

## Cleware Software User Manual



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## **1. Whats new**

### **Version 5.1.0: Counter support added**

USB-Counter now supported, USB-ADC and USB-Counter get extended display settings.  
Minor bug fixes for display of USB-TrafficLights state

### **Version 5.0.2: More traffic light options**

More traffic light options when configuring actions

### **Version 5.0.1 - Socket support :**

The setup of socket connections is faster and the status of the connection is shown in the status line

### **Simplified and enhanced network functionality starting with version 5:**

Sharing USB-devices and sensors other the network in a very easy way is now done using shared directories. No more restrictions where to display the state of the devices.

### **Logic devices and Contact spike protection introduced in Version 4.5:**

In some cases actions should only be taken if multiple conditions are true at the same time. This may be temperature at a certain level and humidity at another. To do this, a logical device is introduced.

To prevent false alarm when a contact get an EMV spike, the contact actions got a time option. This allows to define a minimum time, the contact has to be opened/closed before the action is taken.

### **New in Version 4:**

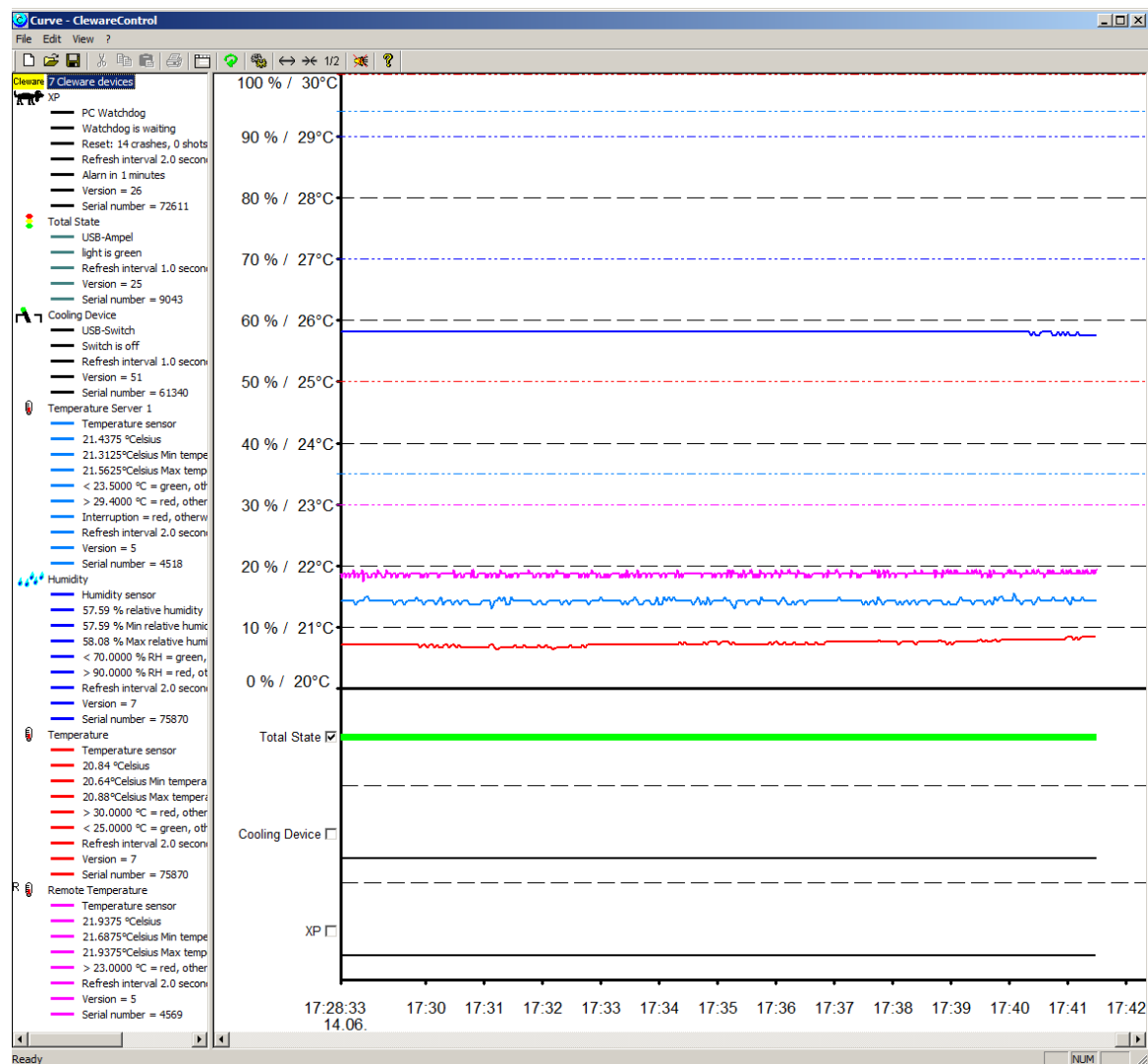
The integration of the USB-TrafficLight (USB-Ampel) in ClewareControl was redesigned to ease the use as an alarm indicator for sensors or events. It is now possible to let the USB-TrafficLight indicate the state of several sensors.

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.

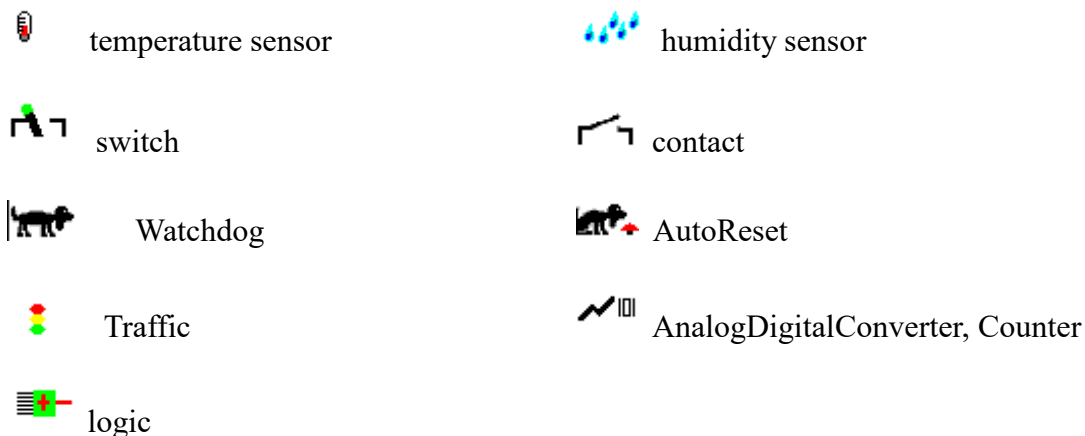
USBswitchCMD has got a lot of new options, including some for interval switching. The access through the registry is also supported for extremely fast switching.

## 2. Introduction

Every Cleware USB device will be configured and controlled by the application "ClewareControl". It will also do the visualization 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:



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 of 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 cause 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.

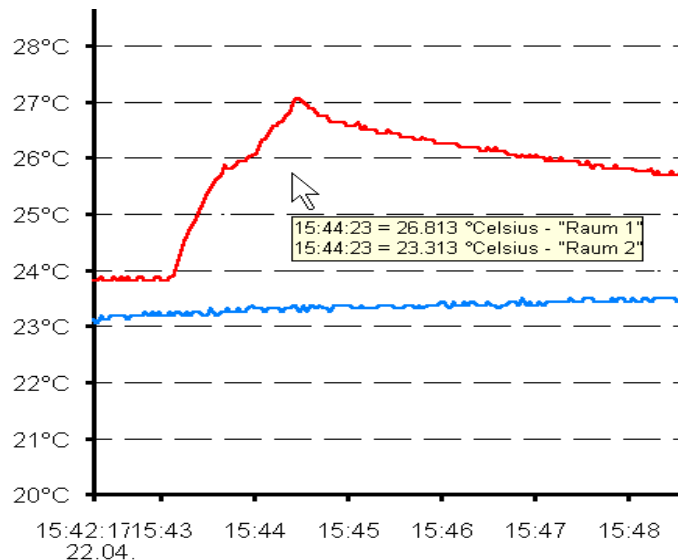
When double clicking the state of an USB-Watchdog or USB-AutoReset, a little dialog opens to select the appropriate action. The dialog is shown below. If the guard is already triggered the double click restarts the sending of life signals to return the device to normal operation. Like the USB-Switch the action could also be 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 left 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 menu 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.

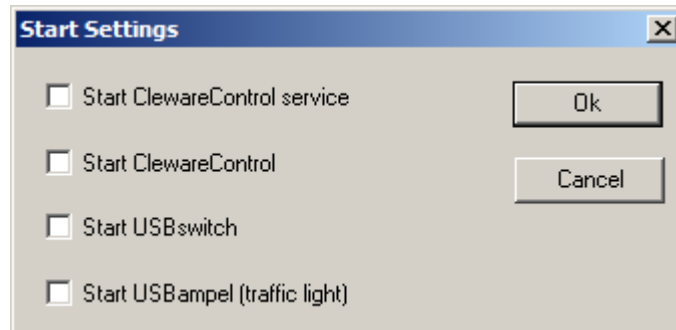
The display may be refreshed with the button  to find new devices. Remote devices will be added automatically.

**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”.

### 3. 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“ menu of with the button .



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


If the option “Start ClewareControl service” was chosen, 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.

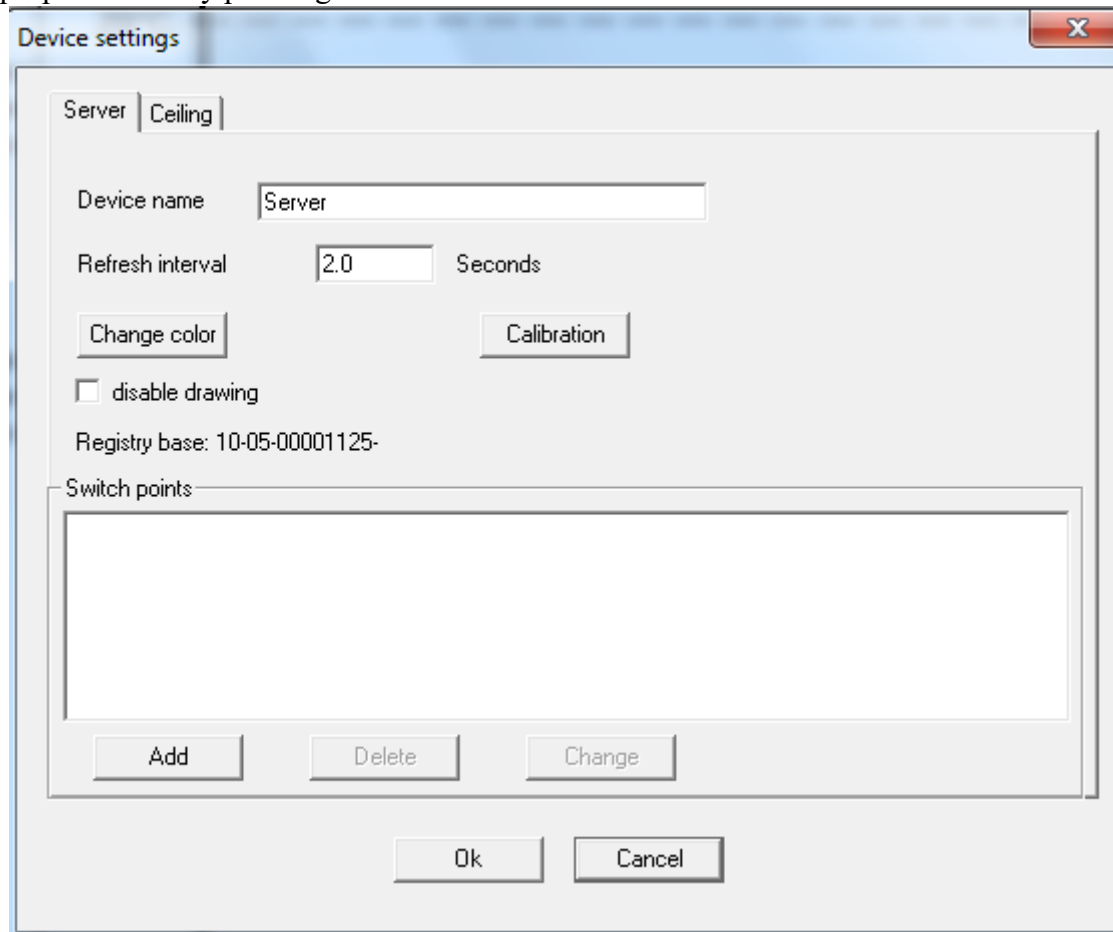
The Cleware service takes care of the actions and will also save values and settings to a file if this was choosen in ClewareControl. To save data from a service, the option “no acknowledge” in the system menu must be selected.

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



#### 4. Device Settings

The settings of the devices could be manipulated with the menu 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 up to 10 seconds is recommended.

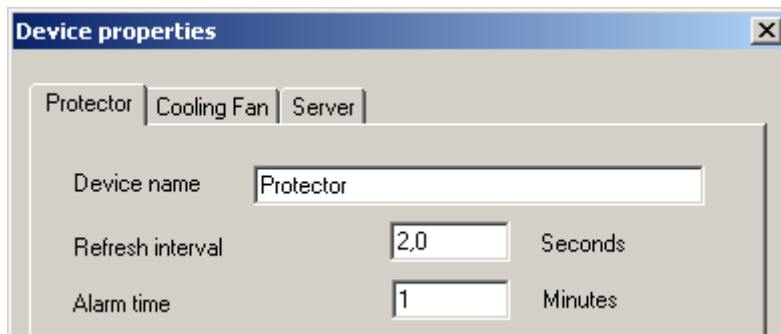
The minimum interval is 1 second in case of the USB-Humidity. The reading of the temperature and the humidity are shifted by half of the interval.

In the case of switches or contact sensors, the refresh interval describes 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 option “disable drawing” will hide this device in ClewareControl. The actions defined for this device will be still active. This option is useful when operating a lot of devices with ClewareControl, e.g. USB-IO16.

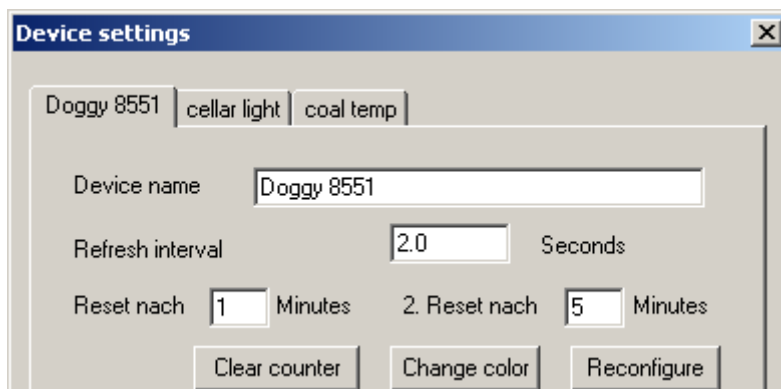


The USB-Watchdog shows an additional parameter, the alarm time. This is the time between the last signal send to the USB-Watchdog and the activation of the alarm. A Value between 1 and 10 minutes is allowed.



The same dialog shows up when the device is a **monitored** version of the **USB-Switch**, except the alarm time unit is seconds. The refresh interval should not be less than the alarm time, because after this time, the USB-Switch goes to the default state.

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

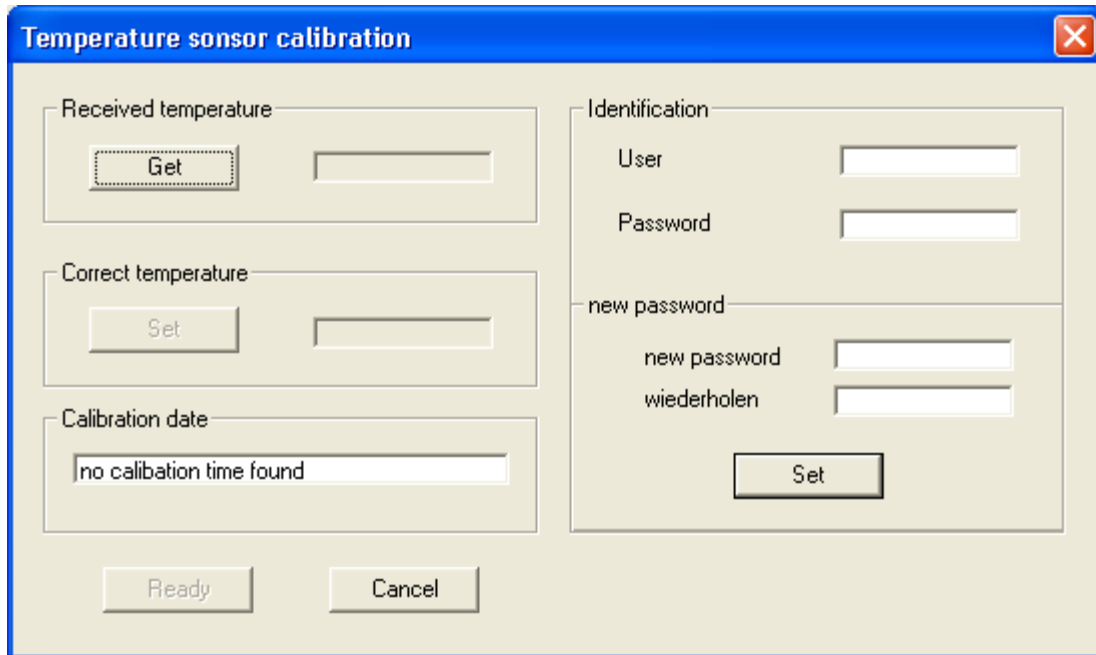


All setttings will be stored in the Registry, a Windows® database. This is done to restore the values when the program is started again. If the operating system is Windows 2000 or higher, the place to store the registry items depends on the existence of administrator rights. If the user got these, the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

Other device settings are described in the following chapters.

## 5. 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:

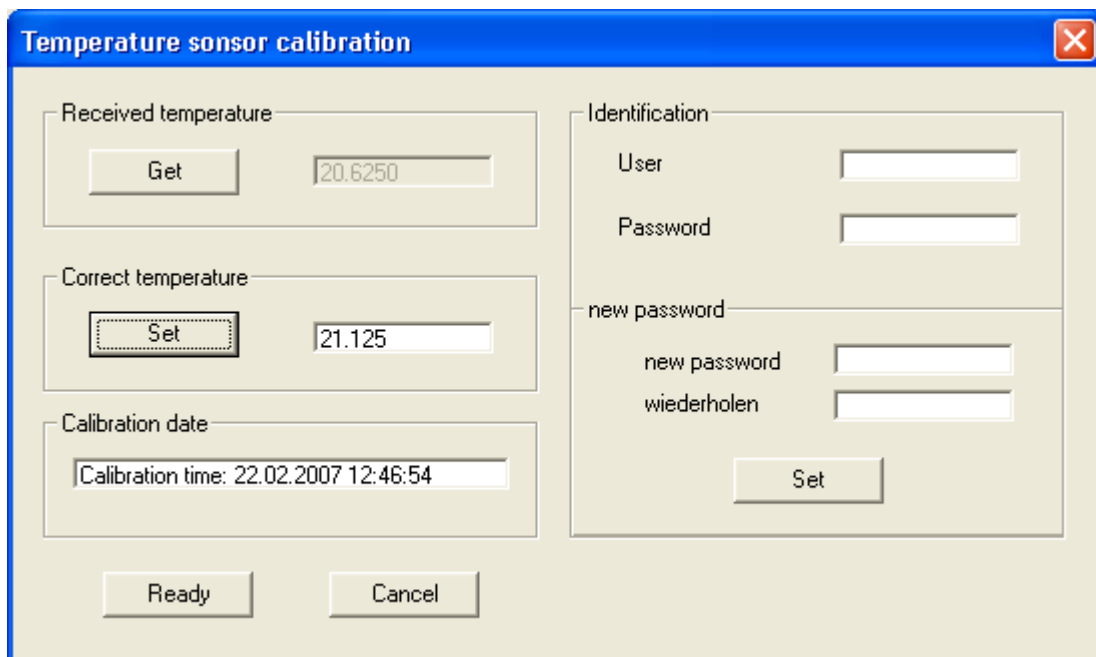


The dialog box is titled "Temperature sensor calibration" and contains the following sections:

- Received temperature:** A button labeled "Get" and an empty text field.
- Correct temperature:** A button labeled "Set" and an empty text field.
- Calibration date:** A text field containing "no calibration time found".
- Identification:**
  - User: empty text field
  - Password: empty text field
  - new password: empty text field
  - wiederholen: empty text field
  - Set: button

At the bottom are "Ready" and "Cancel" buttons.

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.

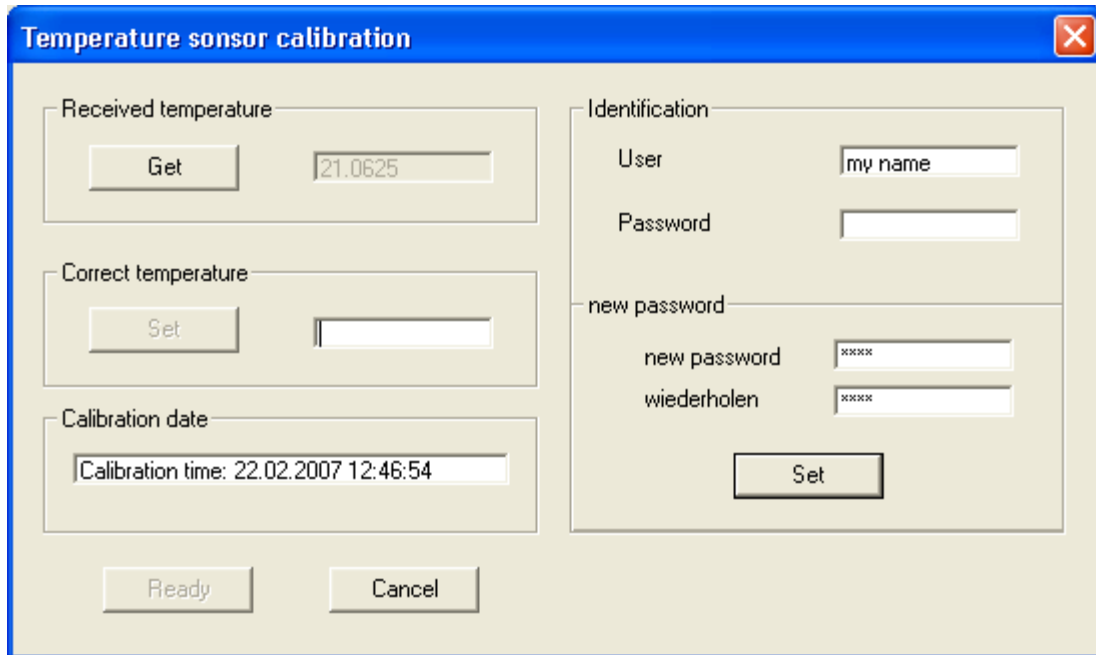


The dialog box is titled "Temperature sensor calibration" and contains the following sections:

- Received temperature:** A button labeled "Get" and a text field containing "20.6250".
- Correct temperature:** A button labeled "Set" and a text field containing "21.125".
- Calibration date:** A text field containing "Calibration time: 22.02.2007 12:46:54".
- Identification:**
  - User: empty text field
  - Password: empty text field
  - new password: empty text field
  - wiederholen: empty text field
  - Set: button

At the bottom are "Ready" and "Cancel" buttons.

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.



The image shows a software dialog box titled "Temperature sensor calibration". It has a blue title bar with a close button (X) in the top right corner. The dialog is divided into several sections:

- Received temperature:** A section with a "Get" button and a text field containing the value "21.0625".
- Correct temperature:** A section with a "Set" button and an empty text field.
- Calibration date:** A section with a text field displaying "Calibration time: 22.02.2007 12:46:54".
- Identification:** A section on the right side containing:
  - "User" field with the text "my name".
  - "Password" field (empty).
  - new password:** A sub-section with two fields: "new password" (containing "xxxx") and "wiederholen" (containing "xxxx").
  - A "Set" button at the bottom of this section.

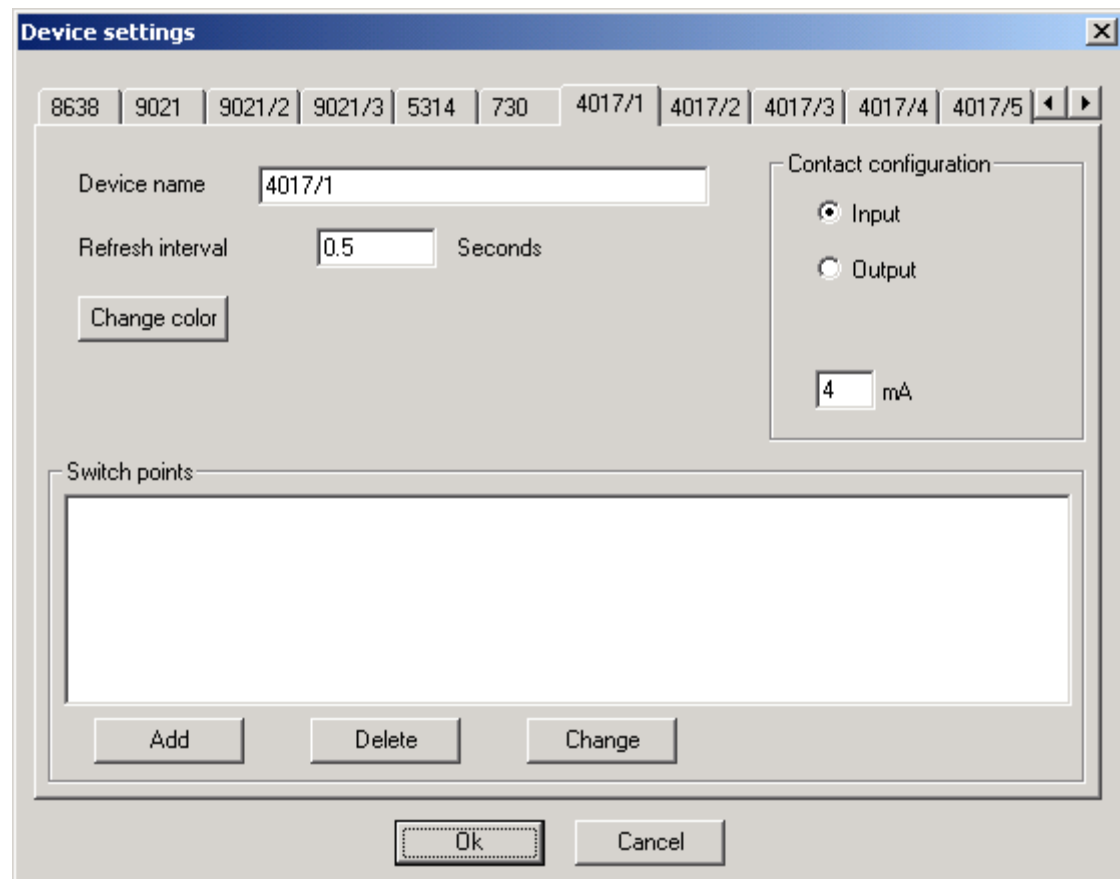
At the bottom of the dialog, there are two buttons: "Ready" and "Cancel".

The 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 field 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.

## 6. 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.

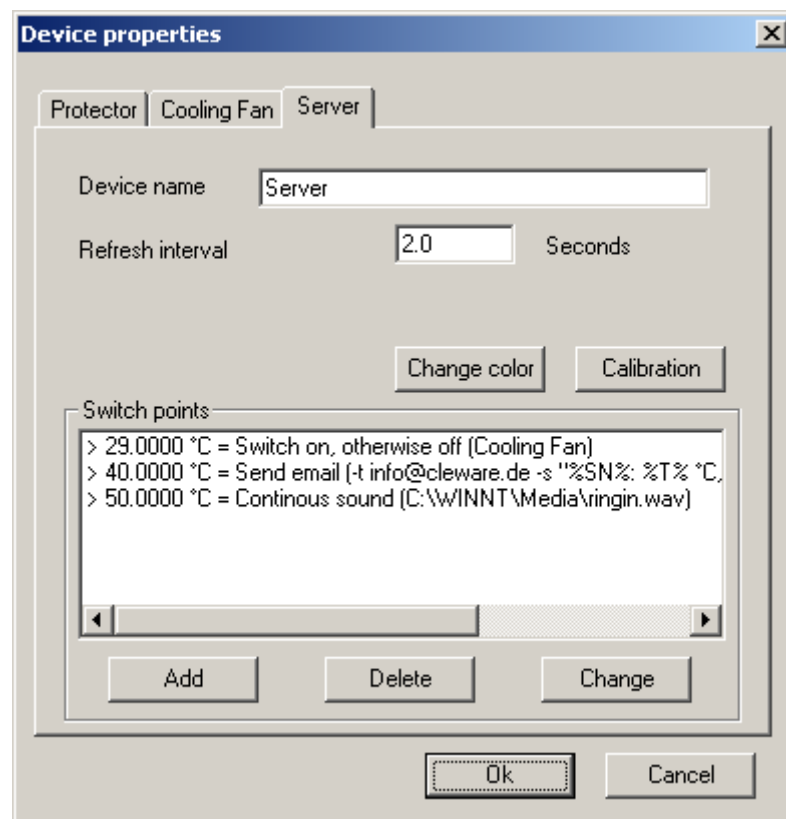
If the channel is defined as an output, the maximum current is expected. This value is of no meaning to the real device. In fact it is just used to calculate the output current of all output channels. The total is checked not to exceed 160 mA-

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

## 7. Switch Points (Sensor Actions)

If the measured temperature is beyond 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:

The 'Switch point' dialog box is titled 'Switch point' with a close button (X) in the top right corner. It contains the following fields and options:

- Start action if**
  - Switch temperature:  °C
    - ☒ exceeded ☐ below
  - ☐ and the temperature is continuously
    - ☐ rising ☐ falling
  - for at least  seconds (0=immediately, 600)
- or
  - ☐ if connection is broken
- Action type**:  (dropdown menu)
- Action**: 
  -
- 

Here the temperature to force an action 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 continuous temperature 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 condition “for at least x seconds” defines how long the condition must be true before is leads to an action. This condition is very useful when controlling contact devices to avoid actions when a short spike interrupts the contact.

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

The 'Switch point' dialog box is titled 'Switch point' with a close button (X) in the top right corner. It contains the following fields and options:

- Start action if**
  - Switching humidity:  % RH
    - ☐ exceeded ☒ falls below
  - ☐ and humidity is constanly
    - ☐ rising ☐ falling

Another condition that could case an alarm is the disappearance of the device. .

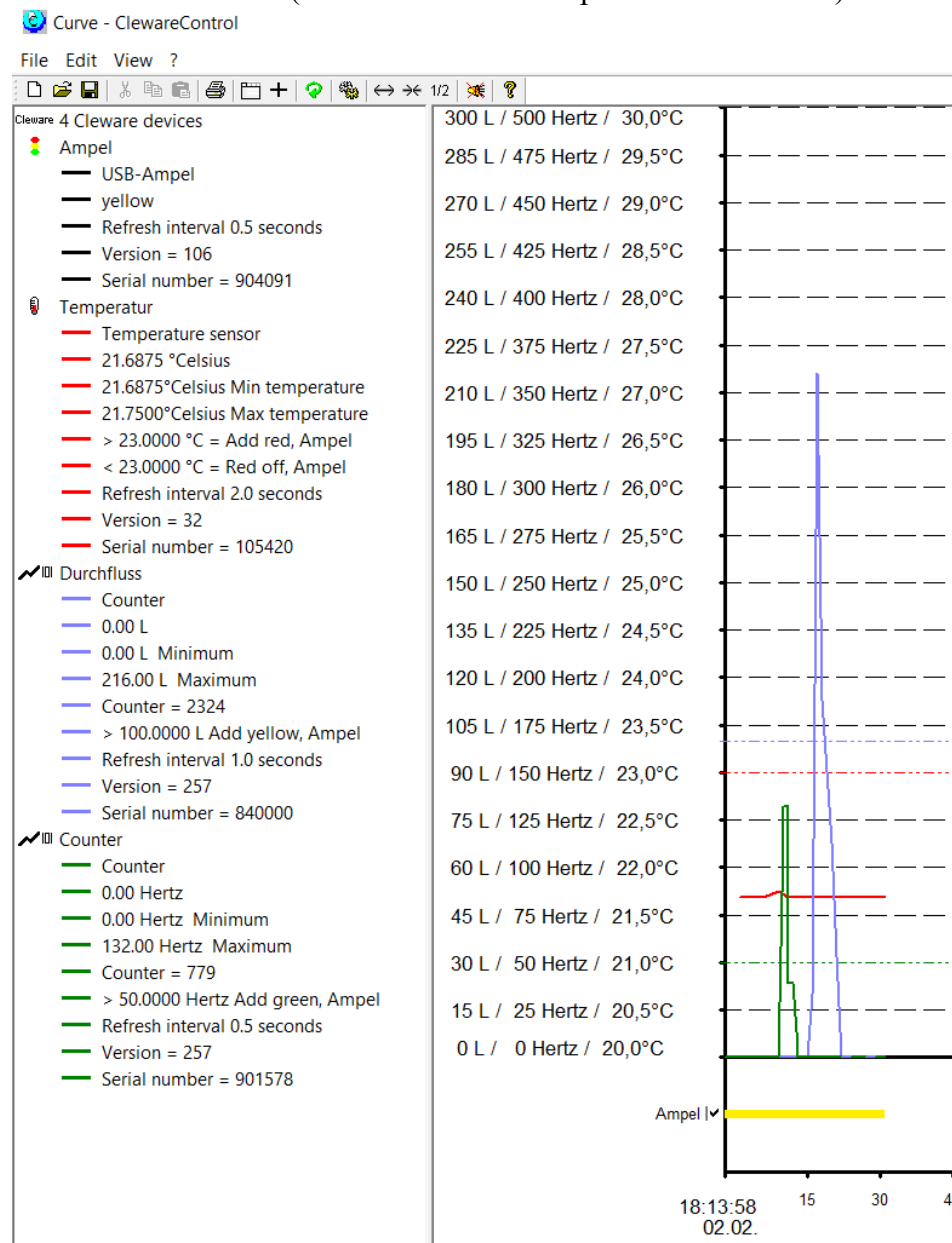
The ADC and counter type devices often use special scaling to be displayed and even the measured value should be adjusted by a factor to multiply with. And of coarse the values may have very different units. To handle this, some new options are introduced:

Device name 
  
Refresh interval  Seconds
  

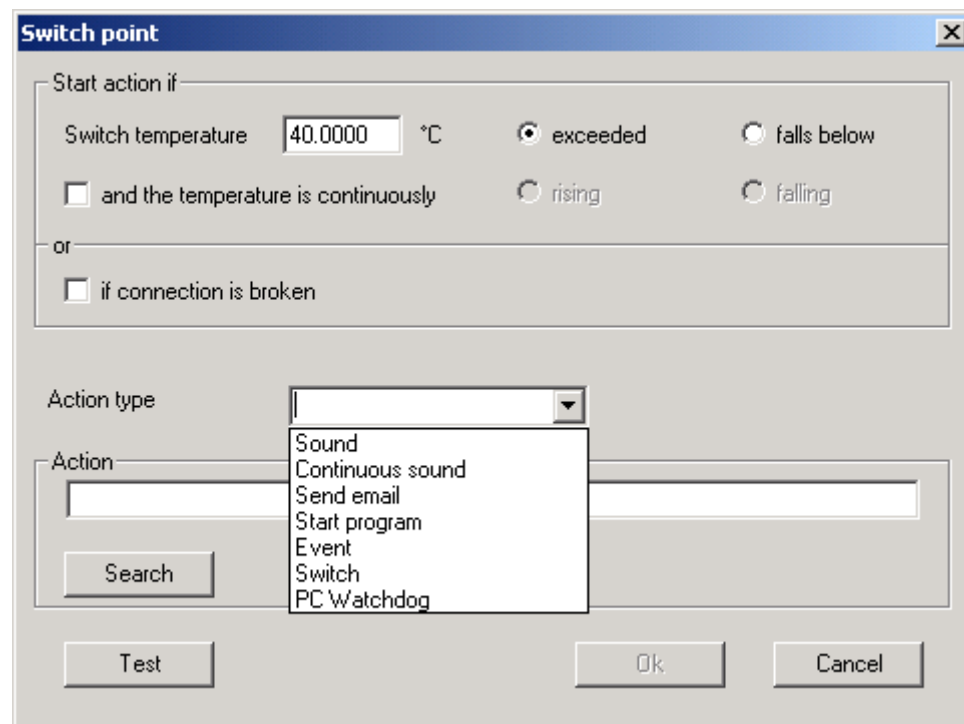
  
☐ disable drawing
  
Registry base: 60-101-000dc1ca-

Display parameter
  
Units 
  
Factor 
  
Minimum 
  
Maximum

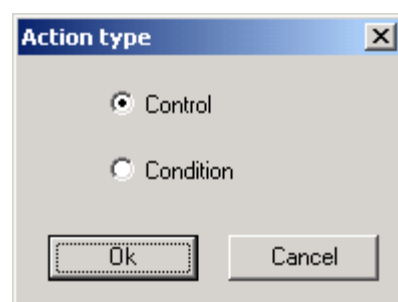
The result is like this (devices are USB-Temp and USB-Counter):



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 chosen action.



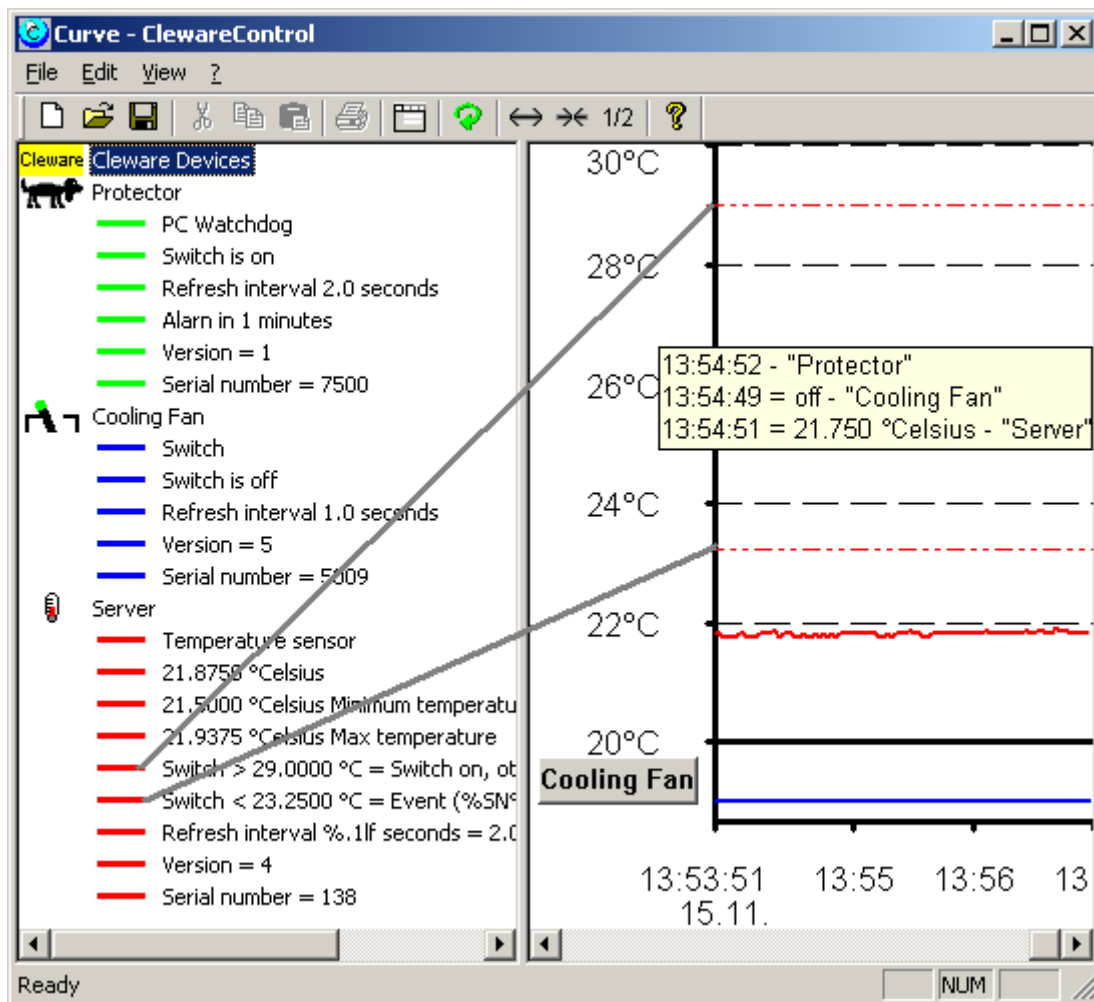
Depending on the choosed action type diffenrent input windows will appear. The meaning of them are decrided in the following sections.



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.

## 8. 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”.

**Switch point**

Start action if —

Switch temperature  °C ☒ exceeded ☐ falls below


☐ and the temperature is continuously ☐ rising ☐ falling

or

☐ if connection is broken

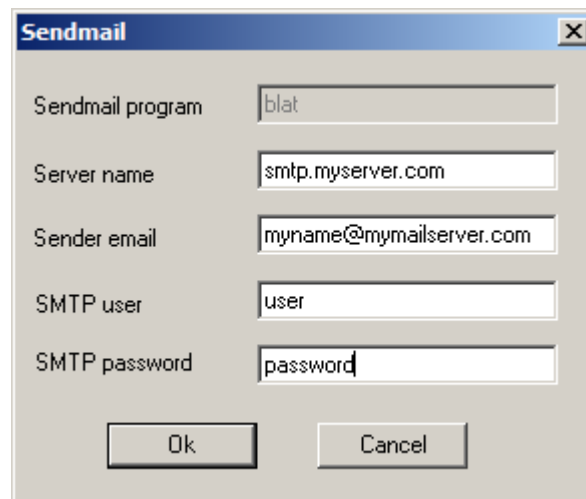
Action type

Action

When the action “Continuous 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 “Continuous tone off”.

## 9. 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 chosen 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.blatt.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 settings 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 whatever 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. It 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.

## 10. 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](http://www.cleware.de)). After registering at the gateway, the setting may look like this:

**Switch point**

Start action if

Switch temperature  °C ☒ exceeded ☐ falls below

☐ and the temperature is continuously ☐ rising ☐ falling

or

☐ if connection is broken

Action type

Action

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.

## 11. 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

Switch point

Start action if

Contact is ☐ opened ☒ closed

or

Action type: Start program

Action: CMD /C "echo Sensor %SN%: closed at %TI% >>c:\logfile"

Search

Test Ok Cancel

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.

## 12. 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

**Switch point**

Start action if —

Switch temperature  °C ☒ exceeded ☐ falls below

☐ and the temperature is continuously ☐ rising ☐ falling

or

☐ if connection is broken

Action type

Action

Ok Cancel

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

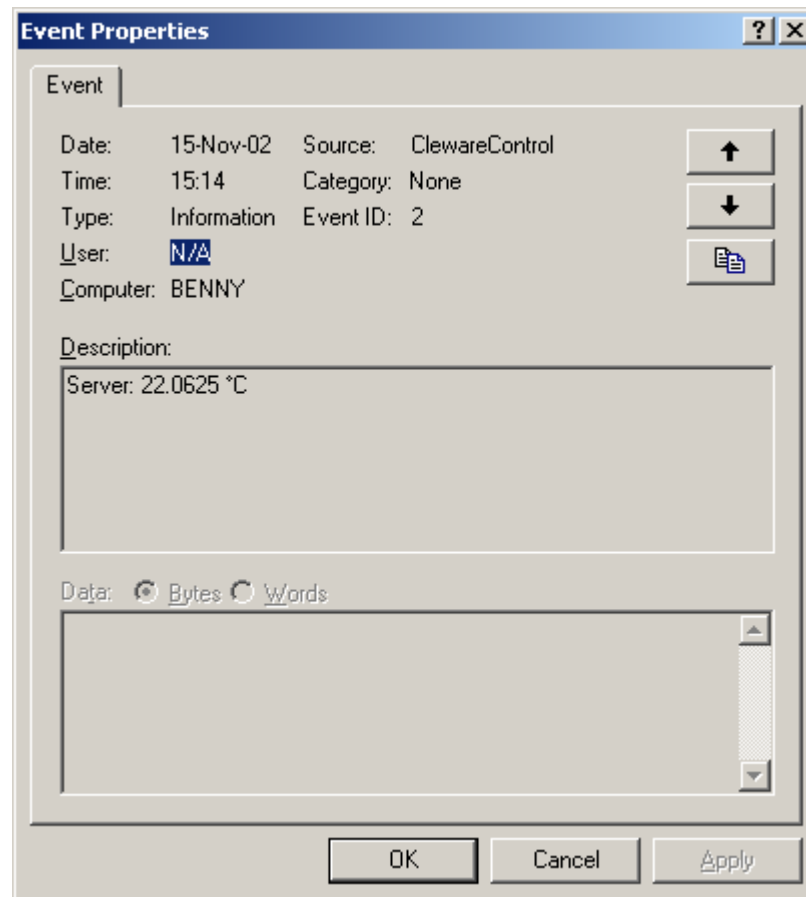
**Event Viewer**

Tree: Event Viewer (Local) > Application Log

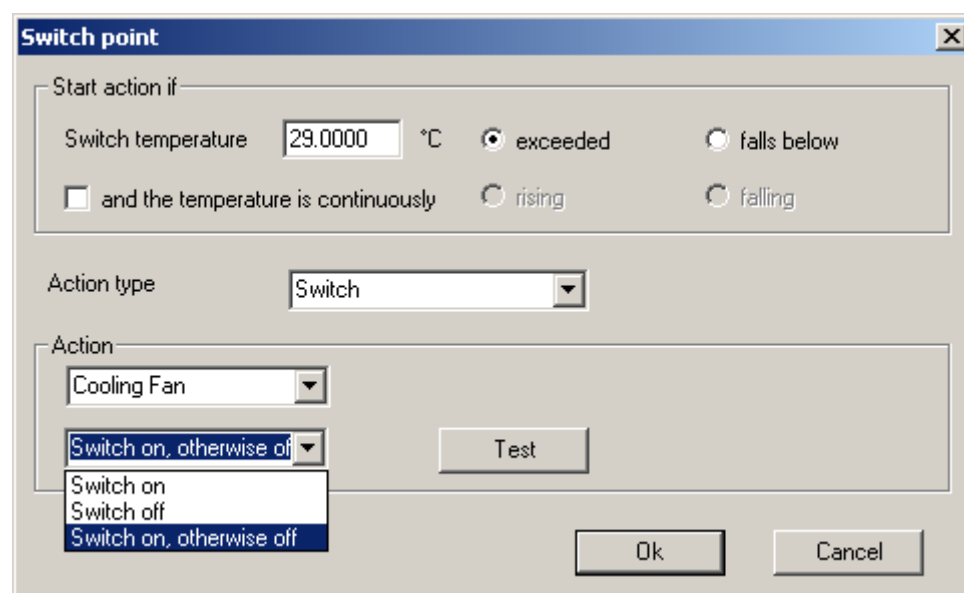
Application Log 2,801 event(s)

Type	Date	Time	Source
Information	15-Nov-02	15:14:42	ClewareControl
Information	15-Nov-02	14:55:51	ClewareControl
Information	15-Nov-02	13:55:53	ClewareControl
Information	15-Nov-02	13:55:35	ClewareControl

The event text looks like this:



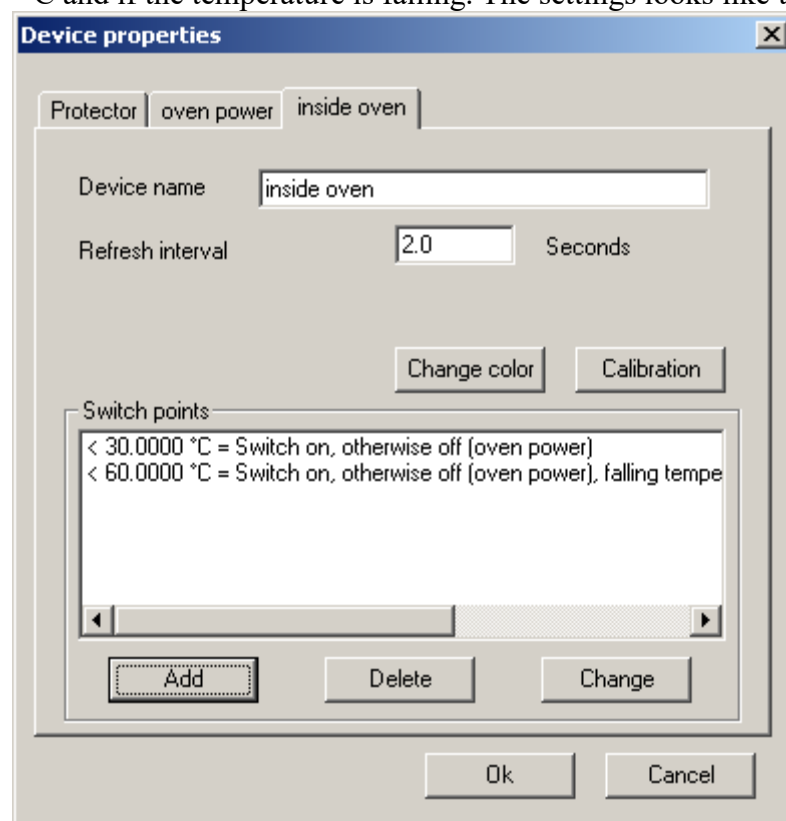
### 13. Sensor Action „Switch“



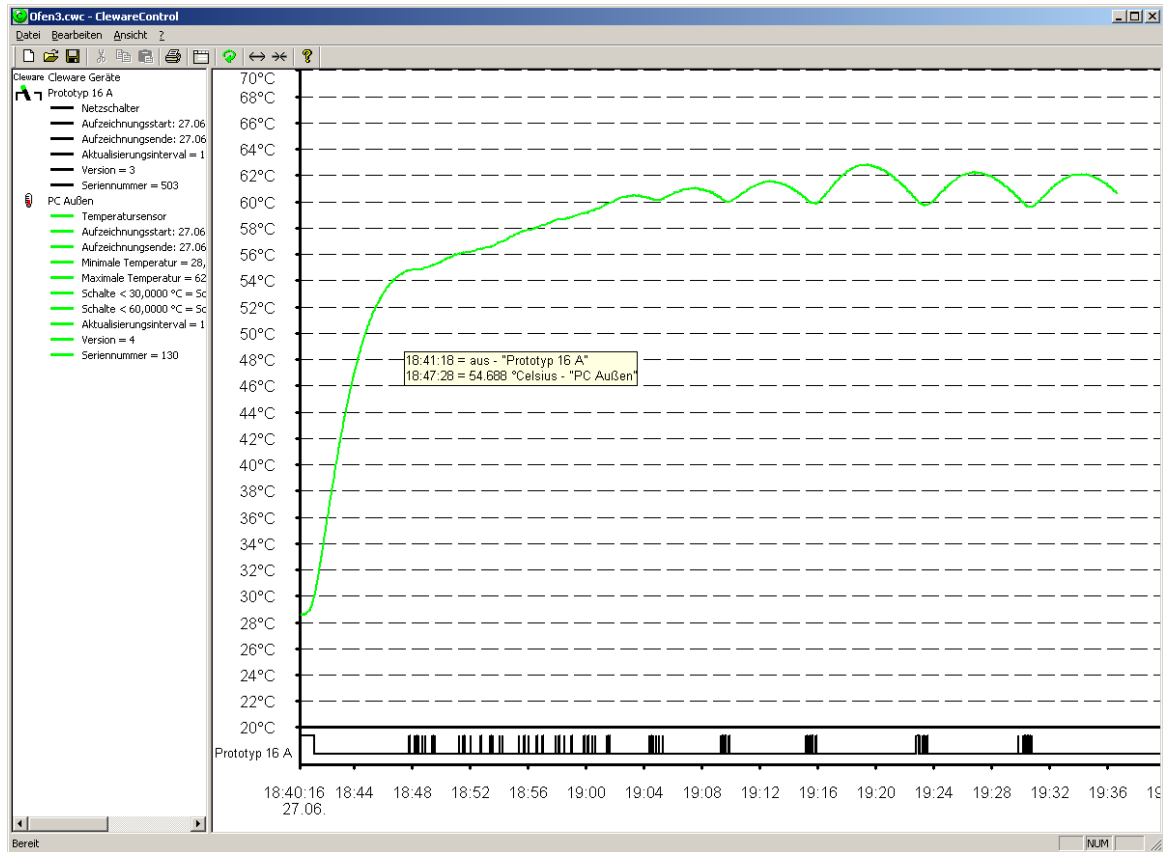


If an USB-Switch is connected to the PC, this may be chosen as the action to take. In this case the action type is “Switch” and the correct switch name is selected in the action field. Three types of switch behaviour are available. The simple ones are turning the switch on or off. In many cases it is desired that the switch turns on if the condition is true and turns off if the condition is false. The third choice “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 look like this:

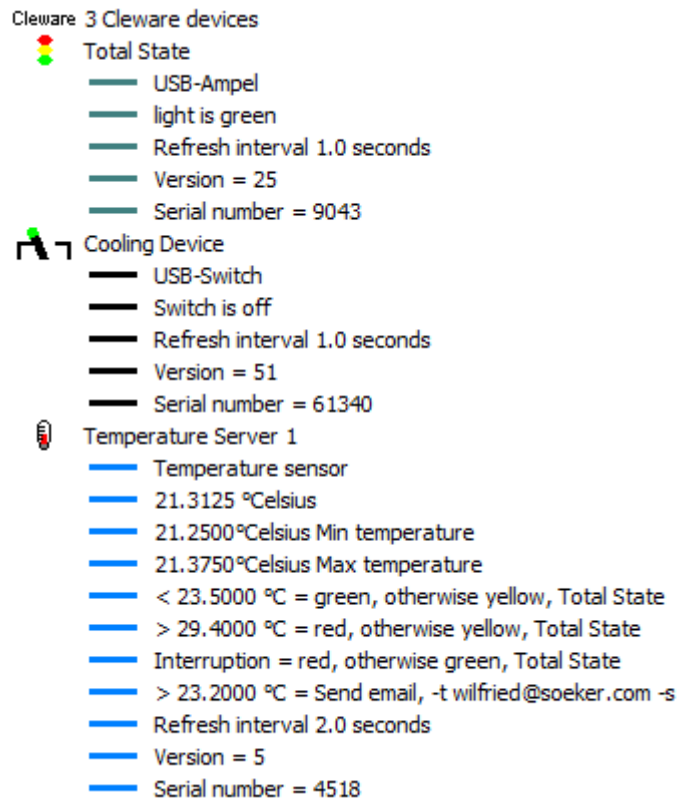


The result of these settings is shown below. The goal temperature will be reached with a deviation of only 2.5 ° C.



#### 14. 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. For seldom cases, the action “Red light, otherwise Green” is available, e.g. to indicate disconnected devices or closed contacts.



The most important 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.

Version 5.0.2 introduces the control of single colors.

- > 23.0000 °C = Add red, Ampel
- < 23.0000 °C = Red off, Ampel

## 15. Sensor action „PC watchdog“

**Switch point**

Start action if —

Switching humidity  % RH ☐ exceeded ☒ falls below

☐ and humidity is constantly ☐ rising ☐ falling

or

☐ if connection is broken

Action type

Action

Ok Cancel

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 alive.

## 16. 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.

Switch point

Start action if

Contact is ☐ opened ☒ closed

for at least  seconds (0=immediately, 600)

or

☐ if connection is broken

Action type

Sound  
Continuous sound  
Send email  
Start program  
Event  
Traffic light

Search

Test Ok Cancel

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

Starting with version 4.5.0 a time period is defined for contact actions. With the new time period the action is only chosen when the condition is active for at least the defined time. This helps avoiding false reactions on spikes created by mechanical switches or EMV sparks.

## 17. 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 may 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:

**Time**

Switch at: 09:00:00, 18-Nov-02

☒ turn on  
☐ turn off  
☐ turn

Repeat:

☐ non  
☐ End time: 01:00:00, 01-Jan-70

☒ time distance: day 01, hour, minute, second

☐ day in month

☐ day in week: ☐ mo ☐ tu ☐ we ☐ th ☐ fr ☐ sa ☐ su

Ok Cancel

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

**Device properties**

Protector Cooling fan Server

Device name: Cooling fan

Refresh interval: 1.0 Seconds

Change color Calibration

Switch points:

- at 09:00, 18.11.2002 turn on, repeat every 01 days
- at 18:00 turn off, repeat every 01 days

Add Delete Change

Ok Cancel

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  
☐ time distance
 

day

hour

minute

second

☐ 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  
☐ time distance
 

day

hour

minute

second

☐ day in month  
☒ day in week
 

☒ mo
 ☒ tu
 ☒ we
 ☒ th
 ☒ fr
 ☐ sa
 ☐ su

☒ End time
 

08:30:10

31-Mar-05

repeat time interval
 

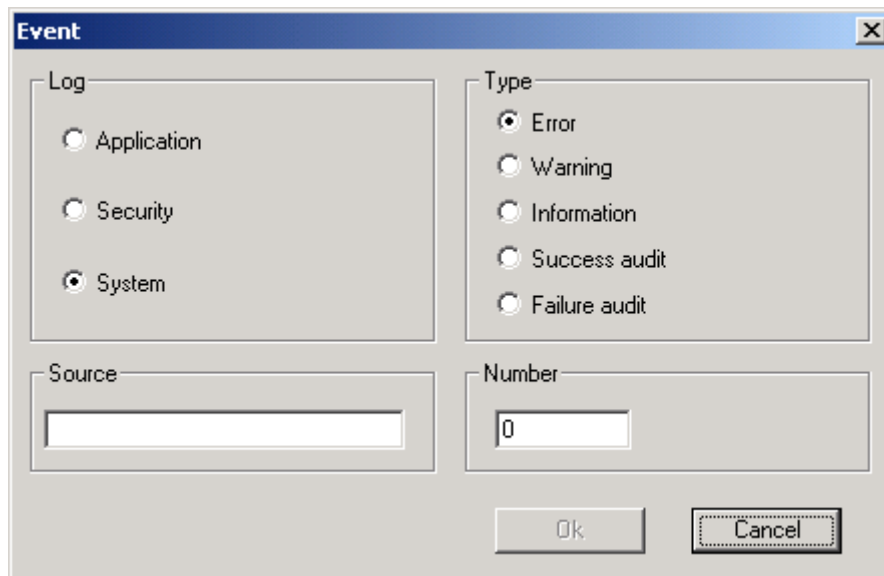
yearly

Ok

Cancel

## 18. Watchdog settings

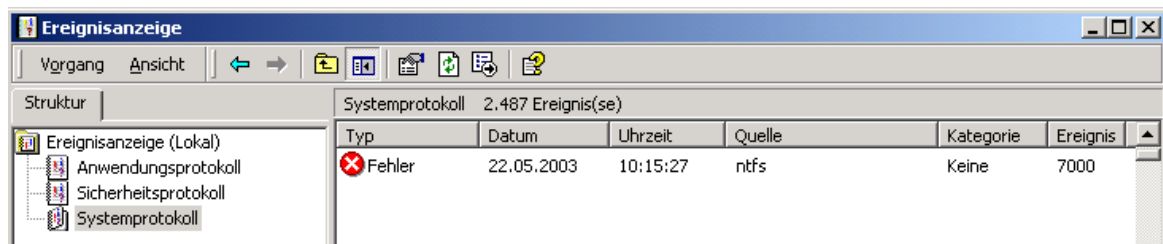
The devices USB-Watchdog and USB-AutoReset (version 10 or higher) could do an alarm or a reset via software. Beside triggering the watchdog with sensor actions, defined events could also cause the watchdog to react. These events are defined as actions of the device. When adding an action, the following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



The 'Event' dialog box contains the following fields:

- Log:** Radio buttons for Application, Security, and System (selected).
- Type:** Radio buttons for Error (selected), Warning, Information, Success audit, and Failure audit.
- Source:** A text input field.
- Number:** A text input field containing the value '0'.
- Buttons:** 'Ok' and 'Cancel' buttons at the bottom right.

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



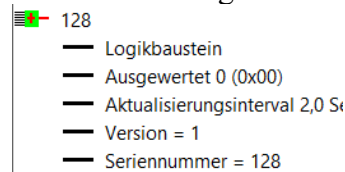
The screenshot shows the Windows Event Viewer window titled 'Ereignisanzeige'. The left pane shows the tree structure with 'Systemprotokoll' selected. The right pane shows a list of events with the following data:

Typ	Datum	Uhrzeit	Quelle	Kategorie	Ereignis
Fehler	22.05.2003	10:15:27	ntfs	Keine	7000

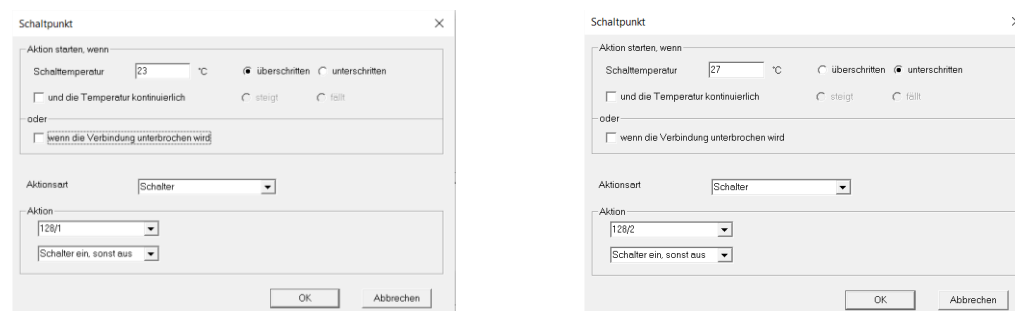
The checking of the events is done by ClewareControl or it's service variant. If only Windows 98 is installed on the target PC, the application USBwatch will do the job.

## 19. Logical combinations

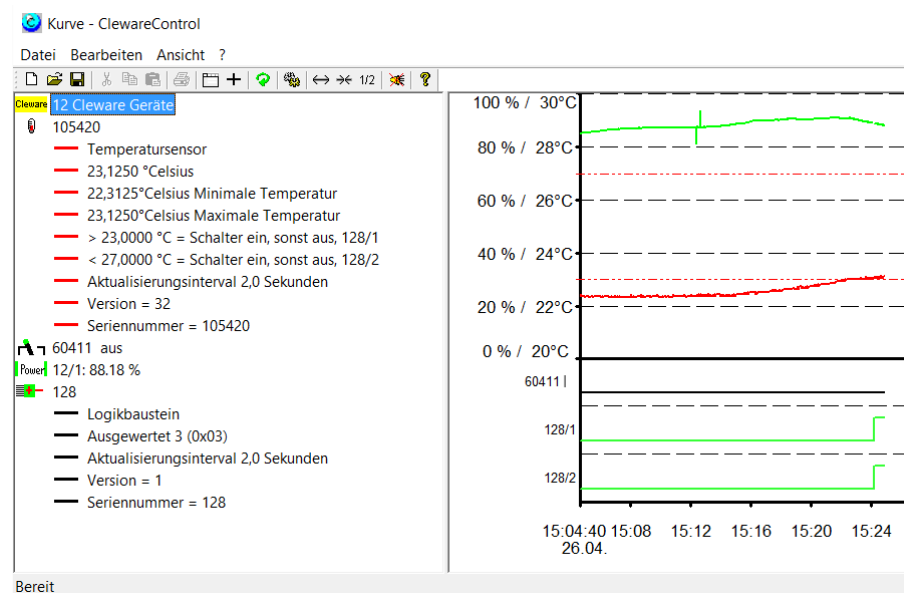
In some cases, it is useful to check a logical combination of sensor or contact states. Starting with version 4.4.6 of ClewareControl a virtual logic device is added. New logic devices are created by pressing **+** or choose the menu „View->Add Logic”. This creates a new logic device.



The logic device is a bit field consisting of 8 bits. Every bit could be manipulated as a result of any action of other devices. For example a temperature sensor which should turn a switch on only if the temperature is in the range 23°C - 27°C.



The device name 128 is the serial number of the logic device with the contacts /1 and /2. These names could be changed the same way as the names of all other devices. If new actions concerning logic bits are active, the state of these are displayed in the right state view.



Back to the sample, the logic analysis is done by adding an action to the logic device:

Schaltpunkt

Aktion starten, wenn

Schaltschwelle  ☐ überschritten ☐ unterschritten

☒ gleich ☐ ungleich ☐ oder

The eight logic contacts are treated like the bits of a byte, /1 is the least significant bit. The action menu offer the conditions greater than, less than, equal or not equal to the value. The last condition “or” checks if one of the bits of the value is found in the logic byte. In the sample the switch should be turned on if /1 (=1) and /2 (=2) is active. This results to 3 (1 + 2).

Up to 32 logic devices are allowed. And the actions of logic devices may also change states of other logic devices.

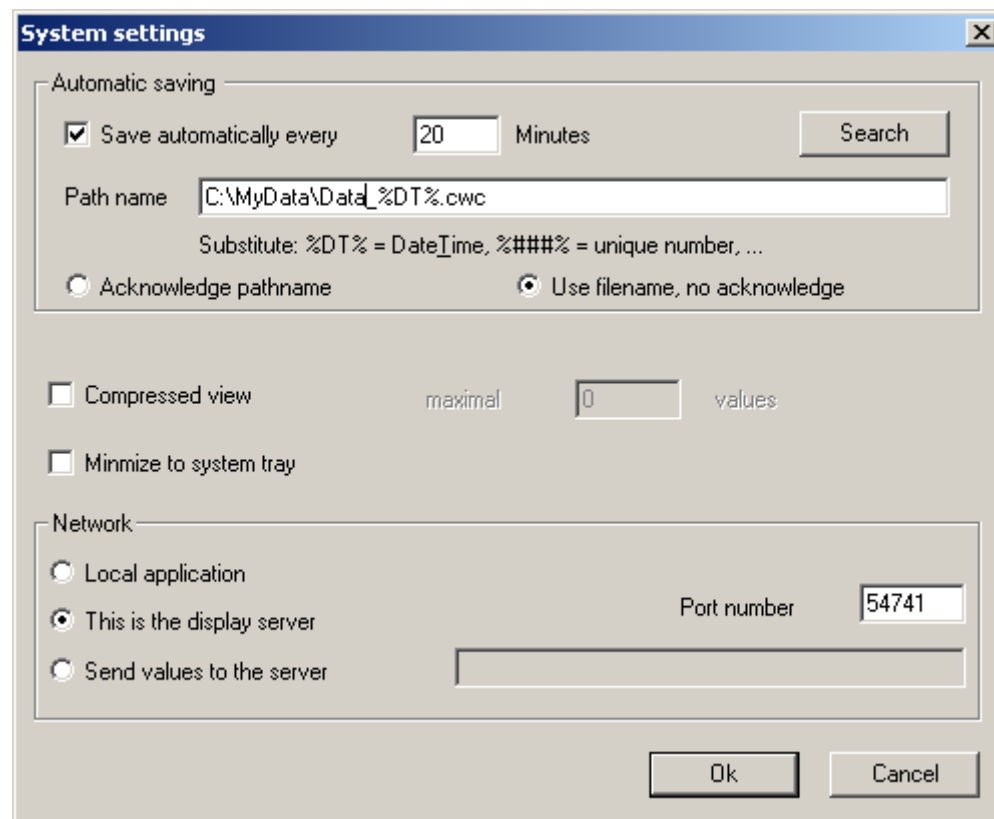
If a logic element is not needed any longer it will no longer displayed on the screen. This is automatically checked by locking if any actions use a logic bit. The logic bits could be used as actions and the display status is checked automatically. If the logic element is disabled when ClewareControl is closed, it will not show up when ClewareControl starts again.

## 20. System Settings – automatic file save

Major ClewareControl settings are managed with the “System settings” dialog located in the “View” menu. 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 menu 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

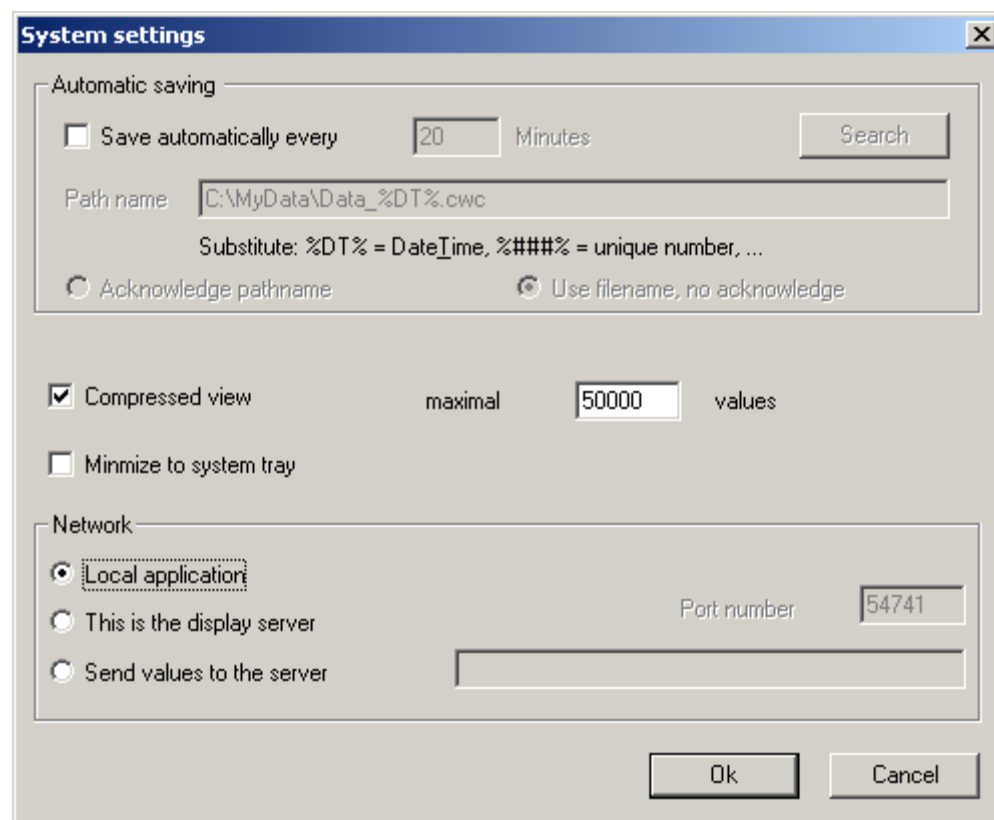
The setting in dialog shown on the last page, a filename that looks like “Data\_26.05.2003 11.44.36.cwc” will be used.

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 chosen if ClewareControl is running in service mode.

## 21. 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 assures that minimum or maximum values will be unmodified. It is also guaranteed that there is at least one value in a period of 10 minutes.

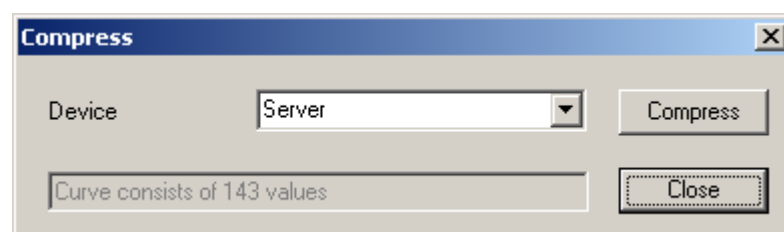
When selecting the compressed view check box the maximal used values must be specified. The default value is 500000 values. When the specified amount of values is reached, the compression will start automatically and reduces the count of values by about 50%.



The 'System settings' dialog box contains the following elements:

- Automatic saving:**
  - ☐ Save automatically every  Minutes
  - Path name:
  - Substitute: %DT% = DateTime, %###% = unique number, ...
  - ☐ Acknowledge pathname ☒ Use filename, no acknowledge
- ☒ Compressed view maximal  values
- ☐ Minimize to system tray
- Network:**
  - ☒ Local application
  - ☐ This is the display server
  - ☐ Send values to the server
  - Port number:
- 

The compression could also be started manually with the view menu item “Compress” or the button . 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.

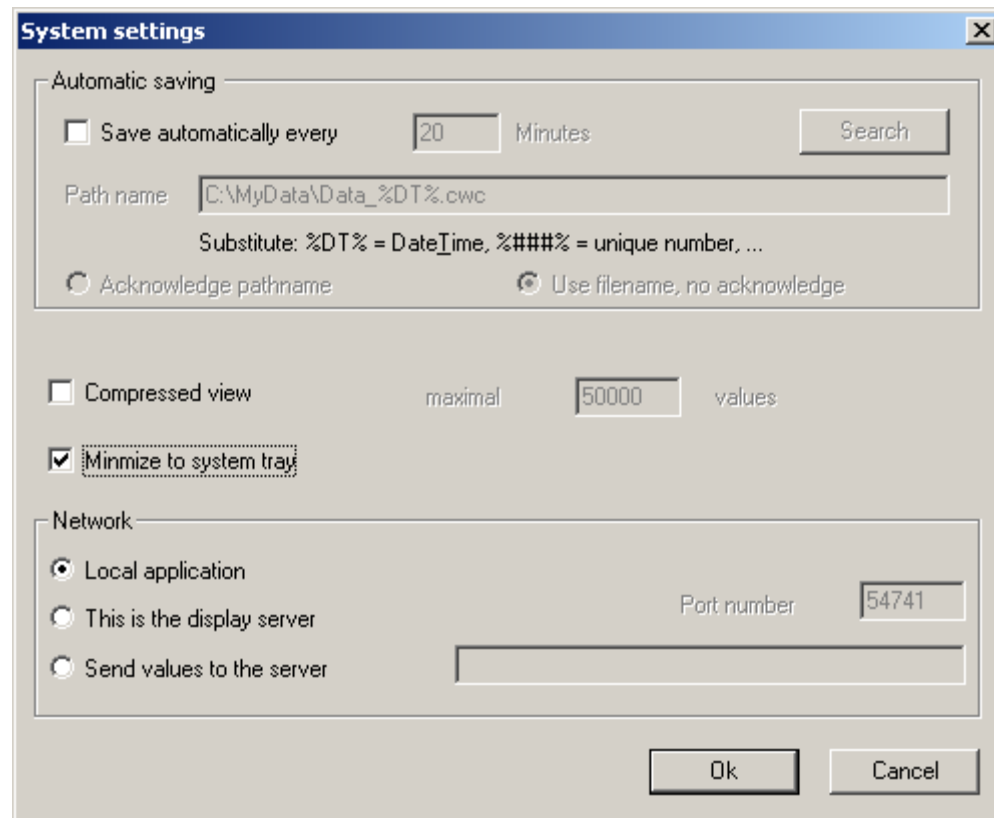


The 'Compress' dialog box contains the following elements:

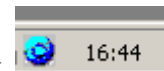
- Device:
- Curve consists of 143 values

## 22. 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 chosen by pressing the right mouse button on the blue icon.



### 23. System Settings –switching and measuring through the network

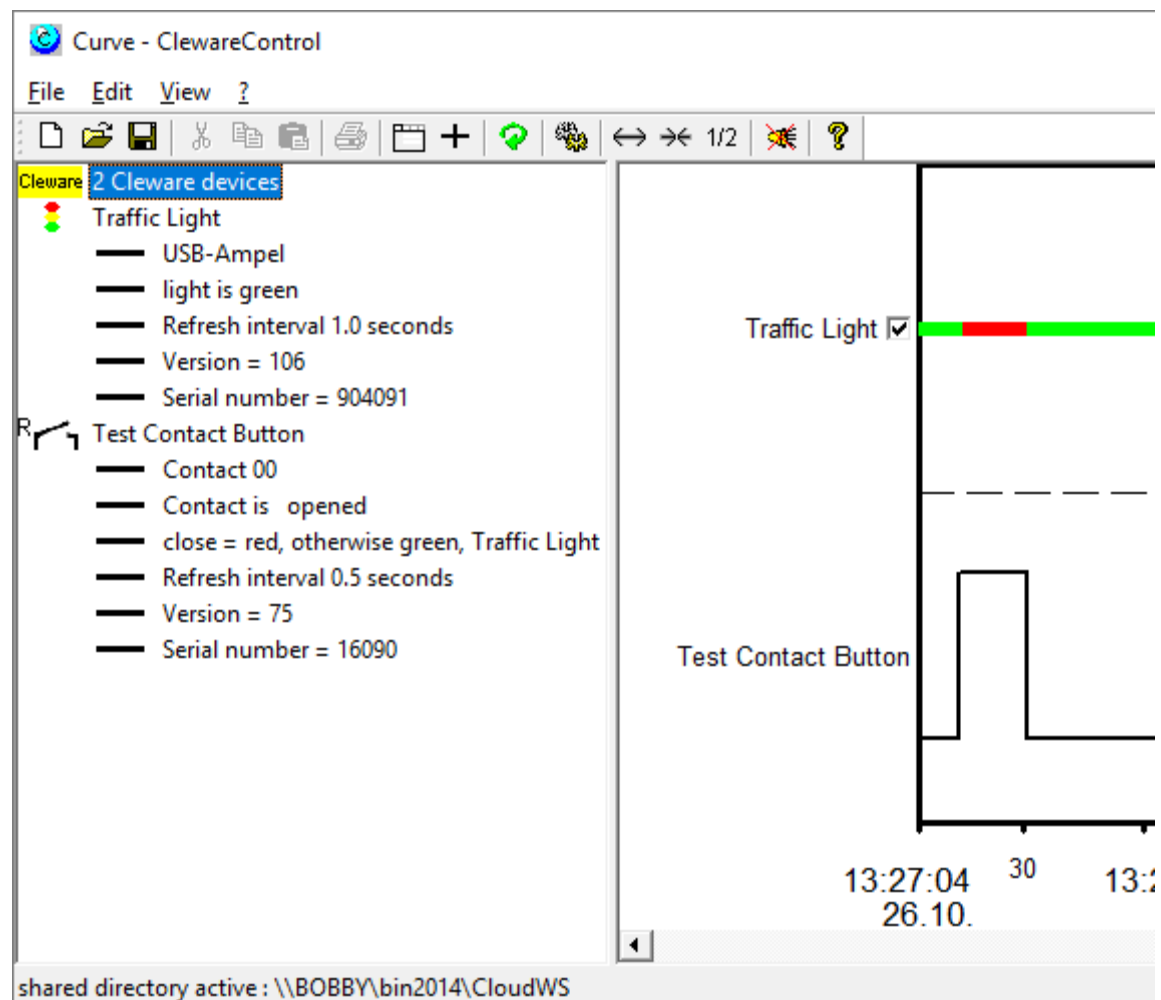
In some cases the measured values should be displayed on another computer than the one that hosts the Cleware USB device. A typical example is the supervision of a server from the system administrator PC or the controlling of rooms from the factory security. Even the activation of an USB-Switch through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

Starting with Cleware software version 5, the network functionality is realized using a shared directory. Up to 250 devices could be managed. This is not a client/server approach, all PCs connected by the shared directory, have the same view and the same level of control. If actions are defined, this should be done only at one instance of the network to avoid conflicts who is responsible for switching.

The sharing is activated in the system settings:

The path name is the path to the shared directory. In all instances the individual path should end at the same directory. The server hosting this directory may just be a remote disc or a shared directory at one PC. The PC-Name identifies the PC which just configures ClewareControl. This name must be unique for every PC involved in the sharing.

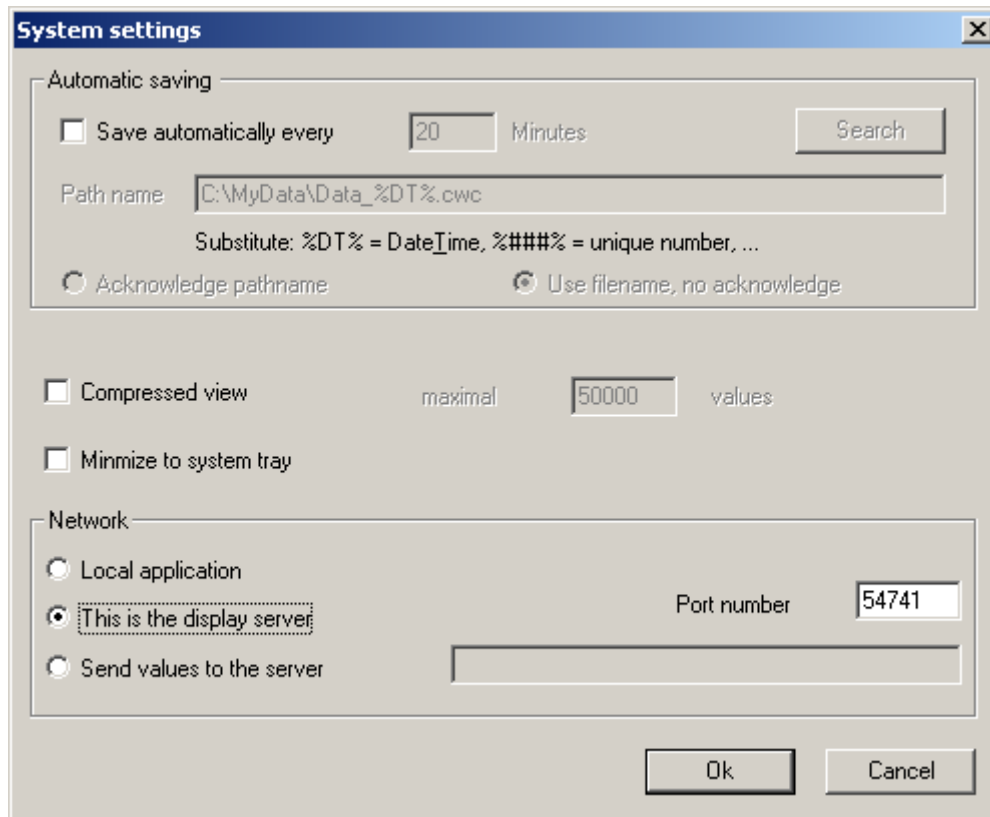
This is a sample with a local USB-Ampel traffic light device and a remote USB-Contact. The USB-Ampel got an action to indicate the state of the contact. Sharing is done by a remote directory, the path is shown at the bottom status line.



## 24. System Settings – switching and measuring through the network via TCP/IP

In older ClewareControl versions the networking is based on TCP/IP sockets. This approach is still valid, but due to it's restricted functionality, not recommended.

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  Minutes

Path name

Substitute: %DT% = DateTime, %###% = unique number, ...

☐ Acknowledge pathname ☒ Use filename, no acknowledge

☐ Compressed view maximal  values

☐ Minimize to system tray

Network

☐ Local application

☐ This is the display server Port number

☒ Send values to the server

oder

**System settings**

Automatic saving

☐ Save automatically every  Minutes

Path name

Substitute: %DT% = DateTime, %###% = unique number, ...

☐ Acknowledge pathname ☒ Use filename, no acknowledge

☐ Compressed view maximal  values

☐ Minimize to system tray

Network

☐ Local application

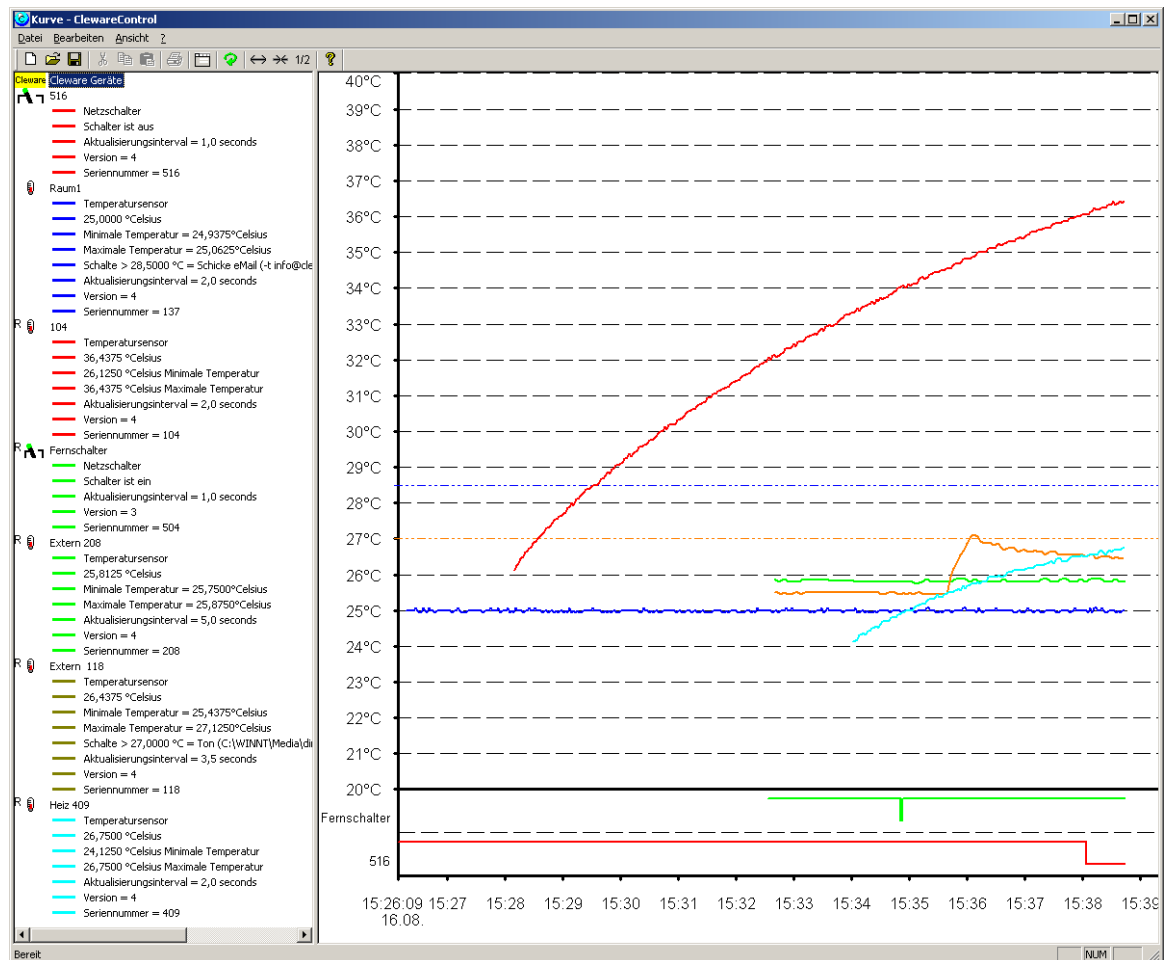
☐ This is the display server Port number

☒ Send values to the server

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.  

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.



## 25. Export of the measured values

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

The device whose data should be exported is selected in the list on the top of dialog. The data could be cut by defining a start and end time. The small gray text window 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:

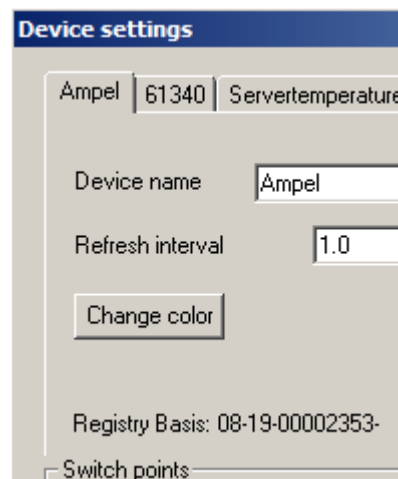
%SN%	Name of the temperature sensor
%T%	actual temperature or relative humidity
%DT%	actual date and time, e.g. 02.05.2002, 11:54:23
%DA%	actual date, e.g. 02.05.2002
%TI%	actual time, e.g. 11:54:23

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.

## 26. 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 7 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.

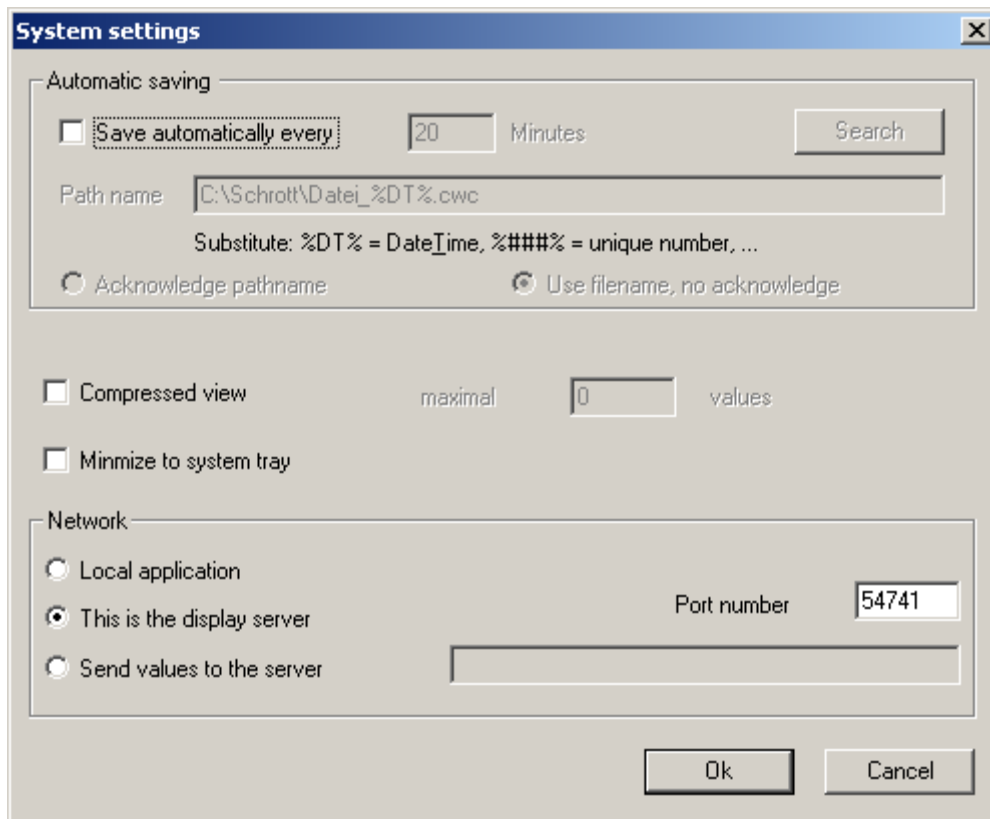
This identifier combined with a keyword could be used to get measured values. If for example the registry base of an USB-Temp is „10-05-000011a6-“, just append „CurrentTemperature“ to the name and start registry read. Reading „10-05-000011a6-CurrentTemperature“ will a DWORD value, with interpreted as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

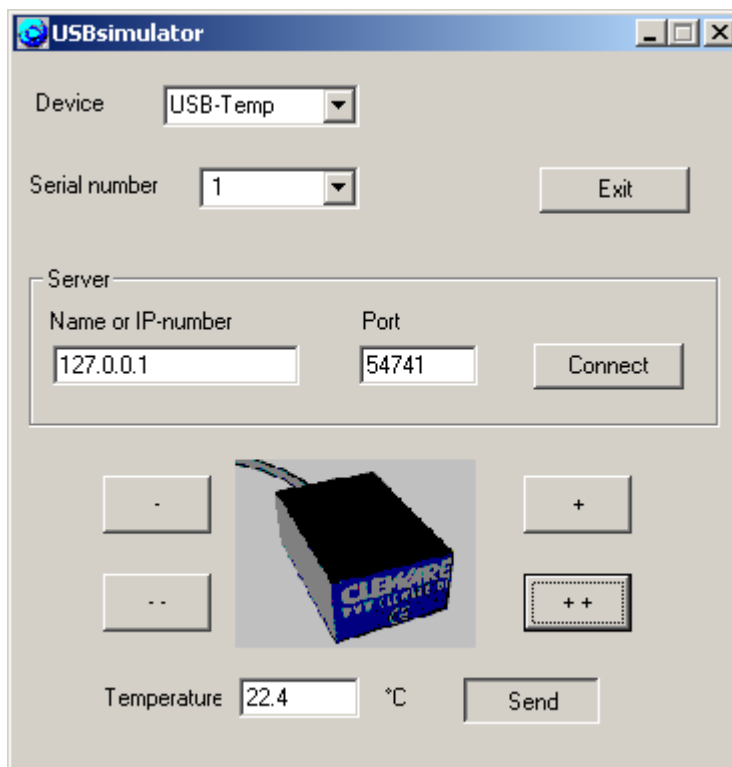
## 27. Device Simulator to test ClewareControl

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

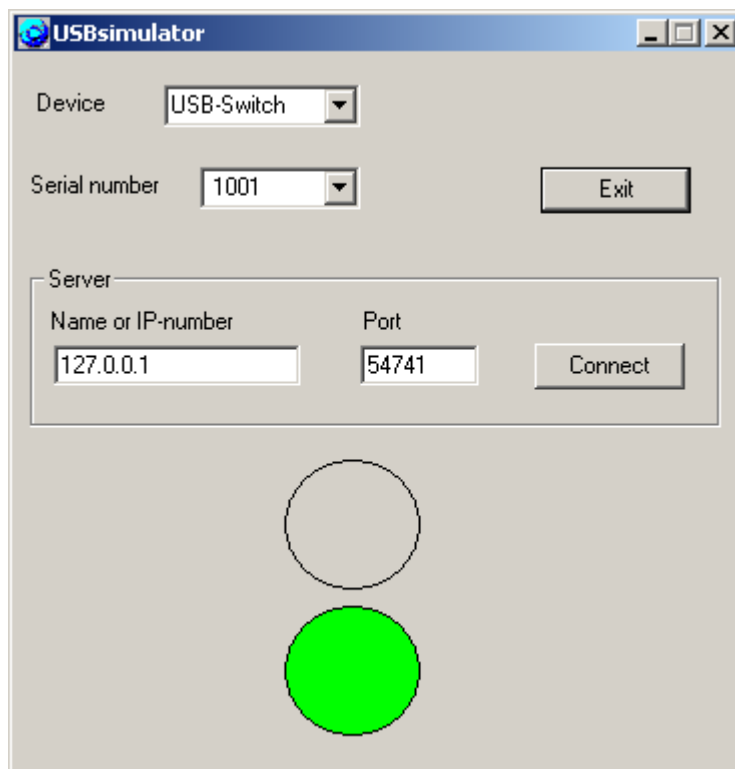


application may be started several times. Please be sure to select a distinct serial number for each simulated device.

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 “++”, “+”, “—“ and “-“ will continuously 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.

