ibaCapture-CAM

Video Recording with ibaPDA-V6

Manual

Issue V 3.7

Measurement and Automation Systems

iba

The content of this publication has been checked for compliance with the described hardware and software. Nevertheless, deviations cannot be excluded completely so that the full compliance is not guaranteed. However, the information in this publication is updated regularly. Required corrections are contained in the following issues or can be downloaded on the Internet.

The current version is available for download on our web site http://www.iba-ag.com.

Issue	Date	Revision	Author	Version SW
3.7	15.02.2016	Handling of GigE cameras	ST	3.7.0

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1 About this manual

This documentation describes the function, the design and the application of the software product *ibaCapture-CAM*.

1.1 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-CAM. As ibaCapture-CAM is an add-on for ibaPDA-V6, the following basic knowledge is required for the configuration:

❑ Windows operating system

❑ Basic knowledge of ibaPDA-V6

❑ 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 "Logic diagram"
Calling the menu command	"Step 1 – Step 2 – Step 3 – Step x" Example: Select the menu "Logic diagram - Add - New function block".
Keys	<Key name> Example: <Alt>; <F1>
Press the keys simultaneously	<Key name> + <Key name> Example: <Alt> + <Ctrl>
Buttons	<Key name> Example: <OK>; <Cancel>
File names, paths	"Filename", "Path" Example: "Test.doc"

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:

- ❑ From an electric shock!
- ❑ Due to the improper handling of software products which are coupled to input and output procedures with control function!

⚠ WARNING

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

⚠ CAUTION

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

Note

A note specifies special requirements or actions to be observed.

Important note

Note if some special features must be observed, for example exceptions from the rule.

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.

Example

Configuration and application examples for a better understanding

2 Overview

2.1 Introduction

ibaCapture is an image capture system integrated in the ibaPDA-V6 data acquisition system. It is an extension of ibaPDA-V6, which allows synchronized linking of image data and measured data.

There are two different versions of ibaCapture:

1. ibaCapture-CAM for recording live camera images

2. ibaCapture-HMI for recording HMI screen content or similar monitor images.

The following explanations apply to ibaCapture-CAM.

This synchronized connection of image information and measuring data allows the connections between process and measurement to be recognized and communicated more easily.

Note

ibaCapture-CAM V3.0 is supported from ibaPDA-V6 version 6.26.0 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, look up the "versions.htm" version history enclosed to the installation file.

The ibaCapture-CAM functions are enabled by activating a license key (dongle).

The ibaCapture-CAM Server and the ibaPDA-V6 Server communicate via a TCP/IP or UDP connection. Windows 7 (32 bit or 64 bit) is required when using GigE cameras.

Multiple ibaCapture-CAM Servers can be used simultaneously for video recording.

The maximum permissible number of ibaCapture-CAM Servers that can be used simultaneously in one ibaPDA system is defined in the ibaPDA-V6 license key.

The video files are compressed in a special procedure and can only be viewed with ibaCapture-CAM Manager, ibaPDA-V6 or ibaAnalyzer. However, it is possible to export individual sequences in .mp4 files.

Note

For ibaCapture-CAM 3.7, the handling of GigE cameras was changed from the ground.

When upgrading to ibaCapture-CAM 3.7, numerous measures have to be taken and settings to be made, when using GigE Vision compatible cameras with ibaCapture-CAM. Therefore, please observe chapter *Special considerations when updating to ibaCapture-CAM V3.7*, page 160.

2.2   Functional principle

The following diagram shows the functional principle and data flow of ibaCapture-CAM.
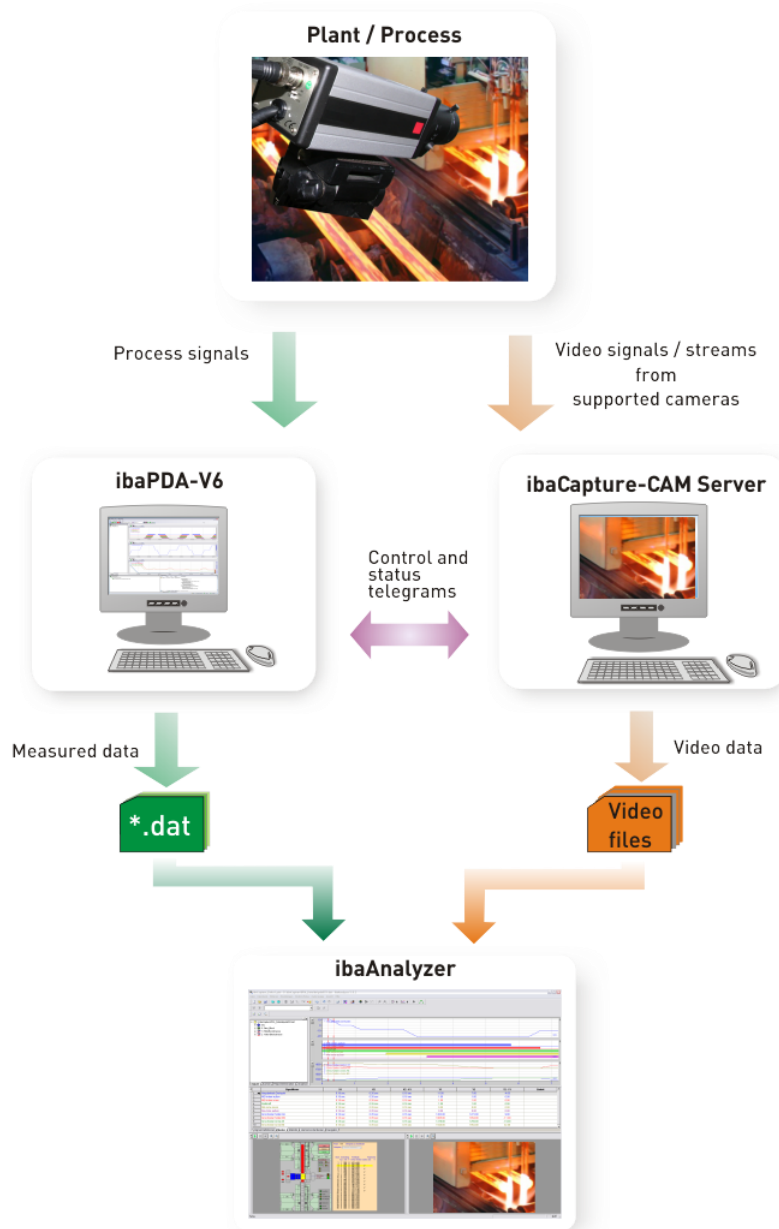
Figure 1:   Overview of ibaCapture-CAM

The plant or the process delivers various data.

- Measured data for ibaPDA
- Image data from video cameras

The image data from the video cameras is recorded by ibaCapture-CAM and saved in video files. The measured data is saved by ibaPDA-V6 in measuring files (*.dat) as usual. Synchronization with the ibaCapture-CAM Server service takes place concurrently to the measurement by means of control and status telegrams. ibaAnalyzer can access both file types and displays the information in a synchronized fashion.

2.2.1   Topology

Multiple ibaCapture-CAM Servers can be run in a network.
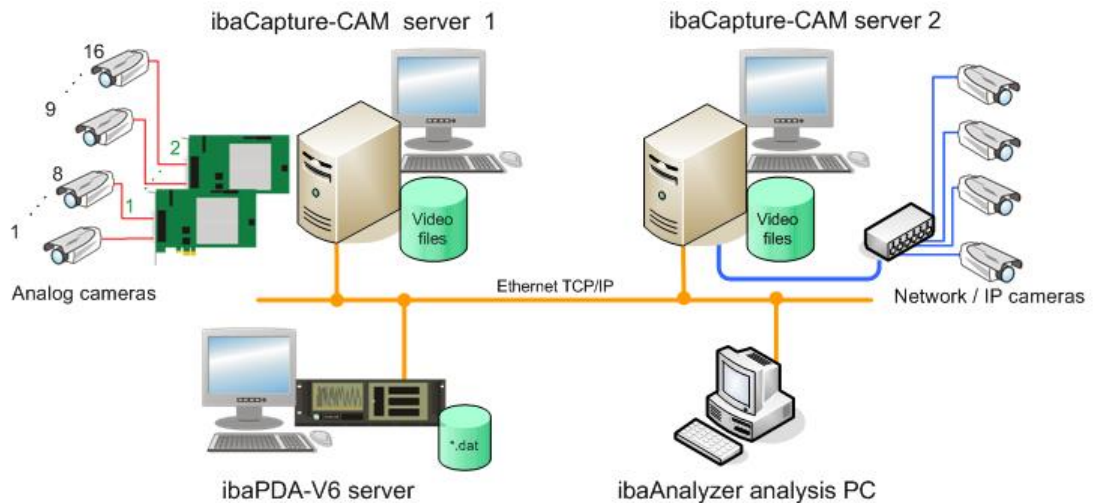
Figure 2:   General topology without GigE cameras
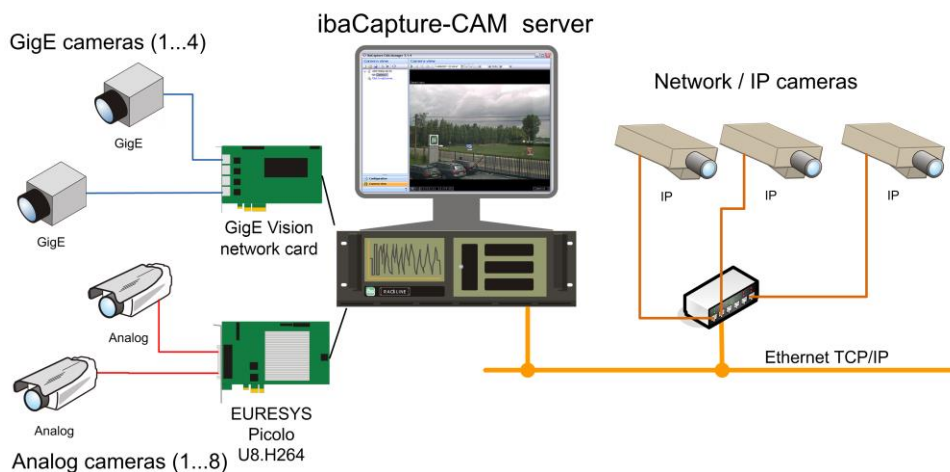
Figure 3:   Model topology with GigE cameras at an ibaCapture-CAM Server

The heart of a recording system is ibaCapture-CAM Video Server (computer). Either analog and/or IP cameras can be connected to ibaCapture-CAM Server. For GigE cameras, which form a special part in the group of IP cameras, some restrictions apply. The total number of cameras in any combination of analog and/or IP cameras (incl. GigE) is limited to 16 cameras per ibaCapture-CAM Server.

For connecting the analog cameras to ibaCapture-CAM Server, frame grabber cards are required. Up to 4 cards of type Euresys PICOLO U4 H.264 or 2 cards of type PICOLO U8 H.264 are permitted per computer. Each frame grabber card has 4, respectively 8 camera links what leads to the maximum number of 16 analog cameras per computer.

Supported network-compatible cameras are connected to ibaCapture-CAM Server via a network (blue LAN in figure 2). Using a Gigabit-switch is recommended. For more than 8 cameras, it is also recommended using 2 switches for half the number of cameras each in order to balance the network load. The limitation to 16 cameras per ibaCapture-CAM Server applies here as well.

So-called GigE cameras must support the GigE Vision® standard. They allow high-speed capturing with frame rates of up 300 fps. GigE cameras must be connected

to ibaCapture-CAM Server via a special GigE frame grabber or network card (either of Matrox Solios GigE type or Intel® Ethernet Server Adapter I350-T4V2). The card allows connecting up to 4 GigE cameras. Only 1 card is supported per ibaCapture-CAM Server. If a GigE card is used, further system requirements apply (see *System requirements*, page 141 chapter).

When using a GigE card, only one additional frame grabber card for up to 8 analog cameras is supported. Also other IP cameras may be used.

The limitation to 16 cameras per ibaCapture-CAM Server applies as well.

It is furthermore recommended installing a separate fast network (orange LAN in the above figure) between ibaCapture-CAM Server(s), ibaPDA Server(s) and ibaPDA Client(s) with camera view and analysis computers. For good performance, a GBit network should be used. 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 significantly increase.

2.2.2   Principles of video recording

The recording of video data is managed by the ibaCapture-CAM Server service. The service is started automatically with the booting of the system.

For every camera, a fixed memory segment is allocated on the hard drive. The allocation of the hard drive into individual camera memory segments is performed by means of the ibaCapture-CAM Manager. The exact procedure to configure ibaCapture-CAM Server can be found in the "Configuring ibaCapture-CAM Server" chapter.
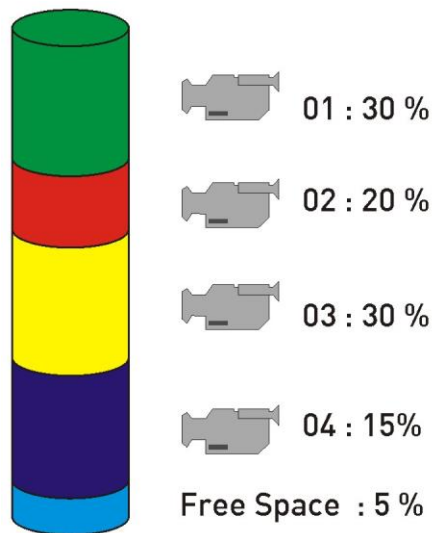
Figure 4:   Memory allocation on hard disk

The cameras' memory segments are built in ring buffer architecture and are divided into a protected and an unprotected area. Example:
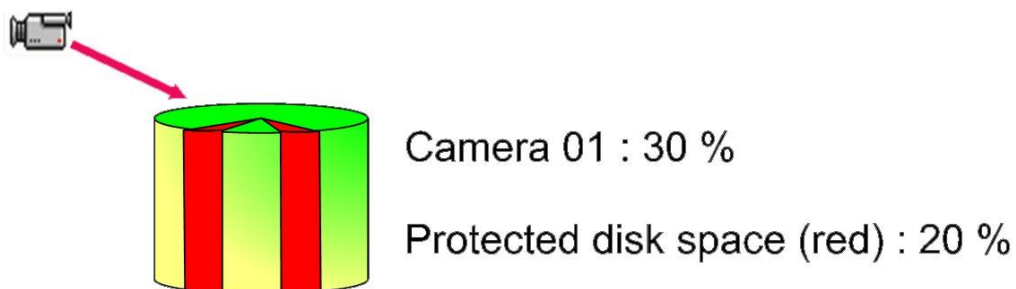
Figure 5:   Ring buffer architecture

The unprotected area is generally used for the continuous video recording. The continuous recording of the configured camera(s) starts immediately after system startup of ibaCapture-CAM 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 is saved in the protected area only if video triggers are used. The video triggers can be configured in the data storage settings of ibaPDA-V6 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.

Whilst video data is continually saved in the unprotected area, the protected areas are skipped during recording.
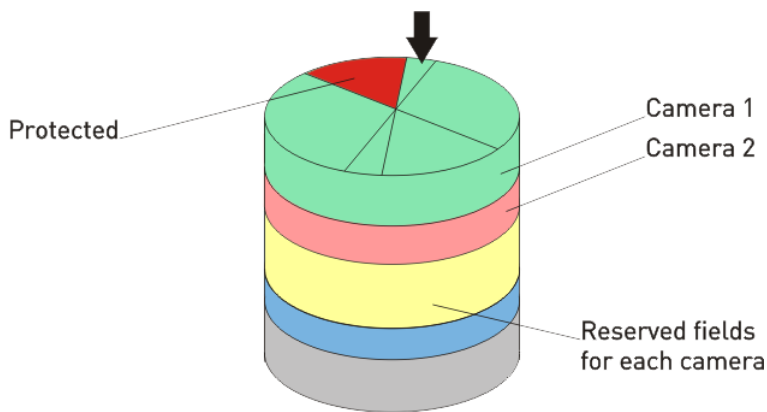
Figure 6:   Video recording

However, if the unprotected or protected video storage was entirely written, the oldest sequences lose their protection and can be overwritten by newer entries due to the ring buffer architecture.

2.2.3   Security and data protection

A user management is available for the protection of the system configuration and control of access to the videos. 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.

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 from the administrator.

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

2.3 Software components

The software package ibaCapture-CAM consists of several programs, which have to be installed on different participating computers:

❑ Driver software for the frame grabber card, to be installed on ibaCapture-CAM Server;

❑ ibaCapture-CAM Server: video recording service, which is installed on ibaCapture-CAM Server;
installation file on DVD: ibaCapture-CAM setup v*3.X.Y.Z.*exe

❑ ibaCapture-CAM Encoder: This program is part of the ibaCapture-CAM Server installation. It is required if the hardware acceleration is to be used for video encoding when using GigE cameras (recommended). The video encoder runs as program – not as service! - under Windows 7. Therefore, the program is placed in the autostart folder and requires an auto-logon user account.
See also the "Installing the ibaCapture-CAM Server software" chapter.

❑ ibaCapture-CAM Manager: Software for the configuration of ibaCapture-CAM Server and for displaying live images or video recordings; to be installed on ibaCapture-CAM Server. Optionally, the software may also be installed on another client PC (Windows XP, Server 2003/2008 or Windows 7) with a network connection to ibaCapture-CAM Server in order to view live images or replay videos by means of the camera view function.
The installation of ibaCapture-CAM Manager can be enabled or disabled in the installation process. Uncheck the "Server" option in the installation wizard to install only ibaCapture-CAM Manager.

❑ ibaCapture-CAM Player: plug-in required for playing video recordings in ibaCapture-CAM Manager, iba PDA Client and ibaAnalyzer.
The program is always installed.
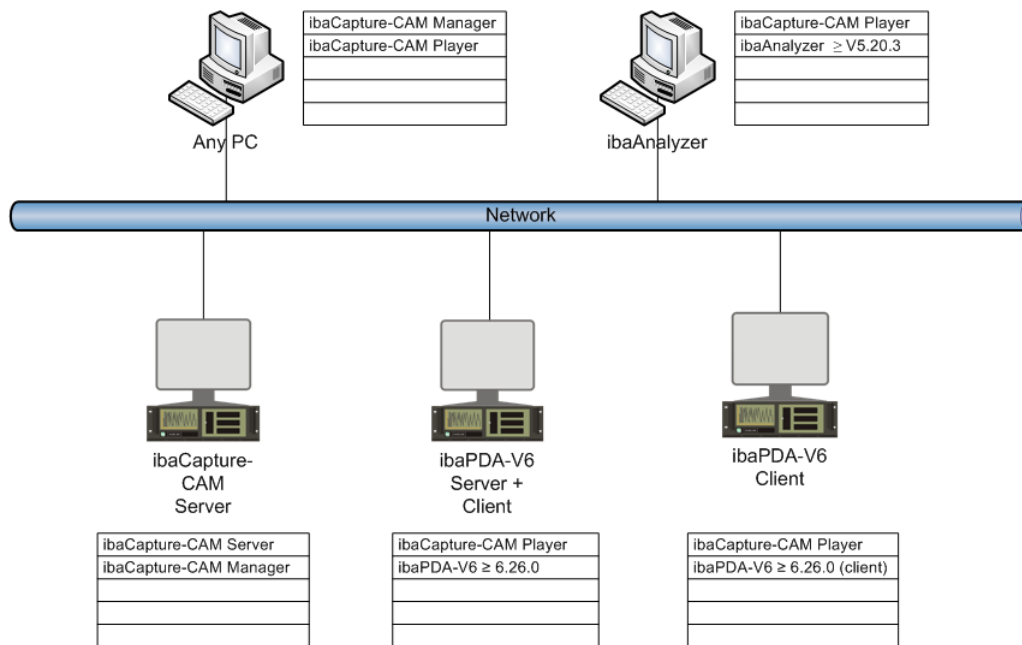
Figure 7:   ibaCapture-CAM software components

The DVD included in delivery contains all the software. In case the ibaCapture-CAM programs are not yet installed on the ibaCapture-CAM Server PC, please follow the installation guide in chapter "*Installing ibaCapture-CAM Server*, page 155".

If ibaCapture-CAM should be used by multiple clients the purchase of corresponding licenses is required. Please refer to the following chapter "License model".

2.4   Software License Model

The following software licenses are available for ibaCapture-CAM:

Basic license ibaCapture-CAM:

The basic license comes with the complete ibaCapture-CAM Server system.

Order no.: 30.670126

It consists of:

❑ 1 dongle for the ibaCapture-CAM Server computer

❑ 1 license ibaPDA-Interface-Capture-CAM (see below)
- ▪ This license must be activated on the ibaPDA-V6 dongle. When purchasing an ibaPDA-V6 system together with the ibaCapture-CAM system, this license will be activated by default. If an ibaPDA-V6 system already exists, the user should provide iba with the ibaPDA S/N no. or dongle no. and iba will upgrade the dongle by sending a key file.

ibaCapture-CAM-1CAM license

This license allows using an analog or IP camera or extending the number of cameras by 1 at ibaCapture-CAM Server. The license is unlocked in the dongle of ibaCapture-CAM Server.

Order no.: 30.670200

ibaCapture-CAM-4CAM license

This license allows using 4 analog and/or IP cameras or extending the number of cameras by 4 at ibaCapture-CAM Server. The license is unlocked in the dongle of ibaCapture-CAM Server.

Order no.: 30.670127

- Up to 16 cameras can be connected to ibaCapture-CAM Server. That means that up to 4 extension licenses of this type are permitted per ibaCapture-CAM Server.

Interface GigE Vision license

This license enables the use of GigE cameras. The license is unlocked in the dongle of ibaCapture-CAM Server. It must be purchased in addition to the above-mentioned ibaCapture-CAM camera licenses, only once per ibaCapture-CAM Server.

Order no.: 30.670128

Extension license ibaPDA-Interface-Capture-CAM

This license allows one ibaPDA-V6 system to connect to multiple ibaCapture-CAM Servers. The license is unlocked in the ibaPDA dongle.
Order no.: 31.001370

- Every ibaPDA-V6 system supposed to connect with ibaCapture-CAM must have at least one license.

- 1 license is already included in the ibaCapture-CAM basic license.

- If one ibaPDA-V6 system should connect to multiple ibaCapture-CAM Servers at the same time there are required as much licenses as ibaCapture-CAM Servers.

- For purchasing this license the user should provide the ibaPDA S/N or dongle no. respectively. iba will upgrade the dongle by sending a new key file.

3   Configuration of ibaCapture-CAM Server

ibaCapture-CAM Server can be configured by means of ibaCapture-CAM Manager.

ibaCapture-CAM Manager provides information about the server status and allows manual start and stop of the ibaCapture-CAM Server service.

Moreover, ibaCapture-CAM Manager allows adding and removing cameras, changing camera settings and setup the video storage including protected and unprotected disk space.

Note

The configuration can only be done by means of ibaCapture-CAM Manager which is installed on the ibaCapture-CAM Server computer.

If ibaCapture-CAM Manager is installed on other computers, only camera images of the connected video servers can be displayed.

3.1   Starting ibaCapture-CAM Manager

If ibaCapture-CAM Manager is not yet installed on your computer, turn to the "Installing ibaCapture-CAM Manager" chapter and proceed accordingly.

Start ibaCapture-CAM Manager by double clicking on the icon on the desktop or via the Windows "Start" menu.
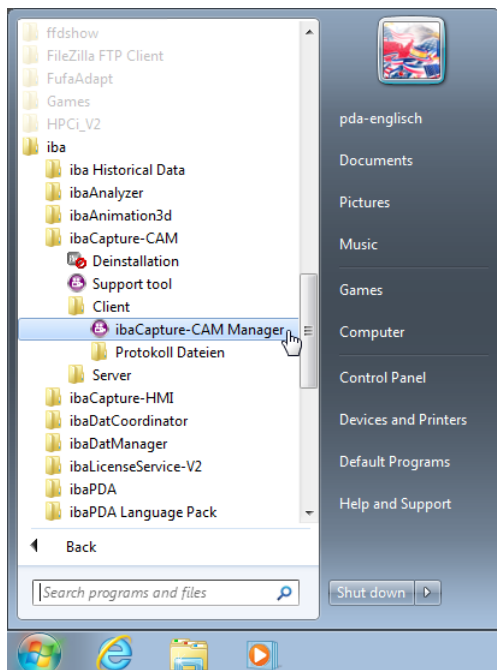
Figure 8:   Starting ibaCapture-CAM Manager, example: Windows 7

Upon being started for the first time, ibaCapture-CAM Manager opens with the following user interface.
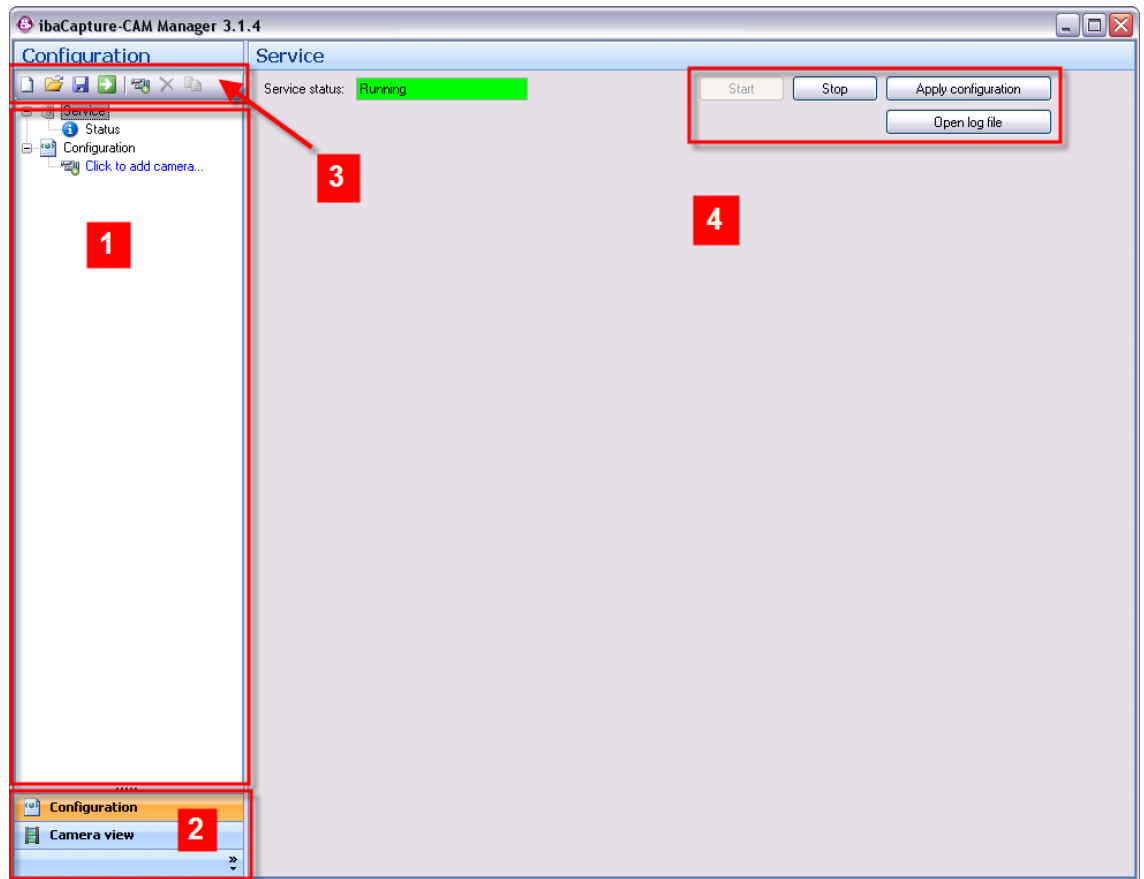
Figure 9:   ibaCapture-CAM Manager

1   Navigation panel

2   Buttons

3   Tool bar

4   Control buttons

ibaCapture-CAM Manager uses a split applications window. A navigation area is located on the left side. The navigation panel contains the following views which can be selected via the buttons in the lower area.

❑ Configuration

❑ Camera view

3.2   Control and status information

Service

In the "Configuration" view, click on the "Service" branch top left in the tree.

In the right pane, you will see the server status and some buttons. With the <Start> and <Stop> buttons, you can start and stop the ibaCapture-CAM Server service.

The <Apply configuration> button should be used to enable new or changed camera configurations. At the moment the button is pressed the new configuration will be saved and the server (service) will be restarted with the new configuration.

↗ For more information, please see chapter *Configuration of server and cameras*, page 27

The <Open log file> button can be used for diagnostic purpose or support cases. It shows the log file of the ibaCapture-CAM Server. More information appears when cameras had been configured.

↗ For more information, please see chapter *Applying the configuration*, page 53

Status

If you click on the "Status" branch, you will see some information about the license and active connections between the ibaCapture-CAM video server and ibaPDA system(s) and/or cameras.

Figure 10:   Status screen of ibaCapture-CAM Server

❑ License info
In this area, the license number is the most important information for support cases or enquiries for system extensions.

You can also see how many cameras (analog + IP, GigE) you can use with your license.

❑ Connections

The connections table gives an overview of all active connections between ibaCapture-CAM Server and different sources, like ibaPDA system(s) and camera(s). Also for each client requesting a camera view, such as ibaQPanel, ibaCapture-CAM Manager etc., a connection is established.

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.

Source: ibaPDA

For ibaPDA, there are two connections established over 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-CAM.

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-CAM Manager for the server configuration.
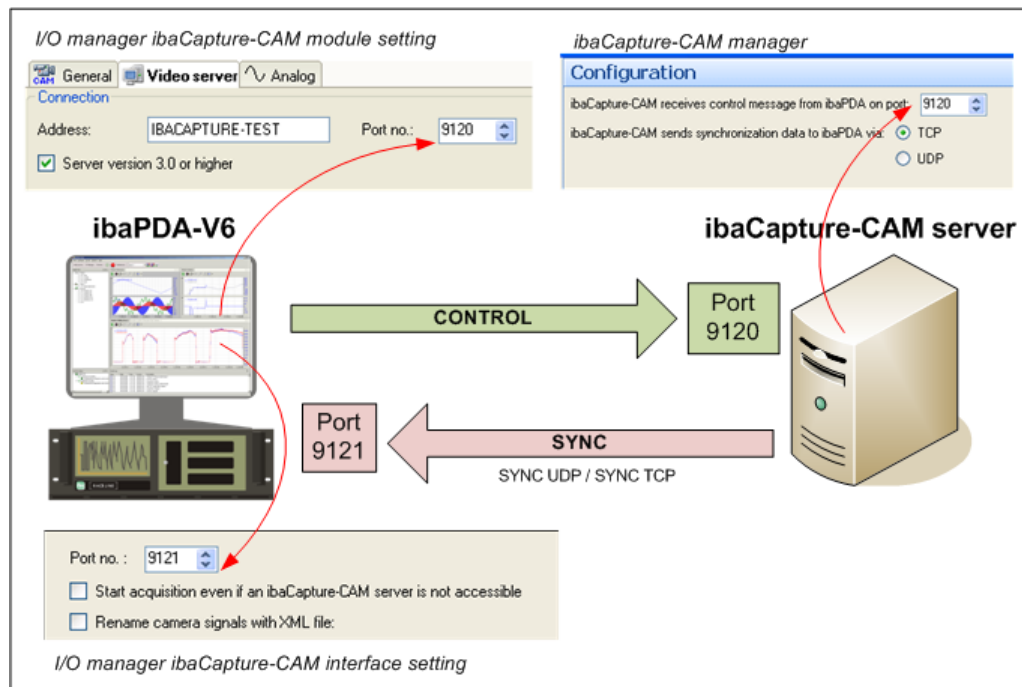
Figure 11: Communication between ibaPDA and ibaCapture-CAM

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

Source: 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-CAM 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.

In case of many clients, it should therefore always be ensured that there is sufficient capacity of the network

The "REPLAY" or "LIVE …" types are displayed, depending on the operational mode of the camera view.

Address	Type	Connected since	Throughput
⊟ **Source: ibaPDA**			
192.168.1.10:1086	CONTROL	11.08.2011 12:19:22	0,00 B/s
192.168.1.10:9121	SYNC TCP	11.08.2011 12:19:22	12,63 KB/s
⊟ **Source: Camera1**			
192.168.1.10:1131	REPLAY	11.08.2011 13:49:22	0,00 B/s
⊟ **Source: Camera 2**			
192.168.1.10:1091	LIVE UDP	11.08.2011 12:21:25	46,72 KB/s

Figure 12:   Active connections of ibaCapture-CAM

3.3   User management

The user management system allows the creation of different user accounts.

With ibaCapture-CAM Player, each user account can be assigned with different access rights to videos and/or cameras. There exists only one administrator user, called admin, that has full rights. It is the only user that is not subject to any restrictions and can add or remove other users as well as change their user rights. The name "admin" cannot be changed. No additional users can be granted administration rights.

3.3.1   User management dialog

You can configure the user management system in the user management dialog. Click on the corresponding branch in the navigation panel of ibaCapture-CAM Manager.
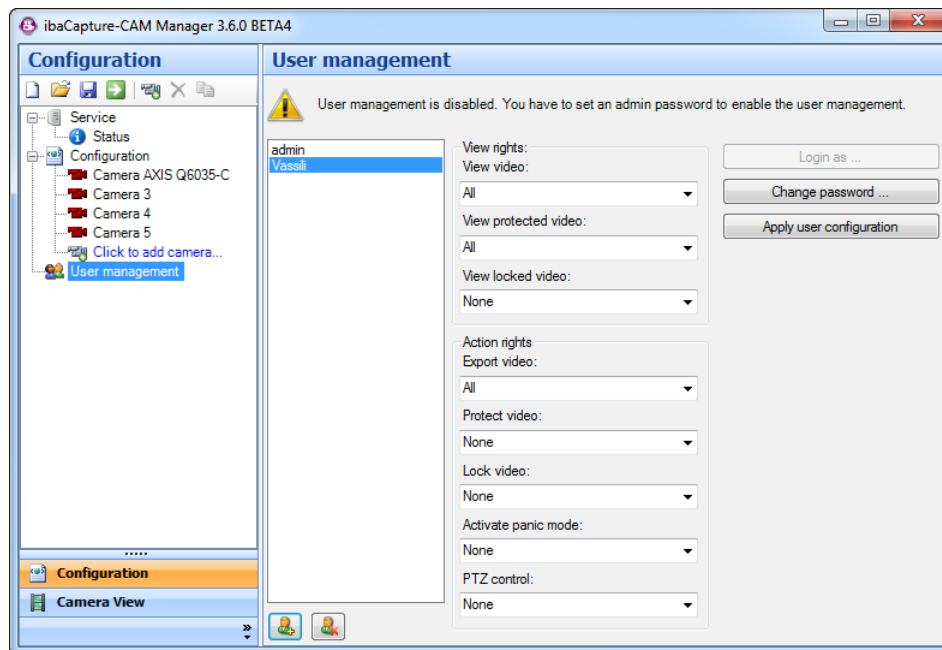
Figure 13:   User management system

In delivery state, the user management is disabled. When the user management system is disabled, every ibaCapture-CAM Player can connect as admin. So every ibaCapture-CAM Player (and user) has full rights.

Enabling the user management system

To enable the user management system, you have to set a password for the admin user. The password is saved in the dongle.

1. You can do this by clicking the <Change password> button. The input dialog for the password will open.

2. Enter the new password into the two dialog fields and press <OK>. The user management system is now enabled and you can add additional users and set their user rights.

Adding users

1. Click the button at the bottom of the dialog. 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).

Removing users

Select the relevant user from the list and press the button .

Disabling the user management system

1. Login as admin.

2. Open the dialog for the user management system.

3. Click on <Change password> and confirm with <OK> without entering a password.

3.3.2   User rights

User rights can be categorized in 3 viewing rights and 4 access 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.

Each right can be assigned to either all cameras, no camera or specific cameras.

Viewing rights	
View 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 ibaPDA-V6 or manually by means of the timeline in the ibaCapture-CAM view.
View locked video	Locked videos are continuously recorded videos manually marked as locked in the timeline in the ibaCapture-CAM view.
Access rights	
Export videos	In order to export a video to an MP4 file while viewing it in the ibaCapture-CAM view or in ibaAnalyzer, the user must be granted the specific right. Only if a user has viewing rights for a video, he can export it. If a user, for example, has no viewing rights for camera 1, the MP4 file exported will not contain a video of camera 1.
Protect video	A user granted this right can protect different sections of a video in the timeline of the ibaCapture-CAM view or remove the protection. ibaPDA-V6 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 ibaCapture-CAM view.
Enable panic mode	A user granted this right can enable the panic mode in the timeline of ibaCapture-CAM view. With the panic mode enabled, only the administrator can view videos.
PTZ control	A user granted this right can control PTZ cameras. The user can be assigned the right for all PTZ cameras or for specific, selected cameras.

Table 1:   Viewing and access rights

3.3.3   Video viewing with active user management

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

In terms of a camera view in ibaPDA-V6, this is as follows:
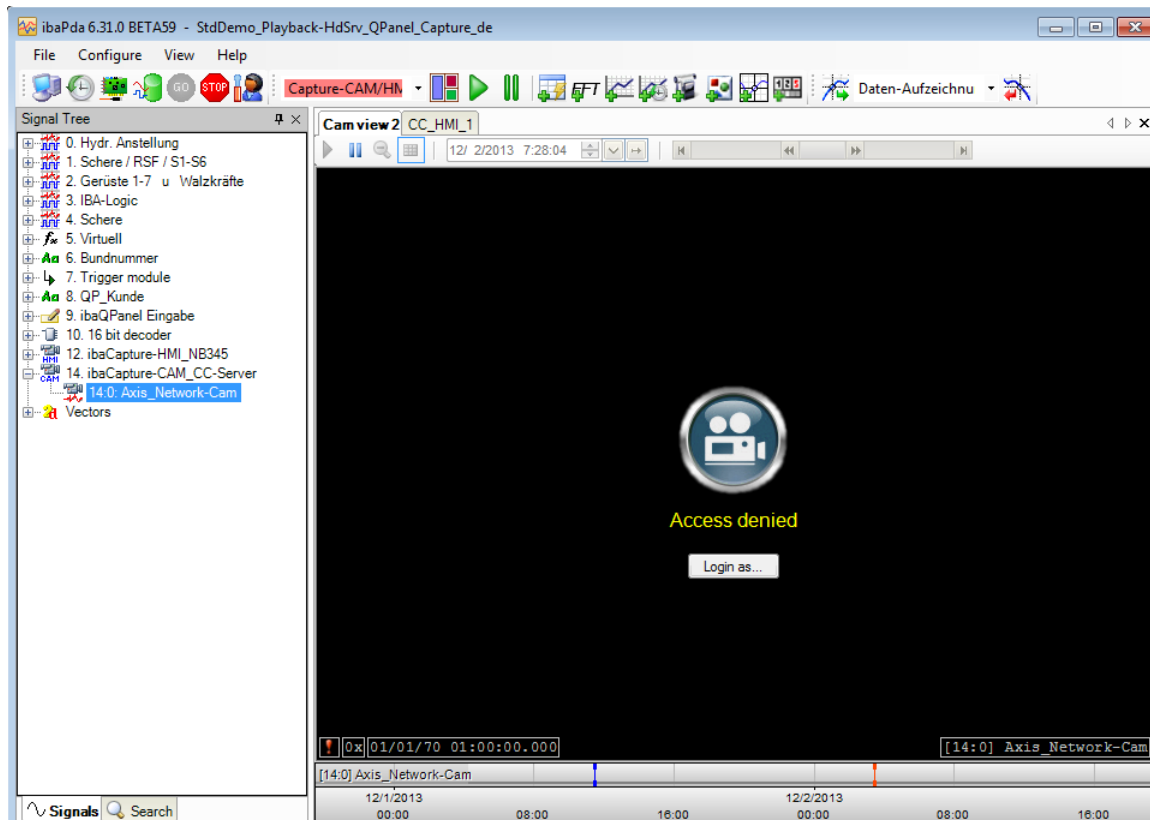
Figure 14:   Camera view in ibaPDA with active user management

First, the user has to login in order to be able to view the video.

Note

If you use an older version of ibaCapture-CAM Player and want to access a proprietary camera, only the red icon for "Access denied" is shown. In this case, you need to install version 3.4 or higher on the relevant computer in order to login.

User login

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

Figure 15:   Login dialog

The header of the dialog shows the name of the ibaCapture-CAM Server you login to. After you have entered user name and password and clicked on <Connect>, a login

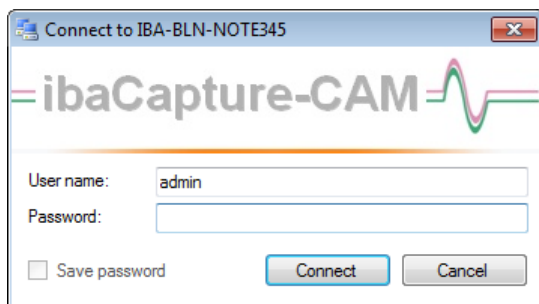attempt is started. After successful login, the video of the relevant camera opens. If the user is unknown or does not have the necessary rights, "Access denied" is shown again.

If you have opened multiple camera views in one application that all refer to the same ibaCapture-CAM 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-CAM Player is started in.

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

In ibaPDA-V6, 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'...".
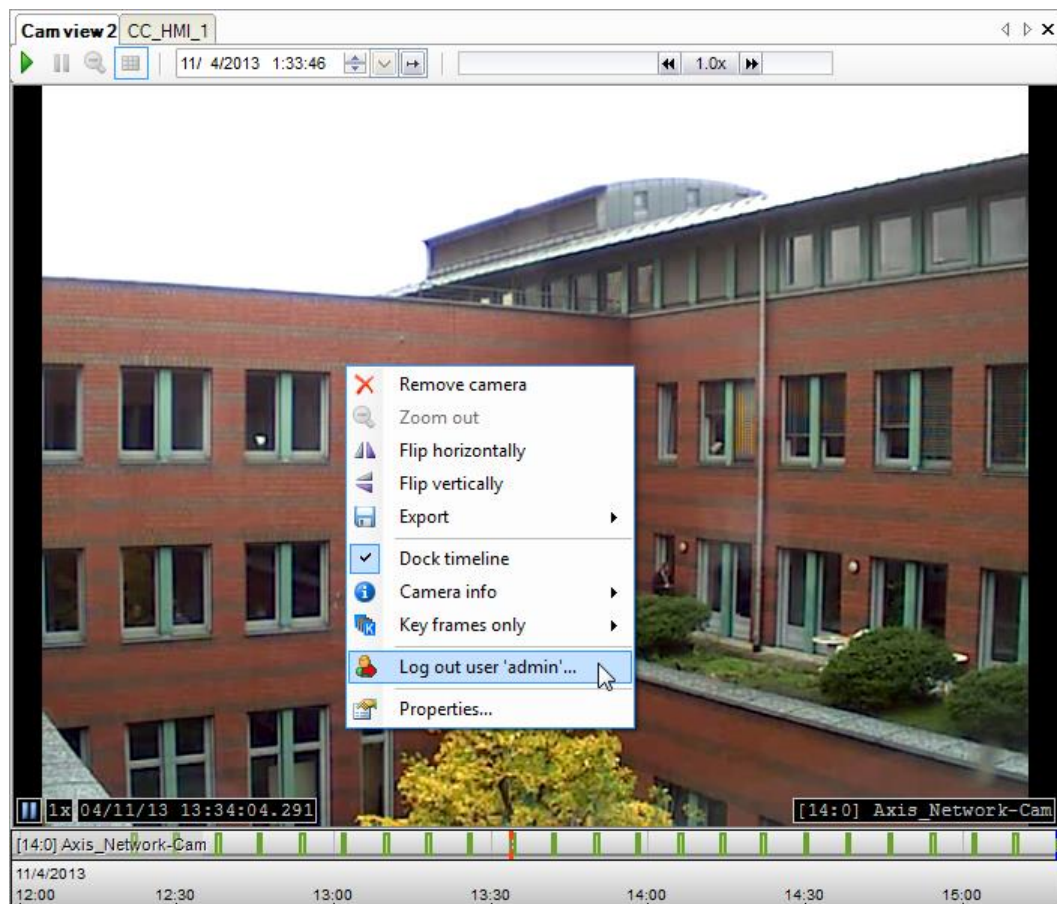
Figure 16:　Context menu for user logout

3.3.4 Changing the configuration when user management is active

Only the administrator (admin) can change the configuration of ibaCapture-CAM Server.

At start of ibaCapture-CAM Manager, login is required.

If a user other than the admin logs in, all configuration functions will be locked, as indicated by the red-colored areas.
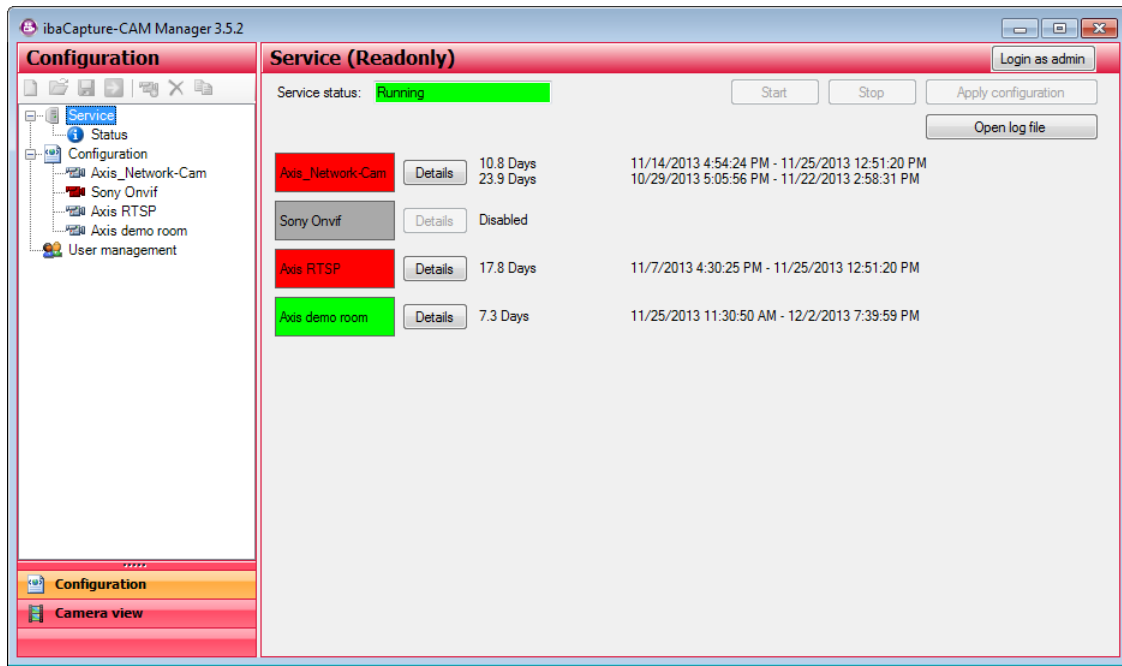

Figure 17:   Users without admin rights solely have read-only rights for the configuration.

3.4   Configuration of server and cameras

To configure ibaCapture-CAM Server and set up cameras, click in the "Configuration" view on the "Configuration" node in the tree structure. If you click on the "Configuration" node in the tree you can set some basic properties of the connection between ibaCapture-CAM video server and ibaPDA, such as port number and transmission protocol for synchronization telegrams. Typically, the default settings should not be changed.

↗ For further information, see chapter *Control and status information*, page 18, section "source: ibaPDA".

In order to configure a new camera, it should be first registered on ibaCapture-CAM Server.
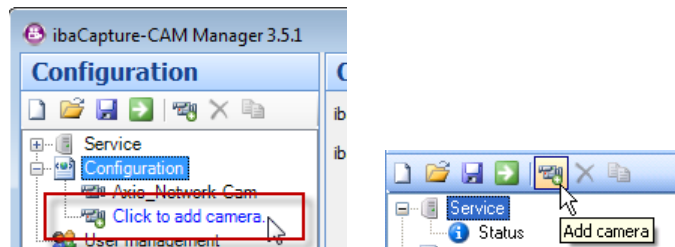

Figure 18:   Configuration: Adding a camera

To do so, left-click on the "Click to add a camera..." sub-branch or on the corresponding tool button in the navigation panel.

The configuration dialog appears in the right pane on the "Configuration" tab. The "Diagnostics" and "Streaming" tabs will be explained further below.
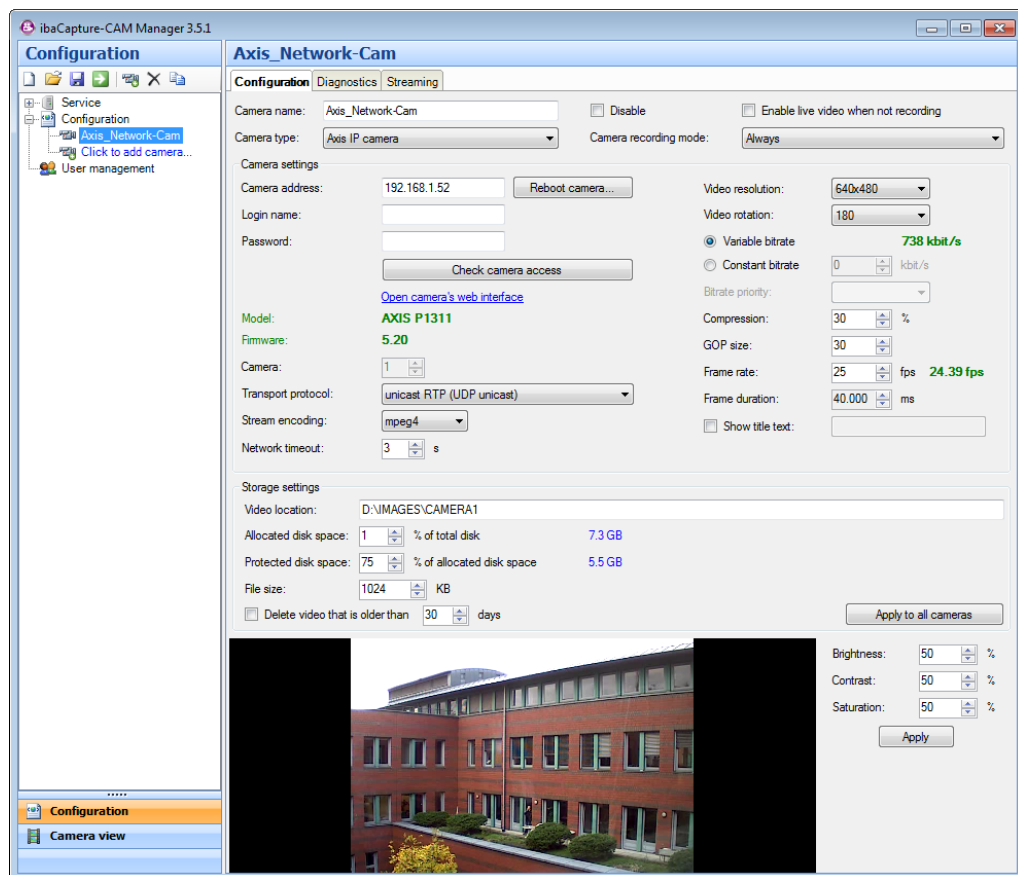

Figure 19:   Configuration of a camera

The configuration dialog has three main sections:

❑ General information (camera name and type, deactivation option, camera recording mode)

❑ Camera settings

❑ Storage settings

Below the last section, you'll find the live view of the camera as soon as it is properly configured and the configuration applied by the server.
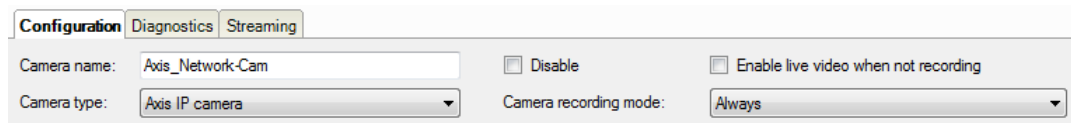
3.4.1   General information

Figure 20:   Camera configuration, general information

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. Furthermore, you need to select the camera type from the "Camera type" pull-down menu. The following camera types are available:

❑ Analog camera (Picolo Diligent)
Select this type if you use analog cameras connected to ibaCapture-CAM Server over frame grabber cards of type Picolo Diligent (like with a previous ibaCapture-CAM Server).

❑ Analog camera (Ux H264); default setting
Select this type if you use analog cameras connected to ibaCapture-CAM Server over frame grabber cards of type Picolo Ux H264 (x = 4 or 8)

❑ Axis IP camera
Select this type if you use IP cameras from Axis.

❑ CNB (compatible) network camera
Select this type if you use CNB or CNB compatible IP cameras like Geutebrück EcoBC-1110 IP.

❑ GigE Vision Camera
Select this type if you use a GigE Vision compatible camera.

❑ ONVIF compatible device
Select this type if you use a network camera or an imaging device supporting the ONVIF standard.

❑ Panasonic Network Camera
Select this type if you use a network camera from Panasonic.

❑ Sony Network Camera
Select this type if you use a network camera from Sony.

To temporarily disable a camera (e.g. for test purposes or to setup a camera which is not yet physically connected), you can check the "Disable" checkbox.

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-CAM 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-V6*, page 124.

Camera recording mode	Description
Always (default)	By default, video is always recorded, irrespective of whether or not a recording control was enabled in ibaPDA. Even if the recording control is enabled and camera recording is disabled in ibaPDA, ibaCapture-CAM will record videos.
Record except when disabled by ibaPDA	Video is recorded unless the recording control is enabled in ibaPDA 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 ibaPDA and recording is enabled for the relevant camera (output signal = true).
Never	No videos are recorded by ibaCapture-CAM, irrespective of whether or not a recording control was enabled in ibaPDA. Only a live image is provided. In this case the "storage settings" are deactivated, since no memory space is required.

Table 2:   Camera recording modes

If recording of a camera was disabled, it will be displayed in orange color in the overview in ibaCapture-CAM Manager.

Important note

In those cases ibaCapture-CAM 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.

3.4.2   Camera settings

The camera settings vary depending on the camera type.

3.4.2.1   Analog camera (Ux H264)

Figure 21:   Analog camera (Ux H264) settings

❑ 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
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.

❑ 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.

❑ Picture quality (only available for CPQ compression mode)
The value to be entered is a measure for compression.
100 = best picture quality, maximum memory requirement.
0 = worst picture quality, minimum memory requirement.
The default value of 30 % is suitable 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 for 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.

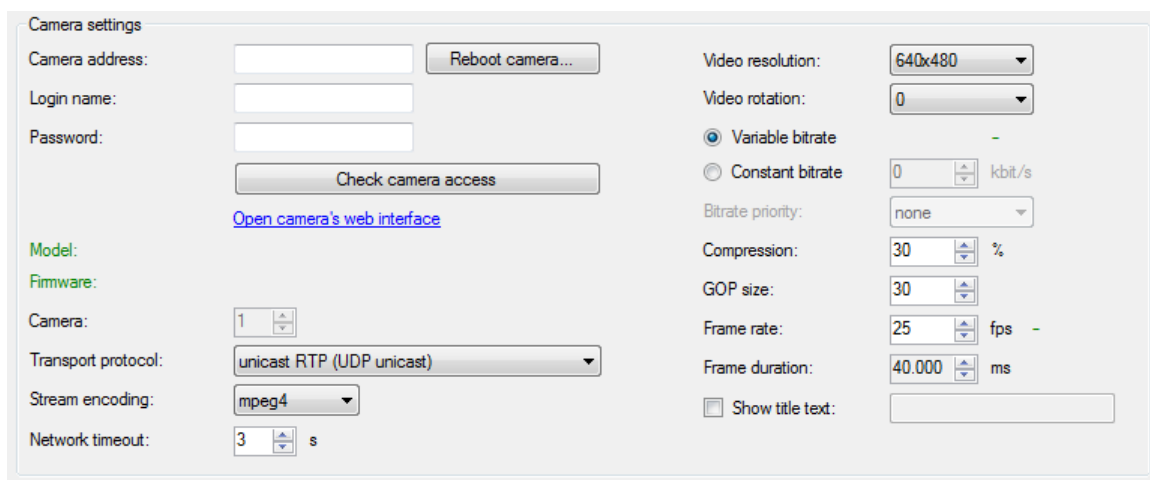### 3.4.2.2 Analog camera (Picolo Diligent)

Figure 22:   Analog camera settings (with older frame grabber cards)

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

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.

3.4.2.3 Axis IP cameras

Figure 23:   Axis IP camera settings

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.

There are some settings which can also be made in ibaCapture-CAM Manager.

❑ Camera address
Enter the IP address of the camera here. If you do not know the IP address, use AXIS IP Utility to find out. 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.

❑ 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.

❑ Open camera's web interface
A click on this hyperlink will open the camera's web interface for more information and settings. A web browser is required for this function.

❑ Button <Reboot camera...>
Press this button only in exceptional cases, e.g. when there is no video stream visible although the settings are correct.

❑ Model, firmware
This information is displayed automatically after accessing the camera.

❑ 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 disabled.
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.

❑ Transport protocol
A selection of different transport protocols for data transmission from camera to ibaCapture-CAM Server is available.

- Unicast RTP (UDP unicast); 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)

❑ Stream encoding
This is the video encoding format for video compression used by the camera. Some camera models allow change of encoding. ibaCapture-CAM supports MPEG-4 and H.264.

❑ Network timeout
Time span of interrupted network connection between camera and ibaCapture-CAM Server given in seconds before a "No video signal" error message will be posted. Default value = 3

❑ Video 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 angles possible depend on the camera model.

❑ Variable/constant bit rate
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 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 for smooth 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.
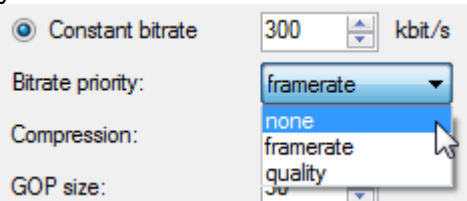
Priority on frame rate will provide for smoother motions but less image quality. Priority on quality will provide for good image quality but motions with jolt. If you select "None", frame rate and image quality will be affected approximately equally.

❑ Compression
Beside 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. But then, there are also fewer details in the image. Delicate structures may not be visible anymore.

❑ 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 fitting for most of the cameras.

❑ 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.

❑ 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.

3.4.2.4 CNB (compatible) network camera

Figure 24:   CNB camera settings

❏ Camera address, login name and password, button <Reboot camera...> and hyperlink:
   See chapter above

❏ Camera model
   Select the camera model you are using.
   The pick-list shows the supported and tested models.

❏ Transport protocol
   There are three different protocol types available. The default setting RTP over UDP works for most of the cases and is recommended.

❏ Stream encoding
   Choose between H.264 (default setting) and mpeg4 if supported by the camera.

❏ Video resolution
   Choose between 2 resolution qualities:

   ▪ QVGA (320 x 240)

   ▪ VGA (640 x 480)

❏ Video bit rate
   Select one of the average bit rates between 128 kbit/s (kbps) and 3 Mbit/s (Mbps) from the drop-down list which fits best your needs and network performance.

❏ Frame rate and frame duration
   See chapter above.

3.4.2.5   Sony Network Camera

Figure 25:   Sony network camera settings

Note

Generally, the video stream properties for Sony network cameras can only be changed over the web-interface of the camera. Once you have set the camera's IP address correctly in this dialog, you can enter the camera's web interface by click on the hyperlink.

❑ Camera address and port
The IP address should be entered in compliance with the setting of the camera.

❑ Login name and password
This information should be entered if the camera is configured for restricted access. However, a valid login to the camera will not enable ibaCapture-CAM to change the video stream properties.
To check login data, press the button <Check camera access>.

❑ Hyperlink "Open camera's web interface"
Click here to enter the web interface of the camera in order to set the video stream properties. A web browser is required for this function.

❑ Video stream properties
This information is for display only and can only be changed on the web interface of the camera. If supported by the camera, only the stream encoding mode may be selected here.

Note

If no stream encoding is displayed, the camera setting is using an encoding which is not supported by ibaCapture-CAM. Only MPEG4 and H.264 are supported by ibaCapture-CAM. The camera must be set on one of these encodings in order to get an image.

3.4.2.6 Panasonic network camera

Note

This camera type is available for network cameras from Panasonic, that do not yet comply with the ONVIF standard. Panasonic cameras should be configured as ONVIF compatible device.

Only few settings are required in ibaCapture-CAM Manager to connect to the Panasonic camera.

Just enter IP address, login name and password of the camera.

The port number should be changed only for special configuration.

Figure 26:   Panasonic cameras settings

When applying the configuration, ibaCapture-CAM Server runs a test to detect the video stream parameters such as video resolution, frame rate and GOP size. ibaCapture-CAM Server receives only the first H.264 stream from the camera which is the main stream of the camera.

All other settings for the camera configuration can be done through web interface.

1. Click on the hyperlink "Open camera's web interface"

2. At first, check the image mode and change it, if needed.
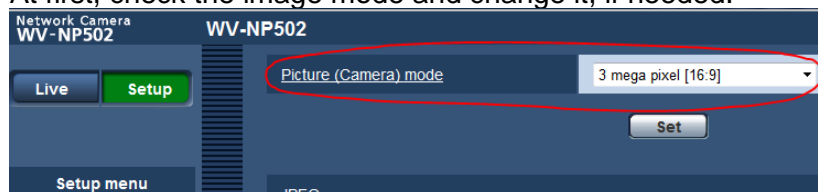
3. Then configure the first H.264 stream:

- Image capture size

- Transmission priority (constant bitrate or frame rate)

- Frame rate
  In case of a fixed frame rate, select the desired frame rate from the drop-down list.
  The current frame rate depends on the image size or resolution, respectively. The configured frame rate indicates only the maximum frame rate for the stream. The higher the resolution, the lower the current frame rate at which the video stream will be sent.

- Maximum bit rate

- Refresh interval
  The refresh interval configures at which period the key frame will be inserted.

Together with the frame rate, it defines the GOP size, which is detected by ibaCapture-CAM Server (<framerate> * <refreshinterval> = <GOPsize>).
Example:
If the current frame rate is 15 fps and the refresh interval is 2 s, the GOP size will be 30.

H.264(1)	
H.264 transmission	⦿ On ○ Off
Internet mode (over HTTP)	○ On ⦿ Off
Image capture size	1920x1080 ▾
Transmission priority	○ Constant bit rate ⦿ Frame rate
Frame rate	30fps * ▾
Max bit rate (per client) *	4096kbps * ▾
Image quality	Fine(Image quality priority) ▾
Refresh interval	2s ▾
Transmission type	Unicast port (AUTO) ▾
Unicast port1(Image)	32004 (1024-50000)
Unicast port2(Audio)	33004 (1024-50000)
Multicast address	239.192.0.20
Multicast port	37004 (1024-50000)
Multicast TTL/HOPLimit	16 (1-254)
	Set

Note: Interface layout and settings may differ depending on the camera model.

3.4.2.7   GigE Vision cameras

GigE Vision compatible cameras, in short GigE cameras, offer a wide range of control and configuration features.

The basic settings should be made using the software tools Matrox Intellicam and/or Matrox Capture Assistant.

These tools are automatically installed with the MIL Matrox Imaging Library. There are two buttons on the camera's configuration tab in ibaCapture-CAM Manager for starting these tools.
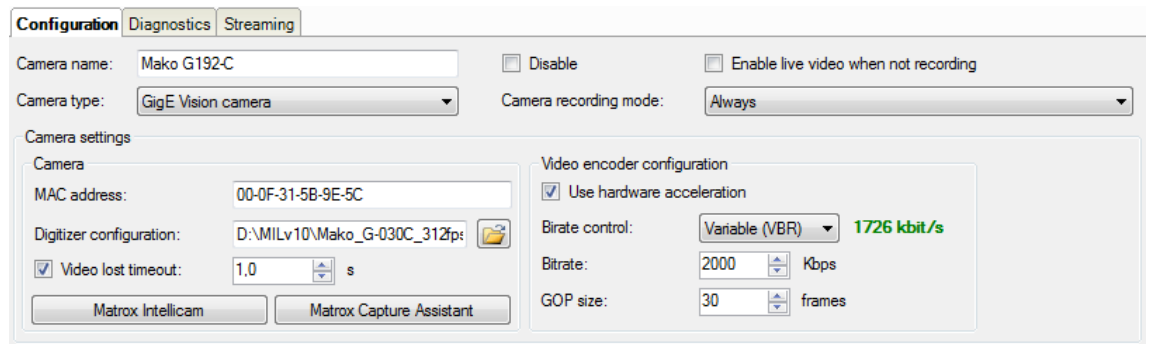
Matrox Intellicam

This program can be used to access the camera after it has been connected to the network card. It offers a fast camera connection and interactive access to all recording functions of your network card. Matrox Intellicam allows you to record images with various camera types and see the result immediately.

You can also use Matrox Intellicam to create or edit digitizer configuration files (dcf files), which also support non-standard acquisition. These files can be used to interface any camera that is supported by your network card.

In order to learn more about Matrox Intellicam, please use the online help of the program.

Matrox Capture Assistant

This program should be used to get information about the connected cameras as well as IP and system configuration. The assistant automatically detects all connected cameras and lists them in a table. Select a camera to retrieve information about this camera and its network configuration.

How to get connected to the camera

1. Open the program Matrox Capture Assistant by clicking on the button in order to connect ibaCapture-CAM Server to the camera.

2. On the "GigE Vision devices" tab, select the camera you want to configure with a mouse-click and copy the MAC address to the Windows clipboard.
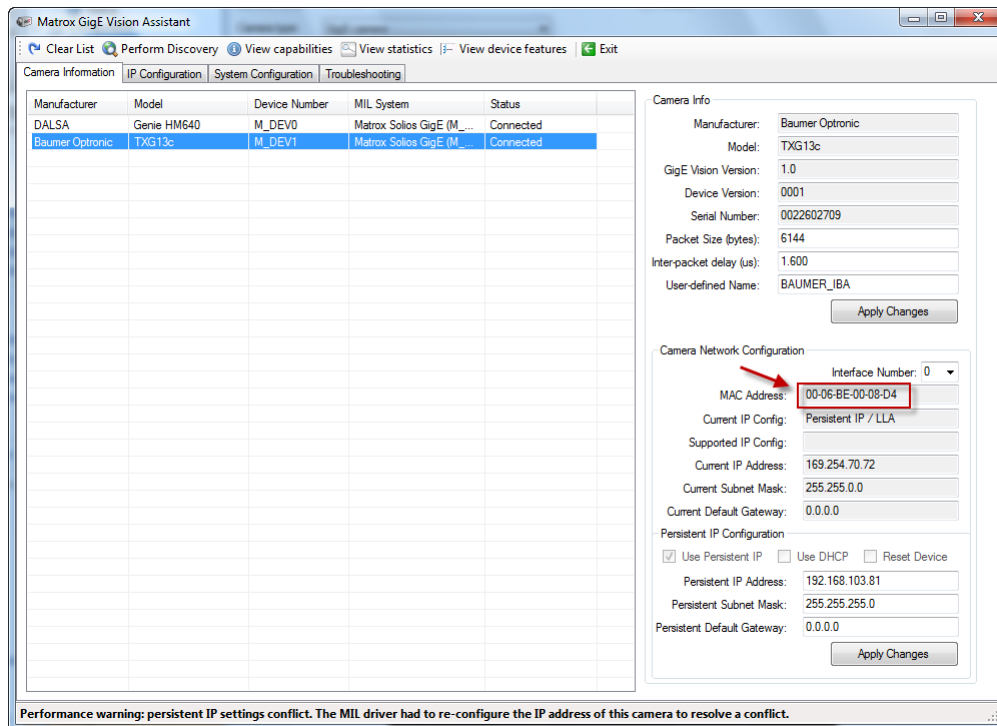
3. Close the program Matrox Capture Assistant.

4. These are the next settings that have to be made in ibaCapture-CAM Manager:

Camera settings

❑ MAC address of the camera
Each camera is uniquely identified by a MAC address. Enter the MAC address of the camera or copy it from the Windows clipboard as described above. This is the only relevant address. In case of GigE cameras, the server ignores the IP address of the camera.
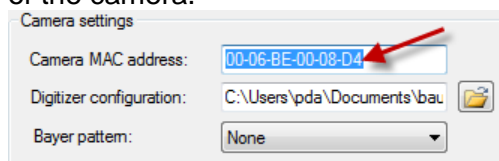
❑ Digitizer configuration and browse button
If you have saved a digitizer configuration with Matrox Intellicam (dcf file) before, you can select and load the file here. ibaCapture-CAM Server extracts from this file the exposure- and image acquisition parameters of the camera. If this field remains empty, the camera will be operated with its default settings.

Note

Some the default settings of the cameras may have as a consequence, that the camera might not deliver a video when connected to ibaCapture-CAM. In that case, you have to create a dcf file to use this camera properly. The settings are described in the manual of this camera. You will find notes on the compatibility of certain settings for the use with ibaCapture-CAM in chapter *GigE cameras*, page 179 in this manual.

Video encoder configuration

❏ Use hardware acceleration
We recommend using the hardware acceleration for video encoding in order to improve the performance.

❏ Bitrate control

▪ VBR (Variable Bit Rate)
With VBR, the bitrate is always set according to the complexity of the taken image. 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.

❏ Bitrate
If VBR is configured for the bitrate control, you can configure here the average bitrate. If CBR is selected, you can configure here the maximum permitted bitrate.

❏ 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.

3.4.2.8   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.

Note

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

Figure 27:   ONVIF compatible device settings

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

Figure 28:   List of detected ONVIF devices

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 press <Choose device>. You will then be informed that the IP address is not in the list of the detected ONVIF devices. However, by pressing <No>, you can still establish a connection to the device.

If user rights 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>.
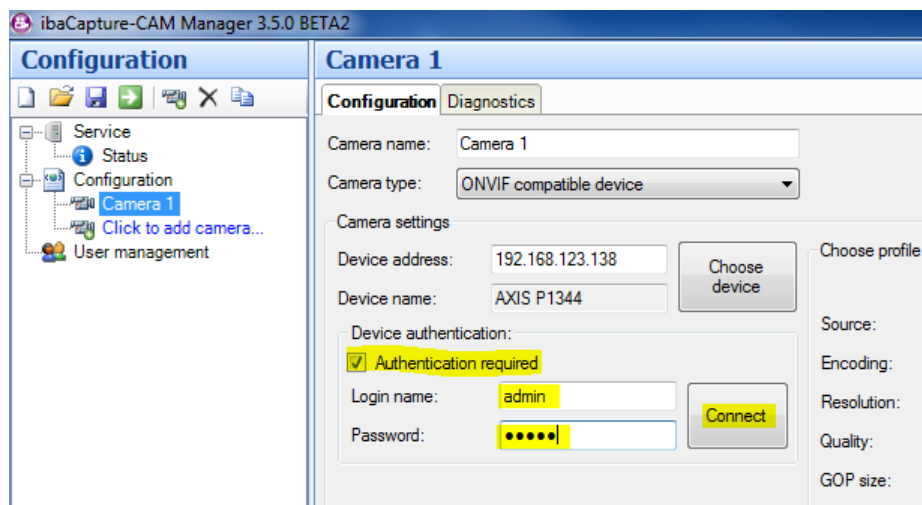
The connection with the device will be established.

In the "Select profile" area, the ONVIF profiles available and supported by ibaCapture-CAM (H.264, MPEG4) are now shown in the pick-list. Other profiles than the ONVIF profiles supported can be found in the Edit Profile Assistant.

Select an ONVIF profile.

Let the server carry out the camera/device configuration.

Important note

ibaCapture-CAM 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 the keyframe is sent on demand. You need to change this default value to a value >0 before you allow ibaCapture-CAM to carry out the configuration. You can change this value either in the web interface of the device or in the profile editor of ibaCapture-CAM.

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 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, MPEG4), 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.
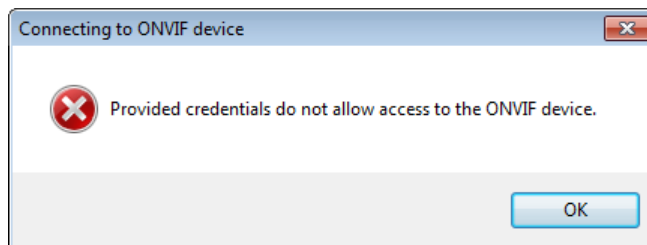
1. Press the <Edit profiles...> button
   The assistant opens showing a list of the available ONVIF profiles.
   The available ONVIF profiles are presented in a table indicating name, source profile, encoder profile and type of video coding.
   If the option "Show only supported profiles" is checked, the list contains only those profiles supported by ibaCapture-CAM.
   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.
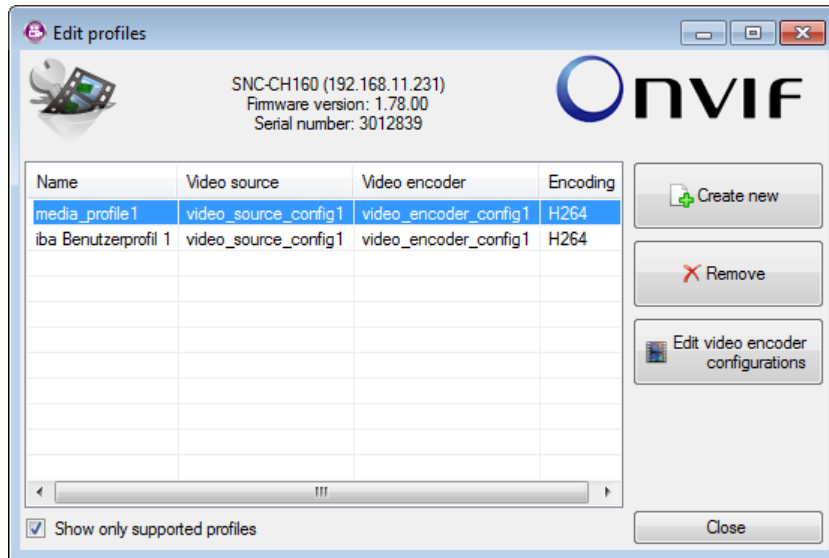
2. Press the <Create new> button.

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, press <Next>.
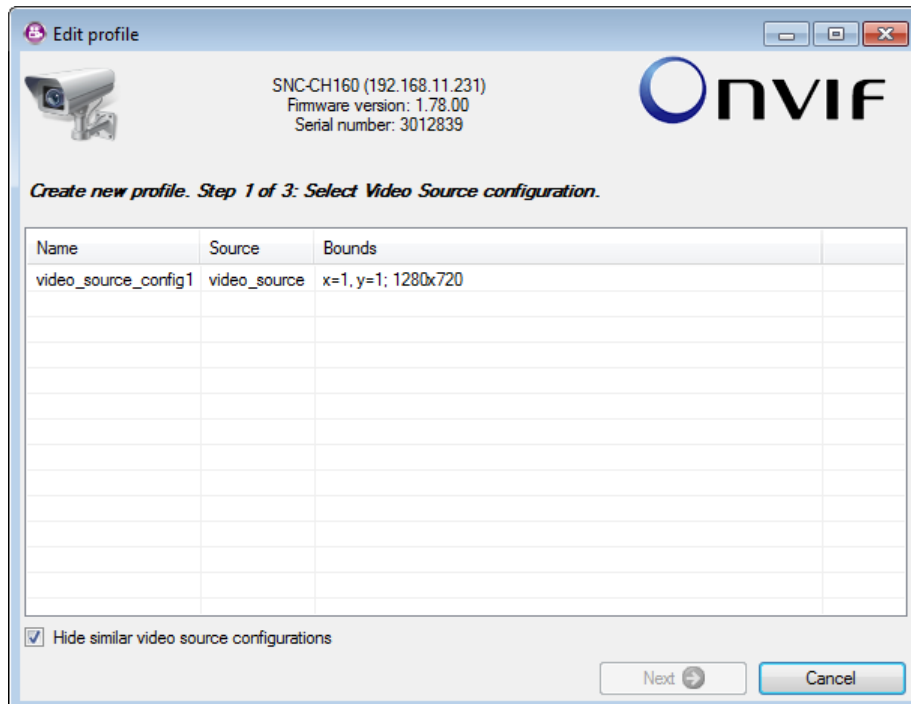
2. Select the encoder profile in the next step.

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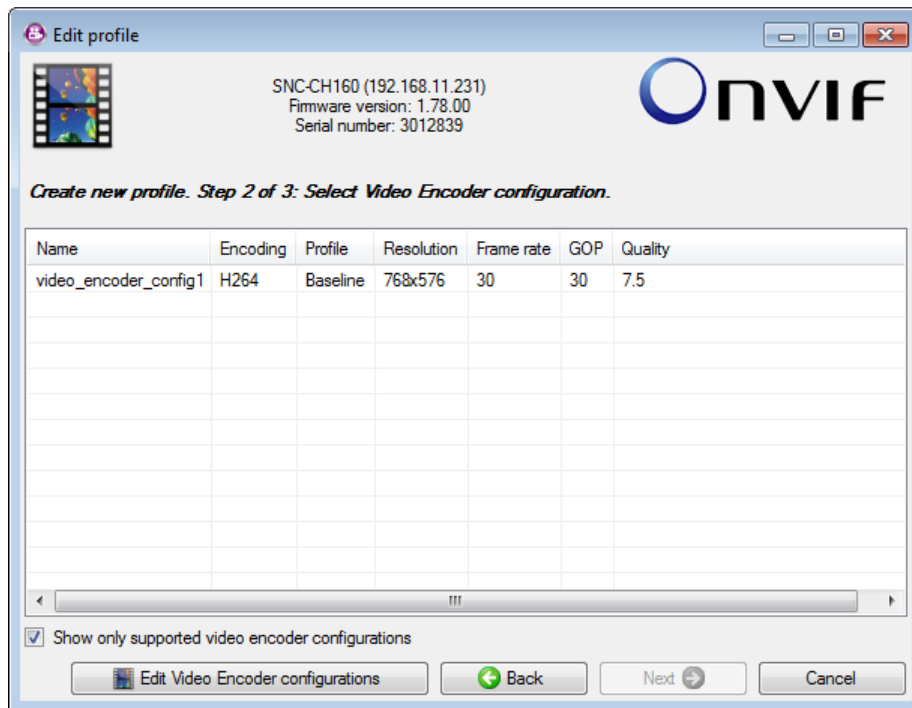
3. In the third step, you confirm your selection. The properties of the profile will be shown again.

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

Complete the creation of the new profile by pressing <Finish>.
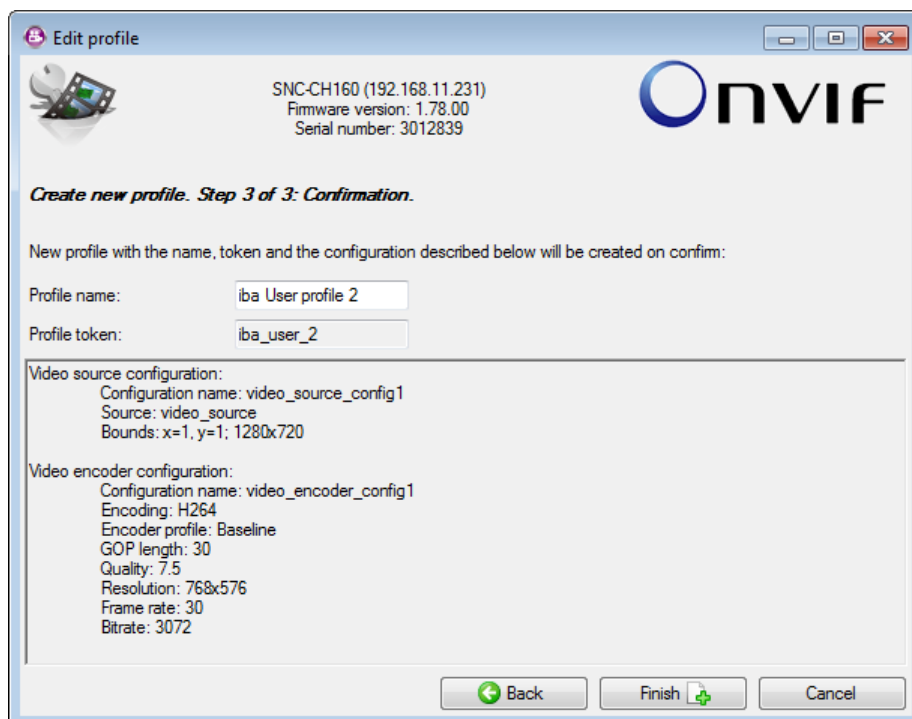
Editing of the video encoder configuration

In contrast to the video source configuration, you have the opportunity to modify the encoder configuration. For this purpose, the <Edit video encoder configurations> button is available in the dialogs.

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.
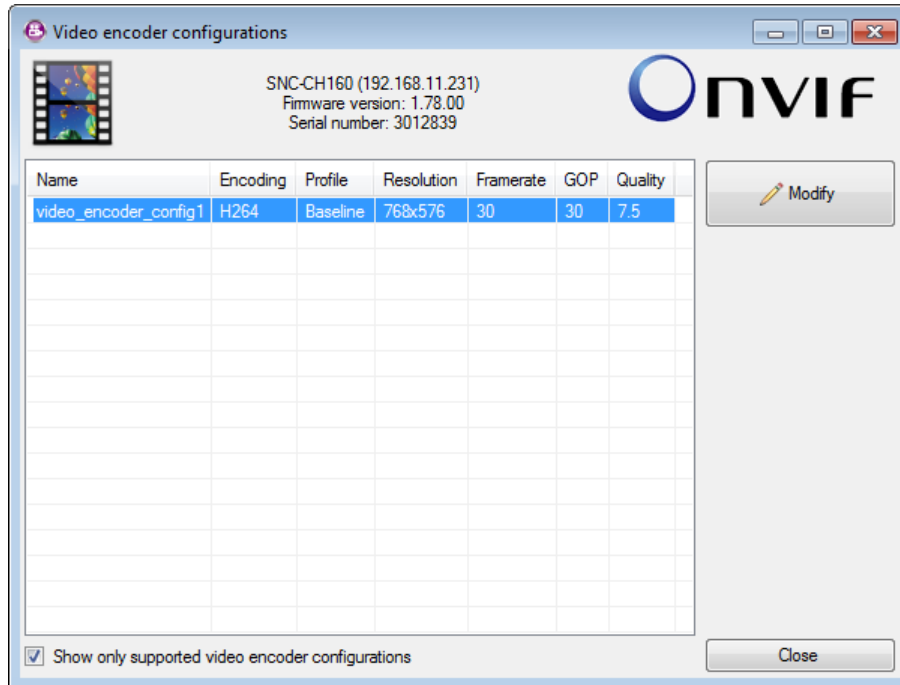
2. Click on the configuration to be modified and press <Modify>.

3. In the first step of the encoder configuration, you adjust the properties.
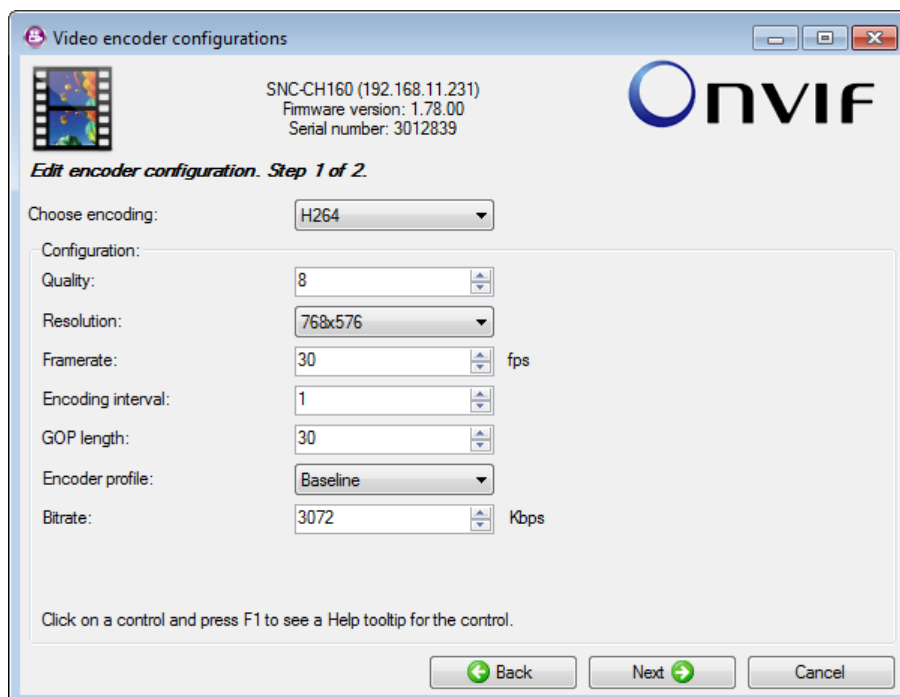
- select the coding.
  (ibaCapture-CAM supports only H.264 or MPEG4)
- select or change the quality, resolution,
   frame rate, encoding interval and bit rate.
- please ensure to enter a value greater than 0 into the GOP size field.
- encoder profiles are not always available.

You will receive a quick info on the individual parameters when you click on the input field and then press <F1>.

4. After you have adjusted and checked all settings, click <Next>.

5. In the second step of the encoder configuration, confirm the settings. 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.
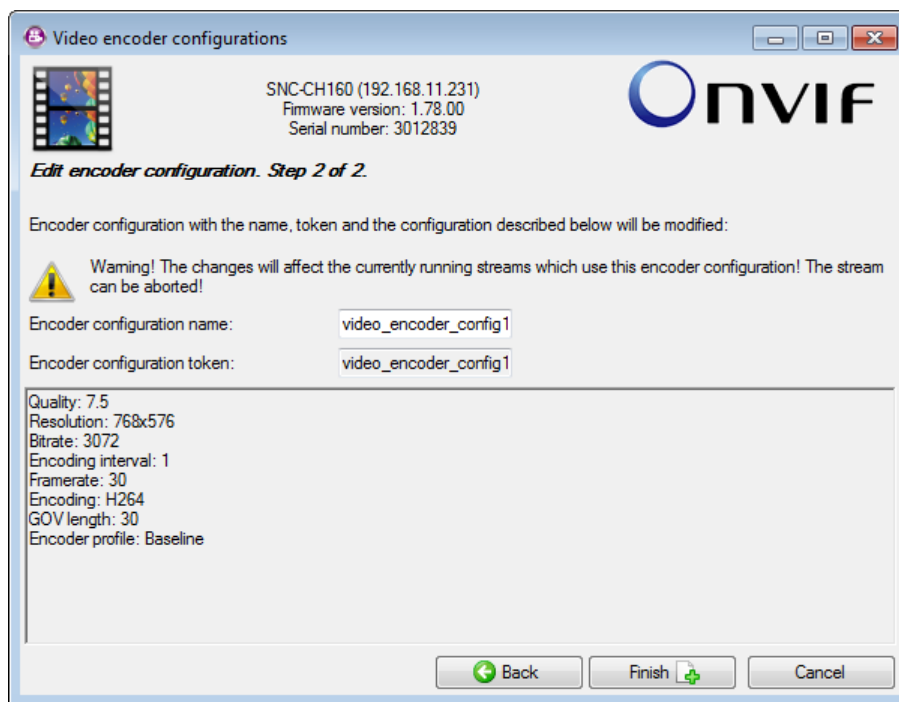
Caution!

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.

Additional notes

You will find additional device- and manufacturer-specific notes on the use of ONVIF compatible devices in the chapter *Supported cameras*, page 169.

3.4.2.9 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-CAM.

The prerequisite is that these sources support RTSP and provide an MPEG4 or H.264 video stream.

For configuration purposes, the URL address of the video source needs to be entered. Video parameters such as resolution, stream coding, frame rate etc. will be adapted automatically by the camera and set correspondingly in ibaCapture-CAM.
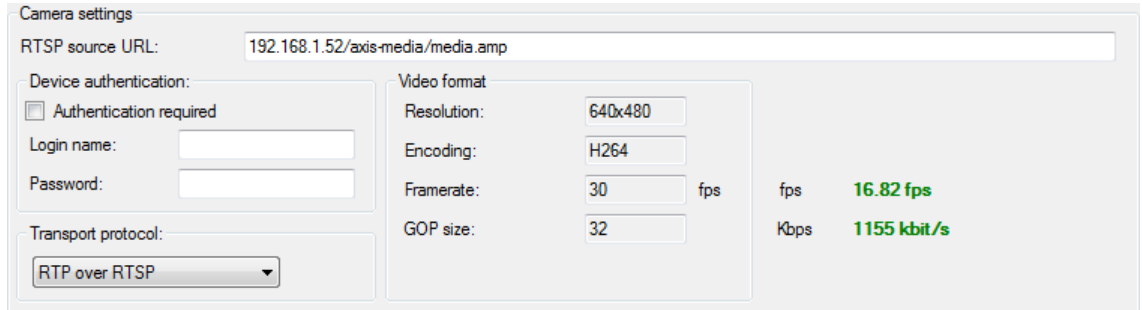
Figure 29:   RTSP source settings

❑ RTSP source URL

For details, on which URL you need to enter at this point, please refer to the camera's manual. This information differs depending on the manufacturer or the model.

The entry generally starts with **rtsp://**, followed by the IP address or host name of the camera or source and further path information.

Tip

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.

❑ Transport protocol

Here, select "RTP over RTSP".

3.4.3   Storage settings

Figure 30:   Storage settings

All settings for saving the video data are undertaken in the section "Storage settings".

In the entry field "Video location", enter the local directory in which the video recording of the camera concerned is to be saved. Each camera needs its own directory.

The total memory capacity for the respective cameras is set in the input field "Allocated disk space". The memory segment is stated in percent of the total disk space on the drive or partition (D:\ in the figure above). The memory capacity is specified in blue text after the value in percent. A click on the link <Click to check the actual disk space usage> shows the actual storage occupancy and number of files.

Figure 31:   Actual storage occupancy

A so-called protected disk segment of the memory capacity is specified in the input field "Protected disk space". The memory segment is stated in percent of the allocated disk space. Basic information for saving video data and the associated division of the memory segments in maximum and protected memory segments can be found in the chapter "Video file storage". The memory capacity required is displayed automatically with blue writing behind the percentage memory requirement.

Important 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 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.

Figure 32:   Video files on hard disk

The "index.dat" file is not a data file within the meaning of ibaPDA (.dat). It is an index file on 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, one percent 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.

The size of the individual video files is specified in the input field "File size". Normally, the default value (1024 KB) can be used.

The "Delete video older than ... days" option serves as adaptation to the legal 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 video recordings older than the period set are deleted regardless of whether they are regular, protected or locked.

3.4.4   Live screen

The last section displays a live screen of the respective camera. The brightness, contrast and color saturation of the camera can be set on the right, next to the live

screen. Pressing the <Apply> button will immediately apply the changes to the camera and save the changes to the configuration of ibaCapture-CAM Server.

3.4.5   Tool bar

The tool bar is located over the navigation panel.

Figure 33:   Toolbar "Configuration"

:   Opening a new, empty configuration

:   Opening a saved configuration

:   Saving the current configuration as an xml file

:   Applying the configuration

:   Adding a camera to the configuration

:   Deleting a camera in the configuration
            (only available if a camera is selected in the tree)

:   Copying a camera including its configuration
            (only available if a camera is selected in the tree)

3.4.6   Applying the configuration

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

Click on the icon [➡] in the toolbar.

Alternatively, you can click on the main branch in the navigation panel "Service". To make the server apply the camera configurations, click on the <Apply configuration> button.

> **Note**
>
> Applying a new configuration will 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.
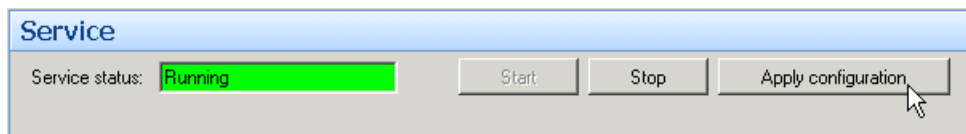
Figure 34:   Applying the new configuration

ibaCapture-CAM Manager saves the configurations on the video server in an XML file. Following this, the video service is restarted activating the changes. The hard disk (the partition for the video files) is reconfigured. This is displayed in the dialog "Service" by a progress bar. If the action takes more time, an estimated time and estimated speed is also shown to give the user an idea how long the initialization will take.
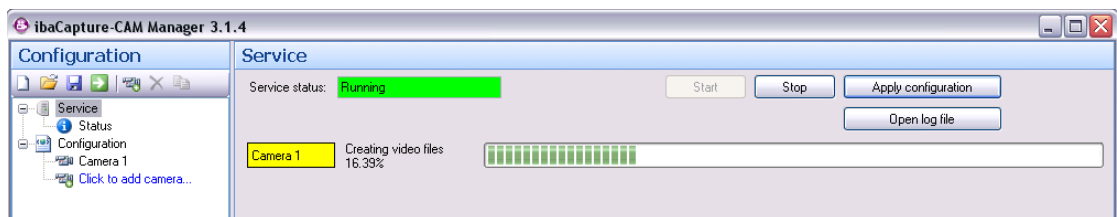
Figure 35:   Initialization of video storage on hard disk

After the changes have been applied, the service status for every configured camera is displayed.
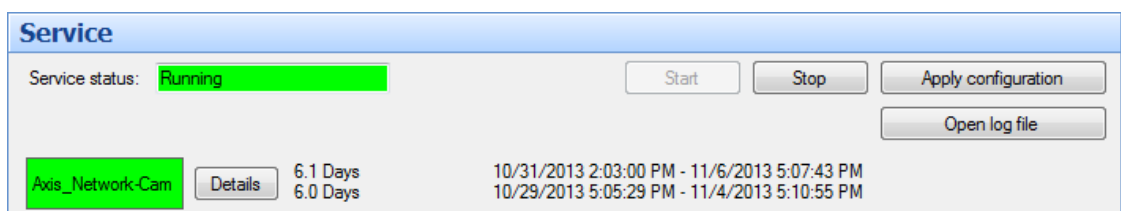
Figure 36:   Service status

Example:

For each camera, the recording time is displayed:

❑ First line = time of continuous (unprotected) recordings

❑ Second line = time of the triggered (protected) recordings

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).

Color code for status information:

Color	Camera status
Grey	Camera disabled
Green	Camera OK
Orange	Recording blocked or recording disabled
Red	Interruption/no connection

Table 3:   Color code for status information

Additionally, you can view further details of the camera status using the <Details> button.
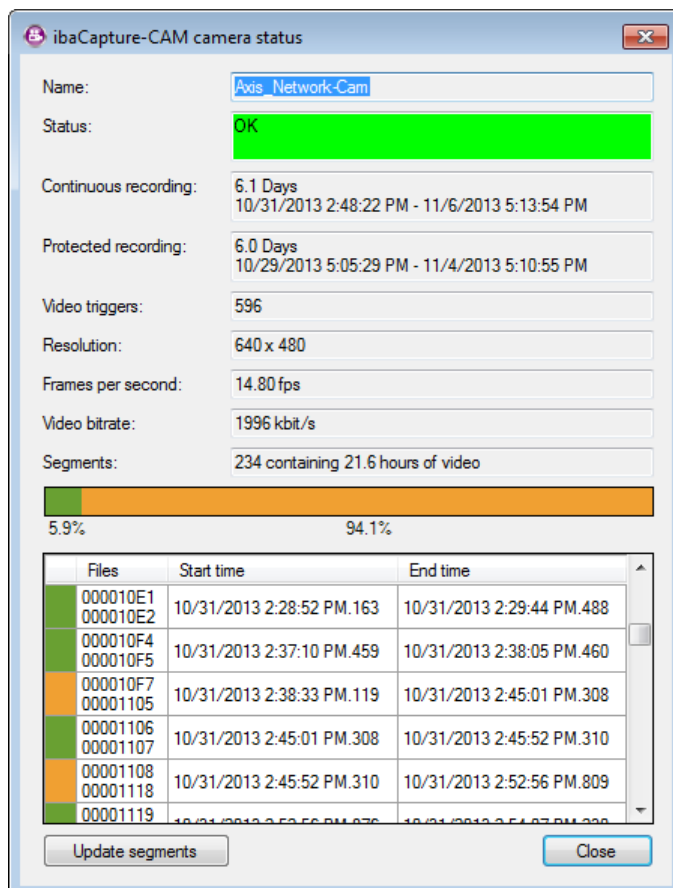
Figure 37:   Service status "Details"

As additional information you will find in this dialog:

❑ 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.

❑ Resolution, frames per second and video bit rate
These are actual values of the camera.

❑ Segments
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.

You can always update the segment view by clicking <Update segments>. If you do this, the end time of the most recent segment (bottommost line of the table) is set to the current point in time.

3.4.7   Camera diagnostics

For each camera, there is a tab "Diagnostics" beside the "Configuration" 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.
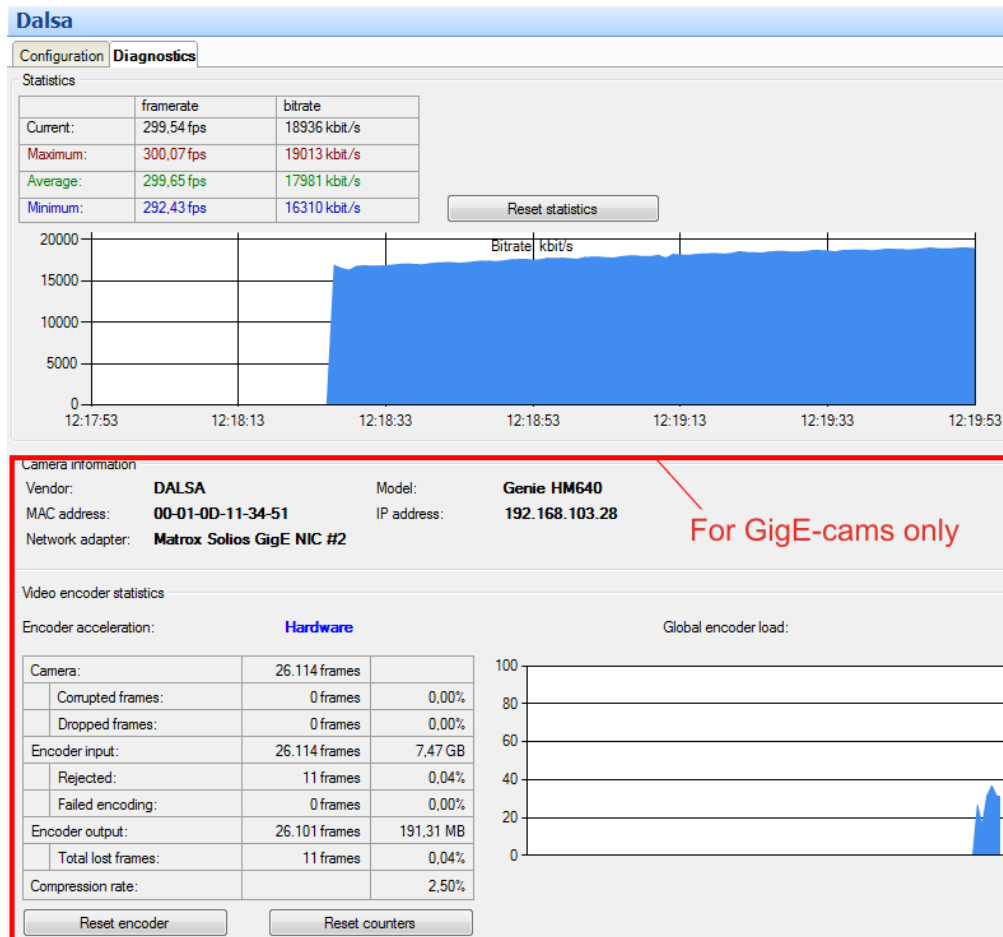
Figure 38:   Camera diagnostics of a GigE camera

If you use a GigE camera, status information of the video encoder is available in the lower part (red frame in the image) of the diagnostics tab.
For comparison, the total numbers of the frames coming from the camera, read by the encoder and output by the encoder are displayed for reference.

For diagnostic purposes, statistic data of the video encoder is shown:

❑ Camera
  The total number of the frames, captured by the GigE camera, sent to the computer and received by ibaCapture-CAM Server (service). When frames are received from the camera, there could be corrupted frames, and when the encoder is too busy, frames can be dropped. Of course, the number of corrupted and dropped frames should be as low as possible, ideally 0.

❑ Encoder input
  This group of values shows how many frames are used for encoding, after corrupted and dropped frames are lost (Encoder input). In addition, the number of frames that were rejected by the encoder or failed to encode (very rare cases) are shown.

❑ Encoder output
This value gives the number of frames which are successfully encoded. The value of Encoder input minus rejected and minus failed frames can differ from Encoder output. It can be equal or greater than Encoder output because some frames are still in encoding process (cached by encoder).
The number of lost frames means the sum of all dropped frames: corrupted, dropped, rejected or failed.

The percentage values of corrupted, dropped, rejected or failed frames in the table are animated in color to draw your attention when their values reach certain limits:

❑ Orange = more than 1 % of frames lost

❑ Red = more than 5 % of frames lost

In case the loss rate is constantly in a critical range (> 5 %), you should consider to take relieving measures such as reduction of frame rate or resolution.

Encoder input and encoder output are also given in bytes, showing how many bytes have been placed to be encoded and how many bytes have been produced by the encoder. The encoder output is always less than the input. The ratio of encoder output and encoder input is the compression rate.

The graph "Global encoder load" shows the integral load of the encoder for all encoding sessions, i. e. all cameras.

Note

The same information about the encoder is also available in the ibaCapture-CAM Encoder program, see the subsequent chapter.

3.4.7.1 ibaCapture-CAM Encoder

The application ibaCapture-CAM Encoder grabs image data from GigE cameras and provides an h264-compliant video encoder to compress incoming video data to a video stream. This video stream can be stored by ibaCapture-CAM.

Additionally, ibaCapture-CAM Encoder provides diagnostic information for the operation of GigE cameras.

Unlike ibaCapture-CAM Server, ibaCapture-CAM Encoder does not run as service but as application and hence needs a logged-on user account, see chapter *Preparatory settings under Windows 7 for GigE cameras*, page 143.

ibaCapture-CAM Encoder is opened by clicking on the ⬛-symbol in the Windows taskbar. The user needs administration rights to execute the program.
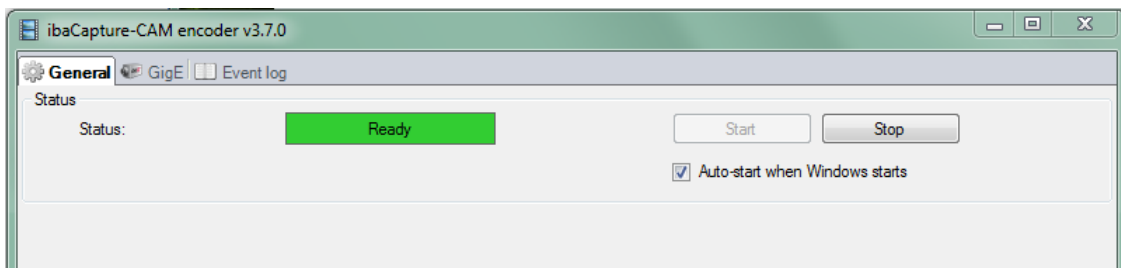
❑ General

On the "General" tab, the status of the program is displayed. The encoder can be started and stopped with the <Start> and <Stop> button. If the option "Autostart at Windows start" is activated, the Encoder starts automatically when logging in to Windows.
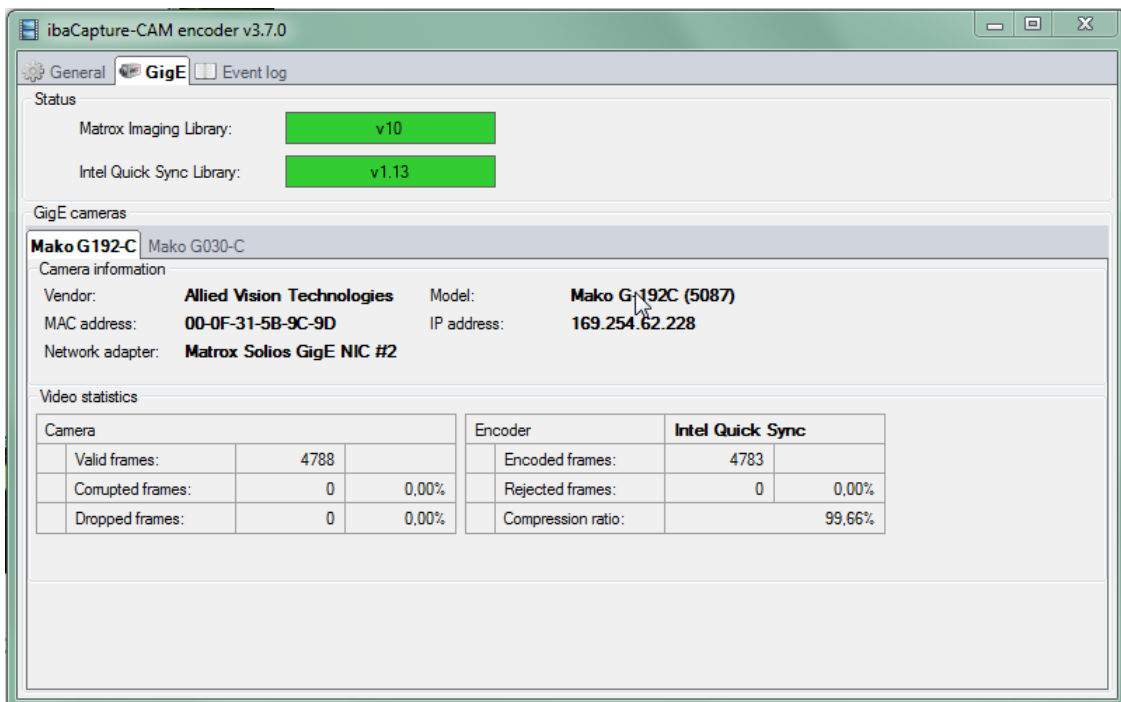
❑ GigE

On the "GigE" tab, the versions of the Matrox Imaging Library and Intel Quick Sync Library programs are shown. If the programs have been installed correctly, the display fields are green, a red field indicates an error.

The tab offers sub-tabs for each connected GigE camera. These sub-tabs show the camera and statistics information for video acquisition. The information is constantly updated during acquisition.
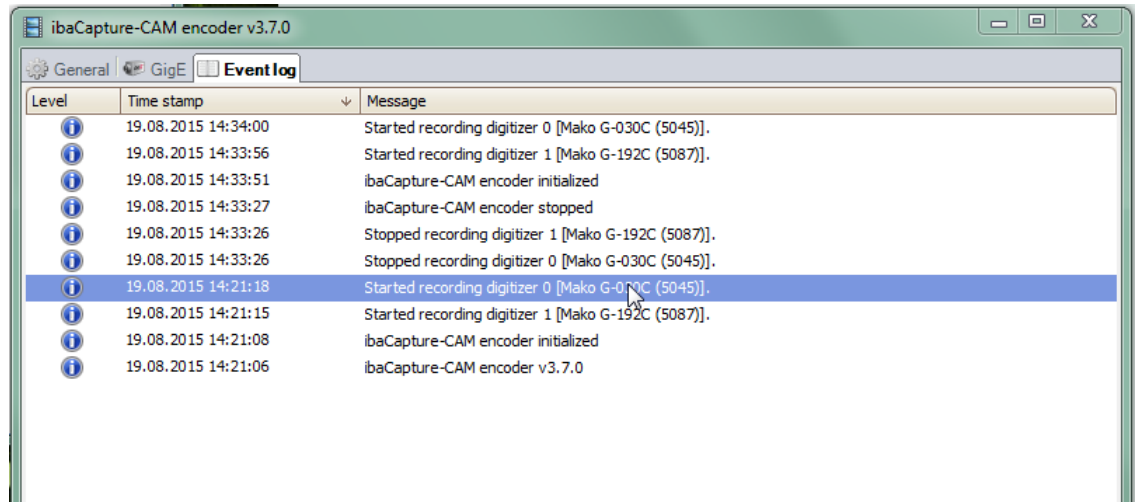
❑ Event log

On the "Event log" tab, events, especially error and warning messages are displayed. All events are stored in a text file, that is stored in the installation directory of ibaCapture-CAM Encoder.

3.4.8   Streaming ports

Besides the ports used for the communication between ibaCapture-CAM Server and ibaPDA-V6 Server for control and synchronization purposes (see figure 11, chapter *Control and status information*, page 18), there are ports required for displaying live video and replay of recordings.

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

A distinction is made here between live stream and replay stream.

3.4.8.1   Configuration
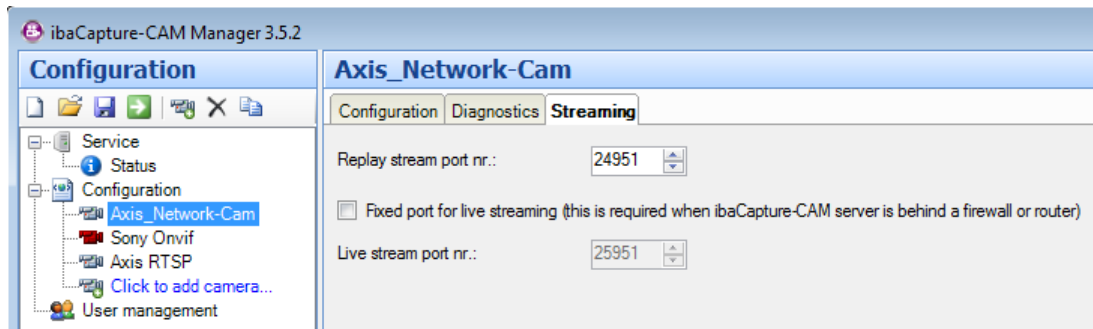
Figure 39:   Setup of the streaming ports of a camera

❑ Port no. replay stream

Each camera is assigned an individual port number for the replay streams which is initially allocated by the system. The port number however can be changed, thus be adjusted to IT administrative requirements (firewall or similar).

Port numbers will start at 24951 and increase by 1 for each camera.

❑ Fixed port for live streaming....

This option allows you to assign a permanent port to a camera for the transport of the live video stream. In this case, the preset value or the value set by you in the field below is valid. The port numbers assigned automatically will start at 25951 and increase by 1 for each camera.

If you disable this option, the port number cannot be set for the transport of the live stream. It will then be set automatically according to requirement. As a consequence, the port number can change between two sessions (between player and server).

The following figure shows the principle behind the port number assignment.
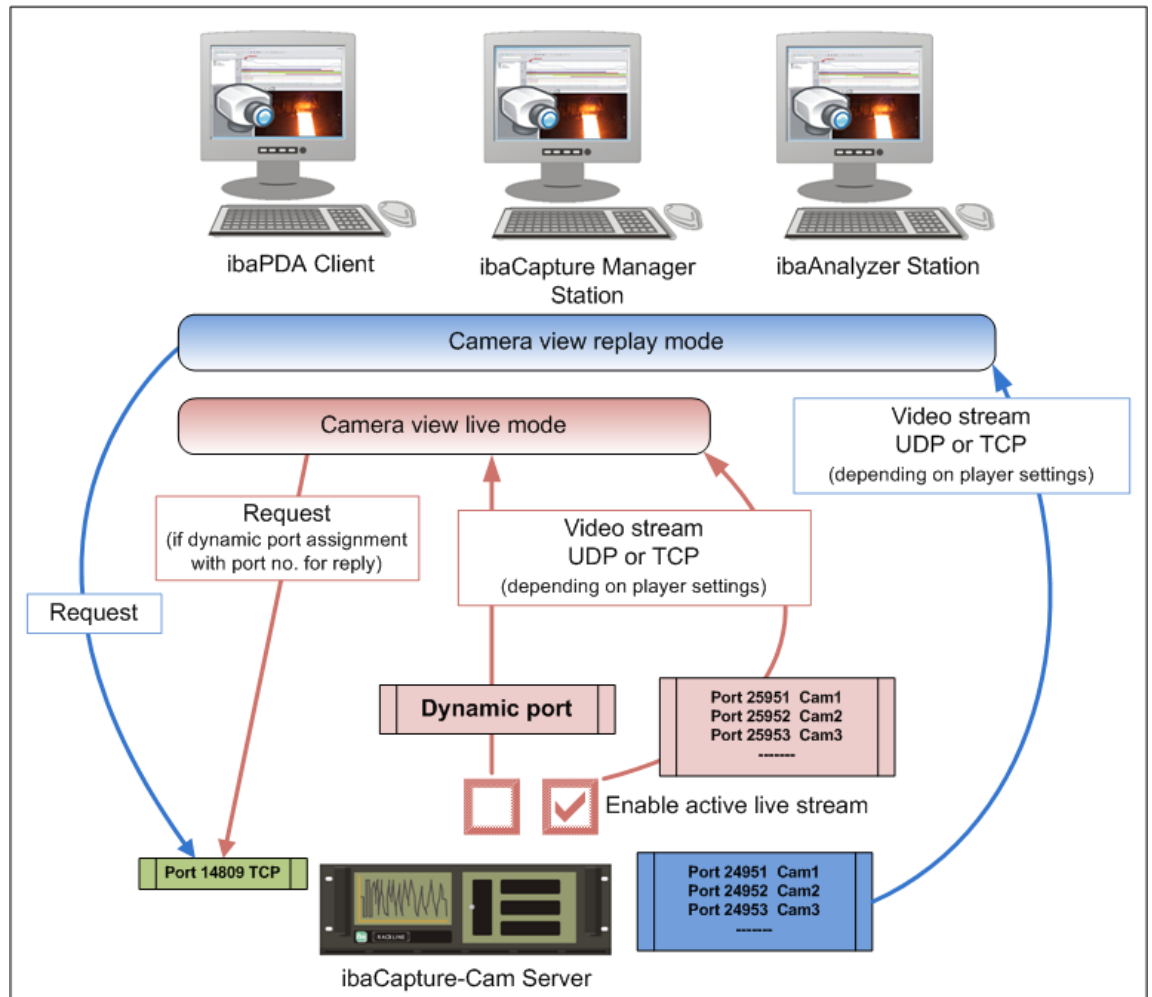
Figure 40:   Ports used for streaming live images and recordings

3.4.9   PTZ cameras

ibaCapture-CAM supports PTZ cameras (pan, tilt, zoom) from version 3.6.0 and higher. 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 the configuration view in the "PTZ" tab or by using a joystick, the mouse or via ibaPDA, see chapter *Using PTZ cameras*, page 101. An initial position and several preset positions can be configured for each PTZ camera.

ibaCapture-CAM supports the control of the following camera types:

❑   ONVIF-compatible PTZ cameras

❑   Axis-IP cameras (with VAPIX log version 3)

3.4.9.1 Configuration

If "Axis IP camera" or "ONVIF-compatible device" is selected as camera type when configuring the camera, the "PTZ" tab appears.
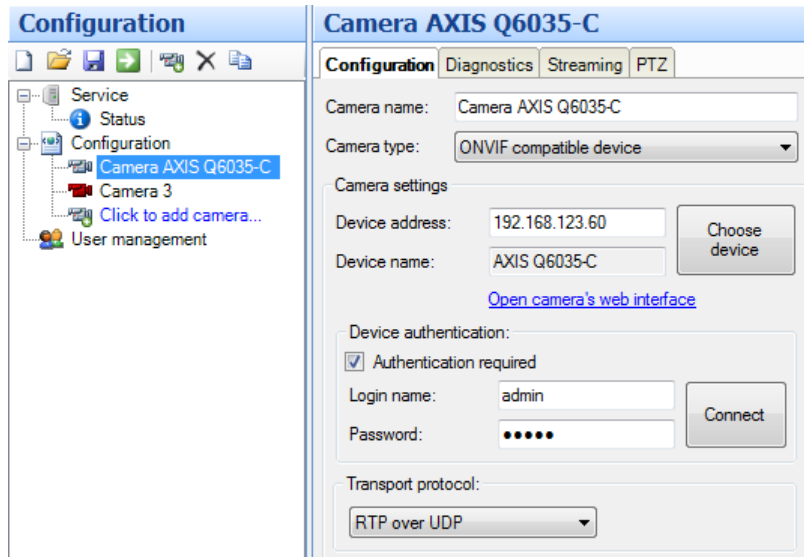
If the camera does not support PTZ control, the PTZ tab shows the message "not supported".
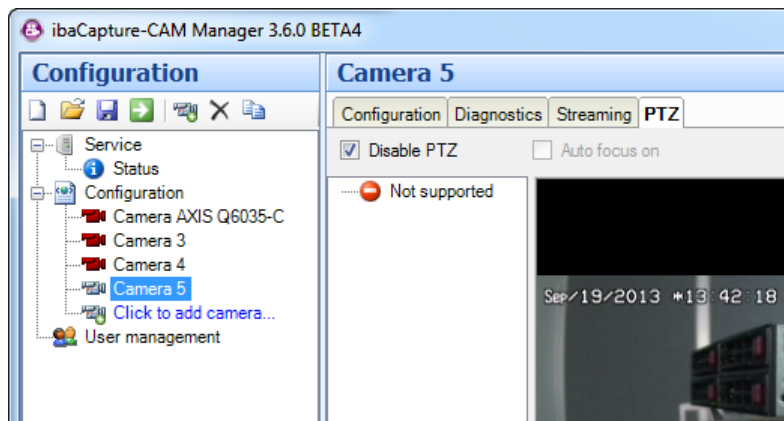
If the camera supports the PTZ function, the PTZ tab shows the live view of the camera and the configuration tree.

Note

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

The configuration tree contains the following branches:

❑ Home

❑ Presets

❑ Absolute move

❑ Relative move

❑ ibaPDA control

3.4.9.2 Home

Here, you can move the camera to its home position or adjust the home position.

Note

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

Moving the camera can be controlled by a joystick or the mouse, see chapter *Using PTZ cameras*, page 101. Otherwise you can use the branches "Absolute move" or "Relative move".

Adjust home position

1. Move the camera to the desired position.

2. Select the „Home" branch and click the 🔆 button.

Move the camera to the home position

1. Mark the „Home" branch in the configuration tree and click the ➡ button.

3.4.9.3 Presets

Here, you can save the camera positions and move the camera to the defined positions by mouse click.

A click on the ↻ button refreshes the list of the preset positions.

Add preset
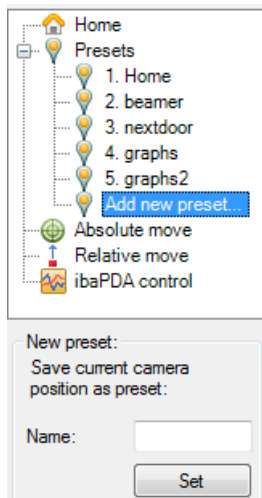
1. Move the camera to the desired position.

2. Click on the "Add new preset..." branch and enter a name for this setting.

3. Click on the <Set> button to save this setting.

Move camera to the preset position
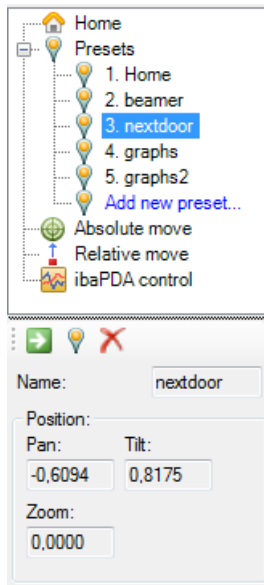
1. Select the desired position in the Preset tree and click on the [icon] button.

"Position" under the configuration tree shows 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 tab and click on the [icon] button.

Change preset name

1. Mark the preset name that you wish to modify.

2. Change the name in the "Name" text field under the configuration tree and click the [icon] button.

Important Note

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

Delete preset position

1. Select the preset you wish to delete and click on the [icon] button.

3.4.9.4   Absolute move
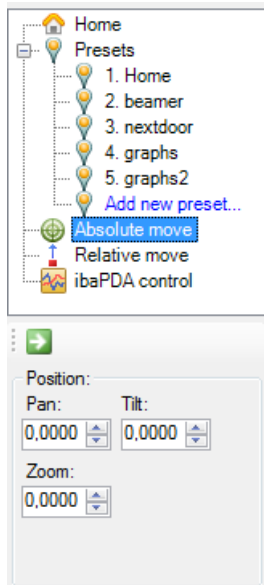
The camera position is indicated in absolute position values. The zoom range is from 0.0 (max. zooming out) to 1.0 (max. zooming in).

The absolute values for the pan and tilt range are from -1.0 to +1.0; the actual pan and tilt angles depend on the camera model.

Example of a camera with a pan range of 360°:

-1.0:   pan by 180° to the left
+1.0:   pan by 180° to the right.

1.   Enter the desired values and click on the button to move the camera.

3.4.9.5   Relative move
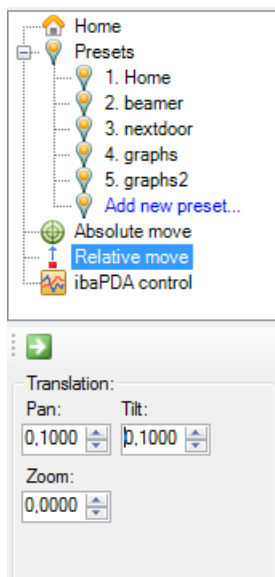
Here, the camera can be moved relative to the current position. The ranges for relative panning, tilting and zooming range from -1.0 to +1.0 each.

The pan and tilt direction with positive or negative values depend on the camera model and its setting.

With positive values in the zoom range, the image detail is zoomed in, with negative values, it is zoomed out.

1. Enter the desired values and click on the [→] button to move the camera.

3.4.9.6 ibaPDA control
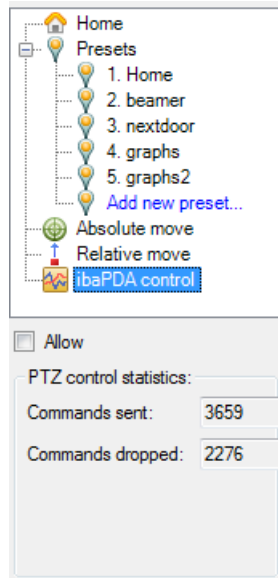
The movement of the PTZ cameras can be controlled with ibaPDA version 6.31 and higher. The prerequisite is that the "Allow" check box is enabled and that the setting has been applied. In the default setting, the control with ibaPDA is not selected.

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 125.

PTZ control statistics

This field shows the sent and lost control commands.

Auto focus

If the camera supports an auto focus function, this function can be enabled with the <Auto focus on> check box. Using this function, the image always remains sharp if the zoom range is changed.

A detailed description of the PTZ camera control using a joystick, mouse or ibaPDA can be found in the *Using PTZ cameras*, page 101 chapter.

3.5   Camera view

To switch to the camera view, click on the button.
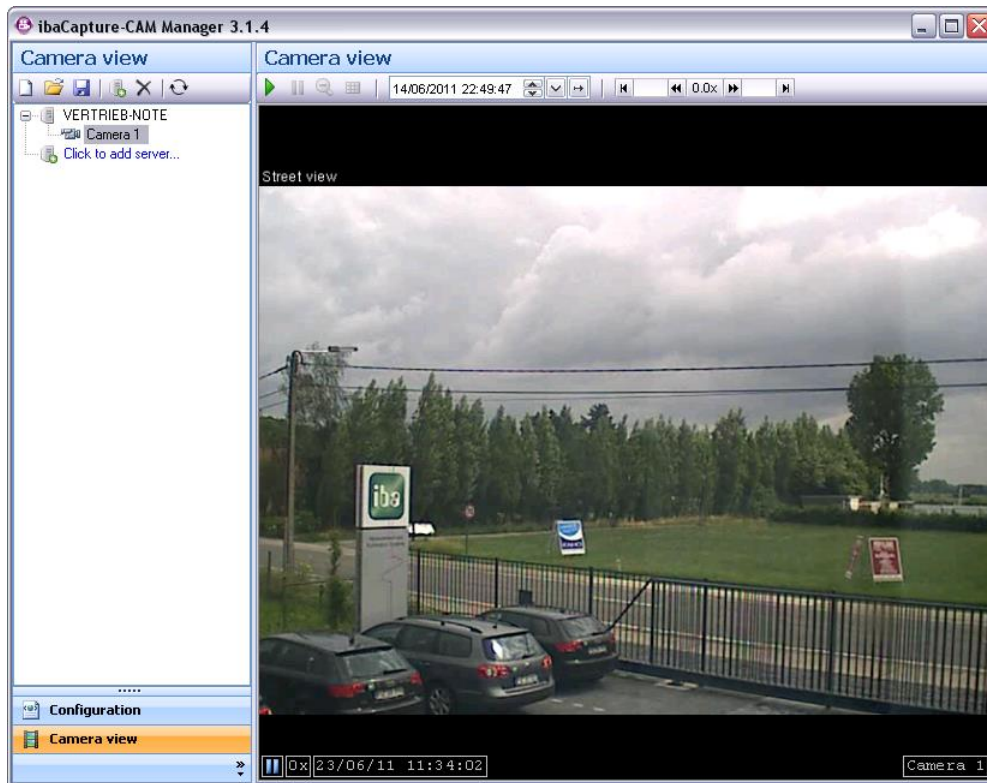
Figure 41:   Camera view main screen

The present and connected servers and their cameras are displayed in a signal tree on the left side in the navigation panel.

If you open the camera view for the first time you only see the cameras of the same ibaCapture-CAM Server the manager is running on.

You may establish more connections to other ibaCapture-CAM Servers in the network and add their cameras to the camera view. This way, you can arrange views with cameras of different video servers.

Click on the blue hyperlink "Click to add server..." or on the corresponding button in the toolbar of the navigation panel.
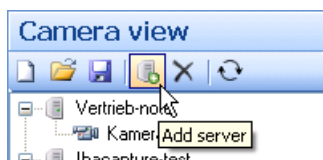
Afterwards, you can either enter the video server's name or IP-address or you use the browser function of the dialog in order to find the server in the network.
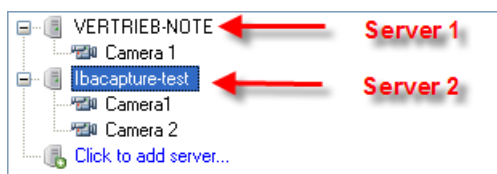
Figure 42:   Several video server in the camera view tree

You can open a camera view by dragging a camera (in the picture above Camera01) into the view pane or by doubleclick on a camera icon in the tree.

The tool which is being used for display at this stage is, in fact, ibaCapture-CAM Player. You can monitor single or multiple camera images, arrange the camera windows in size and position, display live view or replay recorded videos and control image quality.

For a description of the camera view user interface please refer to the chapter *ibaCapture-CAM Player*, page 70.

4   ibaCapture-CAM Player

ibaCapture-CAM Player is an additional software module enabling several iba software applications to visualize camera images captured by ibaCapture-CAM Server.

ibaCapture-CAM Player offers the same user interface with the same look and feel and modes of operation throughout the iba software products ibaCapture-CAM Manager, ibaPDA-V6 and ibaQPanel.

In ibaPDA-V6 it enables the user to add camera views to the ibaPDA-V6 client layout or to ibaQPanel. The user can arrange the camera views on the screen and has the possibility to control size, brightness and contrast of the image. Moreover, the zoom function and access to the stored video footage are available.

In ibaCapture-CAM Manager, the player serves for controlling the camera views.

4.1   Layout

Depending on which program you use to access the camera view (ibaCapture-CAM Manager, ibaPDA-V6 or ibaQPanel), there are different methods to add a camera to the view. Usually, by double-clicking on the camera icon in the signal tree or drag & drop.

For information on how to add a camera view, please refer to the corresponding descriptions in chapters about ibaCapture-CAM Manager, ibaPDA-V6 or ibaQPanel.

The camera view allows the simultaneous display of several cameras.

Figure 43: Multi-view of cameras

By double-clicking on one of the cameras in the server signal tree or by means of drag & drop, the live image of the camera is opened in a camera window. With each

double-click on a camera icon in the tree another camera window opens. All cameras are displayed next to each other by default.

For further actions, the respective cameras can be selected. If a camera view only contains one camera, this camera is always selected. If multiple cameras are displayed in the camera view, simply click inside the camera window in order to select the camera. Yellow highlighted corners indicate that a camera is selected. Multiple cameras can be selected by holding down the <Shift> or <Ctrl> key and clicking on the camera windows. To uncheck a camera from the multi-selection, press <Ctrl> and click the relevant camera window.
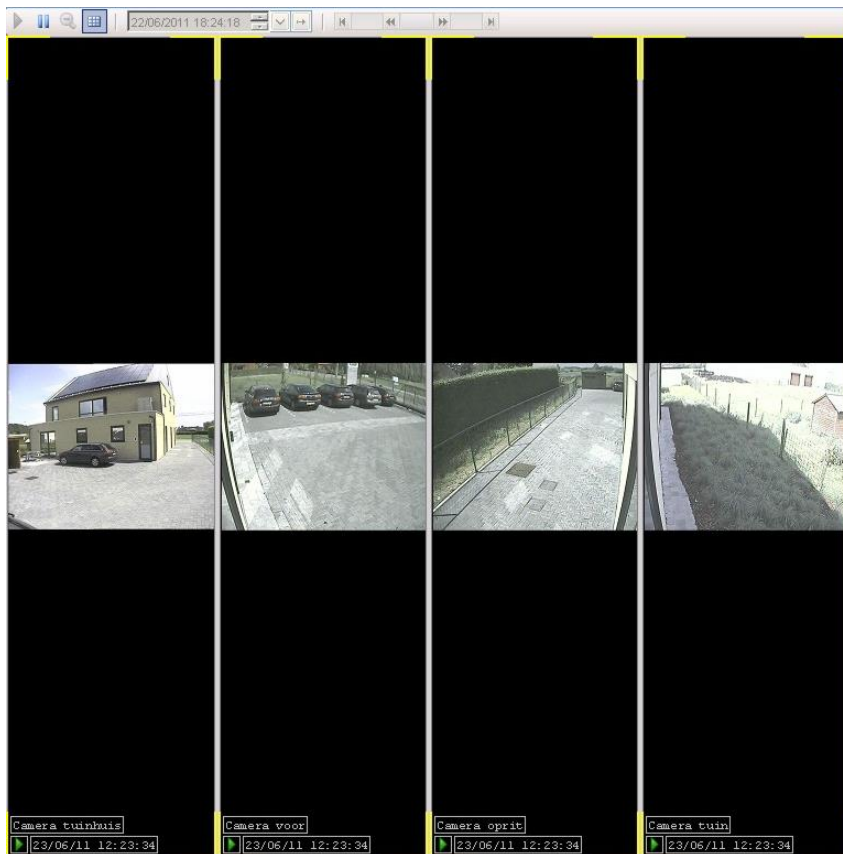
Figure 44:   Several cameras default view

However, the arrangement of the camera views can be modified for a customized layout.

Therefore, move the mouse cursor to the upper left corner of a camera window for the positioning icon to appear. This icon will only appear if multiple cameras have been added to the view.
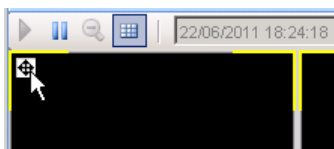
Figure 45:   Positioning icon

Click on the positioning icon and keep the mouse button pressed. Move the mouse pointer in the desired position. There will always be four indicators in the camera view, one at each side. If you drag the mouse over another camera window, this window will also display dock position indicators.

Figure 46:   Rearranging camera view

Release the mouse button over one of these indicators to replace the camera window in which the layout icon is shown.

Figure 47:   New view

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

In order to resize one camera view to full screen, double click on the positioning icon in the upper left corner of the respective camera window.
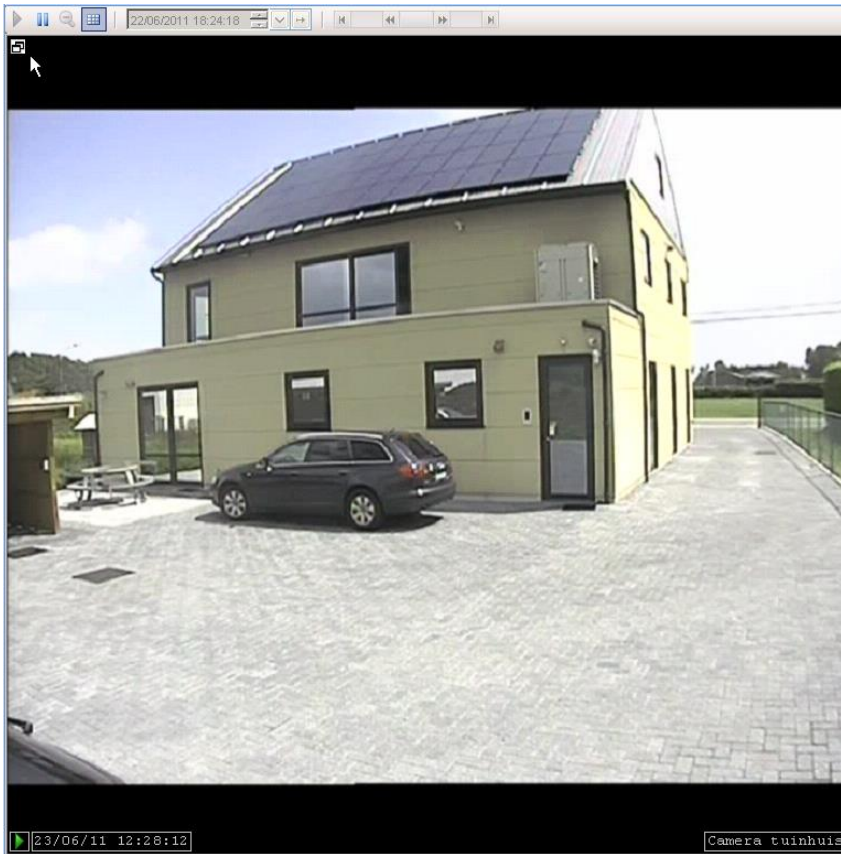
Figure 48:   Prominent camera view

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

After double-clicking on the icon ⊡ again, all views are simultaneously displayed.

Screen modes

The camera view provides different screen modes which can be enabled one after another using the <F10> key:

❑ Standard display

❑ Enlarged (menu bar and tree view are hidden)

❑ Full screen (is equivalent to the "Enlarged" display, however, it fits the whole screen).

❑ Full display on all screens (the display fits all available screens. This mode is only available if several screens are connected.)
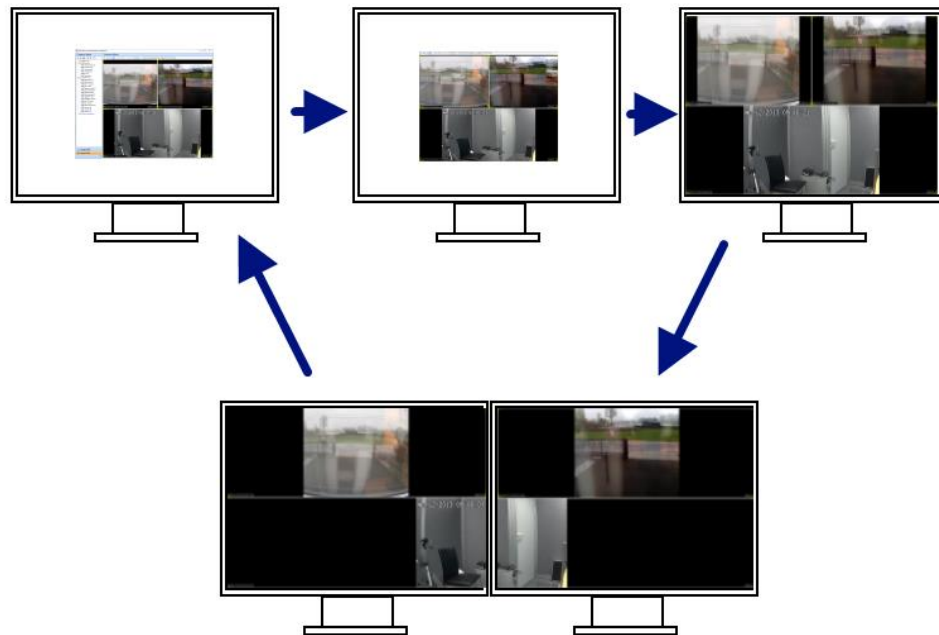
4.2   Camera states

A camera can take on various operating states. The camera state is displayed in the lower left corner of the camera window.
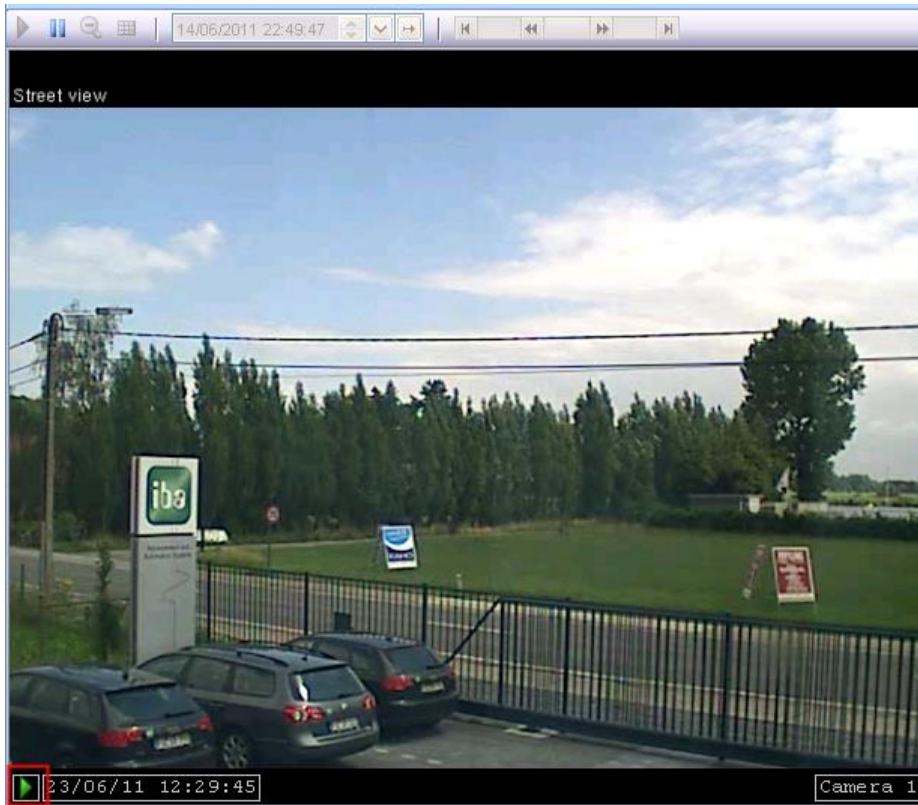
Figure 49:   Operating state camera recording

The following camera states are possible:

❑ Live (▶): the camera's live stream is displayed.

❑ Replay (⏸): 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 are available for this time stamp in the server's database and thus no recordings.

The "Error" state can have different reasons:

1   ibaCapture-CAM Player was not installed on the respective computer where it is needed (see the "Software components" chapter).

2   ibaCapture-CAM Player cannot connect to the configured ibaCapture-CAM Server.

3   No camera is connected to the specified camera input on the video server

Usually, the video server immediately starts with the transmission of the camera images.

Moreover, the different fault states are indicated by big colored camera icons and a supplementary text message describing the situation in the camera window:

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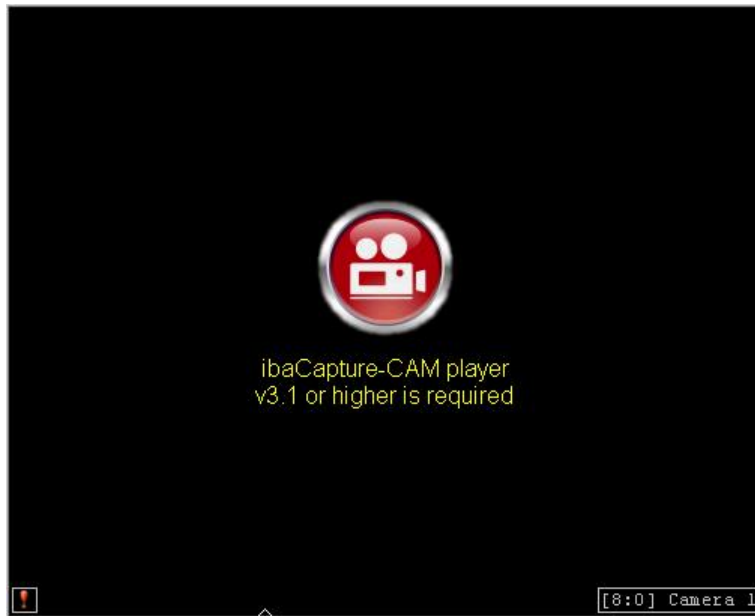

Figure 50:   Camera state if ibaCapture-CAM Player is missing or not up-to-date

↗ For more information on ibaCapture-CAM Player, see the *Software components*, page 13 chapter

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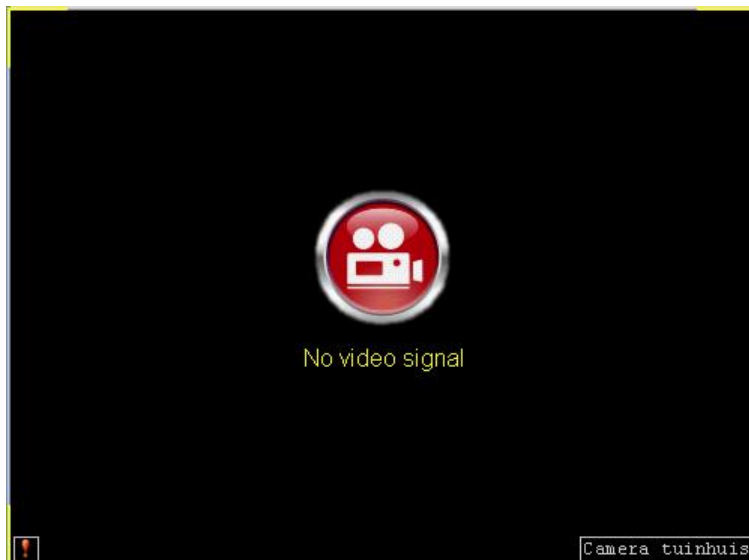

Figure 51:   "No video signal" state

When a camera is in the "No video available" state (no recording), it will display the purple camera icon below.
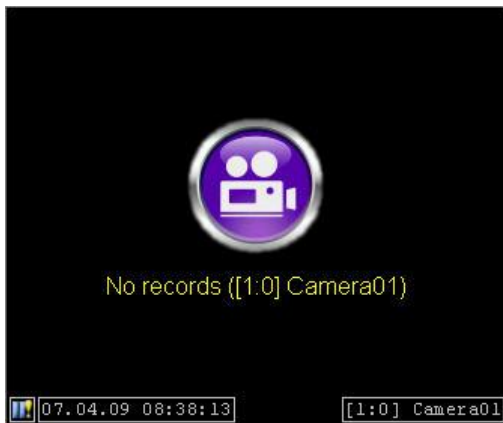
Figure 52: Camera state indication "No records"

When it is in "Replay error" state, the blue image will be shown.
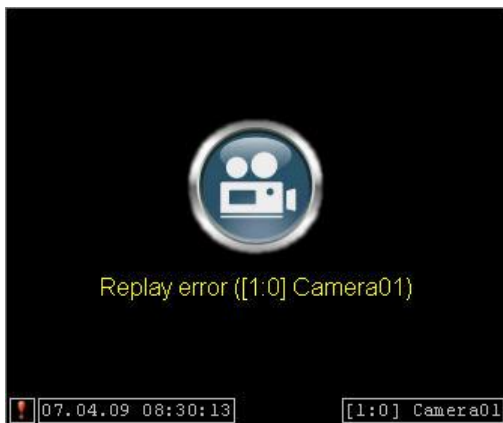
Figure 53: Camera state indication "Replay error"

It is possible to leave the error state by going into live or replay mode using the <Live image> and <Replay> buttons int he toolbar.

↗ For more information, see the *Tool bar for camera settings*, page 80 chapter

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-CAM Manager or ibaPDA client).

4.3   Camera functionality

Each camera offers operating functions to control zoom, contrast and brightness.

The zoom function can be used to expand an area of the camera window. To do so, 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 to zoom in.
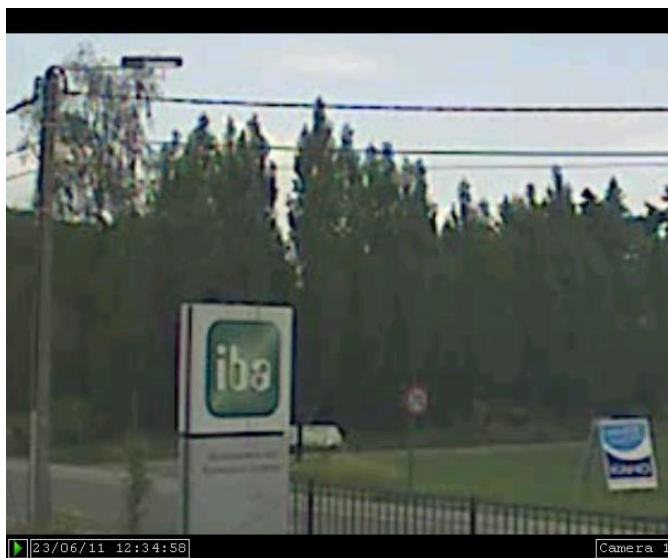

Figure 54:   Zoom in

Figure 55:   Enlarged image detail

Zooming out is performed by pressing the zoom out button in the tool bar. The camera's aspect ratio is always maintained.

From ibaCapture-CAM version 3.5.0 and higher, you can 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.

Contrast and brightness can also be changed in the camera window. To do so, move the mouse pointer in the upper right corner of the camera window where the following control element appears.
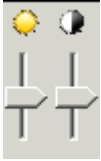
Click on one of the sliders to change the respective setting (brightness or contrast).

By clicking the icon above the sliders, the brightness / contrast will be reset to the default value.

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.
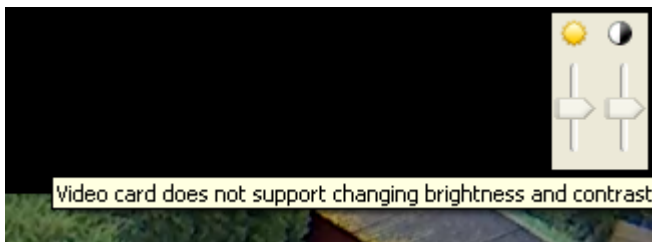
4.4   Tool bar for camera settings

The tool bar "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 selection contains a camera in busy state, all tool bar items will be not available.
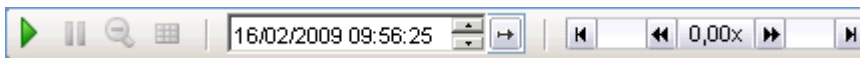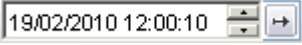
Figure 56:   Camera settings toolbar

With the icon ▶ the selected cameras are switched to live view. This means that the live screen in the camera window is displayed. The icon is available when the camera selection contains at least one camera which is in replay or in error 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. 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. 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 tool bar button was pressed.

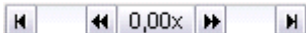The replay mode does not affect the recording of the video data.

A mouse click on the ⊖ icon resets all enlarged image details in their original resolution.

With the icon ▦ selects and locks all camera windows. The locking makes it impossible to change the selection. To unlock the windows, click the button again.

With the icon ⇥ the user is enabled 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 enter the date and time in the "Time Picker" 19/02/2010 12:00:10 ⇥ .

The replay speed after the time jump can be set in the "Properties" dialog. (see chapter "Properties") The function is only available if the cameras are in replay mode.

Clicking the dropdown button (⌄) shows or hides the camera timeline. The timeline is explained below in the "Camera timeline" chapter.

The control element ◅ ◄◄ 0,00x ►► ► allows the setting of the replay speed of the selected camera windows. The control element is only available if replay mode is activated. The control element behaves like a scrollbar. The control bar can be moved right or left using the mouse. To do so, left click on the control bar and hold the mouse key depressed.

Now you can move the control bar to the left or to the right in order to set the speed.

The speed can be gradually increased or reduced. By clicking on the icon ◄◄ you reduce the speed and by clicking on the icon ►► you increase the speed.

Note that the replay speed is relative to the normal speed. For example, 2.00x means that the current replay speed is twice the normal speed.

With the icons ► and ◄ you can jump to the next or previous video image if the replay speed was set to zero.

A double-click on the speed indicator value resets the speed to zero.

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-CAM Server's clock for both analog and IP cameras.

4.5   Camera context menu

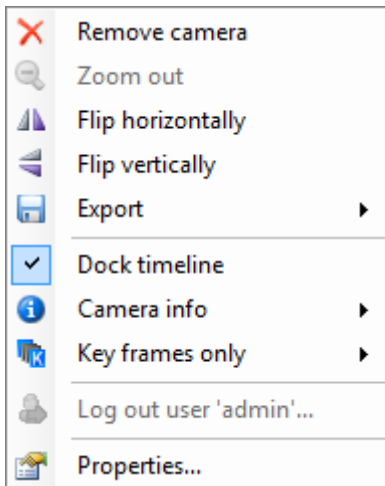A right click on a camera window opens the context menu.

Figure 57:   Camera context menu

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

The "Logging out user 'xy'..." menu command is only visible in active user management and applies to all cameras of a camera view.

The commands "Remove camera", "Flip horizontally", "Flip vertically" and "Export" apply to the camera, the context menu was opened upon.

4.5.1   Submenu "Export"

Individual camera images (snapshots of the current frame) can be exported as JPG graphic files using the "Image" function. Video sequences can be exported as mp4 video files with the "Video" function .

When exporting an image, a file browser will appear. When exporting a video sequence, a dialog will appear in which a start and stop time can be specified. When opening the dialog, the start and end time are set according to the marker positions in the camera timeline.

4.5.2   Dock timeline

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

Refer to chapter "Camera timeline" for more details about the timeline.
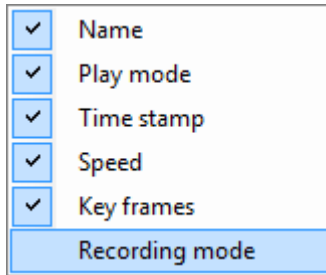
4.5.3   Sub-menu "Camera info"

Figure 58:   Context menu "Camera info"

By setting / removing a checkmark, you can fade in / fade out the camera information items

❑ Name

❑ Play mode

❑ Time stamp

❑ Speed

❑ Key frames

❑ Recording mode (= recording is running, = no recording)
in the camera window.

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

4.5.4   Sub-menu "Key frames only"

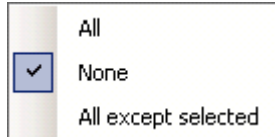|	
	All
✓	None
	All except selected

Figure 59:   "Only reference images" context menu

In order to save system resources, you can reduce the data flow for the live screen view to the key frames. The key frames are the first images of the GOPs. As a result, cameras in "key frames only" view mode will show less fluid motion images. To do so, the context menu "Key frames only" presents the following options:

❑ All: all cameras are set to reduced data flow

❑ None: all cameras run in real time (fluid motion)

❑ All but the selected ones: all cameras except for the selected ones are set to reduced data flow.
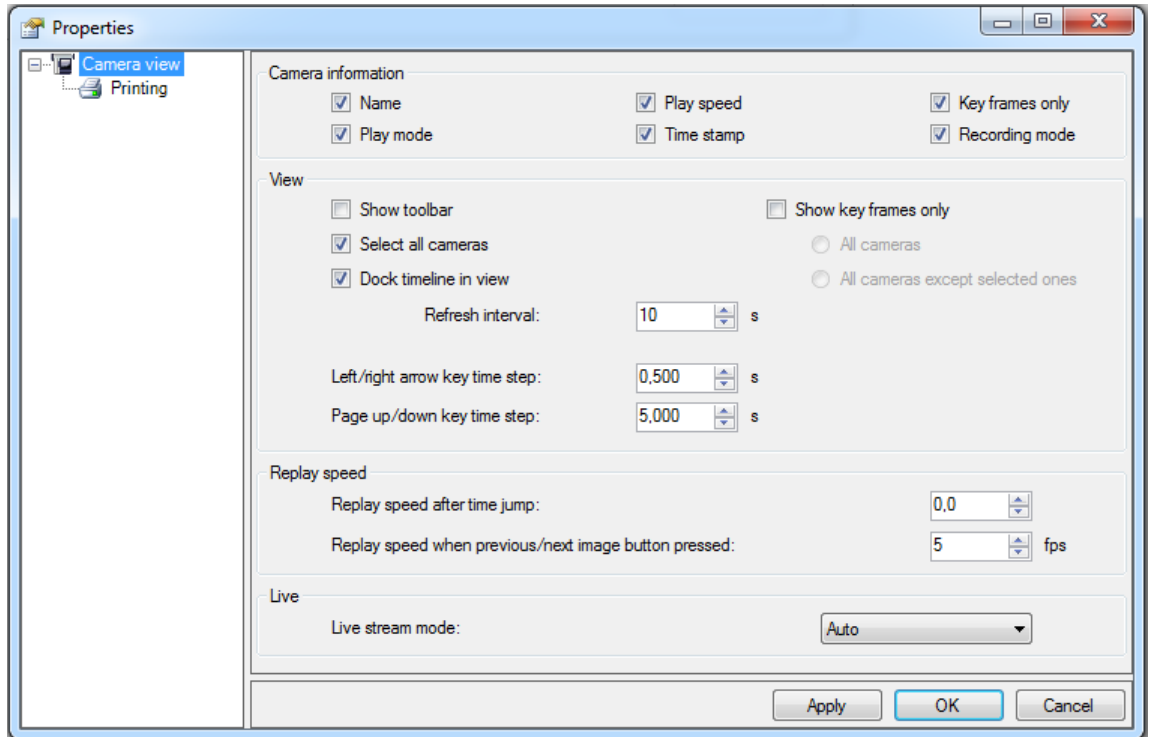
4.5.5   Properties

Figure 60:   "Properties" dialog

The "Properties" dialog is structured in four sections:

❑ Camera information

❑ View

❑ Replay speed

❑ Live

Camera information

By setting / removing a checkmark you can show/hide out the camera information items (similar to the context menu) in the camera window:

▪ Name

▪ Replay mode

▪ Replay speed

▪ Time stamp

▪ Key frames only

▪ Recording mode

View

▪ Uncheck the option "Show toolbar" if you want to hide the replay toolbar in the camera view.

▪ Check "Select all cameras" to select and lock all camera windows.
This state corresponds with the button 🎛 in the toolbar.

▪ Key frames
In order to save system resources, you can switch to a reduced frame rate for the camera display by using the "Key frames only" mode. To do so, set a checkmark

in the option field "Show key frames only". This activates the two option fields "All Cameras" and "All cameras except selected ones".
Selecting the option "All Cameras" enables you to set the "Key frames only" view mode for all cameras. With the option "All cameras except selected ones" all cameras except for those selected are set to "Key frames only" view mode, i. e. only the selected cameras show fluid motion.

- Check "Dock timeline in view" to display the video timeline on the bottom of the camera view window. Specify in the "Refresh interval" input field the update time of the timeline. Do not set the update time too low in order to avoid unnecessary network load.
For more information, see chapter "The camera timeline", page 78.

- Navigation key settings
By entering values given in seconds for the keys <←>/<→> and <Page up>/<Page down>, you can define short pitch and long pitch setting when using these keys for navigation on the timeline.

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 settings "Replay speed by using the button for Previous image/Next image defines the replay speed in images per second. This replay speed is applied if the mentioned buttons ▸| and |◂ are constantly used.

Live

The live streaming settings apply to the streaming protocols between ibaCapture-CAM Server and client. Clients can be ibaCapture-CAM 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.

❑ Multicast UDP
Multicast UDP is not yet implemented.

❑ Unicast UDP
Recommended streaming protocol

❑ TCP
Recommended streaming protocol if UDP does not work satisfactorily.

4.6   The camera timeline

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

4.6.1   Show timeline

The timeline can be made visible in two ways:

1. The timeline can be docked on the bottom in the camera view using the view's context menu or properties dialog.
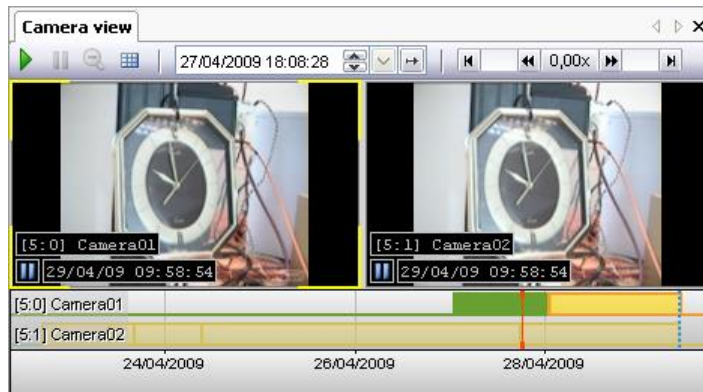

2. When the timeline is not docked, it will pop up when the user clicks the dropdown button next to the time picker in the toolbar. Note that at least one camera must be in replay mode to make this toolbar available.

4.6.2 Bar display

For each camera in the view, a timeline is displayed. A time range containing video recordings is displayed as a colored bar. A range without video recordings is displayed as a gray line. The recorded sequence data is updated at a pace that can be configured in the view's properties dialog.
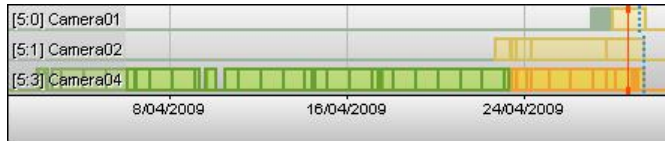
The cameras that are currently selected are shown in bright colors. The non-selected ones are displayed in pale colors.

Explanation of bar colors:

❑ Orange: continuous recording

❑ Green: protected recording (use of video triggers)

4.6.3 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 camera view)

❑ Zoom in by dragging a rectangle over the camera timeline

❑ Auto-scale by clicking the center mouse button.

The maximum resolution of the timeline on HD screens is 2.5 ms. This allows to navigate from frame to frame when using GigE cameras with high frame rates.
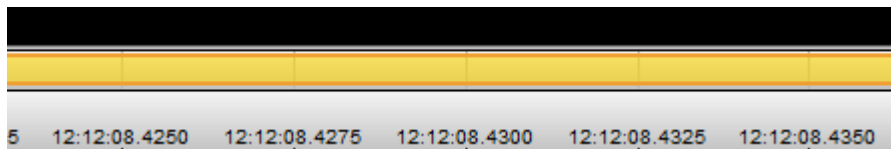
4.6.4 Indicators and markers

On the timeline, a blue, dotted, vertical marker represents the current time stamp of the camera or the image currently displayed. This marker is dynamic, so it moves when a video is playing.

Two markers (red and blue) are shown on the timeline. These markers can be moved by clicking and dragging them with the mouse. The marker you clicked most recently is selected, thus becoming the red marker while the second becomes the blue marker. If you click anywhere on the timeline, the red marker will jump to this position.
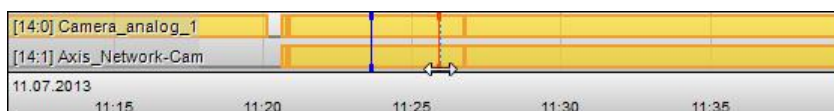
When the timeline is docked, moving the marker puts the selected camera(s) in replay mode and makes these cameras jump to the marker time. The replay speed of the selected camera(s) will be set to the replay speed configured in the properties dialog.

Note that when the marker is moved by dragging, the time jump will occur when the marker is dropped.

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 button symbol ⊞ must be clicked.

The distance between the blue (second marker) and the red marker helps to limit the time range, which the blocking and protective functions in the context menu refer to (see next chapter). Furthermore, the marker positions are entered automatically in the export dialog as start and end time for the export of a video sequence.

4.6.5　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

❑ Manually refresh the timeline

❑ Dock or undock the timeline.

❑ Enable/disable lock and protect (see next chapter)

❑ Enable panic mode (see next chapter)
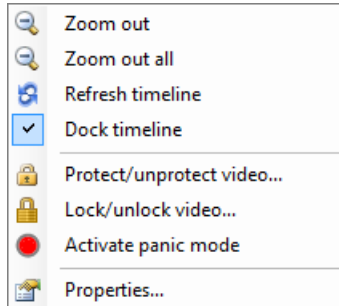
❑ Open the properties dialog

Figure 61:　Camera context menu

4.6.6　Protection and safety functions

The functions of the context menu

- Protect/unprotect video
- Lock/unlock video
- Activate panic mode

can be performed by all authorized users.

� See also "Execution rights" in the *User management*, page 21 chapter.

The functions

- Protect/unprotect video
- Lock/unlock video

refer to the time range between the two markers in the timeline.

In order to protect or lock a particular video sequence, position the two markers at the start and end of the desired time range. Open then the context menu of the timeline and select one of the two functions.

A dialog opens where you can select the camera 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 (yellow corners) are checked.
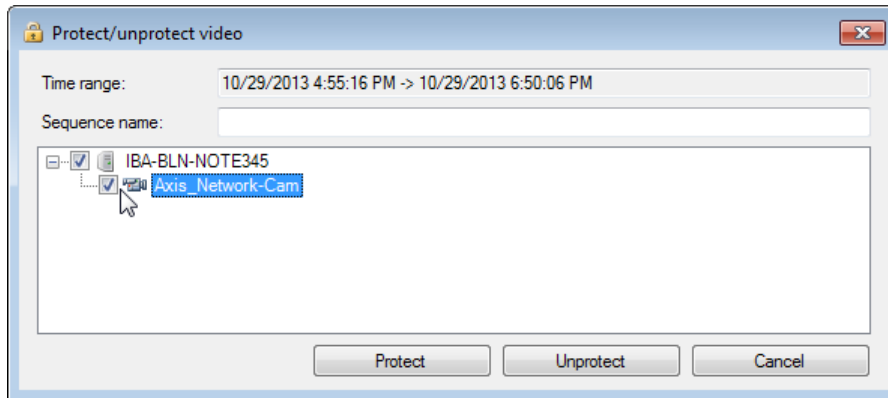

Figure 62:   Example: dialog for camera selection for the "Protect video/remove protection" function

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.

Figure 63:   Camera_analog_1: blocked, Axis_Network-Cam: protected

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

If a user selects a camera, yet 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.
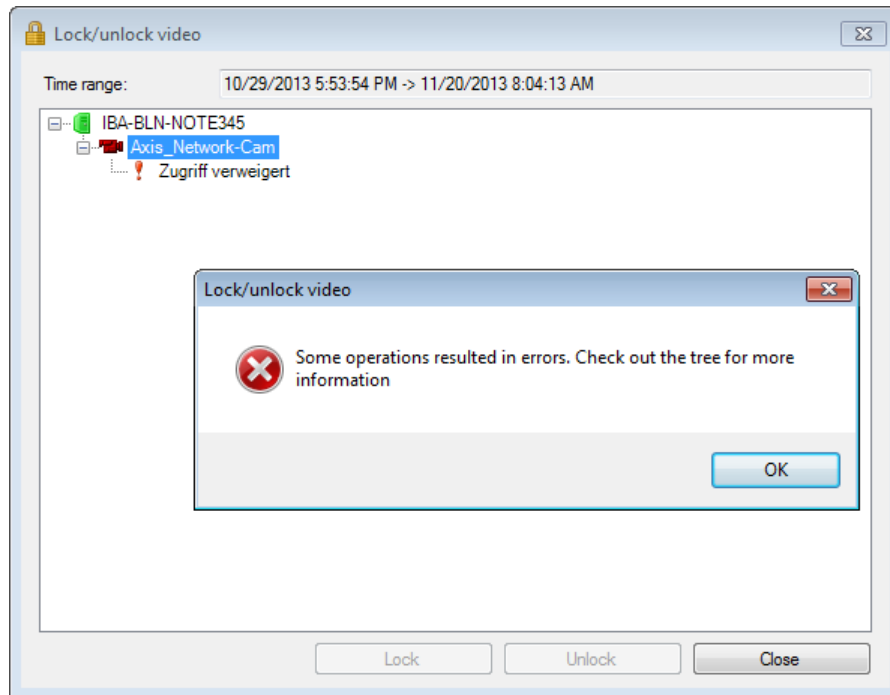

Figure 64:   Error message in case of access denial

4.7   Operation via keyboard shortcuts

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

Key	Function
< ← >	Time jump backward
< → >	Time jump forward
< Page up >	Bigger time jump backward
< Page down >	Bigger time jump forward
< ↑ >	Faster replay speed
< ↓ >	Slower replay speed
< Ctrl> + < → >	Show next image
< Ctrl > + < ← >	Show previous image
< Space bar >	Play / Pause

Table 4:   Shortcuts for video replay

4.8   Scenario player

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. In case of an emergency stop, for instance, the cameras monitoring the respective part of the plant can be switched on display in order to provide immediate insight for the operators.

Note

The scenario player is only available in a camera view on ibaQPanel.

There, the camera view properties dialog will display two extra nodes: one for the scenario layouts and one for the scenario rules.
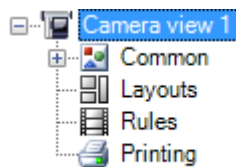

Setting up a scenario is done by defining the desired camera layouts, and then using these in user defined scenario rules. In these rules, signals from ibaPDA can be used to activate the associated layout. Upon activation of the layout, each individual selected camera can be set in live mode, in replay mode while jumping back in time with a static offset or in replay mode while jumping back in time defined by a trigger signal.

When at least one layout and one rule have been defined, the camera view's toolbar will display the scenario buttons. These buttons allow the user to enable () or disable () a scenario.

When the scenario is enabled, user interaction is disabled. This means the user cannot switch between live or replay mode, zoom in on a camera etc. When the scenario is disabled, scenario triggers still fire, but rules will not be activated (see also chapter "*Rules*, page 95").

4.8.1   **Layouts**

In the "Layouts" branch, the user can add (+), remove (x) or edit (…) the layouts of the camera windows that will be available for the scenario rules.
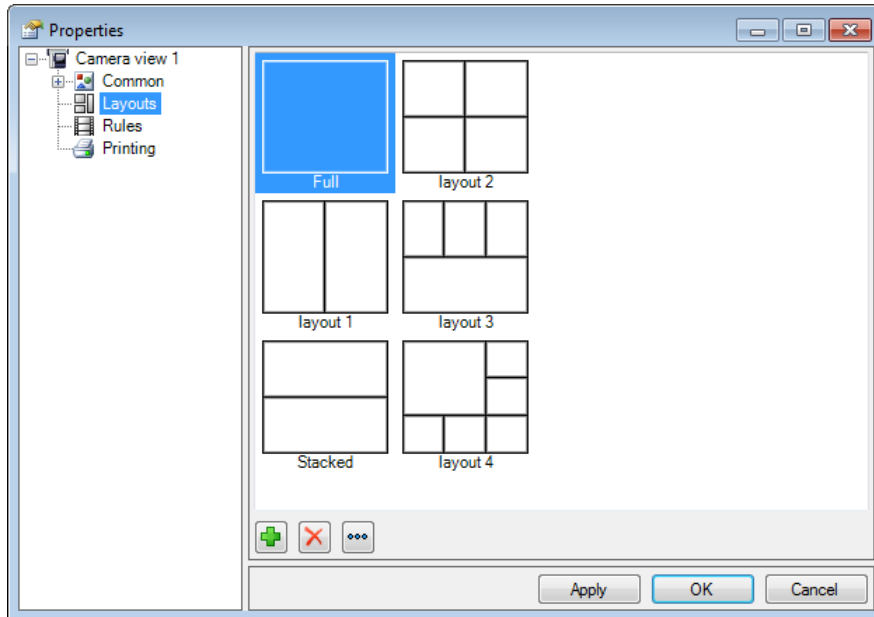
When the "add" or "edit" button is pressed, the layout editor is opened. In this editor, you can create or change a layout in a similar way as in the camera view itself.
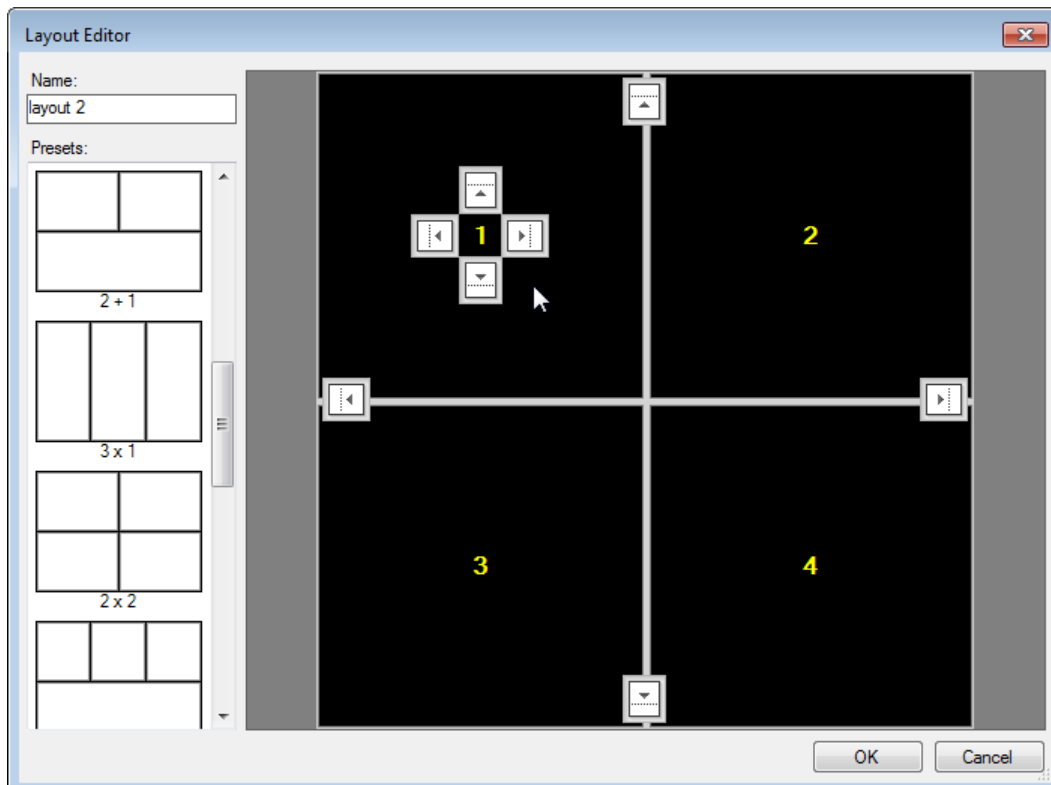
In the upper left side of the editor, the name of the layout can be entered. This name has to be unique. On the left, a couple of layout templates are displayed that will be loaded when clicked. On the right, the layout editor is displayed.

You can also create individual layouts. When a drop pad is clicked, a new camera window will be created. The camera windows can also be resized.

4.8.2   Rules

The trigger mechanism used to create scenarios requires the user to define a set of rules. Each rule has its own trigger, layout, and camera configuration. When a certain rule-trigger fires, its layout will be loaded and its camera configuration will be applied.
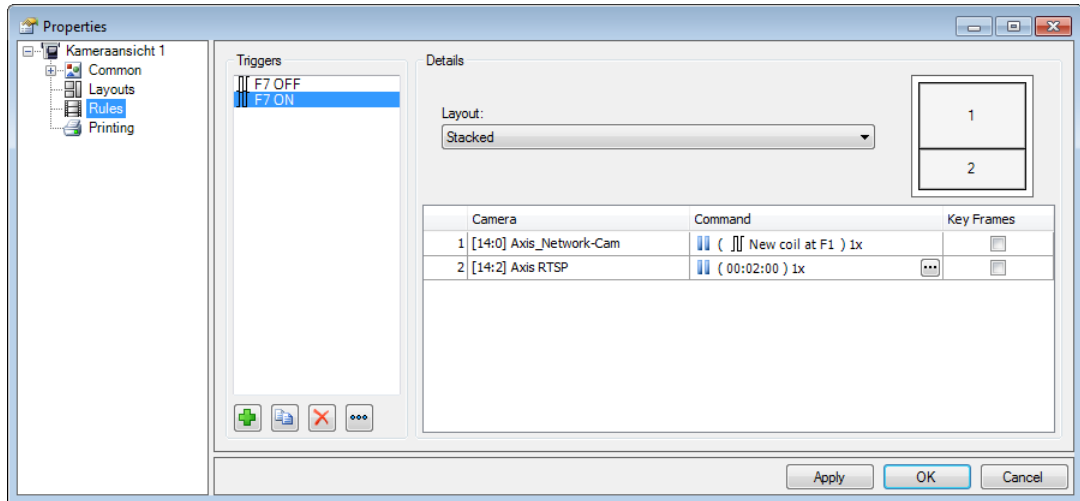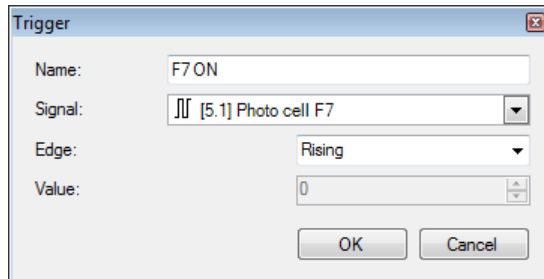

Figure 65:   Dialog for defining the rules

Creating a rule

1. To create a rule, click at first on the branch "Rules" in the properties dialog.

2. Click the <+> button on the bottom left of the dialog.The trigger editor dialog opens:

3. Give the trigger a comprehensive, application-specific name. If the name is omitted an automatic name will be generated.

4. Specify the trigger signal in the signal drop-down list. The trigger edge can be rising, falling or either. If the signal is analog, a trigger level value has to be entered.

5. Leave the dialog with <OK> to add the trigger to the trigger list.

6. Leave the trigger selected and select the layout to be activated in the "Layout" drop-down list, which contains all defined layouts (see 4.8.1). On the right, the selected layout icon is displayed and the camera list is adjusted to the number of cameras in the layout.
   For every camera window, a camera signal and a camera command must be configured:

7. In the "Camera" column, select the camera which should be used on this position.

8. In the "Command" column, click on the <…> button to open the command editor.

There are 3 types of camera commands:

❏ Live

  ▪ Puts the camera in live mode

❏ Static offset

  ▪ Puts the camera in replay mode at the configured replay speed and jumps back in time to [timestamp trigger fired] – [configured offset time span]

❏ Replay trigger

  ▪ Puts the camera in replay mode at the configured replay speed and jumps back to the time when the replay trigger last fired, e.g. a certain process event.

  ▪ Define the replay trigger similar to the rule-trigger

9. Check the "Key frames" option to limit the video stream to key frames only in order to reduce the network load.

The rule triggers are checked cyclically on a 250 ms basis. To prevent unnecessary and uncontrollable layout changes, a rule activation delay can be specified in the properties dialog. Once a rule trigger fires, this delay is started and all other rule-triggers are ignored. At the end of this period, the layout change caused by the first rule trigger is activated.

Figure 66:   Setting the delay for rule activation

4.8.3   Reporting

When the scenario is enabled, the scenario log can be opened using the camera view's context menu. The log allows users to check the scenario triggers. This can prove to be very helpful when configuring a scenario.
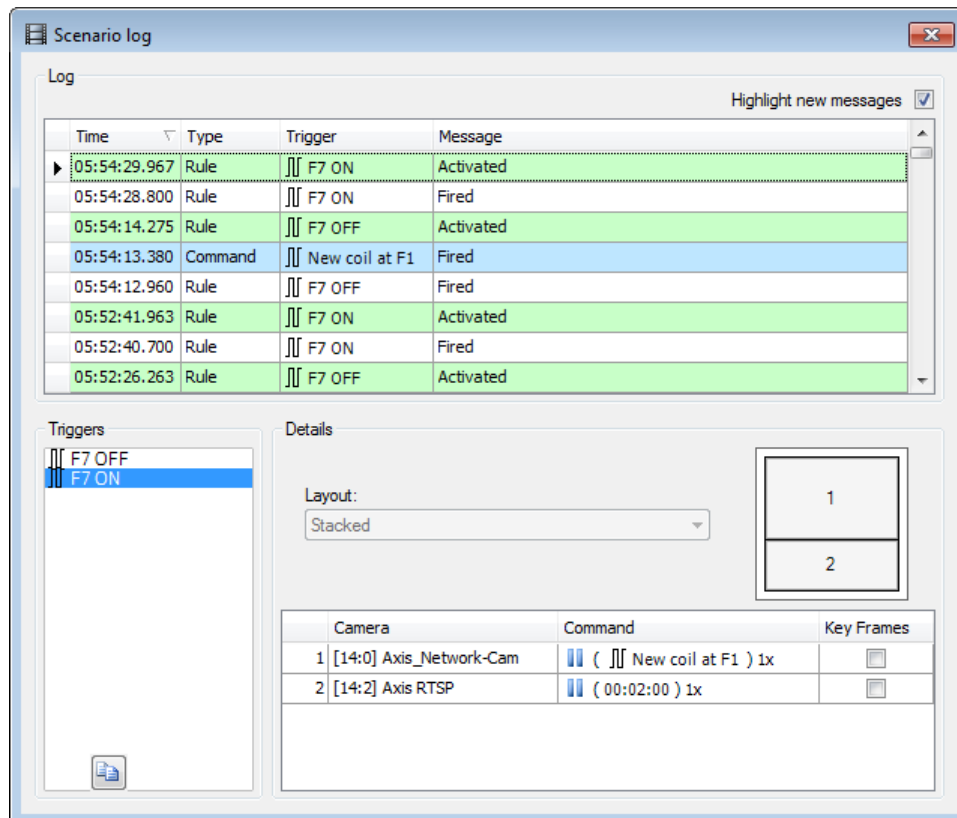

Figure 67:   Scenario log

At the top, there is a table displayed which contains the logged trigger information. When a log entry (row) is selected, the scenario rule, that caused the log entry, is displayed at the bottom. This means that this rule's trigger is selected in the list of triggers and the rule's camera configuration is displayed. When the scenario rule, that caused an entry, is unknown, the entry is displayed in gray. When such a row is selected, the list of triggers will have no selected item and the camera configuration will be empty. Unknown entries are those made before the most recent opening of the properties dialog. Detailed information is only available for the current configuration.

The log can be cleared using the context menu. The checkbox at the top of the table allows new log entries to receive focus. This way, the scenario can easily be examined as it executes.

Note that there are 2 trigger types. One for triggers that belong to a rule (rule trigger) and one for triggers that belong to a replay trigger command (replay trigger).

The log entries are highlighted in different colors for better clarity:

Color	Meaning	Note
White	Rule trigger has fired	
Blue	Replay trigger of a camera command has fired	When the rule is activated afterwards, the replay starts at the trigger event.
Orange	Rule trigger of a rule with camera command has fired but replay trigger has not fired yet.	Cameras, whose replay triggers have not fired yet, just start replaying at the given replay speed.
Green	Rule was activated successfully	Scenario switching according to the rule; not all fired rule triggers may activate their layouts (see chapter "Rules")
Red	Rule has been ignored	This is the case, for instance, when multiple firing occurs during delay time
Gray	Unknown rule	This log entry was done before the most recent opening of the properties dialog

Table 5:   Color code of the scenario log

The log in the image above shows that the following events in chronological order (bottom up):

- rule «F7 OFF» was fired (not visible anymore) and the scenario was activated
- rule «F7 ON» was fired and activated
- rule «F7 OFF» was fired again
- replay trigger «New coil at F1» fired
- rule «F7 OFF» was activated
- rule «F7 ON» was fired again and activated. Video replay refers to replay trigger «New coil at F1» which fired before

4.9   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-V6 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-V6 camera view.

Figure 68:   Overlay text in 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.
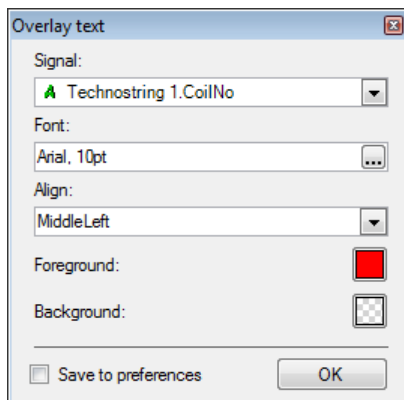

Figure 69:   Properties of "Overlay text"

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 technostring with the replay time of the camera. In ibaPDA, this is only partly possible. If the required technostring data is not available, the text "[?]" will be displayed. ibaPDA will be able to obtain the buffered technostring data since the acquisition started. The buffer size is adjustable in the branch "General" – "Size of text signal buffers" in the preferences of ibaPDA-V6.

4.10 Using PTZ cameras

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

❏ with a joystick

❏ with the mouse

❏ via the PTZ context menu.

4.10.1 Joystick

ibaCapture-CAM version 3.6.0 and higher 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 joysticks for standard games.

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.

Figure 70:   Pointer when moving   the camera

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


Figure 71:   Markings when zooming in/out

The function keys of the joy stick can be assigned a function. ibaCapture-CAM 3.6.0 provides the following functions: moving to the left, right, up or down, zooming in and out and moving to one of the preset positions, see chapter *Configuring the joystick*, page 103.

4.10.1.1 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.
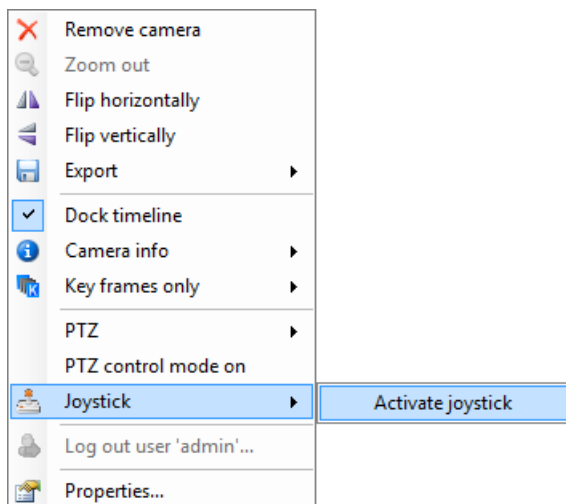
4.10.1.2 Configuring the joystick

For programming the function keys and changing the joystick settings, select "Joystick" in the camera context menu and "Configuration" in the sub-menu.
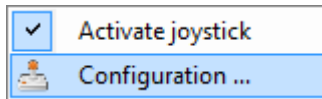
The dialog for configuring the joystick opens.

Programming function keys

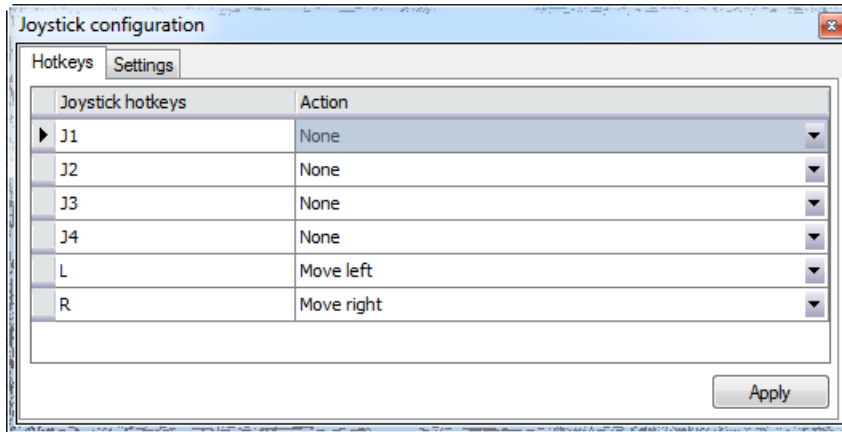The function keys are programmed in the "Hotkeys" tab.

Figure 72:   Programming function keys

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.
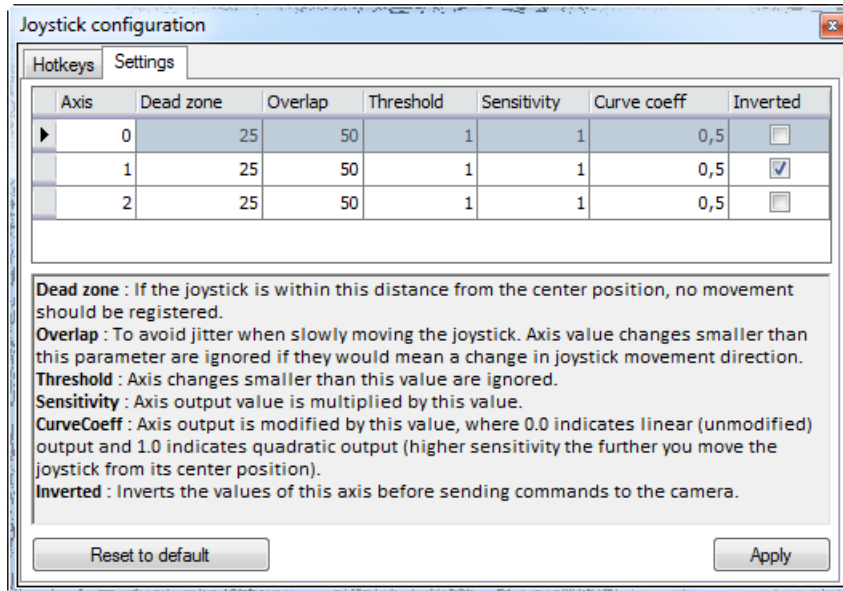

Figure 73:   Joystick settings

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.

4.10.2   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.
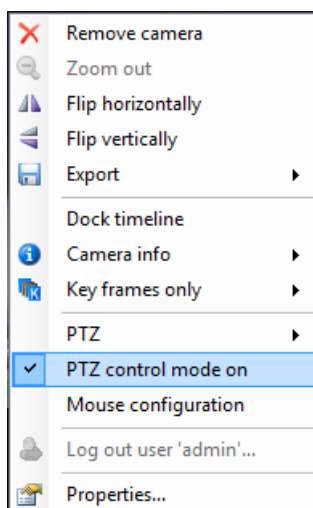

If the PTZ control mode is activated, a crosshair appears in the middle of the video image. The movement of the PTZ camera can be controlled by moving the mouse keeping the left mouse button pressed. Releasing the mouse button stops the movement of the camera.

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 101.

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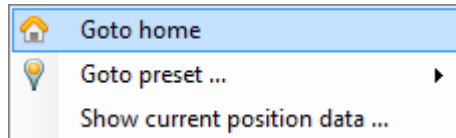
4.10.3   PTZ context menu

To control the camera via the menu, open the context menu of ibaCapture-CAM Player and select "PTZ".
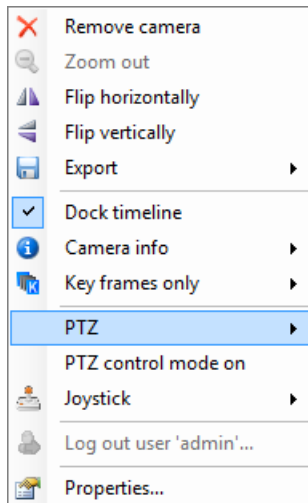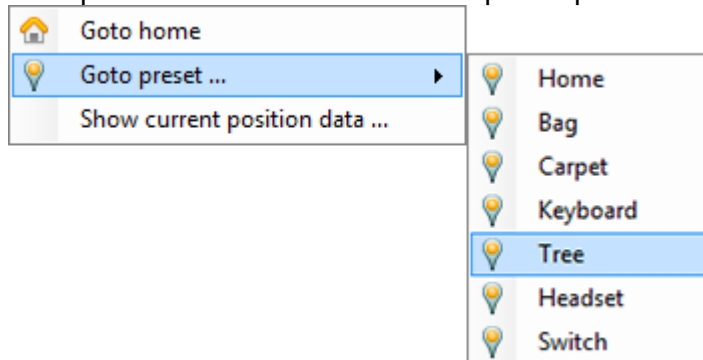
The related sub-menu provides the following options:

❑ 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-CAM configuration. For insertion, place the mouse pointer on one of the input fields and press the key combination <Ctrl> + <V>.
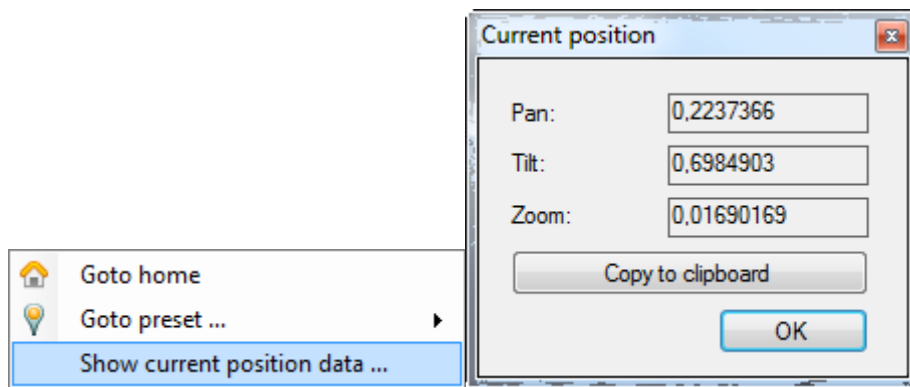
5   Configuration of ibaPDA-V6

This manual only deals with the additional configuration possibilities for ibaPDA-V6 regarding ibaCapture-CAM. All the basic and advanced information and settings in ibaPDA can be found in the "ibaPDA-V6, Process Data Acquisition System" manual.

5.1   ibaCapture-CAM interface and modules

If the installation and configuration of ibaCapture-CAM Server have been completed, it is now possible to add and configure the ibaCapture-CAM modules. For this purpose, it is helpful if ibaCapture-CAM Server is running and accessible by the ibaPDA computer via network.

The modules are created and configured in the I/O Manager of ibaPDA-V6.

To open the I/O Manager, start the ibaPDA client and click on the ![icon] icon in the toolbar. You can also access the I/O Manager via the Configuration menu –> I/O Manager.

5.1.1   ibaCapture-CAM interface

The ibaCapture-CAM interface can be seen in the I/O Manager only if the ibaCapture-CAM function has been activated in the ibaPDA license key (dongle).
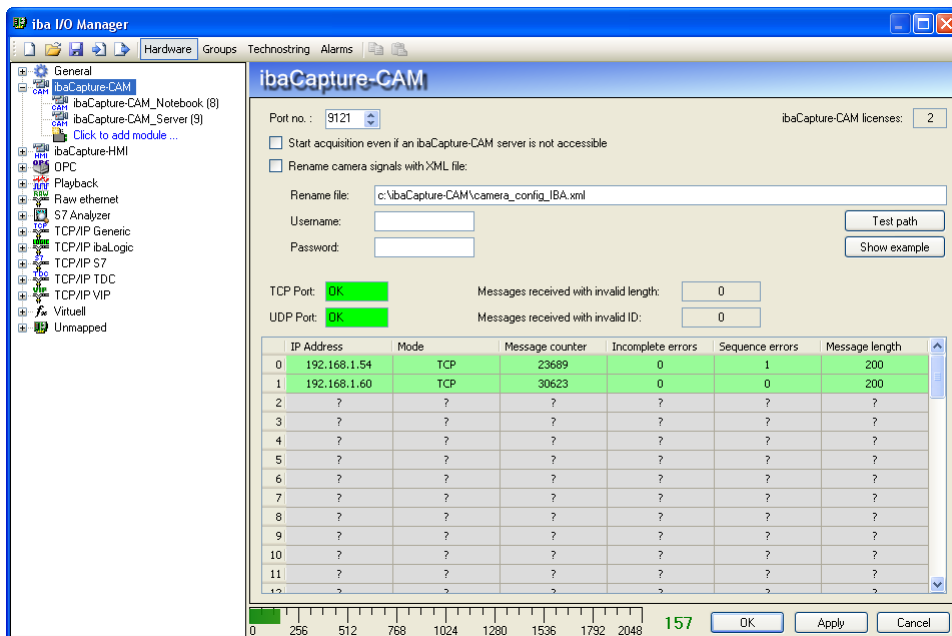

Figure 74:   ibaCapture-CAM Interface

The diagram above shows the view in the ibaCapture-CAM 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-CAM Server via an Ethernet connection. The default port number can normally be used.

➶ For further information, please refer to the chapter *Control and status information*, page 18, section "Source: ibaPDA".

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-CAM Server, informing the video server about the right port for its synchronization messages.

❑ ibaCapture-CAM licenses

The available ibaCapture-CAM licenses are shown in the top right of the screen. You need one license for each connection to an instance of   ibaCapture-CAM Server.

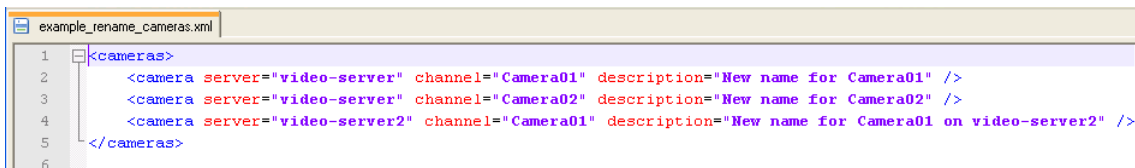❑ Start acquisition even if ibaCapture-CAM Server is not accessible.

If you like the acquisition to start regardless of ibaCapture-CAM Server being accessible or not you should checkmark the corresponding option.

❑ Renaming camera signals with XML file

If there is a chance that the system configuration of the ibaCapture-CAM 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 by the installation of ibaPDA and can be seen by pressing <Show example>

Figure 75:   Sample XML file

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.

5.1.2   ibaCapture-CAM modules

The signal tree shows the available ibaCapture-CAM modules in a tree structure.

The ibaCapture-CAM interface provides up to 64 modules. One module is assigned exactly one instance of ibaCapture-CAM Server. One instance of ibaCapture-CAM Server can handle a maximum of 16 cameras per computer. This means that an ibaPDA system can theoretically record up to 64 x 16 cameras.

5.2   Creating a new ibaCapture-CAM module

To create a new ibaCapture-CAM module, click on "Click to add module" in the branch "ibaCapture-CAM".
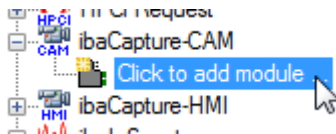

Figure 76:   Adding an ibaCapture-CAM module

Enter a module name in the text box and click the <OK> button.

Choose a name so that the video server and its respective cameras can easily be identified later.
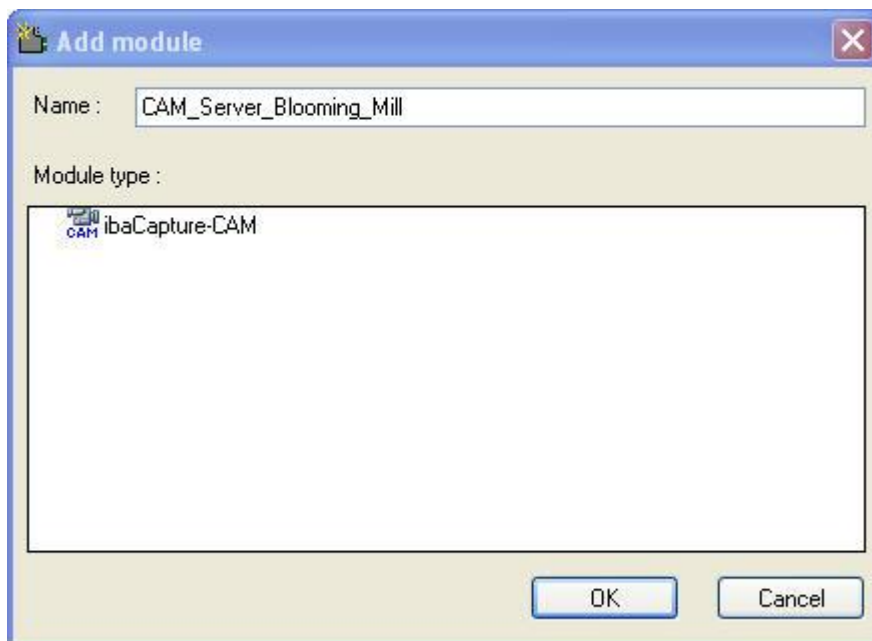

Figure 77:   Module name

Once the module has been created, it is shown in the signal tree.

Figure 78:   ibaCapture-CAM modules

To configure an ibaCapture-CAM module, move the mouse to the module name in the sub-branch and click once on the module.

5.3 Configuring an ibaCapture-CAM module

When configuring an ibaCapture-CAM module, the setup for the connection between ibaPDA-V6 and ibaCapture-CAM Server is done.
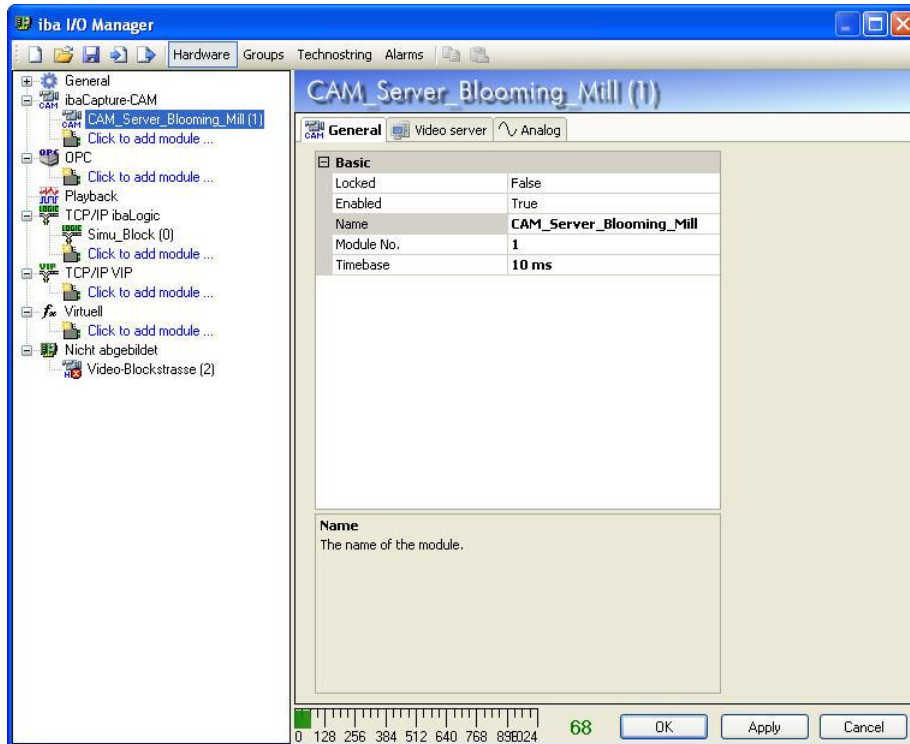

Figure 79: I/O Manager, ibaCapture-CAM module dialog "General"

5.3.1 General

Figure 80: I/O Manager dialog General - Basic settings

The basic settings are described in detail in the "ibaPDA-V6, Process Data Acquisition System" manual. Normally, the preset values do not need to be changed.

Note

The time base in this case sets the period for writing the synchronization data in the data file. It is recommended setting this time base at least half the time base of the fastest camera or lower.

Example: Camera with 25 fps (= 40 ms) → recommended time base ≤ 20 ms
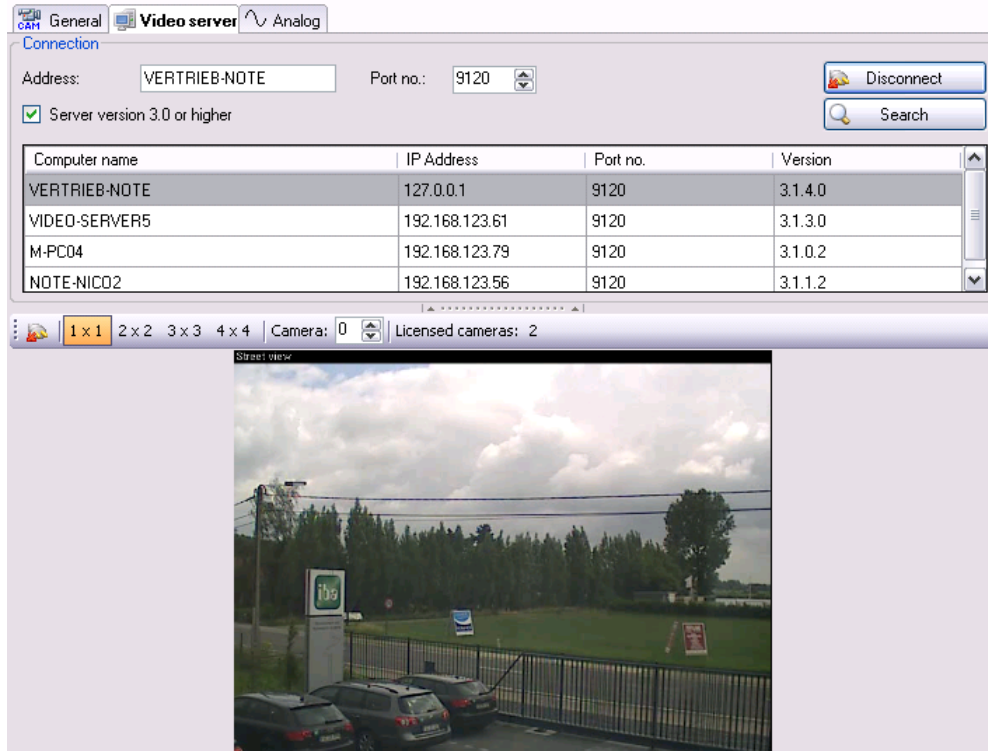
5.3.2   Video server

Figure 81:   I/O Manager, "Video server" dialog

The dialog "Video server" contains two sections:

❑ Connection
❑ Live screen

5.3.2.1   Connection

Figure 82:   I/O Manager, "Video Server -> Connection" dialog, search

In the section "Connection" the ibaCapture-CAM Server is selected on which a video sequence is to be recorded. In order to establish a connection to an ibaCapture-CAM video server you have two possibilities:

1. Enter the computer name or the IP address of the video server computer into the field "Address" or

2. Click on the <Search> button. In the area below all ibaCapture-CAM 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.
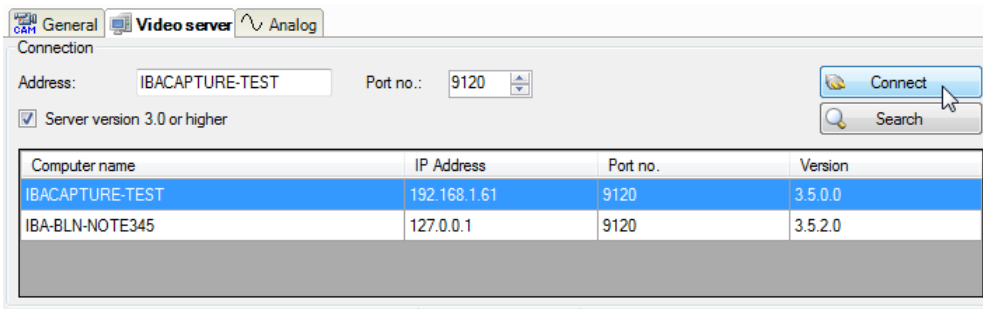

Figure 83:   I/O Manager, "Video Server -> Connection" dialog, connect

The server in question should then be selected with a mouse click. Click the <Connect> button to connect to the ibaCapture-CAM Server. The selected server is shown in the "Address" box.

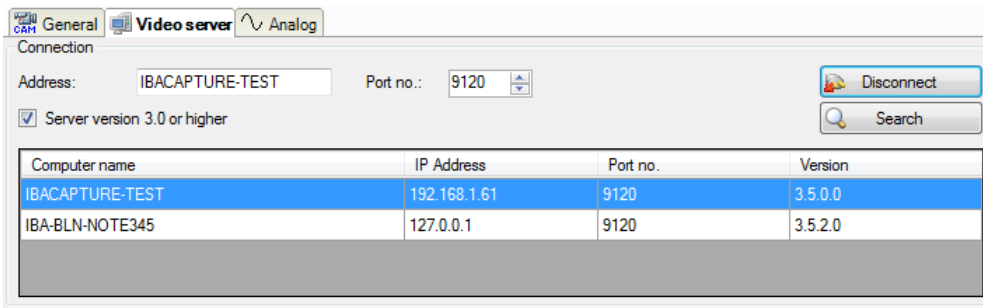Click the <Disconnect> button to disconnect again, if needed.

Figure 84:   I/O Manager, "Video Server -> Connection" dialog, disconnect

5.3.2.2   Camera screen

As soon as the connection between ibaPDA-V6 and ibaCapture-CAM Server is established, a live screen of the connected camera(s) appears in the lower area of the dialog "video server". Depending on the tool bar settings, one or more camera screens are visible.
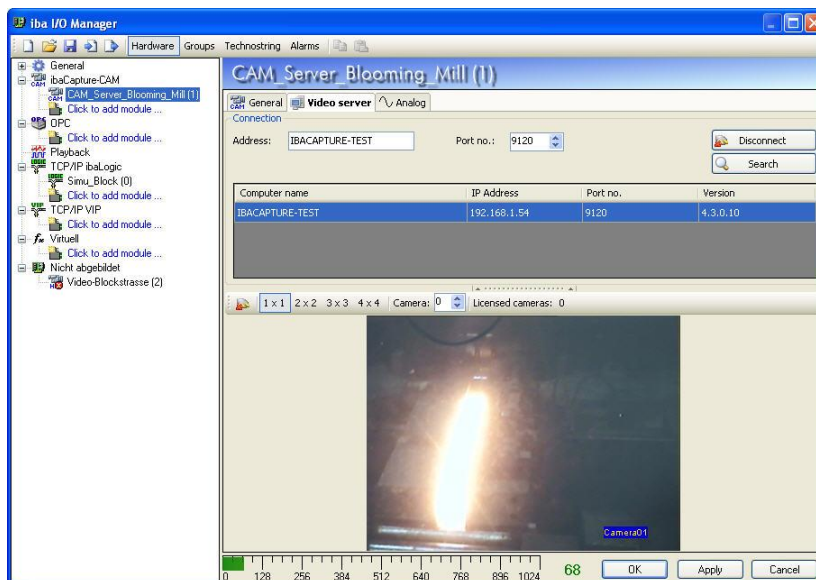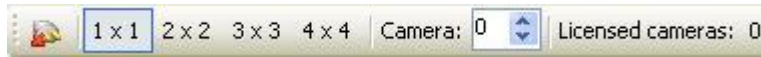

Figure 85:   I/O Manager, "Video Server - Live Screen" dialog

The tool bar for the display area is located above the live screen.
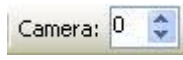

 :   Interrupts the connection to ibaCapture-CAM Server.

 :   1 camera is displayed.

 :   4 cameras are displayed.

 :   9 cameras are displayed.

 :   16 cameras are displayed.

 :   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 rotary 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 tool bar. 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 tool bar.

With a double click on a camera image the ibaCapture-CAM camera status window will open.
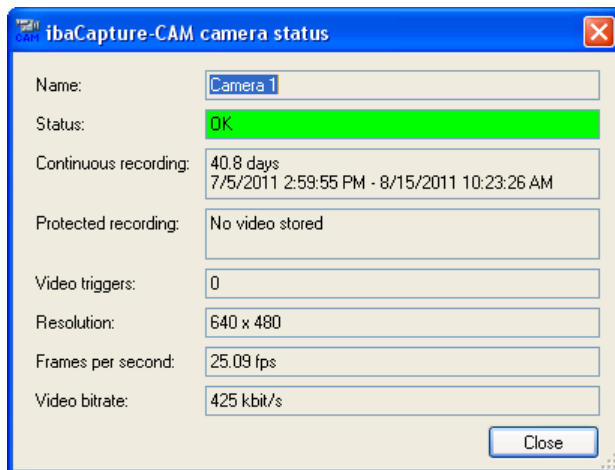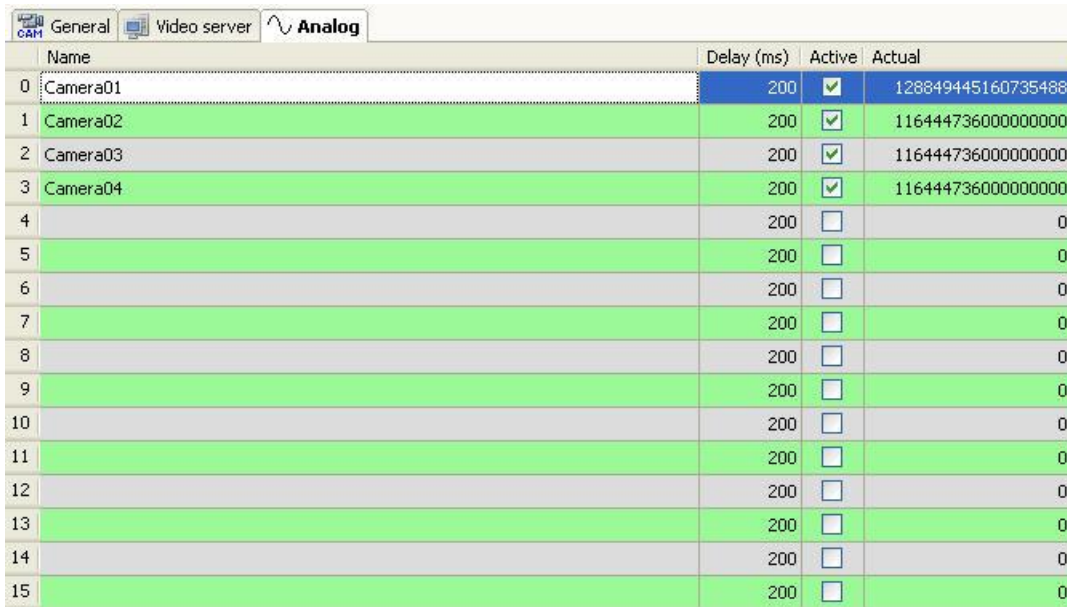

Figure 86:   ibaCapture-CAM camera status

The ibaCapture-CAM 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.

5.3.3 Analog

	Name	Delay (ms)	Active	Actual
0	Camera01	200	☑	128849445160735488
1	Camera02	200	☑	116444736000000000
2	Camera03	200	☑	116444736000000000
3	Camera04	200	☑	116444736000000000
4		200	☐	0
5		200	☐	0
6		200	☐	0
7		200	☐	0
8		200	☐	0
9		200	☐	0
10		200	☐	0
11		200	☐	0
12		200	☐	0
13		200	☐	0
14		200	☐	0
15		200	☐	0

Figure 87:   I/O Manager, "Analog" dialog

The dialog "Analog" displays all the connected cameras in a signal table.

❑ 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-CAM Server are loaded as default as soon as ibaPDA connects to ibaCapture-CAM 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 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-CAM Server using this sync information.

❑ Actual value

The actual value is the timestamp for each camera (64 bit value).

5.4   Data storage with ibaPDA-V6

5.4.1   Continuous video recording

The continuous video recording is started automatically with start of data recording. As soon as the ibaPDA data storage has been started the synchronization data sent by ibaCapture-CAM 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:
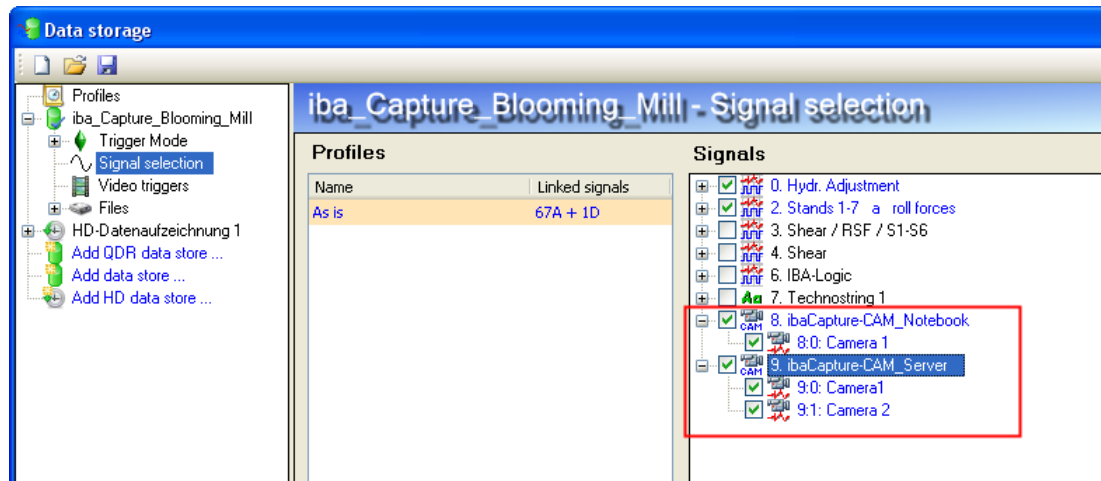

Figure 88:   ibaPDA data storage configuration, ibaCapture-CAM signal selection

An unchecked camera won't be available later in ibaAnalyzer, although ibaCapture-CAM Server has recorded the video stream.

5.4.2   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 in a protected manner on ibaCapture-CAM Server by means of video triggers during video recording to protect the video data from the overwriting of continuous recording.

ibaPDA-V6 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 [icon] in the toolbar or on the "Configure - Data storage..." menu.
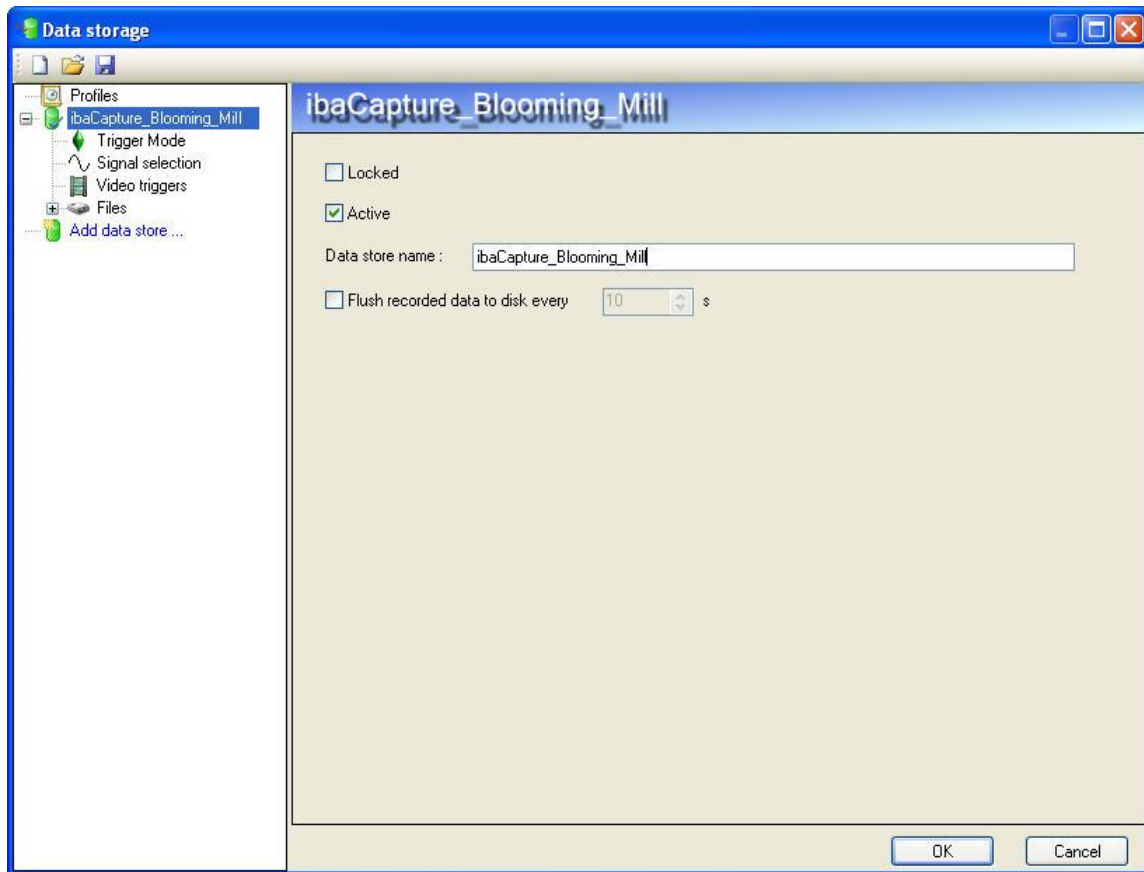

Figure 89: "Data recording" dialog

Click on the branch "Video triggers" to open the video trigger setup dialog.

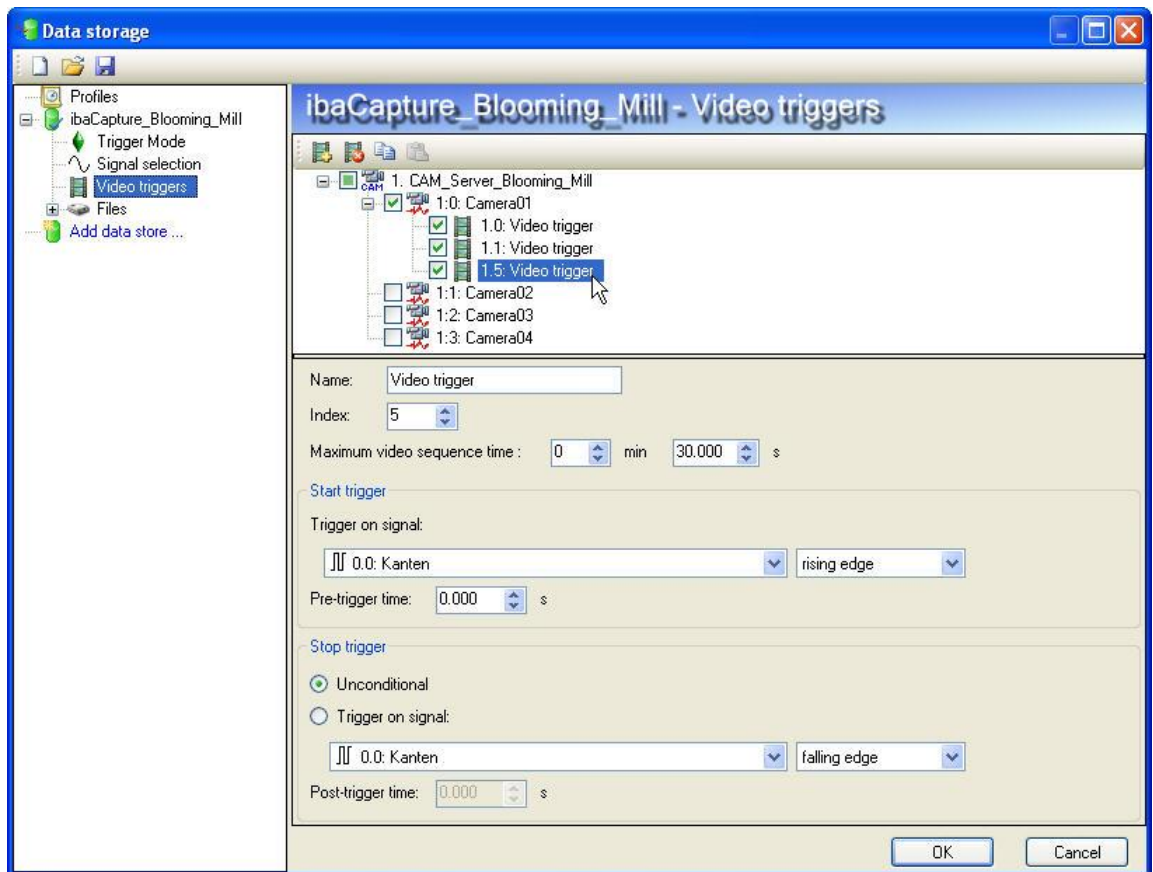Figure 90: Accessing the "video triggers" dialog

Figure 91:   Configuring the video trigger

The available video servers and all active cameras connected to them are displayed in the upper section in a tree structure. Also, all video triggers that will follow to be configured are displayed under the cameras they are assigned to.

Up to 10 video triggers can be added to each camera.

Adding a video trigger

You can add a video trigger to a camera by selecting the camera in the tree structure and clicking on the "Add" button in the toolbar (see below); or 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 tool bar is located in the upper section.

: Add video trigger, alternatively, a video trigger

can be added via the context menu. This requires the relevant camera to be marked.

: Removing video trigger

: Copying marked video trigger to clipboard

: Pasting video trigger from the clipboard

If a video trigger was marked (e.g. as the above trigger 1.5), 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 trigger advance (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 trigger follow-up (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.

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 recording.

5.4.3   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-CAM 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 recording configuration of ibaPDA-V6 (version 6.29.0 or higher). In the tree of data recording, an "Image trigger" branch is shown if ibaCapture-CAM modules are included in the I/O configuration.

In the tree structure of the "Image trigger" branch, all ibaCapture-CAM Servers and the cameras connected are shown.
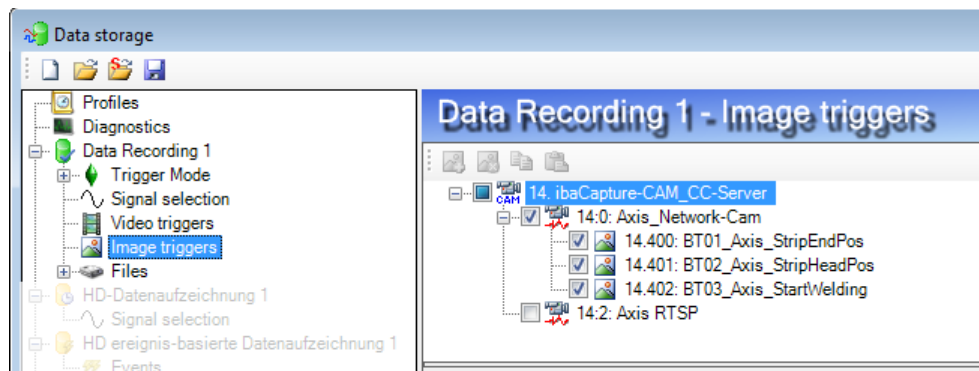
Up to 10 video triggers can be added to each camera.

Figure 92:   Assignment of image trigger and 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 tool bar. Alternatively, you can use the context menu (right-click on the camera).

 :   Add image trigger

 :   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-CAM Server, camera and image trigger.

Server level

Select the server branch

Figure 93:   Configuration of the storage location for still images

On the video server level, you can determine the main folder and the subfolder structure for the storage of image files. For each camera, a subfolder is created automatically in every main folder of the server. Similar to data files during data recording, the image files are saved to a structured storage which you can configure here.

In addition, you can determine a user account to be used for login to the video server.

Camera level

Select the camera branch

Figure 94:   Configuration of the camera-specific storage location for still images

On the camera level, you specify the name of the subfolder for the camera and the allocated disk space in MB. 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.

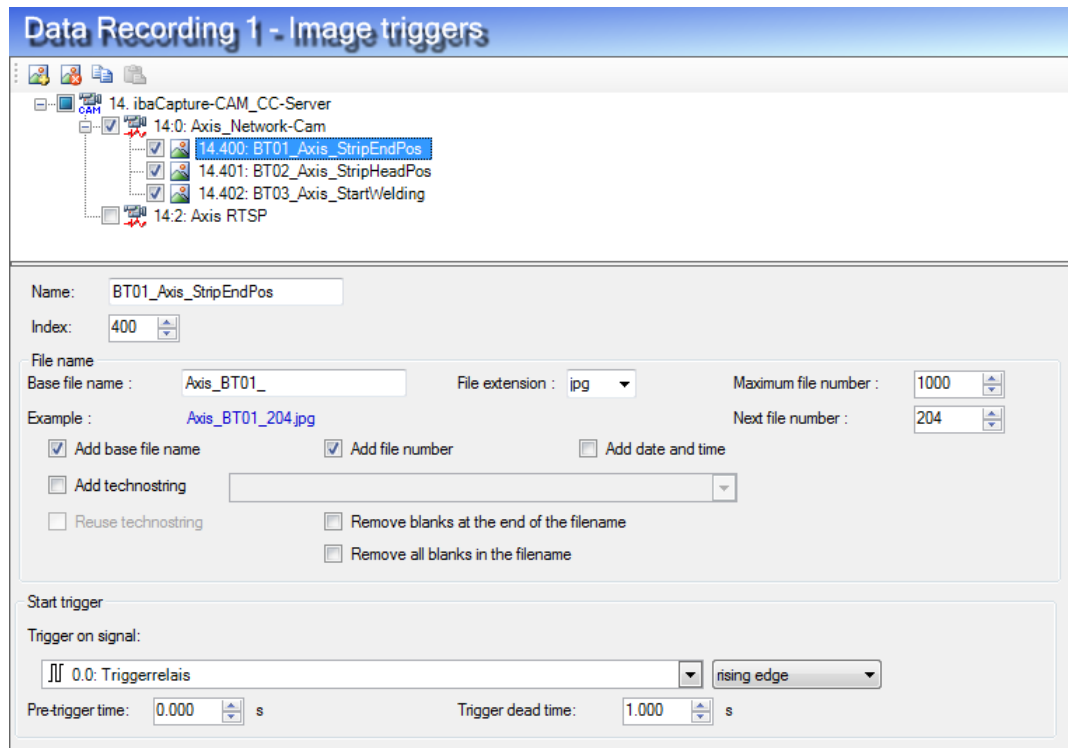**Image trigger level**

Select an image trigger

Figure 95:   Configuration of the 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. 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 as image channels. An image channel contains the file names of the created images.

5.4.4   Starting the video recording

During the actual video recording, as soon as the video server is running, the transmission of synchronization data is started and stopped with the ibaPDA data recording. When ibaPDA measured value recording is started, ibaPDA Server connects to ibaCapture-CAM Server and starts the transmission of synchronization messages.

5.5 Video display in ibaPDA-V6

With ibaCapture-CAM it is possible to display camera views in the ibaPDA-V6 signal display area. An instance of ibaCapture-CAM Server is equivalent to an ibaCapture-CAM module. ibaCapture-CAM modules are displayed in the signal tree like all other ibaPDA modules. Similar to the measured signals, the cameras are arranged below the 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 (Camera01 in the figure below).

❑ A click on the [icon] icon opens a new and empty camera view. Afterwards, you can add one or more cameras by drag and drop.
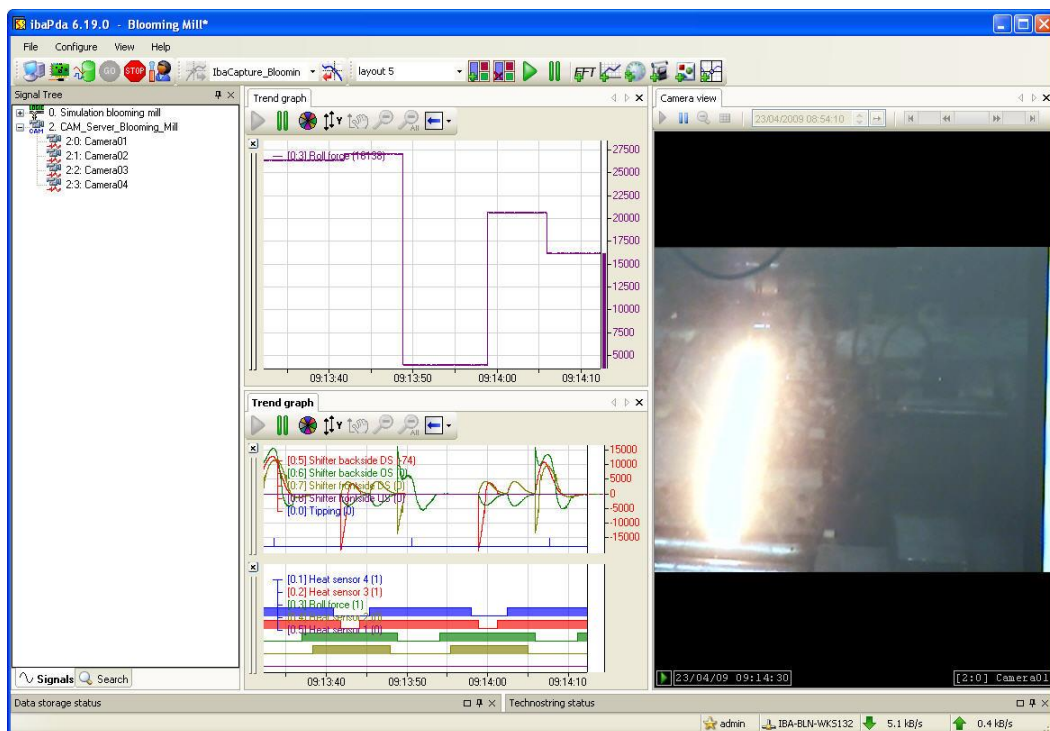

Figure 96:   Camera live view in the signal display area

The component being used for display and application is ibaCapture-CAM Player. For further information, see chapter *ibaCapture-CAM Player*, page 70.

5.6   Online display in ibaQPanel

With ibaCapture-CAM it is possible to display a live image view of the video recording in the signal display area of ibaQPanel.

Figure 97:   Camera live view in ibaQPanel

First, you have to create a panel to be able to use the camera view in ibaQPanel. You can also use a panel already existing. Information about how to use ibaQPanel can be found in the corresponding manual "ibaQPanel".

Switch the panel to the design mode. Select the "Camera view" object from the "Tools" window and 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-CAM Player. For further information, see chapter *ibaCapture-CAM Player*, page 70.

5.7   Controlling the video recording with ibaPDA-V6

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-CAM Server. Using video triggers only affects the marking of specific video sequences and even stopping and restarting 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-CAM Server.

From ibaPDA version 6.29.1 and ibaCapture-CAM version 3.5.0 and higher, you can enable or disable the video recording with digital output signals from ibaPDA.

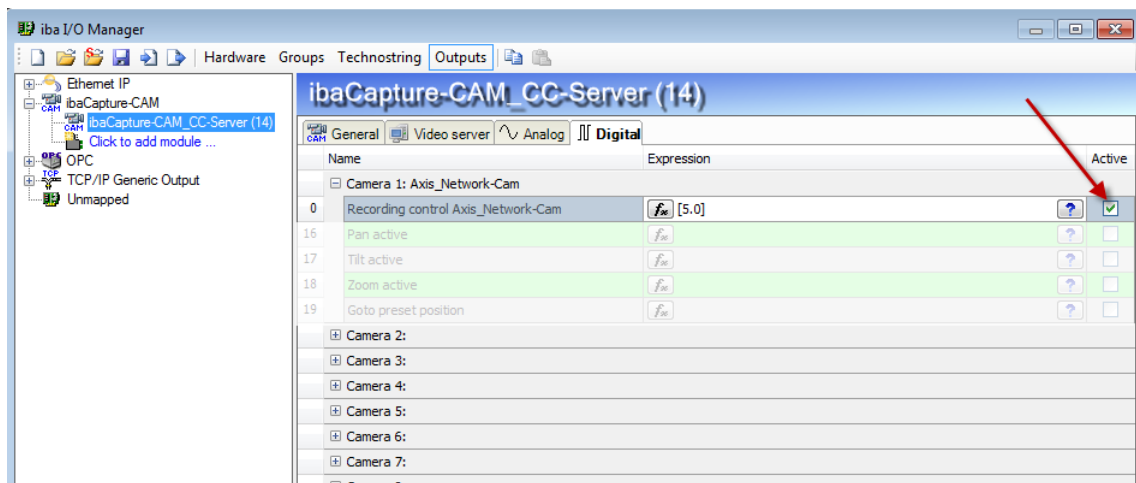The related settings are made in the "Outputs" section (formerly "Alarms") of the I/O Manager.

Figure 98:   Configuration of the control signals in ibaPDA-V6

For each configured ibaCapture-CAM module, i.e. for each ibaCapture-CAM Server, there is a module also 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-CAM Manager.

↗ Please also refer to the "*General information*, page 28" chapter.

5.8   Controlling PTZ cameras with ibaPDA

If a PTZ camera is connected to ibaCapture-CAM, this can be controlled by output signals of ibaPDA.

A prerequisite is:

❑   ibaPDA-V6 version 6.31 or higher

❑   Controlling the PTZ cameras with ibaPDA needs to be permitted in ibaCapture-CAM.

The output signals for controlling the camera are configured in the I/O manager of ibaPDA. Add an ibaCapture-CAM module in the I/O manager and select "Outputs" in the main menu.

"Analog" tab

In the "Analog" tab, 4 signals appear for each configured camera. Using the expression builder, you can assign values to the signals.
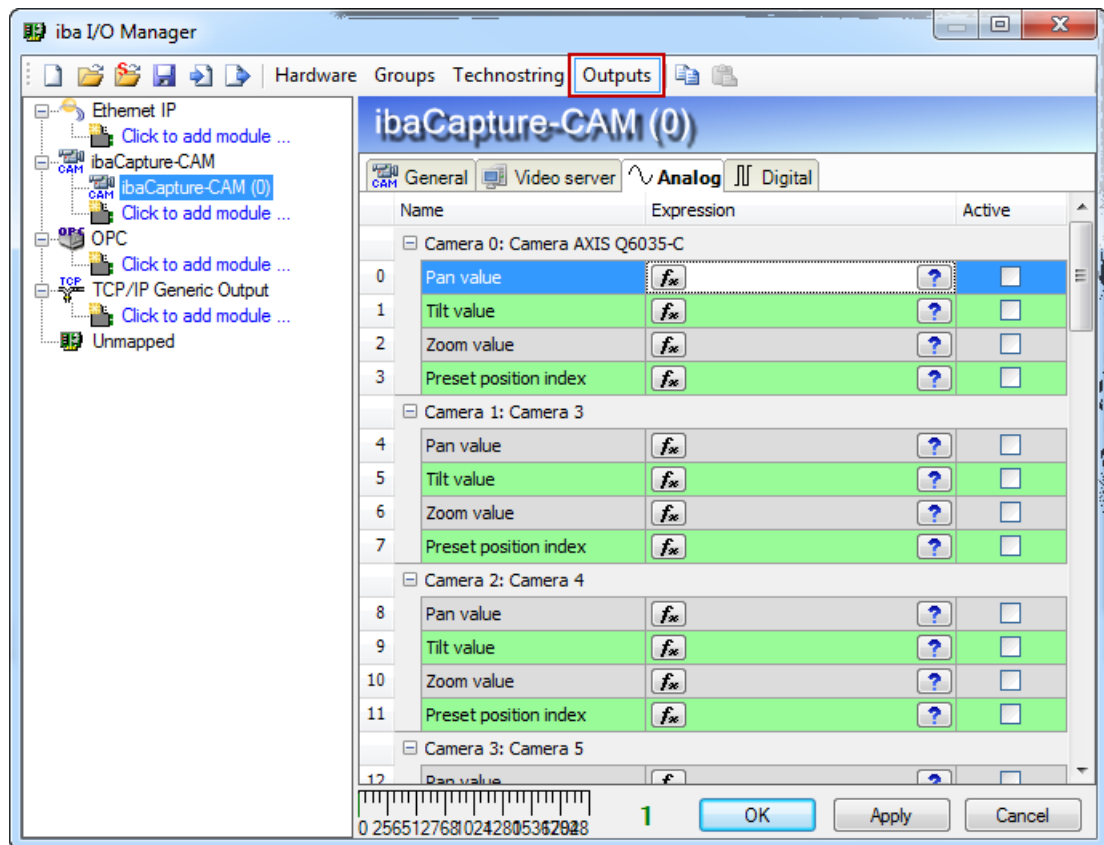

Figure 99:   Output signals for controlling the camera

❑   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 with which the recording can be activated or deactivated.
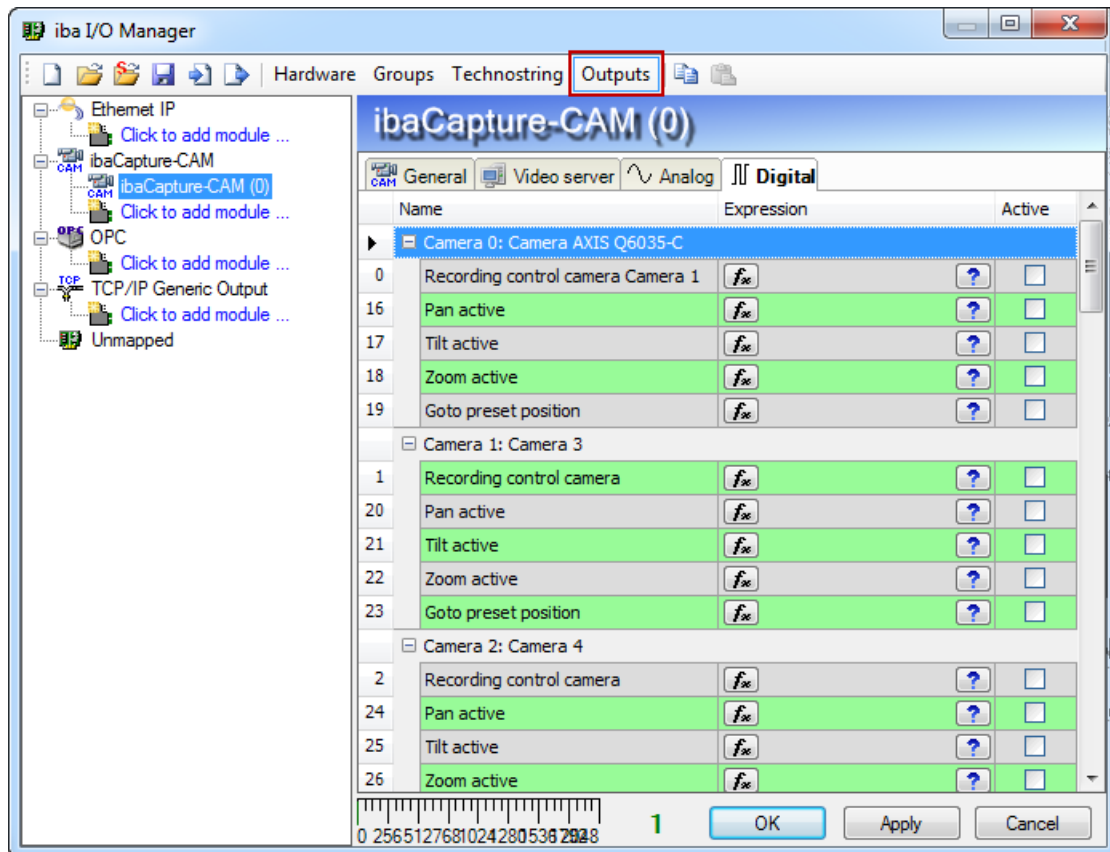

Figure 100: Digital output signals activating the analog signals

6   Offline viewing with ibaAnalyzer

6.1   Displaying video recordings

After the data recording has been successfully carried out, an offline analysis can be carried out using ibaAnalyzer. ibaAnalyzer is a high-performance tool for analyzing complex data recorded with ibaPDA-V6 and ibaCapture-CAM.
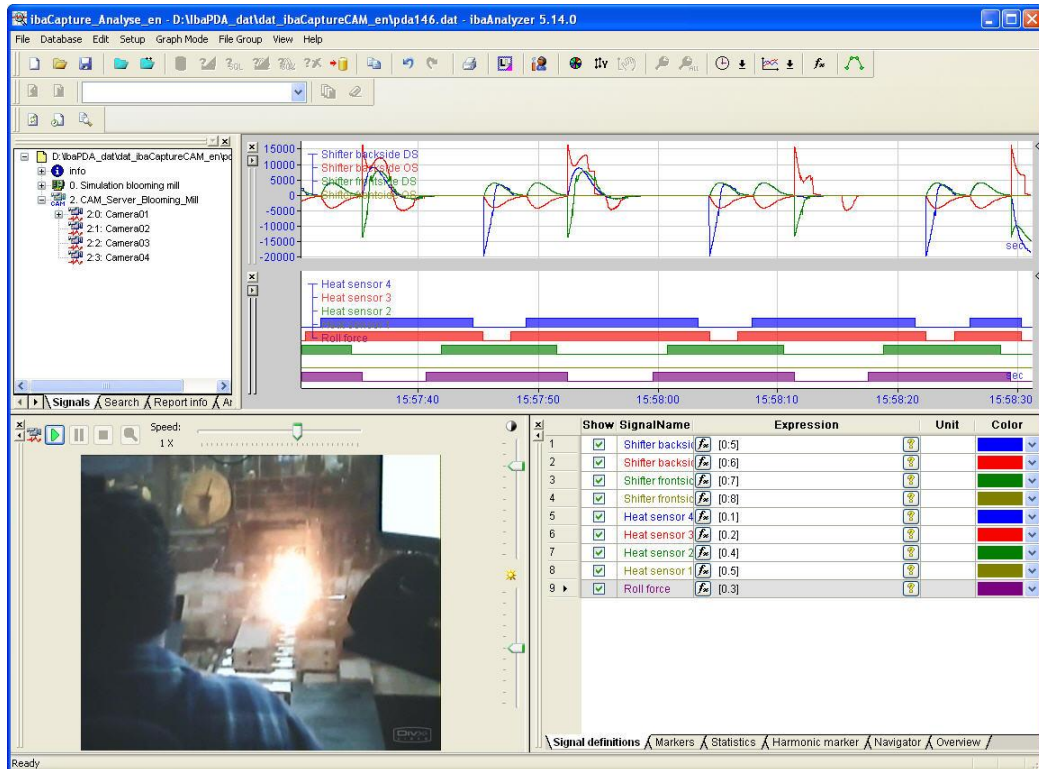

Figure 101: Offline analysis

This manual only deals with the additional functions for ibaCapture. All the basic and advanced settings in ibaAnalyzer can be found in the manual "ibaAnalyzer, Analysis Program".

ibaCapture-CAM Server, where the videos are stored, must be accessible for the computer with ibaAnalyzer via the network.

The following section assumes that you have created an analysis procedure and have loaded the measured signals selected into one or more signal strips.
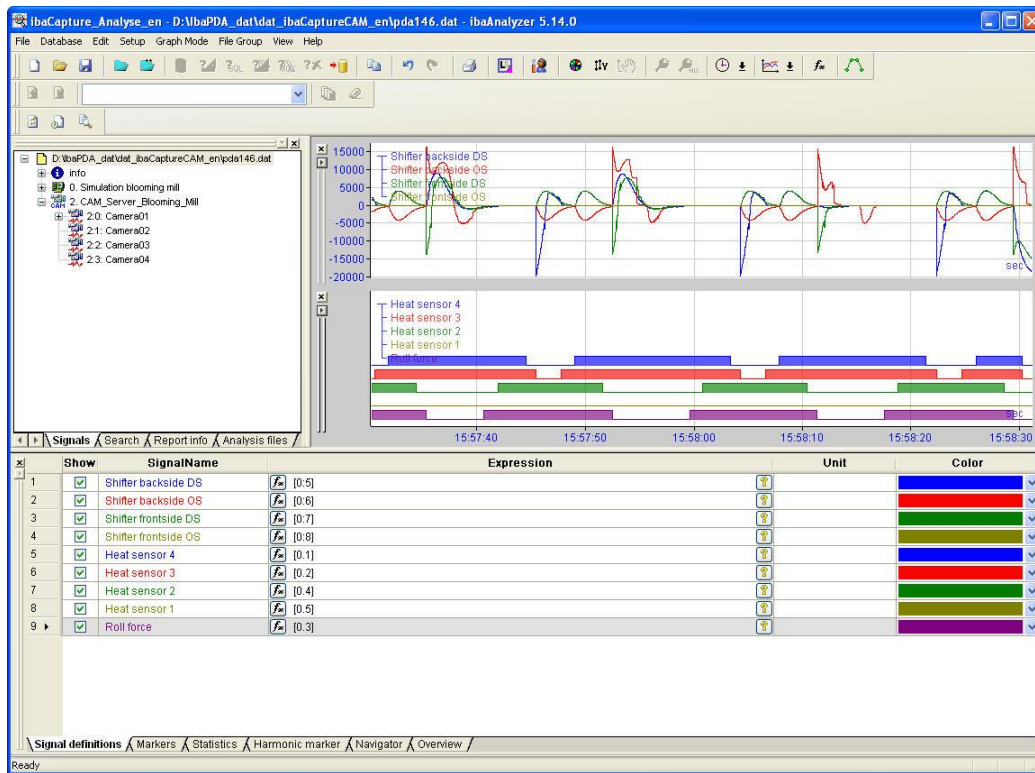

Figure 102: Measured values in the signal strip

In the figure above, several measured values have been loaded in the signal strips. In addition to the measured values, the signal tree contains ibaCapture-CAM modules.
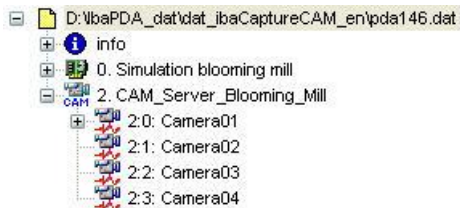

Figure 103: Signal tree of the measuring file

To display the video sequences, click on the camera module and drag it out of the signal tree area. Alternatively, double clicking on a camera loads the video file.
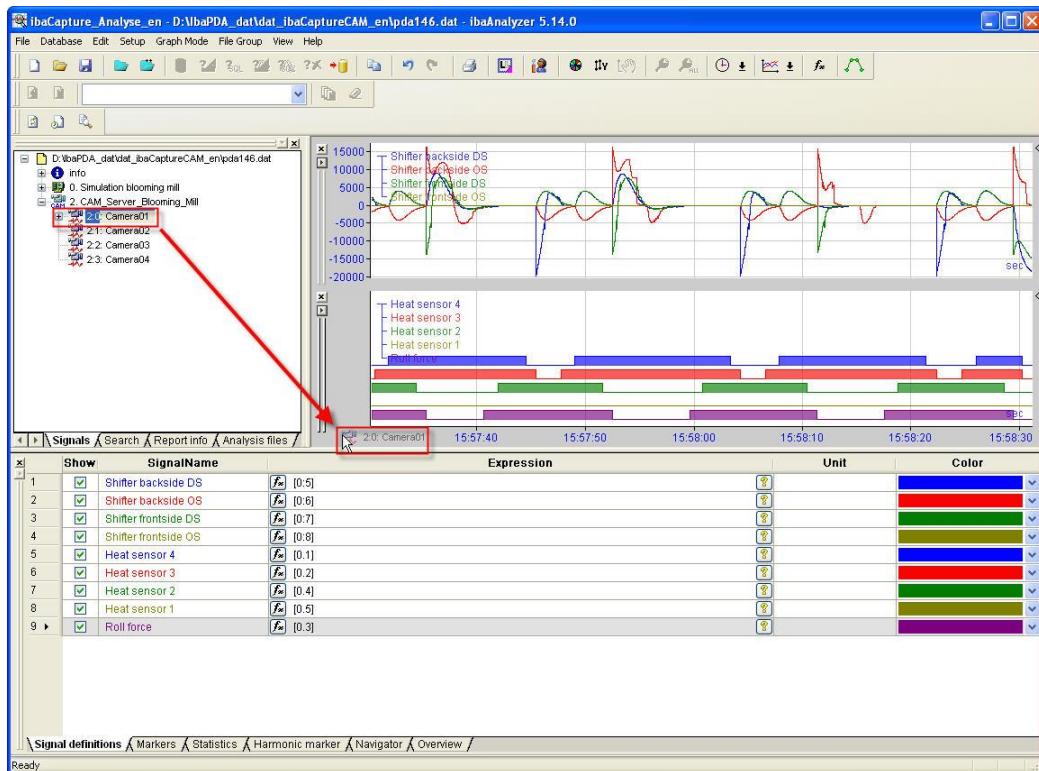

Figure 104: Opening a video window by dragging the camera from the signal tree

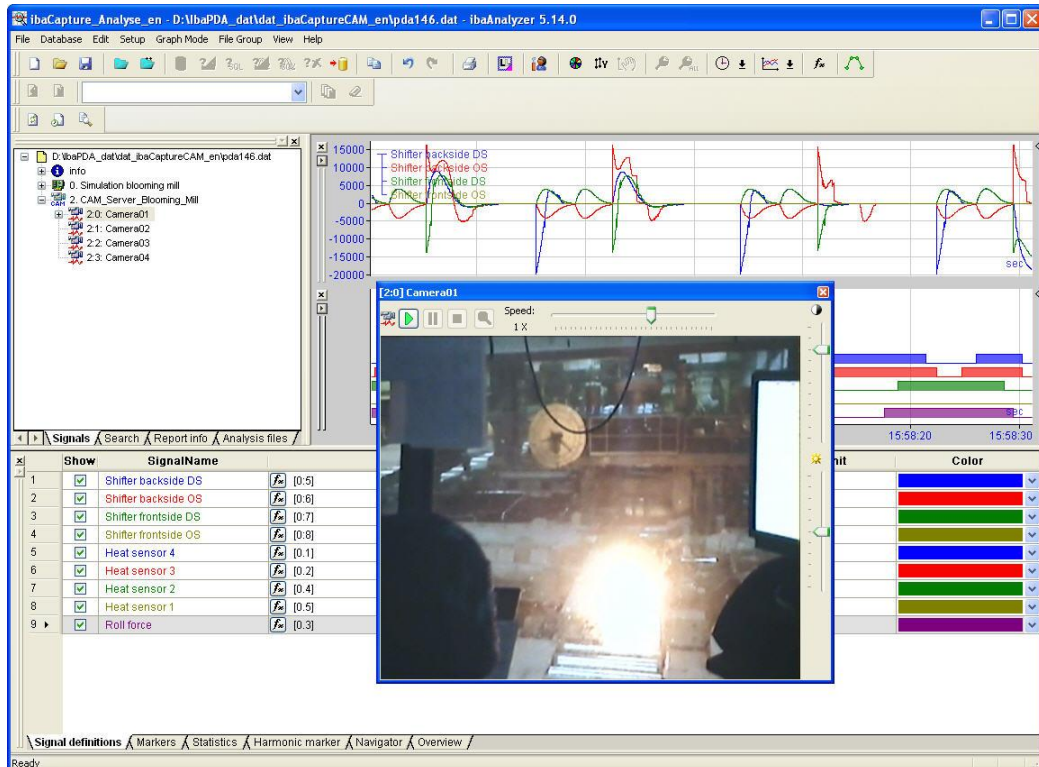A window opens showing the corresponding video image.

Figure 105: Video window, floating

To display the triggered video sequences, click on the video trigger signal of a camera and drag it into the signal strip area. The trigger signal is displayed in a new signal strip.
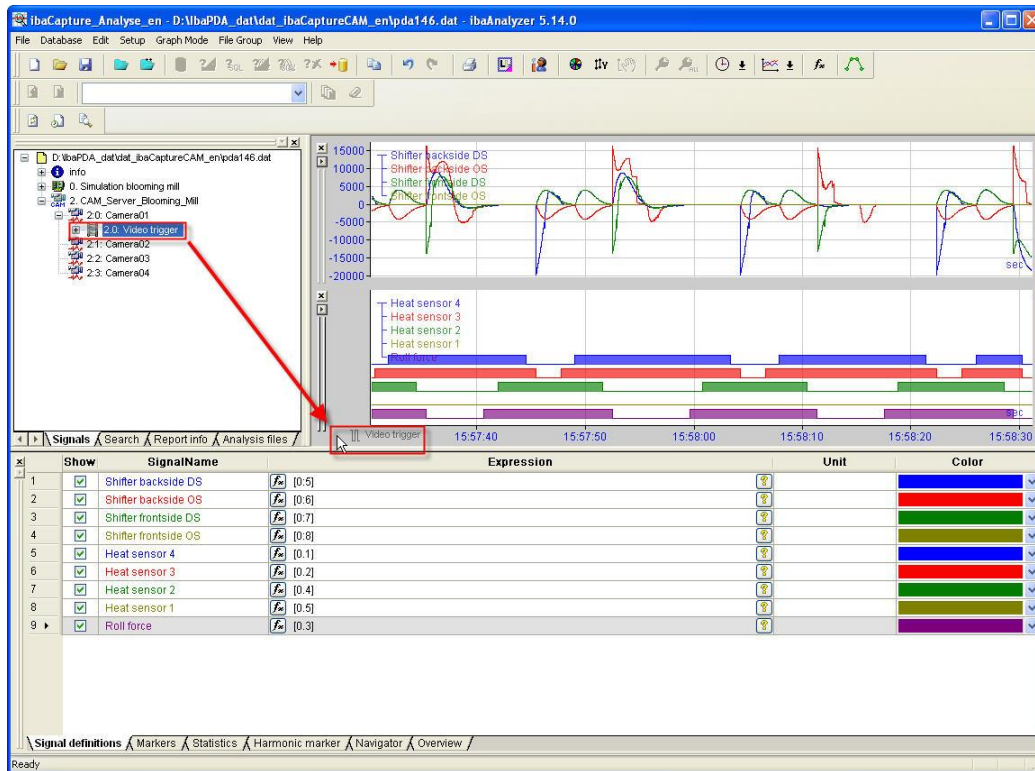

Figure 106: Opening the triggered video sequence

Alternatively, double-clicking on the video trigger also displays the corresponding trigger signal in a new signal strip.

Figure 107: Signal video trigger

If the mouse pointer is moved directly onto the video trigger signal, a small camera icon will appear in addition to the mouse pointer. After double clicking onto the video trigger signal, a video window with the appending video sequence is loaded.

Video window tool bar

The video window tool bar contains five control elements to control video sequence replay.
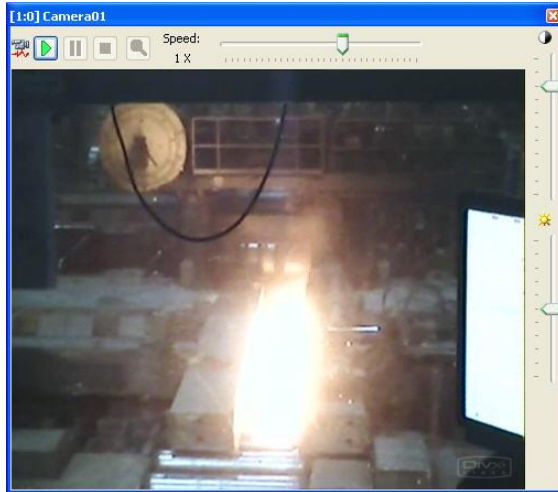

Figure 108: Video window, control

▶ Start: Start replay

❚❚ Pause: Pause replay

■ Stop: Stop replay

⏮ Forward: Play forward one video frame

⏮ Rewind: Play reverse one video frame

🔍 Zoom out one step

The 2 buttons ⏮ ⏮ have repeat function. This means that if you keep the button depressed, after an initial delay of about 1 second, the button will behave as if it is rapidly clicked (about 5 images per second), thus allowing you to forward or rewind the video frame by frame rapidly.

Furthermore, in the right of the video window are two operating elements in the form of sliders to set contrast and brightness.

A slider is located next to the tool bar with which the replay speed can be set. Replay speed can be set both positively and negatively. If the replay speed is negative, the video recording is played backwards. To stop replaying the video recording, click the ❚❚ icon in the toolbar or press the space bar on the keyboard.

The video window has a context menu. Right click on the video window to access the following context menu:
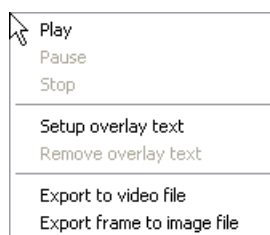
Figure 109: Context menu video window

Replay commands

The start, pause and stop menu items correspond to the functions of the toolbar described above.

Overlay text

The menu "Setup overlay text" enables the setup of the text messages that can be displayed in overlay on each video window. Text messages can be displayed by drag and drop text channels from the signal tree onto the camera view.
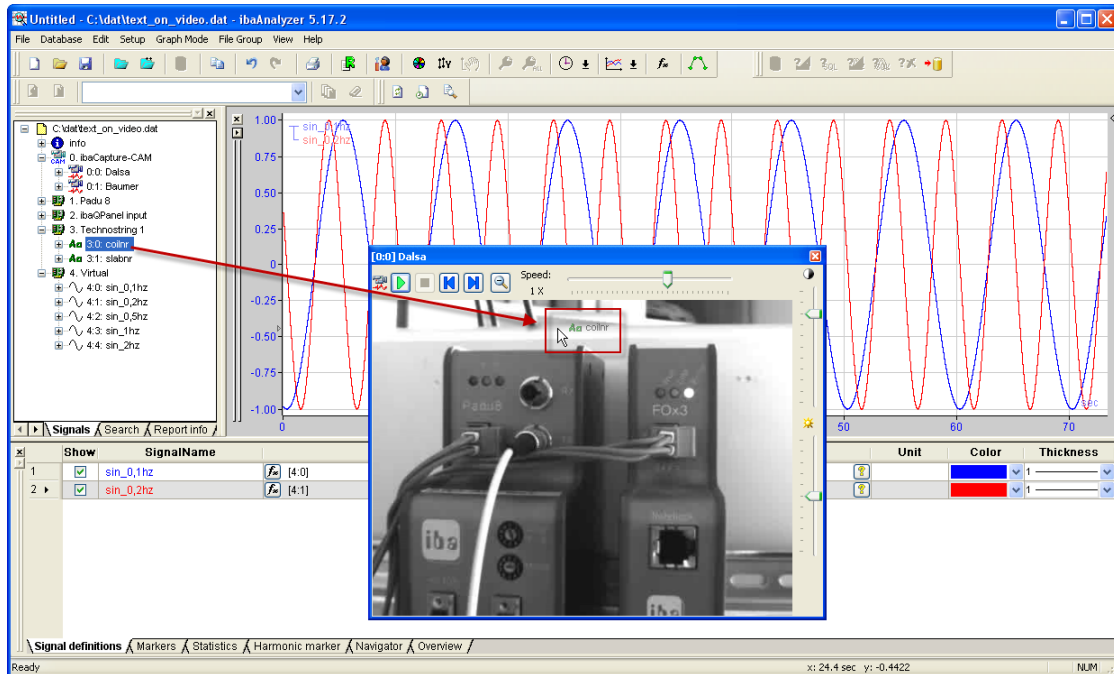
Figure 110: Drag and drop text information from text channels

Depending on where the text channel is dropped, the text will be aligned to one of 9 possible positions. This setting and other settings like font, background and foreground color can be altered by selecting "Setup overlay text" in the context menu.
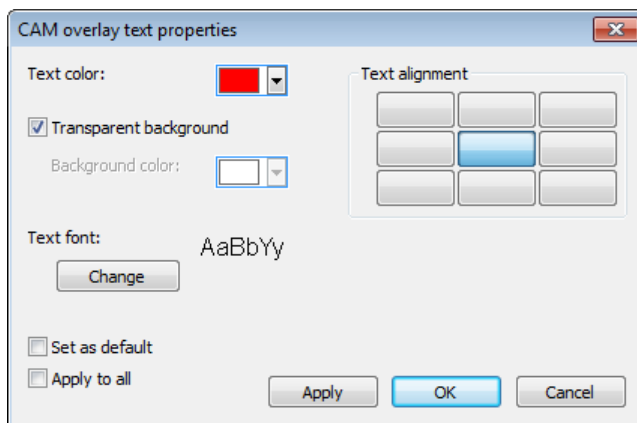
Figure 111: Setup overlay text

Click "Set as default" to save the actual settings as default settings for new camera windows.

Click "Apply to all" to apply the current settings to all visible camera views.

By clicking the "Remove overlay text" item in the context menu, the text being currently visible in the video window will be removed. The text channel will be updated,

synchronized with the video marker or the replayed video as explained in chapter "Evaluating measuring signals using video recording".

Export commands

The "Export to video file" menu item enables you to save the video sequence on a data carrier as an mp4 video file.

The "Export frame to image file" menu command enables you to make a snapshot of the current frame and save it as a JPG file.

Zooming

The image content in video windows can be enlarged. To do so, move the mouse pointer in the respective area of the video window. With a depressed left mouse button, drag a red rectangle of the desired size and then release the mouse button.
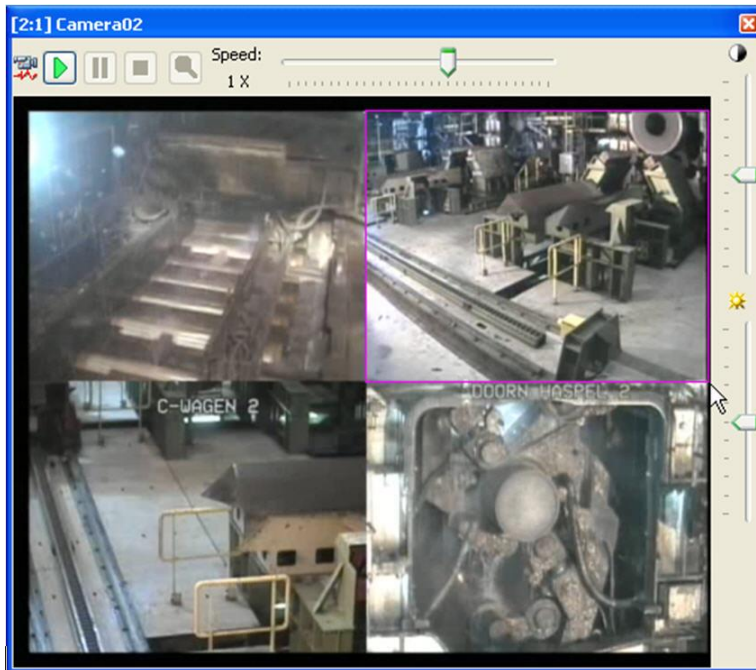
To display the previous image detail, click on the icon 🔍.

Positioning the video window

You can now use the mouse to drag the video window and drop it in the ibaAnalyzer window. As long as the video window has not been docked, you can change its size. For this purpose, put the mouse pointer on one of the corners of the video window and drag the video window to the desired size by keeping the mouse button pressed. The images' proportions always remain unaffected.
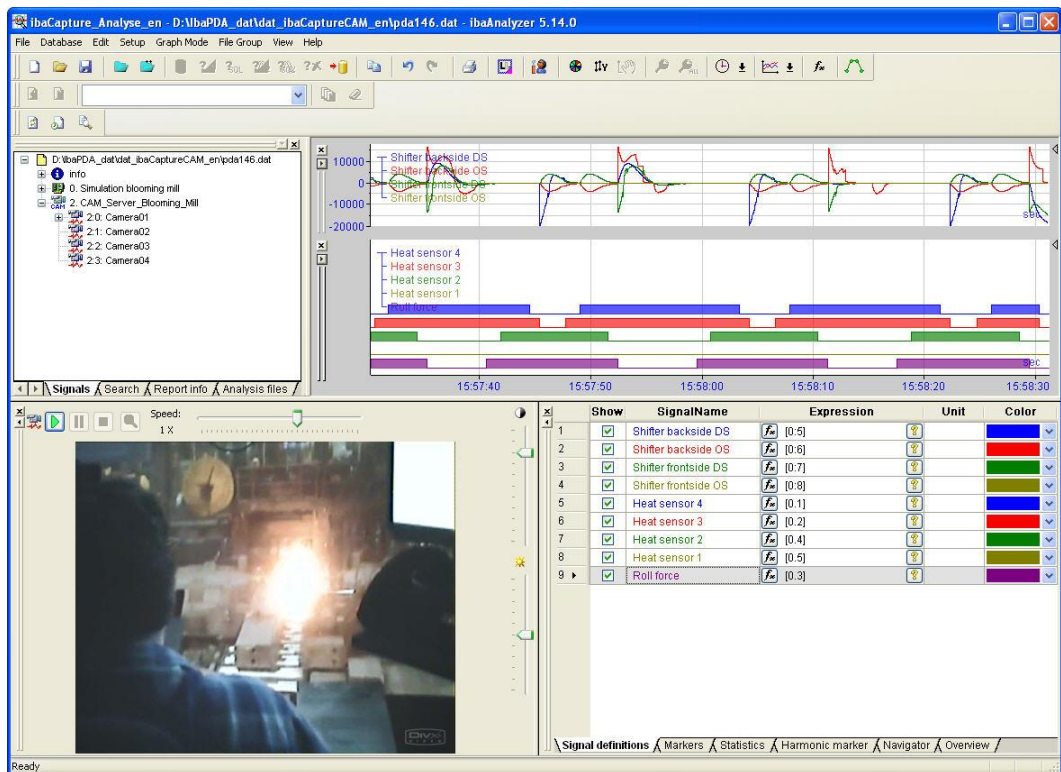
Figure 112: Connected video window

In order to undock a window, place the mouse on the header of the window in question and drag it by keeping the mouse button pressed or double-click to release it.

6.2   Evaluating measuring signals using video recording

Once ibaAnalyzer has been configured with all the measuring signals and video sequences of interest for display, the measured data can be evaluated and the measured values viewed in relation to the video sequences. To do so, change the marker display by clicking on the "Marker" tab under the signal table and set the marker X1 at any point in the signal strip. The markers show the current measured values recorded for the respective video sequences. The video sequences are linked to the measured values by a shared time base. If you move the marker X1, the video window displays the related video sequences. Text channels displayed on the camera view will be updated as well.
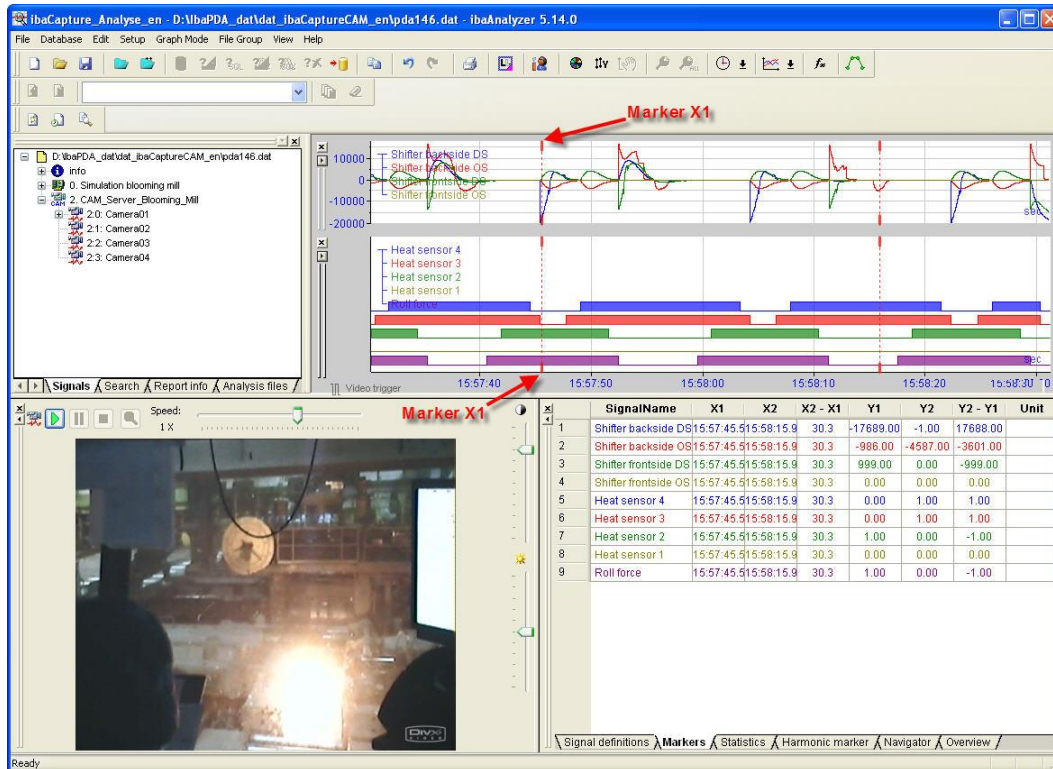
Figure 113: Markers

You can run through the measured values "automatically". Start the video sequence with "Play" (▶). With the "Pause" (❚❚) und "Stop" (■) buttons, you can interrupt and stop the video sequence and thus the run-through of the measured values. The run-through of the measured values is indicated by a camera icon when you lead the mouse pointer over the marker X1.
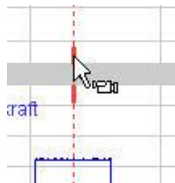
Figure 114: Camera icon on the marker X1

ⓘ   ibaCapture-CAM Server, where the videos are stored, must be accessible for the computer with ibaAnalyzer via the network.

6.3   Export and options

6.3.1   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 .
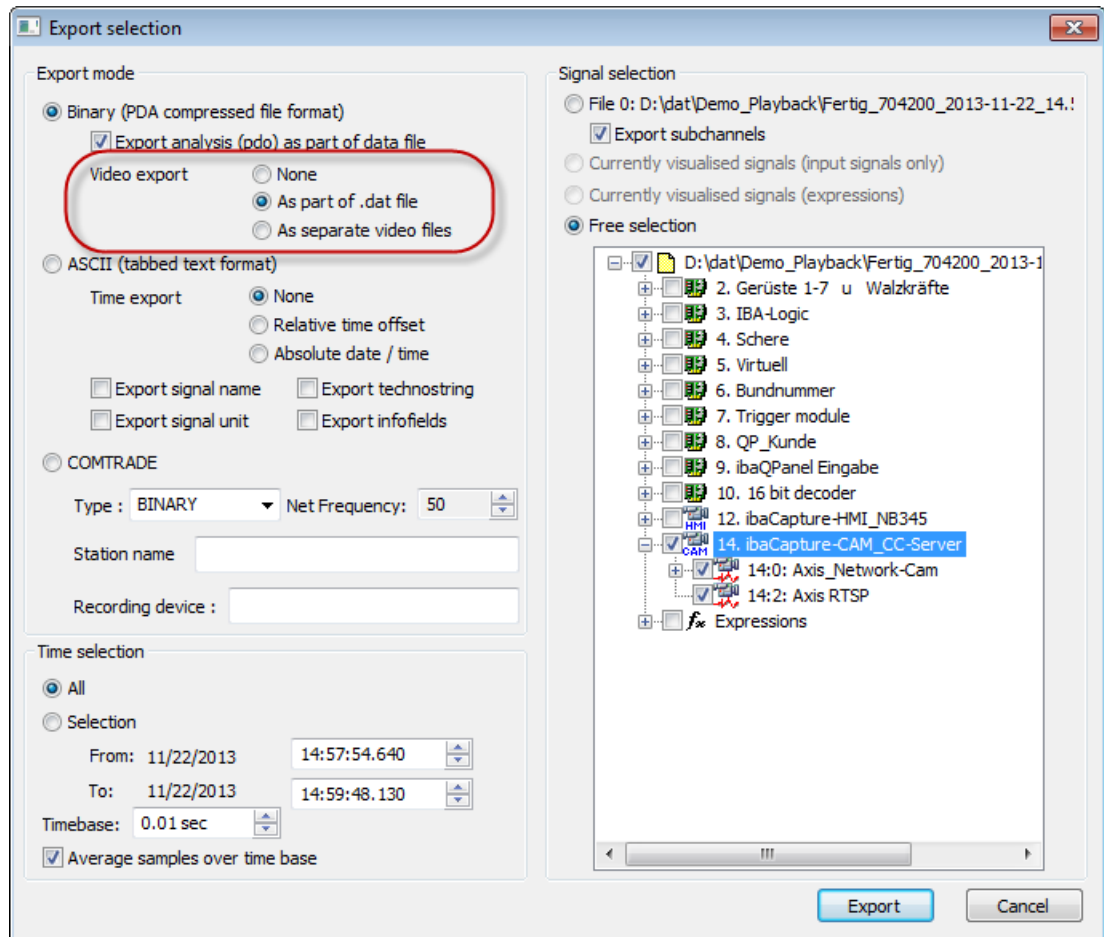
Figure 115: "Export"dialog

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".

6.3.2   ibaAnalyzer preferences for ibaCapture-CAM
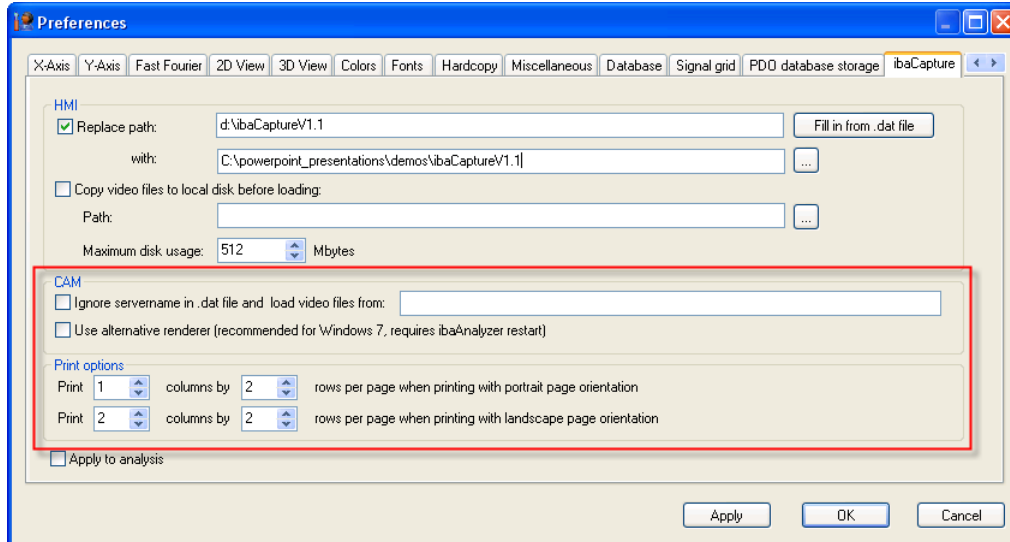
Figure 116: Dialog "Preferences"

In the preferences dialog, "ibaCapture" tab, there are 3 group boxes.

HMI

These preferences refer to ibaCapture-HMI only.

CAM

These preferences refer to ibaCapture-CAM.

Here, an alternative video server can be specified with the option "Ignore server name in .dat-file and load video files from: ..", from which the video sequences will be loaded. The setting is not taken into account if an exported .dat file with integrated video sequences is opened.

Since ibaAnalyzer has been supporting OS Windows 7, an alternative renderer is recommended being used when dealing with a former version (<3.0) of ibaCapture-CAM. When running on Windows 7, this option should be checked to improve quality and performance.

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 detailed information, please refer to chapter *Printing still images and logging*, page 139.

All further and basic settings in the "preferences" dialog are described in detail in the manual "ibaAnalyzer, Settings".

6.4   Printing still images and logging

Video still images can be printed via the build-in printing function of ibaAnalyzer or added to a report using the report generator.

6.4.1   Printing

By using the standard print function of ibaAnalyzer, all actual displayed camera views can be printed. The still images of the camera are printed after the signal table, as illustrated by the print preview below.
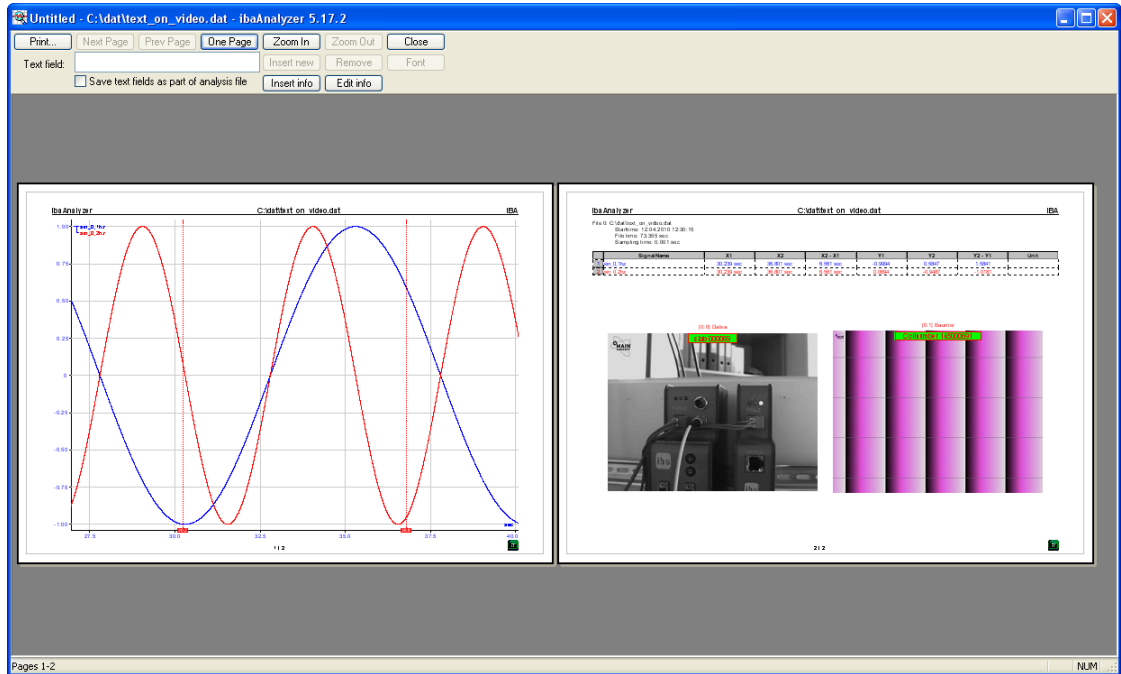
Figure 117: Print preview

The layout can be setup in the "Preferences" dialog, in the "ibaCapture" tab, as explained in the "Preferences" chapter .

6.4.2   Including images in the report generator

Using the report generator, the user can include also still images in a report.

> **Note**
>
> We recommend booking an additional report generator training course at our company in order to learn how to use this complex tool. Please visit our website for training dates, availability and prices, or just call us.

ibaAnalyzer exports any visualized camera view to the report generator variables list, "Videos" branch, as shown below.
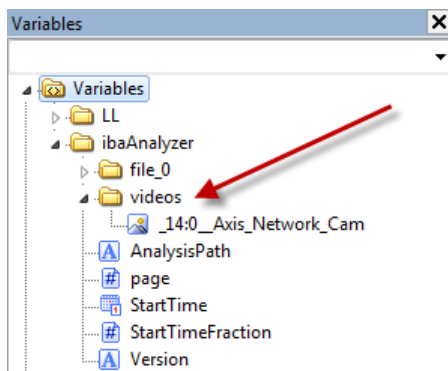
Figure 118: Available camera views in the report generator

Simply drag and drop the camera view on the layout (designer) window and position and resize the view as with a standard graph view.

Double-click the camera view to change its properties.
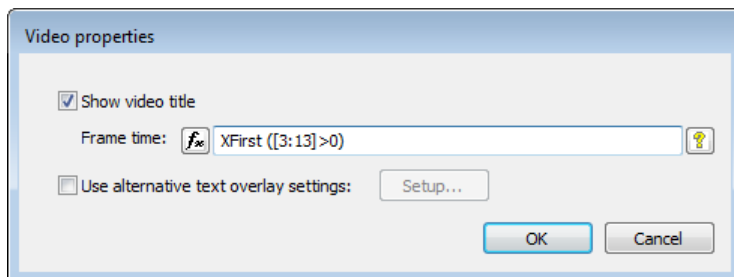
Figure 119: Camera view properties

In this property dialog, the user can decide to show / hide the video title.

In the "frame time" input field, an ibaAnalyzer expression can be entered. The result of this expression in seconds will be used to position the camera image on that timestamp. This timestamp is relative to the start of the oldest data file opened most recently in ibaAnalyzer.

Furthermore, if an overlay text is used in the camera view, the text settings used in ibaAnalyzer can be overridden by specifying new local settings here.

7 Installing the ibaCapture-CAM Server software

7.1 System requirements

Software

❑ Windows XP, Windows 7 (32 Bit), Windows 2003/2008 Server (32 Bit)

❑ Only Windows 7 (32/64 bit) supports the use of GigE cameras!

❑ NET Framework 4.0

❑ Intel HD graphics driver for hardware-accelerated encoding (for GigE cameras), see also "7.5".

Further documentation

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

Hardware

❑ For use with analog and/or IP-cameras

  ▪ IBM PC-compatible computer, Intel(R) Core(TM) 2Quad CPU, 2 GB RAM

  ▪ Frame grabber card type for analog cameras: PICOLO U4 H.264 or U8 H.264, depending on the motherboard as PCI-X or PCI express card

  ▪ Analog camera: Standard PAL or NTSC cameras (25 fps, 704 x 576 px)

❑ For use with GigE cameras

  ▪ IBM PC compatible computer, Intel Core-CPU of the 2nd generation or later (e.g. Intel Core i7-2x00K CPU)

  ▪ Intel HD graphics 3000 or later on CPU / graphics on board enabled,

  ▪ 4 GB RAM

  ▪ Motherboard with Sandy Bridge chipsets Q67, H67 or Z68 or later

  ▪ Network interface card (frame grabber)
    - either Matrox Solios GigE* (PCIe x4 slot needed)
    - or Intel® Ethernet Server Adapter I350-T4V2 (recommended) with license dongle for MIL Runtime

  ▪ Camera according to GigE Vision® standard

➔ For more information on supported cameras, see chapter *Supported cameras*, page 169.

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*ibaCapture-CAM versions up to 3.6 support only the Matrox Solios GigE card

Tip

If you want to watch live videos on the server computer (as usual during commissioning), you should ensure to use a graphic card, which is compatible with Direct-X 9 and has a minimum storage of 256 MB.

The following link shows you a limited list of compatible cards:

Link   : http://disneyinteractivestudios.custhelp.com/app/answers/detail/a_id/2820/~/video-car ds-compatible-with-directx-9.x-and-10.x-(windows-xp%2Fvista):

7.2   Preparatory settings under Windows 7 for GigE cameras

❑ User account control settings (UAC):
set notification level to "Never notify". When using Windows 7, you can open these settings by clicking on Start and entering "UAC" in the search box.
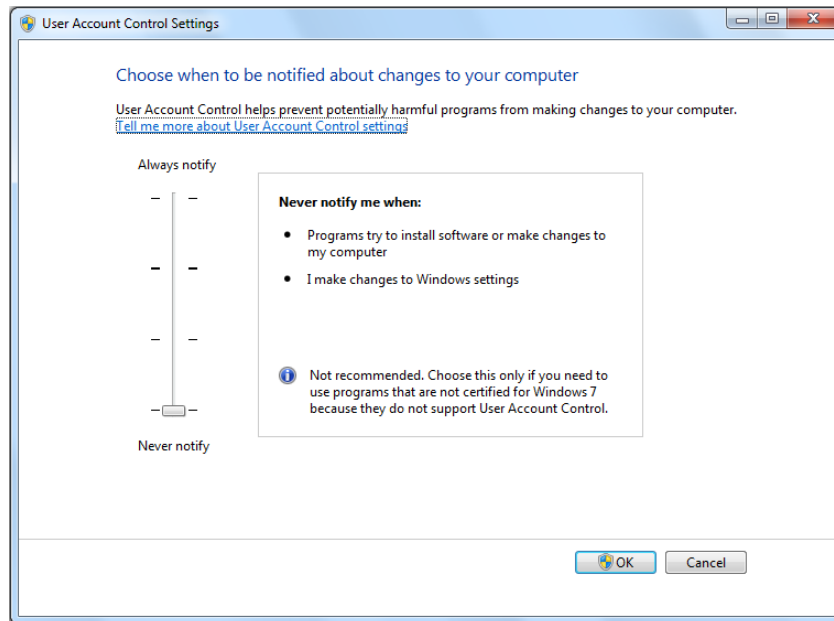
❑ User account for Auto-logon
Unlike ibaCapture-CAM Server, the iba video encoder program that is needed for hardware acceleration on video encoding, runs as a program and not as a service and thus requires a logged on user account.
In order to grant automatic restart of the system, create a user account, which automatically logs on at system start. The installation of ibaCapture-CAM Server puts the video encoder program automatically in the Windows autostart.

How to create a user account (local user) for Auto-logon under Windows 7

1. Click on Start, enter the command **netplwiz** in the search box and press <ENTER>. The dialog for the user account configuration opens.

2. In the "User" tab, uncheck the option "Users must enter user name and password".

3. Click on <Accept>.

4. When the dialog "Automatic login" opens, enter the user name for automatic login under Windows 7. Enter also the corresponding password.

5. Click <OK> and close the dialog "User accounts" by clicking <OK>.

How to create a user account for domain users

If the user is logged-in as domain user, the selection field „Users must enter user name and password" is not shown as default in the "User account" dialog and thus cannot be deactivated for individual users. If the appropriate setting has been done in the Windows Registry, the selection field is shown.

1. Click on the start button, enter the command **regedit** in the search field and press
    <Enter>.
    The Registry Editor is opened.

2. Navigate in the Registry Editor to the path
    „HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows
    NT\CurrentVersion\Winlogon
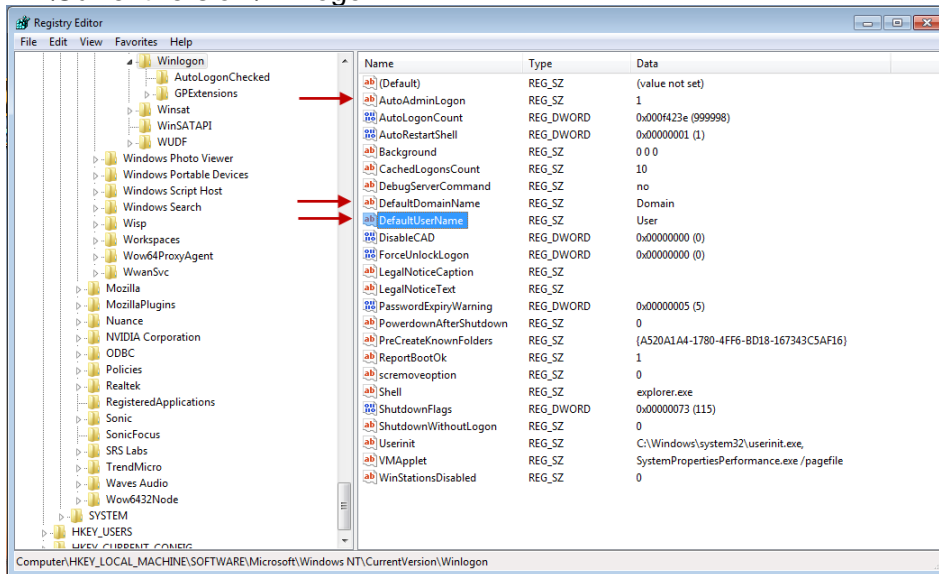
3. Change the value for "AutoAdminLogon" to 1.

4. Click again on the start button, enter the netplwiz command in the search field and
    press <Enter>.
    The dialog for configuring the user accounts is opened.

5. Select the user you want to log in automatically and deactivate the checkbox „Users
    must enter user name and password".

6. In the following dialog, you will be asked to enter the user password. Enter the
    password and confirm with <OK>.

7. Call once again the Registry Editor.

8. Change the setting for "DefaultDomainName" to the domain the user belongs to.

9. Enter under "DefaultUserName" the user that is to be logged in automatically.

10. Close the Registry Editor and reboot the computer. Now, the user should be logged
    in automatically.

7.3   Installing the Euresys driver (for PICOLO Ux H.264)

The installation of the driver is only required if you use frame grabber card models PICOLO U4 H.264 or U8 H.264 for analog cameras. If you do not use analog cameras, skip this installation.

1. Start the installation with the file "picolo-u4-u8-u16-h264-win-2.x.y.z-ds-driver.exe", which can be found on the DVD "iba Software & Manuals" included in delivery ("01_iba_Software\ibaCapture-CAM\02_Euresys_Framegrabber_Boards..."). You can download the file also from the Internet.
Run the file "picolo-u4-u8-u16-h264-win-2.x.y.z-ds-driver.exe".
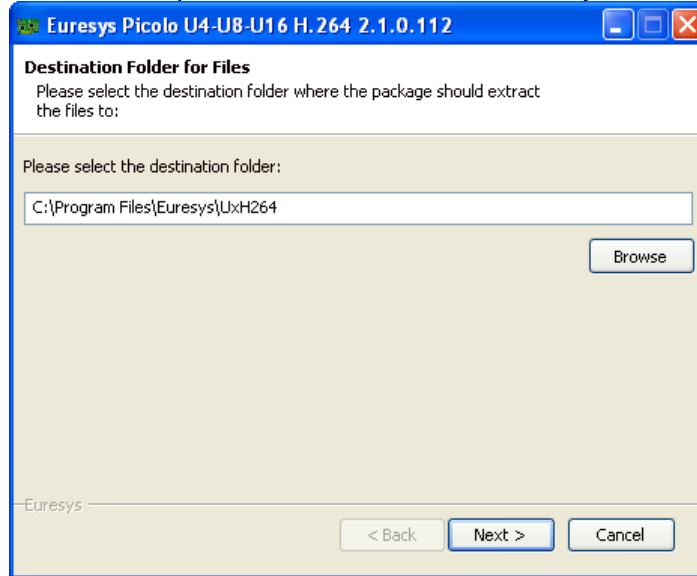
2. Specify the destination folder for the driver. Usually, the default target directory can be used. Click the <Next> button. The installation starts. If warning messages concerning security (unknown publisher) or Windows Logo test pop up, confirm that the software should be installed.

3. Finally, terminate the installation by pressing <Close> in the final dialog.

4. If requested, restart your computer.
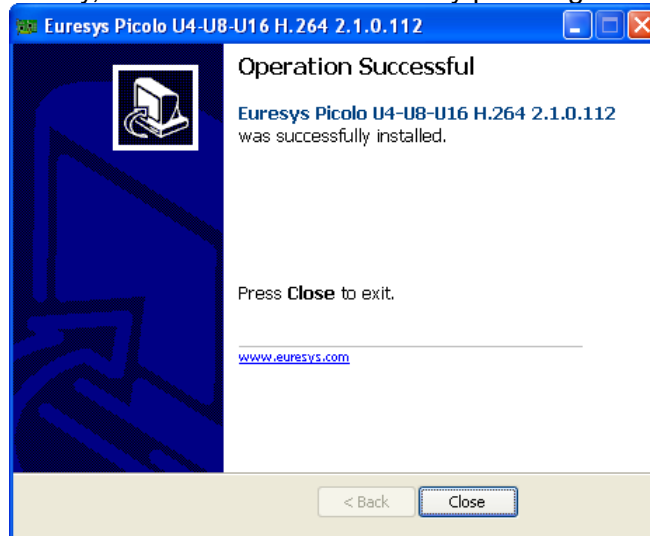
7.4   Installing the MultiCam driver

The installation of the MultiCam drivers is only required if you use frame grabber card models PICOLO Diligent for analog cameras. If you do not use analog cameras, skip this installation.

The Multicam Drivers package is started with the file "multicam-6.7.3.1740.exe".

1. Go to the "01_iba_Software\ibaCapture-CAM\02_Euresys_Framegrabber_Boards" directory and start the "multicam-6.7.3.1740.exe" file.
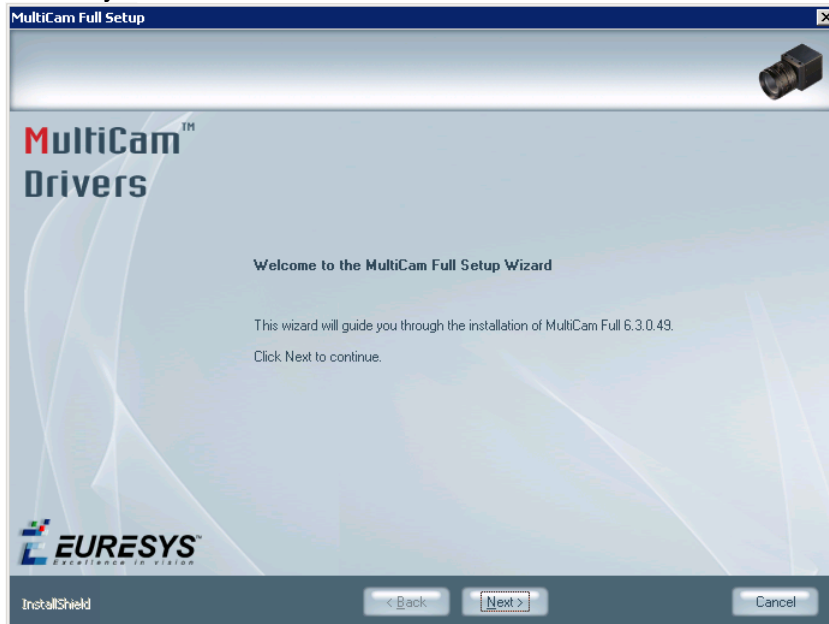
2. Click <Next>.

3. Select the "Runtime" option and click the <NEXT> button.
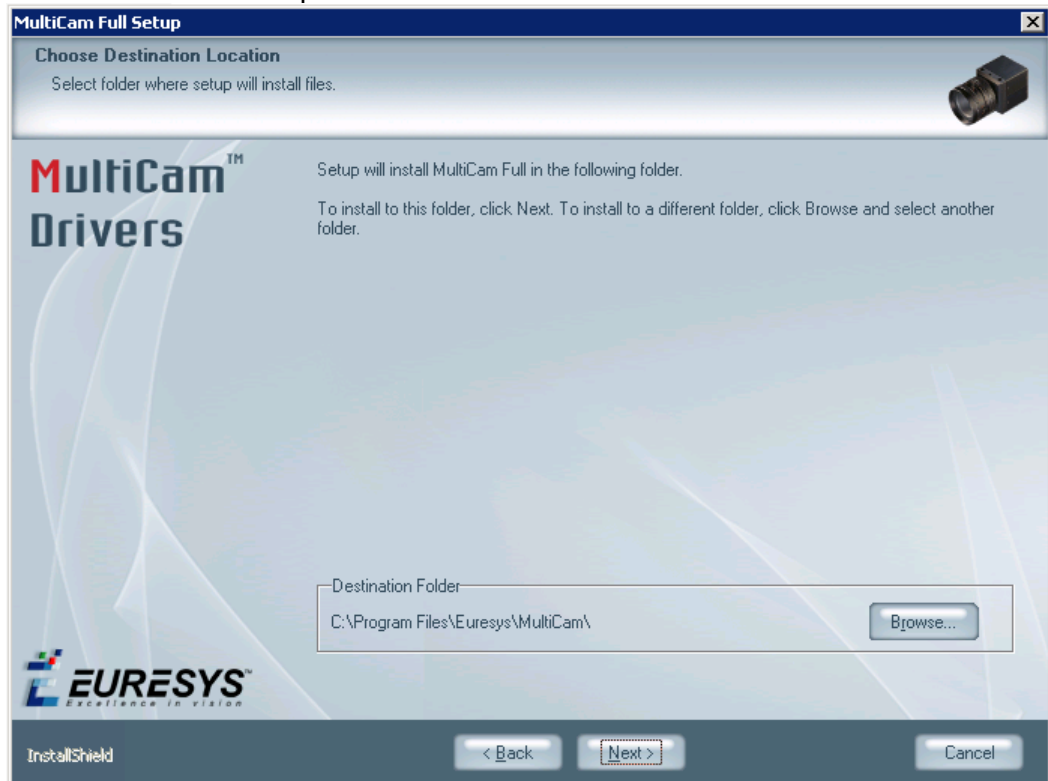
4. Specify the target directory (destination folder) for the MultiCam Driver. The default target directory can normally be used. Click the <Next> button.
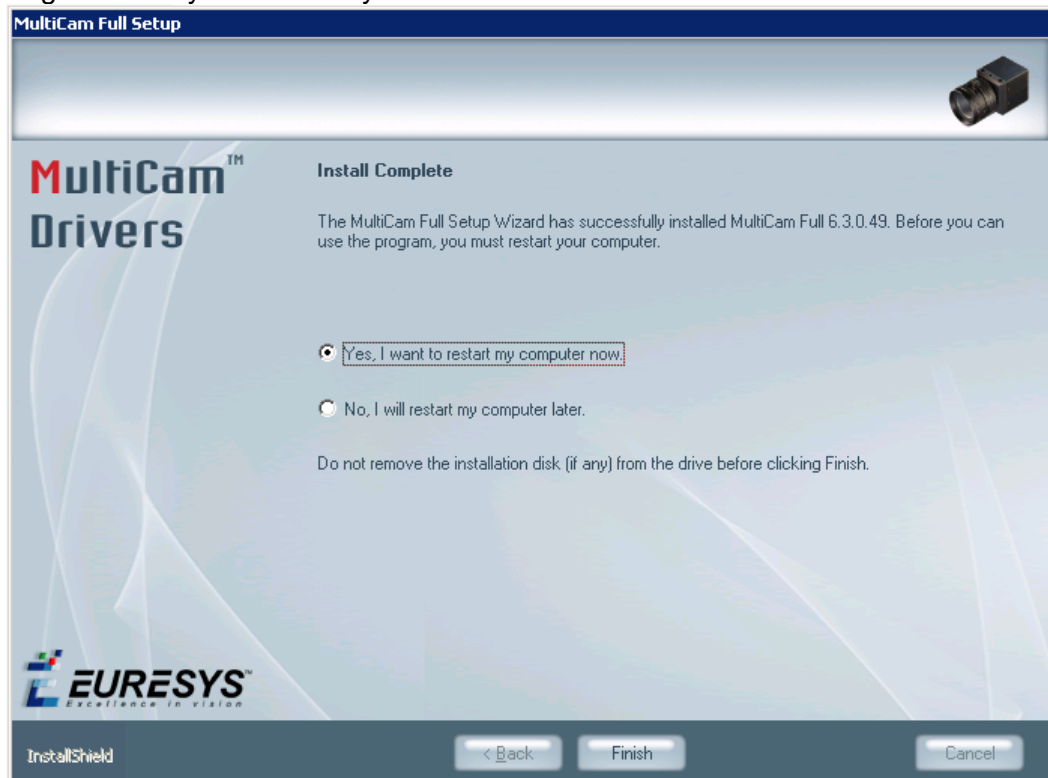
5. To complete the installation, click the <Finish> button and restart the computer.

7.5   Installation of the Matrox Imaging Library

The installation of the new version of MIL is only required if GigE cameras should be used. If you do not use GigE cameras, skip this installation.

Before installing the Library, install the network card (either of the Matrox Solios GigE-type or Intel® Ethernet Server Adapter I350-T4V2) on the server. Pay attention to all safety instructions of the card manufacturer!
You can also install the card after having installed the Library. In this case, you might have to reboot the computer.

You find the MIL package on the "iba Software & Manuals" DVD, which is included in delivery.

Insert the DVD in your computer and follow these steps:

1. Go to the directory
01_iba_Software\ibaCapture-CAM\03_Matrox_Imaging_Library_MIL\MILv10" and then - depending on the computer architecture - to the 32-bit or 64-bit directory.
Start the "setup.exe" file.
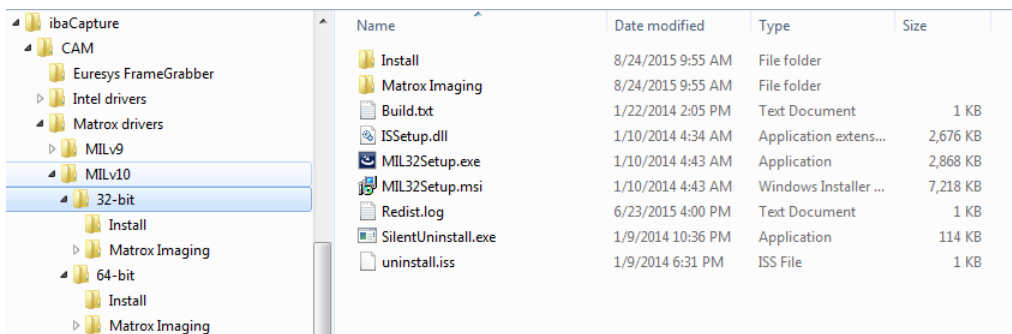
2. Keep the "Intellicam" component enabled.
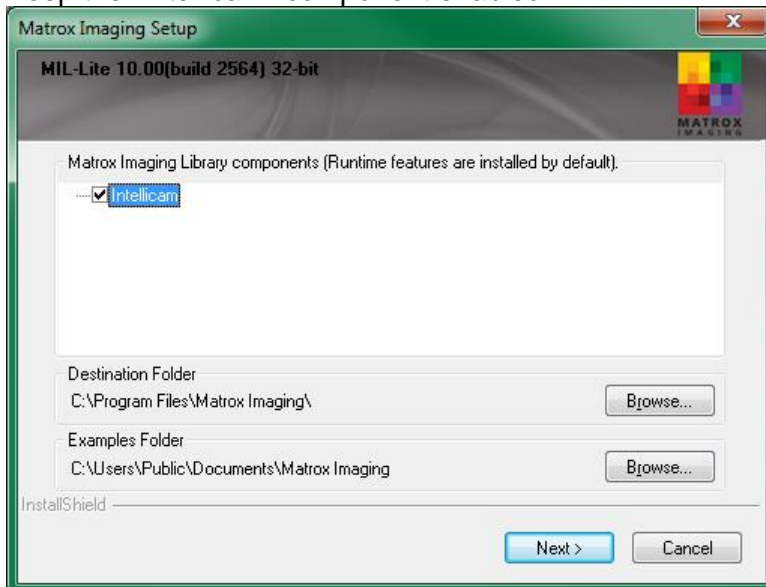
3. If you like, you can specify another target directory for the drivers. The default directory can normally be used.

4. Click on <Next>.
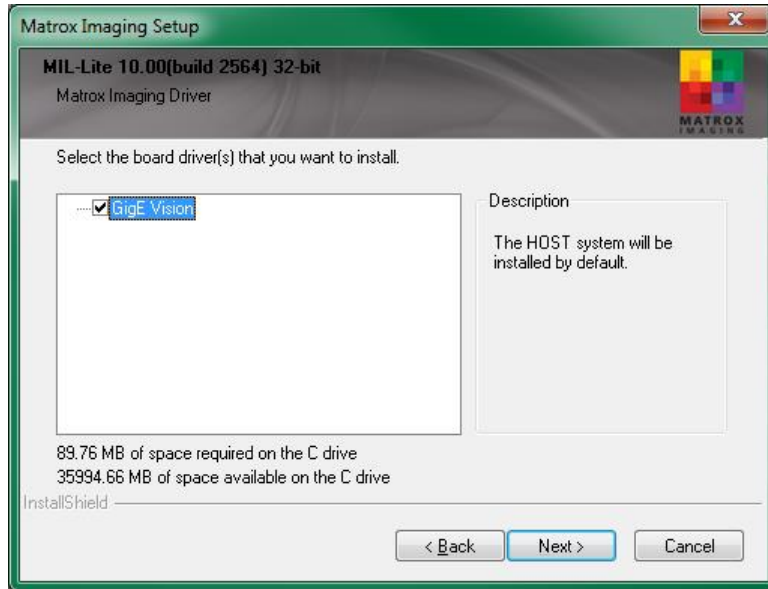
5. Select GigE vision and click on <Next>.
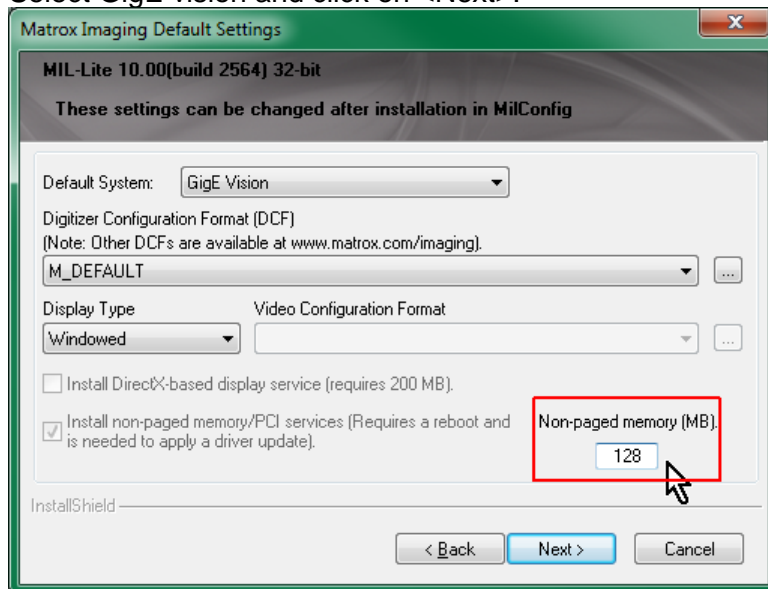
6. Then, the default settings for the GigE Vision system are shown. Change the value for "Non-paged memory" to 128 MB.

7. Click on <Next>.
Now, several drivers are installed.
Since the Solios card contains 4 NIC (network interface cards), many drivers and filter drivers need to be installed.
The installation may be interrupted several times by security warnings.

8. If a Windows security warning appears, check the option „Always trust software from "Matrox Electronic Systems Ltd." and click on <Install>, to continue installing these drivers, even if they are not signed
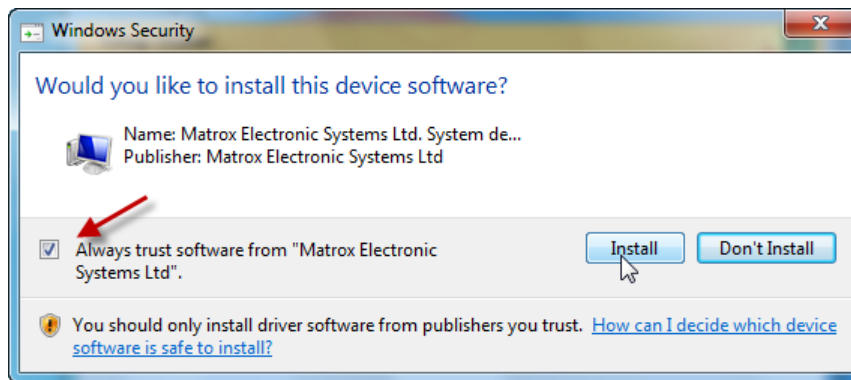
After the drivers have been installed successfully, the following dialog appears.

9. Select "Yes,..." and click <Finish> to complete the installation and restart your computer.

7.6   Installation of Intel Graphics Driver Software

The installation of the Intel graphics drivers is only required if you use GigE cameras. If you do not use GigE cameras, skip this installation.

These drivers are needed for hardware acceleration on video encoding.

The Intel Graphics Driver software is included on the DVD „iba Software & Manuals" included in delivery. Depending on the used processor and operating system on the PC, select the corresponding folder with the appropriate installation file:
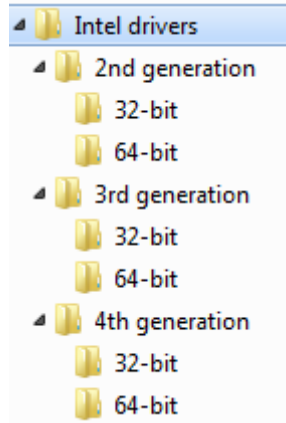
Insert the DVD in your computer and follow these steps:

1. Go to the appropriate folder and start "Winxx_yyyyyy.exe".

2. Click <Next>.

3. Follow the instructions and click <Next>.
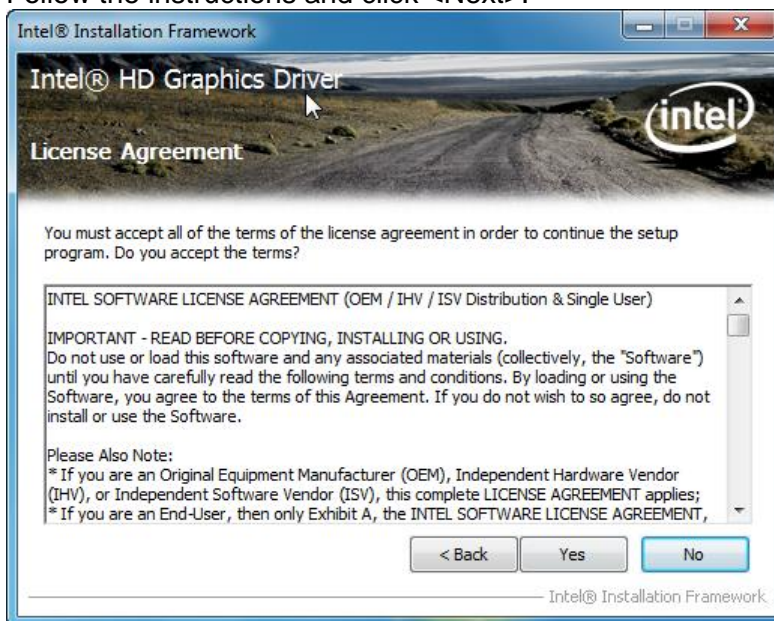
4. Confirm the license agreement by clicking on <Yes>.
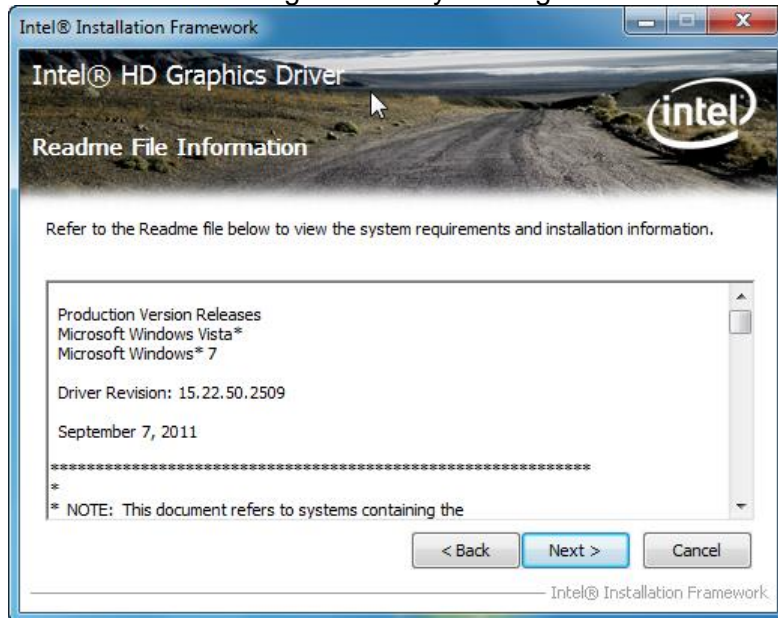
5. Click <Next>.
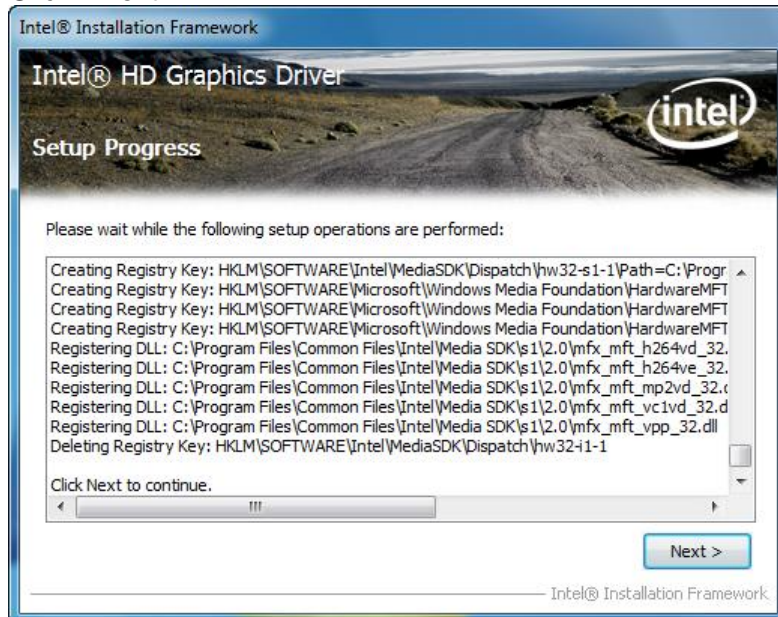
6. The driver files are being copied to your hard disk. Afterwards, click <Next>.
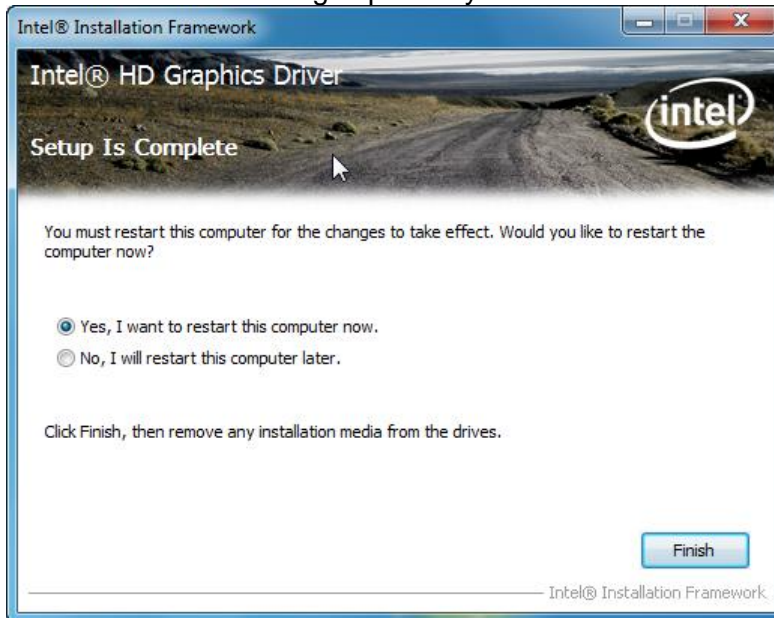
7. Click <Finish> to complete the installation and restart your computer.

7.7   Installing ibaCapture-CAM Server
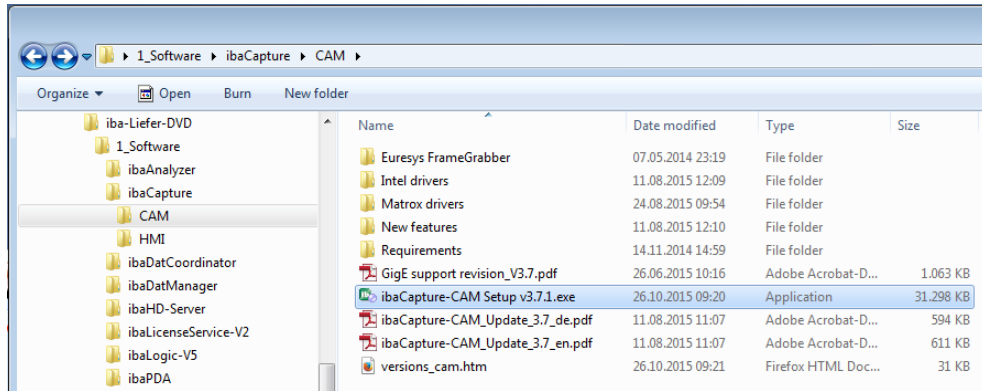
1. To install ibaCapture-CAM Server, execute the file "ibaCapture-CAM Setup v3.x.y.exe" in the directory "\1_Software\ibaCapture\CAM" on the installation disk.
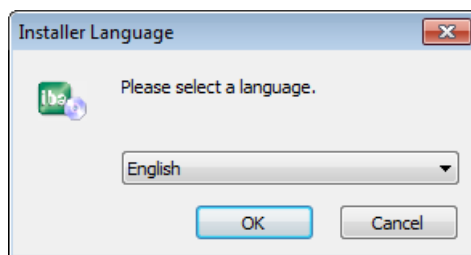
2. Select the desired language for installation and click the <OK> button.
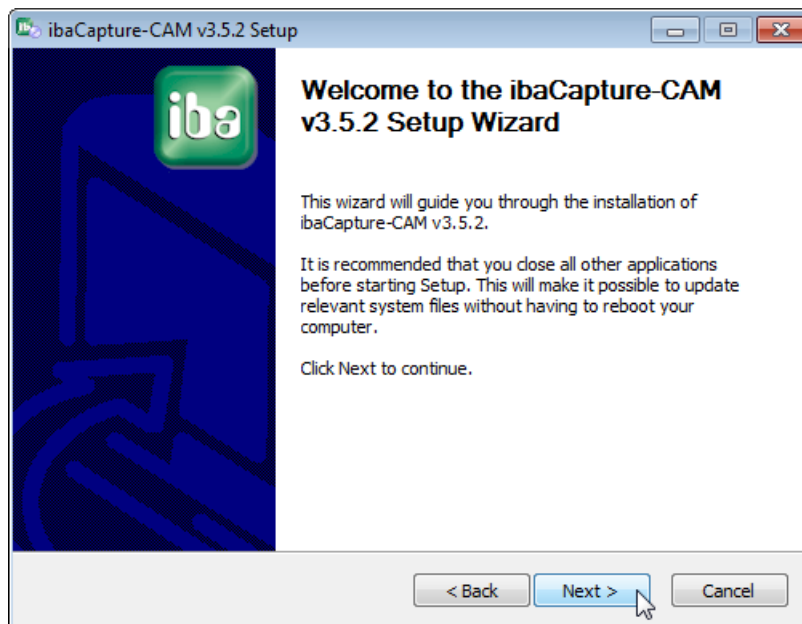
3. Click on <Next> to execute the installation wizard.
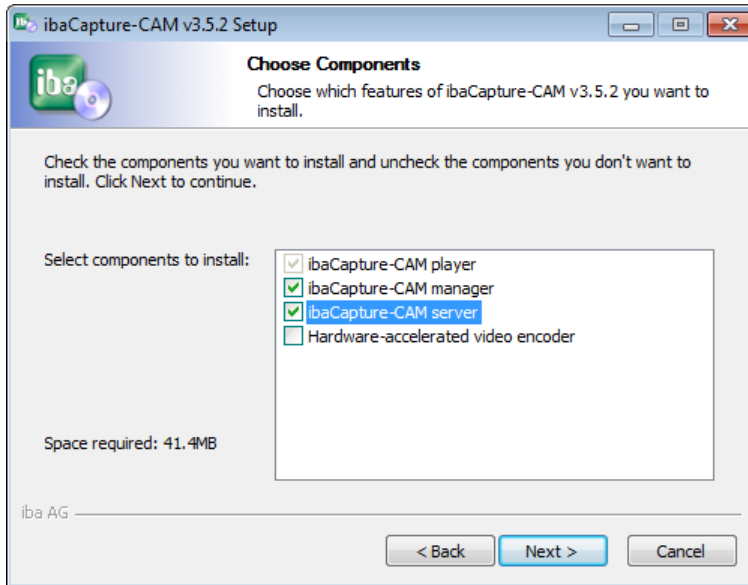
4. Select the components you wish to install on the computer.

- If you want to install ibaCapture-CAM Server, all components must be checked.

- If you want to install ibaCapture-CAM Manager only, uncheck the server component.

- If you want to install ibaCapture-CAM Player only, uncheck the server and manager components.

- A forth option "hardware-accelerated video encoder" is available with Windows 7. Check this option only if you plan to use GigE cameras.

5. Click on <Next> to continue.
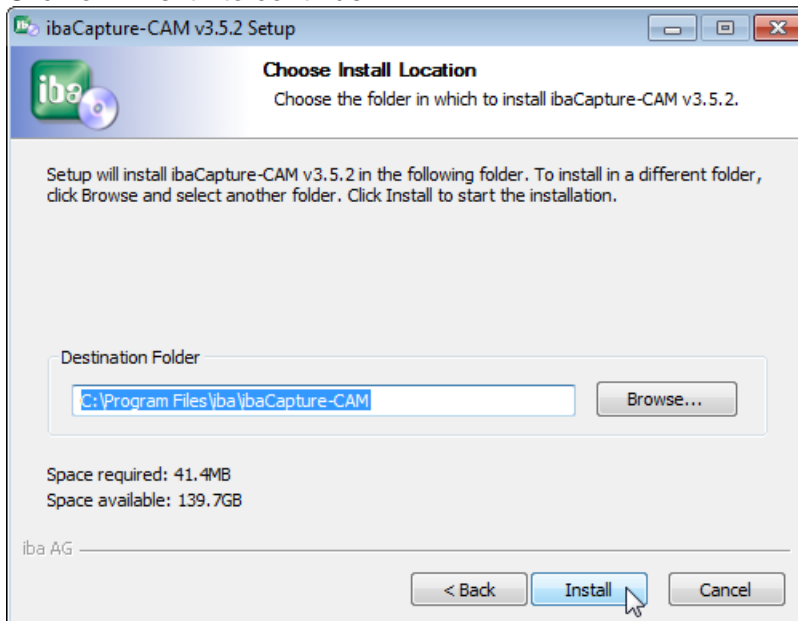
6. Specify the target directory for ibaCapture-CAM Server. The default target directory can generally be used. Click the <Install> button to start the installation.
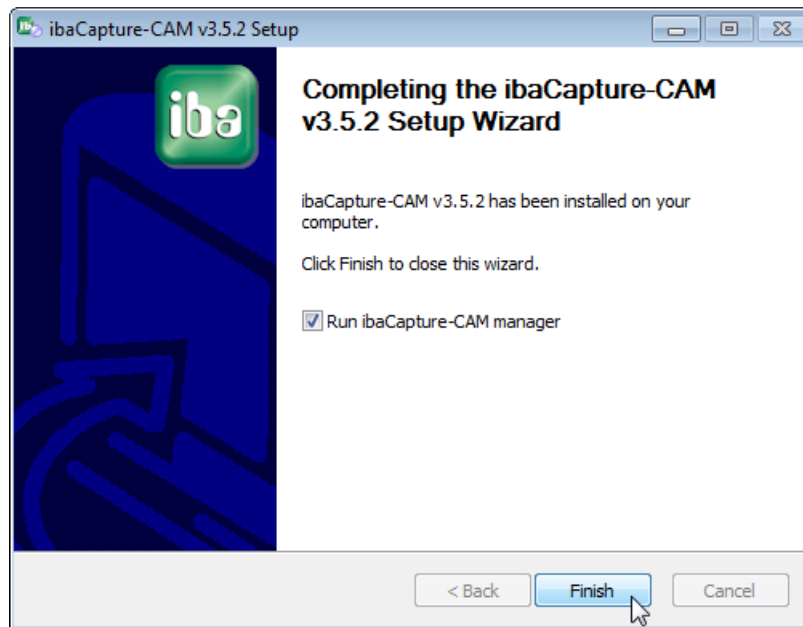
7. Click the <Finish> button to complete the installation.

7.8   Installing ibaCapture-CAM Server via command line

When executing the installer via the command line you may use several command line switches.

On the command shell prompt enter the name of the installer executable in quotes, followed by a blank and one of the following switches:

Switch	Function
/S	silent installation without user interaction (equivalent to pressing the <Next> button on every page without changes)
/manager	install ibaCapture-CAM Manager
/server	install ibaCapture-CAM Server and Manager
/encoder	install Encoder, ibaCapture-CAM Server and Manager

Table 6:   Command line switch for installer

Figure 120: Starting the installer via command line

7.9   Installing the USB dongle driver

The license of the video server is stored in a USB dongle, which is part of the delivery when purchasing a video server system. Generally, the USB dongle driver is installed with installation of ibaCapture-CAM Server. However, in rare cases it may be necessary to install the USB dongle driver again or separately, e. g. when the USB dongle is not detected.

1. In order to install the driver, execute the "CBUSetup.exe" file in the "\1_Software\ibaPDA\" folder on the DVD „iba Software & Manuals".

2. Select CRYPTO-BOX USB as hardware and click <OK>.

7.10   Special considerations when updating to ibaCapture-CAM V3.7

Note

This chapter is only relevant, if you use GigE Vision compatible cameras. All other users can upgrade to ibaCapture-CAM V3.7 just as they are used to by starting the installation program.

When upgrading to ibaCapture-CAM V3.7, pay attention to the measures described hereinafter and observe the given order, because there are many dependencies between the individual components that participate in processing video from GigE cameras.

Step 1:   Adapt the BIOS settings of the mainboard

The used network card (either of the Matrox Solios GigE or Intel® Ethernet Server Adapter I350-T4V2 type) for recording the video pictures works best, if certain BIOS settings related to energy saving are disabled. The following settings are relevant:

❑ ASPM
These are energy saving measures for PCI Express devices. Depending on the mainboard, this function can be enabled/disabled globally or for each individual slot. The function has to be disabled at least for the slot in which the network card is installed.

❑ Intel Speedstep
This technology allows to reduce the clock rate of the CPU during phases of low load. This function has to be disabled. (Sometimes called in the BIOS "EIST", Enhanced Intel Speedstep Technology").

❑ ACPI CPU C-States
C states can be set by single CPU cores to save energy. This function has to be disabled.

For PCs delivered by iba that have mainboards of Fujitsu or Supermicro installed, we describe at the end of this chapter, where the individual settings can be found.

If you use another PC, please see the device documentation.

Step 2:   Save the current configuration of ibaCapture-CAM

To make sure the configuration is available after uninstalling and installing ibaCapture-CAM, save the current camera configuration.
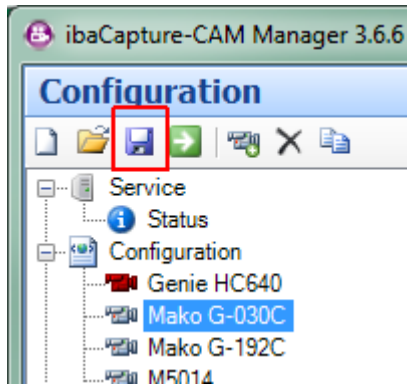
For this purpose, click on the disk symbol in the configuration view. Select a target directory in the dialog that is opened now. The configuration is saved in the XML-format.

Thus, the configuration is available as reference, in case settings should be missing after the upgrading process.

Step 3: Uninstall ibaCapture-CAM

The uninstallation process can be started via "Start menu - All programs - iba - ibaCapture-CAM - Uninstall". All programs (ibaCapture-CAM Encoder) and services (ibaCapture-CAM Server) are stopped. This is a requirement for the next step.

Step 4: Uninstall Matrox Imaging Library (MIL) v9

Matrox Imaging Library (MIL) is used by ibaCapture-CAM to access GigE cameras which are GenICam compliant. With the upgrade to ibaCapture-CAM 3.7 it is necessary to replace the currently used MIL version with a more recent one.

First of all, the MIL needs to be uninstalled. Open the start menu and type "programs" into the search field.
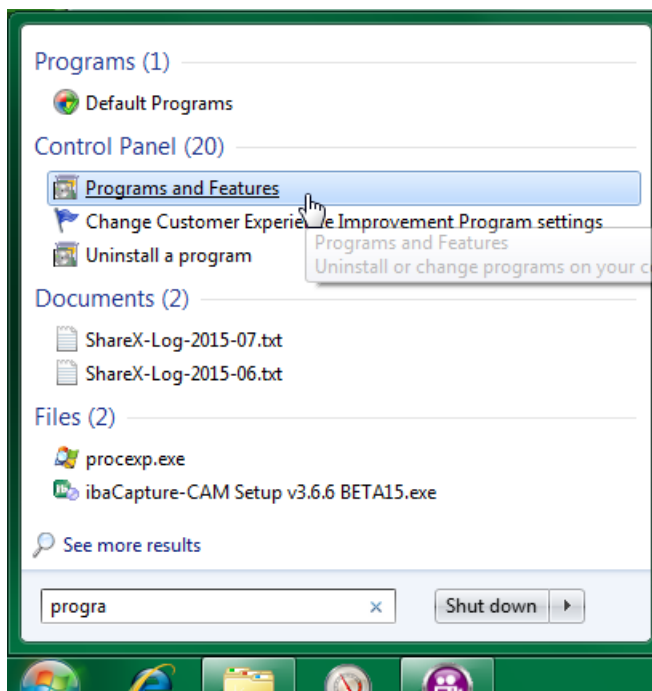
The result list contains "Programs and Features". After clicking this item, a window listing all installed software packages is opened.
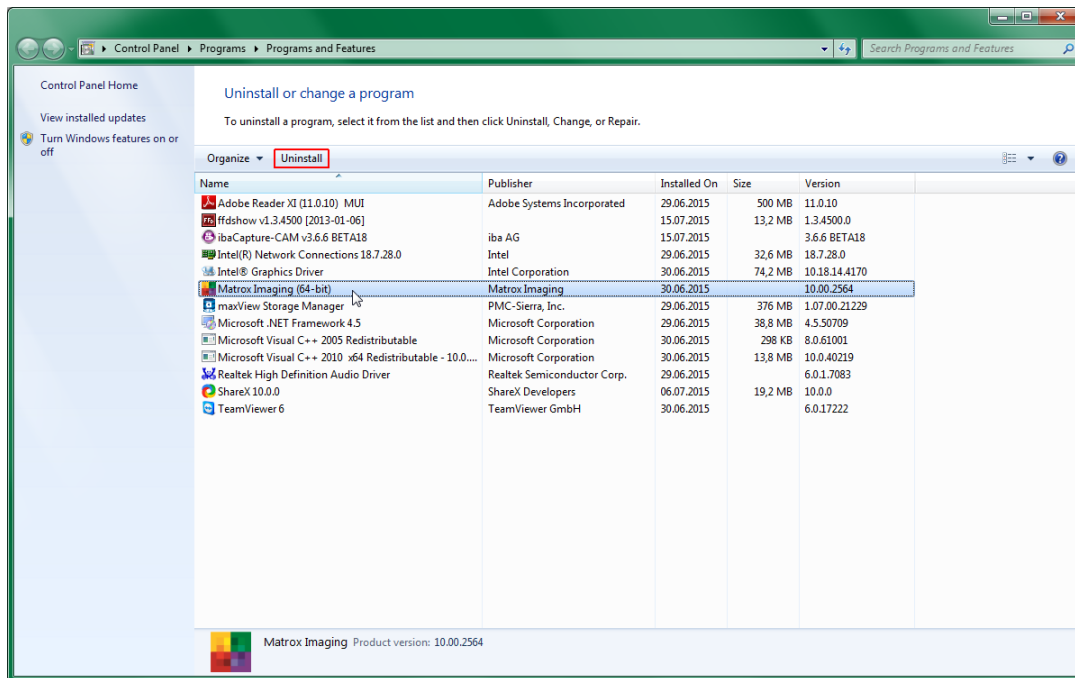
Select "Matrox Imaging" and click on <Uninstall>. Confirm the steps in the following dialogs. After the process is finished you are prompted to do a reboot. Reboot the computer.
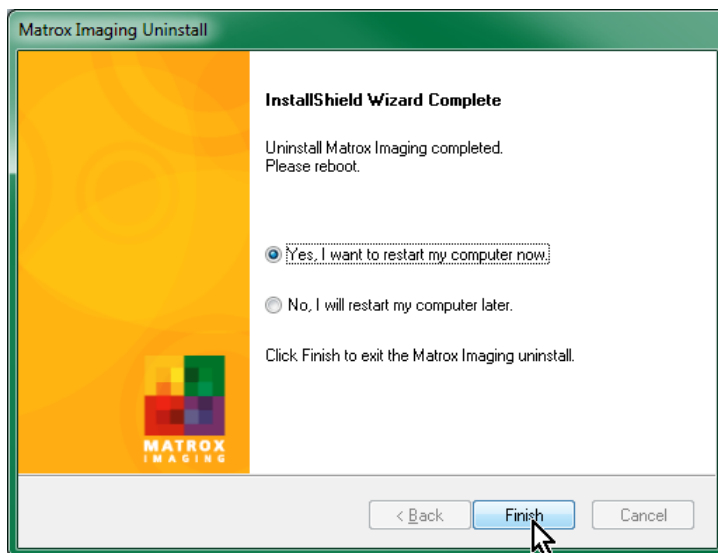
Step 5: Perform update of the graphics drivers for Intel HD graphics

To encode images delivered from GigE cameras as raw data, hardware acceleration on integrated Intel HD Graphics is used. As drivers for graphics adapters are constantly improved for performance and reliability it's necessary to install the latest drivers for the installed graphics chip.

First of all, you need to identify the exact type of Intel HD Graphics chip available in your system. For the systems delivered by iba AG, this is either "Intel HD Graphics 3000" (earlier than 08/2014) or "Intel HD Graphics 4600" (later than 08/2014).

To obtain the latest driver, visit the Intel website (www.intel.com) and download the appropriate driver in the support section.

Now, start the installation. Reboot the system when the installation has been finished.

Step 6: Install Matrox Imaging Library (MIL) v10

As a prerequisite to access GigE cameras, the new version of MIL now needs to be installed on the system.

The installer files are provided by iba. After having logged in on the iba website (*www.iba-ag.com* (*http://www.iba-ag.com*)), you find the installation packages under http://www.iba-ag.com/de/support/downloads/tools/.

Download the correct installer for your architecture (32 or 64 bit) and execute it.

In the following window, check "Intellicam" and click <Next>.
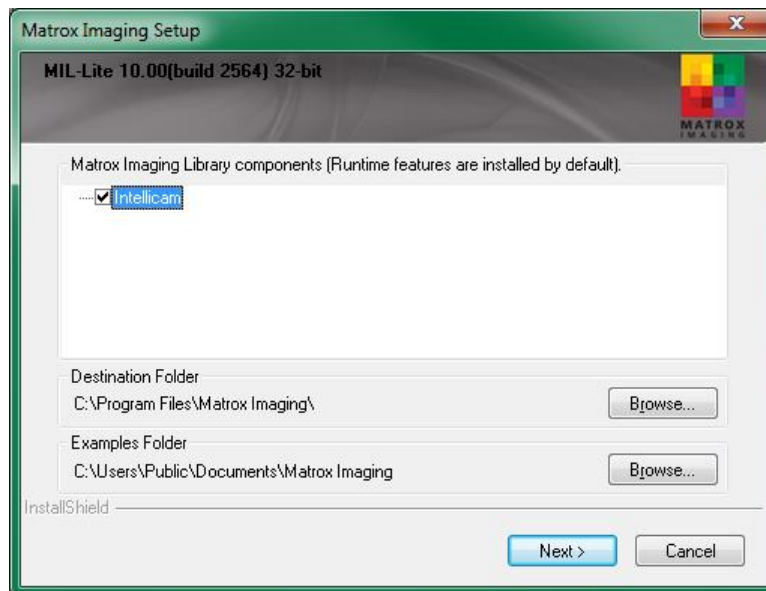
In the next step, check "GigE Vision" and click <Next>.
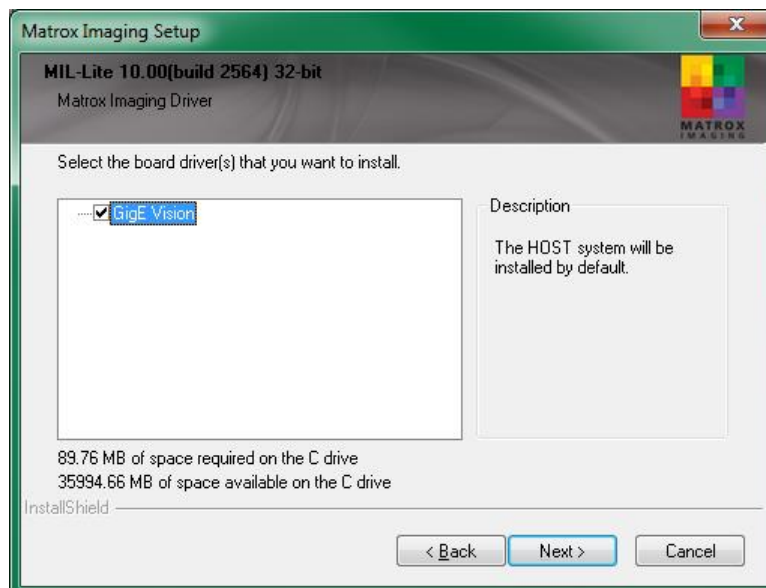
Following this step, the default settings for the GigE Vision system are shown. Change the value for "Non-paged memory" to 128 MB and proceed.
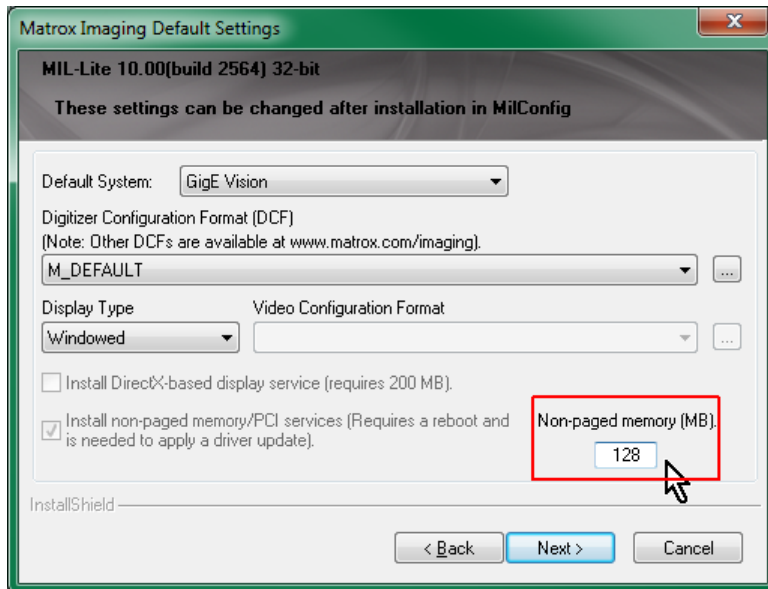
After clicking <Next>, the installation process is performed. Depending on the system configuration, you might need to confirm the installation of certain Matrox device drivers.

When the installation is finished, a final system restart is required.

With this step, all requirements for installing ibaCapture-CAM are met.

Step 7: Install ibaCapture-CAM V3.7

After the restart, the installation of ibaCapture-CAM 3.7 can be performed as usual. Please make sure that all four components (Player, Manager, Server, Encoder) are enabled in the according step.

After the successful installation, open ibaCapture-CAM Manager.

Step 8: Adapt configuration of the GigE cameras

The changes in GigE Vision support partially affect camera configurations.

To confirm that the settings are still valid, open all camera configuration views.
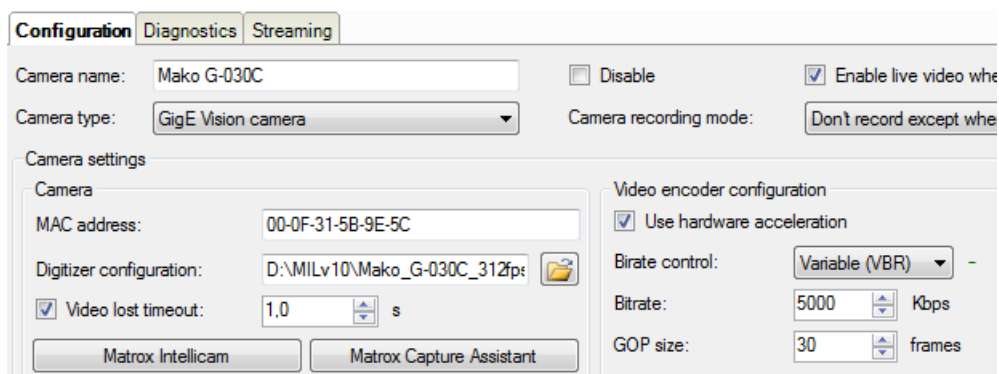
First, check whether the MAC address is still correct. You can display a list of connected cameras with "Matrox Capture Assistant". This tool also allows to read the connected cameras' MAC addresses.

If you leave the textbox "Digitizer configuration" empty, the camera will be used with its default settings. The camera configuration settings for frame rate and image size which were available in previous versions have now been removed from ibaCapture-CAM. If you need to change these settings you now have to specify them in a dcf file using "Matrox Intellicam" (refer to the following chapter). If you enter a dcf file as digitizer configuration and this configuration is applied by ibaCapture-CAM Server, the camera is used according to the settings in the dcf file.

Step 9: Create a dcf-file with Intellicam v10

Start Matrox Intellicam by clicking the <Matrox Intellicam> button. This causes the ibaCapture-CAM Encoder program to pause as concurrent access to cameras by multiple applications is not possible.

A new dcf file can be opened via the menu "File" - "New".
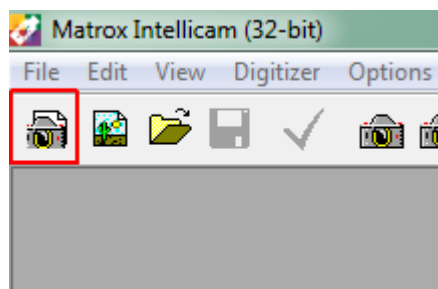
Choose "GigE Vision" in the following dialog and click <OK>.
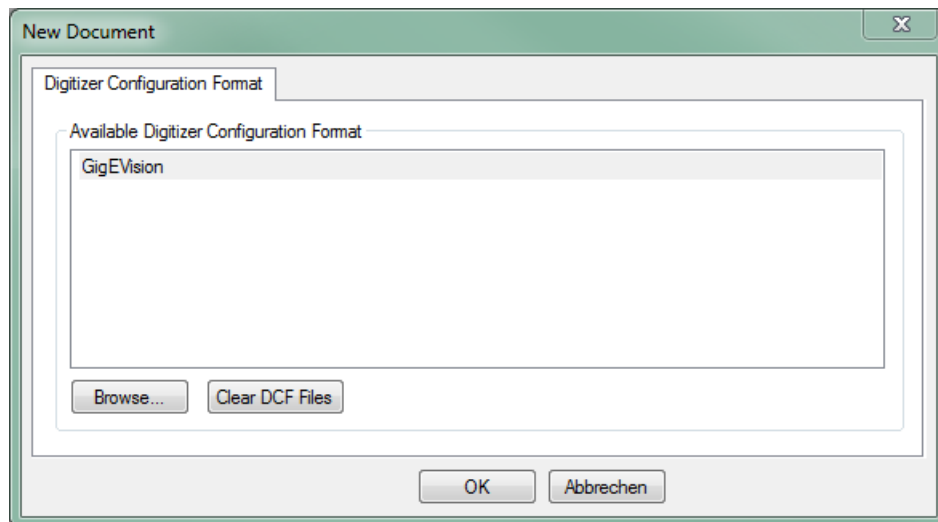
A window where all connected cameras can be configured is displayed.
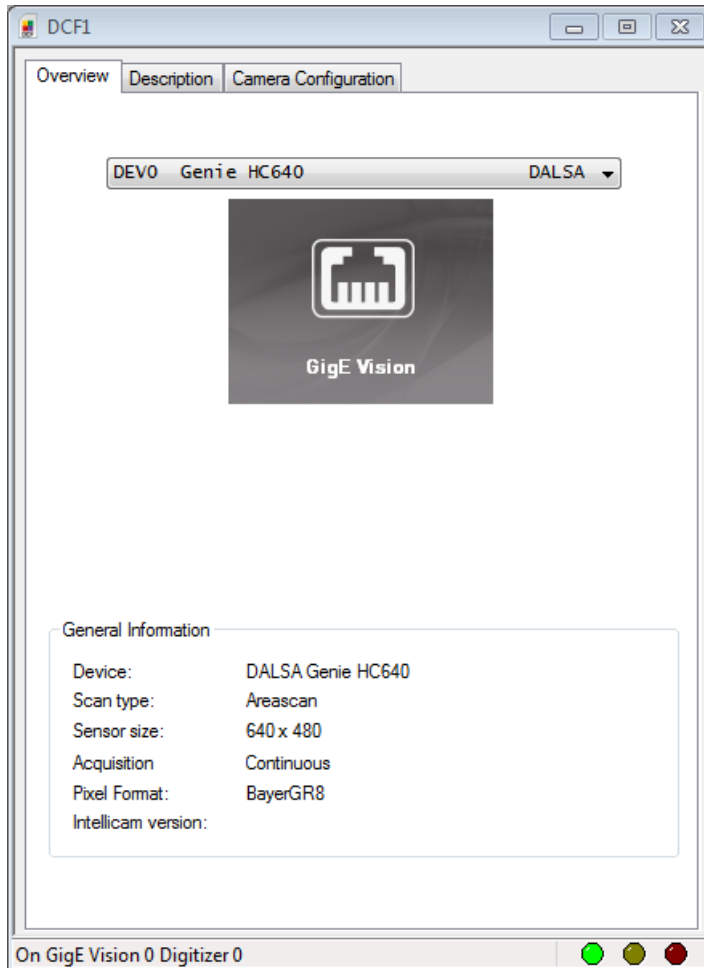
Select the camera you wish to configure from the drop-down list and switch to the "Camera Configuration" tab. For a new dcf file, the list of settings is initially empty. To test whether the ibaCapture-CAM camera is working, you can display the camera's image. There are a few icons in the toolbar to access the according functions.

A "single grab" can be done with the first button on the left . To display a continuous grab, click the third button . While the feed is displayed, the <Stop> button is enabled and stops the frame grabber, when clicked.

To show the feature browser which displays all features of the selected camera, click on the right-most icon .

Each camera has different settings. Some of the settings are limited due to dependencies on other settings. E.g. the exposure time cannot be longer than the time between two images, so if the camera records images at 100 fps, the theoretical maximum exposure time would be 10 ms.
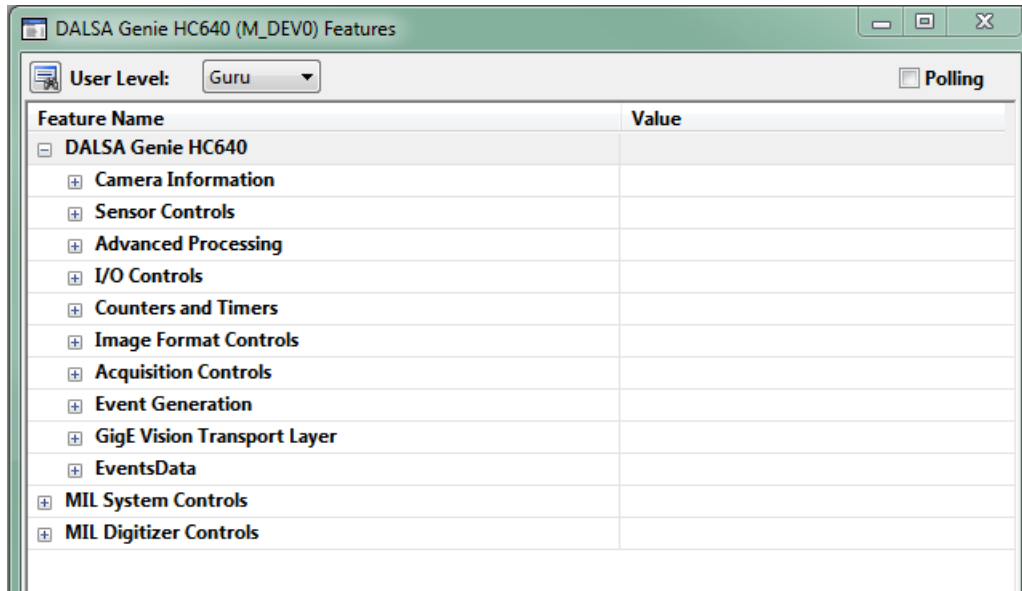
The camera's settings can now be changed in the feature browser when the camera is currently not streaming images. A typical error source for missing images is the setting of the "Trigger Mode", that can be found for this camera under "I/O Controls" - "Trigger Selector". If there is no external trigger signal connected to the camera, the trigger mode setting must be "Off".

The most common settings are image dimensions (width, height) and frame rate. After adjustments have been made in the feature browser, the camera image has to be restarted for checking the consequences.

For the settings to be applied to the dcf file, the checkbox "Recording Mode" has to be enabled in the previously selected "Camera Configuration" tab. Then, you can see with every change in the feature browser that the values are adopted in the dcf configuration.

When all settings have been done, the dcf file can be saved under "File - Save as". This file has then to be selected in the camera configuration of ibaCapture-CAM as digitizer-configuration. The configuration has to be revalidated on ibaCapture-CAM Server.
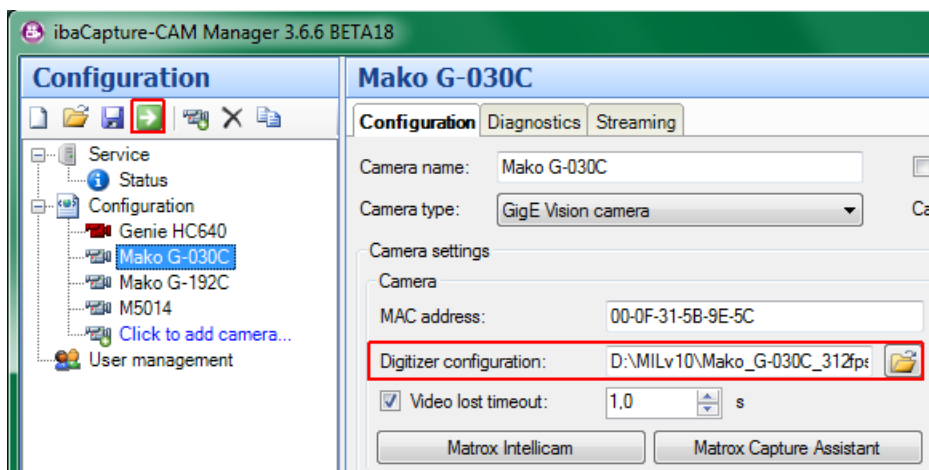
Using these steps you can set up each camera in the same way it was configured in previous versions of ibaCapture-CAM.

If you have further questions, please contact the iba support.

BIOS settings

The following mainboards were delivered in ibaCapture-CAM Rackline server systems.

Fujitsu D3076

❏ Switch off ASPM:

- ▪ Advanced - PCI Subsystem Settings - ASPM Support
  Change this setting to "Disabled".

❏ Swicth off Speedstep and C-States:

- ▪ Advanced - CPU Configuration - Power Technology
  Change this setting to "Custom".

- ▪ Advanced - CPU Configuration - Enhanced SpeedStep
  Change this setting to "Disabled".

- ▪ Advanced - CPU Configuration - Package C State limit
  Change this setting to "C0".

Leave the BIOS-setup and save the values.

Supermicro X10SAT

❏ Switch off ASPM:

- ▪ Advanced - Chipset Configuration - System Agent (SA) Configuration - PCIe Configuration - CPU_SLOT4 PCI-E 3.0 X8 (IN X16)- ASPM
  Change this setting to "Disabled".

- ▪ Advanced - Chipset Configuration - System Agent (SA) Configuration - PCIe Configuration - CPU_SLOT2 PCI-E 3.0 X4 (IN X16)- ASPM
  Change this setting to "Disabled".

❏ Switch off Speedstep and C-states:

- ▪ Advanced - CPU Configuration - EIST
  Change this setting to "Disabled".

- ▪ Advanced - CPU Configuration - CPU C States
  Change this setting to "Disabled".

Leave the BIOS and save the values.

8   Supported cameras

Important note

MOBOTIX IP cameras are no more supported by ibaCapture-CAM.

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-CAM, cannot be completely listed here.

The introduction of the ONVIF standard has significantly extended the range of usable cameras and yet there can be compatibility problems.

Please contact us in case of doubt whether the camera you want to use is suitable or send us a camera for test purposes.

8.1   AXIS

8.1.1   IP cameras and converter

❑ P13 series (several types were tested, e.g. P1311, P1343)

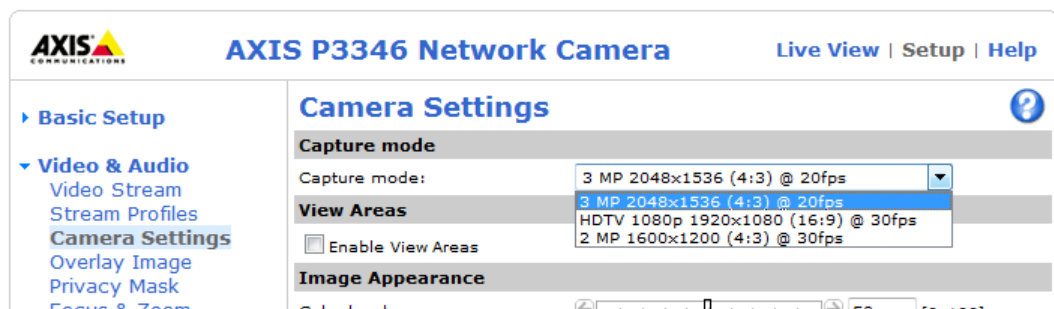❑ M7001 (video encoder): converts an analog camera into Axis IP camera

Figure 121: Video encoder M7001

❑ P3346

Note

For the model P3346, the recording mode must be set via web interface. The capture mode defines the maximum resolution and the frame rate.

Note

If you like to use other recent types of cameras, please contact us for further information on the compatibility or send us the camera for testing.

❑ Video converter Q7404
Each of the 4 channels gets its own IP address. Initially, a root password and, if needed, a fixed IP address has to be configured for each channel.

8.1.2 Information on the operation as ONVIF compatible device

ONVIF activation on AXIS cameras

By default, ONVIF and VAPIX are activated by the manufacturer. If the device is accessed with VAPIX first (usually via the web interface of the device), ONVIF is automatically disabled.

For devices with firmware version 5.40 or higher, ONVIF access is disabled as soon as the "root's" password was configured. To enable ONVIF, the user has to be added as ONVIF user in the device configuration under "System Options – Security – ONVIF".

The firmware of devices with firmware versions < 5.40 should be updated, if possible. For further information, see:

*Web   link:
http://www.axis.com/techsup/faq/index.php/index_axis.php?action=artikel&cat=146&id=
115393&artlang=en*

Replay attack protection

AXIS cameras have the "Enable replay attack protection" option activated by the manufacturer, blocking the access to the camera via the ONVIF interface. For using it with ibaCapture-CAM, this option must be disabled!

To disable the option, open "System Options – Advanced – Plain Config" in the camera menu and select the "WebService" group. Remove the checkmark in the "Enable replay attack protection" check box and click <Save>.

8.1.3 AXIS demo room in the web

You can test the compatibility of most of the AXIS cameras yourself by going to the online AXIS demo room.

This is how it works:

1. Go to *Web link: http://www.axis.com/camerademo/* in your web browser

2. Scroll down and select the camera to be tested.
Not all cameras are available, however, usually at least one model of every series is available. The cameras of a product group often only differ in terms of resolution. So if one camera works, probably the others work as well.

3. Click on the camera.
After the connection is established, you should see the video image of the camera in the browser. It might be required to install the AXIS Media Control Plugin.
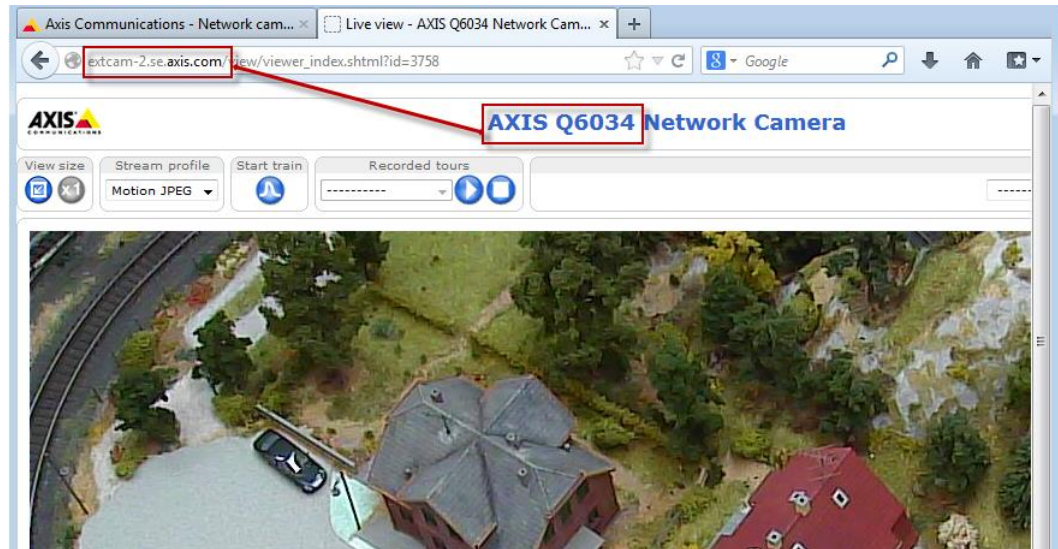
4. Copy the camera's DNS name from the URL line to the clipboard, in this example **extcam-2.se.axis.com**.

5. Now switch to ibaCapture-CAM Manager and add an AXIS IP camera to the configuration.

6. Paste the DNS name of the camera from the clipboard to the "Camera address" field (without http://).

7. Click on the <Check camera access> button.
   Now, the camera model and firmware should be displayed in green letters. This confirms the accessibility of the camera via the web. If this fails, check the DNS name and Internet connection.
   Login name and password are not required.

8. Set the transmission protocol to "Unicast over RTSP over HTTP(TCP)".

9. Let ibaCapture-CAM Server apply the configuration and wait a moment. The camera might be accessed by different users at the same time, so it might take a while until an image appears.

8.2   CNB (compatible) network cameras

❑   Tested cameras:

    ▪   Geutebrück EcoBC-1110 IP

8.3   Sony network cameras

❑ Implementation and testing with SNC-RZ25P

❑ The camera has to provide either an MPEG4- or H.264-encoded stream for ibaCapture-CAM to support it.

Note

In the course of the implementation, numerous cameras were tested via Sony's live demo website. On request, we can make available the complete list, however, due to the product development of Sony, it is not up to date in part.

You can directly connect to the Sony Demo Room via the
Sony Security Solution Portal
Web link: https://www.security.sony.biz/ssp/livedemo.do if you want to test a certain camera. You will have to register to gain access.

If you found a camera, you can copy the IP address from the link and paste it to the camera configuration of ibaCapture-CAM to test the camera. Since the cameras are administered by Sony, the camera settings usually cannot be changed. Some cameras were setup for JPEG or Motion JPEG which is not supported by ibaCapture-CAM. So these cameras cannot be tested.

The following table shows some examples of camera models of the 5th generation tested by us.

Model	Codecs	Test result
SNC-ER580	H.264	OK
SNC-CH110	H.264	OK
SNC-CH140	MPEG-4	OK
SNC-CH160	H.264, MPEG-4	OK
SNC-CH210	H.264	OK
SNC-CH220	H.264	OK
SNC-CH240	H.264	OK
SNC-CH260	H.264	OK
SNC-DH110	H.264	OK
SNC-DH120	H.264, MPEG-4	OK
SNC-DH140	MPEG-4	OK
SNC-DH160	MPEG-4	OK
SNC-DH210	H.264, MPEG-4	OK
SNC-DH220	H.264	OK
SNC-RH124	H.264	OK
SNC-RS46P	H.264, MPEG-4	OK

Table 7:   Selection of tested Sony network cameras

Setup information

Stream parameters (such as width and height, frame rate and i-frame interval) must be set via the camera's web-interface.
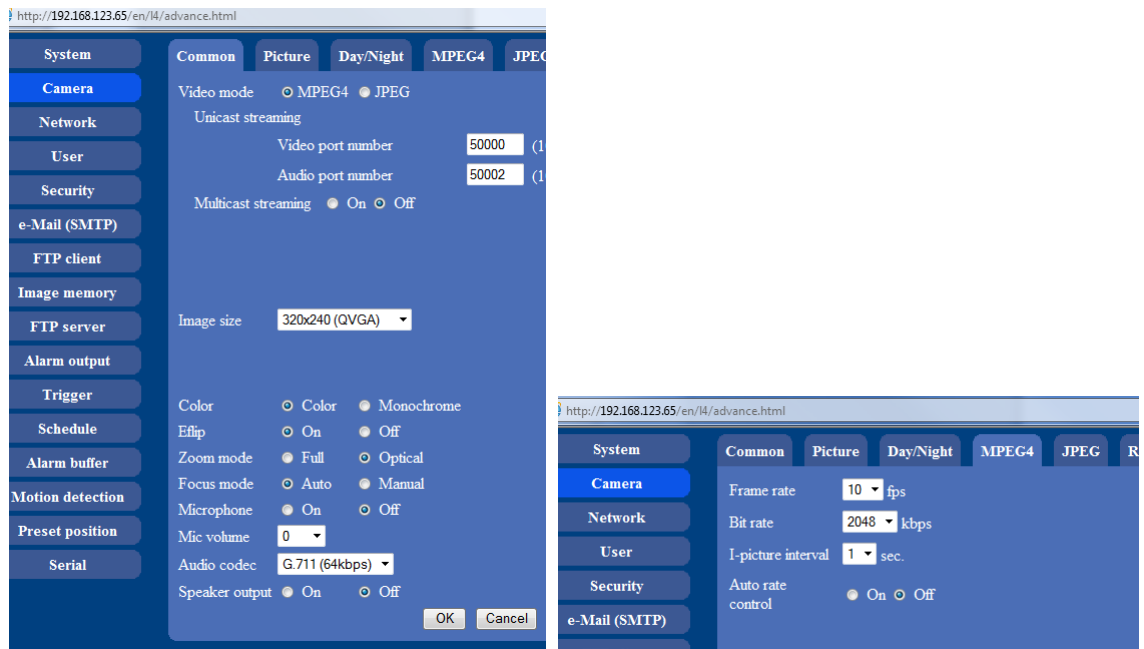
In this case, the MPEG4 stream has a resolution of 320 x 240 (QVGA), a frame rate of 10 fps, and an i-frame interval of 1 s, which means that the GOP size is 10 ("frame rate" x "i-frame interval").
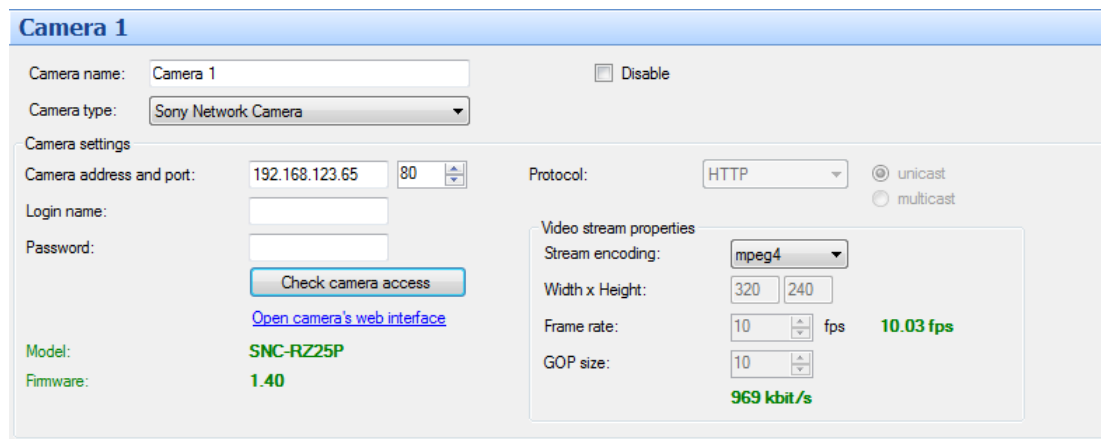
Setting the frame rate to the maximum of 25 fps has effect on the chosen stream according to the technical characteristics of the camera. For the camera SNC-RZ25P, for instance, only a QVGA stream can provide a maximum frame rate of 25 fps. With a VGA stream (640 x 480), the camera only allows for a maximum frame rate of 15 fps.
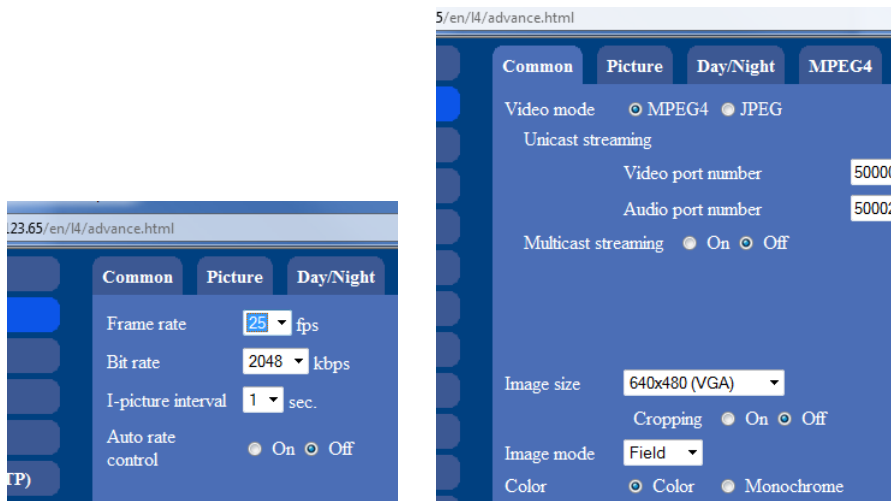
Although the frame rate is set to 25 fps, the incoming stream provides only 15 fps (approximately) if switched to VGA resolution.
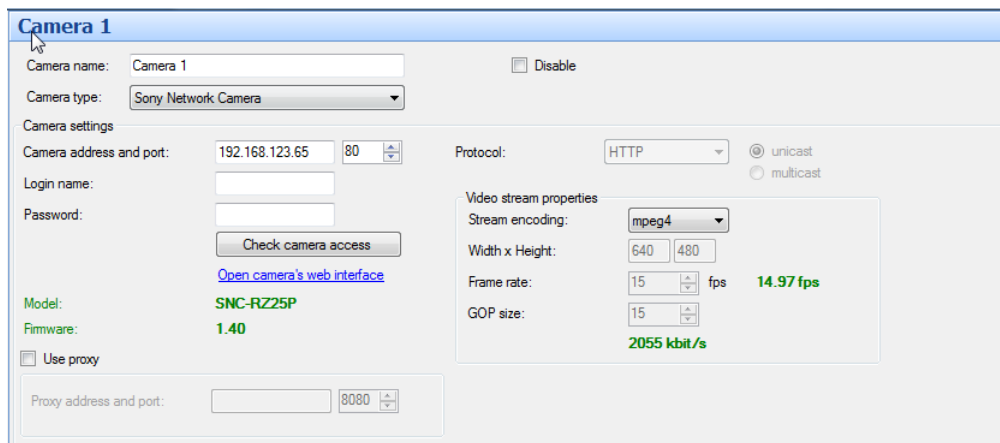
Every time the stream parameters are changed via the web interface, e.g. video resolution, frame rate or i-frame interval, the ibaCapture-CAM configuration has to be updated. For this purpose, click the <Check camera access> button and let the server apply the new configuration.

Some camera models support more than one encoder and thus several streams. If a camera supports MPEG-4 and H.264 encoded streams, these streams can be configured separately in terms of different video resolution, frame rate, etc.

8.4   Panasonic network cameras

These cameras were implemented and tested by using the Panasonic WV-NP502 network camera.

More supported Panasonic network cameras as guaranteed by Panasonic API, according to Panasonic API documentation:

Model	Firmware	Series
DG-NP244 **RP-NP244** **WV-NP244** **WV-NP240**	v.1.81 or higher	NP240
DG-NP1004 **DG-NP1000** **WV-NP1004** **WV-NP1000**	v.1.25 or higher	NP1000
DG-NS202 **WV-NS202**	v.1.11 or higher	NS202
DG-NS202A **WV-NS202A**	v.2.71 or higher	NS202A
DG-NF282 **WV-NF284**	v.1.61 or higher	NF280
DG-NW484S **WV-NW484S**	v.1.61 or higher	NW484
DG-NS950 **WV-NS954** **WV-NS950**	v.1.61 or higher	NS950
DG-NW960 **WV-NW964** **WV-NW960**	v.1.61 or higher	NW960
DG-NF302 **WV-NF302** **DG-NP304** **WV-NP304**	v.1.61 or higher	NP304
DG-NP502 **WV-NP502** **DG-NW502S** **WV-NW502S**	v.1.30 or higher	NP502
DG-SP302 **WV-SP302** **DG-SP304V** **WV-SP304V** **DG-SP305** **WV-SP305** **DG-SP306** **WV-SP306**	v.1.30 or higher	SP300

Model	Firmware	Series
DG-SF332 **WV-SF332** **DG-SF334** **WV-SF334** **DG-SF335** **WV-SF335** **DG-SF336** **WV-SF336**	v.1.30 or higher	SF330
WV-SP105 **WV-SP102** **DG-SP102**	v.1.31 or higher	SP100
WV-SW355 **WV-SW352** **DG-SW355**	v.1.04 or higher	SW350
WV-SC384 **BB-SC384**	v.1.03 or higher	SC384
DG-SC385 **WV-SC385** **WV-SW395** **DG-SW395**	v.1.06 or higher	SC385
WV-SF346 **WV-SF342**	v.1.30 or higher	SF340

Table 8:   Panasonic cameras

Important Note

Using the power schemes or system standby of Windows is not recommended according Panasonic API documentation.

8.5   GigE cameras

Generally, ibaCapture-CAM supports all types of GigE Vision compatible cameras.

Here, you find an overview of current, registered GigE Vision compatible cameras and devices as well as a search function:

Link: http://www.visiononline.org/vision-standards-details.cfm?id=39&type=5

iba has tested the following models:

Manufacturer	Model	Resolution	Remark
Dalsa	Genie HM640	640 x 480	300 fps, monochrome
JAI	RM-6740GE	640 x 480	200 fps, monochrome
Baumer	TXG13c	1392 x 1036	20 fps, color
Basler	acA640-90gc	658 x 492	90 fps, color
Basler	piA2400-17gc	2454 x 2056	17 fps, color
Allied Vision	Mako G-030C	644 x 484	309 fps, color
Allied Vision	Mako G-192C	1600 x 1200	60 fps, color

Table 9:   GigE-cameras tested by iba (Excerpt)

Notes on the compatibility of GigE cameras

❑ Color resolution

When using GigE Vision compatible cameras, the resolution is limited to 8 Bit. Other formats like e.g. Mono16 cannot be used.

❑ Trigger-mode

If the trigger mode is activated in the camera settings, external signals are required for triggering the images. If these external signals are not available, the camera does not provide a video. If the trigger mode is not used explicitly, it should be deactivated.

8.6 BOSCH cameras

BOSCH cameras can be used with the "ONVIF compatible device" camera type. All BOSCH cameras complying with the ONVIF standard can be used.

Information on the BOSCH devices' compatibility

As a factory setting, most of the BOSCH video encoders generate a video stream in interlaced mode. However, playing such a video reverse is not possible. Interlaced video can only be used for live images or forward replay. After updating the firmware on the device, you will receive a "deinterlacing" function on the encoder.
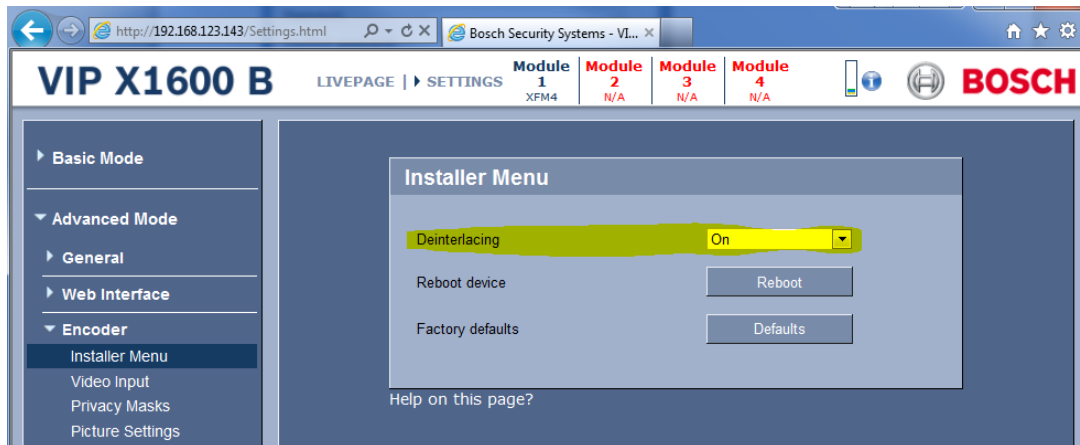
If "deinterlacing" is enabled, deinterlacing is applied before the encoding and a progressive stream is output. This also allows the video to be played reversely.

9 Troubleshooting

9.1 Support tool

If you need the Support's help in case of malfunctions or unclear errors, a tool is available collecting all relevant ibaCapture-CAM 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 – Programs – iba – ibaCapture-CAM – Support tool.
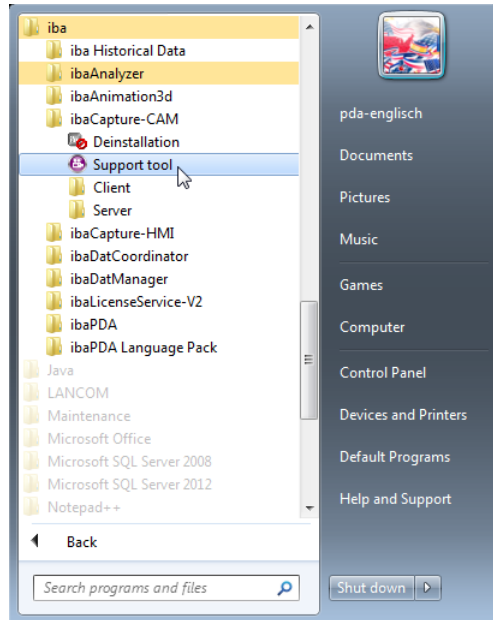
Immediately after starting, the support tool generates the ZIP file and a dialog opens where you can select the file location.

The file has the name **ibaCCSupport_yyyymmdd_hhmmss.zip** by default.

The ZIP file contains the following information:
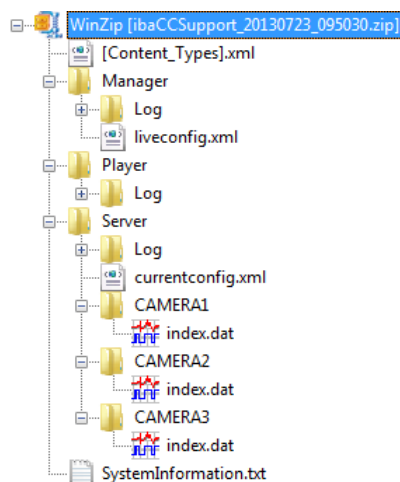
Settings and protocols of ibaCapture-CAM Manager;

Player protocols
(ibaAnalyzer player accesses, ibaPDA, ibaCapture-CAM Manager);

Protocols of ibaCapture-CAM Server, Configuration of ibaCapture-CAM Server, camera information;

System information
(hardware configuration of the computer and running processes at the time of file generation)

9.2   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-CAM).

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 or MPEG4).

❑ When using browsers, the corresponding plug-ins/add-ons (e.g. Active-X) have to be installed in the browser so an H.264-/MPEG4 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-CAM.

❑ Alternatively, you can also use ibaCapture-CAM 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 at ibaCapture-CAM Server can be made.

10   Support and contact

Support

Phone: +49 911 97282-14

Fax: +49 911 97282-33

Email: support@iba-ag.com

Note

If you require support, indicate the serial number (iba-S/N) of the product.

Contact

Headquarters

iba AG
Koenigswarterstr. 44
90762 Fuerth
Germany

Phone: +49 911 97282-0

Fax: +49 911 97282-33

Email: iba@iba-ag.com

Contact: Mr Harald Opel

Regional and worldwide

For contact data of your regional iba office or representative please refer to our web site

www.iba-ag.com.

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-CAM 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 of support within a profile will specify the maximum picture resolution, frame rate, and bit rate that a decoder may be capable of using. A decoder that conforms to a given level is required to be capable of decoding all bitstreams that are encoded for that level and for all lower levels.

(Source: Wikipedia)

More information: http://en.wikipedia.org/wiki/H.264/MPEG-4_AVC

Encoding profile

❑ Baseline Profile (BP)
Primarily for low-cost applications that require additional data loss robustness, 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 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

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)

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)

MPEG-4

An MPEG-4 standard (ISO/IEC-14496), serving among others a method of defining compression of audio and visual data. 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 discovery
- Device management
- Media configuration
- Real time viewing (live video)
- Event handling
- PTZ camera control
- Video analytics
- 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. RTPS is a text-based protocol and can be transmitted over UDP or TCP.

(Source: Wikipedia)

TCP

Transmission Control Protocol:
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)