service settings choose a Ctrl+Shift+S key combination. Then you can change the logger data, so the values of temperature and humidity will be corrected according to the modifications you introduced also in further reading.



How to start the logger's registration process

In order to get the device registering, follow these steps:

1. Plug in the adapter to your computer
2. Connect the logger with the adapter
3. Switch on the computer and launch SoftLog program
4. If the device is not detected automatically, check computer's port. Remember that you may use either the USB port or serial circuit COM port
5. Check the logger's actual time and if it requires correcting, set it right
6. In „Measurements” tab enter the logger's name. Using „Temperature” and „Humidity” sections define the alarm thresholds for the minimum and maximum values of temperature and humidity that shouldn't be exceeded
7. In „Registration” tab set the start mode, the data saving frequency, and the action that is to be taken by the logger when the memory is full. If you want to set a delayed start, enter the time and date the logger should activate itself
8. Go back to „Measurements” tab in order to check if the start parameters are correct (actual logger status). If they aren't, enter the correct data
9. If you chose the device will be started by a computer, activate it using the „Start” button
10. Exit LogSoft program, unplug the logger from the adapter and locate it in the room you want it to monitor temperature and humidity in

11.If you chose to start the logger form a computer or with a delay, it will just start taking measurements according to the saved settings automatically. If you chose to start the logger with a button, you have to manually activate it by pressing the „GO” button and holding it for a few seconds.



Press here and hold for at least 3 seconds until the „LOG” message will appear on the screen.

The „LOG” message displayed on the screen means the device is activated and already taking and saving measurements.

Logger's operation

The first measurement is taken and saved in the logger's memory just after the first device's switch on. Next measurements are made and saved according to the frequency set in the „Registration” tab. The actual status of the device's operation is shown on the display. When the logger works a „LOG” message will be visible on the screen. If the device is switched on but not taking measurements a „WAIT” message will be shown.

There is always a single value displayed on the screen, from which you can start browsing another values by pressing the „GO” button. They are in turn as follows:

- actual temperature
- actual humidity
- the lowest registered temperature value
- the highest registered temperature value
- the lowest registered humidity value
- the highest registered humidity value
- previously set minimum temperature treshold
- previously set maximum temperature treshold
- previously set minimum humidity treshold
- previously set maximum humidity treshold
- battery weraing percentage

If a value exceeds the set threshold you will see an arrow pointing up or down at the left from the digits. This indicates the kind of a value that has been exceeded (minimum or maximum). If a value equals the extreme threshold, there will be a „MIN” or „MAX” message displayed in the upper part of the screen to indicate that. When displaying the value of the threshold, you will see both: MIN or MAX message and an arrow pointing up or down.

How to stop the registration process?

To end registration follow these steps:

- 1.Plug in the adapter to your computer
- 2.Connect the logger with the adapter
- 3.Start your computer and launch LogSoft program
- 4.Using the program choose a USB or COM port
- 5.Check if the logger is currently working. Press „Stop” button to end data registration
- 6.Choose the „Results” tab and then press the „Start anew” button and wait for the data to download
- 7.Go through the saved values, display them as a chart, save as a txt file or print, according to your needs
- 8.Once you stopped the logger, it will store the data in its memory until registration process is restarted

Recording can be stopped also with the button "GO".

When starting up the LogSoft programme and opening a new tab, one needs to tick the method of starting up with the key on logger.

The recorder can be stopped/ started (by pressing the GO button for three seconds) only when the method of activating the registration with the button is chosen.

The stopped logger can be activated again when it is placed in the USB scanner.

Caution!

The level of battery charge for a new battery should be 100%. Please, remember that the battery in low temperatures (-20 degrees for example) loses its properties and the device will run for a shorter period of time.