



# ibaCapture

Synchronous video recording with ibaPDA

Manual  
Issue 5.6

Measurement Systems for Industry and Energy  
[www.iba-ag.com](http://www.iba-ag.com)

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| Version | Date    | Revision                       | Author | Version SW |
|---------|---------|--------------------------------|--------|------------|
| 5.6     | 02-2026 | Integration of thermal cameras | st     | 5.6        |

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# 1 About this documentation

This documentation describes the function and application of the software *ibaCapture*.

## 1.1 Target group and previous knowledge

This documentation addresses qualified professionals, who are familiar with handling electrical and electronic modules as well as communication and measurement technology. A person is regarded as a professional if he/she is capable of assessing the work assigned to him/her and recognizing possible risks on the basis of his/her specialist training, knowledge and experience and knowledge of the standard regulations.

This documentation in particular addresses persons, who are concerned with the configuration of video camera systems in conjunction with *ibaCapture*. As *ibaCapture* is an add-on for *ibaPDA*, the following basic knowledge *ibaCapture* is required for the configuration of *ibaCapture*:

- Operating system Windows
- Basic knowledge *ibaPDA*
- Knowledge of video processing (coding, transmission) is useful but not required

## 1.2 Notations

In this manual, the following notations are used:

| Action                        | Notation  |
|-------------------------------|---|
| Menu command                  | Menu <i>Logic diagram</i>   |
| Calling the menu command      | <i>Step 1 – Step 2 – Step 3 – Step x</i><br>Example:<br>Select the menu <i>Logic diagram – Add – New function block</i> . |
| Keys                          | <Key name><br>Example: <Alt>; <F1>  |
| Press the keys simultaneously | <Key name> + <Key name><br>Example: <Alt> + <Ctrl>  |
| Buttons                       | <Key name><br>Example: <OK>; <Cancel>   |
| Filenames, paths              | <a href="#">Filename</a> , <a href="#">Path</a><br>Example: <a href="#">Test.docx</a>                                     |

## 1.3 Used symbols

If safety instructions or other notes are used in this manual, they mean:

---

### Danger!



**The non-observance of this safety information may result in an imminent risk of death or severe injury!**

Observe the specified measures.

---

### Warning!



**The non-observance of this safety information may result in a potential risk of death or severe injury!**

Observe the specified measures.

---

### Caution!



**The non-observance of this safety information may result in a potential risk of injury or material damage!**

Observe the specified measures.

---

### Note



A note specifies special requirements or actions to be observed.

---

### Tip



Tip or example as a helpful note or insider tip to make the work a little bit easier.

---

### Other documentation



Reference to additional documentation or further reading.

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## 2 Introduction

*ibaCapture* is a video capture system designed for recording video from multiple cameras simultaneously. It can be connected to *ibaPDA*, which allows synchronized recording of video and measured data.

This synchronized connection of image information and measured data allows recognizing relations between process and measurement and significantly improves the quality of data analysis.

In addition to video images, it is also possible to integrate output images from *ibaVision* programs as well as images from HMI stations using virtual cameras. Up to 64 cameras of various types can now be operated with each *ibaCapture* Server.

User management can be integrated in Active Directory so users and passwords can be administered centrally.

---

### Note



*ibaCapture* v5.0 is supported from *ibaPDA* version 6.36.6 and higher. For replaying videos in analyses, *ibaAnalyzer* version 5.20.3 or higher is required. There can be other dependencies for higher versions and certain functions. For this, see the version history "versions\_cam.htm", which can be found in the installation directory.

---

The *ibaCapture* functions are enabled by activating a license key (USB dongle or soft license).

The *ibaCapture* Server and the *ibaPDA* Server communicate via a TCP/IP or UDP connection. Multiple *ibaCapture* Servers can be used simultaneously for video recording.

The video files are stored in a special format and can only be viewed with *ibaCapture* Manager, *ibaPDA*, *ibaQPanel* or *ibaAnalyzer*. However, it is possible to export individual sequences to MP4 files or extract measured data together with video data into DAT files.

---

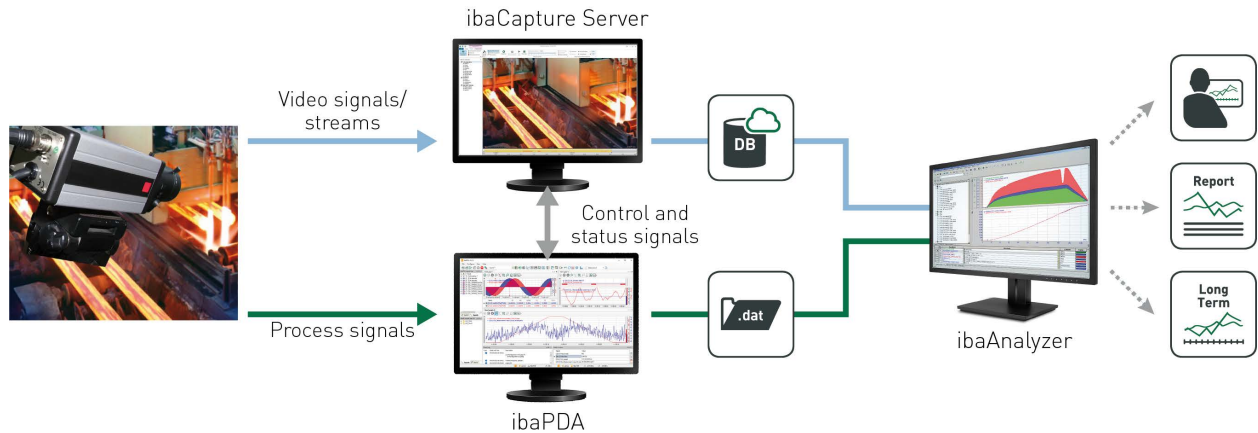
### Note



For detailed information about requirements and handling of GigE cameras, refer to the manual *ibaCapture GigE*.

## 2.1 Functional principle

The following diagram shows the functional principle and data flow of *ibaCapture*.



The plant or the process delivers various data.

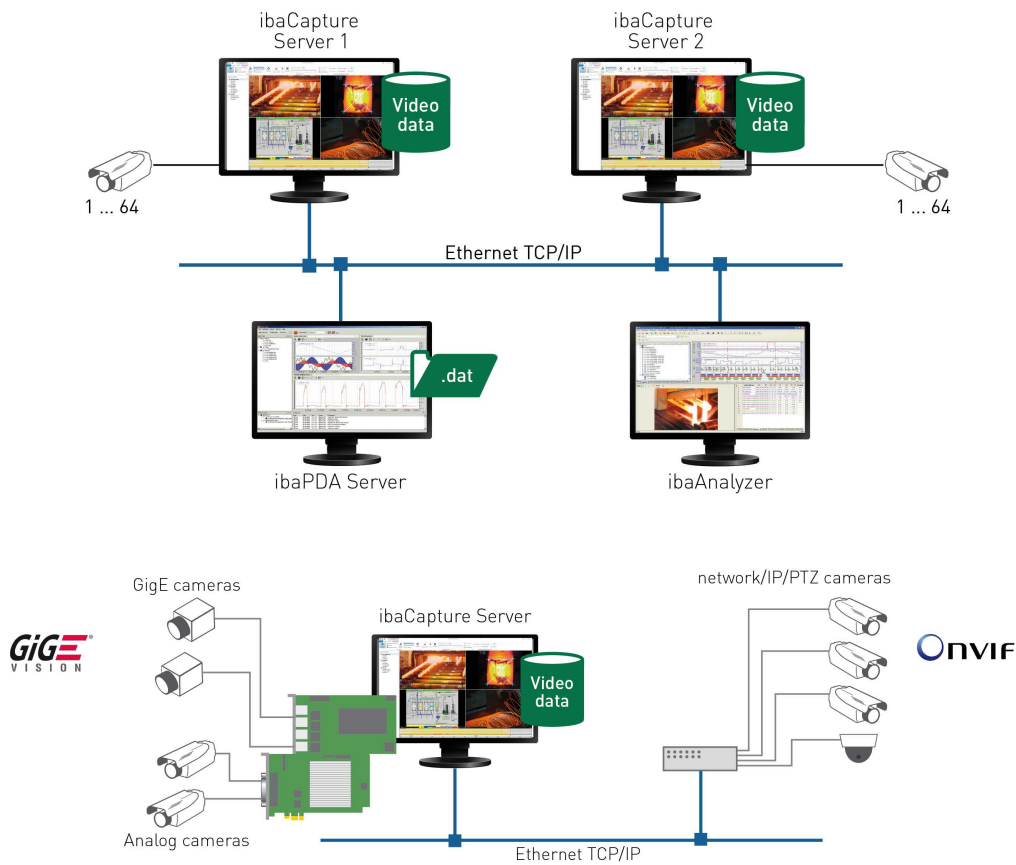
- Measured data for *ibaPDA* (process signals)
- Image data from video cameras

Image data from video cameras is recorded by *ibaCapture* and saved in video directories. Measured data is saved by *ibaPDA* in measuring files (\*.dat) as usual. Synchronization with *ibaCapture Server* takes place concurrently to the measurement by means of control and synchronization telegrams. This way a temporal relation between signal values and video data can be ensured.

*ibaAnalyzer* can access both measured data and video to display the information in a synchronized fashion. For analyzing and viewing recorded video in *ibaAnalyzer*, network access to the *ibaCapture Server* is required.

### 2.1.1 Topology

Multiple *ibaCapture* Servers can be run in a network.



The core of a video recording system is the *ibaCapture* Server (computer). Either analog and/or IP cameras can be connected to *ibaCapture* Server.

For connecting analog cameras to *ibaCapture* Server, either a frame grabber board or an analog-to-IP converter is required.

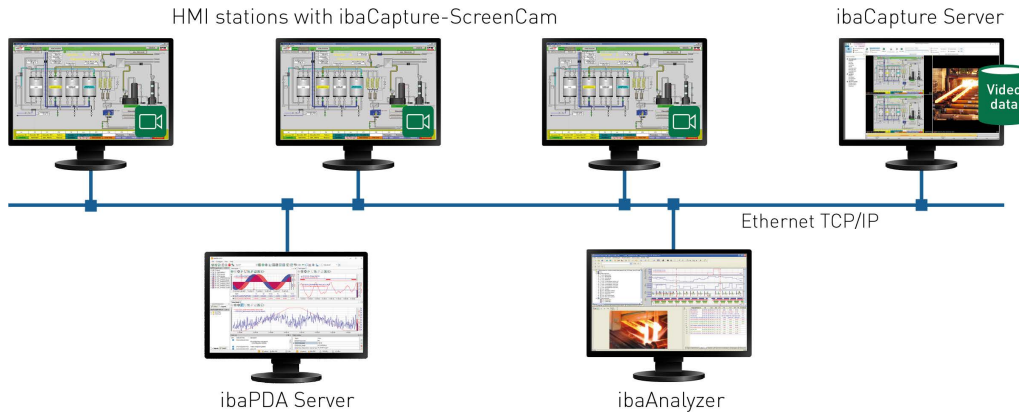
Supported network-compatible cameras are connected to *ibaCapture* Server via standard Ethernet connections. The network infrastructure should be designed to handle continuous camera streams for the given number of cameras and display clients.

So-called GigE cameras must support the GigE Vision® standard. They allow high-speed capturing with frame rates of up to 300 fps. GigE cameras must be connected to *ibaCapture* Server via a special GigE frame grabber or network card (e. g. Type Matrox Solios GigE or Intel® Ethernet Server Adapter I350-T4V2). The card allows connecting up to 4 GigE cameras. Only 1 card is supported per *ibaCapture* Server. If a GigE card is used, further system requirements apply.

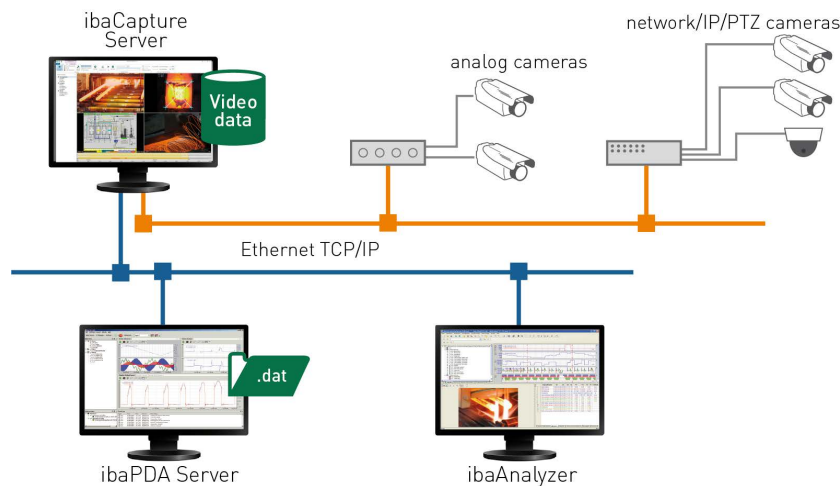
For more information, see separate manual *ibaCapture GigE*.

Visual information of the HMI operator stations, including operating procedures, is recorded synchronously with process data from *ibaPDA* with the help of virtual cameras. This way, the relations between process control and measured data can easily be identified.

All computer monitors that work with a Windows operating system can be captured. An *ibaCapture-ScreenCam* program is installed on computers for this purpose and they must be connected to *ibaCapture Server* via TCP/IP.



It is furthermore recommended installing a dedicated network (blue LAN in the figure below) between *ibaCapture Server*(s), *ibaPDA Server*(s) and *ibaPDA Client*(s) with camera view and analysis computers. Multiple *ibaPDA Clients* with active camera view will draw multiple video streams over the network. If analysis computers additionally request video streams, the network load can increase significantly.



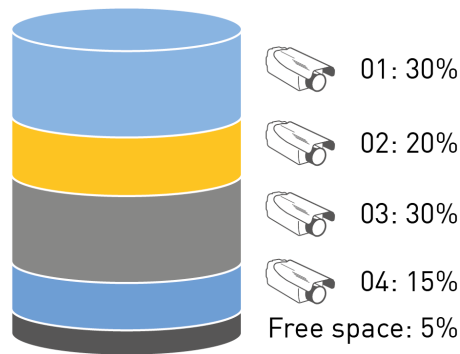
The total number of cameras is limited to 64 cameras per *ibaCapture Server*. The camera types analog and/or IP cameras (incl. GigE) can be combined as desired.

The maximum number of cameras which can be simultaneously operated depends on the *ibaCapture Server* license (see chapter ↗ *License model*, page 16) and on the performance of the hardware.

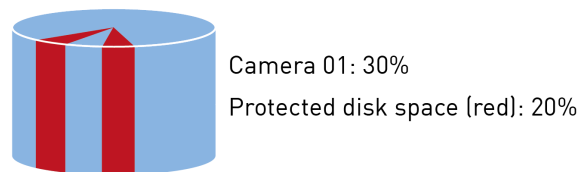
### 2.1.2 Principles of video recording

The storage of video data is managed by the *ibaCapture Server*. The service is started automatically after booting the system.

For every camera, a fixed memory segment is allocated on the hard drive. This is done to avoid storage fragmentation as far as possible and to ensure stable storage performance. The exact procedure to configure *ibaCapture Server* can be found in the chapter ↗ *Configuration of ibaCapture Server*, page 63.



The cameras' memory segments are built in ring buffer architecture. Within the ring buffer, a configurable percentage of the allocated space can hold protected video. Example:

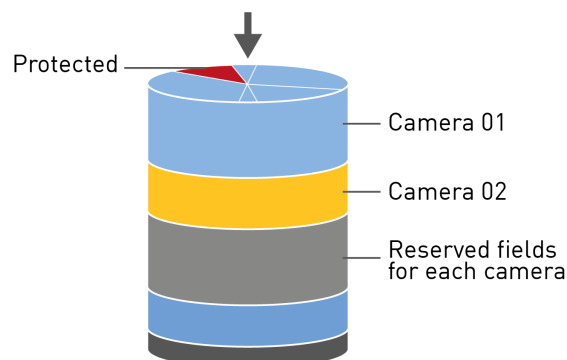


The whole area is generally used for continuous video recording. Continuous recording of the configured camera(s) starts immediately after system startup of *ibaCapture* Server. The video recording will be linked to the measured data as soon as the recording of *ibaPDA* is started.

The protected area is used to store video sequences which should be saved for a longer period. Video data for protected video is stored in the ring buffer and then marked as “protected”. This can happen interactively or through the video trigger feature in *ibaPDA*. Video triggers can be configured in the data storage settings of *ibaPDA* with multiple start and stop conditions. These start and stop conditions enable the specific recording of events and reduce the memory requirements of the protected memory segments of each camera.

The video sequences controlled by video triggers are called triggered recordings.

When continuously recording video data, the protected areas are skipped.



When the unprotected or protected video storage has been completely written, the oldest sequences lose their protection and can be overwritten by newer entries due to the ring buffer architecture.

### 2.1.3 Security and data protection

User management is available for the protection of the system configuration and to control video access. The access to both live videos and video recordings can be granted or denied individually and protected with a password for any number of users.

Authentication can be done via Active Directory services.

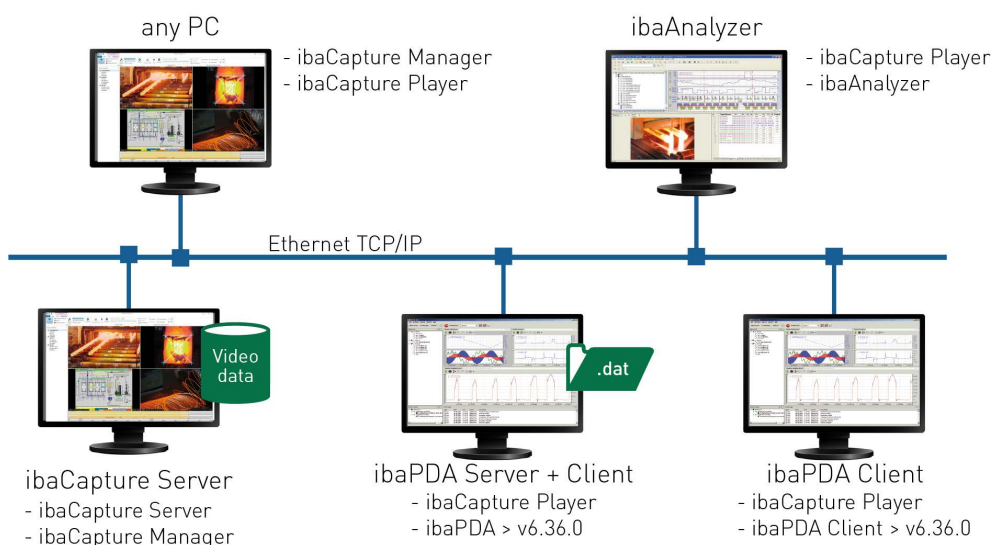
For the protection of business secrets, personal rights, and ethnic and/or ethical aspects, a so-called panic mode can be activated by every authorized user. In panic mode, only a main responsible person (administrator) is allowed to view the videos. Video sequences, that shall not be viewable for general users, can be locked by the administrator.

The panic mode can be canceled in ibaCapture Manager only by the administrator.

## 2.2 Software components

The software package *ibaCapture* consists of several programs, that can be installed on different computers according to their intended use.

- *ibaCapture* Server: video recording service, which is installed on *ibaCapture* Server; installation file on the data medium "iba Software & Manuals": *ibaCapture* setup v5.x.y.exe
- *ibaCapture* Manager: Software for the configuration of *ibaCapture* Server and for displaying live images or video recordings; to be installed on *ibaCapture* Server. Optionally, the software may also be installed on another PC (at least Windows 7 or Windows Server 2008) with a network connection to *ibaCapture* Server in order to view live images or replay videos by means of the camera view function.  
The installation of *ibaCapture* Manager can be enabled or disabled in the installation process. Uncheck the "Server" option in the installation wizard to install only *ibaCapture* Manager.
- *ibaCapture* Player: plug-in required for playing video recordings in *ibaCapture* Manager, *ibaPDA* client and *ibaAnalyzer*. This component is always installed.
- *ibaCapture* Encoder: This program is part of the *ibaCapture* Server installation. It is required when using GigE cameras. The video encoder runs as program – not as service! Therefore, the program is placed in the Startup folder and requires an auto-logon user account. See also separate manual *ibaCapture* GigE.



You will find all the software on the included data medium. In case the *ibaCapture* programs are not yet installed on the *ibaCapture* Server PC, please follow the installation guide in chapter ↗ *Installing ibaCapture software, page 20*.

### 2.3 License model

From *ibaCapture* v5.0.0 WIBU CodeMeter licenses are supported, either as CmDongle (USB) or as CmActLicense (soft-license).

A separate manual from iba is available for handling the WIBU CodeMeter licenses.

Existing licenses of *ibaCapture* v4 remain valid for *ibaCapture* v5. The license requires that the EUP date stored in the license is sufficient for the maintenance period of the used version of *ibaCapture* v5.

If the existing license of *ibaCapture* v4 cannot be used for *ibaCapture* v5, please contact the local iba support.

*ibaCapture* Server and cameras are licensed separately.

#### ibaCapture Server licenses

Different licenses are available for *ibaCapture* Server. Each license specifies an upper limit of frames per second (fps) transmitted by the cameras in total to the *ibaCapture* Server and an upper limit of client live-streams from the server.

The amount of frames per second can be increased by purchasing an upgrade license.

| Order no. | Name                     | Description   |
|-----------|--------------------------|---|
| 38.000001 | ibaCapture-Server-60fps  | Video recording for up to 60 fps, up to 8 client live-streams   |
| 38.000002 | ibaCapture-Server-180fps | Video recording for up to 180 fps, up to 16 client live-streams |
| 38.000003 | ibaCapture-Server-480fps | Video recording for up to 480 fps, up to 48 client live-streams |

| Order no. | Name  | Description   |
|-----------|---|---|
| 38.000004 | ibaCapture-Server-960fps                    | Video recording for up to 960 fps, up to 96 client live-streams   |
| 38.000005 | ibaCapture-Server-1440fps                   | Video recording for up to 1440 fps, up to 144 client live-streams |
| 38.000010 | Upgrade-ibaCapture-Server-60fps to 180fps   | Extension from 60 fps to 180 fps                                  |
| 38.000011 | Upgrade-ibaCapture5-Server-180fps to 480fps | Extension from 180 fps to 480 fps                                 |
| 38.000012 | Upgrade-ibaCapture-Server-480fps to 960fps  | Extension from 480 fps to 960 fps                                 |
| 38.000013 | Upgrade-ibaCapture-Server-960fps to 1440fps | Extension from 960 fps to 1440 fps                                |

Each *ibaCapture* Server license includes the activation for a connection to an *ibaPDA* server. If the video data is to be synchronized with other *ibaPDA* servers, an "ibaCapture-Interface-PDA" is required for each additional *ibaPDA* server.

The number of client live-streams can be extended with "ibaCapture-Live-Stream Add- On" licenses. Viewing recorded video is not limited.

The integrated RTSP server allows video to be streamed from the *ibaCapture* server to third-party video players. This way you can watch live video as well as saved recordings, for example with the VLC Media Player. The additional license "ibaCapture-AddOn-RTSP-Server" is required to use this function.

| Order no. | Name                          | Description  |
|-----------|-------------------------------|--|
| 38.000040 | ibaCapture-Interface-PDA      | Access from ibaPDA to ibaCapture Server                            |
| 38.000041 | ibaCapture-Live-Stream Add-On | 8 additional live-streams for display                              |
| 38.000042 | ibaCapture-AddOn-RTSP-Server  | Add-on for receiving RTSP streams at third-party hardware/software |

### Camera licenses

Camera licenses are required in addition to an *ibaCapture* Server license. *ibaCapture* supports analog cameras, IP cameras, virtual cameras as well as cameras compatible with GigE Vision®. The total number of configured cameras is limited to 64.

Different licenses are available for recording cameras, display-only cameras and virtual cameras. Virtual cameras are required to record HMI images or output images of *ibaVision*. An *ibaCapture-1CAM-GigE* license is required for the use of a GigE camera. An *ibaCapture-1CAM-Optris* license is required for the use of an Optris thermal camera.

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| Order no. | Name                  | Description  |
|-----------|-----------------------|--|
| 38.000030 | ibaCapture-1CAM-REC   | 1 camera license for recording and display                             |
| 38.000031 | ibaCapture-1CAM-DISP  | 1 camera license for displaying only                                   |
| 38.000032 | ibaCapture-1CAM-VIRT  | 1 camera license for recording HMI or ibaVision images                 |
| 38.000033 | ibaCapture-1CAM-GigE  | 1 GigE camera license for recording                                    |
| 38.000034 | ibaCaptur-1CAM-Optris | 1 camera license for recording and display of an Optris thermal camera |

---

### Note on camera licenses



*ibaCapture-1CAM-REC* and *ibaCapture-1CAM-GigE* are not strictly usable for these camera types only.

With *ibaCapture-1CAM-GigE* licenses, all camera types can be configured and operated. If a free *ibaCapture-1CAM-REC* license is available, it can also be used for virtual cameras or cameras without video recording.

---

### Product updates

The purchase of an *ibaCapture* license includes free product updates for a period of two years from the purchase date.

By concluding a maintenance contract, *ibaCapture* users are entitled to install product updates during the term of the contract and continue to benefit from continuous improvements and new features.

## 3 Installation

In the following you will find system requirements and instructions for installing *ibaCapture*.

### 3.1 System requirements

#### Software

- Windows 10 (x86/x64), Windows 11 (x64), Windows Server 2016 (x64), Windows Server 2019 (x64), Windows Server 2022 (x64), Windows Server 2025 (x64) or higher versions
- .NET Framework 4.8

---

#### Note



In the "versions\_cam.htm" version information enclosed with each software version, you will find information on the supported systems and compatibility issues.

---

#### Note



iba software products are developed and carefully tested according to the current rules of technology. iba products generally run without problems on supported computers that fulfill the system requirements specified in the documentation.

In very rare cases, software products from other manufacturers may interfere with the operation of iba products (e.g. starting a service). Known cases were related to special IT monitoring and security software, such as virus and network scanners.

If you have problems with the start of iba products, please check the necessity and setting options of other installed programs or contact our support.

---

#### Hardware

- PC, Intel® Core™ CPU, at least 4 GB RAM (requirements can be higher with greater number of cameras)
- Analog IP converter for connecting analog cameras
- Sufficient hard disk space for video data storage

Due to the continuous write operations when storing video data, it is recommended to use hard disk drives with a redundant structure (e.g. RAID1, RAID5).

For more information on supported cameras ➔ *Supported cameras, page 183*.

---

**Note**

For displaying videos, it is recommended to use a graphics card that is compatible with Direct-X 9 and has at least 256 MB of memory.

---

## 3.2 Installing ibaCapture software

1. To install *ibaCapture*, execute the file *ibaCapture Setup v5.x.y.exe* in the directory "`\01_iba_Software\ibaCapture\ibaCapture`" on the data medium *iba Software & Manuals*.
2. Click on <Next> to execute the installation wizard. Follow the instructions of the installation wizard.
3. Agree to the terms of this license.
4. Select the installation directory.
5. Select the components you wish to install on the computer.
  - If you want to install *ibaCapture* Server, all components must be checked.
  - If you want to install *ibaCapture* Manager only, uncheck the server component.
  - If you want to install *ibaCapture* Player only, uncheck the server and manager components.
  - Install *ibaCapture* Encoder only if you want to use GigE cameras.
  - Installing *ibaManagementStudio* is optional.
6. Click on <Next> to continue.
7. Confirm the license information with <Next>.
8. Start the installation with <Install>.
9. Complete the installation with <Finish>.

## 3.3 Installing ibaCapture via command line

The installation of *ibaCapture* can also be started via command line. This is helpful for central software administration or when using deployment systems.

The installation process can also run in the so-called "Silent Mode", meaning that there is no interaction with the user (clicking the <Next> button in the installation wizard).

You can control how the installation should take place and which components should be installed with the command line switches that are set after the call of the installation program.

**Notation:**

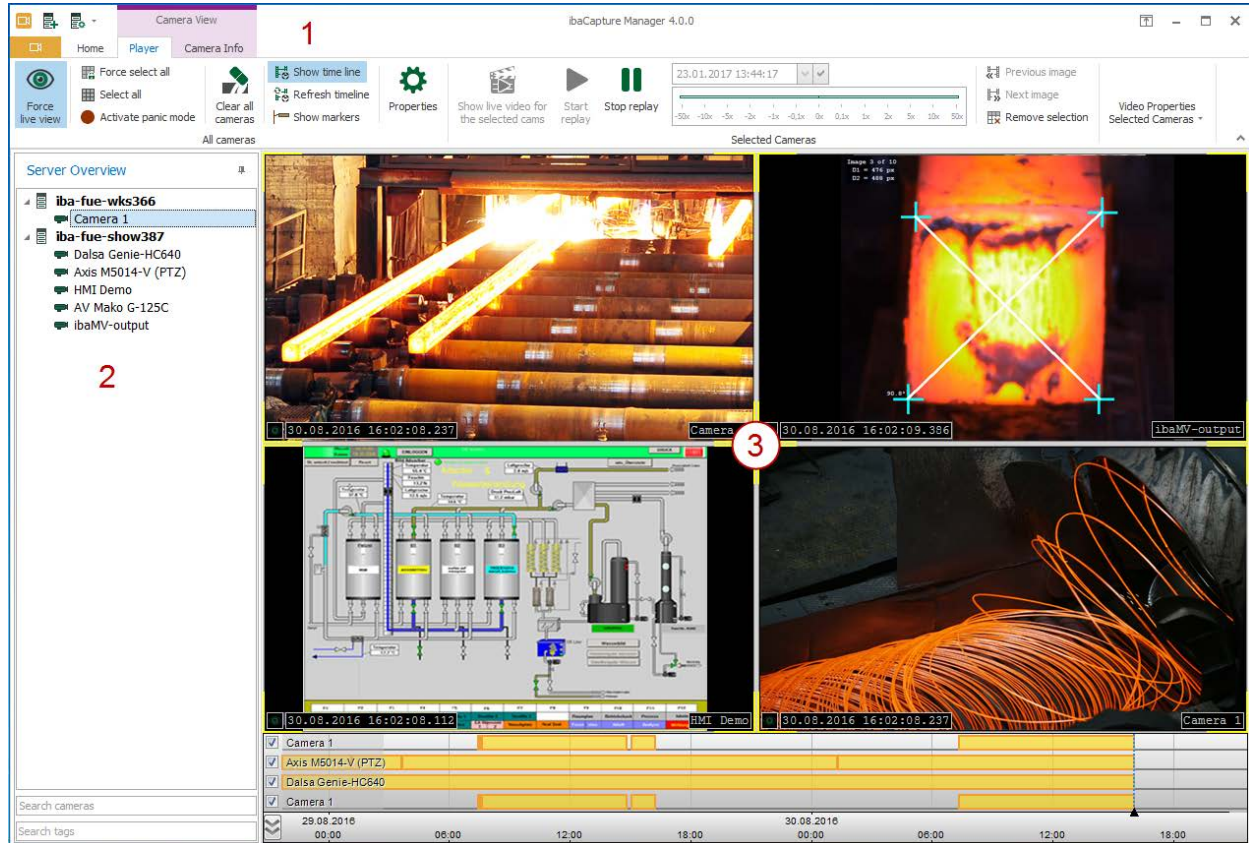
```
ibaCaptureSetup_vX.Y.Z.exe [/VERYSILENT /SUPPRESSMSGBOXES] [/COMPONENTS=] [/TASKS=] [/DIR=] [/PORT] [/LANG=]
```

|                    |   |
|--------------------|---|
| /HELP              | This switch shows a message box containing all supported command line parameters.   |
| /SILENT            | <p>This switch installs the software in "silent mode", i.e., interaction is not required during installation.</p> <p>All installer pages are skipped except the Installing page showing the installation progress. The installer runs without specifying additional parameters, as if &lt;Next&gt; were always pressed in the dialog.</p> |
| /VERYSILENT        | Works like "/SILENT" but nothing is shown.  |
| /SUP-PRESSMSGBOXES | Suppresses all pop-up messages. Use this option especially in combination with /VERYSILENT to guarantee a completely GUI free installation.   |
| /TASKS=            | <p>This switch allows you to specify whether a desktop icon should be created during installation.</p> <p>Examples:</p> <p>/TASKS=desktopicon</p> <p>/TASKS=nodesktopicon</p>   |
| /DIR=              | <p>Use this switch to specify the installation folder, i.e. the program folder.</p> <p>Example:</p> <p>/DIR="C:\Programme (x86)\iba\ibaProduct"</p>   |
| /LANG=             | <p>This switch sets the language of the installer (by default, the language of the operating system is used). Possible options: de, en, es, fr, it, ja, pt, ru, zh.</p> <p>Examples:</p> <p>/LANG=en</p> <p>/LANG=de</p>  |
| /COMPONENTS=       | <p>Use this switch to select the installed components. Possible values are:</p> <ul style="list-style-type: none"> <li>■ ibacaptureplayer</li> <li>■ ibacapturemanager</li> <li>■ ibacaptureserver</li> <li>■ ibacaptureencoder</li> </ul> <p>Example:</p> <p>/COMPONENTS=ibacaptureplayer,ibacapturemanager</p>                          |

## 4 ibaCapture Manager Camera View


*ibaCapture* Player is the software module enabling several iba software applications to visualize camera images captured by *ibaCapture* Server.

In *ibaCapture* Manager, *ibaCapture* player provides the following user interface:



|   |   |
|---|---|
| 1 | Ribbon-based controls                   |
| 2 | Server overview with configured cameras |
| 3 | Camera views                            |

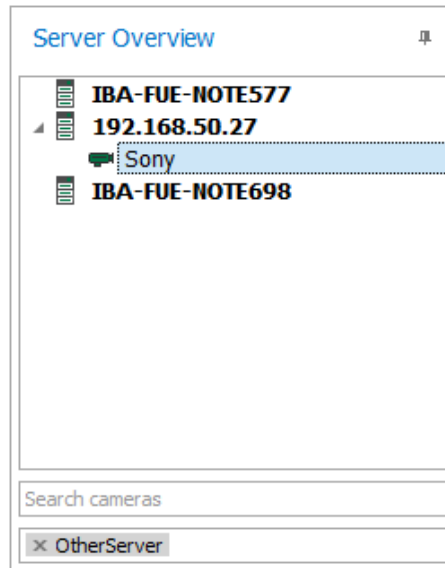
It is possible to establish connections to multiple *ibaCapture* Servers in the network and add their cameras to the camera view. This way, you can arrange views with cameras of different video servers, also see chapter ↗ *Adding servers*, page 26.

Start *ibaCapture* Manager by double clicking on the icon on the desktop  or via the Windows "Start" menu.

The connected servers with the configured cameras are displayed in the server overview. In the lower area, you can filter by camera: by camera name and by tags that have been assigned to the cameras. See also chapter ↗ *General information*, page 96.

With the filter function, only the cameras with the corresponding filter options are displayed.

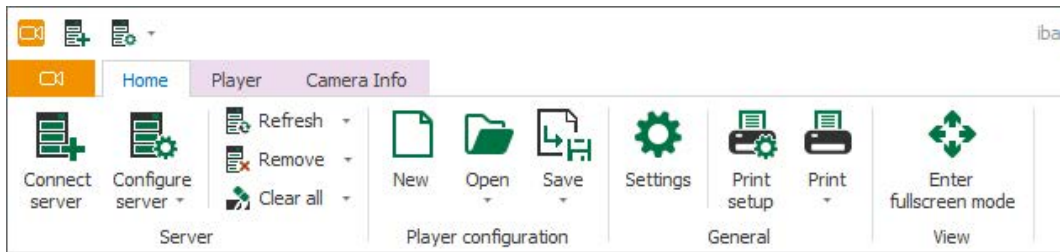
Example:



### 4.1 Set up camera view






In the *Home* menu, you can set up the camera view, in particular

- establish the connection to one or more ibaCapture Servers
- save player configurations and reload saved player configurations
- make default settings for the view mode.



The *Home* menu provides the following commands:

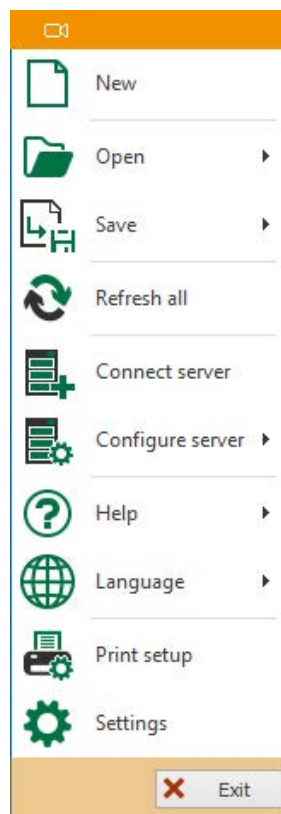
|  |                  |   |
|--|------------------|---|
|  | Connect server   | opens the dialog to add a server or to search the network for <i>ibaCapture</i> Servers   |
|  | Configure server | switches to server configuration mode   |
|  | Refresh          | refreshes the server overview   |
|  | Remove           | removes the selected server   |
|  | Clear all        | removes all connected servers   |
|  | New              | creates a new camera view layout. Note: the current server list will be deleted   |
|  | Load             | loads a camera view configuration file (*.xml, *.ccl). You can select the last 10 entries from the drop-down menu.<br><br>(the current server list will not be changed) |

|   |                       |   |
|---|-----------------------|---|
|  | Save                  | saves a camera view layout as camera view configuration file  |
|  | Settings              | opens the <i>Settings</i> dialog. Here you can select a layout that will be loaded with the next start of <i>ibaCapture</i> Manager.  |
|  | Print setup           | opens the <i>Print Setup</i> dialog. Here you select the printer and you can define the orientation, scaling and margins in addition to the standard printer settings. You can check the settings and their effects in the preview.                 |
|  | Print                 | Use the <i>Print</i> command to open a drop-down list with all open cameras. Select <i>Print all</i> to print the currently visible camera layout with all displayed cameras. To print the image of a camera, select the camera name from the list. |
|  | Enter fullscreen mode | switches to fullscreen mode   |

Further functions for help and language switching can be found in the main menu, see also ↗ *Main menu*, page 24.

### 4.1.1 Main menu

The *Main* menu offers the same functions as the *Home* menu as well as functions for help and language switching.

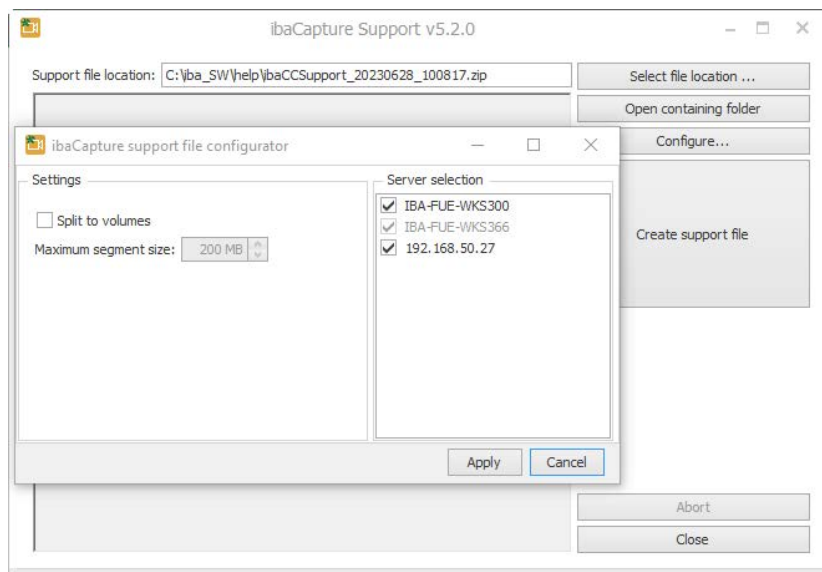


You can open the *Main* menu by clicking on the camera symbol. The additional functions are:

## Help

Opens a dialog where you can select further options:

- *Support*: here you will find the iba customer support and contact details for the subsidiaries worldwide.
- *Save information for iba support...*: this command creates a support file containing information for the iba support. In general, iba recommends sending a current support file to the support desk when a problem occurs.
- Clicking the command opens a dialog where you can configure the content of the support file.



You can select the storage location of the file and open the specified directory. The <Configure> button opens a dialog where you can select the *ibaCapture* Server to which *ibaCapture* Manager is connected and for which you want to create a support file.

The support file can also be split into multiple files if it is too large. You can specify the maximum size of the files in the *Maximum segment size* field.

- *Version history*: This menu command opens an Internet browser with an HTML file where you can read the history of the different program versions.
- *Open ibaCapture Player log files location*
- *Open ibaCapture Manager log files location*
- *About...*: Here you will find the necessary information about the current version of *ibaCapture* Manager.

## Language

It is possible to switch the language of *ibaCapture* Manager. Select a language from the context menu. The menu offers all languages available in *ibaCapture*. Please note that some languages are only available with an additional language pack.

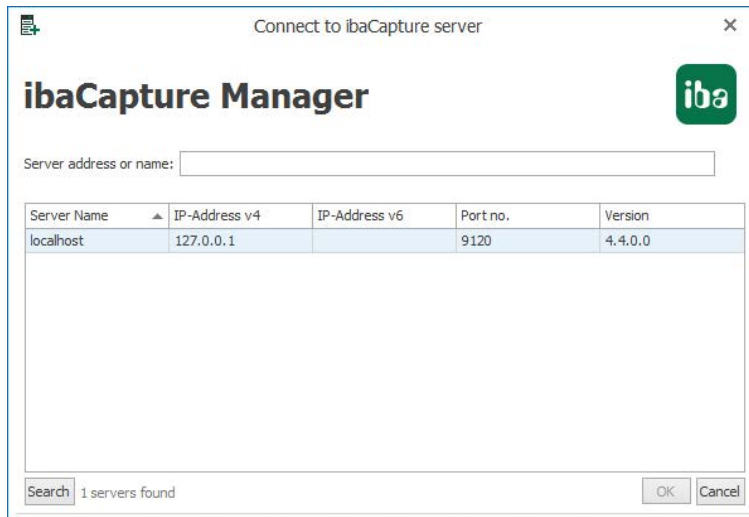
**<Exit>**

Closes *ibaCapture* Manager.

## 4.2 Adding servers


When the PC running *ibaCapture* Server is not displayed in the server overview or when an *ibaCapture* Server shall be configured remotely, the server must be added to the server overview.

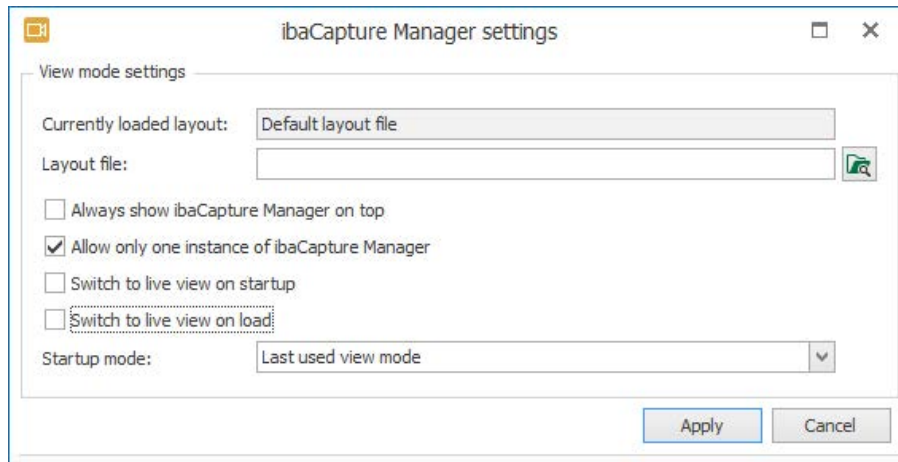
1. Open the dialog for adding a server by clicking *Connect server*  in the ribbon.




2. The server list displays the servers found in the network. A click on the <Search> button searches the local network for other *ibaCapture* Servers. Also *ibaCapture* Servers from a previous *ibaCapture* version can be found.
3. Select the desired server from the server list or enter the server's hostname or its IP address in the textbox.
4. Click <OK> and the server will be added to the server overview. If there are already cameras configured at the server, they will be also displayed.

### 4.3 ibaCapture Manager settings

Settings for the view mode can be made in the *ibaCapture Manager Settings* dialog. A click on *Settings*  opens the dialog:



The current layout is displayed in the field *Currently loaded layout*. This field is for display only. In the *Layout file* field, you can specify a saved layout that will be loaded the next time *ibaCapture Manager* is started. You can specify the file name with the full path or use the <Browse> button  to select the file.

You can enable additional options:

- *Always show ibaCapture Manager on top*: *ibaCapture Manager* is always displayed in the foreground
- *Allow only one instance of the ibaCapture Manager*: *ibaCapture Manager* can only be opened once.
- *Switch to live view on startup*: All cameras are displayed in live view when *ibaCapture Manager* is started.
- *Switch to live view on load*: When a layout is opened, all cameras are displayed in live view.

#### Startup mode

Here you can select the view mode when *ibaCapture Manager* is started:

- Last used view mode
- Normal
- Enlarged
- Full screen
- Full screens on all the screens

## 4.4 Starting ibaCapture Manager from the command line

When starting *ibaCapture* Manager from the command line, it is possible to specify arguments that affect the behavior of *ibaCapture* Manager.

### Camera layout

Files with saved camera layouts (\*.ccl) can be directly appended as argument following the call of *ibaCapture* Manager:

```
ibaCCManager.exe <Path_to_ccl_file>
```

### Manager configuration

The manager configuration (\*.xml) contains the following information:

- Connected *ibaCapture* Server
- Window position
- User-defined settings of the control elements

Calling *ibaCapture* Manager via the command line with transfer of the manager configuration is to be carried out with the switch "/M". If the absolute path to the file is used, the changes made are written back to the transferred manager configuration after *ibaCapture* Manager has been closed.

```
ibaCCManager.exe /M:<Path_to_manager_configuration>
```

It is also possible to pass both files (a layout file, a manager configuration). In this case, the camera layout must be specified as an argument before the manager configuration.

### Display style

*ibaCapture* Manager can be started with different display styles with the following command line parameters:

| Switch                       | Display style  |
|------------------------------|--|
| /DISPLAYSTYLE:Normal         | Normal   |
| /DISPLAYSTYLE:Enlarged       | Full client (menu bar and tree view are hidden)  |
| /DISPLAYSTYLE:FullScreen     | Full screen (is equivalent to the <i>Full client</i> display, but enlarged to the whole screen). |
| /DISPLAYSTYLE:FullAllScreens | Full screen on all monitors (display on all available monitors)                                  |

## 4.5 Arranging the camera view

Depending on which program you use to access the camera view (*ibaCapture* Manager, *ibaPDA* or *ibaQPanel*), there are different methods to add a camera to the view. Usually this can be done by double-clicking on the camera in the server overview or by means of drag & drop.

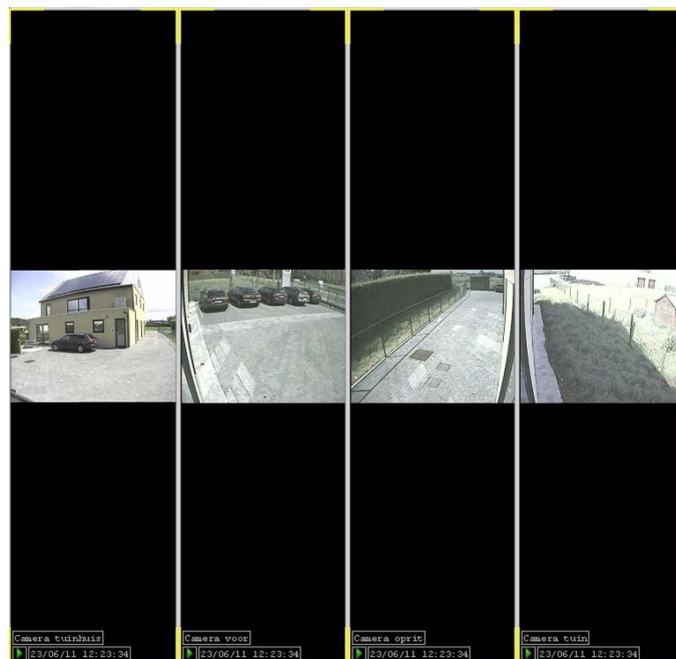
For information on how to add a camera view, please refer to the corresponding descriptions in the *ibaPDA* or *ibaQPanel* manuals.

The camera view allows the simultaneous display of several cameras.



By double-clicking on one of the cameras in the configuration tree or by means of drag & drop, the live image of the camera is opened in a player. With each double-click on a camera icon in the tree another player opens. All players are displayed next to each other by default.

For further actions, the respective players can be selected. If a camera view only contains one player, this player is always selected. If multiple players are displayed in the camera view, simply click inside the camera window in order to select the player. Yellow highlighted corners indicate that a player is selected. Multiple players can be selected by holding down the <Shift> or <Ctrl> key and clicking on the player areas. To uncheck a player from the multi-selection, press <Ctrl> and click the relevant player area.



However, the arrangement of the players can be modified to customize the layout.

When the mouse cursor is moved to the upper left corner of a player the positioning icon appears. This icon will only appear if multiple players have been added to the camera view.



Hold down the left mouse button on the positioning icon. Move the mouse pointer to the desired position. There will always be four indicators in the camera view, one at each side. If you drag the mouse over another player, it will also display position indicators.

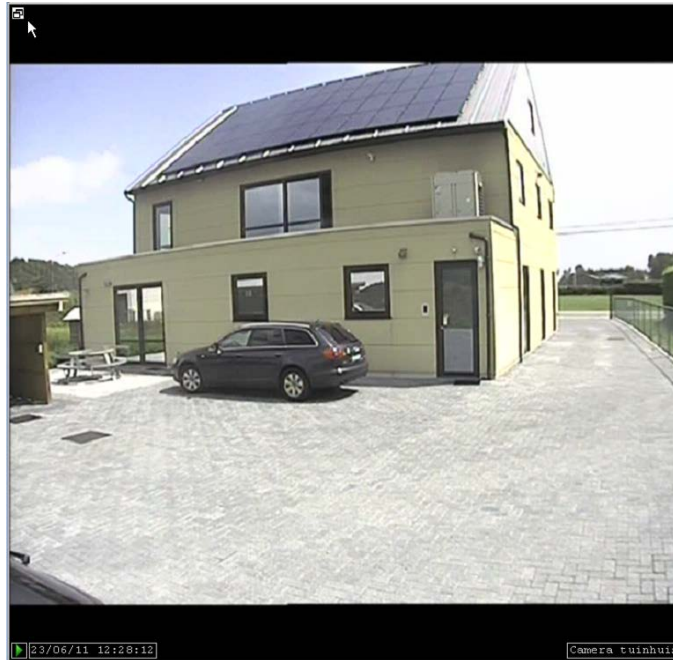



Release the mouse button over one of these indicators to realign the opened players.



To change the size of a player, you can move the separator line between two camera windows horizontally or vertically – depending on the orientation.

In order to resize one player to full screen, double click on the player area or on the positioning icon in the upper left corner of the respective player area.

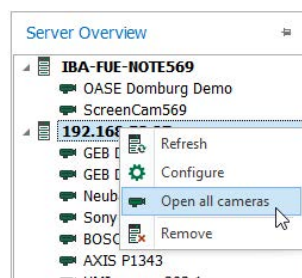


If a player is selected and displayed in full screen format, the icon  is displayed in the top left corner.

After double-clicking on the icon  again, the previous layout is displayed.

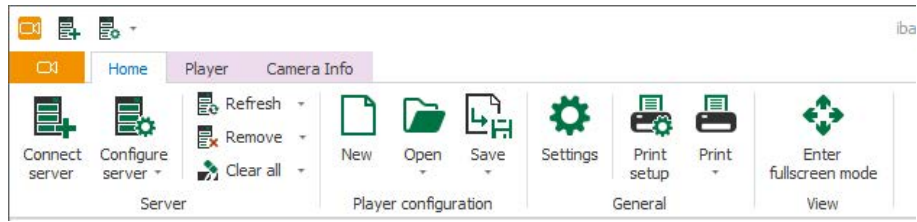
**Open all cameras**

If you want to add all active cameras of a selected *ibaCapture* Server to the camera view, open the context menu of the server and select "Open all cameras".

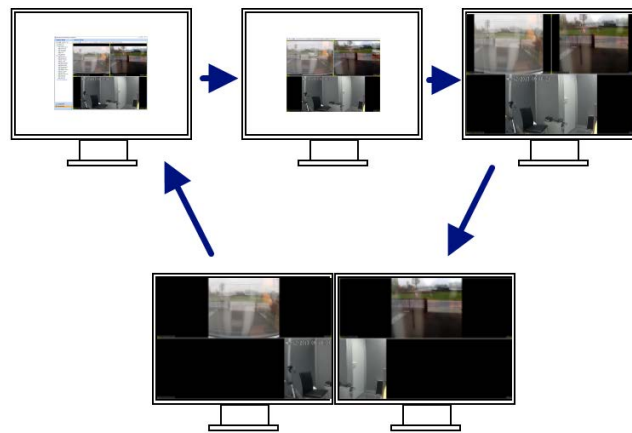


**View modes**


The camera view provides different view modes which can be toggled cyclically using the <F10> key or with the <Enter fullscreen mode> button on the *Home* ribbon:



- Normal view
- Enlarged (menu bar and tree view are hidden)
- Full screen (is equivalent to the "enlarged" display, but enlarged to the whole screen).
- Full screen on all monitors (display on all available monitors. This mode is only available if more than one monitor is connected.)

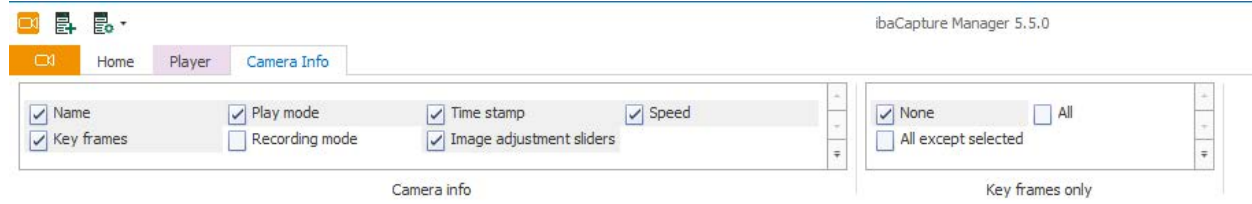




**Saving the camera view configuration**

After having created a layout according to your needs, it is possible to save the camera view configuration and load the configuration at a later point in time again. For this purpose switch to the Home menu and click *Save*  in the ribbon.

## 4.6 Camera info menu

Here, you can enable/disable the camera information items in the camera view.



- Name
- Play mode
- Time stamp
- Speed
- Key frames
- Recording mode (  = recording is running,  = no recording)
- Image adjustment sliders

The time stamp within a camera window shows the system time of the relevant camera.



1\_2\_3\_4\_\_\_\_\_5\_\_\_\_\_6

Legend:

1. Play mode
2. "Only key frame" display
3. Play speed (in replay mode only)
4. Recording mode
5. Date and time (time stamp)
6. Camera name

### “Key frames only”

In order to save system resources, you can limit the data stream for the camera view to the key frames. The key frames are the first images of the GOPs( see also chapter ↗ *Glossary, page 189*). As a result, cameras in “key frames only” view mode will show less fluid motion images. To do so, the following options are available in the “Key frames only” context menu:







- All: all cameras are limited to show only key frames
- None: video for all cameras is shown with all images
- All but the selected ones: only selected cameras show all images, unselected cameras only show key frames

## 4.7 Operation modes

A camera can take on various operating modes. The current mode is displayed in the lower left corner of the player window.



The following camera states are possible:

|   |             |   |
|---|-------------|---|
|  | Live        | The camera's live stream is displayed.  |
|  | Replay      | Replay of a recorded video.   |
|  | Stop replay | Stops replay of a recorded video.   |
|  | Busy        | The camera window is busy (waiting for response from server).                             |
|  | Error       | An error has occurred.  |
|  | No records  | No records available for this time stamp in the server's database and thus no recordings. |

The "Error" state can have various reasons, for example:

- *ibaCapture* Player was not installed on the respective computer where it is needed (see chapter [↗ Software components](#), page 15).
- *ibaCapture* Player cannot connect to the configured *ibaCapture* Server.
- No camera is connected to the specified camera input on the video server.

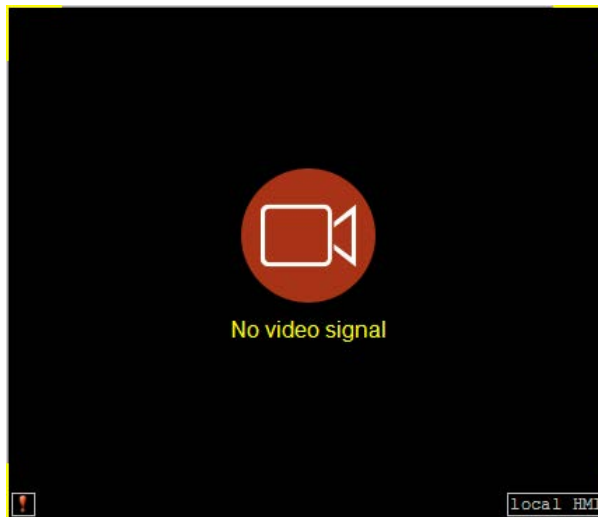
Usually, the video server starts transmitting the camera images immediately.

Moreover, the different fault states are indicated by big colored camera icons, supplemented by text describing the situation:

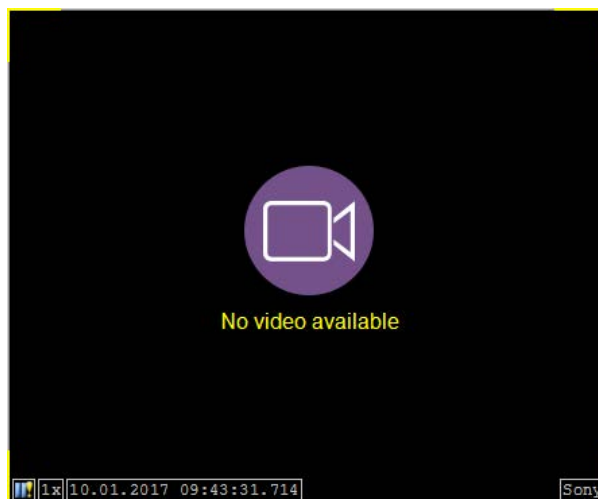
If *ibaCapture* Player is not installed or the version installed is not up-to-date, the following red icon appears.



The red image indicating the "No video signal" state occurs with one of the last two reasons mentioned above.



When a camera is in the "No video available" state, it will display the purple camera icon below.



For more information refer to chapter [↗ Player settings, page 36](#).

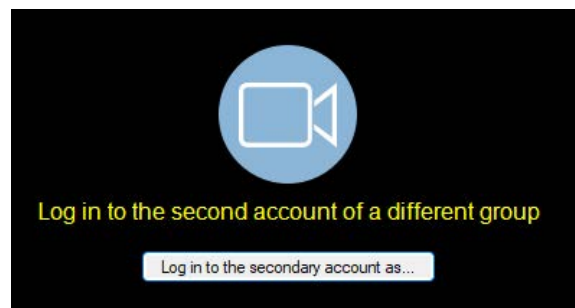
Double-clicking on the player window when it is in a fault state will open the log file of the application which is used for the camera view (*ibaCapture Manager* or *ibaPDA client*).

## 4.8 Video viewing with active two user rule

The two user rule can be used to restrict access to a camera by requiring two users to log in. The two user rule can be configured for a camera as follows:

- when configuring the camera for the first time, see also ↗ *General information, page 96*
- on the info page of the camera, see also ↗ *Camera info, page 128*

If this option is enabled, another user is requested to log in after the first user has logged in. Depending on the configuration selected, it may be necessary for the second user to belong to a different user group.



## 4.9 Player settings

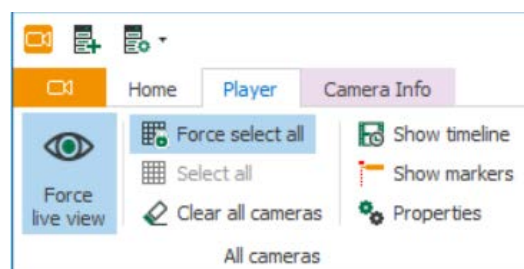
The player settings can be adjusted using command icons in the ribbon. The ribbon has three main sections:



- settings, which affect all cameras
- settings which affect only the selected cameras
- adjusting video properties.






The status of the icons (enabled / disabled) depends on the status of the selected camera(s).


### 4.9.1 Player settings for all cameras

If you change settings in the *All cameras* section of the *Player* menu, these settings affect all cameras.



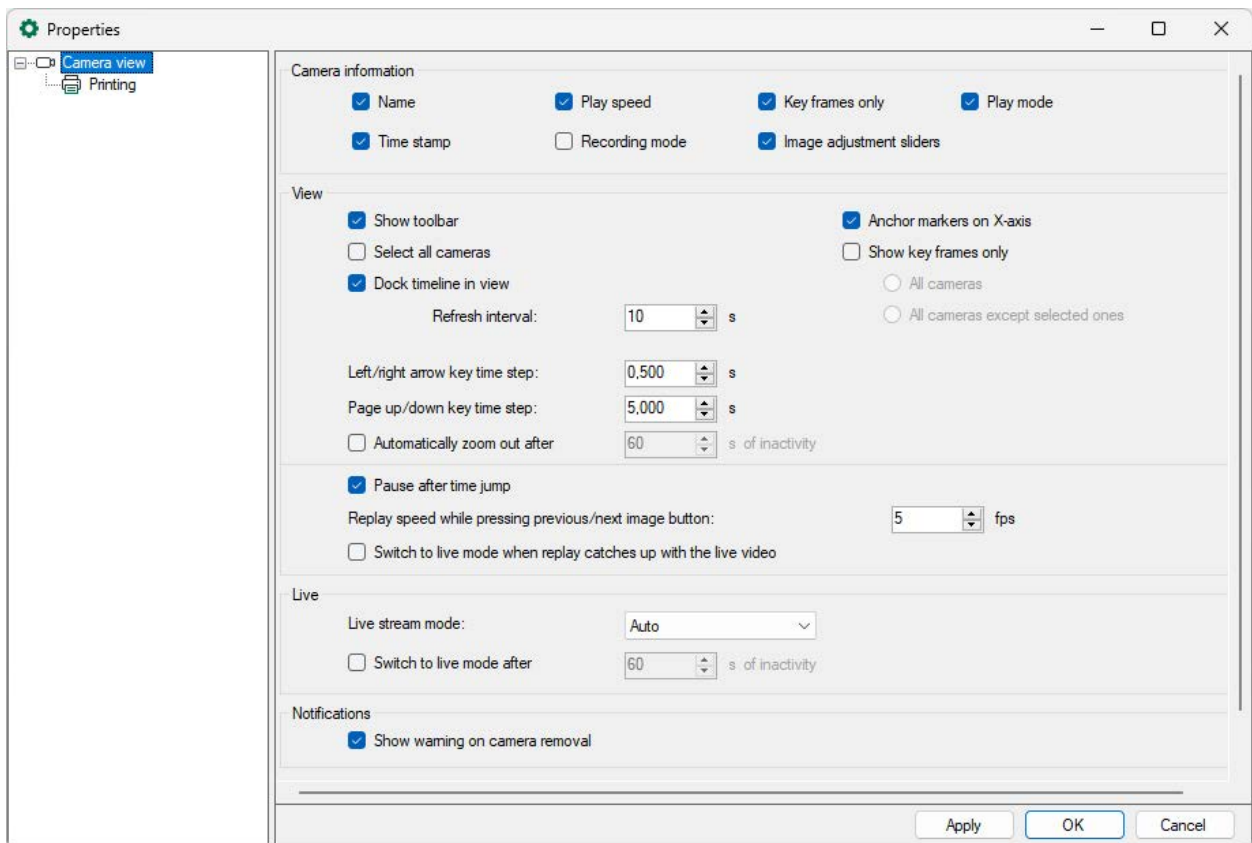
|   |                  |  |
|---|------------------|--|
|  | Force live view  | All cameras will switch to live view.                      |
|  | Force select all | All cameras will be selected, no camera can be deselected. |

|   |                   |   |
|---|-------------------|---|
|  | Select all        | All cameras will be selected, but cameras can be deselected by clicking on the camera view with <Ctrl> key depressed.                       |
|  | Clear all cameras | All camera views will be removed.   |
|  | Show timeline     | Show/ hide timeline   |
|  | Show markers      | With the use of markers, video sections can be protected, locked or exported. See chapter <a href="#">Protect or lock videos, page 53</a> . |
|  | Properties        | Open properties dialog, see section below.  |

A blue background indicates that a setting is enabled:  Force select all . Clicking the command icon toggles the setting.

### Properties

You can also make settings in the *Properties* dialog. You open the dialog by opening the context menu in a camera view with the right mouse button and selecting *Properties*.



The "Properties" dialog is structured in four sections:


- Camera information
- View
- Replay speed
- Live
- Notifications

## Camera information

By setting / removing a checkmark you can show/hide the camera information items (similar to the context menu) in the camera window (see chapter [➤ Camera info menu, page 33](#)):



- Name
- Play mode
- Play speed
- Time stamp
- Key frames only
- Recording mode
- Image adjustment sliders

## View

- Uncheck the option “Show toolbar” if you want to hide the replay toolbar in the camera view. This option is only relevant, when a toolbar is available, e.g. when *ibaCapture* Player is used in *ibaPDA* or *ibaQPanel*.
- Check "Select all cameras" to select and lock all camera views. This state corresponds with the button  (force select all) in the ribbon.
- Check “Dock timeline in view” to display the video timeline on the bottom of the camera view window. Specify the update time in the “Refresh interval” input field. Do not set the update time too low in order to avoid unnecessary network load. For more information refer to chapter [➤ The camera timeline, page 48](#).
- If the option “Anchor markers on X-axis” is disabled then the markers will remain at the same position on the screen when the timeline is moved, e. g. by dragging or panning. As a result the markers will be positioned on a different timestamp after moving the timeline. If the option is enabled then the markers will remain at the same timestamp. So if the X-axis is moved then the markers move with the X-axis.
- Show key frames only  
The “Key frames only” setting is explained in chapter [➤ Camera info menu, page 33](#).
- Navigation keys  
By entering values given in seconds for the arrow keys and the keys <Page up>/<Page down>, you can define short pitch and long pitch setting when using these keys for navigation on the timeline.
- Automatically zoom out after ... s of inactivity  
If there is no more activity in the camera view after enlarging a camera view, all cameras can be automatically zoomed out after a defined time. Enable this option and specify a time in [s].

## Replay speed

In the "Replay speed" section, the replay speed of the video recordings can be set with the option "Replay speed after time jump". If you additionally enable the "Select all cameras" option under "View", the preset replay speed applies to all cameras.

The second setting *Replay speed when previous / next image button pressed* defines the replay speed in images per second. This replay speed is applied if the mentioned buttons  and  are pressed and held down.

Check the option *Switch to live mode when replay catches up with the live video* to switch automatically to live mode, when replay catches up with the live video.

## Live

The live streaming settings apply to the streaming protocols between *ibaCapture* Server and client. Clients can be *ibaCapture* Manager (camera view), *ibaPDA* camera view or *ibaQPanel* camera view.

For setting up the best streaming protocol you can choose between the following options:

### Auto (default setting)

In Auto mode, the system initially uses the unicast UDP protocol which is usually the first choice. If too many frames get lost, the system switches automatically to TCP mode. This could happen, for instance, when the server is running in a Gigabit network while the client is connected over a 100 Mbit network.

### Unicast UDP

Recommended streaming protocol

### TCP

Recommended streaming protocol if UDP does not work satisfactorily.

### TCP Active

When a certain port for streaming live video has to be set in *ibaCapture* Server, this stream mode has to be used. For more information refer to chapter [➤ Streaming ports, page 118](#).

### Switch to live mode after ... s of inactivity

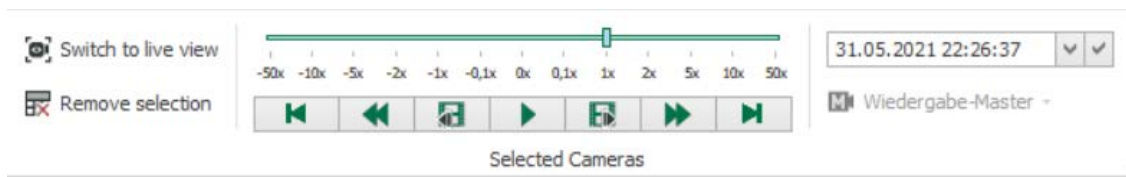
If no more activity is detected in the camera view in playback mode, all cameras can be automatically switched back to live mode after a defined time. Enable this option and specify a time in [s].


### Notifications

If the *Show warning on camera removal* option is enabled, a warning message is displayed when you remove a camera from view.


### 4.9.2 Player settings for selected cameras

If you change settings in the *Player* menu in the *Selected Cameras* section, these settings only affect the selected cameras.



With the icon  the selected cameras are switched to live view. The icon is available when the camera selection contains at least one camera which is in replay or in error mode.

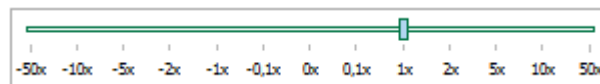
#### Replay mode

With the icon  the selected cameras are switched to replay mode. The icon is available when the camera selection contains at least one camera which is in live or in error mode. Replay or live view on all selected players is then paused. It should be borne in mind that all cameras, at this point, are synchronized. Although it is possible that individual cameras show different time stamps, images are shown which were recorded at the same moment in time – as close as possible to the time the command icon was pressed.

The replay mode does not affect recording of video data.









Using the buttons and the slider you can control the replay.

The replay speed after the time jump can be set with the speed slider. The function is only available if the selected cameras are in replay mode.



Note that the replay speed is specified relative to the normal speed. For example, 2x means that the current replay speed is twice the normal speed.

Meaning of the buttons:

-   Start/stop replay
-   Jump to the previous/next image
-   Decrease/increase replay speed
-   Jump to the previous/next event

Events always refer to the currently selected replay master camera. Events are:

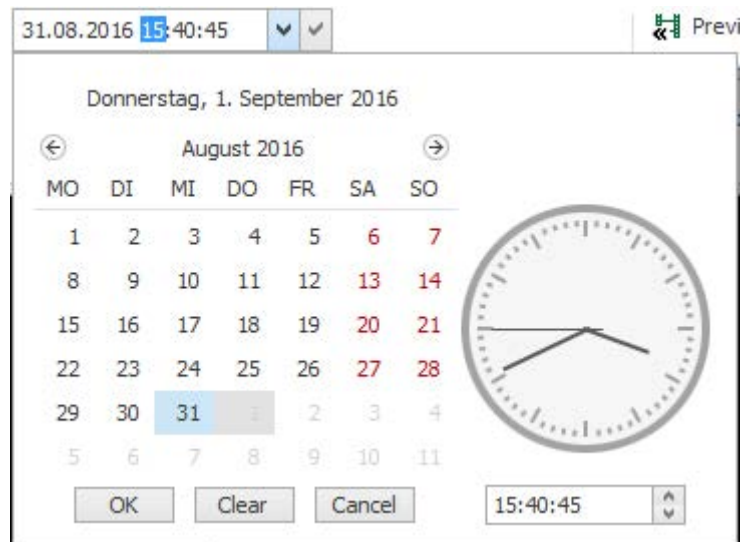
- The first or last frame received
- The start or end of a protected video sequence
- The start or end of a locked video sequence

## Time picker

The time picker allows the user to jump to a particular point in time in the recording. In doing so, all video recordings in the selected camera windows are also reset to this time. To specify the time, you can directly enter the date and time in the time picker entry field.

31.08.2016 15:34:34

It is also possible to use a calendar function to specify the point in time. Click the arrow icon to open the calendar dialog.



## Note



On the video server, the video stream captured by a camera is stored together with time data. The time stamp is generated by the *ibaCapture* Server's clock for all camera types.

When

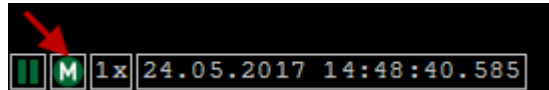
- a) the *ibaCapture* Server clock is not set correctly and
- b) recorded video is viewed in *ibaCapture* Manager,

the recorded video will also be off by the time difference at the time of recording. This does not affect synchronization when viewing recorded video in *ibaAnalyzer*, but may cause inconsistent behavior when cameras from multiple *ibaCapture* Servers are opened in a single instance of *ibaCapture* Manager. In such a case it is recommended to use some kind of clock synchronization mechanism on all *ibaCapture* Servers, e.g. PTP. (see chapter [PTP time synchronization](#), page 77).

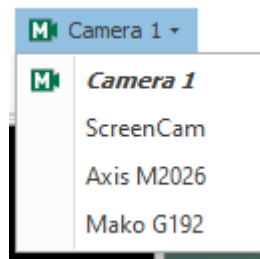
### Replay master

In replay mode, you can configure a replay master which allows you to replay the video recordings in a time synchronous way. The replay master generates the clock for replaying videos. All other selected cameras will be replayed synchronously. This mechanism also maintains synchronicity when using the "previous image" and "next image" functions. For the replay master, the previous/next image will be shown, while for all other cameras the image closest to the master image will be used. This is especially important when using cameras with different frame rates.

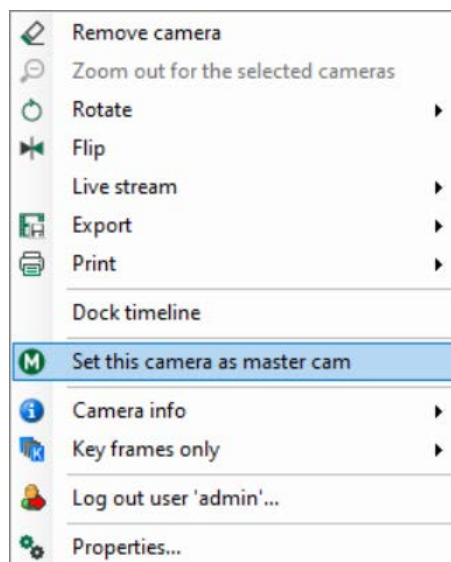
At first, the current replay master will be selected automatically and indicated by the master icon in the camera information bar.



By clicking on the master icon in the menu ribbon, the user can specify the replay master in the drop-down menu.



Optionally, you can configure a camera as replay master. For this purpose, open the context menu in the camera view you want to configure as master with a right mouse-click and select *Set this camera as master cam*.



### 4.9.3 Video properties

Each camera offers operating functions to control zoom, contrast, brightness, saturation and hue and to flip the image. All functions can be controlled by command icons in the ribbon.



|  |   |
|--|---|
|  | Zoom out  |
|  | A click on the small triangle offers the option <i>Zoom out all</i> . All zoom steps are undone at once by selecting this option. |
|  | A click on the small triangle opens a selection of options to rotate the image: 90°, 180° and 270° counterclockwise               |
|  | Flip image horizontally   |
|  | Slider for adjusting image brightness<br>Brightness will be reset to the default value by clicking the icon.                      |
|  | Slider for adjusting image contrast<br>Contrast will be reset to the default value by clicking the icon.                          |
|  | Slider for adjusting the saturation<br>Saturation will be reset to the default value by clicking the icon                         |
|  | Slider for adjusting the hue<br>Hue will be reset to the default value by clicking the icon.                                      |

Please note that brightness, contrast, saturation and hue are only changed in selected video players. There is no effect on stored video and on players in other applications, e.g. *ibaPDA* or *ibaAnalyzer*.

There are also alternative ways to zoom in and out and to change brightness, contrast saturation and hue:

#### Zooming

In order to zoom in position the mouse pointer in the top left corner of the area that you wish to magnify. Draw a red rectangle by keeping the mouse button pressed and dragging the mouse to the lower right corner. Release the mouse button.



Zooming out is performed by pressing *Zoom out*  in the ribbon.

As third way, it is possible to zoom in/out by scrolling the mouse wheel. Position the mouse pointer over the image and scroll the mouse wheel. When zoomed in, you can move the section by moving the mouse keeping the <ALT> and left mouse button pressed.

To preserve the original aspect ratio of the video during display, the image is centered between black bars. When zooming in, the black areas are reduced accordingly or are no longer visible, while still maintaining the aspect ratio.

### Change properties in the camera window

Contrast, brightness, saturation and hue can also be changed using the sliders in the camera window. To do so, move the mouse pointer in the upper right corner of the camera window where sliders appear.



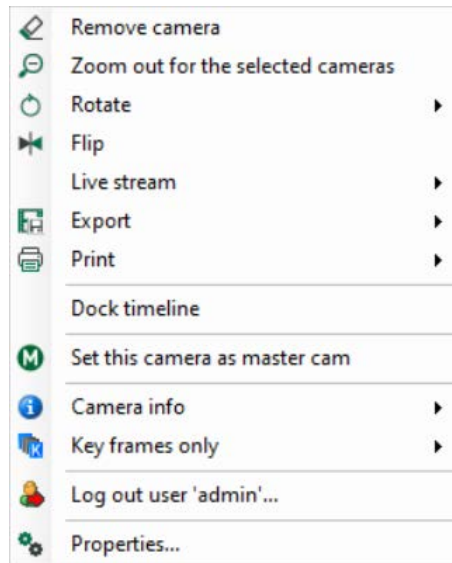
Brightness, contrast, saturation and hue will be reset to the default value by clicking the respective icon above the sliders.

If the graphics adapter of your computer does not support changing these settings you'll get an error message in a tooltip with the mouse hovering over the control.



## 4.10 Camera context menu

A right click on a camera window opens the context menu.



The menu items "Dock timeline", "Camera info" and "Key frames only" apply to all cameras in a camera view.

The command "Log out user 'xy'..." is only visible when user management is active and applies to all cameras from that ibaCapture Server in the current camera view.

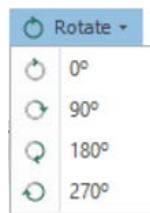
The commands "Remove camera", "Rotate", "Flip" and "Export" apply to the camera where the context menu was opened.

The "Print" command allows you to choose whether to print this camera or all cameras in the view.

The command „Set this camera as master cam“ is available in replay mode. For a description of this function, see chapter [➤ Player settings for selected cameras, page 40](#).

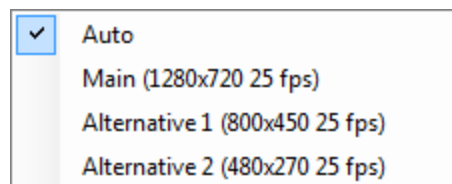
### 4.10.1 Submenu Rotate

You can select in the submenu *Rotate* from preset values by how many degrees the image is rotated counterclockwise.



### 4.10.2 Submenu Live stream

In order to save system resources, you can configure alternative live streams with a lower resolution for the live stream display.



#### Auto

"Auto" is the default setting for the live stream. "Auto" automatically selects the resolution of the live stream depending on the player size, i.e. when the player window gets smaller, an alternative live stream with a lower resolution will be selected automatically.

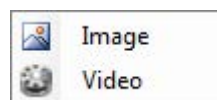
#### Main / Alternative 1 / Alternative 2

By selecting one of the other options, the live stream will be set permanently to the respective resolution.

For more information about the alternative live streams, see chapter [↗ Additional streams](#), page 120.

### 4.10.3 Submenu Export

In the *Export* submenu, you can export individual images or video sequences.

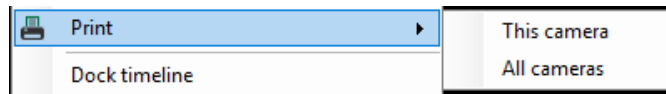


Individual camera images (snapshots of the current frame) can be exported as JPG image files using the "Image" option. Video sequences can be exported as MP4 video files with the "Video" option.

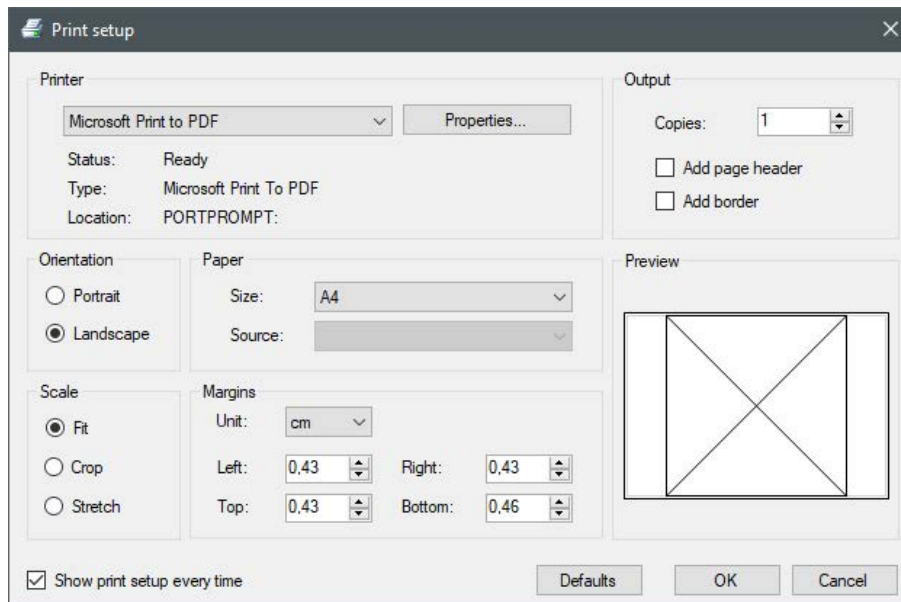
If an image is to be exported, then a file browser appears to select the location. When exporting a video sequence, a dialog will appear in which a start and stop time can be specified. The start and end times are set to the positions of the markers in the camera timeline when the dialog is opened.

### 4.10.4 Submenu Print

You can make printer settings in the *Print* submenu.



Here you can select whether you want to print this camera or all cameras, i.e. the currently visible camera layout. In the *Print setup* dialog, you can select the printer, set the orientation, scaling and margins. The preview shows how the camera images will be printed on the selected paper and the effect of the settings.



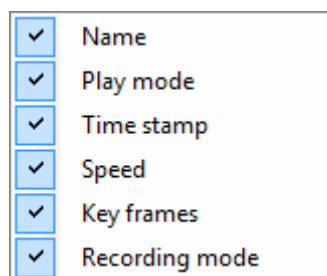
### 4.10.5 Dock timeline

Check / uncheck the “Dock timeline” item to show or hide the timeline at the bottom of the camera view.

More information about the timeline, see chapter ↗ *The camera timeline, page 48*.

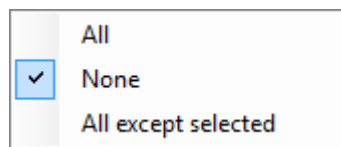
### 4.10.6 Sub-menu Camera info

By setting/removing a checkmark, you can set visibility for the camera information items, see also chapter ↗ *Camera info menu, page 33*.



### 4.10.7 Sub-menu Key frames only

By setting/removing a checkmark, you can specify which cameras shall only display key frames. See also chapter [➤ Camera info menu, page 33](#).



### 4.10.8 Properties


The properties dialog can also be opened in the context menu, description see chapter [➤ Player settings for all cameras, page 36](#).

## 4.11 The camera timeline


The camera timeline provides the user with an overview of the available video sequences of all cameras that have been added to the view. Furthermore, it allows easy navigation to a certain point in time.

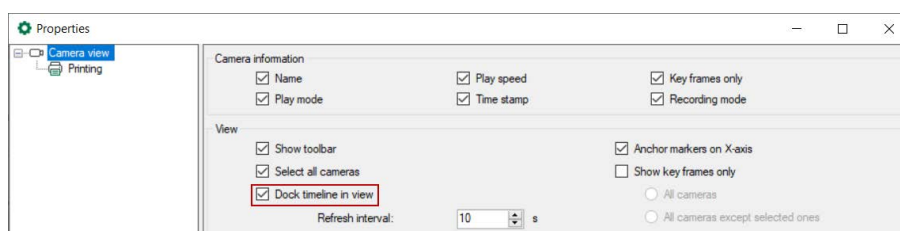
### 4.11.1 Show timeline

The timeline can be enabled in several ways:

1. Click *Show timeline*  in the ribbon. Another click on the command will hide the timeline again.
2. Open the camera view's context menu and select "Dock timeline".

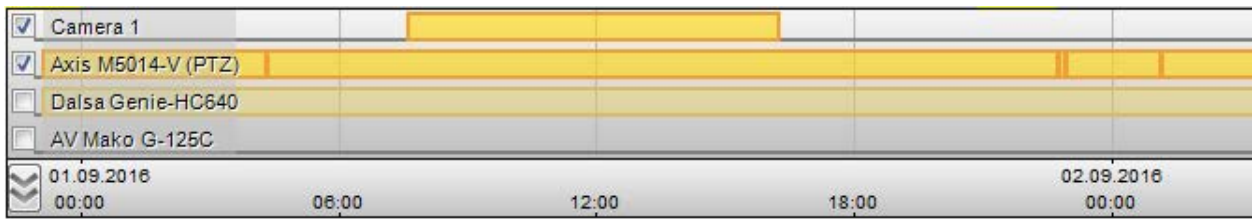


3. Open "Properties" with a double-click on the icon  and select "Dock timeline in view".



### 4.11.2 Bar display

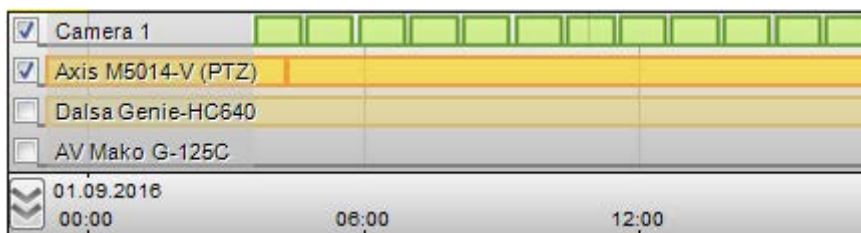
A timeline is displayed for each camera in the view. A time range containing video recordings is displayed as a colored bar. A range without video recordings is displayed as gray line. The display of the recorded sequences in the timeline is updated cyclically, according to the setting in the properties dialog of the view.




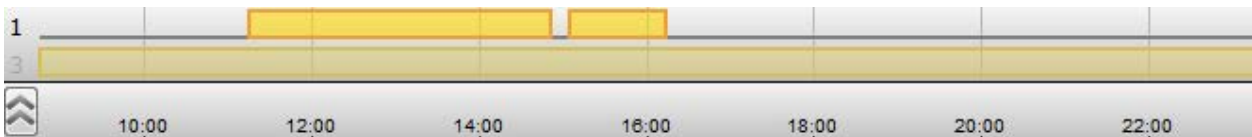
The cameras that are currently selected are shown in bright colors and a checkmark is set in front of the camera name.. The non-selected cameras are displayed in pale colors.

Meaning of bar colors:

- Orange: continuous recording
- Green: protected recording (use of video triggers)
- Violet: locked video (see chapter ↗ *Protect or lock videos, page 53* for examples)



The timeline can be collapsed and expanded with the button  in the bottom left corner of the timeline. A collapsed timeline contains a line for selected players and one for unselected players (if available).



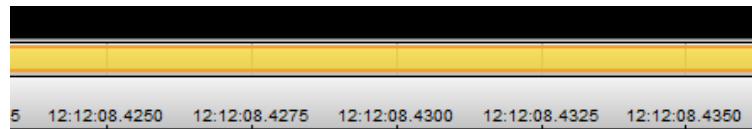
The colored bar of a collapsed timeline shows the total of the camera’s timelines it contains. The number in front of a timeline indicates the number of cameras the timeline contains. In the example above, the first line shows stored video for 1 selected camera and the second line shows this information for 3 unselected cameras.

### 4.11.3 Time axis

The time axis shown at the bottom of the timeline is interactive. You can:

- Shift the visible time range by clicking the axis keeping it pressed and then dragging the mouse horizontally
- Zoom in/out by scrolling the mouse wheel (at any position in the timeline)
- Zoom in by dragging a rectangle over the camera timeline
- Auto-scale by clicking the center mouse button

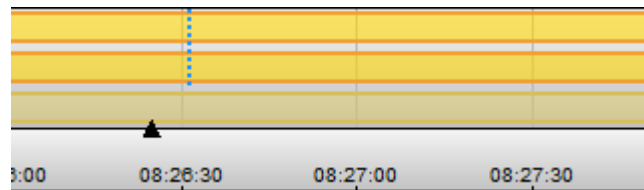
The maximum resolution of the timeline is 2.5 ms. This allows navigating from frame to frame when using cameras with high frame rates.



#### 4.11.4 Indicators and markers

A black triangle represents the marker of the current time stamp on the timeline. Moving the current time marker will stop all selected players and jump to the timestamp of the marker.

A dotted blue line indicates the current point of time of a selected camera view on the timeline of the camera. This marker is dynamic. It moves forward when a video is playing.



The current time marker (triangle) can be moved by clicking and dragging it with the mouse. If you click anywhere on the timeline, the marker will jump to this position.

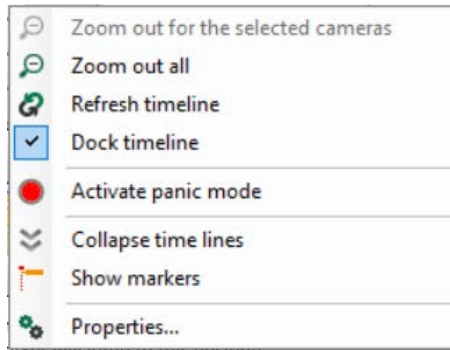
Moving the marker sets the selected camera(s) back to play mode. The players follow the marker time. The blue dotted lines follow the current time marker as well. The replay speed of the selected camera(s) will be set to the replay speed configured in the properties dialog.

Moving the marker also updates the time in the time picker. If you want the selected camera(s) to jump to the specified time in the time picker, the jump icon  must be clicked.

#### 4.11.5 Context menu

The timeline has its own context menu which allows the user to:

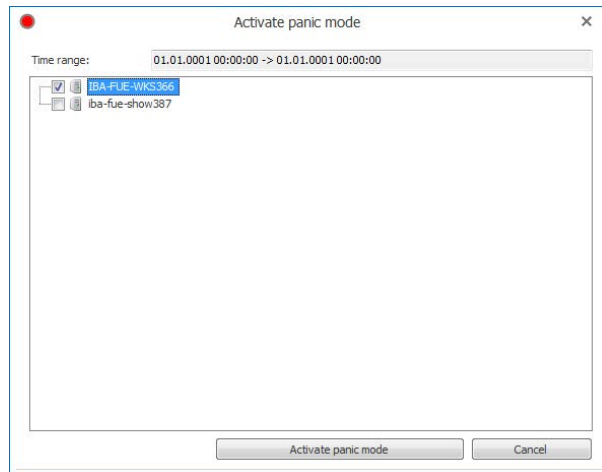
- Zoom out if the user has previously zoomed in using the zoom rectangle, either for the selected cameras or all cameras
- Manually refresh the timeline
- Dock or undock the timeline.
- Enable panic mode
- Collapse/expand timelines
- Show markers which are used for protection and safety functions (see next chapter)
- Open the properties dialog



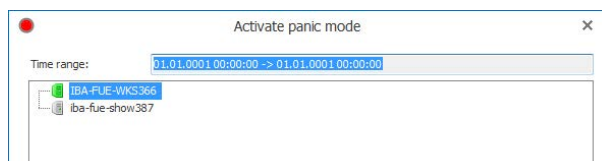
**Panic mode**

Panic mode can only be used when user management is enabled, see also chapter [User management in ibaCapture, page 83](#). This mode can only be activated by authorized users. In panic mode, only a main responsible person (administrator) is allowed to view the videos.

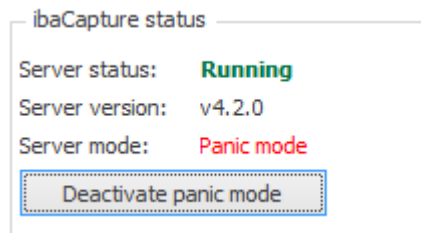
A click on the command opens a dialog where you can select the server(s) the panic mode shall be activated for. Select one or multiple servers in the tree structure and click on <Activate panic mode>.




When panic mode is active, the color of the server icon turns to green.

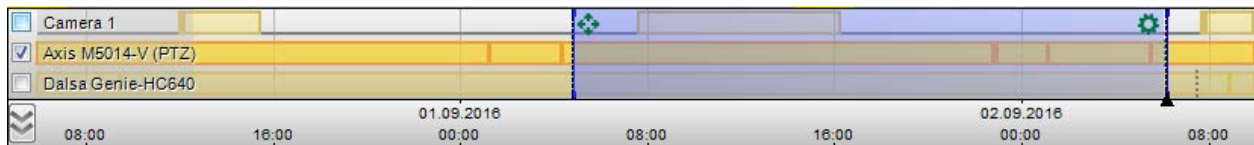


The panic mode can only be deactivated by the admin user by restarting the *ibaCapture* service. In case the panic mode is active, you can see a button that allows you to disable the mode in the “iba Capture status” field.



### 4.11.6 Range markers

To carry out protection and safety functions, range markers are necessary. Range markers can be added by clicking *Show markers*  in the ribbon or right-click on the timeline and select *Show markers* from the context menu. By default, 1/3 of the timeline range will be marked.



The marked range can be changed in two ways:

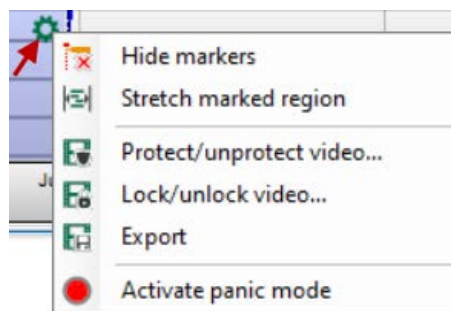
1. Move the begin or end marker while keeping the left mouse button pressed
2. Move the total range while keeping the left mouse button pressed on the move icon in the top left corner of the marked range.



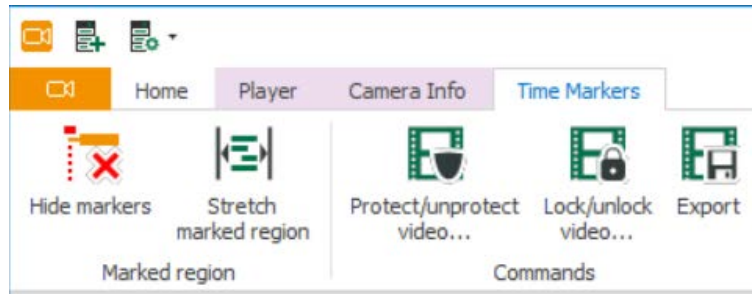
You can also select a range manually. Proceed as follows:

1. Hold down <Ctrl>-key
2. Hold down left mouse key on the camera timeline
3. Select the range by moving the cursor
4. Release the left mouse key
5. Release the <Ctrl>-key






Hovering the mouse over the icon in the top right corner of the marked range opens a context menu providing commands for export, protection and safety functions. See chapters [↗ Protect or lock videos, page 53](#) and [↗ Export videos, page 55](#) for more information.



The same commands appear in the menu *Time Markers*, which is visible when time markers were added.



Commands for protection and safety functions:

|  |   |
|--|---|
|   | Hide markers  |
|   | Stretch marked region (over the displayed timeline)                           |
|   | Protect/unprotect video; see chapter ↗ <i>Protect or lock videos, page 53</i> |
|   | Lock/unlock video, see chapter ↗ <i>Protect or lock videos, page 53</i>       |
|  | Export; see chapter ↗ <i>Export videos, page 55</i>                           |

#### 4.11.7 Protect or lock videos

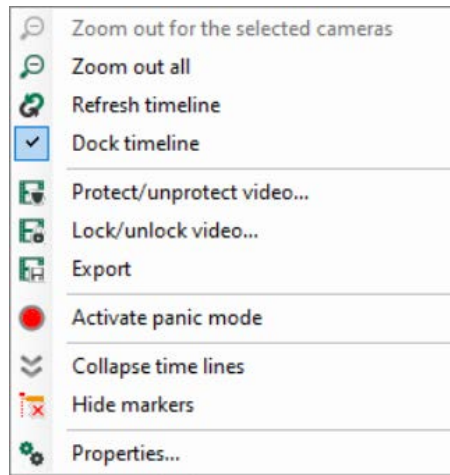
The functions “protect/unprotect video” and “lock/unlock video” can be performed by authorized users.

See also “Action rights” in chapter ↗ *User management in ibaCapture, page 83*.

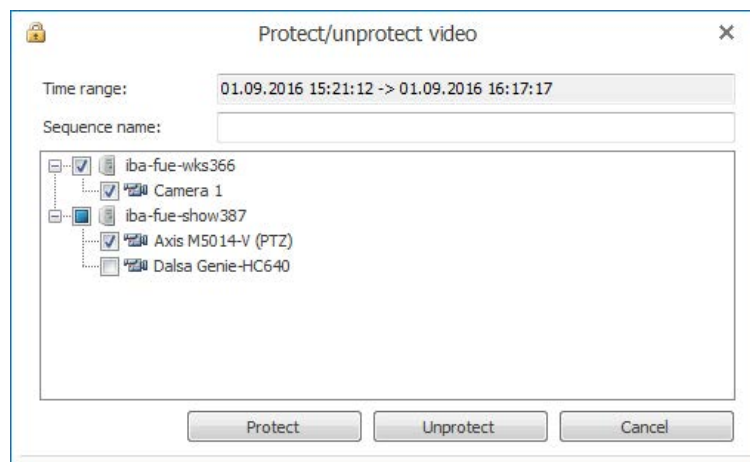
Protected video will be overwritten less frequently than normal video. Locked videos can be viewed only by users who have this right. User management must be enabled for locked video to have effect.

In order to protect or lock a particular video sequence, you first need to specify a time range using the time markers as described in the previous chapter.

Then, click the command icon in the ribbon for the desired function or open the context menu of the timeline and select the desired function.

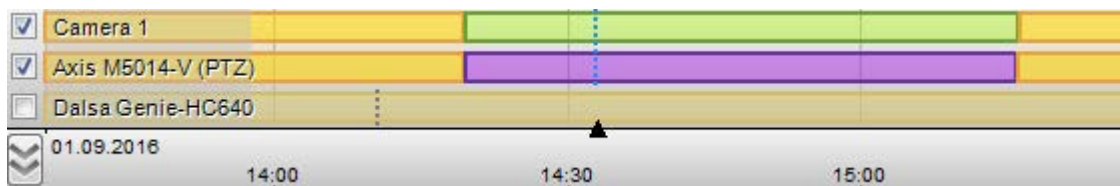


A dialog opens where you can select the cameras for which the function is to be performed. From a tree structure you can select one of the cameras that are shown in the camera view. By default, all cameras selected in the camera view are checked.



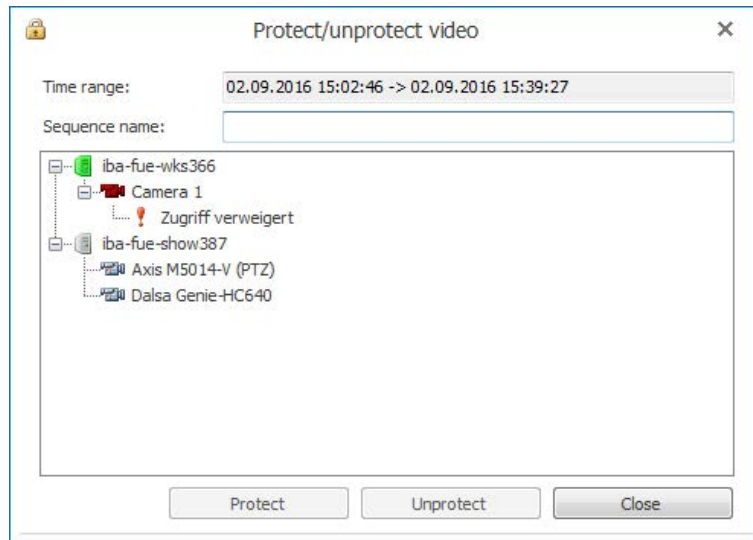
In the *Time range* line, the relevant time range is shown corresponding to the marker positions. For the "Protect video" function, you can additionally enter a sequence name.

Locked sequences are displayed violet, protected sequences are colored green.



Protected recordings created automatically via video trigger remain unaffected by the *Unprotect* function.

If a user selects a camera, but is not authorized to perform the desired function for this particular camera, an error message appears, the camera icon turns red and the dialog remains open.




### 4.11.8 Export videos

Video sequences from multiple cameras can be exported as MP4 file. When user management is enabled, only authorized users can export videos.

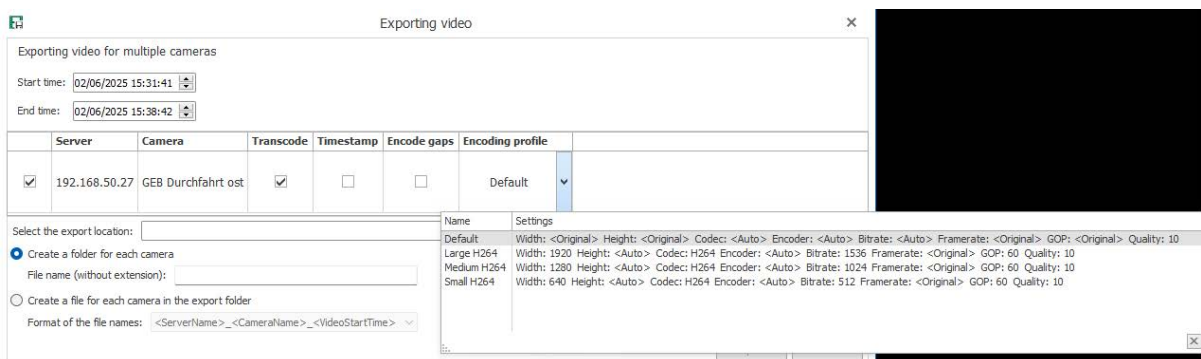
When exporting videos to a file *ibaCapture* can transcode the video to a different format and resolution. This can be used to archive recordings in a more compact format (e.g., a lower resolution, bitrate or with the more efficient encoding). When exporting, overlay images and the timestamp of the video can be inserted into the video.

To transcode a video, an encoding profile must be configured. See also chapter ↗ *Export settings, page 137*.

#### How to export video:

1. First, specify a time range with the range markers.
2. Click *Export* in the ribbon  or open the context menu of the timeline and select *Export*. The video export dialog will open.

By default all currently opened cameras are selected. The marked region is given as start and end time. It is possible to uncheck single cameras if no video shall be exported.



3. You can specify for each camera individually whether the video file should be transcoded by selecting the *Transcode* option. The following settings are possible:

*Timestamp:* If you enable the *Timestamp* option, a timestamp with the settings configured under Export settings is displayed.

*Encode gaps:* If you activate *Encode gaps*, video gaps are encoded as frames in the file, including an optional timestamp. If the option is disabled, video gaps will be added as skips in the file.

*Encoding profile:* Select one of the configured profiles for this camera from the drop-down menu.

With the *Default* profile, the settings for the exported video and the stored video are the same. This can be useful if, for example, a video with an overlay image is to be re-encoded.

**Note**

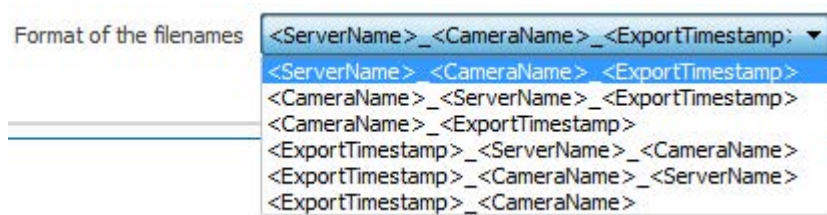


If you are using an *ibaCapture* Server version older than 5.3, no encoding profiles can be configured. Instead, three default profiles will be provided for selection. These cannot be modified.

- Specify the storage location for the video files. One video file will be created for each selected camera. Possible file locations:

Create a directory in the export location root for each camera and define a filename. Each camera will generate the same filename in its own directory.

Create all files in the export location root. Since all files should have distinctive names in this case, you can select a format for the filename.



→ As soon as the export is started, progress bars are shown for each camera.

- It is possible to cancel the export for each player with a click on the <x> button. Closing the dialog will cancel the export of all players.

## 4.12 Operation via keyboard shortcuts

If the camera view is in replay mode, some functions can be directly controlled by keys:

| Key           | Function                  |
|---------------|---------------------------|
| ←             | Time step backward        |
| →             | Time step forward         |
| < Page up >   | Bigger time step backward |
| < Page down > | Bigger time step forward  |

| Key              | Function              |
|------------------|-----------------------|
| ↑                | Increase replay speed |
| ↓                | Decrease replay speed |
| < Ctrl > + < > → | Show next image       |
| < Ctrl > + < > ← | Show previous image   |
| < Space bar >    | Play / Pause          |

#### Note



For the keyboard shortcuts to work, focus has to be on the camera view/player area. If the ribbon is active, e.g. because the user has clicked on commands, the cameras will not receive the key strokes.

Simply click once on one of the cameras to activate camera operation via key strokes.

## 4.13 Using PTZ cameras

In the camera view, there are different options to control PTZ cameras:

- with a joystick
- with the mouse
- via the PTZ context menu

### 4.13.1 Joystick

*ibaCapture* supports the use of USB joysticks which are recognized by Windows, e.g. AXIS T8311 video monitoring joystick, part of the AXIS T8310 video monitoring unit or other standard game controllers.

The joystick can be connected to every client to control the configured PTZ cameras. Panning and tilting of the camera can be controlled intuitively by moving the joystick. Depending on the joystick model, the zoom function can be controlled using a rotary knob or setting wheel.

When panning or tilting, the following pointer appears in the image.



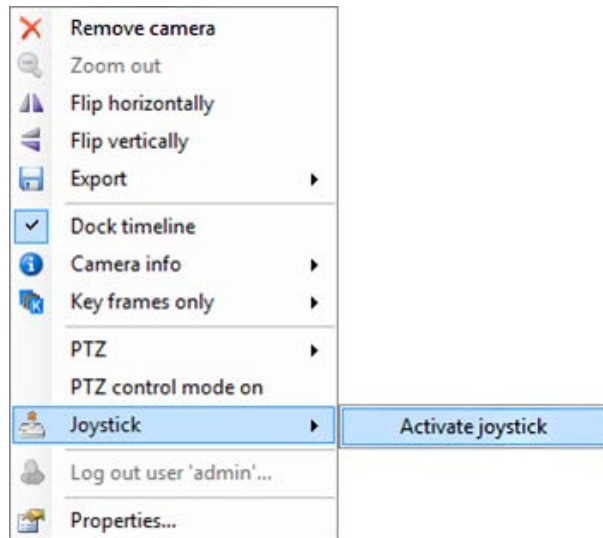
When zooming in or out, the following markings appear in the image:



Various functions can be assigned to the joystick keys. *ibaCapture* provides the following functions: moving to the left, right, up or down, zooming in and out and moving to one of the preset positions.

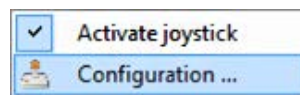
### Activate joystick

To control the camera with the joystick, this needs to be activated first. Select *Joystick* in the camera context menu and select *Activate joystick* in the sub-menu.



### Configuring the joystick

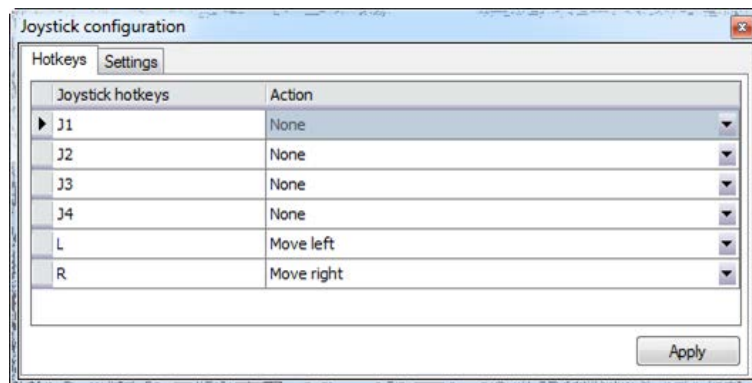
For programming the function keys and changing the joystick settings, select *Joystick* in the camera context menu and *Configuration* in the sub-menu.



The dialog for configuring the joystick opens.

### Programming function keys

The function keys are programmed in the Hotkeys tab.



To program a function key, select the relevant function key (in the above image "Jn") and open an action tree by clicking on the arrow.

Select the desired action from the action tree. Available for selection are:

- "Goto preset" - this shows a list of all positions already saved
- "Move" – here, you can select from 4 directions of movement
- "Zoom" – zooming in and out can be selected
- "Switch camera" – here, it can be selected whether to switch to the next or previous camera.

Select the desired function for every function key and confirm the setting by clicking the <Apply> button.

If the check box "Apply to all cameras" has been selected, the movement functions (to the right, left, up and down) and the zoom functions (zooming in and out) apply to all PTZ cameras. The function "Goto preset" only applies to the camera for which this preset has been configured. The functions assigned to the function keys are saved for the current Windows user.

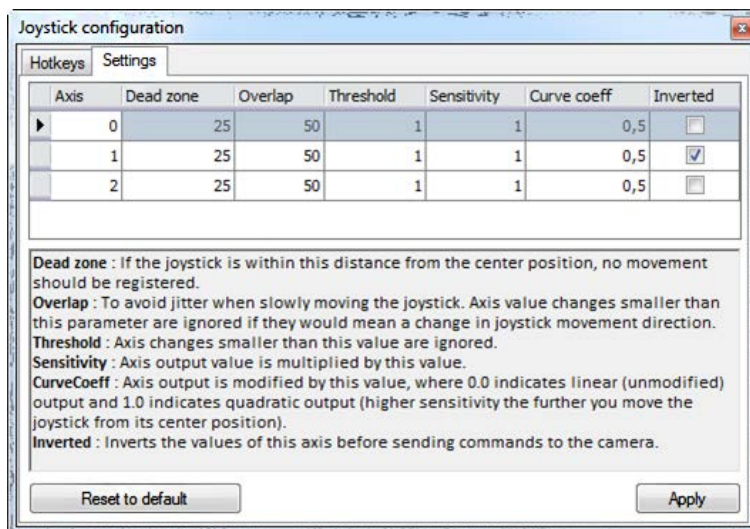
**Note**



In case of an Axis T8311 joystick, the function keys L and R are already preconfigured. R = moving to the right, L = moving to the left.

**Change joystick settings**

In the "Settings" tab, you can change the settings for the joystick such as sensitivity and threshold values.

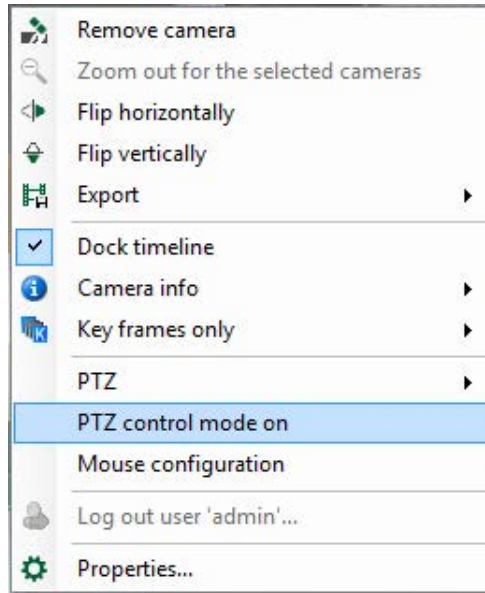


The changed settings are applied by clicking the <Apply> button.

You can reset the settings to the default values by clicking the <Reset to default> button.

**4.13.2 Mouse**

For the PTZ camera to be controllable with the mouse, the PTZ control mode needs to be activated. For this purpose, select PTZ control mode on in the camera context menu or click with the middle mouse button or the setting wheel. Do the same for deactivation.



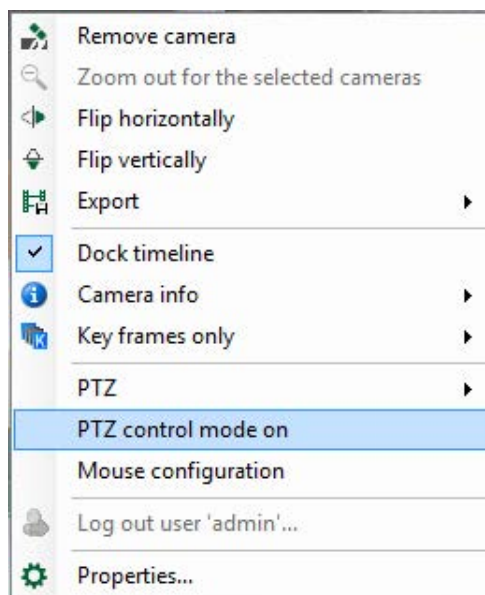
If the PTZ control mode is activated, a crosshair appears in the middle of the video image. The movement of the PTZ camera can be controlled by moving the mouse keeping the left mouse button pressed. Releasing the mouse button stops the movement of the camera.

The mouse wheel is used for zooming in and out. Scroll the mouse wheel up to enlarge the view, scroll it down to minimize the view. When moving the camera as well as zooming in and out, the familiar markings appear on the screen, see chapter [Joystick, page 57](#).

Select *Mouse configuration* from the context menu to make settings for the sensitivity and dead zone of the mouse.

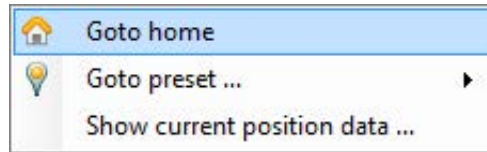
### 4.13.3 PTZ context menu

To control the camera via the menu, open the context menu of *ibaCapture* Player and select "PTZ".

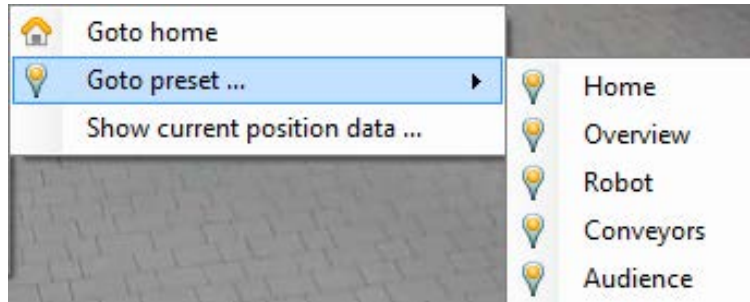


The related sub-menu provides the following options:

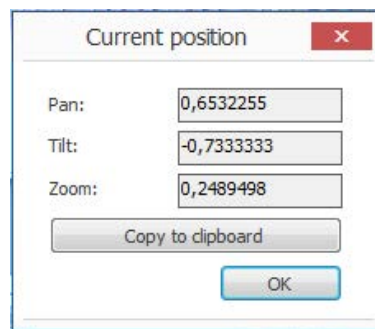
- Goto home: moves the camera to the initial position



- Goto preset: moves the camera to a preset position



- Show current position data: shows the absolute pan, tilt and zoom values of the current camera position. By clicking on <Copy to clipboard>, the data can be copied and, if required, inserted as absolute position in "Absolute move" of the "PTZ" tab of the *ibaCapture* configuration. For insertion, place the mouse pointer on one of the input fields and press the key combination <Ctrl> + <V>.



## 5 Configuration of ibaCapture Server

The *ibaCapture* Server service can be controlled through the *ibaCapture* Server Status application. It provides information about the server status and allows manual start and stop of the *ibaCapture* Server service, see chapter [↗ ibaCapture Server Status, page 63](#).

Moreover, *ibaCapture* Manager allows adding and removing cameras, changing camera settings and setup the video storage including protected and unprotected disk space, see chapter [↗ ibaCapture Manager, page 64](#).

In *ibaCapture* Manager, also camera views are displayed and the cameras can be controlled.

Basically, *ibaCapture* Manager provides 2 modes with the following functions:

- Camera view
  - Overview of connected cameras and servers as tree-view. Servers can be added and removed.
  - Player area for video players of the selected cameras.
  - Menu ribbon with application and player control commands
- Server configuration mode
  - Configuration of *ibaCapture* Server
  - Camera configuration
  - Storage configuration
  - User management

### 5.1 ibaCapture Server Status

The *ibaCapture* Server Status application will be automatically started after the installation of *ibaCapture*.

After installation you will find the *ibaCapture* Status icon in the Windows system tray: 

The different symbols indicate the following states:



*ibaCapture* service is running

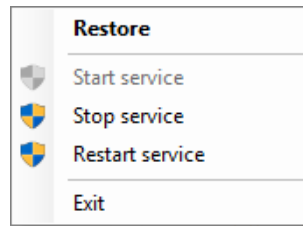
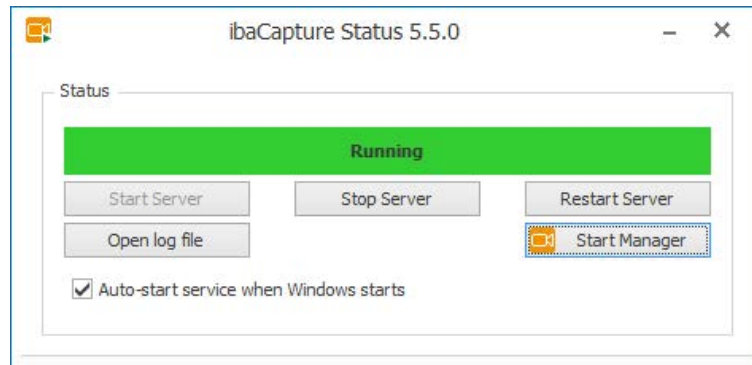


*ibaCapture* service is stopped

The application can be started in different ways:

- Double-click the *ibaCapture* Status icon in the system tray
- Using the context menu of the *ibaCapture* Service icon (right mouse-click *Restore*)
- Using the Windows start menu *All programs – iba – ibaCapture – ibaCapture Server Status*

The *ibaCapture* Server Status application allows you to start, stop and restart the service using either the buttons or the context menu. You can also start *ibaCapture* Manager.




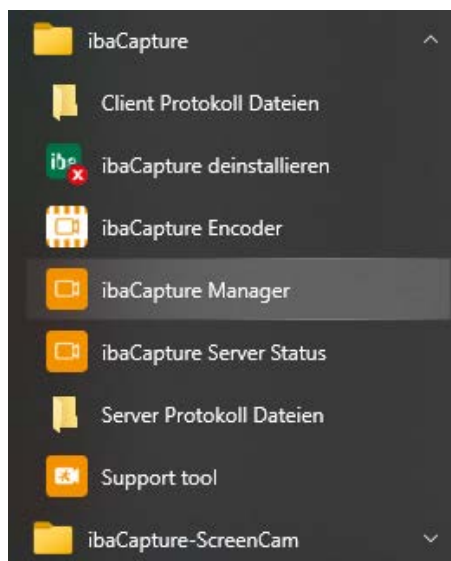
The button <Open log file> opens the *ibaCapture* Server log file *ibaCCServerLog.txt*.

If the option *Auto-start when Windows starts* is enabled, the *ibaCapture* Server Status application starts automatically when logging in to Windows.

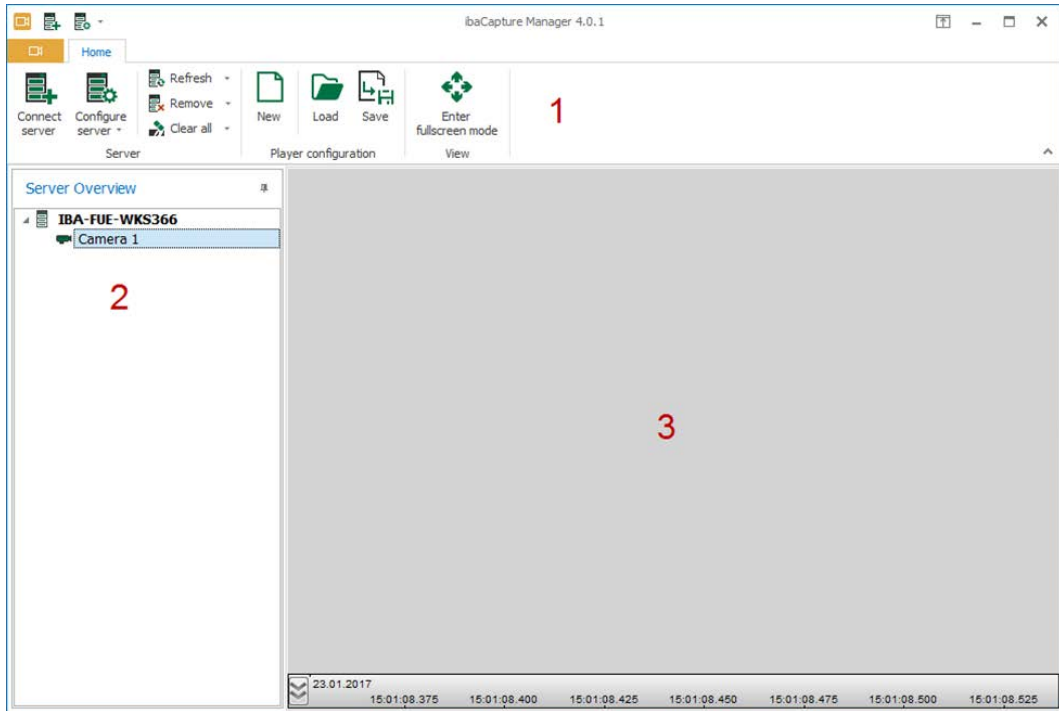
## 5.2 ibaCapture Manager

If *ibaCapture* Manager is not yet installed on your computer, turn to the chapter ↗ *Installing ibaCapture software*, page 20 and proceed accordingly.

Start *ibaCapture* Manager by double clicking on the icon on the desktop  or via the Windows "Start" menu.



At the first start *ibaCapture* Manager opens with the following user interface.



|   |  |
|---|--|
| 1 | Ribbon (providing the commands)  |
| 2 | Server overview (servers which can be configured and list of configured cameras for viewing video) |
| 3 | Camera view (video players of the selected cameras)  |

**Initial installation**


When *ibaCapture* is installed for the first time, i.e. no upgrade from previous versions, and *ibaCapture Manager* is opened on the same PC as *ibaCapture Server* runs, that server is automatically added to the server overview. You can directly switch to server configuration mode, see chapter ↗ *Switching to server configuration mode, page 66*, and configure the server and cameras.

**Upgrade installation**

When *ibaCapture* is installed as an upgrade from previous versions, the *ibaCapture Server* PC has to be added to the server overview, see chapter ↗ *Adding servers, page 26*. The cameras which are already configured at the server will be automatically detected when the server has been added.

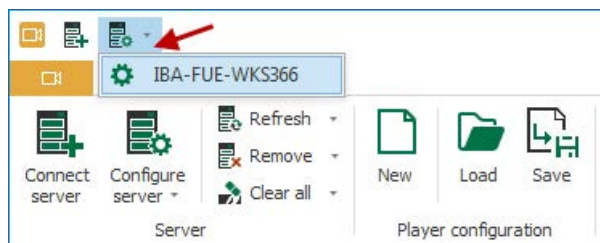
### 5.2.1 Switching to server configuration mode

There are several ways to switch to sever configuration mode:

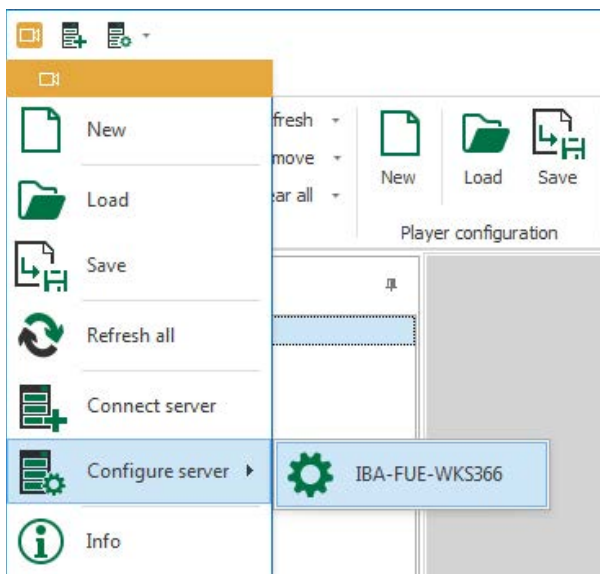
1. Click *Configure server* in the ribbon  and select the server you want to configure.



2. Click the button in the quick access toolbar  and select the server you want to configure.



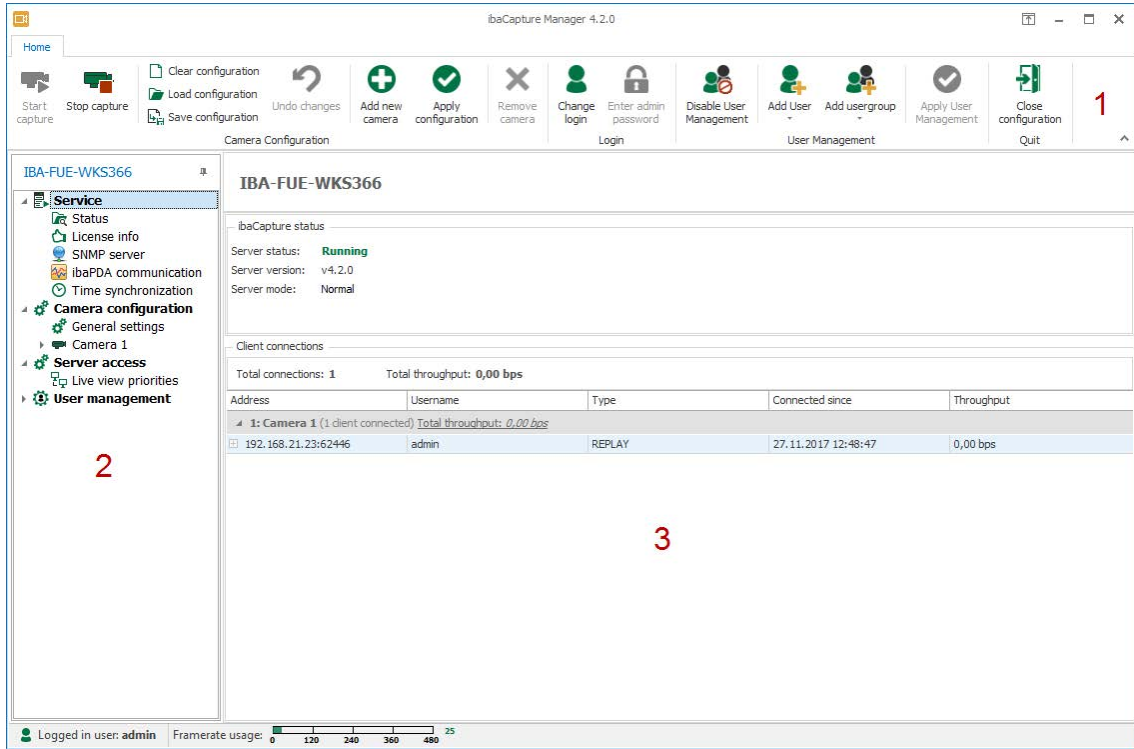
3. Open the main menu, click on *Configure server* and select the sever you want to configure.



Note: A server can only be configured when it is displayed in the server overview.

### 5.3 Server configuration overview

If you have switched to server configuration mode, you will see the following screen:



The server configuration mode consists of three major parts:

|   |   |
|---|---|
| 1 | Ribbon with commands for<br>- Camera configuration<br>- Login<br>- User management  |
| 2 | Tree for server configuration<br>Navigation through different configuration options |
| 3 | Dialog area<br>Area for entering settings and displaying information                |

### 5.3.1 Status information

If you click on the “Status” branch, you will see some information about the *ibaCapture* status and active connections between the *ibaCapture* Server and *ibaPDA* system(s) and/or cameras.

**ibaCapture status**

Server status: **Running**

Server version: v4.2.0

Server mode: Normal

#### ibaCapture status

Display of *ibaCapture* status and server mode.

| Client connections   |          |                            |                     |            |
|--|----------|----------------------------|---------------------|------------|
| Total connections: 1   |          | Total throughput: 0,00 bps |                     |            |
| Address  | Username | Type                       | Connected since     | Throughput |
| ▲ 1: Camera 1 (1 client connected) <u>Total throughput: 0,00 bps</u> |          |                            |                     |            |
| 192.168.21.23:62446  | admin    | REPLAY                     | 27.11.2017 12:48:47 | 0,00 bps   |

#### Client connections

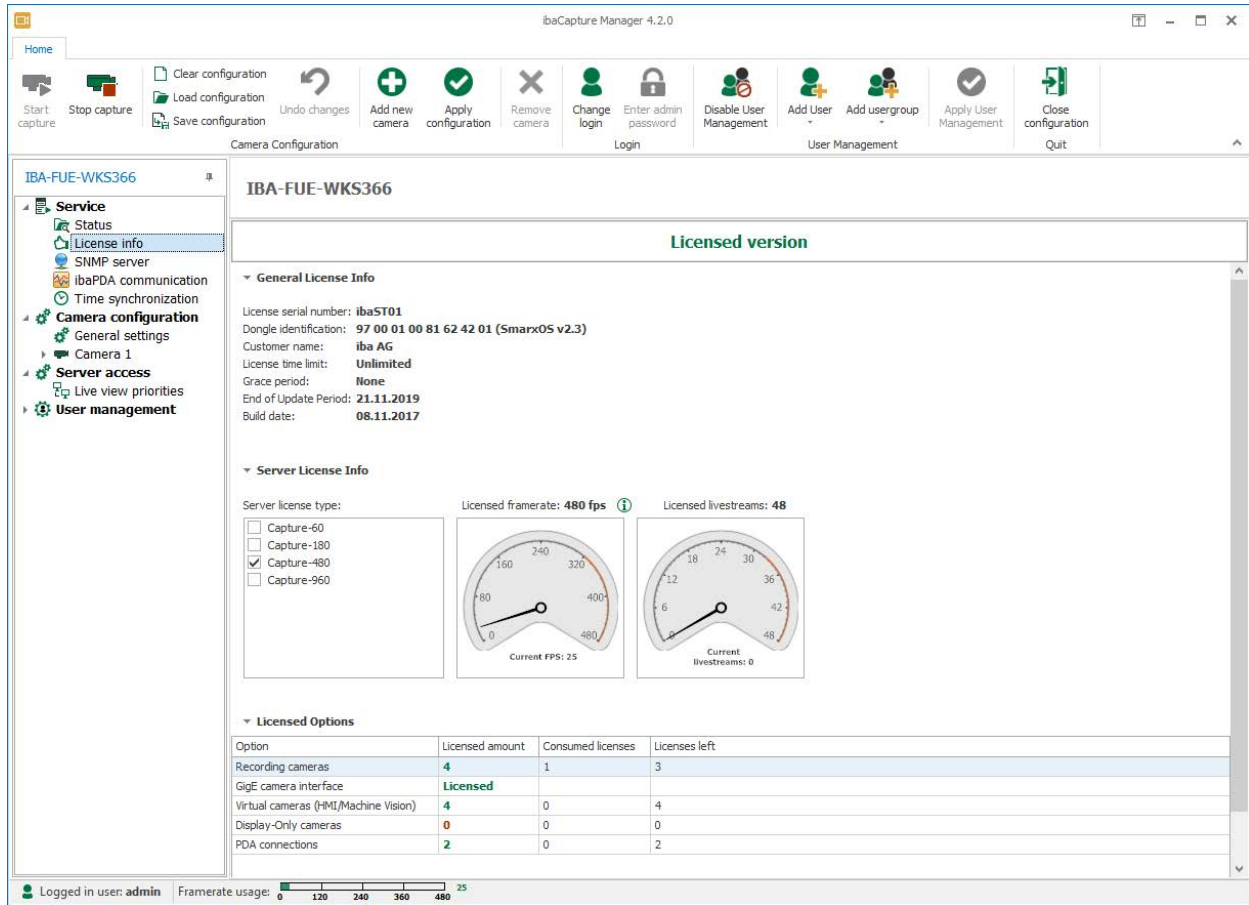
The connections table gives an overview of active client connections to *ibaCapture* Server. Clients can be *ibaCapture* Players requesting a camera view, such as *ibaQPanel* or *ibaCapture* Manager. Synchronization and control connections to *ibaPDA* Server systems are also listed here.

In the “Address” column, you can see the IP address and port number of each connection.

In the “Type” column, you get information about the type of communication running over the related connection.

### 5.3.2 License info

The *License info* node contains information on the server license and other licensed options.

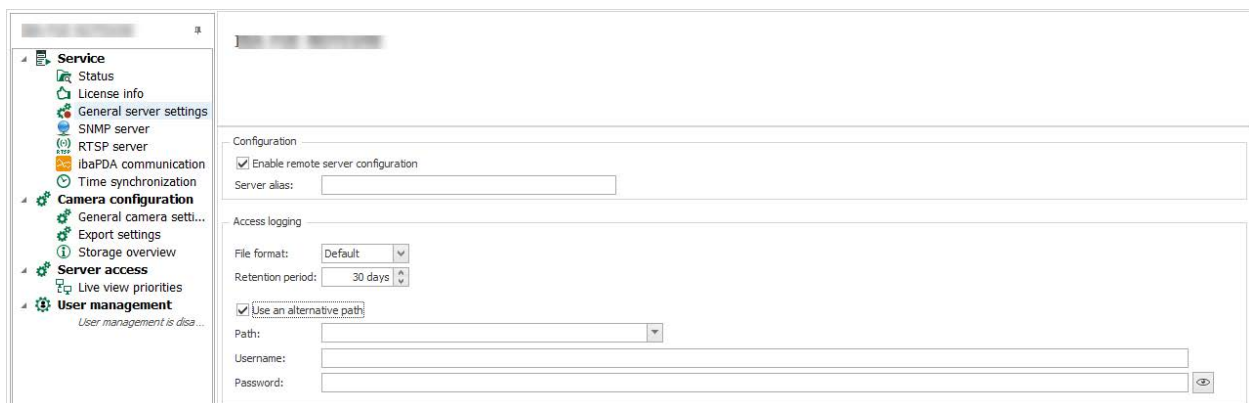


In this area, the license number is the most important information for support cases or inquiries for system extensions. The *end of update period* specifies the period of validity of your license.

You can also see other licensed options, like frame rate, livestreams, recording cameras, virtual cameras, display-only cameras and GigE interface.

### 5.3.3 General server settings

In the *General server settings* node, you make settings for remote access to the server configuration.



### Configuration

The *Enable remote server configuration* checkbox can be used to enable or disable the remote configuration of this server, even without setting up a user administration.

You can enter an alias name for the server in the *Server alias* field. The server is displayed under this alias name in the server overview in ibaCapture Manager.

### Access logging

Certain actions (e.g., PTZ operations, opening a livestream) are logged in separate access log files. The standard format or the CSV format can be selected as the file format. The retention period for this log file can be set here. The default setting is 30 days.

An alternative (UNC) storage path can be defined for the log files. If user credentials are required for the path, enter the user name and password here.

If the storage path is changed, the old files are moved to the new location.

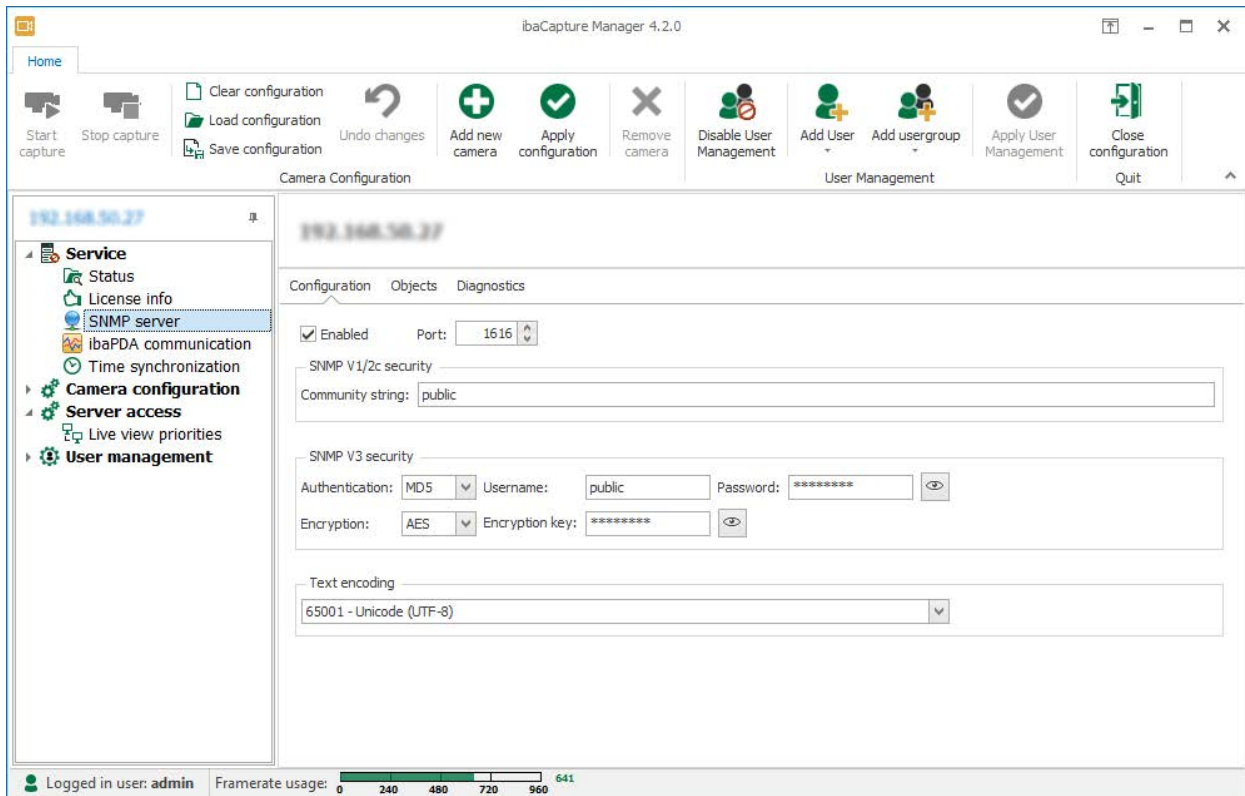
## 5.3.4 SNMP Server

*ibaCapture* has a built-in SNMP server.

SNMP (simple network management protocol) was designed to be able to monitor and control network elements (e.g., routers, switches, printers, computers, etc.) from a central station. By using the SNMP server, the *ibaCapture* system can be monitored by a network-monitoring tool, e. g., Paessler PRTG or Nagios. The SNMP versions V1, V2c and V3, are supported. By default, the SNMP server provides a set of diagnostic signals that give feedback about the state of the system and the various data recordings.

### 5.3.4.1 SNMP configuration

In the *Configuration* tab, you make general settings for the integrated SNMP server.



#### Enabled

You can enable or disable the SNMP server here.

#### Port

Here, you can specify the port via which the SNMP server accepts connections. The default value is 1616.

#### Community string

For authentication with protocol variants V1 and V2c, only a so-called community string can be specified, which assumes the function of a password for the data traffic between SNMP server and SNMP client. The default value for the community string is "public".

#### Authentication, user name and password

For the V3 protocol version, the safety standard is higher and there are multiple methods of authentication and encryption for selection. Two standards are supported for the authentication:

- MD5 (message-digest algorithm 5, hash function, 128 bit)
- SHA (secure hash algorithm, SHA1 class, hash function, 160 bit)

In addition to selecting the authentication algorithm, you need to enter a user name and a password.

#### Encryption, key

For encryption, you can choose between:

- no encryption
- DES (data encryption standard)
- AES (advanced encryption standard)

In addition to selecting the encryption type, you still need to enter a key.

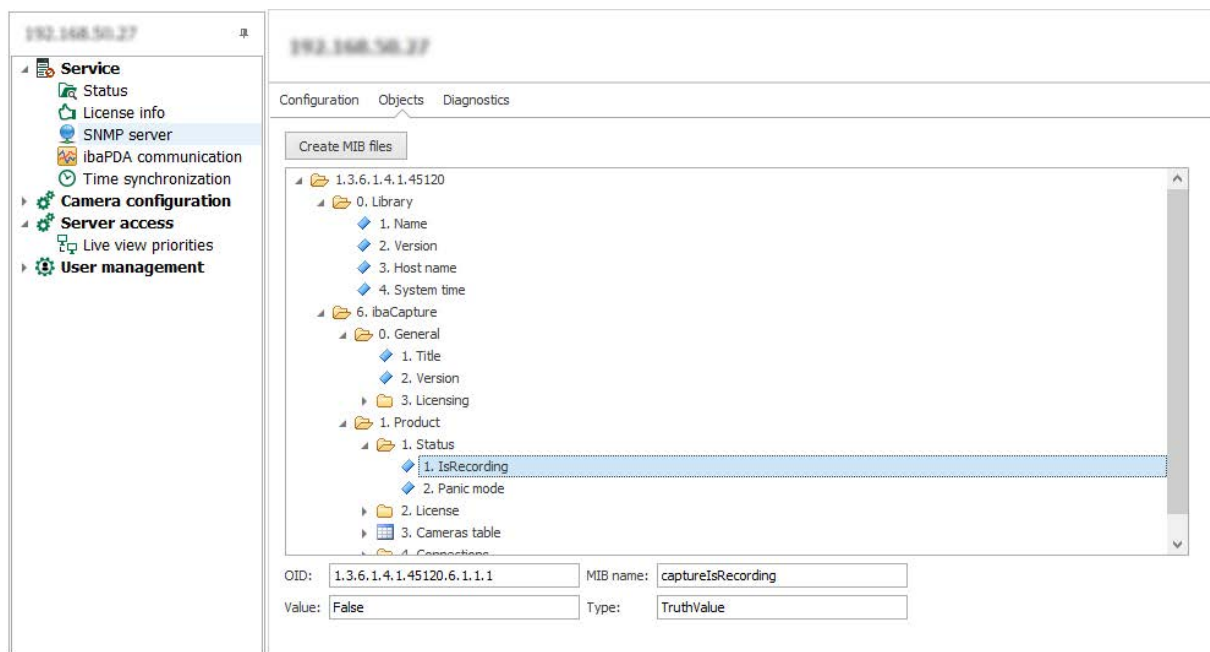
The button with the eye icon is used to display the key and password.

### Text encoding

Select a text encoding from the drop-down menu, which should be used for the SNMP server.

## 5.3.4.2 SNMP objects

The *Objects* tab shows which information and data are available on the SNMP server.



The tree structure shows the OID tree (object identification). The SNMP objects are:

- Objects about SNMP library
- Objects about ibaCapture general properties like the version and dongle information
- Objects about the current status like an *IsRecording* object
- Objects about the license
- Objects about the configured cameras
- Objects about connections

### <Create MIB files>

You start the generation of MIB (management information base) files using this button and you have to specify a storage directory. 2 MIB files are generated by the *ibaCapture* Server:

- IBA-GENERAL-MIB.txt: This file contains the objects that are common to all iba products.
- IBA-PRODUCT-IBACAPTURE-MIB.txt: This file contains the *ibaCapture* specific objects.

The following is displayed under the OID tree for the currently selected node or object:

- Full OID
- MIB name
- Current value
- Data type

To access the information in the cameras table, the OID has to be extended by the number of the camera on the server.

So, the base OID to get the camera name would be 1.3.6.1.4.1.45120.6.1.3.1.1.

Now to get the name of the first camera, append “.0” to the OID: 1.3.6.1.4.1.45120.6.1.3.1.1.0

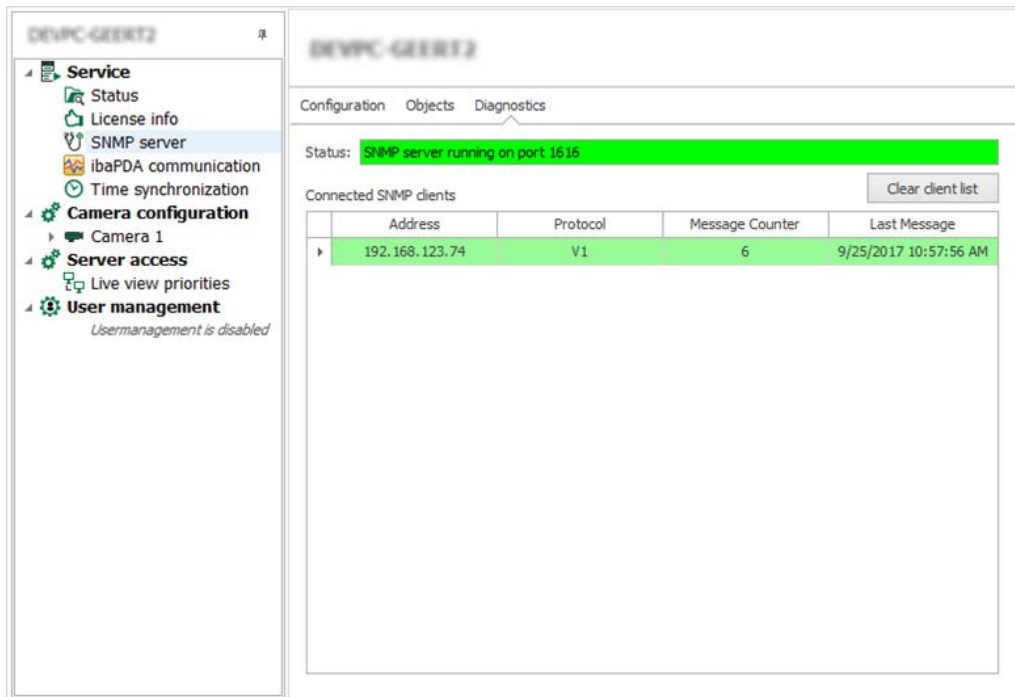
If a camera index is specified that can't be matched to a camera on the *ibaCapture* Server, “NULL2” will be returned as value.

The OID 1.3.6.1.4.1.45120.6.1.3.1.2.x allows retrieving the current camera status. The result can have the following values:

- disabled (0): The camera is disabled in the configuration.
- checkingConfig (1): Validation of the camera configuration.
- configError (2): The configuration failed validation.
- storageLoadingIndex (3): Loading of the index file for video storage.
- storageCreatingVideo (4): Checking and/or creating the video files for video storage.
- storageInitializeDB (5): Initializing the database for protected/locked video sequences.
- storageError (6): Storage initialization failed.
- storageInitialized (7): Storage initialized successfully.
- startRecording (8): Starting the camera recording.
- noVideo (9): No incoming video detected.
- recording (10): The camera is recorded.
- recordingError (11): An error occurred while recording.
- stopped (12): Recording for the camera has been stopped.
- noLicense (13): No license is currently available for the camera.
- recordingDisabled (14): Recording is disabled for the camera.
- recordingDisabledLiveAvailable (15): Recording is disabled for the camera, but live streams are allowed.
- storageCheckingFiles (16): Performing a consistency check for the index and video files of the camera.

### 5.3.4.3 SNMP diagnostics

The *Diagnostics* tab provides information about the status of the SNMP server.



There is also a list of all the clients who have accessed the SNMP server within the last hour. Clients who have accessed the SNMP server within the past 10 minutes are highlighted in green and the others in gray.

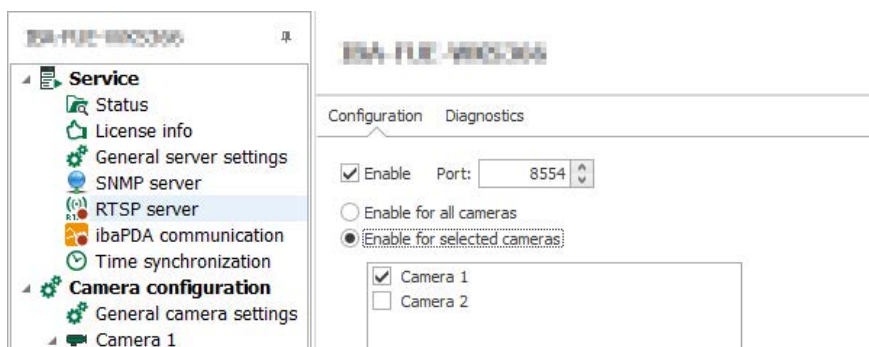
With the <Clear client list> button, you can remove all entries from the list.

### 5.3.5 RTSP Server

The *ibaCapture* Server can be set up as RTSP server, allowing users to access video content via RTSP streams. Both live and replay streams are supported. An additional license of *ibaCapture-AddOn-RTSP-Server* (order no. 38.000042) is required for this function. Also note that live RTSP streams count towards the live stream license usage.

#### Configuration

In the *Configuration* tab, streaming via the RTSP server can be activated, either for all cameras or for selected cameras.



**Note**

RTSP streaming is not supported for *ibaCapture-ScreenCam* sources because their format is incompatible with RTSP players.

**Diagnostics**

The *Diagnostics* tab displays the current status of the RTSP server as well as further information about the streams.

| Configuration   |          | Diagnostics |                     |            |
|---|----------|-------------|---------------------|------------|
| Status: The RTSP server is running on port 8554                   |          |             |                     |            |
| Total RTSP connections: 1 Total throughput: 1,54 Mbps             |          |             |                     |            |
| Address   | Username | Type        | Connected since     | Throughput |
| ▲ 10: Axis_M2026 (1 client connected) Total throughput: 1,54 Mbps |          |             |                     |            |
| 192.168.50.44:49728   | test     | LIVE RTSP   | 10.07.2019 14:35:58 | 1,54 Mbps  |

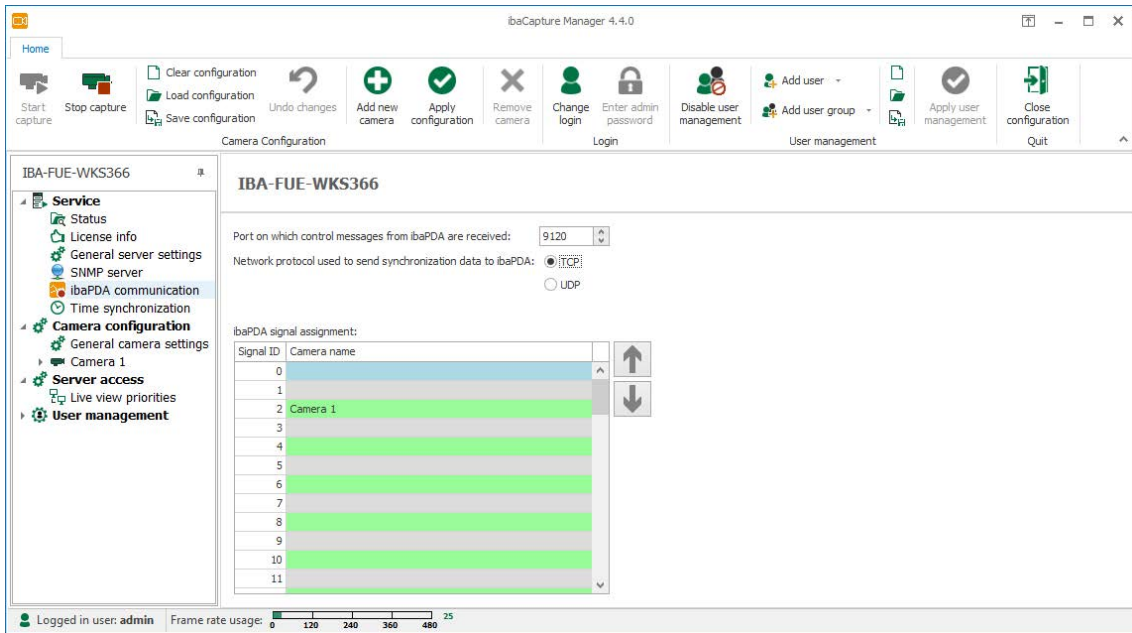
Valid RTSP URLs for accessing videos can be created as follows:

- Live:  
rtsp://ip\_address:port\_no/camera\_name/live
- Replay:  
rtsp://ip\_address:port\_no/camera\_name/replay?begin=yyyyMMddHHmmss [&end=yyyyM-MddHHmmss][&speed=floating-point]
- Alternative live streams:  
rtsp://ip-address:port\_no/camera\_name/alt1  
(for alternative live stream 1, see chapter ↗ *Additional streams, page 120*).

Special characters in camera names can be specified url-encoded. Spaces can be replaced by %20. For replay streams, a timestamp that marks the start of the stream is required. Optionally, you can add a timestamp for the end and/or a speed factor. Note that negative speed factors are not allowed. The order of the parameters in the string is not relevant.

### 5.3.6 ibaPDA communication

In the *ibaPDA communication* node, make settings for the port and the network protocol for communication with *ibaPDA* and for connections to the cameras.



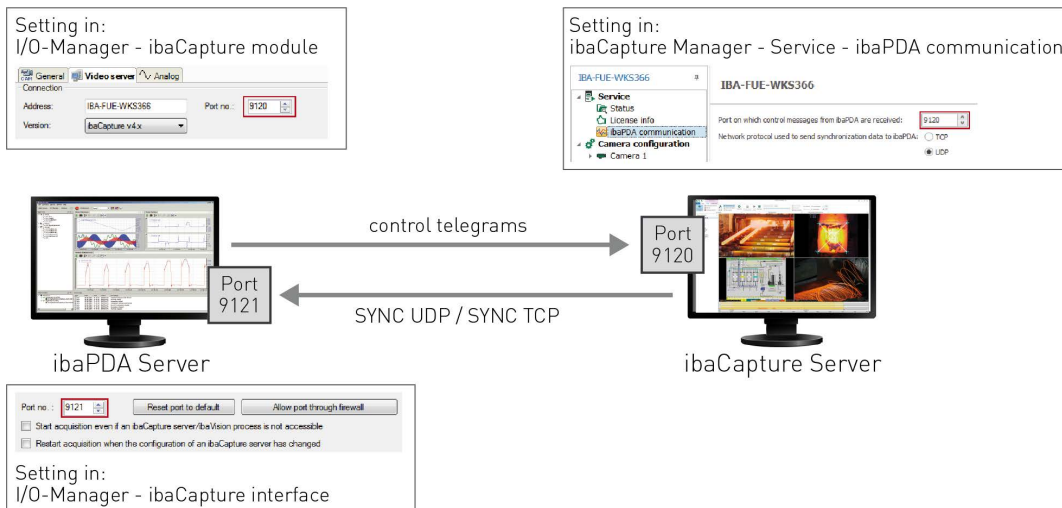
The control messages are sent and received over port number 9120 (default). This port number can be changed but has to be the same on both sides, on *ibaPDA* and *ibaCapture*.

Select the network protocol which is used to send synchronizatin data to *ibaPDA*, either TCP or UDP.

#### Communication ports to ibaPDA

There are two connections for *ibaPDA*, which are routed via different ports.

1. Type CONTROL for control telegrams sent from *ibaPDA* to the video server. The control messages are sent and received over port number 9120 (default). This port number can be changed but has to be the same on both sides, on *ibaPDA* and *ibaCapture*.
2. Type SYNC UDP or SYNC TCP for synchronization data from video server to *ibaPDA*. The port number for SYNC is by default the CONTROL port number + 1. Whether SYNC UDP or SYNC TCP is displayed depends on the setting in *ibaCapture* Manager for the server configuration.



The installation of *ibaCapture* Server automatically configures the corresponding ports in the Windows firewall.

### ibaPDA signal assignment table

In the *ibaPDA* signal assignment table it is possible to assign cameras to specific signal IDs. The signal IDs define the position of the cameras in *ibaPDA* in the signal list of an *ibaCapture* module. The signal IDs are not changed by removing a camera.

If you want to change the positions, select a camera and move it up or down using the arrow keys. If there is already a camera in a line in which the selected camera is to be moved, the positions of the two cameras are swapped. You can also drag and drop the cameras to a new position. If a camera is deleted from the configuration, the line remains empty.

### Connections to cameras

Connections for cameras are established as soon as the video server has to supply a video stream for a camera view to any client. Such clients are *ibaPDA* clients, *ibaQPanel* or *ibaCapture* Manager with their camera views running in replay or live mode. In case the same camera view is requested by multiple clients at the same time, multiple connections will be established. Each client receives a separate stream. With many clients, it should therefore be ensured that the network capacity is sufficient. You can reduce the data throughput by configuring alternative live streams with a low resolution, see also chapter [↗ Additional streams, page 120](#).

Depending on the operating mode of the camera view, the following types are displayed:

- REPLAY - Replay mode
- LIVE ... - Live display with main stream
- LIVE (ALT 1/2) - Live display, alternative stream

| Client connections  |          |                               |                     |             |
|---|----------|-------------------------------|---------------------|-------------|
| Total connections: 7  |          | Total throughput: 832,42 Kbps |                     |             |
| Address   | Username | Type                          | Connected since     | Throughput  |
| ▲ 0: ibaPDA (4 clients connected) Total throughput: 832,42 Kbps   |          |                               |                     |             |
| 192.168.50.26:59864   | ibaPDA   | CONTROL                       | 23.11.2017 17:10:03 | 0,00 bps    |
| 192.168.50.26:9121  | ibaPDA   | SYNC UDP                      | 23.11.2017 17:10:03 | 416,22 Kbps |
| 192.168.21.159:53218  | ibaPDA   | CONTROL                       | 27.11.2017 12:18:34 | 0,00 bps    |
| 192.168.21.159:9121   | ibaPDA   | SYNC UDP                      | 27.11.2017 12:18:34 | 416,20 Kbps |
| ▲ 1: M5014 (1 client connected) Total throughput: 0,00 bps        |          |                               |                     |             |
| 192.168.21.23:64688 (IBA-FUE-...)                                 | test     | REPLAY                        | 27.11.2017 13:36:48 | 0,00 bps    |
| ▲ 16: Mako G192-C (1 client connected) Total throughput: 0,00 bps |          |                               |                     |             |
| 192.168.21.23:64707 (IBA-FUE-...)                                 | test     | REPLAY                        | 27.11.2017 13:37:09 | 0,00 bps    |
| ▲ 20: AXIS P1343 (1 client connected) Total throughput: 0,00 bps  |          |                               |                     |             |
| 192.168.21.23:64698 (IBA-FUE-...)                                 | test     | REPLAY                        | 27.11.2017 13:37:01 | 0,00 bps    |

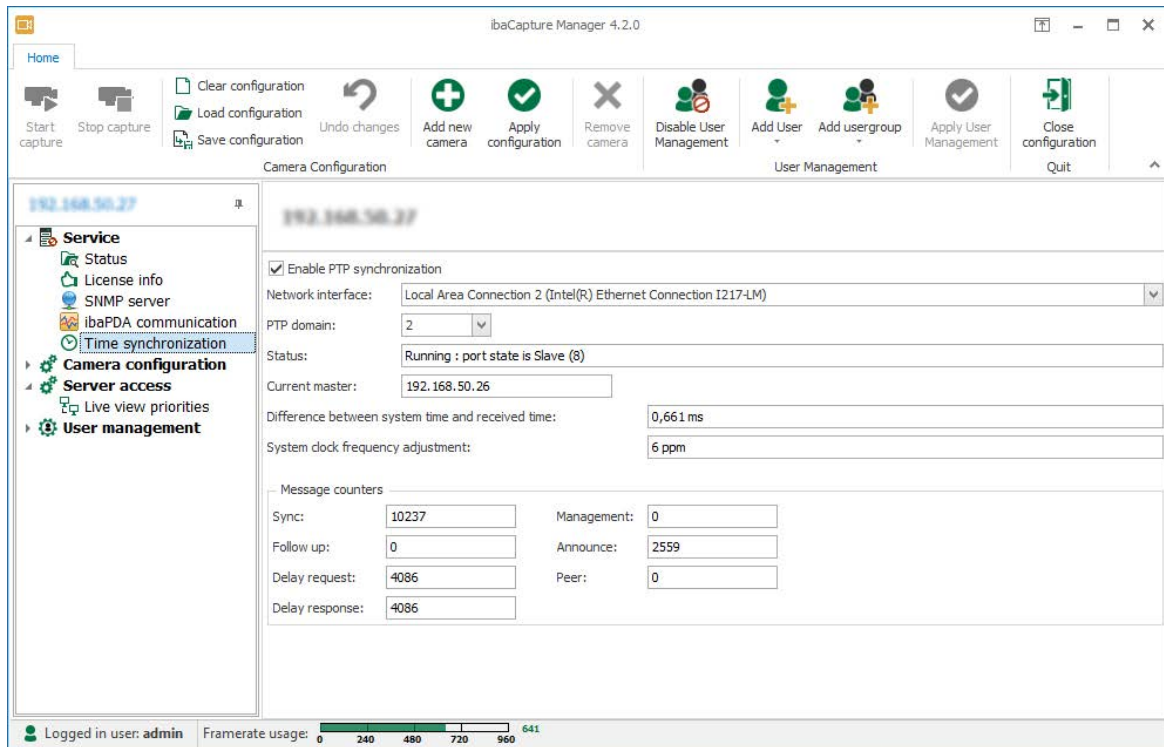
## 5.3.7 PTP time synchronization

*ibaCapture* offers the possibility of time synchronization with Precision Time Protocol (PTP). PTP is a communications protocol for synchronizing the system time of different systems (PC, PLC and other devices) in a network. The protocol is defined in accordance with Standard IEEE 1588.

In a typical PTP topology, there is one time master and one or more time slaves that synchronize to the master. The best synchronization accuracy of software-based PTP applications, as in *ibaCapture*, is 5 ms. An *ibaCapture* system is a PTP slave, it synchronizes to a PTP master in the network.

### PTP settings

Switch to server configuration mode and select the node *Time synchronization*. Here you can enable PTP time synchronization with a tick in the checkbox. Changes will be applied when the server configuration is applied again.



### Network interface

Here, choose the network interface of the *ibaCapture* Server to be used for time synchronization.

### PTP domain

The multicast address is set using the PTP domain. There are 4 standard domains available (0 to 3), each assigned a particular multicast address in accordance with IEEE 1588.

- 0: 224.0.1.129
- 1: 224.0.1.130
- 2: 224.0.1.131
- 3: 224.0.1.132

### Status

The status field shows the current status of the time synchronization.

### Current master

The IP address of the time master is displayed here.

### Difference between system time and received time

The received time is compared with the system time cyclically and the deviation is determined. Depending on whether the difference is more positive or more negative, a corresponding frequency adjustment of the internal system clock is calculated.

### System clock frequency adjustment

The value of the frequency adjustment has been determined from the difference between the system time and the received time. Thus, a system clock ahead or behind is corrected.

### Message counters

This overview shows different message counters. There is one counter per telegram type. If there is a master-slave connection, the counters should usually count up: sync, announce, delay request and delay response.

## 5.3.8 Certificates

Certificates are managed in *ibaCapture* in the *Certificates* node. Certificates are required to establish trustworthy encrypted network connections.

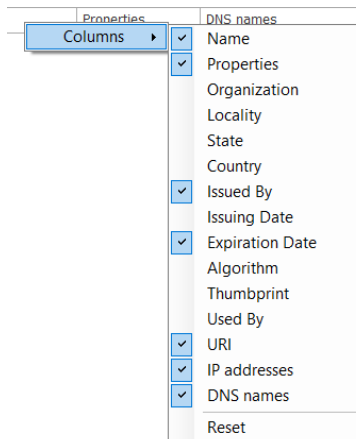
All registered certificates are listed in a table.

| Name                                 | IP addresses                                | Properties | DNS names   | Issued By                   | Expiration Date      | URI                            |
|--------------------------------------|---|------------|---|-----------------------------|----------------------|--------------------------------|
| ibaCapture@IBA-FUE-NOTE853           | 127.0.0.1<br>192.168.21.224<br>172.16.0.100 |            | localhost<br>IBA-FUE-NOTE853.iba-ag.local<br>IBA-FUE-NOTE853  | ibaCapture@IBA-FUE-NOTE853  | 12/1/2035 4:33:00 PM | urn:IBA-FUE-NOTE853:ibaCapture |
| axis-acc8ebc58b8                     |   |            |   | axis-acc8ebc58b8            | 1/19/2038 4:14:07 AM |                                |
| WV-U1542LA.0000-0100-CS33-CD3E-1p... |   |            | WV-U1542LA.0000-0100-CS33-CD3E-1p...<br>o:security-system.net | I-PRO Atlas Issuing CA 2022 | 5/19/2042 1:10:01 PM |                                |

Each row refers to one certificate.

By default, the columns Name, IP Addresses, Properties, DNS names, Issued By, Expiration Date, and URI are displayed.



If needed, you may add or remove other columns via the context menu.



The *Name* column holds the name of a certificate. Different certificates may have the same name, thus it is not unique. Only the finger print of a certificate is unique.

The symbols in the *Properties* column have the following meaning:

| Symbol | Meaning   |
|--------|---|
|        | The certificate is trusted as long as it has not expired. |
|        | This certificate is not trusted.                          |

| Symbol  | Meaning   |
|---|---|
|  | A private key for this certificate is available.  |
|  | This certificate is invalid. If the certificate is invalid because it has expired, the expiration date will also be highlighted in red. |








The *Expiration Date* column shows the date on which the certificate expires. The certificate can no longer be used after this date. The certificate must then be renewed or replaced with another valid certificate.

An expired certificate is marked with a red expiration date.

### 5.3.8.1 Manage certificates

The central certificate store is used to manage the certificates. Here you can add, create and delete certificates.

In the certificate store toolbar you will find a number of buttons with the following functions:

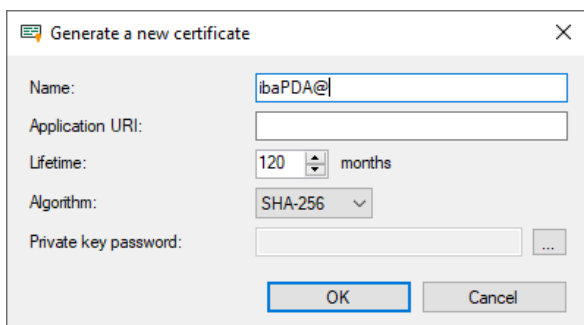
| Button  | Function   |
|---|--|
|   | This button opens a dialog that allows you to load an existing certificate file. Various file formats are supported (.der, .cer, .crt, .cert, .pem, .pfx, .p12). If you have a certificate with an unknown file extension, expand the file filter to "*.*)" and try to open the file anyway. This works in most cases. |
|  | This button opens a dialog that lets you create a new certificate file.  |
|  | This button lets you export a certificate to a file to register it for Windows or another application, e.g. on an OPC UA client. Multiple file formats are supported here as well.   |
|  | Use this button to remove the selected certificate from the table.   |
|  | This button opens a window with all the detailed information about the certificate selected in the table.  |
|  | Use this button to designate the selected certificate as "trusted".  |
|  | Use this button to designate the selected certificate as "not trusted". However, the certificate will still remain in the certificate store table. However, certificates that are not trusted are not available in the selection list for use in the corresponding configuration dialog.                               |

The commands always refer to the certificate selected in the table, which is indicated by an arrow on the left at the start of the line.

### 5.3.8.1.1 Generate a new certificate

If no certificates are available to load, it is necessary to generate one.

1. Click the button  and the following dialog box will open:




2. Enter a name of your choice for the certificate.
3. If required, enter an Application URI.  
The URI (Uniform Resource Identifier) is a global unique identifier for the application. If you do not fill in this field, a standard URI will be generated, provided that the OPC UA client verifies an Application URI. This standard URI consists of the machine name and the name of the application:  
`urn:machinename:applicationName.`
4. Define the desired validity period (lifetime) of the certificate.
5. Select the desired hash algorithm for the encryption.  
You have the choice between the algorithms SHA-256, SHA-384 and SHA-512.  
Make sure that the other communication partners support the selected algorithm too.
6. Define a password for the private key. If no password has been entered, the <OK> button remains inactive. To assign the password, click the <...> button and enter the password twice and confirm with <OK>. There are no special requirements for the password. Keep the password in a safe place so that the self-generated certificate can be exported and used for Windows or other applications.
7. Close the dialog with <OK>.

The new certificate is now entered into the list held by the certificate store and immediately assigned the properties "trusted" + private key.


You can now also export the certificate and register it with the communication partner, e.g., an OPC UA client. Afterwards, the client can then connect to *ibaPDA* (OPC UA-Server).

### 5.3.8.1.2 Add certificate

1. In the certificate store toolbar, click the button .  
A dialog will open that lets you navigate to the desired certificate file and open it.  
Different file formats are supported (.der, .cer, .crt, .cert, .pem, .pfx, .p12).  
If you have a certificate with an unknown file extension, expand the file filter to "\*.\*)" and try to open the file anyway. This works in most cases.
2. When the certificate is loaded, it appears in the certificate store list.
3. If you have not already done so, trust the certificate.

### 5.3.8.1.3 Export certificates

All certificates in the certificate store can be exported individually as a file and subsequently used for Windows or other applications. An exported certificate can also be re-imported into.

To export a certificate, first select the desired certificate in the table and then click the button  in the toolbar for the certificate store.

If you wish to export a certificate without a private key, a dialog that lets you save the file opens immediately.

If the certificate to be exported has a private key, there are some options.

First, you will be asked if the existing private key should be exported as well. If you answer "no", the certificate will be saved immediately, just like a certificate without a key.

If you answer "yes", then you must enter the correct password afterwards. The correct password is the password used when importing or generating the certificate. If the password is correct, the certificate can be saved as a PFX-file. This file is password protected and contains the certificate and the private key.

If the password is incorrect, the certificate will not be exported.

Under certain circumstances, a certificate with a private key may be stored, however the key is not password protected. In this case, the certificate can only be exported without a private key. You will then be notified accordingly.

### 5.3.8.2 Save and protect certificates

The certificates are stored in the `settings.xml` file, which is located in the folder `c:\ProgramData\iba\Name of application\Certificates`. This file is automatically encrypted.

There are a number of measures whereby certificates with private keys can be used to protect your identity or that of your organization. Specifically, these are measures that make their simple export and reuse in Windows or other applications more difficult.

- Certificates are always stored in encrypted form.
- For certificates with a private key, the input of a password is required...
  - when a new certificate is generated
  - when a certificate with a private key is exported
  - when a certificate with a private key is imported
- Certificates with a private key can only be exported if there is also a password for the key. If there is no password or the password is unknown, the certificate can no longer be exported. Therefore, keep the passwords in a safe place.
- The password for a private key cannot be changed.
- It is not necessary to enter a password to use a certificate. The `settings.xml` file can be copied from one installation to another to transfer the certificates there. Password entry is not required for this either.

Should the private key fall into the wrong hands, many types of misuse are possible. Therefore, make sure that the passwords are kept safe.



### 5.3.8.3 Check information about a certificate


If you want to get more detailed information about a certificate then proceed as follows:

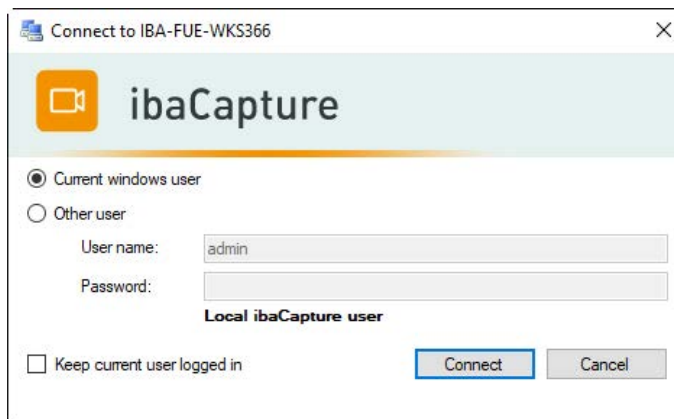
1. Go to the certificate overview in the certificate store.
  2. Select the certificate in question by clicking on the corresponding row.
  3. In the certificate store toolbar above the table, click on the info-button (i).
- A window opens showing all relevant information, which are available for this certificate.

### 5.3.9 Login


The login group provides two commands:

|   |                      |
|---|----------------------|
|  | Change login         |
|  | Enter admin password |

If you want to enable the user management, you have to set a password for the admin user. A click on *Enter admin password*  opens the login dialog. The header of the dialog shows the name of the *ibaCapture* Server you login to.



After you have entered a password and clicked on <Connect>, the user management is active. For detailed information, see the next chapter.

When the user management is active, it is possible to login as another user than the currently logged in user. For this purpose click on *Change login*  and enter the user credentials in the login dialog.

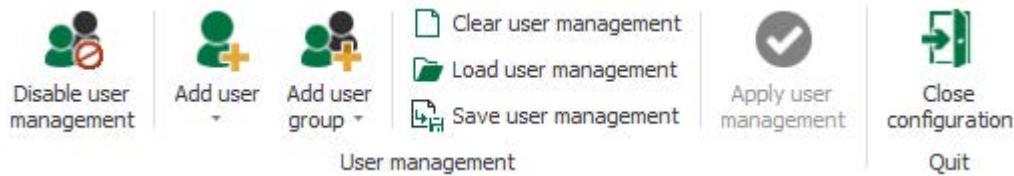
### 5.3.10 User management in ibaCapture

The user management allows the creation of different user accounts. The user management supports users and user groups.

If the computer where *ibaCapture* Manager is running is joined to a domain, it is possible to add users and user groups that belong to that domain.

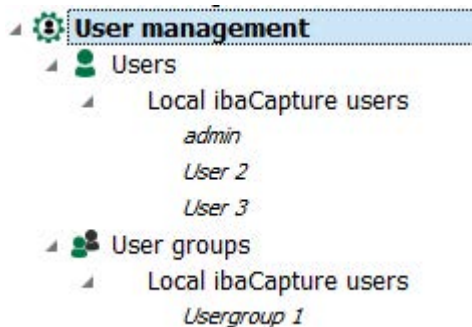
Each user account can be assigned different access rights to videos and/or cameras. Only one administrator user (“admin”) exists, which always has all rights. It is the only user that is not subject to any restrictions and can add or delete other users as well as change their user rights. The name "admin" cannot be changed.

The user management system can be controlled via the following commands:



|  |   |
|--|---|
|  | Disable the user management system  |
|  | Add user  |
|  | Add user group  |
|  | Delete user management  |
|  | Load user management (a user management configuration file can be imported by loading the corresponding ccu file) |
|  | Save user management (the user management configuration file can be saved (*.ccu))                                |
|  | Apply user management   |

These commands are available if the *User management* branch is selected in the server configuration tree, and when the *Users* and *User groups* branches are selected.



The menu in the ribbon changes to *Local*, when a single user or user group is selected, see chapter [Manage users, page 85](#).


**Save/load user management file**

The user management configuration can be saved and loaded as a ccu file. When importing a user management configuration to another (or the original) server, all non-applicable permissions (e.g., permissions for non-existing cameras) are removed from the new configuration. Only the *admin* user and users who have the security administration permission can save, load or delete the user administration configuration.

### 5.3.10.1 Enabling the user management system


By default, the user management is disabled. When the user management system is disabled, every *ibaCapture* Player will connect as admin. This means that every *ibaCapture* Player (and user) has full rights.

To enable the user management system, you must set a password for the admin user. This password is saved in the dongle.

1. You can do this by clicking on *Enter admin password* . The input dialog for the password will open.
2. Enter the desired password in both fields and click on <OK>. The user management system is now enabled and you can add additional users and set their user rights (see next chapter).

### 5.3.10.2 Manage users

#### Add users


1. Click on *Add user* in the  ribbon. The input dialog for the user name and password will open.
2. Enter a user name. Setting a password is optional. The user can also specify or change the password at a later time. Close the dialog with <OK>.
3. Now, assign the user rights (see next chapter).

#### Remove users


Select the relevant user in the configuration tree and click *Remove user* .

#### Clone user


Via this function, it is possible to copy a user including its permissions.

1. Select a user and click *Clone user* . The input dialog for the user name and password will open.
2. Enter a new user name. A user name cannot be used twice. Setting a password is optional. The user can also specify or change the password at a later time. Close the dialog with <OK>.

#### Reset a password

1. If you want to change a password or specify a password for a user later on, select the relevant user and click *Reset password* .
2. Enter the new password twice for safety reasons. Confirm with <OK>.


#### Disable the user management system

1. Log in as admin and select the user management branch in the configuration tree.
2. Click on *Disable user management*  and confirm with <OK>.

### 5.3.10.3 User groups

A user group can contain multiple users, and a user may be member of multiple user groups simultaneously.

#### Establish a user group

1. Click *Add user group* in the ribbon . The input dialog for the user group will open.
2. Enter a name for the user group.
3. Assign the rights for the user group.

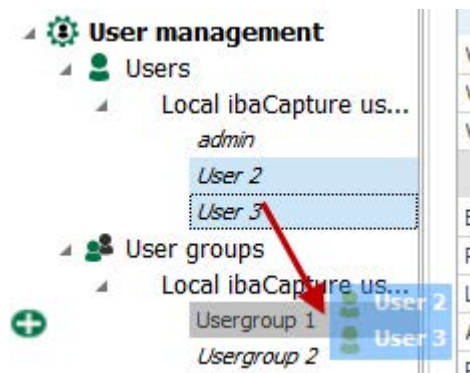
The following rules apply to the assignment of user rights:

- If a user has more granted permissions than the user group, the user keeps its permissions.
- A permission for a user is overridden by a permission for the user group if the user group has more granted permissions.
- If a user belongs to multiple user groups, the rights of the user group with the most granted permissions will apply to the user.

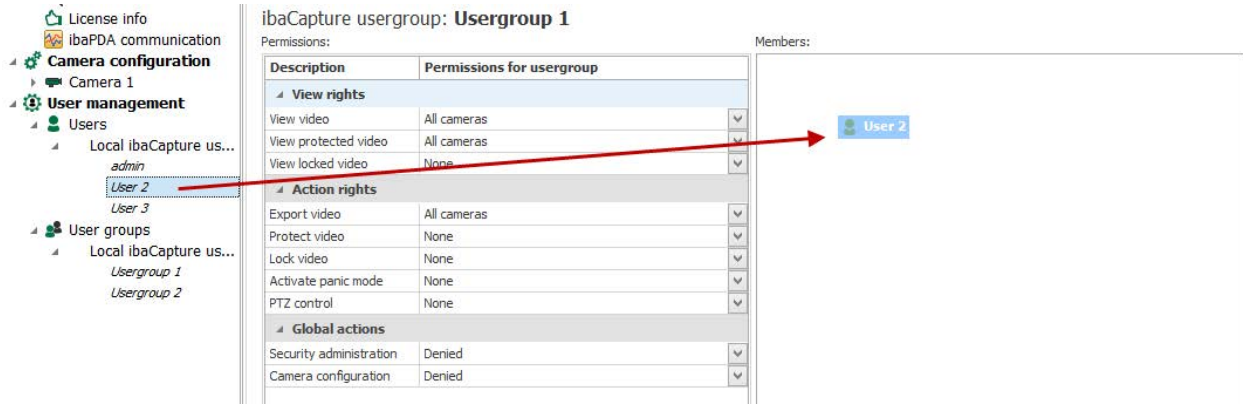
#### Add a user to a group

There are two ways to add a user to a user group:

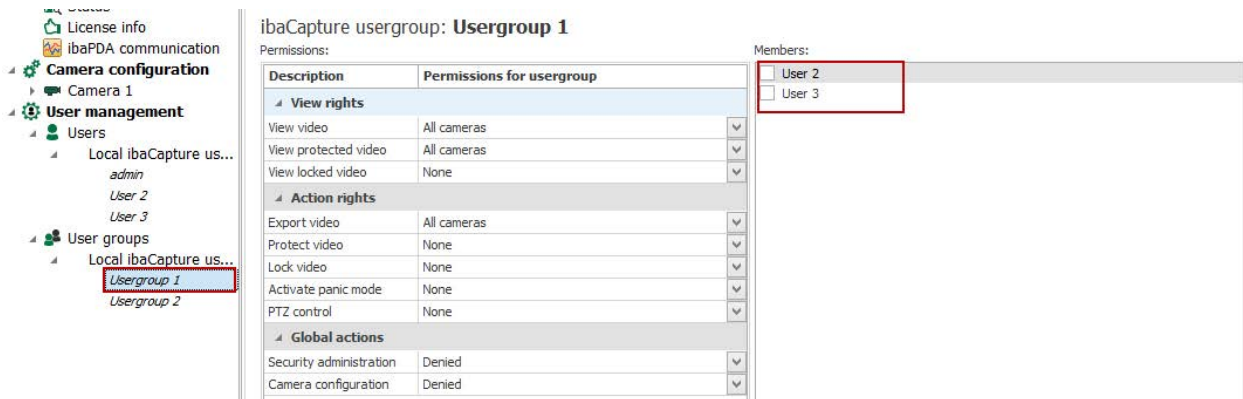
- Select one or multiple users in the configuration tree, drag them by keeping the left mouse button depressed and drop the users on the branch of the related user group.



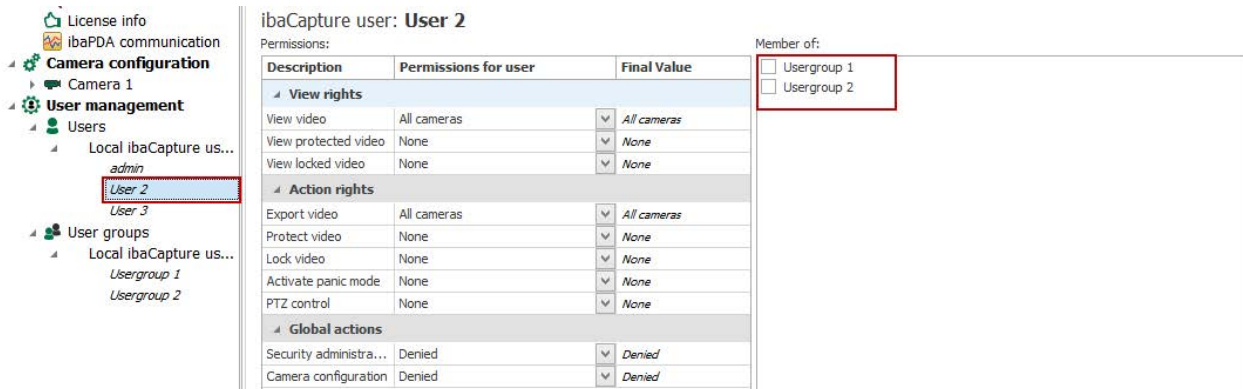
- Select a user in the configuration tree, drag the user by keeping the left mouse button depressed and drop the user on the member list of the currently selected user group.



When the user group is selected, the users of this user group are displayed in the members list:



When a user is selected, the user groups of which the user is a member are listed.




### Remove a user from a user group

- ▶ Select one or multiple users who should be removed by adding checkmarks in the members list. Click on *Remove members* in the ribbon 

### Remove a user group

- ▶ Select the user group in the configuration tree and click *Remove user group* 

### Remove membership of a user from a user group

1. Select the relevant user in the configuration tree.
2. Select one or multiple user groups from which the user should be removed by adding checkmarks in the “Members of” list.
3. Click on *Remove group membership* 

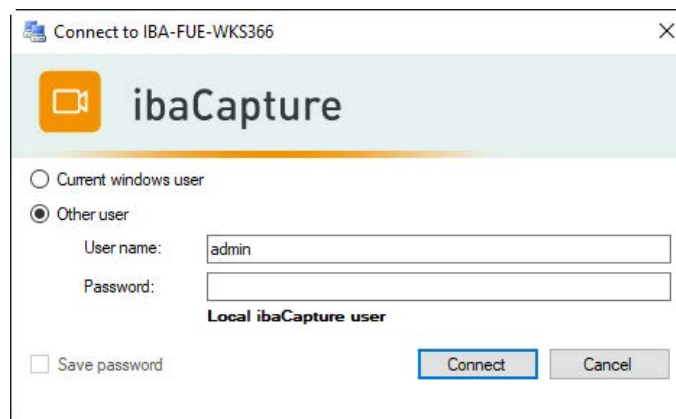
### 5.3.10.4 Domain objects

If the computer on which *ibaCapture* Manager is running is joined to a domain, it is possible to add users and user groups of that domain.

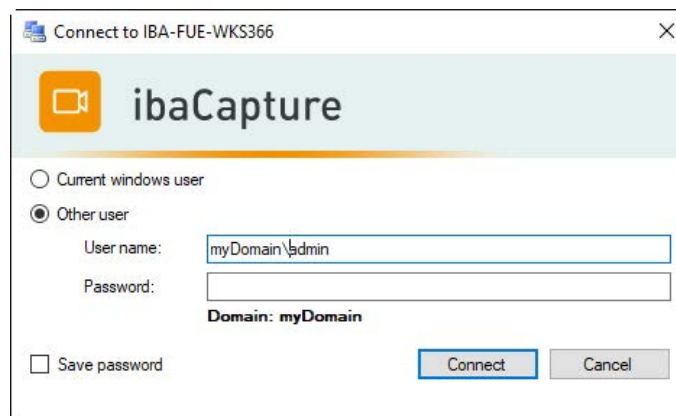
These users can be members of *ibaCapture* user groups. Conversely, a domain user group can have *ibaCapture* users in its member list.

The user login has the following options

- Current windows user: the current logged in user
- Other user
  - Local *ibaCapture* user: Enter the name



- Domain user: Enter the domain and the user name in the format *domain\user name*



### 5.3.10.5 User rights

User rights can be categorized as viewing rights, access rights, and global actions rights. By assigning the user rights, you can determine who is allowed to view which video and/or to perform actions such as protecting, locking or exporting videos.

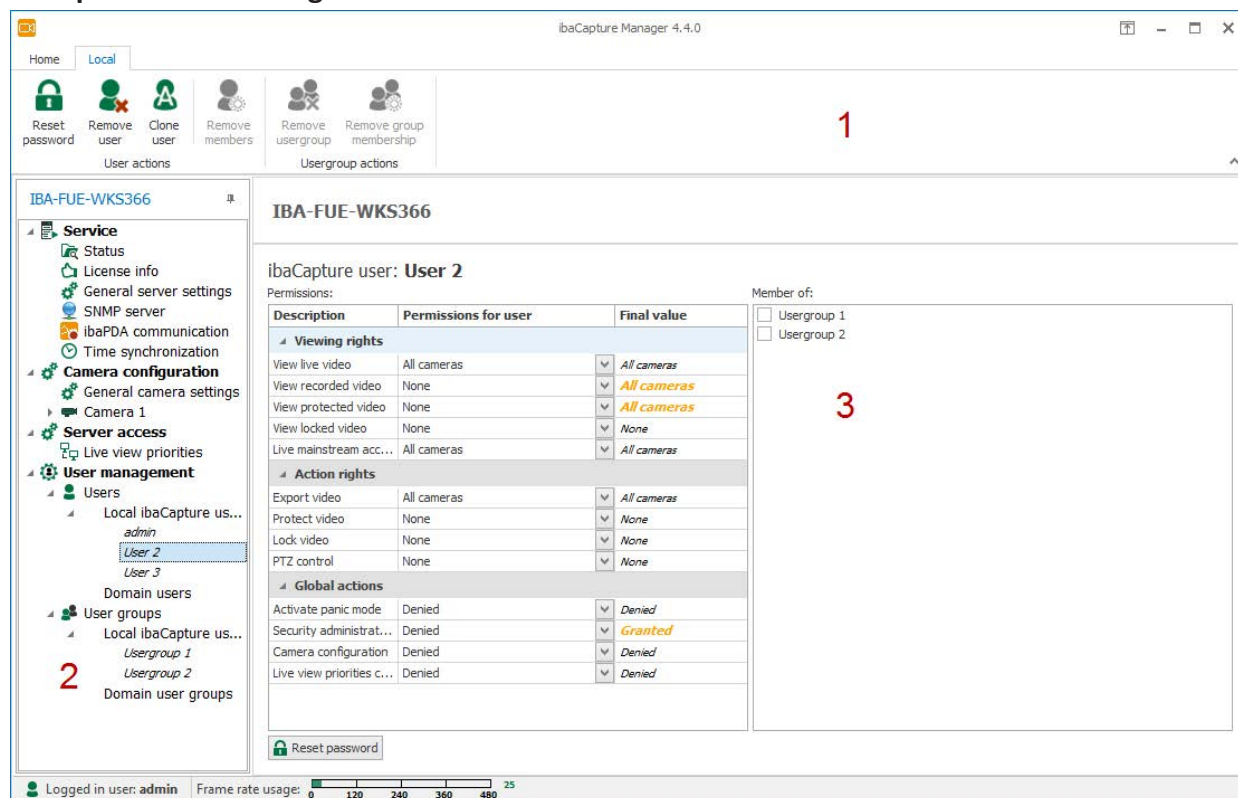
The viewing rights apply to both the live videos and the video recordings.

| Viewing rights                 |   |
|--------------------------------|---|
| View live video                | A user granted this right can view live videos  |
| View recorded video            | Applies to "standard" videos, which are neither protected nor locked and which are overwritten cyclically.  |
| View protected video           | Protected videos are stored for a longer period than standard videos. These videos are created either with help of the video triggers in <i>ibaPDA</i> or manually by means of the timeline in the <i>ibaCapture</i> .    |
| View locked video              | Locked videos are continuously recorded videos that are manually marked as locked in the timeline in the <i>ibaCapture</i> view.  |
| Live access to the main stream | A user granted this right can watch the main stream in live mode. Without this permission, the user will only have access to an alternative stream. If no alternative stream is available, an error message is displayed. |

| Action rights |   |
|---------------|---|
| Export videos | In order to export a video to an MP4 file while viewing it in the <i>ibaCapture</i> view or in <i>ibaAnalyzer</i> , the user must be granted the specific right. Users can only export videos for which they have viewing rights. If a user, for example, has no viewing rights for Camera 1, the exported MP4 file will not contain video from Camera 1. |
| Protect video | A user granted this right can protect different sections of a video in the timeline of the <i>ibaCapture</i> view or remove the protection. <i>ibaPDA</i> basically has the right to protect videos by means of the video triggers. This function does not require a user login.  |
| Lock video    | A user granted this right can lock or unlock different sections of a video in the timeline of the <i>ibaCapture</i> view.   |
| PTZ control   | A user granted this right can control PTZ cameras. The user can be assigned this right for all PTZ cameras or for specific, selected cameras.   |

| Global actions                       |  |
|--------------------------------------|--|
| Activate panic mode                  | A user granted this right can enable the panic mode via the timeline of the <i>ibaCapture</i> view. With panic mode enabled, only the administrator can view videos. |
| Security administration              | A user granted this right can configure security settings.   |
| Camera configuration                 | A user granted this right can configure cameras.   |
| Configuring priorities for live view | A user with this right can configure priorities for the live view.   |

### User permissions dialog



The user permissions dialog consists of


|   |                      |
|---|----------------------|
| 1 | Ribbon with commands |
| 2 | Configuration tree   |
| 3 | Permissions table    |


When an individual user or user group is selected in the configuration tree, the *Local* menu appears. This menu provides commands for actions by users and user groups.

ibaCapture user: **User 2**

Permissions:

| Description               | Permissions for user                             | Final value |
|---------------------------|--|-------------|
| <b>Viewing rights</b>     |  |             |
| View live video           | All cameras                                      | All cameras |
| View recorded video       | None   | All cameras |
| View protected video      | None   | All cameras |
| View locked video         | None   | None        |
| Live mainstream acc...    | All cameras                                      | All cameras |
| <b>Action rights</b>      |  |             |
| Export video              | All cameras                                      | All cameras |
| Protect video             | <input checked="" type="checkbox"/> (Select All) | None        |
| Lock video                | <input checked="" type="checkbox"/> Camera 1     | None        |
| PTZ control               |  | None        |
| <b>Global actions</b>     |  |             |
| Activate panic mode       | Denied   | Denied      |
| Security administrat...   | Denied   | Granted     |
| Camera configuration      | Denied   | Denied      |
| Live view priorities c... | Denied   | Denied      |



Each right can be assigned to either all cameras, no camera or specific cameras. The camera list can be opened by clicking on the arrow  button. Select all or specific cameras by means of a checkmark and confirm with <OK>.

If a user group to which the user belongs has been granted more permissions than the user itself, the user's permissions are overridden by the permissions of the user group.

In the example above, the user is not allowed to view protected videos from any camera. But a user group to which it belongs has the permission to view protected videos from all cameras. As a result, the user has also the permission to view protected videos from all cameras. If the permissions granted to the user and the user group differ, the valid permission is stated in orange in the "Final Value" column.

The user's password can be changed by clicking on the <Reset password> button.

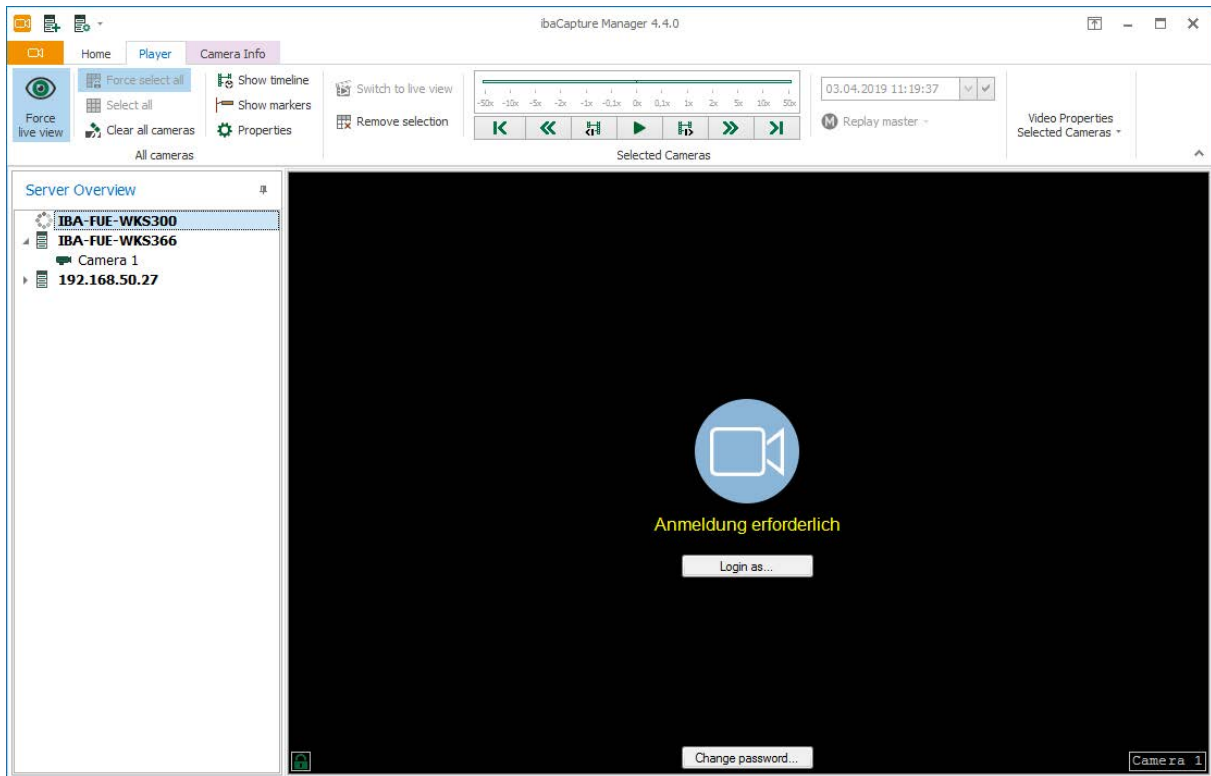


For security reasons, the password must be entered twice.

### 5.3.10.6 Video viewing with active user management

If user rights are restricted for a camera, each *ibaCapture* view has to login.

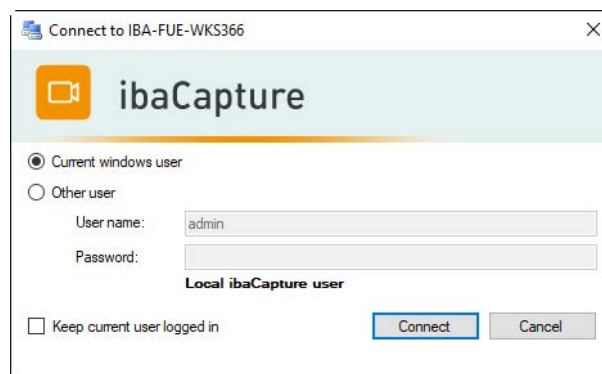
This is represented as follows in *ibaCapture*-Player:



First, the user has to login to be able to view the video. Local users can also change the password here.

#### User login

A click on <Login as...> opens the login dialog.



The header of the dialog shows the name of the *ibaCapture* Server you login to. After you have entered user name and password and clicked on <Connect>, a login attempt is started. After successful login, the video of the relevant camera opens. If the user is unknown or does not have the necessary rights, "Access denied" is shown again.

If you have opened multiple camera views in one application that all refer to the same *ibaCapture* Server, the same login applies to all views. Thus, you need to login to only one camera view. All other views will be logged in with the same login information.

The "Save password" function works differently, depending on the application *ibaCapture* Player is started in.

In *ibaCapture* Manager, the password is saved to the view configuration. When starting *ibaCapture* Manager, the players login with the same user name.

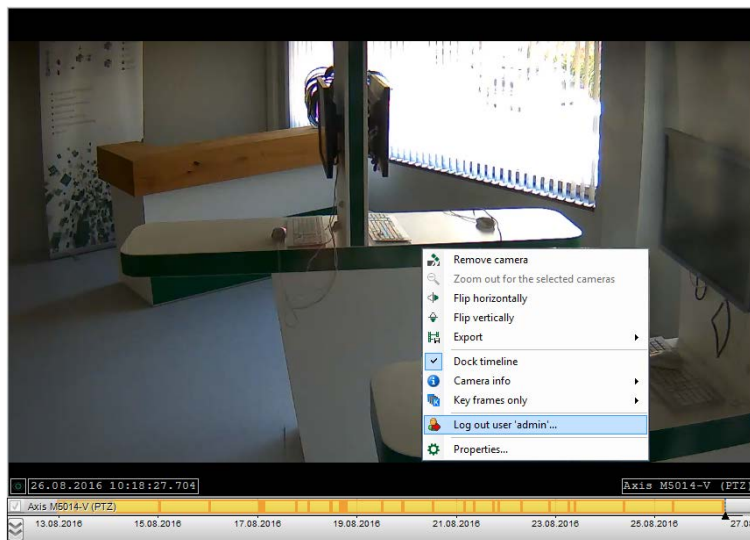
In *ibaPDA*, the password is saved to the layout.

In *ibaAnalyzer*, the password is saved to the analysis file.

The password for the *admin* user cannot be saved.

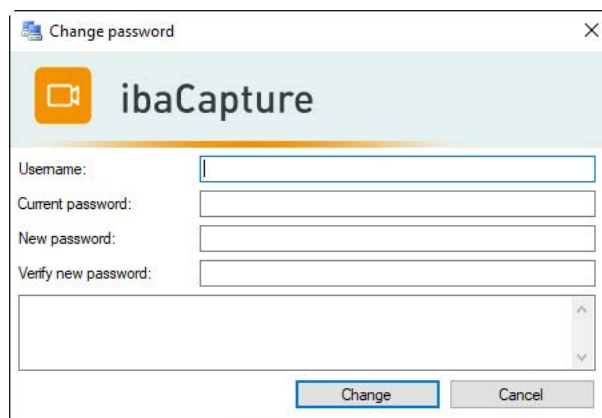
### User logout

You can logout the current user by opening the context menu of the camera view and selecting "Logout user 'xy'...".



### Change password

Local users can change their password when logging in. A click on the <Change password> button opens the *Change password* dialog. Enter your user name and the current password here. For safety reasons, the new password must be entered twice.

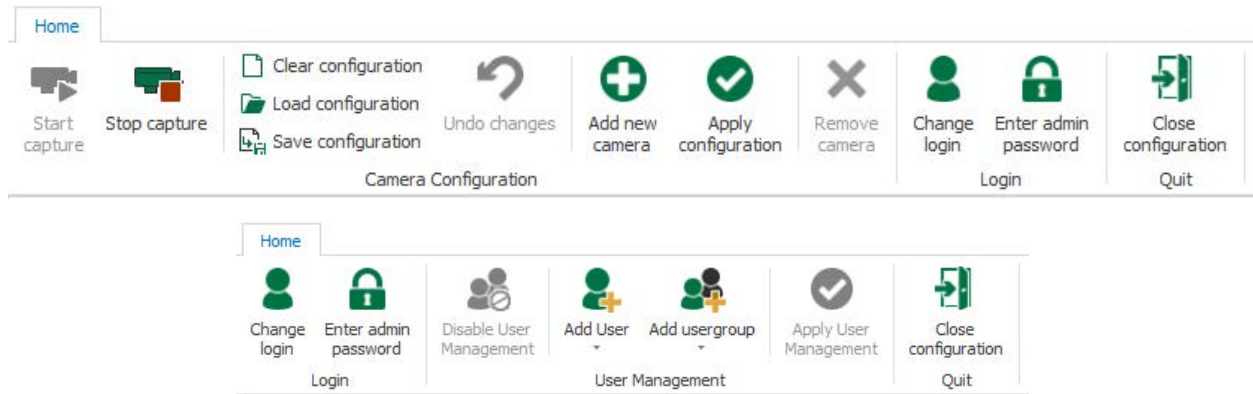


### 5.3.10.7 Changing the configuration when user management is active

When user management is active and you switch to server configuration mode, login is required.

The administrator (admin) has all permissions to change the configuration of *ibaCapture* Server.

If a user other than the admin logs in, the available configuration functions depend on his granted permissions. Only permissible functions will be shown in the ribbon.



The currently logged-in user is displayed in the status bar.



## 5.4 Camera configuration

Cameras can be set up in server configuration mode.

The ribbon provides the following commands for camera configuration:

|  |  |
|--|--|
|  | Start capture  |
|  | Stop capture   |
|  | Load project (loads saved project, ZIP file)   |
|  | Save project:<br>The ibaCapture server and user administration configuration can be saved as an ibaCapture project (ZIP file). In a selection dialog you can choose whether you want to save the ibaCapture server and/or user administration configuration. |
|  | Add new camera   |
|  | Apply configuration  |
|  | Remove camera (only available if a camera is selected in the tree)   |
|  | Clear configuration (clears all configuration settings)  |
|  | Load configuration (loads a saved configuration)   |
|  | Save configuration (saves the current configuration as XML file)   |

### 5.4.1 Add new camera

In order to add a new camera click *Add new camera* in the ribbon. 

A configuration wizard guides you through the configuration process:

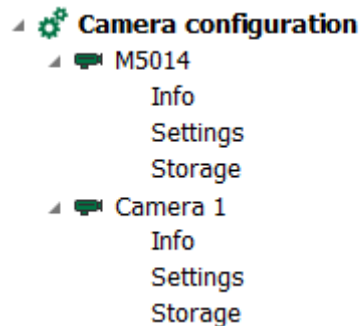
Step 1: Camera information, settings are described in chapter [↗ General information, page 96](#)

Step 2: Camera settings - Configuration; the settings depend on the selected camera type, camera specific settings are described in chapter [↗ Camera settings, page 99](#)

Step 2: Camera settings – Streaming; settings are described in chapter [↗ Streaming ports, page 118](#)

Step 3: Storage settings; settings are described in chapter [↗ Storage settings, page 125](#)

When configuration is completed, the cameras appear in the configuration tree.



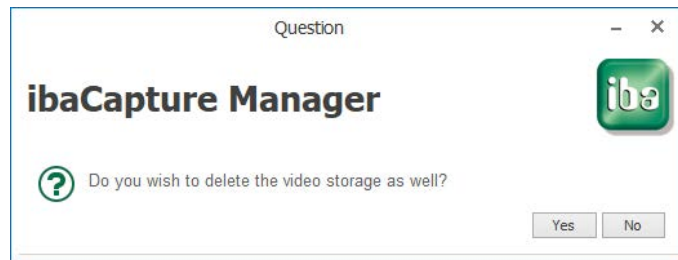
Each camera branch has three main sections:

- Info (camera name and type, deactivation option, camera recording mode, camera diagnostics). For detailed information, see chapter [↗ Camera info, page 128](#).
- Settings (camera access, video configuration, streaming, PTZ configuration). The settings for the different camera types are described in the subchapters of chapter [↗ Camera settings, page 99](#).
- Storage configuration, you find detailed information in chapter [↗ Storage settings, page 125](#).

You can change the order of the cameras in the configuration tree by selecting a camera and dragging it to the desired position using drag & drop.

### 5.4.2 Removing a camera

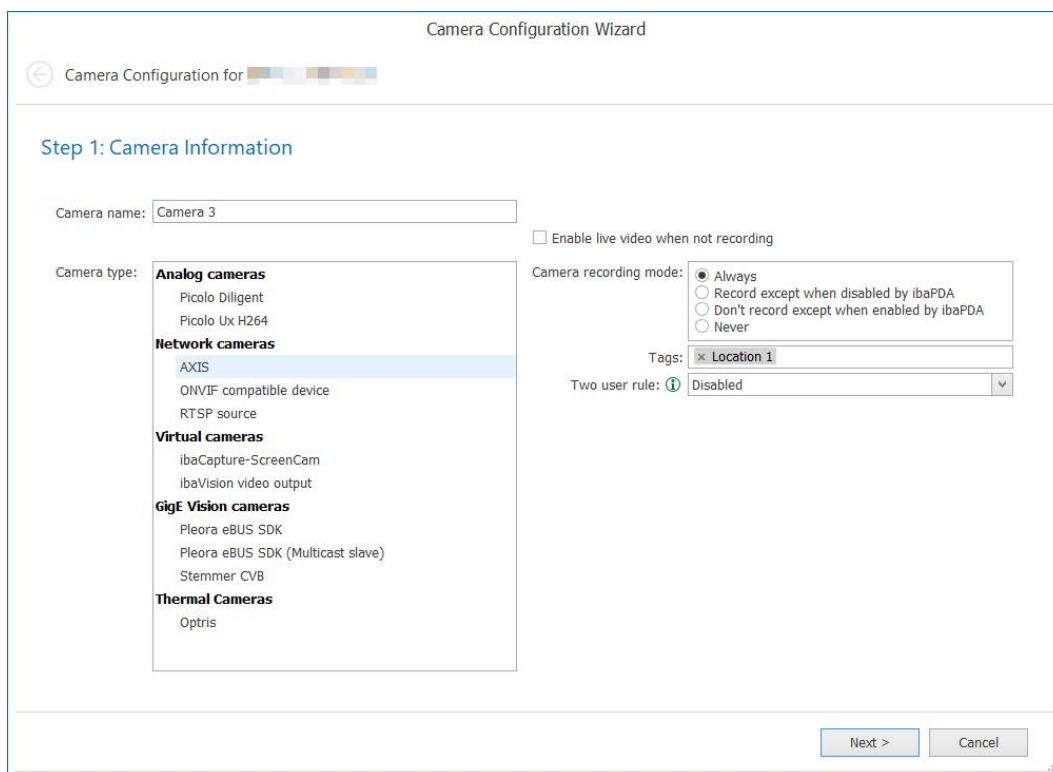
In order to remove a camera from the configuration, select the camera in the tree and click *Remove camera* in the ribbon. It is possible to delete also the corresponding video storage when removing the camera. To do so, confirm the following question with <Yes>.



Keep in mind that after confirming the question, the deletion of video storage can only be undone by closing the configuration mode without applying the unsaved changes of the configuration.

### 5.4.3 General information

In the first step of the camera configuration, you select the camera type and can assign a name.



#### Camera name

If a new camera is added, it is automatically assigned with a default name. You may however change the camera name by entering a new name in the entry field.

You can also assign individual tags to each camera and thus provide the camera with additional information. Cameras in the Server overview can then be filtered by their tags to only show cameras which have the selected tags.

## Camera type

Furthermore, you need to select the camera type from the camera type list. The following camera types are available:

### Analog cameras

- *Piccolo Diligent* for analog cameras connected to *ibaCapture* Server over frame grabber cards of type Piccolo Diligent.
- *Piccolo Ux H264* analog cameras connected to *ibaCapture* Server over frame grabber cards of type Piccolo Ux H264 (x = 4 or 8).

### Network cameras

- *Axis* for IP cameras from Axis
- *ONVIF compatible device* for network cameras or imaging devices supporting the ONVIF standard.
- *RTSP source* for cameras or other video sources supporting RTSP (Real Time Streaming Protocol).

### Virtual cameras

- *ibaCapture-ScreenCam*: for virtual cameras for recording HMI screens.
- *ibaVision video output* for virtual cameras for recording output videos from *ibaVision*.

### GigE Vision cameras

- *Pleora eBUS SDK*: record videos from GigE Vision cameras with the Pleora eBUS SDK
- *Pleora eBUS SDK (Multicast slave)*: GigE Vision cameras can be configured and recorded as multicast slaves
- *Stemmer CVB*: record videos from GigE Vision cameras with the Common Vision Blox as SDK

A detailed description of the handling of GigE Vision cameras can be found in the *ibaCapture GigE* manual.

### Thermal cameras

- *Optris* for thermal cameras from Optris

The option *Enable live video when not recording* and the setting of the camera recording mode are relevant if you want to control the recording of video files with *ibaPDA*. From *ibaPDA* version 6.29.1 and *ibaCapture* version 3.5.0 and higher, you can enable or disable the video recording with digital, virtual output signals from *ibaPDA*.

For further information regarding recording control with *ibaPDA*, see chapter [↗ Controlling the video recording with ibaPDA](#), page 161.

### Camera recording mode

| Camera recording mode                      | Description  |
|--|--|
| Always (default)                           | By default, video is always recorded, irrespective of whether or not a recording control was enabled in <i>ibaPDA</i> . Even if the recording control is enabled and camera recording is disabled in <i>ibaPDA</i> , <i>ibaCapture</i> will record videos. |
| Record except when disabled by ibaPDA      | Video is recorded unless the recording control is enabled in <i>ibaPDA</i> and recording is disabled for the relevant camera (output signal = true).   |
| Don't record except when enabled by ibaPDA | Video is not recorded unless the recording control is enabled in <i>ibaPDA</i> and recording is enabled for the relevant camera (output signal = true).  |
| Never                                      | No videos are recorded by <i>ibaCapture</i> , irrespective of whether or not a recording control was enabled in <i>ibaPDA</i> . Only a live image is provided.   |

#### Note



In those cases *ibaCapture* is not recording, no live images will generally be provided. If, however, you still want to receive images, you have to check the "Enable live video when not recording" option.

The following steps depend on the selected camera type. However, a connection to the camera has to be established.

### Two user rule

With the two user rule, you can restrict camera access by requiring two users to log in to gain access to videos. The following settings are available:

- Disabled (default)
- Two users need to log in
- Two users of different groups need to log in

If this option is enabled, another user is required to log in after the first user has logged in. Depending on the configuration selected, it may be necessary for the second user to belong to a different user group. See also ↗ *Video viewing with active two user rule*, page 36.

The two user rule offers the following security functions:

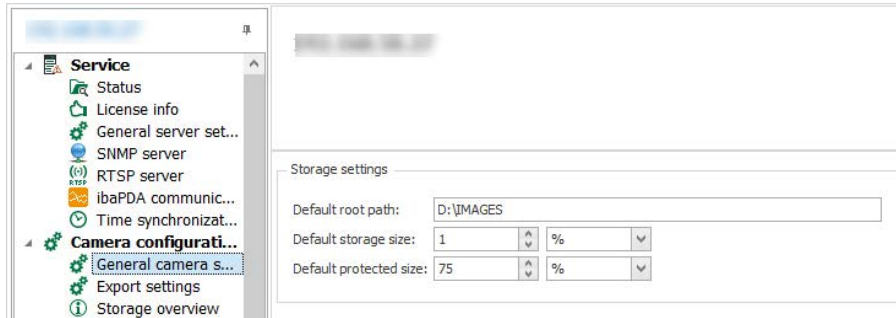
- Prevents unauthorized or unilateral access to video material
- Protects the privacy of individuals who may have been unintentionally recorded
- Ensures accountability by requiring cross-approval from two authorized users
- Grants access only when there is a justified and jointly confirmed need, reinforcing transparency and trust in sensitive operational environments

### 5.4.4 Camera settings

The camera settings vary depending on the camera type. The specific configuration for each camera type is described in the following subchapters.

A default storage path can be set on the *General settings* node under *Camera configuration*. This will be the default path when the storage of a camera is configured for the first time.

You can also define a default storage size that is applied to newly added cameras.



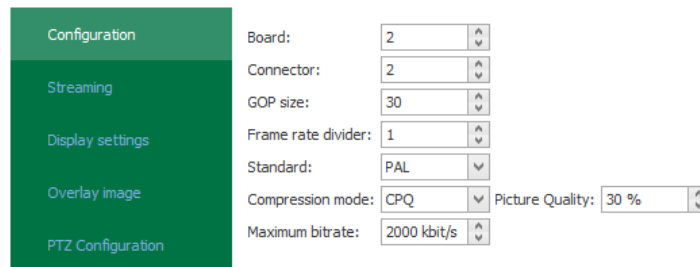
Streaming port settings are described in chapter ↗ *Streaming ports, page 118*.

Specific PTZ settings of PTZ cameras are described in chapter ↗ *PTZ cameras, page 131*.

#### 5.4.4.1 Analog cameras (Ux H264)

The following settings are required for analog cameras (Ux H264):

Step 2: Camera settings (Picolo Ux H264)



##### Board

Select the appropriate board number of the Picolo Ux H264 card the camera is connected to.

- For U4 cards from 1 to 4
- For U8 cards 1 or 2

##### Connector

Select the appropriate connector on the card the camera is connected to.

- For U4 cards from 1 to 4
- For U8 cards from 1 to 8

##### GOP size

See chapter ↗ *Glossary, page 189*.

### Frame rate divider

Analog cameras usually provide a video stream of 25 fps (PAL) or 30 fps (NTSC). These frame rates ensure for the human eye an impression of fluid motions in the video. In some cases, when there are only few or very slow motions in the filmed set-up, it might be reasonable to reduce the frame rate. A reduced frame rate can significantly save storage space on the hard disk. As a result, it is possible to cover a longer time range of video recording with the same disk space.

| Divider | PAL        |                  | NTSC       |                  |
|---------|------------|------------------|------------|------------------|
|         | Frame rate | 1 frame every... | Frame rate | 1 frame every... |
| 1       | 25 fps     | 40 ms            | 30 fps     | 33.3 ms          |
| 2       | 12.50 fps  | 80 ms            | 15 fps     | 66.7 ms          |
| 3       | 8.33 fps   | 120 ms           | 10 fps     | 100 ms           |
| 4       | 6.25 fps   | 160 ms           | 7.5 fps    | 133 ms           |
| 10      | 2.5 fps    | 400 ms           | 3 fps      | 333 ms           |

#### Note



If you use high divider values, remember to lower the GOP size value, as it takes more time until a GOP is filled with a low frame rate.

### Standard

Select the TV standard of the camera (see camera manual). Typical settings:

- PAL in Europe
- NTSC in America and Asia

### Compression mode

- CPQ (Constant Picture Quality)  
Select this mode if you want to maintain a constant subjective image quality. The effective bit rate is continuously varying.  
A value for picture quality can be entered below for further configuration.
- VBR (Variable Bit Rate)  
VBR will adjust the bit rate according to the images' complexity. This requires a lot of bandwidth for a high activity in the image and less bandwidth for a low activity.
- CBR (Constant Bit Rate)  
When using CBR, you can set a fixed maximum bit rate, which will ensure that the level of bandwidth consumed is predictable and will not change, irrespective of the activity in the image. The maximum value will not be exceeded, irrespective of the activity in the image.

### Picture quality (only available for CPQ compression mode)

The value entered here is a measure for compression.

100 = best picture quality, maximum memory requirement.

0 = worst picture quality, minimum memory requirement.

The default value of 30% works for many cases.

### Average bit rate

In case of choosing VBR compression mode, you can set an average bit rate with this setting. Experience shows that an average bit rate of 1200 kbit/s produces a sufficient recording quality.

### Maximum bit rate

Here, you can set the maximum permissible bit rate for every compression mode. The default value is 2000 kbit/s. The higher the max. bit rate, the higher the image quality of the recording in case of high complexity of the recorded image; however, the higher is also the storage requirement. If CPQ is set as compression mode, the bit rate will be limited irrespective of the selected picture quality. This means a reduction of the picture quality if a bit rate higher than the max. one set was required for achieving the selected picture quality.

## 5.4.4.2 Analog camera (Picolo Diligent)

The following settings are required for analog cameras (Picolo Diligent):

Basically, the camera settings for this older type of frame grabber cards correspond to those in the chapter above.

### Step 2: Camera settings (Picolo Diligent)

|                  |                  |             |
|------------------|------------------|-------------|
| Configuration    | Connector:       | 1           |
| Streaming        | Average bitrate: | 1500 kbit/s |
| Display settings | GOP size:        | 25          |
|                  | Standard:        | PAL         |

The differences are:

- The *Connector* status display serves for information purposes only. The connection is established automatically.
- You may change the average bit rate for the recording. The default value of 1500 kbit/s provides for a fair recording quality.

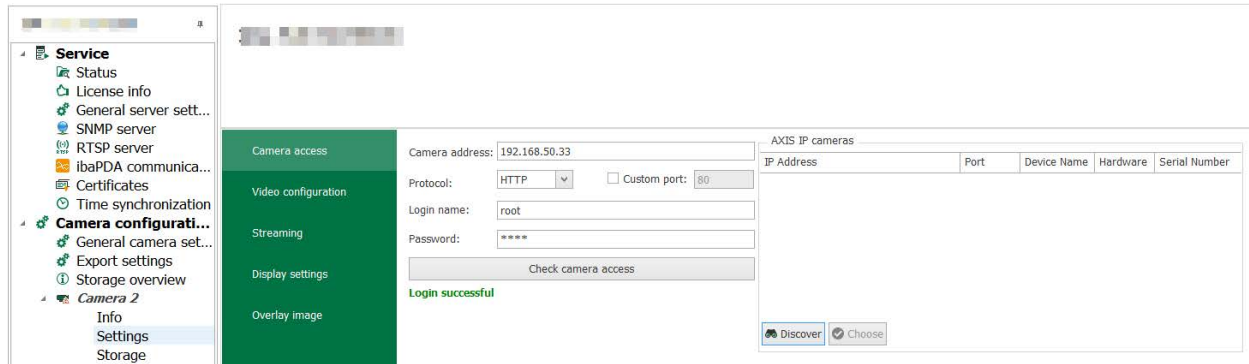
## 5.4.4.3 Axis IP cameras

A basic setup of Axis IP cameras should be performed by means of the software tools, which come with the camera, such as AXIS IP Utility or over the web interface of the camera.

This basic setup includes settings such as TCP/IP settings, user login data, streaming and compression settings, focus, color and contrast.

Some settings can be made in *ibaCapture Manager*.

## Settings – Camera access



### Camera address

The IP address of the camera as specified in the camera installation wizard is displayed here. If you do not know the IP address, use AXIS IP Utility to find the address. In case the camera is dynamically assigned the IP address by a DHCP server, it is advisable to use a fix host name, if possible within the network.

### Protocol

Supported protocols are HTTP and HTTPS. A valid certificate is required to use HTTPS. If the certificate is invalid or has yet to be added, the error message “Invalid certificate or TLS version” will be displayed.

For information on creating and managing certificates, see chapter [Certificates, page 79](#).

### Login name, password

Every access to the camera requires authorization, e.g. for changing settings. Therefore, enter user name and password for the camera as created before by means of AXIS camera software. Verify user data by pressing <Check camera access> button.

### Axis IP cameras

With a click on the <Discover> button, a list of all detected, active Axis IP cameras will be shown.

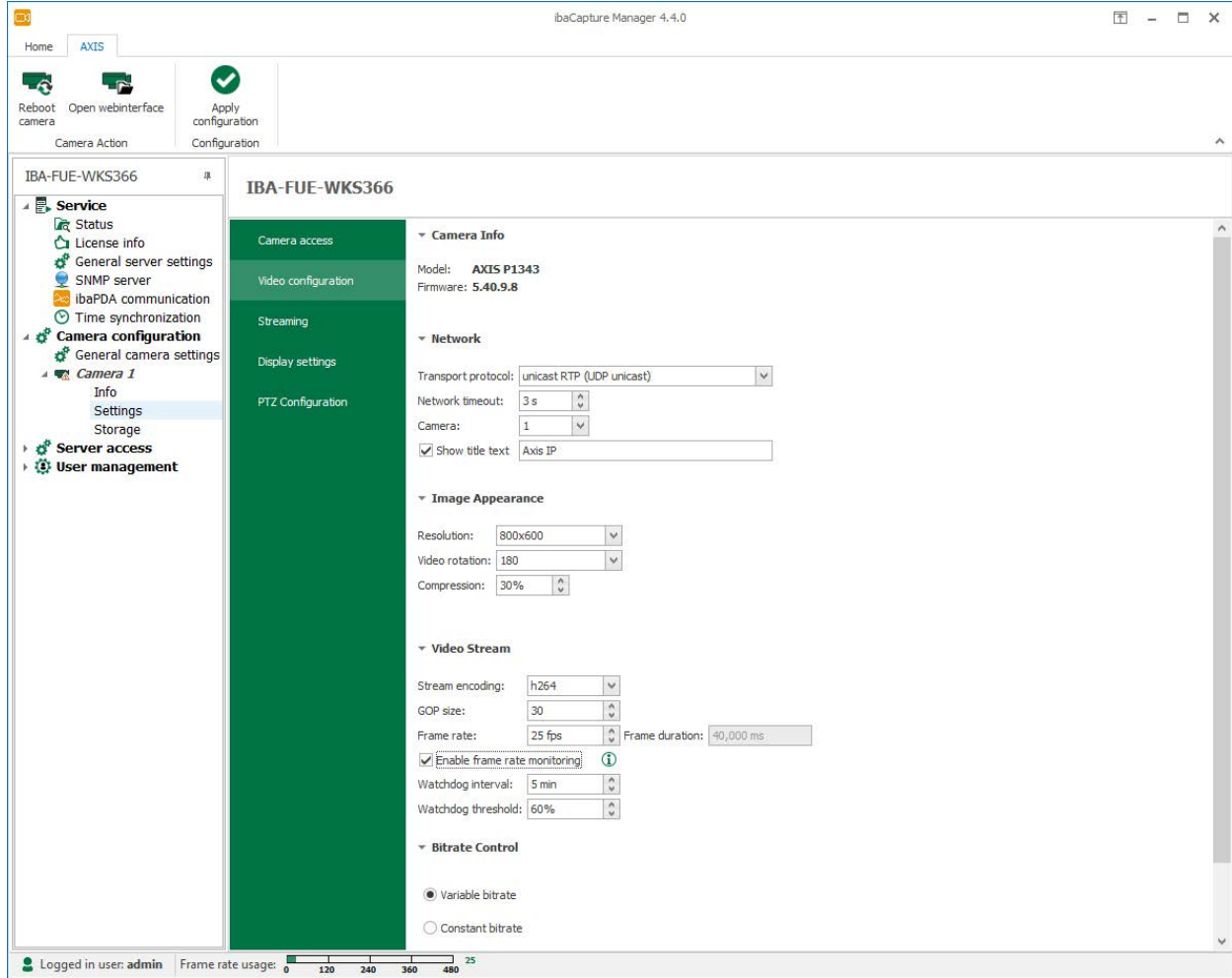
#### Open webinterface

A click on the command icon in the ribbon will open the camera’s web interface for more information and settings. A web browser is required for this function.

#### Reboot camera

Click this command icon in the ribbon only in exceptional cases, e.g. when there is no video stream visible although the settings are correct.

## Settings – video configuration



### Model, firmware

This information is displayed automatically after accessing the camera.

### Network

#### Transport protocol

A selection of different transport protocols for data transmission from camera to *ibaCapture* Server is available.

- Multicast RTP (UDP multicast); default setting
- Multicast RTP (UDP Multicast)
- Unicast RTP over RTSP (TCP)
- Unicast RTP over RTSP over HTTP (TCP)
- Unicast RTP over RTSP over HTTPS (TCP)

If the video stream must be encrypted, you can select any option that includes transport over HTTPS. *ibaCapture* Server also accepts self-signed certificates, which are enabled by default on AXIS cameras.

**Network timeout**

Time span of interrupted network connection between camera and *ibaCapture* Server given in seconds before a “No video signal” error message will be posted. Default value = 3

**Camera**

In case of one single camera or a video A/D converter for a single analog camera connected, this value is always = 1 and cannot be changed. In case of an A/D converter for multiple analog cameras connected, the stream of a specific camera can be selected by using the spinner.

**Show title text**

If you enable this option, you can enter a text, which will be displayed above the image in the camera view window.

**Image Appearance****Resolution**

A selection of available image resolutions is offered in the drop-down list, depending on the camera model. A change may have a significant influence on the image quality.

**Video rotation**

If necessary due to the camera installation, you can rotate the video image. The options and possible angles depend on the camera model.

**Compression**

Besides the bit rate, you can set a value for image compression. The default value of 30% works for many cases. The higher the compression the smaller the file size. However, there is then also less detail in the image. Delicate structures may not be visible anymore.

**Video stream****Stream encoding**

This is the video encoding format for video compression used by the camera. Some camera models allow changing the encoding. *ibaCapture* supports MPEG-4, H.264 and H.265.

**GOP size**

See glossary, chapter 11, page 189

**Frame rate**

A frame rate of 25 fps usually works for the human eye to get the impression of smooth movement.

**Frame duration**

Shows the time for one frame in ms depending on the frame rate setting. For information only.

**Enable frame rate monitoring**

If this option is enabled, a watchdog monitors the current frame rate. If the frame rate for the set *watchdog interval* falls below the set *watchdog threshold*, the connection to the camera is reset.

**Bitrate control****Variable/constant bitrate**

Select one of the two options which fits best your needs and network performance.

- VBR (Variable Bit Rate) will adjust the bit rate according to the complexity of the image. This requires a lot of bandwidth for a high activity in the image and less bandwidth for a low activity.
- If you select a constant bit rate, you should enter a fixed bit rate in the field nearby (default value 300 kbit/s).
- If there is a lot of movement in the image, a high bit rate provides a smooth representation of the movements. The lower the bit rate the more jolt will occur in motions. Furthermore, you can select a priority either in favor of frame rate or quality. As the bit rate would need to increase for increased image activity, but cannot when a constant bit rate is selected, the frame rate (motion) and image quality (details) will both be affected negatively. By selecting the priority, you can contribute to your needs.
- Priority on frame rate will provide for smoother motions but less image quality. Priority on quality will provide for good image quality but motions with jolt. If you select "None", frame rate and image quality will be affected approximately equally.

Constant bitrate

Bitrate:

Bitrate priority:

#### 5.4.4.4 ONVIF compatible device

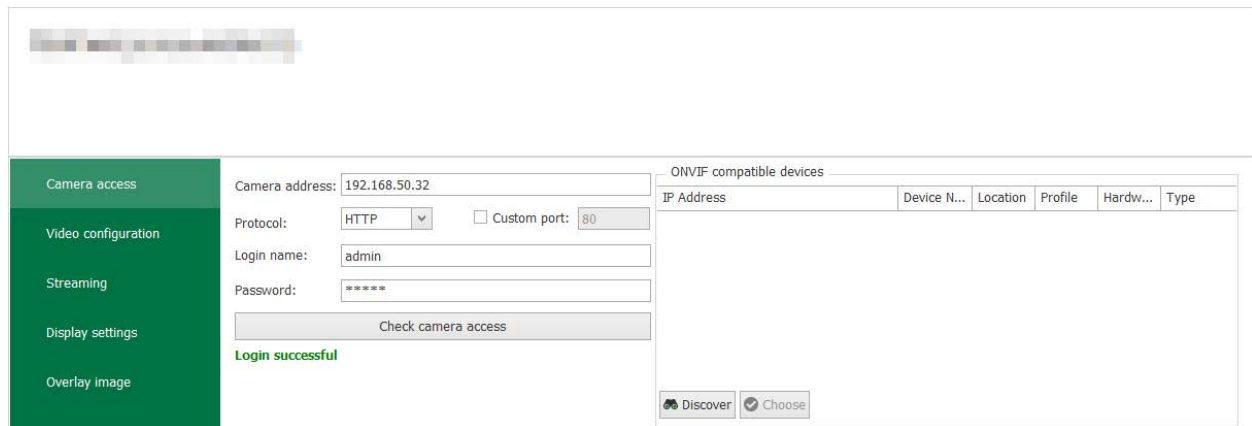
ONVIF is an open interface standard for network-based video devices that is increasingly supported by various manufacturers. If you have cameras or encoders supporting ONVIF, use this type of device.

*ibaCapture* supports the ONVIF profiles S and T.

#### Note



In order to prevent malfunctions as far as possible, we recommend having installed the latest firmware for your ONVIF devices.



As ONVIF compatible devices support an automatic detection, the easiest way is to click on the <Discover> button. A list of all detected, active ONVIF compatible cameras will be shown.

| ONVIF compatible devices |             |             |          |              |  |
|--------------------------|-------------|-------------|----------|--------------|--|
| IP Address               | Device N... | Location    | Profile  | Hardware     | Type                                     |
| 192.168.50.35            | Bosch       |             | Strea... | DINION_40... | Network_Video_Transmitter;               |
| 192.168.50.33            | AXIS P1343  |             | Strea... | P1343        | video_encoder;audio_encoder;             |
| 192.168.50.32            | Sony        | country/... | Strea... | SNC-CH160    | video_encoder;ptz;audio_encoder;video... |

Discover Choose

If the desired device is not shown in the list because it was turned off or not connected, then click on <Discover> after the device is turned on or connected.

Click on the desired device in order to select it and press <Choose> or double-click the device.

**Note**



If the device is still not detected, check the firmware version and update it if necessary. Some older camera models possibly cannot be optimized for ONVIF operation. In order to prevent malfunctions as far as possible, we recommend having installed the latest firmware for your ONVIF devices.

Network restrictions may be another reason for the automatic detection not working. In such a case, directly enter the IP address of the ONVIF device into the device address field and click <Choose>.

**Protocol**

Supported protocols are HTTP and HTTPS. A valid certificate is required to use HTTPS. If the certificate is invalid or has yet to be added, the error message "Invalid certificate or TLS version" will be displayed.

For information on creating and managing certificates, see chapter ↗ *Certificates, page 79*.

**Login name, password**

If user credentials are required for camera access, then enable the selection field "Authentication required" in the "Device authentication" area and enter user name and password.

Afterwards, click <Connect>.

### Video configuration

**IBA-FUE-WKS300**

Camera access

Video configuration

Streaming

PTZ Configuration

▼ **Camera Info**

Device name: **SNC-CH160**

Firmware version: **1.85.00**

Serial number: **3012839**

▼ **Network**

Transport protocol:

▼ **Onvif profile**

Choose profile:

Source: **video\_source\_config1**

Encoding: **H264**

Resolution: **1280 x 720**

Quality: **7,5**

GOP size: **25**

Framerate limit: **25 fps**

Bitrate limit: **3072 kbit/s**

The connection with the device will be established.

In the "Onvif profile" section, the ONVIF profiles available and supported by *ibaCapture* (H.264, H.265, MPEG-4) are now shown in the drop-down list. You find other profiles than the ONVIF profile in the wizard for editing profiles.

Select an ONVIF profile to use for recording.

**Note**



*ibaCapture* supports only finite GOP sizes. Some devices, such as the BOSCH VIP X1600 Encoder, are preset by the manufacturer to an infinite GOP size (value = 0) and key frames are sent on demand. You need to change this default value to a value >0 before you enable the configuration in *ibaCapture*. You can change this value either in the web interface of the device or in the profile editor within *ibaCapture*.

**Note**



The video encoders of some cameras allow setting the frame structure. There are values like "IP" or "IBP". For *ibaCapture* it is recommended to use only structures without "B" frames.

### ONVIF profile

The ONVIF profile is a combination of the source profile (video source) and the encoder profile (video encoder).


The configuration of the source profile is determined by the properties of the ONVIF device. A camera generally has only one source profile. Other devices, such as analog IP encoders, can provide several video sources. Depending on the equipment, the available inputs can be selected via the source profiles.

The configuration of the encoder profile determines the way the video stream is encoded within the camera. These settings are usually made via the web interface of the camera/device. This includes parameters such as coding (H.264, H.265, MPEG-4), resolution, quality, GOP size, frame rate and bit rate. Different encoding configurations may help you to optimize videos with regard to purpose or way of transmission.

The ONVIF profiles can be adjusted to individual requirements.

### Editing ONVIF profiles

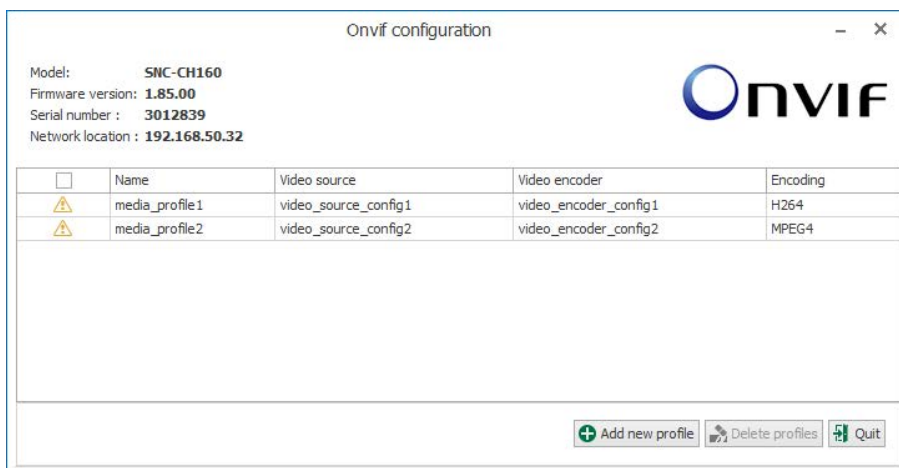
For editing an ONVIF profile, you first need to ensure that the user set in the "device authentication" area (see above) has the user rights required for changes in the ONVIF profiles. If this is not the case, an error message will appear later at the corresponding step.

 An error occurred while creating the ONVIF profile

1. Click *Manage Profiles* in the ribbon .

The assistant opens showing a list of available ONVIF profiles.

The available ONVIF profiles are presented in a table indicating name, source profile, encoder profile and type of video coding. If the option "Show only supported profiles" is checked, the list contains only those profiles supported by *ibaCapture*. ONVIF profiles can be added or removed. It is not possible to change existing ONVIF profiles. In order to adjust the video coding, the encoder profile can be modified.



2. Press the <Add new profile> button

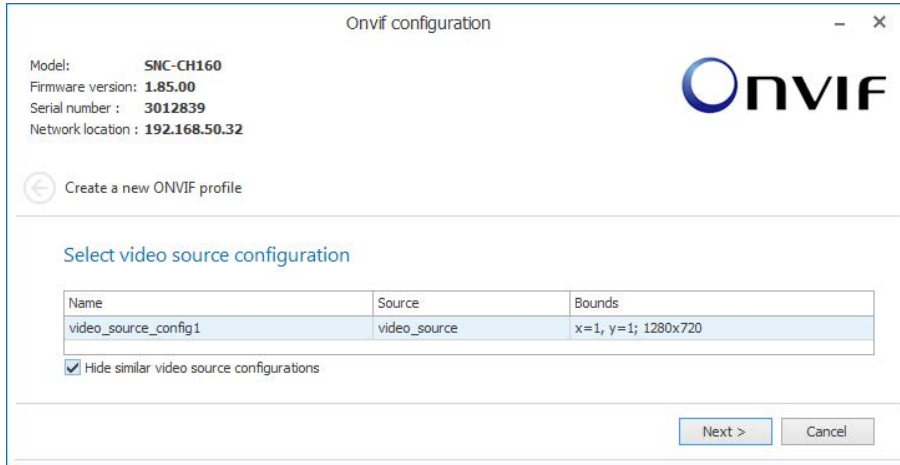
A new ONVIF profile is created on the basis of the last selected profile. The assistant will guide you through the next steps.

### Selection of the video source configuration

1. First, select a source profile.

The video sources are permanently stored in the respective ONVIF device and cannot be changed. If the option "Hide similar video source configurations" is checked, the assistant attempts to reasonably narrow down the available video sources, e.g. when the same video source is listed multiple times.

A camera usually has only one video source. Afterwards, click <Next>.

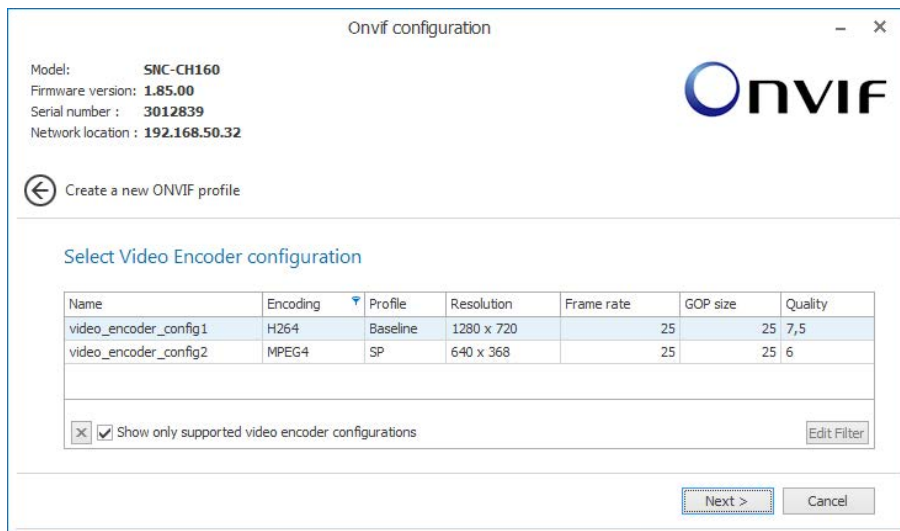


2. Select the encoder profile in the next step.

The encoder profiles are stored in the device.

Select the desired profile and click <Next>.

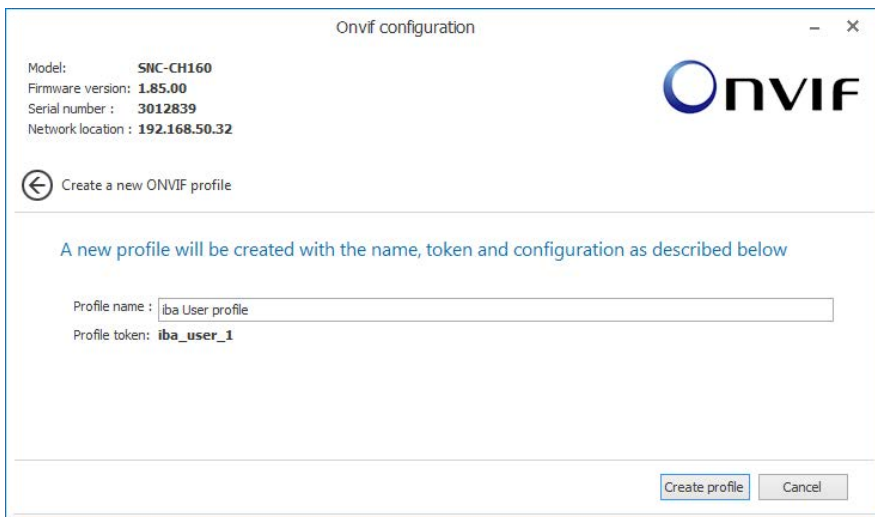
If none of the offered encoder profiles meets your requirements, you can change an existing profile. Hereto, refer to the next chapter.




3. In the third step, you confirm your selection. The properties of the profile will be shown again.

Enter a name for your new ONVIF profile. The token at the end is an internal ID for the profile and will be assigned automatically.

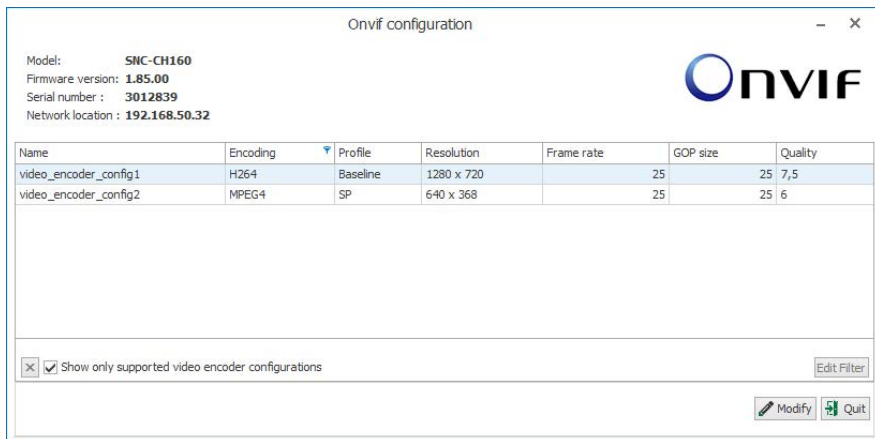
Complete the creation of the new profile by pressing <Create profile>.



### Editing of the video encoder configuration

In contrast to the video source configuration, you have the opportunity to modify the encoder configuration. For this purpose, click *Manage Encoders*  in the ribbon.


1. In order to change an existing video encoder configuration, click on the aforementioned button. The dialog for selecting the configuration to be modified opens.



2. Click on the configuration to be modified and press <Modify>.
3. In the next step of the encoder configuration, you adjust the properties.

The screenshot shows the 'Onvif configuration' window. At the top, it displays device information: Model: SNC-CH160, Firmware version: 1.85.00, Serial number: 3012839, and Network location: 192.168.50.32. The ONVIF logo is in the top right. Under the 'General' section, the configuration name is 'video\_encoder\_config1' and the token is 'video\_encoder\_config1'. The 'Encoder Video settings' section includes dropdown menus for Encoding, Resolution (1280 x 720), Encoder profile (Baseline), and numeric input fields for Quality (7), Frame rate (25), Interval (1), Bit rate (3072), and GOP size (25). Each numeric field has an information icon (i) to its right. At the bottom right, there are 'Submit changes' and 'Quit' buttons.

- select the coding.  
(ibaCapture supports only H.264, H.265 or MPEG-4)
- select or change the quality, resolution, frame rate, encoding interval and bit rate.
- please ensure to enter a value greater than 0 into the GOP size field.
- encoder profiles are not always available.

You will receive a quick info on the individual parameters when you move the mouse over the icon. 

4. If the modified configuration is not to replace the original, you can enter a new name for the configuration in this dialog. It will then be added to the list of available encoder configurations.
5. Confirm the settings with <Submit changes>.

### Caution!



All changes you make to the video profiles and video encoder configurations are permanent. They will remain even after a restart of the device.

Therefore, be careful when making changes, especially when removing profiles.

You will find additional device- and manufacturer-specific notes on the use of ONVIF compatible devices in the chapter [Supported cameras, page 183](#).

### 5.4.4.5 RTSP source

Over RTSP (Real Time Streaming Protocol), it is possible to receive video streams from cameras or other video sources that are not explicitly supported by *ibaCapture*.

The prerequisite is that these sources support RTSP and provide an MPEG-4, H.264 or H.265 video stream.

For configuration purposes, the full URL of the video source needs to be entered. Video parameters such as resolution, stream coding, frame rate etc. need to be configured in the camera and will be detected by ibaCapture.

Camera Configuration Wizard

← Camera Configuration for IBA-FUE-WKS366

---

Step 2: Camera settings (RTSP source)

Camera access

Video configuration

Streaming

PTZ Configuration

Camera address:

Specify port number:

Login name:

Password:

Apply RTSP URL
 

None

Axis

#### RTSP source URL

Please refer to the camera manual to find out which URL you have to enter here. This information differs depending on the manufacturer or the model.

The entry generally starts with the IP address or host name of the camera or source and further path information. Currently the default RTSP path for AXIS cameras can be selected from the "Apply RTSP URL" list.

#### Note



There are websites documenting the RTSP URLs of different cameras. In case of doubt, read the manual of your camera or contact the manufacturer support.

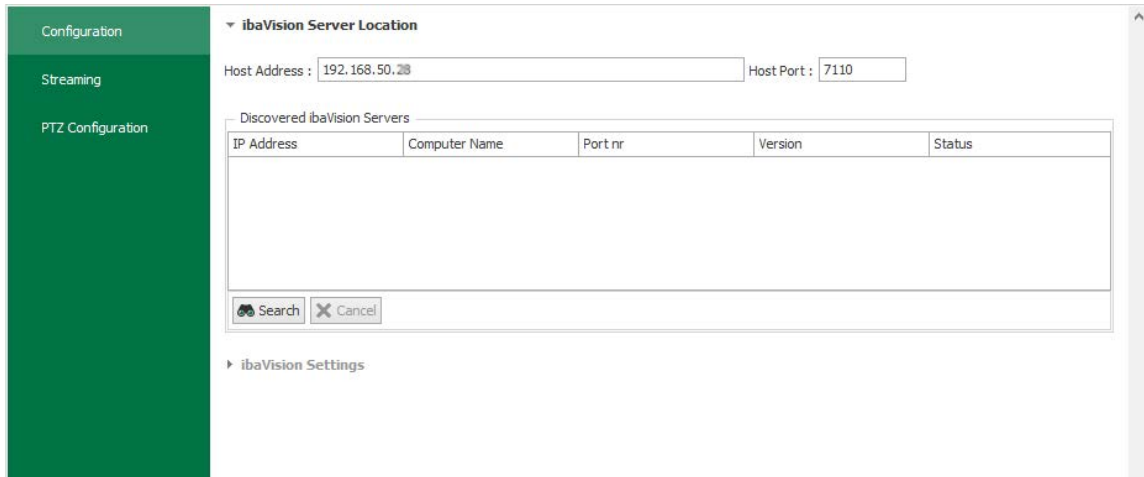
### 5.4.4.6 HMI camera

Recording HMI screens and configuring virtual cameras with *ibaCapture-ScreenCam* is described in chapter [↗ Capturing HMI screens, page 174](#).

### 5.4.4.7 Virtual camera (ibaVision)

The virtual camera type (*ibaVision*) is designed for capturing *ibaVision* output video. *ibaVision* processes image data recorded with *ibaCapture* and extracts visual signals or processed images with added visual information. The images processed by *ibaVision* can be captured again in *ibaCapture* and recorded using this camera type.

This chapter only describes the configuration of virtual cameras in *ibaCapture*. For a detailed description of *ibaVision*, please refer to the *ibaVision* manual.

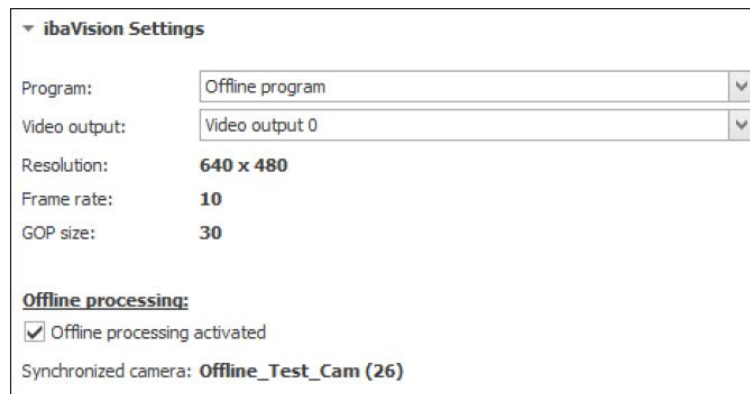


#### ibaVision Server Location

Enter the IP address of the *ibaVision* Server, whose output data shall be recorded into the field "Host Address". Alternatively, you can click on the <Search> button to search the network for *ibaVision* instances.

The available *ibaVision* instances will be listed in the table. Select the desired host and configure the *ibaVision* settings.

#### ibaVision settings



This section contains two drop-down controls. The first selection list "Program" lists all configured *ibaVision* programs of the active *ibaVision* instance. If the selected program offers more than one video output, the desired one can be selected from the second selection list "Video output".

All settings regarding video resolution and size need to be done in *ibaVision*. The values are displayed here for information only.

Furthermore, *ibaVision* offers an offline processing mode that allows to execute image processing on stored video at a later time. This requires the definition of a source camera, which is also used to generate synchronization data for an offline virtual camera. The videos processed later can then be recorded with the virtual camera and stored in the ring buffer of the virtual camera at the correct time. When the offline processing mode is enabled in *ibaVision*, this is displayed here. In addition, the source camera is displayed, which must be present at the *ibaCapture* Server.

#### 5.4.4.8 Optris thermal cameras

The manufacturer's software, PIX Connect, must be installed in order to use Optris thermal cameras. PIX Connect is free software from the manufacturer Optris.

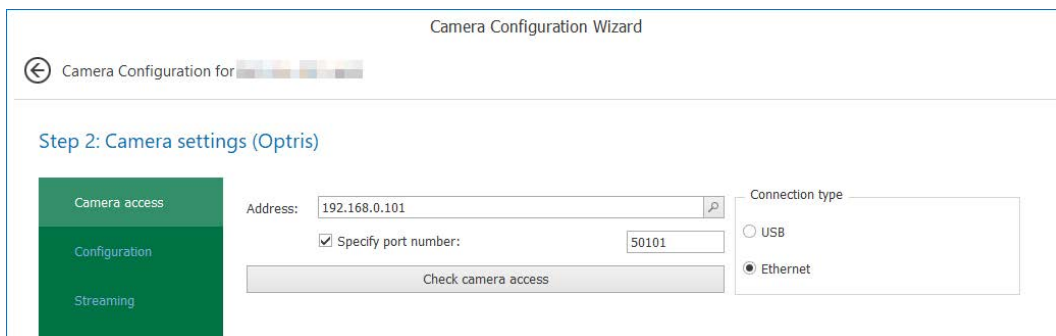
The software and documentation for the software are available for download at the following website:

<https://optris.com/software/pixconnect/>

Using PIX Connect, measurement areas can be defined, exported as layout files, and imported into *ibaCapture*.

In addition, PIX Connect provides calibration files for each camera. The path to the calibration files must be entered in *ibaCapture*.

#### Settings – Camera access



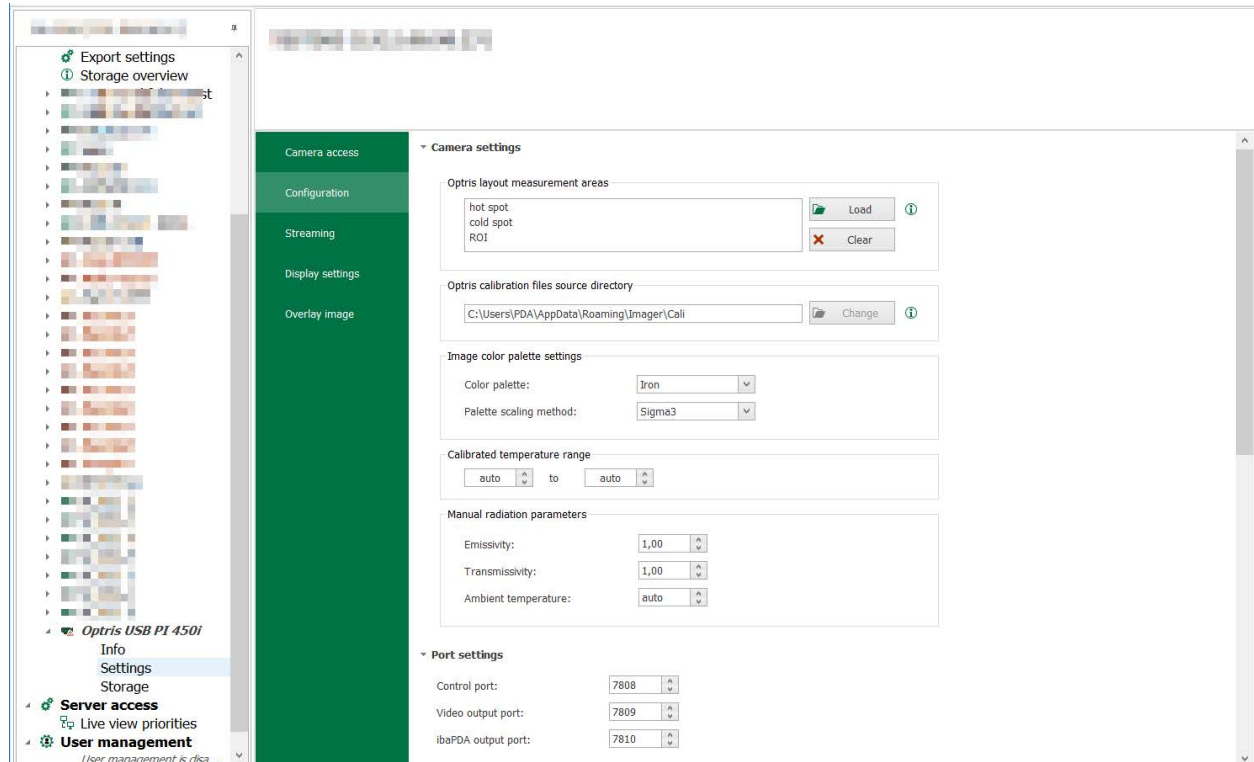
The screenshot shows the 'Camera Configuration Wizard' interface. At the top, it says 'Camera Configuration Wizard' and 'Camera Configuration for [camera icon]'. Below that, it says 'Step 2: Camera settings (Optris)'. On the left, there is a sidebar with three options: 'Camera access' (highlighted in green), 'Configuration', and 'Streaming'. The main area contains the following fields and controls:

- 'Address': 192.168.0.101
- 'Specify port number':  Specify port number: 50101
- 'Connection type':  USB,  Ethernet
- 'Check camera access' button

First of all, select the the connection type:

- USB: Select the camera from the dropdown list. Clicking on the <Discover> button displays a list of all detected, active Optris cameras.
- Ethernet: Enter the network address of the camera and the port number. Click the <Check camera access> button to verify that the connection to the camera is successful.

## Settings – Configuration



### Measurement areas

Custom measurement areas can be defined for each camera by importing layout files.

You can define the measurement areas using the PIX Connect camera software and export them as a layout file (XML file). The procedure is described in the documentation for the PIX Connect software.

By clicking on <Load>, you can load the layout file into *ibaCapture* and then select the desired measurement area.

For each measurement area, *ibaCapture* automatically generates the following temperature values, which can be recorded as signals in ibaPDA:

- Average temperature
- Hot spot temperature
- Cold spot temperature

### Optris calibration files source directory

Each camera requires calibration files, which are provided by PIX Connect. When the camera is connected and PIX Connect is launched, the software automatically downloads all necessary files.

This requires an Internet connection. Further details are described in the Optris documentation.

### Image color palette settings

You can choose different color palettes from the dropdown list to display the temperatures.

By scaling the temperature range, you can assign colors to the temperature values within the reference bar.

A description of the settings can be found in the documentation for PIX Connect.

### Calibrated temperature range

The <auto> setting applies the settings of the PIX Connect software.

### Manual radiation parameters

These parameters relate to the radiation loss of surfaces and the ambient temperature, which influence the surface temperature. The parameters depend on the material, among other things, and are described in the documentation for PIX Connect.

### Port settings

The Optris Frame Grabber runs as a separate process and uses three ports. The port numbers are set automatically, but can be changed:

- Control port: Communication with the *ibaCapture Server*
- Video output port: Video stream handling
- ibaPDA output port: Thermal data output to *ibaPDA*

### Video encoder configuration

Select the desired encoder from the dropdown list. The corresponding configuration options are displayed accordingly. Available for selection are:

- NVIDIA
- Intel Quick Sync

For further information, see chapter [↗ Video encoder, page 116](#).

#### 5.4.4.8.1 Video encoder

Once you have selected the video encoder, the corresponding configuration options are displayed:

#### NVIDIA

▼ Video encoder configuration

|                 |   |
|-----------------|---|
| Encoder type:   | <input type="text" value="NVIDIA"/>                                 |
| Frame rate:     | <input type="text" value="25"/> fps                                 |
| Resolution:     | <input type="text" value="368"/> x <input type="text" value="288"/> |
| Device:         | <input type="text" value="Default"/>                                |
| Codec:          | <input type="text" value="H264"/>                                   |
| Encoder preset: | <input type="text" value="Default"/>                                |

Enable encoder preset customization

#### Frame rate, resolution

Set the desired frame rate and resolution.

#### Device

GPU on which the encoding will be performed (in case multiple GPUs are installed).

## Codec

*ibaCapture* supports H.264 and H.265 (or HEVC) encoding. The main benefit of H.265 encoding is a reduction of the required storage space compared to H.264 encoding. However, this comes at the expense of increased computing power requirements (both for encoding and decoding). Select the encoding type in the dropdown menu:

- H.264
- HEVC (H.265)

## Encoder preset

The NVIDIA encoder API provides different presets. Their names indicate their intended use. If a preset is not supported by the GPU, it reverts to the default preset.

If you enable the *Encoder preset customization* option, you can configure individual settings.

A description of the parameters can be found in chapter [↗ Analog cameras \(Ux H264\)](#), page 99.

## Intel Quick Sync

▼ Video encoder configuration

Encoder type: Intel Quick Sync

Use hardware acceleration

Codec: H264


Bitrate control: Variable (VBR)

Bitrate: 500 Kbps

GOP size: 30 frames

Frame rate: 25 fps

Resolution: 368 x 288

Performance: 

You can enable hardware acceleration.

## Codec

*ibaCapture* supports H.264 encoding as well as H.265 (or HEVC). Select the encoding type in the dropdown menu:

- H.264
- HEVC (H.265)

## Bitrate control

- VBR (Variable Bit Rate)

VBR will adjust the bit rate according to the images' complexity. That means, that a high bandwidth is required for a high activity and a low bandwidth for low activity in the video.

■ CBR (Constant Bit Rate)

If you select CBR, you can configure a fixed maximum bitrate and hence make sure that the demand for the bandwidth remains calculable. Thus, the maximum value will not be exceeded, no matter how much activity is in the video.

**GOP size**

GOP (Group Of Pictures) defines the number of pictures after which a full picture, a so called keyframe will be stored. The pictures between the keyframes are derived from the previous keyframe, in between, only changes of the pictures are stored. With a high GOP, possible encoding errors exist longer, with a low GOP, the bitrate and hence the memory requirements of the video stream tend to grow. The default setting 30 is suitable for most of the cameras.

**Frame rate, resolution**

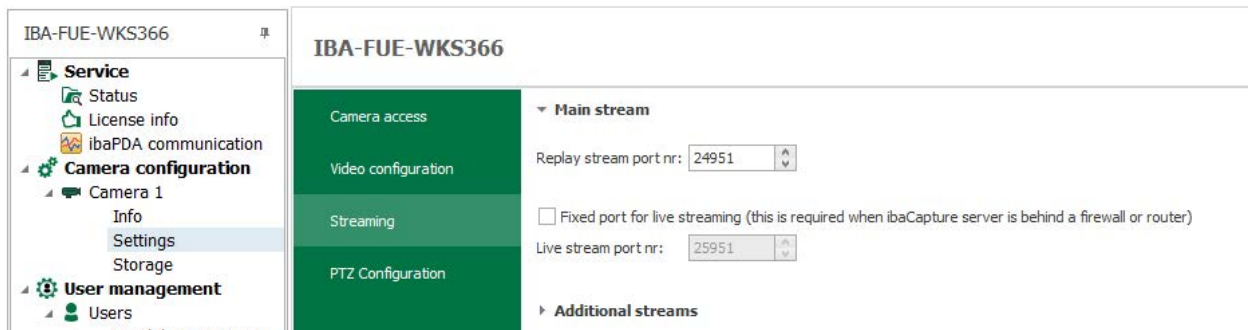
Set the desired frame rate and resolution.

**Performance slider**

The performance can be adjusted with the slider to prioritize either compression or speed. Please note that a high speed causes low compression and requires large memory space. High compression requires high computing capacity and lowers the speed.

**5.4.5 Streaming ports**

Besides the ports used for the communication between *ibaCapture* Server and *ibaPDA* Server for control and synchronization purposes, there are ports required for displaying live video and replay of recordings.



Each instance of *ibaCapture* Player that is to display a live video or play a recording requires a port for the transmission of the video stream. In this case, it is irrelevant whether the player is running in the camera view of an *ibaPDA* Client, in *ibaCapture* Manager or *ibaAnalyzer*.

There are certain differences between replay streams and live streams when setting up network connections.

**Replay stream**

A TCP port is defined for each camera in the configuration of each *ibaCapture* Server. To play back a stored video, an *ibaCapture* Player must establish a network connection to this port.

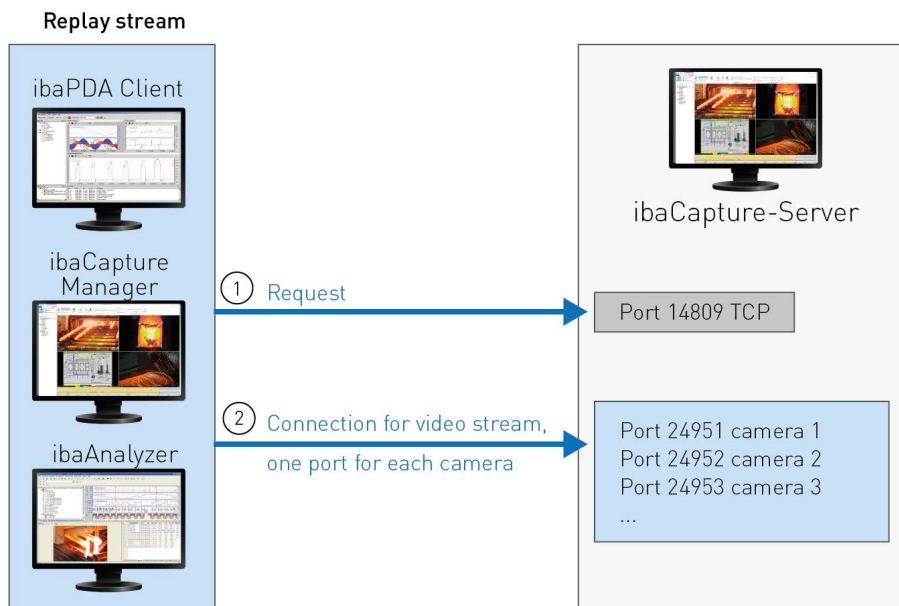
The port numbers start at 24951 by default. For each additional camera, the port number is increased by 1. The same port cannot be assigned twice.

The *ibaCapture* Player first establishes a connection to port 14809 on the *ibaCapture* Server. With this connection, the parameters for the stream are negotiated, including the port to be used.

Only after that is the connection established via which the video data is actually transmitted.

If connections to the *ibaCapture* Server are to be established through a firewall, access to all relevant ports must be permitted. Port 14809/TCP must always be released. For all cameras whose streams are to be allowed through the firewall, the corresponding ports must also be released.

As mentioned, *ibaCapture* assigns the replay stream ports in ascending order by default. Depending on the firewall used, a contiguous range of ports can be released here in a single rule.



### Live stream

In the configuration of each camera, you can specify whether the live streams of this camera are to be transmitted via a fixed port or via dynamic ports.

Regardless of this setting, the first connection of each *ibaCapture* Player is established on port 14809/TCP of the *ibaCapture* Server in order to negotiate the connection parameters for the desired camera.

#### Setting *Dynamic ports*

For each live stream, *ibaCapture* Player automatically determines and opens a free port. The opened port is communicated to the *ibaCapture* Server via the connection on port 14809. Next, the server will initiate a connection to the *ibaCapture* Player on the negotiated port for sending the live video stream.

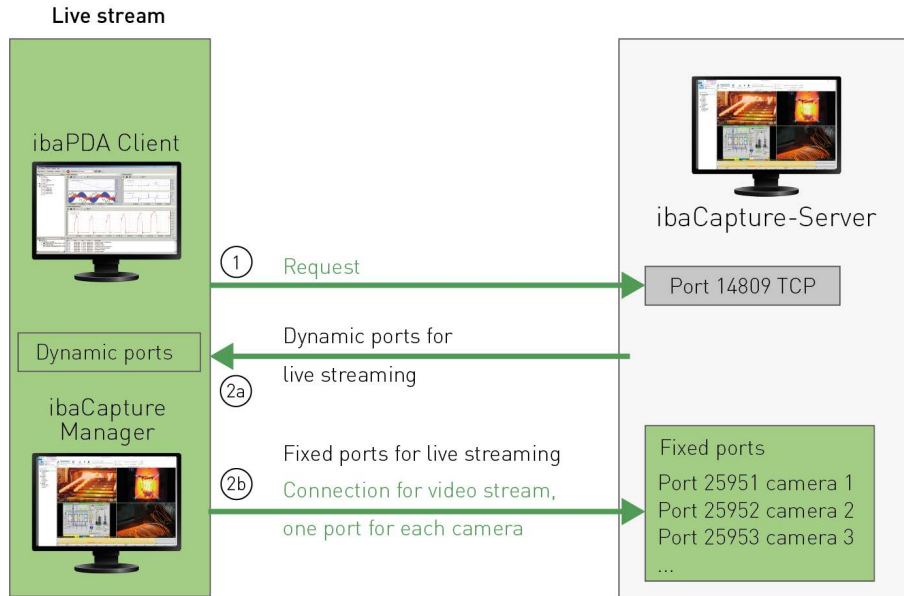
With each new request for a live stream, a different port is used. Therefore, this setting is not suitable for transmitting live streams through a firewall.

#### Setting *Fixed ports for live streaming*

A port is defined here in the configuration of each camera via which the video streams are transmitted. By default, port 25951 is used for the first camera and is increased by 1 for each additional camera.

If connections to *ibaCapture* Server are to be established through a firewall, access to all relevant ports must be permitted. Port 14809/TCP must always be opened. For all cameras whose streams are to be allowed through the firewall, the corresponding ports must also be opened.

When using additional live streams, please note that the same setting may have to be made for each additional stream for each camera. See chapter ↗ *Additional streams*, page 120.



### 5.4.5.1 Additional streams

The display of numerous cameras puts high demands on the performance of the processor and the RAM, especially for videos with a high resolution. However, live displays do not always require a high resolution. Often, the camera window in the player is significantly smaller than the full resolution when several cameras are displayed simultaneously. Thus, a Full HD video with 1920 x 1080 pixels might be displayed in the player with only 640 x 480 pixels. As in this case a lower resolution is sufficient, you can configure alternative streams with a lower resolution for the live views of each camera. Thus, processor and RAM are relieved.

If the server administrator has configured an additional stream, the live view automatically switches to the lower resolution if the size of the player is accordingly small.

The alternative live streams only affect the live view. They are only created for the live view and are not being recorded. The videos are recorded with the resolution configured under *Video configuration*.

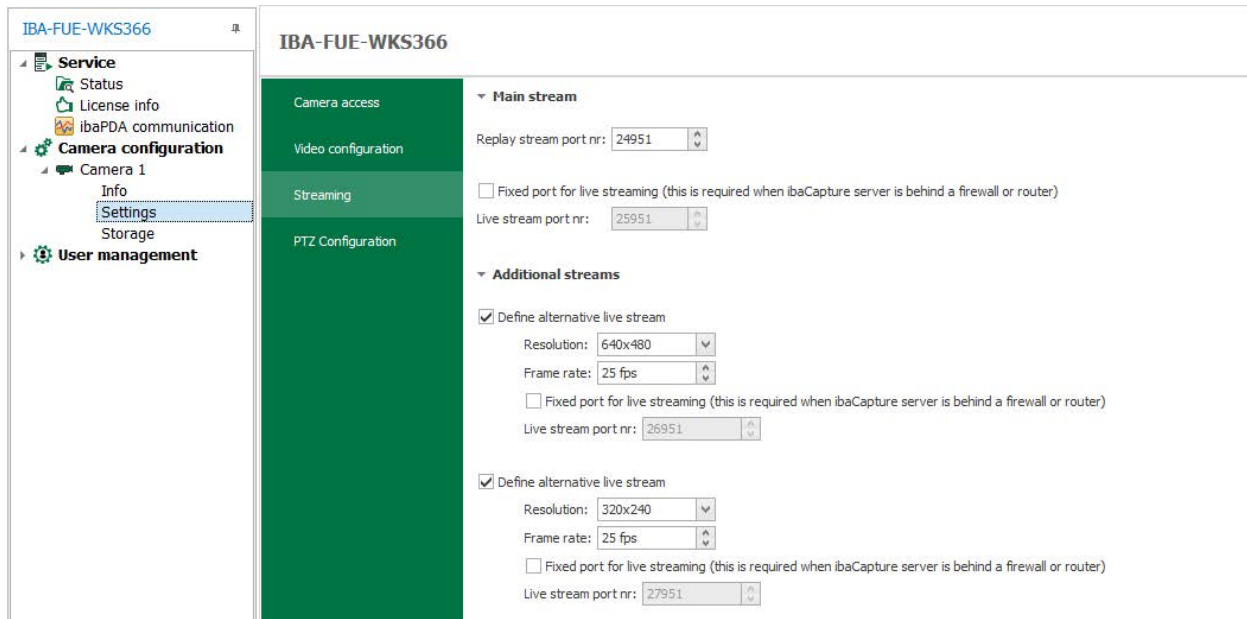
You can configure up to 2 alternative live streams for each camera. The following settings may serve as an orientation:

|                            | Ratio 4:3                                    | Ratio 16:9                                   |
|----------------------------|--|--|
| 1 alternative live stream  | 640 x 480                                    | 640 x 360                                    |
| 2 alternative live streams | 1. stream: 800 x 600<br>2. stream: 320 x 240 | 1. stream: 800 x 450<br>2. stream: 320 x 180 |

### Configuration

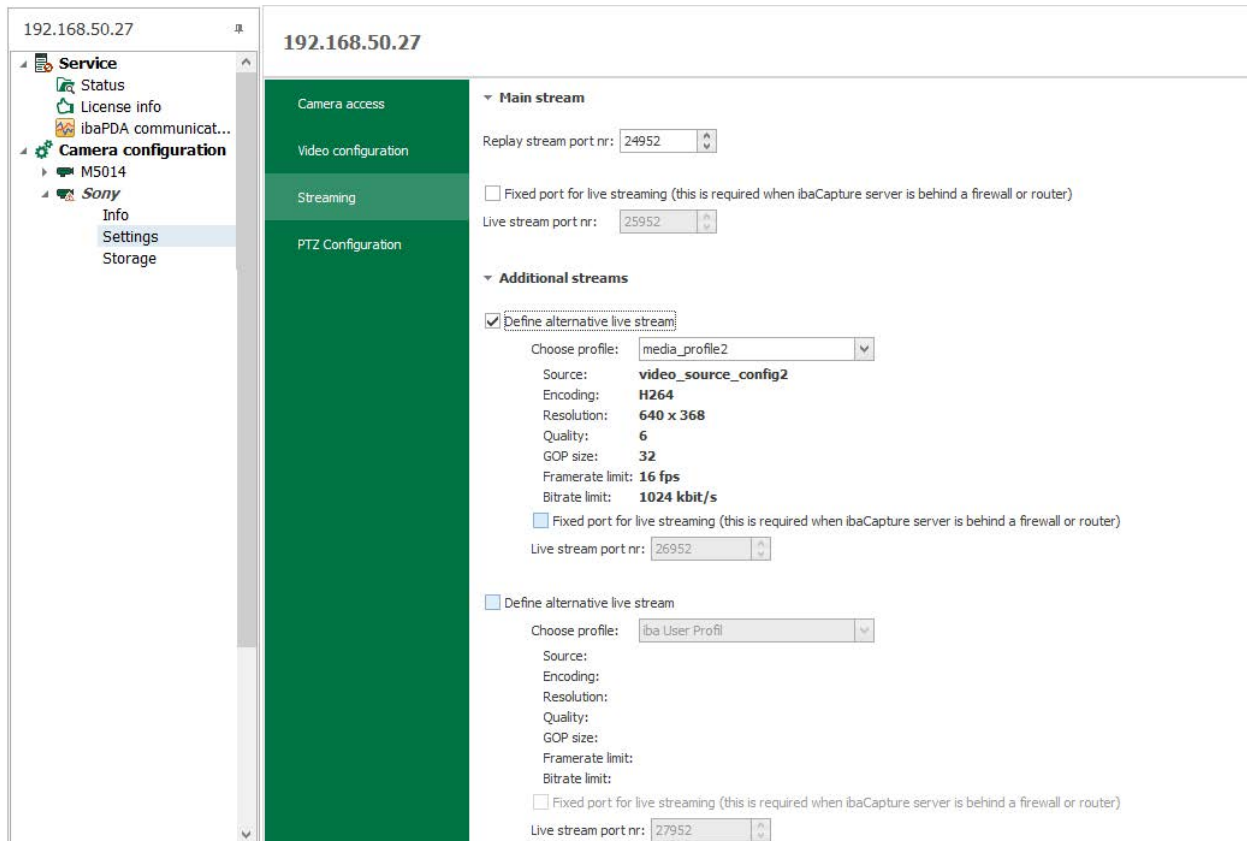
You can configure live streams for Axis IP, ONVIF compatible and RTSP camera types.

#### ■ Axis cameras



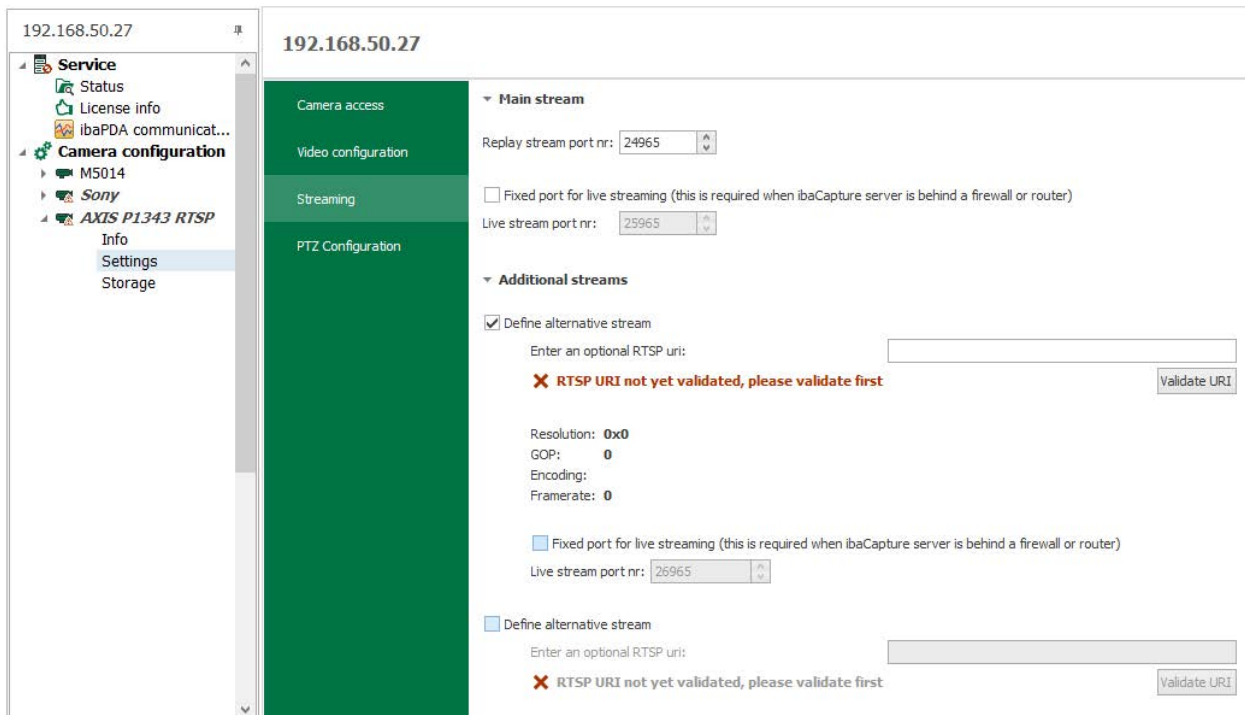
Set a checkmark in the area *Additional streams* for 1 or 2 alternative live streams. For Axis IP cameras, you can select the resolution directly from the drop-down menu. Moreover, you can enter the frame rate in the entry field.

#### ■ ONVIF compatible cameras



Set a checkmark in the area *Additional streams* for 1 or 2 alternative live streams. For ONVIF compatible cameras, you have to choose an ONVIF profile. In this profile, the resolution is defined. It might be necessary to configure such profiles in the camera.

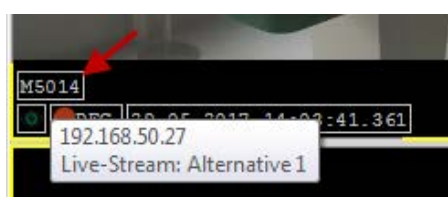
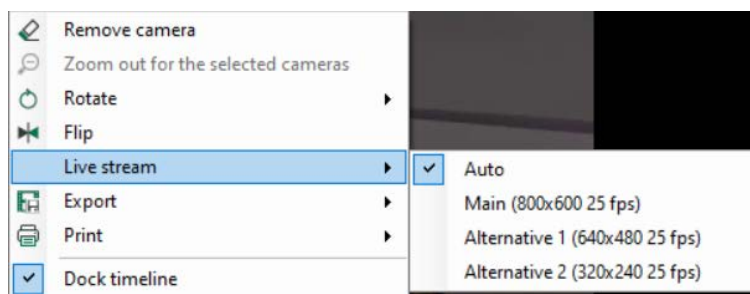
■ RTSP sources



Set a checkmark in the area *Additional streams* for 1 or 2 alternative live streams. You have to enter an URI (Uniform Resource Identifier) for RTSP sources. In this URI, the video parameters are defined with an according resolution.

**Display of alternative live streams in the Player**

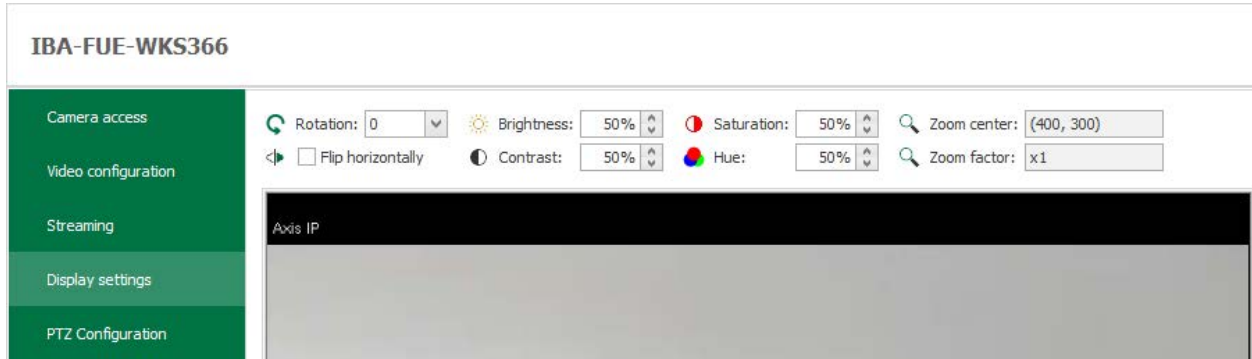
In the camera view, the user can define which live stream will be displayed. Open the context menu in the respective camera view with a right mouse click. (For a description, see chapter ↗ *Submenu Live stream*, page 46)



You can see in a tooltip, which camera is currently running. Just move the mouse over the camera name in the info toolbar. Furthermore, the tooltip displays the name of the video server.

### 5.4.6 Display settings

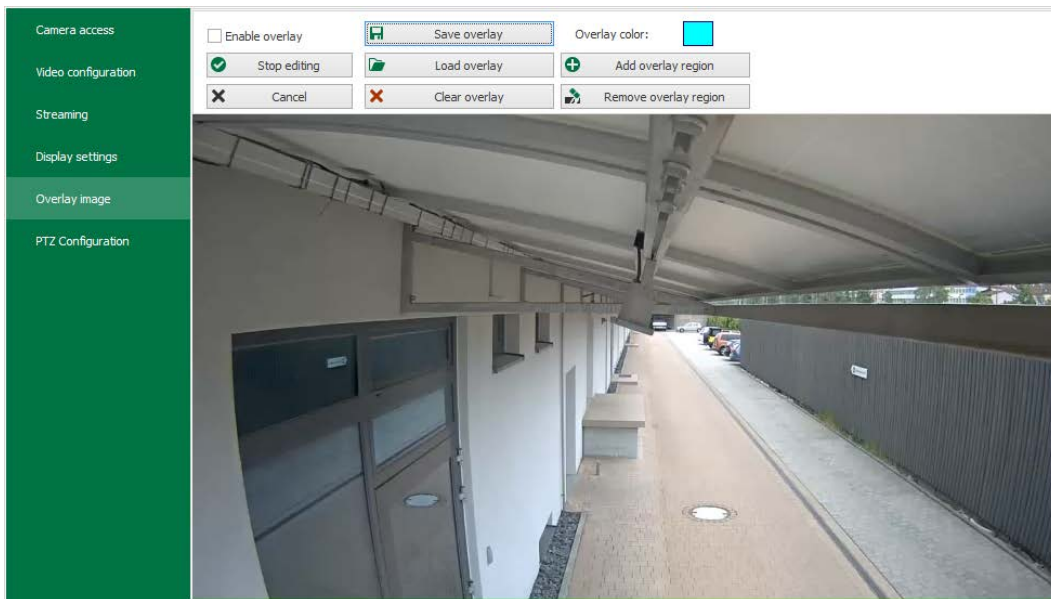
A number of display settings in the *ibaCapture* Player can be set and saved as default settings in the *Display settings* tab for each camera: rotation, flip horizontally, brightness, contrast, saturation, hue, zoom center, zoom factor.



Every *ibaCapture* Player (v4.4.0 or higher) will start streaming using these default settings unless they are overwritten by custom adjustments.

### 5.4.7 Overlay image

With the *Overlay Image* function, a static image can be displayed over the current video image, for example to mask areas relevant to privacy protection. The function can also be used to display calibration/orientation information within the image.



Use the *Enable overlay* check box to enable the overlay function for all *ibaCapture* clients.

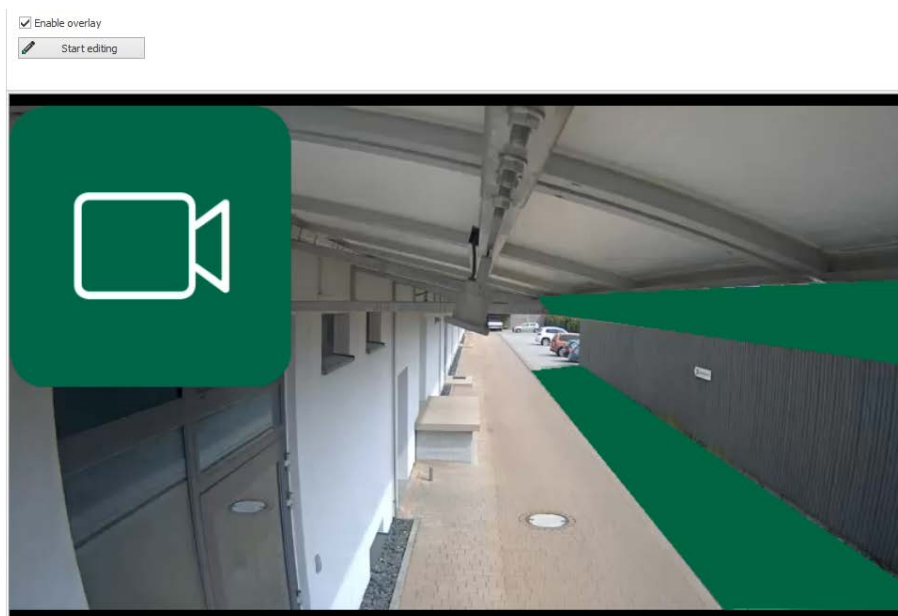
With <Start editing> you can edit an overlay image. The camera image will be shown as a still image in its original size. For large resolutions, it may be required to use the scroll bars to see the whole image.

The overlay image can be created by using these controls:

|                         |  |
|-------------------------|--|
| Overlay color           | The overlay color can be selected by clicking the color field.   |
| <Add overlay region>    | <p>Overlay regions generally are created as polygons. Set the corner points by clicking at the desired position in the image. You can verify the created polygon instantly in the preview. You can move the corner points by holding down the left mouse button. If you hold down the &lt;Shift&gt; key, the line snaps to certain angles in 15-degree steps.</p> <p>To abort polygon creation, click the &lt;Cancel&gt; button. With &lt;Apply&gt; you confirm the created polygon.</p> |
| <Remove overlay region> | You can create corner points of a polygon by clicking. With this polygon, areas can be removed from the previously created overlay image. This means that the area thus defined is made visible again.   |
| <Save overlay>          | Overlay images can be saved as PNG.  |
| <Clear overlay>         | The overlay image is removed.  |
| <Load overlay>          | Existing PNG images can be loaded as overlay images.   |

With <Stop editing> you finish editing the overlay masking. You can verify the overlay image in the preview.

By clicking <Apply> the new *ibaCapture* server configuration becomes effective.



**Restrictions with enabled overlay**

The main use for image overlays is the creation of privacy masks. As the received video streams are not modified after they are received by *ibaCapture* Server, video from potentially sensitive areas is still stored. It will only be masked when video is displayed by *ibaCapture* Player.

To avoid sensitive areas being visible, the following functions of *ibaCapture* are restricted for cameras with overlay enabled:

- RTSP server
- Video export

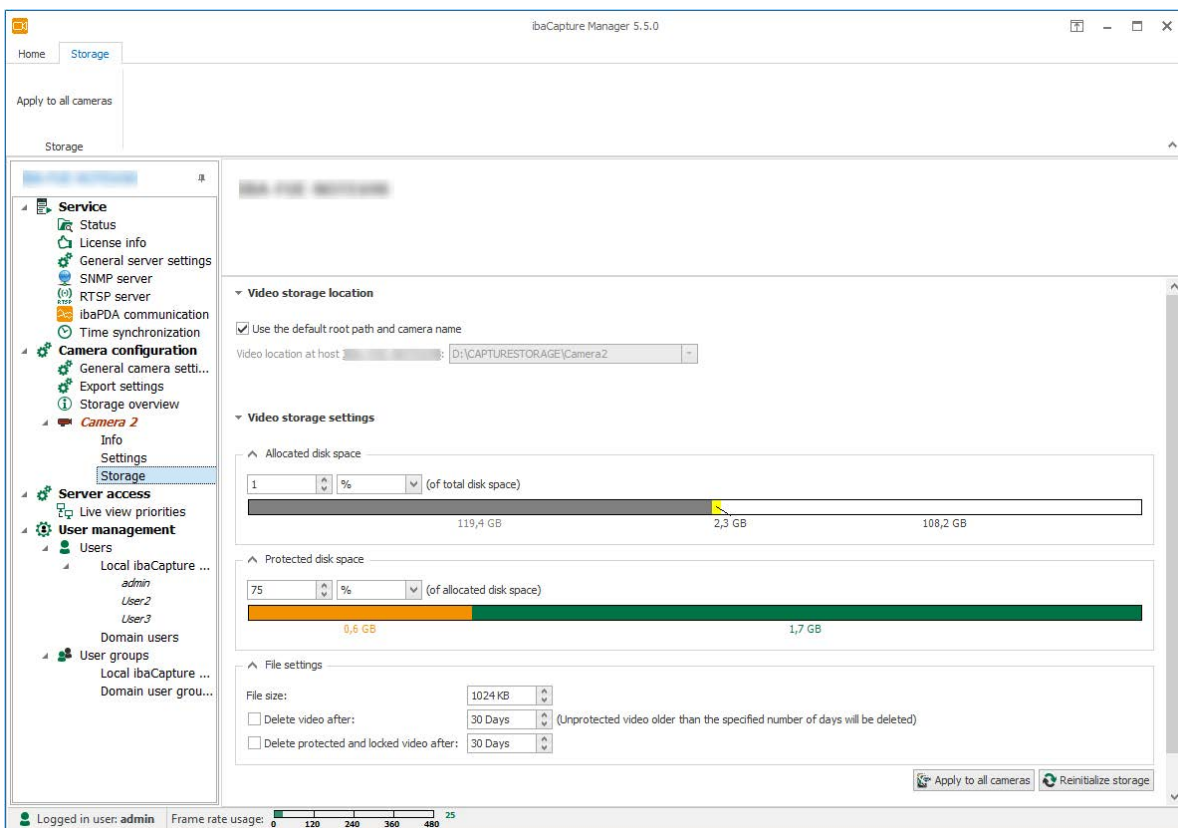
**Note**



Without enabling user management, every user with access to the *ibaCapture* Server will be able to disable the overlay.

### 5.4.8 Storage settings

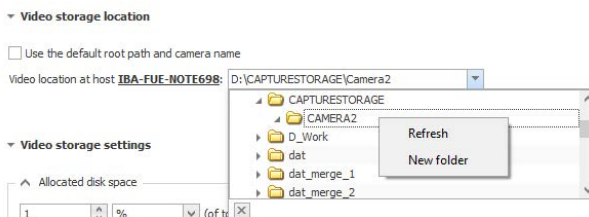
All settings for saving the video data are made in the *Storage* branch.



#### Video storage location

Each camera requires its own directory in which the video recording is to be stored. If you enable the option *Use the default root path and camera name*, a folder with the camera name is automatically created in the base directory CAPTURESTORAGE on the local hard disk.

If the option is not enabled, you can specify a local directory on the server to which you are connected. You can refresh the view or create a new folder via the context menu.



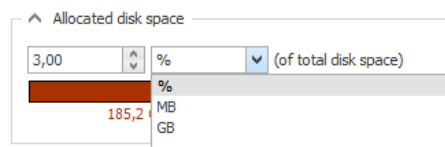
Changing the storage location of a camera will move the old recording to the new location. This way, it remains available for watching. It is not necessary to manually delete the old recording.

### Video storage settings

The total memory capacity for the respective cameras is set in the input field *Allocated disk space*. The memory segment is stated either

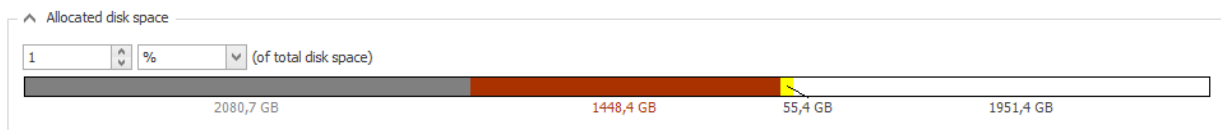
- as relative value in percent of the total disk space on the drive or partition (D:\ in the figure above).
- or as absolute value in MB (Megabytes) or GB (Gigabytes).

Select the desired option in the drop-down menu:

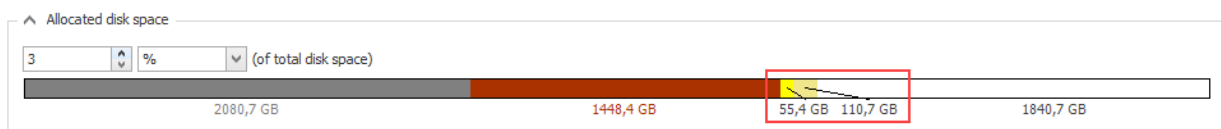


The memory capacity is depicted in the bar below with different colors.

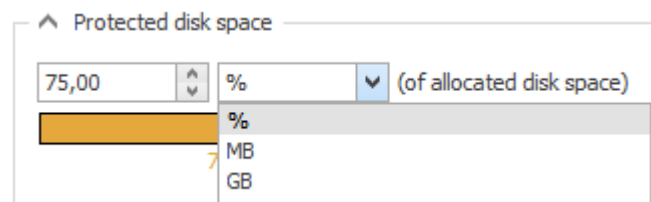
- Grey: used space on the disk
- Red: space allocated for other cameras
- Yellow: space used by this camera
- White: free space



If you change the settings, the effects of the change are displayed before they are applied.



A so-called protected disk segment of the memory capacity is specified in the input field "Protected disk space". The memory segment is also stated either in percent of the allocated disk space or as absolute values in MB or GB.



The memory capacity is depicted in the bar below with different colors.

- Orange: space for normal video
- Green: space for protected videos



Basic information for saving video data and the associated division of the memory segments in maximum and protected memory segments can be found in chapter ↗ *Principles of video recording*, page 13.

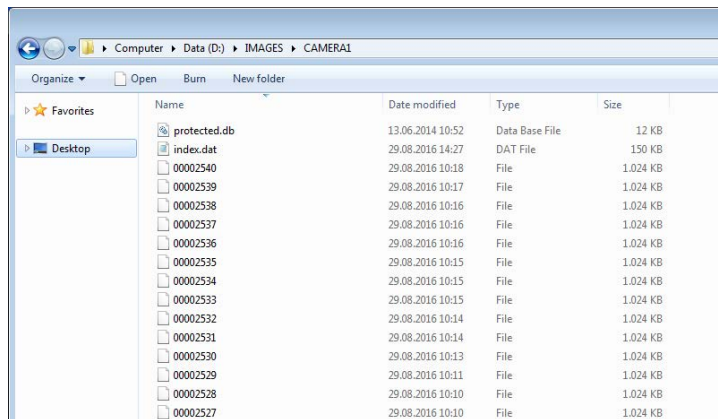
**Note**



On first configuration of a camera, we recommend setting a small percentage (≈ 1%) for “Allocated disk space” at the beginning. When using a large memory size (TB scale), the initial setup of the memory segments can take a long time (several minutes or even hours).

We suggest setting up the final memory size after completion of the camera configuration and to run the allocation job, e.g. overnight.

In order to prevent disk fragmentation during recording, the memory segment of each camera is filled with files as placeholders already at the time of applying the configuration to the server.



The "index.dat" file is not a data file within the meaning of *ibaPDA* (.dat). It is an index file over all video files of a camera. There is an “index.dat” file in each directory per camera.

**Example:**

For a hard disk with 259 GB, 1% for Camera1 is provided. This produces 2.6 GB for the reserved hard drive area of the camera. The protected memory segment should be 75% of the one percent of the memory capacity. This produces a protected memory capacity of 1.9 GB.



### File size

The size of the individual video files is specified here. Normally, the default value (1024 KB) can be used.

### Delete video after

This option serves as adaptation to the regulations stipulating an absolute upper time limit for storing video footage. If such a regulation exists, you can set the maximum storage period here and enable the option. All regular video recordings older than the period set are deleted.

### Delete protected and locked video after

This option allows you to separately set a maximum storage time for protected and locked videos. Protected and locked videos that are older than the specified storage time will be deleted.

### <Apply to all cameras>

The settings can be applied to all cameras by pressing the button at the bottom

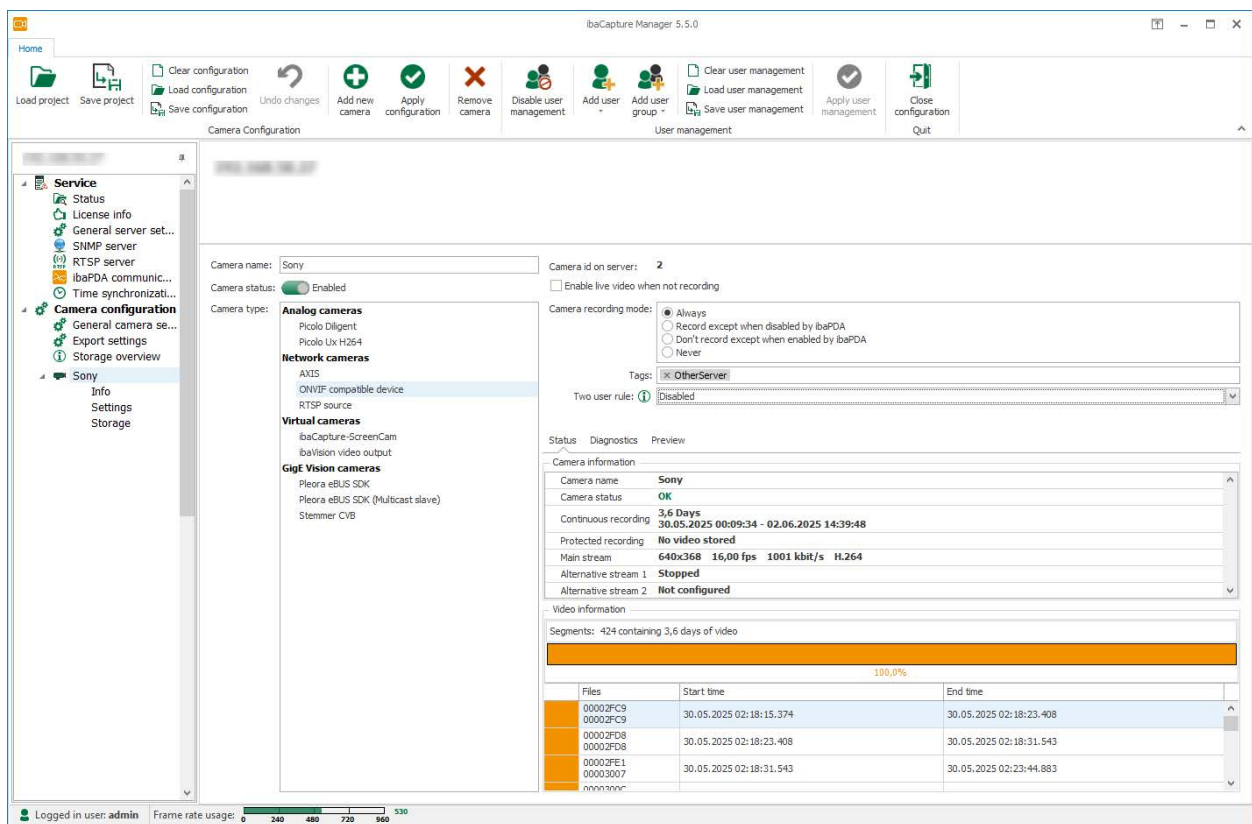




### <Reinitialize storage>

Reinitializes the specified location. The complete contents of the directory will be removed.

## 5.4.9 Camera info

For each camera, there is an *Info* branch, where you can enable/disable the camera, find status information, diagnostics and a camera preview.



Camera name, camera status and camera type are displayed on the left side. To temporarily disable a camera (e.g. for test purposes or to setup a camera which is not yet physically connected), click the enable/disable button . A disabled camera is indicated by a red button .

On the right side you find the following information.

### Camera id on server

The ID is assigned automatically by *ibaCapture* Server.

### Enable the live video when not recording

In those cases *ibaCapture* is not recording, no live images will generally be provided. If, however, you still want to receive images, you have to check this option.

### Camera recording mode

When configuring a new camera, you have to specify the camera recording mode, see chapter [↗ General information, page 96](#). Here, you can change this setting.

### Two user rule

The two user rule can be used to restrict access to a camera by requiring two users to log in. You can enable or disable the setting here. See also [↗ Video viewing with active two user rule, page 36](#).

### Status tab

| Camera information   |  |           |            |
|----------------------|--|-----------|------------|
| Camera Name          | Camera 1   |           |            |
| Camera Status        | OK   |           |            |
| Continuous Recording | 67,4 Days<br>01.06.2017 07:14:08 - 07.08.2017 16:12:42 |           |            |
| Protected Recording  | No video stored  |           |            |
| Video Triggers       | 0  |           |            |
| Main stream          | 800x600  | 24,91 fps | 143 kBit/s |
| Alternative stream 1 | 640x480  | 24,91 fps | 78 kBit/s  |
| Alternative stream 2 | Stopped  |           |            |

- Camera status can be: OK, disabled, recording blocked or disabled, no connection.
- The recording time is displayed for each camera:
  - Continuous recording (unprotected recordings)
  - Protected recording (e.g. by video triggers)

The time is given roughly in days, followed by the first time (earliest available recording date) and the last time (most recent available recording date).

### Video triggers

The number of video triggers refers to the number of triggered recording sequences. The number is 0 (zero) when only continuous recording is/was used.

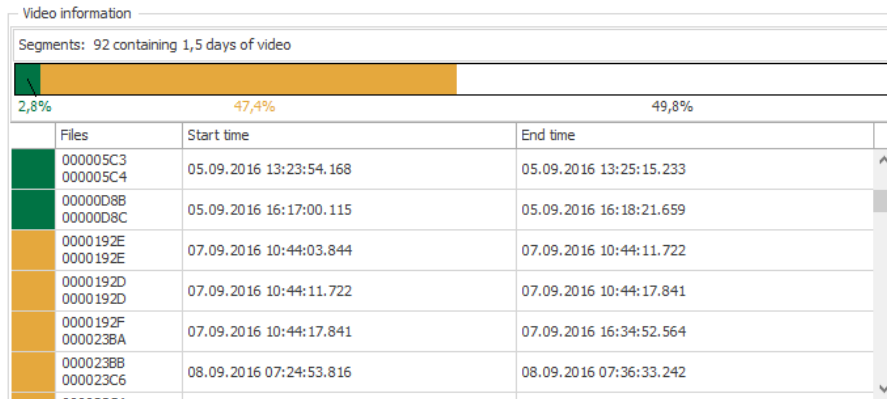
### Main stream

Current resolution, frame rate, video bit rate of the camera. The main stream is being recorded.

### Alternative Stream 1 / 2

Current resolution, frame rate, video bit rate of the currently active alternative live stream.

### Video information

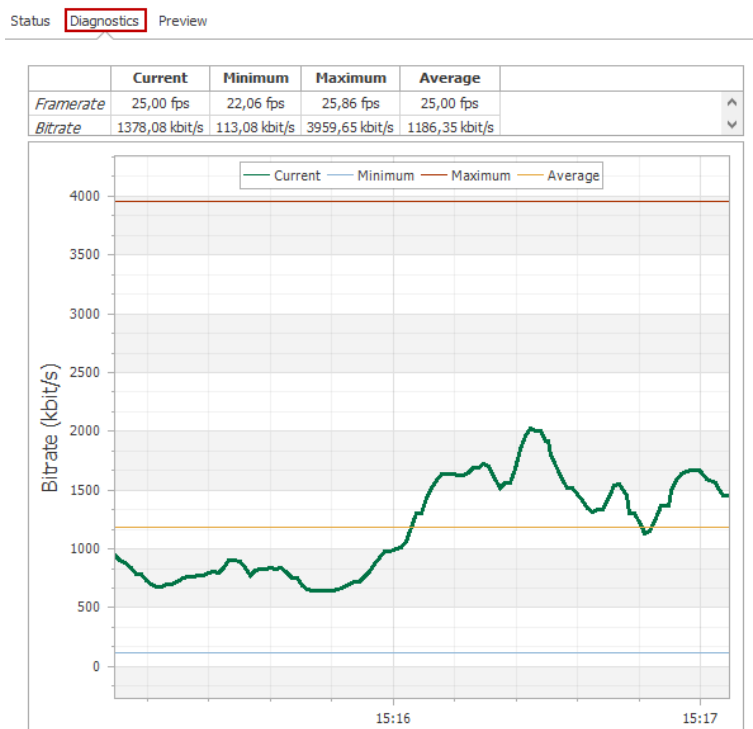


The bar graph for segments shows quota of free disk space (white), continuous recordings (orange) and triggered recordings (green). The corresponding percentage is shown below the bar graph.

The table shows all stored sequences with file names, start and end time.

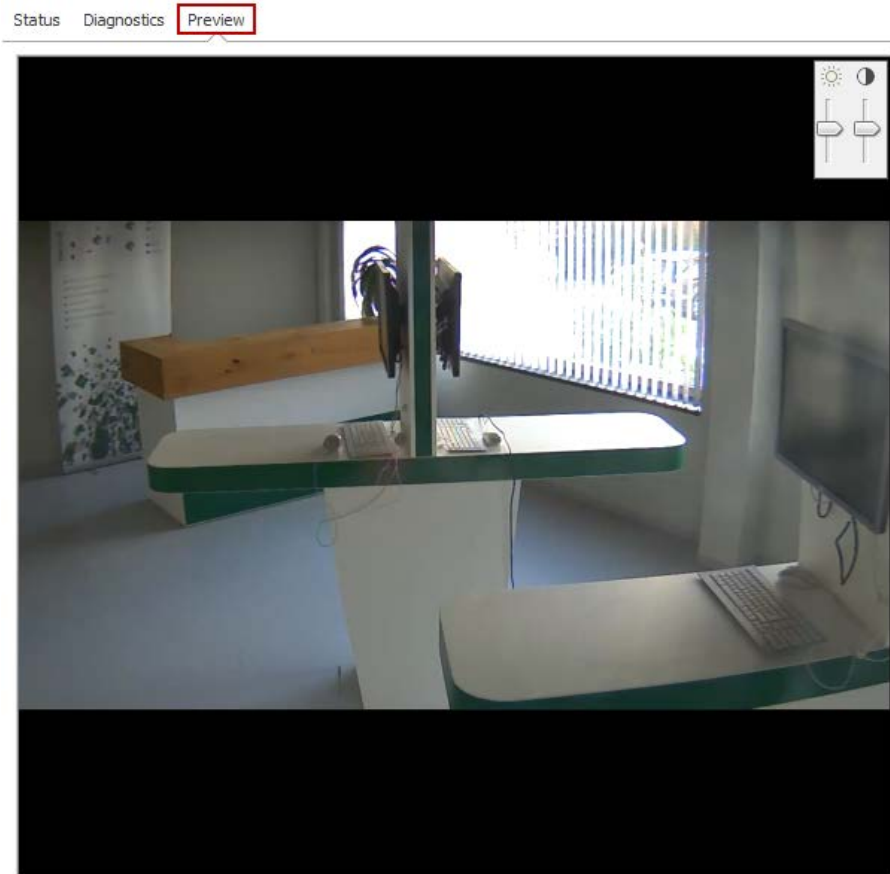
### Dignostics tab

The *Diagnostics* tab provides information about the camera as well as frame and bit rates. A trend view shows the bit rate trend over the last two minutes.



### Preview tab

The *Preview* tab provides a preview of the camera. If you move the mouse over the top right corner of the preview window, two sliders appear for adjusting contrast and brightness of the camera.



### 5.4.10 PTZ cameras

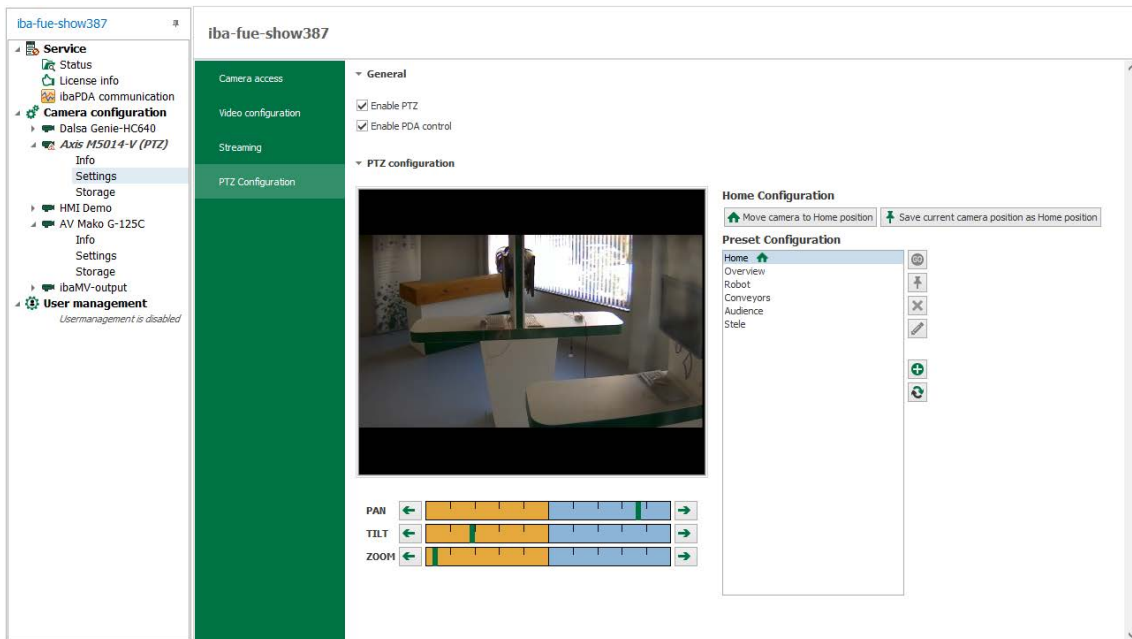
ibaCapture supports PTZ cameras (pan, tilt, zoom). PTZ cameras provide functions for panning, tilting and zooming of the camera via remote control. The movement of the PTZ camera can be controlled in server configuration mode ("Camera configuration" - "Settings" branch) in the "PTZ Configuration" section or by using a joystick, the mouse or via ibaPDA, see chapter [Controlling PTZ cameras with ibaPDA, page 162](#). An initial position and several preset positions can be configured for each PTZ camera.

ibaCapture supports the control of the following camera types:

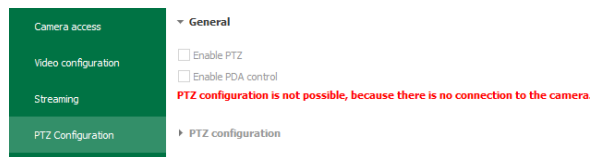
- ONVIF-compatible PTZ cameras
- Axis-IP cameras (with VAPIX log version 3)

### 5.4.10.1 Configuration

Mark the “Settings” branch under the camera and select “PTZ Configuration” in order to configure PTZ settings.



If the camera does not support PTZ control, the message "PTZ is not supported for this camera" is displayed.



#### Note

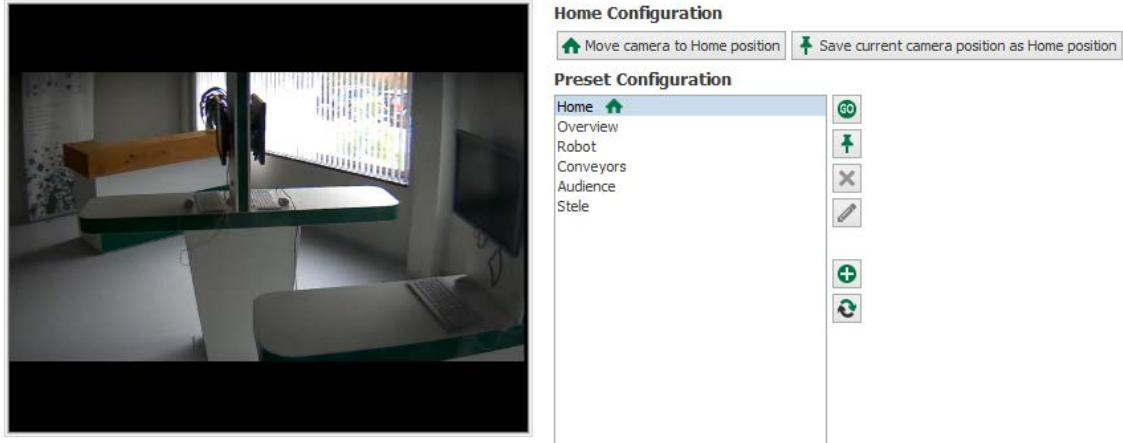


PTZ is disabled for all new cameras by default. For activation, the checkmark must be set and the server configuration applied.

### 5.4.10.2 Home configuration

Using the two buttons, you can move the camera to its home position or adjust the home position.

▼ PTZ configuration



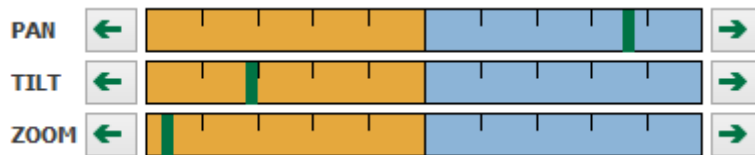
**Note**



The settings for the camera positions (home position and other presets) are stored in the camera, not in *ibaCapture*.

Moving the camera can be controlled by a joystick or the mouse, see chapter ↗ *Using PTZ cameras*, page 57.

Otherwise you can use the sliders “Pan”, “Tilt”, and “Zoom”, either by clicking on the arrows or by dragging the green cursor with pressed left mouse button.



**Set home position**

1. Move the camera to the desired position.
2. Select the „Home" branch and click the button <Save current position as Home position> or click *Update home* 📌 in the ribbon.







**Move the camera to the home position**

- ▶ Click the button <Move camera to Home position> or click *Move to home* in the ribbon. 🏠


### 5.4.10.3 Preset configurations

You can save camera positions (presets) and move the camera to the defined positions by mouse click.

The PTZ configuration can be controlled using these buttons:

|   |   |
|---|---|
|  | Move the camera to the selected preset              |
|  | Save the current position to the selected preset    |
|  | Remove the selected preset                          |
|  | Rename the selected preset                          |
|  | Create a new preset for the current camera position |
|  | Refresh the preset list                             |


#### Create a new preset

1. Move the camera to the selected preset.
2. Click on the *Create new preset...* button and  enter a name for this setting in the dialog.



3. The position can be set as home position by setting a checkmark in the box below the text-field.
4. Click on the <OK> button to save this setting.


#### Move camera to the preset position

- Select the desired position in the preset list and click on the button 


The green markers on the pan, tilt and zoom sliders show the absolute pan, tilt and zoom values of the saved camera position.

The values for the current position retrieved by the camera can deviate from the actual values, e. g. due to firmware implemented incompletely in the camera. This depends on the model.

#### Change preset position


1. Move the camera to the desired position.
2. Select the position to be changed in the preset list and click on the button 

### Change preset name


1. Mark the preset name that you wish to modify and click on the button 
2. Change the name in the text field of the dialog and confirm with <Yes>.

#### Note



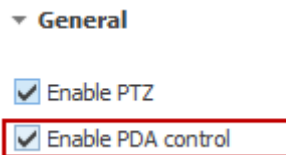
Before you change a preset name, move the camera to the preset position by clicking on the  button, since otherwise the position will be changed, too.

### Delete preset position

- ▶ Select the preset you wish to delete and click on the  button.

#### 5.4.10.4 ibaPDA control


The movement of the PTZ cameras can be controlled with *ibaPDA* version 6.31 and higher. The prerequisite is that the *Enable PDA control* checkbox is enabled and that the setting has been applied. The control with *ibaPDA* is not selected in the default setting.





*ibaPDA* can control the PTZ camera via the output signals. The signals can either contain absolute position values or one of the preset positions, see chapter [↗ Controlling PTZ cameras with ibaPDA, page 162](#).

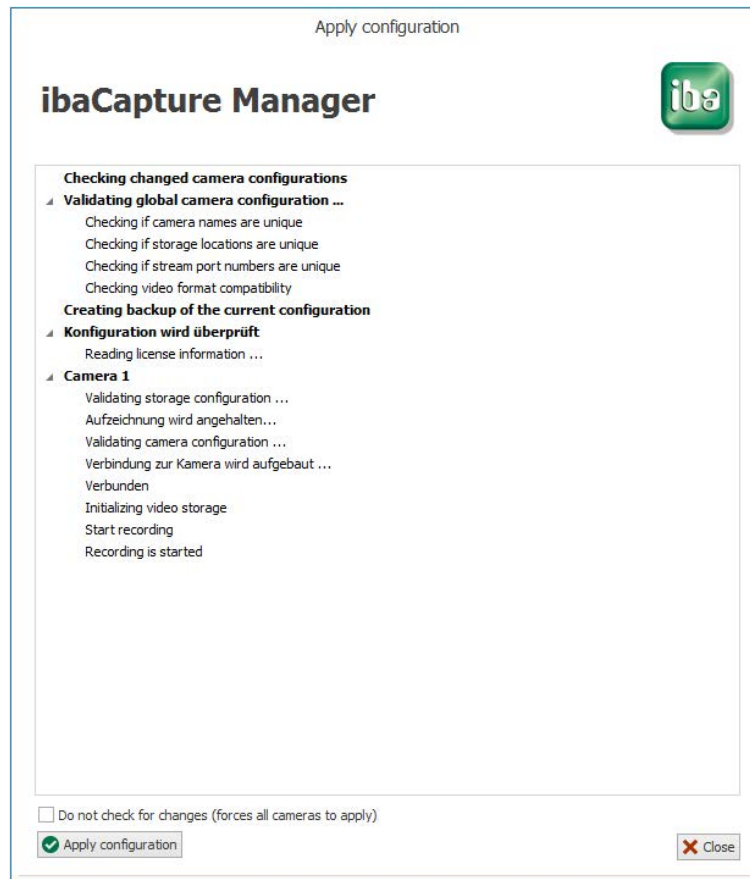
#### 5.4.11 Applying the configuration

After a camera has been configured the configuration must be applied by the server.

If the camera configuration has been changed and has not been applied by the server, this will be indicated by a yellow triangle over the camera icon in the configuration tree .

By clicking *Undo changes*  you can revert to the last saved configuration.

When clicking *Apply configuration*  the changes are applied to the server. The configuration validation is shown in the following window.



By default, the server will only stop those cameras whose configuration was changed. This can be overruled by checking the checkbox “Do not check for changes” and clicking the <Apply configuration> button again. This will force the server to stop all cameras and apply their configuration, regardless if the configuration was changed or not.

If you do not want all cameras to be stopped, you can close the window.


### Note



Applying a new configuration can cause the system to reconfigure and initialize the hard disk partition for video storage, i. e. the directories for the respective camera. In case of memory quota extension, new empty video files (place holders) will be added to a camera folder. In case of a quota reduction, existing video recordings may be deleted.

Only folders of the respective camera(s) will be affected.

*ibaCapture* Manager saves the configurations on the video server in an XML file. After that, the video service will be restarted and the changes will take effect. The hard disk (the partition for the video files) is reconfigured.

After the changes have been applied  click *Close configuration* to switch to camera view mode.

### 5.4.12 Export settings

You can configure encoding profiles in the *Export settings* node under *Camera configuration*.

When exporting videos to a file *ibaCapture* can transcode the video to a different format and resolution. This can be used to archive recordings in a more compact format (e.g., a lower resolution, bitrate or with the more efficient encoding).

You can define these settings in an encoding profile. These profiles are stored on the ibaCapture Server.

Transcoding happens on the client side. The transcoding can be hardware-accelerated if the client system has an NVIDIA or Intel graphics processor.

The following operating elements are available below the table:

|          |   |
|----------|---|
| <Add>    | Add a new profile.  |
| <Remove> | Selected profiles are removed.  |
| <Import> | Profiles can be imported by loading the corresponding XML file.                               |
| <Export> | Profiles can be exported and saved as an XML file. Select the file location and enter a name. |

#### 5.4.12.1 Encoding profiles

Several encoding profiles with different picture sizes are already preset (Large H264, Medium H264, Small H264):

The screenshot shows the 'Encoding profiles' section of the ibaCapture configuration interface. It features a table with columns for Name, Width, Height, Encoder, Codec, Bit rate [kbps], Frame rate, GOP, and Quality. Three profiles are listed: Large H264, Medium H264, and Small H264. The 'Encoder' column for the Small H264 profile has a dropdown menu open, showing options: <Auto>, Nvidia, and Intel\_SDK. Below the table are buttons for Add, Remove, Import, and Export. To the right, there is a vertical list of 'Enabled cameras' with checkboxes. Below the table is the 'Timestamp appearance' section, which includes settings for Alignment (TopLeft), Color, Font (Courier New), and Size (Small). It also shows a 'Format' field with the value '<CameraName> <dt:M/d/yyyy h:mm:ss tt>' and a 'Preview' field showing 'North Exit 5/2/2023 4:23:10 PM'. A 'Reset' button is also present.

You can assign a name and make the following settings for each encoding profile:

- Width/height: numerical input in pixels, <Auto> or <Keep original>
- Encoder: <Auto>, NVIDIA or Intel SDK
- Codec: H264 or HEVC

- Bit rate: numerical input
- Frame rate: numerical input or <Keep original>
- GOP: numerical input or <Keep original>
- Quality: Numerical input (1 - 10)

The Quality setting can be adjusted to prioritize performance over image quality. Lower values favor encoding speed over image quality. If there are no other constraints, it is recommended to set this value to 10 and adjust image quality with the bit rate setting.

If you select <Auto>, *ibaCapture* automatically selects an appropriate value. If you select <Keep original>, the settings are kept unchanged from the source video.

The *Enabled cameras* list allows to enable or disable the currently selected profile for specific cameras. To do this, select a profile and select or deselect the cameras. Newly added cameras are enabled for all profiles by default.

### 5.4.12.2 Timestamp

You can configure the alignment, color, font and format of the time stamp display. You can check the settings in the *Preview* field.

In the below example, the variable “<CameraName>” will be replaced with the actual camera name during encoding. The variable “<dt:(...)>” will be replaced by the formatted timestamp.

Timestamp appearance

|   |  |                                      |
|---|--|--------------------------------------|
| Alignment: <input type="text" value="TopLeft"/> | Format: <input type="text" value="&lt;CameraName&gt; &lt;dt:M/d/yyyy h:mm:ss tt&gt;"/> | <input type="button" value="Reset"/> |
| Color: <input type="text"/>                     | Preview: <input type="text" value="North Exit 5/2/2023 4:23:10 PM"/>                   |                                      |
| Font: <input type="text" value="Courier New"/>  | MM: Month  | HH: Hours (24h format)               |
| Size: <input type="text" value="Small"/>        | dd: Day  | hh: Hours (12h format)               |
|   | yyyy: Year   | mm: Minutes                          |
|   |  | ss: Seconds                          |
|   | <CameraName>: Camera name  | fff: Milliseconds                    |
|   |  | tt: AM/PM                            |

### 5.4.13 Storage overview

The *Storage overview* table provides an overview of all configured camera storage on the server. You can find the table in the *Storage overview* node under *Camera configuration*.

| Camera   | Used      | Total     | Protected | Start               | End                 | Delete after                          | Usage  |
|----------|-----------|-----------|-----------|---------------------|---------------------|---------------------------------------|--|
| Camera 1 | 26,23 GB  | 55,36 GB  | 75%       | 03.11.2024 23:59:36 | 07.11.2024 14:15:32 | Standard: 3 Days<br>Protected: 3 Days | <div style="width: 47.4%; background-color: orange; height: 15px; display: inline-block;"></div> 47,4% <div style="width: 52.6%; background-color: #ccc; height: 15px; display: inline-block;"></div> 52,6%  |
| Camera 2 | 52,41 GB  | 55,36 GB  | 75%       | 19.07.2022 07:54:29 | 07.11.2024 14:15:24 | Standard: 3 Days<br>Protected: ---    | <div style="width: 0.0%; background-color: orange; height: 15px; display: inline-block;"></div> 0,0% <div style="width: 94.7%; background-color: orange; height: 15px; display: inline-block;"></div> 94,7% <div style="width: 5.3%; background-color: #ccc; height: 15px; display: inline-block;"></div> 5,3% |
| Camera 3 | 758,81 GB | 758,81 GB | 75%       | 20.07.2021 14:49:52 | 07.11.2024 14:15:44 | Standard: ---<br>Protected: ---       | <div style="width: 0.2%; background-color: orange; height: 15px; display: inline-block;"></div> 0,2% <div style="width: 99.8%; background-color: orange; height: 15px; display: inline-block;"></div> 99,8%  |
| Sony     | 38,00 GB  | 38,00 GB  | 50%       | 06.11.2024 08:16:55 | 07.11.2024 14:15:43 | Standard: 7 Days<br>Protected: 7 Days | <div style="width: 100.0%; background-color: orange; height: 15px; display: inline-block;"></div> 100,0%   |

The table shows the following for each camera:

- Total allocated storage space
- Used storage space

- Protected storage space
- Currently stored time range
- Configured delete times
- Storage usage
  - orange: space for normal videos
  - green: space for protected videos
  - white: free space

## 5.5 Live view priorities

Every *ibaCapture* Server has a licensed number of live streams. When multiple clients (e.g. *ibaPDA* Client, *ibaCapture* Manager) in the network access live streams, the number of available live streams can be exhausted. With live view priorities it is possible to define clients that should be preferred when requesting live views from *ibaCapture* Server

The screenshot shows the configuration interface for IBA-FUE-WKS366. The left sidebar contains a tree view with the following items: Service (Status, License info, SNMP server, ibaPDA communication, Time synchronization), Camera configuration (General settings, Camera 1), Server access (Live view priorities, User management), and User management. The main panel is titled 'IBA-FUE-WKS366' and contains the following sections:

- Client defined priorities:** A checkbox labeled 'Enable client defined priorities' is checked. Below it is a table with two columns: 'Client name' and 'Priority'.
 

| Client name    | Priority |
|----------------|----------|
| iba-fue-wks366 | 2        |
| iba-fue-wks*   | 0        |

 To the right of the table are two buttons: a green plus sign (+) and a red minus sign (-).
- Current live streams:** A section with a 'Number of streams' input field set to '1'. Below it is a table with five columns: 'Username', 'Client', 'IP Address', 'Connected since', and 'Priority'.
 

| Username | Client         | IP Address                | Connected since     | Priority |
|----------|----------------|---------------------------|---------------------|----------|
| admin    | IBA-FUE-WKS366 | [fe80::31fc:255b:2036:... | 29.11.2017 13:51:56 | 2        |

Live view priorities can be configured in server configuration mode on the *Live view priorities* node. Priorities are based on the client name of the system.

If you want to use live view priorities, first enable *client defined priorities* with a tick in the checkbox. A priority rule consists of the client name (server name) and a numeric priority. The higher the number the higher the priority. The default priority is 0. Negative priorities are supported as well.

Priority rules can be added and/or removed with the buttons <+> and <x>. Enter a name and a value for the priority.

A rule can be applied to multiple clients with the use of wildcards. The supported wildcards are:

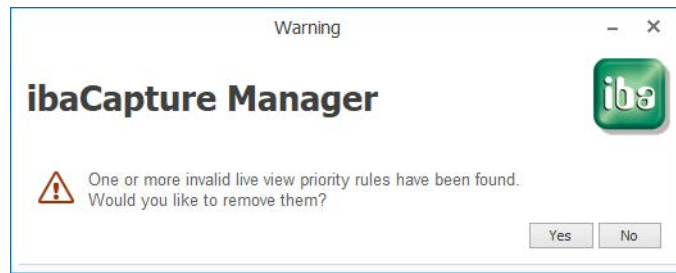
- ?: matches exactly one character.
- +: matches one or more characters.
- \*: matches zero or more characters.

Rules without wildcards will always overrule rules with wildcards.

While configuring priorities, invalid rules will be marked with a red icon. Hovering over the icon will show a tooltip with more information to correct the rule.



If you try to leave the *Live view priorities* node while there are invalid rules, you will be asked if you would like to remove these. Only if all rules are valid you are able to leave the node.



The grid underneath the priority rules grid shows the current live stream connections and their priorities.


## 6 Configuration of ibaPDA

This manual only deals with the additional configuration possibilities for *ibaPDA* regarding *ibaCapture*. All basic and further information and settings in *ibaPDA* can be found in the *ibaPDA* manual.

### 6.1 ibaCapture interface and modules

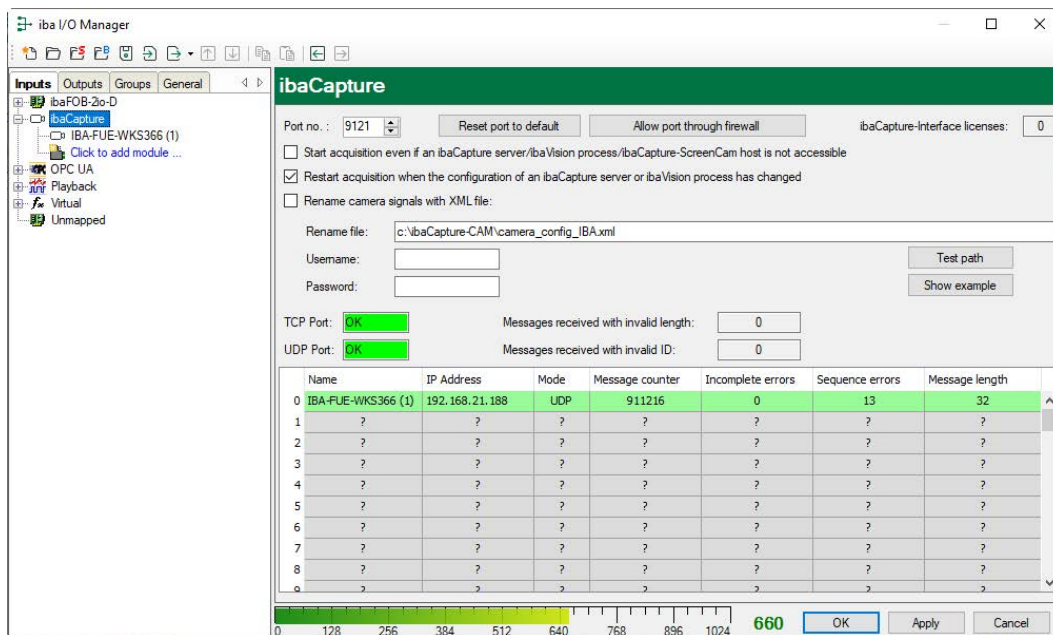
If installation and configuration of *ibaCapture* Server have been completed, it is now possible to add and configure *ibaCapture* modules. For this purpose, it is helpful if *ibaCapture* Server is running and accessible by the *ibaPDA* computer via network.

The modules are created and configured in the I/O Manager of *ibaPDA*.

To open the I/O Manager, start the *ibaPDA* client and click on the icon  in the toolbar. You can also access the I/O Manager via the menu “Configure - I/O Manager”.

#### 6.1.1 ibaCapture interface

Below you will find information on the settings for the *ibaCapture* interface.



#### Port number

The port number is specified in the entry field in the top left. The port number is used to receive synchronization data from one or more *ibaCapture* Server via Ethernet connection. The default port number can normally be used.

For further information, see chapter  *ibaPDA communication*, page 76.

If the default port number is already used in your network for other purposes you can change it here. The port number is always transferred to *ibaCapture* Server, to inform the video server about the correct port number for the exchange of the synchronization telegrams.

### ibaCapture-Interface licenses

The available *ibaCapture* licenses are shown in the top right of the screen. You need one license for each connection to an instance of *ibaCapture* Server.

### Start acquisition even if an ibaCapture Server/ibaVision process is not accessible

If you want to make sure that the acquisition starts, regardless of *ibaCapture* Server or *ibaVision* being accessible or not you should checkmark the corresponding option.

### Restart acquisition when the configuration of an ibaCapture server has changed

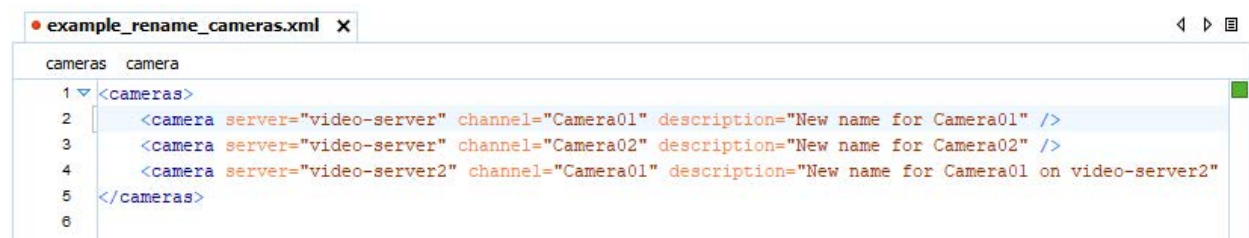
If ibaPDA detects a change in configuration for one of its active cameras then the acquisition can be automatically restarted (only works with ibaCapture Servers v4 or higher).

### Renaming camera signals with XML file

If there is a chance that the system configuration of the *ibaCapture* Server(s) is changed from time to time, e. g. due to renaming of the cameras, the XML file is a helpful mean.

If this option is selected *ibaPDA* will read the XML file specified in the field "Rename file".

A sample file is stored during installation of *ibaPDA* and can be seen by pressing <Show example>.



```

example_rename_cameras.xml x
cameras camera
1 <cameras>
2   <Camera server="video-server" channel="Camera01" description="New name for Camera01" />
3   <Camera server="video-server" channel="Camera02" description="New name for Camera02" />
4   <Camera server="video-server2" channel="Camera01" description="New name for Camera01 on video-server2" />
5 </cameras>
6

```

If you prepare such files with different content (according to the different camera constellations) and copy it to the specified path before restarting the acquisition, *ibaPDA* will automatically acquire the new camera names.

## 6.1.2 Modules in ibaCapture

The signal tree shows the available *ibaCapture* modules in a tree structure under the *ibaCapture* interface. Two different module types are available:

- ibaCapture
- ibaCapture-ScreenCam
- ibaVision input
- ibaVision V2 input
- ibaVision V2 text input

*ibaCapture* modules are designed for video cameras (analog, IP, GigE) and virtual cameras. Each module is assigned to one *ibaCapture* Server and can handle up to 64 cameras of the aforementioned types. The actual number of cameras depends on the *ibaCapture* Server configuration.

The configuration of an *ibaCapture* module is described in chapter [➤ Configuring an ibaCapture module, page 144](#).

*ibaVision* input modules are designed to receive the following signals:

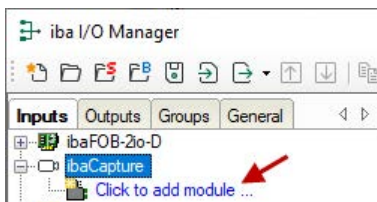
- analog and digital signals sent from an *ibaVision* process
- temperature values as analog signals generated by *ibaCapture* from the images from thermal cameras

The modules *ibaVision V2 input* and *ibaVision V2 text input* module must be used when working with the previous version *ibaVision-V2*.

The configuration of an *ibaVision* input module is described in the *ibaVision* manual.

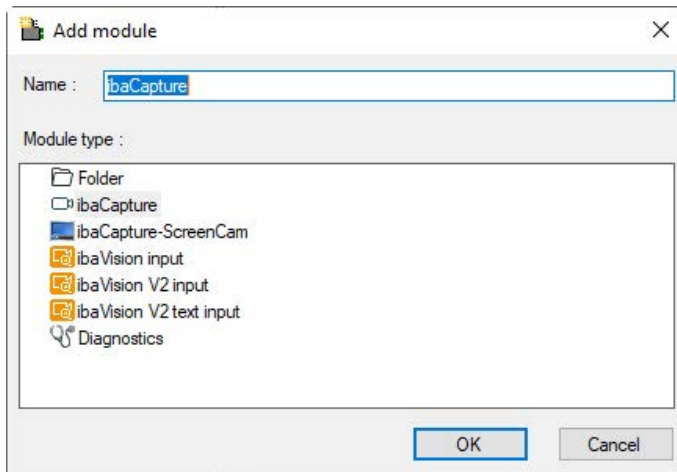
## 6.2 Creating a new ibaCapture module

1. To create a new *ibaCapture* module, click on "Click to add module..." under *ibaCapture*.



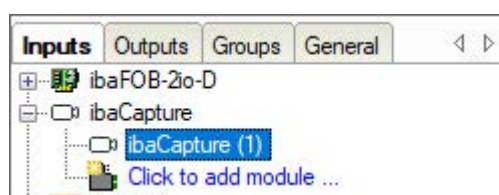
2. Enter a module name in the text box and select the module type:
  - a) *ibaCapture*, when connecting to an *ibaCapture* Server
  - b) *ibaVision input*, when receiving data from *ibaVision* or analog temperature values from an Optris thermal camera

Choose a name so that the video server and its respective cameras can easily be identified later.



3. Confirm with <OK>.
 

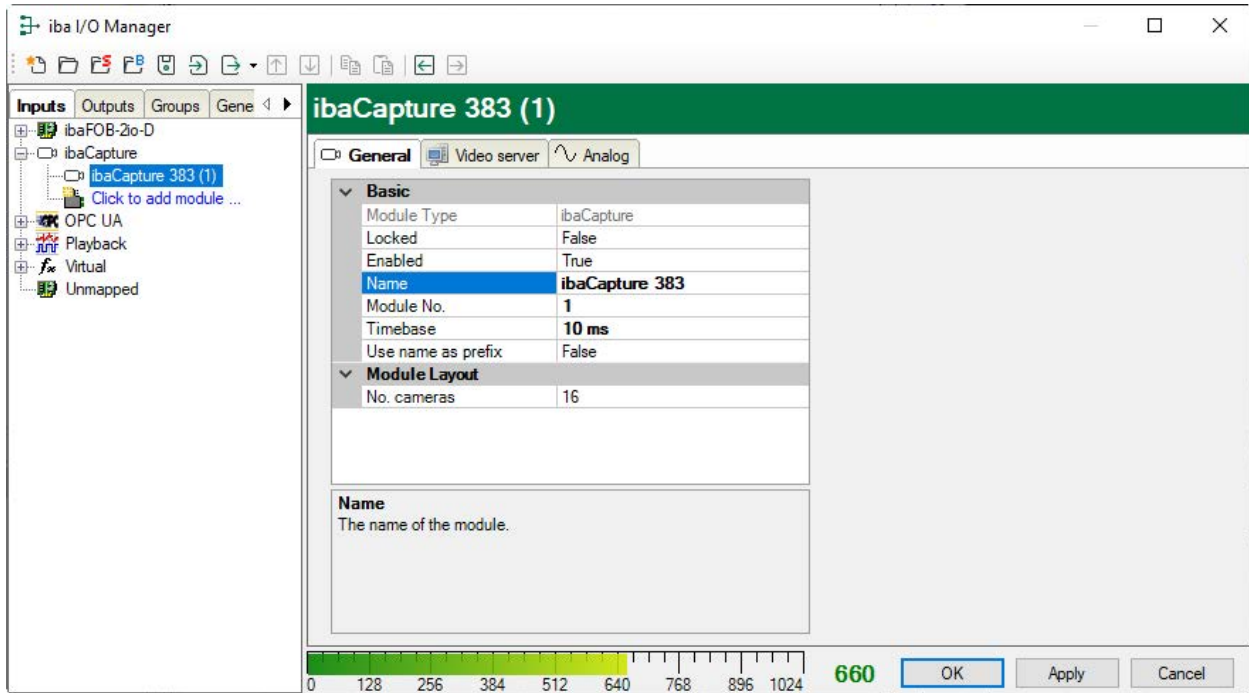
→ Once the module has been created, it is shown in the signal tree.



To configure an *ibaCapture* module, select the respective *ibaCapture* module in the signal tree.

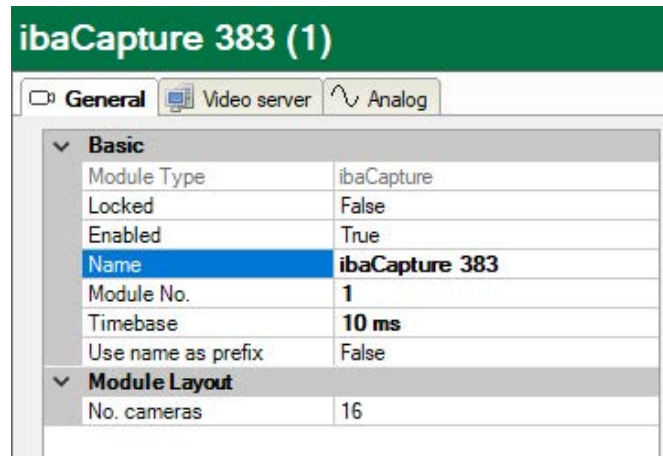
### 6.3 Configuring an ibaCapture module

The settings for the connection between *ibaPDA* and an *ibaCapture* server are made in the configuration of the *ibaCapture* module.



#### 6.3.1 General

The basic settings are described in detail in the *ibaPDA* manual. Normally, the preset values do not need to be changed.



In the field “No. cameras”, you can configure the number of cameras to be configured. The minimum value is 16. When connected to the video server, *ibaPDA* will automatically set the number of cameras to the correct value, if a higher number of cameras is available.

**Note**

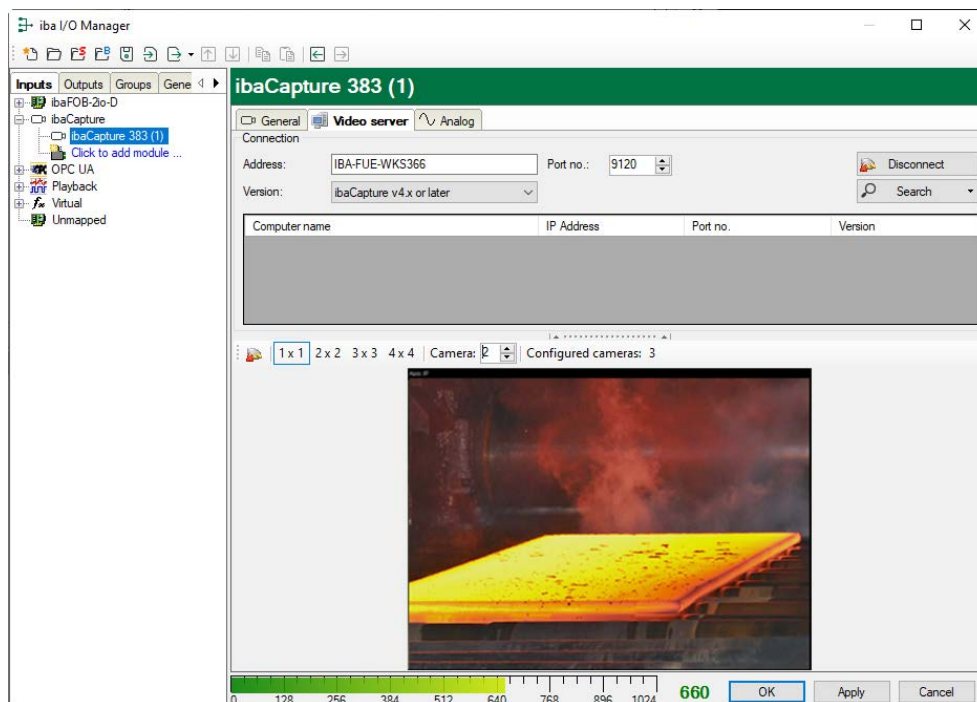


The timebase in this case sets the period for writing the synchronization data in the data file. It is recommended setting this timebase at least half the timebase of the fastest camera or lower.

Example: Camera with 25 fps (= 40 ms) -> recommended time base ≤ 20 ms

Camera with 300 fps (= 3.33 ms) -> recommended time base ≤ 2 ms

### 6.3.2 Video server

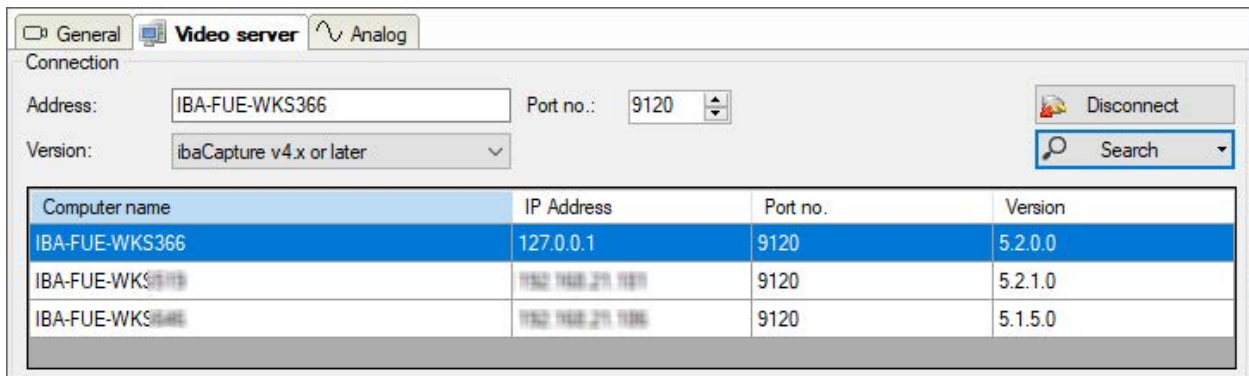


The *Video server* dialog consists of two sections:

- Connection
- Live screen

### 6.3.2.1 Connection

In the section *Connection* the *ibaCapture* Server is selected on which a video sequence is to be recorded.



In order to establish a connection to a video server you have two possibilities:

- Enter the computer name or the IP address of the video server computer into the field *Address*.
- Click on the <Search> button. In the area below all *ibaCapture* Servers available in the network will be listed with their computer names.

Please note that the search function might fail due to network restrictions concerning multicast messages.

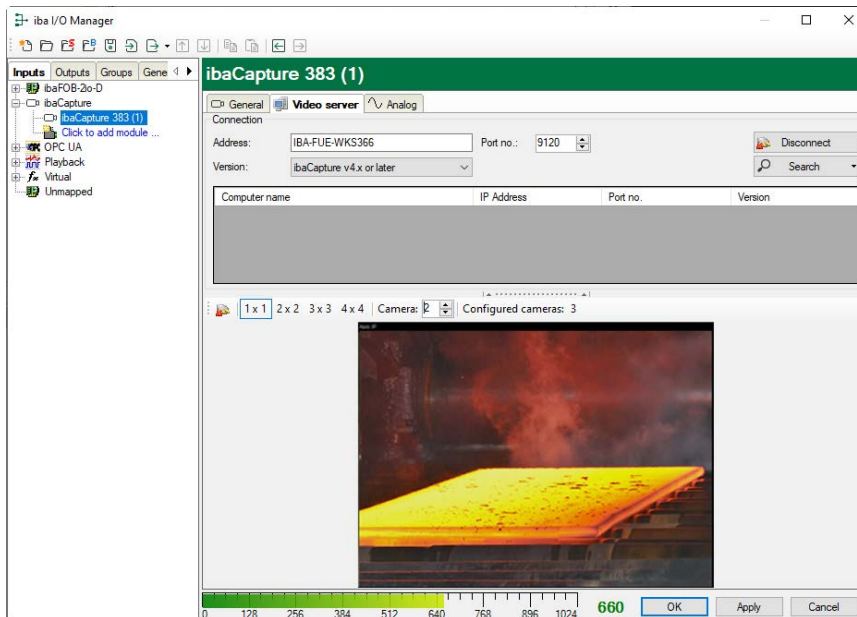
The default port number can usually be retained as it equals the default port number of the video server.

The server in question should then be selected with a mouse click. Click the <Connect> button to connect to the *ibaCapture* Server. The selected server is shown in the *Address* field.

The version of *ibaCapture* will be automatically detected when connected to the server.

### 6.3.2.2 Camera screen

As soon as the connection between *ibaPDA* and *ibaCapture* Server is established, a live screen of the connected camera(s) appears in the lower area of the dialog "video server". Depending on the toolbar settings, one or more camera screens are visible.



The toolbar for the display area is located above the live screen.



 : Interrupts the connection to *ibaCapture*

**1 x 1** 1 cameras is displayed.

**2 x 2** 4 cameras are displayed.

**3 x 3** 9 cameras are displayed.

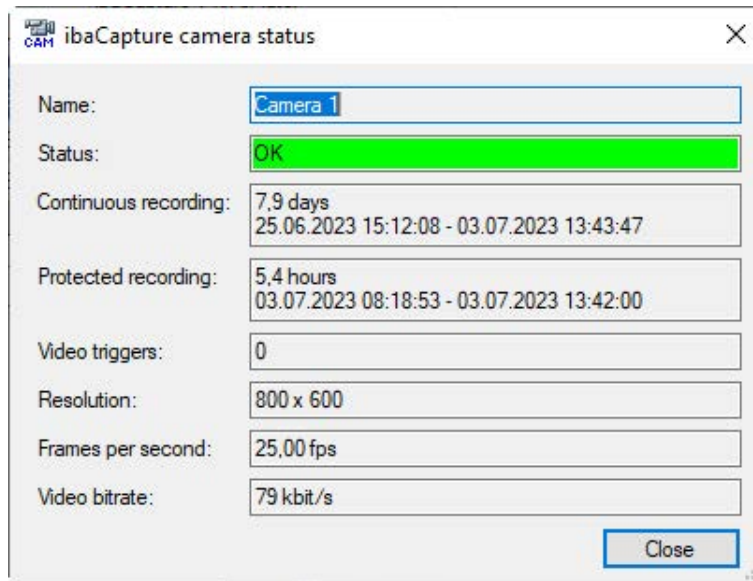
**4 x 4** 16 cameras are displayed.

Camera: **0** Selection of camera / camera group

The display area can display a maximum of 16 live screens at the same time. Display as a tile pattern reduces the screens in size. The field "Camera" provides the possibility of a larger display. If eight cameras are connected and only four live screens are to be displayed at the same time, open the view 2x2 by clicking in the toolbar. Cameras one to four will be displayed. A mouse click on the "arrow upwards" displays the next four live screens. The camera number jumps from 0 (for the first camera) to the number 4 (for the fifth camera) automatically. With a mouse click on the "arrow downwards" the live screens of the first four cameras are displayed again.

The number of licensed cameras is also displayed in the toolbar.

With a double click on a camera image the *ibaCapture* camera status window will open.



The *ibaCapture* camera status shows useful information on the camera (e.g. status, recording time, number of video triggers, resolution and bit rate).

When the camera is in error state a double-click on the camera view will open the *ibaPDA* client log file.

### 6.3.3 Analog

The *Analog* tab displays all the connected cameras in a signal table.

| ibaCapture 383 (1)   |            |                                     |                   |
|--|------------|-------------------------------------|-------------------|
| <input type="checkbox"/> General <input checked="" type="checkbox"/> Video server <input checked="" type="checkbox"/> Analog |            |                                     |                   |
| Name   | Delay (ms) | Active                              | Actual            |
| 0 ScreenCam  | 200        | <input checked="" type="checkbox"/> | 16883847433405664 |
| 1  | 200        | <input type="checkbox"/>            | 0                 |
| 2 Camera 1   | 200        | <input checked="" type="checkbox"/> | 16883847434286028 |
| 3  | 200        | <input type="checkbox"/>            | 0                 |
| 4  | 200        | <input type="checkbox"/>            | 0                 |
| 5  | 200        | <input type="checkbox"/>            | 0                 |

#### Name

Clicking in the column *Name* enables you to change the name of the camera in the respective row.

If no camera names have been assigned yet in *ibaPDA*, the camera names from *ibaCapture Server* are loaded as default as soon as *ibaPDA* connects to *ibaCapture Server*.

#### Delay

The delay time given in ms is the time needed for the transfer of the video data from the camera via MPEG/H.264/H.265 compression to time stamp and storage on the video server. It can be modified according to real circumstances if required.

Usually, the pre-set values of the delay can be retained.

## Active

For the synchronization data of a camera to be stored in the data file and thus connecting the video to the measuring data recording, the *Active* column must be ticked off. Respectively, *ibaAnalyzer* will show the camera in its signal tree later when the DAT file is opened for analysis. If you double-click the camera, then in *ibaAnalyzer* it will retrieve the video from the ring buffer of the *ibaCapture* Server using the stored sync information.

## Actual value

The actual value is the timestamp/sync value for each camera (64 bit value).

## 6.4 Data acquisition with ibaPDA

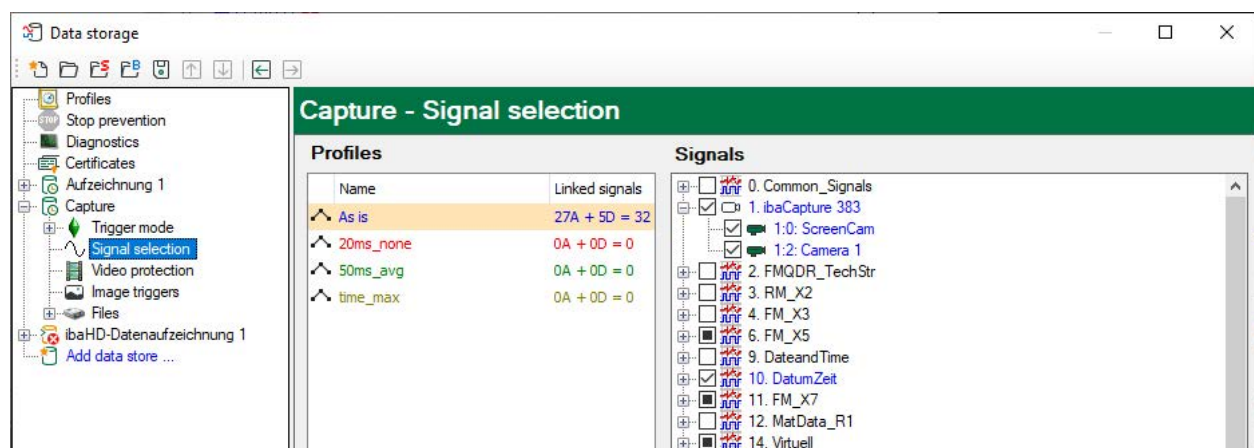
There are different types of video recording in *ibaPDA*:

- Continuous video recording
- Triggered video recording
- Single images via image trigger

### 6.4.1 Continuous video recording

The continuous video recording is started automatically with start of data recording. As soon as *ibaPDA* data storage has been started the synchronization data sent by *ibaCapture* Server is stored in the data file together with the measured data. This is how the measured values are connected to the video recording. When stopping the data recording, the data file is closed and the connection is removed. In doing so, *ibaPDA* does not have any impact on the video server.

To make sure that the video streams are correctly stored with the measured data, for both continuous and triggered recording, you must check the camera signals in the signal selection pane of the data storage configuration dialog:



An unchecked camera will not be available later in *ibaAnalyzer*, although *ibaCapture* Server has recorded the video stream.

With *ibaHD-Server* v1.6.4 and higher, it is also possible to store camera synchronization data. Video in *ibaAnalyzer* can then be used as if a DAT file was opened. For this to work, the camera signals also have to be enabled in the HD data store configuration.

### 6.4.2 Triggered video recording

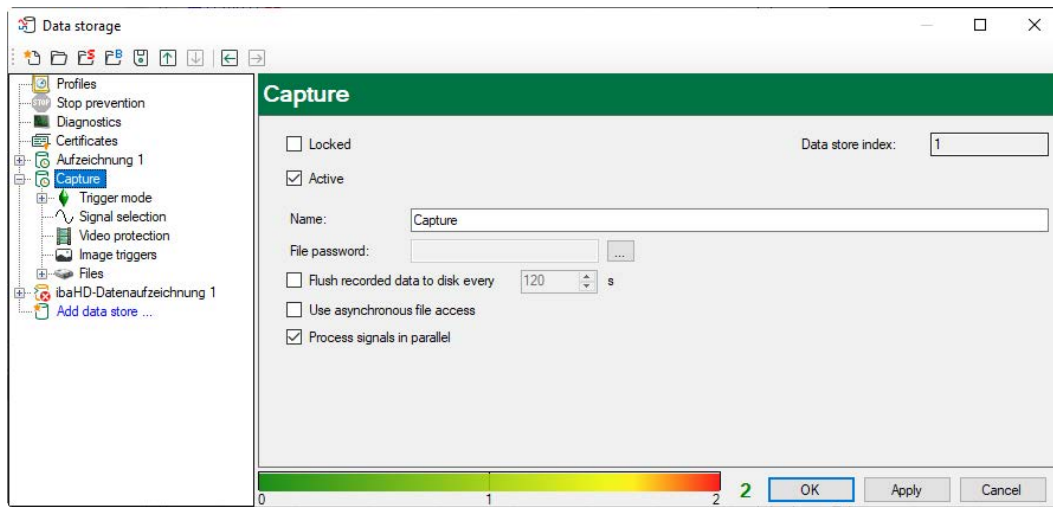
Parallel to the continuous video recording, triggered video sequences can be recorded. As described in chapter "Principles of video recording", particular video sequences are stored protected on ibaCapture Server by means of video triggers during video recording to protect the video data against being overwritten by the continuous recording.

ibaPDA therefore sends the information on the trigger events to the video server.

In order to record triggered video sequences, the video triggers need to be configured.

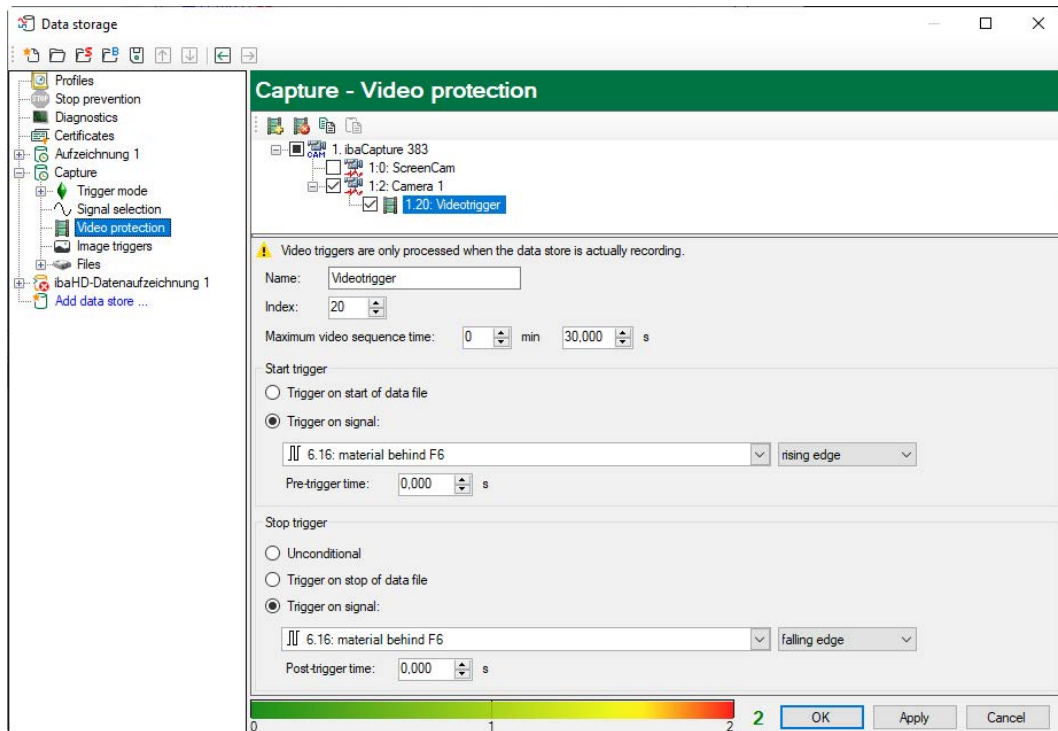
Select an existing data storage you want the video recording to be linked with or create a new data storage.

For this purpose, open the "Data storage" dialog by clicking on the icon  in the toolbar or on the *Configure - Data storage...* menu.



Click on the branch "Video protection" to open the video trigger setup dialog.





The available video servers and all active cameras connected to them are displayed in the upper section in a tree structure. All further video triggers to be configured are created under the corresponding (marked) camera.

Up to 10 video triggers can be added to each camera.

### Adding an image trigger

You can assign an image trigger to a camera by selecting the camera in the tree structure and pressing the "Add image trigger" button in the toolbar. Alternatively, you can use the context menu (right-click on the camera).

By setting or removing a checkmark in the corresponding checkbox, you can enable or disable every trigger for recording.

The video trigger toolbar is located in the upper section.



Add image trigger, alternatively, a image trigger can be added via the context menu. The relevant camera must be marked for this.



Removing image trigger



Copying marked image trigger to clipboard



Pasting image trigger from the clipboard

If an image trigger was marked, the name can be changed. Furthermore, it is possible to set the index in the rotary field "Index" and the maximum video sequence time. The trigger index defines the order of the triggers for one camera.

For a triggered recording, at least a start trigger has to be configured. Every trigger can have its individual conditions.

The setting of trigger conditions is widely the same as for *ibaPDA* data storage triggers.

In the "Start trigger" section, both a digital and analog signal can be selected as trigger signal. The following trigger conditions can be selected:

- Rising / falling edge or log. 0 / log 1 for digital signals
- Rising / falling edge or below / above level X for analog signals

Optionally, it is possible to define a pre-trigger time.

According to the "Start trigger" section, a trigger signal can be selected with the aforementioned trigger conditions in the "Stop trigger" section. Optionally, it is possible to define a post-trigger time.

The video sequence will start after firing of a start trigger.

The video sequence will stop when the maximum video sequence time has been reached or a stop trigger fires.

If a stop trigger was defined for stopping the recording which, however, did not occur (due to bad level or edge setting), the recording is stopped after lapse of time.

---

#### Note



The maximum video sequence time limit is dominant compared to a stop trigger. If you want to use a stop trigger, make sure that the maximum video sequence time value is high enough.

---

A click on the <OK> button applies the configuration of the data storage.

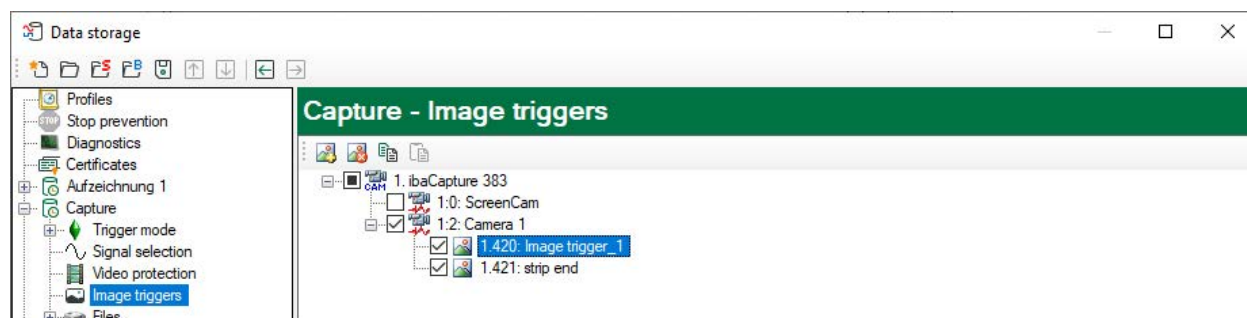
### 6.4.3 Still images/snapshots via image trigger

Image triggers allow saving of single images from a video stream at a specific time. With each trigger fired, ibaCapture creates an image (.jpg or .bmp) of the corresponding frame of the video stream.

Similar to video triggers (see above), image triggers are defined in the data storage configuration of *ibaPDA* (version 6.29.0 or higher). A branch "Image trigger" can be seen in the tree of data storage if ibaCapture modules are included in the I/O configuration.





All *ibaCapture* Servers and the cameras connected are shown in the tree structure of the "Image trigger" branch.

Up to 10 image triggers can be added to each camera.



#### Adding image triggers

You can assign an image trigger to a camera by selecting the camera in the tree structure and pressing the "Add image trigger" button in the toolbar. Alternatively, you can use the context menu (right-click on the camera).

-  Add image triggers
-  Remove image trigger
-  Copy marked image triggers to clipboard
-  Insert image triggers from clipboard

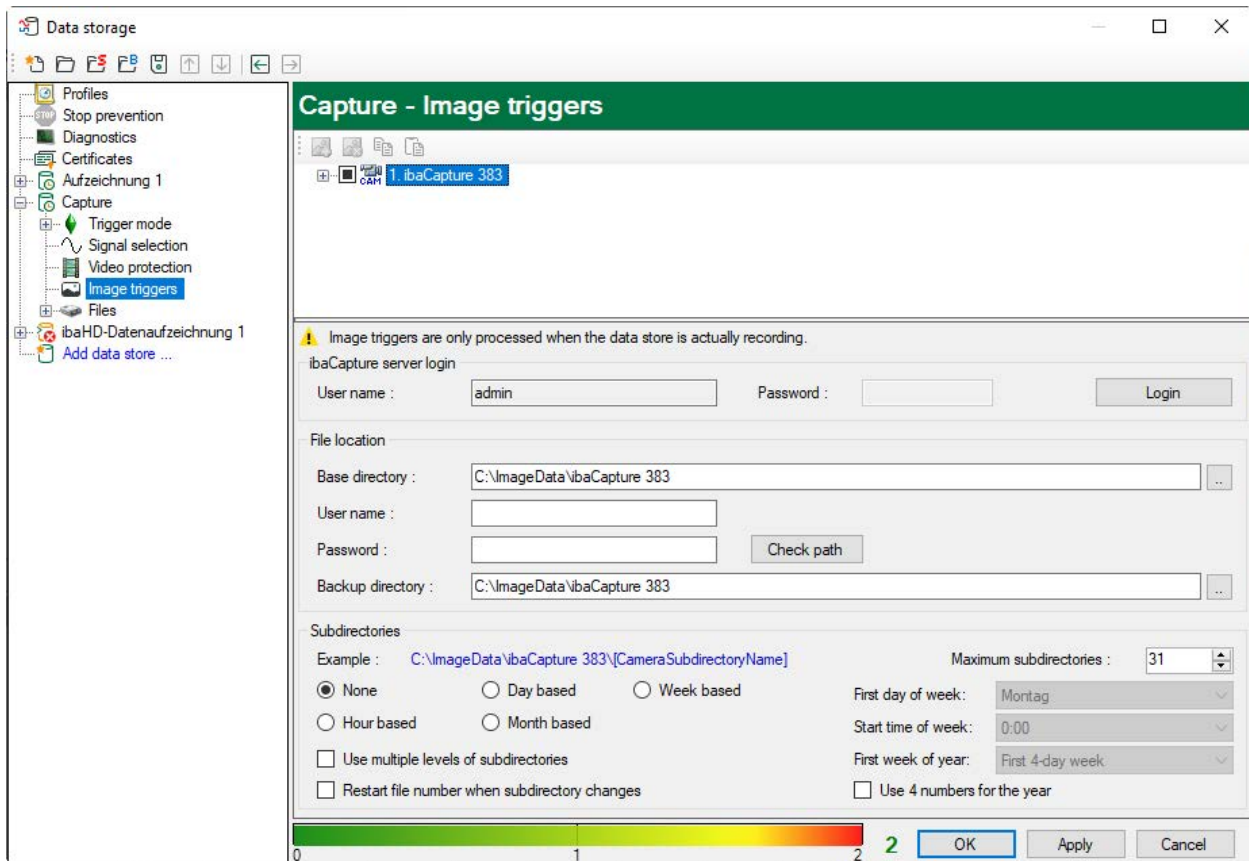
By setting or removing a checkmark, you can enable or disable every image trigger for recording.

#### Configuring image triggers

The configuration of the image triggers is done on 3 different levels: *ibaCapture* Server, camera and image trigger.

##### Server level

Select the server branch.

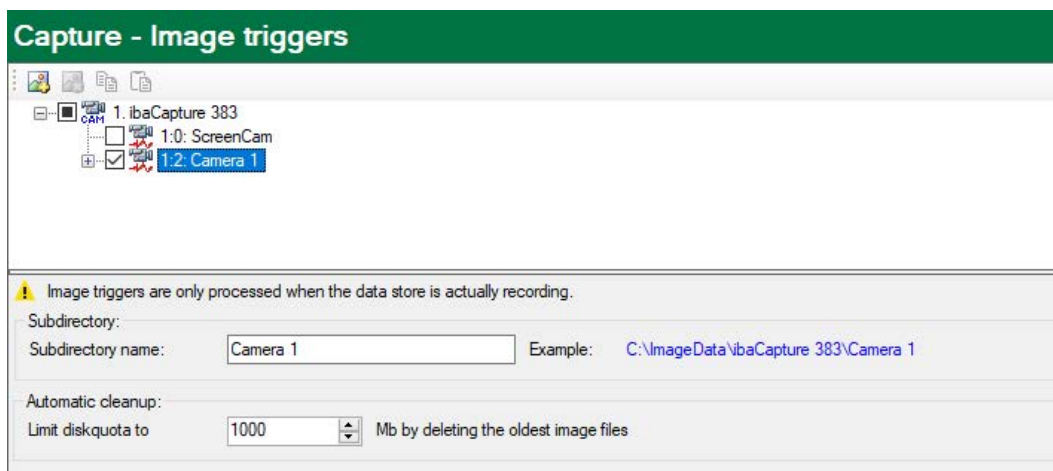


On the video server level, you can determine the main folder and the subfolder structure for the storage of image files. A subdirectory is automatically created under the main directory of the server for each camera. A structured storage is then made below this, which you can configure here, similar to the measurement files in the data storage.

In addition, you can determine a user account to be used for login to the video server.

### Camera level

Select the camera branch.



Specify the name of the subdirectory for the camera and the allocated disk space in MB at the camera level. The disk quota is checked every 15 minutes. Choose a memory size that corresponds to the maximum permissible disk space minus the approximate data volume generated

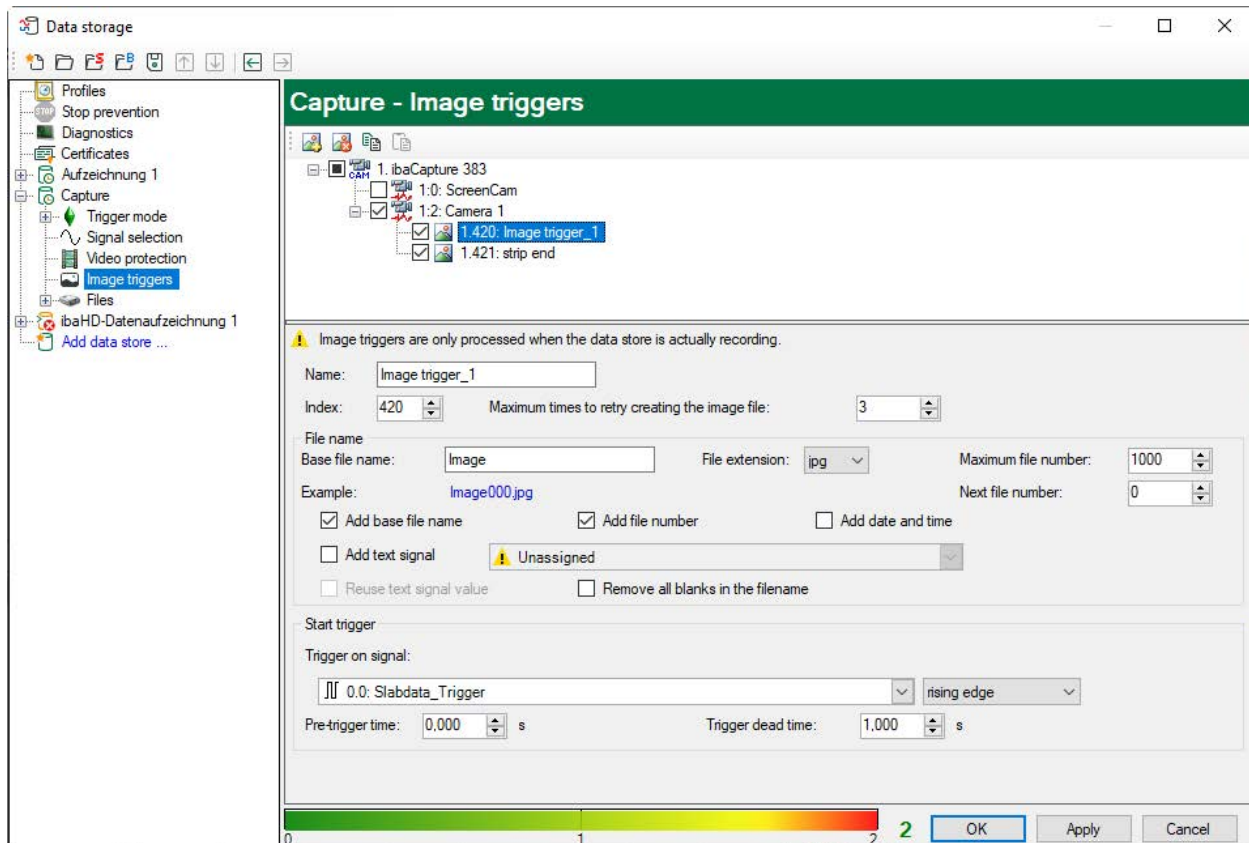
within 15 minutes. Doing so helps you to ensure that the maximum permissible disk space is not exceeded.

**Example**

A maximum of 500 MB is available for one camera. Approximately 10 MB of image files are generated within 15 minutes. The memory use should then be limited to 490 MB.

**Image trigger level**

Select an image trigger



On the trigger level, you can change the name and index of an image trigger. The index determines the order of triggers for a camera.

Furthermore, you can set the way the file name of the image file is created. The same setting options as for the data files are available.

The start trigger determines the time a snapshot is made. You can also trigger on the edge of a digital signal or the pass-by value of an analog signal. It is also possible to define a pre-trigger time. The snapshot is then taken at the time set (trigger event – pre- trigger time). The trigger dead time determines the minimum time interval between two snapshots. In addition, the image triggers are saved in the measurement file as image channels. An image channel contains the file names of the created images.


### 6.4.4 Starting the video recording

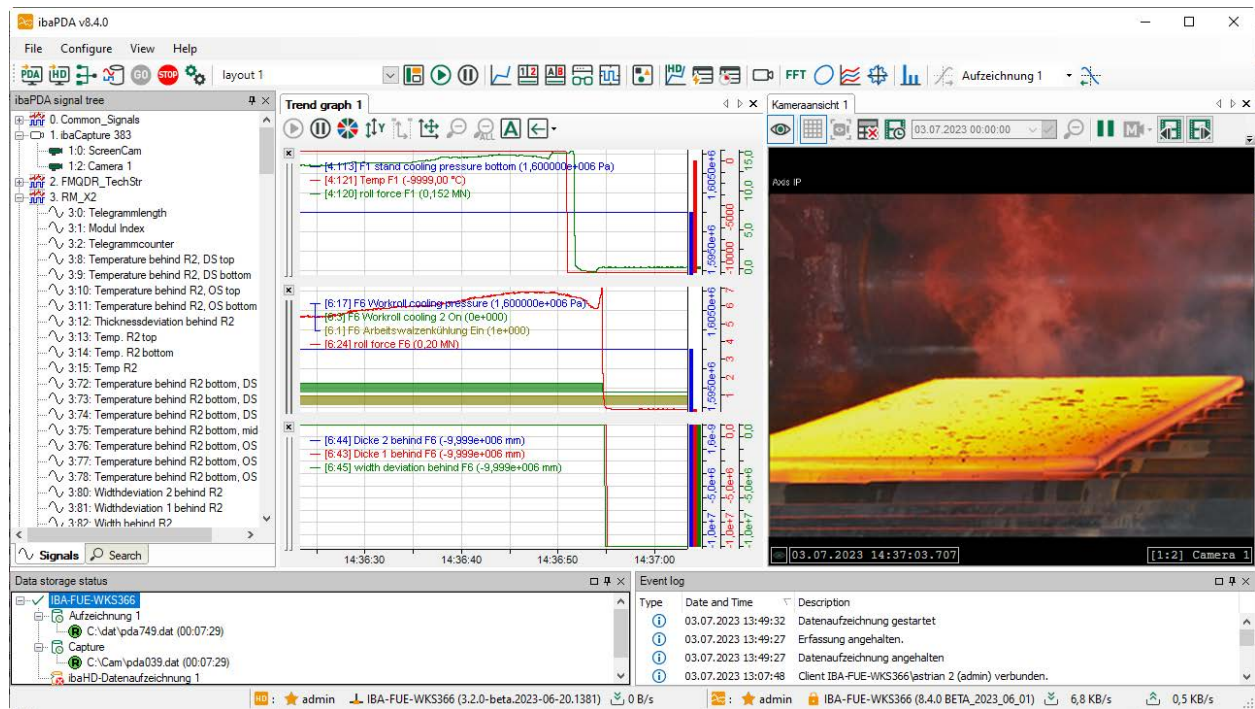
While the actual video recording takes place as soon as the *ibaCapture* server is running, the transmission of the synchronization data is started and stopped with the *ibaPDA* data acquisition. When *ibaPDA* measured value recording is started, *ibaPDA* Server connects to *ibaCapture* Server and starts the transmission of synchronization messages.

## 6.5 Video display in ibaPDA

With *ibaCapture* it is possible to display camera views in the *ibaPDA* signal display area. An instance of *ibaCapture* Server is equivalent to an *ibaCapture* module. *ibaCapture* modules are displayed in the signal tree like all other *ibaPDA* modules.

The following methods can be used in order to get camera views displayed in the signal display area:

- A double click on the camera icon in the signal tree opens a camera view showing the actual image of the respective camera (Camera 1 in the figure below).
- A click on the icon  opens a new and empty camera view. Afterwards, you can add one or more cameras by drag and drop.







The component being used for display and application is *ibaCapture* Player.


### Toolbar in ibaPDA camera view


When integrated in *ibaPDA*, *ibaCapture* Player provides a toolbar to control the video functions, in contrast to the ribbon-style menus in *ibaCapture* Manager.

The toolbar "camera settings" is located on top of the camera view. The status of the icons (enabled / disabled) depends on the status of the selected camera(s). When the camera view contains a camera in busy state, all toolbar items will be not available.








-  All cameras are switched to live view..
-  All players are selected, no camera can be deselected. To deselect the cameras, click the button again
-  Selected cameras are removed.
-  Shows or hides the camera timeline.  
For information about the timeline see also chapter ↗ *Show timeline*, page 48.

 The time selection can be used to jump to a specific point in time in the recording. all video recordings in the selected camera windows are also reset to this time. To specify the time, you can enter the date and time in the *time picker*.

It is also possible to use a calendar function to specify the point in time. Click the arrow icon to open the calendar dialog .

The replay speed after the time jump can be set in the *Properties* dialog, see chapter ↗ *Player settings for all cameras*, page 36 in the *Properties* section. The function is only available if the selected cameras are in replay mode

-  All zoomed in players are reset to their original resolution.
-  Selected cameras are switched to replay/pause mode.  
The replay speed of the video recording is then set to zero for all selected camera recordings. It should be borne in mind that all cameras, at this point, are synchronized.
-  Select playback master in the selection list.
-  Jump to the next or previous video image.

The control element  allows the setting of the replay speed of the selected camera windows. The control element is only available if replay mode is activated.

Note that the replay speed is specified relative to the normal speed. For example, 2.00x means that the current replay speed is twice the normal speed.

### 6.5.1 Overlay text display

It is possible to add a dynamic text overlay to each camera view. This can be done by dragging a technostring from the *ibaPDA* signal tree onto the desired camera. The text will be positioned depending on where the signal was dropped.

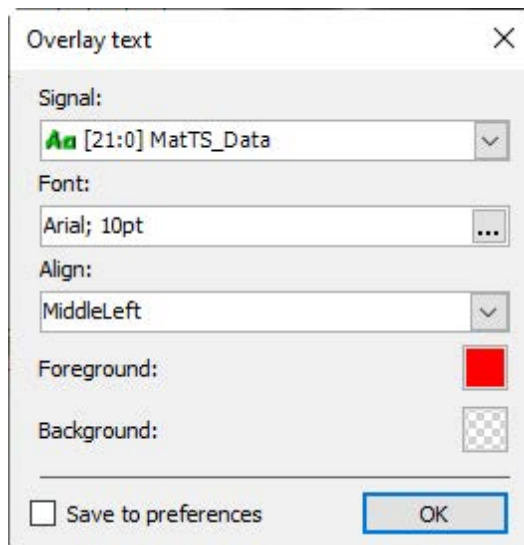
**Note**



The overlay text display is only available in the *ibaPDA* camera view.



An overlay text can be removed easily using the context menu (right-click on the text). In the context menu, you can also find the command for opening the properties dialog.



In this dialog, you can configure:

- font in which text is displayed
- foreground and background color
- orientation of the text in the camera window

By right-clicking the background color button, it is possible to select an entirely transparent color. By checking the "Save to preferences" checkbox before clicking <OK>, you can save the current settings as default settings.

If the camera switches to replay mode, the system will attempt to synchronize the technosting with the replay time of the camera. In *ibaPDA*, this is only partly possible. If the required technosting data is not available, the text "[?]" will be displayed. *ibaPDA* receives the buffered technosting data at the beginning of the data acquisition. The buffer size is adjustable in the branch "General" – "Size of text signal buffers" in the preferences of *ibaPDA*.

## 6.5.2 Display of Optris cameras

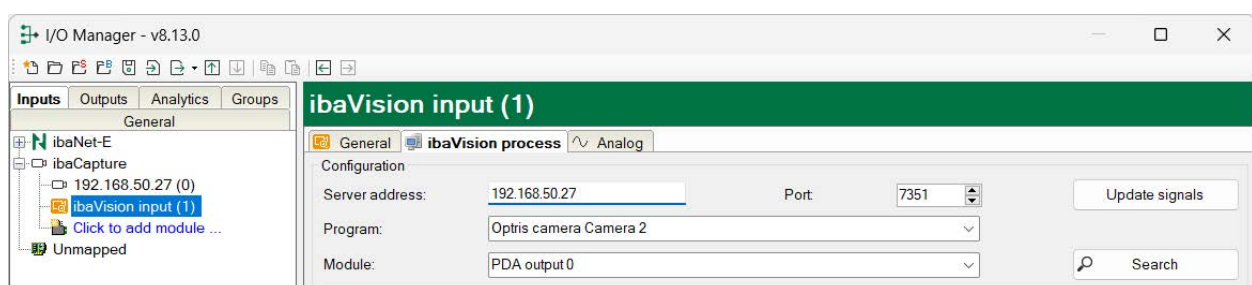
The false color video image from an Optris camera can be added as a regular *ibaCapture* camera using an *ibaCapture* module.

For configuration, see chapter [↗ Configuring an ibaCapture module, page 144](#).

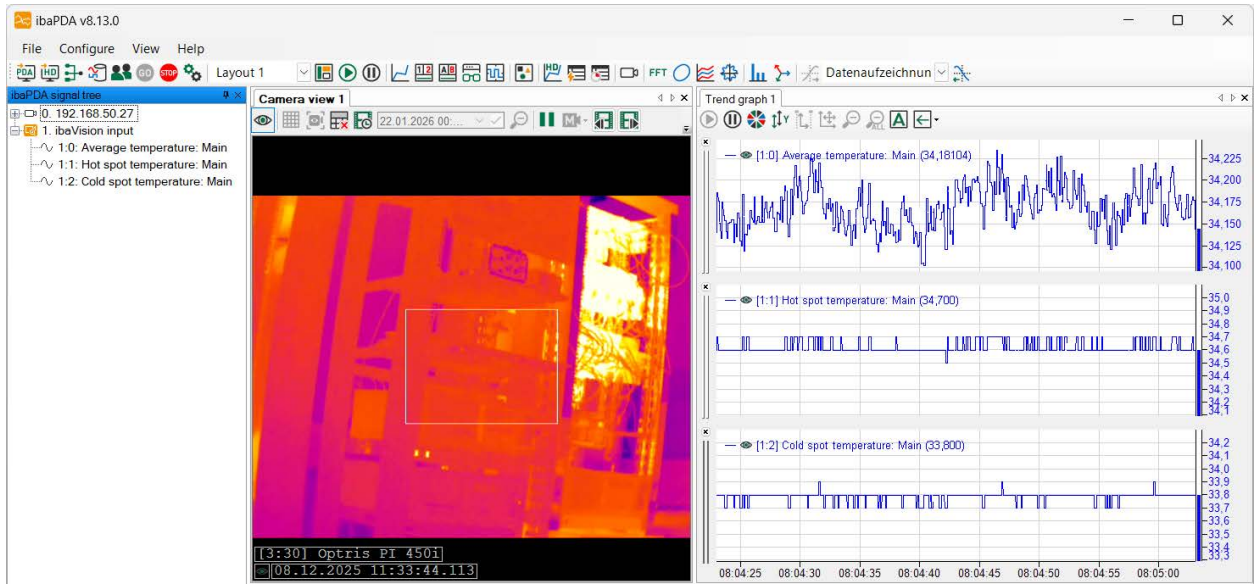
The temperature values determined by *ibaCapture* from the images of an Optris thermal camera can be added using an *ibaVision input* module. No *ibaVision* installation or *ibaVision* licensing is required for this.

### Procedure

1. Add an *ibaVision input* module under the *ibaCapture* interface.
2. Enter the address (computer name or IP address) of the *ibaCapture* Server.
3. Enter the port number 7351.
4. The entries in the *Program* and *Module* fields are filled in automatically.
5. Confirm with <OK>.

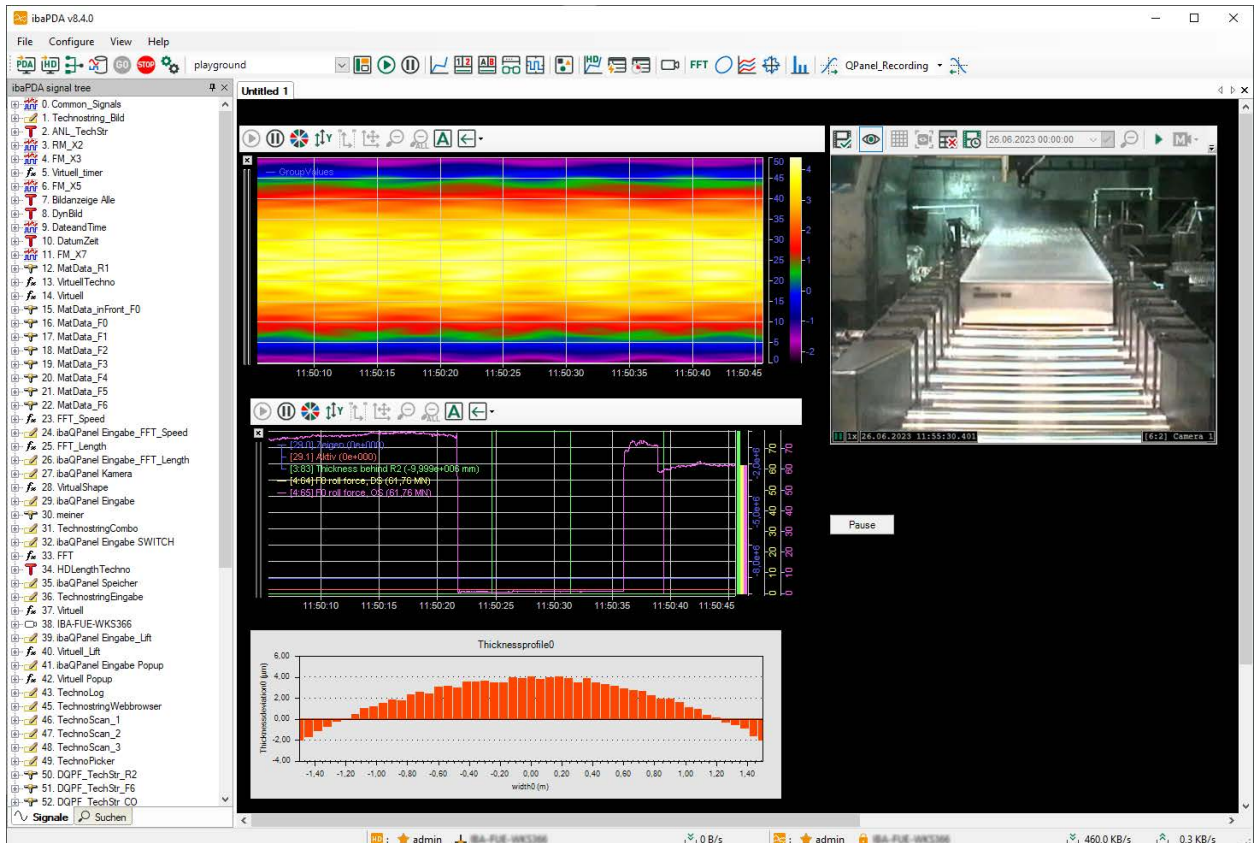


The image from the Optris thermal camera is displayed in the *ibaPDA* client in a camera view, the temperature values appear as analog signals in the signal tree and can be displayed in a trend graph.



## 6.6 Online display in ibaQPanel

With *ibaCapture* it is possible to display a live image view of the video recording in the signal display area of *ibaQPanel*.



First, you have to create a panel to be able to use the camera view in *ibaQPanel*. You can also use an existing panel. Information about how to use *ibaQPanel* can be found in the corresponding *ibaQPanel* manual.

Switch the panel to the design mode. Select the "Camera view" object from the "Tools" window, drag the object and drop it into the panel. Then exit design mode.

Now, you can add one or more cameras from the signal tree to the camera view object by drag and drop.

The component being used for display and application is *ibaCapture Player*.

For further information regarding the toolbar, see previous chapter [Video display in ibaPDA, page 156](#).

The scenario player in *ibaQPanel* is a specific feature for controlling the camera layout. The scenario player provides a trigger mechanism to change camera layouts controlled by *ibaPDA* signals.

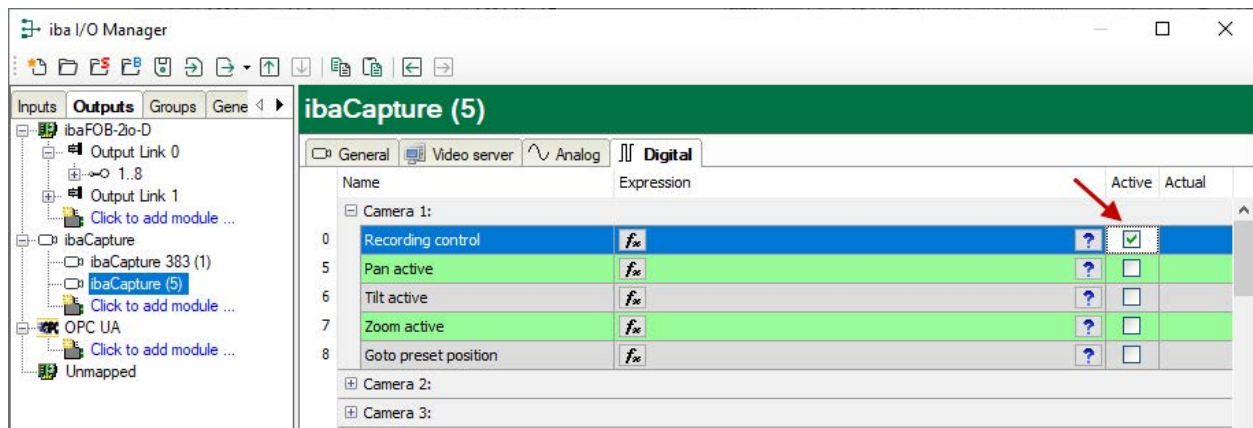
Thus the camera view can be automatically switched by special events or process signals. This allows the cameras in the relevant sector of a plant to be activated in the event of an emergency stop, giving the operator immediate insight into the situation. For detailed information, see the *ibaQPanel* manual.

## 6.7 Controlling the video recording with ibaPDA

Irrespective of whether or not using a trigger, all aforementioned setup options for video recording require the video images of all cameras to be always saved by *ibaCapture Server*. Using video triggers only affects the marking of specific video sequences and even stopping and re-starting the measurement only affects the link between data file and video file. The actual video recording is done independently unless it was disabled for individual cameras in the configuration of *ibaCapture Server*.

From *ibaPDA* version 6.29.1 and *ibaCapture* version 3.5.0 and higher, you can enable or disable the video recording with digital output signals from *ibaPDA*.

The related settings are made in the *Outputs* tab of the *I/O Manager*.



For each configured *ibaCapture* module, i.e. for each *ibaCapture Server*, there is also a module in this section. For each camera, you can define a digital signal or a boolean expression to control the video recording of the corresponding camera. If the expression is 'true', the recording is enabled or disabled according to the selected camera recording mode.

With a checkmark in the "Active" column, you determine whether or not the control of the camera is enabled.

If you enable the recording control for a camera in *ibaPDA*, please consider the basic camera settings in *ibaCapture Manager*.

See chapter ↗ *General information*, page 96.

## 6.8 Controlling PTZ cameras with ibaPDA

If a PTZ camera is connected to *ibaCapture*, this can be controlled by output signals of *ibaPDA*.

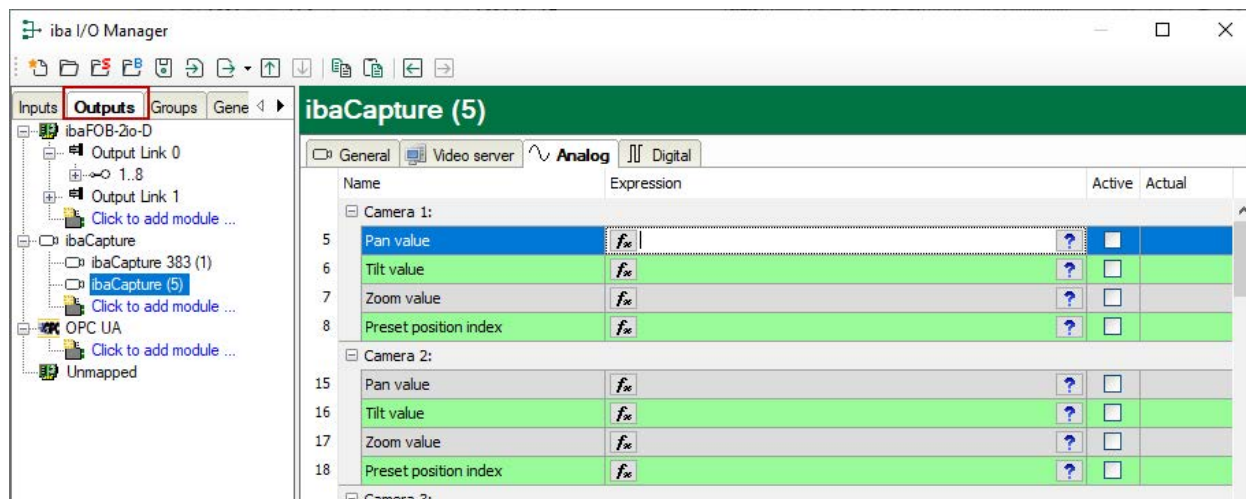
A prerequisite is:

- *ibaPDA* version 6.31 or higher
- Controlling the PTZ cameras with *ibaPDA* needs to be permitted in *ibaCapture*.

The output signals for controlling the camera are configured in the I/O Manager of *ibaPDA*. Add an *ibaCapture* module in the I/O Manager and select the *Outputs* tab.

### Analog tab

In the *Analog* tab, 4 signals appear for each configured camera. Using the expression builder, you can assign values to the signals.



- Pan value, tilt value, zoom value: absolute pan, tilt and zoom values of the camera position
- Preset position index: using an index, a position from the configured presets can be set.

The indices for the presets are counted upwards in the order in which they have been configured. The counting method for cameras working on the basis of the ONVIF standard differs from that for cameras using the VAPIX log, see the following table:

|          | VAPIX index | ONVIF index |
|----------|-------------|-------------|
| Home     | 0           | -           |
| Preset 1 | 1           | 0           |
| Preset 2 | 2           | 1           |
| Preset 3 | 3           | 2           |
| ...      | ...         | ...         |

**Note**

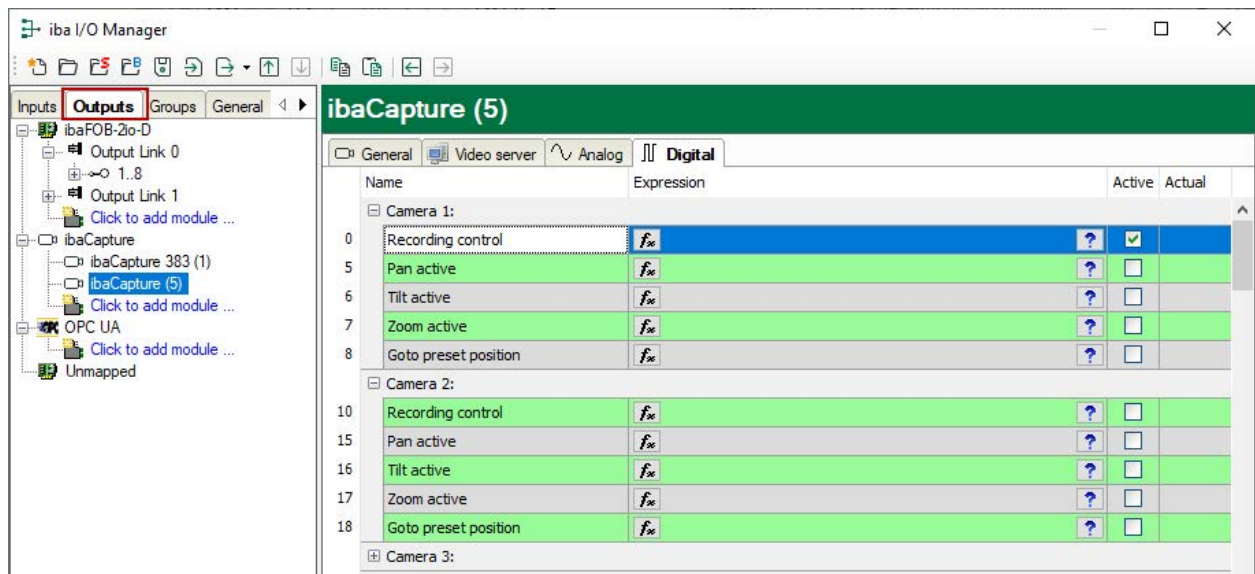


If the index used in *ibaPDA* is higher than permitted, the signal will be ignored.

**Digital tab**

In the *Digital* tab, 4 digital signals appear for each camera, each belonging to the 4 analog signals. By means of the digital output signals, the analog signals are activated or deactivated.

In the *Digital* tab, the signal *Recording control* additionally appears. The recording can be activated or deactivated with this signal.



## 7 Offline viewing with ibaAnalyzer

*ibaAnalyzer* is a powerful tool for analyzing complex data that has been recorded with *ibaPDA* and *ibaCapture*, for example. You can view the measured value recordings and video recordings that *ibaCapture* has recorded synchronously with the measured values.

### Other documents



This manual only deals with the additional configuration possibilities for *ibaCapture*. All the basic and advanced settings in *ibaAnalyzer* can be found in the manual *ibaAnalyzer*.

### 7.1 Showing video recordings

Once the data has been successfully recorded, *ibaAnalyzer* can perform an offline analysis.

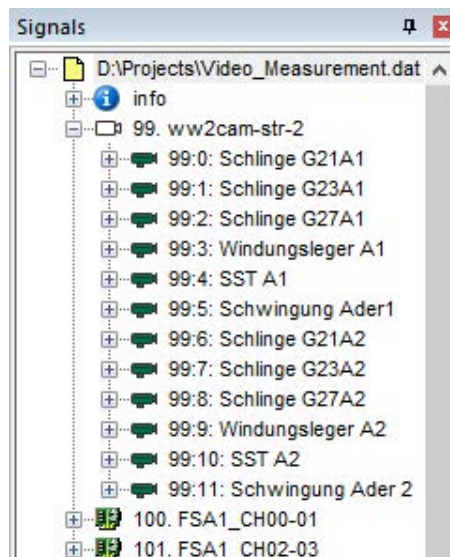
#### Note



The *ibaCapture* Server, where the videos are stored, must be accessible for the computer with *ibaAnalyzer* via the network.

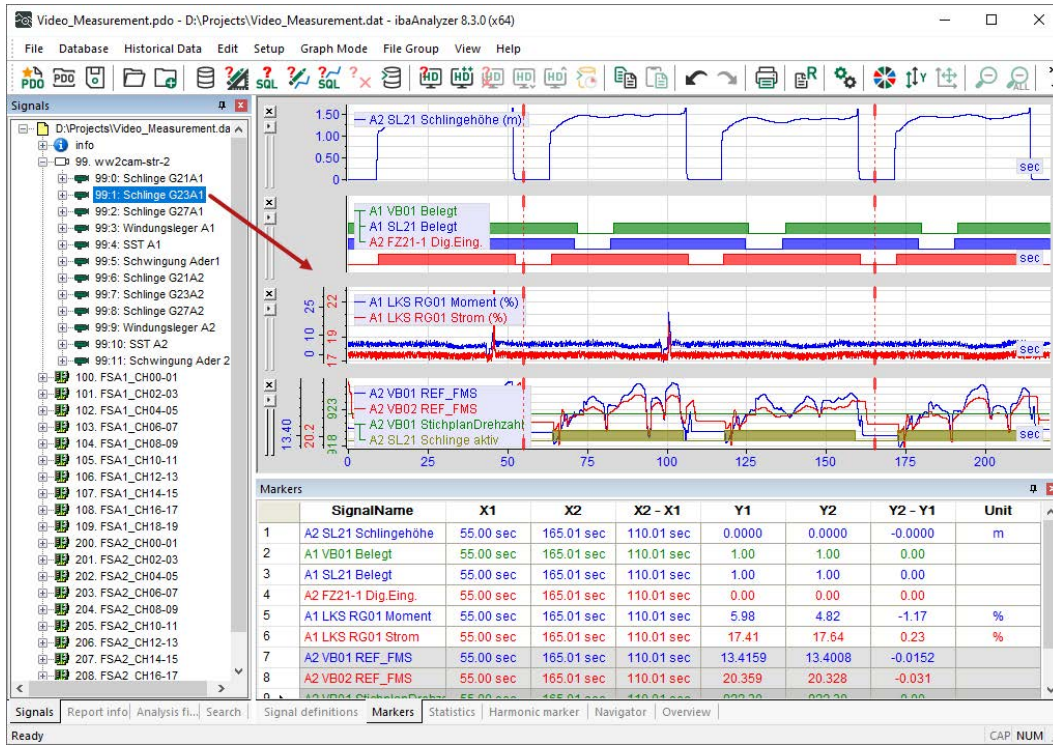
In the following, it is assumed that you have created an analysis and added signals to one or more graphs.

If a data file also contains *ibaCapture* video data, the signal tree also includes the *ibaCapture* modules in addition to the measured values.



#### Displaying a video

- To display a video, drag and drop the video signal (green camera icon) into the recorder window or double-click on a video signal.



→ A video player opens up playing the selected video.



Each video signal is opened in a separate window.

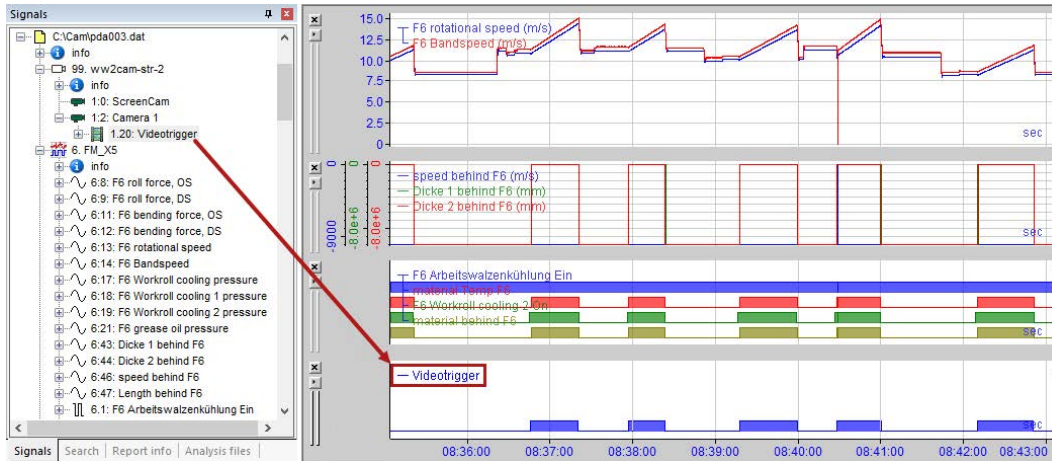
For more information on analyzing measurement data and video data, see [Analysis of measurement signals based on video recording, page 168](#).

### Displaying videos with trigger signal

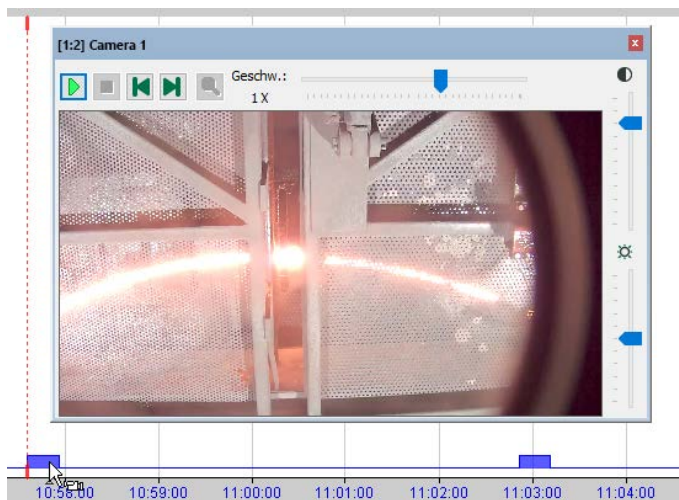
If videos have been recorded based on a trigger signal, you can display the signal and the video sequences.

1. To display triggered video sequences, drag and drop the video trigger into the recorder window or double-click on the trigger signal.

→ The trigger signal appears in a new graph.



2. To open the corresponding video sequence, double-click on the trigger signal.



3. If video signals are open in addition to the trigger signal, you can change the video image by moving the X1 marker.

### Positioning the video window

You can move the video window with the mouse and dock it at various points in the *ibaAnalyzer* window.

If you change the size of the video window, the image proportions remain the same.

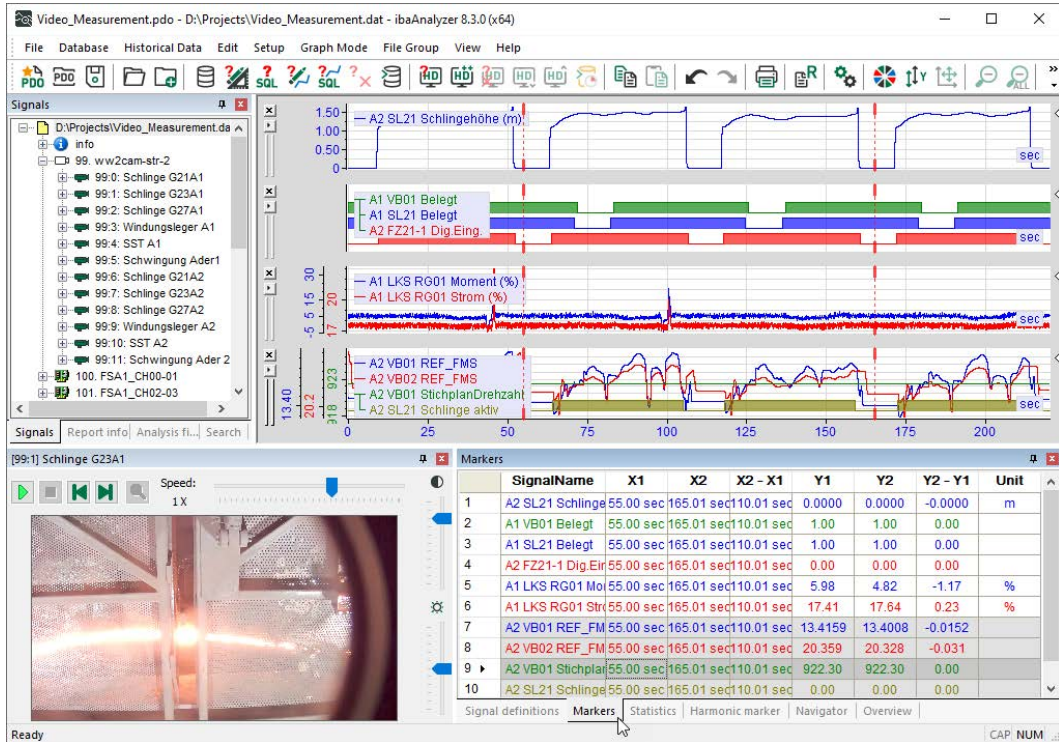


To undock the window, double-click on the window header or drag the header to a different position.

## 7.2 Analysis of measurement signals based on video recording

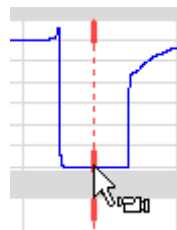
Once you have configured *ibaAnalyzer* with all the required measurement signals and video recordings, you can analyze the measurement data and view the measured values in relation to the video sequences.

Select the *Markers* tab in the signal table window to display the markers in the graphs.



Place the marker at any point in the graph. The marker shows the current measured values recorded in the respective video sequences. The video sequences are linked to the measured values by a common time base.

When you move the X1 marker, the video window displays the corresponding video sequences. Text channels that are visible in the camera view are also updated. The camera icon on the marker indicates the link between the measured values and the open video.

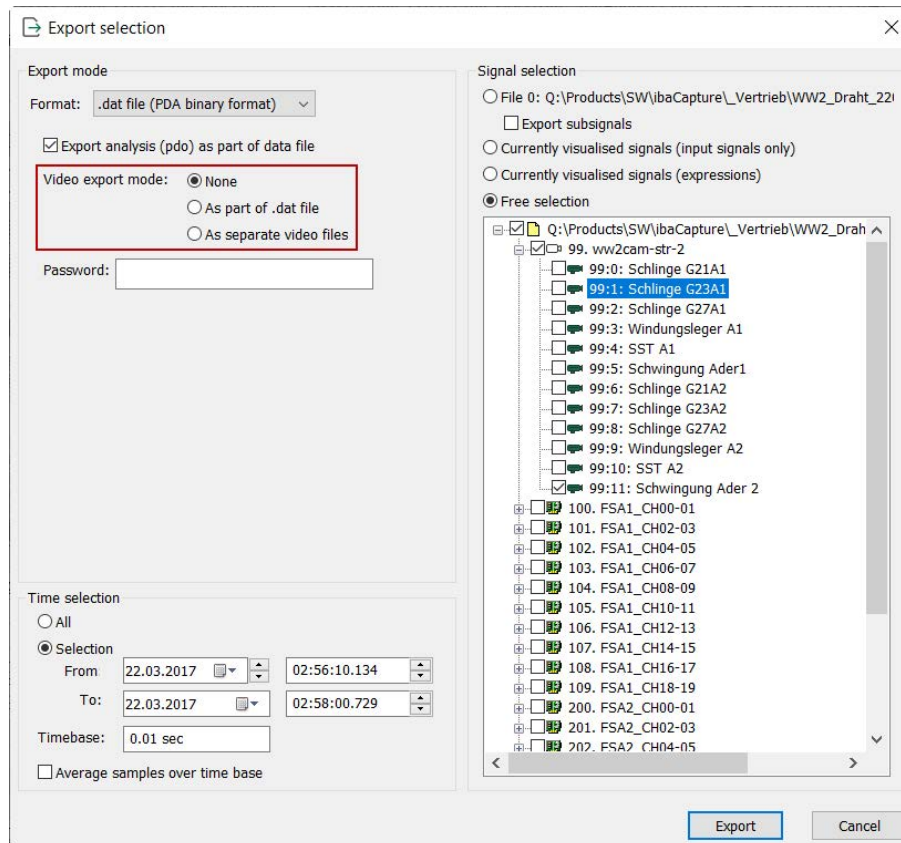


When you play the video sequence, the marker also runs through the measured values. You can use the <Pause> and <Stop> buttons to interrupt the film sequence, and thus also the sequence of measured values.

## 7.3 Export and options

### 7.3.1 Exporting video data

In the export dialog, also the video recordings can be exported with a binary data export. You access the export dialog via the “File - Export...” menu .



There are 3 export modes you can select from:

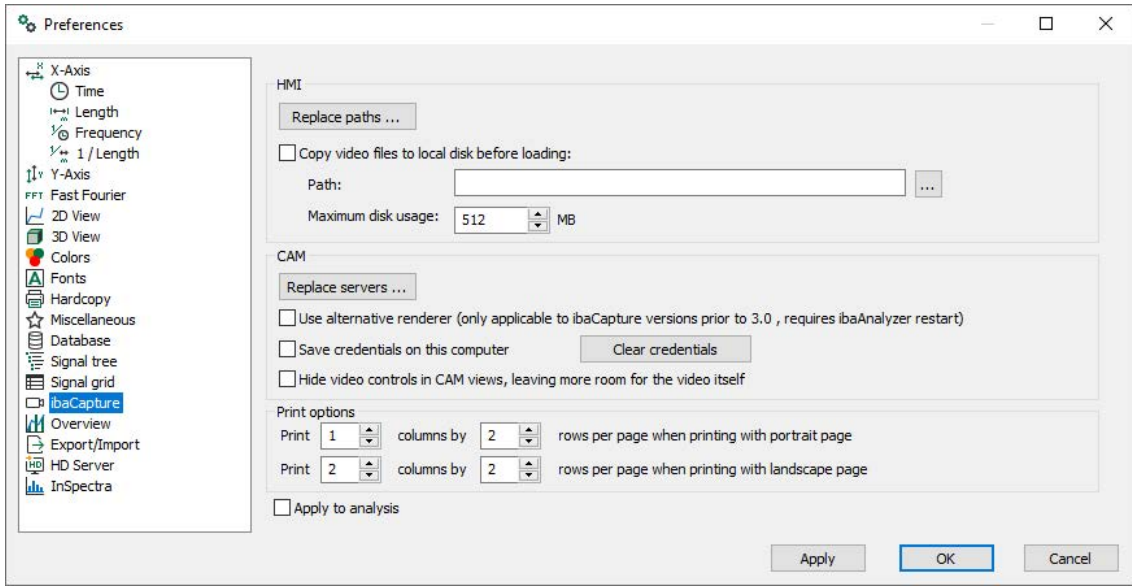
- None: Videos will not be exported
- As part of the data file: The data file (\*.dat) contains the video sequences
- As separate video file: In addition to the DAT file, an MP4 file is generated.

The "as part of data file" export function is conceived for a case in which data files including their synchronized video files are to be played irrespective of the video server. A network connection to the video server is thus not necessary. A new DAT file is created which contains the selected measuring signals and video recordings. Continuous and triggered video recordings can be exported in one data file.

All further and basic settings in the export dialog are described extensively in the manual "ibaAnalyzer", chapter "Exporting data".

### 7.3.2 ibaAnalyzer preferences for ibaCapture

In the preferences dialog under *ibaCapture* there are 3 group boxes.



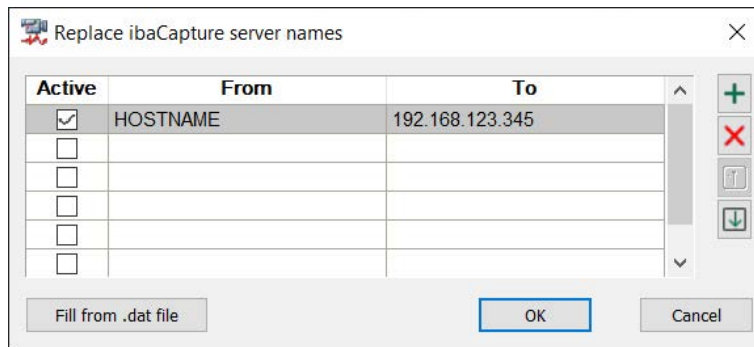
#### HMI

These settings refer to ibaCapture-HMI (V1 and V2) (*ibaCapture-ScreenCam*) only.

#### CAM

These preferences refer to *ibaCapture(-CAM)*.

When *ibaCapture* and *ibaPDA* Servers have connections to multiple networks, it may become necessary to use the “Replace servers ...” feature.



In the depicted example, *ibaPDA* was configured to connect to the ibaCapture Server "HOST-NAME". For the PC running ibaAnalyzer, HOSTNAME could not be reachable over the network, however the address 192.168.123.345 can be reached. When you click “Fill from .dat file”, all *ibaCapture* server names that are stored in the currently opened measurement file are listed in the "From" column.

Since *ibaAnalyzer* has been supporting OS Windows 7, an alternative renderer is recommended being used when dealing with older versions (<3.0) of *ibaCapture-CAM*. When running on Windows 7, this option should be checked to improve quality and performance.

Save credentials on this computer needs to be enabled so login data can be stored by *ibaAnalyzer* when user management is enabled on *ibaCapture Server*.

With newer *ibaAnalyzer* versions, the single video toolbars in each player can be hidden. In that case, there will be a video toolbar in the main *ibaAnalyzer* toolbar.



The functions are the same as in the individual player controls.

### Print options

These options apply to both HMI and CAM videos. Here, the user can setup the layout of the camera views and / or HMI screens on a printout.

For more information refer to chapter [➤ Printing and reporting of video images, page 171](#).

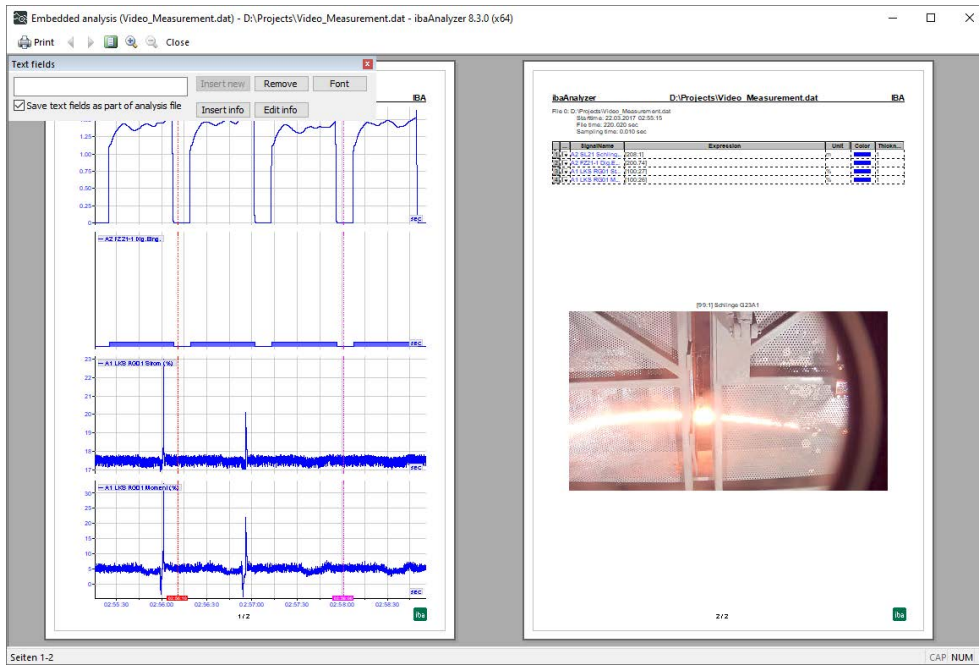
All further and basic settings in the "preferences" dialog are described in detail in the manual "ibaAnalyzer, Settings".

## 7.4 Printing and reporting of video images

You can print still images from the videos with the print function of *ibaAnalyzer* or add them to a report using the report generator.

### 7.4.1 Print with video images

You can print out all currently displayed video images using standard print function of *ibaAnalyzer*. The still images from the cameras are printed out after the signal table, as can be seen in the print preview below.



You can customize the layout in the *Preferences* dialog under *ibaCapture*.

**Other documentation**



All further and basic settings in the *Preferences* and *Print* dialogs can be found in the *ibaAnalyzer* manual part 2.

**7.4.2 Report with video images**

You can also use the report generator to present still images in a report.

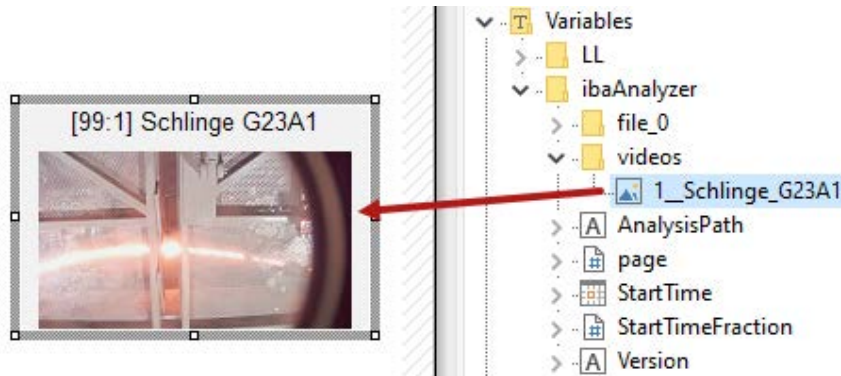
**Note**



iba AG offers standard training courses for the *ibaAnalyzer-Reportgenerator*. You can find information on the training schedule our website, or you can contact your local iba representative.

*ibaAnalyzer* exports each visible camera view to the variables list of the report generator into the "videos" folder.

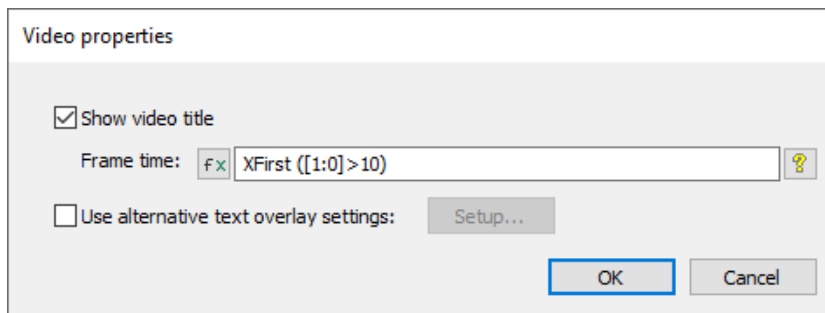
1. In the *Report Designer*, drag the desired camera view from the tree into the layout window.



2. Position and scale it in the same way as the normal curve views.

### Changing the video properties

If you want to change the properties of the camera image, double-click on the image.



#### Show video title

If you enable this option, the name of the source signal is displayed as the video title.

#### Frame

Enter an expression or a format from the *ibaAnalyzer* expression builder to use the video image relevant to this time. The time is relative to the start time of the oldest data open file in *ibaAnalyzer*.

#### Use alternative text overlay settings

If the camera view has an overlaid text, you can change the text settings here.

## 8 Capturing HMI screens

Besides capturing images from video cameras, it is also possible to record visual information of HMI operator stations, including operating procedures, synchronously with process data from *ibaPDA*. For this purpose, the virtual camera type *ibaCapture-ScreenCam* is available.

Computer monitors that work with a Windows operating system (at least .Net 4.0) can be captured. An *ibaCapture-ScreenCam* program must be installed on computers for this purpose and they must be connected to *ibaCapture* Server via TCP/IP.

Virtual *ibaCapture-ScreenCams* can be configured in *ibaCapture-ScreenCam*, which can be accessed by *ibaCapture*. *ibaCapture* receives the screen recording stream and stores these recordings like for usual surveillance cameras.

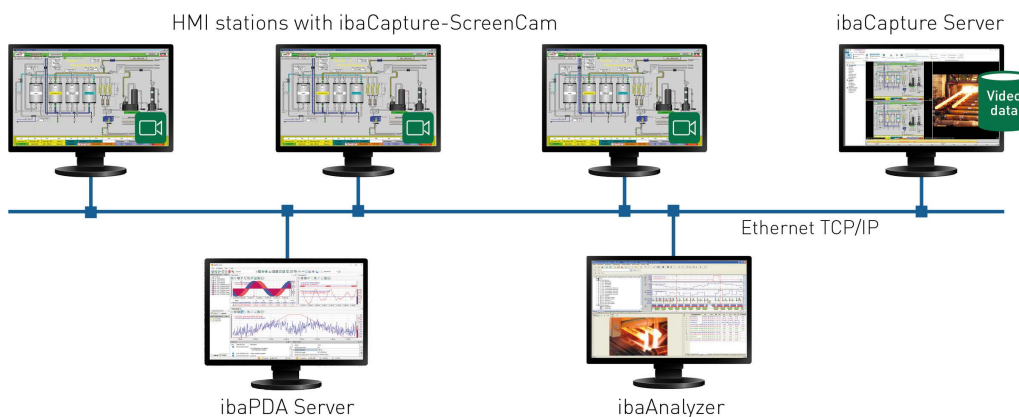
One virtual *ibaCapture-ScreenCam* can capture either all monitors connected to a computer or one whole screen or a region of a screen. When several regions of a screen should be captured, a virtual *ibaCapture-ScreenCam* can be created for each region.

The number of cameras which can be operated on the *ibaCapture* Server depends on the *ibaCapture* license. The *ibaCapture-ScreenCam* program does not require a specific license.

### Note



*ibaCapture-ScreenCam* v4.0 or higher must always be installed on the computer where the image sequences are to be recorded. An installation of *ibaPDA* is not required on that computer.



### 8.1 Installing ibaCapture-ScreenCam



On each system, you want to do screen recording you have to run the *ibaCapture-ScreenCam* program.


1. To install *ibaCapture-ScreenCam*, execute the file "*ibaCapture-ScreenCam* Setup v5.x.y.exe" in the directory "\\01\_iba\_Software\ibaCapture\ibaCapture-ScreenCam" on the data medium "iba Software & Manuals".

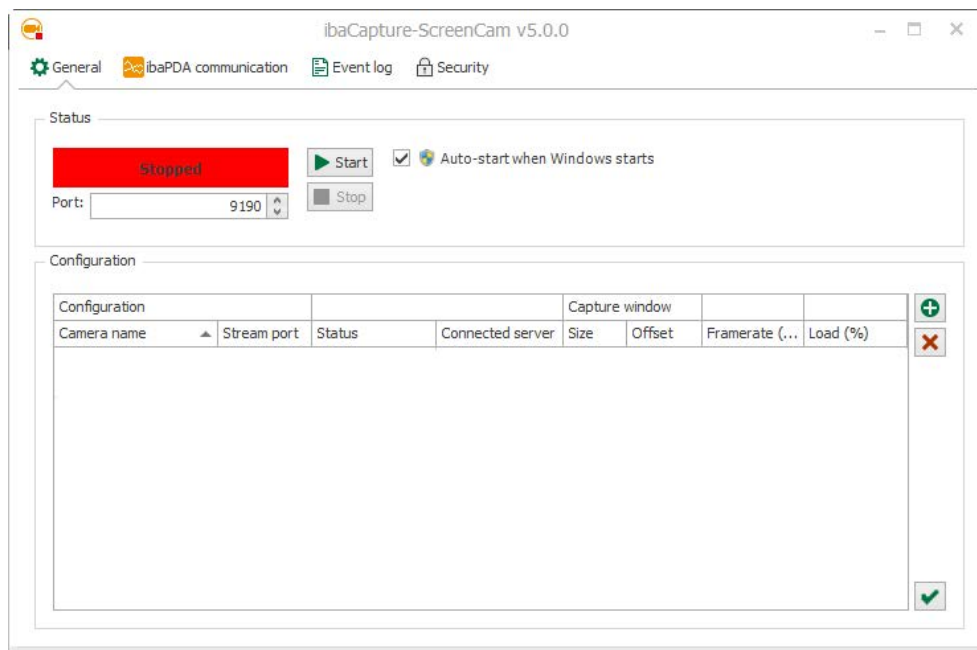
2. Select the desired language for installation and click the <OK> button.
3. Click on <Next> to execute the installation wizard.
4. Specify the target directory for *ibaCapture-ScreenCam*. The default target directory can generally be used. Click the <Install> button to start the installation.
5. Click the <Finish> button to complete the installation. If the option "Run *ibaCapture- ScreenCam*" is selected, the program starts right after the installation.

## 8.2 ibaCapture-ScreenCam configuration

When successfully installed, the *ibaCapture-ScreenCam* symbol appears in the Windows taskbar indicating the following states:

|   |   |
|---|---|
|  | Green symbol: ibaCapture-ScreenCam is recording |
|  | Red symbol: error state or stopped              |

Open *ibaCapture-ScreenCam* with a double-click on the icon  in the Windows taskbar.



### General tab

The *General* tab is divided in 2 sections. In the *Status* section, you find information about the status of the *ibaCapture-ScreenCam* program indicated by different colors:

- Stopped (red)
- Waiting (orange)
- Recording (green)

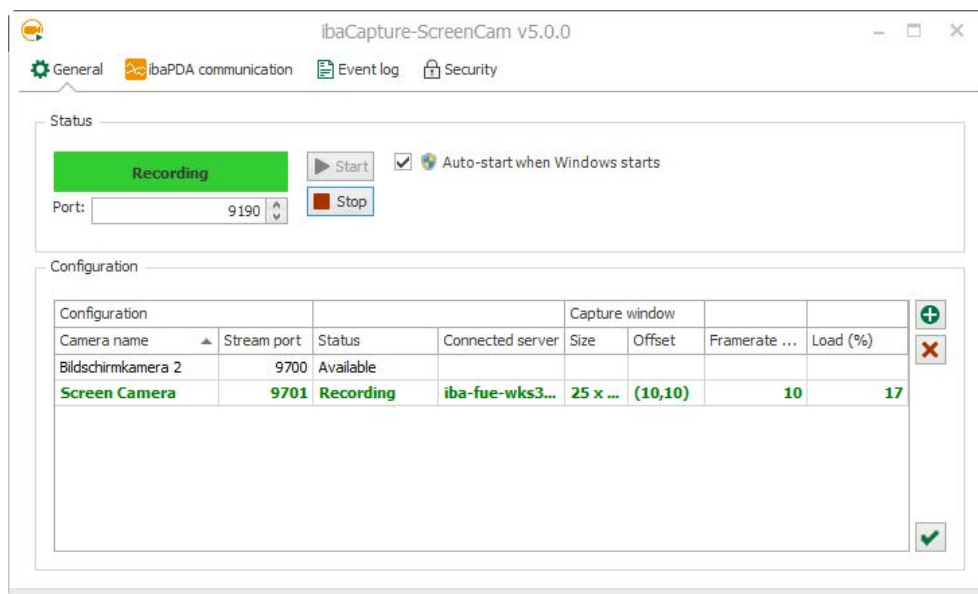
With the <Start> and <Stop> button, you can start and stop the program. The port number should be only changed for special configurations. If the option "Auto-start when Windows

starts" is activated, the ibaCapture-ScreenCam program starts automatically when logging in to Windows.

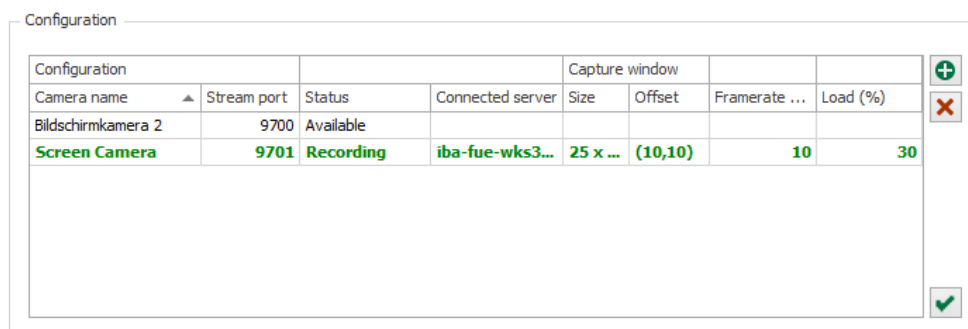
In the *Configuration* section, you can disable Windows aero theme in order to save computing capacity.

In the table, you can add (+) or remove (X) HMI cameras. A camera is required for every screen or region on the screen which shall be captured. The HMI camera settings, like screen or region selection, can be configured in *ibaCapture Manager*.

When you add a camera, you can specify a camera name. The port number is entered automatically.



Apply the settings (✓) and configure capture window and frame rate in *ibaCapture Manager*, see chapter ↗ *Configuration in ibaCapture Manager, page 178*. When configuration was done in *ibaCapture Manager*, additional information is displayed in the table.



- Status can be recording, available or not applied
- Connected server (host name)

**Capture Window**

The width and height of the captured region is given in pixels. The offset (X/Y) of the top left corner of the region rectangle refers to the top left edge of the monitor.

### Frame rate (fps)

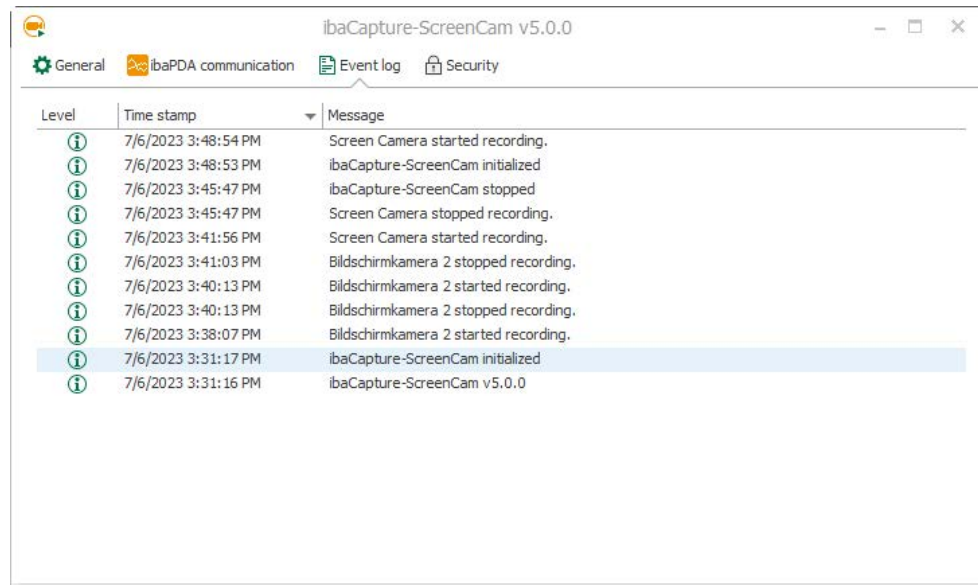
The *Configured* column displays the frame rate as configured in *ibaCapture* Manager.

### Load (%)

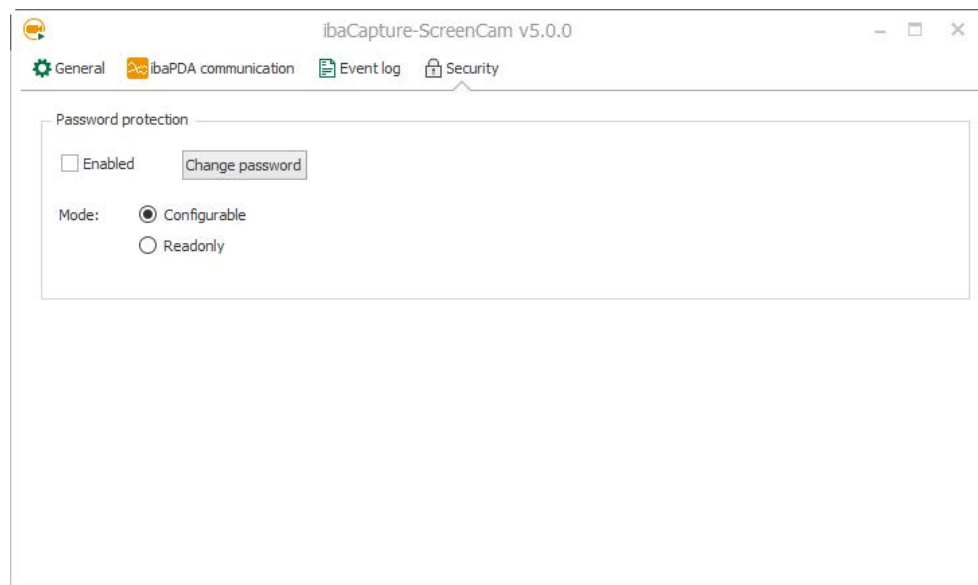
The load of the encoder is given in %. If the load increases nearly to 100%, it is recommended to decrease the resolution (video quality) and/or frame rate for this HMI camera in *ibaCapture* Manager. A value of 100% means that the application needs all the time between two images to capture, encode and send each image.

### Event log tab

On the *Event log* tab, events, especially error and warning messages are displayed.



### Security tab




Access to screens can be protected with a password. Click on <Change password> to activate the password protection. In *ibaCapture-ScreenCam* only the account with the user "admin" is supported.

Once a password has been set, the *Enabled* checkbox will be checked. Then screen recording from this system only works after entering the correct password. The *ibaCapture-ScreenCam* instance can also only be exited by entering the correct password.

To protect the local configuration, the mode can be switched between "Configurable" and "Readonly". If you switch from "Readonly" to "Configurable", the password must be entered.

### 8.3 Configuration in ibaCapture Manager

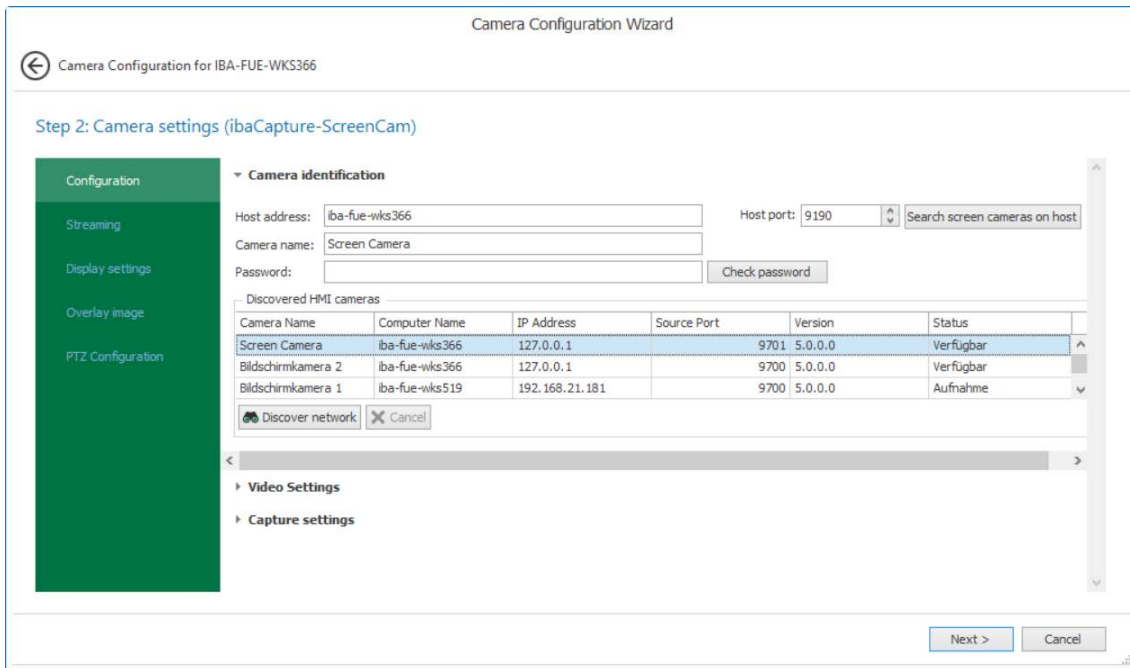
In *ibaCapture Manager*, a *ibaCapture-ScreenCam* has to be added to the *ibaCapture Server*, where HMI screen recording shall be stored. Switch to server configuration mode and select the respective *ibaCapture Server*.

A click on *Add new camera*  in the ribbon opens the configuration wizard. The first step is to select *ibaCapture-ScreenCam* as camera type and to select the camera recording mode, see chapter [General information](#), page 96.

In the next step, the camera(s) configured in the *ibaCapture-ScreenCam* program is listed in the camera table.

### 8.3.1 Camera settings

In step 2 of the camera configuration, you can make settings for the individual HMI cameras.



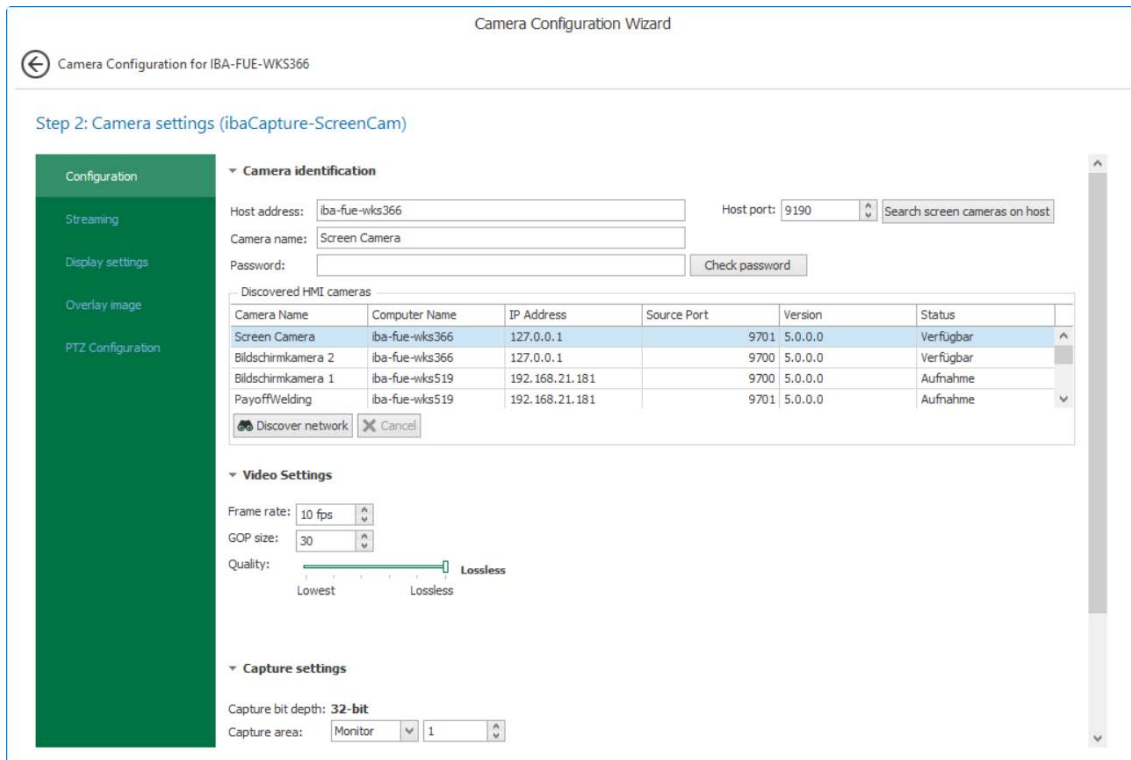
With a click on the <Search screen cameras on the host> button, screen cameras, which are configured at the entered host address and port number, can be searched. If password protection is enabled in *ibaCapture-ScreenCam*, you must enter the password here.

After a restart or during configuration, click the <Discover network> button to search screen cameras in the network. Depending on the network topology, not all instances of *ibaCapture-ScreenCam* may be found. Detected ScreenCam instances can be selected by double-clicking on the entry.

The connection table contains the following information:

- "Camera name" is the camera name configured in the *ibaCapture-ScreenCam* program
- "Computer name" is the name of the computer the screen camera (*ibaCapture-ScreenCam*) is running on
- "IP Address" is the IP address of the computer
- "Source Port" is the TCP/IP port number that is used by *ibaCapture-ScreenCam* to communicate with *ibaCapture Server*
- "Version" of the *ibaCapture-ScreenCam* program
- "Status" of the screen camera

Select a camera in the list in order to configure its video and capture settings.



### Video settings

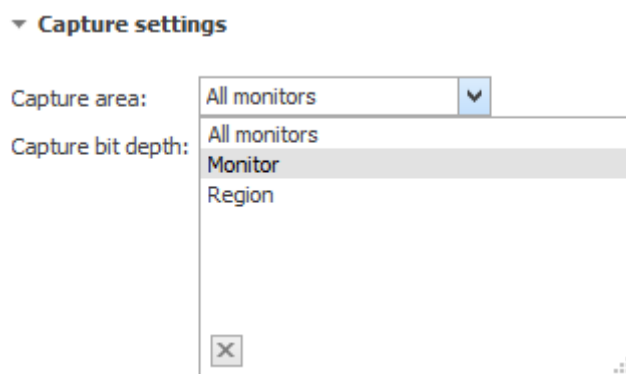
You can set the frame rate (in frames per second) and the GOP size.

The video quality can be adjusted with the slider. Please note that the higher the quality, the larger the file size of the video files and the higher the required computing capacity.

### Capture settings


It is possible to capture all monitors connected to a computer, one whole monitor or a rectangular region of the monitor.

These three options are available in the drop-down list.

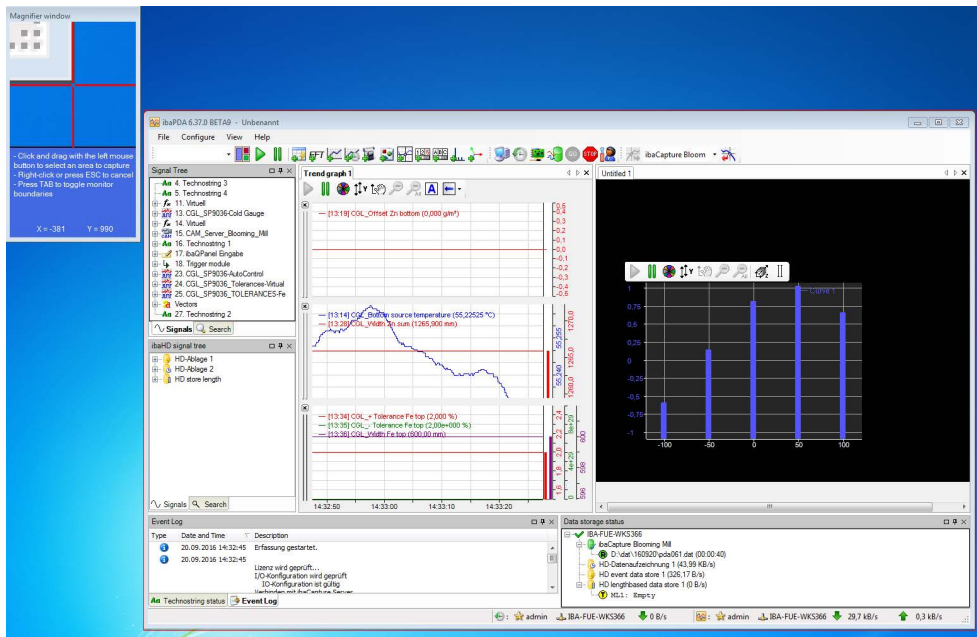


- All monitors (connected to the computer)
- Monitor (whole screen): specify the monitor ID assigned in Windows to the monitor. The monitor ID can be found in the "Display" dialog in the Windows control panel.



- Region: a click on the icon opens a preview of the selected monitor. . Here, you can draw a rectangle with the mouse while holding the left mouse button down over the region to be captured.

Capture area:  



▼ Capture settings

Capture area:    

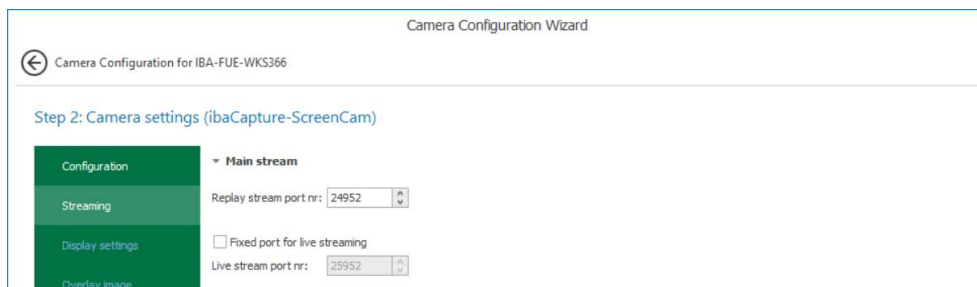
Capture bit depth: 32-bit

The region is given in pixels (X, Y) => w x h

(X, Y) = Offset of the top left corner of the region rectangle from the top left edge of the monitor.

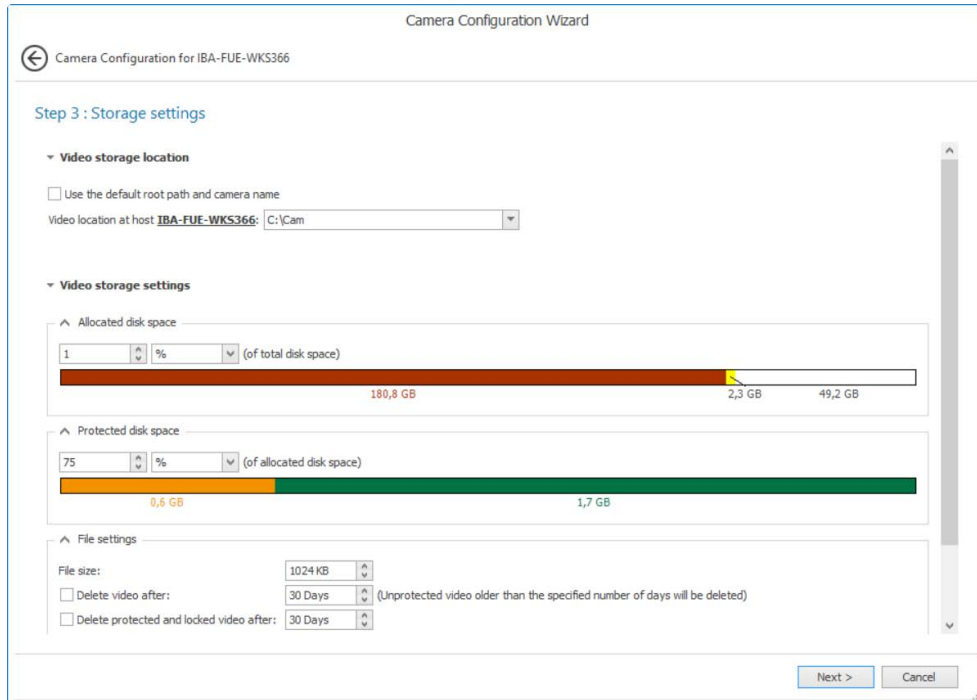
w x h = width x height

In the next step, port numbers can be assigned for video streams, see chapter [Streaming ports](#), page 118.

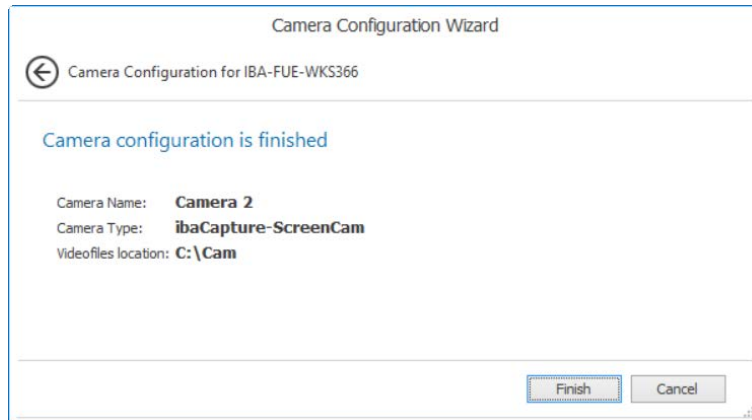


### 8.3.2 Storage settings

The last step is to configure the storage settings, ↗ *Storage settings*, page 125.



Complete the configuration of the screen camera with a click on <Finish>.



The preview tab depicts a preview of the area that will be recorded.

## 9 Supported cameras

### Note



IP cameras which do not support the video codecs MPEG-4, H.264 or H.265 are not supported by *ibaCapture*.

Due to the numerous manufacturers and camera models as well as the continuous development of imaging technologies, the devices, which can be used with *ibaCapture*, cannot be completely listed here.

Please contact us in case of doubt whether the camera you want to use is suitable or send us a camera for test purposes.

### 9.1 AXIS

Usually, all AXIS IP cameras that can be addressed via the VAPIX protocol are supported. Verify in the camera's datasheet if the VAPIX protocol is supported.

#### **ONVIF activation on AXIS cameras**

To enable ONVIF, the user has to be added as ONVIF user in the device configuration.

For more information on creating ONVIF users in AXIS cameras, please refer to the documentation for the camera you are using.

### 9.2 ONVIF

ONVIF cameras that are compatible to either ONVIF Profile S or Profile T are supported by *ibaCapture*.

An ONVIF profile is described by a set of services defined by the ONVIF standard. ONVIF profiles make it easy to recognize how ONVIF conformant devices and clients are compatible with one another.

An ONVIF profile has a fixed set of features that must be supported by a conformant device and client. It ensures that a client that conforms to Profile S, for example, will work with a device that also conforms to Profile S.

There are also conditional features, which are features that shall be implemented by an ONVIF device or ONVIF client if it supports that feature in any way, including any proprietary way.

The underlying functions of the features included in a profile are defined in the ONVIF Network Interface Specifications, see <https://www.onvif.org/profiles/specifications/>

Clients and devices can support more than one ONVIF profile; for instance, a network camera with local storage can conform to both Profile S and G.

You can find more information at <https://www.onvif.org/profiles/>

**Profile S**

The ONVIF Profile S is designed for basic video streaming of IP-based video systems. A Profile S device (e.g., an IP network camera or video encoder) is one that can send video data over an IP network to a Profile S client. A Profile S client (e.g., a video management software) is one that can configure, request, and control video streaming over an IP network from a Profile S device. Profile S also covers ONVIF specifications for PTZ control, audio in, multicasting and relay outputs for conformant devices and clients that support such features.

**Profile T**

The ONVIF Profile T is designed for advanced video streaming of IP-based video systems. Profile T supports video streaming features such as the use of H.264 and H.265 encoding formats, imaging settings, and alarm events such as motion and tampering detection. Mandatory features for devices also include onscreen display and metadata streaming, while mandatory features for clients also include PTZ control. Profile T also covers ONVIF specifications for HTTPS streaming, PTZ configuration, motion region configuration, digital inputs and relay outputs, and bidirectional audio for conformant devices and clients that support such features.

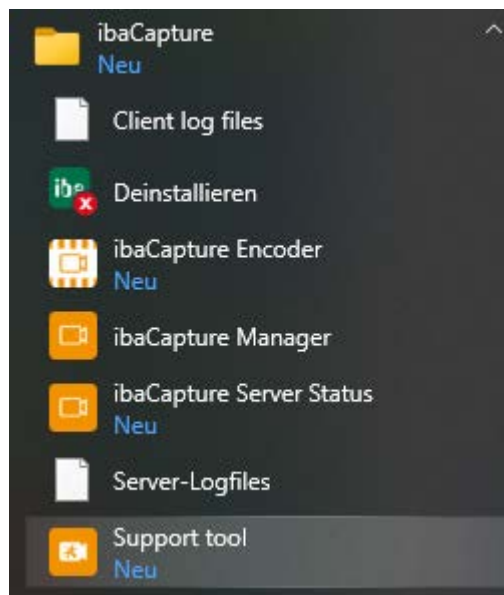
## 10 Troubleshooting

In the following you will find help on possible errors when using *ibaCapture*. If you have any further questions, please contact the iba support.

### 10.1 Support tool

If you need the Support's help in case of malfunctions or unclear errors, a tool is available collecting all relevant ibaCapture information and saving it in a ZIP file. You can then email this ZIP file to iba Support.

You start the support tool via the Start menu – Program Files – iba – ibaCapture – Support tool.



Starting with *ibaCapture*-Manager 4.0, the support tool can also be started in the main menu of *ibaCapture*-Manager.

A description of the support file creation can be found in chapter ↗ *Set up camera view*, page 23.

The file has the default name `ibaCCSupport_yyyymmdd_hhmmss.zip`

The ZIP file contains the following information:

- Settings and logfiles of ibaCapture Manager
- Player logfiles
- Logfiles of the ibaCapture Server
- Configuration of ibaCapture Server
- Camera info
- System information

## 10.2 Low frame rate with multi-access to IP cameras

### Problem

The frame rate of a camera significantly decreases if several users simultaneously access an IP camera via web services (not ibaCapture).

### Background

If several sessions access a camera and their parameter settings differ (e.g. image rotation or encoding), this results in a higher load of the camera and therefore in a reduction of the frame rate. If, however, the sessions use the same parameters, the number of simultaneous sessions has no significant effect on the frame rate.

### Remedy

- Please ensure that all sessions (also access via web browser) are set to the same image rotation.
- Please ensure that all sessions use the same stream encoding (e.g. H.264, H.265 or MPEG-4).
- When using browsers, the corresponding plug-ins/add-ons (e.g. Active-X) have to be installed in the browser so an H.264-/H.265-/MPEG-4 stream can be displayed.
- Some cameras offer the option in the configuration menu to set a fixed stream encoding and to disable a pick-list for other encodings. Use this option and set the same encoding as for ibaCapture.
- Alternatively, you can also use ibaCapture Manager as viewer free of charge instead of web browsers. In this case, however, an active user management is recommended so no unauthorized configuration changes can be made at ibaCapture Server.

## 10.3 High CPU load when displaying video

### Problem

The display of video in ibaCapture requires system resources, including on the main processor (CPU). The following cases, for example, can lead to a significant load on a system when video is played in ibaCapture:

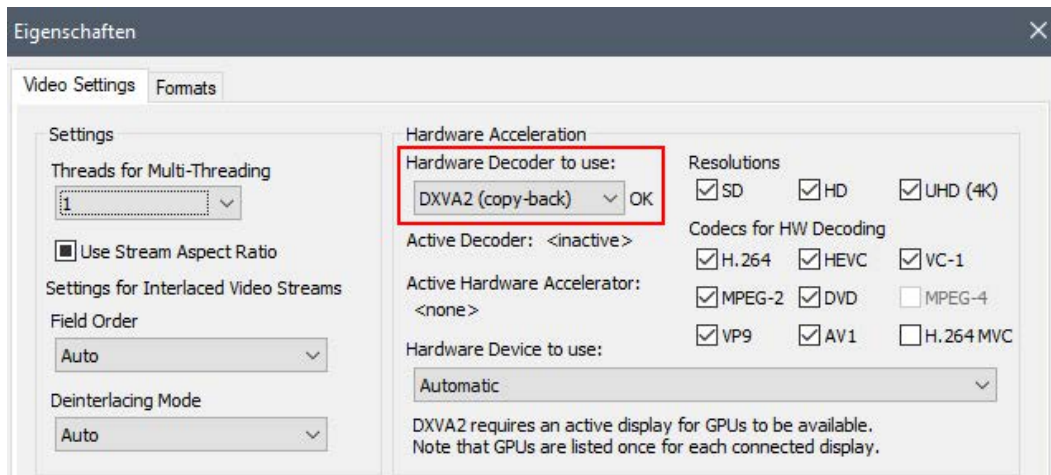
- Simultaneous display of several video streams
- Very high bit rate of individual streams (e.g. with high resolution or high frame rate)
- Use of the HEVC/H.265 video codec

### Remedy

These adjustments can be made to minimize the load as far as possible:

- Make sure that the firmware of the cameras used is up to date (depending on the camera type).
- Update the drivers for the graphics card on the PCs used.
- Check whether hardware acceleration can be enabled on the PCs used:

1. Open the *LAV Video Configuration* application. In the *Decoder to use* selection, select DXVA2 (copy-back) or another compatible setting if necessary.



2. Then restart the iba applications used (*ibaPDA Client*, *ibaCapture Manager*).

### Note



Avoid changes to the *Threads for Multi-Threading* value. Values greater than 1 cause problems during playback.

### More tips



- By reducing the bit rate of the camera streams, experience has shown that the load on the systems is reduced. Check whether the bit rate can be set lower for the cameras used without compromising the video quality.
- Alternative streams are a mechanism that specifically uses streams with a low bit rate for the live display. See also chapter [↗ Additional streams](#), page 120.

## 10.4 Running ibaCapture-ScreenCam on systems with multiple users

### Problem

*ibaCapture-ScreenCam* is started under Windows in the environment of a logged-in user. This is different from other iba products, which are started as a system service by default.

When *ibaCapture-ScreenCam* is started, network ports are opened for general communication and for a first screen camera. The program always uses the same port numbers for this.

### Remedy

On systems where several users log on at the same time (e.g. terminal servers), it may be necessary to configure the network ports specifically for each user. This is necessary because the same port number can only be opened once on each system.

The correspondingly adapted ports must then also be taken into account when configuring virtual cameras on an *ibaCapture Server*.

# 11 Glossary

## ***Bayer pattern***

The "Bayer pattern", also known as "Bayer matrix", describes a photo sensor covered by a color filter (Bayer filter). The Bayer filter is a color filter array with a specific arrangement of RGB color filters in a square grid on the surface of a photo sensor. Its particular arrangement of color filters is used in most single-chip digital image sensors used in digital cameras, camcorders, and scanners to create a color image. The filter matrix is 50 % green, 25 % red and 25 % blue; hence it is also called RGBG, GRGB, or RGGB.

The options for the Bayer pattern in ibaCapture refer to the order of the first two pixels of any possible combination: Blue-Green (B-G), Green-Blue (G-B), Green-Red (G-R) and Red-Green (R-G).

(Source: Wikipedia)

For more information, refer to the online help of the Matrox Intellicam software.

## ***Encoding level***

As the term is used in the standard, a "level" is a specified set of constraints indicating a degree of required decoder performance for a profile. For example, a level supported for a particular profile determines the maximum frame resolution, frame rate, and bit rate that a decoder can use. A decoder corresponding to a given level must be able to decode all bitstreams encoded for that level and all lower levels.

(Source: Wikipedia)

More information: [http://en.wikipedia.org/wiki/H.264/MPEG-4\\_AVC](http://en.wikipedia.org/wiki/H.264/MPEG-4_AVC)

## ***Encoding profile***

Baseline Profile (BP): Originally created for low-cost applications that require higher security against data loss, this profile is used in some video conferencing and mobile applications.

Main Profile (MP): This profile is used for standard-definition digital TV broadcasts that use the MPEG-4 format as defined in the DVB standard.

High Profile (HiP): The high profile is the primary profile for broadband and disc storage applications, particularly for high-definition television applications. This profile, for example, was adopted for the Blu-ray Disc storage format and the DVB HDTV broadcast service.

(Source: Wikipedia)

More information: [http://en.wikipedia.org/wiki/H.264/MPEG-4\\_AVC](http://en.wikipedia.org/wiki/H.264/MPEG-4_AVC)

## ***GigE Vision®***

GigE Vision® is an interface standard introduced in 2006 for high-performance industrial cameras. It provides a framework for transmitting high-speed video and related control data over Gigabit Ethernet networks at data transfer rates of up to 1000 Mbit/s.

Please note that not all cameras connected over GigE interface do support the GigE Vision standard.

(Source: Wikipedia)

**GOP**

GOP (Group Of Pictures) defines the number of pictures after which a full picture, a so called keyframe will be stored. The pictures between the keyframes are derived from the previous keyframe, in between, only changes of the pictures are stored. With a high GOP, possible encoding errors exist longer, with a low GOP, the bitrate and hence the memory requirements of the video stream tend to grow. The default setting 30 is fitting for most of the cameras.

**H.264**

An H. standard for highly efficient video compression. ISO/IEC MPEG lists the standard under MPEG-4/AVC (Advanced Video Coding). It is part 10 of the MPEG-4 standard (MPEG-4/Part 10, ISO/IEC 14496-10). H.264 is a video encoding standard for Blu-ray Discs and is widely used by streaming Internet sources (Vimeo, You Tube, iTunes, etc.).

(Source: Wikipedia)

**H.265**

High Efficiency Video Coding (HEVC), also known as H.265 and MPEG-H Part 2, is a standard for encoding video content and images. It is the successor of the H.264/MPEG-4-AVC standard. The aim was to achieve twice as much compression compared to H.264/MPEG-4-AVC while maintaining the same quality. .

(Source: Wikipedia)

**MPEG-4**

An MPEG standard (ISO/IEC-14496) that describes, among other things, methods for video and audio data compression. MPEG-4 defines the compatibility to Part 2 of the MPEG-4 standard (MPEG-4/Part 2).

(Source: Wikipedia)

**ONVIF**

The Open Network Video Interface Forum (ONVIF) is a global and open industry forum with the goal to facilitate the development and use of a standard for the interface of network-based video devices. Started in 2008 by Axis, Bosch and Sony, the ONVIF aims to achieve interoperability between devices of different manufacturers, flexibility, future viability and a certain quality standard.

The ONVIF Core Specification covers the following areas:

- IP configuration
- Device detection
- Device management
- Media configuration
- Real time viewing (live video)
- Event handling
- PTZ camera control
- Video analysis
- Security

(Source: Wikipedia)

***PTZ camera***

A pan–tilt–zoom camera (PTZ camera) is a camera that is capable of remote directional and zoom control.

(Source: Wikipedia)

***RTP***

Real-time Transport Protocol: A protocol designed for continuous transmission of audio and video data (streams) over IP networks.

(Source: Wikipedia)

***RTSP***

Real Time Streaming Protocol:

A network control protocol designed for continuous transmission of audio and video data (streams) or software over IP networks. RTSP is a text-based protocol and can be transmitted over UDP or TCP.

(Source: Wikipedia)

***TCP***

Transmission Control Protocol:

The protocol is a reliable, connection-oriented protocol delivering data packages within computer networks. It is part of the Internet protocol suite (IP), the heart of the Internet.

(Source: Wikipedia)

***UDP***

User Datagram Protocol:

A minimal, connectionless network protocol and a transport layer of the Internet protocol suite.

(Source: Wikipedia)

## 12 Support and contact

### Support

Phone: +49 911 97282-14

Email: [support@iba-ag.com](mailto:support@iba-ag.com)

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### Note



If you need support for software products, please state the number of the license container. For hardware products, please have the serial number of the device ready.

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### Contact

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**[www.iba-ag.com](http://www.iba-ag.com)**