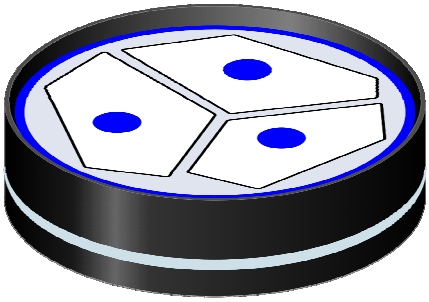

User Manual

PeCon cellVivo Software

V1.1.0.0

Manual version 2.0 – 08 / 2013

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Introduction

The present user manual describes the use and functionality of the PeCon cellVivo Software.

This software is a simple facility even for untrained users to set up, to work with and to control an incubation environment.

On the PC, a program with many configuration options is executed. It collects the current states of all of the connected devices and makes them available in a separate GUI.

The software offers the possibility of saving and recalling different user-specific settings if the microscope is used by several users.

So-called "Dynamic Experiments" can be planned and operated separately. That is, that for example a time-dependent alteration of specified values and a defined switch-on and switch-off of channels is possible.

About this User Manual

- The screenshots and devices shown and mentioned below can possibly differ from the actually illustrated screen displays and utilized devices.
- In this manual, the operation of the PeCon cellVivo Software is described. For information regarding the hardware, for example control devices, see the corresponding manuals.

Usage of Symbols

Following symbols are used in this manual.

Important hints for the usage and limitations of the software.

Additional explanations and useful tips for the usage of the software.

Further Identification Marks

[push buttons]	Push buttons which refer to the software
Software-lettering	Denotations which refer to the lettering within the software interface
"*list item*"	List items which refer to the items in the drop-down boxes or menus

Initial Operation

To make sure that the software is operating correctly, please follow the instructions of the Initial Operation in the order as described below.

1. Download of the Installation File:

   a) Open your internet browser.
   b) Enter the following internet address:
   http://www.pecon.biz/cellvivo-sw
   c) After confirming the internet address, the installation file can be saved in one of your desired folders.

2. Installation:

   a) Open the folder with the installation file.
   b) Double-click on the installation file to start the installation.
   c) Follow the installation assistant.

   The software cannot be installed unless the user account is registered as "Computer Administrator."
   If the user account is registered as a "Restricted Account," change it to the "Computer Administrator" account.
   (For user account registration, refer to the instruction manuals for your computer.)

3. Licensing the Software:

   Insert the USB-Dongle in one of the USB ports of your computer.

4. Connection of the Control Devices:

   Connect the control device that you are using (i. e. TempController 2000-2 cell vivo design) with the Windows-PC. For this purpose, please use the USB connecting cable that is enclosed in the control device (see manual of the control device).

   In rare cases, the USB port on your PC loses the connection to the connected device.
   If so, connect the USB plug of the cable to another port on the PC.

5. Starting the Software:

   To start the software, double-click on the symbol on the desktop or start it via the Windows start menu.

Initial screen:

The software opens and looks as follows.

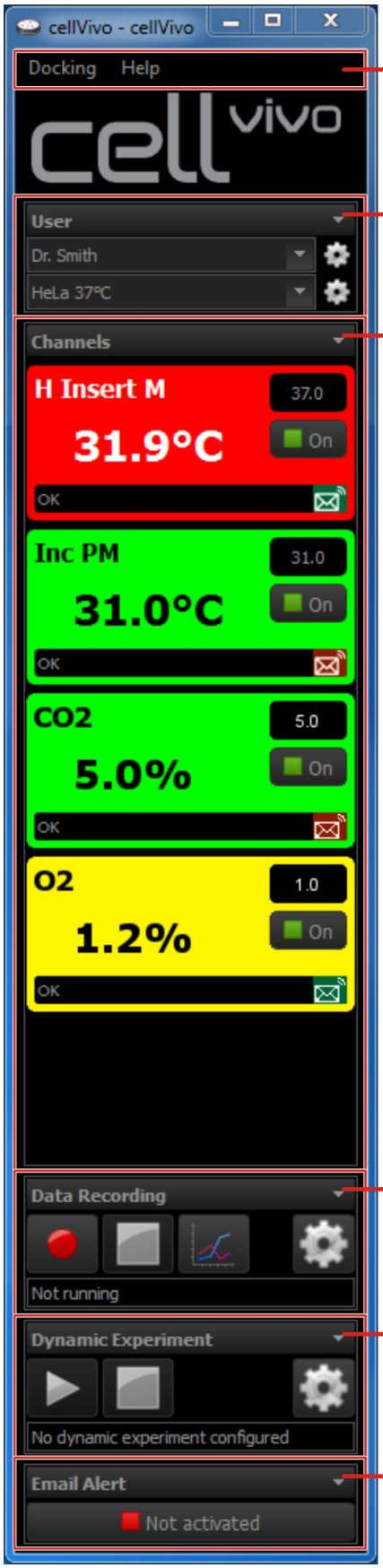
As there are no users and profiles created yet, the main screen is empty.

As soon as an user and a profile is generated, the main screen looks similar to the one shown on the next page (section "User Interface"), depending on the used components and defined settings.

Basic Functional Overview

User Interface

This is an example of the main screen of the software if all settings (explained in the following section "First Steps") have been made.



Menu bar

User view

Channel view

Data Recording

Dynamic Experiment

Email Alert

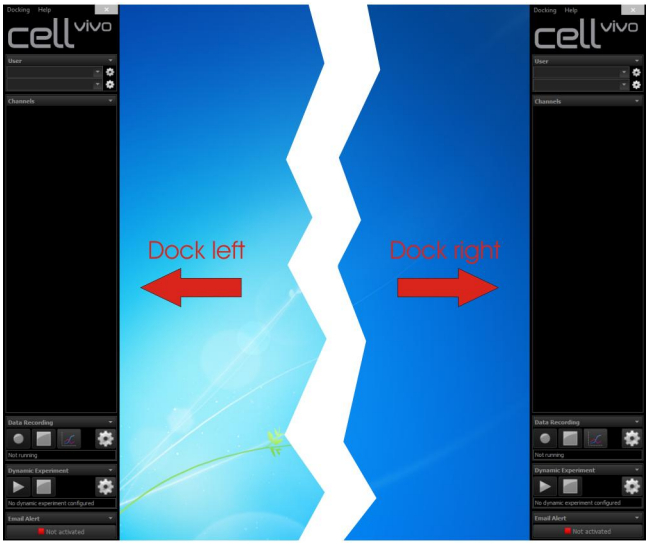
Explanation of the menu

The following chapter describes the menu bar of the software.

Docking:

The main screen of the software has no docking by default.

- "*Screen 0: Dock left / Dock right*":
  Docks the main screen of the software to the main computer screen.
- "*Screen 1: Dock left / Dock right*":
  If there is a multi-monitor setup, it is possible to dock the main screen of the software to every computer screen.
- "*No docking*":
  By selecting this option in the menu ***Docking***, the docking will be undone and the main screen of the software changes to a normal window.



Docking the software:

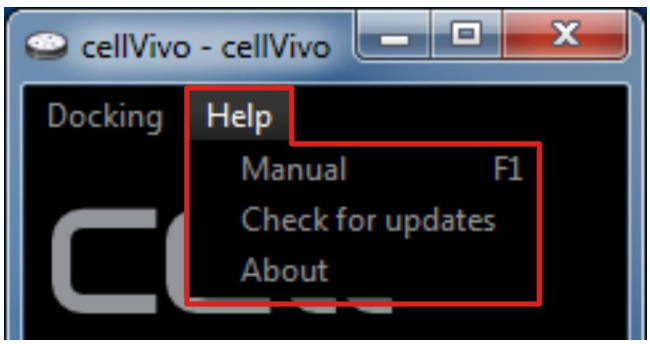
With the menu item ***Docking*** you can choose between a left hand side docking ("*Dock left*") or a right hand side docking ("*Dock right*") on the desktop of the main computer screen ("*Screen 0: ..*") or the second computer screen ("*Screen 1: ..*").

The main window of the other software is automatically positioned in the free desktop area next to the cellVivo Software when the software window is maximized.

No docking:

With the option "*No docking*" the main screen of the software is a normal window.

If you want to have the other software to use the full screen, change the docking option to this point.



Help:

- "*Manual*":
  Here you can call up the user manual for the software.
- "*Check for updates*":
  Here you can check if a newer version of the cellVivo software exists. A version history will be displayed.
- "*About*":
  Here you can call up some specified information about your current software version.

First Steps

Creating the Users

The software offers the possibility of saving and recalling different user-specific settings if the microscope workplace is used by several users, and not every user has its own user account.

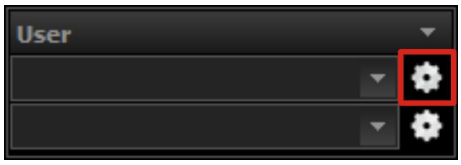
Since the software stores all settings and data in the user specific documents folder, it is also possible to manage different user settings of the cellVivo Software with different Windows user accounts. In this case, at least one user has to be created within the User Settings.

The software recalls the last selected user and profile. This information is also stored within the Windows user account, making work with different Windows accounts easy.

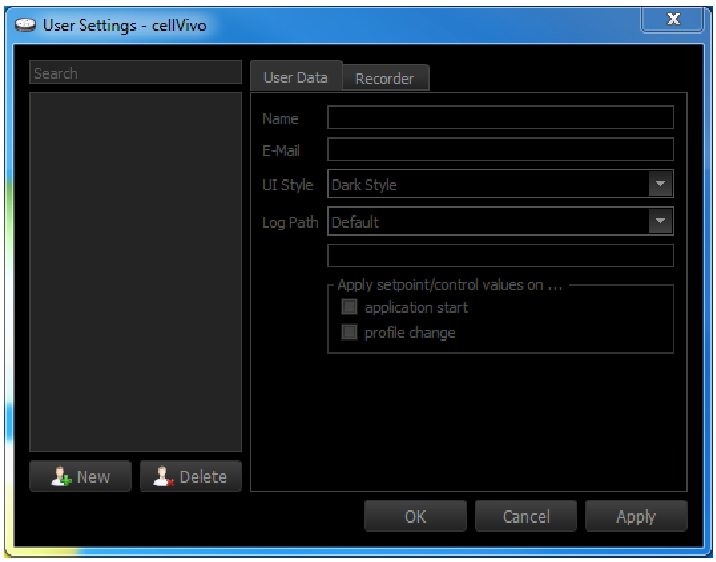
View ***User***:

1	Select user	In this box, different users can be selected.
2	Select profile	In this box, different profiles belonging to the user can be selected.
3	Min/Max button	With this button, the view on the user interface can be minimized and maximized.
4	Manage user settings	With this button, the window for the user settings can be opened. Here, new users can be created or settings for already existing users can be altered.
5	Manage profile settings	With this button, the window for the profile settings can be opened. Here, new profiles belonging to the current user can be created or settings for already existing profiles can be altered.

User Settings:

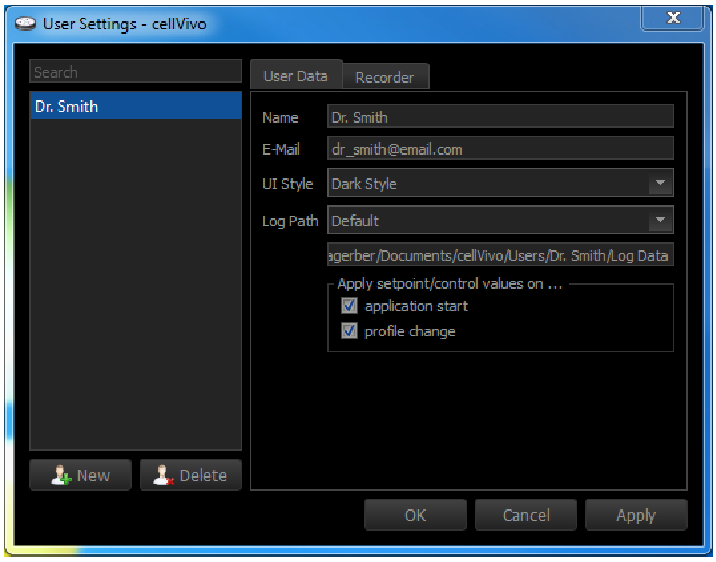


1. Press the settings button next to the drop-down field of the users to open the window of the ***User Settings***.



2. Click on **[New]** in order to enable the mask for the input of the user data.

Tab *User Data*:

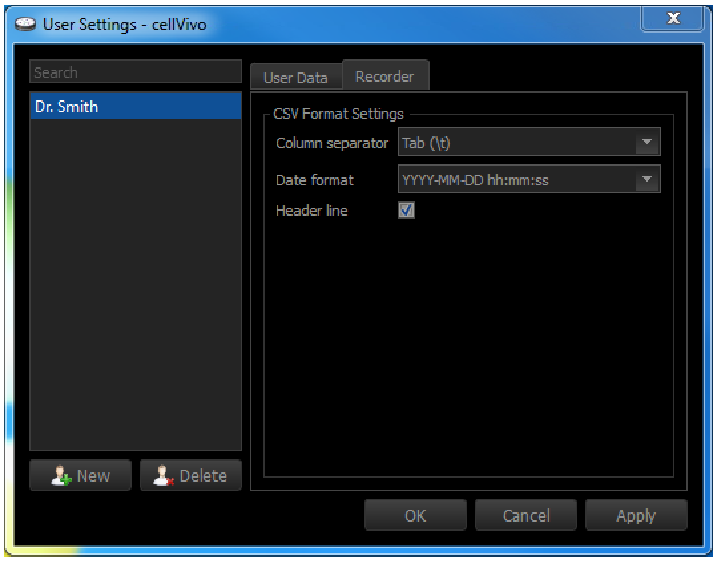


1. Enter the user name into the input field ***Name***.
2. Enter your e-mail address into the input field ***E-Mail***. This will be the email address that receives the email alerts.
3. Select a UI style:

   Two UI styles are available. The "*Dark Style*" and the "*Light Style*".
4. Select the ***Log Path***:
   - Is the Log Path set to "*Default*", the logfile will be automatically saved in a specific folder.
   - It is also possible to define another folder. For this purpose, select "*Custom*" in the drop-down box and change the folder in the *Select Folder Dialog*.
5. *Apply setpoint/control values on ...*:
   - *application start*:
     If you restart the software, all setpoint values and control settings on the control device will be reset to the settings defined in the software.
   - *profile change*:
     If you change your profile, the values of the setpoint and the control defined in the profile will be send to the controllers and change them automatically.

It is also possible to delete an user within the software. For this purpose, select an user name in the list of users and click [Delete].

Tab ***Recorder***:



When the software is recording an experiment progress, a logfile (csv format) will be saved. For this logfile, the following settings can be made.

CSV Format Settings:

- ***Column separator***:
  Select whether the columns in the logfile are separated by a tabulator "*Tab (\t)*" or a semicolon "*Semicolon (;)*".
- ***Date format***:
  Different date formats are available. It is also possible to set the Date format to Relative time.
- ***Header line***:
  The Header line indicates the different recorded values and shows the device name of the used components. By deselecting the checkbox, the logfile will be saved without the Header line.

If you have added all of the user data, click **[OK]**.

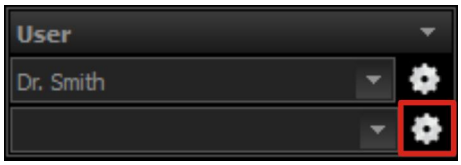
[OK] = *save entered user data and close window*
[Cancel] = *discard entered user date and close window*
[Apply] = *save entered user date and leave window open*

Setting Up a Profile

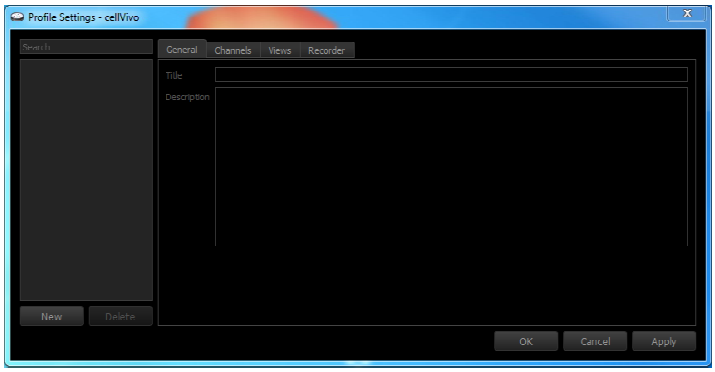
Several profiles can be saved for one user. The purpose of the profiles is to allow each user to define and quickly recall different setups for the cellVivo Software GUI and the incubation hardware. These can be used to quickly change the workplace within the software for different experimental situations, where only heating or heating and atmosphere control is needed, for example. Hiding the unnecessary channels on the GUI puts more emphasis on the relevant parameters.

Within a profile, setpoint values and a feedback control status for each channel can also be defined. They can be assigned automatically to the respective channels when the software starts or a different profile is selected. This behaviour can be customized for each individual user (see chapter User Settings) and allows a quick setup of the incubation system according to your needs after another user has used the system.

Profile Settings:

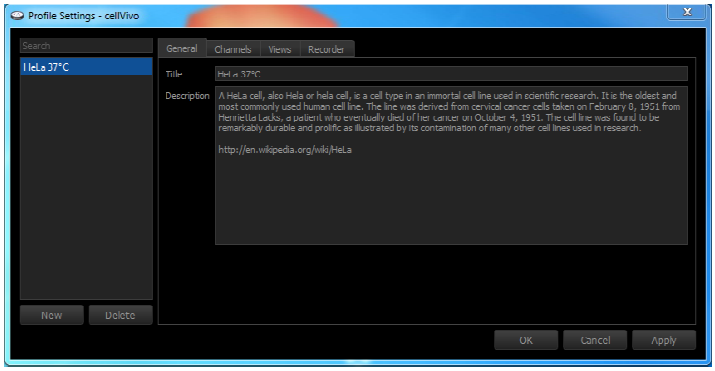


1. Press the settings button next to the drop-down field of the profile to open the window of the ***Profile Settings***.



2. Click on **[New]** in order to enable the mask for the input of the profile data.

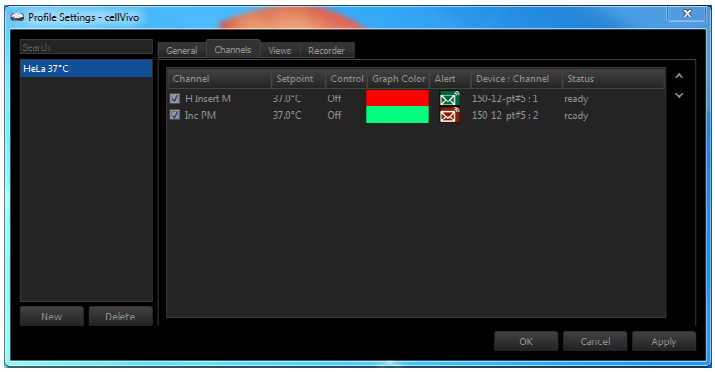
Tab *General*:



In the tab ***General***, general information for the profile can be stored.

1. Enter the title of the profile into the input field ***Title***.
2. Further information can be stored in the bottom input field ***Description.***

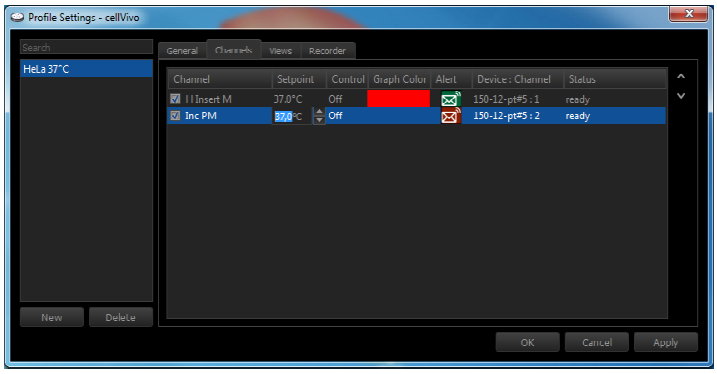
Tab ***Channels***:



All the available channels are listed here, i. e. the channels to which components are connected to.

The channel elements of the connected components can be hidden or displayed on the main screen by deselecting or selecting the checkbox in front of the channel name.

Only the values of the channel elements that are displayed on the main screen are recorded.

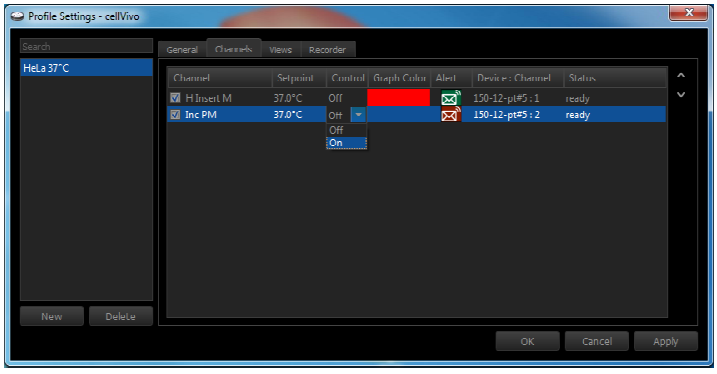


In the column ***Setpoint***, the initial setpoint value can be changed by clicking into the field.

Change the Setpoint:

1. Double-click on the field with the current initial set-point value.
2. Change the numeric value either with the numbers on the keyboard or with the two arrow buttons in the edit field.

If the software is closed and reopened or if the profile is changed, the control device will be reset to this initial setpoint value.

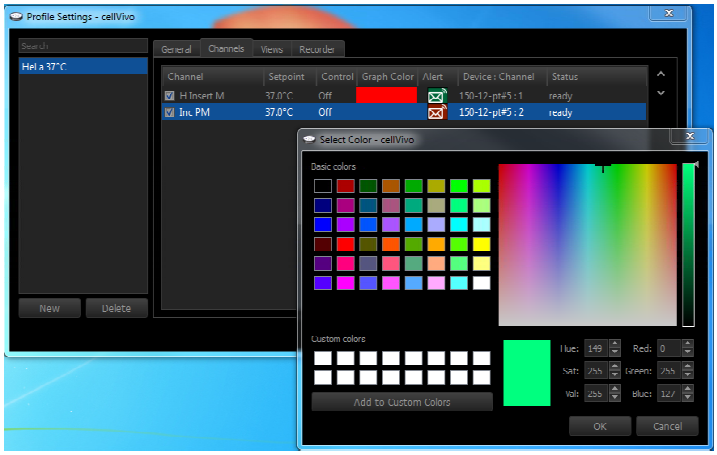


In the column ***Control***, the initial control status of the channel can be set.

Change the control status:

1. Double-click on the field with the current control status.
2. Use the drop-down menu to change the control status.
3. Set the control status either to "*On*" or "*Off*".

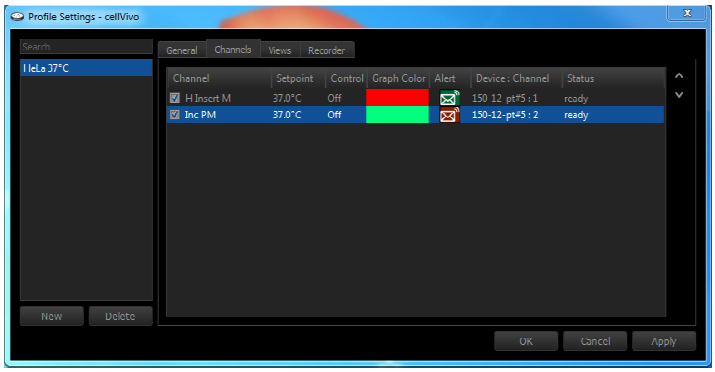
If the software is closed and reopened or if the profile is changed, the control device will be reset to this initial control status.



In the column ***Graph Color***, the color in which the channel is displayed in the graph can be changed.

Change the graph color:

1. Double-click on the field with the current graph color to open the window ***Select Color***.
2. Select the color and click **[OK]**.

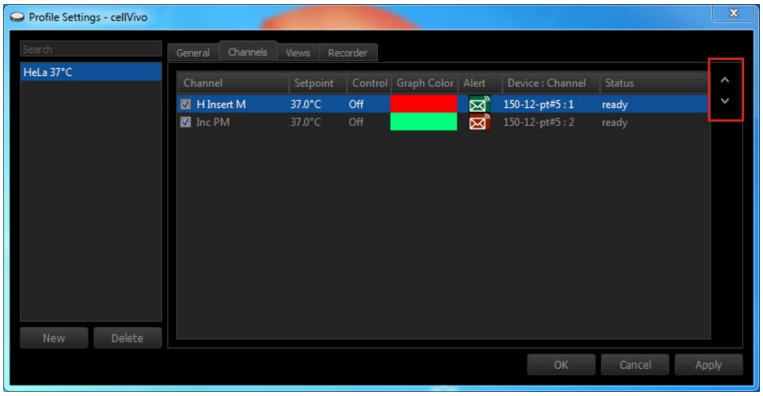


In the column Alert, the monitoring by the Email Alert for each channel can be activated or deactivated with one click on the Email Alert icon.

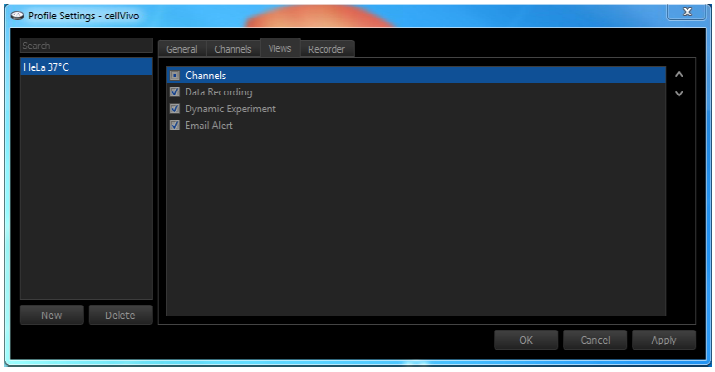
Email Alert monitoring activated =

Email Alert monitoring deactivated =

It is also possible to rearrange the order of the channel elements in the main screen of the software. Select the channel to be moved and move it up or down with the arrows on the right-hand half of the window.



Tab ***Views***:

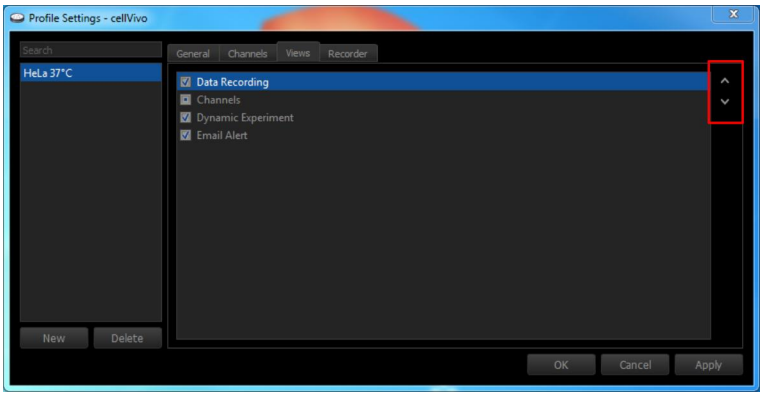


In the tab ***Views***, you can show or hide the views on the main screen by selecting or deselecting the checkbox next to the view name.

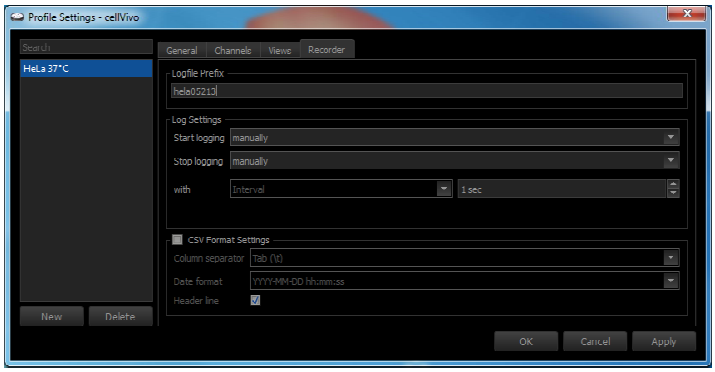
The view ***Channels*** cannot be deselected completely. Without any channel view, an experiment cannot be performed.

The list item Channels exists in this list only for the option of rearranging the views on the main screen.

It is also possible to rearrange the order of the views in the main screen of the software. Select the view to be moved and move it up or down with the arrows on the right-hand half of the window.



Tab ***Recorder***:



Logfile Prefix:

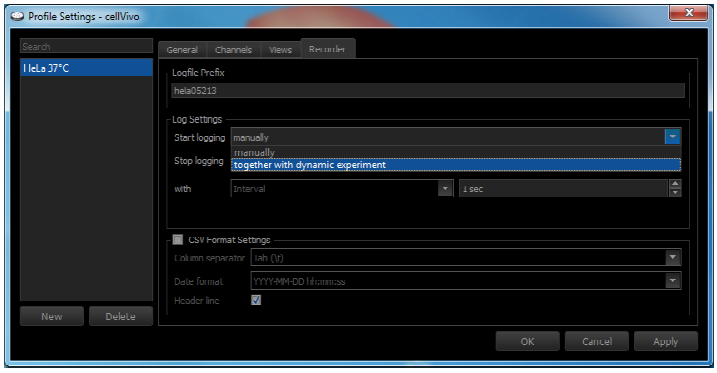
Enter a prefix for your experiment. It will be used to create the file name of the saved logfile. In this way, it will be easier later on to allocate the various logfiles to their experiments/profiles.

The software automatically appends the date and time to the logfile name of each recording.

Filename example:

hela052013_2013-05-15_11-44-41.csv

Logfile Prefix | *Start date of recording* | *Start time of recording* | *File extension*

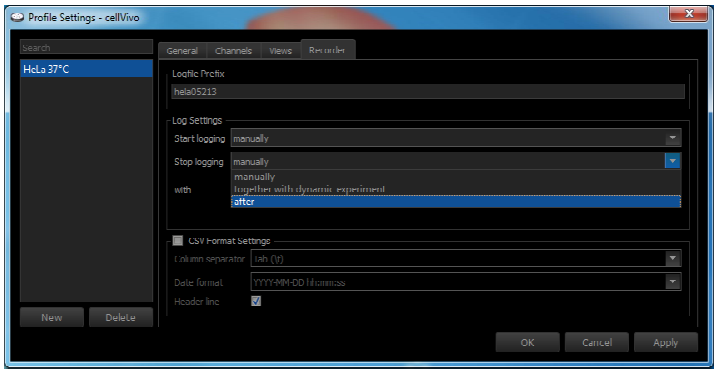


Log Settings:

With the ***Log Settings***, you can define the recording of your experiment.

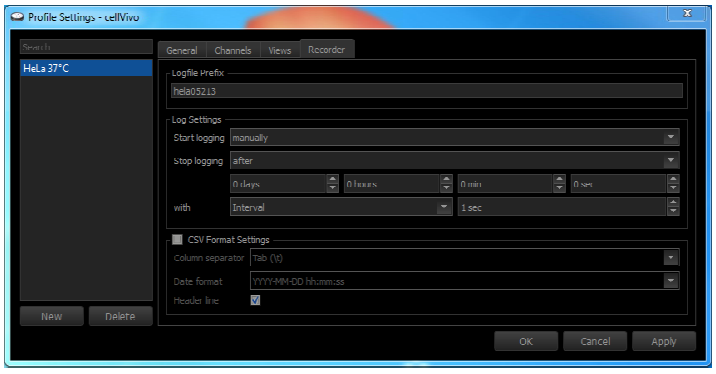
Start logging:

- "*manually*":
  The start of the recording is set manually by pressing the PLAY button.
- "*together with dynamic experiment*":
  The start of the recording is set with the start of the Dynamic Experiment.



Stop logging:

- "*manually*":
  The stop of the recording is set manually by pressing the STOP button.
- "*together with dynamic experiment*":
  The stop of the recording is set with the stop of the Dynamic Experiment.
- "*after*":
  The stop of the recording is set after a specific time. By selecting *"after"*, a further edit field appears to define the exact endpoint of the recording.

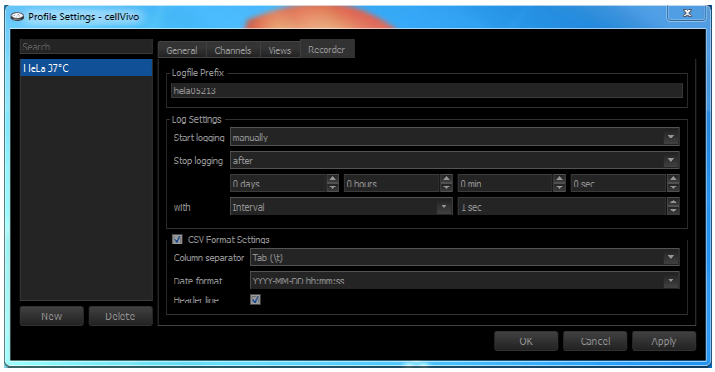


with:

Here, you can define the recording points in seconds.

When selecting "*after*" for ***Stop logging***: to define the recording points, you can now select between "*Interval*" or "*Data points*".

- "*Interval*":
  defines the interval between 2 recording points in seconds (1 - 60 sec)
- "*Data points*":
  divides the defined recording duration in an equal amount of points where the values of your experiment are recorded (i.e. experiment duration: 1 min; 30 data points; the values are saved every 2 seconds).



CSV Format Settings:

Regardless of the ***CSV Format Settings*** in the User ***Settings***, these settings can be changed for the specific profile.

1. Set the checkmark in front of the title ***CSV Format Settings***.
2. Change the settings.

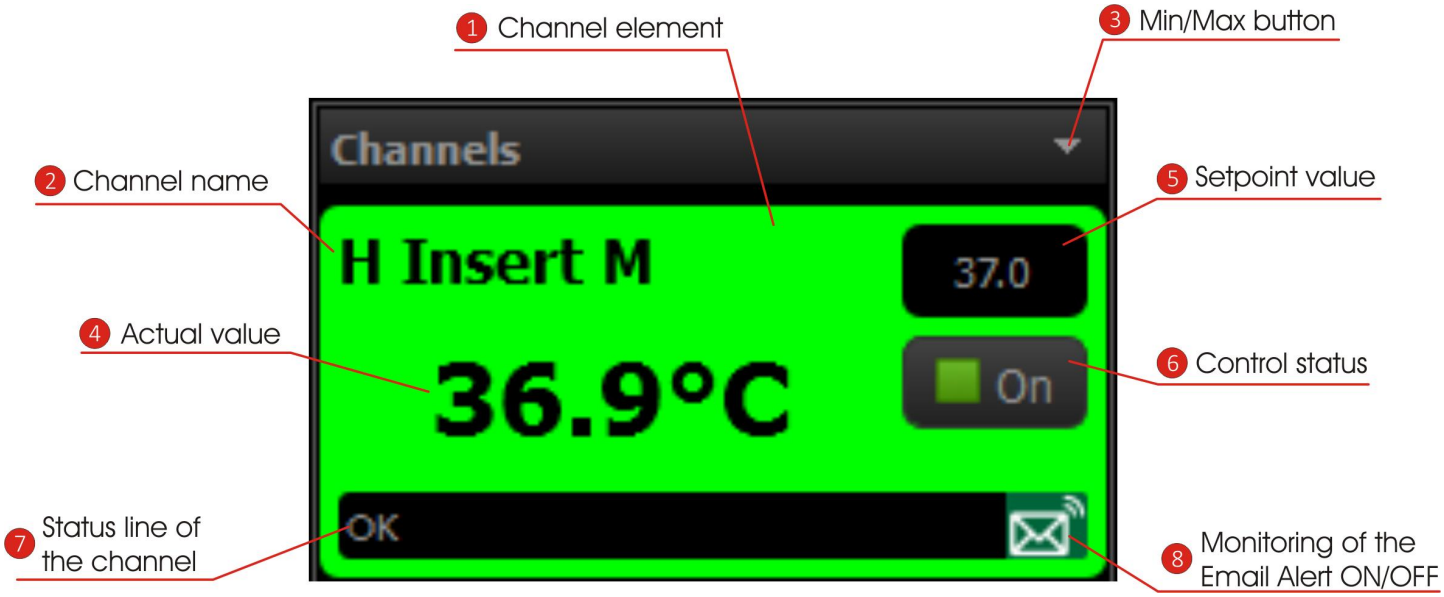
If all profile data has been added, click **[OK]**.

[OK] = *save entered user data and close window*
[Cancel] = *discard entered user date and close window*
[Apply] = *save entered user date and leave window open*

Operating the Channels

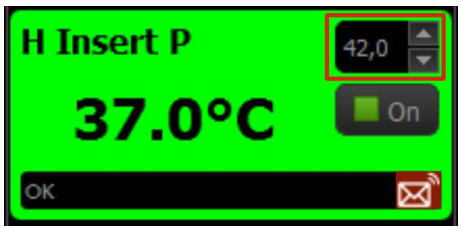
In the channel view, the different channels with their connected components can be operated directly via the channel elements.

Views ***Channels***:



1	Channel element	This area defines all the settings and indications of one component (i.e. Heating Insert M06 2000) connected to the channel. Depending on the current state of the component, the channel area changes its color.
2	Channel name	Depending on the connected component, the channel name is displayed in the channel area. (Example: H Insert M = Heating Insert M06 2000)
3	Min/Max button	With this button, the view on the user interface can be minimized and maximized.
4	Actual value	The actual value of the channel is displayed as a numeric value (°C or %-Vol). A history graph (last 1h) of the actual value for this channel can be shown here, too.
5	Setpoint value	In this edit field, the setpoint value can be altered directly.
6	Control status	In this field, the control status of the channel is displayed. On = the feedback control is active Off = the feedback control is inactive With one click in this field, the feedback control status can be toggled.
7	Status line	The status line displays the current status of the channel. If an error occurs, it will be displayed in this status line. If no error is detected, the status line displays "OK".
8	Email Alert ON/OFF	This icon displays the current status of the status of the Email Alert monitoring. = Email Alert monitoring activated = Email Alert monitoring deactivated With one click on the icon, the alert can be activated or deactivated for every channel separately.

Channel element functions

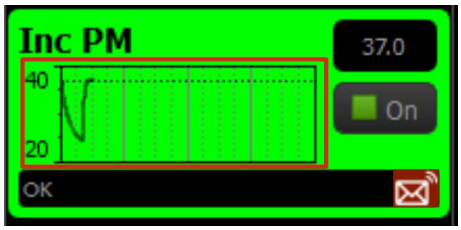


Change the setpoint value:

1. Click into the edit field of the setpoint.
2. Change the setpoint value with the two arrow buttons or the numbers on your keyboard.
3. Confirm the new setpoint value with ENTER.

Change the control status:

By one click into this field, the feedback control status can be toggled between "*On*" or "*Off*".

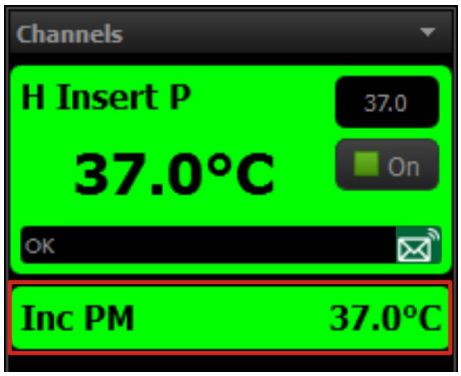


Show the history graph in the channel element:

Double-click on the actual value of the channel element. It is possible to show a small graph which illustrates the history of the actual value for this channel for the last 1h.

The dotted line in the graph shows the setpoint.

The history is running independently from the Data Recording Graph and is reset each time a profile is changed. It allows to quickly evaluate the stability of each channel without the need for a data recording.



Minimize a single channel element:

By double-clicking on the title of the channel element (i. e. H Insert P) it is possible to minimize the corresponding channel element.

In order to maximize the channel element again, double-click on the title of the channel element.

Minimize all channel elements at once:

With the Min/Max button of the channel view, all channel elements shown can be minimize at once.

In order to maximize all channel elements, click the Min/Max button again.

Tool tip for the channel:

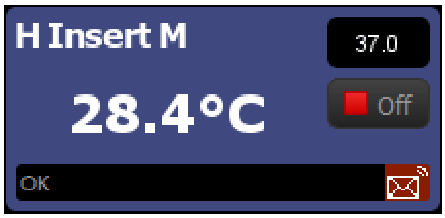
To get more information about the channel, move the mouse pointer over the channel element and keep it there for al least 2 seconds until the tool tip of the corresponding channel appears.

In this tool tip you find following information:

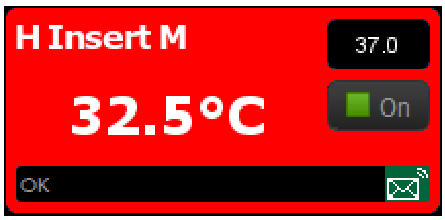
- the connected control unit (i. e. TempController 2000-2 *cell vivo design* or CO_2-Controller 2000 *cell vivo design*),
- the serial number of the connected control device,
- the channel number on the controller hardware,
- the status message for the channel. In the case of an error some help is offered so that you are possibly able to fix the issue by yourself.

Channel Element Color

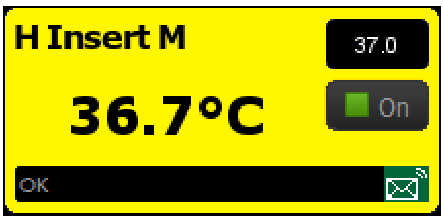
Depending on the current state of the channel, the background color of the channel element changes.



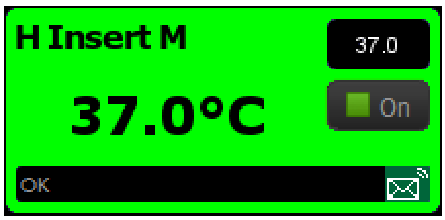
PURPLE:
The channel is connected but the control status is set to "OFF".



RED:
The channel has not reached the desired setpoint yet.



YELLOW:
The channel is near the desired setpoint but is not yet ready to use.



GREEN:
The channel has reached the desired setpoint and is now stable.

Channel Offline

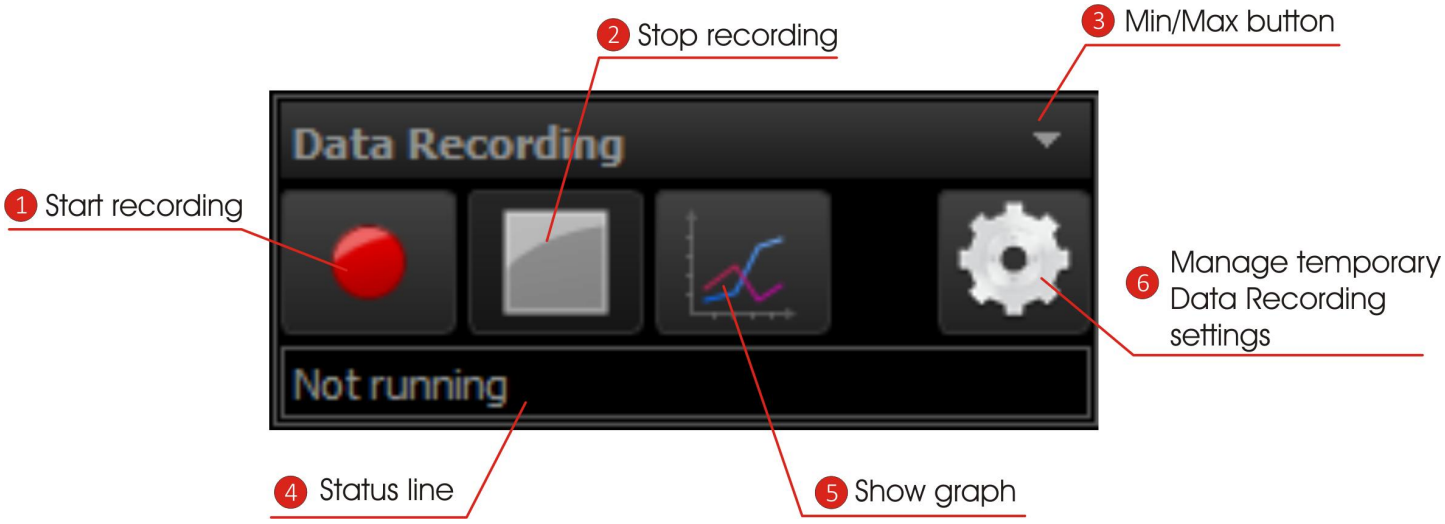
If the software cannot communicate with the device, the respective channels elements are shown minimized and ***offline*** with a grey background.

Either the device is switched off (switch it on and restart the software), or the software has been started before the device was ready for use. Check if all devices are running correctly and restart the software.
Check in the Windows device manager if the incubation devices are shown under "USB devices". If not, try a different USB port.

Data Recording

This function is required for the recording of the progress of an experiment, i. e. temperature sequences of single heating components or if the history of incubation gas concentrations ought to be recorded over a certain period of time. During the recording, a logfile in the csv format is written out which can be imported in other programs (i. e. Excel). Additionally, a graph of the experiment progress can be illustrated.

View ***Data Recording***:

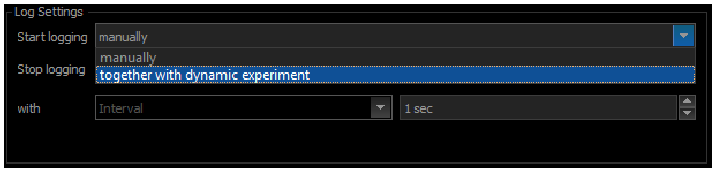


1	Start Recording	Starts the recording of the current experiment.
2	Stop recording	Stops the recording of the current experiment.
3	Min/Max button	With this button it is possible to minimize and maximize the Data Recording view on the user interface
4	Status line	The status line displays the current status of the Data Recording. When the Data Recording is active, the running time is displayed.
5	Show graph	A click on this button opens the graph. This Graph illustrates the development of the current experiment.
6	Manage temporary Data Recording settings	With this button, the menu for the Data Recording settings can be opened. Here, the settings for the required recording of an experiment can be made.

Performing a Data Recording:

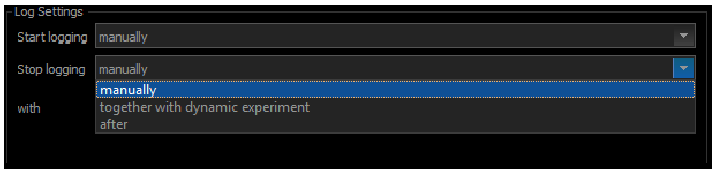
Log Settings:

The Log Settings define the starting and the stopping of the Data Recording as well as the interval of the saved data points.



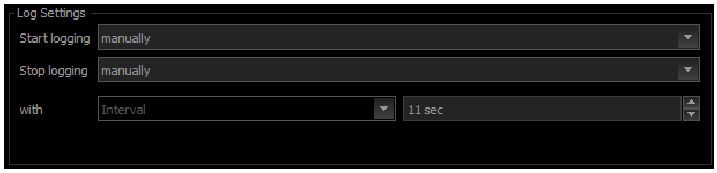
Start logging:

- "*manually*":
  The start of the recording is set manually by pressing the PLAY button.
- "*together with dynamic experiment*":
  The start of the recording is set with the start of the Dynamic Experiment.



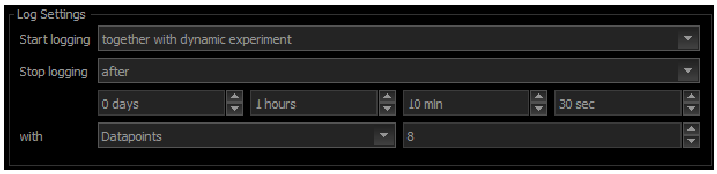
Stop logging:

- "*manually*":
  The stop of the recording is set manually by pressing the STOP button.
- "*together with dynamic experiment*":
  The stop of the recording is set with the stop of the Dynamic Experiment.
- "*after*":
  The stop of the recording is set after a specific time. By selecting "*afte*"", a further edit field appears to define the exact endpoint of the recording.



with:

Here, you can define the recording points in seconds.



When selecting "*after*" for ***Stop logging***: to define the recording points, you can now select between "*Interval*" or "*Data points*".

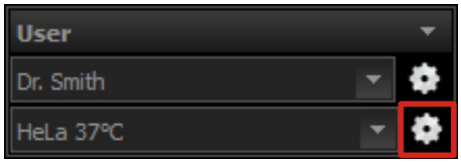
- "*Interval*":
  defines the interval between 2 recording points in seconds (1 - 60 sec)
- "*Data points*":
  divides the defined recording duration in an equal amount of points where the values of your experiment are recorded (i.e. experiment duration: 1 min; 30 data points; the values are saved every 2 seconds).

Recorder Settings:

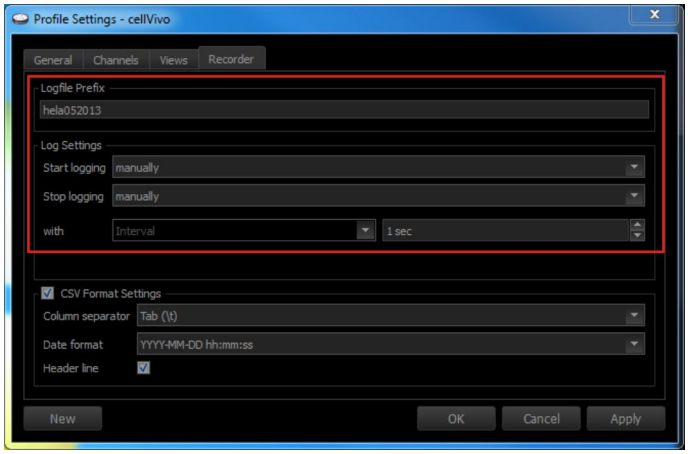
There are different positions to set up the recorder settings within the software. Generally, settings made in a higher position number overrule the settings defined in lower position numbers.

Position 1 - Log Settings in the ***Profile Settings***:

Settings made here are permanently defined for each profile separately. With this, you can define a different log file prefix for each experimental setup.



Press the settings button next to the drop-down field of the profiles to open the window of the ***Profile Settings***.



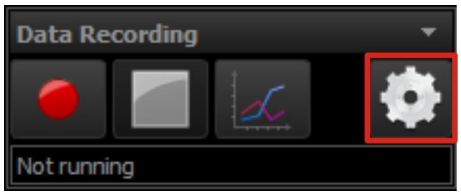
Switch to the tab ***Recorder***.

Here, you can find the ***Log Settings*** for the Data Recording.

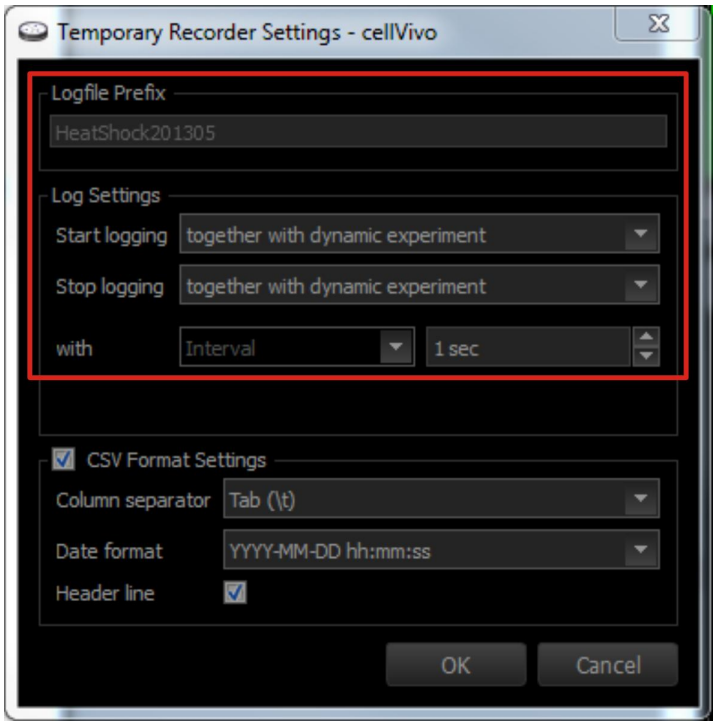
Change the settings and confirm the alteration with **[OK]**.

Position 2 - Log Settings in the ***Temporary Recorder Settings***:

Settings made here are only temporary until the software is closed or the user or profile is changed.



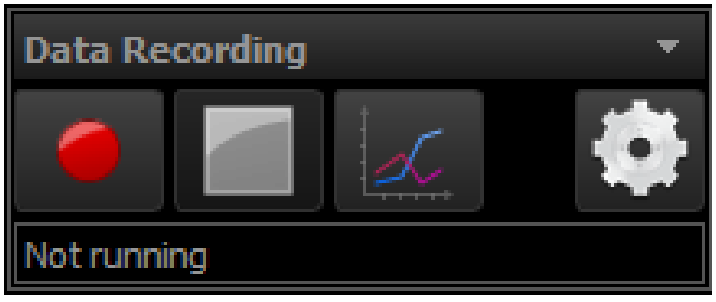
Press the settings button on the Data Recording view to open the window of the ***Temporary Recorder Settings***.



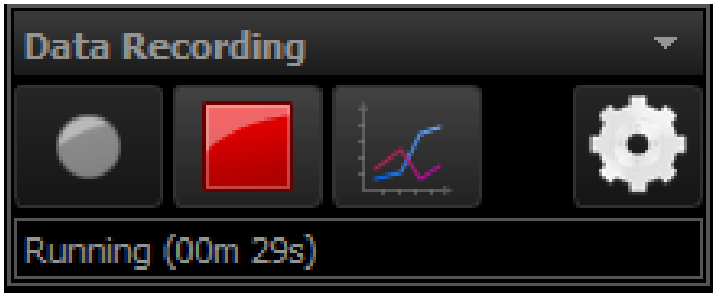
For changing the recorder settings only temporary without changing the settings in the profile, you can use the ***Temporary Recorder Settings***.

Change the settings and confirm the alteration with **[OK]**.

Starting the Data Recording



Press the RECORD button to start the Data Recording.

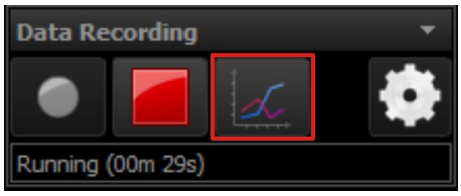


In the status line of the Data Recording view you can see the current running time of the recording.

To illustrate the progress of the experiment, open the graph (see next chapter *Graph*).

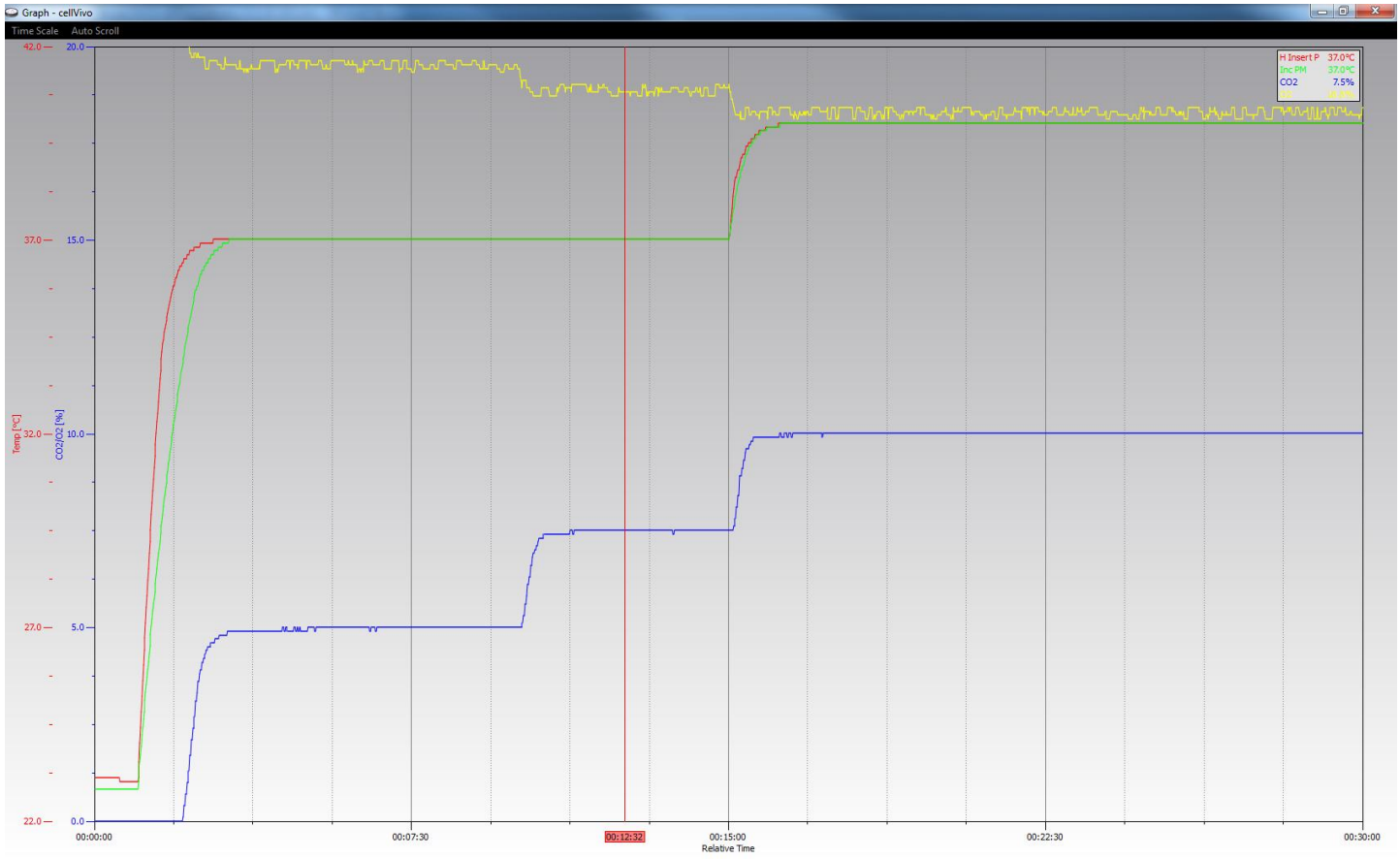
Graph

To illustrate the progress of the current experiment, a graph is available. A variety of functions makes it easier to observe your experiment progress.



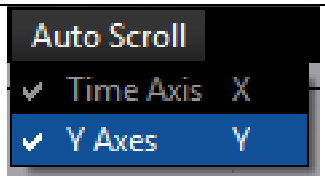
Press the GRAPH button on the Data Recording view to open the graph.

If no recording is running and you open the graph, it will be empty.



Graph Functions:

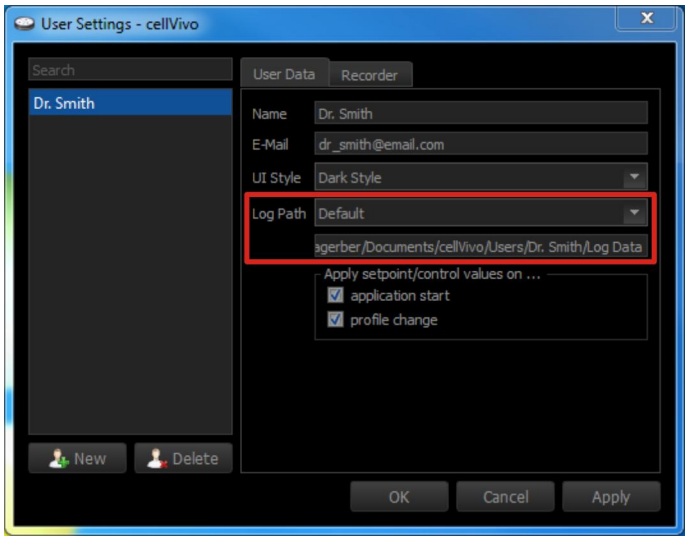
Function	Command	Description
Zoom In	+	enlarges the measurement curve scales down the x-axis (time)
Zoom In (fine)	Ctrl + +	enlarges the measurement curve at a finer level scales down the x-axis (time) at a finer level
Zoom Out	-	makes the measurement curve smaller scales up the x-axis (time)
Zoom Out (fine)	Ctrl + -	makes the measurement curve smaller at a finer level scales up the x-axis (time) at a finer level
Relative/Absolute	T	changes between absolute and relative time in the x-axis (time)

Move in y-direction	keep the left mouse button pressed y axis area	You can move the measurement curves freely in the y-direction without zooming in or zooming out.
Move in x-direction	keep the left mouse button pressed + move left and right	Move the graph in the x-direction only.
Scale the x axis	first keep the left mouse button pressed + Ctrl	The curves can be scaled up or scaled down in the x-direction.
Set / move measurement point	keep the right mouse button pressed	It is possible to set a defined measurement point to the x-axis (time). If a measurement point is set, the values (°C or Vol-%) can be read off from the legend.
Remove measurement point	double-click with the right mouse button on the label of the measurement point	The measurement point can be removed by double-clicking on the label with the right mouse button.
Zoom Area	Ctrl + keep the left mouse button pressed + move cursor from upper left to lower right	Allows you to zoom in into a specific area.
Zoom Last	Ctrl + keep the left mouse button pressed + move cursor from lower right to upper left	Switches to the last view.
Auto Scroll - Time Axis	X or	If the function of the Auto Scroll is activated, the current endpoint of the curve is always displayed on the graph. Then, it is not possible to move the current endpoint of the curve off the screen.
Auto Scroll - Y Axis	Y or 	

The Logfile

With every recording, the measured data will be saved in a logfile (csv format) in a certain path on your computer.

Log path:



Log Path:

- "*Default*":
  The logfiles are stored by default in the folder:
  My Documents\cellVivo\Users\<Username>\Log Data

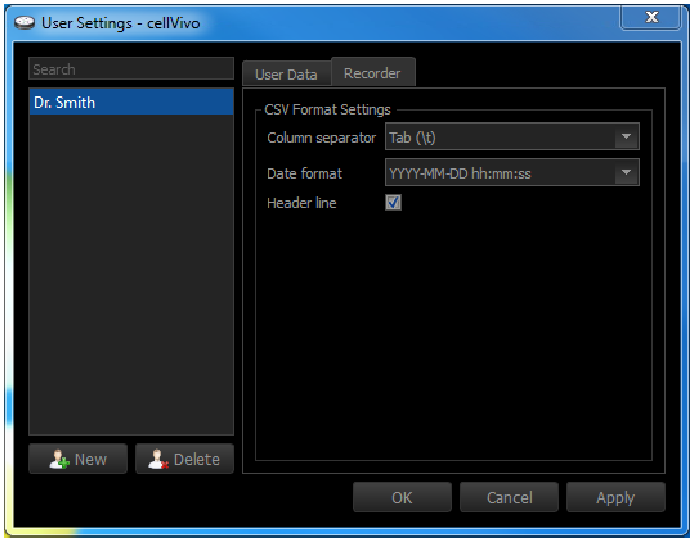
- "*Custom*":
  It is also possible to define another log path by selecting the list item "*Custom*".
  When selecting "*Custom*", the *Select Folder Dialog* pops up and you can change your log path.

CSV Format Settings:

There are three different positions to edit the CSV Format Settings. Generally, settings made in a higher position number overrule the settings defined in lower position numbers if the respective checkmark is set.

Position 1 - User Settings

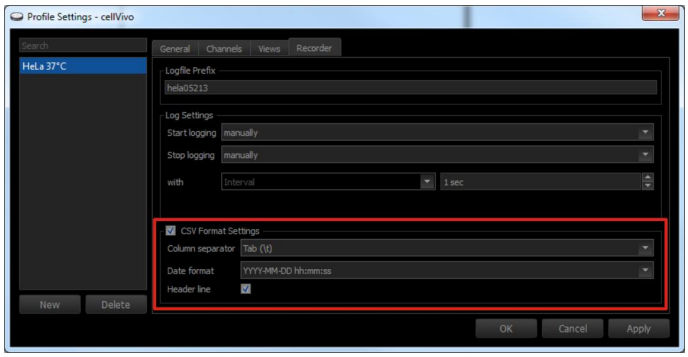
Settings made here are permanently defined for this user and are passed to all subsequent profiles.



The ***CSV Format Settings*** that are defined here in the ***User Settings*** will be passed on to the recorder settings in the ***Profile Settings*** and to the ***Temporary Recorder Setting*** if no other settings in these recorder settings are made.

Position 2 - Profile Settings

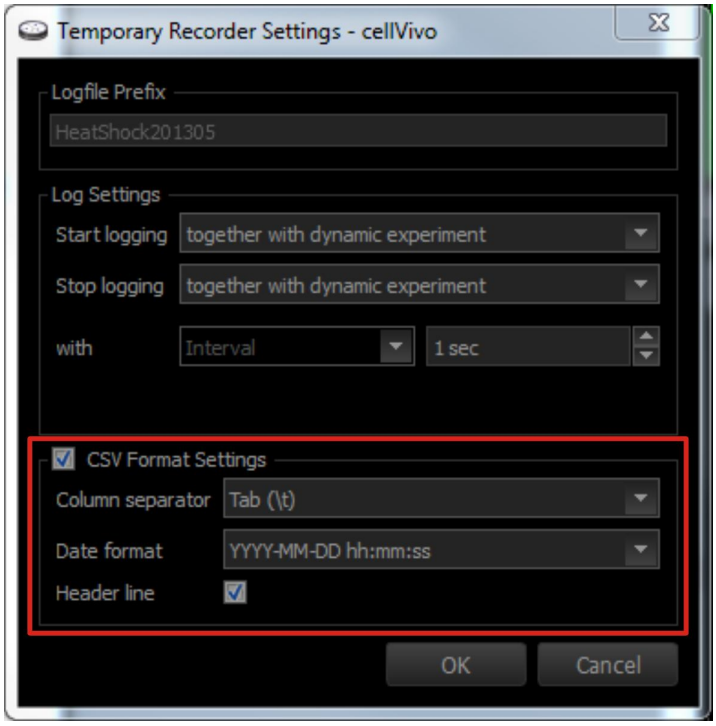
Settings made here are permanently defined for each profile separately.



If it is necessary for a profile to have other ***CSV Format Settings*** as defined in the User Settings, this can be altered here in the ***Profile Settings*** by selecting the checkmark in front of the title ***CSV Format Settings*** and making the necessary changes.

Position 3 - Temporary Recorder Settings

Settings made here are only temporary until the software is closed or the user or profile is changed.

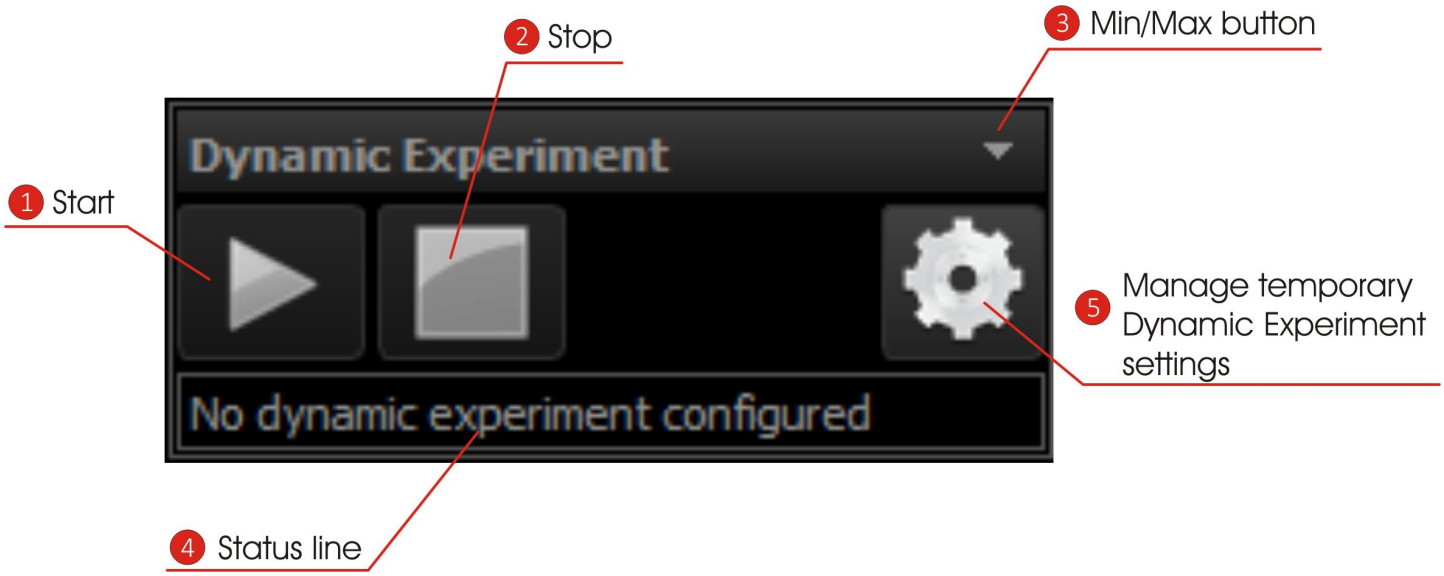


If it is necessary for a current recording to have other ***CSV Format Settings*** as defined in the ***User Settings*** or ***Profile Settings***, this can be altered here in the ***Temporary Recorder Settings*** by selecting the checkmark in front of the title ***CSV Format Settings*** and making the necessary changes.

Dynamic Experiment

The Dynamic Experiment feature of the cellVivo Software makes it possible to plan and execute a time dependent alteration of setpoint values and/or change of feedback control status of each channel.

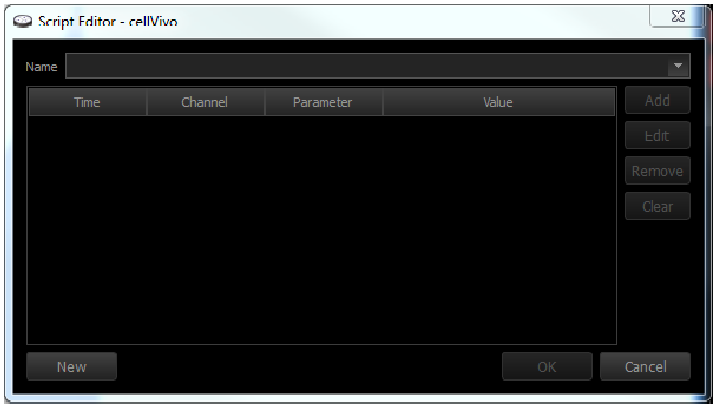
View ***Dynamic Experiment***:



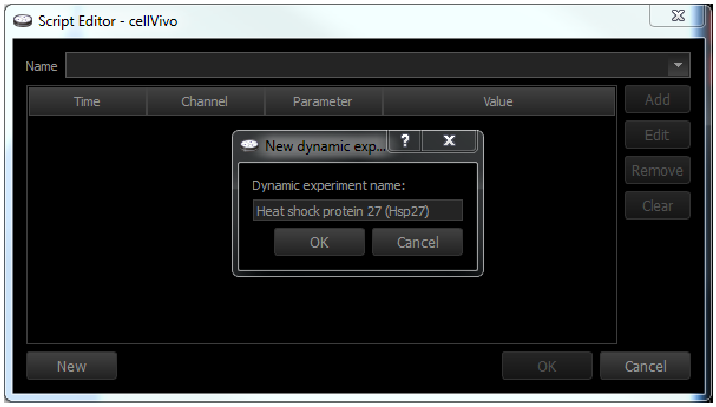
1	Start	Starts the Dynamic Experiment.
2	Stop	Stops the Dynamic Experiment.
3	Min/Max button	With this button it is possible to minimize and maximize the Dynamic Experiment view on the user interface
4	Status line	The status line displays the current status of the Dynamic Experiment. When a Dynamic Experiment is active, the running time is displayed.
5	Manage Dynamic Experiment settings	With this button, the menu for the Dynamic Experiment settings can be opened. Here, the settings like a time dependent alteration of setpoint values and/or the switch-on and switch-off of the activity of different channels can be programmed.

Setting Up a Dynamic Experiment:

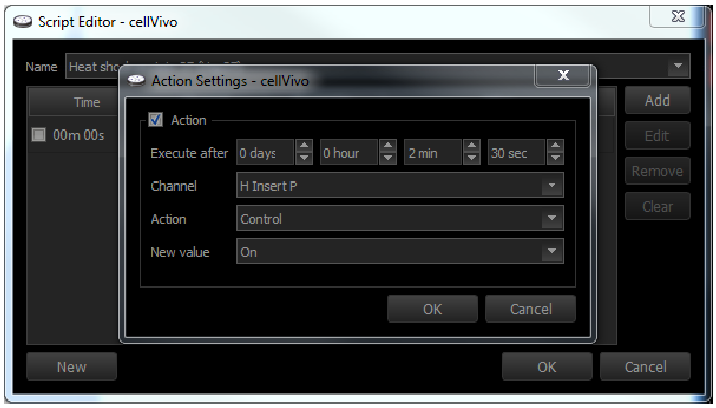
1. With the settings button on the Dynamic Experiment view open the window for the ***Script Editor***.



2. Click on **[New]** to define a new Dynamic Experiment.

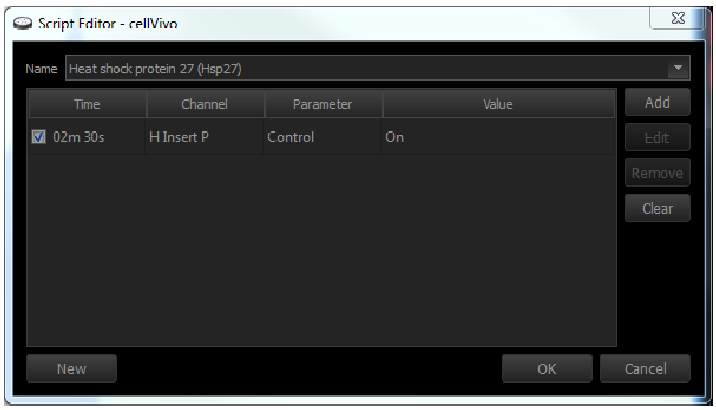


3. Insert a name for the Dynamic Experiment and click **[OK]**.
4. After confirming the entry with **[OK]**, the name appears in the upper drop-down field.

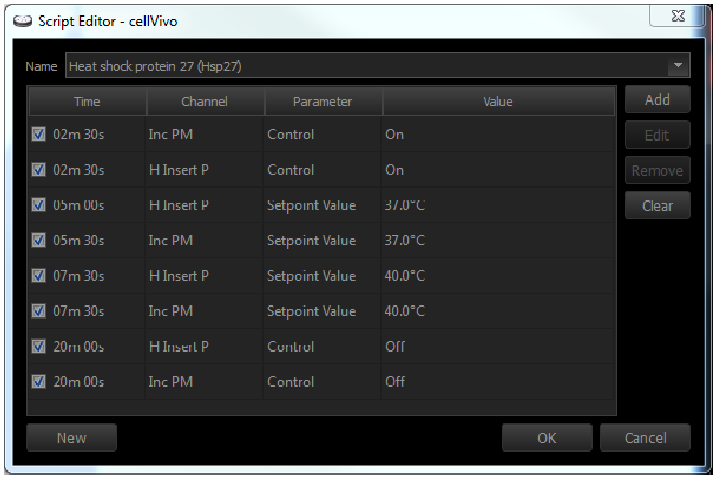


To create an experiment cycle, single actions have to be created.

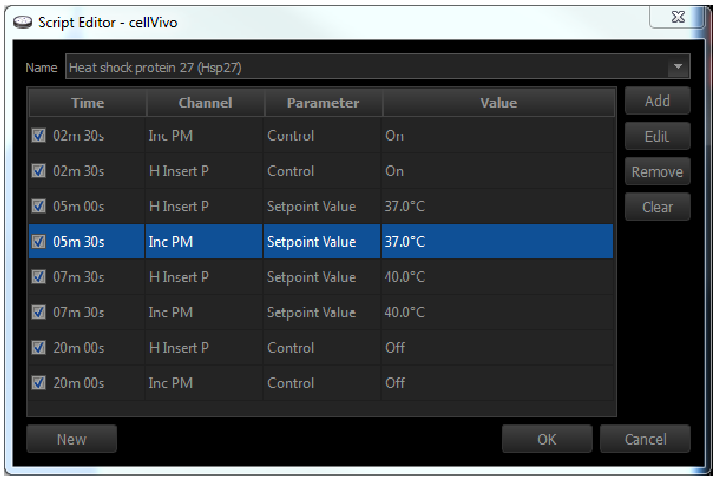
1. Click **[Add]** on the right hand side of the window of the ***Script Editor*** to open the window ***Action Settings***.
2. Define the action.
   - Checkmark ***Action***:
     Every action can be set active or inactive by setting the checkmark in front of the title ***Action***.
   - ***Execute after***:
     Set the relative time after start of the Dynamic Experiment when the action should be executed.
   - ***Channel***:
     Select the channel which should carry out the action (i. e. "*H Insert P*").
   - ***Action***:
     Select the type of action, "*Control*" or "*Setpoint*".
   - ***New value***:
     Depending on the action, select "*On*" or "*Off*" for the action "*Control*" or the temperature for the action "*Setpoint*".



3. After confirming the entry with **[OK]**, the action appears in the table.

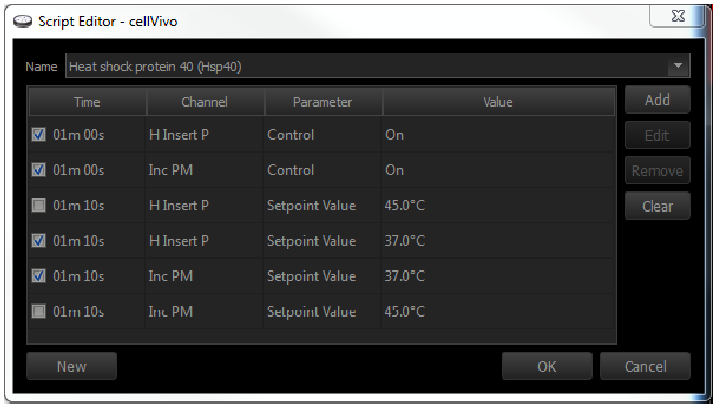


By creating new actions, you create the progress of your Dynamic Experiment.



After creating the individual steps of the Dynamic Experiment, it is possible to edit the progress afterwards.

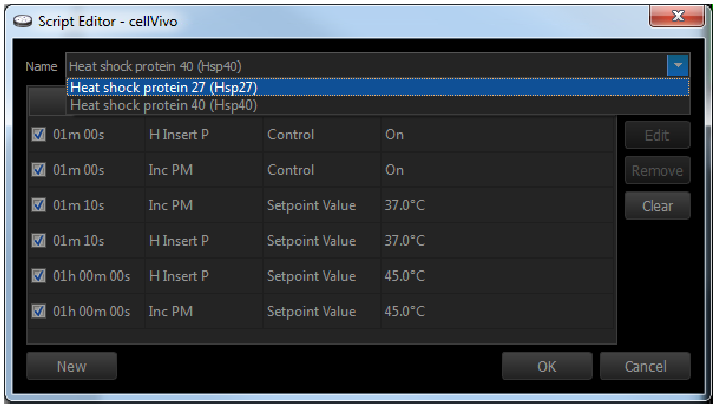
- **[Add]**:
  Add a new action to the experiment progress
- **[Edit]**:
  Select the action and click **[Edit]** or double-click on the action. The window ***Action Settings*** opens and you can change the action values.
- **[Remove]**:
  For deleting an action of the progress, select the action and click **[Remove]**.
- **[Clear]**:
  For deleting the whole progress, click **[Clear]**. To undo the function, click **[Cancel]** and reopen the ***Script Editor***.



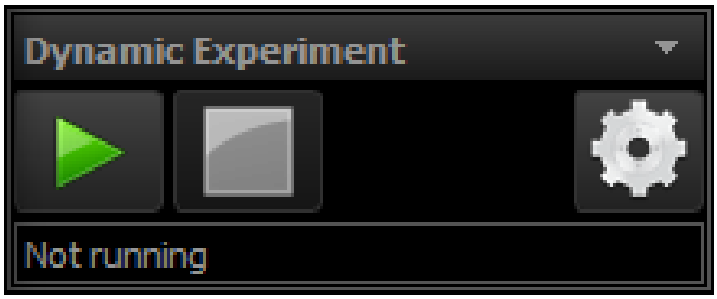
With the checkmarks in front of the actions, single actions can be deactivated or activated again.
For example, this allows to define two different setpoint values for the same time point and alternatively activate one or the other for different runs of the Dynamic Experiment.

If the progress for the Dynamic Experiment has been created, click **[OK]** to save your script.

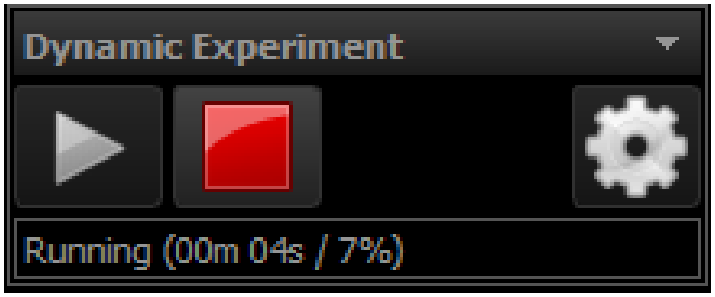
Starting a Dynamic Experiment:



1. When there is the choice between several Dynamic Experiments, go to the ***Script Editor***.
2. Select the experiment progress you need in the upper drop-down field ***Name***.
3. Confirm the selection of the experiment progress with **[OK]**.



4. Start the Dynamic Experiment by pressing the START button in the view of the Dynamic Experiment.



5. The software begins to process the individual actions of the Dynamic Experiment. After having finished all actions, the experiment progress stops automatically. It is also possible to stop the progress manually by pressing the STOP button .

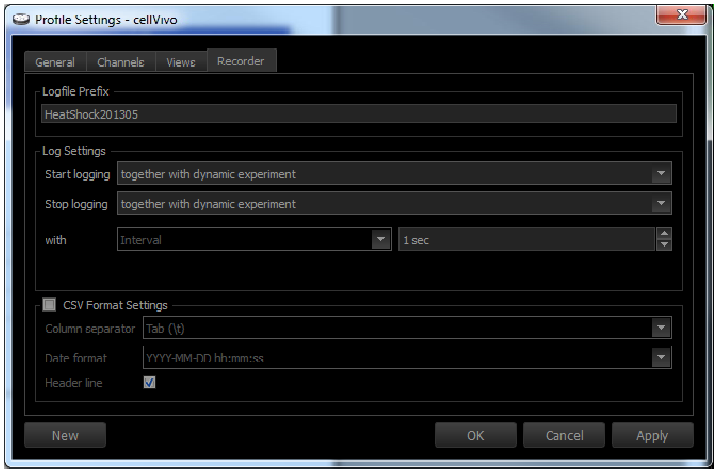
If you start a Dynamic Experiment, no recording is carried out automatically unless you have configured it in the Profile Settings (Start/Stop Logging).
The several ways to record a Dynamic Experiment will be described in the following section.

Recording the Dynamic Experiment:

There are three different positions to set up the recorder settings for a Dynamic Experiment. Generally, settings made in a higher position number overrule the settings defined in lower position numbers.

Position 1 - Recorder Settings in the Profile Settings

Settings made here are permanently defined for each profile separately.



1. Open the window of the ***Profile Settings*** and switch to the tab ***Recorder***.
2. Set ***Start logging*** to "*together with dynamic experiment*".

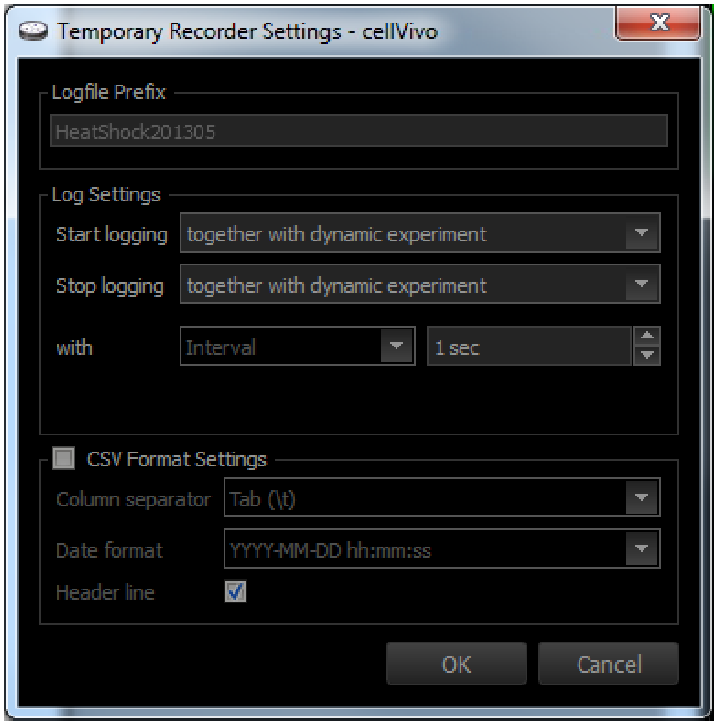
   Now, the Data Recording starts automatically when the Dynamic Experiment is started.
3. Set ***Stop logging*** to "*together with dynamic Experiment*".

   Now, the Data Recording stops automatically when the Dynamic experiment ends.

Every time a dynamic experiment is started within this profile, the Data Recording starts automatically, too.

Position 2 - Temporary Recorder Settings

Settings made here are only temporary until the software is closed or the user or profile is changed.



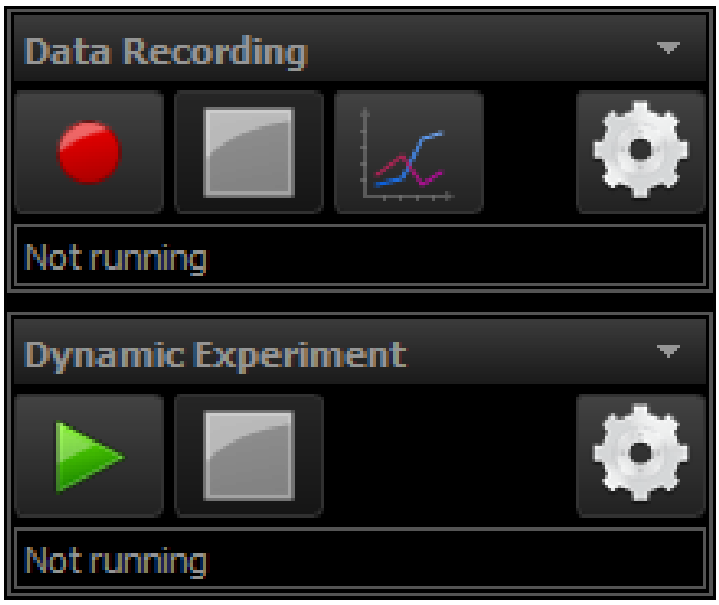
1. Open the window of the ***Temporary Recorder Settings***.
2. Set ***Start logging*** to "*together with dynamic experiment*".

   Now, the Data Recording starts automatically when the Dynamic Experiment is started.
3. Set ***Stop logging*** to "*together with dynamic Experiment*".

   Now, the Data Recording stops automatically when the Dynamic Experiment ends.

Position 3 - Starting and Stopping the Recording Manually

For starting the recording of the Dynamic Experiment manually, the ***Log Settings*** have to be set to "*manually*" for ***Start logging*** and **Stop logging**.



1. Start the Data Recording with the RECORD button .
2. After starting the Data Recording, start the Dynamic Experiment at the point of time of your choice by pressing the PLAY button .

   You can start a Dynamic Experiment several times during a single Data Recording session, or even use different Dynamic Experiments.
3. Stop the Data Recording at the time point of your choice with the STOP button .

Email Alert

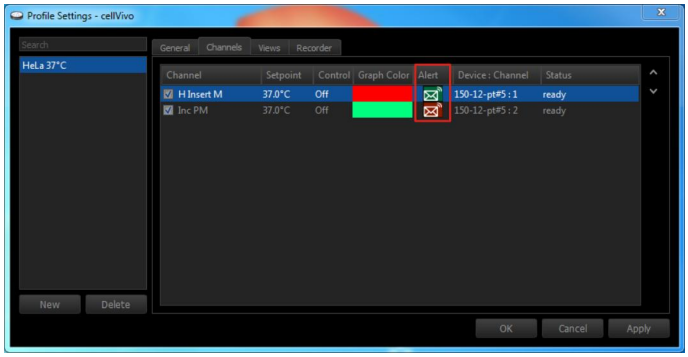
This function allows the user to receive a notification if something goes wrong with the feedback control within the experiment. If one channel looses its actual value and the channel color changes to RED, the user receives an alert via email with the information about which channel is not working correctly and a link to the remote dashboard.

View ***Email Alert***:

1	Activate or deactivate the Email Alert	This button activates or deactivates the Email Alert.
2	Min/Max button	With this button it is possible to minimize and maximize the Email Alert view on the user interface

Only channels with an activated monitoring for the Email Alert trigger an alert email if their status turns to RED (see section "Channel color").

Activate/Deactivate the Email Alert monitoring in the Profile settings:



In the column Alert, the Email Alert monitoring for each channel can be activated or deactivated by one click on the Email Alert icon.

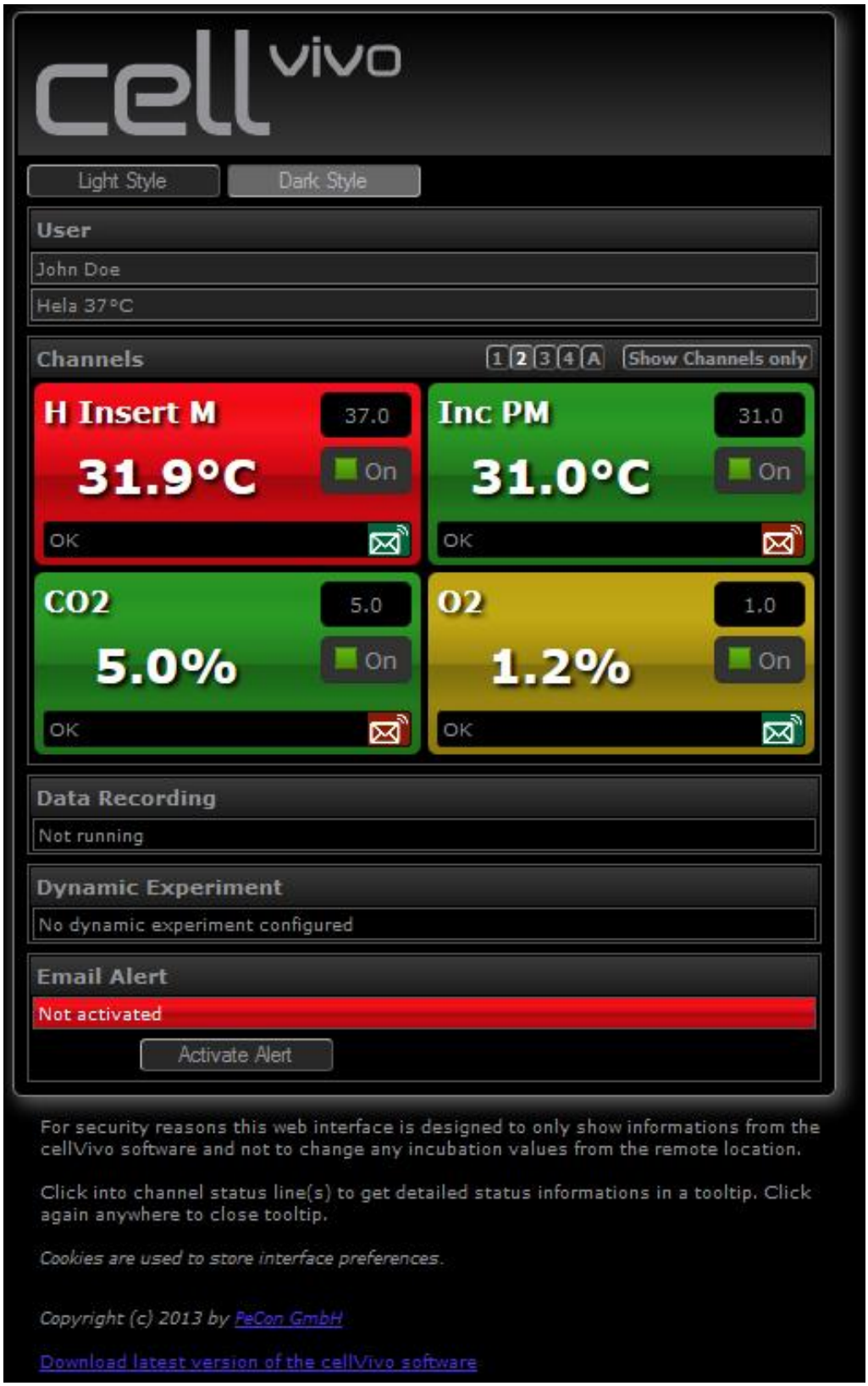
= Email Alert monitoring activated

= Email Alert monitoring deactivated

Depending on the Settings in the User Settings, these alteration to the alert are basic. That means, that if the software is closed ore the profile is changed, the alert settings will reset to these definitions.

Web server of the PeCon cellVivo Software

The PeCon cellVivo software allows the remote monitoring of incubation by a build-in web server. It is possible to display the current status of the software in a web browser on every PC, smartphone or tablet-PC.



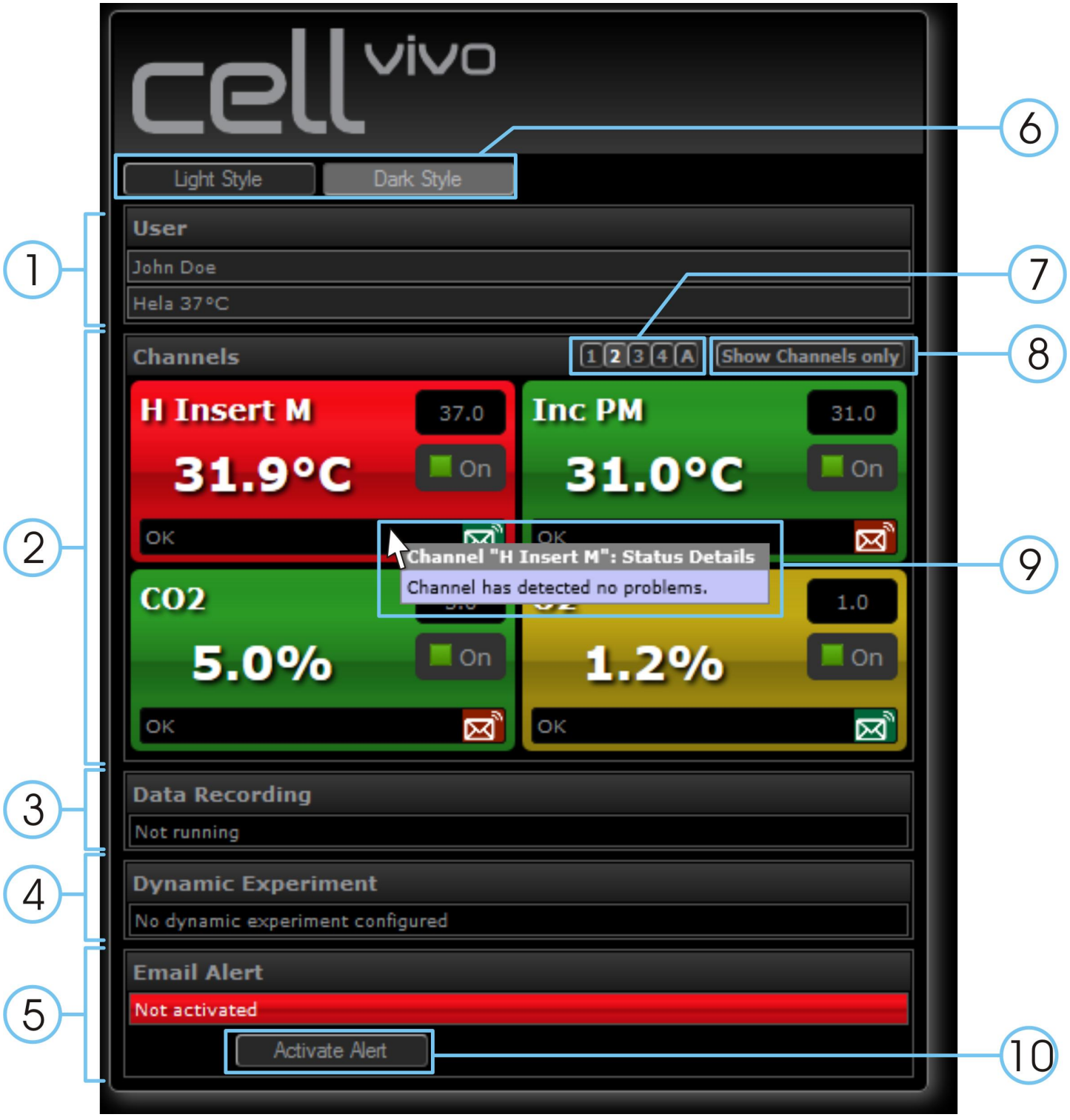
Schematic overview and example configuration of communication with the cellVivo web server

Using the remote dashboard:

The remote dashboard only allows the monitoring of the incubation and not the changing of values. Thus, the system is safe from any misuse by others. Anyways, in most cases it will be necessary to check on the system in person if an error occurs in order to fix the problem on-site.

If you feel that you need remote operation, contact your local IT-administration and ask them for a secure access to the desktop of your PC (like VPN with Microsoft Terminal services or installing TeamViewer).

Remote dashboard:



1	User view: Information about the user and profile selected in cellVivo.
2	Channel view: Channels selected in the profile are shown here with their current operation status. The channels are also arranged according to the settings in the profile.
3	Data Recording view: Status information about the Data Recording
4	Dynamic Experiment view: Status information about the Dynamic Experiment
5	Email Alert view: Email alert status "Activated / Not activated" is displayed
6	GUI style: Here, you can change between the Light and the Dark GUI style.
7	Channel layout - Columns: A = Automatic (use browser window width) 1 = 1 column 2 = 2 columns 3 = 3 columns 4 = 4 columns
8	Channel layout - Information: "Show channels only": Hide all other information, only show channel view. "Show all": Show all information.
9	Channel tooltips Click into the status line to get a tooltip with detailed status information of the corresponding channel.
10	Activation button of Email Alert: Here, you can activate the alert. For security reasons, a once activated alert cannot be deactivated on the remote dashboard. For deactivating the Email Alert, use the user interface on the PC.

If cookies are allowed on your browser, the remote dashboard stores your selection for GUI style, channel layout and channels.

Service

In case of further questions, please consult your local Olympus service partner:

http://www.olympus-europa.com

Beyond that, PeCon's technical information service will be glad to answer your questions:

http://support.pecon.biz

support@pecon.biz

Minimum Operating Environment

Topic	Remark
CPU	1 GHz or faster 32-bit (x86) or 64-bit (x64) processor
RAM	1 GB RAM (32-bit) or 2 GB RAM (64-bit)
HDD	128 MB available hard disk space
Graphic Card	DirectX 9 graphics device with WDDM 1.0 or higher driver Screen resolution 1024x768 or above
PC Input Device	Minimum 2 button mouse Keyboard
I/O Ports	USB 2.0 or higher
OS	Microsoft® Windows® 7 Ultimate / Professional (32bit / 64bit) SP1 Microsoft® Windows® 8 Enterprise / Pro (32bit / 64bit)
OS Language	Japanese, German, English, Chinese, Russian and others using the Roman alphabet
Software	PDF-viewer for example Adobe® Acrobat® Reader

Remarks

- The software data and settings may be damaged unexpectedly. Please back up the data on a regular base.
- This software must not be used for medical purpose.
- The application cannot be started doubly.
- Please refer to the instruction manual of each device for the setup procedures or the operation procedures of other devices.
- Never attempt to delete or rename the folders and files installed by the provided installer software. Otherwise, the software may get unable to be started up.
- When the HDD free space reduces, the data processing speed may slow extremely or errors may occur frequently. To prevent this, delete unnecessary data files frequently.
- Please understand that PeCon shall not be responsible for any loss (destruction) of the data recorded.
- Be sure to create a backup of your PC system before installing this software.

Administrative Information

This section gives information for IT-specialists who maintain the installation of the PeCon cellVivo Software and the corresponding hardware devices.

Before editing the xml, cvp and cvx files, you should make yourself familiar with the XML file format. Malformed files by incorrect editing might make the cellVivo Software unstable or lead to unexpected behaviour.

Software deployment

The installer supports unattended deployment of the software. A list of available installer switches can be seen by starting the installation executable with the "/?" switch.

Unattended deployment with an installer script can be done by using the "/SILENT" switch, for example.

For further information please follow the link given in the command line parameters window using the "/?" switch.

Software file locations

The cellVivo Software stores all settings and data in a separate folder "cellVivo" in the "My Documents" folder of the currently registered user (<username>):

..\\Documents and Settings\<username>\My Documents\cellVivo

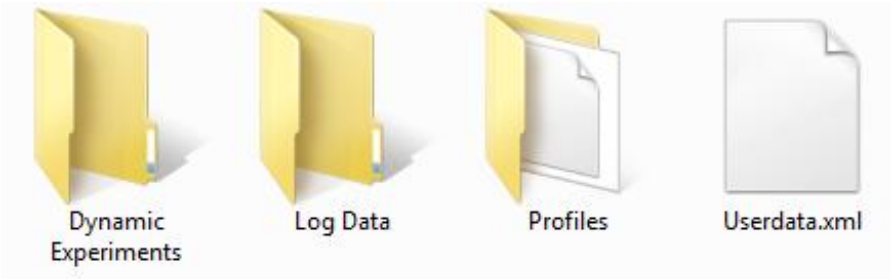
Please back up this folder and all of its contents regularly or make sure the folder is redirected to a server (roaming profiles), which is backed up regularly.

General software settings

Software specific information that is valid for all users defined in the software is stored in the file "Settings.xml". This file can be copied to other computers running the cellVivo Software to synchronize basic settings between different installations.

User settings and data

For each user created within the cellVivo Software a separate folder is made within the subfolder "Users". The user specific folder has the following sub-structure:



The file "Userdata.xml" includes the user specific settings defined in the User Settings window.

The folder "Dynamic experiments" has a separate file with the extension ".cvx" for each dynamic experiment that this user has defined.

The folder "Log Data" is the default location where the experiment recordings are stored as CSV-files. The file name is a combination of a user defined prefix for his recording supplemented with a software defined suffix, which is a date-/time code.

The folder "Profiles" includes all the different profiles that this user has defined as separate files with the extension ".cvp".

Managing User settings

Make sure, the cellVivo Software is not running before manipulating files and folders.

To uniquely identify a component within the cellVivo Software, a combination of the device unique serial number and the device channel number is used for the linking of the settings within the ".cvp" and ".cvx" files. Therefore, if the hardware is changed, or the files are copied/moved to a new installation with different hardware, this unique information has to be edited, so that it reflects the new incubation hardware situation. See below for detailed information.

Copy / Move all user files from one installation to another

To copy or move all settings from a user to another installation of the cellVivo Software simply copy the user folder and all of its contents to the same location:

..\\Documents and Settings\<username>\My Documents\cellVivo\Users\<cellVivo-username>

<username> = User name of the currently registered user to Windows

<cellVivo-username> = User name of the user defined in the cellVivo Software

If different incubation hardware devices are used with the new installation (different device serial numbers), do not forget to edit the ".cvp" and ".cvx" files according to the instructions below.

Check the file "Userdata.xml", if the attribute "LogPath" defined in the element "Recorder" is still valid. It has to point to the new path for "My Documents" with the necessary subdirectories. Modify if necessary.

```
<?xml version="1.0" standalone="yes"?>
<CvUserData name="">
    <EMail address=""/>
    <Recorder LogPath="C:/Users/John/Documents/cellVivo/Users/Dr. Smith/Log Data"/>
    <UIStyle style="0"/>
    <Flags value="3"/>
</CvUserData>
```

Copy / Move a single file

Within the same installation (same incubation hardware devices) ".cvp" and ".cvx" files can by copied or moved between users without problems.

If the files should be used on a different installation of the cellVivo Software (different device serial numbers), do not forget to edit the ".cvp" and ".cvx" files according to the instructions below

Delete files or a complete user

".cvp" and ".cvx" files (Profiles / Dynamic Experiments) can be simply deleted in their folders.

To delete a user, just delete the user folders and all of its contents in the "Users" folder.

After the next start, the cellVivo Software takes over the new situation.

Change of incubation hardware – Edit ".cvp" and ".cvx" files

To uniquely indentify a component within the cellVivo Software, a combination of the device unique serial number and the device channel number is used for the linking of the settings within the ".cvp" and ".cvx" files. Therefore, if the hardware is changed, or the files are copied/moved to a new installation with different hardware, this unique information has to be edited, so that it reflects the new incubation hardware situation.

The first 3 digits of the serial number reflect the device type:

150 = TempController 2000-2 cell vivo design

153 = CO_2-Controller 2000 cell vivo design

154 = CO_2-O_2-Controller 2000 cell vivo design

Example ".cvp" file:

```
<?xml version="1.0" standalone="yes"?>
<CvProfile name="HeLa 37°C">
    <Description></Description>
    <Channels>
        <Channel id="150-13-0001:1" setpoint="37" name="H Insert P" color="#ff0000" unit="°C" control="1"/>
        <Channel id="150-13-0001:2" setpoint="37" name="Inc PM" color="#ff0000" unit="°C" control="1"/>
    </Channels>
    <Recorder logFilePrefix="">
        <LogSettings captureMode="0" startMode="0" stopMode="0" interval="1000"/>
    </Recorder>
    <Views>
        <View visible="1" id="channels"/>
        <View visible="1" id="recorder"/>
        <View visible="1" id="dynamic"/>
    </Views>
</CvProfile>
```

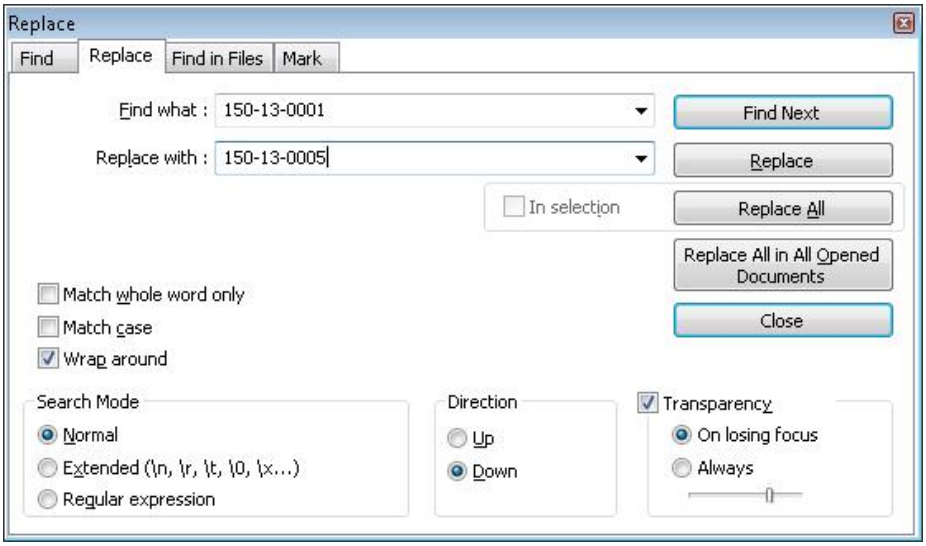
In this file a TempController 2000-2 cell vivo design is defined with two channels. Each channel has a separate element "Channel" with the attribute "id". This attribute is the unique combination of the device serial number and the channel number in the format "<serialnumber>:<channelnumber>".

Example ".cvx" file (only partly viewed):

```
<?xml version="1.0" standalone="yes"?>
<CvDynamicExperiment name="Manual">
    <ScriptActions>
        <ScriptAction comment="" active="1" type="setChannelValue" time="0">
            <ActionParameters>
                <ActionParameter type="QString" value="150-13-0001:2" name="channel.id"/>
                <ActionParameter type="double" value="37" name="channel.value"/>
            </ActionParameters>
        </ScriptAction>
        <ScriptAction comment="" active="1" type="setChannelValue" time="0">
            <ActionParameters>
                <ActionParameter type="QString" value="150-13-0001:1" name="channel.id"/>
                <ActionParameter type="double" value="37" name="channel.value"/>
            </ActionParameters>
        </ScriptAction>
```

Each element "ActionParameter" has the attribute "value" which refers to the serial number and channel of the incubation device.

Use your favourite text editor and replace all occurrences of the old serial number with the serial number of the new device.

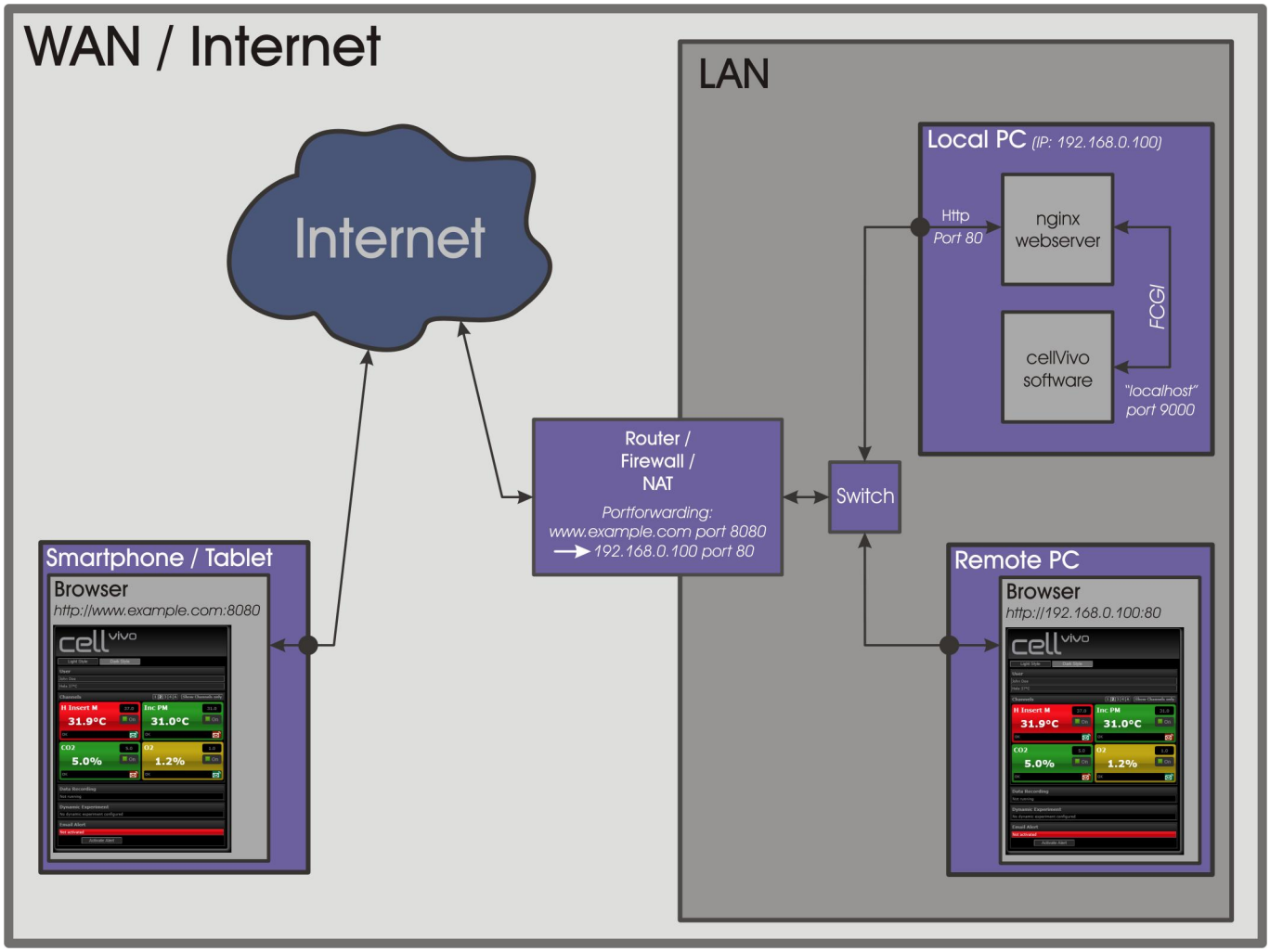


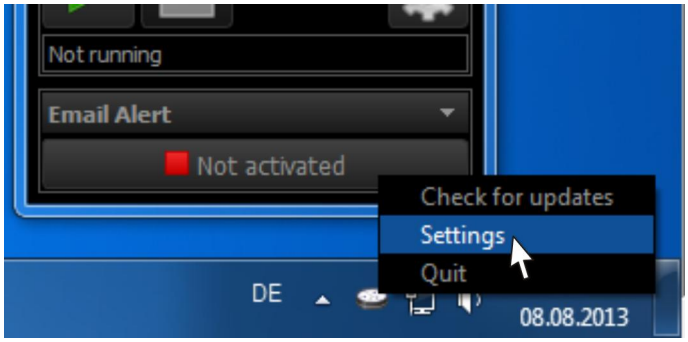
Only replace serial numbers with the same first 3-digit code (device type)!
For example, do not replace 150-13-0001 with 154-13-0005. This might lead to problems.

The serial number of the new device can be found on the type label on the bottom, it is temporary displayed during the start-up of the device or can be shown with the help of the device menu entry "Version Info".

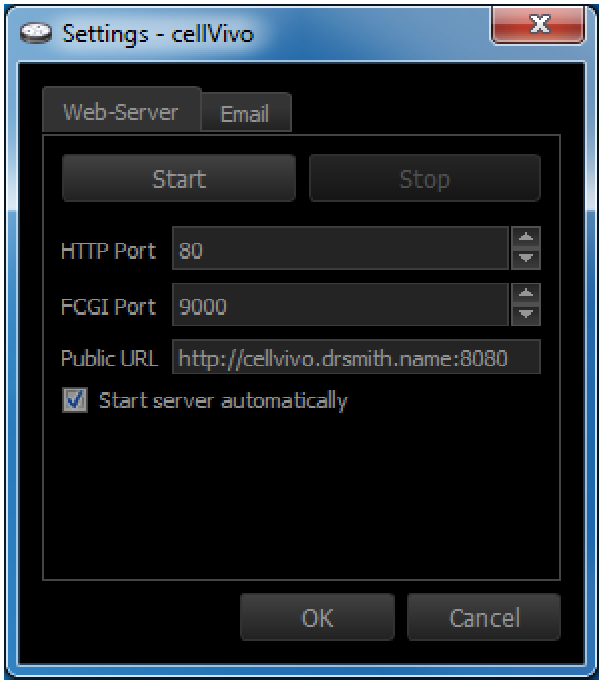
Configuring remote access to internal web server

The cellVivo software allows the remote monitoring of incubation with a build-in web server and HTML5 technology (remote dashboard). By default, this web server is disabled for security reasons. If you want to have remote access, you have to configure the web server according to your network requirements and start it. Since setting up a web service on your local PC that should be available on the internet could interfere with the security policies of your local network, you should contact your IT-administration for help. They can also help to make your local cellVivo web server available on the internet through a friendly DNS-name with a free port.





For configuration, click with the right mouse button on the notification icon and select "*Settings*".



HTTP Port:

This defines the port of the cellVivo web server on your local PC. Default is port "80", which is the standard port for http. If this port is already used by another application on your local PC, you can change it to a free port.

FCGI Port:

This defines the communication port between the cellVivo web server and the cellVivo software. This is only used for local communication on your PC. If this port is already used by another application on your local PC, you can change it to a free port.

Public URL:

Here you must enter the complete URL including the protocol, host (either domain name or static IP-address) and the port (e.g. http://www.example.com:8080). This information is copied into the alert email for one-click access to the cellVivo remote dashboard. Contact your local IT-administration for this information, since they need to configure port forwarding on their routers/firewalls to your local PC according to their network needs and security policies.

Start/Stop:

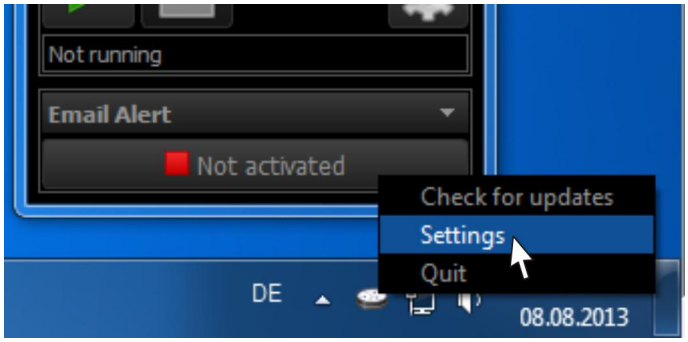
Here you can manually start or stop the cellVivo web server service.

Start server automatically:

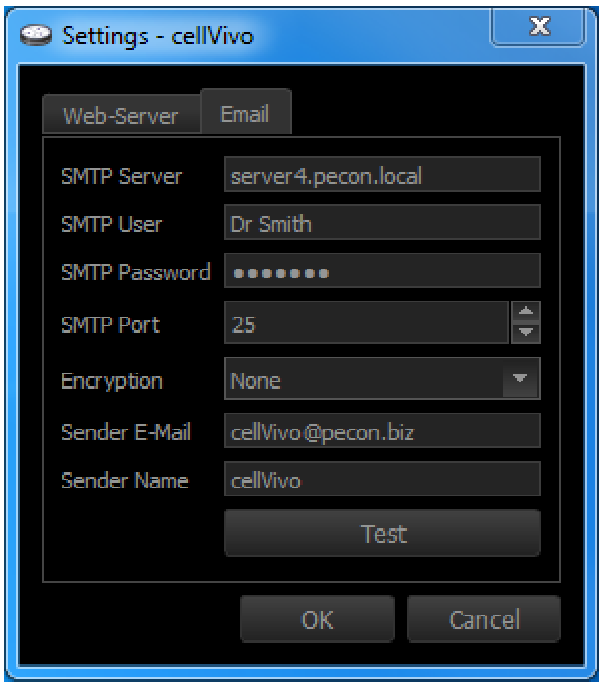
If this box is ticked/unticked, the cellVivo web server starts/stops automatically with the cellVivo Software. The web servers runs with the rights of the currently registered user. For security reasons do not work with an user with administrative rights.

Configuring Email Alert settings

To enable cellVivo to send you an email when an alert has been detected, you have to configure an email server cellVivo can use to send the email to. Normally, this will be the central mail server on your local network. Sending mails directly to a mail server on the internet will mostly be restricted by the firewall of your LAN. Contact your local IT-administration for getting the necessary information.



For configuration, click with the right mouse button on the notification icon and select "*Settings*".



SMTP Server:

This is the address of the mail server where the email should be send to for delivery.

SMTP User / SMTP Password:

Only with a correct authentication, a mail server accepts email for delivery. Enter here a valid user name and password of an account on your mail server. This account is used to send emails of ALL users defined in cellVivo! It is recommended to set up a new, neutral account on your mail server that is only used for sending emails for further delivery by the mail server. Account information is stored encrypted in the HKCU branch of the registry. Therefore, if different windows users are used for separating cellVivo users, an individual email account setting can be used.

SMTP Port:

The port of the mail server where the email is sent to. Depending on the encryption type (see below), the respective standard port is set.

Encryption:

Type of encryption that is used for sending the email to the configured mail server. None, TLS or SSL can be used.

Sender E-Mail:

The email address that appears as sender address. It is used in most email clients as reply address.

Sender Name:

The name that should be appear in the sender field of your email client.

Test button:

Here you can test your email settings and send a test email to any recipient address.

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