Software for
USB devices made by Cleware

User Manual

Version 4.0.0
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Contents

1.Introduction

For operation of the Cleware devices some Windows programs are included in the distribution. These programs allow a very simple ans easy controlling of the devices. The major program is ClewareControl to control all kind of devices with one program. Also included are some small programs for specific tasks.

The following programs are available:

USBAmpel	Small program driving USB-Trafficlights
USBswitch	Simple program for controlling the USB-Switch
Example	DOS application for USB-Temp und USB-Switch
USBswitchCmd	Comfortable DOS application handling switches and the like
USBTemp	DOS application transfers sensor data to file
ClewareControl	Control program for all devices, supports runnig as service

The definition which program should start after logging in is done in the start dialog of ClewareControl (see chapter 7). The default setting will start only ClewareControl. Cleware devices may also be controlled by a service program running unattendend in the background. The configuration is also done in the start settings. Windows 98 does not support services

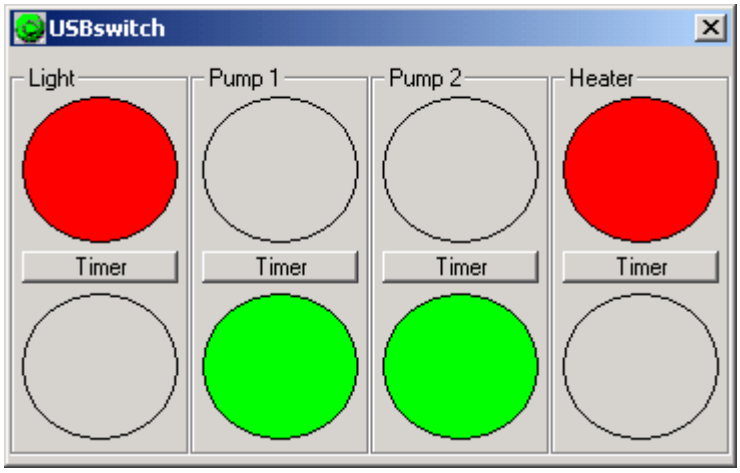
New in Version 4.0.0:
The integration of the USB-TrafficLight (USB-Ampel) in ClewareControl was redesigned to ease the use as an alarm indicator for sensors or events. It is now possible to let the USB-TrafficLight indicate the state of several sensors.

ClewareControl mirrors the device status in the registry. Accessing temperature or other states is now possible though by reading the registry. Turning the USB-Switch and the like is also possible just by writing to the registry.

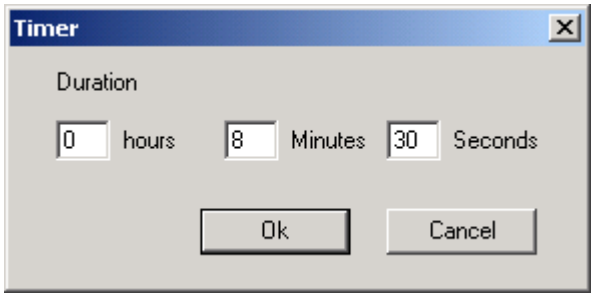
USBswitchCMD has got a lot of new options, including some for interval switching. The access through the registry is also supported for extremly fast switching.

2.USBswitch control program

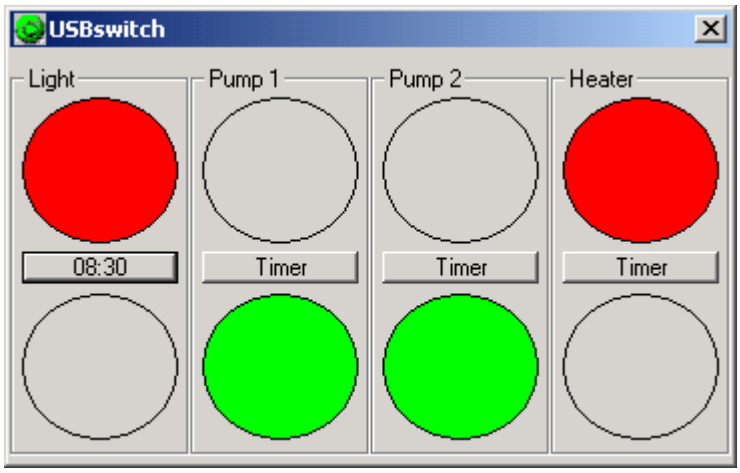
The little application „USBswitch“ implements a simple control of the connected USB-Switches. When starting the application a little window shows the state of the switches. Red and green circles indicates off and on states. Clicking on the inactive circle changes the state.



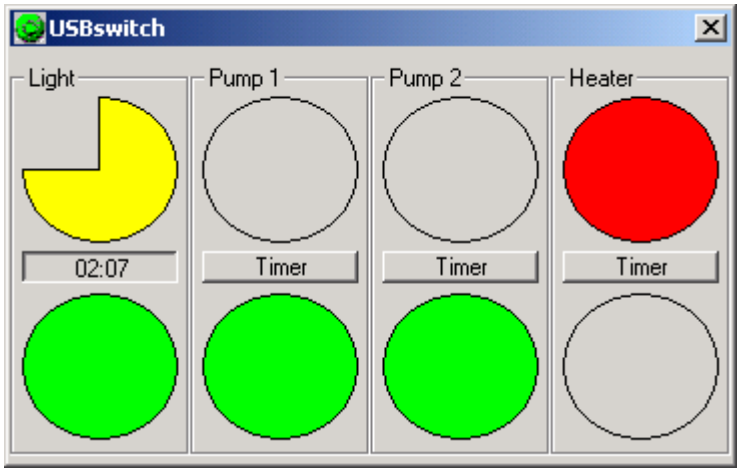
USBswitch supplies a timer functionality for the connected switches. The button “Timer” is used to set the time after which the switch is automatically turned off. The dialog look like this:



USBswitch displays the timer setting in the corresponding timer button.

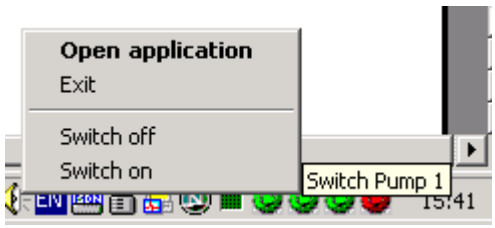


When the switch is turned on with the lower signal button, the time runs backwards to 00:00:00. Then the switch is turned off. To show the state of the timer, the upper signal shows a yellow pie in a size corresponding to the used time. With the settings above the interface looks like this 2 minutes and 7 seconds before the switch is turned off:



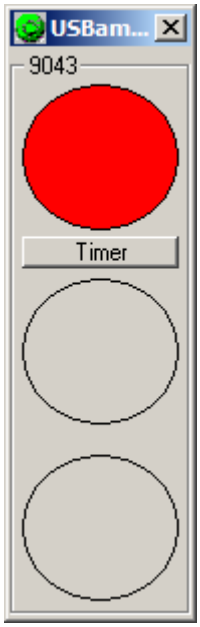
Every switch has it's own timer which runs independent.

When closing the window the application will minimized to the system tray. Every connected USB-Switch will be represented by an individual right colored icon. Switching from the system tray is done by clicking on the right mouse button an choosing the correct entry.



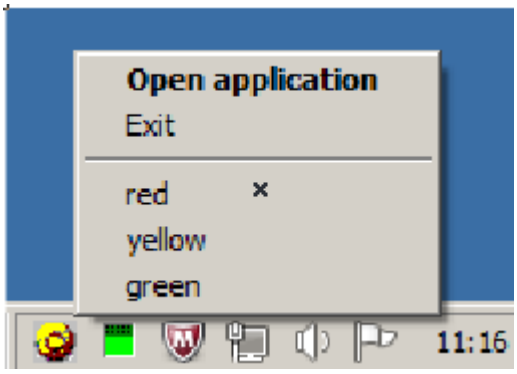
The names of the switches are assigned by the application „ClewareControl" described later on.

3.USBampel – a simple traffic light control

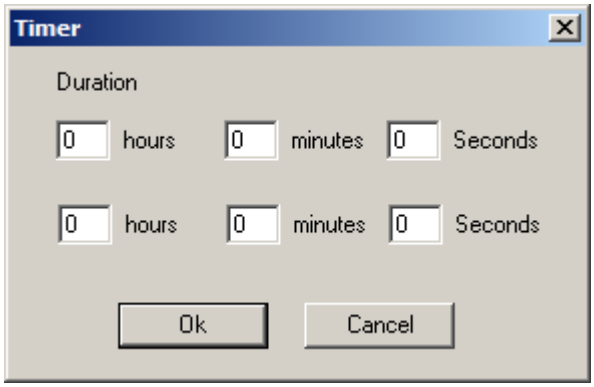


The application USBampel is a special version of the USBswitch program, specialized to control our USB traffic lights. All three lights are handled as a single device. When one light is turned on, the other two light are automatically turned off.

The display and handling on the system tray is also simplified.



When using the timer, the traffic light device added a second timer. The upper line in the timer dialog defines the rime to pass before the green light turns into yellow. The second line is the time definition from yellow to red.



4. Command "USBswitchCmd“

The little program “USBswitchCmd“ allows a very simple control of an USB-Switch. The sources are supplied in the API.

When “USBswitchCmd” is called with the Argument “0”, a connected USB-Switch is turned off. If the Argument is “1”, it is turned on. The following arguments are supported:

USBswitchCmd [-n device] [0 | 1] [-d] [-s] [-r] [-t] [-I nnn] [-I nnn] [-p t..tn] [-v] [-h]

-n device	use USB-Switch with this serial number
0 | 1	turns switch off(0) or on(1)
-d	print debug infos
-s	secure switching - wait and ask if switching was done
-r	read the current setting
-t	reseT the device
-# switch#	select switch for multiple switch device, first=0
-i nnn	interval test, turn endless on/off and wait nnn ms between state change
-I nnn	interval test, turn once on/off and wait nnn ms between state change
-p t1 .. tn	pulse mode, turn the switch n times for a 0.5 second time period on, the time between the pulse is defined by t1 t2 t3 .. tn in seconds
-v	print version
-h	print command usage

Example:
1. Turning the third socket of the USB-Switch 3 on
   USBswitchCmd 1 -# 2

2. Using an USB-Switch 3,5” to control a fireworks battery. These devices needs a short key press to initiate the next shot.
   USBswitchCmd -p 1 4 5 1 12 7 8 12

5. Command „USBtemp“

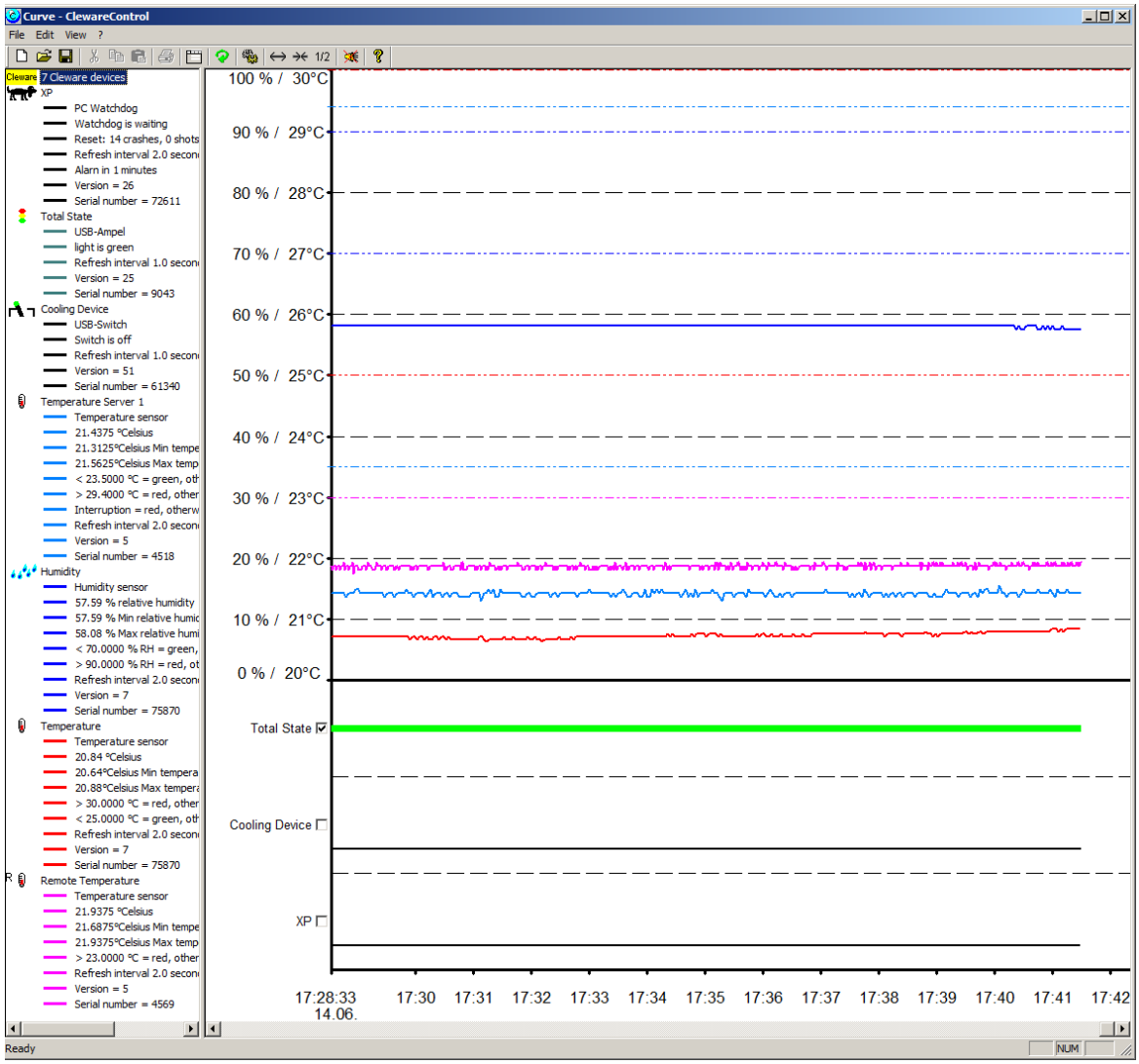
The program „USBtemp“ (sources in API) reads values from temperature or humidity sensors and writes them to a file.

USBtemp [-o filename] [-o+ filename] [-s serialnumber] [-d] [-h] [-i timeinterval]

-o filename	write to this file
-o+ filename	dito, but appends to the end of file
-s serialnumber	get data from this device
-i interval	between two samples in seconds
-b	return only one value and exit program
-d	print debug infos
-h	print command usage

6.ClewareControl

Every Cleware USB device will be configured and controlled by the application “ClewareControl”. It will also do the visualisation of values received from the devices. The program window splits into two major windows. In the left tree based window the connected devices and their properties are listed. The right data window displays temperature curves and switch state diagrams. Please find below a sample with five devices (2 x USB-Temp, USB-Switch, USB-Contact and USB-AutoReset).



The entries in the state window on the left shows the following:


sensor name
- device type temperature sensor
- Current temperature
- minimale detected temperature
- maximal detected temperature

or


sensor name
- device type humidity sensor
- Current relative humidity
- minimale detected relative humidity
- maximal detected relative humidity

or


switch name
- device type switch (single phase net switch)
- current switch state

or


contact name
- contakt type (Contakt)
- current contakt state

or


Watchdog name


AutoReset name
- device type USB-Watchdog
- current watch state
- number of activations initiated by timeout ior command
- time to alarm/reset in minutes and time the the second alarm or with the USB-WatchLight the time for turning on the red and yellow light in seconds

or


Traffic light name
- device type USB-Ampel
- current light state

All devices share the following entries
- switch points (if any defined)
- refresh interval
- version of the device
- serial number of the device

To keep a good overview over many connected devices, the property lines could be suppressed. The view is toggled by double clicking the device name. In the compressed view only the name, the status and the curve color are displayed in a single line. When devices are found the first time, the display is expanded for temperature and humidity sensors. Switches and contacts will be shown in the condensed mode. Changes os the display mode will be saved and restored when starting ClewareControl next time.

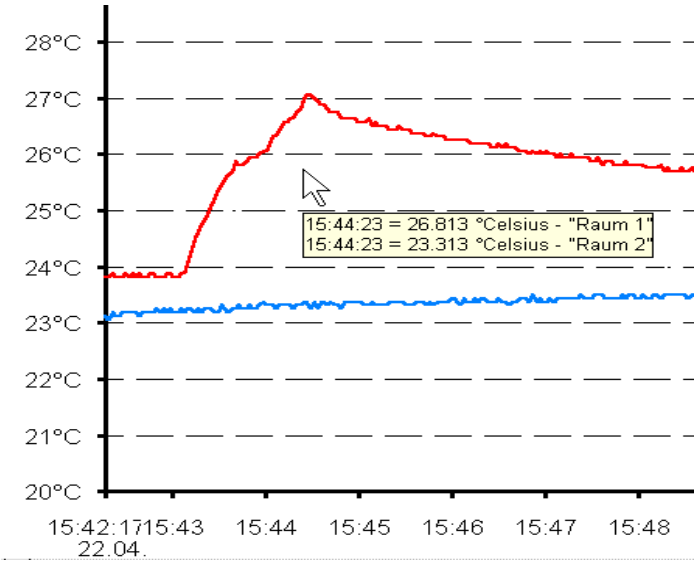
A double click on the current status will start an immediate action depending on the kind of device. The USB-Temp will causes an immediate call for new temperature data no matter of the state of the refresh interval. A double click on the switch state changes the switch state. The button drawn on the left side of the right window next the USB-Switch state diagram could also be used to change the state of the switch.

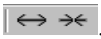
When double clicking the state of an USB-Watchdog or USB-AutoReset, a little dialog opens to select the appropriate action. The dialog is shown below. If the guard is already triggered the double click restarts the sending of life signals to return the device to normal operation. Like the USB-Switch the action could also initiated by pressing the button next to the state diagram in the right ClewareControl window.

If “Set Cleware event” is selected, an error event named “ClewarControl” with the event number 16 is entered into the event log when the Ok button is pressed. If the selection was “Send Reset command”, the reset command will be send immediately to the guard.

The recorded values can be stored for later display with the menu „File“->“save“ and „save as“.

When moving the cursor inside the data window while pressing the let mouse button, the values next to the cursor position will be displayed. This will help to get information about a specific time.



The time scale could be compressed or expanded with the menue point “View”->”increase/decrease view” or with the buttons  .

The recorded values could also be printed. The print out will use the same time scale as the data view.

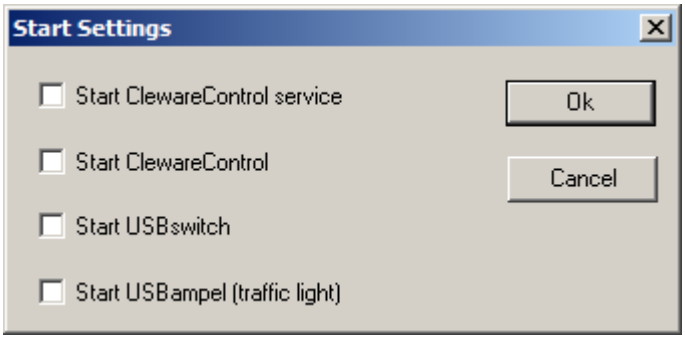
The display may be refreshed with the button to find new devices. Remote devices will be added automatically.

Version 4 Traffic light control redesign: The USB-Traffic Light is expected to show the state of all sensors connected. To achieve this behavior the traffic light control was redesigned. The traffic light devices control themselves the actions of the connected sensors. If one sensor indicates red alert, the red light is turned on. If no one signals condition red, the yellow state of the sensors will be checked. If anyone is in yellow state, the yellow light is turned on, otherwise the green light indicates “all ok”.

The sensors needs 2 action statements to control the traffic light condition. Example: An USB-Temp should go to yellow state when 25°C is exceeded and do a red alert after passing 35°C. The first statement is “green if the temperature falls below 25°C , otherwise yellow”. The second one is “red if 35°C are exceeded, otherwise yellow”.

7.Start Settings and ClewareControl running as service

The start dialog is implemented to choose the programs which should start when the user logs in (see below). The dialog is available in the „View“ menue of with the button .

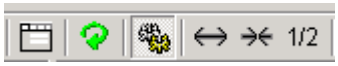


The lower three options will start the corresponding program at login time.

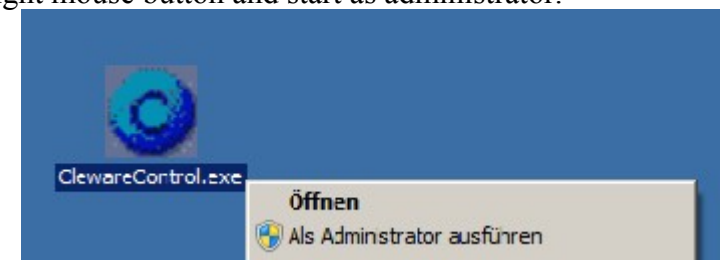
If the option “Start ClewareControl service” was choosen, the actions of the found Cleware devices or controlled by the Cleware service. The service will start after pressing Ok and will also start anytime the PC is bootet without the need to have somebody logged in. When changing actions with ClewareControl, these changes are send to the service immediately. To delete the service, just uncheck the check box and click Ok.

The Cleware service takes care of the actions and will also save values and settings to a file if this was choosen in ClewareControl. To save data from a service, the option “no acknoledge” in the system menue must be selected.

When ClewareControl is running as a service in the background, this will be indicated by ClewareControl with the state of the button  . The menue will look like this if the Cleware service is running:



Windows Vista and beyond: Starting with the Windows Vista version, the security concept was redesigned. This has two impacts on ClewareControl. The first difference is that the start of services needs administrator rights. To get these, go to the ClewareControl icon, press the right mouse button and start as administrator.

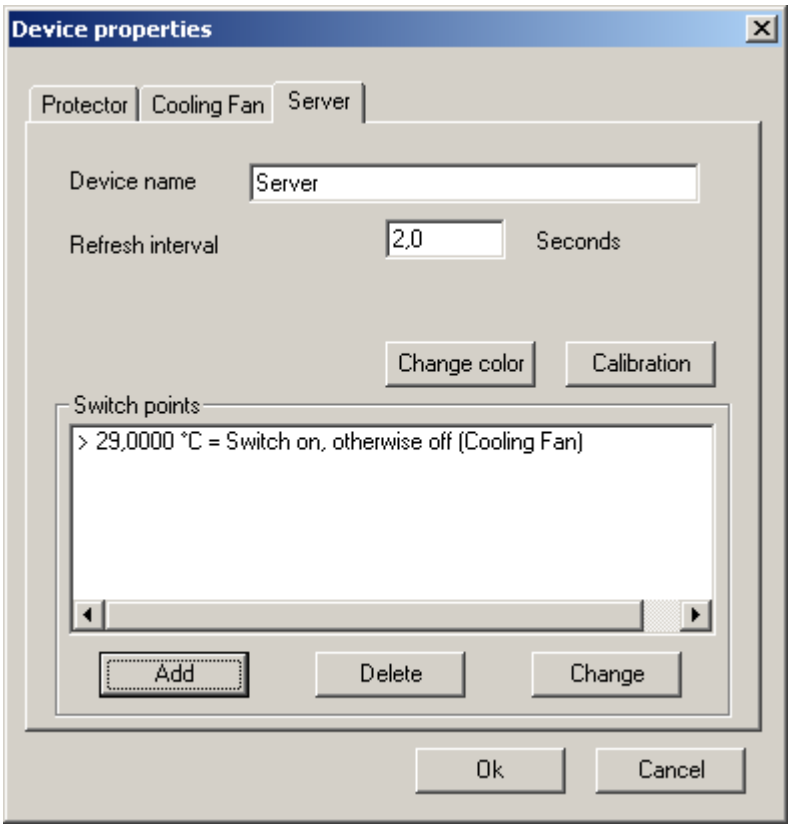


The second difference is the location of registry items. Beginning with Vista, every user stores ClewareControl properties in its own registry location, including the Administrator. This has the consequence that the settings must be redone in administrator mode before the service should be fired up. The better way to go is to allow the current user to access the system wide registry settings stored in HKEY_LOCAL_MASCHINE. This could be done this way:

1. Start ClewareControl once with Administrator rights
2. Open the registry editor “regedt32”.
3. Select “HKEY_LOCAL_MASCHINE->SOFTWARE->Cleware GmbH” with the right mouse button.
4. Choose the menu entry “permissions”
5. Press the “Advanced” button in the permissions dialog
6. Now click the “Add” button and add the current user.
7. Set “Full Control” in the permissions
8. close the dialogs with ok
9. From now on, all settings will be stored in one place.

8.Device Settings

The settings of the devices could be manipulated with the menue item “View”->”Device properties” or by pressing the button  .



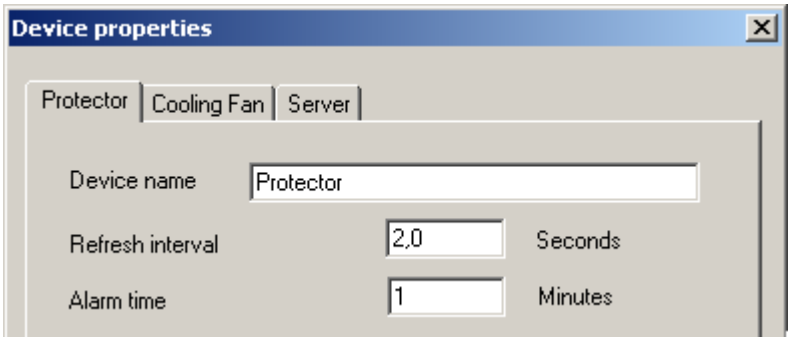
The device name used to identify the device in the display view of ClewareControl has to be unique. Default is the serial number. The color of the curve can be changed with the button “Change color”.

The acceptable refresh interval depends on the device type. For temperature sensors it must be in the range 1.5 to 3600 seconds. The refresh interval is the time between two probes. For most applications a refresh rate of 10 to 60 seconds is recommended.

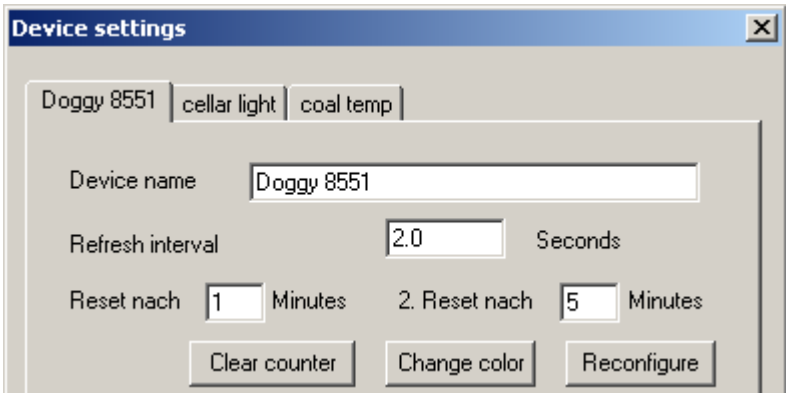
The minimum interval is 1 second in case of the USB-Humidity. The reading of the temperature and the humidity are shifted by half of the interval.

In the case of switches or contact sensors, the refresh interval decribes the time between to updates of the switch state. This is done on a regular basis, because some other application may have changed the state. The refresh interval for switches is valid between 0.5 and 3600 seconds. The minimal value for contact sensors is 0.1 seconds.

The USB-Watchdog shows an additional parameter, the alarm time. This is the time between the last signal send to the USB-Watchdog and the activation of the alarm. A Value between 1 and 10 minutes is allowed.



If a USB-AutoReset is connected, the second reset time could also be entered. The button “Clear counter” reset the device internal switch counter.

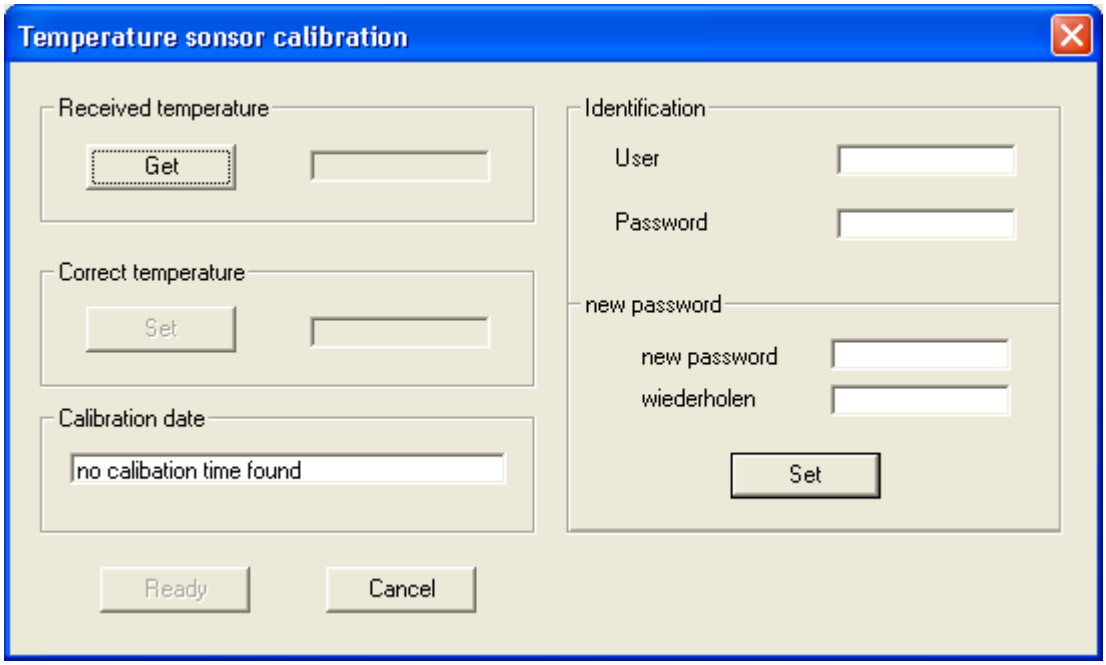


All setttings will be stored in the Registry, a Windows® database. This is done to restore the values when the program is started again. If the operating system is Windows 2000 or higher, the place to store the registry items depends on the existence of administrator rights. If the user got these, the vales are stored in “HKEY_LOCAL_MACHINE”, otherwise in “HKEY_CURRENT_USER”.

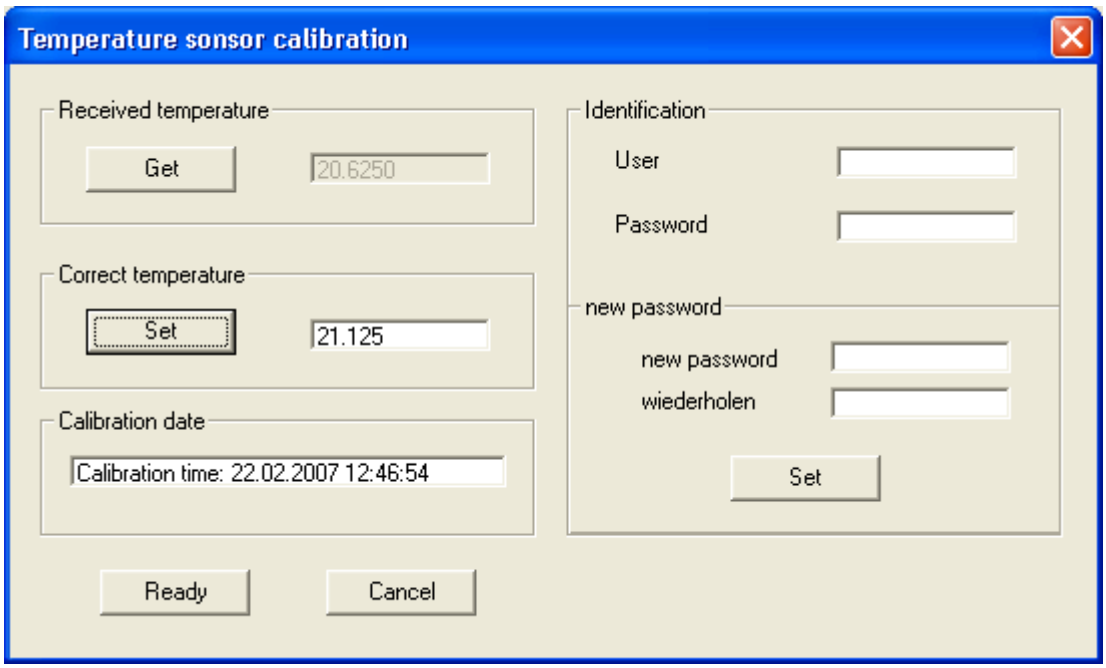
Other device settings are described in the following chapters.

9.Calibration (Sensors)

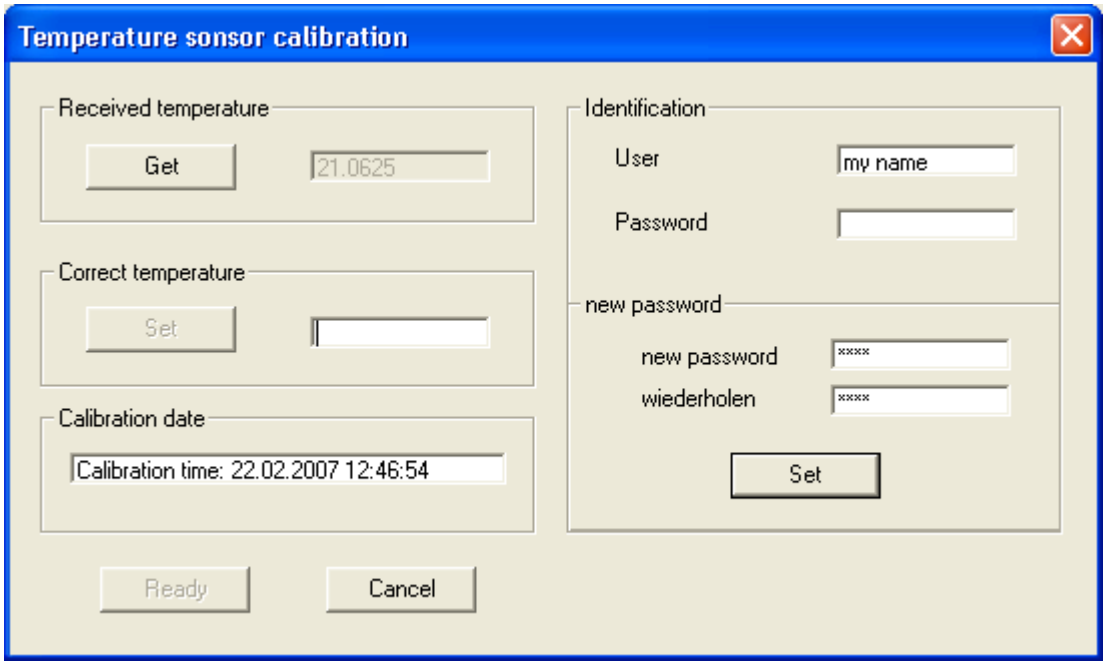
If the temperature of the USB-Temp2 is not correct, the sensor could be recalibrated. This is done by pressing the button “Calibration” in the device properties. A new dialog shows up:



First the current temperature must be fetched by pressing the button “Get”. Then the correct value must be entered in the field next the “Set” button. The calibration will be done when in the third step the button “set” was pressed. These three steps may be repeated to get a higher accuracy.



When the result is acceptable, the dialog could be closed with the „Ready“ button. Before starting the calibration it is recommended that the corresponding temperature curve is horizontal for a longer period. The calibration is done inside the sensor and is independent from the used PC.

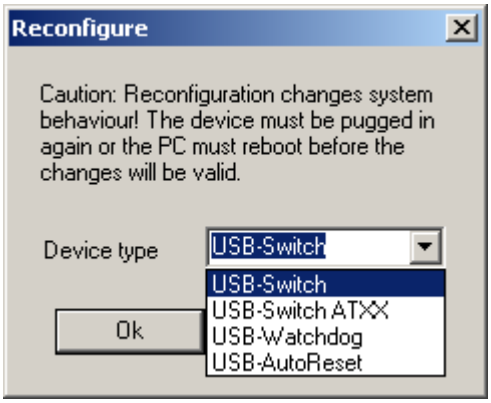


Tha calibration may be protected by setting a password in the fields on the right side. If the password is set, another calibration is only possible if the password filed contains the right password. For information purposes the name of the user may be set in the user field.

The USB-Humidity needs no calibration, because this high precision sensor was exactly calibrated in the factory.

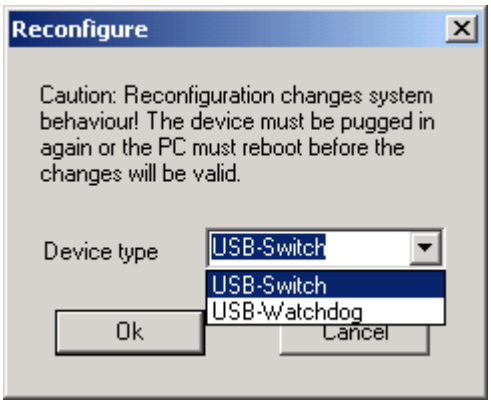
10.Reconfigure (USB-Switch or USB-AutoReset)

Starting with version 14, theUSB-Switch and USB-AutoReset could be reconfigured via Software. An USB-Switch could be configured to behave like an USB-Switch ATXX, an USB-Watchdog or an USB-AutoReset. When clicking the button “Reconfigure”, the followong dialog appears:



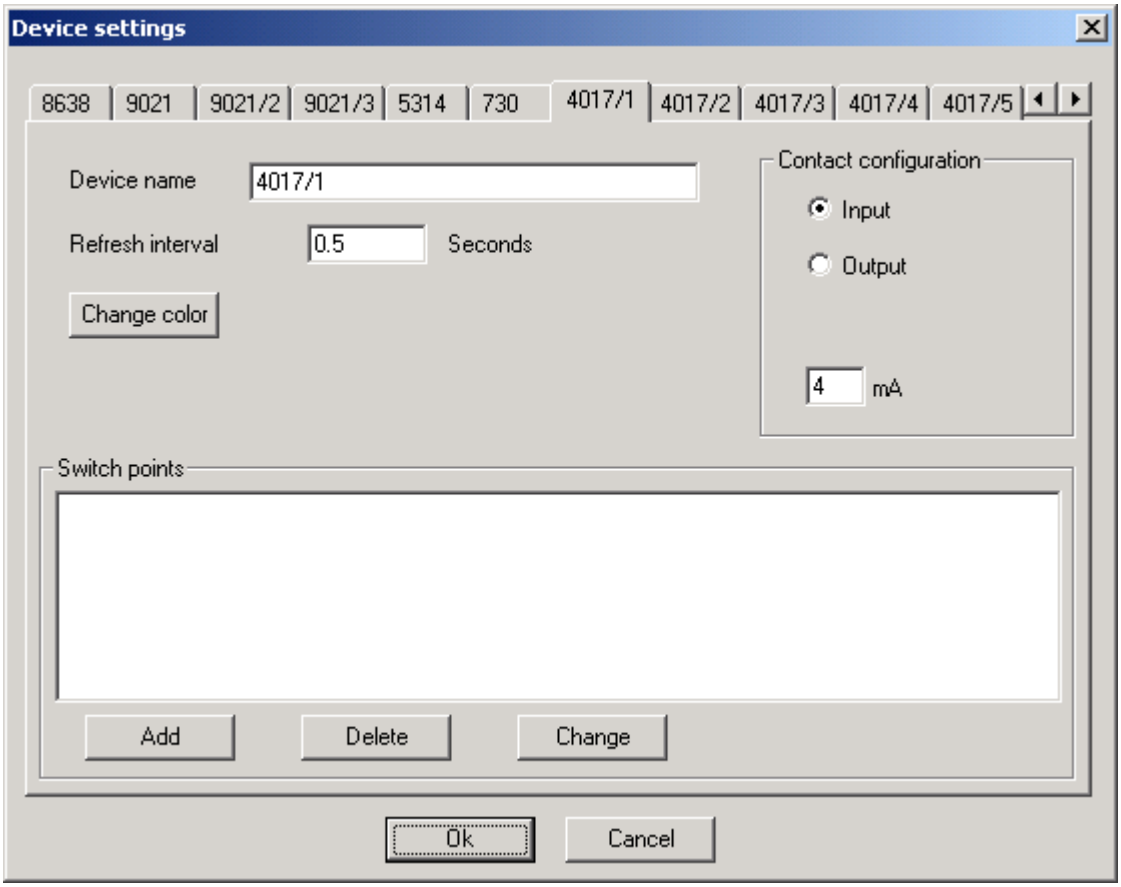
The new behaviour will be valid after repowering the device. This should be done by turning the PC off and on. **Please note:** the watchdog and autoreset function is not present in new USB-Switch devices (version 50 or newer).

The device USB-Ampel (version 25 or higher) could also be configured to behave like a kind of watchdog. The dialog will look like this:



11.Configuration of the USB-IO16

The USB-IO16 houses 16 independant channels, which could be defined as input or output. This is defined also in the device settings.



When the device is running the first time with the PC, the names of the channels are set to the serial number and the channel number (e.g. 4017/1). Located on the right side of the dialog is the definition of the channel direction. These setting is transmitted to and stored in the USB-IO16. It is thus defined even if the device is connected to a different PC.

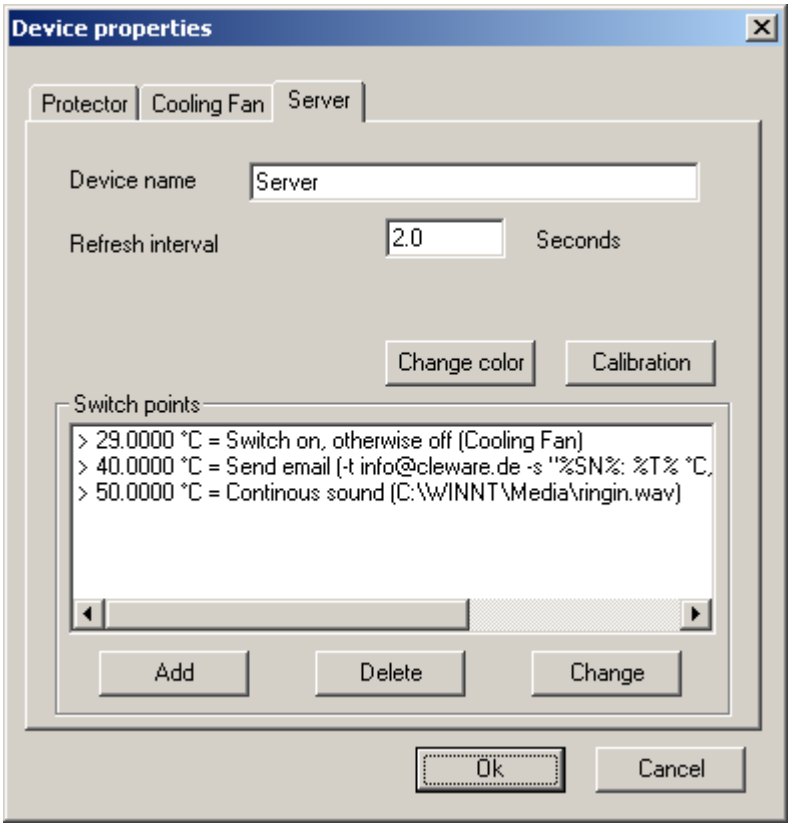
If the channel is defined as an output, the maximun currentis expected. This value is of no meaning to the real device. In fact it is just used to calculate the output current of all output channels. The total is checked not to exceed 160 mA-

The first channel has the ability to define the refresh interval, which is used for all channels.

12.Switch Points (Sensor Actions)

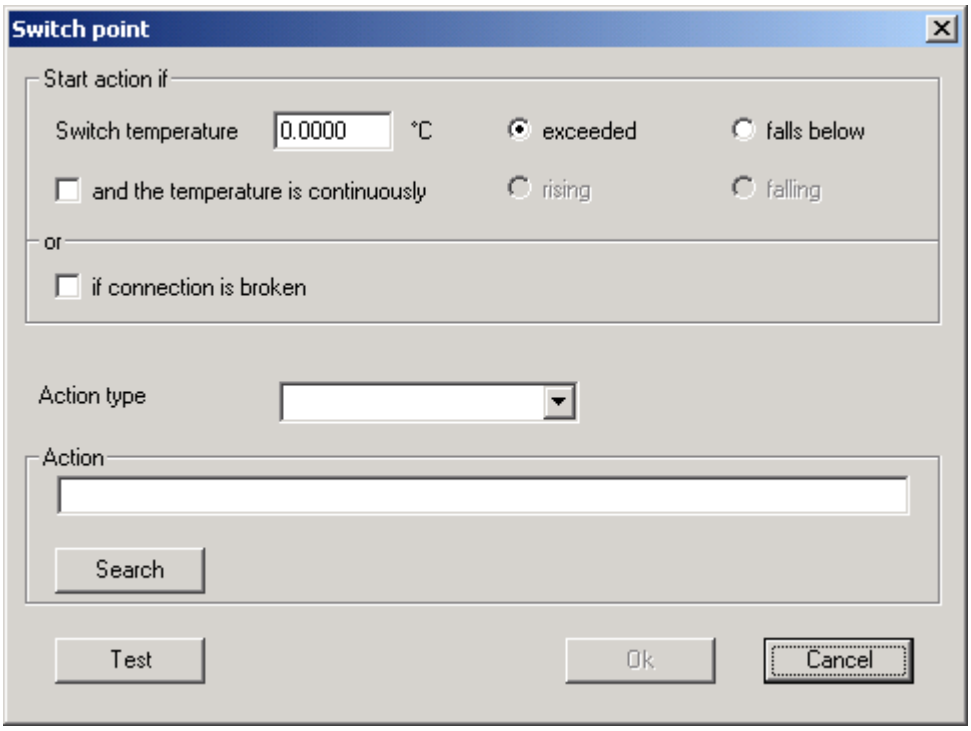
If the measured temperature is bejond a defined limit, different actions could be initiated by ClewareControl. These temperature limits are called switch points. Every sensor may define up to 256 different switch points.

Switch points will be added by pressing the button „Add“ in the device settings. When a switch point is selected in the list of switch points, this switch point can be deleted with the “Delete” button or modified by either pressing the “Modify” button or double clicking on the item in the list.



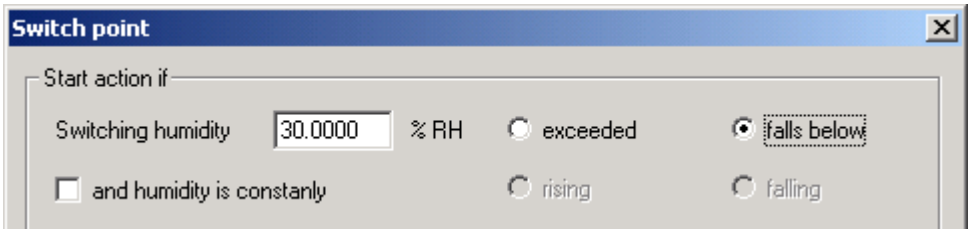
Different actions may be defined at the same temperature. Every action will be taken which condition is true. Once taken the actions point will be deactivated until the condition changes again. So if an eMail will be send at 40 ° C, it will be send only once. It will be send again, if the temperature goes below 40 ° C and exceeds it again.

When pressing the „Add“ or „Modify“ button, the following dialog will show up:



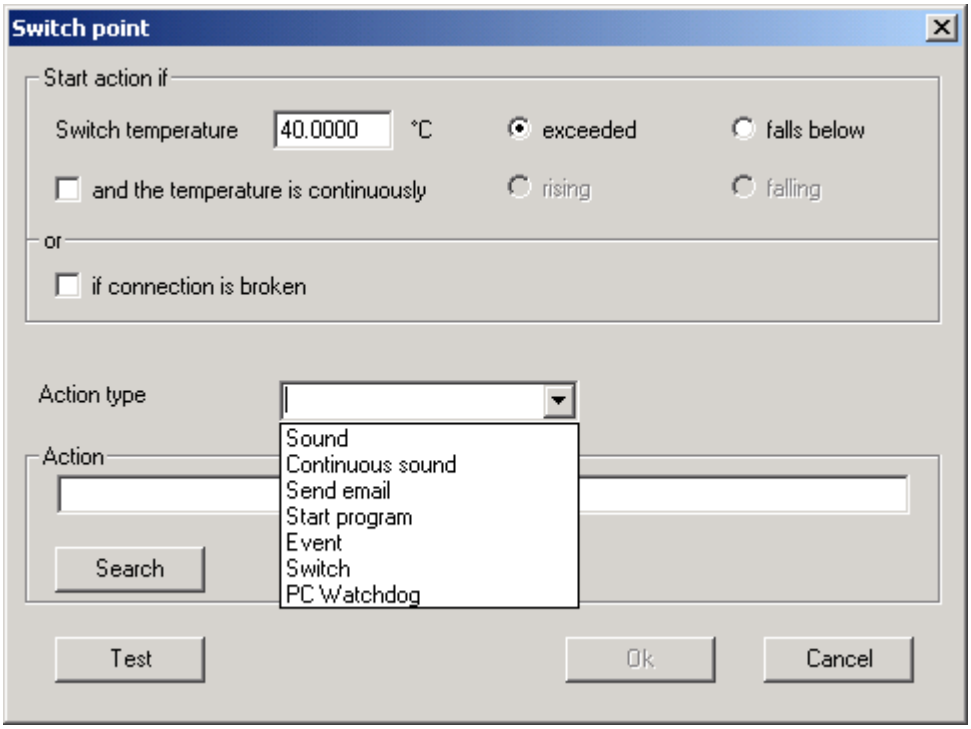
Here the temperature and change direction will be defined. In addition a second condition may optionally defined that demands a continuously falling or rising temperature. The last condition will be evaluated with four values. If all values are greater than the first one, the curve is defined rising and if all values are less, falling. With this condition a very smooth controller could be build.

The dialog for setting switch points using a humidity sensor looks very similar to the temperature sensor dialogs.

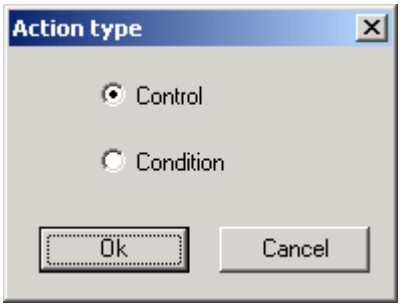


Another condition that could case an alarm is the disappearance of the device. Starting with version 2.9.6 of ClewareControl, the software automatically trys to reconnect the device.

Seven different actions (sound, continuous sound, eMail, program start, event, switch and watchdog) are possible. The fields and buttons in the action field of the dialog will change dynamically with the choosen action. The event action is not available starting with Windows 98.

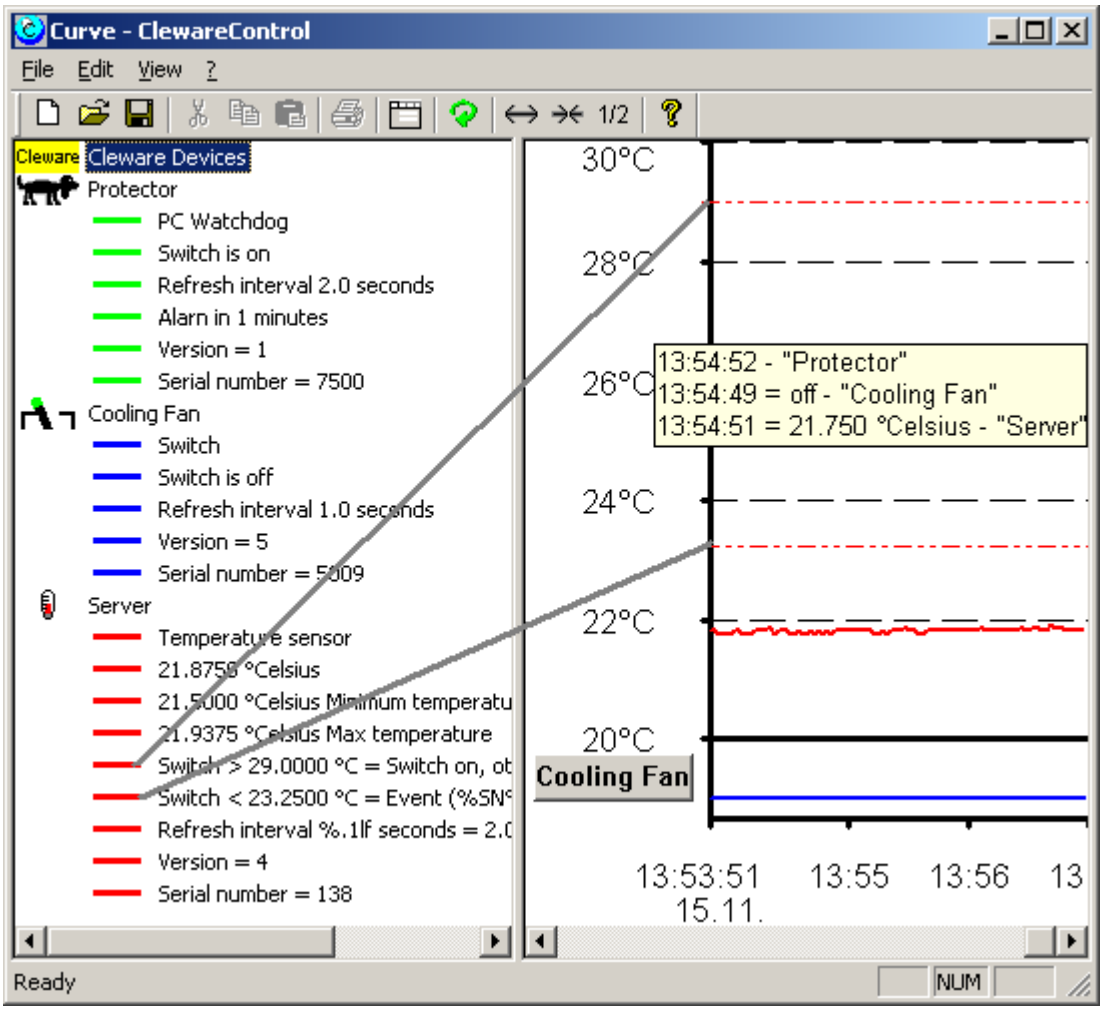


Depending on the choosed action type diffenrent input windows will appear. The meaning of them are decribed in the following sections.



The USB-Switch and the USB-IO16 configured as output has two kind of actions. The first is the “control” for timed actions. Added with ClewareControl 3.1.3 is the “condition” type that allows to set an action for the case the device is removed.

The switch points will be drawn with a dotted line in the data window in the same color as the monitored device.

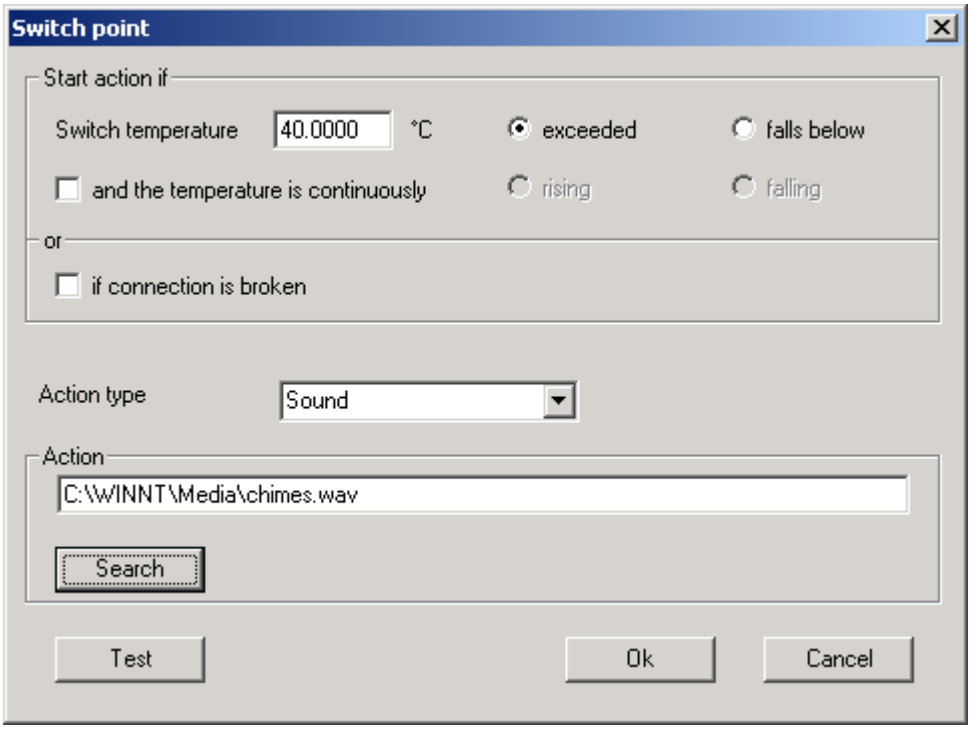


All temperature switch points are evaluated with a hysteresis to get a secure switching behaviour. The used hysteresis is 0.25 °Celsius. In the example above, the Switch is turned on at 29.0 °C and turned off when the temperature falls below 28.75 °C.

13.Sensor Action „acoustic switch points“

The acoustic switch point types are “Sound” or “Continuous sound”. The “Sound” is created by playing a sound file once. The “Continuous sound” is produced by playing the file in an endless loop as long as the condition is true.

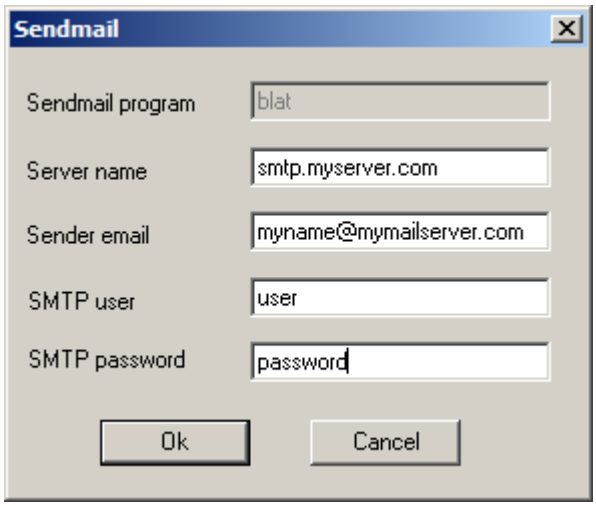
The field „Action“ is used to specify the sound file (.wav). The button “Search” will open the standard file open dialog to search and specify a sound file. The sound file may be played by pressing the button “Test”.



When the action “Continous sound” is executed, it may be necessary to turn of the sound before the condition that causes the action is handled. This is done with the button  or with the edit menue item “Continous tone off”.

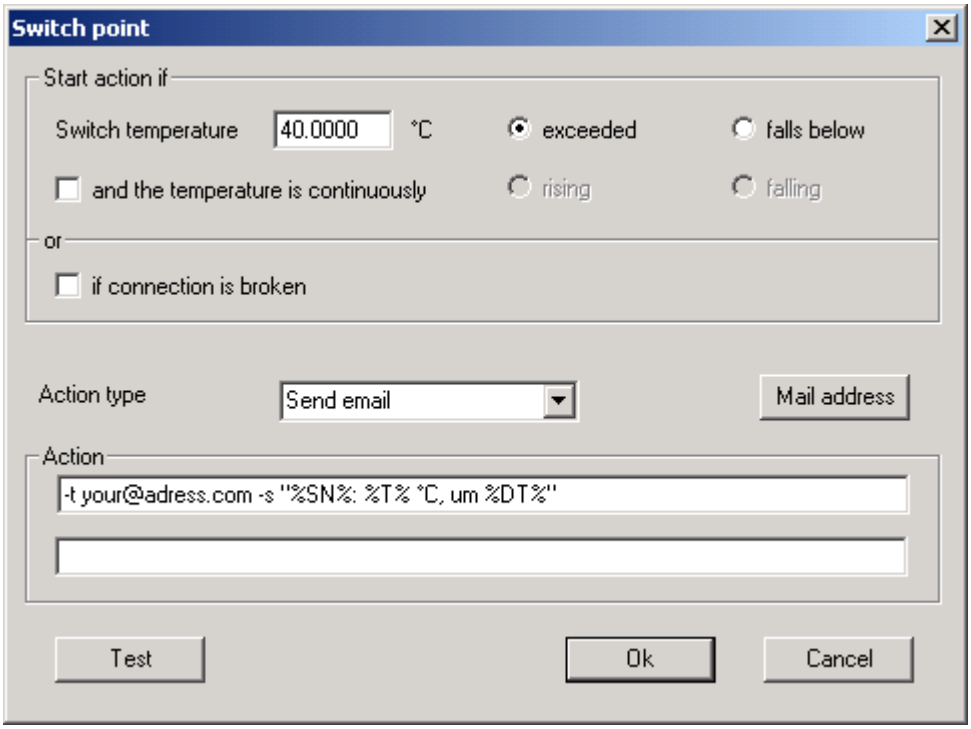
14.Sensor Action „automatic emails“

Another action is the automatic sending of eMail. The PC must know the SMTP-Protocol which is true in most cases with installed eMail. Unfortunately the standard Windows installation lacks a tool for sending eMail from the command line. But other programs may be choosen to do the job. In the default installation of ClewareControl, the public domain program “blat” is used. More information about this program can be found at http://www.blat.net or in the file „Blat Readme.txt” in the installation directory of ClewareControl. If another program should be used the action “Program execution” is the way to go.



When selecting the action „Send email” for the first time, a dialog will show up to do the initial settingas of blat. The setting may be changed anytime by pressing the button “Mail address”.

The server name is the name of the mail server used to send the eMails. The correct values could be found in the server settings of Thunderbird, Outlook or whatevr is used. The field “Sender email” is used to define the eMail sender address. The SMTP user and password could be set in the lower two fields.



The field „Action“ is used to define the command line arguments used for the blat program. The destination address is specified with „-t receiver@myServer.com“. The mail subject is defined with the option “-s”

At the time the action was be taken the email arguments are filtered and some text substitutions will take place. The following substitution pattern are possible:

%SN%	Name of the temperature sensor
%T%	actual temperature or relative humidity
%DT%	actual date and time, e.g. 02.05.2002, 11:54:23
%DA%	actual date, e.g. 02.05.2002
%TI%	actual time, e.g. 11:54:23

The button “Test” could be used to test if the email will reach the addresse .

The text of the email is defined in the second line of the action field. If it is empty, a text will be generated that contains sensor name, temperature and time of the event. If may look like this:

```
Temperature sensor: Server
Temperature = 22.0625 °Celsius
Time: 14:55:51
```

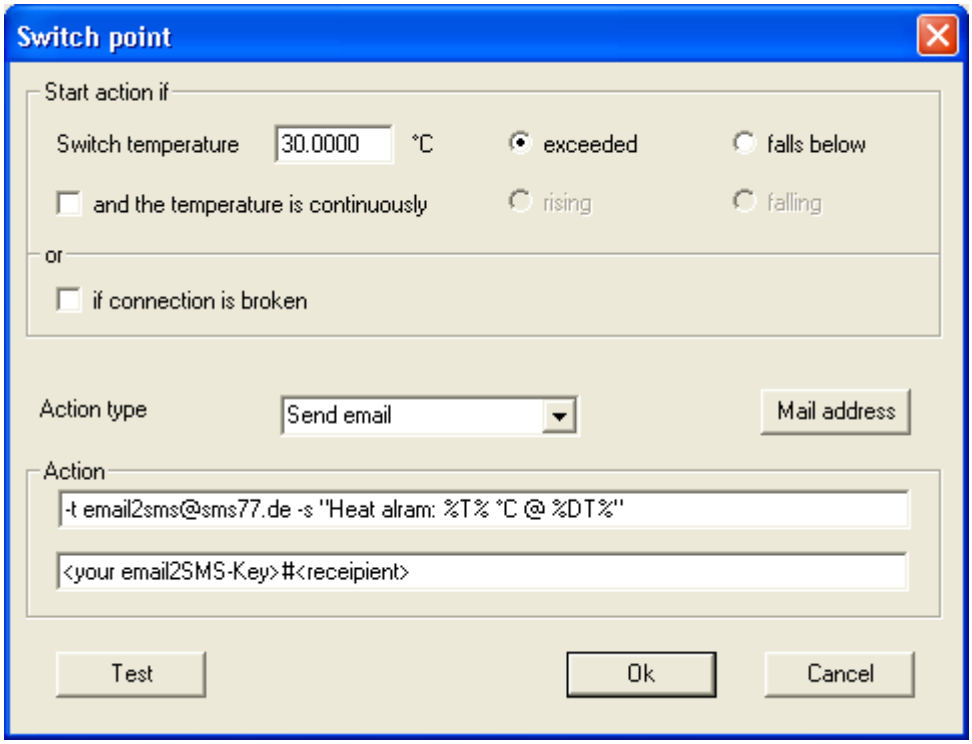
If sending the email fails, information about the reason could be detected by using the the program directly in an command window (DOS box). This may look like this:

blat text.txt -server serveraddress.com -t name@destination.com -s "subject" -debug

The debug option causes a lot of information printed. In most cases, the reason for the failure is also visible here.

15.Sensor Action „SMS via eMails“

Version 3.1.3 of ClewareControl simplifies sending SMS vereinfacht worden. Creating of SMS is done by sending an appropriate email to a SMS-Gateway geschickt, which converts it to an SMS. We recommend SMS77 (see Link at www.cleware.de). After registering at the gateway, the setting may look like this:

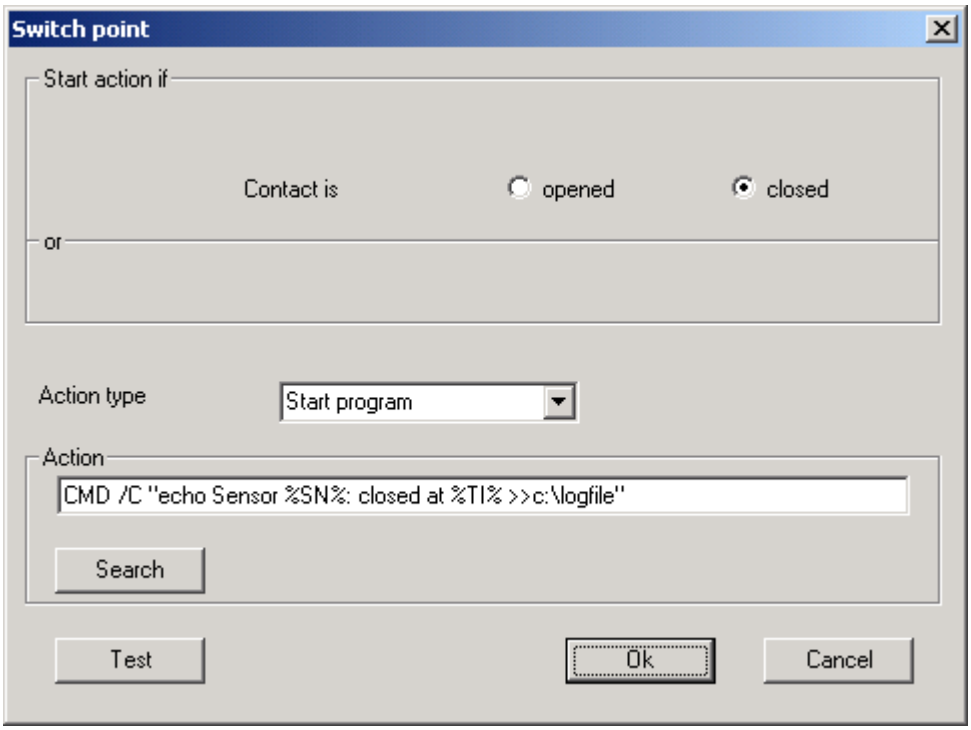


The eMail target address is email2sms@sms77.de. The second line contains the email text, in this case your SMS password and destination of the SMS. The password will be supplied by SMS77, but you may also use any other SMS gateway. In the latter case the settings must be adapted to this one.

16.Sensor Action „Start program“

With this action any available program on the PC could be started. This may be a special email program, the shutdown of the PC or the entry in a log file. The command line is defined in the action field and goes through the same substitution mechanism as the email action. The following substitutions may be used:

%SN%	Name of the temperature sensor
%T%	actual temperature or relative humidity
%DT%	actual date and time, e.g. 02.05.2002, 11:54:23
%DA%	actual date, e.g. 02.05.2002
%TI%	actual time, e.g. 11:54:23



In this example the DOS command “echo” will be called to write some text at the end of a file. The DOS shell will be reached with the “CMD” command. With Windows 98, the “CMD” text must be replaced with “COMMAND.COM”. The contents of the file “values.log” after executing the action above is as follows:

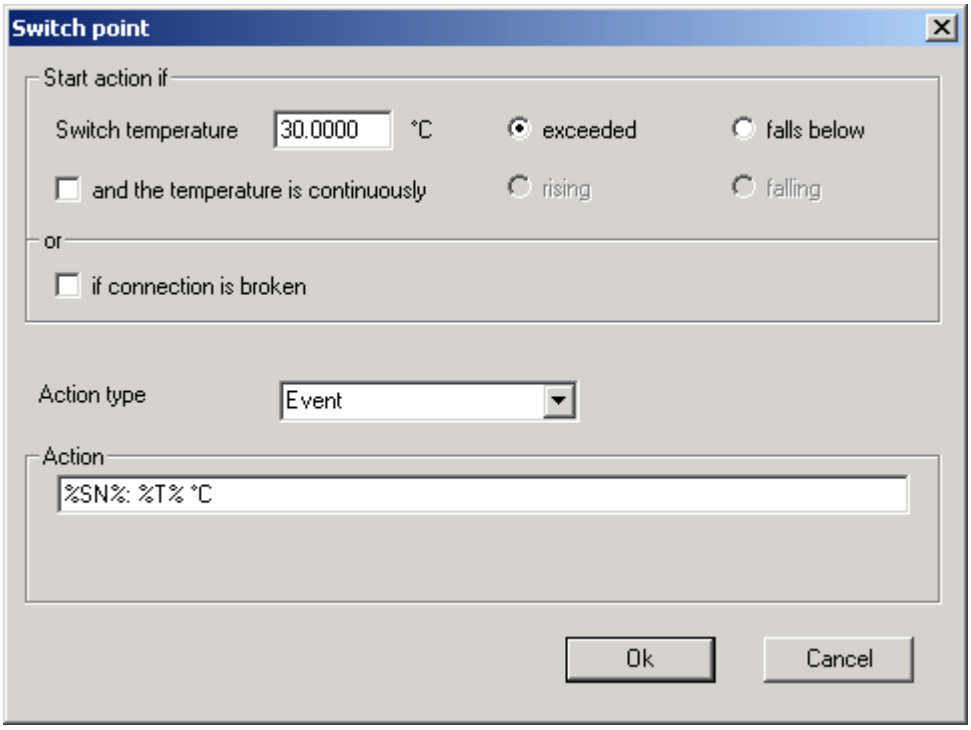
```
Sensor 4017/16: closed at 22:52:02
```

To find valid programs for execution, the button “Search” will open a file search dialog.

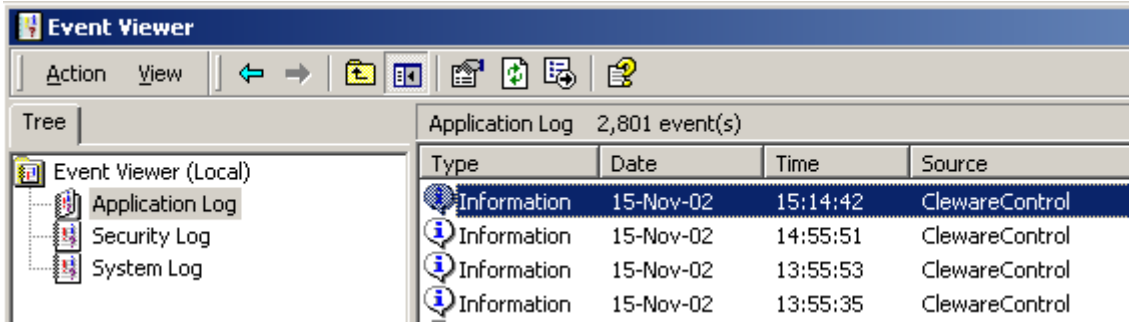
17.Sensor Action „Event“

With Windows 2000 or following an entry in the system event log could be written when an action condition is true. TO do this the action type “Event” must be choosen. The field “Action” is used to define the text to enter in the event log. Some replacement pattern are available:

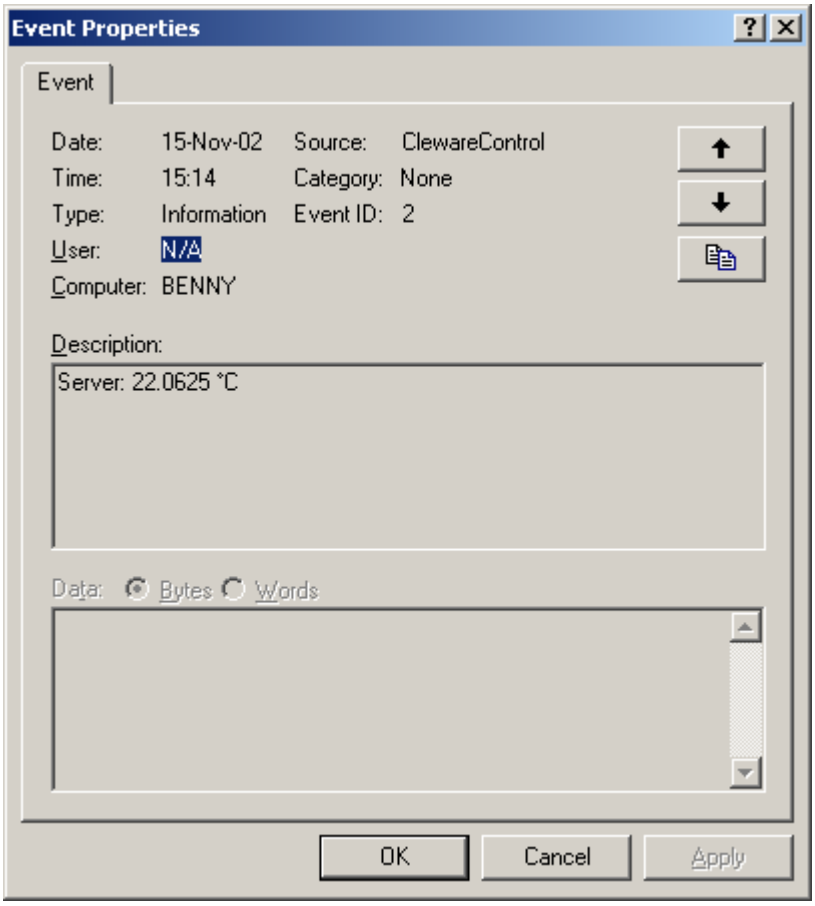
%SN%	Name of the temperature sensor
%T%	actual temperature or relative humidity
%DT%	actual date and time, e.g. 02.05.2002, 11:54:23
%DA%	actual date, e.g. 02.05.2002
%TI%	actual time, e.g. 11:54:23



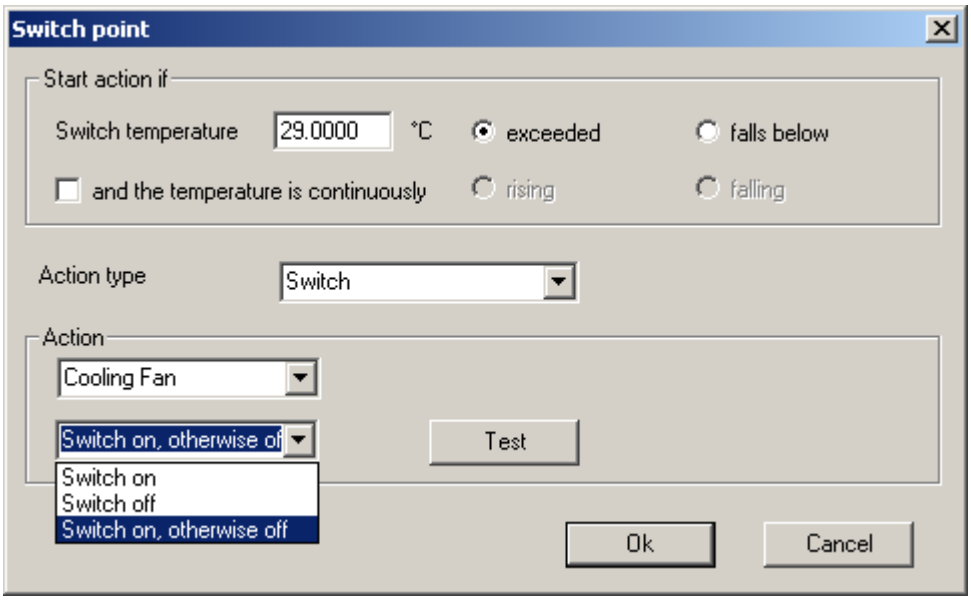
In the Event Viewer the taken actions will show up in the Application Log.



The event text looks like this:

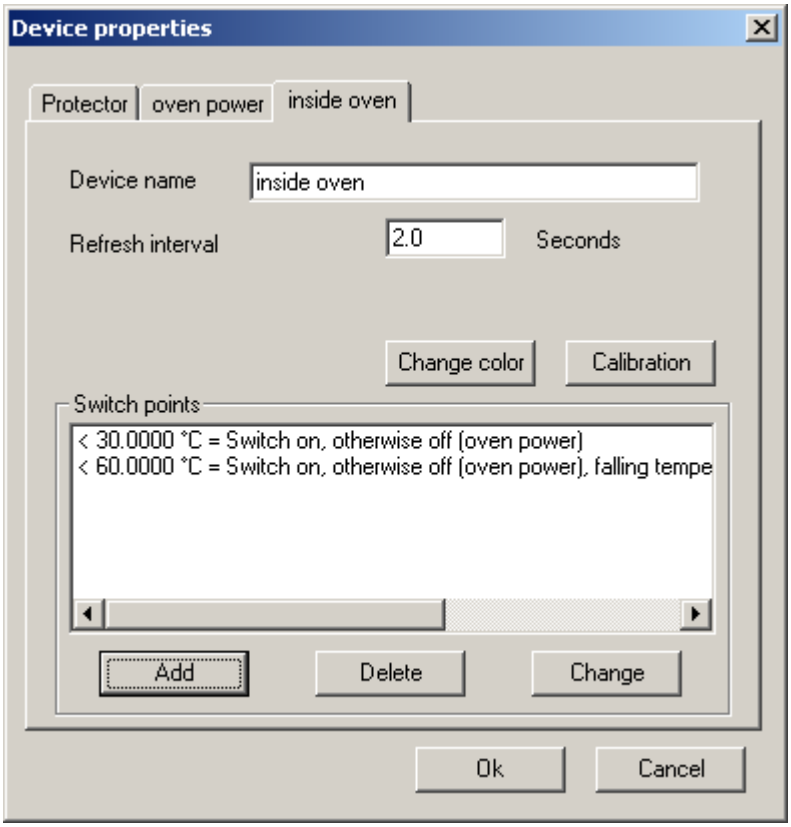


18.Sensor Action „Switch“

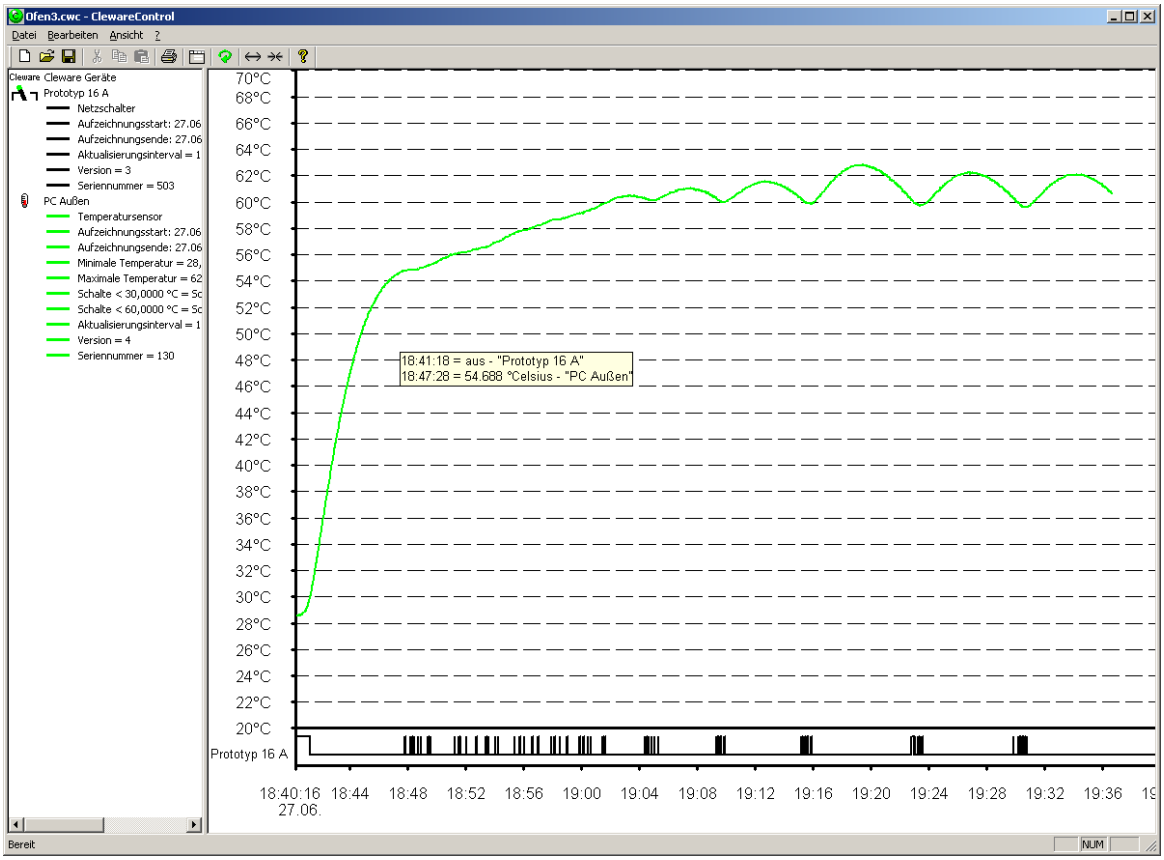


If an USB-Switch is connected to the PC, this may be choosen as the action to take. In this case the action type is “Switch” an the correct switch name is selected in the action field. Three types of switch behaviour are available. The simple ones are turning the switch on or off. In many cases it is desired that the switch turns on if the condition is true and turns off if the condition is false. The third choise “Switch on, otherwise off” will work this way. It is possible to define multiple actions at different temperatures with the same switch.

One example for an application with two switch points is a temperature control for a very simple oven. In this example, a temperature of 60 ° C should be reached. The power of the oven is turned on and off with an USB-Switch. The used oven is a very simple one, there turning off the heating will still increase the temperature for some time. The first switch point is set at 30 ° C and turns the oven on if the temperature is below and off if the temperature is above. The second switch point is activated if the temperature is below 60 ° C and if the temperature is falling. The settings looks like this:

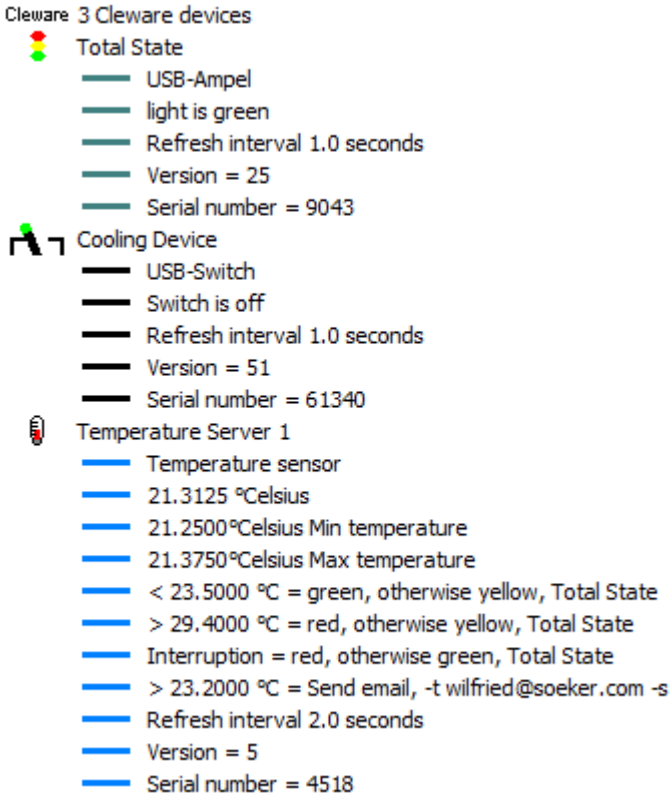


The result of theses settings is shown below. The goal temperature will be reached with a deviation of only 2.5 ° C.



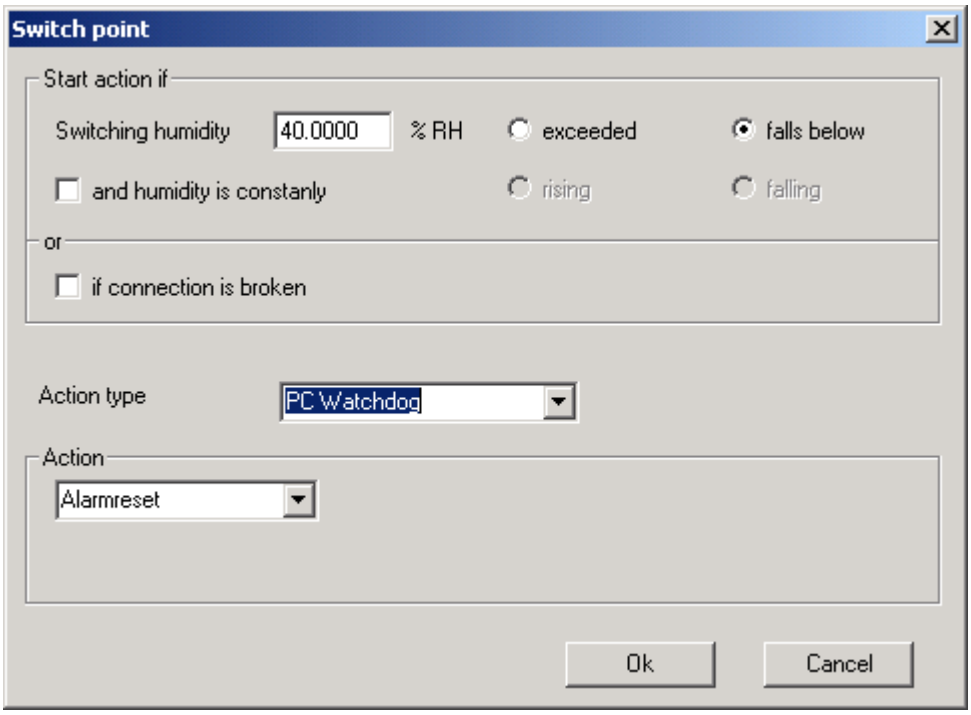
19.Sensor Action „Traffic Light“

Starting with version 4 of ClewareControl the USB traffic light devices will be handled in a special way, that differs in the way actions are handled. First of all, there are typically 2 action types for traffic light. One is “Red light, otherwise Yellow”, used e.g. when the upper temperature limit is exceeded and the other is “Green light, otherwise Yellow” when the temperature falls below the second limit. Tor seldom cases, the action “Red light, otherwise Green” is available, e.g. to indicate disconnected devices or closed contacts.



The most imported difference is that the traffic light device implementation is actively controlling of the device states. In other words, if one of the connected USB devices indicates a condition Red, the red light is turned on. Otherwise, if at least one indicates a Yellow condition, the yellow light will glare. If none of these conditions could be found, the traffic light stays green.

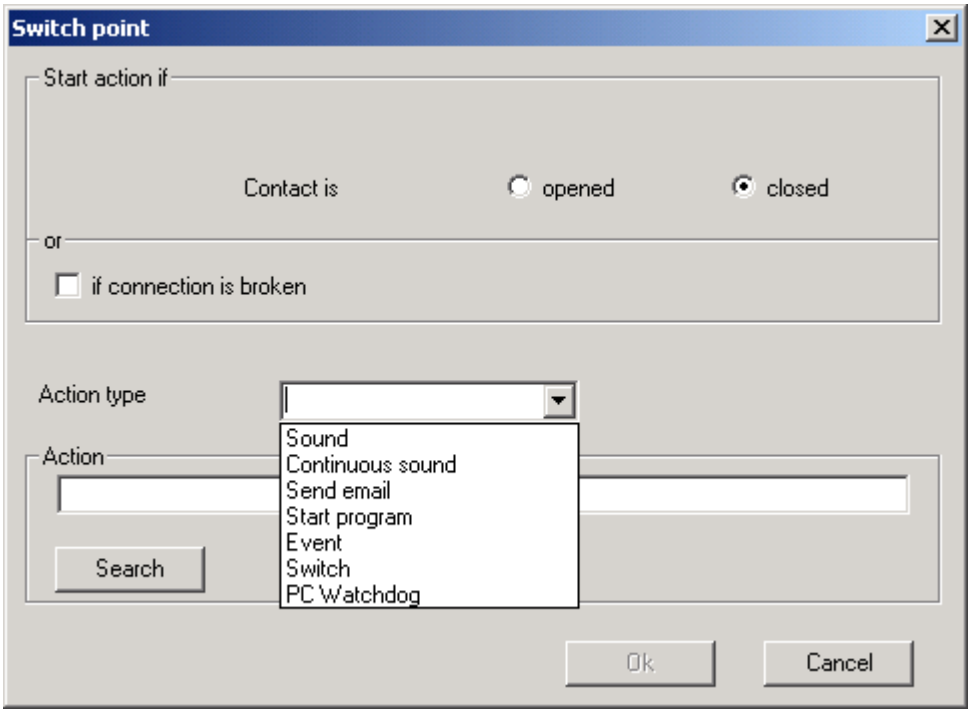
20.Sensor action „PC watchdog“



Starting with version 3.0.0 a USB-AutoReset or USB-Watchdog could also be selected as a destination of an action. This is useful to build a good protection system, because the guard will beside the actions control if PC itself is alife.

21.Contact sensor actions

The contact sensor “USB-contact” could initiate the same actions as the temperature or humidity sensors. The trigger of the action is the closing or opening contact.

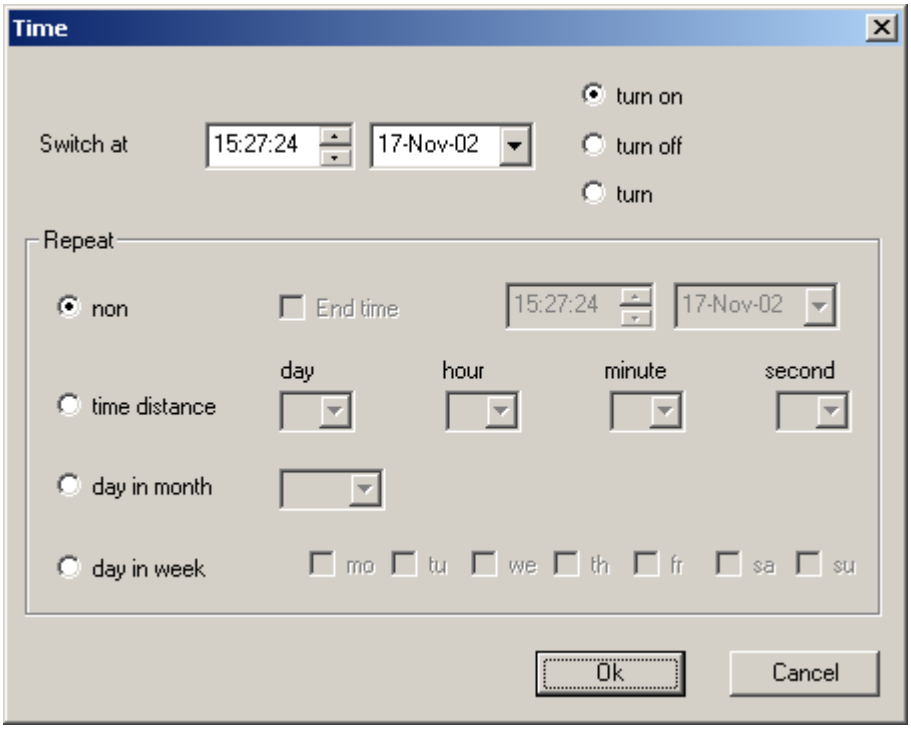


Several actions could be triggered the same time the state of a contact changes.

22.Switch action „Time Switch“

The USB-Switch may also be used as a time switch. The times for turning on and off the switch can be defined independent. In addition, the switch may be used with constant repeat interval, e.g. turning on and off every 10 seconds.

Action points will be added by pressing the „Add“ button in the device properties of the switch. Then the following dialog will appear:



In this dialog it will be defined at which time and day the the switch should be turned on or off. The third possibility is just “turn” which is used with repeat intervals.

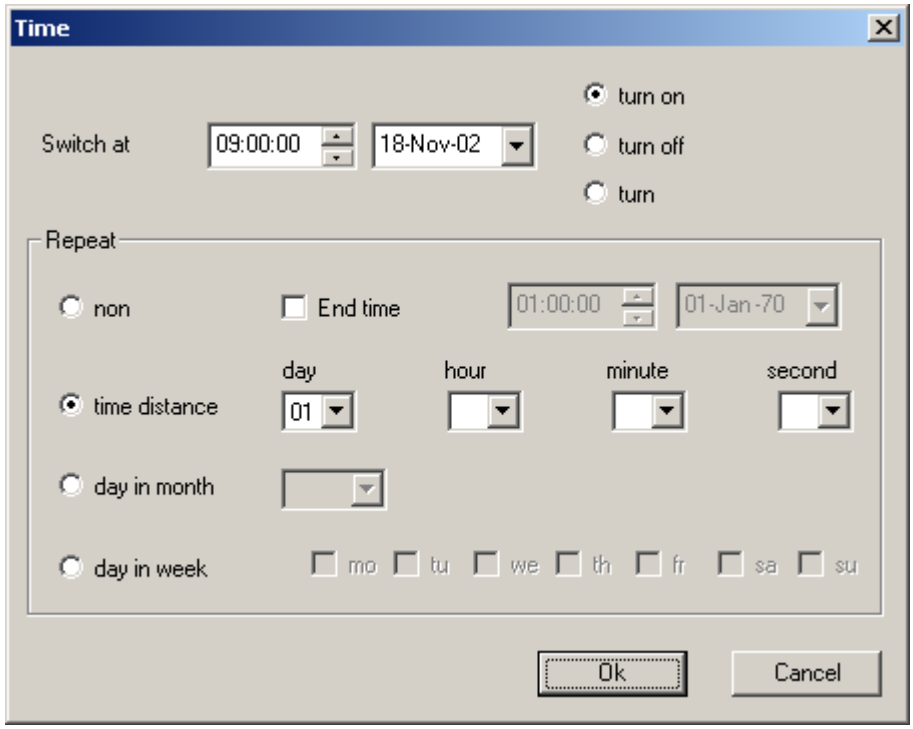
In addition repeat intervals may be defined in three different ways. The first on “time distance” defines the time between two switch times. The time is defined as a sum of days, hours, minutes and seconds. A time distance of 90 minutes will be defined as the combination of 1 hour and 30 minutes.

Alternatively the repeat interval nay be defined as a day in month, e.g. every 3. in a month. The last possible interval is to choose one or more days in a week. The repeat intervals may be limited by defining an end time.

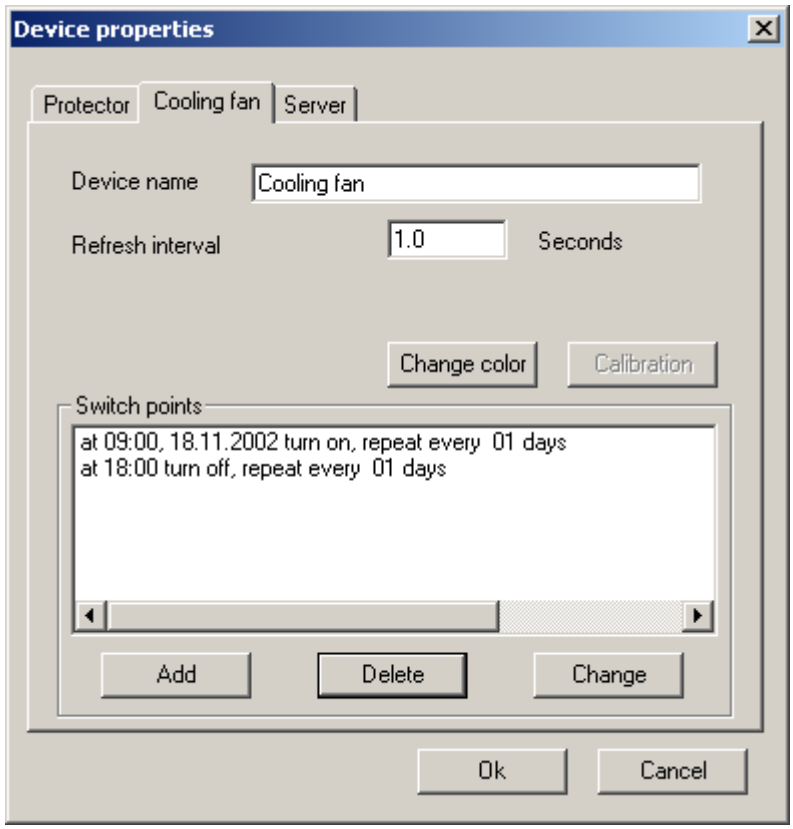
Every switch may be assigned up to 256 action points. The times for turning on and off will be defined independently in different action points.

Examples:

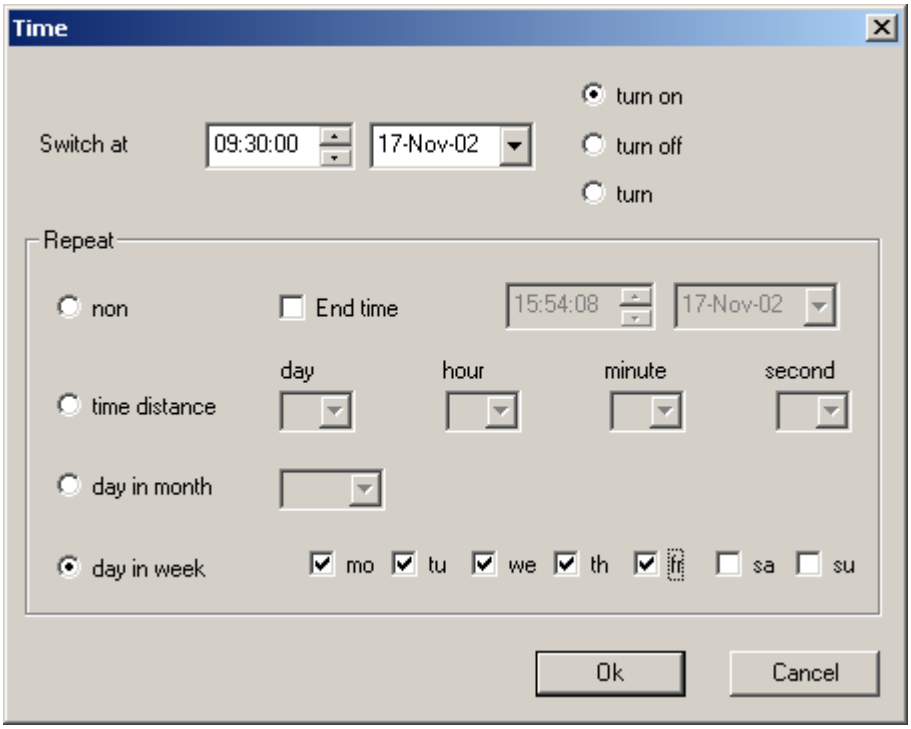
A USB-Switch should be turned on every day at 9:00 and turned off at 18:00. This needs two action points. The first one looks like this:



The other action point is defined the same way and this is the result:



If the USB-Switch should be turned on Monday to Friday at 9:30, this could be done this way:

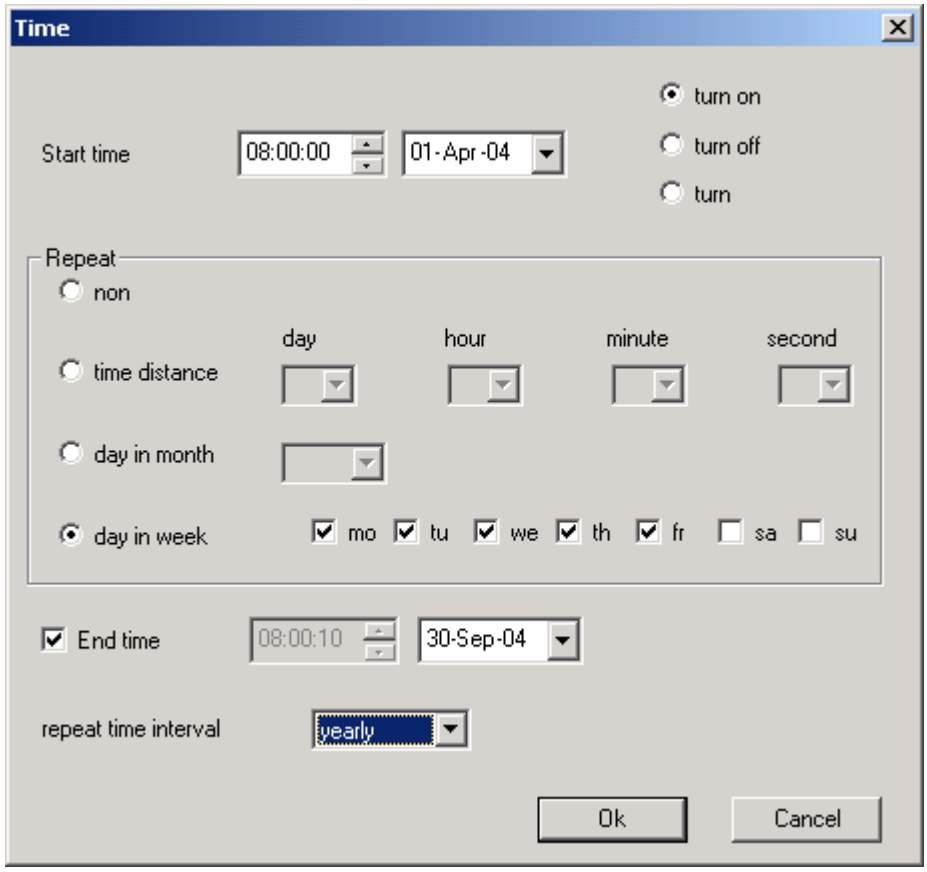


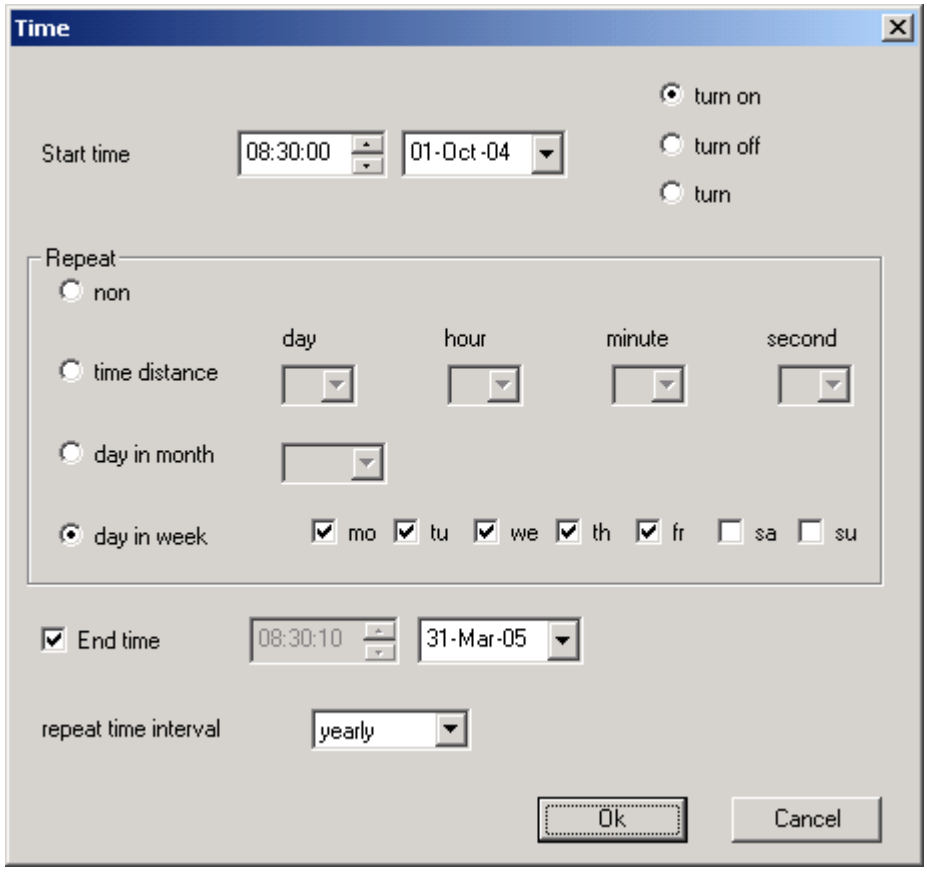
To simplify the definition of similar actions, a new entry will be initialised with the values of the actions that was activ, when the add button was pressed.

Starimg with version 3.0.3 the switching times could be limited to a defined time period. For example, the air condition could be turned on at 8:00 am in winter and at 8:30 am in summer. The followong steps are neccessay to set up this behaviour:

1. define the start time
2. set the days in week
3. define the end date
4. set repeat time interval to yearly

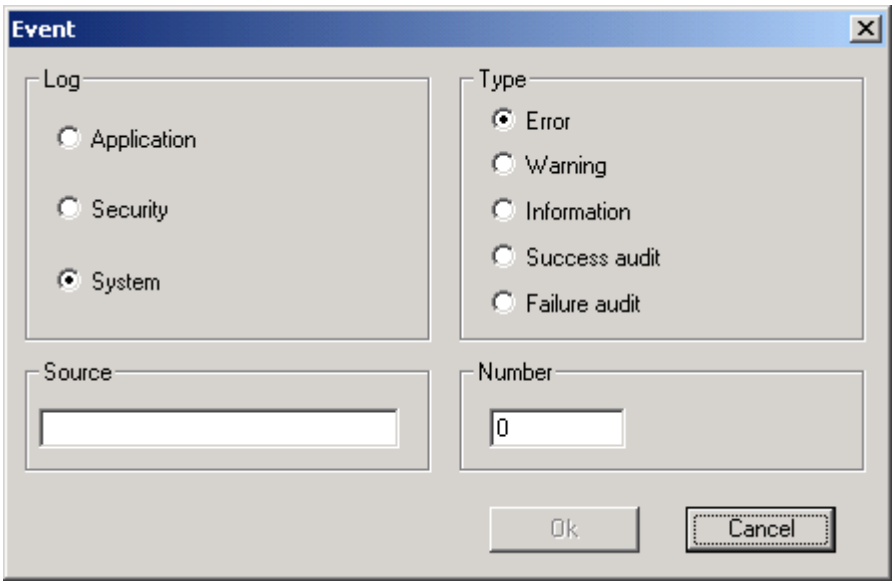
The dialogs for this example will look like this:


Time
Start time
08:00:00
01-Apr-04
turn on
turn off
turn
Repeat
non
day
hour
minute
second
time distance
day in month
day in week
mo
tu
we
th
fr
sa
su
End time
08:00:10
30-Sep-04
repeat time interval
yearly
Ok
Cancel

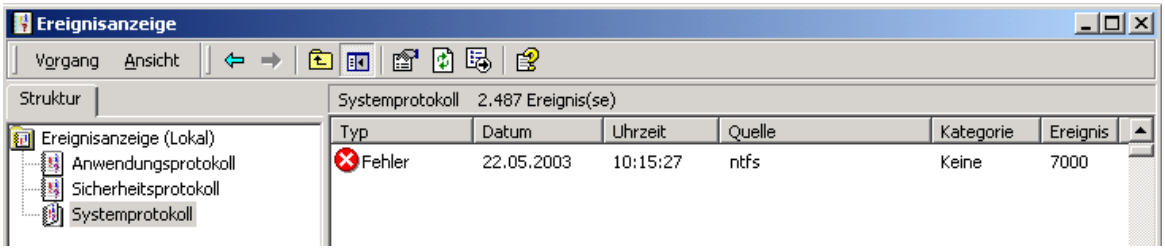

Time
Start time
08:30:00
01-Oct-04
turn on
turn off
turn
Repeat
non
day
hour
minute
second
time distance
day in month
day in week
mo
tu
we
th
fr
sa
su
End time
08:30:10
31-Mar-05
repeat time interval
yearly
Ok
Cancel

23.Watchdog settings

The devices USB-Watchdog and USB-AutoReset (version 10 or higher) could do an alarm or a reset via software. Beside triggering the watchdog with sensor actions, defined events could also cause the watchdog to react. These events are defined as actions of the device. When adding an action, the following dialog appears:



Because the spelling of the event may differ from what is displayed in the event viewer, the source names are not case sentive.



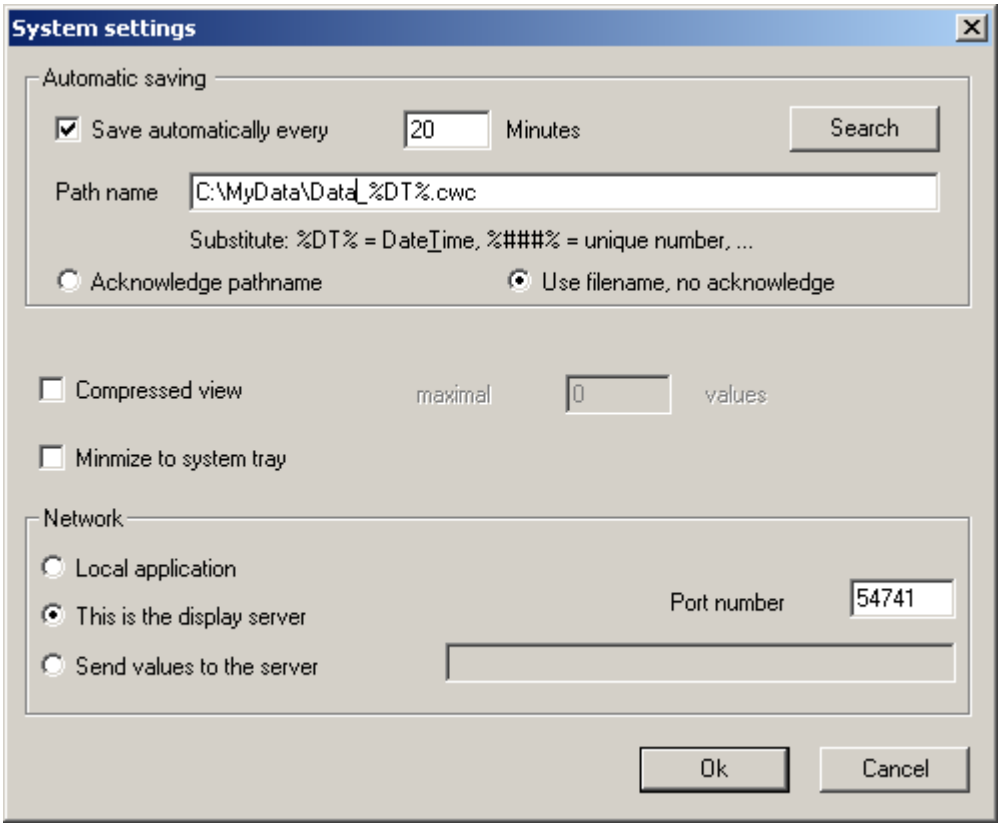
The checking of the events is done by ClewareControl or it's service variant. If only Windows 98 is installed on the target PC, the application USBwatch will do the job.

24.System Settings – automatic file save

Major ClewareControl settings are managed with the “System settings” dialog lacated in the “View” menue. The settings for automatic file saving, compression, tray display and networking are controlled here. This chapter describes the first one, the others can be found in the following chapters.

When a program or computer crashes all values stored in RAM will be lost. For that reason, the data should be stored to disk from time to time using the file save menue item. This saving could also be automated with the systems settings dialog item “automatic saving”. The interval between savings must be specified as well as the path of the data file. The “Search” button may be used to pick a file with the file search dialog.

When leaving the system settings dialog with the “Ok” button this setting will be stored and activated. To make sure the supplied path is ok, the first saving operation will start immediately.



The filename may contains substitution strings. They will be replaced at time the program will be started. The following replacment strings are detected:

%SN%	name of the device
%###%	automatic incremented number
%DT%	start date and time of the program, e.g. 02.05.2002, 11:54:23
%DA%	date of the program start, e.g. 02.05.2002
%TI%	time of the program start, e.g. 11:54:23

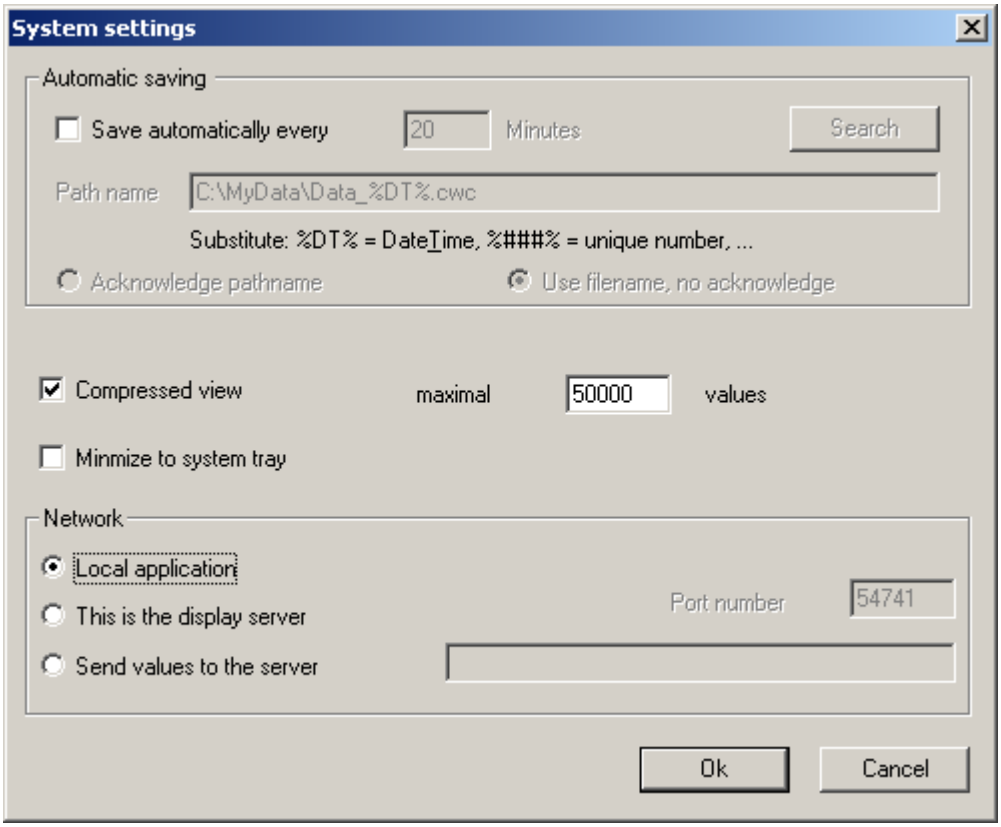
The setting in dialog shown on the last page, a filename that looks like "Data_26.05.2003 11.44.36.cwc" will be used.

The settings are stored in the registry and used at the next time the program starts. To avoid a inadvertent overwriting of the file, the system dialog will be opened when the automatic save is selected. In some cases, the popup of the dialog should be avoided, e.g. if the system should reboot automatically. The popup of the dialog may be disabled by checking the box "Use filename, no acknowledge". This should always be choosen if ClewareControl is running in service mode.

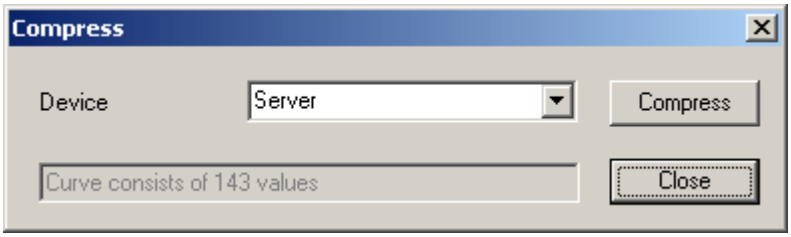
25.System Settings – Optimizing memory needed and speed

When temperature sensors are used several weeks with a low refresh interval, a large amount of memory will be needed to hold the values. When refreshing every 2 seconds the memory consumption will be about 337 kB per day. This may lead to memory problems and the display speed in the data window will slow down. This is the reason for compressing the data. The used algorithm ashures that minimum or maximum values will be unmodified. It is also guarenteed that there is is at least one value in a period of 10 minutes.

When seleting the compressed view check box the maximal used values must be specified. The default value is 500000 values. When the specified amount of values is reached, the compression will start automatically and reduces the count of values by about 50%.

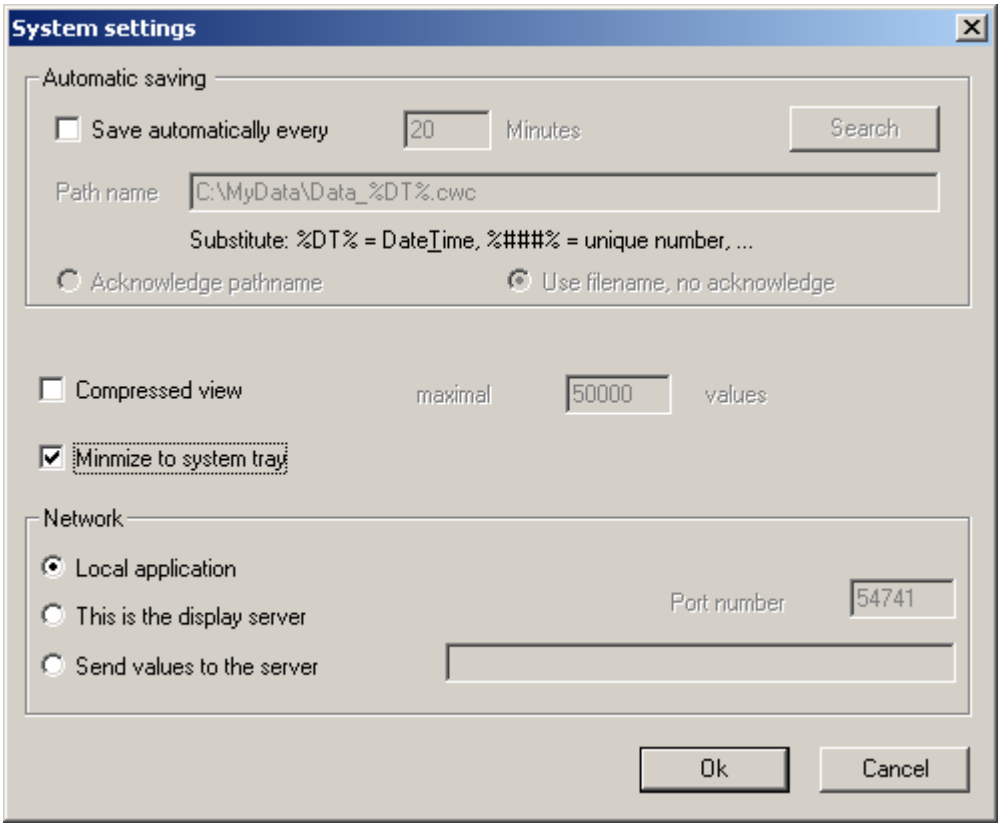


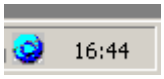
The compression could also be startet manually with the view menue item “Compress” or the button 1/2. The dialog shown below will be displayed. The compression is done per device. The value count is displayed in the text window below the device selection.



26.System Settings – Systemtray

When ClewareControl should run as a background process it is desirable to display the process in the system tray when minimized. This is done by checking the box „Minimize to system tray”.



When active the ClewareControl icon could be found in the system tray. 

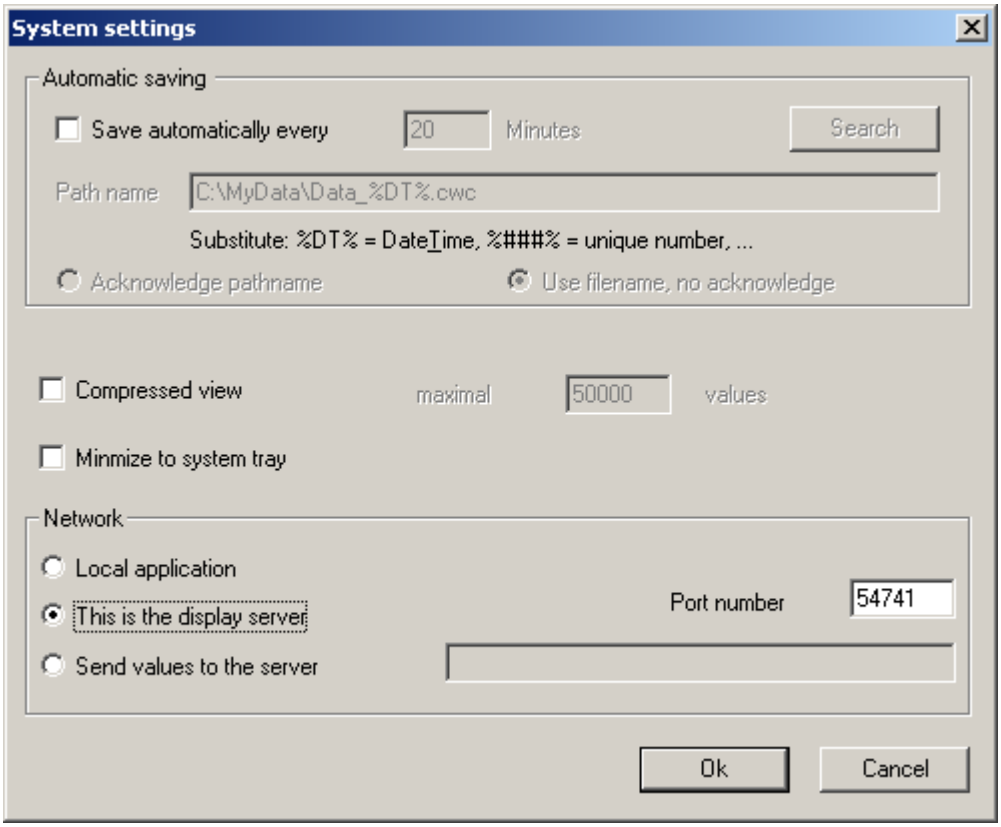
Double clicking on the icon will restore the ClewareControl window. This and other actions could also be choosen by pressing the right mouse button on the blue icon.

27.System Settings –switching and measuring through the network

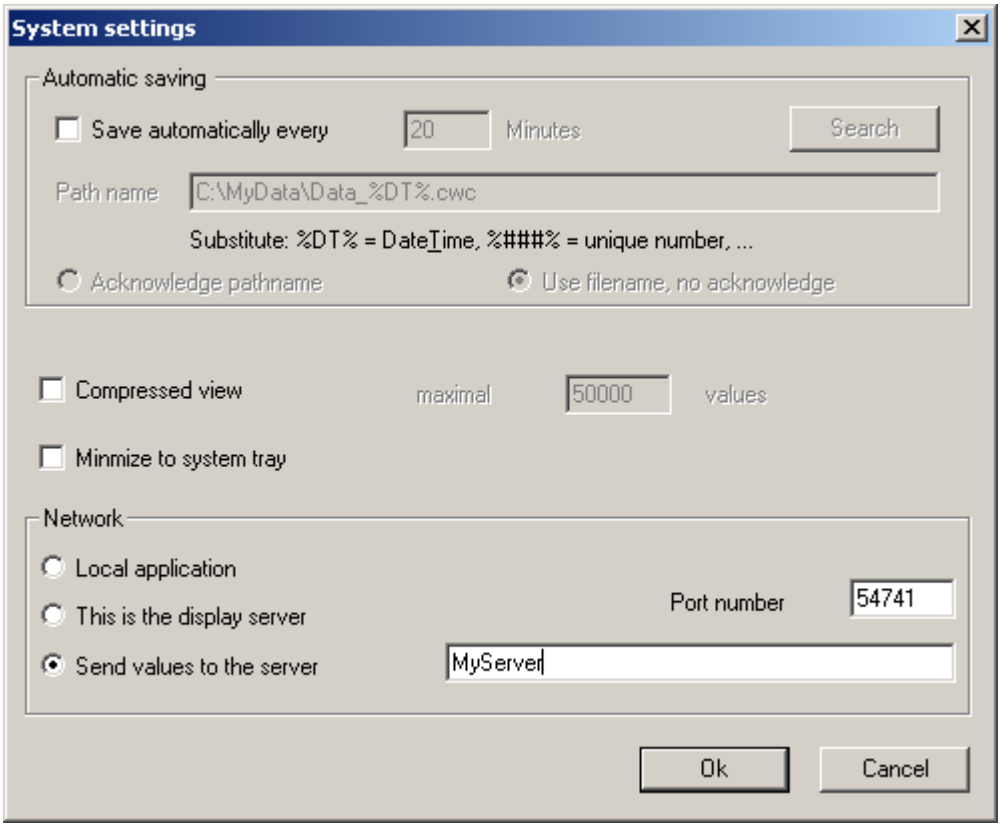
In many cases the sensored values should be displayed on another computer than the one that owns the used USB interface. A typical example is the supervision of a server from the system administrator PC or the controlling of rooms from the factory security. Even the activation of an USB-Switch through the network is usefull, e.g. to turn on the light before looking through a remote camera.

For that reasons the ClewareControl software contains some network functions. These functions are based on the sockets of TCP/IP which could be typically found on nearly every PC. If there are problems the system adminstrator will help.

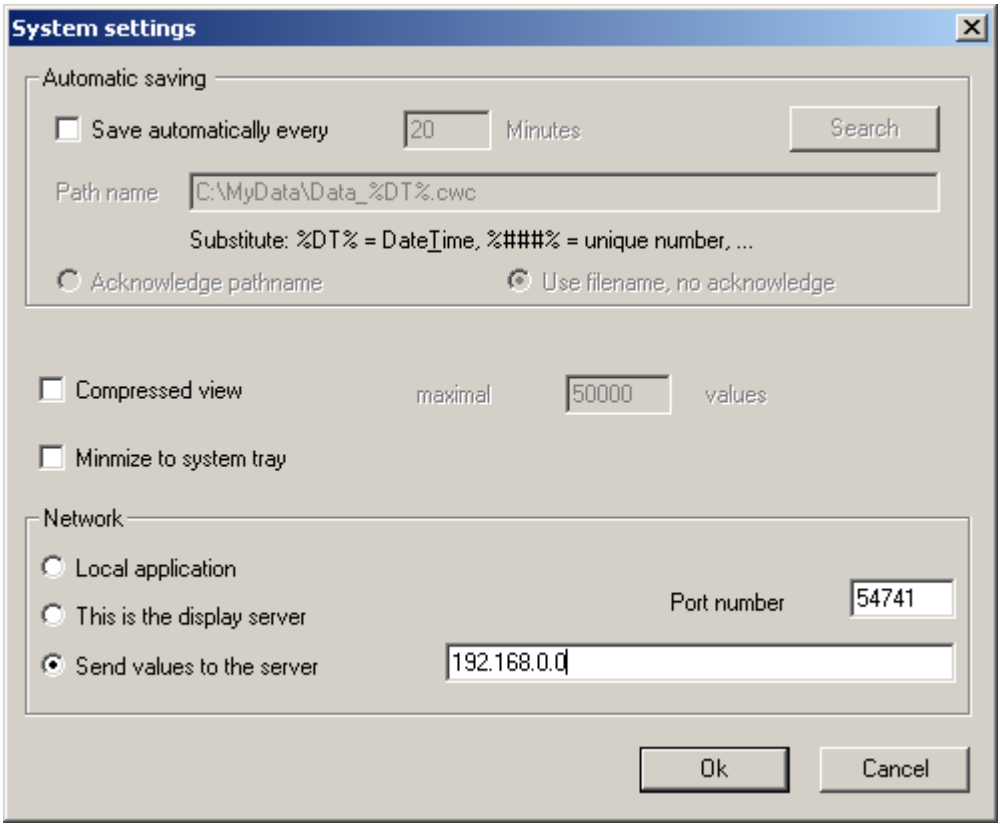
The PC to show the values and do the control is called the display server. On this PC, the option “This is the display server” must be checked along with the port number to use. In most cases the default number 54741 should be ok.



The other PCs (clients) who should send data to the server, must activate the option “Send values to the server “ on their copy of ClewareControl. The name or IP number of the server must also be specified and the port number must be identical.


System settings
Automatic saving
Save automatically every
20
Minutes
Search
Path name
C:\MyData\Data_%DT%.cwc
Substitute: %DT% = DateTime, %###% = unique number, ...
Acknowledge pathname
Use filename, no acknowledge
Compressed view
maximal
50000
values
Minmize to system tray
Network
Local application
This is the display server
Send values to the server
Port number
54741
MyServer
Ok
Cancel

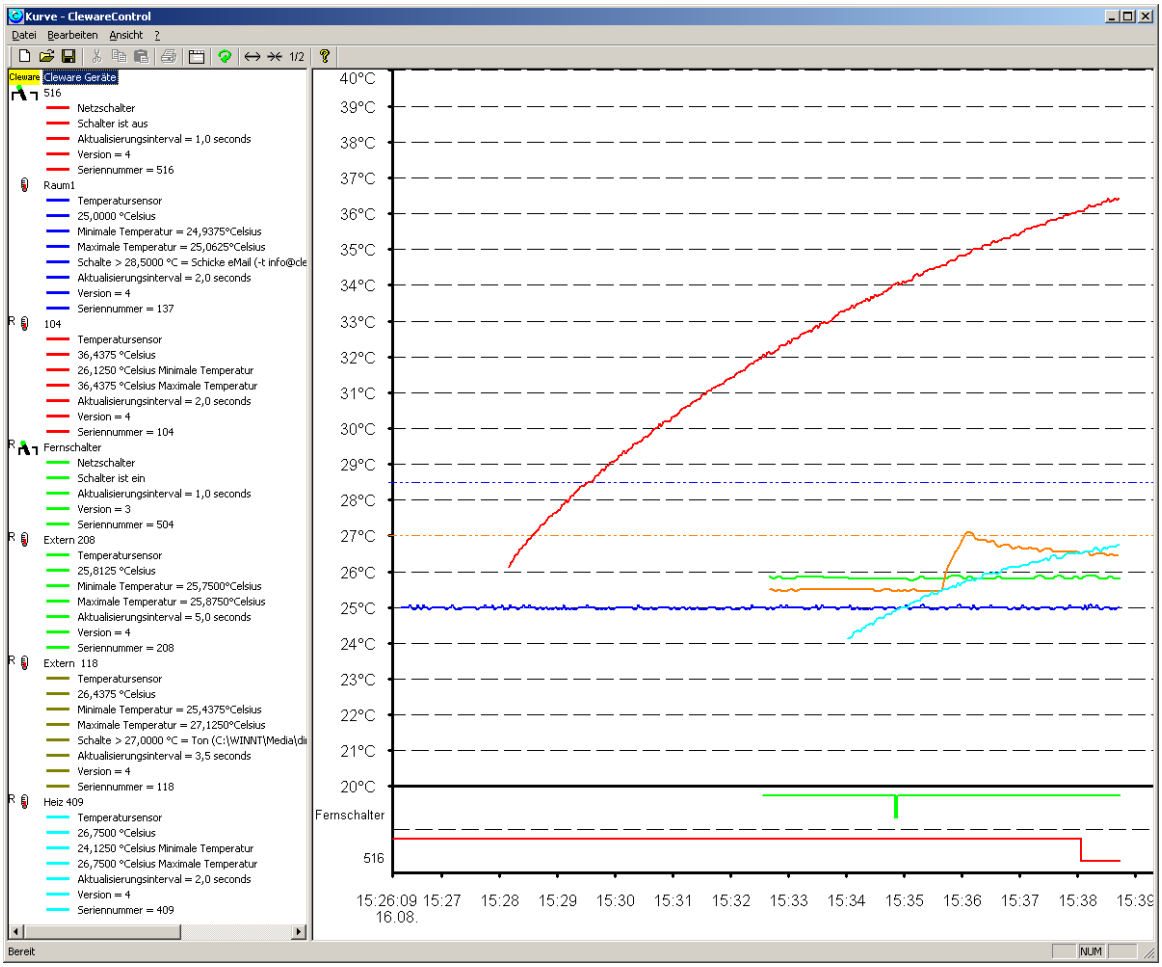
oder


System settings
Automatic saving
Save automatically every
20
Minutes
Search
Path name
C:\MyData\Data_%DT%.cwc
Substitute: %DT% = DateTime, %###% = unique number, ...
Acknowledge pathname
Use filename, no acknowledge
Compressed view
maximal
50000
values
Minmize to system tray
Network
Local application
This is the display server
Send values to the server
Port number
54741
192.168.0.0
Ok
Cancel

When ClewareControl is running on the client PC, the values are displayed unchanged. The only difference is that the values are also transferred to the server. When such remote data is received by the server, they will be displayed on the server with the remote indicator “R” .

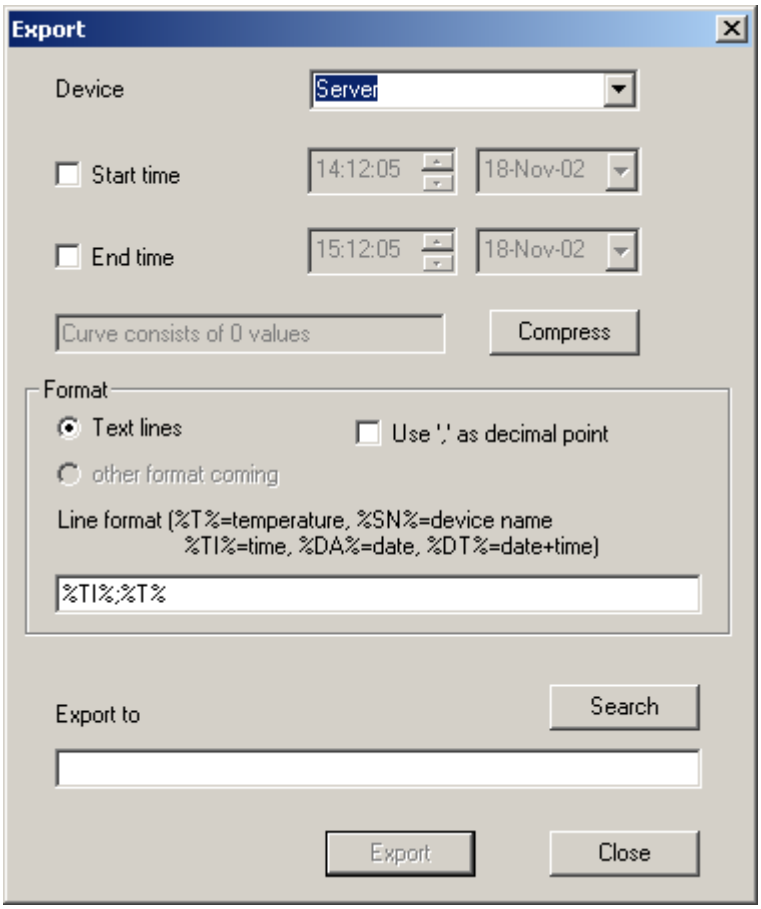
e.g. R R

When server ClewareControl is changing the refresh interval, name, color or when a switch is turned on, these settings will take place on the remote PC. The following picture shows a configuration with 5 sensors and 2 switches. One sensor and one switch is local, the other devices are located on three different clients.



28.Export of the measured values

To process the measured values with other programs these values could we exported to a text file. The data export is configured with the “Export” dialog located in the “File” menue.



The device whos data should be exported is selected in the list on the top of dialog. The data could be cutted by defining a start and end time. The small gray text windw below the end time checkbox informs about the number of items that are found in the selected time. This amount could be reduced by pressing the compress button on the left. The button may be pressed several times until the number of values is acceptable.

The only supported output form until now are text lines. By checking the “Use ‘,’ as decimal point” checkbox all numbers are transformed this way. The format of the lines must be defined in the line format window. Several substitutions will be processed when the data is exported:

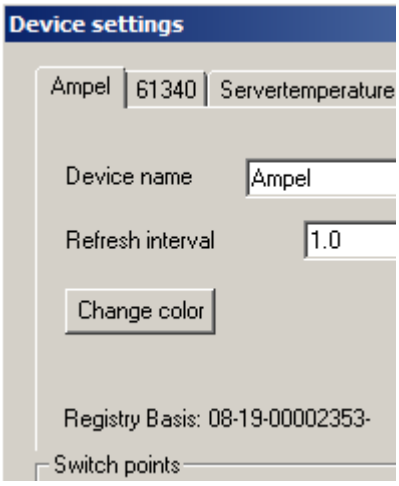
%SN%	Name of the temperature sensor
%T%	actual temperature or relative humidity
%DT%	actual date and time, e.g. 02.05.2002, 11:54:23
%DA%	actual date, e.g. 02.05.2002
%TI%	actual time, e.g. 11:54:23

Between the different parts of the line inserting an unique delimiter like ‘;’ is useful. This simplifies the later import. The format may look like “%TI%;%T%” where the time and temperature is delimited by a semicolon.

The destination file for the export is asked for in the “Export to” field. The button “Search” may be pressed to display the file open dialog for easier file selection. The export will be startet when the “Export” button will be pressed.

29. Controlling devices using the Windows Registry

Starting with ClewareControl version 3.6 controlling Cleware USB devices is as easy as reading and writing the registry. This is done by reading and modifying registry entries controlled by ClewareControl running as a service in the background. The special registry behavior of new Windows versions must be kept in mind, see page 13 for a work around.



The properties of every Cleware USB device is stored in registry at “Cleware GmbH->USB” in several key value pairs. The name of all keys start with an unique device identifier, the Registry Base. This unique identifier is displayed in the device setting dialog.

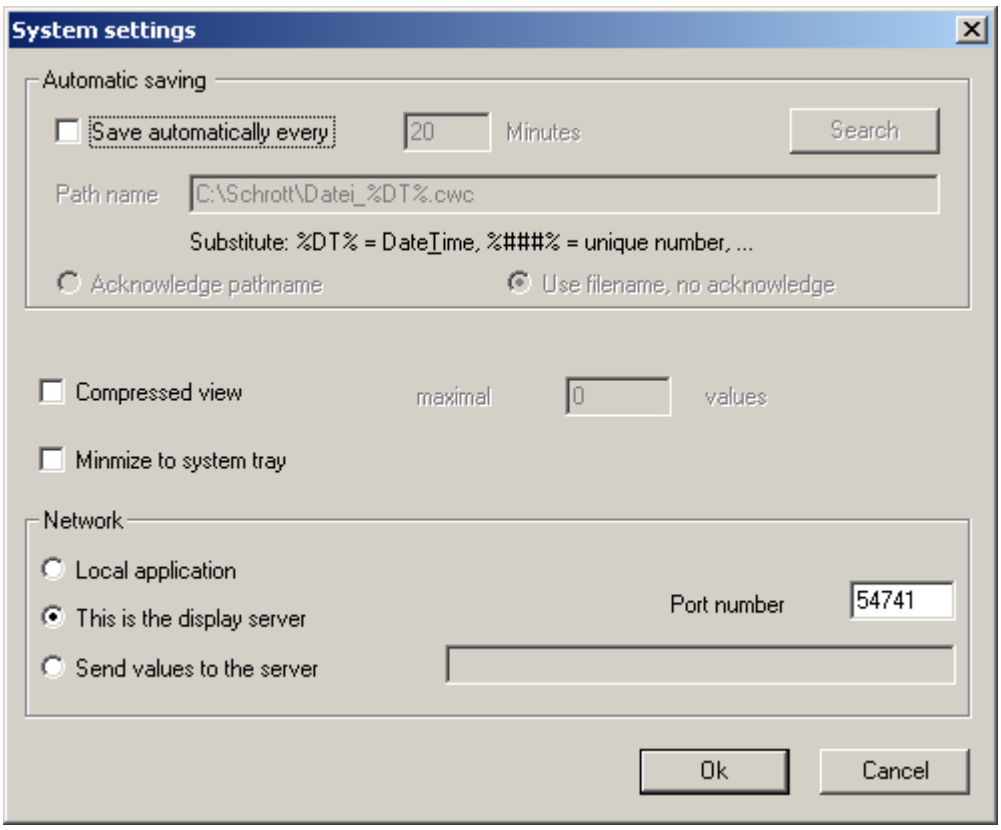
This identifier combined with a keyword could be used to get measured values. If for example the registry base of an USB-Temp is „10-05-000011a6-“, just append „CurrentTemperature“ to the name and start registry read. Readind „10-05-000011a6-CurrentTemperature“ will a DWORD value, with interpreted as as float data type, will tell the just measured temperature.

Other names to add are “CurrentHumidity” or “CurrentState” for all switch devices, including the traffic lights. A sample how to easily control a switch using the registry could be found in the sample “USBswitchCMD”.

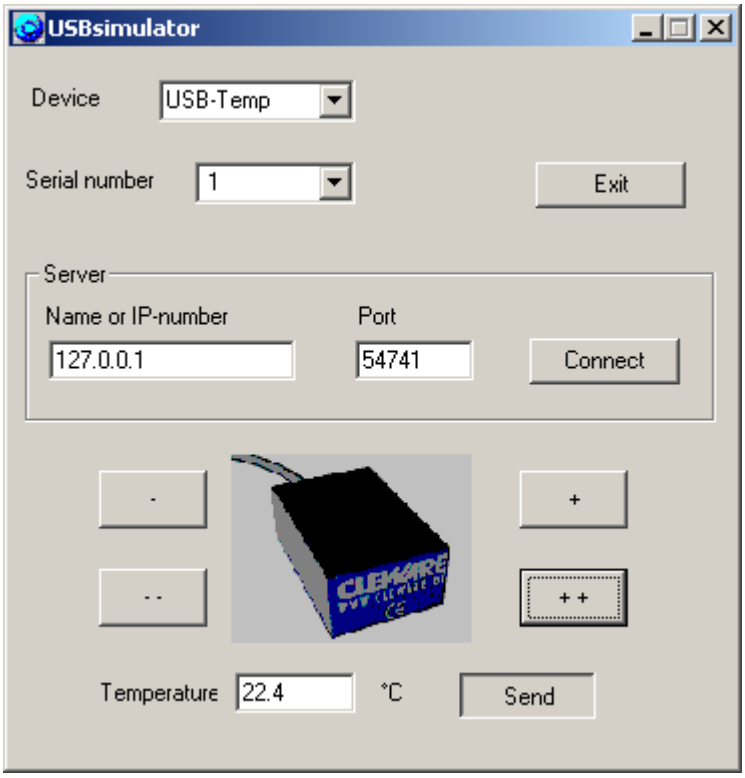
30. Device Simulator to test ClewareControl

The device simulator USBsimulator is capable to simulate an USB-Temp or USB-Switch. The connetion to ClewareControl is done through the network interface. For that reason, the simulator could also be used to test the remote features of ClewareControl. But both applications could also work on the same PC. To test the behaviour with multiple devices, several instances of the USBsimulator could be startet.

Before using the simulator, ClewareControl must be configured as a server.



Now the simulator could be started.

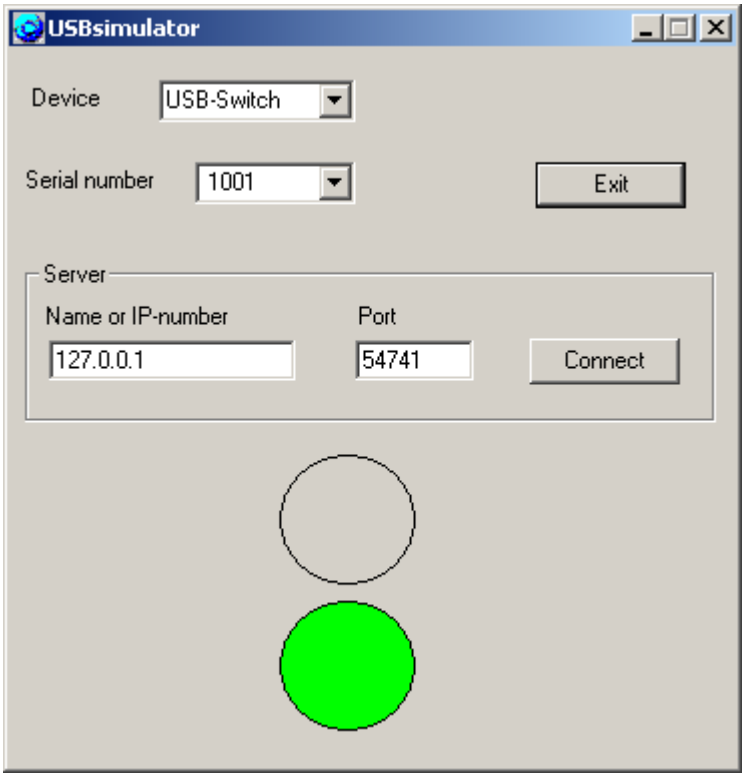


The first line defines the device type to simulate (USB-Temp or USB-Switch). The corresponding serial number is defined below. To simulate multiple devices the application may be started several times. Please be sure to select a distinct serial number for each simulated device.

The field “server” will get the name of the PC running ClewareControl. Alternatively the IP number of the PC could be entered. If both applications run on the same PC, the special IP number “127.0.0.1” could be used. The port number should be the same as used in ClewareControl. Pressing the connect button will establish the connection to ClewareControl. If no problems were detected the send button in the USB-Temp simulation will be activated.

Pressing the send button will start sending the values displayed in the field “temperature”. Different values could be entered directly in this field. Clicking on the buttons marked with “++”, “+”, “—“ ans “-“ will continously increase or decrease the temperature.

When a USB-Switch is to simulate, the following dialog is displayed:



The lower green field indicates an active switch, the upper red one the inactive state. To turn the USB-Switch from the simulation, the round buttons may be pressed directly.