OPERATING INSTRUCTION
TERMIO-1, TERMIO-2, TERMIO-15, TERMIO-31

Table of Contents

1. General Information

Data loggers features:

- **measuring in °C**
- **resolution 0,01°C**
- **display min/max readings**
- **low battery indication**
- **high accuracy**
- **hold function**
- **measurement frequency Termio-2 -30 sec.- maximizing battery life**
- **recording indication**
- **visual inspection shows if limits exceeded**
- **recording turning on directly from a button from calendar/clock or from caomputer**
- **sample rate Termio-1 and Termio-31: from 1 sec**
- **sample rate Termio-2 and Termio-15 : from 1 min**
- **memory 32 000 data**

Termio-1/2 is as standard supplied with stainless steel ST-05 probe.

Termio 31 is equipped with MiniTherma socket. It allows the User to change the K type thermocouple.

Dataloggers range:

Termio-1   **from -50°C to 300°C**

Termio-2   **from -50°C to 300°C**

Termio-31   **from -200°C to 1400°C**

Data logger Termio-15 with internal sensor:

Termio15   **from -30°C to 70°C**

NOTE ! There are probes which can`t be used in whole range of temperature

Customized probes to datalogger Termio 1 / 2 / 31 availabe on request.

Data logger is connected to computer via USB reader.

Software Logsoft (for free on : http://www.termoprodukt.com.pl/en/download) allows :

- programme the logging interval rate, the real-time clock , thresholds, after filing memory rewriting or stop
- display datas as graph and table and print them
- save datas in txt or pdf format
- programme delayed start from clock/calendar or start from button

Data logger Termio 1 /2 / 31 / 15 has Bootloader program inside, which allows update device.
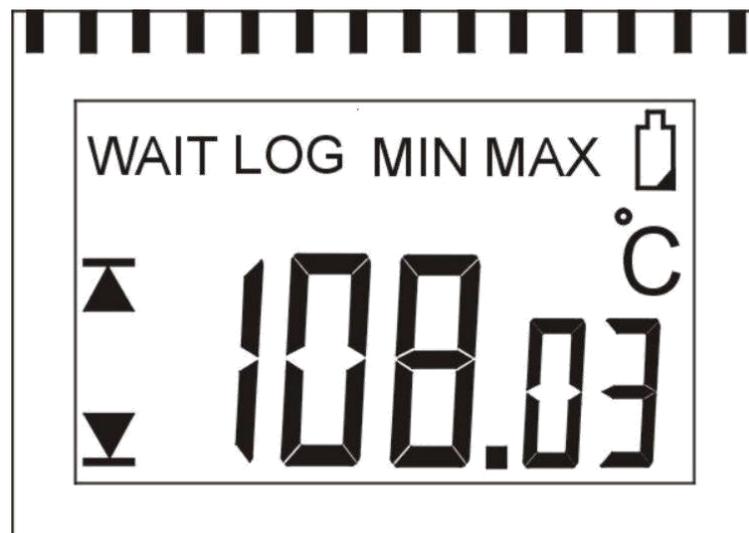
2. Technical data

Temperature range Termio 1 /2	**-50 to + 300 ° C**
Termperature range Termio-15	**-200 to 1400 ° C**
Temperature range Termio-31	**-200 to 1400 ° C**
Resolution Termio 1 / 2 / 15	**0.01 ° C**
Resolution Termio-31	**0.1 ° C**
Accuracy Termio 1 / 2	**in the range from -10 ° C to 100 ° C - / + 0.07;** **in the range from 101 ° C to 150 ° C - / + 0.15**
Accuracy Termio-15	**- / + 0.4 ° C**
Accuracy Termio-31 with ST-01 K probe	**-/+0,6°C or better in range from 0°C to 200°C**
Memory	**32,000 readings**
Sample rating interval	**Termio 2/15 from 1 minute ;** **Termio 1 / 31 from 1 sec**
Measurement frequency Termio 2/15	**30 sec**
Start/Stop recording	**from button or from clock, adjustable delayed start or end**
Dimensions	**45 mm × 100 mm × 19 mm**
Protection	**IP65-electronics**
Power	**1x lithium battery 3.6V (1 / 2AA) included**
Weight	**85g**
Interface	**USB**

3. Produkt Desctription

Device is housed in ergonomic ABS plastic case, resistant to dust, dirt and water (IP 65).

LCD display :

- low battery indication (right upper corner)
- current measuremnt reading
- min/max temperature values
- threshold exceeded (down and up arrows)
- registration indication (LOG), registration stopped (WAIT)

Temperature data logger has two buttons, one for starting registration (START) one for stopping registration (STOP). At the bottom of device is place to cannect it to USB reader.

4. Logsoft – Installation

To make installation software Logsoft :

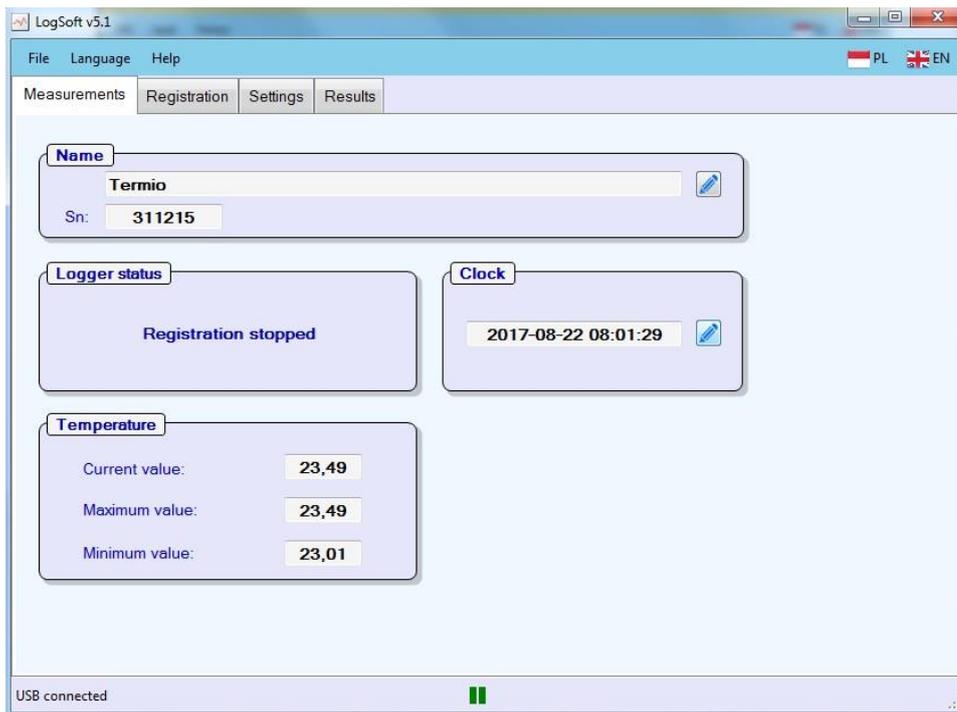- connect USB reader/ logger cradle to USB port in your computer
- download full version of Logsoft from Termoprodukt website http://www.termoprodukt.com.pl/en/download
- install the Logsoft

USB reader/ logger cradle is automatically detected by Windows 7 or newer versions of Windows.

USB reader/ logger cradle has FTDI unit which is automatically updating.

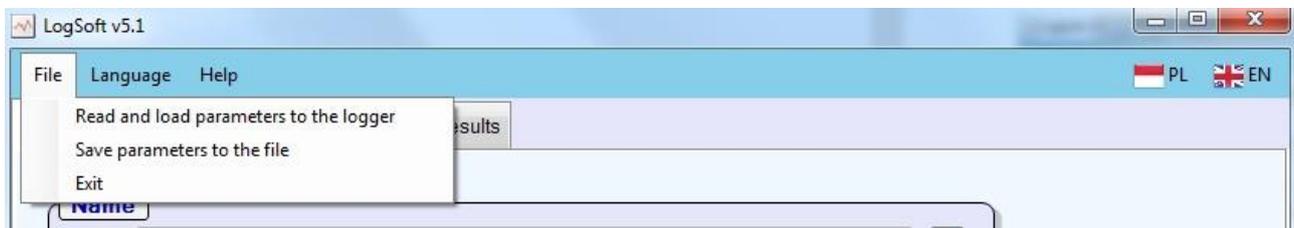**NOTE ! USB reader/ logger cradle doesn`t work with Windows XP.**

5. Logsoft – Start

After starting software Logsoft you can see main application widows which contain basic data logger information. If device is properly conected to USB reader informations will be automatically shown.
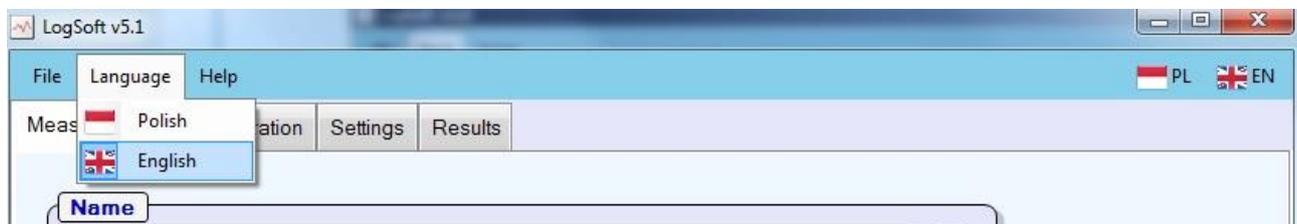
At the top of the windows you can see 3 tabs which are:

File:
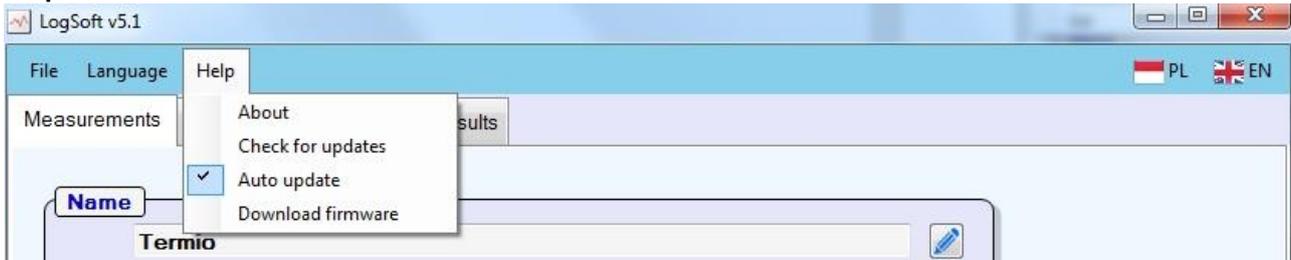

„Read and load parameters to the logger" , „ Save parameters to the file" - two of them allow to program more loggers with the same settings as registration, thresholds etc.

Language:

To choose English or Polish language

Help:

About - information about Logsoft version
Check for updates - to check the newest Logsoft version
Auto update - to make Logsoft updating automatically
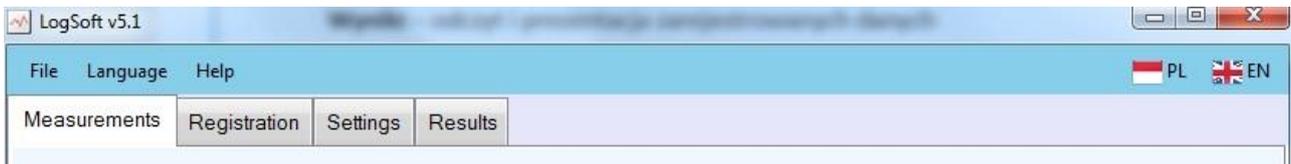**Download frimware** - to change logger software

Main part of windows depends on Tab which is chosen :
Measurements – basic logger information
Registration – registration parameters
Settings – thresholds parameters
Results – datas reading and seaving

There is connection beetwen logger and Logsoft shown in the middle of bottom part of windows as status bar. If there is no connection status bar is stopped.

6. Logsoft - Measurements

After opening Logsoft first tab which is seen is Measurements tab. Measuremets tab contains basic logger informations. Informations are in „frames" which contain:
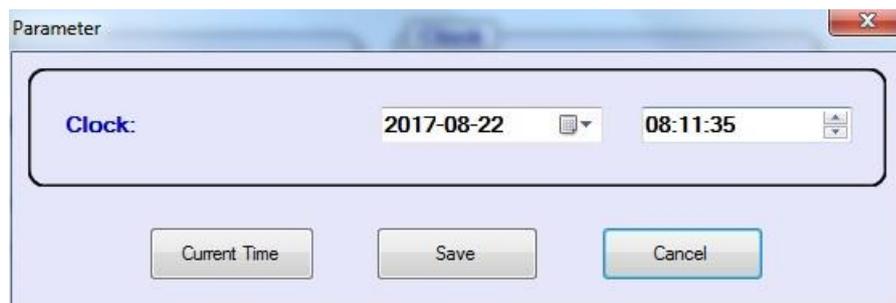Name – logger name chosen by users
Logger status – connect or disconnect, Registration stopped or launched
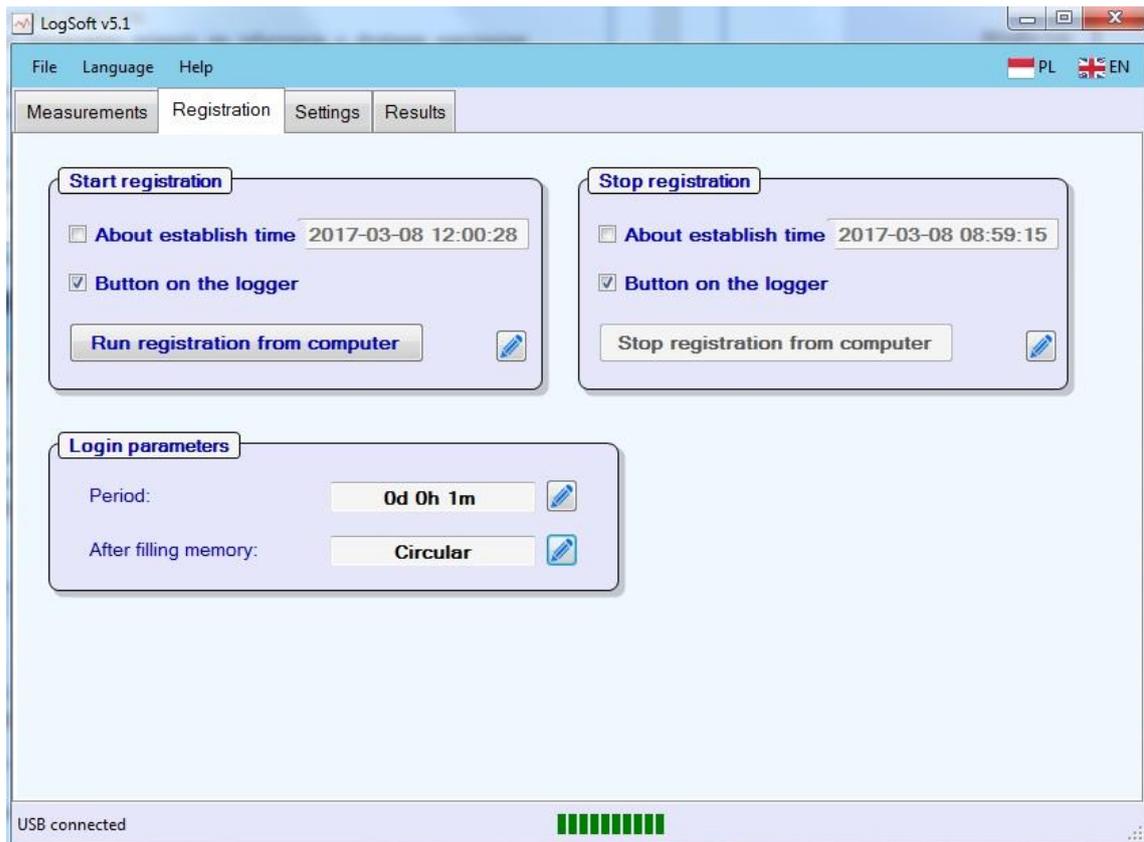Clock – actual logger time
Temperature – current temperature, min and max registered values
When registration is started in Logger status is Registration launched if not Registration stopped
In Clock windows there is Current time button to set current time

7. Logsoft - Registration

When registration is started there is no chance to change any settings. There will be windows with information of inability of changing.
NOTE! Before changing settings registration has to be stopped

There are few ways to start and stop registration. Each time when registration is started and stopped there is new file with datas created.
Registration tab contains few frames Start and Stop registration and Login parameters.
Registration can be started:
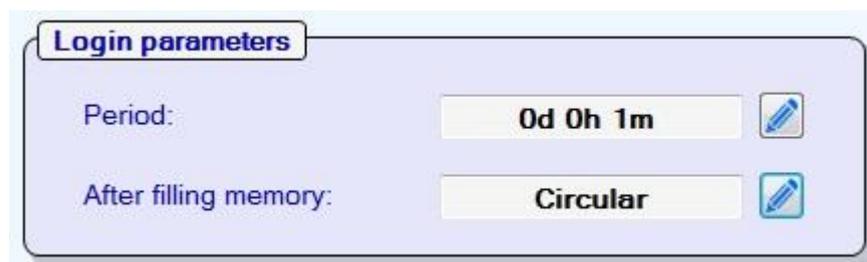About estabilish time – on estabilished date and time
Button on logger – by pressing button START on logger for few seconds
Run registration from computer – start directly from computer

There is **LOG symbol** on display when registration is sterted.
Registration can be stopped about estabilshed time, **by button STOP** on logger, directly from computer – this stops registration in any case.
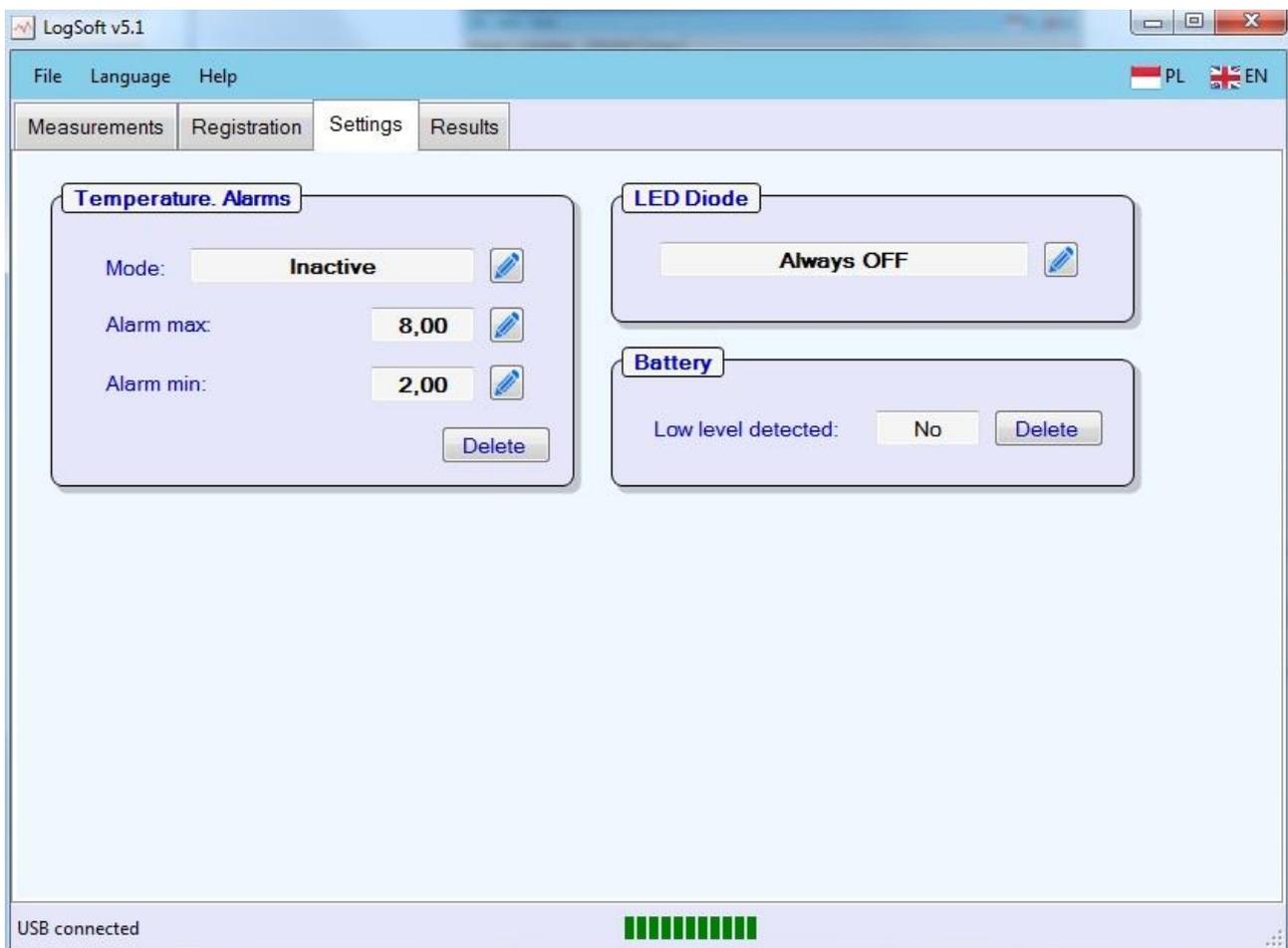There is **WAIT symbol** on display when registration is stopped.

Registration interval can be chosen in days, hours, minutes and secondes.

Termio-1 and Termio-31 interval is from **1 sec. Termio-2 and Termio-15** interval is from **1 min**.

Measurements frequency for Termio-1 and Termio-31 is twice a seconds. Battery life with interval 10 min is about 3 months.

Measurements frequency for Termio-2 and Termio-15 is twice a minute. Battery life with interval 10 minutes is about 12 months.

Data storage method is selected in Login parameter box: After filling memory – single run to stop when memory is full or circular to overwrite the oldest datas.

8. Logsoft – Settings

There is ability of set thresholds in Setting tab in Temperature. Alarms frame. After exceeded min and max thersholds/ Alarms arrows appeare on display and red LED blinks. Battery level is monitored.
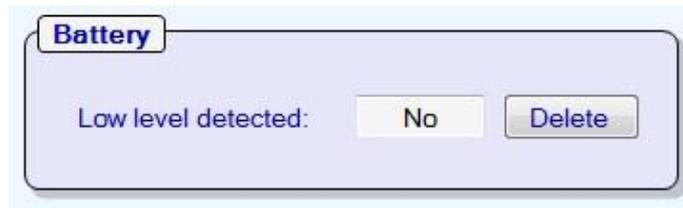
Alarms can be Inactive , Always active or Active when logging

NOTE! Active red LED makes battery unload faster

Deleting battery symbol :

Blinking battery symbol on display indicates low battery level.
There is possibility of showing blinking battery symbol after changing battery to new. To delate this symbol choose Reset in Battery frame.

9. Logsoft - Results

After choosen Read in Result tab all registered datas will be reading. Reading takes few seconds. When there is 32000 datas recorded reading can takes about 40 sec. Datas are shown from the oldest to the newest.

After reading datas there are available files with data. Each time when registration is started and stopped new file is created.

NOTE! When press Delete all datas will be removed

Datas can be saved in txt and pdf format and processing in e.g. Excel

Example of datas saved in txt format

0001	2013-09-02	11:59:14	20,67
0002	2013-09-02	11:59:15	20,66
0003	2013-09-02	11:59:16	20,67
0004	2013-09-02	11:59:17	20,67
0005	2013-09-02	11:59:18	20,68
0006	2013-09-02	11:59:19	20,67
0007	2013-09-02	11:59:20	20,67
0008	2013-09-02	11:59:21	20,67
0009	2013-09-02	11:59:22	20,66
0010	2013-09-02	11:59:23	20,67
0011	2013-09-02	11:59:24	20,67

Kolumn in a row : ordinal number , day , hour . temperature
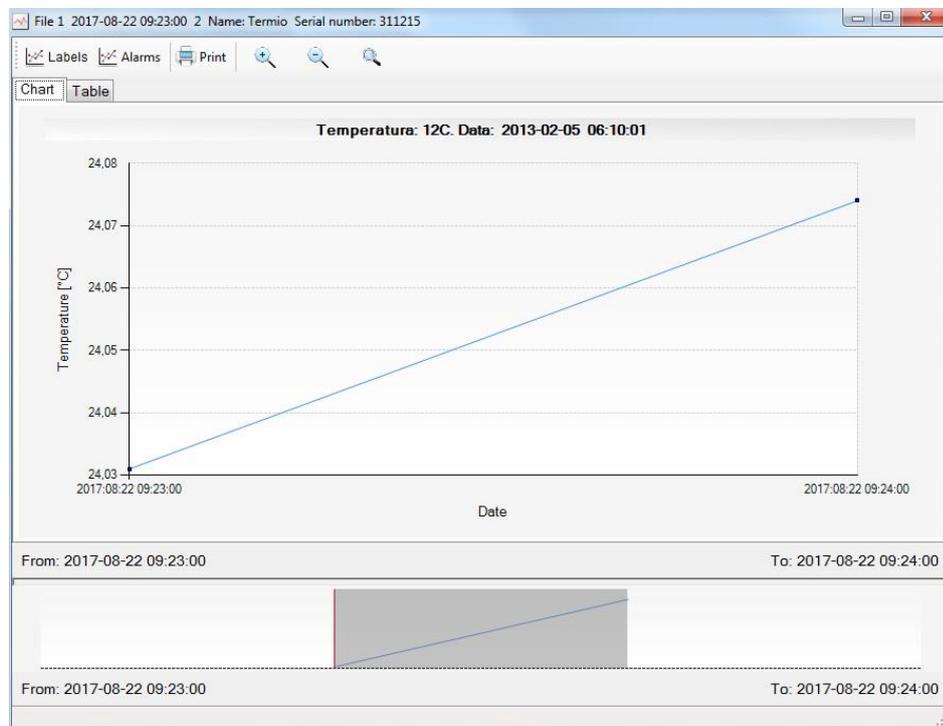
Example of datas saved in pdf format

```
Name:           Termio
Serial number:  311215
Start:          2017-08-22 09:23:00    Stop:    2017-08-22 09:24:00
Period:         0d:0h:1m:0s
Save date:      2017-08-22 09:43:23
User name:      Edyta
```

Lp.	Date	Temperature
1	2017-08-22 09:23:00	24,03
2	2017-08-22 09:24:00	24,07

Example of datas as graph/chart

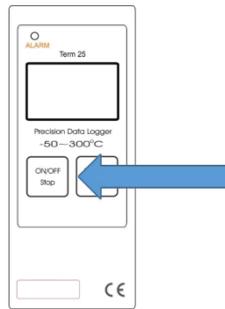

10. Starting registration

To start registration :

- Put logger into USB reader
- **NOTE ! USB reader works with Windows 7 system or newer**
- System Windows should have access to internet to updating reader unit FTDI
- Turn on computer and start Logsoft
- Check time on logger in Measurement tab and set current time if it is not set
- Set logger name in Measuremnts tab
- In Registration tab set interval, way of starting and stopping registration, circular or single run. When start is from clock, set date and time from which registration will start.
- Set thersholds in Settings tab. (not necessery, optional)
- Close Logsoft, disconnect logger from USB reader and put in place of measurements.

- Data logger starts registration automatically about estabilished time and from computer, When way of starting is from button on logger press button for few seconds for starting registration. On display should be symbol LOG when registration is started.

When stop registration is from buttom press button STOP for few seconds, on display should appeare symbol WAIT what means registration is stopped.

11. Registration

First data is registered to memory when registration is started. Every measuremnt is registered with interval frequency. When registration is started symbol LOG is on display. When registration is stopped symbol WAIT is on display.
Button min/max/hold allows for:

- hold current temperature – hold function
- display max registered temperature
- display min registered temperature

Data logger can be turn off by button ON/OFF in WAIT mode.
NOTE! When registration is started there is no possibility of turning logger off

12. Changing the batteries

Battery symbol on display means that battery has to be change.
After battery changing battery symbol can be still on display in this case put logger into USB reader and delete it in Settings tab.

Appearing on display only battery symbol means logger does not work and battery has to be change.