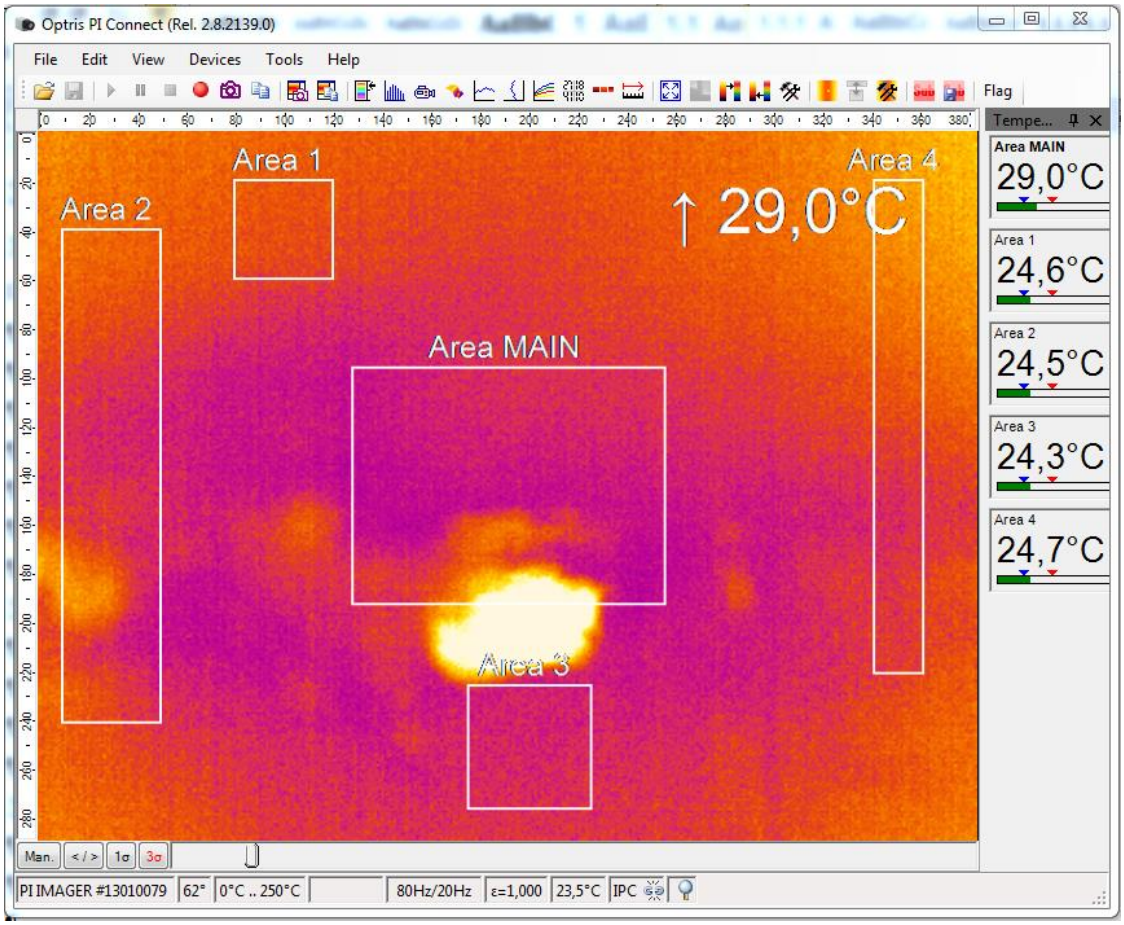


IPEMOTION Software

OPTRIS PlugIn

November 2017 30.11.2017

Table of Contents

1 Information

1.1 About this manual

This manual describes the configuration and operation of the OPTRIS PlugIn. The PlugIn supports data acquisition of infrared cameras OPTRIS company from Berlin . The plugin is published and supportes by the company PMR. The plugin is licensed and the license key can be purchased through PMR or IPETRONIK .

1.1.1 Support for this PlugIn

Prozess Mess Regeltechnik (PMR) HandelsgmbH

St. Peter Hauptstraße 50 • A-8042 Graz

Tel.: +43 316 464999-0 • Fax DW: -11

e-mail: office [at] pmr.at

Internet: www.pmr.at/

CEO: Erich Kickenweitz

Company register: 323245k

UID- number: ATU 64802244

Firmengericht: Landesgericht für ZRS Graz

2 System Overview

2.1 Introduction

By OPTRIS PlugIn users can integrate infrared cameras into IPEmotion. It can be transmitted by IPEmotion PlugIn in the current version only the readings of the measuring windows. The transfer of thermographic images is currently not possible.

To be able to run the plug-in must be at least IPEmotion 2014 R1 on your Computer installed .

2.2 Supported OPTRIS IR cameras

This PlugIn supports the following PI cameras: http://www.OPTRIS.de/infrarotkameras

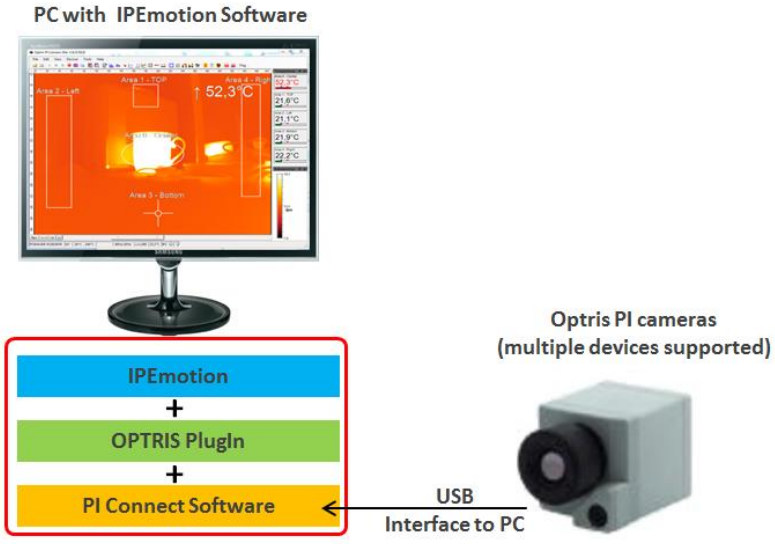
- PI160 / PI200 / PI400 / PI450

2.3 System structure

In order to capture the data from the camera in IPEmotion, following programs must be installed on the measuring computer:

- IPEmotion Release 2014 R1 or higher
- OPTRIS PlugIn (with activation License [4.2.2])
- PI Connect Software with SDK*

The camera is connected via USB to the measuring computer. A connection via extender cables for long distances is also possible.



Information *The PI software must have at least Version : 08/02/2145. Older PI Connect software versions do not support the extended InterProcess Communication (IPC Imager.DLL) for data transmission for IPEmotion OPTRIS PlugIn .*

* (SDK = Software Developer Kit with Imager DLL i.a. for data transmission to IPEmotion)

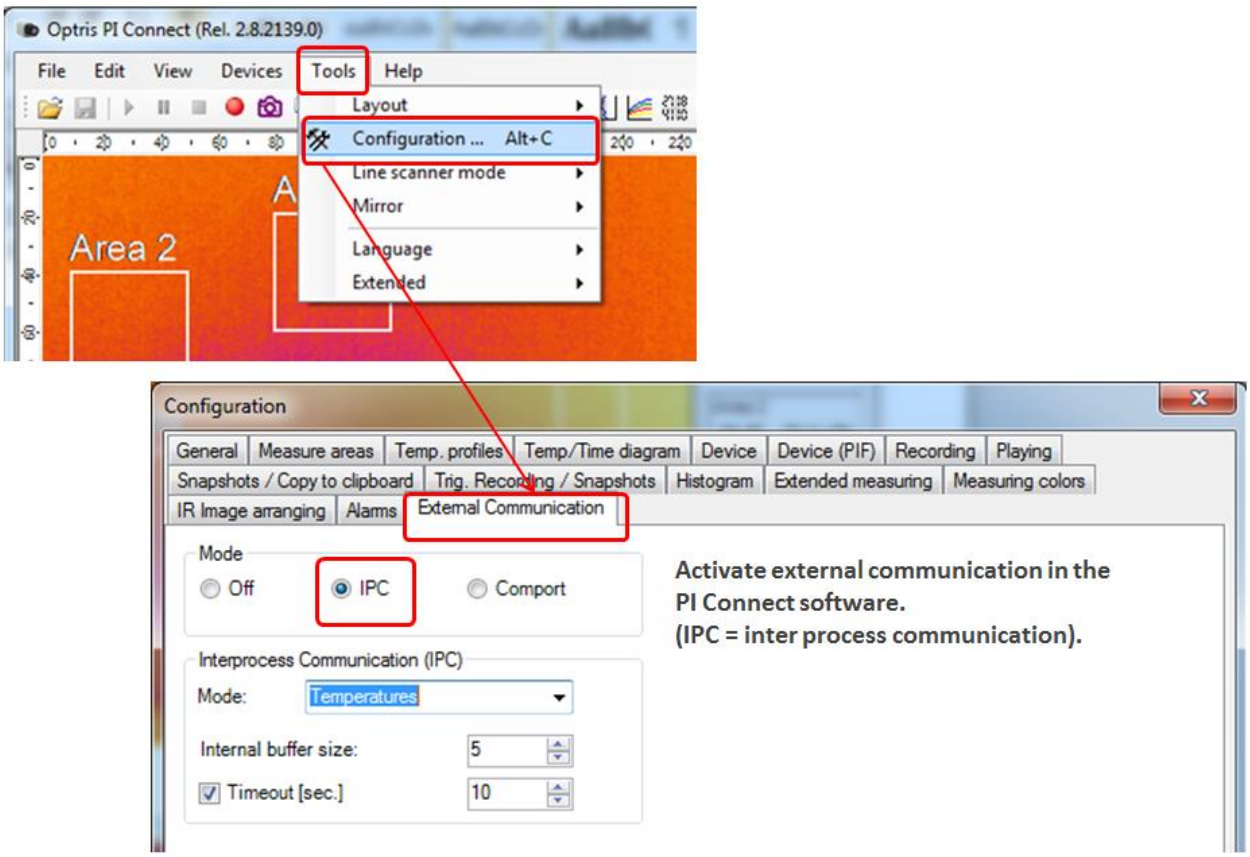
3 Starting and settings of PI Connect Software

For a data transmission from the Optris PI infrared camera to IPEmotion, the PI Connect software on the measurement computer must be started. The PI Connect software automatically synchronizes the camera calibration files from the Internet or from a local drive and the measurement is starting. The measurement data is then transferred from the PI Connect software via an IPC Imager.DLL to IPEmotion software.

Information *Data acquisition with IPEmotion is only possible if the PI Connect software is started.*

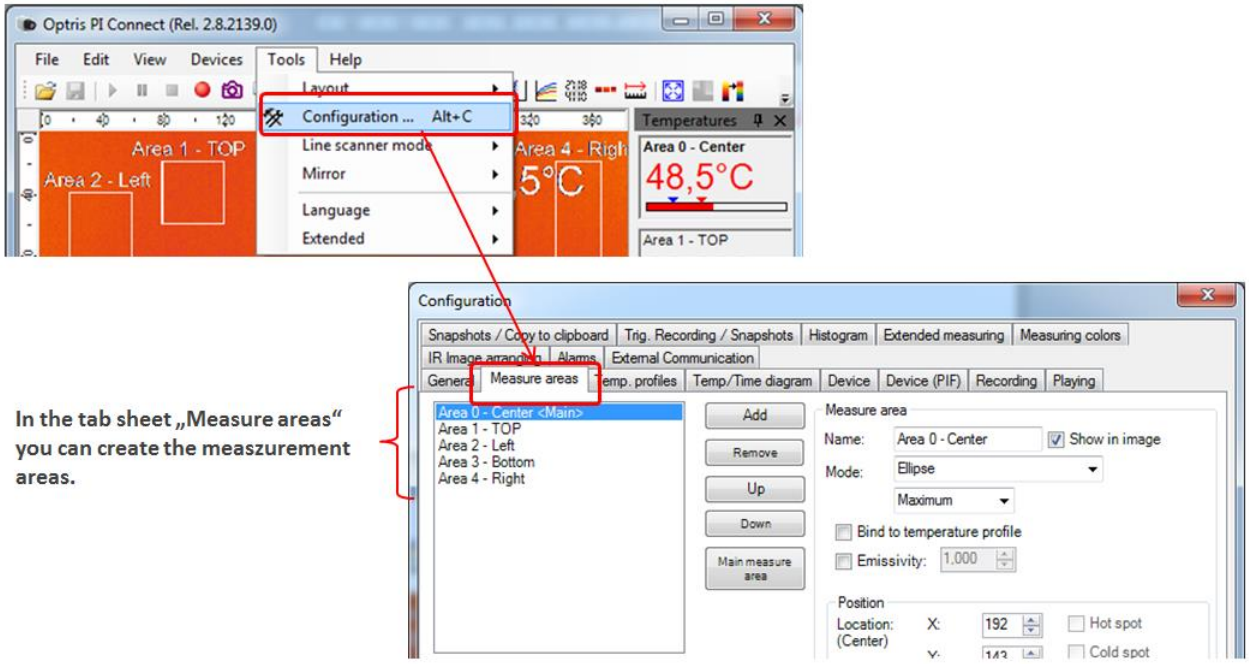
3.1.1 Activating IPC communication

For transfer data via PI Connect software to IPEmotion, the Inter Process Communication (IPC) must be activated . For this purpose, the user must call under menu Tools configuration and switch to "External Communication ".



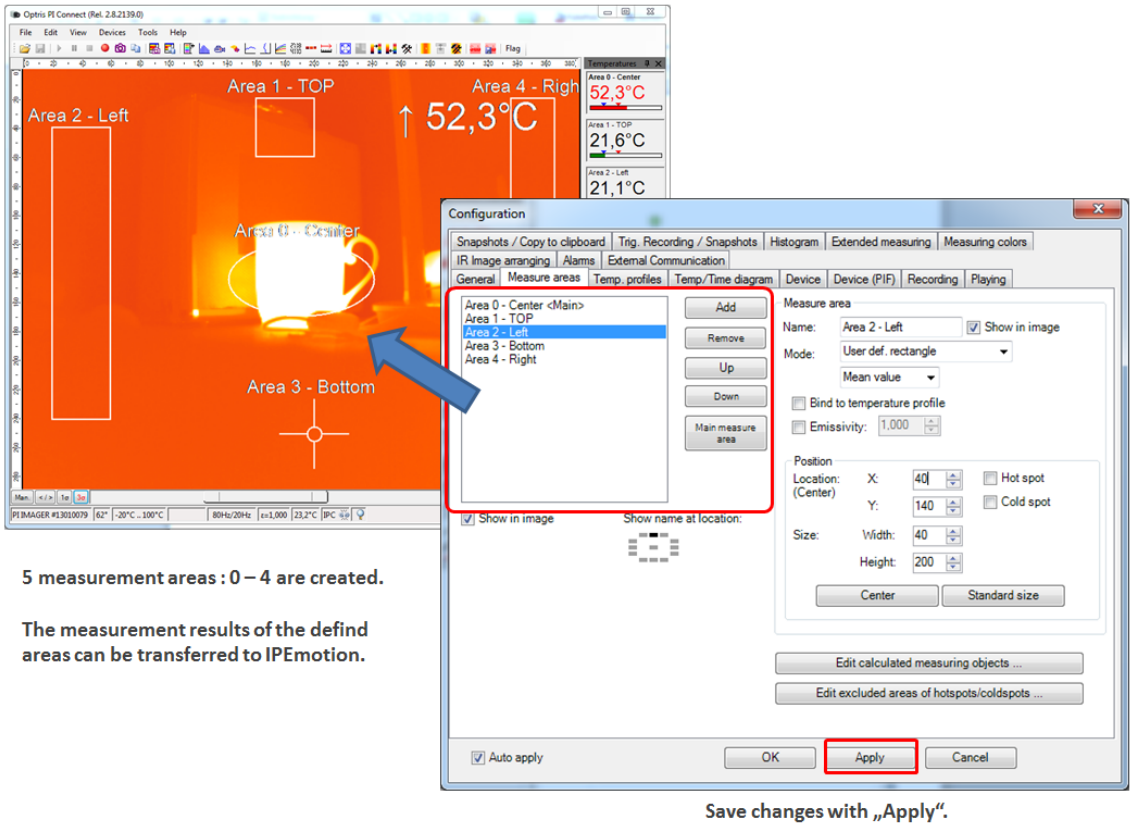
3.1.2 Enable measuring areas

As described above, the OPTRIS PlugIn receives only temperature values from defined measuring areas of the PI Connect software. Therefore, measurement areas must be defined. You have to open configuration in menu Tools switch to "Measure areas".



In the tab sheet „Measure areas“ you can create the measzurement areas.

This screenshot shows that 5 measuring areas where created. The measurement areas can be displayed directly in IPEmotion in the next step.



5 measurement areas : 0 – 4 are created.

The measurement results of the defind areas can be transferred to IPEmotion.

Save changes with „Apply“.

4 Installing IPEmotion and OPTRIS PlugIn

4.1 Installing IPEmotion Software

You find the current IPEmotion measuring software on the official IPETRONIK website. www.ipetronik.com

4.2 Installing and activating OPTRIS PlugIn license

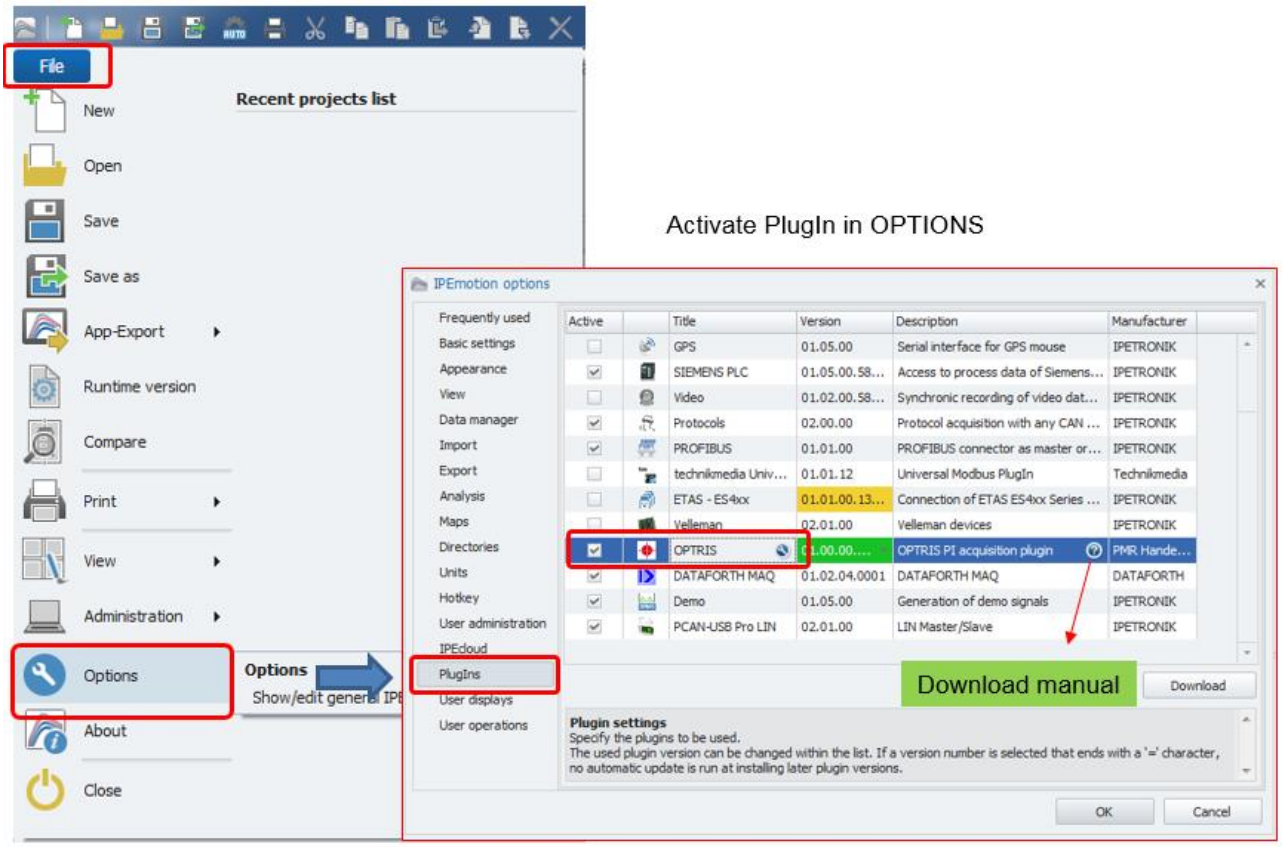
The OPTRIS PlugIn is placed on to the IPETRONIK website for download.

Link: www.ipetronik.com

After you have downloaded the plug-in, it must be installed. The installation wizard leads you through the installation steps.

4.2.1 OPTRIS PlugIn activation in the options

After installing the software IPEmotion needs to be started. The new PlugIn is automatically recognized and is actively enabled via the checkbox in the first column.

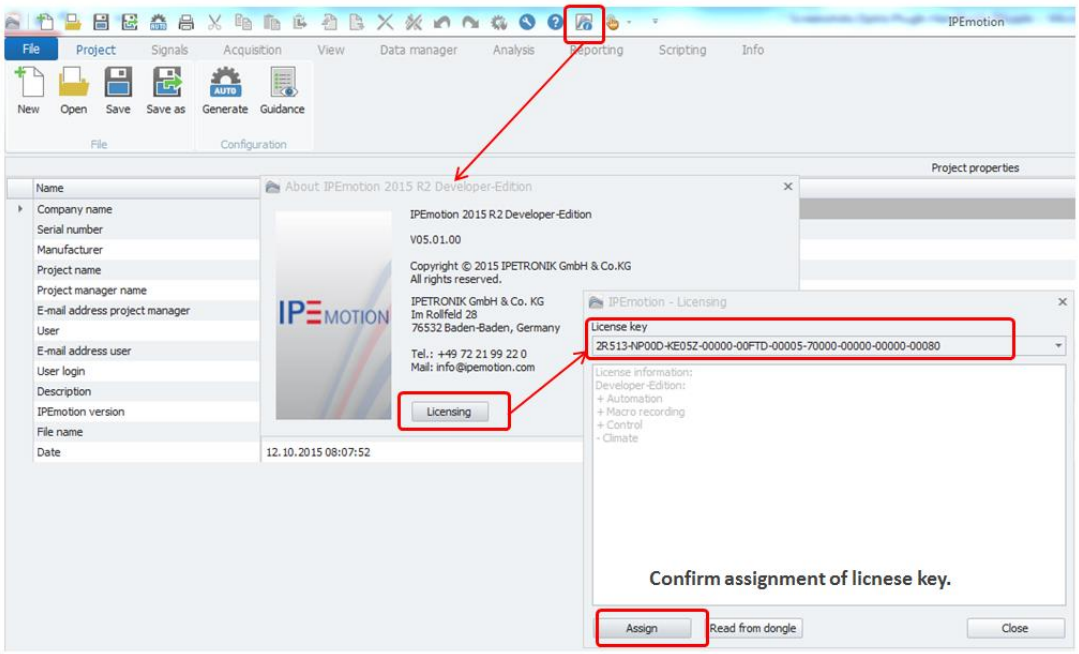


4.2.2 Activating OPTRIS PlugIn license

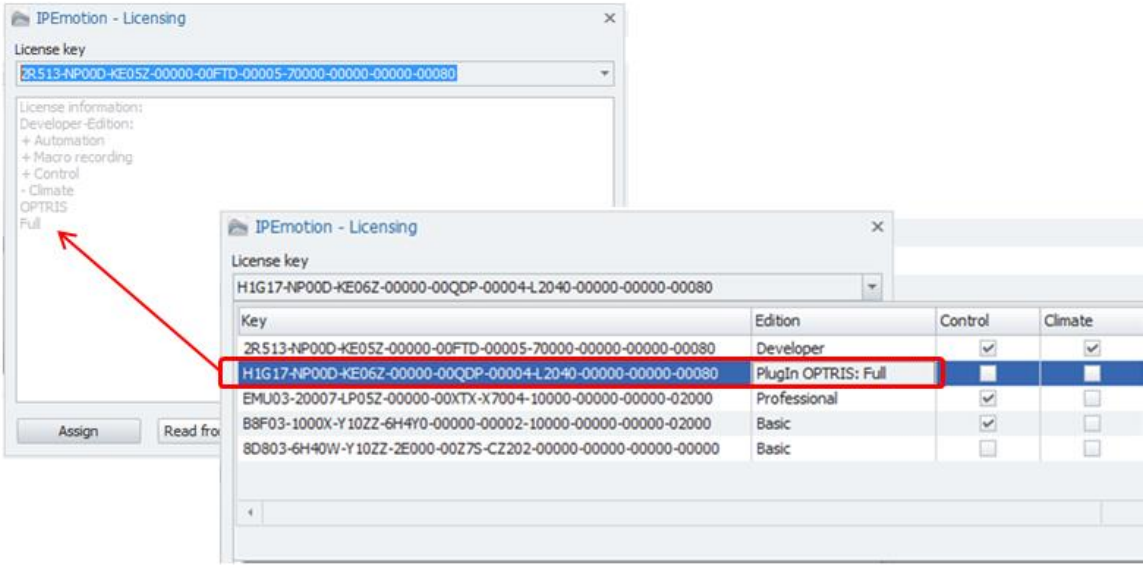
IPEmotion is available for 30 days as a demo Edition free of charge. The license key for the demo edition can be purchased from the IPETRONIK website. For further use of IPEmotion, you can use the free BASIC edition or buy a license from PMR or IPETRONIK.

The OPTRIS PlugIn is a licensed PlugIn. The OPTRIS PlugIn can be used by IPEmotion Demo period without license keys for 30 days.

If you like to use the PlugIn afterwards please contact PMR regarding a an license key. To activate the plugin, you have to enter the license key in the license dialog.



Use the "Apply" button to enter the activation menu. The activation over internet is recommended. The following video shows the procedure for activating a license online. Youtube: http://youtu.be/CEPdWfh-KnM. If the PlugIn is activated, in the license dialog OPTRIS PlugIn appears.

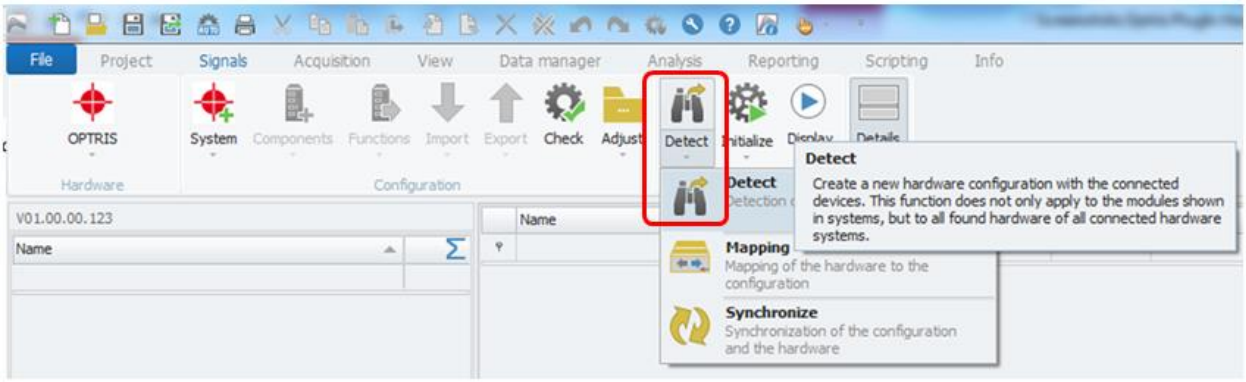


PlugIn license is activated.

5 Configure OPTRIS PlugIn

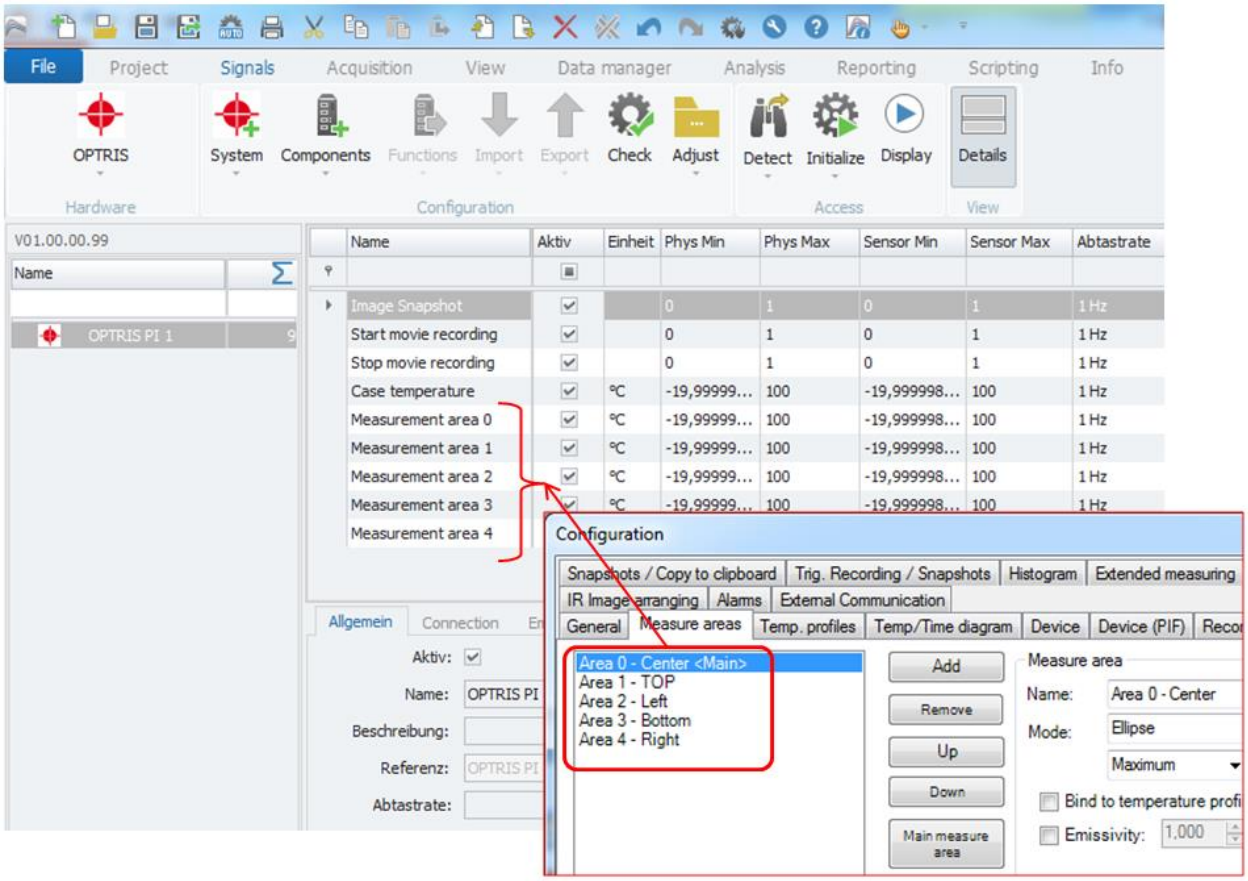
5.1 Automatic hardware identification

The OPTRIS PlugIn supports automatic HW recognition. If only one OPTRIS PI camera is connected via the USB connection on the PC, then you can establish the connection to the device via the "Detect" button.



Run automatic HW detect when camera is connected to PC.

After hardware detection all measurement areas of the PI software are automatically shown in IPEmotion. The channels have to be activated by the hardware detection, so that measurement data is displayed.



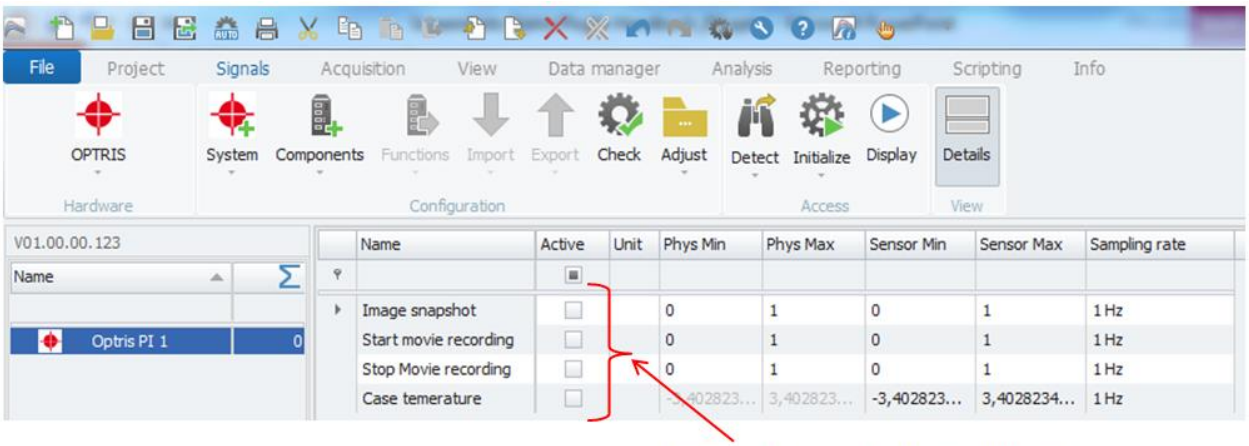
All measurement areas are automatically integrated to IPEmoation as measurement channels.

Information

In IPEmotion meassuring areas are only shown with neutral numbering naming „measurement area 0“ to „measurement area x“. Individual area names from the software Optris PI can not currently be transferred to IPEmotion

5.2 Optris system – Standard channels

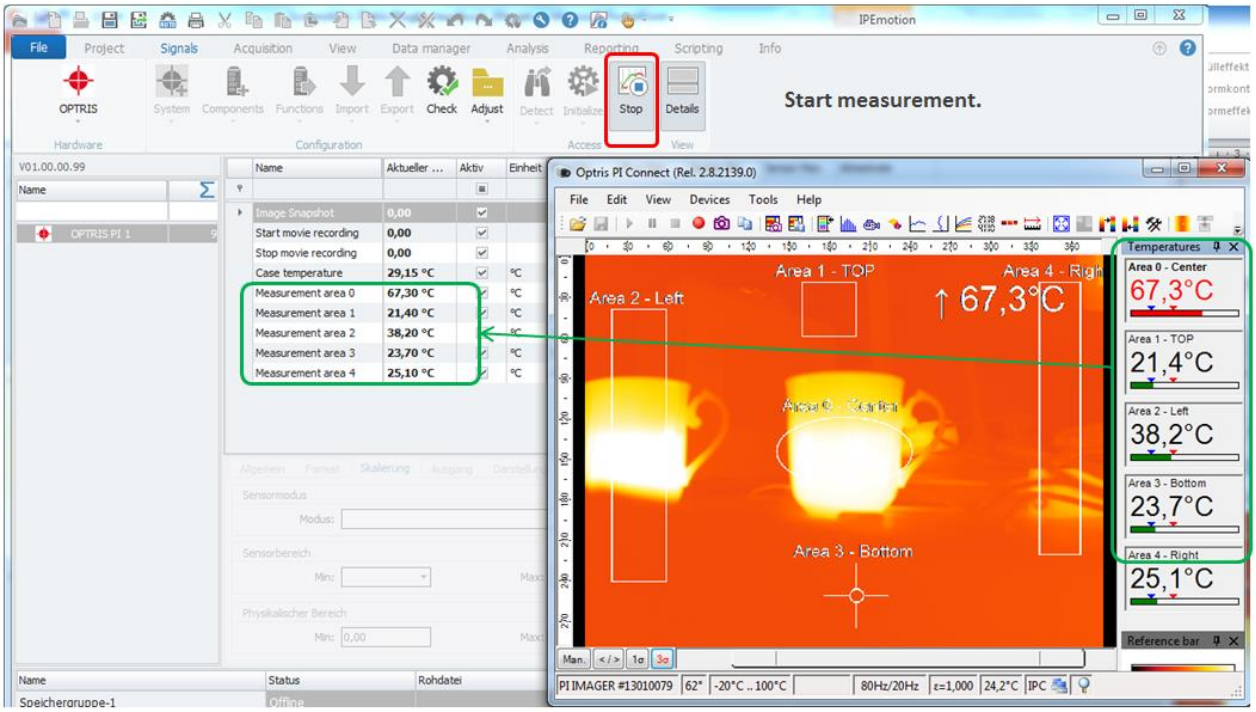
If no measuring areas have been created in the PI software and you perform a hardware detection or when you create a system in OPTRIS IPEmotion manually, the following 4 channels are created in the standard.



The use of these channels is described in the section of the measuring channel configuration [5.9].

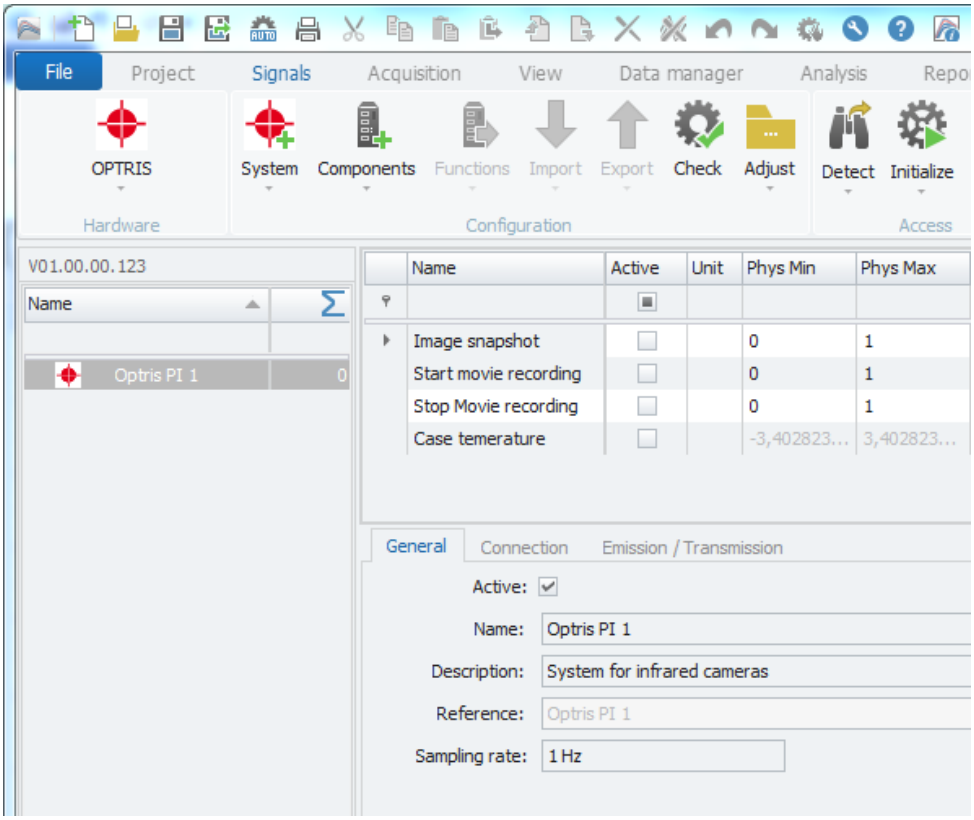
5.3 Start measurement

The measurement can be started immediately. Then, the measurement data of the PI Connect software on the IPC Imager DLL is transferred to IPEmotion.



5.4 Tab sheet – General

In the General tab, you can assign the name of the camera and set aside a description. The adjustment of the sample rate is described below measurement channels. [**Fehler! Verweisquelle konnte nicht gefunden werden.**].



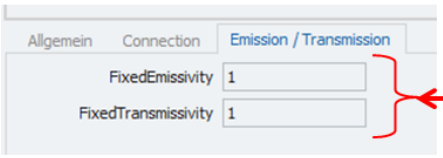
5.5 Tab sheet – Connection

In this tab you can view the details associated camera. These areas are read automatically before the start of the measurement or during the hardware detection from the PI software. A special feature is the connection to several cameras. Therefore an automatic detection of the hardware is not possible; it has to be assigned a PI Connect instance name, which is then registered as a dry -scale system in the "Instance Name" area. For more information see chapter [**Fehler! Verweisquelle konnte nicht gefunden werden.**].

5.6 Tab sheet – Emission/Transmission

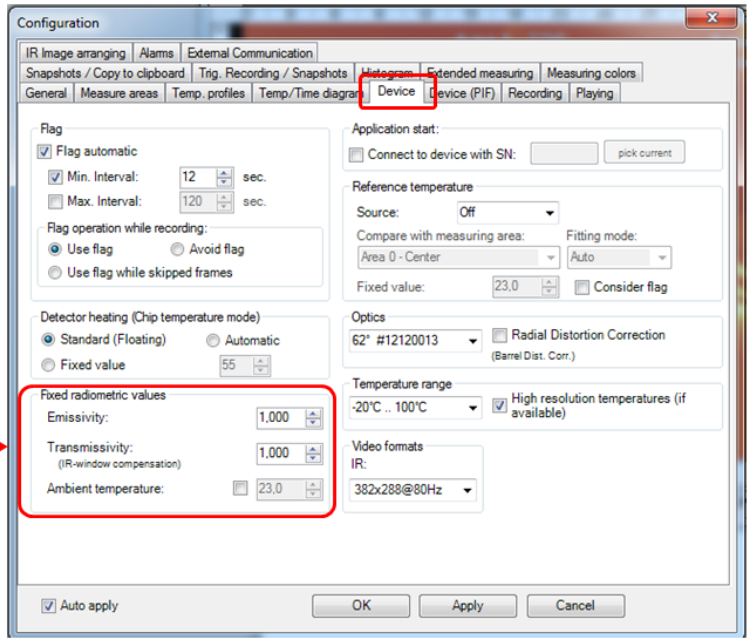
Emission and transmission are two important parameters that need to be adjusted depending on the measured object. You can either define these parameter with the OPTRIS software in the tab "Device" or via IPEmotion. If you enter the parameters in one of the software the other program will be updated with the new input value.

IPEmotion



Emissions- & Transmissions can be entered over IPEmotion.

PI Connect software



Information

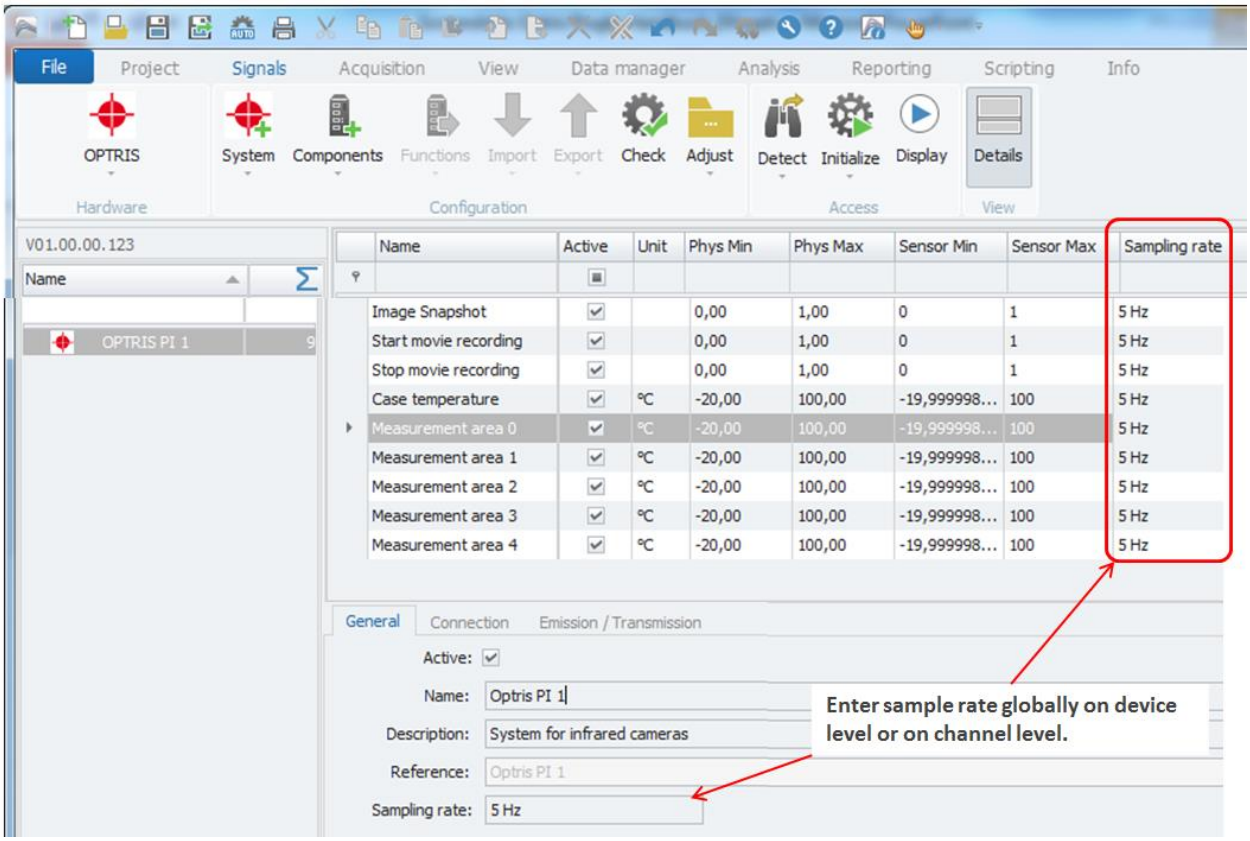
In IPEmotion the parameters for emission / transmission can only be entered before the start of measurement. If the values are changed, the measurement must be paused.

5.7 Configuration of measuring channels

5.7.1 Setting the sampling rate

The sampling rate is set globally for all channels (measuring areas). You can enter the sampling rate to equipment level or update a measurement channel and all other channels are being updated as well

The sampling rate for the measurement values from the measurement areas is limited to a maximum of 10 Hz. The measuring areas are updated via the PI software with the Imager.DLL only up to a maximum of 10 times / second (10 Hz).



Information

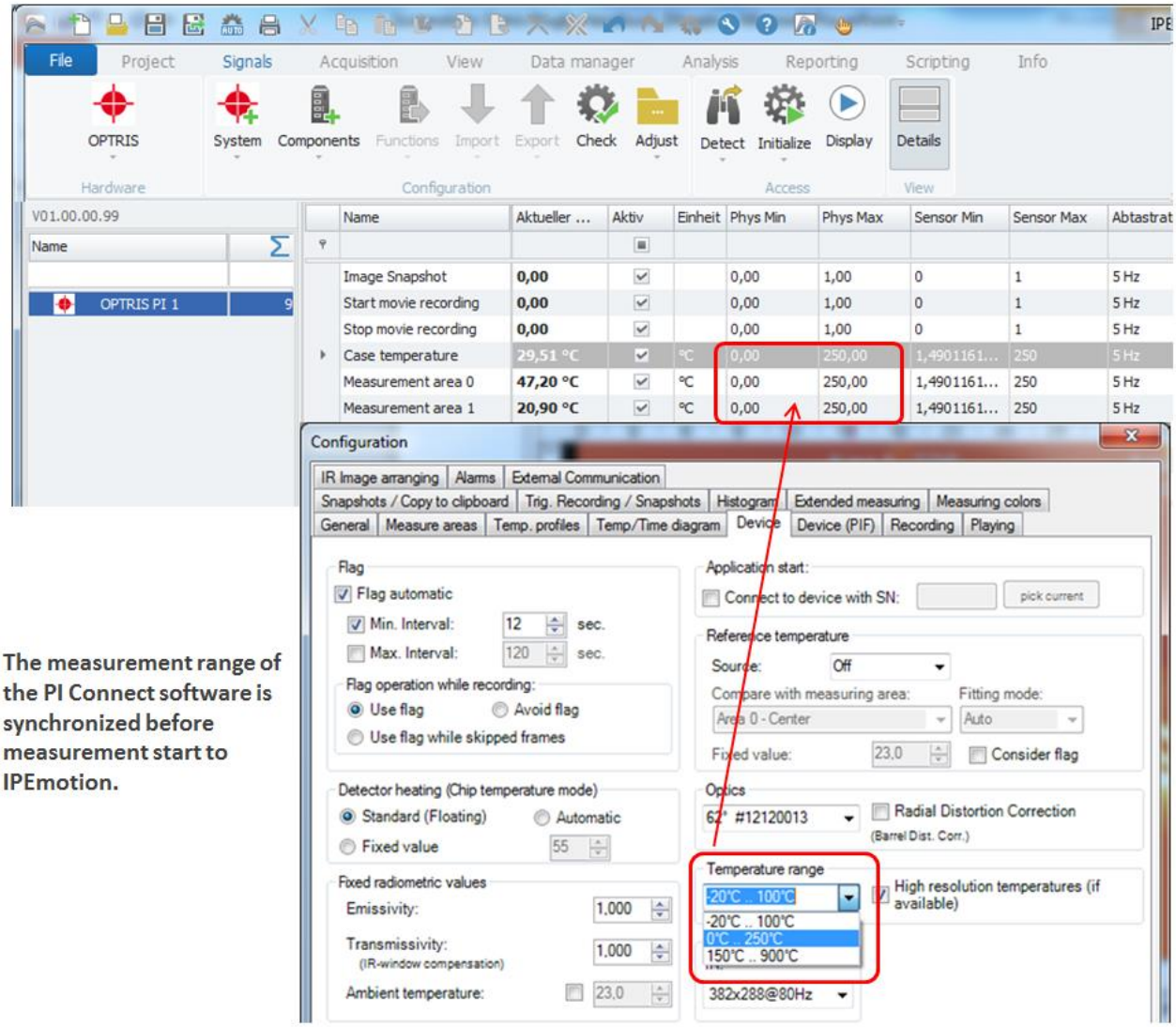
Higher sample rates than 10 Hz can be entered, but won't increase the transmission of measured values.

5.7.2 Temperature ranges of the measurement areas

The PI Connect software supports 3 different measurement ranges that are presented in IPEmotion in column Physical Min / Max or physical sensor Min / Max sensor.

- -20 – 100°C
- 0 – 250°C
- 150 – 900°C

You can change the measuring ranges in the PI Connect Software with the menu Tool > Configuration within the Device tab. The measuring range is updated before the start of measurement in IPEmotion as the following screenshot shows



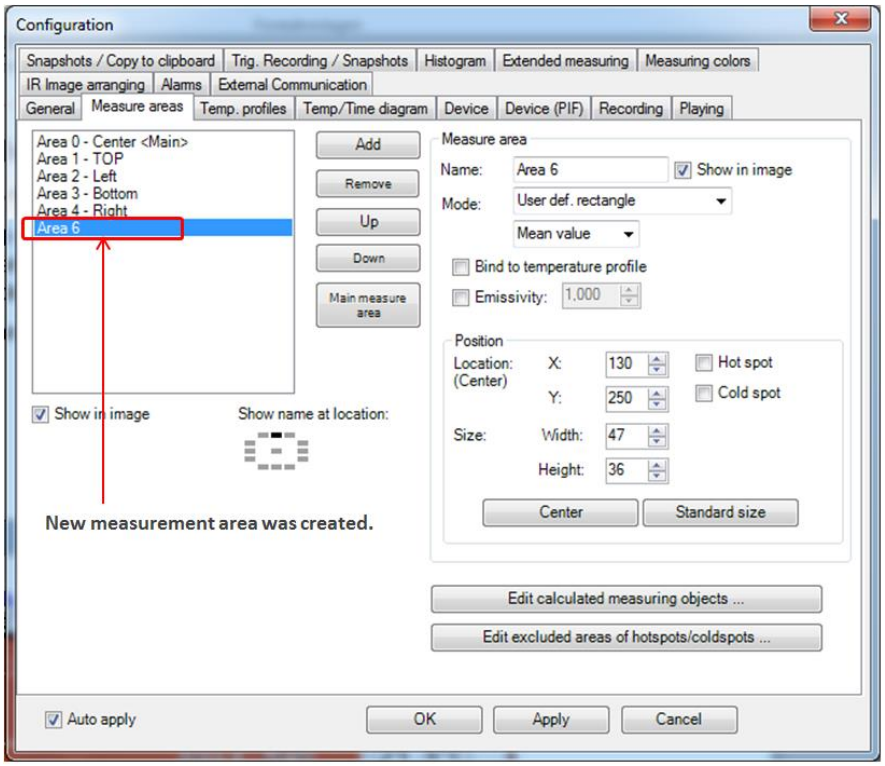
The measurement range of the PI Connect software is synchronized before measurement start to IPEmotion.

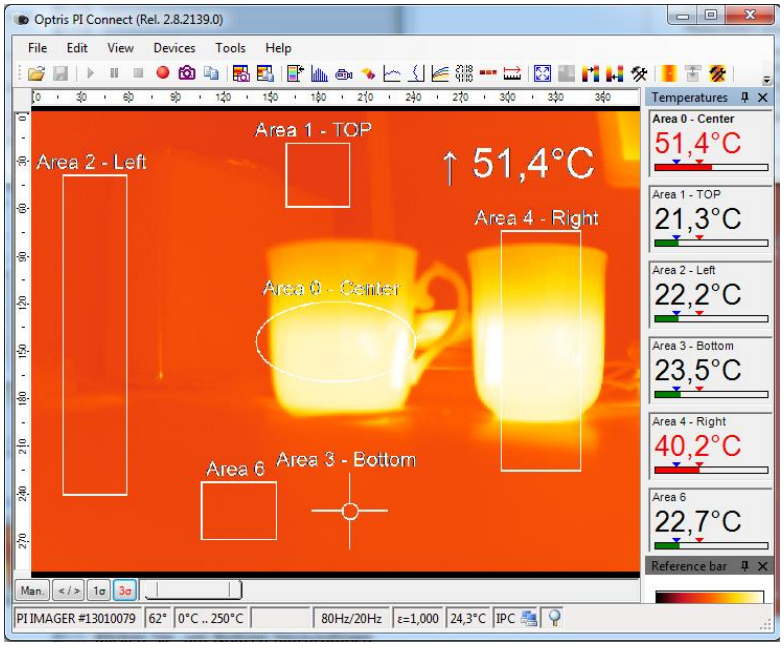
5.8 Synchronization of the measuring areas PI Connect to IPEmotion

5.8.1 Adding measuring areas

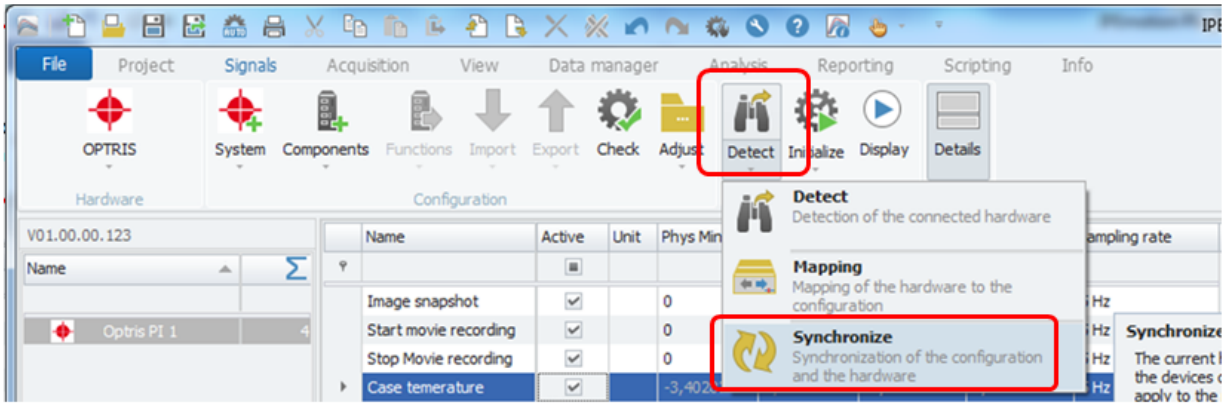
If the number of measurement areas changes in the PI Connect software, this change can be easily redrawn in IPEmotion. If a further measurement area occurs, you can use the "synchronization function" to record the new area in the configuration.

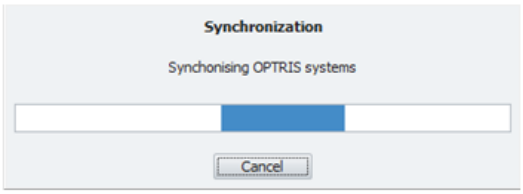
Example: Area 6 was applied as a further measuring area . See also [**Fehler! Verweisquelle konnte nicht gefunden werden.**].



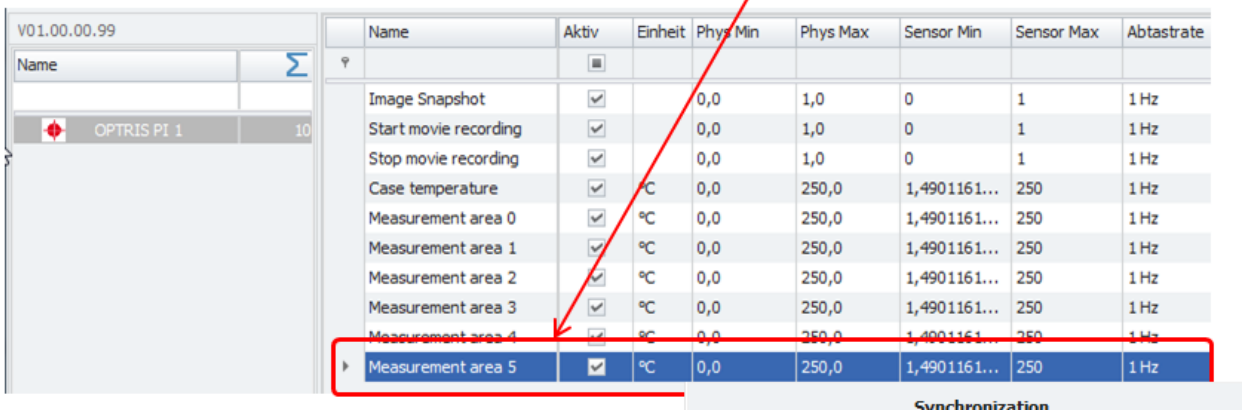


Use the Synchronize function in IPEmotion to add an additional measuring area.





New „Measurement Area 5“ was created.



Information

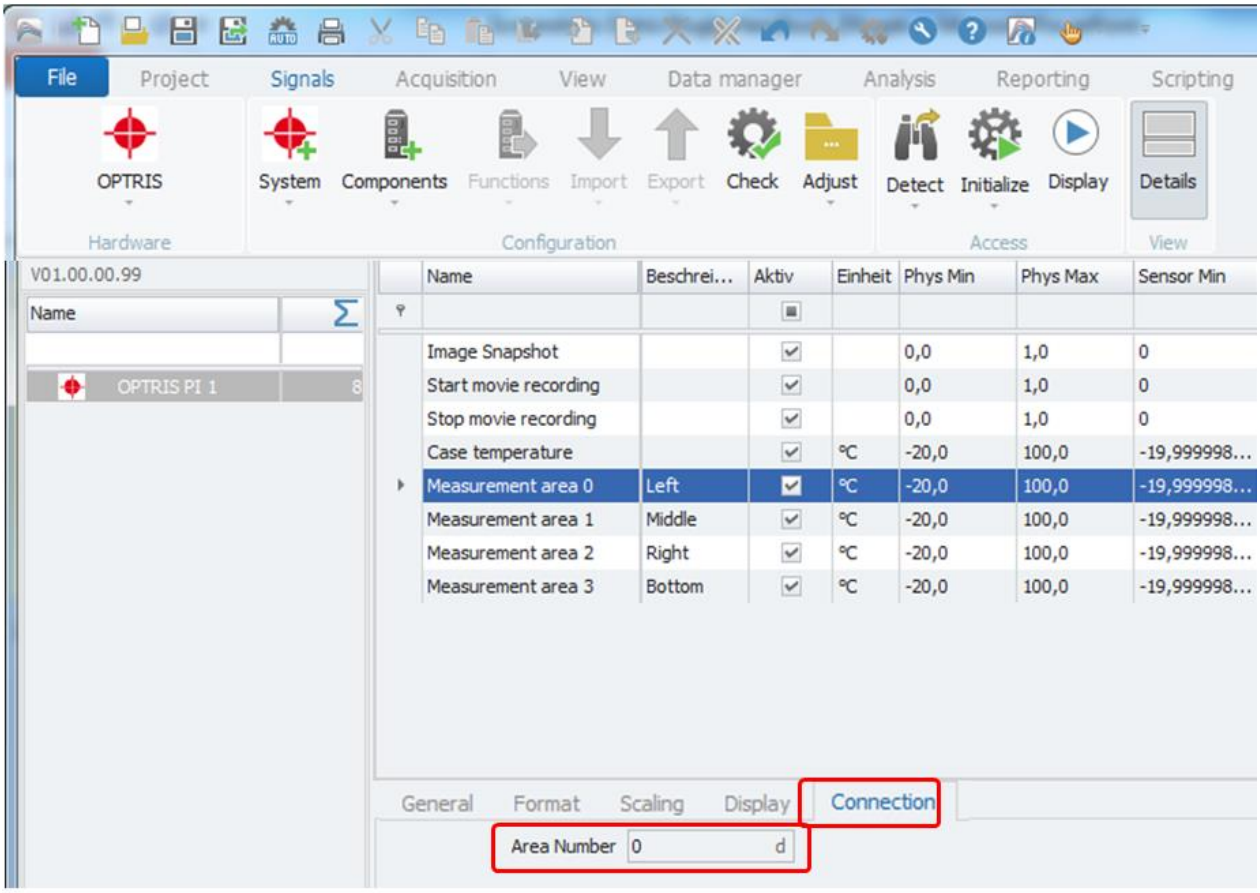
When a measuring area in the PI Connect software is added, then IPEmotion puts only a new measurement area with the generic description " Measurement area x ". It is currently, as described in section automatic hardware detection [5.1] described, not possible to synchronize the name of the measurement areas of the PI Connect software to IPEmotion

5.8.2 Deleting measuring areas – Impact on IPEmotion

The channels to the measurement areas, there is another configuration tab "Connection " with a configuration area " Area Number. The hardware detection counts "Area Number " is from 0 to the n -th measurement area up. In the automatic hardware detection, the Area Number are automatically assigned correctly and the measured values of the PI Connect software are transmitted correctly to the measurement channels in the IPEmotion.

The first measuring area has automatically the area number = 0.

The second area automatically = 1, etc…

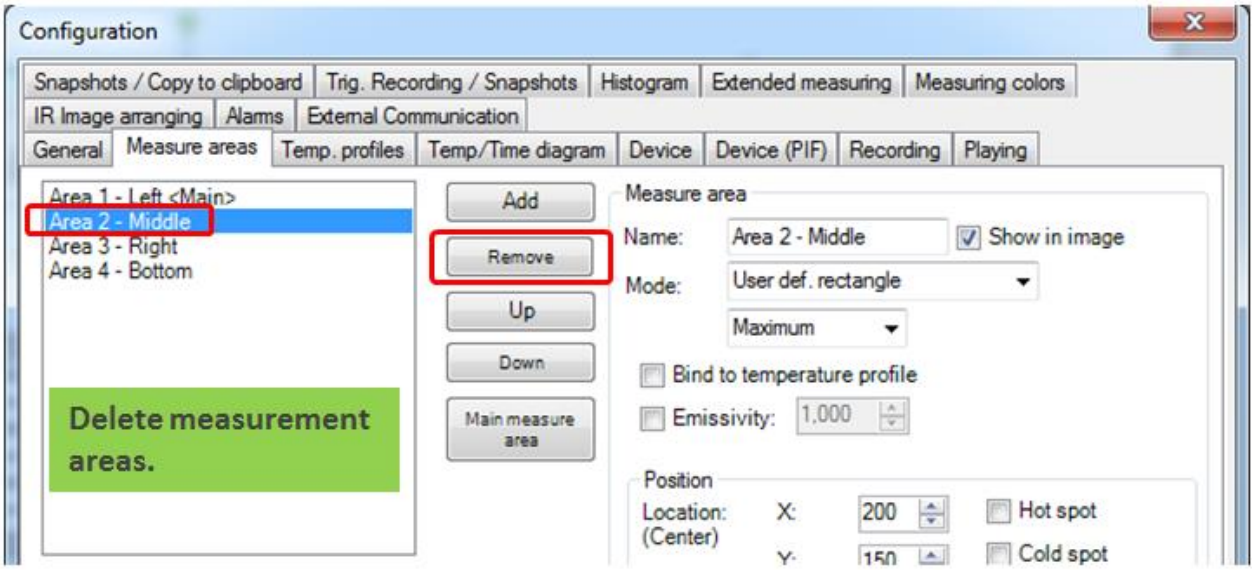


Area Number is the common ID to link PI conenct areas to IPEmotion.

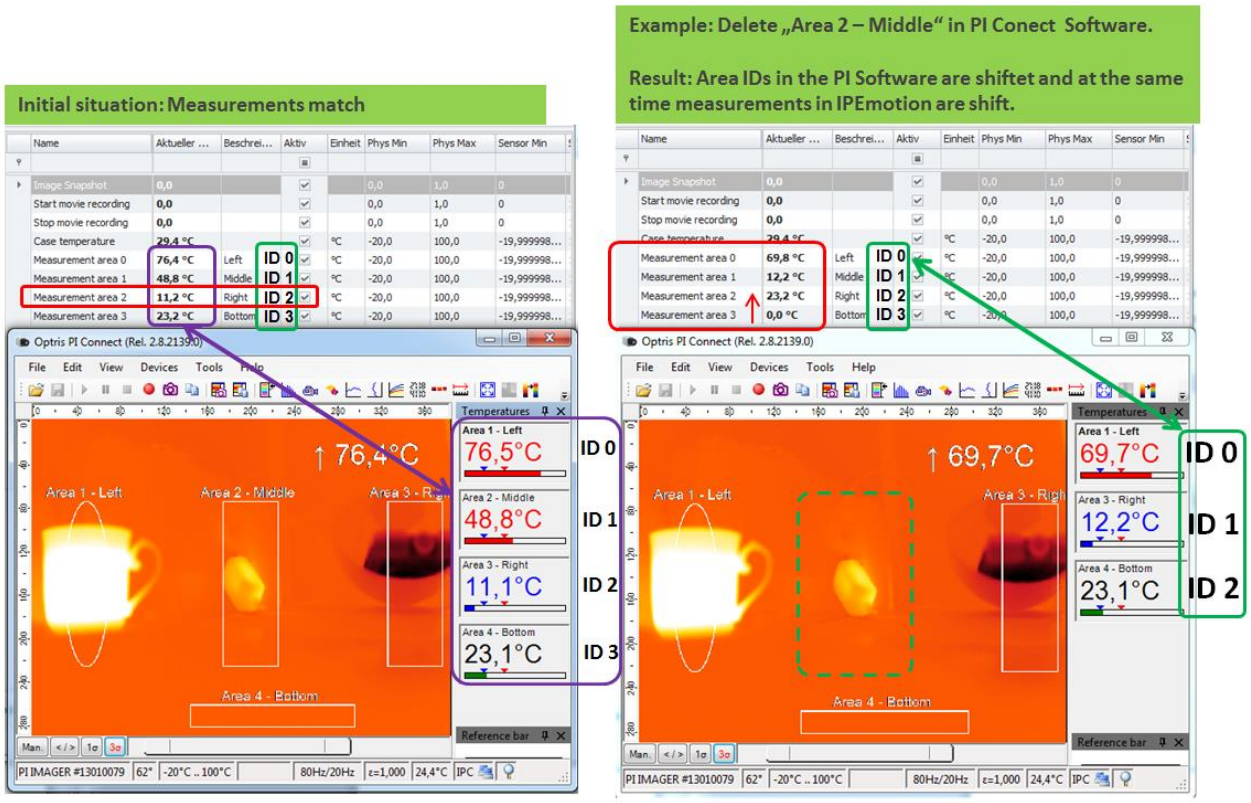
Deleting measurement areas has since Area Numbers change a direct impact on the measurement data display in the IPEmotion in the PI Connect software.

Example:

In the initial configuration, there are 4 measuring areas. In the example, the measurement box "Area 2 - Middle" removed from the PI Connect software.



The screenshot below shows the effect on IPEmotion. After the measurement area "Area 2 - Middle" was removed the measured values shift in the IPEmotion display. All mesurements slip up one line. In order to make the behaviour more visible the column description was displayed in the same channel name was deposited in IPEmotion as in the Optris PI Connect software. To see this effect the description column, which is the same channel name as of IPEmotion and the Optris PI Connect software, was displayed.



Output system	after deleting Area 2 – Middle
Area Number ID	the display changes in IPEmotion
ID 0 Left ca. 70 °C (hot water)	no changes - OK
ID 1 Middle ca. 50°C (power Supply) the ice pack in IPEmotion (12 ° C)	is no longer detected but shows the temperature of
ID 2 Right ca. 12 °C (ice pack)	In measuring area is Right in IPEmotion now
Ambient temperature display (about 23 ° C)	
ID 3 Bottom ca. 23 °C (ambient conditions)	IPEmotion shows 0 °C

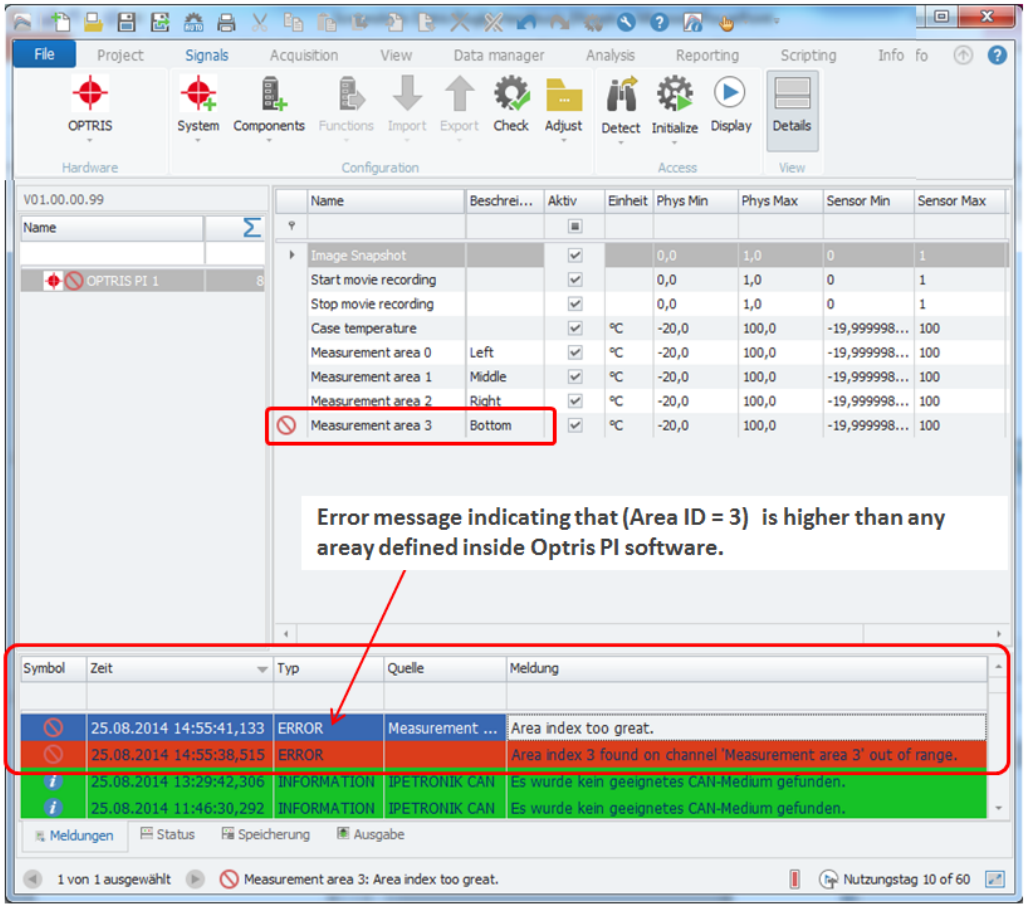
The deletion leads to a rearrangement of the area ID numbers in the Optris PI Connect software. All measurement areas behind the measuring area "Area 2 - . Center (ID 2) have shifted with its successive ID by one count upward. This explains the channel measurement box " Middle " in IPEmotion and the temperature is represented by the ice cube .

Attenion

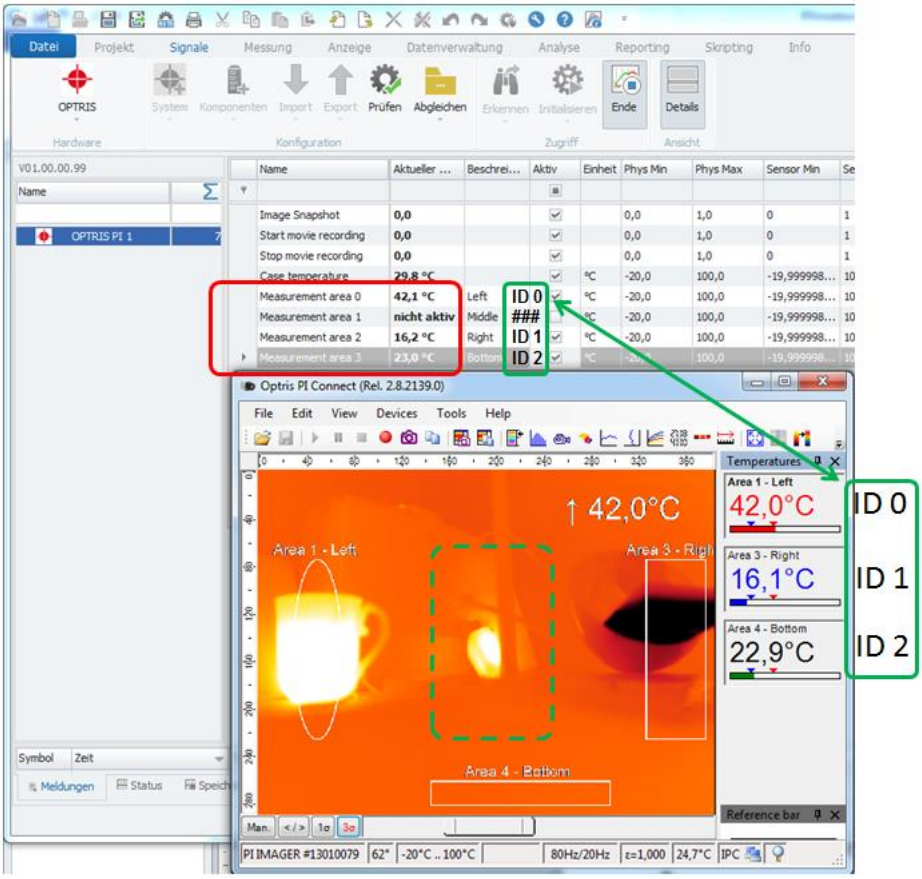
The order of the measuring areas (channels) in the PI Connect software automatically decides which (Area Number IDs) for IPEmotion .

It is not possible to transmit on the IPC.DLL the changes of the measurement areas in the PI Connect software was automatically after IPEmotion . You must make sure that the Area Numbers and corresponding channel name in IPEmotion with the PI Connect software correctly itself .

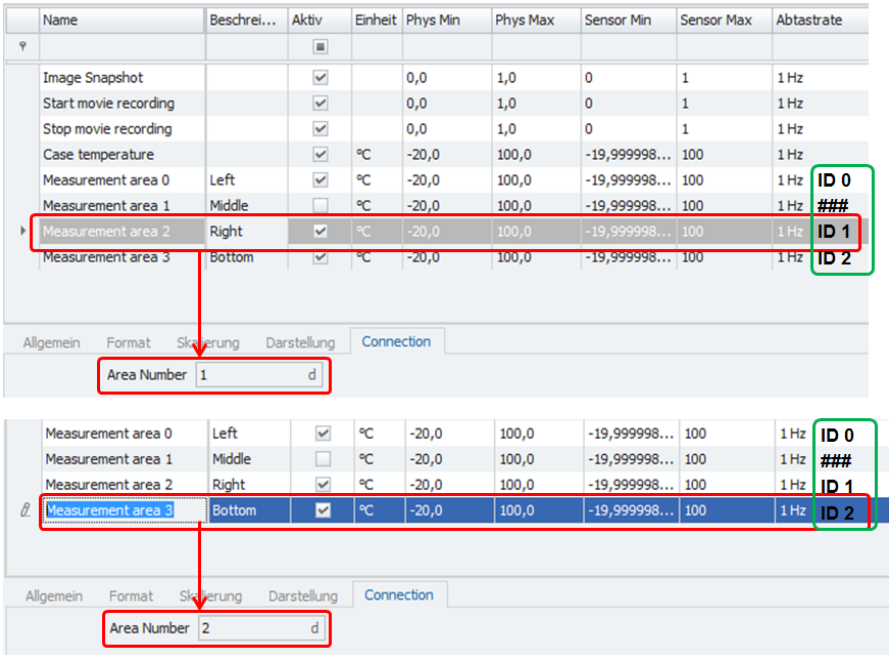
If the measurement is stopped and restarted, then an error message is displayed in the message window IPEmotion .



So that you still represent in an existing configuration IPEmotion the correct measurements of the OPTRIS PI Connect in IPEmotion, you need to adapt Area IDs in IPEmotion on the IDs in PI Connect software. The following screenshot shows the deleted Area "2. Middle" is disabled as not active in IPEmotion. If the IDs between the two programs go together the correct measuring values are going to be transmitted from IPEmotion software to PI Connect.

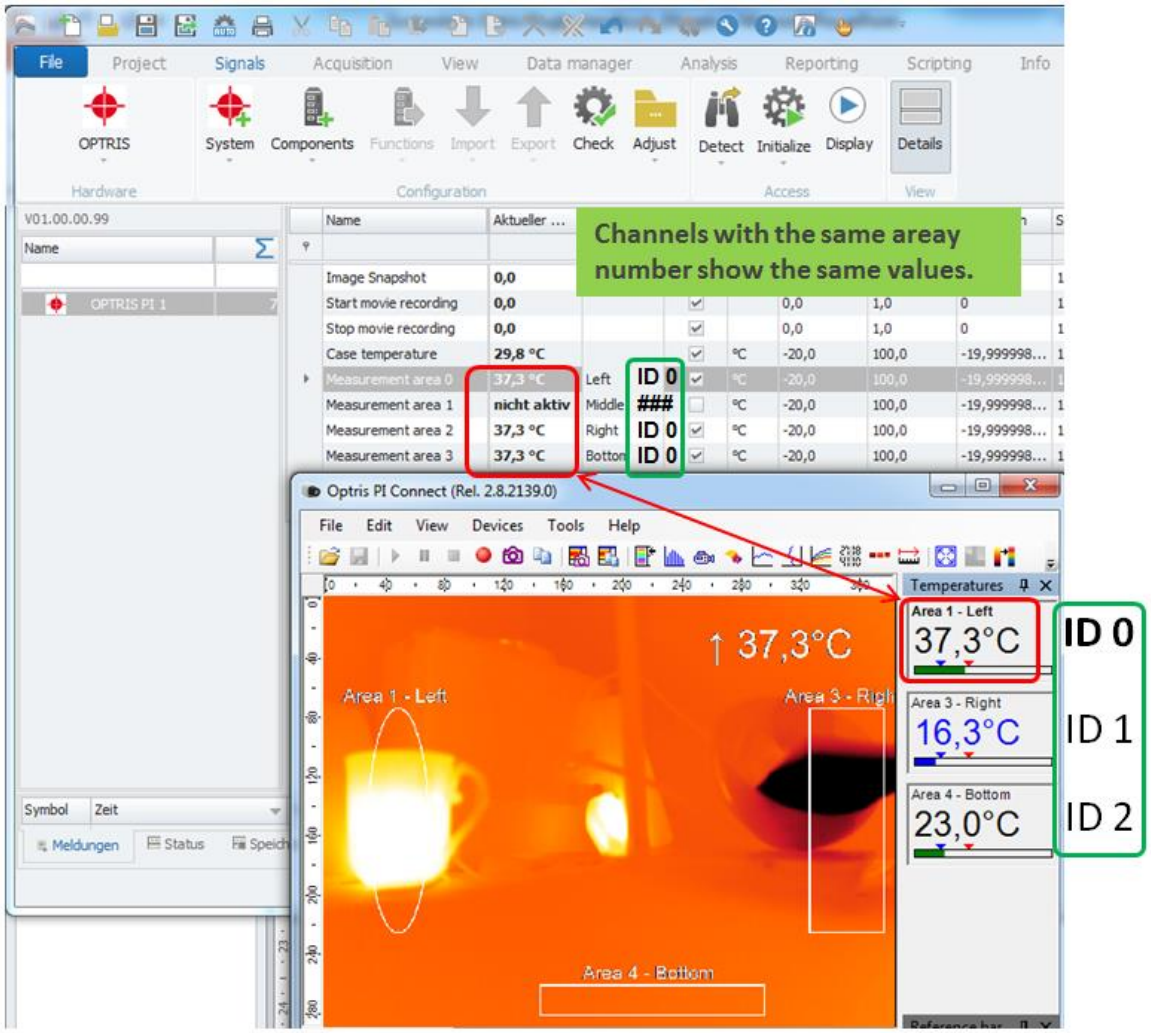


The affected downstream channels Area Number was in the channel configuration the tab "Connection " updated to the values in the OPTRIS software.



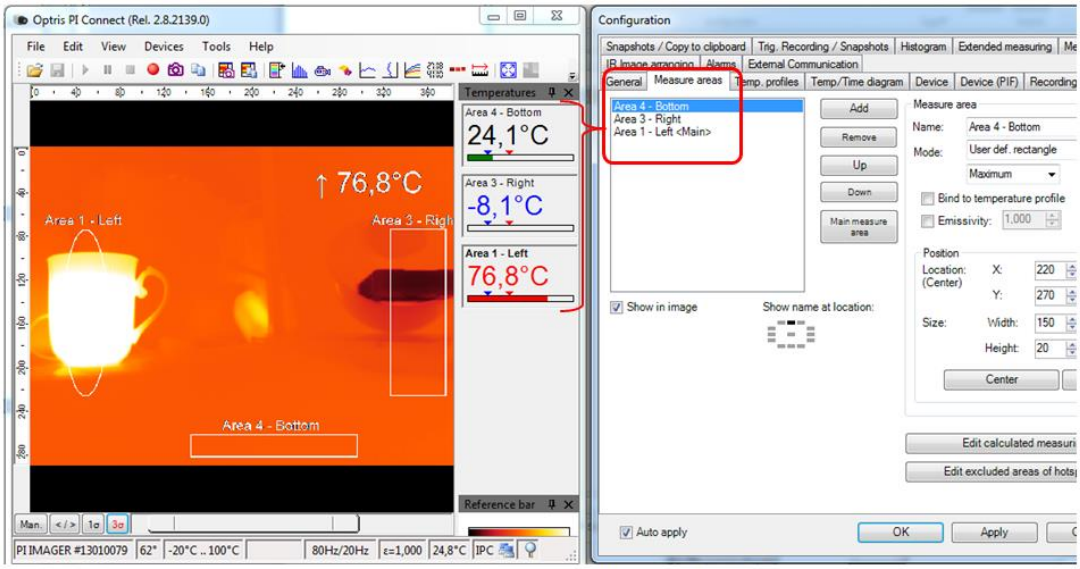
Special feature:

Several IPEmotion measurement channels may get assigned to the same Area ID Number. In the case of measuring channel are then shown the same readings on each IPEmotion. In the screenshot below , each measuring channel in IPEmotion has the ID = 0. Thus, the temperature at the measurement area on all 3 channels "Area 1 - Left " (37.3 ° C) appears.



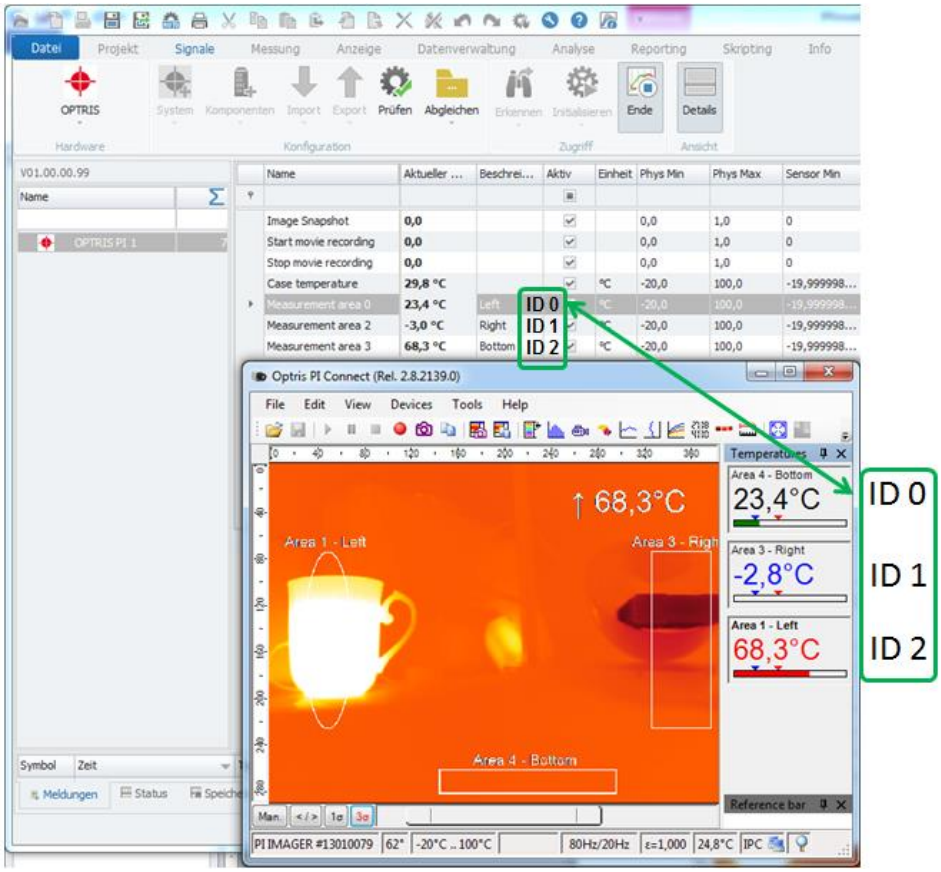
5.8.3 Changing the order of the measurement areas

If you change in the Optris PI Connect software the order of the measuring areas, it also has an impact on the presentation in IPEmotion. In the following example, the order of the measuring areas has been once inverted.



Revers order of measurement areas.

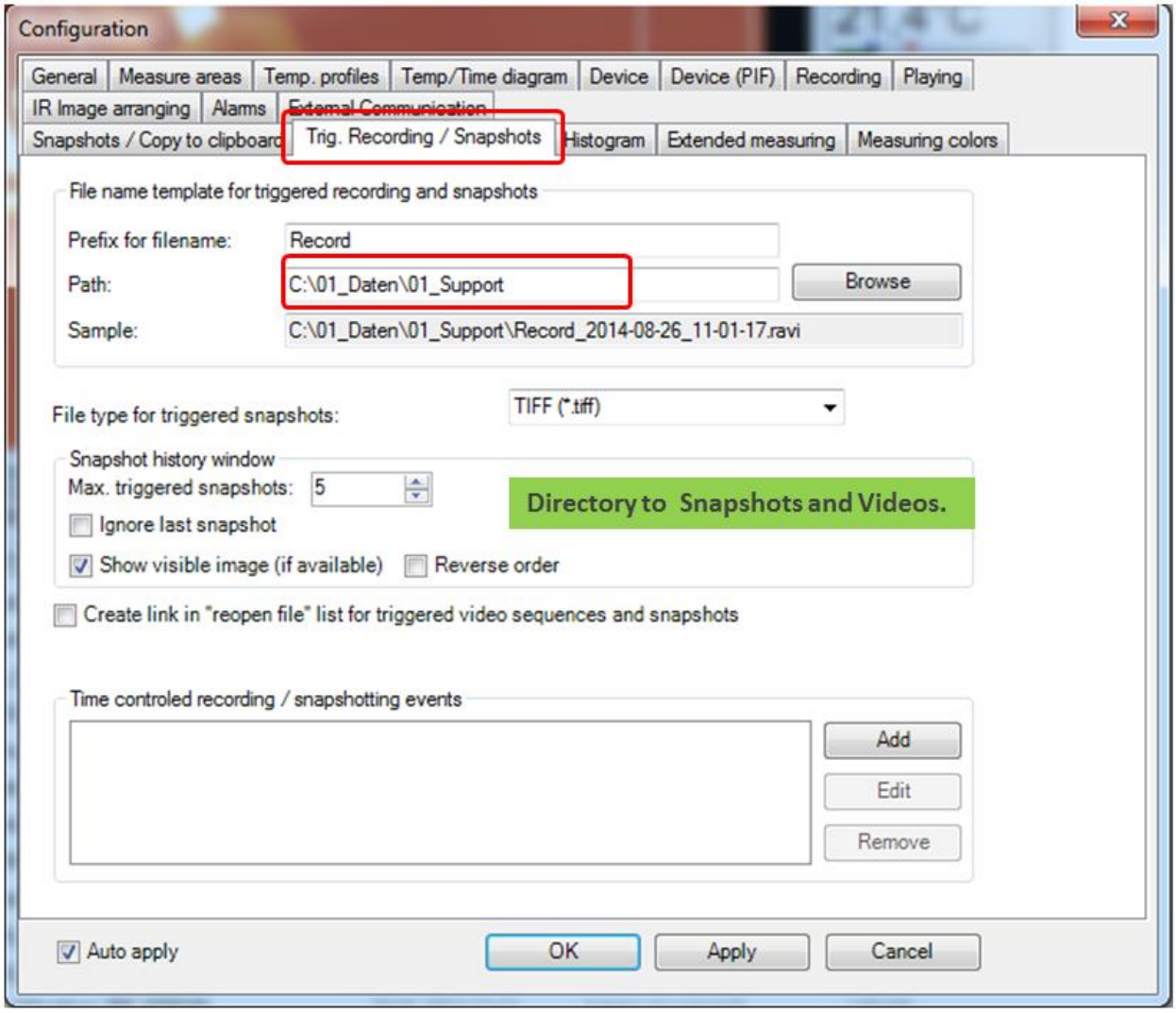
By reversing and new sort of measurement areas, the measured values to the corresponding to OPTRIS Area Number ID are displayed in IPEmotion. Under the new order, the "Area 4 -bottom " with the ID = 0 in IPEmotion also on the measurement channel (Left) with ID = 0 is displayed .



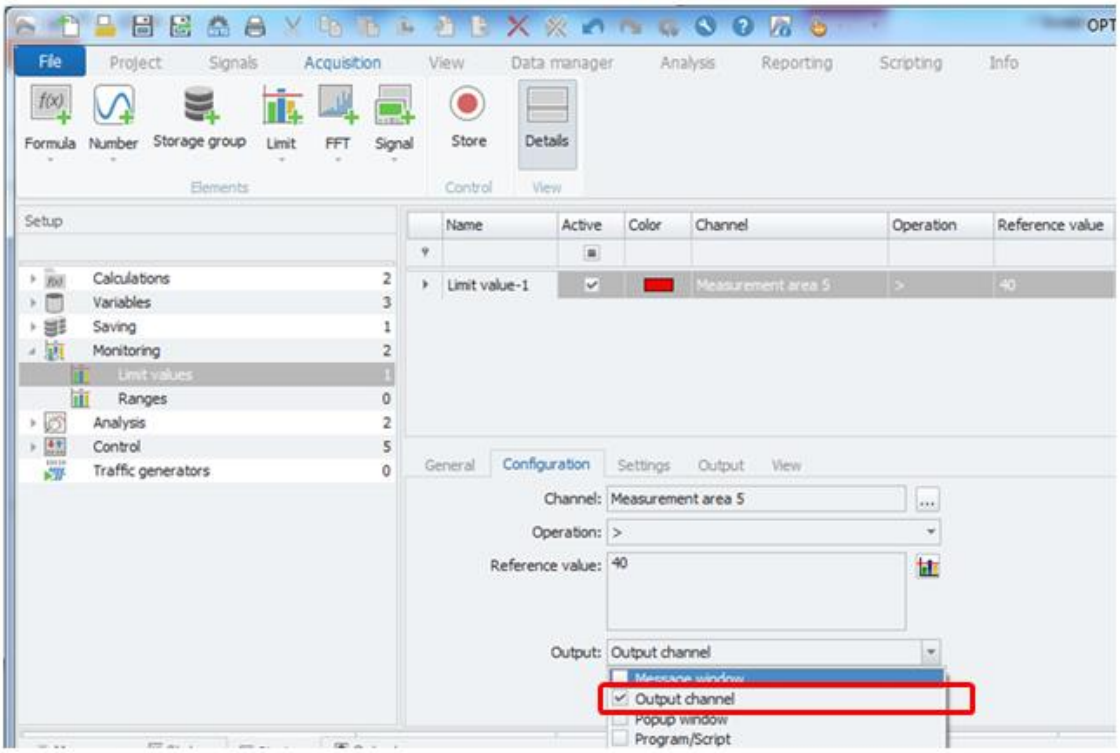
5.9 Function of the 4 standard channels

5.9.1 Image Snapshots

With this channel you can use a trigger event (rising edge from 0 to value 1) which detects IPEmotion has (eg limit value monitoring) transferred to the PI Connect software, so a screenshot will be stored. The location where the snapshots and videos are stored are defined in the PI Connect software.

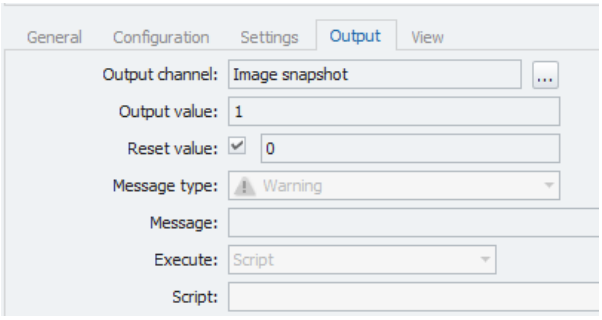


Example: Configuration of a channel threshold to trigger a snapshot. If the threshold condition is met, a Snapshot is stored by the PI Connect software.

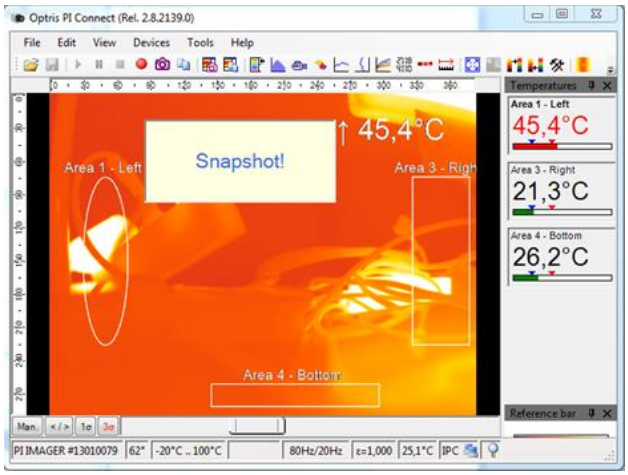


Trigger snapshot recording from limit channel.

You need to activate the output function to set the trigger value to 1.



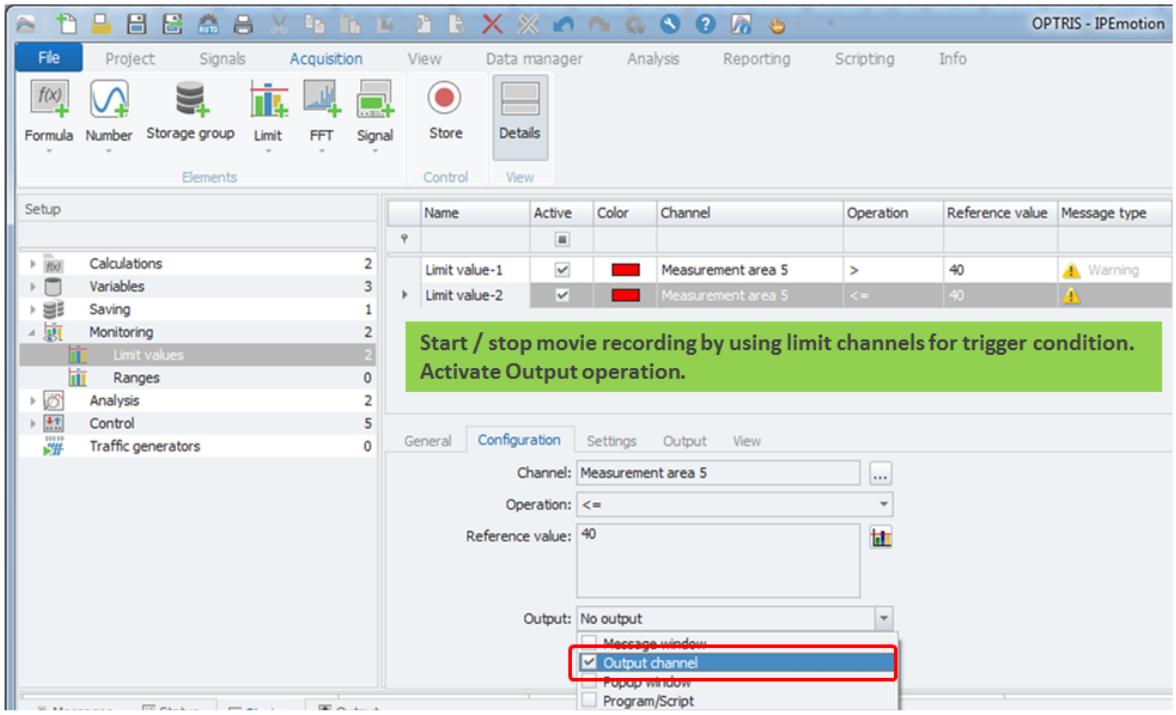
You will get a notification in PI Connect software when a snapshot was stored.



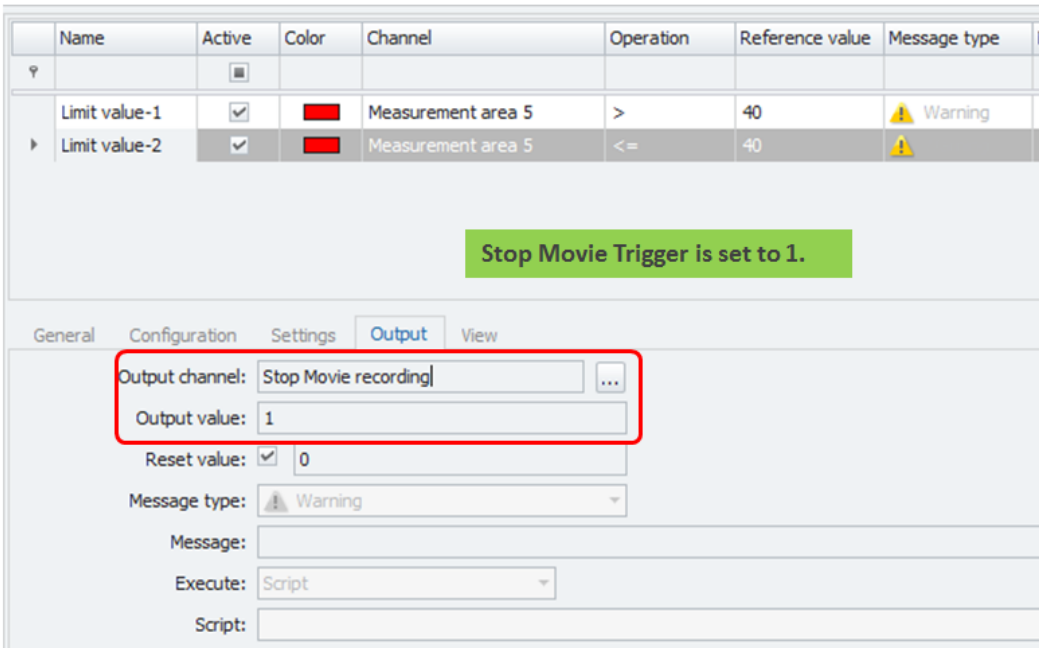
5.9.2 Start / Stop movie recording

There are two control channels in order to control the start and end of a movie clip (RAVI file) in the PI Connect software. Here you can also, for example, set the trigger events over a threshold channel.

Example: There is a limit / trigger channel which triggers the start of recording.



Example. There is a second threshold / trigger channel triggers the end of recording. Set output value of the limit channel to 1 to stop the recording.



5.9.3 Case Temperature

In this channel, the internal case temperature of PI camera is displayed.

6 Multi-camera operation

It is possible to acquire the data of the measurement areas of multiple cameras in IPEmotion. In a multi-camera system as in chapter [5.1] described no automatic hardware detection can be performed. In this case, the PI for each camera a PI Connect software instance must be started. The PI software can be launched from a command line.

If you want to use multiple cameras simultaneously please contact the PMR for further assistance .